Adminstrative Record Index
3 Bear Libby Gas Plant Permit NSR-7482M1

BATES NO.	DATE	FROM	TO	FORMAT	SUBJECT
00001-00141	9/25/2019 - 5/05/2020	NMED/3 Bear/WEG	NMED/3 Bear/WEG	Emails	Email correspondence relating to 3 Bear Libby Gas Plant NSR Permit Application
00142-00388	9/11/2019	Stephaine Swanson (3 Bear)	Ted Schooley (NMED)	Letter, Enclosure	NSR permit calculations and application
00389-00396	10/11/2019	Julia Kuhn (NMED)	Stephanie Swanson (3 Bear)	Certified Letter	Notice of application complete, permit fee invoice
00397-00400	10/11/2019	NMED	N/A	Legal Notice, Posting, Letter	Legal notice of permit application
00401-00638	12/5/2019	3 Bear	NMED	Documents	Revised permit application sections/cacluations
00639-00650	12/4/2019	NMED	N/A	Docments	NMED Public Involvement Plan and Limited English Proficiency (LEP) Services Evaluation for NSR Permit Application 7482-M1
00651-00658	1/17/2020	Jeremy Nichols (WEG)	Julia Kuhn (NMED)	Email with Attachment	Comments of WildEarth Guardians on permit application
00659-00662	1/30/2020	Melinda Owens (NMED)	Jeremy Nichols (WEG)	Certified Letter	Letter acknowledging receipt of WildEarth Guardians comments on permit application
00663-00668	2/4/2020	NMED	N/A	Legal Notice, Posting, Letter	Legal notice of NMED analysis of permit application
00669-00671	3/27/2020	Jeremy Nichols (WEG)	Melinda Owens (NMED)	Email with attachment	Comments of WildEarth Guardians on draft permit and statement of basis
00672-00725	2/11/2020	NMED	NMED	Draft Documents	Drafts of permit, statement of basis, and database summary
00726-00733	2/7/2020	NMED	NMED	NMED document	Air dispersion modeling summary for Permit No. 7482M1
00734-00784	4/8/2020	NMED	N/A	NSR Permit	Final NSR Permit No. 7482M1

BATES NO.	DATE	FROM	TO	FORMAT	SUBJECT
00785-00808	4/8/2020	NMED	N/A	NMED document	Final Statement of Basis and Database Summary for NSR Permit No. 7482M1
00809-00813	4/8/2020	Melinda Owens (NMED)	Jeremy Nichols (WEG)	Letter	NMED response to WEG comments on permit

From:	Kuhn, Julia, NMENV
To:	"lmarquez@barr.com"
Subject:	7482M1/3 Bear Libby Gas Plant application
Date:	Wednesday, September 25, 2019 11:47:07 AM

Good morning Lori,

I've been assigned to work on the Significant Revision and Title V permit applications for the 3 Bear Libby Gas Plant facility. In order to rule your application complete/incomplete, can you please email me the Excel files for emission calculations? Thank you for your time.

If you have any questions, do not hesitate to contact me at the number/email below.

Sincerely,

Please fill out our Industry/Consultant Feedback Questionnaire online.

If guidance or a determination is included in this email, it is intended to serve as general guidance and is in no way a formal statement of Department policy. New information or changes to regulations may result in a different determination or guidance.

Julia Kuhn
Permitting – Major Sources
New Mexico Environmental Department
Air Quality Bureau
525 Camino de los Marquez, Suite 1
Santa Fe, NM 87505
505-476-4376
Julia.Kuhn@state.nm.us
www.env.nm.gov

From: Kuhn, Julia, NMENV
To: "Nancy L. Pratt"
Subject: RE: 7482M1/3 Bear Libby Gas Plant application
Date: Wednesday, September 25, 2019 12:22:01 PM
Attachments: image001.png

Thank you!

From: Nancy L. Pratt <NPratt@barr.com>
Sent: Wednesday, September 25, 2019 12:21 PM
To: Kuhn, Julia, NMENV <Julia.Kuhn@state.nm.us>; Trent M. Wade <TWade@barr.com>
Cc: Lori K. Marquez <LMarquez@barr.com>
Subject: [EXT] RE: 7482M1/3 Bear Libby Gas Plant application

Julia,

I am forwarding this to Trent Wade who will contact you to see what you require.

Thank you for reaching out to me! Let me know if you need anything further.

Nancy L. Pratt

Senior Air Quality Consultant
Denver, CO office:
cell: 720.272.8835
NPratt@barr.com
www.barr.com

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If you no longer wish to receive marketing e-mails from Barr, respond to communications@barr.com and we will be happy to honor your request.

From: Kuhn, Julia, NMENV <Julia.Kuhn@state.nm.us>
Sent: Wednesday, September 25, 2019 12:14 PM
To: Nancy L. Pratt <NPratt@barr.com>
Cc: Lori K. Marquez <LMarquez@barr.com>
Subject: 7482M1/3 Bear Libby Gas Plant application

CAUTION: This email originated from outside your organization. Exercise caution when opening attachments or clicking links, especially from unknown senders.

Good morning Nancy,

I received an automated response form Lori Marquez to contact you for assistance. Is the request below something you can help me with? Thank you.

I've been assigned to work on the Significant Revision and Title V permit applications for the 3 Bear

Libby Gas Plant facility. In order to rule your application complete/incomplete, can you please email me the Excel files for emission calculations? Thank you for your time.

If you have any questions, do not hesitate to contact me at the number/email below.

Sincerely,

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New Mexico Environmental Department
Air Quality Bureau
525 Camino de los Marquez, Suite 1
Santa Fe, NM 87505
505-476-4376
Julia.Kuhn@state.nm.us
www.env.nm.gov

From:	Kuhn, Julia, NMENV
To:	"twade@barr.com"
Cc:	"lmarquez@barr.com"
Subject:	3 Bear Libby Gas Plant
Date:	Friday, September 27, 2019 1:35:34 PM

Good afternoon Mr. Wade,

As mentioned earlier, TV regulations 20.2.70.300.D(5) require that the computations are provided with your application. Please see note below:

"(5) *For all emissions of all air pollutants for which the source is major and all emissions of regulated air pollutants, provide all emissions information, calculations and computations for the source and for each emissions unit, except for insignificant activities"*

Thank you for your response.

Regards,

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Air Quality Bureau
525 Camino de los Marquez, Suite 1
Santa Fe, NM 87505
505-476-4376
Julia.Kuhn@state.nm.us
www.env.nm.gov

From:	Kuhn, Julia, NMENV
To:	"Trent M. Wade"
Cc:	Lori K. Marquez; "Liz Klein"
Subject:	RE: 3 Bear Libby Gas Plant
Date:	Wednesday, October 2, 2019 2:13:09 PM
Attachments:	image001.png

Thank you.

Regards,

Julia Kuhn

From: Trent M. Wade <TWade@barr.com>
Sent: Wednesday, October 2, 2019 2:05 PM
To: Kuhn, Julia, NMENV <Julia.Kuhn@state.nm.us>
Cc: Lori K. Marquez <LMarquez@barr.com>; 'Liz Klein' <lklein@3bearllc.com>
Subject: [EXT] RE: 3 Bear Libby Gas Plant

Julia,

I have attached the emission calculations for Libby Gas Plant to this email. If you have any questions please let me know.

Thanks,

Trent M. Wade

Chemical Engineer
Denver, CO office:
cell: 970.381.0564
TWade@barr.com
www.barr.com

From: Kuhn, Julia, NMENV <Julia.Kuhn@state.nm.us>
Sent: Friday, September 27, 2019 1:36 PM
To: Trent M. Wade <TWade@barr.com>
Cc: Lori K. Marquez <LMarquez@barr.com>
Subject: 3 Bear Libby Gas Plant

Good afternoon Mr. Wade,

As mentioned earlier, TV regulations 20.2.70.300.D(5) require that the computations are provided with your application. Please see note below:

"(5) *For all emissions of all air pollutants for which the source is major and all emissions of regulated air pollutants, provide all emissions information, calculations and computations for the source and for each emissions unit, except for insignificant activities"*

Thank you for your response.

Regards,

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Santa Fe, NM 87505
505-476-4376
Julia.Kuhn@state.nm.us
www.env.nm.gov

From:	Kuhn, Julia, NMENV
To:	"stephanie@3bearllc.com"
Cc:	"Trent M. Wade"; Lori K. Marquez
Subject:	Completeness Determination for 7482M1, 3 Bear Delaware Operating, NM LLC – 3 Bear Libby Gas Plant
Date:	Friday, October 11, 2019 11:33:48 AM
Attachments:	Completion (7482M1).pdf

Dear Ms. Swanson,

Please find attached, the Completion letter for Air Quality Construction Permit **Modification** for **7482M1, 3 Bear Delaware Operating, NM LLC – 3 Bear Libby Gas Plant**.

Completeness Determination Date: October 11, 2019. Please note that the letter includes the Legal Notice and Invoice for permit Fee.

Thank you,

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Julia.Kuhn@state.nm.us
www.env.nm.gov

From: Trent M. Wade
To: Kuhn, Julia, NMENV
Cc: Lori K. Marquez; "Liz Klein"
Subject: [EXT] RE: 3 Bear Libby Gas Plant
Date: Tuesday, October 29, 2019 1:06:26 PM
Attachments: image001.png

Julia,

The NSPS OOOOa regulatory citation is 60.5405a "What standards apply to sweetening unit affected facilities at onshore natural gas processing plants?" If you have any questions please let me know.

Thanks,

Trent M. Wade

Chemical Engineer
Denver, CO office:
cell: 970.381.0564
TWade@barr.com
www.barr.com

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From: Kuhn, Julia, NMENV <Julia.Kuhn@state.nm.us>
Sent: Tuesday, October 29, 2019 9:23 AM
To: Trent M. Wade <TWade@barr.com>
Cc: Lori K. Marquez <LMarquez@barr.com>; 'Liz Klein' <lklein@3bearllc.com>
Subject: RE: 3 Bear Libby Gas Plant

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Good morning,

In regards to the Tittle V application for the 3 Bear Libby Gas Plant, the information you've provided in Section 19 (Requirements for TV Program) establishes that the amine is not subject to a CAM plan because the unit has a pre-control device to achieve compliance with emission limitation or standards for VOC and H2S under OOOOa regulations, and it is therefore exempt under 64.2(b)(1)(i). Would you please provide the citation in NSPS OOOOa supporting this information? Thank you.

Sincerely,

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Santa Fe, NM 87505
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Julia.Kuhn@state.nm.us
www.env.nm.gov

From:	Kuhn, Julia, NMENV
To:	"stephanie@3bearllc.com"
Cc:	"Trent M. Wade"; Lori K. Marquez
Subject:	RULED INCOMPLETE Title V Permit From the State of New Mexico - P285, 3 Bear Delaware Operating, NM, LLC - 3 Bear Libby Gas Plant
Date:	Thursday, October 31, 2019 10:30:00 AM
Attachments:	Ruled Incomplete (P285).pdf

Ms. Swanson:

Please find attached, the Ruled Incomplete letter for Air Quality Operating Permit **Initial Application** for **P285, 3 Bear Delaware Operating, NM, LLC - 3 Bear Libby Gas Plant.**

The application was ruled incomplete on: **October 31, 2019**.

Thank you,

Please fill out our Industry/Consultant Feedback Questionnaire online.

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New Mexico Environmental Department
Air Quality Bureau
525 Camino de los Marquez, Suite 1
Santa Fe, NM 87505
505-476-4376
Julia.Kuhn@state.nm.us
www.env.nm.gov

From:	Kuhn, Julia, NMENV
To:	"Trent M. Wade"; Lori K. Marquez
Subject:	3 Bear Libby Gas Plant - NSR application
Date:	Friday, November 1, 2019 4:18:00 PM

Good afternoon,

In reviewing the calculations provided for ENG2-8, can you please direct me where in the application you've requested a controlled emission factor for CO; and what is the underlying concept for the controlled emission number (0.78 g/hp-hr) used in the calculations? Also, would you please address formaldehyde in the explanation? See image below as a reference. Thank you.

Engine Emission Detail Sheet

Item	Value
Source Name	ENG 5-8
Description	Compressor Engine
Engine Use	Residue Compression
Quantity	4
Make	Caterpillar
Model	Caterpillar G3516
Serial Number	TBD
Manufacture Date	11/20/2017, After 7/1/2007
Fuel Type	Natural Gas
Engine Type	4SLB

Item	Value	Units	Source
Rated Horsepower	1380	hp	Manufacturer
Heat Rate	11.39	MMBtu/hr	Calculated
Fuel Consumption	8256	Btu/hp-hr	Manufacturer
Fuel Use	7693.20	scf/hr	Calculated
Fuel Heat Value	1479.8	btu/scf	Gas Analysis
Emisson Controls	Oxidation Catalyst		Manufacturer
Control Efficiency CH2O	80%		Manufacturer/Permit Condition
Control Efficiency NOx	0%		Manufacturer/JJJJ
Control Efficiency VOC	31%		Manufacturer/JJJJ
Control Efficiency CO	68%		Manufacturer/Permit Condition
Engine Speed	1400	RPM	Manufacturer
Potential Operation	8760	hr/yr	
Sulfur Content	9,476	grains/MMscf	AP42 with margin
Sulfur Margin	400%	%	

Total Potential Emissions

Pollutant	Uncontrolled Emissions		Controlled Emissions	
	(lb/hr)	(tpy)	(lb/hr)	(tpy)
NOx	12.17	53.31	12.17	53.31
VOC (less formaldehyde)	8.52	37.32	8.52	37.32
Total VOC	13.88	60.78	9.59	42.01
CO	29.58	129.55	9.49	41.58
SO2	0.13	0.56	0.13	0.56
PM10	0.46	1.99	0.46	1.99
Formaldehyde	5.35	23.45	1.07	4.69
Acetaldehyde	0.38	1.67	0.38	1.67
Acrolein	0.23	1.03	0.23	1.03
Benzene	0.02	0.09	0.02	0.09
Toluene	0.02	0.08	0.02	0.08
Ethylbenzene	0.00	0.01	0.00	0.01
Xylene	0.01	0.04	0.01	0.04
n-Hexane	0.05	0.22	0.05	0.22
Total HAPs	6.07	26.58	1.79	7.82

Potential Emissions Per Engine

Pollutant	Uncontrolled Emissions				Controlled Emissions				Source of Emission Factor
	EF	Units	(lb/hr)	(tpy)	EF	Units	(lb/hr)	(tpy)	
NOx	1.00*	g/hp-hr	3.04	13.33	1.00	g/hp-hr	3.04	13.33	40 CFR 60 Subpart JJJJ
VOC (less formaldehyde)	0.70*	g/hp-hr	2.13	9.33	0.70	g/hp-hr	2.13	9.33	40 CFR 60 Subpart JJJJ
Total VOC***	1.14	g/hp-hr	3.47	15.19	0.79	g/hp-hr	2.40	10.50	40 CFR 60 Subpart JJJJ + CH2O
CO	2.43**	g/hp-hr	7.39	32.39	0.78	g/hp-hr	2.37	10.40	Permit Condition
SO2*****	2.79E-03	lb/mmBtu	0.03	0.14	2.79E-03	lb/mmBtu	0.03	0.14	EPA AP-42 Table 3.2-2
PM10******	9.99E-03	lb/mmBtu	0.11	0.50	9.99E-03	lb/mmBtu	0.11	0.50	EPA AP-42 Table 3.2-2
Formaldehyde	4.40E-01	g/hp-hr	1.34	5.86	8.80E-02	g/hp-hr	0.27	1.17	Permit Condition
Acetaldehyde	8.36E-03	lb/mmBtu	0.10	0.42	[illegible]	lb/mmBtu	0.10	0.42	EPA AP-42 Table 3.2-2
Acrolein	5.14E-03	lb/mmBtu	0.06	0.26	5.14E-03	lb/mmBtu	0.06	0.26	EPA AP-42 Table 3.2-2
Benzene	4.40E-04	lb/mmBtu	0.01	0.02	4.40E-04	lb/mmBtu	0.01	0.02	EPA AP-42 Table 3.2-2
Toluene	4.08E-04	lb/mmBtu	0.00	0.02	4.08E-04	lb/mmBtu	0.00	0.02	EPA AP-42 Table 3.2-2
Ethylbenzene	3.97E-05	lb/mmBtu	0.00	0.00	3.97E-05	lb/mmBtu	0.00	0.00	EPA AP-42 Table 3.2-2
Xylene	1.84E-04	lb/mmBtu	0.00	0.01	1.84E-04	lb/mmBtu	0.00	0.01	EPA AP-42 Table 3.2-2
n-Hexane	1.11E-03	lb/mmBtu	0.01	0.06	1.11E-03	lb/mmBtu	0.01	0.06	EPA AP-42 Table 3.2-2
Total HAPs			1.52	6.65			0.45	1.96	

* - Uncontrolled and controlled emission factors for NOx and VOC are based on JJJJ standards as manufacturer uncontrolled emission factors are lower than JJJJ emission standards.
** - Uncontrolled emission factor for CO was taken from the Manufacturer technical data sheets. Controlled emission factor for CO is a permit condition requested in this application.
*** - Uncontrolled and controlled emission factor for Total VOC was calculated to include formaldehyde.
**** - Controlled CO emission factor is a permit condition requested in this application.
***** - Sulfur emission factor from AP-42 Table 1.4-2 is ratio adjusted based on the max sulfur content when sulfur content is greater than 2,000 grains/MMscf.
****** - PM10 emissions include filterable and condensable particulates.

Sample Calculation for NOx
1.00 g/hp-hr * 1380 hp / 453.59 g/lb * 8760 hr/yr / 2000 lb/ton = 13.33 tpy

Regards,

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Air Quality Bureau

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Julia.Kuhn@state.nm.us
www.env.nm.gov

From:	Kuhn, Julia, NMENV
To:	"Trent M. Wade"; "Lori K. Marquez"
Subject:	RE: 3 Bear Libby Gas Plant - NSR application
Date:	Tuesday, November 12, 2019 2:26:00 PM

Good afternoon,

I'm following up on the email below. Would you please clarify the emissions factors (controlled) used in your calculations for the engines? Also, would you please direct me to supporting documentation in the application?

Thank you,

Julia Kuhn

From: Kuhn, Julia, NMENV
Sent: Friday, November 1, 2019 4:19 PM
To: 'Trent M. Wade' <TWade@barr.com>; Lori K. Marquez <LMarquez@barr.com>
Subject: 3 Bear Libby Gas Plant - NSR application

Good afternoon,

In reviewing the calculations provided for ENG2-8, can you please direct me where in the application you've requested a controlled emission factor for CO; and what is the underlying concept for the controlled emission number (0.78 g/hp-hr) used in the calculations? Also, would you please address formaldehyde in the explanation? See image below as a reference. Thank you.

Engine Emission Detail Sheet

Item	Value
Source Name	ENG 5-8
Description	Compressor Engine
Engine Use	Residue Compression
Quantity	4
Make	Caterpillar
Model	Caterpillar G3516
Serial Number	TBD
Manufacture Date	11/20/2017, After 7/1/2007
Fuel Type	Natural Gas
Engine Type	4SLB

Item	Value	Units	Source
Rated Horsepower	1380	hp	Manufacturer
Heat Rate	11.39	MMBtu/hr	Calculated
Fuel Consumption	8258	Btu/hp-hr	Manufacturer
Fuel Use	7699.20	scf/hr	Calculated
Fuel Heat Value	1479.8	btu/scf	Gas Analysis
Emission Controls	Oxidation Catalyst		Manufacturer
Control Efficiency CH2O	80%		Manufacturer/Permit Condition
Control Efficiency NOx	0%		Manufacturer/JJJJ
Control Efficiency VOC	31%		Manufacturer/JJJJ
Control Efficiency CO	68%		Manufacturer/Permit Condition
Engine Speed	1400	RPM	Manufacturer
Potential Operation	8760	hr/yr	
Sulfur Content	3,476	grains/MMscf	AP42 with margin
Sulfur Margin	400%	%	

Total Potential Emissions

Pollutant	Uncontrolled Emissions		Controlled Emissions	
	(lb/hr)	(tpy)	(lb/hr)	(tpy)
NOx	12.17	53.31	12.17	53.31
VOC (less formaldehyde)	8.52	37.32	8.52	37.32
Total VOC	13.88	60.78	9.59	42.01
CO	29.58	129.55	9.49	41.56
SO2	0.13	0.56	0.13	0.56
PM10	0.46	1.99	0.46	1.99
Formaldehyde	5.35	23.45	1.07	4.69
Acetaldehyde	0.38	1.67	0.38	1.67
Acrolein	0.23	1.03	0.23	1.03
Benzene	0.02	0.09	0.02	0.09
Toluene	0.02	0.08	0.02	0.08
Ethylbenzene	0.00	0.01	0.00	0.01
Xylene	0.01	0.04	0.01	0.04
n-Hexane	0.05	0.22	0.05	0.22
Total HAPs	6.07	26.58	1.79	7.82

Potential Emissions Per Engine

Pollutant	Uncontrolled Emissions				Controlled Emissions				Source of Emission Factor
	EF	Units	(lb/hr)	(tpy)	EF	Units	(lb/hr)	(tpy)	
NOx	1.00*	g/hp-hr	3.04	13.33	1.00	g/hp-hr	3.04	13.33	40 CFR 60 Subpart JJJJ
VOC (less formaldehyde)	0.70*	g/hp-hr	2.13	9.33	0.70	g/hp-hr	2.13	9.33	40 CFR 60 Subpart JJJJ
Total VOC***	1.14	g/hp-hr	3.47	15.19	0.79	g/hp-hr	2.40	10.50	40 CFR 60 Subpart JJJJ + CH2O
CO	2.43**	g/hp-hr	7.39	32.39	0.78	g/hp-hr	2.37	10.40	Permit Condition
SO2*****	2.79E-03	lb/mmBtu	0.03	0.14	2.79E-03	lb/mmBtu	0.03	0.14	EPA AP-42 Table 3.2-2
PM10******	3.99E-03	lb/mmBtu	0.11	0.50	3.99E-03	lb/mmBtu	0.11	0.50	EPA AP-42 Table 3.2-2
Formaldehyde	4.40E-01	g/hp-hr	1.34	5.86	8.80E-02	g/hp-hr	0.27	1.17	Permit Condition
Acetaldehyde	8.36E-03	lb/mmBtu	0.10	0.42	[illegible]	lb/mmBtu	0.10	0.42	EPA AP-42 Table 3.2-2
Acrolein	5.14E-03	lb/mmBtu	0.06	0.26	5.14E-03	lb/mmBtu	0.06	0.26	EPA AP-42 Table 3.2-2
Benzene	4.40E-04	lb/mmBtu	0.01	0.02	4.40E-04	lb/mmBtu	0.01	0.02	EPA AP-42 Table 3.2-2
Toluene	4.08E-04	lb/mmBtu	0.00	0.02	4.08E-04	lb/mmBtu	0.00	0.02	EPA AP-42 Table 3.2-2
Ethylbenzene	3.97E-05	lb/mmBtu	0.00	0.00	3.97E-05	lb/mmBtu	0.00	0.00	EPA AP-42 Table 3.2-2
Xylene	1.84E-04	lb/mmBtu	0.00	0.01	1.84E-04	lb/mmBtu	0.00	0.01	EPA AP-42 Table 3.2-2
n-Hexane	1.11E-03	lb/mmBtu	0.01	0.06	1.11E-03	lb/mmBtu	0.01	0.06	EPA AP-42 Table 3.2-2
Total HAPs			1.52	6.65			0.45	1.96	

* - Uncontrolled and controlled emission factors for NOx and VOC are based on JJJJ standards as manufacturer uncontrolled emission factors are lower than JJJJ emission standards.
** - Uncontrolled emission factor for CO was taken from the Manufacturer technical data sheets. Controlled emission factor for CO is a permit condition requested in this application.
*** - Uncontrolled and controlled emission factor for Total VOC was calculated to include formaldehyde.
**** - Controlled CO emission factor is a permit condition requested in this application.
***** - Sulfur emission factor from AP-42 Table 1.4-2 is ratio adjusted based on the max sulfur content when sulfur content is greater than 2,000 grains/MMscf.
****** - PM10 emissions include filterable and condensable particulates.

Sample Calculation for NOx
1.00 g/hp-hr * 1380 hp / 453.59 g/lb * 8760 hr/yr / 2000 lb/ton = 13.33 tpy

Regards,

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Julia Kuhn
Permitting – Major Sources
New Mexico Environmental Department
Air Quality Bureau
525 Camino de los Marquez, Suite 1
Santa Fe, NM 87505
505-476-4376
Julia.Kuhn@state.nm.us
www.env.nm.gov

From:	Kuhn, Julia, NMENV
To:	"Trent M. Wade"
Cc:	Lori K. Marquez; Owens, Melinda, NMENV
Subject:	3 Bear Libby Gas Plant - NSR application
Date:	Friday, November 15, 2019 3:30:00 PM
Attachments:	image001.png Heaters calculations (7482M1).pdf

Good afternoon,

There are a couple of issues I would like to address in regards to emissions calculations for the 3 Bear Libby Gas Plant:

1. The fugitive emissions should be enter in the application as uncontrolled emissions rather than controlled. Unlike other states, New Mexico has no state regulation requiring LDAR monitoring. While NSPS KKK and NSPS OOOO/OOOOa require LDAR monitoring, none of these rules allow applicants to apply a control efficiency for LDAR monitoring in the PTE calculation. Thus, no credit for LDAR monitoring may be claimed in the PTE calculation.

   In short, fugitive VOC and H2S emissions must be based on the uncontrolled values and may not claim any control efficiency from LDAR monitoring. Therefore, emissions for FUG-1 should be represented as 51.25 tpy.

2. I have attached my calculations for HT-1 and HT-2 emissions. Please refer to AP-42 Tables 1.4-1 and 1.4-2 footnotes for clarification on AP-42 emission factors when using a different natural gas heating value. AP-42 emission factors are based on an average natural gas heating value of 1020 btu/scf, thus a ratio between heating values should be part of the calculation.

3. I have discussed the 3 Bear Libby Gas Plant application with my manager and determined that based on the emissions of the heaters, the facility would exceed the threshold for PSD applicability since the CO would be over 250 tpy.

4. Please advise how you would like to proceed as soon as possible. Thank you.

Regards,

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Julia.Kuhn@state.nm.us
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From: Trent M. Wade <TWade@barr.com>
Sent: Tuesday, October 29, 2019 1:06 PM
To: Kuhn, Julia, NMENV <Julia.Kuhn@state.nm.us>
Cc: Lori K. Marquez <LMarquez@barr.com>; 'Liz Klein' <lklein@3bearllc.com>
Subject: [EXT] RE: 3 Bear Libby Gas Plant

Julia,

The NSPS OOOOa regulatory citation is 60.5405a "What standards apply to sweetening unit affected facilities at onshore natural gas processing plants?" If you have any questions please let me know.

Thanks,

Trent M. Wade

Chemical Engineer
Denver, CO office:
cell: 970.381.0564
TWade@barr.com
www.barr.com

From: Kuhn, Julia, NMENV <Julia.Kuhn@state.nm.us>
Sent: Tuesday, October 29, 2019 9:23 AM
To: Trent M. Wade <TWade@barr.com>
Cc: Lori K. Marquez <LMarquez@barr.com>; 'Liz Klein' <lklein@3bearllc.com>
Subject: RE: 3 Bear Libby Gas Plant

Good morning,

In regards to the Tittle V application for the 3 Bear Libby Gas Plant, the information you've provided in Section 19 (Requirements for TV Program) establishes that the amine is not subject to a CAM plan because the unit has a pre-control device to achieve compliance with emission limitation or standards for VOC and H2S under OOOOa regulations, and it is therefore exempt under 64.2(b)(1)(i). Would you please provide the citation in NSPS OOOOa supporting this information? Thank you.

Sincerely,

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From:	Trent M. Wade
To:	Kuhn, Julia, NMENV
Cc:	"Liz Klein"; Lori K. Marquez
Subject:	[EXT] RE: 3 Bear Libby Gas Plant - NSR application
Date:	Tuesday, December 3, 2019 4:45:22 PM
Attachments:	image001.png Libby Gas Plant Updated Pages.pdf A-7482M1-UA2-Libby Gas Plant_Final_Rev1_To AQB.xls

Julia,

We are still working out the details on the engine option operating scenario, so to move things forward with your review process I have compiled and answered your questions in this one email. Please see our responses below in red. As I mentioned earlier, we realized that CO emissions on a short term basis at FL-1 are underestimated because we did not originally include a plant blowdown in the short term emissions options. This was updated in the emission calculations submitted with this email and assumes a plant blowdown to flare is the maximum short term emissions event. We will follow up this week with modeling to verify our facility will meet the NAAQS standards.

3Bear plans to install an additional emergency generator (GEN-1) that will be exempt under 20.2.72.202.B.3. In addition, ENG-9 has been moved to Table 2B to accurately reflect its status as an emergency generator; it is currently exempt and we did not intend to change its status. Its hours of operation are adjusted in the attached calculations. An updated Table 2B has been submitted to reflect these changes, and the changes listed below.

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2) In regards to the thermal oxidizer (TO-1), a 50% margin added to Vapor Flow Rate impacts the outcome of emissions rates. Also, the heating value used in the calculations is 1020 btu/scf rather than 1479.8 btu/scf. Can you please provide justification/clarification for the values entered in your calculations? For all pieces of equipment that use fuel, we updated the emission calculations to use residue gas because that is what 3Bear would use in the field. These emissions were originally calculated based on the inlet gas. We updated the emissions to reduce the safety factor to 25% per your request. Please see the attached calculations.

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4) I have attached my calculations for HT-1 and HT-2 emissions. Please refer to AP-42 Tables 1.4-1 and 1.4-2 footnotes for clarification on AP-42 emission factors when using a different natural gas heating value. AP-42 emission factors are based on an average natural gas heating value of 1020 btu/scf, thus a ratio between heating values should be part of the calculation. We reviewed your emission factor conversion and ours and believe both were in error; the site specific heat value is irrelevant to the calculation. Based on AP-42 Table 1.4-1 note (a), the heater emission factor can be converted from lb/MMscf to lb/MMBtu by dividing the lb/MMscf emission factor by 1020 btu/scf (the AP42 Basis). Using this emission factor we are able to use our manufacture rating (MMBtu/hr) to calculate the heater emissions. Our emissions have been updated to reflect this change. Please see the below sample equation:

84 lb/MMscf / 1020 Btu/Scf * 49.42 MMBtu/hr / 2000 lb/ton x 8760 hr/yr = 17.82 ton/yr

5) I have discussed the 3 Bear Libby Gas Plant application with my manager and determined that based on the emissions of the heaters, the facility would exceed the threshold for PSD applicability since the CO would be over 250 tpy. With all of the changes listed above, our CO emissions are below 250 tpy.

We will let you know as soon as possible whether or not we are going to move forward with the residue compressor engine options. We appreciate you being flexible and working with us.

Thanks,

Trent M. Wade

Chemical Engineer
Denver, CO office:
cell: 970.381.0564
TWade@barr.com
www.barr.com

From: Kuhn, Julia, NMENV <Julia.Kuhn@state.nm.us>
Sent: Wednesday, November 27, 2019 8:15 AM
To: Trent M. Wade <TWade@barr.com>
Subject: RE: 3 Bear Libby Gas Plant - NSR application

CAUTION: This email originated from outside your organization. Exercise caution when opening attachments or clicking links, especially from unknown senders.

Thank you! I will leave work early today. If you want, you can take your time and email me on Tuesday next week.

Happy Thanksgiving.

Julia Kuhn

From: Trent M. Wade <TWade@barr.com>
Sent: Tuesday, November 26, 2019 6:06 PM
To: Kuhn, Julia, NMENV <Julia.Kuhn@state.nm.us>
Subject: [EXT] RE: 3 Bear Libby Gas Plant - NSR application

Julia,

I wanted to give you a status update. I'm finalizing our responses and will be able to send over a response tomorrow.

Thanks,

Trent M. Wade

Chemical Engineer
Denver, CO office:
cell: 970.381.0564
TWade@barr.com
www.barr.com

From: Kuhn, Julia, NMENV <Julia.Kuhn@state.nm.us>
Sent: Monday, November 25, 2019 4:07 PM
To: Trent M. Wade <TWade@barr.com>
Subject: RE: 3 Bear Libby Gas Plant - NSR application

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Great, thank you for the acknowledgement.

Regards,

Julia Kuhn

From: Trent M. Wade <TWade@barr.com>
Sent: Monday, November 25, 2019 4:04 PM
To: Kuhn, Julia, NMENV <Julia.Kuhn@state.nm.us>; Lori K. Marquez <LMarquez@barr.com>
Subject: [EXT] RE: 3 Bear Libby Gas Plant - NSR application

Julia,

Sorry for the delay in response, I appreciate you being patient with us. We are currently looking into these questions and will have a response to you by end of the day tomorrow.

Trent M. Wade

Chemical Engineer
Denver, CO office:
cell: 970.381.0564
TWade@barr.com
www.barr.com

From: Kuhn, Julia, NMENV <Julia.Kuhn@state.nm.us>
Sent: Monday, November 25, 2019 12:23 PM
To: Trent M. Wade <TWade@barr.com>; Lori K. Marquez <LMarquez@barr.com>
Subject: FW: 3 Bear Libby Gas Plant - NSR application

Good morning,

I've been waiting to hear back from you regarding the issues addressed in my previous email (see below). Please remember that the modeling specialist is waiting on verification of calculations before she can proceed with modeling analysis. The permit is due on January 9th, 2020 and with the upcoming holidays, the deadline seems to be a lot shorter. Would you please respond by Wednesday next week the latest?

I am also emailing regarding some additional concerns with the calculations provided.

- AMINE-1 has a 30% margin added for operational flexibility. Can you please define "operational flexibility"? I am wondering if this may be what we define as a "safety factor" added to the calculations of emissions. If this is the case, we allow up to a 25% safety factor. In addition, can you please clarify why is 1020 btu/scf use in the calculations rather than 1479.8 btu/scf?

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Just so you know, I am still working with the flares values. Thus, I may have to email you back if there are other issues of concerns. Meanwhile, if you could provide an unlocked excel file for the calculations, it would be incredibly helpful.

Thank you for your prompt attention on this matter.

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From: Kuhn, Julia, NMENV
Sent: Friday, November 15, 2019 3:30 PM
To: 'Trent M. Wade' <TWade@barr.com>
Cc: Lori K. Marquez <LMarquez@barr.com>; Owens, Melinda, NMENV <Melinda.Owens@state.nm.us>
Subject: 3 Bear Libby Gas Plant - NSR application

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Sent: Tuesday, October 29, 2019 1:06 PM
To: Kuhn, Julia, NMENV <Julia.Kuhn@state.nm.us>
Cc: Lori K. Marquez <LMarquez@barr.com>; 'Liz Klein' <lklein@3bearllc.com>
Subject: [EXT] RE: 3 Bear Libby Gas Plant

Julia,

The NSPS OOOOa regulatory citation is 60.5405a "What standards apply to sweetening unit affected facilities at onshore natural gas processing plants?" If you have any questions please let me know.

Thanks,

Trent M. Wade

Chemical Engineer
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www.barr.com

resourceful. naturally.

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Sent: Tuesday, October 29, 2019 9:23 AM
To: Trent M. Wade <TWade@barr.com>
Cc: Lori K. Marquez <LMarquez@barr.com>; 'Liz Klein' <lklein@3bearllc.com>
Subject: RE: 3 Bear Libby Gas Plant

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From:	Trent M. Wade
To:	Kuhn, Julia, NMENV
Cc:	"Liz Klein"; Lori K. Marquez
Subject:	[EXT] RE: 3 Bear Libby Gas Plant - NSR application
Date:	Wednesday, December 4, 2019 9:51:11 AM
Attachments:	image001.png A-7482M1-5-Libby Gas Plant_EM Calcs_Final_Rev1_To AQB.xlsx

Julia,

Please see the attached calcs.

Thanks,

Trent M. Wade

Chemical Engineer
Denver, CO office:
cell: 970.381.0564
TWade@barr.com
www.barr.com

From: Kuhn, Julia, NMENV <Julia.Kuhn@state.nm.us>
Sent: Wednesday, December 4, 2019 8:32 AM
To: Trent M. Wade <TWade@barr.com>
Cc: 'Liz Klein' <lklein@3bearllc.com>; Lori K. Marquez <LMarquez@barr.com>
Subject: RE: 3 Bear Libby Gas Plant - NSR application

Good morning,

Thank you for the update. Would you please send the excel file with the revised calculations?

Regards,

Julia Kuhn

From: Trent M. Wade <TWade@barr.com>
Sent: Tuesday, December 3, 2019 4:45 PM
To: Kuhn, Julia, NMENV <Julia.Kuhn@state.nm.us>
Cc: 'Liz Klein' <lklein@3bearllc.com>; Lori K. Marquez <LMarquez@barr.com>
Subject: [EXT] RE: 3 Bear Libby Gas Plant - NSR application

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Sent: Wednesday, November 27, 2019 8:15 AM
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Subject: RE: 3 Bear Libby Gas Plant - NSR application

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To: Kuhn, Julia, NMENV <Julia.Kuhn@state.nm.us>
Subject: [EXT] RE: 3 Bear Libby Gas Plant - NSR application

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Cc: Lori K. Marquez <LMarquez@barr.com>; Owens, Melinda, NMENV <Melinda.Owens@state.nm.us>
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From: Kuhn, Julia, NMENV <Julia.Kuhn@state.nm.us>
Sent: Tuesday, October 29, 2019 9:23 AM
To: Trent M. Wade <TWade@barr.com>
Cc: Lori K. Marquez <LMarquez@barr.com>; 'Liz Klein' <lklein@3bearllc.com>
Subject: RE: 3 Bear Libby Gas Plant

CAUTION: This email originated from outside your organization. Exercise caution when opening attachments or clicking links, especially from unknown senders.

Good morning,

In regards to the Tittle V application for the 3 Bear Libby Gas Plant, the information you've provided in Section 19 (Requirements for TV Program) establishes that the amine is not subject to a CAM plan because the unit has a pre-control device to achieve compliance with emission limitation or standards for VOC and H2S under OOOOa regulations, and it is therefore exempt under 64.2(b)(1)(i). Would you please provide the citation in NSPS OOOOa supporting this information? Thank you.

Sincerely,

Please fill out our Industry/Consultant Feedback Questionnaire online.

If guidance or a determination is included in this email, it is intended to serve as general guidance and is in no way a formal statement of Department policy. New information or changes to regulations may result in a different determination or guidance.

Julia Kuhn
Permitting – Major Sources
New Mexico Environmental Department
Air Quality Bureau
525 Camino de los Marquez, Suite 1
Santa Fe, NM 87505
505-476-4376
Julia.Kuhn@state.nm.us
www.env.nm.gov

From:	Trent M. Wade
To:	Kuhn, Julia, NMENV
Cc:	Raso, Angela, NMENV; Lori K. Marquez; "Liz Klein"
Subject:	[EXT] RE: 3 Bear Libby Gas Plant - NSR application
Date:	Thursday, December 5, 2019 6:03:43 PM
Attachments:	image001.png Libby Gas Plant Modeling Updates 12-2019.zip

Julia,

I have remodeled Libby Gas Plant to account for the changes at the thermal oxidizer (reduced margin), heater (change in emission calculation), and flare (increase in emissions due to plant blowdown). The table below describes the changes in concentration for NOx, CO, and SO2 from what was originally modeled. As you can see, there is only a significant change in the modeled concentration for CO. Even with the increase in concentration, the updated facility still modeled under the significant impact levels for CO. I have attached the modeling files to support this table to this email. If you or Angela have any questions or concerns, please let me know.

Pollutant	Standard	Receptor High	Updated Concentration ($\mu g/m^3$)	Original Modeled Concentration ($\mu g/m^3$)	Difference in Concentration ($\mu g/m^3$)	Significance Level ($\mu g/m^3$)	NMAAQS ($\mu g/m^3$)
NOx	Annual		6.15	7.09	-0.93	1.00	94.02
	1-hr	8th High	99.57	97.84	1.73	7.52	188.03
	24-hr	1st High	57.27	55.60	1.67	5.00	N/A[1]
CO	1-hr	1st High	1004.74	685.13	319.61	2000.00	14997.50
	8-hr	1st High	336.67	229.78	106.89	500.00	9960.10
SO2	Annual		5.67	5.68	-0.01	1.00	52.40
	1-hr	4th High	184.57	184.18	0.39	7.80	196.4[2]
	3-hr	2nd High	157.46	157.19	0.27	25.00	1309.3[2]
	24-hr	2nd High	61.16	61.00	0.16	5.00	261.90

Note:
1 - Compliance with 1-hour NAAQS automatically demonstrates compliance with 24-hour NMAAQS.
2 - NAAQS standard as there is not an NMAAQS standard for this averaging period.

Thanks,

Trent M. Wade

Chemical Engineer
Denver, CO office:
cell: 970.381.0564
TWade@barr.com
www.barr.com

From: Kuhn, Julia, NMENV <Julia.Kuhn@state.nm.us>
Sent: Thursday, December 5, 2019 7:11 AM
To: Trent M. Wade <TWade@barr.com>
Subject: 3 Bear Libby Gas Plant - NSR application

Good morning Trent,

My apologies, it does look like you will be submitting new files for modeling and I missed that in your email. I just looked quickly through the answers but I haven't had a chance to review the updates you sent me.

Would you please clarify if you're still planning on engine options? Table 2A reflects Caterpillar engines only.

Thank you,

Julia Kuhn

From: Kuhn, Julia, NMENV
Sent: Wednesday, December 4, 2019 4:33 PM
To: 'Trent M. Wade' <TWade@barr.com>
Cc: Raso, Angela, NMENV <Angela.Raso@state.nm.us>
Subject: RE: 3 Bear Libby Gas Plant - NSR application

Hello Trent,

Are you planning on submitting new modeling files? I've cc Angela in case you have any questions, you can reach out to her. She said that if the emissions are higher, or if the stack parameters are different from the files you've submitted, then you will need to submit new modeling files. Please let me know.

Thank you,

Julia Kuhn

From: Trent M. Wade <TWade@barr.com>
Sent: Wednesday, December 4, 2019 9:51 AM
To: Kuhn, Julia, NMENV <Julia.Kuhn@state.nm.us>
Cc: 'Liz Klein' <lklein@3bearllc.com>; Lori K. Marquez <LMarquez@barr.com>
Subject: [EXT] RE: 3 Bear Libby Gas Plant - NSR application

Julia,

Please see the attached calcs.

Thanks,

Trent M. Wade

Chemical Engineer
Denver, CO office:
cell: 970.381.0564
TWade@barr.com
www.barr.com

From: Kuhn, Julia, NMENV <Julia.Kuhn@state.nm.us>
Sent: Wednesday, December 4, 2019 8:32 AM
To: Trent M. Wade <TWade@barr.com>
Cc: 'Liz Klein' <lklein@3bearllc.com>; Lori K. Marquez <LMarquez@barr.com>
Subject: RE: 3 Bear Libby Gas Plant - NSR application

Good morning,

Thank you for the update. Would you please send the excel file with the revised calculations?

Regards,

Julia Kuhn

From: Trent M. Wade <TWade@barr.com>
Sent: Tuesday, December 3, 2019 4:45 PM
To: Kuhn, Julia, NMENV <Julia.Kuhn@state.nm.us>
Cc: 'Liz Klein' <lklein@3bearllc.com>; Lori K. Marquez <LMarquez@barr.com>
Subject: [EXT] RE: 3 Bear Libby Gas Plant - NSR application

Julia,

We are still working out the details on the engine option operating scenario, so to move things forward with your review process I have compiled and answered your questions in this one email. Please see our responses below in red. As I mentioned earlier, we realized that CO emissions on a short term basis at FL-1 are underestimated because we did not originally include a plant blowdown in the short term emissions options. This was updated in the emission calculations submitted with this email and assumes a plant blowdown to flare is the maximum short term emissions event. We will follow up this week with modeling to verify our facility will meet the NAAQS standards.

3Bear plans to install an additional emergency generator (GEN-1) that will be exempt under 20.2.72.202.B.3. In addition, ENG-9 has been moved to Table 2B to accurately reflect its status as an emergency generator; it is currently exempt and we did not intend to change its status. Its hours of operation are adjusted in the attached calculations. An updated Table 2B has been submitted to reflect these changes, and the changes listed below.

1) AMINE-1 has a 30% margin added for operational flexibility. Can you please define "operational flexibility"? I am wondering if this may be what we define as a "safety factor" added to the calculations of emissions. If this is the case, we allow up to a 25% safety factor. In addition, can you please clarify why is 1020 btu/scf use in the calculations rather than 1479.8 btu/scf? Amine flash gas stream and acid gas stream heat rates are calculated based on the heating value and mol% of each constituent in their respective gas streams. Our emission calculations show these values to be 888.18 btu/scf and 3.27 btu/scf respectively. We have updated the emissions to show a 25% safety factor. Please see the attached emission calculations.

2) In regards to the thermal oxidizer (TO-1), a 50% margin added to Vapor Flow Rate impacts the outcome of emissions rates. Also, the heating value used in the calculations is 1020 btu/scf rather than 1479.8 btu/scf. Can you please provide justification/clarification for the values entered in your calculations? For all pieces of equipment that use fuel, we updated the emission calculations to use residue gas because that is what 3Bear would use in the field. These emissions were originally calculated based on the inlet gas. We updated the emissions to reduce the safety factor to 25% per your request. Please see the

attached calculations.

3) The fugitive emissions should be enter in the application as uncontrolled emissions rather than controlled. Unlike other states, New Mexico has no state regulation requiring LDAR monitoring. While NSPS KKK and NSPS OOOO/OOOOa require LDAR monitoring, none of these rules allow applicants to apply a control efficiency for LDAR monitoring in the PTE calculation. Thus, no credit for LDAR monitoring may be claimed in the PTE calculation. In short, fugitive VOC and H2S emissions must be based on the uncontrolled values and may not claim any control efficiency from LDAR monitoring. Therefore, emissions for FUG-1 should be represented as 51.25 tpy. The attached emission summary sheet was updated to reflect no LDAR control credit.

4) I have attached my calculations for HT-1 and HT-2 emissions. Please refer to AP-42 Tables 1.4-1 and 1.4-2 footnotes for clarification on AP-42 emission factors when using a different natural gas heating value. AP-42 emission factors are based on an average natural gas heating value of 1020 btu/scf, thus a ratio between heating values should be part of the calculation. We reviewed your emission factor conversion and ours and believe both were in error; the site specific heat value is irrelevant to the calculation. Based on AP-42 Table 1.4-1 note (a), the heater emission factor can be converted from lb/MMscf to lb/MMBtu by dividing the lb/MMscf emission factor by 1020 btu/scf (the AP42 Basis). Using this emission factor we are able to use our manufacture rating (MMBtu/hr) to calculate the heater emissions. Our emissions have been updated to reflect this change. Please see the below sample equation:

84 lb/MMscf / 1020 Btu/Scf * 49.42 MMBtu/hr / 2000 lb/ton x 8760 hr/yr = 17.82 ton/yr

5) I have discussed the 3 Bear Libby Gas Plant application with my manager and determined that based on the emissions of the heaters, the facility would exceed the threshold for PSD applicability since the CO would be over 250 tpy. With all of the changes listed above, our CO emissions are below 250 tpy.

We will let you know as soon as possible whether or not we are going to move forward with the residue compressor engine options. We appreciate you being flexible and working with us.

Thanks,

Trent M. Wade

Chemical Engineer
Denver, CO office:
cell: 970.381.0564
TWade@barr.com
www.barr.com

From: Kuhn, Julia, NMENV <Julia.Kuhn@state.nm.us>
Sent: Wednesday, November 27, 2019 8:15 AM
To: Trent M. Wade <TWade@barr.com>
Subject: RE: 3 Bear Libby Gas Plant - NSR application

Thank you! I will leave work early today. If you want, you can take your time and email me on Tuesday next week.

Happy Thanksgiving.

Julia Kuhn

From: Trent M. Wade <TWade@barr.com>
Sent: Tuesday, November 26, 2019 6:06 PM
To: Kuhn, Julia, NMENV <Julia.Kuhn@state.nm.us>
Subject: [EXT] RE: 3 Bear Libby Gas Plant - NSR application

Julia,

I wanted to give you a status update. I'm finalizing our responses and will be able to send over a response tomorrow.

Thanks,

Trent M. Wade

Chemical Engineer
Denver, CO office:
cell: 970.381.0564
TWade@barr.com
www.barr.com

From: Kuhn, Julia, NMENV <Julia.Kuhn@state.nm.us>
Sent: Monday, November 25, 2019 4:07 PM
To: Trent M. Wade <TWade@barr.com>
Subject: RE: 3 Bear Libby Gas Plant - NSR application

CAUTION: This email originated from outside your organization. Exercise caution when opening attachments or clicking links, especially from unknown senders.

Great, thank you for the acknowledgement.

Regards,

Julia Kuhn

From: Trent M. Wade <TWade@barr.com>
Sent: Monday, November 25, 2019 4:04 PM
To: Kuhn, Julia, NMENV <Julia.Kuhn@state.nm.us>; Lori K. Marquez <LMarquez@barr.com>
Subject: [EXT] RE: 3 Bear Libby Gas Plant - NSR application

Julia,

Sorry for the delay in response, I appreciate you being patient with us. We are currently looking into these questions and will have a response to you by end of the day tomorrow.

Trent M. Wade

Chemical Engineer
Denver, CO office:
cell: 970.381.0564
TWade@barr.com
www.barr.com

From: Kuhn, Julia, NMENV <Julia.Kuhn@state.nm.us>
Sent: Monday, November 25, 2019 12:23 PM
To: Trent M. Wade <TWade@barr.com>; Lori K. Marquez <LMarquez@barr.com>
Subject: FW: 3 Bear Libby Gas Plant - NSR application

CAUTION: This email originated from outside your organization. Exercise caution when opening attachments or clicking links, especially from unknown senders.

Good morning,

I've been waiting to hear back from you regarding the issues addressed in my previous email (see below). Please remember that the modeling specialist is waiting on verification of calculations before she can proceed with modeling analysis. The permit is due on January 9th, 2020 and with the upcoming holidays, the deadline seems to be a lot shorter. Would you please respond by Wednesday next week the latest?

I am also emailing regarding some additional concerns with the calculations provided.

- AMINE-1 has a 30% margin added for operational flexibility. Can you please define "operational flexibility"? I am wondering if this may be what we define as a "safety factor" added to the calculations of emissions. If this is the case, we allow up to a 25% safety factor. In addition, can you please clarify why is 1020 btu/scf use in the calculations rather than 1479.8 btu/scf?

- In regards to the thermal oxidizer (TO-1), a 50% margin added to Vapor Flow Rate impacts the outcome of emissions rates. Also, the heating value used in the calculations is 1020 btu/scf rather than 1479.8 btu/scf. Can you please provide justification/clarification for the values entered in your calculations?

Just so you know, I am still working with the flares values. Thus, I may have to email you back if there are other issues of concerns. Meanwhile, if you could provide an unlocked excel file for the calculations, it would be incredibly helpful.

Thank you for your prompt attention on this matter.

Regards,

Julia Kuhn

From: Kuhn, Julia, NMENV
Sent: Friday, November 15, 2019 3:30 PM
To: 'Trent M. Wade' <TWade@barr.com>
Cc: Lori K. Marquez <LMarquez@barr.com>; Owens, Melinda, NMENV <Melinda.Owens@state.nm.us>
Subject: 3 Bear Libby Gas Plant - NSR application

Good afternoon,

There are a couple of issues I would like to address in regards to emissions calculations for the 3 Bear Libby Gas Plant:

1) The fugitive emissions should be enter in the application as uncontrolled emissions rather than controlled. Unlike other states, New Mexico has no state

regulation requiring LDAR monitoring. While NSPS KKK and NSPS OOOO/OOOOa require LDAR monitoring, none of these rules allow applicants to apply a control efficiency for LDAR monitoring in the PTE calculation. Thus, no credit for LDAR monitoring may be claimed in the PTE calculation.

In short, fugitive VOC and H2S emissions must be based on the uncontrolled values and may not claim any control efficiency from LDAR monitoring. Therefore, emissions for FUG-1 should be represented as 51.25 tpy.

2) I have attached my calculations for HT-1 and HT-2 emissions. Please refer to AP-42 Tables 1.4-1 and 1.4-2 footnotes for clarification on AP-42 emission factors when using a different natural gas heating value. AP-42 emission factors are based on an average natural gas heating value of 1020 btu/scf, thus a ratio between heating values should be part of the calculation.

3) I have discussed the 3 Bear Libby Gas Plant application with my manager and determined that based on the emissions of the heaters, the facility would exceed the threshold for PSD applicability since the CO would be over 250 tpy.

4) Please advise how you would like to proceed as soon as possible. Thank you.

Regards,

Please fill out our Industry/Consultant Feedback Questionnaire online.

If guidance or a determination is included in this email, it is intended to serve as general guidance and is in no way a formal statement of Department policy. New information or changes to regulations may result in a different determination or guidance.

Julia Kuhn
Permitting – Major Sources
New Mexico Environmental Department
Air Quality Bureau
525 Camino de los Marquez, Suite 1
Santa Fe, NM 87505
505-476-4376
Julia.Kuhn@state.nm.us
www.env.nm.gov

From: Trent M. Wade <TWade@barr.com>
Sent: Tuesday, October 29, 2019 1:06 PM
To: Kuhn, Julia, NMENV <Julia.Kuhn@state.nm.us>
Cc: Lori K. Marquez <LMarquez@barr.com>; 'Liz Klein' <lklein@3bearllc.com>
Subject: [EXT] RE: 3 Bear Libby Gas Plant

Julia,

The NSPS OOOOa regulatory citation is 60.5405a “What standards apply to sweetening unit affected facilities at onshore natural gas processing plants?” If you have any questions please let me know.

Thanks,

Trent M. Wade
Chemical Engineer
Denver, CO office:
cell: 970.381.0564
TWade@barr.com
www.barr.com

resourceful. naturally. BARR

From: Kuhn, Julia, NMENV <Julia.Kuhn@state.nm.us>
Sent: Tuesday, October 29, 2019 9:23 AM
To: Trent M. Wade <TWade@barr.com>
Cc: Lori K. Marquez <LMarquez@barr.com>; 'Liz Klein' <lklein@3bearllc.com>
Subject: RE: 3 Bear Libby Gas Plant

Good morning,

In regards to the Tittle V application for the 3 Bear Libby Gas Plant, the information you’ve provided in Section 19 (Requirements for TV Program) establishes that the amine is not subject to a CAM plan because the unit has a pre-control device to achieve compliance with emission limitation or standards for VOC and H2S under OOOOa regulations, and it is therefore exempt under 64.2(b)(1)(i). Would you please provide the citation in NSPS OOOOa supporting this information? Thank you.

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From:	Raso, Angela, NMENV
To:	Trent M. Wade; Kuhn, Julia, NMENV
Cc:	Lori K. Marquez; "Liz Klein"
Subject:	RE: 3 Bear Libby Gas Plant - NSR application
Date:	Friday, December 6, 2019 8:19:06 AM
Attachments:	image001.png

Thank you Trent,

I will let you know if any questions come up as I review the modeling files.

Angela Raso, PhD
Dispersion Modeler
New Mexico Environment Department
Air Quality Bureau
525 Camino de Los Marquez Suite 1
Santa Fe, New Mexico, 87505
Phone: (505) 476-4345
Email: angela.raso@state.nm.us

From: Trent M. Wade <TWade@barr.com>
Sent: Thursday, December 5, 2019 6:00 PM
To: Kuhn, Julia, NMENV <Julia.Kuhn@state.nm.us>
Cc: Raso, Angela, NMENV <Angela.Raso@state.nm.us>; Lori K. Marquez <LMarquez@barr.com>; 'Liz Klein' <lklein@3bearllc.com>
Subject: [EXT] RE: 3 Bear Libby Gas Plant - NSR application

Julia,

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Thanks,

Trent M. Wade

Chemical Engineer
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Sent: Thursday, December 5, 2019 7:11 AM
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Good morning Trent,

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Cc: Raso, Angela, NMENV <Angela.Raso@state.nm.us>
Subject: RE: 3 Bear Libby Gas Plant - NSR application

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Subject: RE: 3 Bear Libby Gas Plant - NSR application

Good morning,

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Regards,

Julia Kuhn

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3) The fugitive emissions should be enter in the application as uncontrolled emissions rather than controlled. Unlike other states, New Mexico has no state regulation requiring LDAR monitoring. While NSPS KKK and NSPS OOOO/OOOOa require LDAR monitoring, none of these rules allow applicants to apply a control efficiency for LDAR monitoring in the PTE calculation. Thus, no credit for LDAR monitoring may be claimed in the PTE calculation. In short, fugitive VOC and H2S emissions must be based on the uncontrolled values and may not claim any control efficiency from LDAR monitoring. Therefore, emissions for FUG-1 should be represented as 51.25 tpy. The attached emission summary sheet was updated to reflect no LDAR control credit.

4) I have attached my calculations for HT-1 and HT-2 emissions. Please refer to AP-42 Tables 1.4-1 and 1.4-2 footnotes for clarification on AP-42 emission factors when using a different natural gas heating value. AP-42 emission factors are based on an average natural gas heating value of 1020 btu/scf, thus a ratio between heating values should be part of the calculation. We reviewed your emission factor conversion and ours and believe both were in error; the site specific heat value is irrelevant to the calculation. Based on AP-42 Table 1.4-1 note (a), the heater emission factor can be converted from lb/MMscf to lb/MMBtu by dividing the lb/MMscf emission factor by 1020 btu/scf (the AP42 Basis). Using this emission factor we are able to use our manufacture rating (MMBtu/hr) to calculate the heater emissions. Our emissions have been updated to reflect this change. Please see the below sample equation:

   84 lb/MMscf / 1020 Btu/Scf * 49.42 MMBtu/hr / 2000 lb/ton x 8760 hr/yr = 17.82 ton/yr

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We will let you know as soon as possible whether or not we are going to move forward with the residue compressor engine options. We appreciate you being flexible and working with us.

Thanks,

Trent M. Wade

Chemical Engineer
Denver, CO office:
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From: Kuhn, Julia, NMENV <Julia.Kuhn@state.nm.us>
Sent: Wednesday, November 27, 2019 8:15 AM
To: Trent M. Wade <TWade@barr.com>
Subject: RE: 3 Bear Libby Gas Plant - NSR application

Thank you! I will leave work early today. If you want, you can take your time and email me on Tuesday next week.

Happy Thanksgiving.

Julia Kuhn

From: Trent M. Wade <TWade@barr.com>
Sent: Tuesday, November 26, 2019 6:06 PM
To: Kuhn, Julia, NMENV <Julia.Kuhn@state.nm.us>

Subject: [EXT] RE: 3 Bear Libby Gas Plant - NSR application

Julia,

I wanted to give you a status update. I'm finalizing our responses and will be able to send over a response tomorrow.

Thanks,

Trent M. Wade

Chemical Engineer
Denver, CO office:
cell: 970.381.0564
TWade@barr.com
www.barr.com

From: Kuhn, Julia, NMENV <Julia.Kuhn@state.nm.us>
Sent: Monday, November 25, 2019 4:07 PM
To: Trent M. Wade <TWade@barr.com>
Subject: RE: 3 Bear Libby Gas Plant - NSR application

Great, thank you for the acknowledgement.

Regards,

Julia Kuhn

From: Trent M. Wade <TWade@barr.com>
Sent: Monday, November 25, 2019 4:04 PM
To: Kuhn, Julia, NMENV <Julia.Kuhn@state.nm.us>; Lori K. Marquez <LMarquez@barr.com>
Subject: [EXT] RE: 3 Bear Libby Gas Plant - NSR application

Julia,

Sorry for the delay in response, I appreciate you being patient with us. We are currently looking into these questions and will have a response to you by end of the day tomorrow.

Trent M. Wade

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If you no longer wish to receive marketing e-mails from Barr, respond to communications@barr.com and we will be happy to honor your request.

From: Kuhn, Julia, NMENV <Julia.Kuhn@state.nm.us>
Sent: Monday, November 25, 2019 12:23 PM
To: Trent M. Wade <TWade@barr.com>; Lori K. Marquez <LMarquez@barr.com>
Subject: FW: 3 Bear Libby Gas Plant - NSR application

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Good morning,

I've been waiting to hear back from you regarding the issues addressed in my previous email (see below). Please remember that the modeling specialist is waiting on verification of calculations before she can proceed with modeling analysis. The permit is due on January 9th, 2020 and with the upcoming holidays, the deadline seems to be a lot shorter. Would you please respond by Wednesday next week the latest?

I am also emailing regarding some additional concerns with the calculations provided.

- AMINE-1 has a 30% margin added for operational flexibility. Can you please define "operational flexibility"? I am wondering if this may be what we define as a "safety factor" added to the calculations of emissions. If this is the case, we allow up to a 25% safety factor. In addition, can you please clarify why is 1020 btu/scf use in the calculations rather than 1479.8 btu/scf?

- In regards to the thermal oxidizer (TO-1), a 50% margin added to Vapor Flow Rate impacts the outcome of emissions rates. Also, the heating value used in the calculations is 1020 btu/scf rather than 1479.8 btu/scf. Can you please provide justification/clarification for the values entered in your calculations?

Just so you know, I am still working with the flares values. Thus, I may have to email you back if there are other issues of concerns. Meanwhile, if you could provide an unlocked excel file for the calculations, it would be incredibly helpful.

Thank you for your prompt attention on this matter.

Regards,

Julia Kuhn

From: Kuhn, Julia, NMENV
Sent: Friday, November 15, 2019 3:30 PM
To: 'Trent M. Wade' <TWade@barr.com>
Cc: Lori K. Marquez <LMarquez@barr.com>; Owens, Melinda, NMENV <Melinda.Owens@state.nm.us>
Subject: 3 Bear Libby Gas Plant - NSR application

Good afternoon,

There are a couple of issues I would like to address in regards to emissions calculations for the 3 Bear Libby Gas Plant:

1. The fugitive emissions should be enter in the application as uncontrolled emissions rather than controlled. Unlike other states, New Mexico has no state regulation requiring LDAR monitoring. While NSPS KKK and NSPS OOOO/OOOOa require LDAR monitoring, none of these rules allow applicants to apply a control efficiency for LDAR monitoring in the PTE calculation. Thus, no credit for LDAR monitoring may be claimed in the PTE calculation.

   In short, fugitive VOC and H2S emissions must be based on the uncontrolled values and may not claim any control efficiency from LDAR monitoring. Therefore, emissions for FUG-1 should be represented as 51.25 tpy.

2. I have attached my calculations for HT-1 and HT-2 emissions. Please refer to AP-42 Tables 1.4-1 and 1.4-2 footnotes for clarification on AP-42 emission factors when using a different natural gas heating value. AP-42 emission factors are based on an average natural gas heating value of 1020 btu/scf, thus a ratio between heating values should be part of the calculation.

3. I have discussed the 3 Bear Libby Gas Plant application with my manager and determined that based on the emissions of the heaters, the facility would exceed the threshold for PSD applicability since the CO would be over 250 tpy.

4. Please advise how you would like to proceed as soon as possible. Thank you.

Regards,

Please fill out our Industry/Consultant Feedback Questionnaire online.

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Julia Kuhn
Permitting – Major Sources
New Mexico Environmental Department
Air Quality Bureau
525 Camino de los Marquez, Suite 1
Santa Fe, NM 87505
505-476-4376
Julia.Kuhn@state.nm.us
www.env.nm.gov

From: Trent M. Wade <TWade@barr.com>
Sent: Tuesday, October 29, 2019 1:06 PM
To: Kuhn, Julia, NMENV <Julia.Kuhn@state.nm.us>
Cc: Lori K. Marquez <LMarquez@barr.com>; 'Liz Klein' <lklein@3bearllc.com>
Subject: [EXT] RE: 3 Bear Libby Gas Plant

Julia,

The NSPS OOOOa regulatory citation is 60.5405a "What standards apply to sweetening unit affected facilities at onshore natural gas processing plants?" If you have any questions please let me know.

Thanks,

Trent M. Wade
Chemical Engineer
Denver, CO office:
cell: 970.381.0564

TWade@barr.com
www.barr.com

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From: Kuhn, Julia, NMENV <Julia.Kuhn@state.nm.us>
Sent: Tuesday, October 29, 2019 9:23 AM
To: Trent M. Wade <TWade@barr.com>
Cc: Lori K. Marquez <LMarquez@barr.com>; 'Liz Klein' <lklein@3bearllc.com>
Subject: RE: 3 Bear Libby Gas Plant

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Good morning,

In regards to the Tittle V application for the 3 Bear Libby Gas Plant, the information you've provided in Section 19 (Requirements for TV Program) establishes that the amine is not subject to a CAM plan because the unit has a pre-control device to achieve compliance with emission limitation or standards for VOC and H2S under OOOOa regulations, and it is therefore exempt under 64.2(b)(1)(i). Would you please provide the citation in NSPS OOOOa supporting this information? Thank you.

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New Mexico Environmental Department
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525 Camino de los Marquez, Suite 1
Santa Fe, NM 87505
505-476-4376
Julia.Kuhn@state.nm.us
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From:	Trent M. Wade
To:	Kuhn, Julia, NMENV
Cc:	Lori K. Marquez; stephanie@3bearllc.com; lklein@3bearllc.com
Subject:	[EXT] Re: 3 Bear Libby Gas Plant - NSR application
Date:	Monday, December 9, 2019 4:40:59 PM
Attachments:	image001.png image001.png

Julia,

3Bear would like to move forward with the addition of compressor engine options. I will get you an updated application and modeling files as soon as possible. I will also have a response to your most recent question regarding H2S and the thermal oxidizer compliance test tomorrow. Thank you for working with us, and if you have any questions please let me know.

Thanks!

Trent M. Wade

Chemical Engineer
Denver, CO office:
cell: 970.381.0564
TWade@barr.com
www.barr.com

From: Kuhn, Julia, NMENV <julia.kuhn@state.nm.us>
Sent: Monday, December 9, 2019 15:52
To: Trent M. Wade
Subject: RE: 3 Bear Libby Gas Plant - NSR application

Good afternoon Trent,

In regards to the H2S to SO2 conversion, it is not clear to me how you determined the calculations. I've attached and highlighted a copy of the conversion factors from the Sulfur Measurement Handbook. Would you please clarify/revise the conversion factor applied to the 8 Grains H2S/100scf in the calculation?

Also, was the thermal oxidizer installed and is it currently in operation? If so, was the initial compliance test completed?

Thank you,

Julia Kuhn

From: Trent M. Wade <TWade@barr.com>
Sent: Wednesday, December 4, 2019 9:51 AM
To: Kuhn, Julia, NMENV <Julia.Kuhn@state.nm.us>
Cc: 'Liz Klein' <lklein@3bearllc.com>; Lori K. Marquez <LMarquez@barr.com>
Subject: [EXT] RE: 3 Bear Libby Gas Plant - NSR application

Julia,

Please see the attached calcs.

Thanks,

Trent M. Wade

Chemical Engineer
Denver, CO office:
cell: 970.381.0564
TWade@barr.com
www.barr.com

resourceful. naturally. BARR

From: Kuhn, Julia, NMENV <Julia.Kuhn@state.nm.us>
Sent: Wednesday, December 4, 2019 8:32 AM
To: Trent M. Wade <TWade@barr.com>
Cc: 'Liz Klein' <lklein@3bearllc.com>; Lori K. Marquez <LMarquez@barr.com>
Subject: RE: 3 Bear Libby Gas Plant - NSR application

Good morning,

Thank you for the update. Would you please send the excel file with the revised calculations?

Regards,

Julia Kuhn

From: Trent M. Wade <TWade@barr.com>
Sent: Tuesday, December 3, 2019 4:45 PM
To: Kuhn, Julia, NMENV <Julia.Kuhn@state.nm.us>
Cc: 'Liz Klein' <lklein@3bearllc.com>; Lori K. Marquez <LMarquez@barr.com>
Subject: [EXT] RE: 3 Bear Libby Gas Plant - NSR application

Julia,

We are still working out the details on the engine option operating scenario, so to move things forward with your review process I have compiled and answered your questions in this one email. Please see our responses below in red. As I mentioned earlier, we realized that CO emissions on a short term basis at FL-1 are underestimated because we did not originally include a plant blowdown in the short term emissions options. This was updated in the emission calculations submitted with this email and assumes a plant blowdown to flare is the maximum short term emissions event. We will follow up this week with modeling to verify our facility will meet the NAAQS standards.

3Bear plans to install an additional emergency generator (GEN-1) that will be exempt under 20.2.72.202.B.3. In addition, ENG-9 has been moved to Table 2B to accurately reflect its status as an emergency generator; it is currently exempt and we did not intend to change its status. Its hours of operation are adjusted in the attached calculations. An updated Table 2B has been submitted to reflect these changes, and the changes listed below.

1) AMINE-1 has a 30% margin added for operational flexibility. Can you please define "operational flexibility"? I am wondering if this may be what we define as a "safety factor" added to the calculations of emissions. If this is the case, we allow up to a 25% safety factor. In addition, can you please clarify why is 1020 btu/scf use in the calculations rather than 1479.8 btu/scf? Amine flash gas stream and acid gas stream heat rates are calculated based on the heating value and mol% of each constituent in their respective gas streams. Our emission calculations show these values to be 888.18 btu/scf and 3.27 btu/scf respectively. We have updated the emissions to show a 25% safety factor. Please see the attached emission calculations.

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3) The fugitive emissions should be enter in the application as uncontrolled emissions rather than controlled. Unlike other states, New Mexico has no state regulation requiring LDAR monitoring. While NSPS KKK and NSPS OOOO/OOOOa require LDAR monitoring, none of these rules allow applicants to apply a control efficiency for LDAR monitoring in the PTE calculation. Thus, no credit for LDAR monitoring may be claimed in the PTE calculation. In short, fugitive VOC and H2S emissions must be based on the uncontrolled values and may not claim any control efficiency from LDAR monitoring. Therefore, emissions for FUG-1 should be represented as 51.25 tpy. The attached emission summary sheet was updated to reflect no LDAR control credit.

4) I have attached my calculations for HT-1 and HT-2 emissions. Please refer to AP-42 Tables 1.4-1 and 1.4-2 footnotes for clarification on AP-42 emission factors when using a different natural gas heating value. AP-42 emission factors are based on an average natural gas heating value of 1020 btu/scf, thus a ratio between heating values should be part of the calculation. We reviewed your emission factor conversion and ours and believe both were in error; the site specific heat value is irrelevant to the calculation. Based on AP-42 Table 1.4-1 note (a), the heater emission factor can be converted from lb/MMscf to lb/MMBtu by dividing the lb/MMscf emission factor by 1020 btu/scf (the AP42 Basis). Using this emission factor we are able to use our manufacture rating (MMBtu/hr) to calculate the heater emissions. Our emissions have been updated to reflect this change. Please see the below sample equation:

84 lb/MMscf / 1020 Btu/Scf * 49.42 MMBtu/hr / 2000 lb/ton x 8760 hr/yr = 17.82 ton/yr

5) I have discussed the 3 Bear Libby Gas Plant application with my manager and determined that based on the emissions of the heaters, the facility would exceed the threshold for PSD applicability since the CO would be over 250 tpy. With all of the changes listed above, our CO emissions are below 250 tpy.

We will let you know as soon as possible whether or not we are going to move forward with the residue compressor engine options. We appreciate you being flexible and working with us.

Thanks,

Trent M. Wade

Chemical Engineer
Denver, CO office:
cell: 970.381.0564
TWade@barr.com
www.barr.com

resourceful. naturally. BARR

From: Kuhn, Julia, NMENV <Julia.Kuhn@state.nm.us>
Sent: Wednesday, November 27, 2019 8:15 AM
To: Trent M. Wade <TWade@barr.com>
Subject: RE: 3 Bear Libby Gas Plant - NSR application

Thank you! I will leave work early today. If you want, you can take your time and email me on

Tuesday next week.

Happy Thanksgiving.

Julia Kuhn

From: Trent M. Wade <TWade@barr.com>
Sent: Tuesday, November 26, 2019 6:06 PM
To: Kuhn, Julia, NMENV <Julia.Kuhn@state.nm.us>
Subject: [EXT] RE: 3 Bear Libby Gas Plant - NSR application

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Thanks,

Trent M. Wade

Chemical Engineer
Denver, CO office:
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TWade@barr.com
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From: Kuhn, Julia, NMENV <Julia.Kuhn@state.nm.us>
Sent: Monday, November 25, 2019 4:07 PM
To: Trent M. Wade <TWade@barr.com>
Subject: RE: 3 Bear Libby Gas Plant - NSR application

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Regards,

Julia Kuhn

From: Trent M. Wade <TWade@barr.com>
Sent: Monday, November 25, 2019 4:04 PM

To: Kuhn, Julia, NMENV <Julia.Kuhn@state.nm.us>; Lori K. Marquez <LMarquez@barr.com>
Subject: [EXT] RE: 3 Bear Libby Gas Plant - NSR application

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Sent: Monday, November 25, 2019 12:23 PM
To: Trent M. Wade <TWade@barr.com>; Lori K. Marquez <LMarquez@barr.com>
Subject: FW: 3 Bear Libby Gas Plant - NSR application

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Cc: Lori K. Marquez <LMarquez@barr.com>; Owens, Melinda, NMENV <Melinda.Owens@state.nm.us>
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Air Quality Bureau
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505-476-4376
Julia.Kuhn@state.nm.us
www.env.nm.gov

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To: Kuhn, Julia, NMENV <Julia.Kuhn@state.nm.us>
Cc: Lori K. Marquez <LMarquez@barr.com>; 'Liz Klein' <lklein@3bearllc.com>
Subject: [EXT] RE: 3 Bear Libby Gas Plant

Julia,

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Cc: Lori K. Marquez <LMarquez@barr.com>; 'Liz Klein' <lklein@3bearllc.com>
Subject: RE: 3 Bear Libby Gas Plant

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From:	Trent M. Wade
To:	Kuhn, Julia, NMENV
Cc:	Lori K. Marquez; Liz Klein
Subject:	[EXT] RE: 3 Bear Libby Gas Plant - NSR application
Date:	Tuesday, December 10, 2019 4:42:43 PM
Attachments:	image001.png 3Bear_CST_TOresults_LibbyGP_8-20-19.pdf

Julia,

To convert the H2S to SO2 we assumed a 100% conversion rate. Please see the conversion below:

8 (grains H2S/100scf) / 7000 (grains/lb) = 1.14E-05 (lb H2S/scf)

1.14E-05 (lb H2S/scf) x 32.1 (MW of Sulfur) / 34.1 (MW of H2S) = 1.08E-05 (lb S/scf)

60 MMscf/d x 1.08E-05 (lb S/scf) x 64.1 (MW of SO2) / 32.1 (MW of Sulfur) x 10^6/MM = 1288.98 (lb SO2/day)

1288.98 (lb/day) / 24 (hr/day) x 20% margin = 64.45 (lb/hr)

The initial thermal oxidizer test was completed on 8/20/2019. Please see an attached copy of the report.

Thanks,

Trent M. Wade

Chemical Engineer
Denver, CO office:
cell: 970.381.0564
TWade@barr.com
www.barr.com

From: Kuhn, Julia, NMENV <Julia.Kuhn@state.nm.us>
Sent: Monday, December 9, 2019 3:52 PM
To: Trent M. Wade <TWade@barr.com>
Subject: RE: 3 Bear Libby Gas Plant - NSR application

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Thank you,

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To: Kuhn, Julia, NMENV <Julia.Kuhn@state.nm.us>
Cc: 'Liz Klein' <lklein@3bearllc.com>; Lori K. Marquez <LMarquez@barr.com>
Subject: [EXT] RE: 3 Bear Libby Gas Plant - NSR application

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Cc: 'Liz Klein' <lklein@3bearllc.com>; Lori K. Marquez <LMarquez@barr.com>
Subject: RE: 3 Bear Libby Gas Plant - NSR application

Good morning,

Thank you for the update. Would you please send the excel file with the revised calculations?

Regards,

Julia Kuhn

From: Trent M. Wade <TWade@barr.com>
Sent: Tuesday, December 3, 2019 4:45 PM
To: Kuhn, Julia, NMENV <Julia.Kuhn@state.nm.us>
Cc: 'Liz Klein' <lklein@3bearllc.com>; Lori K. Marquez <LMarquez@barr.com>
Subject: [EXT] RE: 3 Bear Libby Gas Plant - NSR application

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84 lb/MMscf / 1020 Btu/Scf * 49.42 MMBtu/hr / 2000 lb/ton x 8760 hr/yr = 17.82 ton/yr

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We will let you know as soon as possible whether or not we are going to move forward with the residue compressor engine options. We appreciate you being flexible and working with us.

Thanks,

Trent M. Wade

Chemical Engineer
Denver, CO office:
cell: 970.381.0564
TWade@barr.com
www.barr.com

resourceful. naturally. BARR

From: Kuhn, Julia, NMENV <Julia.Kuhn@state.nm.us>
Sent: Wednesday, November 27, 2019 8:15 AM
To: Trent M. Wade <TWade@barr.com>
Subject: RE: 3 Bear Libby Gas Plant - NSR application

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Thank you! I will leave work early today. If you want, you can take your time and email me on Tuesday next week.

Happy Thanksgiving.

Julia Kuhn

From: Trent M. Wade <TWade@barr.com>
Sent: Tuesday, November 26, 2019 6:06 PM
To: Kuhn, Julia, NMENV <Julia.Kuhn@state.nm.us>
Subject: [EXT] RE: 3 Bear Libby Gas Plant - NSR application

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If you no longer wish to receive marketing e-mails from Barr, respond to communications@barr.com and we will be happy to honor your request.

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Sent: Monday, November 25, 2019 4:07 PM

To: Trent M. Wade <TWade@barr.com>
Subject: RE: 3 Bear Libby Gas Plant - NSR application

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Great, thank you for the acknowledgement.

Regards,

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From: Trent M. Wade <TWade@barr.com>
Sent: Monday, November 25, 2019 4:04 PM
To: Kuhn, Julia, NMENV <Julia.Kuhn@state.nm.us>; Lori K. Marquez <LMarquez@barr.com>
Subject: [EXT] RE: 3 Bear Libby Gas Plant - NSR application

Julia,

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Trent M. Wade

Chemical Engineer
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Sent: Monday, November 25, 2019 12:23 PM
To: Trent M. Wade <TWade@barr.com>; Lori K. Marquez <LMarquez@barr.com>
Subject: FW: 3 Bear Libby Gas Plant - NSR application

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Thank you for your prompt attention on this matter.

Regards,

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Sent: Friday, November 15, 2019 3:30 PM
To: 'Trent M. Wade' <TWade@barr.com>
Cc: Lori K. Marquez <LMarquez@barr.com>; Owens, Melinda, NMENV <Melinda.Owens@state.nm.us>
Subject: 3 Bear Libby Gas Plant - NSR application

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1) The fugitive emissions should be enter in the application as uncontrolled emissions rather than controlled. Unlike other states, New Mexico has no state regulation requiring LDAR monitoring. While NSPS KKK and NSPS OOOO/OOOOa require LDAR monitoring, none of these rules allow applicants to apply a control efficiency for LDAR monitoring in the PTE calculation. Thus, no credit for LDAR monitoring may be claimed in the PTE calculation.

In short, fugitive VOC and H2S emissions must be based on the uncontrolled values and may not claim any control efficiency from LDAR monitoring. Therefore, emissions for FUG-1 should be represented as 51.25 tpy.

2) I have attached my calculations for HT-1 and HT-2 emissions. Please refer to AP-42 Tables 1.4-1 and 1.4-2 footnotes for clarification on AP-42 emission factors when using a different natural gas heating value. AP-42 emission factors are based on an average natural gas heating value of 1020 btu/scf, thus a ratio between heating values should be part of the calculation.

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4) Please advise how you would like to proceed as soon as possible. Thank you.

Regards,

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Julia Kuhn
Permitting – Major Sources
New Mexico Environmental Department
Air Quality Bureau
525 Camino de los Marquez, Suite 1
Santa Fe, NM 87505
505-476-4376
Julia.Kuhn@state.nm.us
www.env.nm.gov

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To: Kuhn, Julia, NMENV <Julia.Kuhn@state.nm.us>
Cc: Lori K. Marquez <LMarquez@barr.com>; 'Liz Klein' <lklein@3bearllc.com>
Subject: [EXT] RE: 3 Bear Libby Gas Plant

Julia,

The NSPS OOOOa regulatory citation is 60.5405a "What standards apply to sweetening unit affected facilities at onshore natural gas processing plants?" If you have any questions please let me know.

Thanks,

Trent M. Wade

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Subject: RE: 3 Bear Libby Gas Plant

Good morning,

In regards to the Tittle V application for the 3 Bear Libby Gas Plant, the information you've provided in Section 19 (Requirements for TV Program) establishes that the amine is not subject to a CAM plan because the unit has a pre-control device to achieve compliance with emission limitation or standards for VOC and H2S under OOOOa regulations, and it is therefore exempt under 64.2(b)(1)(i). Would you please provide the citation in NSPS OOOOa supporting this information? Thank you.

Sincerely,

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From:	Trent M. Wade
To:	Kuhn, Julia, NMENV
Cc:	Lori K. Marquez; Liz Klein
Subject:	[EXT] RE: 3 Bear Libby Gas Plant - NSR application
Date:	Wednesday, December 11, 2019 1:04:29 PM
Attachments:	image001.png

Julia,

We are remodeling the facility, so if everything goes smoothly I should be able to have something to you by end of day Friday. I will let you know if something occurs that will prevent us from meeting that deadline.

Thanks,

Trent M. Wade

Chemical Engineer
Denver, CO office:
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TWade@barr.com
www.barr.com

From: Kuhn, Julia, NMENV <Julia.Kuhn@state.nm.us>
Sent: Wednesday, December 11, 2019 8:23 AM
To: Trent M. Wade <TWade@barr.com>
Cc: Lori K. Marquez <LMarquez@barr.com>; Liz Klein <lklein@3bearllc.com>
Subject: RE: 3 Bear Libby Gas Plant - NSR application

Good morning Trent,

Thank you for the information you've provided. Any idea when you will be submitting the engines option revision?

Regards,

Julia Kuhn

From: Trent M. Wade <TWade@barr.com>
Sent: Tuesday, December 10, 2019 4:43 PM
To: Kuhn, Julia, NMENV <Julia.Kuhn@state.nm.us>

Cc: Lori K. Marquez <LMarquez@barr.com>; Liz Klein <lklein@3bearllc.com>
Subject: [EXT] RE: 3 Bear Libby Gas Plant - NSR application

Julia,

To convert the H2S to SO2 we assumed a 100% conversion rate. Please see the conversion below:

8 (grains H2S/100scf) / 7000 (grains/lb) = 1.14E-05 (lb H2S/scf)

1.14E-05 (lb H2S/scf) x 32.1 (MW of Sulfur) / 34.1 (MW of H2S) = 1.08E-05 (lb S/scf)

60 MMscf/d x 1.08E-05 (lb S/scf) x 64.1 (MW of SO2) / 32.1 (MW of Sulfur) x 10^6/MM = 1288.98 (lb SO2/day)

1288.98 (lb/day) / 24 (hr/day) x 20% margin = 64.45 (lb/hr)

The initial thermal oxidizer test was completed on 8/20/2019. Please see an attached copy of the report.

Thanks,

Trent M. Wade

Chemical Engineer
Denver, CO office:
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TWade@barr.com
www.barr.com

From: Kuhn, Julia, NMENV <Julia.Kuhn@state.nm.us>
Sent: Monday, December 9, 2019 3:52 PM
To: Trent M. Wade <TWade@barr.com>
Subject: RE: 3 Bear Libby Gas Plant - NSR application

Good afternoon Trent,

In regards to the H2S to SO2 conversion, it is not clear to me how you determined the calculations. I've attached and highlighted a copy of the conversion factors from the Sulfur Measurement

Handbook. Would you please clarify/revise the conversion factor applied to the 8 Grains H2S/100scf in the calculation?

Also, was the thermal oxidizer installed and is it currently in operation? If so, was the initial compliance test completed?

Thank you,

Julia Kuhn

From: Trent M. Wade <TWade@barr.com>
Sent: Wednesday, December 4, 2019 9:51 AM
To: Kuhn, Julia, NMENV <Julia.Kuhn@state.nm.us>
Cc: 'Liz Klein' <lklein@3bearllc.com>; Lori K. Marquez <LMarquez@barr.com>
Subject: [EXT] RE: 3 Bear Libby Gas Plant - NSR application

Julia,

Please see the attached calcs.

Thanks,

Trent M. Wade

Chemical Engineer
Denver, CO office:
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TWade@barr.com
www.barr.com

From: Kuhn, Julia, NMENV <Julia.Kuhn@state.nm.us>
Sent: Wednesday, December 4, 2019 8:32 AM
To: Trent M. Wade <TWade@barr.com>
Cc: 'Liz Klein' <lklein@3bearllc.com>; Lori K. Marquez <LMarquez@barr.com>
Subject: RE: 3 Bear Libby Gas Plant - NSR application

Good morning,

Thank you for the update. Would you please send the excel file with the revised calculations?

Regards,

Julia Kuhn

From: Trent M. Wade <TWade@barr.com>
Sent: Tuesday, December 3, 2019 4:45 PM
To: Kuhn, Julia, NMENV <Julia.Kuhn@state.nm.us>
Cc: 'Liz Klein' <lklein@3bearllc.com>; Lori K. Marquez <LMarquez@barr.com>
Subject: [EXT] RE: 3 Bear Libby Gas Plant - NSR application

Julia,

We are still working out the details on the engine option operating scenario, so to move things forward with your review process I have compiled and answered your questions in this one email. Please see our responses below in red. As I mentioned earlier, we realized that CO emissions on a short term basis at FL-1 are underestimated because we did not originally include a plant blowdown in the short term emissions options. This was updated in the emission calculations submitted with this email and assumes a plant blowdown to flare is the maximum short term emissions event. We will follow up this week with modeling to verify our facility will meet the NAAQS standards.

3Bear plans to install an additional emergency generator (GEN-1) that will be exempt under 20.2.72.202.B.3. In addition, ENG-9 has been moved to Table 2B to accurately reflect its status as an emergency generator; it is currently exempt and we did not intend to change its status. Its hours of operation are adjusted in the attached calculations. An updated Table 2B has been submitted to reflect these changes, and the changes listed below.

1) AMINE-1 has a 30% margin added for operational flexibility. Can you please define "operational flexibility"? I am wondering if this may be what we define as a "safety factor" added to the calculations of emissions. If this is the case, we allow up to a 25% safety factor. In addition, can you please clarify why is 1020 btu/scf use in the calculations rather than 1479.8 btu/scf? Amine flash gas stream and acid gas stream heat rates are calculated based on the heating value and mol% of each constituent in their respective gas streams. Our emission calculations show these values to be 888.18 btu/scf and 3.27 btu/scf respectively. We have updated the emissions to show a 25% safety factor. Please see the attached emission calculations.

2) In regards to the thermal oxidizer (TO-1), a 50% margin added to Vapor Flow Rate impacts the outcome of emissions rates. Also, the heating value used in the calculations is 1020 btu/scf rather than 1479.8 btu/scf. Can you please provide justification/clarification for the values entered in your calculations? For all pieces of equipment that use fuel, we updated the emission calculations to use residue gas because that is what 3Bear would use in the field. These emissions were originally calculated based on the inlet gas. We updated the emissions to reduce the safety factor to 25% per your request. Please see the attached calculations.

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Thanks,

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Subject: RE: 3 Bear Libby Gas Plant

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www.env.nm.gov

From:	Trent M. Wade
To:	Kuhn, Julia, NMENV
Cc:	Lori K. Marquez; Liz Klein; "Stephanie Swanson"; Raso, Angela, NMENV
Subject:	[EXT] RE: 3 Bear Libby Gas Plant - NSR application
Date:	Friday, December 13, 2019 3:06:28 PM
Attachments:	image001.png 3Bear Libby Gas Plant Modeling Difference Table_Rev1.xlsx A-7482M1-5-Libby Gas Plant_EM Calcs_Final_Rev2_ToAQB.xlsx Libby GP Modeling Rev2.zip Waukesha 7044 Engine Info.pdf A-7482M1-UA3-Libby Gas Plant_Final_Rev1.doc A-7482M1-UA2-Libby Gas Plant_Final_Rev2.xls

Julia,

I have updated the Libby Gas Plant application to include the residue compressor engine options. I have attached the updated calculation spreadsheet, UA2, UA3, modeling files, and a modeling comparison spreadsheet to this email. After modeling the Caterpillar and Waukesha engine options, it was determined that the Caterpillar engines are the worst case operating scenario. I have included the test models with the modeling files for verification. I spoke with Angela about the modeling this morning, and she should have everything she needs to review, but please let me know if either of you have questions.

Thanks and have a good weekend!

Trent M. Wade

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Subject: RE: 3 Bear Libby Gas Plant - NSR application

Good morning Trent,

Thank you for the information you've provided. Any idea when you will be submitting the engines option revision?

Regards,

Julia Kuhn

From: Trent M. Wade <TWade@barr.com>
Sent: Tuesday, December 10, 2019 4:43 PM
To: Kuhn, Julia, NMENV <Julia.Kuhn@state.nm.us>
Cc: Lori K. Marquez <LMarquez@barr.com>; Liz Klein <lklein@3bearllc.com>
Subject: [EXT] RE: 3 Bear Libby Gas Plant - NSR application

Julia,

To convert the H2S to SO2 we assumed a 100% conversion rate. Please see the conversion below:

8 (grains H2S/100scf) / 7000 (grains/lb) = 1.14E-05 (lb H2S/scf)

1.14E-05 (lb H2S/scf) x 32.1 (MW of Sulfur) / 34.1 (MW of H2S) = 1.08E-05 (lb S/scf)

60 MMscf/d x 1.08E-05 (lb S/scf) x 64.1 (MW of SO2) / 32.1 (MW of Sulfur) x 10^6/MM = 1288.98 (lb SO2/day)

1288.98 (lb/day) / 24 (hr/day) x 20% margin = 64.45 (lb/hr)

The initial thermal oxidizer test was completed on 8/20/2019. Please see an attached copy of the report.

Thanks,

Trent M. Wade

Chemical Engineer
Denver, CO office:
cell: 970.381.0564
TWade@barr.com
www.barr.com

resourceful. naturally. BARR

From: Kuhn, Julia, NMENV <Julia.Kuhn@state.nm.us>
Sent: Monday, December 9, 2019 3:52 PM
To: Trent M. Wade <TWade@barr.com>
Subject: RE: 3 Bear Libby Gas Plant - NSR application

CAUTION: This email originated from outside your organization. Exercise caution when opening attachments or clicking links, especially from unknown senders.

Good afternoon Trent,

In regards to the H2S to SO2 conversion, it is not clear to me how you determined the calculations. I've attached and highlighted a copy of the conversion factors from the Sulfur Measurement Handbook. Would you please clarify/revise the conversion factor applied to the 8 Grains H2S/100scf in the calculation?

Also, was the thermal oxidizer installed and is it currently in operation? If so, was the initial compliance test completed?

Thank you,

Julia Kuhn

From: Trent M. Wade <TWade@barr.com>
Sent: Wednesday, December 4, 2019 9:51 AM
To: Kuhn, Julia, NMENV <Julia.Kuhn@state.nm.us>
Cc: 'Liz Klein' <lklein@3bearllc.com>; Lori K. Marquez <LMarquez@barr.com>
Subject: [EXT] RE: 3 Bear Libby Gas Plant - NSR application

Julia,

Please see the attached calcs.

Thanks,

Trent M. Wade

Chemical Engineer
Denver, CO office:
cell: 970.381.0564
TWade@barr.com
www.barr.com

From: Kuhn, Julia, NMENV <Julia.Kuhn@state.nm.us>
Sent: Wednesday, December 4, 2019 8:32 AM
To: Trent M. Wade <TWade@barr.com>
Cc: 'Liz Klein' <lklein@3bearllc.com>; Lori K. Marquez <LMarquez@barr.com>

Subject: RE: 3 Bear Libby Gas Plant - NSR application

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Good morning,

Thank you for the update. Would you please send the excel file with the revised calculations?

Regards,

Julia Kuhn

From: Trent M. Wade <TWade@barr.com>
Sent: Tuesday, December 3, 2019 4:45 PM
To: Kuhn, Julia, NMENV <Julia.Kuhn@state.nm.us>
Cc: 'Liz Klein' <lklein@3bearllc.com>; Lori K. Marquez <LMarquez@barr.com>
Subject: [EXT] RE: 3 Bear Libby Gas Plant - NSR application

Julia,

We are still working out the details on the engine option operating scenario, so to move things forward with your review process I have compiled and answered your questions in this one email. Please see our responses below in red. As I mentioned earlier, we realized that CO emissions on a short term basis at FL-1 are underestimated because we did not originally include a plant blowdown in the short term emissions options. This was updated in the emission calculations submitted with this email and assumes a plant blowdown to flare is the maximum short term emissions event. We will follow up this week with modeling to verify our facility will meet the NAAQS standards.

3Bear plans to install an additional emergency generator (GEN-1) that will be exempt under 20.2.72.202.B.3. In addition, ENG-9 has been moved to Table 2B to accurately reflect its status as an emergency generator; it is currently exempt and we did not intend to change its status. Its hours of operation are adjusted in the attached calculations. An updated Table 2B has been submitted to reflect these changes, and the changes listed below.

1) AMINE-1 has a 30% margin added for operational flexibility. Can you please define "operational flexibility"? I am wondering if this may be what we define as a "safety factor" added to the calculations of emissions. If this is the case, we allow up to a 25% safety factor. In addition, can you please clarify why is 1020 btu/scf use in the calculations rather than 1479.8 btu/scf? Amine flash gas stream and acid gas stream heat rates are calculated based on the heating value and mol% of each constituent in their respective gas streams. Our emission calculations show these values to be 888.18 btu/scf and 3.27 btu/scf respectively. We have updated the emissions to show a 25% safety factor. Please see the attached emission calculations.

2) In regards to the thermal oxidizer (TO-1), a 50% margin added to Vapor Flow Rate impacts the outcome of emissions rates. Also, the heating value used in the calculations is 1020 btu/scf rather than 1479.8 btu/scf. Can you please provide justification/clarification for the values entered in your calculations? For all pieces of equipment that use fuel, we updated the emission calculations to use residue gas because that is what 3Bear would use in the field. These emissions were originally calculated based on the inlet gas. We updated the emissions to reduce the safety factor to 25% per your request. Please see the attached calculations.

3) The fugitive emissions should be enter in the application as uncontrolled emissions rather than controlled. Unlike other states, New Mexico has no state regulation requiring LDAR monitoring. While NSPS KKK and NSPS OOOO/OOOOa require LDAR monitoring, none of these rules allow applicants to apply a control efficiency for LDAR monitoring in the PTE calculation. Thus, no credit for LDAR monitoring may be claimed in the PTE calculation. In short, fugitive VOC and H2S emissions must be based on the uncontrolled values and may not claim any control efficiency from LDAR monitoring. Therefore, emissions for FUG-1 should be represented as 51.25 tpy. The attached emission summary sheet was updated to reflect no LDAR control credit.

4) I have attached my calculations for HT-1 and HT-2 emissions. Please refer to AP-42 Tables 1.4-1 and 1.4-2 footnotes for clarification on AP-42 emission factors when using a different natural gas heating value. AP-42 emission factors are based on an average natural gas heating value of 1020 btu/scf, thus a ratio between heating values should be part of the calculation. We reviewed your emission factor conversion and ours and believe both were in error; the site specific heat value is irrelevant to the calculation. Based on AP-42 Table 1.4-1 note (a), the heater emission factor can be converted from lb/MMscf to lb/MMBtu by dividing the lb/MMscf emission factor by 1020 btu/scf (the AP42 Basis). Using this emission factor we are able to use our manufacture rating (MMBtu/hr) to calculate the heater emissions. Our emissions have been updated to reflect this change. Please see the below sample equation:

84 lb/MMscf / 1020 Btu/Scf * 49.42 MMBtu/hr / 2000 lb/ton x 8760 hr/yr = 17.82 ton/yr

5) I have discussed the 3 Bear Libby Gas Plant application with my manager and determined that based on the emissions of the heaters, the facility would exceed the threshold for PSD applicability since the CO would be over 250 tpy. With all of the changes listed above, our CO emissions are below 250 tpy.

We will let you know as soon as possible whether or not we are going to move forward with the residue compressor engine options. We appreciate you being flexible and working with us.

Thanks,

Trent M. Wade

Chemical Engineer
Denver, CO office:

cell: 970.381.0564
TWade@barr.com
www.barr.com

resourceful. naturally. BARR

From: Kuhn, Julia, NMENV <Julia.Kuhn@state.nm.us>
Sent: Wednesday, November 27, 2019 8:15 AM
To: Trent M. Wade <TWade@barr.com>
Subject: RE: 3 Bear Libby Gas Plant - NSR application

Thank you! I will leave work early today. If you want, you can take your time and email me on Tuesday next week.

Happy Thanksgiving.

Julia Kuhn

From: Trent M. Wade <TWade@barr.com>
Sent: Tuesday, November 26, 2019 6:06 PM
To: Kuhn, Julia, NMENV <Julia.Kuhn@state.nm.us>
Subject: [EXT] RE: 3 Bear Libby Gas Plant - NSR application

Julia,

I wanted to give you a status update. I'm finalizing our responses and will be able to send over a response tomorrow.

Thanks,

Trent M. Wade

Chemical Engineer
Denver, CO office:
cell: 970.381.0564
TWade@barr.com
www.barr.com

resourceful. naturally. BARR

If you no longer wish to receive marketing e-mails from Barr, respond to communications@barr.com and we will be happy to honor your request.

From: Kuhn, Julia, NMENV <Julia.Kuhn@state.nm.us>
Sent: Monday, November 25, 2019 4:07 PM
To: Trent M. Wade <TWade@barr.com>
Subject: RE: 3 Bear Libby Gas Plant - NSR application

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Great, thank you for the acknowledgement.

Regards,

Julia Kuhn

From: Trent M. Wade <TWade@barr.com>
Sent: Monday, November 25, 2019 4:04 PM
To: Kuhn, Julia, NMENV <Julia.Kuhn@state.nm.us>; Lori K. Marquez <LMarquez@barr.com>
Subject: [EXT] RE: 3 Bear Libby Gas Plant - NSR application

Julia,

Sorry for the delay in response, I appreciate you being patient with us. We are currently looking into these questions and will have a response to you by end of the day tomorrow.

Trent M. Wade

Chemical Engineer
Denver, CO office:
cell: 970.381.0564
TWade@barr.com
www.barr.com

From: Kuhn, Julia, NMENV <Julia.Kuhn@state.nm.us>
Sent: Monday, November 25, 2019 12:23 PM
To: Trent M. Wade <TWade@barr.com>; Lori K. Marquez <LMarquez@barr.com>
Subject: FW: 3 Bear Libby Gas Plant - NSR application

CAUTION: This email originated from outside your organization. Exercise caution when opening attachments or clicking links, especially from unknown senders.

Good morning,

I've been waiting to hear back from you regarding the issues addressed in my previous email (see below). Please remember that the modeling specialist is waiting on verification of calculations before she can proceed with modeling analysis. The permit is due on January 9^{th}, 2020 and with the upcoming holidays, the deadline seems to be a lot shorter. Would you please respond by Wednesday next week the latest?

I am also emailing regarding some additional concerns with the calculations provided.

- AMINE-1 has a 30% margin added for operational flexibility. Can you please define "operational flexibility"? I am wondering if this may be what we define as a "safety factor" added to the calculations of emissions. If this is the case, we allow up to a 25% safety factor. In addition, can you please clarify why is 1020 btu/scf use in the calculations rather than 1479.8 btu/scf?

- In regards to the thermal oxidizer (TO-1), a 50% margin added to Vapor Flow Rate impacts the outcome of emissions rates. Also, the heating value used in the calculations is 1020 btu/scf rather than 1479.8 btu/scf. Can you please provide justification/clarification for the values entered in your calculations?

Just so you know, I am still working with the flares values. Thus, I may have to email you back if there are other issues of concerns. Meanwhile, if you could provide an unlocked excel file for the calculations, it would be incredibly helpful.

Thank you for your prompt attention on this matter.

Regards,

Julia Kuhn

From: Kuhn, Julia, NMENV
Sent: Friday, November 15, 2019 3:30 PM
To: 'Trent M. Wade' <TWade@barr.com>
Cc: Lori K. Marquez <LMarquez@barr.com>; Owens, Melinda, NMENV <Melinda.Owens@state.nm.us>
Subject: 3 Bear Libby Gas Plant - NSR application

Good afternoon,

There are a couple of issues I would like to address in regards to emissions calculations for the 3 Bear Libby Gas Plant:

1) The fugitive emissions should be enter in the application as uncontrolled emissions rather than controlled. Unlike other states, New Mexico has no state regulation requiring LDAR

monitoring. While NSPS KKK and NSPS OOOO/OOOOa require LDAR monitoring, none of these rules allow applicants to apply a control efficiency for LDAR monitoring in the PTE calculation. Thus, no credit for LDAR monitoring may be claimed in the PTE calculation.

In short, fugitive VOC and H2S emissions must be based on the uncontrolled values and may not claim any control efficiency from LDAR monitoring. Therefore, emissions for FUG-1 should be represented as 51.25 tpy.

2) I have attached my calculations for HT-1 and HT-2 emissions. Please refer to AP-42 Tables 1.4-1 and 1.4-2 footnotes for clarification on AP-42 emission factors when using a different natural gas heating value. AP-42 emission factors are based on an average natural gas heating value of 1020 btu/scf, thus a ratio between heating values should be part of the calculation.

3) I have discussed the 3 Bear Libby Gas Plant application with my manager and determined that based on the emissions of the heaters, the facility would exceed the threshold for PSD applicability since the CO would be over 250 tpy.

4) Please advise how you would like to proceed as soon as possible. Thank you.

Regards,

Please fill out our Industry/Consultant Feedback Questionnaire online.

If guidance or a determination is included in this email, it is intended to serve as general guidance and is in no way a formal statement of Department policy. New information or changes to regulations may result in a different determination or guidance.

Julia Kuhn
Permitting – Major Sources
New Mexico Environmental Department
Air Quality Bureau
525 Camino de los Marquez, Suite 1
Santa Fe, NM 87505
505-476-4376
Julia.Kuhn@state.nm.us
www.env.nm.gov

From: Trent M. Wade <TWade@barr.com>
Sent: Tuesday, October 29, 2019 1:06 PM
To: Kuhn, Julia, NMENV <Julia.Kuhn@state.nm.us>
Cc: Lori K. Marquez <LMarquez@barr.com>; 'Liz Klein' <lklein@3bearllc.com>
Subject: [EXT] RE: 3 Bear Libby Gas Plant

Julia,

The NSPS OOOOa regulatory citation is 60.5405a "What standards apply to sweetening unit affected facilities at onshore natural gas processing plants?" If you have any questions please let me know.

Thanks,

Trent M. Wade

Chemical Engineer
Denver, CO office:
cell: 970.381.0564
TWade@barr.com
www.barr.com

From: Kuhn, Julia, NMENV <Julia.Kuhn@state.nm.us>
Sent: Tuesday, October 29, 2019 9:23 AM
To: Trent M. Wade <TWade@barr.com>
Cc: Lori K. Marquez <LMarquez@barr.com>; 'Liz Klein' <lklein@3bearllc.com>
Subject: RE: 3 Bear Libby Gas Plant

Good morning,

In regards to the Tittle V application for the 3 Bear Libby Gas Plant, the information you've provided in Section 19 (Requirements for TV Program) establishes that the amine is not subject to a CAM plan because the unit has a pre-control device to achieve compliance with emission limitation or standards for VOC and H2S under OOOOa regulations, and it is therefore exempt under 64.2(b)(1)(i). Would you please provide the citation in NSPS OOOOa supporting this information? Thank you.

Sincerely,

Please fill out our Industry/Consultant Feedback Questionnaire online.

If guidance or a determination is included in this email, it is intended to serve as general guidance and is in no way a formal statement of Department policy. New information or changes to regulations may result in a different determination or guidance.

Julia Kuhn
Permitting – Major Sources
New Mexico Environmental Department

Air Quality Bureau
525 Camino de los Marquez, Suite 1
Santa Fe, NM 87505
505-476-4376
Julia.Kuhn@state.nm.us
www.env.nm.gov

From:	Kuhn, Julia, NMENV
To:	"Trent M. Wade"
Subject:	RE: 3 Bear Libby Gas Plant - NSR application
Date:	Monday, December 16, 2019 9:49:00 AM
Attachments:	image001.png

Thank you. Yes, I was comparing to the revised file on 12/4 rather than the initial file.

From: Trent M. Wade <TWade@barr.com>
Sent: Monday, December 16, 2019 9:39 AM
To: Kuhn, Julia, NMENV <Julia.Kuhn@state.nm.us>
Subject: [EXT] RE: 3 Bear Libby Gas Plant - NSR application

Julia,

The updated pages that I submitted on Friday are just for the Waukesha engines. However, the updated pages did include the equipment changes that I sent to you on December 5th. Those changes included: updated equipment fuel heat rate from inlet gas heat rate to residue gas heat rate, changes at the thermal oxidizer (reduced margin), heater (change in emission calculation), and flare (increase in emissions due to plant blowdown). If you have any questions, please let me know.

Thanks,

Trent M. Wade

Chemical Engineer
Denver, CO office:
cell: 970.381.0564
TWade@barr.com
www.barr.com

From: Kuhn, Julia, NMENV <Julia.Kuhn@state.nm.us>
Sent: Monday, December 16, 2019 8:56 AM
To: Trent M. Wade <TWade@barr.com>
Subject: RE: 3 Bear Libby Gas Plant - NSR application

Trent,

Are the latest changes to the Waukesha engines only? Can you please verify if everything else remains the same or have you made changes to calculations for other equipment?

Thank you. It will help a lot to have this clarification.

Regards,

Julia Kuhn

From: Trent M. Wade <TWade@barr.com>
Sent: Friday, December 13, 2019 3:05 PM
To: Kuhn, Julia, NMENV <Julia.Kuhn@state.nm.us>
Cc: Lori K. Marquez <LMarquez@barr.com>; Liz Klein <lklein@3bearllc.com>; 'Stephanie Swanson' <stephanie@3bearllc.com>; Raso, Angela, NMENV <Angela.Raso@state.nm.us>
Subject: [EXT] RE: 3 Bear Libby Gas Plant - NSR application

Julia,

I have updated the Libby Gas Plant application to include the residue compressor engine options. I have attached the updated calculation spreadsheet, UA2, UA3, modeling files, and a modeling comparison spreadsheet to this email. After modeling the Caterpillar and Waukesha engine options, it was determined that the Caterpillar engines are the worst case operating scenario. I have included the test models with the modeling files for verification. I spoke with Angela about the modeling this morning, and she should have everything she needs to review, but please let me know if either of you have questions.

Thanks and have a good weekend!

Trent M. Wade

Chemical Engineer
Denver, CO office:
cell: 970.381.0564
TWade@barr.com
www.barr.com

From: Kuhn, Julia, NMENV <Julia.Kuhn@state.nm.us>
Sent: Wednesday, December 11, 2019 8:23 AM
To: Trent M. Wade <TWade@barr.com>
Cc: Lori K. Marquez <LMarquez@barr.com>; Liz Klein <lklein@3bearllc.com>
Subject: RE: 3 Bear Libby Gas Plant - NSR application

Good morning Trent,

Thank you for the information you've provided. Any idea when you will be submitting the engines option revision?

Regards,

Julia Kuhn

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Sent: Tuesday, December 10, 2019 4:43 PM
To: Kuhn, Julia, NMENV <Julia.Kuhn@state.nm.us>
Cc: Lori K. Marquez <LMarquez@barr.com>; Liz Klein <lklein@3bearllc.com>
Subject: [EXT] RE: 3 Bear Libby Gas Plant - NSR application

Julia,

To convert the H_2S to SO_2 we assumed a 100% conversion rate. Please see the conversion below:

8 (grains H_2S/100scf) / 7000 (grains/lb) = 1.14E-05 (lb H_2S/scf)

1.14E-05 (lb H_2S/scf) x 32.1 (MW of Sulfur) / 34.1 (MW of H_2S) = 1.08E-05 (lb S/scf)

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1288.98 (lb/day) / 24 (hr/day) x 20% margin = 64.45 (lb/hr)

The initial thermal oxidizer test was completed on 8/20/2019. Please see an attached copy of the report.

Thanks,

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Cc: 'Liz Klein' <lklein@3bearllc.com>; Lori K. Marquez <LMarquez@barr.com>
Subject: [EXT] RE: 3 Bear Libby Gas Plant - NSR application

Julia,

Please see the attached calcs.

Thanks,

Trent M. Wade

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Thank you for the update. Would you please send the excel file with the revised calculations?

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Thanks,

Trent M. Wade

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Sent: Wednesday, November 27, 2019 8:15 AM
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Subject: RE: 3 Bear Libby Gas Plant - NSR application

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Happy Thanksgiving.

Julia Kuhn

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Sent: Tuesday, November 26, 2019 6:06 PM
To: Kuhn, Julia, NMENV <Julia.Kuhn@state.nm.us>
Subject: [EXT] RE: 3 Bear Libby Gas Plant - NSR application

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Trent M. Wade

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www.barr.com

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Sent: Monday, November 25, 2019 4:07 PM
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Regards,

Julia Kuhn

From: Trent M. Wade <TWade@barr.com>
Sent: Monday, November 25, 2019 4:04 PM
To: Kuhn, Julia, NMENV <Julia.Kuhn@state.nm.us>; Lori K. Marquez <LMarquez@barr.com>
Subject: [EXT] RE: 3 Bear Libby Gas Plant - NSR application

Julia,

Sorry for the delay in response, I appreciate you being patient with us. We are currently looking into these questions and will have a response to you by end of the day tomorrow.

Trent M. Wade

Chemical Engineer
Denver, CO office:
cell: 970.381.0564
TWade@barr.com
www.barr.com

resourceful. naturally. BARR

If you no longer wish to receive marketing e-mails from Barr, respond to communications@barr.com and we will be happy to honor your request.

From: Kuhn, Julia, NMENV <Julia.Kuhn@state.nm.us>
Sent: Monday, November 25, 2019 12:23 PM
To: Trent M. Wade <TWade@barr.com>; Lori K. Marquez <LMarquez@barr.com>
Subject: FW: 3 Bear Libby Gas Plant - NSR application

CAUTION: This email originated from outside your organization. Exercise caution when opening attachments or clicking links, especially from unknown senders.

Good morning,

I've been waiting to hear back from you regarding the issues addressed in my previous email (see below). Please remember that the modeling specialist is waiting on verification of calculations before she can proceed with modeling analysis. The permit is due on January 9th, 2020 and with the upcoming holidays, the deadline seems to be a lot shorter. Would you please respond by Wednesday next week the latest?

I am also emailing regarding some additional concerns with the calculations provided.

- AMINE-1 has a 30% margin added for operational flexibility. Can you please define "operational flexibility"? I am wondering if this may be what we define as a "safety factor" added to the calculations of emissions. If this is the case, we allow up to a 25% safety factor. In addition, can you please clarify why is 1020 btu/scf use in the calculations rather than 1479.8 btu/scf?

- In regards to the thermal oxidizer (TO-1), a 50% margin added to Vapor Flow Rate impacts the outcome of emissions rates. Also, the heating value used in the calculations is 1020 btu/scf rather than 1479.8 btu/scf. Can you please provide justification/clarification for the values entered in your calculations?

Just so you know, I am still working with the flares values. Thus, I may have to email you back if there are other issues of concerns. Meanwhile, if you could provide an unlocked excel file for the calculations, it would be incredibly helpful.

Thank you for your prompt attention on this matter.

Regards,

Julia Kuhn

From: Kuhn, Julia, NMENV
Sent: Friday, November 15, 2019 3:30 PM
To: 'Trent M. Wade' <TWade@barr.com>
Cc: Lori K. Marquez <LMarquez@barr.com>; Owens, Melinda, NMENV <Melinda.Owens@state.nm.us>
Subject: 3 Bear Libby Gas Plant - NSR application

Good afternoon,

There are a couple of issues I would like to address in regards to emissions calculations for the 3 Bear Libby Gas Plant:

1. The fugitive emissions should be enter in the application as uncontrolled emissions rather than controlled. Unlike other states, New Mexico has no state regulation requiring LDAR monitoring. While NSPS KKK and NSPS OOOO/OOOOa require LDAR monitoring, none of these rules allow applicants to apply a control efficiency for LDAR monitoring in the PTE calculation. Thus, no credit for LDAR monitoring may be claimed in the PTE calculation.

   In short, fugitive VOC and H2S emissions must be based on the uncontrolled values and may not claim any control efficiency from LDAR monitoring. Therefore, emissions for FUG-1 should be represented as 51.25 tpy.

2. I have attached my calculations for HT-1 and HT-2 emissions. Please refer to AP-42 Tables 1.4-1 and 1.4-2 footnotes for clarification on AP-42 emission factors when using a different natural gas heating value. AP-42 emission factors are based on an average natural gas heating value of 1020 btu/scf, thus a ratio between heating values should be part of the calculation.

3. I have discussed the 3 Bear Libby Gas Plant application with my manager and determined that based on the emissions of the heaters, the facility would exceed the threshold for PSD applicability since the CO would be over 250 tpy.

4. Please advise how you would like to proceed as soon as possible. Thank you.

Regards,

Please fill out our Industry/Consultant Feedback Questionnaire online.

If guidance or a determination is included in this email, it is intended to serve as general guidance and is in no way a formal statement of Department policy. New information or changes to regulations may result in a different determination or guidance.

Julia Kuhn
Permitting – Major Sources
New Mexico Environmental Department
Air Quality Bureau
525 Camino de los Marquez, Suite 1
Santa Fe, NM 87505
505-476-4376
Julia.Kuhn@state.nm.us
www.env.nm.gov

From: Trent M. Wade <TWade@barr.com>

Sent: Tuesday, October 29, 2019 1:06 PM
To: Kuhn, Julia, NMENV <Julia.Kuhn@state.nm.us>
Cc: Lori K. Marquez <LMarquez@barr.com>; 'Liz Klein' <lklein@3bearllc.com>
Subject: [EXT] RE: 3 Bear Libby Gas Plant

Julia,

The NSPS OOOOa regulatory citation is 60.5405a "What standards apply to sweetening unit affected facilities at onshore natural gas processing plants?" If you have any questions please let me know.

Thanks,

Trent M. Wade

Chemical Engineer
Denver, CO office:
cell: 970.381.0564
TWade@barr.com
www.barr.com

From: Kuhn, Julia, NMENV <Julia.Kuhn@state.nm.us>
Sent: Tuesday, October 29, 2019 9:23 AM
To: Trent M. Wade <TWade@barr.com>
Cc: Lori K. Marquez <LMarquez@barr.com>; 'Liz Klein' <lklein@3bearllc.com>
Subject: RE: 3 Bear Libby Gas Plant

Good morning,

In regards to the Tittle V application for the 3 Bear Libby Gas Plant, the information you've provided in Section 19 (Requirements for TV Program) establishes that the amine is not subject to a CAM plan because the unit has a pre-control device to achieve compliance with emission limitation or standards for VOC and H2S under OOOOa regulations, and it is therefore exempt under 64.2(b)(1)(i). Would you please provide the citation in NSPS OOOOa supporting this information? Thank you.

Sincerely,

Please fill out our Industry/Consultant Feedback Questionnaire online.

Julia Kuhn
Permitting – Major Sources
New Mexico Environmental Department
Air Quality Bureau
525 Camino de los Marquez, Suite 1
Santa Fe, NM 87505
505-476-4376
Julia.Kuhn@state.nm.us
www.env.nm.gov

From: Kuhn, Julia, NMENV
To: "Trent M. Wade"
Subject: RE: 3 Bear Libby Gas Plant
Date: Friday, December 20, 2019 8:32:00 AM
Attachments: image001.png

Thank you Trent. I won't be here next week but Melinda will, if you have any questions.

Happy Holidays.

From: Trent M. Wade <TWade@barr.com>
Sent: Friday, December 20, 2019 8:08 AM
To: Kuhn, Julia, NMENV <Julia.Kuhn@state.nm.us>
Subject: [EXT] RE: 3 Bear Libby Gas Plant

Julia,

Section 10 was updated to reflect these changes.

Thanks,

Trent M. Wade

Chemical Engineer
Denver, CO office:
cell: 970.381.0564
TWade@barr.com
www.barr.com

resourceful. naturally. BARR

From: Kuhn, Julia, NMENV <Julia.Kuhn@state.nm.us>
Sent: Thursday, December 19, 2019 1:52 PM
To: Trent M. Wade <TWade@barr.com>
Subject: 3 Bear Libby Gas Plant

Hi Trent,

Would you please let me know if section 10 of the last revision of the application was updated to reflect all changes? Thank you.

Please fill out our Industry/Consultant Feedback Questionnaire online.

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Julia Kuhn
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New Mexico Environmental Department
Air Quality Bureau
525 Camino de los Marquez, Suite 1
Santa Fe, NM 87505
505-476-4376
Julia.Kuhn@state.nm.us
www.env.nm.gov

From:	Kuhn, Julia, NMENV
To:	"Trent M. Wade"
Subject:	RE: TV part B&C permit
Date:	Friday, December 20, 2019 3:59:00 PM
Attachments:	image001.png

Hi Trent,

I spoke to a manager and an inspector to get you this answer: new or modified source refers to each piece of equipment. You do need to submit the anticipated startup date for new equipment added to your permit. Previously authorized equipment, assuming that you have submitted the anticipated startup date in the past, doesn't need to be included, UNLESS the current modification of the permit affects previously authorized equipment. In other words, if the current in-house modification of the permit affects authorized units, then you do need to submit the anticipated startup date.

If your question concerns to 3 Bear Libby Gas Plant, you could do your submittal around March 8th, since the permit will be issue on April 8th the latest. However, there is a chance this permit can be issue before the due date because I've already completed a lot of the review. You can check in with me every so often, to see where we are in in the process so you can go ahead with your 30 days submission. Please note that you do need to wait until permit issuance date before you can start operation of the new and modified sources.

If you need additional clarification, Kirby Olson was the manager who helped me sort this out. You may contact her next week at 505-476-4322.

Thank you,

Julia Kuhn

From: Trent M. Wade <TWade@barr.com>
Sent: Friday, December 20, 2019 2:52 PM
To: Kuhn, Julia, NMENV <Julia.Kuhn@state.nm.us>
Subject: [EXT] RE: TV part B&C permit

Julia,

Under section B110(B)(1) is the language I was talking about. Do we need to submit anticipated startup 30 days in advance for equipment that has been authorized under a permit?

Thanks,

Trent M. Wade

Chemical Engineer
Denver, CO office:
cell: 970.381.0564
TWade@barr.com
www.barr.com

From: Kuhn, Julia, NMENV <Julia.Kuhn@state.nm.us>
Sent: Friday, December 20, 2019 2:21 PM
To: Trent M. Wade <TWade@barr.com>
Subject: RE: TV part B&C permit

I realized that I was looking at the TV permit rather than NSR. Please find the attached NSR permit.

From: Trent M. Wade <TWade@barr.com>
Sent: Friday, December 20, 2019 2:20 PM
To: Kuhn, Julia, NMENV <Julia.Kuhn@state.nm.us>
Subject: [EXT] RE: TV part B&C permit

Julia,

Is the part B and C the same for a TV as an NSR? The permit I'm looking at is for an NSR facility.

Thanks,

Trent M. Wade

Chemical Engineer
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cell: 970.381.0564
TWade@barr.com
www.barr.com

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From: Kuhn, Julia, NMENV <Julia.Kuhn@state.nm.us>
Sent: Friday, December 20, 2019 2:11 PM
To: Trent M. Wade <TWade@barr.com>
Subject: TV part B&C permit

CAUTION: This email originated from outside your organization. Exercise caution when opening attachments or clicking links, especially from unknown senders.

This is the most updated version of Part A&B of the TV permit.

Thank you,

Please fill out our Industry/Consultant Feedback Questionnaire online.

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Julia Kuhn
Permitting – Major Sources
New Mexico Environmental Department
Air Quality Bureau
525 Camino de los Marquez, Suite 1
Santa Fe, NM 87505
505-476-4376
Julia.Kuhn@state.nm.us
www.env.nm.gov

From: Trent M. Wade
To: Kuhn, Julia, NMENV
Cc: Lori K. Marquez; "Liz Klein"
Subject: [EXT] RE: BACKUP GENERATORS
Date: Wednesday, January 8, 2020 2:27:48 PM
Attachments: image001.png

Julia,

Would you be able to show the generators in the NSR permit without having any additional testing requirements shown?

Thanks,

Trent M. Wade

Chemical Engineer
Denver, CO office:
cell: 970.381.0564
TWade@barr.com
www.barr.com

From: Kuhn, Julia, NMENV <Julia.Kuhn@state.nm.us>
Sent: Wednesday, January 8, 2020 12:26 PM
To: Trent M. Wade <TWade@barr.com>
Subject: RE: BACKUP GENERATORS

It means that although subject to federal regulations (IIII, JJJJ, and ZZZZ), the backup generators are exempt under part 72. Thus, we are not required to enter the generators in the NSR permit. However, we will enter the generators in your Title V permit, in the future. This discrepancy, creates confusion at the facility so we've been accommodating the option to enter the exempt equipment in your NSR permit, if you would like. Last time we spoke, you mentioned you would ask the facility what they want to do. Let me know.

Thank you,

Julia Kuhn

From: Trent M. Wade <TWade@barr.com>
Sent: Wednesday, January 8, 2020 12:07 PM
To: Kuhn, Julia, NMENV <Julia.Kuhn@state.nm.us>

Subject: [EXT] RE: BACKUP GENERATORS

Hi Julia,

Could you please remind me what that exactly means?

Thanks!

Trent M. Wade

Chemical Engineer
Denver, CO office:
cell: 970.381.0564
TWade@barr.com
www.barr.com

From: Kuhn, Julia, NMENV <Julia.Kuhn@state.nm.us>
Sent: Wednesday, January 8, 2020 11:59 AM
To: Trent M. Wade <TWade@barr.com>
Subject: BACKUP GENERATORS

Hello Trent,

I'm checking back with you regarding the backup generators. Do you want these to be included in your NSR permit since they will be subject to federal regulations under your Title V permit?

Thank you,

Julia Kuhn

From: Trent M. Wade <TWade@barr.com>
Sent: Friday, December 20, 2019 2:52 PM
To: Kuhn, Julia, NMENV <Julia.Kuhn@state.nm.us>
Subject: [EXT] RE: TV part B&C permit

Julia,

Under section B110(B)(1) is the language I was talking about. Do we need to submit anticipated startup 30 days in advance for equipment that has been authorized under a permit?

Thanks,

Trent M. Wade

Chemical Engineer
Denver, CO office:
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TWade@barr.com
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From: Kuhn, Julia, NMENV <Julia.Kuhn@state.nm.us>
Sent: Friday, December 20, 2019 2:21 PM
To: Trent M. Wade <TWade@barr.com>
Subject: RE: TV part B&C permit

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From: Trent M. Wade <TWade@barr.com>
Sent: Friday, December 20, 2019 2:20 PM
To: Kuhn, Julia, NMENV <Julia.Kuhn@state.nm.us>
Subject: [EXT] RE: TV part B&C permit

Julia,

Is the part B and C the same for a TV as an NSR? The permit I'm looking at is for an NSR facility.

Thanks,

Trent M. Wade

Chemical Engineer
Denver, CO office:
cell: 970.381.0564
TWade@barr.com
www.barr.com

From: Kuhn, Julia, NMENV <Julia.Kuhn@state.nm.us>
Sent: Friday, December 20, 2019 2:11 PM
To: Trent M. Wade <TWade@barr.com>
Subject: TV part B&C permit

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This is the most updated version of Part A&B of the TV permit.

Thank you,

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Julia Kuhn
Permitting – Major Sources
New Mexico Environmental Department
Air Quality Bureau
525 Camino de los Marquez, Suite 1
Santa Fe, NM 87505
505-476-4376
Julia.Kuhn@state.nm.us
www.env.nm.gov

From:	Kuhn, Julia, NMENV
To:	"Lori K. Marquez"
Cc:	Trent M. Wade; Liz Klein
Subject:	RE: BACKUP GENERATORS
Date:	Friday, January 10, 2020 1:34:00 PM

Sure. Thank you.

From: Lori K. Marquez <LMarquez@barr.com>
Sent: Friday, January 10, 2020 11:57 AM
To: Kuhn, Julia, NMENV <Julia.Kuhn@state.nm.us>
Cc: Trent M. Wade <TWade@barr.com>; Liz Klein <lklein@3bearllc.com>
Subject: [EXT] Re: BACKUP GENERATORS

Thank you Julia. Your proposed language is acceptable to us. Please add them to the NSR.

Thanks.

Lori Marquez

Sent from my iPhone

On Jan 10, 2020, at 10:35 AM, Kuhn, Julia, NMENV <Julia.Kuhn@state.nm.us> wrote:

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Good morning Lori,

Please see attachment for conditions details I will be adding to the permit if GEN-1 and GEN-2 are included. Basically, I will be adding conditions referencing JJJJ and ZZZZ regardless, since these conditions apply to all engines. The only extra condition will be referencing is IIII since it is applicable to GEN-2. Just so you know, there are not opacity or periodic testing applicability requirements for the exempt generators. Let me know what you would like to do. Thank you.
40 CFR 60, Subpart JJJJ for Units **ENG 1-12, GEN-1**
40 CFR 63, Subpart ZZZZ for Units **ENG 1-12, GEN 1-2**
40 CFR 60, Subpart IIII for Unit **GEN-2**

Julia Kuhn
Permitting – Major Sources
New Mexico Environmental Department
Air Quality Bureau
525 Camino de los Marquez, Suite 1

Santa Fe, NM 87505
505-476-4376
Julia.Kuhn@state.nm.us
www.env.nm.gov

From: Lori K. Marquez <LMarquez@barr.com>
Sent: Thursday, January 9, 2020 4:42 PM
To: Kuhn, Julia, NMENV <Julia.Kuhn@state.nm.us>; Trent M. Wade <TWade@barr.com>
Cc: 'Liz Klein' <lklein@3bearllc.com>
Subject: [EXT] RE: BACKUP GENERATORS

Julia,
What type of permit conditions would be added? We wouldn't want any extra permit requirements just to have the convenience of having them listed in the NSR. If the permit condition just references the appropriate NSPS with requirements that are applicable anyway, we are ok with that. Thanks.

Lori K. Marquez

Senior Air Quality Consultant
Denver, CO office:
cell: 303.503.4735
LMarquez@barr.com
www.barr.com

<image001.png>

From: Kuhn, Julia, NMENV <Julia.Kuhn@state.nm.us>
Sent: Thursday, January 9, 2020 4:24 PM
To: Trent M. Wade <TWade@barr.com>
Cc: Lori K. Marquez <LMarquez@barr.com>; 'Liz Klein' <lklein@3bearllc.com>
Subject: RE: BACKUP GENERATORS

Trent,

We would have to add permit conditions if we add the generators. Let me know what you want to do.

Thank you,

Julia Kuhn

From: Trent M. Wade <TWade@barr.com>
Sent: Wednesday, January 8, 2020 2:28 PM
To: Kuhn, Julia, NMENV <Julia.Kuhn@state.nm.us>
Cc: Lori K. Marquez <LMarquez@barr.com>; 'Liz Klein' <lklein@3bearllc.com>
Subject: [EXT] RE: BACKUP GENERATORS

Julia,

Would you be able to show the generators in the NSR permit without having any additional testing requirements shown?

Thanks,

Trent M. Wade

Chemical Engineer
Denver, CO office:
cell: 970.381.0564
TWade@barr.com
www.barr.com

<image001.png>

From: Kuhn, Julia, NMENV <Julia.Kuhn@state.nm.us>
Sent: Wednesday, January 8, 2020 12:26 PM
To: Trent M. Wade <TWade@barr.com>
Subject: RE: BACKUP GENERATORS

It means that although subject to federal regulations (IIII, JJJJ, and ZZZZ), the backup generators are exempt under part 72. Thus, we are not required to enter the generators in the NSR permit. However, we will enter the generators in your Title V permit, in the future. This discrepancy, creates confusion at the facility so we've been accommodating the option to enter the exempt equipment in your NSR permit, if you would like. Last time we spoke, you mentioned you would ask the facility what they want to do. Let me know.

Thank you,

Julia Kuhn

From: Trent M. Wade <TWade@barr.com>
Sent: Wednesday, January 8, 2020 12:07 PM
To: Kuhn, Julia, NMENV <Julia.Kuhn@state.nm.us>
Subject: [EXT] RE: BACKUP GENERATORS

Hi Julia,

Could you please remind me what that exactly means?

Thanks!

Trent M. Wade

Chemical Engineer
Denver, CO office:
cell: 970.381.0564
TWade@barr.com
www.barr.com

<image001.png>

From: Kuhn, Julia, NMENV <Julia.Kuhn@state.nm.us>
Sent: Wednesday, January 8, 2020 11:59 AM
To: Trent M. Wade <TWade@barr.com>
Subject: BACKUP GENERATORS

Hello Trent,

I'm checking back with you regarding the backup generators. Do you want these to be included in your NSR permit since they will be subject to federal regulations under your Title V permit?

Thank you,

Julia Kuhn

From: Trent M. Wade <TWade@barr.com>
Sent: Friday, December 20, 2019 2:52 PM
To: Kuhn, Julia, NMENV <Julia.Kuhn@state.nm.us>
Subject: [EXT] RE: TV part B&C permit

Julia,

Under section B110(B)(1) is the language I was talking about. Do we need to submit anticipated startup 30 days in advance for equipment that has been authorized under a permit?

Thanks,

Trent M. Wade

Chemical Engineer
Denver, CO office:
cell: 970.381.0564
TWade@barr.com
www.barr.com

<image001.png>

From: Kuhn, Julia, NMENV <Julia.Kuhn@state.nm.us>
Sent: Friday, December 20, 2019 2:21 PM
To: Trent M. Wade <TWade@barr.com>
Subject: RE: TV part B&C permit

I realized that I was looking at the TV permit rather than NSR. Please find the attached NSR permit.

From: Trent M. Wade <TWade@barr.com>
Sent: Friday, December 20, 2019 2:20 PM
To: Kuhn, Julia, NMENV <Julia.Kuhn@state.nm.us>

Subject: [EXT] RE: TV part B&C permit

Julia,

Is the part B and C the same for a TV as an NSR? The permit I'm looking at is for an NSR facility.

Thanks,

Trent M. Wade

Chemical Engineer
Denver, CO office:
cell: 970.381.0564
TWade@barr.com
www.barr.com

<image001.png>

From: Kuhn, Julia, NMENV <Julia.Kuhn@state.nm.us>
Sent: Friday, December 20, 2019 2:11 PM
To: Trent M. Wade <TWade@barr.com>
Subject: TV part B&C permit

This is the most updated version of Part A&B of the TV permit.

Thank you,

Please fill out our Industry/Consultant Feedback Questionnaire online.

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Julia Kuhn
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New Mexico Environmental Department
Air Quality Bureau
525 Camino de los Marquez, Suite 1
Santa Fe, NM 87505
505-476-4376
Julia.Kuhn@state.nm.us

www.env.nm.gov

<conditions.docx>

From: Kuhn, Julia, NMENV
To: Trent M. Wade; "Lori K. Marquez"
Subject: 3 Bear Libby Gas Plant/CAM Plan
Date: Monday, January 13, 2020 11:51:00 AM

Good morning,

In earlier stages of the application process, we've determined that the Amine Unit is exempt for CAM because the unit is subject to OOOOa. However, this applies to VOCs and a certain reduction efficiency of SO2. As per part 70, H2S is a regulated air pollutant and it appears that the Amine Unit will be subject to CAM. We've determined that H2S needs to be included in Table 2-D (uncontrolled emissions) in both, NSR and TV applications. In addition, the TV application will need a CAM plan submission for H2S before we can rule the application complete. Let me know if you have any questions. Thank you.

Regards,

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New Mexico Environmental Department
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525 Camino de los Marquez, Suite 1
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505-476-4376
Julia.Kuhn@state.nm.us
www.env.nm.gov

From:	Trent M. Wade
To:	Kuhn, Julia, NMENV; Lori K. Marquez
Subject:	[EXT] RE: Engines 9-12
Date:	Tuesday, January 14, 2020 7:41:24 AM
Attachments:	image001.png

Julia,

VOC is also controlled. Sorry about that.

Trent M. Wade

Chemical Engineer
Denver, CO office:
cell: 970.381.0564
TWade@barr.com
www.barr.com

From: Kuhn, Julia, NMENV <Julia.Kuhn@state.nm.us>
Sent: Monday, January 13, 2020 7:24 AM
To: Lori K. Marquez <LMarquez@barr.com>; Trent M. Wade <TWade@barr.com>
Subject: Engines 9-12

Good morning,

Would you please clarify if NSCRs from Engines 9-12 are controlling VOC's in addition to NOx and CO? It appears that this is the case according to the calculations, but this is not reflected in table 2-C of the application. There is no need to correct the table. This email will suffice.

Regards,

Julia Kuhn

From: Lori K. Marquez <LMarquez@barr.com>
Sent: Thursday, January 9, 2020 4:42 PM
To: Kuhn, Julia, NMENV <Julia.Kuhn@state.nm.us>; Trent M. Wade <TWade@barr.com>
Cc: 'Liz Klein' <lklein@3bearllc.com>
Subject: [EXT] RE: BACKUP GENERATORS

Julia,
What type of permit conditions would be added? We wouldn't want any extra permit requirements

just to have the convenience of having them listed in the NSR. If the permit condition just references the appropriate NSPS with requirements that are applicable anyway, we are ok with that. Thanks.

Lori K. Marquez

Senior Air Quality Consultant
Denver, CO office:
cell: 303.503.4735
LMarquez@barr.com
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Sent: Thursday, January 9, 2020 4:24 PM
To: Trent M. Wade <TWade@barr.com>
Cc: Lori K. Marquez <LMarquez@barr.com>; 'Liz Klein' <lklein@3bearllc.com>
Subject: RE: BACKUP GENERATORS

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Thank you,

Julia Kuhn

From: Trent M. Wade <TWade@barr.com>
Sent: Wednesday, January 8, 2020 2:28 PM
To: Kuhn, Julia, NMENV <Julia.Kuhn@state.nm.us>
Cc: Lori K. Marquez <LMarquez@barr.com>; 'Liz Klein' <lklein@3bearllc.com>
Subject: [EXT] RE: BACKUP GENERATORS

Julia,

Would you be able to show the generators in the NSR permit without having any additional testing requirements shown?

Thanks,

Trent M. Wade

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www.barr.com

resourceful. naturally. BARR

From: Kuhn, Julia, NMENV <Julia.Kuhn@state.nm.us>
Sent: Wednesday, January 8, 2020 12:26 PM
To: Trent M. Wade <TWade@barr.com>
Subject: RE: BACKUP GENERATORS

CAUTION: This email originated from outside your organization. Exercise caution when opening attachments or clicking links, especially from unknown senders.

It means that although subject to federal regulations (IIII, JJJJ, and ZZZZ), the backup generators are exempt under part 72. Thus, we are not required to enter the generators in the NSR permit. However, we will enter the generators in your Title V permit, in the future. This discrepancy, creates confusion at the facility so we've been accommodating the option to enter the exempt equipment in your NSR permit, if you would like. Last time we spoke, you mentioned you would ask the facility what they want to do. Let me know.

Thank you,

Julia Kuhn

From: Trent M. Wade <TWade@barr.com>
Sent: Wednesday, January 8, 2020 12:07 PM
To: Kuhn, Julia, NMENV <Julia.Kuhn@state.nm.us>
Subject: [EXT] RE: BACKUP GENERATORS

Hi Julia,

Could you please remind me what that exactly means?

Thanks!

Trent M. Wade

Chemical Engineer
Denver, CO office:
cell: 970.381.0564
TWade@barr.com
www.barr.com

From: Kuhn, Julia, NMENV <Julia.Kuhn@state.nm.us>
Sent: Wednesday, January 8, 2020 11:59 AM
To: Trent M. Wade <TWade@barr.com>
Subject: BACKUP GENERATORS

Hello Trent,

I'm checking back with you regarding the backup generators. Do you want these to be included in your NSR permit since they will be subject to federal regulations under your Title V permit?

Thank you,

Julia Kuhn

From: Trent M. Wade <TWade@barr.com>
Sent: Friday, December 20, 2019 2:52 PM
To: Kuhn, Julia, NMENV <Julia.Kuhn@state.nm.us>
Subject: [EXT] RE: TV part B&C permit

Julia,

Under section B110(B)(1) is the language I was talking about. Do we need to submit anticipated startup 30 days in advance for equipment that has been authorized under a permit?

Thanks,

Trent M. Wade

Chemical Engineer
Denver, CO office:
cell: 970.381.0564
TWade@barr.com
www.barr.com

From: Kuhn, Julia, NMENV <Julia.Kuhn@state.nm.us>
Sent: Friday, December 20, 2019 2:21 PM
To: Trent M. Wade <TWade@barr.com>
Subject: RE: TV part B&C permit

CAUTION: This email originated from outside your organization. Exercise caution when opening attachments or clicking links, especially from unknown senders.

I realized that I was looking at the TV permit rather than NSR. Please find the attached NSR permit.

From: Trent M. Wade <TWade@barr.com>
Sent: Friday, December 20, 2019 2:20 PM
To: Kuhn, Julia, NMENV <Julia.Kuhn@state.nm.us>
Subject: [EXT] RE: TV part B&C permit

Julia,

Is the part B and C the same for a TV as an NSR? The permit I'm looking at is for an NSR facility.

Thanks,

Trent M. Wade

Chemical Engineer
Denver, CO office:
cell: 970.381.0564
TWade@barr.com
www.barr.com

From: Kuhn, Julia, NMENV <Julia.Kuhn@state.nm.us>
Sent: Friday, December 20, 2019 2:11 PM
To: Trent M. Wade <TWade@barr.com>
Subject: TV part B&C permit

CAUTION: This email originated from outside your organization. Exercise caution when opening attachments or clicking links, especially from unknown senders.

This is the most updated version of Part A&B of the TV permit.

Thank you,

Please fill out our Industry/Consultant Feedback Questionnaire online.

If guidance or a determination is included in this email, it is intended to serve as general guidance and is in no way a formal statement of Department policy. New information or changes to regulations may result in a different determination or guidance.

Julia Kuhn
Permitting – Major Sources
New Mexico Environmental Department
Air Quality Bureau
525 Camino de los Marquez, Suite 1
Santa Fe, NM 87505
505-476-4376
Julia.Kuhn@state.nm.us
www.env.nm.gov

From:	Jeremy Nichols
To:	Kuhn, Julia, NMENV
Subject:	[EXT] Proposed Air Quality Permit, 3 Bear Operating, Libby Gas Plant, Permit No. 7482M1
Date:	Friday, January 17, 2020 8:47:48 PM
Attachments:	2020-1-17 WG 3 Bear Libby Gas Plant Permit Comments.pdf

---

Dear Ms. Kuhn:

Attached, please find initial comments from WildEarth Guardians regarding the New Mexico Environment Department's proposal to issue the subject air quality permit. Please feel free to contact me if you have any questions or concerns. We look forward to engaging further in this permitting process. Thank you.

Sincerely,

Jeremy Nichols

Climate and Energy Program Director

(303) 437-7663
www.wildearthguardians.org/climate-energy

From: Jeremy Nichols
To: Kuhn, Julia, NMENV
Subject: [EXT] Re: Proposed Air Quality Permit, 3 Bear Operating, Libby Gas Plant, Permit No. 7482M1
Date: Monday, February 3, 2020 12:19:01 PM

Dear Ms. Kuhn -

I wanted to see where things stand with this permitting process. On NMED's website, there is a "second" public notice posted for this proposed permit indicating that the Dept. intends to issue a permit on or before January 9, 2020. Has a permit been issued already? If so, how does NMED intend to address our comments? Thank you for any insight.

Jeremy

Climate and Energy Program Director

(303) 437-7663
www.wildearthguardians.org/climate-energy

On Fri, Jan 17, 2020 at 8:47 PM Jeremy Nichols <jnichols@wildearthguardians.org> wrote:

> Dear Ms. Kuhn:
>
> Attached, please find initial comments from WildEarth Guardians regarding the New Mexico Environment Department's proposal to issue the subject air quality permit. Please feel free to contact me if you have any questions or concerns. We look forward to engaging further in this permitting process. Thank you.
>
> Sincerely,
>
> Jeremy Nichols
>
> ***Climate and Energy Program Director***
>
> ***(303) 437-7663***
> ***www.wildearthguardians.org/climate-energy***

From: Kuhn, Julia, NMENV
To: "Jeremy Nichols"
Subject: Proposed Air Quality Permit, 3 Bear Operating, Libby Gas Plant, Permit No. 7482M1
Date: Monday, February 3, 2020 1:22:00 PM

Dear Mr. Nichols,

The timeline for the permit has been extended and the new issuance date is 4/8/2020. Because there were revisions to the application, we've posted a second public notice to reflect the changes. I have not issue the permit yet, and the Department is working on a response to your comments submitted on 1/17/2020.

Please let me know if you have any additional questions.

Regards,

Please fill out our Industry/Consultant Feedback Questionnaire online.

If guidance or a determination is included in this email, it is intended to serve as general guidance and is in no way a formal statement of Department policy. New information or changes to regulations may result in a different determination or guidance.

Julia Kuhn
Permitting – Major Sources
New Mexico Environmental Department
Air Quality Bureau
525 Camino de los Marquez, Suite 1
Santa Fe, NM 87505
505-476-4376
Julia.Kuhn@state.nm.us
www.env.nm.gov

From: Jeremy Nichols <jnichols@wildearthguardians.org>
Sent: Monday, February 3, 2020 12:18 PM
To: Kuhn, Julia, NMENV <Julia.Kuhn@state.nm.us>
Subject: [EXT] Re: Proposed Air Quality Permit, 3 Bear Operating, Libby Gas Plant, Permit No. 7482M1

Dear Ms. Kuhn -

I wanted to see where things stand with this permitting process. On NMED's website, there is a "second" public notice posted for this proposed permit indicating that the Dept. intends to issue a permit on or before January 9, 2020. Has a permit been issued already? If so, how does NMED intend to address our comments? Thank you for any insight.

Jeremy

Climate and Energy Program Director

(303) 437-7663
[***www.wildearthguardians.org/climate-energy***](www.wildearthguardians.org/climate-energy)

On Fri, Jan 17, 2020 at 8:47 PM Jeremy Nichols <jnichols@wildearthguardians.org> wrote:

> Dear Ms. Kuhn:
>
> Attached, please find initial comments from WildEarth Guardians regarding the New Mexico Environment Department's proposal to issue the subject air quality permit. Please feel free to contact me if you have any questions or concerns. We look forward to engaging further in this permitting process. Thank you.
>
> Sincerely,
>
> Jeremy Nichols
>
> ***Climate and Energy Program Director***
>
> **(303) 437-7663**
> [***www.wildearthguardians.org/climate-energy***](www.wildearthguardians.org/climate-energy)

From:	Jeremy Nichols
To:	Kuhn, Julia, NMENV
Subject:	[EXT] Re: Proposed Air Quality Permit, 3 Bear Operating, Libby Gas Plant, Permit No. 7482M1
Date:	Monday, February 3, 2020 7:11:28 PM

Great, thanks so much for this update, Julia.

Jeremy

Climate and Energy Program Director

(303) 437-7663
www.wildearthguardians.org/climate-energy

On Mon, Feb 3, 2020 at 1:22 PM Kuhn, Julia, NMENV <Julia.Kuhn@state.nm.us> wrote:

> Dear Mr. Nichols,
>
> The timeline for the permit has been extended and the new issuance date is 4/8/2020. Because there were revisions to the application, we've posted a second public notice to reflect the changes. I have not issue the permit yet, and the Department is working on a response to your comments submitted on 1/17/2020.
>
> Please let me know if you have any additional questions.
>
> Regards,
>
> Please fill out our Industry/Consultant Feedback Questionnaire online.
>
> **If guidance or a determination is included in this email, it is intended to serve as general guidance and is in no way a formal statement of Department policy. New information or changes to regulations may result in a different determination or guidance.**

Julia Kuhn

Permitting – Major Sources

New Mexico Environmental Department

Air Quality Bureau

525 Camino de los Marquez, Suite 1

Santa Fe, NM 87505

505-476-4376

Julia.Kuhn@state.nm.us

www.env.nm.gov

From: Jeremy Nichols <jnichols@wildearthguardians.org>
Sent: Monday, February 3, 2020 12:18 PM
To: Kuhn, Julia, NMENV <Julia.Kuhn@state.nm.us>
Subject: [EXT] Re: Proposed Air Quality Permit, 3 Bear Operating, Libby Gas Plant, Permit No. 7482M1

Dear Ms. Kuhn -

I wanted to see where things stand with this permitting process. On NMED's website, there is a "second" public notice posted for this proposed permit indicating that the Dept. intends to issue a permit on or before January 9, 2020. Has a permit been issued already? If so, how does NMED intend to address our comments? Thank you for any insight.

Jeremy

Climate and Energy Program Director

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www.wildearthguardians.org/climate-energy

On Fri, Jan 17, 2020 at 8:47 PM Jeremy Nichols <jnichols@wildearthguardians.org> wrote:

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Sincerely,

Jeremy Nichols

Climate and Energy Program Director

(303) 437-7663
www.wildearthguardians.org/climate-energy

From:	Trent M. Wade
To:	Kuhn, Julia, NMENV
Cc:	"Liz Klein"; Stephanie Swanson; Lori K. Marquez
Subject:	[EXT] FW: Request for review of Draft Air Quality Permit #7482-M1, 3 Bear Delaware Operating – NM, LLC - 3 Bear Libby Gas Plant
Date:	Tuesday, February 25, 2020 10:39:25 AM
Attachments:	image001.png DRAFT NSR Permit (7482M1)_Comments.docx

Julia,

Please see our attached comments to the draft. Would you be able to jump on a call at 8:30 am tomorrow to discuss?

Thanks,

Trent M. Wade

Chemical Engineer
Denver, CO office:
cell: 970.381.0564
TWade@barr.com
www.barr.com

From:	Trent M. Wade
To:	Kuhn, Julia, NMENV
Cc:	"Liz Klein"; Stephanie Swanson; Lori K. Marquez
Subject:	[EXT] RE: FW: Request for review of Draft Air Quality Permit #7482-M1, 3 Bear Delaware Operating – NM, LLC - 3 Bear Libby Gas Plant
Date:	Tuesday, February 25, 2020 12:22:16 PM
Attachments:	image001.png DRAFT - DBS (7482M1) Comments.rtf DRAFT - SOB (7482M1) Comments.rtf

---

Julia,

Sorry, we didn't see the DBS and SOB. Please see the comments for DBS and SOB. If Melinda can join tomorrow that would be great.

Thanks,

Trent M. Wade

Chemical Engineer
Denver, CO office:
cell: 970.381.0564
TWade@barr.com
www.barr.com

resourceful. naturally. BARR

From: Kuhn, Julia, NMENV <Julia.Kuhn@state.nm.us>
Sent: Tuesday, February 25, 2020 10:49 AM
To: Trent M. Wade <TWade@barr.com>
Cc: 'Liz Klein' <lklein@3bearllc.com>; Stephanie Swanson <stephanie@3bearllc.com>; Lori K. Marquez <LMarquez@barr.com>
Subject: RE: FW: Request for review of Draft Air Quality Permit #7482-M1, 3 Bear Delaware Operating – NM, LLC - 3 Bear Libby Gas Plant

Trent,

Thank you for your comments. Do you not have any comments on SOB and DBS documents?

Yes, I will be able to talk to you tomorrow at 8:30am. Do you want Melinda to participate as well?

Regards,

JK

From: Trent M. Wade <TWade@barr.com>
Sent: Tuesday, February 25, 2020 10:40 AM
To: Kuhn, Julia, NMENV <Julia.Kuhn@state.nm.us>
Cc: 'Liz Klein' <lklein@3bearllc.com>; Stephanie Swanson <stephanie@3bearllc.com>; Lori K. Marquez <LMarquez@barr.com>
Subject: [EXT] FW: Request for review of Draft Air Quality Permit #7482-M1, 3 Bear Delaware Operating – NM, LLC - 3 Bear Libby Gas Plant

Julia,

Please see our attached comments to the draft. Would you be able to jump on a call at 8:30 am tomorrow to discuss?

Thanks,

Trent M. Wade

Chemical Engineer
Denver, CO office:
cell: 970.381.0564
TWade@barr.com
www.barr.com

From: Trent M. Wade
To: Kuhn, Julia, NMENV
Cc: Lori K. Marquez
Subject: [EXT] RE: FW: Request for review of Draft Air Quality Permit #7482-M1, 3 Bear Delaware Operating - NM, LLC - 3 Bear Libby Gas Plant
Date: Tuesday, March 3, 2020 12:18:56 PM
Attachments: image001.png

Julia,

Thank you for the explanation on my comments. The changes look great. We spoke with 3Bear about the permit language for the flare, and we decided to leave the flare language as is and not update it.

Thank you!

Trent M. Wade

Chemical Engineer
Denver, CO office:
cell: 970.381.0564
TWade@barr.com
www.barr.com

resourceful. naturally. BARR

From: Kuhn, Julia, NMENV <Julia.Kuhn@state.nm.us>
Sent: Monday, March 2, 2020 12:22 PM
To: Trent M. Wade <TWade@barr.com>
Cc: Lori K. Marquez <LMarquez@barr.com>
Subject: RE: FW: Request for review of Draft Air Quality Permit #7482-M1, 3 Bear Delaware Operating - NM, LLC - 3 Bear Libby Gas Plant

Hi Trent,

Please see response to your comments in the attachments. Also, please refer to pages A13 and A28 since I’ve added additional comments. Thank you.

Julia Kuhn

From: Trent M. Wade <TWade@barr.com>
Sent: Monday, March 2, 2020 11:15 AM
To: Kuhn, Julia, NMENV <Julia.Kuhn@state.nm.us>

Cc: Lori K. Marquez <LMarquez@barr.com>
Subject: [EXT] RE: FW: Request for review of Draft Air Quality Permit #7482-M1, 3 Bear Delaware Operating - NM, LLC - 3 Bear Libby Gas Plant

Julia,

Please see my comments on the DBS and draft permit. I do not have any comments on the SOB. Do we owe you anything else?

Thanks,

Trent M. Wade

Chemical Engineer
Denver, CO office:
cell: 970.381.0564
TWade@barr.com
www.barr.com

From: Kuhn, Julia, NMENV <Julia.Kuhn@state.nm.us>
Sent: Wednesday, February 26, 2020 2:13 PM
To: Trent M. Wade <TWade@barr.com>
Cc: Lori K. Marquez <LMarquez@barr.com>
Subject: RE: FW: Request for review of Draft Air Quality Permit #7482-M1, 3 Bear Delaware Operating – NM, LLC - 3 Bear Libby Gas Plant

Hi Trent,

I made most of the requested changes to the attached documents. In regards to table 106.A, emissions for equipment with control devices must have the numbers associated with the pollutant being controlled. I've highlighted any changes we didn't discussed earlier. Let me know if you have any additional questions.

Thank you,

Julia Kuhn

From: Trent M. Wade <TWade@barr.com>
Sent: Tuesday, February 25, 2020 12:22 PM
To: Kuhn, Julia, NMENV <Julia.Kuhn@state.nm.us>

Cc: 'Liz Klein' <lklein@3bearllc.com>; Stephanie Swanson <stephanie@3bearllc.com>; Lori K. Marquez <LMarquez@barr.com>
Subject: [EXT] RE: FW: Request for review of Draft Air Quality Permit #7482-M1, 3 Bear Delaware Operating – NM, LLC - 3 Bear Libby Gas Plant

Julia,

Sorry, we didn't see the DBS and SOB. Please see the comments for DBS and SOB. If Melinda can join tomorrow that would be great.

Thanks,

Trent M. Wade

Chemical Engineer
Denver, CO office:
cell: 970.381.0564
TWade@barr.com
www.barr.com

From: Kuhn, Julia, NMENV <Julia.Kuhn@state.nm.us>
Sent: Tuesday, February 25, 2020 10:49 AM
To: Trent M. Wade <TWade@barr.com>
Cc: 'Liz Klein' <lklein@3bearllc.com>; Stephanie Swanson <stephanie@3bearllc.com>; Lori K. Marquez <LMarquez@barr.com>
Subject: RE: FW: Request for review of Draft Air Quality Permit #7482-M1, 3 Bear Delaware Operating – NM, LLC - 3 Bear Libby Gas Plant

Trent,

Thank you for your comments. Do you not have any comments on SOB and DBS documents?

Yes, I will be able to talk to you tomorrow at 8:30am. Do you want Melinda to participate as well?

Regards,

JK

From: Trent M. Wade <TWade@barr.com>

Sent: Tuesday, February 25, 2020 10:40 AM
To: Kuhn, Julia, NMENV <Julia.Kuhn@state.nm.us>
Cc: 'Liz Klein' <lklein@3bearllc.com>; Stephanie Swanson <stephanie@3bearllc.com>; Lori K. Marquez <LMarquez@barr.com>
Subject: [EXT] FW: Request for review of Draft Air Quality Permit #7482-M1, 3 Bear Delaware Operating – NM, LLC - 3 Bear Libby Gas Plant

Julia,

Please see our attached comments to the draft. Would you be able to jump on a call at 8:30 am tomorrow to discuss?

Thanks,

Trent M. Wade

Chemical Engineer
Denver, CO office:
cell: 970.381.0564
TWade@barr.com
www.barr.com

From:	Kuhn, Julia, NMENV
To:	"Jeremy Nichols"
Subject:	Air Quality Permit No. 7482-M1 (IDEA ID No. 38067 - PRN20190001) - 3 Bear Delaware Operating - NM LLC – 3 Bear Libby Gas Plant
Date:	Thursday, April 9, 2020 2:27:00 PM
Attachments:	FinalCitizenLetr (7482M1).pdf

Dear Mr. Nichols,

Please find the attached letter is in response to WildEarth Guardian's comments on the air quality permit application for the 3 Bear Libby Gas Plant dated September 6, 2019 and received by the Air Quality Bureau on September 13, 2019.

Regards,

Please fill out our Industry/Consultant Feedback Questionnaire online.

If guidance or a determination is included in this email, it is intended to serve as general guidance and is in no way a formal statement of Department policy. New information or changes to regulations may result in a different determination or guidance.

Julia Kuhn
Permitting – Major Sources
New Mexico Environmental Department
Air Quality Bureau
525 Camino de los Marquez, Suite 1
Santa Fe, NM 87505
505-476-4376
Julia.Kuhn@state.nm.us
www.env.nm.gov

From:	Owens, Melinda, NMENV
To:	Lori K. Marquez; stephanie@3bearllc.com
Cc:	Trent M. Wade; "lklein@3bearllc.com"; "Scott Baber"
Subject:	RE: FINAL NSR Permit From the State of New Mexico - 7482M1, 3 Bear Delaware Operating - NM LLC - 3 Bear Libby Gas Plant
Date:	Friday, April 10, 2020 10:30:00 AM
Attachments:	image001.png

Lori,

Many thanks to you and Trent for your help and for 3 Bear Delaware's patience during this process.

Please note that the Air Quality Bureau has added a document under the 3 Bear Libby Gas Plant – Permits with Public Interest, web-site address:

https://www.env.nm.gov/air-quality/permit-applications-with-public-interest-public-meeting-or-public-hearing/

Please view the last document concerning ozone. It is called: How Ozone Trends at New Mexico's Ozone Monitoring Stations are Being Addressed

Also, we have added the following to our web-site:
https://www.env.nm.gov/air-quality/ozone/

Thanks, again.
Melinda

From: Lori K. Marquez <LMarquez@barr.com>
Sent: Friday, April 10, 2020 10:17 AM
To: Owens, Melinda, NMENV <Melinda.Owens@state.nm.us>; stephanie@3bearllc.com
Cc: Trent M. Wade <TWade@barr.com>; 'lklein@3bearllc.com' <lklein@3bearllc.com>; 'Scott Baber' <scott@baberenvironmental.com>
Subject: [EXT] RE: FINAL NSR Permit From the State of New Mexico - 7482M1, 3 Bear Delaware Operating - NM LLC - 3 Bear Libby Gas Plant

Melinda,
Thank you so much for all your help on this! We greatly appreciate your efforts.

Hope you are well, stay safe!!

Lori K. Marquez

Senior Air Quality Consultant
Denver, CO office:
cell: 303.503.4735
LMarquez@barr.com
www.barr.com

resourceful. naturally. BARR

From: Owens, Melinda, NMENV <Melinda.Owens@state.nm.us>
Sent: Friday, April 10, 2020 9:05 AM
To: stephanie@3bearllc.com
Cc: Lori K. Marquez <LMarquez@barr.com>; Trent M. Wade <TWade@barr.com>
Subject: FINAL NSR Permit From the State of New Mexico - 7482M1, 3 Bear Delaware Operating - NM LLC - 3 Bear Libby Gas Plant

Dear Ms. Swanson:

Please find attached the Final Air Quality Construction Permit (**Significant Revision**) for **7482M1, 3 Bear Delaware Operating - NM LLC – 3 Bear Libby Gas Plant,** issued **April 8, 2020**. Also attached for your information are the statement of basis and database summary.

Thank you,

Melinda Owens | TV Program Manager
NMED - Air Quality Bureau
525 Camino de los Marquez, Suite 1
Santa Fe, New Mexico 87505
Direct: 505.476.4341 | Fax: 505.476.4375 | AQB Main Line: 505.476.4300
Melinda.Owens@state.nm.us | https://www.env.nm.gov/aqb/

From:	Jeremy Nichols
To:	Kuhn, Julia, NMENV
Subject:	[EXT] Re: Air Quality Permit No. 7482-M1 (IDEA ID No. 38067 - PRN20190001) - 3 Bear Delaware Operating - NM LLC – 3 Bear Libby Gas Plant
Date:	Monday, May 4, 2020 4:14:12 PM

Hi Julia -

I wanted to see if I could get a copy of the final permit and statement of basis for the 3 Bear Libby modification (Permit No. 7482-M1), the April 8, 2020 letter indicates it should be on NMED's website, but I can't find it. Thank you very much.

Jeremy NIchols

Climate and Energy Program Director
(303) 437-7663
www.wildearthguardians.org/climate-energy

On Thu, Apr 9, 2020 at 2:28 PM Kuhn, Julia, NMENV <Julia.Kuhn@state.nm.us> wrote:

> Dear Mr. Nichols,
>
> Please find the attached letter is in response to WildEarth Guardian's comments on the air quality permit application for the 3 Bear Libby Gas Plant dated September 6, 2019 and received by the Air Quality Bureau on September 13, 2019.
>
> Regards,
>
> Please fill out our Industry/Consultant Feedback Questionnaire online.
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>
> Julia Kuhn
>
> Permitting – Major Sources

New Mexico Environmental Department

Air Quality Bureau

525 Camino de los Marquez, Suite 1

Santa Fe, NM 87505

505-476-4376

Julia.Kuhn@state.nm.us

www.env.nm.gov

From:	Kuhn, Julia, NMENV
To:	"Jeremy Nichols"
Subject:	RE: [EXT] Re: Air Quality Permit No. 7482-M1 (IDEA ID No. 38067 - PRN20190001) - 3 Bear Delaware Operating - NM LLC – 3 Bear Libby Gas Plant
Date:	Tuesday, May 5, 2020 7:46:00 AM

Good morning,

I made a request to post the final version of the documents in the NMED website. Thank you for letting me know. This is usually done within a few hours. It will definitely be posted by the end of the day.

Regards,

Please fill out our Industry/Consultant Feedback Questionnaire online.

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Julia Kuhn
Permitting – Major Sources
New Mexico Environmental Department
Air Quality Bureau
525 Camino de los Marquez, Suite 1
Santa Fe, NM 87505
505-476-4376
Julia.Kuhn@state.nm.us
www.env.nm.gov

From: Jeremy Nichols <jnichols@wildearthguardians.org>
Sent: Monday, May 4, 2020 4:14 PM
To: Kuhn, Julia, NMENV <Julia.Kuhn@state.nm.us>
Subject: [EXT] Re: Air Quality Permit No. 7482-M1 (IDEA ID No. 38067 - PRN20190001) - 3 Bear Delaware Operating - NM LLC – 3 Bear Libby Gas Plant

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Jeremy NIchols

Climate and Energy Program Director
[(303) 437-7663]
[www.wildearthguardians.org/climate-energy]

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>
> Julia Kuhn
> Permitting – Major Sources
> New Mexico Environmental Department
> Air Quality Bureau
> 525 Camino de los Marquez, Suite 1
> Santa Fe, NM 87505
> 505-476-4376
> Julia.Kuhn@state.nm.us
> www.env.nm.gov

Summary of Uncontrolled Air Emission Units

Unit	Unit		Potential Emissions Uncontrolled + No Product Recovered																	
			NOx		CO		VOC		SO2		PM		PM10		PM2.5		H2S		HAPs	
Name	Description	Qty	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy
ENG*	Worst-Case Composite Engine Emissions	N/A	3.04	13.33	7.39	32.39	3.47	15.19	0.03	0.14	0.11	0.50	0.11	0.50	0.11	0.50	--	--	1.52	6.65
ENG 3-4	Inlet Compression	2	6.09	26.66	14.79	64.77	6.94	30.39	0.06	0.28	0.23	1.00	0.23	1.00	0.23	1.00	--	--	3.03	13.29
ENG 5-8	Residue Compression	4	12.17	53.31	29.58	129.55	13.88	60.78	0.13	0.56	0.46	1.99	0.46	1.99	0.46	1.99	--	--	6.07	26.58
ENG-9	Generator Engine	1	0.82	3.61	1.65	7.22	0.67	2.92	0.01	0.05	0.09	0.38	0.09	0.38	0.09	0.38	--	--	0.12	0.55
TK-1	Gunbarrel Tank	1	--	--	--	--	22.64	99.18	--	--	--	--	--	--	--	--	--	--	1.43	6.25
TK 2-5	Stabilized Condensate Tank	4	--	--	--	--	7.98	34.95	--	--	--	--	--	--	--	--	--	--	0.50	2.20
TK-6	Slop Oil Tank	1	--	--	--	--	0.85	3.72	--	--	--	--	--	--	--	--	--	--	0.05	0.23
PWTK-1	Produced Water Tank	1	--	--	--	--	0.00	0.00	--	--	--	--	--	--	--	--	--	--	0.00	0.00
HTR-1	Hot Oil Heater	1	1.69	7.40	2.84	12.43	0.19	0.81	0.10	0.42	0.26	1.12	0.26	1.12	0.26	1.12	--	--	0.06	0.28
HTR-2	Regen Gas Heater	1	0.74	3.26	0.62	2.73	0.04	0.18	0.02	0.09	0.06	0.25	0.06	0.25	0.06	0.25	--	--	0.01	0.06
CONDLOAD-1	Condensate Loadout	1	--	--	--	--	99.91	27.35	--	--	--	--	--	--	--	--	--	--	6.29	1.72
OILLOAD-1	Oil Loadout	1	--	--	--	--	99.91	0.19	--	--	--	--	--	--	--	--	--	--	6.29	0.01
FUG-1	Fugitives - OOOOa	N/A	--	--	--	--	11.30	51.24	--	--	--	--	--	--	--	--	0.00	0.00	0.10	0.47
FUG-2	Fugitives - Residue	N/A	--	--	--	--	0.01	0.06	--	--	--	--	--	--	--	--	0.00	0.00	0.00	0.00
AMINE-1	Amine Unit	1	--	--	--	--	41.44	181.50	--	--	--	--	--	--	--	--	--	--	0.29	1.25
COMP	Compressor Blowdowns	8	--	--	--	--	2.27	9.95	--	--	--	--	--	--	--	--	--	--	0.02	0.09
PLANT BD	Gas Plant Blowdown	1	--	--	--	--	32,803.52	16.40	--	--	--	--	--	--	--	--	--	--	302.73	0.15
TO-1	Thermal Oxidizer	1	1.18	5.15	0.99	4.33	4.26	18.64	--	--	--	--	--	--	--	--	--	--	0.04	0.17
FL-1	Upset/Maintenance Flare	1	0.03	0.15	0.16	0.68	0.44	1.94	--	--	--	--	--	--	--	--	--	--	0.00	0.00
FL-2	Tank Flare	1	0.01	0.03	0.03	0.14	0.09	0.39	--	--	--	--	--	--	--	--	--	--	0.00	0.00
HR-1	Road Dust	N/A	--	--	--	--	--	--	--	--	12.49	0.23	3.18	0.06	0.32	0.01	--	--	--	--
MAIN-1	Maintenance Activities	N/A	--	--	--	--	--	10.00	--	--	--	--	--	--	--	--	--	--	--	--
UP/MAL-1	Upsets/Malfunctions	N/A	--	--	--	--	--	10.00	--	--	--	--	--	--	--	--	--	--	--	--
	Facility-Wide Total Emissions		25.78	112.89	58.05	254.24	33119.80	575.79	0.35	1.53	13.68	5.47	4.38	5.30	1.51	5.24	0.00	0.00	328.57	59.96

Summary of Controlled Air Emission Units

Unit	Unit		Potential Emissions Controlled + Product Recovery																		
			NOx		CO		VOC		SO2		PM		PM10		PM2.5		H2S		HAPs		
Name	Description	Qty	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	CO2e
ENG*	Worst-Case Composite Engine Emissions	N/A	3.04	13.33	3.04	13.33	2.40	10.50	0.03	0.14	0.11	0.50	0.11	0.50	0.11	0.50	--	--	0.45	1.96	5,843
ENG 3-4	Inlet Compression	2	6.09	26.66	4.75	20.79	4.80	21.00	0.06	0.28	0.23	1.00	0.23	1.00	0.23	1.00	--	--	0.89	3.91	11,687
ENG 5-8	Residue Compression	4	12.17	53.31	9.49	41.58	9.59	42.01	0.13	0.56	0.46	1.99	0.46	1.99	0.46	1.99	--	--	1.79	7.82	23,374
ENG-9	Generator Engine	1	0.82	3.61	1.65	7.22	0.67	2.92	0.01	0.05	0.09	0.38	0.09	0.38	0.09	0.38	--	--	0.12	0.55	2,264
TK-1	Gunbarrel Tank	1	--	--	--	--	1.13	4.96	--	--	--	--	--	--	--	--	--	--	0.07	0.31	7
TK 2-5	Stabilized Condensate Tank	4	--	--	--	--	0.40	1.75	--	--	--	--	--	--	--	--	--	--	0.03	0.11	20
TK-6	Slop Oil Tank	1	--	--	--	--	0.04	0.19	--	--	--	--	--	--	--	--	--	--	0.00	0.01	2
PWTK-1	Produced Water Tank	1	--	--	--	--	0.00	0.00	--	--	--	--	--	--	--	--	--	--	0.00	0.00	0
HTR-1	Hot Oil Heater	1	1.69	7.40	2.84	12.43	0.19	0.81	0.10	0.42	0.26	1.12	0.26	1.12	0.26	1.12	--	--	0.06	0.28	25,644
HTR-2	Regen Gas Heater	1	0.74	3.26	0.62	2.73	0.04	0.18	0.02	0.09	0.06	0.25	0.06	0.25	0.06	0.25	--	--	0.01	0.06	5,642
CONDLOAD-1	Condensate Loadout	1	--	--	--	--	33.47	9.16	--	--	--	--	--	--	--	--	--	--	2.11	0.58	23
OILLOAD-1	Oil Loadout	1	--	--	--	--	33.47	0.06	--	--	--	--	--	--	--	--	--	--	2.11	0.00	0
FUG-1	Fugitives - OOOOa	N/A	--	--	--	--	3.37	14.97	--	--	--	--	--	--	--	--	0.00	0.00	0.03	0.14	20815
FUG-2	Fugitives - Residue	N/A	--	--	--	--	0.01	0.06	--	--	--	--	--	--	--	--	0.00	0.00	0.00	0.00	0
AMINE-1	Amine Unit	1	--	--	--	--	2.91	4.09	--	--	--	--	--	--	--	--	--	--	0.01	0.03	65,846
COMP	Compressor Blowdowns	3	--	--	--	--	0.11	0.50	--	--	--	--	--	--	--	--	--	--	0.00	0.00	35
PLANT BD	Gas Plant Blowdown	1	--	--	--	--	1,640.18	0.82	--	--	--	--	--	--	--	--	--	--	15.14	0.01	21
TO-1	Thermal Oxidizer	1	1.63	7.15	1.37	6.01	4.26	18.64	64.45	235.24	0.00	0.00	0.00	0.00	0.00	0.00	--	--	0.04	0.17	8,539
FL-1	Upset/Maintenance Flare	1	170.49	26.44	777.23	120.53	93.36	16.00	6.30	1.34	5.75	0.88	5.75	0.88	5.75	0.88	--	--	0.00	0.00	75,763
FL-2	Tank Flare	1	0.89	3.91	4.07	17.82	0.09	0.39	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.01	--	--	0.00	0.00	6,730
HR-1	Road Dust	N/A	--	--	--	--	--	--	--	--	12.49	0.23	3.18	0.06	0.32	0.01	--	--	--	--	--
MAIN-1	Maintenance Activities	N/A	--	--	--	--	--	10.00	--	--	--	--	--	--	--	--	--	--	--	--	250
UP/MAL-1	Upsets/Malfunctions	N/A	--	--	--	--	--	10.00	--	--	--	--	--	--	--	--	--	--	--	--	250
	Facility-Wide Total Emissions		197.57	145.06	805.07	242.44	1,830.48	169.02	71.10	238.11	19.44	6.35	10.13	6.18	7.27	6.13	0.00	0.00	22.86	15.94	252,758

* - Composite emissions represent worse case engine emissions

Summary of Uncontrolled HAP Emissions

Unit Name	Unit Description	Qty	Formaldehyde lb/hr	Formaldehyde tpy	Acetaldehyde lb/hr	Acetaldehyde tpy	Acrolein lb/hr	Acrolein tpy	Benzene lb/hr	Benzene tpy	Toluene lb/hr	Toluene tpy	Ethylbenzene lb/hr	Ethylbenzene tpy	Xylenes lb/hr	Xylenes tpy	n-Hexane lb/hr	n-Hexane tpy	2,2,4-TMP lb/hr	2,2,4-TMP tpy
			Potential Emissions Uncontrolled + No Product Recovered																	
ENG*	Worst-Case Composite Engine Emissions	N/A	1.34	5.86	0.10	0.42	0.06	0.26	0.01	0.02	0.00	0.02	0.00	0.00	0.00	0.01	0.01	0.06	--	--
ENG 3-4	Inlet Compression	2	2.68	11.73	0.19	0.83	0.12	0.51	0.01	0.04	0.01	0.04	0.00	0.00	0.00	0.02	0.03	0.11	--	--
ENG 5-8	Residue Compression	4	5.35	23.45	0.38	1.67	0.23	1.03	0.02	0.09	0.02	0.08	0.00	0.01	0.01	0.04	0.05	0.22	--	--
ENG-9	Generator Engine	1	0.09	0.40	0.01	0.05	0.01	0.05	0.01	0.03	0.00	0.01	0.00	0.00	0.00	0.00	N/A	N/A	--	--
TK-1	Gunbarrel Tank	1	--	--	--	--	--	--	0.23	0.99	0.23	0.99	0.02	0.10	0.02	0.10	0.91	3.97	0.02	0.10
TK 2-5	Stabilized Condensate Tank	4	--	--	--	--	--	--	0.08	0.35	0.08	0.35	0.01	0.03	0.01	0.03	0.32	1.40	0.01	0.03
TK-6	Slop Oil Tank	1	--	--	--	--	--	--	0.01	0.04	0.01	0.04	0.00	0.00	0.00	0.00	0.03	0.15	0.00	0.00
PWTK-1	Produced Water Tank	1	--	--	--	--	--	--	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
HTR-1	Hot Oil Heater	1	0.00	0.01	--	--	--	--	0.00	0.00	0.00	0.00	--	--	--	--	0.06	0.27	--	--
HTR-2	Regen Gas Heater	1	0.00	0.00	--	--	--	--	0.00	0.00	0.00	0.00	--	--	--	--	0.01	0.06	--	--
CONDLOAD-1	Condensate Loadout	1	--	--	--	--	--	--	1.00	0.27	1.00	0.27	0.10	0.03	0.10	0.03	4.00	1.09	0.10	0.03
OILLOAD-1	Oil Loadout	1	--	--	--	--	--	--	1.00	0.00	1.00	0.00	0.10	0.00	0.10	0.00	4.00	0.01	0.10	0.00
FUG-1	Fugitives - OOOOa	N/A	--	--	--	--	--	--	0.04	0.16	0.01	0.02	0.00	0.00	0.00	0.00	0.06	0.28	0.00	0.00
FUG-2	Fugitives - Residue	N/A	--	--	--	--	--	--	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AMINE-1	Amine Unit	1	--	--	--	--	--	--	0.03	0.15	0.03	0.15	0.00	0.01	0.01	0.04	0.17	0.73	0.04	0.17
COMP	Compressor Blowdowns	3	--	--	--	--	--	--	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.00
PLANT BD	Gas Plant Blowdown	1	--	--	--	--	--	--	105.62	0.05	15.19	0.01	0.00	0.00	0.00	0.00	181.91	0.09	0.00	0.00
TO-1	Thermal Oxidizer	1	--	--	--	--	--	--	0.01	0.06	0.00	0.01	0.00	0.00	0.00	0.00	0.02	0.10	0.00	0.00
FL-1	Upset/Maintenance Flare	1	--	--	--	--	--	--	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00
FL-2	Tank Flare	1	--	--	--	--	--	--	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
HR-1	Road Dust	N/A	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MAIN-1	Maintenance Activities	N/A	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
UP/MAL-1	Upsets/Malfunctions	N/A	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	Facility-Wide Total HAP Emissions		9.46	41.45	0.68	2.97	0.42	1.85	108.07	2.28	17.58	2.00	0.24	0.19	0.26	0.28	191.58	8.56	0.27	0.34

Summary of Controlled HAP Emissions

Unit Name	Unit Description	Qty	Formaldehyde lb/hr	Formaldehyde tpy	Acetaldehyde lb/hr	Acetaldehyde tpy	Acrolein lb/hr	Acrolein tpy	Benzene lb/hr	Benzene tpy	Toluene lb/hr	Toluene tpy	Ethylbenzene lb/hr	Ethylbenzene tpy	Xylenes lb/hr	Xylenes tpy	n-Hexane lb/hr	n-Hexane tpy	2,2,4-TMP lb/hr	2,2,4-TMP tpy
			Potential Emissions Controlled + Product Recovery																	
ENG*	Worst-Case Composite Engine Emissions	N/A	0.32	1.40	0.10	0.42	0.06	0.26	0.01	0.02	0.00	0.02	0.00	0.00	0.00	0.01	0.01	0.06	--	--
ENG 3-4	Inlet Compression	2	0.54	2.35	0.19	0.83	0.12	0.51	0.01	0.04	0.01	0.04	0.00	0.00	0.00	0.02	0.03	0.11	--	--
ENG 5-8	Residue Compression	4	1.07	4.69	0.38	1.67	0.23	1.03	0.02	0.09	0.02	0.08	0.00	0.01	0.01	0.04	0.05	0.22	--	--
ENG-9	Generator Engine	1	0.09	0.40	0.01	0.05	0.01	0.05	0.01	0.03	0.00	0.01	0.00	0.00	0.00	0.00	N/A	N/A	--	--
TK-1	Gunbarrel Tank	1	--	--	--	--	--	--	0.01	0.05	0.01	0.05	0.00	0.00	0.00	0.00	0.05	0.20	0.00	0.00
TK 2-5	Stabilized Condensate Tank	4	--	--	--	--	--	--	0.00	0.02	0.00	0.02	0.00	0.00	0.00	0.00	0.02	0.07	0.00	0.00
TK-6	Slop Oil Tank	1	--	--	--	--	--	--	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00
PWTK-1	Produced Water Tank	1	--	--	--	--	--	--	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
HTR-1	Hot Oil Heater	1	0.00	0.01	--	--	--	--	0.00	0.00	0.00	0.00	--	--	--	--	0.06	0.27	--	--
HTR-2	Regen Gas Heater	1	0.00	0.00	--	--	--	--	0.00	0.00	0.00	0.00	--	--	--	--	0.01	0.06	--	--
CONDLOAD-1	Condensate Loadout	1	--	--	--	--	--	--	0.33	0.09	0.33	0.09	0.03	0.01	0.03	0.01	1.34	0.37	0.03	0.01
OILLOAD-1	Oil Loadout	1	--	--	--	--	--	--	0.33	0.00	0.33	0.00	0.03	0.00	0.03	0.00	1.34	0.00	0.03	0.00
FUG-1	Fugitives - OOOOa	N/A	--	--	--	--	--	--	0.01	0.05	0.00	0.01	0.00	0.00	0.00	0.00	0.02	0.08	0.00	0.00
FUG-2	Fugitives - Residue	N/A	--	--	--	--	--	--	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AMINE-1	Amine Unit	1	--	--	--	--	--	--	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.00
COMP	Compressor Blowdowns	3	--	--	--	--	--	--	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PLANT BD	Gas Plant Blowdown	1	--	--	--	--	--	--	5.28	0.00	0.76	0.00	0.00	0.00	0.00	0.00	9.10	0.00	0.00	0.00
TO-1	Thermal Oxidizer	1	--	--	--	--	--	--	0.01	0.06	0.00	0.01	0.00	0.00	0.00	0.00	0.02	0.10	0.00	0.00
FL-1	Upset/Maintenance Flare	1	--	--	--	--	--	--	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
FL-2	Tank Flare	1	--	--	--	--	--	--	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
HR-1	Road Dust	N/A	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MAIN-1	Maintenance Activities	N/A	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
UP/MAL-1	Upsets/Malfunctions	N/A	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	Facility-Wide Total HAP Emissions		2.02	8.85	0.68	2.97	0.42	1.85	6.03	0.46	1.48	0.33	0.07	0.03	0.08	0.09	12.04	1.56	0.07	0.02

* - Composite emissions represent worse case engine emissions

Summary of Compressor Engine Air Emission Units

				Potential Emissions Uncontrolled + No Product Recovered									
				NOx		CO		VOC		SO2		PM10	
Option Number	**Unit Name**	**Make & Model**	**Qty**	**lb/hr**	**tpy**	**lb/hr**	**tpy**	**lb/hr**	**tpy**	**lb/hr**	**tpy**	**lb/hr**	**tpy**
1	ENG-1	Caterpillar G3508B		1.52	6.66	3.93	17.19	1.70	7.46	0.02	0.07	0.06	0.25
		Option 1 Total:	1	1.52	6.66	3.93	17.19	1.70	7.46	0.02	0.07	0.06	0.25
2	ENG-2	Caterpillar G3516		3.04	13.33	7.39	32.39	3.47	15.19	0.03174	0.13902	0.11	0.50
		Option 2 Total:	1	3.04	13.33	7.39	32.39	3.47	15.19	0.03	0.14	0.11	0.50
		Worst-Case Composite Engine Emissions		3.04	13.33	7.39	32.39	3.47	15.19	0.03	0.14	0.11	0.50

				Potential Emissions Controlled + Product Recovery										
				NOx		CO		VOC		SO2		PM10		CO2e
Option Number	**Unit Name**	**Make & Model**	**Qty**	**lb/hr**	**tpy**	**lb/hr**	**tpy**	**lb/hr**	**tpy**	**lb/hr**	**tpy**	**lb/hr**	**tpy**	**tpy**
1	ENG-1	Caterpillar G3508B		1.52	6.66	3.04	13.33	1.38	6.06	0.02	0.07	0.06	0.25	2903
		Option 1 Total:	1	1.52	6.66	3.04	13.33	1.38	6.06	0.02	0.07	0.06	0.25	2903
2	ENG-2	Caterpillar G3516		3.04	13.33	2.37	10.40	2.40	10.50	0.03	0.14	0.11	0.50	5843
		Option 2 Total:	1	3.04	13.33	2.37	10.40	2.40	10.50	0.03	0.14	0.11	0.50	5843
		Worst-Case Composite Engine Emissions		3.04	13.33	3.04	13.33	2.40	10.50	0.03	0.14	0.11	0.50	5843

Engine Emission Detail Sheet

Item	Value
Source Name	ENG-1
Description	Compressor Engine
Engine Use	Inlet Compression
Quantity	1
Make	Caterpillar
Model	Caterpillar G3508B
Serial Number	TBD
Manufacture Date	After 7/1/2010
Fuel Type	Natural Gas
Engine Type	4SLB

Item	Value	Units	Source
Rated Horsepower	690	hp	Manufacturer
Heat Rate	5.66	MMBtu/hr	Calculated
Fuel Consumption	8203	Btu/hp-hr	Manufacturer
Fuel Use	3825	scf/hr	Calculated
Fuel Heat Value	1479.8	btu/scf	Gas Analysis
Emisson Controls	Catalyst/AFR		Manufacturer
Control Efficiency CH2O	50%		Manufacturer/Permit Condition
Control Efficiency NOx	0%		Manufacturer/JJJJ
Control Efficiency VOC	19%		Manufacturer/JJJJ
Control Efficiency CO	22%		Manufacturer/JJJJ
Engine Speed	1400	RPM	Manufacturer
Potential Operation	8760	hr/yr	
Sulfur Content	9,476	grains/MMscf	Gas Analysis with Margin
Sulfur Margin	400%	%	

Total Potential Emissions

Pollutant	Uncontrolled Emissions		Controlled Emissions	
	(lb/hr)	(tpy)	(lb/hr)	(tpy)
NOx	1.52	6.66	1.52	6.66
VOC (less formaldehyde)	1.07	4.66	1.07	4.66
Total VOC	1.70	7.46	1.38	6.06
CO	3.93	17.19	3.04	13.33
SO2	0.02	0.07	0.02	0.07
PM10	0.06	0.25	0.06	0.25
Formaldehyde	0.64	2.80	0.32	1.40
Acetaldehyde	0.05	0.21	0.05	0.21
Acrolein	0.03	0.13	0.03	0.13
Benzene	0.00	0.01	0.00	0.01
Toluene	0.00	0.01	0.00	0.01
Ethylbenzene	0.00	0.00	0.00	0.00
Xylene	0.00	0.00	0.00	0.00
n-Hexane	0.01	0.03	0.01	0.03
Total HAPs	0.73	3.19	0.41	1.79

Potential Emissions Per Engine

Pollutant	Uncontrolled Emissions				Controlled Emissions				Source of Emission Factor
	EF	Units	(lb/hr)	(tpy)	EF	Units	(lb/hr)	(tpy)	
NOx	1.00*	g/hp-hr	1.52	6.66	1.00	g/hp-hr	1.52	6.66	40 CFR 60 Subpart JJJJ
VOC (less formaldehyde)	0.70*	g/hp-hr	1.07	4.66	0.70	g/hp-hr	1.07	4.66	40 CFR 60 Subpart JJJJ
Total VOC***	1.12	g/hp-hr	1.70	7.46	0.91	g/hp-hr	1.38	6.06	40 CFR 60 Subpart JJJJ + CH2O
CO	2.58**	g/hp-hr	3.93	17.19	2.00	g/hp-hr	3.04	13.33	40 CFR 60 Subpart JJJJ
SO2****	2.79E-03	lb/mmBtu	0.02	0.07	2.79E-03	lb/mmBtu	0.02	0.07	EPA AP-42 Table 3.2-2
PM10*****	9.99E-03	lb/mmBtu	0.06	0.25	9.99E-03	lb/mmBtu	0.06	0.25	EPA AP-42 Table 3.2-2
Formaldehyde	0.42	g/hp-hr	0.64	2.80	0.21	g/hp-hr	0.32	1.40	Permit Condition
Acetaldehyde	8.36E-03	lb/mmBtu	0.05	0.21	8.36E-03	lb/mmBtu	0.05	0.21	EPA AP-42 Table 3.2-2
Acrolein	5.14E-03	lb/mmBtu	0.03	0.13	5.14E-03	lb/mmBtu	0.03	0.13	EPA AP-42 Table 3.2-2
Benzene	4.40E-04	lb/mmBtu	0.00	0.01	4.40E-04	lb/mmBtu	0.00	0.01	EPA AP-42 Table 3.2-2
Toluene	4.08E-04	lb/mmBtu	0.00	0.01	4.08E-04	lb/mmBtu	0.00	0.01	EPA AP-42 Table 3.2-2
Ethylbenzene	3.97E-05	lb/mmBtu	0.00	0.00	3.97E-05	lb/mmBtu	0.00	0.00	EPA AP-42 Table 3.2-2
Xylene	1.84E-04	lb/mmBtu	0.00	0.00	1.84E-04	lb/mmBtu	0.00	0.00	EPA AP-42 Table 3.2-2
n-Hexane	1.11E-03	lb/mmBtu	0.01	0.03	1.11E-03	lb/mmBtu	0.01	0.03	EPA AP-42 Table 3.2-2
Total HAPs			0.73	3.19			0.41	1.79	

* - Uncontrolled and controlled NOx and VOC emission factors based on 40 CFR 60 Subpart JJJJ standards as manufacturer emission factors are lower than JJJJ standards.
** - Uncontrolled and controlled emission factors for CO were taken from the Manufacturer technical data sheets and 40 CFR 60 Subpart JJJJ emission standards, respectively.
*** - Total VOC emissions were calculated to include formaldehyde.
**** - Sulfur emission factor from AP-42 Table 1.4-2 is ratio adjusted based on the max sulfur content when sulfur content is greater than 2,000 grains/MMscf.
***** - PM10 emissions include filterable and condensable particulates.

Sample Calculation for NOx
1.00 g/hp-hr * 690 hp / 453.59 g/lb * 8760 hr/yr / 2000 lb/ton = 6.66 tpy

Engine Emission Detail Sheet

Item	Value
Source Name	ENG-2
Description	Compressor Engine
Engine Use	Inlet Compression
Quantity	1
Make	Caterpillar
Model	Caterpillar G3516
Serial Number	TBD
Manufacture Date	After 7/1/2007
Fuel Type	Natural Gas
Engine Type	4SLB

Item	Value	Units	Source
Rated Horsepower	1380	hp	Manufacturer
Heat Rate	11.39	MMBtu/hr	Calculated
Fuel Consumption	8256	Btu/hp-hr	Manufacturer
Fuel Use	7699.20	scf/hr	Calculated
Fuel Heat Value	1479.8	btu/scf	Gas Analysis
Emisson Controls	Oxidation Catalyst		Manufacturer
Control Efficiency CH2O	80%		Manufacturer/Permit Condition
Control Efficiency NOx	0%		Manufacturer/JJJJ
Control Efficiency VOC	31%		Manufacturer/JJJJ
Control Efficiency CO	68%		Manufacturer/Permit Condition
Engine Speed	1400	RPM	Manufacturer
Potential Operation	8760	hr/yr	
Sulfur Content	9,476	grains/MMscf	Gas Analysis with Margin
Sulfur Margin	400%	%	

Total Potential Emissions

Pollutant	Uncontrolled Emissions		Controlled Emissions	
	(lb/hr)	(tpy)	(lb/hr)	(tpy)
NOx	3.04	13.33	3.04	13.33
VOC (less formaldehyde)	2.13	9.33	2.13	9.33
Total VOC	3.47	15.19	2.40	10.50
CO	7.39	32.39	2.37	10.40
SO2	0.03	0.14	0.03	0.14
PM10	0.11	0.50	0.11	0.50
Formaldehyde	1.34	5.86	0.27	1.17
Acetaldehyde	0.10	0.42	0.10	0.42
Acrolein	0.06	0.26	0.06	0.26
Benzene	0.01	0.02	0.01	0.02
Toluene	0.00	0.02	0.00	0.02
Ethylbenzene	0.00	0.00	0.00	0.00
Xylene	0.00	0.01	0.00	0.01
n-Hexane	0.01	0.06	0.01	0.06
Total HAPs	1.52	6.65	0.45	1.96

Potential Emissions Per Engine

Pollutant	Uncontrolled Emissions				Controlled Emissions				Source of Emission Factor
	EF	Units	(lb/hr)	(tpy)	EF	Units	(lb/hr)	(tpy)	
NOx	1.00*	g/hp-hr	3.04	13.33	1.00	g/hp-hr	3.04	13.33	40 CFR 60 Subpart JJJJ
VOC (less formaldehyde)	0.70*	g/hp-hr	2.13	9.33	0.70	g/hp-hr	2.13	9.33	40 CFR 60 Subpart JJJJ
Total VOC***	1.14	g/hp-hr	3.47	15.19	0.79	g/hp-hr	2.40	10.50	40 CFR 60 Subpart JJJJ + CH2O
CO	2.43**	g/hp-hr	7.39	32.39	0.78****	g/hp-hr	2.37	10.40	Permit Condition
SO2*****	2.79E-03	lb/mmBtu	0.03	0.14	2.79E-03	lb/mmBtu	0.03	0.14	EPA AP-42 Table 3.2-2
PM10******	9.99E-03	lb/mmBtu	0.11	0.50	9.99E-03	lb/mmBtu	0.11	0.50	EPA AP-42 Table 3.2-2
Formaldehyde	4.40E-01	g/hp-hr	1.34	5.86	8.80E-02	g/hp-hr	0.27	1.17	Permit Condition
Acetaldehyde	8.36E-03	lb/mmBtu	0.10	0.42	8.36E-03	lb/mmBtu	0.10	0.42	EPA AP-42 Table 3.2-2
Acrolein	5.14E-03	lb/mmBtu	0.06	0.26	5.14E-03	lb/mmBtu	0.06	0.26	EPA AP-42 Table 3.2-2
Benzene	4.40E-04	lb/mmBtu	0.01	0.02	4.40E-04	lb/mmBtu	0.01	0.02	EPA AP-42 Table 3.2-2
Toluene	4.08E-04	lb/mmBtu	0.00	0.02	4.08E-04	lb/mmBtu	0.00	0.02	EPA AP-42 Table 3.2-2
Ethylbenzene	3.97E-05	lb/mmBtu	0.00	0.00	3.97E-05	lb/mmBtu	0.00	0.00	EPA AP-42 Table 3.2-2
Xylene	1.84E-04	lb/mmBtu	0.00	0.01	1.84E-04	lb/mmBtu	0.00	0.01	EPA AP-42 Table 3.2-2
n-Hexane	1.11E-03	lb/mmBtu	0.01	0.06	1.11E-03	lb/mmBtu	0.01	0.06	EPA AP-42 Table 3.2-2
Total HAPs			1.52	6.65			0.45	1.96	

* - Uncontrolled and controlled emission factors for NOx and VOC are based on JJJJ standards as manufacturer uncontrolled emission factors are lower than JJJJ emission standards.
** - Uncontrolled emission factor for CO was taken from the Manufacturer technical data sheets. Controlled emission factor for CO is a permit condition requested in this application.
*** - Uncontrolled and controlled emission factor for Total VOC was calculated to include formaldehyde.
**** - Controlled CO emission factor is a permit condition requested in this application.
***** - Sulfur emission factor from AP-42 Table 1.4-2 is ratio adjusted based on the max sulfur content when sulfur content is greater than 2,000 grains/MMscf.
****** - PM10 emissions include filterable and condensable particulates.

Sample Calculation for NOx
1.00 g/hp-hr * 1380 hp / 453.59 g/lb * 8760 hr/yr / 2000 lb/ton = 13.33 tpy

Engine Emission Detail Sheet

Item	Value
Source Name	ENG 3-4
Description	Compressor Engine
Engine Use	Inlet Compression
Quantity	2
Make	Caterpillar
Model	Caterpillar G3516
Serial Number	TBD
Manufacture Date	After 7/1/2007
Fuel Type	Natural Gas
Engine Type	4SLB

Item	Value	Units	Source
Rated Horsepower	1380	hp	Manufacturer
Heat Rate	11.39	MMBtu/hr	Calculated
Fuel Consumption	8256	Btu/hp-hr	Manufacturer
Fuel Use	7699.20	scf/hr	Calculated
Fuel Heat Value	1479.8	btu/scf	Gas Analysis
Emisson Controls	Oxidation Catalyst		Manufacturer
Control Efficiency CH2O	80%		Manufacturer/Permit Condition
Control Efficiency NOx	0%		Manufacturer/JJJJ
Control Efficiency VOC	31%		Manufacturer/JJJJ
Control Efficiency CO	68%		Manufacturer/Permit Condition
Engine Speed	1400	RPM	Manufacturer
Potential Operation	8760	hr/yr	
Sulfur Content	9,476	grains/MMscf	Gas Analysis with Margin
Sulfur Margin	400%	%	

Total Potential Emissions

Pollutant	Uncontrolled Emissions		Controlled Emissions	
	(lb/hr)	(tpy)	(lb/hr)	(tpy)
NOx	6.09	26.66	6.09	26.66
VOC (less formaldehyde)	4.26	18.66	4.26	18.66
Total VOC	6.94	30.39	4.80	21.00
CO	14.79	64.77	4.75	20.79
SO2	0.06	0.28	0.06	0.28
PM10	0.23	1.00	0.23	1.00
Formaldehyde	2.68	11.73	0.54	2.35
Acetaldehyde	0.19	0.83	0.19	0.83
Acrolein	0.12	0.51	0.12	0.51
Benzene	0.01	0.04	0.01	0.04
Toluene	0.01	0.04	0.01	0.04
Ethylbenzene	0.00	0.00	0.00	0.00
Xylene	0.00	0.02	0.00	0.02
n-Hexane	0.03	0.11	0.03	0.11
Total HAPs	3.03	13.29	0.89	3.91

Potential Emissions Per Engine

Pollutant	Uncontrolled Emissions				Controlled Emissions				Source of Emission Factor
	EF	Units	(lb/hr)	(tpy)	EF	Units	(lb/hr)	(tpy)	
NOx	1.00*	g/hp-hr	3.04	13.33	1.00	g/hp-hr	3.04	13.33	40 CFR 60 Subpart JJJJ
VOC (less formaldehyde)	0.70*	g/hp-hr	2.13	9.33	0.70	g/hp-hr	2.13	9.33	40 CFR 60 Subpart JJJJ
Total VOC***	1.14	g/hp-hr	3.47	15.19	0.79	g/hp-hr	2.40	10.50	40 CFR 60 Subpart JJJJ + CH2O
CO	2.43**	g/hp-hr	7.39	32.39	0.78	g/hp-hr	2.37	10.40	Permit Condition
SO2*****	2.79E-03	lb/mmBtu	0.03	0.14	2.79E-03	lb/mmBtu	0.03	0.14	EPA AP-42 Table 3.2-2
PM10******	9.99E-03	lb/mmBtu	0.11	0.50	9.99E-03	lb/mmBtu	0.11	0.50	EPA AP-42 Table 3.2-2
Formaldehyde	4.40E-01	g/hp-hr	1.34	5.86	8.80E-02	g/hp-hr	0.27	1.17	Permit Condition
Acetaldehyde	8.36E-03	lb/mmBtu	0.10	0.42	8.36E-03	lb/mmBtu	0.10	0.42	EPA AP-42 Table 3.2-2
Acrolein	5.14E-03	lb/mmBtu	0.06	0.26	5.14E-03	lb/mmBtu	0.06	0.26	EPA AP-42 Table 3.2-2
Benzene	4.40E-04	lb/mmBtu	0.01	0.02	4.40E-04	lb/mmBtu	0.01	0.02	EPA AP-42 Table 3.2-2
Toluene	4.08E-04	lb/mmBtu	0.00	0.02	4.08E-04	lb/mmBtu	0.00	0.02	EPA AP-42 Table 3.2-2
Ethylbenzene	3.97E-05	lb/mmBtu	0.00	0.00	3.97E-05	lb/mmBtu	0.00	0.00	EPA AP-42 Table 3.2-2
Xylene	1.84E-04	lb/mmBtu	0.00	0.01	1.84E-04	lb/mmBtu	0.00	0.01	EPA AP-42 Table 3.2-2
n-Hexane	1.11E-03	lb/mmBtu	0.01	0.06	1.11E-03	lb/mmBtu	0.01	0.06	EPA AP-42 Table 3.2-2
Total HAPs			1.52	6.65			0.45	1.96	

* - Uncontrolled and controlled emission factors for NOx and VOC are based on JJJJ standards as manufacturer uncontrolled emission factors are lower than JJJJ emission standards.
** - Uncontrolled emission factor for CO was taken from the Manufacturer technical data sheets. Controlled emission factor for CO is a permit condition requested in this application.
*** - Uncontrolled and controlled emission factor for Total VOC was calculated to include formaldehyde.
**** - Controlled CO emission factor is a permit condition requested in this application.
***** - Sulfur emission factor from AP-42 Table 1.4-2 is ratio adjusted based on the max sulfur content when sulfur content is greater than 2,000 grains/MMscf.
****** - PM10 emissions include filterable and condensable particulates.

Sample Calculation for NOx

1.00 g/hp-hr * 1380 hp / 453.59 g/lb * 8760 hr/yr / 2000 lb/ton = 13.33 tpy

Engine Emission Detail Sheet

Item	Value
Source Name	ENG 5-8
Description	Compressor Engine
Engine Use	Residue Compression
Quantity	4
Make	Caterpillar
Model	Caterpillar G3516
Serial Number	TBD
Manufacture Date	11/20/2017, After 7/1/2007
Fuel Type	Natural Gas
Engine Type	4SLB

Item	Value	Units	Source
Rated Horsepower	1380	hp	Manufacturer
Heat Rate	11.39	MMBtu/hr	Calculated
Fuel Consumption	8256	Btu/hp-hr	Manufacturer
Fuel Use	7699.20	scf/hr	Calculated
Fuel Heat Value	1479.8	btu/scf	Gas Analysis
Emisson Controls	Oxidation Catalyst		Manufacturer
Control Efficiency CH2O	80%		Manufacturer/Permit Condition
Control Efficiency NOx	0%		Manufacturer/JJJJ
Control Efficiency VOC	31%		Manufacturer/JJJJ
Control Efficiency CO	68%		Manufacturer/Permit Condition
Engine Speed	1400	RPM	Manufacturer
Potential Operation	8760	hr/yr	
Sulfur Content	9,476	grains/MMscf	AP42 with margin
Sulfur Margin	400%	%	

Total Potential Emissions

Pollutant	Uncontrolled Emissions		Controlled Emissions	
	(lb/hr)	(tpy)	(lb/hr)	(tpy)
NOx	12.17	53.31	12.17	53.31
VOC (less formaldehyde)	8.52	37.32	8.52	37.32
Total VOC	13.88	60.78	9.59	42.01
CO	29.58	129.55	9.49	41.58
SO2	0.13	0.56	0.13	0.56
PM10	0.46	1.99	0.46	1.99
Formaldehyde	5.35	23.45	1.07	4.69
Acetaldehyde	0.38	1.67	0.38	1.67
Acrolein	0.23	1.03	0.23	1.03
Benzene	0.02	0.09	0.02	0.09
Toluene	0.02	0.08	0.02	0.08
Ethylbenzene	0.00	0.01	0.00	0.01
Xylene	0.01	0.04	0.01	0.04
n-Hexane	0.05	0.22	0.05	0.22
Total HAPs	6.07	26.58	1.79	7.82

Potential Emissions Per Engine

Pollutant	Uncontrolled Emissions				Controlled Emissions				Source of Emission Factor
	EF	Units	(lb/hr)	(tpy)	EF	Units	(lb/hr)	(tpy)	
NOx	1.00*	g/hp-hr	3.04	13.33	1.00	g/hp-hr	3.04	13.33	40 CFR 60 Subpart JJJJ
VOC (less formaldehyde)	0.70*	g/hp-hr	2.13	9.33	0.70	g/hp-hr	2.13	9.33	40 CFR 60 Subpart JJJJ
Total VOC***	1.14	g/hp-hr	3.47	15.19	0.79	g/hp-hr	2.40	10.50	40 CFR 60 Subpart JJJJ + CH2O
CO	2.43**	g/hp-hr	7.39	32.39	0.78	g/hp-hr	2.37	10.40	Permit Condition
SO2*****	2.79E-03	lb/mmBtu	0.03	0.14	2.79E-03	lb/mmBtu	0.03	0.14	EPA AP-42 Table 3.2-2
PM10******	9.99E-03	lb/mmBtu	0.11	0.50	9.99E-03	lb/mmBtu	0.11	0.50	EPA AP-42 Table 3.2-2
Formaldehyde	4.40E-01	g/hp-hr	1.34	5.86	8.80E-02	g/hp-hr	0.27	1.17	Permit Condition
Acetaldehyde	8.36E-03	lb/mmBtu	0.10	0.42	8.36E-03	lb/mmBtu	0.10	0.42	EPA AP-42 Table 3.2-2
Acrolein	5.14E-03	lb/mmBtu	0.06	0.26	5.14E-03	lb/mmBtu	0.06	0.26	EPA AP-42 Table 3.2-2
Benzene	4.40E-04	lb/mmBtu	0.01	0.02	4.40E-04	lb/mmBtu	0.01	0.02	EPA AP-42 Table 3.2-2
Toluene	4.08E-04	lb/mmBtu	0.00	0.02	4.08E-04	lb/mmBtu	0.00	0.02	EPA AP-42 Table 3.2-2
Ethylbenzene	3.97E-05	lb/mmBtu	0.00	0.00	3.97E-05	lb/mmBtu	0.00	0.00	EPA AP-42 Table 3.2-2
Xylene	1.84E-04	lb/mmBtu	0.00	0.01	1.84E-04	lb/mmBtu	0.00	0.01	EPA AP-42 Table 3.2-2
n-Hexane	1.11E-03	lb/mmBtu	0.01	0.06	1.11E-03	lb/mmBtu	0.01	0.06	EPA AP-42 Table 3.2-2
Total HAPs			1.52	6.65			0.45	1.96	

* - Uncontrolled and controlled emission factors for NOx and VOC are based on JJJJ standards as manufacturer uncontrolled emission factors are lower than JJJJ emission standards.
** - Uncontrolled emission factor for CO was taken from the Manufacturer technical data sheets. Controlled emission factor for CO is a permit condition requested in this application.
*** - Uncontrolled and controlled emission factor for Total VOC was calculated to include formaldehyde.
**** - Controlled CO emission factor is a permit condition requested in this application.
***** - Sulfur emission factor from AP-42 Table 1.4-2 is ratio adjusted based on the max sulfur content when sulfur content is greater than 2,000 grains/MMscf.
****** - PM10 emissions include filterable and condensable particulates.

Sample Calculation for NOx

1.00 g/hp-hr * 1380 hp / 453.59 g/lb * 8760 hr/yr / 2000 lb/ton = 13.33 tpy

Engine Emission Detail Sheet

Item	Value
Source Name	ENG-9
Description	Generator Engine
Engine Use	Generator
Quantity	1
Make	Olympian
Model	250LG6
Serial Number	TBD
Manufacture Date	After 7/1/2010
Fuel Type	Natural Gas
Engine Type	4SRB

Item	Value	Units	Source
Rated Horsepower	374	hp	Manufacturer
Heat Rate	4.41	MMBtu/hr	Calculated
Fuel Consumption	11803	Btu/hp-hr	Manufacturer
Fuel Use	2983	scf/hr	Calculated
Fuel Heat Value	1479.8	btu/scf	Gas Analysis
Emission Controls	TBD		Manufacturer
Control Efficiency CH2O	0%		AP42
Control Efficiency NOx	0%		JJJJ
Control Efficiency VOC	0%		JJJJ
Control Efficiency CO	0%		JJJJ
Engine Speed	1800	RPM	Manufacturer
Potential Operation	8760	hr/yr	
Sulfur Content	8,000	grains/MMscf	AP42 with margin
Sulfur Margin	400%	%	

Potential Emissions Per Engine

Pollutant	Uncontrolled Emissions				Controlled Emissions				Source of Emission Factor
	EF	Units	(lb/hr)	(tpy)	EF	Units	(lb/hr)	(tpy)	
Nox	1.00*	g/hp-hr	0.82	3.61	1.00	g/hp-hr	0.82	3.61	40 CFR 60 Subpart JJJJ
VOC (less formaldehyde)	0.70*	g/hp-hr	0.58	2.53	0.70	g/hp-hr	0.58	2.53	40 CFR 60 Subpart JJJJ
Total VOC**	0.81	g/hp-hr	0.67	2.92	0.81	g/hp-hr	0.67	2.92	40 CFR 60 Subpart JJJJ + CH2O
CO	2.00*	g/hp-hr	1.65	7.22	2.00	g/hp-hr	1.65	7.22	40 CFR 60 Subpart JJJJ
SO2****	2.35E-03	lb/mmBtu	0.01	0.05	2.35E-03	lb/mmBtu	0.01	0.05	EPA AP-42 Table 3.2-3
PM10*****	1.94E-02	lb/mmBtu	0.09	0.38	1.94E-02	lb/mmBtu	0.09	0.38	EPA AP-42 Table 3.2-3
Formaldehyde	2.05E-02	lb/mmBtu	0.09	0.40	2.05E-02	lb/mmBtu	0.09	0.40	EPA AP-42 Table 3.2-3
Acetaldehyde	2.79E-03	lb/mmBtu	0.01	0.05	2.79E-03	lb/mmBtu	0.01	0.05	EPA AP-42 Table 3.2-3
Acrolein	2.63E-03	lb/mmBtu	0.01	0.05	2.63E-03	lb/mmBtu	0.01	0.05	EPA AP-42 Table 3.2-3
Benzene	1.58E-03	lb/mmBtu	0.01	0.03	1.58E-03	lb/mmBtu	0.01	0.03	EPA AP-42 Table 3.2-3
Toluene	5.58E-04	lb/mmBtu	0.00	0.01	5.58E-04	lb/mmBtu	0.00	0.01	EPA AP-42 Table 3.2-3
Ethylbenzene	2.48E-05	lb/mmBtu	0.00	0.00	2.48E-05	lb/mmBtu	0.00	0.00	EPA AP-42 Table 3.2-3
Xylene	1.95E-04	lb/mmBtu	0.00	0.00	1.95E-04	lb/mmBtu	0.00	0.00	EPA AP-42 Table 3.2-3
n-Hexane	N/A	lb/mmBtu	N/A	N/A	N/A	lb/mmBtu	N/A	N/A	EPA AP-42 Table 3.2-3
Total HAPs			0.12	0.55			0.12	0.55	

* - Uncontrolled and controlled emission factors for NOx, CO, and VOC are based on JJJJ standards as manufacturer uncontrolled emission factors are lower than JJJJ emission standards.
** - Uncontrolled emission factor for Total VOC was calculated to include formaldehyde.
*** - Controlled emission factors are permit conditions requested in this application.
**** - Sulfur emission factor from AP-42 Table 1.4-2 is ratio adjusted based on the max sulfur content when sulfur content is greater than 2,000 grains/MMscf.
***** - PM10 emissions include filterable and condensable particulates.

Sample Calculation for NOx

1.00 g/hp-hr * 374 hp / 453.59 g/lb * 8760 hr/yr / 2000 lb/ton = 3.61 tpy

Tank Detail Sheet

Equipment Source Name	TK-1		Tank Height	25	ft	
Source Description	Gunbarrel Tank		Tank Diameter	12	ft	
Quantity	1		Potential Operation	8,760	hr/yr	
Tank Capacity	500	bbl (each)	Potential Oil Throughput	766	bbl/yr	2.1 avg. bbl/day
Total Tank Capacity	500	bbl	Potential Throughput Per Tank	766	bbl/yr/tk	2.1 avg. bbl/day/tk
Control Efficiency	95%		Throughput Margin	0.00%		
			Calendar Year	2019		

Total Potential Emissions

Pollutant	Uncontrolled		Controlled	
	(lb/hr)	(ton/yr)	(lb/hr)	(ton/yr)
VOC	22.64	99.18	1.13	4.96
Benzene	0.23	0.99	0.01	0.05
Toluene	0.23	0.99	0.01	0.05
Ethylbenzene	0.02	0.10	0.00	0.00
Xylenes	0.02	0.10	0.00	0.00
n-Hexane	0.91	3.97	0.05	0.20
2,2,4-Trimethylpentane	0.02	0.10	0.00	0.00
Total HAPs	1.43	6.25	0.07	0.31

Potential Emissions Per Tank

Pollutant	EF	Uncontrolled		Controlled		Source of Emission Factor
	(lb/bbl)	(lb/hr)	(ton/yr)	(lb/hr)	(ton/yr)	
VOC	258.95	22.64	99.18	1.13	4.96	Engineering Calculation
Benzene	2.59	0.23	0.99	0.01	0.05	Engineering Calculation
Toluene	2.59	0.23	0.99	0.01	0.05	Engineering Calculation
Ethylbenzene	0.26	0.02	0.10	0.00	0.00	Engineering Calculation
Xylenes	0.26	0.02	0.10	0.00	0.00	Engineering Calculation
n-Hexane	10.36	0.91	3.97	0.05	0.20	Engineering Calculation
2,2,4-Trimethylpentane	0.26	0.02	0.10	0.00	0.00	Engineering Calculation
Total HAPs		1.43	6.25	0.07	0.31	

Process Streams	39 To Flare	40 To Slop Oil
Composition	Solved	Solved
Phase: Total	VSSL-105	VSSL-105
	--	--
Mole Fraction	%	%
Methane	14.0050	0.095017
Ethane	15.1670	0.87808
Propane	28.5610	7.41773
i-Butane	9.11843	7.17785
n-Butane	26.0267	34.2548
i-Pentane	3.42445	12.6336
n-Pentane	2.60785	13.7462
n-Hexane	0.849356	20.9208
n-Heptane	0.0200098	1.87120
C8	0.00266528	1.00249
Water	0.00304587	0.000043916
N2	0.122357	0.000185748
CO2	0.091903	0.00194386
H2S	0.000283058	1.96086E-05
Triethylene Glycol	0	0
EG	0	0
MeOH	0	0
CHEMTHERM 550	0	0

Process Streams	39 To Flare	40 To Slop Oil
Composition	Solved	Solved
Phase: Total	VSSL-105	VSSL-105
Process Streams	39 To Flare	40 To Slop Oil
Mass Fraction	%	%
Methane	4.9915	0.0225109
Ethane	10.1321	0.389921
Propane	27.9801	4.83045
i-Butane	11.77447	6.16109
n-Butane	33.6078	29.4025
i-Pentane	5.48907	13.4610
n-Pentane	4.18014	14.6465
n-Hexane	1.62612	26.6246
n-Heptane	0.0445449	2.76896
C8	0.00676389	1.69113
Water	0.00121908	1.16839E-05
N2	0.076151	0.000076844
CO2	0.089858	0.00126337
H2S	0.000214321	9.86911E-06
Triethylene Glycol	0	0
EG	0	0
MeOH	0	0
CHEMTHERM 550	0	0

Process Streams		39 To Flare	40 To Slop Oil
Properties	Status:	Solved	Solved
Phase: Total	From Block:	VSSL-105	VSSL-105
	To Block:	--	--
Property	Units		
Temperature	°F	16.19949	16.19949
Pressure	psig	0.125*	0.125
Mole Fraction Vapor	%	100	0
Mole Fraction Light Liquid	%	0	100
Mole Fraction Heavy Liquid	%	0	0
Molecular Weight	lb/lbmol	45.0112	67.7141
Mass Density	lb/ft^3	0.1209179	40.1146
Molar Flow	lbmol/h	13.8689	6.79227
Mass Flow	lb/h	624.256	459.933
Vapor Volumetric Flow	ft^3/h	5162.64	11.4655
Liquid Volumetric Flow	gpm	643.654	1.42946
Std Vapor Volumetric Flow	MMSCFD	0.126313	0.0618614
Std Liquid Volumetric Flow	sgpm	2.45639	1.50085
Compressibility		0.978572	0.00443751
Specific Gravity		1.55412	0.643185
API Gravity			97.3979
Enthalpy	Btu/h	-665846	-501320
Mass Enthalpy	Btu/lb	-1066.62	-1089.99
Mass Cp	Btu/(lb*°F)	0.378222	0.521661
Ideal Gas CpCv Ratio		1.13354	1.08773
Dynamic Viscosity	cP	0.00739850	0.280324
Kinematic Viscosity	cSt	3.81972	0.436251
Thermal Conductivity	Btu/(h*ft*°F)	0.0089001	0.0713101?
Surface Tension	lbf/ft		0.00123561?
Net Ideal Gas Heating Value	Btu/ft^3	2353.24	3485.33
Net Liquid Heating Value	Btu/lb	19688.6	19372.5
Gross Ideal Gas Heating Value	Btu/ft^3	2557.29	3771.13
Gross Liquid Heating Value	Btu/lb	21409.2	20974.6

1 - Uncontrolled emissions were calculated from Promax output.

2- No HAP emissions are reported by Promax; therefore, these emissions were estimated based on the ration of HAP's to total VOC's from a conservative engineering assumption.

Tank Detail Sheet

Equipment Source Name	TK 2-5		Tank Height	20 ft		
Source Description	Stabilized Condensate Tank		Tank Diameter	12 ft		
Quantity	4		Potential Operation	8760 hr/yr		
Tank Capacity	400	bbl (each)	Potential Throughput	219,000 bbl/yr	600.0	avg. bbl/day
Total Tank Capacity	1600	bbl	Potential Throughput Per Tank	54,750 bbl/yr/tk	150.0	avg. bbl/day/tk
Control Efficiency	95%		Calendar Year	2019		

Total Potential Emissions

Pollutant	Uncontrolled		Controlled	
	(lb/hr)	(ton/yr)	(lb/hr)	(ton/yr)
VOC	7.98	34.95	0.40	1.75
Benzene	0.08	0.35	0.00	0.02
Toluene	0.08	0.35	0.00	0.02
Ethylbenzene	0.01	0.03	0.00	0.00
Xylenes	0.01	0.03	0.00	0.00
n-Hexane	0.32	1.40	0.02	0.07
2,2,4-Trimethylpentane	0.01	0.03	0.00	0.00
Total HAPs	0.50	2.20	0.03	0.11

Potential Emissions Per Tank

Pollutant	HAP Wt %	Uncontrolled		Controlled		Source of Emission Factor
	(%)	(lb/hr)	(ton/yr)	(lb/hr)	(ton/yr)	
VOC		1.99	8.74	0.10	0.44	EPA TANKS 4.0.9d
Benzene	1.00%	0.02	0.09	0.00	0.00	Engineering Calculation
Toluene	1.00%	0.02	0.09	0.00	0.00	Engineering Calculation
Ethylbenzene	0.10%	0.00	0.01	0.00	0.00	Engineering Calculation
Xylenes	0.10%	0.00	0.01	0.00	0.00	Engineering Calculation
n-Hexane	4.00%	0.08	0.35	0.00	0.02	Engineering Calculation
2,2,4-Trimethylpentane	0.10%	0.00	0.01	0.00	0.00	Engineering Calculation
Total HAPs		0.13	0.55	0.01	0.03	

1 - Uncontrolled emissions were taken directly from the EPA TANKS 4.0.9d output.

2 - No HAP emissions are reported by EPA Tanks 4.0.9d; therefore, these emissions were estimated based on the ration of HAP's to total VOC's from a conservative engineering assumption.

Tank Detail Sheet

Equipment Source Name	TK-6		Tank Height	20	ft		
Source Description	Slop Oil Tank		Tank Diameter	12	ft		
Quantity	1		Potential Operation	8760	hr/yr		
Tank Capacity	400	bbl (each)	Potential Throughput	1,532	bbl/yr	4.2	avg. bbl/day
Total Tank Capacity	400	bbl	Potential Throughput Per Tank	1,532	bbl/yr/tk	4.2	avg. bbl/day/tk
Control Efficiency	95%		Margin	100%			
			Calendar Year	2019			

Total Potential Emissions

Pollutant	Uncontrolled		Controlled	
	(lb/hr)	(ton/yr)	(lb/hr)	(ton/yr)
VOC	0.85	3.72	0.04	0.19
Benzene	0.01	0.04	0.00	0.00
Toluene	0.01	0.04	0.00	0.00
Ethylbenzene	0.00	0.00	0.00	0.00
Xylenes	0.00	0.00	0.00	0.00
n-Hexane	0.03	0.15	0.00	0.01
2,2,4-Trimethylpentane	0.00	0.00	0.00	0.00
Total HAPs	0.05	0.23	0.00	0.01

Potential Emissions Per Tank

Pollutant	HAP Wt %	Uncontrolled		Controlled		Source of Emission Factor
	(%)	(lb/hr)	(ton/yr)	(lb/hr)	(ton/yr)	
VOC		0.85	3.72	0.04	0.19	EPA TANKS 4.0.9d
Benzene	1.00%	0.01	0.04	0.00	0.00	Engineering Calculation
Toluene	1.00%	0.01	0.04	0.00	0.00	Engineering Calculation
Ethylbenzene	0.10%	0.00	0.00	0.00	0.00	Engineering Calculation
Xylenes	0.10%	0.00	0.00	0.00	0.00	Engineering Calculation
n-Hexane	4.00%	0.03	0.15	0.00	0.01	Engineering Calculation
2,2,4-Trimethylpentane	0.10%	0.00	0.00	0.00	0.00	Engineering Calculation
Total HAPs		0.05	0.23	0.00	0.01	

1 - Uncontrolled emissions were taken directly from the EPA TANKS 4.0.9d output.

2 - No HAP emissions are reported by EPA Tanks 4.0.9d; therefore, these emissions were estimated based on the ration of HAP's to total VOC's from a conservative engineering assumption.

Tank Detail Sheet

Equipment Source Name	PWTK-1		Tank Height	20 ft	
Source Description	Produced Water Tank		Tank Diameter	12 ft	
Quantity	1		Potential Operation	8760 hr/yr	
Tank Capacity	400	bbl (each)	Potential PW Throughput	1,532 bbl/yr	4.2 avg. bbl/day
Total Tank Capacity	400	bbl	Potential Oil from PW Throughput	15 bbl/yr	0.1 avg. bbl/day
Control Efficiency	95%		Potential Oil Throughput Per Tank	15 bbl/yr/tk	0.1 avg. bbl/day/tk
			Margin	100%	
			Calendar Year	2019	

Total Potential Emissions

Pollutant	Uncontrolled		Controlled	
	(lb/hr)	(ton/yr)	(lb/hr)	(ton/yr)
VOC	0.00	0.00	0.00	0.00
Benzene	0.00	0.00	0.00	0.00
Toluene	0.00	0.00	0.00	0.00
Ethylbenzene	0.00	0.00	0.00	0.00
Xylenes	0.00	0.00	0.00	0.00
n-Hexane	0.00	0.00	0.00	0.00
2,2,4-Trimethylpentane	0.00	0.00	0.00	0.00
Total HAPs	0.00	0.00	0.00	0.00

Potential Emissions Per Tank

Pollutant	HAP Wt %	Uncontrolled		Controlled		Source of Emission Factor
	(%)	(lb/hr)	(ton/yr)	(lb/hr)	(ton/yr)	
VOC		0.00	0.00	0.00	0.00	EPA TANKS 4.0.9d
Benzene	1.00%	0.00	0.00	0.00	0.00	Engineering Calculation
Toluene	1.00%	0.00	0.00	0.00	0.00	Engineering Calculation
Ethylbenzene	0.10%	0.00	0.00	0.00	0.00	Engineering Calculation
Xylenes	0.10%	0.00	0.00	0.00	0.00	Engineering Calculation
n-Hexane	4.00%	0.00	0.00	0.00	0.00	Engineering Calculation
2,2,4-Trimethylpentane	0.10%	0.00	0.00	0.00	0.00	Engineering Calculation
Total HAPs		0.00	0.00	0.00	0.00	

1 - Uncontrolled emissions were taken directly from the EPA TANKS 4.0.9d output.
2 - Uncontrolled emissions were calculated based on the assumption that 1% of the produced water throughput is condensate.
3 - No HAP emissions are reported by EPA Tanks 4.0.9d; therefore, these emissions were estimated based on the ration of HAP's to total VOC's from a conservative engineering assumption.
4 - Throughput includes margin to account for additional water streams dumping into the tank.

Heater / Boiler Detail Sheet

Equipment Source Name	HTR-1			
Source Description	Hot Oil Heater			
Equipment Usage	Hot Oil Heater	Potential operation	8760	hr/yr
Equipment Make	TBD	Fuel Heating Value	1479.8	Btu/scf
Equipment Model	TBD	Heat Rate	50.00	MMBtu/hr
Serial Number	TBD	Sulfur Content	9,476	grains/MMscf Gas Analysis with Margin
Quantity	1	Sulfur Margin	400%	%
Emission Controls	None			

Total Potential Emissions

Pollutant	Estimated Emissions (lb/hr)	(tpy)
NOx	1.69	7.40
CO	2.84	12.43
VOC	0.19	0.81
SOx	0.10	0.42
PM10	0.26	1.12
Benzene	0.00	0.00
n-Hexane	0.06	0.27
Toluene	0.00	0.00
CH_2O	0.00	0.01
Total HAPs	0.06	0.28

Potential Emissions Per Heater

Pollutant	EF (lb/MMscf)	Estimated Emissions (lb/hr)	(tpy)	Source of Emission Factor
NOx[2]	50	1.69	7.40	AP-42 Table 1.4-1
CO	84	2.84	12.43	AP-42 Table 1.4-1
VOC	5.5	0.19	0.81	AP-42 Table 1.4-2
SOx[1]	2.84	0.10	0.42	AP-42 Table 1.4-2
PM10	7.6	0.26	1.12	AP-42 Table 1.4-2
Benzene	0.0021	0.00	0.00	AP-42 Table 1.4-3
n-Hexane	1.80	0.06	0.27	AP-42 Table 1.4-3
Toluene	0.0034	0.00	0.00	AP-42 Table 1.4-3
CH_2O	0.075	0.00	0.01	AP-42 Table 1.4-3
Total HAPs		0.06	0.28	

1 - Sulfur emission factor from AP-42 Table 1.4-2 is ratio adjusted based on the max sulfur content when sulfur content is greater than 2,000 grains/MMscf.
2 - This is a low NOx burner.

Sample Calculation for NOx
50 lb/MMscf / 1479.80 Btu/scf * 50.000 MMBtu/hr = 1.69 lb/hr

Heater / Boiler Detail Sheet

Equipment Source Name	HTR-2				
Source Description	Regen Gas Heater				
Equipment Usage	Regen Gas Heater	Potential operation	8760	hr/yr	
Equipment Make	TBD	Fuel Heating Value	1479.8	Btu/scf	
Equipment Model	TBD	Heat Rate	11.00	MMBtu/hr	
Serial Number	TBD	Sulfur Content	9,476	grains/MMscf	Gas Analysis with Margin
Quantity	1	Sulfur Margin	400%	%	
Emission Controls	None				

Total Potential Emissions

Pollutant	Estimated Emissions (lb/hr)	(tpy)
NOx	0.74	3.26
CO	0.62	2.73
VOC	0.04	0.18
SOx	0.02	0.09
PM10	0.06	0.25
Benzene	0.00	0.00
n-Hexane	0.01	0.06
Toluene	0.00	0.00
CH_2O	0.00	0.00
Total HAPs	0.01	0.06

Potential Emissions Per Heater

Pollutant	EF (lb/MMscf)	Estimated Emissions (lb/hr)	(tpy)	Source of Emission Factor
NOx	100	0.74	3.26	AP-42 Table 1.4-1
CO	84	0.62	2.73	AP-42 Table 1.4-1
VOC	5.5	0.04	0.18	AP-42 Table 1.4-2
SOx[1]	2.84	0.02	0.09	AP-42 Table 1.4-2
PM10	7.6	0.06	0.25	AP-42 Table 1.4-2
Benzene	0.0021	0.00	0.00	AP-42 Table 1.4-3
n-Hexane	1.80	0.01	0.06	AP-42 Table 1.4-3
Toluene	0.0034	0.00	0.00	AP-42 Table 1.4-3
CH_2O	0.075	0.00	0.00	AP-42 Table 1.4-3
Total HAPs		0.01	0.06	

1 - Sulfur emission factor from AP-42 Table 1.4-2 is ratio adjusted based on the max sulfur content when sulfur content is greater than 2,000 grains/MMscf.

Sample Calculation for NOx

100 lb/MMscf / 1479.80 Btu/scf * 11.000 MMBtu/hr = 0.74 lb/hr

Loadout Emissions Detail Sheet

Equipment Source Name	CONDLOAD-1	
Source Description	Condensate Loadout	
Quantity	1	
Potential Throughput	219,000	bbl/yr
LACT On Site?	No	
Estimated LACT Downtime	NA	
Control Device	Vapor Balance	
Control Efficiencies	95%	
Capture Efficiency	70%	

Potential Emissions

Pollutant	HAP Wt % (%)	Uncontrolled lb/hr	Uncontrolled tpy	Controlled lb/hr	Controlled tpy	Source of Emission Calculations
VOC		99.91	27.35	33.47	9.16	AP-42 Section 5.2.1
Benzene	1.00%	1.00	0.27	0.33	0.09	Engineering Calculation
Toluene	1.00%	1.00	0.27	0.33	0.09	Engineering Calculation
Ethylbenzene	0.10%	0.10	0.03	0.03	0.01	Engineering Calculation
Xylenes	0.10%	0.10	0.03	0.03	0.01	Engineering Calculation
n-Hexane	4.00%	4.00	1.09	1.34	0.37	Engineering Calculation
2,2,4-Trimethylpentane	0.10%	0.10	0.03	0.03	0.01	Engineering Calculation
Total HAPs		6.29	1.72	2.11	0.58	

Molecular Weight of Vapors, MW	64.0	lb/lb-mol	EPA TANKS 4.0.9d
True Vapor Pressure, Pva @ T	6.48	psia	Interpolation from AP-42 Table 7.1-2
Temperature of Bulk Liquid Loaded, T	61	F	Ambient Temperature
	521	R	
Saturation Factor	0.6		AP-42 Table 5.2.1
Efficiency of controlled loading (%)	0.0%		
Potential Annual Throughput, v	9,198	1000 gallons	
Loading losses, L @ tank	5.95	lb/1000 gallons	
L = 12.46 S P MW / T (1-eff)			
Potential annual losses @ tank, L*v	54,699.81	lb/yr	**27.35 tpy**
Max hourly fill rate[1]	16.8	1000 gallons/hr	Trucking Company
Max hourly emissions	**99.9**	**lb/hr**	Calculated

1 - Max hourly fill rate based on a 200-bbl truck filling every 30 minutes.

Sample Calculation

219000 bbl/yr * 42 gal/bbl / 1000 gal * 5.95 lb/1000 gal / 2000 lb/ton = 27.35 tpy

Loadout Emissions Detail Sheet

Equipment Source Name	OILLOAD-1	
Source Description	Oil Loadout	
Quantity	1	
Potential Throughput	1,532	bbl/yr
LACT On Site?	No	
Estimated LACT Downtime	NA	
Control Device	Vapor Balance	
Control Efficiencies	95%	
Capture Efficiency	70%	

Potential Emissions

Pollutant	HAP Wt % (%)	Uncontrolled lb/hr	Uncontrolled tpy	Controlled lb/hr	Controlled tpy	Source of Emission Calculations
VOC		99.91	0.19	33.47	0.06	AP-42 Section 5.2.1
Benzene	1.00%	1.00	0.00	0.33	0.00	Engineering Calculation
Toluene	1.00%	1.00	0.00	0.33	0.00	Engineering Calculation
Ethylbenzene	0.10%	0.10	0.00	0.03	0.00	Engineering Calculation
Xylenes	0.10%	0.10	0.00	0.03	0.00	Engineering Calculation
n-Hexane	4.00%	4.00	0.01	1.34	0.00	Engineering Calculation
2,2,4-Trimethylpentane	0.10%	0.10	0.00	0.03	0.00	Engineering Calculation
Total HAPs		6.29	0.01	2.11	0.00	

Molecular Weight of Vapors, MW	64.0	lb/lb-mol	EPA TANKS 4.0.9d
True Vapor Pressure, Pva @ T	6.48	psia	Interpolation from AP-42 Table 7.1-2
Temperature of Bulk Liquid Loaded, T	61	F	Ambient Temperature
	521	R	
Saturation Factor	0.6		AP-42 Table 5.2.1
Efficiency of controlled loading (%)	0.0%		
Potential Annual Throughput, v	64	1000 gallons	
Loading losses, L @ tank	5.95	lb/1000 gallons	
L = 12.46 S P MW / T (1-eff)			
Potential annual losses @ tank, L*v	382.65	lb/yr	**0.19 tpy**
Max hourly fill rate[1]	16.8	1000 gallons/hr	Trucking Company
Max hourly emissions	**99.9**	**lb/hr**	Calculated

1 - Max hourly fill rate based on a 200-bbl truck filling every 30 minutes.

Sample Calculation

1532 bbl/yr * 42 gal/bbl / 1000 gal * 5.95 lb/1000 gal / 2000 lb/ton = 0.19 tpy

Fugitive Emissions Detail Sheet

Equipment Source Name	FUG-1	Potential Operation	8760	hr/yr
Source Description	Fugitives - OOOOa			

Uncontrolled Potential Emissions

	HAP	Heavy Crude - Emissions		Light Crude - Emissions		Gas - Emissions		Total Emissions	
Pollutant	Wt. %	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy
VOC		0.00	0.00	5.00	23.68	6.29	27.56	11.30	51.24
H2S		NA	NA	NA	NA	0.00	0.00	0.00	0.00
Benzene	0.32%	0.00	0.00	0.02	0.08	0.02	0.09	0.04	0.16
Toluene	0.05%	0.00	0.00	0.00	0.01	0.00	0.01	0.01	0.02
Ethylbenzene	0.00%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Xylenes	0.00%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
n-Hexane	0.55%	0.00	0.00	0.03	0.13	0.03	0.15	0.06	0.28
2,2,4-Trimethylpentane	0.00%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total HAPs		0.00	0.00	0.05	0.22	0.06	0.25	0.10	0.47

Controlled Potential Emissions

	HAP	Heavy Crude - Emissions		Light Crude - Emissions		Gas - Emissions		Total Emissions	
Pollutant	Wt. %	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy
VOC		0.00	0.00	0.96	4.41	2.41	10.56	3.37	14.97
H2S		NA	NA	NA	NA	0.00	0.00	0.00	0.00
Benzene	0.32%	0.00	0.00	0.00	0.01	0.01	0.03	0.01	0.05
Toluene	0.05%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
Ethylbenzene	0.00%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Xylenes	0.00%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
n-Hexane	0.55%	0.00	0.00	0.01	0.02	0.01	0.06	0.02	0.08
2,2,4-Trimethylpentane	0.00%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total HAPs		0.00	0.00	0.01	0.04	0.02	0.10	0.03	0.14

Gas

Equipment Type	EF (kg/hr/source)	Source Count	VOC Wt. %	Control Efficiencies %	Uncontrolled Emissions VOC (lb/hr)	Uncontrolled Emissions VOC (tpy)	Controlled Emissions VOC (lb/hr)	Controlled Emissions VOC (tpy)
Valve	4.50E-03	763	48%	96%	3.66	16.04	0.15	0.64
Flanges	3.90E-04	495	48%	81%	0.21	0.90	0.04	0.17
Connectors	2.00E-04	1155	48%	81%	0.25	1.08	0.05	0.21
Open Ended Lines	2.00E-03	0	48%		0.00	0.00	0.00	0.00
Pump Seals	2.40E-03	0	48%		0.00	0.00	0.00	0.00
Other Components	8.80E-03	232	48%		2.18	9.54	2.18	9.54
VOC Emissions					**6.29**	**27.56**	**2.41**	**10.56**

Gas VOC Wt% Margin 20.00%

Light Liquid[3]

Equipment Type	EF (kg/hr/source)	Source Count	VOC Wt. %	Control Efficiencies %	Uncontrolled Emissions VOC (lb/hr)	Uncontrolled Emissions VOC (tpy)	Controlled Emissions VOC (lb/hr)	Controlled Emissions VOC (tpy)
Valve	2.50E-03	684	100%	95%	3.77	16.51	0.19	0.83
Flanges	1.10E-04	417	100%	81%	0.10	0.44	0.02	0.08
Connectors	2.10E-04	1020	100%	81%	0.47	2.07	0.09	0.39
Open Ended Lines	1.40E-03	0	100%		0.00	0.00	0.00	0.00
Pump Seals	1.30E-02	14	100%	88%	0.00	1.76	0.00	0.21
Other Components	7.50E-03	40	100%		0.66	2.90	0.66	2.90
VOC Emissions					**5.00**	**23.68**	**0.96**	**4.41**

Heavy Liquid[3]

Equipment Type	EF (kg/hr/source)	Source Count	VOC Wt. %	Control Efficiencies %	Uncontrolled Emissions VOC (lb/hr)	Uncontrolled Emissions VOC (tpy)	Controlled Emissions VOC (lb/hr)	Controlled Emissions VOC (tpy)
Valve	8.40E-06	0	100%		0.00	0.00	0.00	0.00
Flanges	3.90E-06	1	100%	81%	0.00	0.00	0.00	0.00
Connectors	7.50E-06	1	100%	81%	0.00	0.00	0.00	0.00
Open Ended Lines	1.40E-04	0	100%		0.00	0.00	0.00	0.00
Pump Seals	N/A							
Other Components	3.20E-05	0	100%		0.00	0.00	0.00	0.00
VOC Emissions					**0.00**	**0.00**	**0.00**	**0.00**

1 - Component counts are actual facility component counts determined by Dexter ATC Field Services.
2 - Component leak rates taken from EPA's Oil and Gas Production Operations average equipment leak emission factors (EPA 453/R-95-017 dated November 1995) Table 2-4.
3 - Assuming heavy and light crude weight percentage is 100% VOC to be conservative in heavy and light crude fugitive emission calculations.
4 - Control efficiencies were obtained from Table 4.1 in "EPA Leak Detection and Repair - A Best Practices Guide"
5 - HAP Weight percentages based on a conservative engineering estimation.

Sample Calculation:
0.00250 kg/hr-source * 684 Sources * 2.20462 lb/kg * 100 % VOC Wt% * 8760 hr/yr /2000 lb/ton = 16.51 tpy

Fugitive Emissions Detail Sheet

Equipment Source Name	FUG-2	Potential Operation	8760	hr/yr
Source Description	Fugitives - Residue	Emission Controls	None	

Uncontrolled Potential Emissions

	HAP	Gas - Emissions		Total Emissions	
Pollutant	Wt. %	lb/hr	tpy	lb/hr	tpy
VOC		0.01	0.06	0.01	0.06
H2S		0.00	0.00	0.00	0.00
Benzene	0.00%	0.00	0.00	0.00	0.00
Toluene	0.00%	0.00	0.00	0.00	0.00
Ethylbenzene	0.00%	0.00	0.00	0.00	0.00
Xylenes	0.00%	0.00	0.00	0.00	0.00
n-Hexane	0.01%	0.00	0.00	0.00	0.00
2,2,4-Trimethylpentane	0.00%	0.00	0.00	0.00	0.00
Total HAPs		0.00	0.00	0.00	0.00

Controlled Potential Emissions

	HAP	Gas - Emissions		Total Emissions	
Pollutant	Wt. %	lb/hr	tpy	lb/hr	tpy
VOC		0.01	0.06	0.01	0.06
H2S		0.00	0.00	0.00	0.00
Benzene	0.00%	0.00	0.00	0.00	0.00
Toluene	0.00%	0.00	0.00	0.00	0.00
Ethylbenzene	0.00%	0.00	0.00	0.00	0.00
Xylenes	0.00%	0.00	0.00	0.00	0.00
n-Hexane	0.01%	0.00	0.00	0.00	0.00
2,2,4-Trimethylpentane	0.00%	0.00	0.00	0.00	0.00
Total HAPs		0.00	0.00	0.00	0.00

Gas HAP Wt% Margin 100.00%

Gas

Equipment Type	EF[3] (kg/hr/source)	Source Count	VOC Wt. %	Control Efficiencies %	Uncontrolled Emissions VOC (lb/hr)	Uncontrolled Emissions VOC (tpy)	Controlled Emissions VOC (lb/hr)	Controlled Emissions VOC (tpy)
Valve	4.50E-03	4	4%	0%	0.00	0.01	0.00	0.01
Flanges	3.90E-04	8	4%		0.00	0.00	0.00	0.00
Connectors	2.00E-04	300	4%	0%	0.00	0.02	0.00	0.02
Open Ended Lines	2.00E-03	0	4%		0.00	0.00	0.00	0.00
Pump Seals	2.40E-03	0	4%		0.00	0.00	0.00	0.00
Other Components	8.80E-03	10	4%		0.01	0.03	0.01	0.03
VOC Emissions					**0.01**	**0.06**	**0.01**	**0.06**

Gas VOC Wt% Margin 100.00%

Component Counts[1]	Total
Valve	4
Flanges	8
Connectors	300
Open Ended Lines	0
Pump Seals	0
Other Components	10
Total	322

1 - Component counts are engineering estimations.
2 - Component leak rates taken from EPA's Oil and Gas Production Operations average equipment leak emission factors (EPA 453/R-95-017 dated November 1995) Table 2-4.
3 - Gas VOC and HAP wt % percentage is based on stream 47 from Promax run with margin.

Sample Calculation:
0.00450 kg/hr-source * 4 Sources * 2.20462 lb/kg * 4 % VOC Wt% * 8760 hr/yr /2000 lb/ton = 0.01 tpy

Process and compressor Fugitives GHG Emissions

Fugitive GHG Summary

	CH4	CO2	CO2e
Emissions TPY	827.73	122.06	**20,815.37**
Global Warming Potential (GWP)	25	1	

CH4 Emission Rate for Gas Processing Volume[1] = 2.5e-3 tonne CH4/MMscf processed
CH4 Emission Rate for Reciprocating Compressors[1] = 8.95e-3 tonne CH4/compressor-hr
CH4 Emission Rate for Centrifugal Compressors[1] = 1.7e-2 tonne CH4/compressor-hr

[1] API Compendium of Greenhouse Gas Emissions Methodologies for the Oil and Natural Gas Industry Table 6-5

Process gas CH4 molar percentage = 38.64% From modeled composition
Process gas CO2 molar percentage = 2.07% From modeled composition
CH4 molecular weight (lb/lb mol) 16
CO2 molecular weight (lb/lb mol) 44

Amount of gas throughput (MMscf/yr) = 21,900 (Max 60 MMSCFD * 365 days/yr)
Number of Reciprocating Compressors in Process = 7
Number of Centrifugal Compressors in Process = 1

CH4 Emission Calculation for Processing Volume

tonne CH4/MMscf processed	MMscf processed/year	ton CH4/ tonne CH4	ton CH4/year
0.0025	21,900	1.1	60.225

Total CH4 process emissions (ton/year) = 60.23

CO2 Emission Calculation for Processing Volume

ton CH4/year	CO2 mol % / CH4 mol %	CO2 mol wt/ CH4 mol wt	ton CO2 / year
60.225	0.05362	2.75	8.881

Total CO2 process emissions (ton/year) = 8.88

CH4 Emission Calculation for Reciprocating Compressors

tonne CH4/compressor-hr	hr/year	compressor number	ton CH4/ tonne CH4	ton CH4 /year
0.00895	8760.00	7	1.1	604

Total CH4 reciprocating compressor emissions (ton/year) = 603.70

CO2 Emission Calculation for Reciprocating Compressors

ton CH4/year	CO2 mol % / CH4 mol %	CO2 mol wt/ CH4 mol wt	ton CO2 / year
604	0.05362	2.75	89.023

Total CO2 reciprocating compressor emissions (ton/year) = 89.023

CH4 Emission Calculation for Centrifugal Compressors

tonne CH4/compressor-hr	hr/year	compressor number	ton CH4/ tonne CH4	ton CH4 /year
0.017	8760.00	1	1.1	164

Total CH4 centrifugal compressor emissions (ton/year) = 163.81

CO2 Emission Calculation for Centrifugal Compressors

ton CH4/year	CO2 mol % / CH4 mol %	CO2 mol wt/ CH4 mol wt	ton CO2 / year
164	0.05362	2.75	24.156

Total CO2 centrifugal compressor emissions (ton/year) = 24.156

Equipment Source Name	AMINE-1
Source Description	Amine Unit
Equipment Usage	Amine Unit
Equipment Make	TBD
Equipment Model	TBD
Serial Number	TBD
QTY	1

Potential Operation:	8760 hr/yr
TO Downtime Allowance:	438 hr/yr
TO Control Efficiency:	98%
TO Downtime Control Efficiency:	95% FL-1 Control Efficiency
Margin added for operational flexibility:	30%

Emissions Summary
VOC Emissions Summary (tons/yr) with margin added

	Uncontrolled		Controlled		Uncontrolled TO Downtime		Controlled TO Downtime	
Emission Unit	lb/hr	tons/yr	lb/hr	tons/yr	lb/hr	tons/yr	lb/hr	tons/yr
AMINE-1 (Flash)	36.20	158.54	0.72	3.17	36.20	7.93	1.81	0.40
AMINE-1 (Still)	5.24	22.96	0.10	0.46	5.24	1.15	0.26	0.06

	Uncontrolled		Controlled	
	lb/hr	tons/yr	lb/hr	tons/yr
AMINE-1 Total	41.44	181.50	2.91	4.09

Uncontrolled HAP Emissions Summary (with margin)

Emission Unit	BZ	Tol	EB	Xyl	n-Hex	224-TMP	Total
AMINE-1 (Flash) (lb/hr)	0.03	0.03	0.00	0.01	0.14	0.03	0.25
AMINE-1 (Flash) (lb/yr)	254.97	258.97	14.66	75.38	1256.99	300.78	2161.75
AMINE-1 (Still) (lb/hr)	0.00	0.00	0.00	0.00	0.02	0.01	0.04
AMINE-1 (Still) (lb/yr)	39.89	40.52	2.29	11.79	196.68	47.06	338.24
Total AMINE-1 (lb/hr)	**0.03**	**0.03**	**0.00**	**0.01**	**0.17**	**0.04**	**0.29**
Total AMINE-1 (lb/yr)	**294.87**	**299.49**	**16.95**	**87.17**	**1453.66**	**347.85**	**2499.99**
Total AMINE-1 (TPY)	**0.15**	**0.15**	**0.01**	**0.04**	**0.73**	**0.17**	**1.25**

Controlled HAP Emissions (Normal Operation) Summary

Emission Unit	BZ	Tol	EB	Xyl	n-Hex	224-TMP	Total
AMINE-1 (Flash) (TO-1) (lb/yr)	5.48	5.57	0.32	1.62	27.03	6.47	46.48
AMINE-1 (Still) (TO-1) (lb/yr)	0.86	0.87	0.05	0.25	4.23	1.01	7.27
Total AMINE-1 (lb/hr)	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.01**
Total AMINE-1 (lb/yr)	**6.34**	**6.44**	**0.36**	**1.87**	**31.25**	**7.48**	**53.75**
Total AMINE-1 (TPY)	**0.00**	**0.00**	**0.00**	**0.00**	**0.02**	**0.00**	**0.03**

Equipment Source Name AMINE-1
ProMax Output File Summary

	AMINE-1			
	Amine Flash		Amine Still	
	Mass flow	Mole Fraction	Mass flow	Mole Fraction
Specie	[lb/h]	[%]	[lb/h]	[%]
Methane	71.85	55.84%	7.40	0.14%
Ethane	29.58	12.27%	4.09	0.04%
Propane	20.09	5.68%	3.01	0.02%
Iso-Butane	0.59	0.13%	0.02	0.00%
N-Butane	5.18	1.11%	0.75	0.00%
Iso-Pentane	0.44	0.08%	0.03	0.00%
N-Pentane	0.77	0.13%	0.10	0.00%
Other Hexanes	0.48	0.07%	0.07	0.00%
n-Hexane	0.11	0.02%	0.02	0.00%
Heptane	0.06	0.01%	0.01	0.00%
2,2,4-Trimethylpentane	0.03	0.00%	0.00	0.00%
Octanes +	0.05	0.01%	0.01	0.00%
Benzene	0.02	0.00%	0.00	0.00%
Toluene	0.02	0.00%	0.00	0.00%
Ethylbenzene	0.00	0.00%	0.00	0.00%
Xylenes	0.01	0.00%	0.00	0.00%
Water	8.93	6.18%	410.47	7.14%
Hydrogen Sulfide	0.03	0.01%	11.22	0.10%
Carbon Dioxide	59.46	16.85%	12992.85	92.54%
Nitrogen	3.65	1.62%	0.12	0.00%
TOTAL	**201.34**	**1.00**	**13430.17**	**1.00**

Equipment Source Name	AMINE-1	
Molar flow [lbmol/h]	8.02	319.02
Std volumetric flow [MMSCFD]	0.07	2.91
Std volumetric flow [MMSCFD] with margi	0.09	3.78
Std volumetric flow [SCFH]	3956.52	157376.36
mmscf/yr	34.66	1378.62
TO downtime throughput mmscf/yr	1.73	68.93
VOC flow [lb/h]	27.84	4.03
HAP flow [lb/h]	0.19	0.03
VOC flow [lb/h] with margin	36.20	5.24
HAP flow [lb/h] with margin	0.25	0.04
Benzene with margin	0.03	0.00
Toluene with margin	0.03	0.00
Ethylbenzene with margin	0.00	0.00
o-Xylene with margin	0.01	0.00
nC6 with margin	0.14	0.02
2,2,4-Trimethylpentane with margin	0.03	0.01
Net Ideal Gas Heating Value (Btu/ft^3)	888.18	3.27
Btu/lbmol	438143.41	1613.99

Gas Analysis - AMINE-1 Flash

Gas Constituent	Molecular Weight (lb/lb-mol)	Mole %	Mole % Without Water	Weight (lb/lbmole Gas)	Weight %	Weight % Without Water	Total HC Corrected Weight * %	Total VOC Corrected Weight ** %
Methane	16.04	55.84%	59.52%	8.96	35.68%	37.34%	55.58%	NA
Ethane	30.07	12.27%	13.07%	3.69	14.69%	15.37%	22.88%	NA
Total HC (Non-VOC)		**68.10%**	**72.59%**		**50.38%**	**52.71%**	**78.46%**	**NA**
Propane	44.10	5.68%	6.05%	2.50	9.98%	10.44%	15.54%	72.15%
Iso-Butane	58.12	0.13%	0.13%	0.07	0.29%	0.31%	0.46%	2.12%
N-Butane	58.12	1.11%	1.18%	0.65	2.57%	2.69%	4.01%	18.61%
Iso-Pentane	72.15	0.08%	0.08%	0.06	0.22%	0.23%	0.34%	1.60%
N-Pentane	72.15	0.13%	0.14%	0.10	0.38%	0.40%	0.59%	2.75%
Other Hexanes	86.18	0.07%	0.07%	0.06	0.24%	0.25%	0.37%	1.71%
n-Hexane	86.18	0.02%	0.02%	0.01	0.05%	0.06%	0.09%	0.40%
Heptane	100.21	0.01%	0.01%	0.01	0.03%	0.03%	0.05%	0.21%
2,2,4-Trimethylpentane	114.23	0.00%	0.00%	0.00	0.01%	0.01%	0.02%	0.09%
Octanes +	114.23	0.01%	0.01%	0.01	0.02%	0.02%	0.04%	0.17%
Benzene	78.11	0.00%	0.00%	0.00	0.01%	0.01%	0.02%	0.08%
Toluene	92.14	0.00%	0.00%	0.00	0.01%	0.01%	0.02%	0.08%
Ethylbenzene	106.17	0.00%	0.00%	0.00	0.00%	0.00%	0.00%	0.00%
Xylenes	106.16	0.00%	0.00%	0.00	0.00%	0.00%	0.01%	0.02%
Total NMNE VOC		**7.23%**	**7.71%**	**3.47**	**13.83%**	**14.47%**	**21.54%**	**100.00%**
Total HAPs		**0.03%**	**0.03%**	**0.02**	**0.09%**	**0.10%**	**0.15%**	**0.68%**
Water	18.02	6.18%	NA	1.11	4.43%	NA	NA	NA
Hydrogen Sulfide	34.08	0.01%	0.01%	0.00	0.02%	0.02%	NA	NA
Carbon Dioxide	44.01	16.85%	17.96%	7.41	29.53%	30.90%	NA	NA
Nitrogen	28.01	1.62%	1.73%	0.45	1.81%	1.90%	NA	NA
Totals		100.00%	100.00%	25.10	100.00%	100.00%	100.00%	

Average Molecular Weight of VOCs: **47.98 lb/lb-mol**

Notes:

* Weight Percent corrected to remove Water, Carbon Dioxide,Nitrogen, and H2S content.

** Weight Percent corrected to remove non-VOC content.

EnerflexRun	**Mol Fraction**	**Mol %**	**Heating Value (BTU/scf)**	**Heating Value (BTU/scf)**
Water	6.18	6.18%	0.00	0.00
Hydrogen Sulfide	0.01	0.01%	586.80	0.07
Carbon Dioxide	16.85	16.85%	0.00	0.00
GAS/SPEC CS-1160	0.00	0.00%	0.00	0.00
Methane	55.84	55.84%	909.10	507.62
Ethane	12.27	12.27%	1617.80	198.42
Propane	5.68	5.68%	2316.10	131.55
n-Butane	1.11	1.11%	3010.40	33.46
Isobutane	0.13	0.13%	3001.10	3.80
n-Pentane	0.13	0.13%	3707.50	4.91
Isopentane	0.08	0.08%	3698.30	2.84
n-Hexane	0.11	0.11%	5100.20	5.51
Nitrogen	1.62	1.62%	0.00	0.00
Total	100.00	1.00	23947.3	888.18

Note - Enerflex amine flash analysis is provided in Section 7 of the application.

Gas Analysis - AMINE-1 Still

Gas Constituent	Molecular Weight (lb/lb-mol)	Mole %	Mole % Without Water	Weight (lb/lbmole Gas)	Weight %	Weight % Without Water	Total HC Corrected Weight * %	Total VOC Corrected Weight ** %
Methane	16.04	0.14%	0.16%	0.02	0.06%	0.06%	47.67%	NA
Ethane	30.07	0.04%	0.05%	0.01	0.03%	0.03%	26.34%	NA
Total HC (Non-VOC)		**0.19%**	**0.20%**		**0.09%**	**0.09%**	**74.01%**	**NA**
Propane	44.10	0.02%	0.02%	0.01	0.02%	0.02%	19.38%	0.16%
Iso-Butane	58.12	0.00%	0.00%	0.00	0.00%	0.00%	0.15%	0.00%
N-Butane	58.12	0.00%	0.00%	0.00	0.01%	0.01%	4.82%	0.04%
Iso-Pentane	72.15	0.00%	0.00%	0.00	0.00%	0.00%	0.19%	0.00%
N-Pentane	72.15	0.00%	0.00%	0.00	0.00%	0.00%	0.66%	0.01%
Other Hexanes	86.18	0.00%	0.00%	0.00	0.00%	0.00%	0.48%	0.00%
n-Hexane	86.18	0.00%	0.00%	0.00	0.00%	0.00%	0.11%	0.00%
Heptane	100.21	0.00%	0.00%	0.00	0.00%	0.00%	0.06%	0.00%
2,2,4-Trimethylpentane	114.23	0.00%	0.00%	0.00	0.00%	0.00%	0.03%	0.00%
Octanes +	114.23	0.00%	0.00%	0.00	0.00%	0.00%	0.05%	0.00%
Benzene	78.11	0.00%	0.00%	0.00	0.00%	0.00%	0.02%	0.00%
Toluene	92.14	0.00%	0.00%	0.00	0.00%	0.00%	0.02%	0.00%
Ethylbenzene	106.17	0.00%	0.00%	0.00	0.00%	0.00%	0.00%	0.00%
Xylenes	106.16	0.00%	0.00%	0.00	0.00%	0.00%	0.01%	0.00%
Total NMNE VOC		**0.03%**	**0.03%**	**0.01**	**0.03%**	**0.03%**	**25.99%**	**0.22%**
Total HAPs		**0.00%**	**0.00%**	**0.00**	**0.00%**	**0.00%**	**0.19%**	**0.00%**
Water	18.02	7.14%	NA	1.29	3.06%	NA	NA	NA
Hydrogen Sulfide	34.08	0.10%	0.11%	0.04	0.08%	0.09%	NA	NA
Carbon Dioxide	44.01	92.54%	99.66%	40.73	96.74%	99.79%	NA	NA
Nitrogen	28.01	0.00%	0.00%	0.00	0.00%	0.00%	NA	NA
Totals		100.00%	100.00%	42.10	100.00%	100.00%	100.00%	

Average Molecular Weight of VOCs: **0.17 lb/lb-mol**

Notes:

* Weight Percent corrected to remove Water, Carbon Dioxide,Nitrogen, and H2S content.

** Weight Percent corrected to remove non-VOC content.

EnerflexRun	Mol Fraction	Mol %	Heating Value (BTU/scf)	Heating Value (BTU/scf)
Water	7.14	7.14%	0.00	0.00
Hydrogen Sulfide	0.10	0.10%	586.80	0.61
Carbon Dioxide	92.54	92.54%	0.00	0.00
GAS/SPEC CS-1160	0.00	0.00%	0.00	0.00
Methane	0.14	0.14%	909.10	1.31
Ethane	0.04	0.04%	1617.80	0.69
Propane	0.02	0.02%	2316.10	0.50
n-Butane	0.00	0.00%	3010.40	0.12
Isobutane	0.00	0.00%	3001.10	0.00
n-Pentane	0.00	0.00%	3707.50	0.02
Isopentane	0.00	0.00%	3698.30	0.00
n-Hexane	0.00	0.00%	5100.20	0.02
Nitrogen	0.00	0.00%	0.00	0.00
Total	100.00	1	23947.3	3.27

Note - Enerflex amine still analysis is provided in Section 7 of the application.

SO2 Assumptions:
SO2 Emissions Calculations from combustion of AMINE Unit vent stream
Assumes all H2S in the gas stream is removed by the AMINE units and oxidized to SO2 by the thermal oxidizer.
H2S Assumptions:
Based on 98% control efficiency, 2% not oxidized
H2S content "Pipeline spec"

	8	Grains H2S/100scf		using conversion factor
	80,000.00	grains H2S/MMscf		(Sulfur Measurement Handbook Rev7)
	127.74	ppm		1 pound = 7000 grains
Conversion factor	1.43E-04	lb/grains		
				MW
			H2S	34.1
	1.14E-05	lb H2S/scf	S	32.1
	1.08E-05	lb S/scf	SO2	64.1

AMINE-1

Throughput	6.00E+07	scfd
	21900.00	MMSCF/yr
	125.14	TPY H2S uncontrolled
	28.57	lbs/hr H2S uncontrolled
	98.00%	Control Efficiency
	2.50	TPY H2S controlled
	0.57	lbs/hr H2S controlled

SO2 emissions		
lb/hr	**lb/day**	**tpy**
64.45	1288.98	235.24

lb/hr Margin 20%

Compressor Blowdown Detail Sheet

Equipment Source Name:	COMP		
Equipment Name	Compressor Blowdowns		
Inlet Compressor Quantity	3		
Residue Compressor Quantity	4		
Refrigeration Compressor Quantity	1		
Source Description	Reciprocating		
Equipment Usage	Reciprocating Compressor	Potential operation	8760 hr/yr
Control Efficiency	95%		

Total Potential Emissions

Pollutant	Uncontrolled Emissions		Controlled Emissions	
	(lb/hr)	(tpy)	(lb/hr)	(tpy)
VOC	2.27	9.95	0.11	0.50
Benzene	0.01	0.03	0.00	0.00
Toluene	0.00	0.00	0.00	0.00
Ethylbenzene	0.00	0.00	0.00	0.00
Xylenes	0.00	0.00	0.00	0.00
n-Hexane	0.01	0.05	0.00	0.00
2 2 4-trimethylpentane	0.00	0.00	0.00	0.00
Total HAPs	0.02	0.09	0.00	0.00

Potential Emissions Per Inlet Compressor Blowdown

Pollutant	Emission Factor (Mscf/event)	Frequency (events/yr)	(ton/blowdown)	Uncontrolled Emissions (lb/hr)	Uncontrolled Emissions (tpy)	Controlled Emissions (lb/hr)	Controlled Emissions (tpy)	Source of Emission Factor
VOC	2.00	120	0.0262	0.72	3.15	0.04	0.16	Engineering Estimation
Benzene				0.00	0.01	0.00	0.00	Engineering Calculation
Toluene				0.00	0.00	0.00	0.00	Engineering Calculation
Ethylbenzene				0.00	0.00	0.00	0.00	Engineering Calculation
Xylenes				0.00	0.00	0.00	0.00	Engineering Calculation
n-Hexane				0.00	0.02	0.00	0.00	Engineering Calculation
2 2 4-trimethylpentane				0.00	0.00	0.00	0.00	Engineering Calculation
Total HAPs				0.01	0.03	0.00	0.00	

Potential Emissions Per Residue Compressor Blowdown

Pollutant	Emission Factor (Mscf/event)	Frequency (events/yr)	(ton/blowdown)	Uncontrolled Emissions (lb/hr)	Uncontrolled Emissions (tpy)	Controlled Emissions (lb/hr)	Controlled Emissions (tpy)	Source of Emission Factor
VOC	2.00	120	0.0008	0.02	0.10	0.00	0.00	Engineering Estimation
Benzene				0.00	0.00	0.00	0.00	Engineering Calculation
Toluene				0.00	0.00	0.00	0.00	Engineering Calculation
Ethylbenzene				0.00	0.00	0.00	0.00	Engineering Calculation
Xylenes				0.00	0.00	0.00	0.00	Engineering Calculation
n-Hexane				0.00	0.00	0.00	0.00	Engineering Calculation
2 2 4-trimethylpentane				0.00	0.00	0.00	0.00	Engineering Calculation
Total HAPs				0.00	0.00	0.00	0.00	

Based on 10%VOC

Potential Emissions Per Refrigeration Compressor Blowdown

Pollutant	Emission Factor (Mscf/event)	Frequency (events/yr)	(ton/blowdown)	Uncontrolled Emissions (lb/hr)	Uncontrolled Emissions (tpy)	Controlled Emissions (lb/hr)	Controlled Emissions (tpy)	Source of Emission Factor
VOC	2.00	1	0.1164	0.03	0.12	0.00	0.01	Engineering Estimation
Benzene				0.00	0.00	0.00	0.00	Engineering Calculation
Toluene				0.00	0.00	0.00	0.00	Engineering Calculation
Ethylbenzene				0.00	0.00	0.00	0.00	Engineering Calculation
Xylenes				0.00	0.00	0.00	0.00	Engineering Calculation
n-Hexane				0.00	0.00	0.00	0.00	Engineering Calculation
2 2 4-trimethylpentane				0.00	0.00	0.00	0.00	Engineering Calculation
Total HAPs				0.00	0.00	0.00	0.00	

Sample Calculation

2.000 Mscf/event * 1000 scf/Mscf / 379 scf/lb-mol * 9.95 lb/lb-mol * 1/2000 lb/ton * 120 events/year = 3.15 tpy

Compressor Blowdown Detail Sheet

Equipment Source Name:	PLANT BD		
Equipment Name	Gas Plant Blowdown		
Quantity	1		
Source Description	Gas Plant Blowdown	Plant Volume	60.0 MMscf/day
Equipment Usage	Gas Plant Blowdown	Potential operation	8760 hr/yr
Control Efficiency	95%		

Total Potential Emissions

Pollutant	Uncontrolled Emissions		Controlled Emissions	
	(lb/hr)	(tpy)	(lb/hr)	(tpy)
VOC	32803.52	16.40	1640.18	0.82
Benzene	105.62	0.05	5.28	0.00
Toluene	15.19	0.01	0.76	0.00
Ethylbenzene	0.00	0.00	0.00	0.00
Xylenes	0.00	0.00	0.00	0.00
n-Hexane	181.91	0.09	9.10	0.00
2 2 4-trimethylpentane	0.00	0.00	0.00	0.00
Total HAPs	302.73	0.15	15.14	0.01

Potential Emissions Per Blowdown

Pollutant	Volume	Frequency	Event Duration	Uncontrolled Emissions		Controlled Emissions		Source of Emission Factor
	(MMScf/d)	(events/yr)	(hr/event)	(lb/hr)	(tpy)	(lb/hr)	(tpy)	
VOC	60.00	1	0.5	32803.52	16.40	1640.18	0.82	Engineering Calculation
Benzene				105.62	0.05	5.28	0.00	Engineering Calculation
Toluene				15.19	0.01	0.76	0.00	Engineering Calculation
Ethylbenzene				0.00	0.00	0.00	0.00	Engineering Calculation
Xylenes				0.00	0.00	0.00	0.00	Engineering Calculation
n-Hexane				181.91	0.09	9.10	0.00	Engineering Calculation
2 2 4-trimethylpentane				0.00	0.00	0.00	0.00	Engineering Calculation
Total HAPs				302.73	0.15	15.14	0.01	

Sample Calculation

60.000 Mscf/event * 1000 scf/Mscf / 379 scf/lb-mol * 9.95 lb/lb-mol * 1/2000 lb/ton * 1 events/year = 16.40 tpy

Flare Detail Sheet

Equipment Source Name	TO-1	Stack Height	30	ft
Source Description	Thermal Oxidizer	Potential Operation	8760	hr/yr
Equipment Make	TBD			
Equipment Model	TBD			
Quantity	1			
Destruction Efficiency	98%			

Total Emissions

Pollutant	Estimated Emissions	
	(lb/hr)	(tpy)
NOx	1.63	7.15
CO	1.37	6.01
VOC	4.26	18.64
SO2	64.45	235.24
PM10	0.00	0.00
Benzene	0.01	0.06
Toluene	0.00	0.01
Ethylbenzene	0.00	0.00
Xylenes	0.00	0.00
n-Hexane	0.02	0.10
2 2 4-trimethylpentane	0.00	0.00
Total HAPs	0.04	0.17

Pilot Stream

Pilot Rating	12.00	MMBtu/hr
Pilot Heat Value	1479.8	Btu/scf
Pilot Gas Flow Rate	8.109	Mscf/hr

Pollutant	EF	Estimated Emissions		Source of Emission Factor
	(lb/MMBtu)	(lb/hr)	(tpy)	
NOx	0.0980	1.18	5.15	AP-42 Table 1.4-1
CO	0.082	0.99	4.33	AP-42 Table 1.4-1
VOC	N/A	4.26	18.64	Engineering Calculation
Benzene	N/A	0.01	0.06	Engineering Calculation
Toluene	N/A	0.00	0.01	Engineering Calculation
Ethylbenzene	N/A	0.00	0.00	Engineering Calculation
Xylenes	N/A	0.00	0.00	Engineering Calculation
n-Hexane	N/A	0.02	0.10	Engineering Calculation
2 2 4-trimethylpentane	N/A	0.00	0.00	Engineering Calculation
Total HAPs		0.04	0.17	

Amine Flash Gas Waste Stream

Vapor Flow Rate	39.991 MMscf/yr	50.00% Margin	
	4.565 Mscf/hr		
Total Emissions Heat Value	888.18 Btu/scf	Based on Amine Gas Analysis (Enerflex)	

Pollutant	EF	Estimated Emissions		Source of Emission Factor
	(lb/MMBtu)	(lb/hr)	(tpy)	
NOx	0.0980	0.40	1.74	AP-42 Table 1.4-1
CO	0.082	0.33	1.46	AP-42 Table 1.4-1
VOC[1]	N/A	N/A	N/A	N/A
PM10	0.01	0.00	0.00	AP-42 Table 1.4-2

Amine Acid Gas Waste Stream

Vapor Flow Rate	1590.712 MMscf/yr	50.00% Margin	
	181.588 Mscf/hr		
W&S Emissions Heat Value	3.272 Btu/scf	Based on Amine Gas Analysis (Enerflex)	

Pollutant	EF	Estimated Emissions		Source of Emission Factor
	(lb/MMBtu)	(lb/hr)	(tpy)	
NOx	0.0980	0.06	0.26	AP-42 Table 1.4-1
CO	0.082	0.05	0.21	AP-42 Table 1.4-1
VOC[1]	N/A	N/A	N/A	N/A
PM10	0.01	0.00	0.00	AP-42 Table 1.4-2

1 - VOC emissions from produced gas stream are calculated using a mass balance and a 98% destruction efficiency. VOC emissions from waste streams are shown at the amine.

Sample Calculation for NOx from Tank Waste Stream

0.098 lb/MMBtu * 4.565 MMscf/yr * 0,888.2 Btu/scf / 8,760 hr/yr = 0.40 lb/hr

Flare Detail Sheet

Equipment Source Name	FL-1	Stack Height	100	ft
Source Description	Upset/Maintenance Flare	Potential Operation	8760	hr/yr
Equipment Make	TBD			
Equipment Model	TBD			
Quantity	1			
Destruction Efficiency	95%			

Total Emissions

Pollutant	Estimated Emissions	
	(lb/hr)	(tpy)
NOx	170.49	26.44
CO	777.23	120.53
VOC	93.36	16.00
SO2	6.30	1.34
PM10	5.75	0.88
Benzene	0.00	0.00
Toluene	0.00	0.00
Ethylbenzene	0.00	0.00
Xylenes	0.00	0.00
n-Hexane	0.00	0.00
2 2 4-trimethylpentane	0.00	0.00
Total HAPs	0.00	0.00

Pilot Stream

Pilot Rating	0.50	MMBtu/hr
Pilot Heat Value	1479.8	Btu/scf
Pilot Gas Flow Rate	0.338	Mscf/hr

Pollutant	EF	Estimated Emissions		Source of Emission Factor
	(lb/MMBtu)	(lb/hr)	(tpy)	
NOx	0.0680	0.03	0.15	AP-42 Table 13.5-1
CO	0.310	0.16	0.68	AP-42 Table 13.5-2
VOC	N/A	0.44	1.94	Engineering Calculation
Benzene	N/A	0.00	0.01	Engineering Calculation
Toluene	N/A	0.00	0.00	Engineering Calculation
Ethylbenzene	N/A	0.00	0.00	Engineering Calculation
Xylenes	N/A	0.00	0.00	Engineering Calculation
n-Hexane	N/A	0.00	0.01	Engineering Calculation
2 2 4-trimethylpentane	N/A	0.00	0.00	Engineering Calculation
Total HAPs		0.00	0.02	

Residue Gas Stream

Produced Gas Flow Rate	693.4	MMscf/yr	
	79.2	Mscf/hr	
Max Hourly Gas Flow Rate	2291.7	Mscf/hr	
Gas Heating Value	1066.43	Btu/scf	Based on Residue Gas Analysis
Max Sulfur Content[2]	2.000	grains/MMscf	AP42 Chapter 3.2

Pollutant	EF	Estimated Emissions		Source of Emission Factor
	(lb/MMBtu)	(lb/hr)	(tpy)	
NOx	0.068	166.19	25.14	AP-42 Table 13.5-1
CO	0.31	757.61	114.62	AP-42 Table 13.5-2
VOC[1]	N/A	92.92	14.06	Engineering Calculation
SO2	N/A	1.31	0.20	Engineering Calculation
PM10[2]	40	5.72	0.87	AP-42 Table 13.5-1
Benzene	N/A	0.00	0.00	Engineering Calculation
Toluene	N/A	0.00	0.00	Engineering Calculation
Ethylbenzene	N/A	0.00	0.00	Engineering Calculation
Xylenes	N/A	0.00	0.00	Engineering Calculation
n-Hexane	N/A	0.00	0.00	Engineering Calculation
2 2 4-trimethylpentane	N/A	0.00	0.00	Engineering Calculation
Total HAPs		0.00	0.00	

Maintenance Waste Stream

Vapor Flow Rate			
Compressor Blowdown	1,682.000	Mscf/yr	
Plant Blowdown	2,500.000	Mscf/yr	
Misc. Pipeline Flaring[1]	240.000	Mscf/yr	
Total Vapor Flow Rate	4.422	MMscf/yr	
	0.505	Mscf/hr	
Waste Stream Heat Value	1479.8	Btu/scf	
Max Sulfur Content	80,000	grains/MMscf	Maximum measured H2S concentration

Pollutant	EF (lb/MMBtu)	Estimated Emissions (lb/hr)	Estimated Emissions (tpy)	Source of Emission Factor
NOx	0.068	0.05	0.22	AP-42 Table 13.5-1
CO	0.31	0.23	1.01	AP-42 Table 13.5-2
VOC	N/A	0.04	0.16	Engineering Calculation
SO2	N/A	0.01	0.05	Engineering Calculation
PM10[2]	40	0.00	0.01	AP-42 Table 13.5-1

Thermal Oxidizer Downtime Waste Stream

TO Potential Downtime	438.0	hr/yr	
Vapor Flow Rate	95.58	MMscf/yr	
	218.22	Mscf/hr	
Waste Stream Heat Value	284.4	Btu/scf	Engineering Calculation
Max Sulfur Content	80,000	grains/MMscf	Maximum measured H2S concentration

Pollutant	EF (lb/MMBtu)	Estimated Emissions (lb/hr)	Estimated Emissions (tpy)	Source of Emission Factor
NOx	0.068	4.22	0.92	AP-42 Table 13.5-1
CO	0.31	19.24	4.21	AP-42 Table 13.5-2
VOC	N/A	N/A	N/A	N/A
SO2	N/A	4.98	1.09	Engineering Calculation
PM10[4]	40	0.03	0.01	AP-42 Table 13.5-1

1 - VOC emissions from process gas stream and miscellaneous pipeline flaring are calculated using a mass balance and a 95% destruction efficiency. VOC emissions from maintenance and thermal oxidizer downtime waste streams are shown at compressor blowdowns, plant blowdowns and amine unit.
2 - PM10 emission factor in units of μg/L, assuming a lightly smoking flare.

3 - Maintenace volume includes 240 Mscf/yr for miscellaneous activities to be conservative in emission estimations.

Sample Calculation for NOx from Process Gas Stream

0.068 lb/MMBtu * 1E6 scf/MMscf * 693.44 MMscf/yr * 1,066.43 Btu/scf * MMBtu / 1E6 Btu / 8,760 hr/yr = 166.19 lb/hr

Sample Calculation for NOx from Tank Waste Stream

0.068 lb/MMBtu * 0.505 MMscf/yr * 1,479.8 Btu/scf / 8,760 hr/yr = 0.05 lb/hr

Flare Detail Sheet

Equipment Source Name	FL-2	Stack Height	TBD	ft
Source Description	Tank Flare	Potential Operation	8760	hr/yr
Equipment Make	TBD			
Equipment Model	TBD			
Quantity	1			
Destruction Efficiency	95%			

Total Emissions

Pollutant	Estimated Emissions	
	(lb/hr)	(tpy)
NOx	0.89	3.91
CO	4.07	17.82
VOC	0.09	0.39
SO2	0.00	0.00
PM10	0.00	0.01
Benzene	0.00	0.00
Toluene	0.00	0.00
Ethylbenzene	0.00	0.00
Xylenes	0.00	0.00
n-Hexane	0.00	0.00
2 2 4-trimethylpentane	0.00	0.00
Total HAPs	0.00	0.00

Pilot Stream

Pilot Rating	0.10	MMBtu/hr
Pilot Heat Value	1479.8	Btu/scf
Pilot Gas Flow Rate	0.068	Mscf/hr

Pollutant	EF	Estimated Emissions		Source of Emission Factor
	(lb/MMBtu)	(lb/hr)	(tpy)	
NOx	0.0680	0.01	0.03	AP-42 Table 13.5-1
CO	0.310	0.03	0.14	AP-42 Table 13.5-2
VOC	N/A	0.09	0.39	Engineering Calculation
Benzene	N/A	0.00	0.00	Engineering Calculation
Toluene	N/A	0.00	0.00	Engineering Calculation
Ethylbenzene	N/A	0.00	0.00	Engineering Calculation
Xylenes	N/A	0.00	0.00	Engineering Calculation
n-Hexane	N/A	0.00	0.00	Engineering Calculation
2 2 4-trimethylpentane	N/A	0.00	0.00	Engineering Calculation
Total HAPs		0.00	0.00	

Tank Waste Stream

Vapor Density:			
Gunbarrel	0.1209	lb/scf	Promax
Condensate	0.0893	lb/scf	TANKS 4.0.9d
Oil	0.0893	lb/scf	TANKS 4.0.9d
Produced Water	0.0014	lb/scf	TANKS 4.0.9d
Tank Emissions:			
Gunbarrel	5,468,485.42	lb/yr	Promax
Condensate	69,897.16	lb/yr	TANKS 4.0.9d
Oil	7,438.04	lb/yr	TANKS 4.0.9d
Produced Water	9.51	lb/yr	TANKS 4.0.9d
Uncontrolled Recovery- Vapor:	46,097,576.69	scf/yr	
Vapor Margin:	20.00%		
Uncontrolled Recovery- Vapor With Margin :	151,554	scf/day	
Total Emissions Heat Value:	2050	Btu/scf	Engineering Estimation
Total Heat Flow:	310,685,037	Btu/day	
Total Heat Flow:	12.95	MMBtu/hr	

Pollutant	EF	Estimated Emissions		Source of Emission Factor
	(lb/MMBtu)	(lb/hr)	(tpy)	
NOx	0.068	0.88	3.86	AP-42 Table 13.5-1
CO	0.31	4.01	17.58	AP-42 Table 13.5-2
VOC[1]	N/A	N/A	N/A	N/A
PM10[2]	40	0.00	0.01	AP-42 Table 13.5-1

Loadout Waste Stream

Potential Emissions	55082.5	lb/yr	Based on AP-42 Section 5.2.1
Vapor Molecular Weight	64.0	lb/lb-mol	Based on TANKS 4.0.9d
Vapor Flow Rate	0.326	MMscf/yr	
	0.037	Mscf/hr	
Emissions Heat Value	2050	Btu/scf	Engineering Estimation

Pollutant	EF	Estimated Emissions		Source of Emission Factor
	(lb/MMBtu)	(lb/hr)	(tpy)	
NOx	0.068	0.01	0.02	AP-42 Table 13.5-1
CO	0.31	0.02	0.10	AP-42 Table 13.5-2
VOC[1]	N/A	N/A	N/A	N/A
PM10[2]	40	0.00	0.00	AP-42 Table 13.5-1

1 - VOC emissions from waste streams are shown at tanks and loadout.
2 - PM10 emission factor in units of μg/L, assuming a lightly smoking flare.

Sample Calculation for NOx from Tank Waste Stream

0.068 lb/MMBtu * 12.945 MMBtu/hr = 0.88 lb/hr

Fugitive Dust Emissions Detail Sheet

Equipment Source Name:	HR-1		
Source Description:	Road Dust		
Operation:	24	hr/day	365 days/yr
Emission Controls:	None		

Potential Emissions

Pollutant	Estimated Potential Emissions				Source of Emission Calculations
	Uncontrolled		Controlled		
	lb/hr	tpy	lb/hr	tpy	
PM30*	12.49	0.23	12.49	0.23	AP-42 Section 13.2.2
PM10	3.18	0.06	3.18	0.06	AP-42 Section 13.2.2
PM 2.5	0.32	0.01	0.32	0.01	AP-42 Section 13.2.2

* Assumed equivalent to total suspended particulate matter (TSP)

Mean Vehicle Weight (W)			17.7	tons	Engineering Calculation
Surface Material Silt Content (s)			4.8	%	NMED Default[2]
Mean # of Days with > 0.01 inch of precipitation			70	Days	NMED Default[2]
Material moisture content (%water)			2	%	NMED Default[2]
Mean Wind Speed			11	mph	NMED Default[2]
Oil Production Trucked	100%	of max throughput	4.2	bbl/day	
Condensate Production Trucked	100%	of max throughput	600.0	bbl/day	
Produced Water Production trucked	100%	of max throughput	4.2	bbl/day	

Tech Truck[1]	5,000	lb			
	1	trips/day			
	0.26	miles/day			
	1.49	lb/day	PM30		
	0.38	lb/day	PM10		
	0.04	lb/day	PM 2.5		
Oil Hauler[3]	200	BBL Oil/trip	Truck capacity	12,000	lb Empty weight
	41,820	lb		7.1	lb/gal (oil)
	0.02	trips/day			
	0.01	miles/day			
	0.03	lb/day	PM30		
	0.01	lb/day	PM10		
	0.00	lb/day	PM 2.5		
Condensate Hauler[3]	200	BBL Condensate	Truck capacity	12,000	lb Empty weight
	35,520	lb		5.6	lb/gal (Condensate RVP 12)
	3	trips/day			
	52	miles/day			
	298.09	lb/day	PM30		
	75.97	lb/day	PM10		
	7.60	lb/day	PM 2.5		
Produced Water Hauler[4]	140	BBL PW/trip	Truck capacity	12,000	Empty weight
	36,402	lb	(12,000 empty weight)	8.3	lb/gal (water)
	0	trips/day			
	0.01	miles/day			
	0.04	lb/day	PM30		
	0.01	lb/day	PM10		
	0.00	lb/day	PM 2.5		
	52.27	Total miles/day (Tech Truck + Oil Hauler + Produced Water Hauler)			
	2.18	Total miles/hr			
	19080	Total miles/yr			

Fugitive Dust (PM30) per mile traveled	5.73	lb/VMT	AP-42 Eqn 13.2.2-1a &2
Fugitive Dust (PM10) per mile traveled	1.46	lb/VMT	AP-42 Eqn 13.2.2-1a &2
Fugitive Dust (PM2.5) per mile traveled	0.15	lb/VMT	AP-42 Eqn 13.2.2-1a &2
Vehicle miles traveled	0.26	miles/trip	Engineering Estimation

Notes:

1 - Based on the weight of a Ford F-150

2 - NMED Department Accepted Values for: Aggregate Handling, Storage Pile, and Haul Road Emissions

3 - Based on the assumption each hauler can carry 200 bbls of oil per visit

4 - Based on the assumption each hauler can carry 140 bbls of produced water per visit

Sample Calculation for PM30

5.73 lb/VMT * (0.01 + 0.01 + 0.26) miles/day * 365 days/yr / 2000 lb/ton * (365-70)/ 365 = 0.23 tpy

Uncontrolled MSS Activities

Equipment Source Name MAIN-1
Source Description: Maintenance Activities

Emission Summary

Activity
Aerosol
Painting
Tank Degassing
Tank Cleaning
Engine Startup/Warmup
Sump Cleanout
Pipeline Degassing
Pigging
Filter Changes

	lb/hr*	tpy
TOTAL VOC Emissions	--	10.00

Notes:
* - Hourly emission limits are not appropriate for this operating situation.

Libby Gas Plant Gas Sample dated 1/9/2019

Gas Constituent	Molecular Weight (lb/lb-mol)	Mole %	Mole % Without Water	Weight (lb/lbmole Gas)	Weight %	Weight % Without Water	Total HC Corrected Weight * %	Total VOC Corrected Weight ** %
Methane	16.04	61.85%	61.85%	9.92	38.64%	38.64%	40.23%	NA
Ethane	30.07	15.96%	15.96%	4.80	18.69%	18.69%	19.45%	NA
Total HC (Non-VOC)		**77.81%**	**77.81%**		**57.33%**	**57.33%**	**59.68%**	**NA**
Propane	44.10	11.39%	11.39%	5.02	19.56%	19.56%	20.36%	50.50%
Iso-Butane	58.12	1.64%	1.64%	0.95	3.71%	3.71%	3.86%	9.58%
N-Butane	58.12	4.17%	4.17%	2.42	9.43%	9.43%	9.82%	24.35%
Iso-Pentane	72.15	0.85%	0.85%	0.62	2.40%	2.40%	2.50%	6.20%
N-Pentane	72.15	0.83%	0.83%	0.60	2.34%	2.34%	2.44%	6.04%
Other Hexanes	86.18	0.26%	0.26%	0.22	0.86%	0.86%	0.90%	2.23%
n-Hexane	86.18	0.06%	0.06%	0.06	0.21%	0.21%	0.22%	0.55%
Heptane	100.21	0.01%	0.01%	0.01	0.05%	0.05%	0.05%	0.13%
2,2,4-Trimethylpentane	114.23	0.00%	0.00%	0.00	0.00%	0.00%	0.00%	0.00%
Octanes	114.23	0.00%	0.00%	0.00	0.01%	0.01%	0.01%	0.02%
Nonanes	128.20	0.00%	0.00%	0.00	0.01%	0.01%	0.01%	0.03%
Decanes+	142.29	0.00%	0.00%	0.00	0.00%	0.00%	0.00%	0.00%
Benzene	78.11	0.04%	0.04%	0.03	0.12%	0.12%	0.13%	0.32%
Toluene	92.14	0.01%	0.01%	0.00	0.02%	0.02%	0.02%	0.05%
Ethylbenzene	106.17	0.00%	0.00%	0.00	0.00%	0.00%	0.00%	0.00%
Xylenes	106.16	0.00%	0.00%	0.00	0.00%	0.00%	0.00%	0.00%
Total NMNE VOC		**19.27%**	**19.27%**	**9.95**	**38.73%**	**38.73%**	**40.32%**	**100.00%**
Total HAPs		**0.11%**	**0.11%**	**0.09**	**0.36%**	**0.36%**	**0.37%**	**0.92%**
Water	18.02	0.00%	NA	0.00	0.00%	NA	NA	NA
Hydrogen Sulfide	34.08	0.00%	0.00%	0.00	0.00%	0.00%	NA	NA
Carbon Dioxide	44.01	1.21%	1.21%	0.53	2.07%	2.07%	NA	NA
Nitrogen	28.01	1.71%	1.71%	0.48	1.87%	1.87%	NA	NA
Totals		100.00%	100.00%	25.68	100.00%	100.00%	100.00%	

Average Molecular Weight of VOCs: **51.62 lb/lb-mol**

Notes:

* Weight Percent corrected to remove Water, Carbon Dioxide,Nitrogen, and H2S content.

** Weight Percent corrected to remove non-VOC content.

Libby Gas Plant - Promax Stream 47

Gas Constituent	Molecular Weight (lb/lb-mol)	Mole %	Weight (lb/lbmole Gas)	Weight %	Total HC Corrected Weight * %	Total VOC Corrected Weight ** %
Methane	16.04	88.38%	14.18	79.96%	82.72%	NA
Ethane	30.07	8.83%	2.66	14.97%	15.49%	NA
Total HC (Non-VOC)		97.21%		94.93%	98.21%	NA
Propane	44.10	0.62%	0.28	1.55%	1.61%	89.53%
Iso-Butane	58.12	0.02%	0.01	0.07%	0.07%	3.83%
N-Butane	58.12	0.03%	0.02	0.11%	0.11%	6.08%
Iso-Pentane	72.15	0.00%	0.00	0.01%	0.01%	0.31%
N-Pentane	72.15	0.00%	0.00	0.00%	0.00%	0.22%
Other Hexanes	86.18	0.00%	0.00	0.00%	0.00%	0.02%
n-Hexane	86.18	0.00%	0.00	0.00%	0.00%	0.00%
Heptane	100.21	0.00%	0.00	0.00%	0.00%	0.00%
2,2,4-Trimethylpentane	114.23	0.00%	0.00	0.00%	0.00%	0.00%
Octanes+	114.23	0.00%	0.00	0.00%	0.00%	0.00%
Benzene	78.11	0.00%	0.00	0.00%	0.00%	0.00%
Toluene	92.14	0.00%	0.00	0.00%	0.00%	0.00%
Ethylbenzene	106.17	0.00%	0.00	0.00%	0.00%	0.00%
Xylenes	106.16	0.00%	0.00	0.00%	0.00%	0.00%
Total NMNE VOC		**0.68%**	**0.31**	**1.73%**	**1.79%**	**100.00%**
Hydrogen Sulfide	34.08	0.00%	0.00	0.00%	NA	NA
Carbon Dioxide	44.01	0.01%	0.00	0.01%	NA	NA
Nitrogen	28.01	2.10%	0.59	3.32%	NA	NA
Totals		100.00%	17.73	100.00%	100.00%	

Average Molecular Weight of VOCs: **45.28 lb/lb-mol**

Lumped C6+ Natural Gas Analysis Conversion

Hexane+ Mol % from Gas Analysis	0.0001%

(Reference: Typical speciated C6+ from GRI-GLYCalc Help System)

	Production Weighted Mol % of C6***	Production Total Gas Mol %	Molecular Weight (lb/lb-mol)	Weight (lb/lb-mol Gas)	Weight% of C6+	Total Gas Weight%	Total VOC Corrected Weight%
Other Hexanes	63.85%	0.00005961%	86.18	55.03	62.25%	0.00%	0.002%
n-Hexane	14.79%	0.00001381%	86.18	12.75	14.42%	0.00%	0.001%
Heptane	6.87%	0.00000641%	100.2	6.88	7.79%	0.00%	0.000%
2,2,4-Trimethylpentane	2.67%	0.00000249%	114.23	3.05	3.45%	0.00%	0.000%
Octanes +	4.80%	0.00000448%	114.23	5.48	6.20%	0.00%	0.000%
Benzene	3.31%	0.00000309%	78.11	2.59	2.92%	0.00%	0.000%
Toluene	2.85%	0.00000266%	92.13	2.63	2.97%	0.00%	0.000%
Ethylbenzene	0.14%	0.00000013%	106.17	0.15	0.17%	0.00%	0.000%
Xylenes	0.72%	0.00000067%	106.17	0.76	0.86%	0.00%	0.000%
Totals C6+	**100.00%**	**0.0001%**					0.004%
Total HAPs						**0.0000%**	

Notes:
* Weight Percent corrected to remove Carbon Dioxide,Nitrogen, and H2S content.
** Weight Percent corrected to remove non-VOC content.
*** GRY-GLYCalc C6+ typical gas composition from Help System used to speciate Hexanes+ for HAP emissions.

Process Streams		**47**
Composition	**Status:**	**Solved**
Phase: **Total**	**From Block:**	**PIPE-1**
	To Block:	--
Mole Fraction		**%**
Methane		88.38%
Ethane		8.83%
Propane		0.62%
i-Butane		0.02%
n-Butane		0.03%
i-Pentane		0.0013388%
n-Pentane		0.0009551%
n-Hexane		0.0000918%
n-Heptane		0.0000014%
C8		0.0000001%
Water		0.00%
N2		2.10%
CO2		0.01%
H2S		0.00%
Triethylene Glycol		0.00%
EG		0.00%
MeOH		0.00%
MDEA		0.00%
CHEMTHERM 550		0.00%

Process Streams		**47**
Properties	**Status:**	**Solved**
Phase: **Total**	**From Block:**	**PIPE-1**
	To Block:	--
Property	**Units**	
Temperature	°F	75.1253
Pressure	psig	828.3127315
Mole Fraction Vapor	%	100
Mole Fraction Light Liquid	%	0
Mole Fraction Heavy Liquid	%	0
Molecular Weight	lb/lbmol	17.7327
Mass Density	lb/ft^3	2.99494
Molar Flow	lbmol/h	2275.60
Mass Flow	lb/h	40352.7
Vapor Volumetric Flow	ft^3/h	13473.6
Liquid Volumetric Flow	gpm	1679.83
Std Vapor Volumetric Flow	MMSCFD	20.7253
Std Liquid Volumetric Flow	sgpm	255.058
Compressibility		0.868260
Specific Gravity		0.612266
API Gravity		
Enthalpy	Btu/h	-7.37803E+07
Mass Enthalpy	Btu/lb	-1828.39
Mass Cp	Btu/(lb*°F)	0.617786
Ideal Gas CpCv Ratio		1.28750
Dynamic Viscosity	cP	0.01245206
Kinematic Viscosity	cSt	0.259557
Thermal Conductivity	Btu/(h*ft*°F	0.0218038
Surface Tension	lbf/ft	
Net Ideal Gas Heating Value	Btu/ft^3	962.820
Net Liquid Heating Value	Btu/lb	20579.0
Gross Ideal Gas Heating Value	Btu/ft^3	1066.43
Gross Liquid Heating Value	Btu/lb	22796.7

3Bear Energy

1512 Larimer
Street
Suite 540
Denver, CO 80202

September 11, 2019

Mr. Ted Schooley
Air Permits Program Manager
Air Quality Bureau
New Mexico Environment Department
525 Camino De los Marquez, Suite 1
Santa Fe, New Mexico 87505

Re: New Source Review (NSR) Construction Permit Application Revision for the 3Bear Libby Gas Plant

Dear Mr. Schooley,

This application and accompanying material is a revision of New Source Review (NSR) Construction Permit No. 7482 for the 3Bear Libby Gas Plant (Libby), owned and operated by 3 Bear Delaware Operating – NM, LLC (3Bear). NSR Permit No. 7482 was issued on January 8, 2018. The attached application describes the equipment and processes proposed and includes an alternate operating scenario to allow flexibility in engine installation.

Please note that Sections 18, 19, and 21 of the Universal Application were not applicable to the facility in question and so were omitted from this application.

If you have any questions regarding this submittal, please contact me at (303) 862-3967 or stephanie@3bearllc.com.

Sincerely,

Stephanie Swanson

Manager of Engineering
3 Bear Delaware Operating – NM, LLC
1512 Larimer St. Suite 540
Denver, CO 80202
Cell: (303) 862-3967
stephanie@3bearllc.com

3 Bear Delaware Operating - NM, LLC
1512 Larimer Street, Suite 540
Denver CO 80202-1620
303-862-3951

Operating Account

WELLS FARGO BANK NA

11-24
1210

Check No	Check Date	Check Amount
0000041602	09/12/2019	**************$500.00

PAY *Five Hundred Dollars and Zero Cents*

Void After 90 Days

TO THE ORDER OF

NMED
NEW MEXICO ENVIRONMENT DEPARTMENT
525 CAMINO DE LOS MARQUEZ, SUITE 1
SANTA FE NM 87505

⑈0000041602⑈ ⑆121000248⑆ 4128466042⑈

^PLEASE DETACH AT PERFORATION ABOVE^

^PLEASE DETACH AT PERFORATION ABOVE^

3 Bear Delaware Operating - NM, LLC
1512 Larimer Street, Suite 540
Denver CO 80202-1620
303-862-3951

3Bear Energy

Check Number 0000041602

Invoice #	Inv. Date	Description	Amount	Discount	Net Amount
NMED-CR-09092019	09/06/2019	NSR Construction Permit App Fee	500.00	0.00	500.00

0909	Owner	Check Date: 09/12/2019	Check Amount	500.00

Mail Application To:		For Department use only:
New Mexico Environment Department Air Quality Bureau Permits Section 525 Camino de los Marquez, Suite 1 Santa Fe, New Mexico, 87505 Phone: (505) 476-4300 Fax: (505) 476-4375 www.env.nm.gov/aqb		AIRS No.:

Universal Air Quality Permit Application

Use this application for NOI, NSR, or Title V sources.

Use this application for: the initial application, modifications, technical revisions, and renewals. For technical revisions, complete Sections, 1-A, 1-B, 2-E, 3, 9 and any other sections that are relevant to the requested action; coordination with the Air Quality Bureau permit staff prior to submittal is encouraged to clarify submittal requirements and to determine if more or less than these sections of the application are needed. Use this application for streamline permits as well. See Section 1-I for submittal instructions.

This application is submitted as (check all that apply): ☐ Request for a No Permit Required Determination (no fee)
☐ **Updating** an application currently under NMED review. Include this page and all pages that are being updated (no fee required).
Construction Status: ☐ Not Constructed ☑ Existing Permitted (or NOI) Facility ☐ Existing Non-permitted (or NOI) Facility
Minor Source: ☐ a NOI 20.2.73 NMAC ☑ 20.2.72 NMAC application or revision ☐ 20.2.72.300 NMAC Streamline application
Title V Source: ☐ Title V (new) ☐ Title V renewal ☐ TV minor mod. ☐ TV significant mod. TV Acid Rain: ☐ New ☐ Renewal
PSD Major Source: ☐ PSD major source (new) ☐ minor modification to a PSD source ☐ a PSD major modification

Acknowledgements:
☑ I acknowledge that a pre-application meeting is available to me upon request. ☐ Title V Operating, Title IV Acid Rain, and NPR applications have no fees.
☑ $500 NSR application Filing Fee enclosed OR ☐ The full permit fee associated with 10 fee points (required w/ streamline applications).
☑ Check No.: 41602 in the amount of $500
☑ I acknowledge the required submittal format for the hard copy application is printed double sided 'head-to-toe', 2-hole punched (except the Sect. 2 landscape tables is printed 'head-to-head'), numbered tab separators. Incl. a copy of the check on a separate page.
☐ This facility qualifies to receive assistance from the Small Business Environmental Assistance program (SBEAP) and qualifies for 50% of the normal application and permit fees. Enclosed is a check for 50% of the normal application fee which will be verified with the Small Business Certification Form for your company.
☐ This facility qualifies to receive assistance from the Small Business Environmental Assistance Program (SBEAP) but does not qualify for 50% of the normal application and permit fees. To see if you qualify for SBEAP assistance and for the small business certification form go to https://www.env.nm.gov/aqb/sbap/small_business_criteria.html).

Citation: Please provide the **low level citation** under which this application is being submitted: **20.2.72.200 NMAC**
(e.g. application for a new minor source would be 20.2.72.200.A NMAC, one example for a Technical Permit Revision is 20.2.72.219.B.1.b NMAC, a Title V acid rain application would be: 20.2.70.200.C NMAC)

Section 1 – Facility Information

Section 1-A: Company Information

		AI # if known (see 1st 3 to 5 #s of permit IDEA ID No.): 38067	Updating Permit/NOI #: 7482
1	Facility Name: 3Bear Libby Gas Plant	Plant primary SIC Code (4 digits): 1321 Plant NAIC code (6 digits): 211130	
a	Facility Street Address (If no facility street address, provide directions from a prominent landmark): From the intersection of US-180 W/US-62 and W/W Marland Blvd in Hobbs, NM, head west on US-180 W/US-62 for 22.6 miles. Turn Left (Southerly) onto Co Rd 27A for 6.5 miles. The facility location will be on the right.		

Printed: 9/12/2019

2	Plant Operator Company Name: 3 Bear Delaware Operating – NM, LLC	Phone/Fax: (303) 626-8290
a	Plant Operator Address: 1512 Larimer St. Suite 540, Denver, CO 80202	
b	Plant Operator's New Mexico Corporate ID or Tax ID: 5501695	
3	Plant Owner(s) name(s): 3 Bear Delaware Operating – NM, LLC	Phone/Fax: (303) 626-8290
a	Plant Owner(s) Mailing Address(s): 1512 Larimer St. Suite 540, Denver, CO 80202	
4	Bill To (Company): 3 Bear Delaware Operating – NM, LLC	Phone/Fax: (303) 626-8290
a	Mailing Address: 1512 Larimer St. Suite 540, Denver, CO 80202	E-mail: info@3bearllc.com
5	☐ Preparer: ☑ Consultant: Barr Engineering Co.	Phone/Fax: (303) 503-4735
a	Mailing Address: 1600 Broadway Suite 1600, Denver, CO 80202	E-mail: LMarquez@barr.com
6	Plant Operator Contact: Stephanie Swanson	Phone/Fax: (303) 862-3967
a	Address: 1512 Larimer St. Suite 540, Denver, CO 80202	E-mail: stephanie@3bearllc.com
7	Air Permit Contact: Lori Marquez	Title: Senior Air Quality Consultant
a	E-mail: LMarquez@barr.com	Phone/Fax: (303) 503-4735
b	Mailing Address: 1600 Broadway Suite 1600, Denver, CO 80202	
c	The designated Air permit Contact will receive all official correspondence (i.e. letters, permits) from the Air Quality Bureau.	

Section 1-B: Current Facility Status

1.a	Has this facility already been constructed? ☑ Yes ☐ No	1.b If yes to question 1.a, is it currently operating in New Mexico? ☑ Yes ☐ No
2	If yes to question 1.a, was the existing facility subject to a Notice of Intent (NOI) (20.2.73 NMAC) before submittal of this application? ☐ Yes ☑ No	If yes to question 1.a, was the existing facility subject to a construction permit (20.2.72 NMAC) before submittal of this application? ☐ Yes ☐ No
3	Is the facility currently shut down? ☐ Yes ☑ No	If yes, give month and year of shut down (MM/YY):
4	Was this facility constructed before 8/31/1972 and continuously operated since 1972? ☐ Yes ☑ No	
5	If Yes to question 3, has this facility been modified (see 20.2.72.7.P NMAC) or the capacity increased since 8/31/1972? ☐Yes ☐No ☑N/A	
6	Does this facility have a Title V operating permit (20.2.70 NMAC)? ☐ Yes ☑ No	If yes, the permit No. is: P-
7	Has this facility been issued a No Permit Required (NPR)? ☐ Yes ☑ No	If yes, the NPR No. is:
8	Has this facility been issued a Notice of Intent (NOI)? ☐ Yes ☑ No	If yes, the NOI No. is:
9	Does this facility have a construction permit (20.2.72/20.2.74 NMAC)? ☑ Yes ☐ No	If yes, the permit No. is: 7482
10	Is this facility registered under a General permit (GCP-1, GCP-2, etc.)? ☐ Yes ☑ No	If yes, the register No. is:

Section 1-C: Facility Input Capacity & Production Rate

1	What is the facility's maximum input capacity, specify units (reference here and list capacities in Section 20, if more room is required)			
a	Current	Hourly: 2.5 MMscf	Daily: 60 MMScf	Annually: 21,900 MMScf
b	Proposed	Hourly: 2.5 MMscf	Daily: 60 MMScf	Annually: 21,900 MMScf

2	What is the facility's maximum production rate, specify units (reference here and list capacities in Section 20, if more room is required)			
a	Current	Hourly: 2.5 MMscf	Daily: 60 MMScf	Annually: 21,900 MMScf
b	Proposed	Hourly: 2.5 MMscf	Daily: 60 MMScf	Annually: 21,900 MMScf

Section 1-D: Facility Location Information

1	Section: NESE 26	Range: 34E	Township: 20S	County: Lea	Elevation (ft): 3,713
2	UTM Zone: ☐ 12 or ☑ 13			Datum: ☐ NAD 27 ☐ NAD 83 ☑ WGS 84	
a	UTM E (in meters, to nearest 10 meters): 638430			UTM N (in meters, to nearest 10 meters): 3601510	
b	**AND** Latitude (deg., min., sec.): 32° 32' 32.49" N			Longitude (deg., min., sec.): 103° 31' 32.62" W	
3	Name and zip code of nearest New Mexico town: Monument, 88240				
4	Detailed Driving Instructions from nearest NM town (attach a road map if necessary): From the intersection of US-180 W/US-62 and W/W Marland Blvd in Hobbs, NM, head west on US-180 W/US-62 for 22.6 miles. Turn Left (Southerly) onto Co Rd 27A for 6.5 miles. The facility location will be on the right.				
5	The facility is 16.2 (distance) miles SW (direction) of Monument (nearest town).				
6	Status of land at facility (check one): ☑ Private ☐ Indian/Pueblo ☐ Federal BLM ☐ Federal Forest Service ☐ Other (specify)				
7	List all municipalities, Indian tribes, and counties within a ten (10) mile radius (20.2.72.203.B.2 NMAC) of the property on which the facility is proposed to be constructed or operated: Lea County				
8	**20.2.72** NMAC applications **only**: Will the property on which the facility is proposed to be constructed or operated be closer than 50 km (31 miles) to other states, Bernalillo County, or a Class I area (see www.env.nm.gov/aqb/modeling/class1areas.html)? ☑ Yes ☐ No (20.2.72.206.A.7 NMAC) If yes, list all with corresponding distances in kilometers: Texas - 43 km				
9	Name nearest Class I area: Carlsbad Cavern National Park				
10	Shortest distance (in km) from facility boundary to the boundary of the nearest Class I area (to the nearest 10 meters): 90 km				
11	Distance (meters) from the perimeter of the Area of Operations (AO is defined as the plant site inclusive of all disturbed lands, including mining overburden removal areas) to nearest residence, school or occupied structure: 17,940 m				
12	Method(s) used to delineate the Restricted Area: Signs and Fencing "**Restricted Area**" is an area to which public entry is effectively precluded. Effective barriers include continuous fencing, continuous walls, or other continuous barriers approved by the Department, such as rugged physical terrain with steep grade that would require special equipment to traverse. If a large property is completely enclosed by fencing, a restricted area within the property may be identified with signage only. Public roads cannot be part of a Restricted Area.				
13	Does the owner/operator intend to operate this source as a portable stationary source as defined in 20.2.72.7.X NMAC? ☐ Yes ☑ No A portable stationary source is not a mobile source, such as an automobile, but a source that can be installed permanently at one location or that can be re-installed at various locations, such as a hot mix asphalt plant that is moved to different job sites.				
14	Will this facility operate in conjunction with other air regulated parties on the same property? ☒ No ☐ Yes If yes, what is the name and permit number (if known) of the other facility?				

Section 1-E: Proposed Operating Schedule (The 1-E.1 & 1-E.2 operating schedules may become conditions in the permit.)

1	Facility **maximum** operating ($\frac{\text{hours}}{\text{day}}$): 24	($\frac{\text{days}}{\text{week}}$): 7		($\frac{\text{weeks}}{\text{year}}$): 52	($\frac{\text{hours}}{\text{year}}$): 8,760	
2	Facility's maximum daily operating schedule (if less than 24 $\frac{\text{hours}}{\text{day}}$)? Start:		☐AM ☐PM	End:		☐AM ☐PM
3	Month and year of anticipated start of construction: 11/2017					
4	Month and year of anticipated construction completion: Upon approval of NSR Construction Permit					

5	Month and year of anticipated startup of new or modified facility: Upon approval of NSR Construction Permit
6	Will this facility operate at this site for more than one year? ☑ Yes ☐ No

Section 1-F: Other Facility Information

1	Are there any current Notice of Violations (NOV), compliance orders, or any other compliance or enforcement issues related to this facility? ☐ Yes ☑ No If yes, specify:		
a	If yes, NOV date or description of issue:		NOV Tracking No:
b	Is this application in response to any issue listed in 1-F, 1 or 1a above? ☐ Yes ☑ No If Yes, provide the 1c & 1d info below:		
c	Document Title:	Date:	Requirement # (or page # and paragraph #):
d	Provide the required text to be inserted in this permit:		
2	Is air quality dispersion modeling or modeling waiver being submitted with this application? ☑ Yes ☐ No		
3	Does this facility require an "Air Toxics" permit under 20.2.72.400 NMAC & 20.2.72.502, Tables A and/or B? ☐ Yes ☑ No		
4	Will this facility be a source of federal Hazardous Air Pollutants (HAP)? ☑ Yes ☐ No		
a	If Yes, what type of source? ☐ **Major** (☐ ≥10 tpy of any single HAP **OR** ☐ ≥25 tpy of any combination of HAPS) **OR** ☑ **Minor** (☑ <10 tpy of any single HAP **AND** ☑<25 tpy of any combination of HAPS)		
5	Is any unit exempt under 20.2.72.202.B.3 NMAC? ☐ Yes ☑ No		
a	If yes, include the name of company providing commercial electric power to the facility: ___________________________ Commercial power is purchased from a commercial utility company, which specifically does not include power generated on site for the sole purpose of the user.		

Section 1-G: Streamline Application **(This section applies to 20.2.72.300 NMAC Streamline applications only)**

1	☐ I have filled out Section 18, "Addendum for Streamline Applications." ☑ N/A (This is not a Streamline application.)

Section 1-H: Current Title V Information - Required for all applications from TV Sources

(Title V-source required information for all applications submitted pursuant to 20.2.72 NMAC (Minor Construction Permits), or 20.2.74/20.2.79 NMAC (Major PSD/NNSR applications), and/or 20.2.70 NMAC (Title V))

1	Responsible Official (R.O.) (20.2.70.300.D.2 NMAC):	Phone:
a	R.O. Title:	R.O. e-mail:
b	R. O. Address:	
2	Alternate Responsible Official (20.2.70.300.D.2 NMAC):	Phone:
a	A. R.O. Title:	A. R.O. e-mail:
b	A. R. O. Address:	
3	Company's Corporate or Partnership Relationship to any other Air Quality Permittee (List the names of any companies that have operating (20.2.70 NMAC) permits and with whom the applicant for this permit has a corporate or partnership relationship):	
4	Name of Parent Company ("Parent Company" means the primary name of the organization that owns the company to be permitted wholly or in part.):	
a	Address of Parent Company:	
5	Names of Subsidiary Companies ("Subsidiary Companies" means organizations, branches, divisions or subsidiaries, which are owned, wholly or in part, by the company to be permitted.):	

6	Telephone numbers & names of the owners' agents and site contacts familiar with plant operations:
7	Affected Programs to include Other States, local air pollution control programs (i.e. Bernalillo) and Indian tribes: Will the property on which the facility is proposed to be constructed or operated be closer than 80 km (50 miles) from other states, local pollution control programs, and Indian tribes and pueblos (20.2.70.402.A.2 and 20.2.70.7.B)? If yes, state which ones and provide the distances in kilometers:

Section 1-I – Submittal Requirements

Each 20.2.73 NMAC (**NOI**), a 20.2.70 NMAC (**Title V**), a 20.2.72 NMAC (**NSR** minor source), or 20.2.74 NMAC (**PSD**) application package shall consist of the following:

Hard Copy Submittal Requirements:

1) One hard copy **original signed and notarized application package** **printed double sided** **'head-to-toe'** **2-hole punched** as we bind the document on top, not on the side; except Section 2 (landscape tables), which should be head-to-head. Please use **numbered tab separators** in the hard copy submittal(s) as this facilitates the review process. For NOI submittals only, hard copies of UA1, Tables 2A, 2D & 2F, Section 3 and the signed Certification Page are required. Please include a copy of the check on a separate page.

2) If the application is for a minor NSR, PSD, NNSR, or Title V application, include one working hard **copy** for Department use. This copy should be printed in book form, 3-hole punched, and **must be double sided**. Note that this is in addition to the head-to-to 2-hole punched copy required in 1) above. Minor NSR Technical Permit revisions (20.2.72.219.B NMAC) only need to fill out Sections 1-A, 1-B, 3, and should fill out those portions of other Section(s) relevant to the technical permit revision. TV Minor Modifications need only fill out Sections 1-A, 1-B, 1-H, 3, and those portions of other Section(s) relevant to the minor modification. NMED may require additional portions of the application to be submitted, as needed.

3) The entire NOI or Permit application package, including the full modeling study, should be submitted electronically. Upon receipt of the application fee, the Bureau will email the applicant with instructions for submitting the electronic files through a secure file transfer service. Optionally, the applicant may submit the files with the application on compact disk (CD) or digital versatile disc (DVD).

4) If **air dispersion modeling** is required by the application type, include the **NMED Modeling Waiver** and/or electronic air dispersion modeling report, input, and output files. The dispersion modeling ***summary report only*** should be submitted as hard copy(ies) unless otherwise indicated by the Bureau.

5) If the applicant submits the electronic files on CD and the application is subject to PSD review under 20.2.74 NMAC (PSD) or NNSR under 20.2.79 NMC include,
   a. one additional CD copy for US EPA,
   b. one additional CD copy for each federal land manager affected (NPS, USFS, FWS, USDI) and,
   c. one additional CD copy for each affected regulatory agency other than the Air Quality Bureau.

   If the application is submitted electronically through the secure file transfer service, these extra CDs do not need to be submitted.

Electronic Submittal Requirements [in addition to the required hard copy(ies)]:

1) All required electronic documents shall be submitted. Submit a single PDF document of the entire application as submitted and the individual documents comprising the application.

2) The documents should also be submitted in Microsoft Office compatible file format (Word, Excel, etc.) allowing us to access the text and formulas in the documents (copy & paste). Any documents that cannot be submitted in a Microsoft Office compatible format shall be saved as a PDF file from within the electronic document that created the file. If you are unable to provide Microsoft office compatible electronic files or internally generated PDF files of files (items that were not created electronically: i.e. brochures, maps, graphics, etc,), submit these items in hard copy format. We must be able to review the formulas and inputs that calculated the emissions.

3) It is preferred that this application form be submitted as 4 electronic files (3 MSWord docs: Universal Application section 1, Universal Application section 3-19, and Universal Application 4, the modeling report) and 1 Excel file of the tables (Universal Application section 2). Please include as many of the 3-19 Sections as practical in a single MS Word electronic document. Create separate electronic file(s) if a single file becomes too large or if portions must be saved in a file format other than MS Word.

4) The electronic file names shall be a maximum of 25 characters long (including spaces, if any). The format of the electronic Universal Application shall be in the format: "A-3423-FacilityName". The "A" distinguishes the file as an application submittal, as opposed to other documents the Department itself puts into the database. Thus, all electronic application submittals should begin with "A-". Modifications to existing facilities should use the core permit number (i.e. '3423') the Department assigned to the facility as the next 4 digits. Use 'XXXX' for new facility applications. The format of any separate electronic submittals (additional submittals such as non-Word attachments, re-submittals, application updates) and Section document shall be in the format: "A-3423-9-description", where "9" stands for the section # (in this case Section 9-Public Notice). Please refrain, as much as possible, from submitting any scanned documents as this file format is extremely large, which uses up too much storage capacity in our database. Please take the time to fill out the header information throughout all submittals as this will identify any loose pages, including the Application Date (date submitted) & Revision # (0 for original, 1, 2, etc.; which will help keep track of subsequent partial update(s) to the original submittal. The footer information should not be modified by the applicant.

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Table 2-A: Regulated Emission Sources

Unit and stack numbering must correspond throughout the application package. If applying for a NOI under 20.2.73 NMAC, equipment exemptions under 2.72.202 NMAC do not apply.

Unit Number[1]	Source Description	Make	Model #	Serial #	Manufacturer's Rated Capacity[3] (Specify Units)	Requested Permitted Capacity[3] (Specify Units)	Date of Manufacture[2] Date of Construction/ Reconstruction[2]	Controlled by Unit # Emissions vented to Stack #	Source Classification Code (SCC)	For Each Piece of Equipment, Check One	RICE Ignition Type (CI, SI, 4SLB, 4SRB, 2SLB)[4]	Replacing Unit No.
ENG-1	Inlet Compressor Engine, x1	Caterpillar	G3508	TBD	690 hp	690 hp	> 7/1/2010 >6/12/2006	N/A ENG-1	20200254	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	4SLB	N/A
ENG 2-4	Inlet Compressor Engine, x3	Caterpillar	G3516	TBD	1,380 hp	1,380 hp	11/20/2017 , > 7/1/2010, TBD >6/12/2006	N/A ENG 2-4	20200254	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	4SLB	N/A
ENG 5-8	Residue Compressor Engine, x4	Caterpillar	G3516	TBD	1,380 hp	1,380 hp	> 7/1/2010 >6/12/2006	N/A ENG 5-8	20200254	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	4SLB	N/A
ENG-9	Generator Engine, x1	Olympian	250LG6	TBD	374 hp	374 hp	> 7/1/2010 >6/12/2006	N/A ENG-9	20200253	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	4SRB	N/A
TK-1	Gunbarrel Tank, x1	TBD	TBD	TBD	500 bbl	500 bbl	4/2018 4/2018	FL-2 TK-1	40400301 / 40400302	☐ Existing (unchanged) ☐ To be Removed ☑ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
TK 2-5	Stabilized Condensate Tanks, x4	TBD	TBD	TBD	400 bbl	400 bbl	4/2018 1/8/2018	FL-2 TK 2-5	31000212	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
TK-6	Slop Oil Tanks, x1	TBD	TBD	TBD	400 bbl	400 bbl	4/2018 1/8/2018	FL-2 TK-6	40400301 / 40400302	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
PWTK-1	Produced Water Tank, x1	TBD	TBD	TBD	400 bbl	400 bbl	4/2018 4/2018	FL-2 PWTK-1	40400301 / 40400302	☐ Existing (unchanged) ☐ To be Removed ☑ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
HTR-1	Hot Oil Heater, x1	TBD	TBD	TBD	50 MMBtu/hr	50 MMBtu/hr	4/2018 1/8/2018	N/A HTR-1	30600105	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
HTR-2	Regen Gas Heater, x1	TBD	TBD	TBD	11 MMBtu/hr	11 MMBtu/hr	4/2018 1/8/2018	N/A HTR-2	30600105	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
CONDLOAD-1	Truck Loading (Cond Loadout)	N/A	N/A	N/A	N/A	N/A	N/A N/A	FL-2 N/A	2310021030	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
OILLOAD-1	Truck Loading (Oil Loadout)	N/A	N/A	N/A	N/A	N/A	N/A N/A	FL-2 N/A	2310021030	☐ Existing (unchanged) ☐ To be Removed ☑ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
FUG-1	Equipment Leaks (OOOOa Fugitives)	N/A	N/A	N/A	N/A	N/A	N/A > 9/18/2015	N/A N/A	31088811	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
FUG-2	Equipment Leaks (Residue Fugitives)	N/A	N/A	N/A	N/A	N/A	N/A N/A	N/A N/A	31088811	☐ Existing (unchanged) ☐ To be Removed ☑ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
AMINE-1	Amine Unit, x1	TBD	TBD	TBD	60 MMScf/d	60 MMScf/d	2018 1/8/2018	TO-1 AMINE-1	31000305	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
COMP	Compressor Blowdowns, x7	TBD	TBD	N/A	N/A	N/A	N/A N/A	FL-1 N/A	31000313	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
PLANT BD	Plant Blowdown, x1	TBD	TBD	N/A	N/A	N/A	N/A N/A	FL-1 N/A	31000199	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
TO-1	Thermal Oxidizer, x1	TBD	TBD	TBD	N/A	N/A	2/2018 1/8/2018	N/A TO-1	31000199	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
FL-1	Upset/Maintenance Flare, x1	TBD	TBD	TBD	N/A	N/A	N/A 1/8/2018	N/A FL-1	31000160	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
FL-2	Tank Flare, x1	TBD	TBD	TBD	N/A	N/A	N/A 1/8/2018	N/A FL-2	31000160	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
HR 1	Road Dust, x1	N/A	N/A	N/A	N/A	N/A	N/A N/A	N/A N/A	31000199	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
MAIN-1	Maintenance Activities	N/A	N/A	N/A	N/A	N/A	N/A N/A	N/A N/A	31000199	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
UP/MAL	Upsets/Malfunctions	N/A	N/A	N/A	N/A	N/A	N/A N/A	N/A N/A	31000199	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A

[1] Unit numbers must correspond to unit numbers in the previous permit unless a complete cross reference table of all units in both permits is provided.
[2] Specify dates required to determine regulatory applicability. Date of construction/reconstruction is the approval date of NSR Permit No. 7482.
[3] To properly account for power conversion efficiencies, generator set rated capacity shall be reported as the rated capacity of the engine in horsepower, not the kilowatt capacity of the generator set.
[4] "4SLB" means four stroke lean burn engine, "4SRB" means four stroke rich burn engine, "2SLB" means two stroke lean burn engine, "CI" means compression ignition, and "SI" means spark igni

Table 2-B: Insignificant Activities[1] (20.2.70 NMAC) OR Exempted Equipment (20.2.72 NMAC)

All 20.2.70 NMAC (Title V) applications must list all Insignificant Activities in this table. All 20.2.72 NMAC applications must list Exempted Equipment in this table. If equipment listed on this table is exempt under 20.2.72.202.B.5, include emissions calculations and emissions totals for 202.B.5 "similar functions" units, operations, and activities in Section 6, Calculations. Equipment and activities exempted under 20.2.72.202 NMAC may not necessarily be Insignificant under 20.2.70 NMAC (and vice versa). Unit & stack numbering must be consistent throughout the application package. Per Exemptions Policy 02-012.00 (see http://www.env.nm.gov/aqb/permit/aqb_pol.html), 20.2.72.202.B NMAC Exemptions do not apply, but 20.2.72.202.A NMAC exemptions do apply to NOI facilities under 20.2.73 NMAC. List 20.2.72.301.D.4 NMAC Auxiliary Equipment for Streamline applications in Table 2-A. The List of Insignificant Activities (for TV) can be found online at http://www.env.nm.gov/aqb/forms/InsignificantListTitleV.pdf . TV sources may elect to enter both TV Insignificant Activities and Part 72 Exemptions on this form.

Unit Number	Source Description	Manufacturer	Model No.	Max Capacity	List Specific 20.2.72.202 NMAC Exemption (e.g. 20.2.72.202.B.5)	Date of Manufacture /Reconstruction[2]	For Each Piece of Equipment, Check Onc
			Serial No.	Capacity Units	Insignificant Activity citation (e.g. IA List Item #1.a)	Date of Installation /Construction[2]	
N/A	Misc. Insignificant Tanks	N/A	TBD	TBD	20.2.72.202.B.5	TBD	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
			TBD	TBD	N/A	TBD	
							☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
							☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
							☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
							☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
							☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
							☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
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							☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
							☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced

[1] Insignificant activities exempted due to size or production rate are defined in 20.2.70.300.D.6, 20.2.70.7.Q NMAC, and the NMED/AQB List of Insignificant Activities, dated September 15, 2008. Emissions from these insignificant activities do not need to be reported, unless specifically requested.

[2] Specify date(s) required to determine regulatory applicability.

Table 2-C: Emissions Control Equipment

Unit and stack numbering must correspond throughout the application package. Only list control equipment for TAPs if the TAP's maximum uncontrolled emissions rate is over its respective threshold as listed in 20.2.72 NMAC, Subpart V, Tables A and B. In accordance with 20.2.72.203.A(3) and (8) NMAC, 20.2.70.300.D(5)(b) and (e) NMAC, and 20.2.73.200.B(7) NMAC, the permittee shall report all control devices and list each pollutant controlled by the control device regardless if the applicant takes credit for the reduction in emissions.

Control Equipment Unit No.	Control Equipment Description	Date Installed	Controlled Pollutant(s)	Controlling Emissions for Unit Number(s)[1]	Efficiency (% Control by Weight)	Method used to Estimate Efficiency
ENG-1	Oxidation Catalyst amd Air Fuel Ratio Controller	>6/12/2006	VOC, CO and CH2O	ENG-1	19% VOC, 22% CO and 50% CH2O	Subpart JJJJ (VOC and CO) / Permit Condition (CH2O)
ENG 2-8	Oxidation Catalyst amd Air Fuel Ratio Controller	>6/12/2006	VOC, CO and CH2O	ENG 2-8	31% VOC, 68% CO and 80% CH2O	Subpart JJJJ (VOC) / Permit Condition (CO and CH2O)
TO-1	Thermal Oxidizer	1/8/2018	VOC, H2S	AMINE-1	98%	Engineering Assumption
FL-1	Upset/Maintenance Flare	1/8/2018	VOC	AMINE-1 (Backup), COMP, PLANT BD, Misc Maintenance	95%	Engineering Assumption
FL-2	Tank Flare	1/8/2018	VOC	TK 1-6, PWTK-1, CONDLOAD-1, OILLOAD-1	95%	Engineering Assumption

[1] List each control device on a separate line. For each control device, list all emission units controlled by the control device.

Table 2-D: Maximum Emissions (under normal operating conditions)

☐ This Table was intentionally left blank because it would be identical to Table 2-E.

Maximum Emissions are the emissions at maximum capacity and prior to (in the absence of) pollution control, emission-reducing process equipment, or any other emission reduction. Calculate the hourly emissions using the worst case hourly emissions for each pollutant. For each pollutant, calculate the annual emissions as if the facility were operating at maximum plant capacity without pollution controls for 8760 hours per year, unless otherwise approved by the Department. List Hazardous Air Pollutants (HAP) & Toxic Air Pollutants (TAPs) in Table 2-I. Unit & stack numbering must be consistent throughout the application package. Fill all cells in this table with the emission numbers or a "-" symbol. A "-" symbol indicates that emissions of this pollutant are not expected. Numbers shall be expressed to at least 2 decimal points (e.g. 0.41, 1.41, or 1.41E-4).

Unit No.	NOx		CO		VOC		SOx		PM[1]		PM10[1]		PM2.5[1]		H_2S		Lead	
	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr
ENG-1	1.52	6.66	3.93	17.19	1.70	7.46	0.02	0.07	0.06	0.25	0.06	0.25	0.06	0.25	--	--	--	--
ENG-2	3.04	13.33	7.39	32.39	3.47	15.19	0.03	0.14	0.11	0.50	0.11	0.50	0.11	0.50	--	--	--	--
ENG*	**3.04**	**13.33**	**7.39**	**32.39**	**3.47**	**15.19**	**0.03**	**0.14**	**0.11**	**0.50**	**0.11**	**0.50**	**0.11**	**0.50**	**--**	**--**	**--**	**--**
ENG-3	3.04	13.33	7.39	32.39	3.47	15.19	0.03	0.14	0.11	0.50	0.11	0.50	0.11	0.50	--	--	--	--
ENG-4	3.04	13.33	7.39	32.39	3.47	15.19	0.03	0.14	0.11	0.50	0.11	0.50	0.11	0.50	--	--	--	--
ENG-5	3.04	13.33	7.39	32.39	3.47	15.19	0.03	0.14	0.11	0.50	0.11	0.50	0.11	0.50	--	--	--	--
ENG-6	3.04	13.33	7.39	32.39	3.47	15.19	0.03	0.14	0.11	0.50	0.11	0.50	0.11	0.50	--	--	--	--
ENG-7	3.04	13.33	7.39	32.39	3.47	15.19	0.03	0.14	0.11	0.50	0.11	0.50	0.11	0.50	--	--	--	--
ENG-8	3.04	13.33	7.39	32.39	3.47	15.19	0.03	0.14	0.11	0.50	0.11	0.50	0.11	0.50	--	--	--	--
ENG-9	0.82	3.61	1.65	7.22	0.67	2.92	0.01	0.05	0.09	0.38	0.09	0.38	0.09	0.38	--	--	--	--
TK-1	--	--	--	--	22.64	99.18	--	--	--	--	--	--	--	--	--	--	--	--
TK 2-5	--	--	--	--	7.98	34.95	--	--	--	--	--	--	--	--	--	--	--	--
TK-6	--	--	--	--	0.85	3.72	--	--	--	--	--	--	--	--	--	--	--	--
PWTK-1	--	--	--	--	0.00	0.00	--	--	--	--	--	--	--	--	--	--	--	--
HTR-1	1.69	7.40	2.84	12.43	0.19	0.81	0.10	0.42	0.26	1.12	0.26	1.12	0.26	1.12	--	--	--	--
HTR-2	0.74	3.26	0.62	2.73	0.04	0.18	0.02	0.09	0.06	0.25	0.06	0.25	0.06	0.25	--	--	--	--
CONDLOAD-1	--	--	--	--	99.91	27.35	--	--	--	--	--	--	--	--	--	--	--	--
OILLOAD-1	--	--	--	--	99.91	0.19	--	--	--	--	--	--	--	--	--	--		
FUG-1	--	--	--	--	11.30	51.24	--	--	--	--	--	--	--	--	0.00	0.00	--	--
FUG-2	--	--	--	--	0.01	0.06	--	--	--	--	--	--	--	--	0.00	0.00		
AMINE-1	--	--	--	--	41.44	181.50	--	--	--	--	--	--	--	--	--	--	--	--
COMP	--	--	--	--	2.27	9.95	--	--	--	--	--	--	--	--	--	--	--	--
PLANT BD	--	--	--	--	32803.52	16.40	--	--	--	--	--	--	--	--	--	--	--	--
TO-1	1.63	7.15	1.37	6.01	4.26	18.64	64.45	235.24	0.00	0.00	0.00	0.00	0.00	0.00	--	--	--	--
FL-1	170.49	26.44	777.23	120.53	93.36	16.00	6.30	1.34	5.75	0.88	5.75	0.88	5.75	0.88	--	--	--	--
FL-2	0.89	3.91	4.07	17.82	0.09	0.39	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.01	--	--	--	--
HR-1	--	--	--	--	--	--	--	--	12.49	0.23	3.18	0.06	0.32	0.01	--	--	--	--
MAIN-1	--	--	--	--	--	10.00	--	--	--	--	--	--	--	--	--	--	--	--
UP/MAL	--	--	--	--	--	10.00	--	--	--	--	--	--	--	--	--	--	--	--
Totals	197.57	145.06	839.55	393.45	33212.71	589.85	71.10	238.11	19.44	6.35	10.13	6.18	7.27	6.13	0.00	0.00	--	--

[1]**Condensable Particulate Matter:** Include condensable particulate matter emissions for PM10 and PM2.5 if the source is a combustion source. Do not include condensable particulate matter for PM unless PM is set equal to PM10 and PM2.5. Particulate matter (PM) is not subject to an ambient air quality standard, but PM is a regulated air pollutant under PSD (20.2.74 NMAC) and Title V (20.2.70 NMAC).

* - Composite emissions represent worse case compressor engine emissions

Table 2-E: Requested Allowable Emissions

Unit & stack numbering must be consistent throughout the application package. Fill all cells in this table with the emission numbers or a "-" symbol. A "-" symbol indicates that emissions of this pollutant are not expected. Numbers shall be expressed to at least 2 decimal points (e.g. 0.41, 1.41, or $1.41E^{-4}$).

Unit No.	NOx		CO		VOC		SOx		PM[1]		PM10[1]		PM2.5[1]		H_2S		Lead	
	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr
ENG-1	1.52	6.66	3.04	13.33	1.38	6.06	0.02	0.07	0.06	0.25	0.06	0.25	0.06	0.25	--	--	--	--
ENG-2	3.04	13.33	2.37	10.40	2.40	10.50	0.03	0.14	0.11	0.50	0.11	0.50	0.11	0.50	--	--	--	--
ENG*	**3.04**	**13.33**	**3.04**	**13.33**	**2.40**	**10.50**	**0.03**	**0.14**	**0.11**	**0.50**	**0.11**	**0.50**	**0.11**	**0.50**	**--**	**--**	**--**	**--**
ENG-3	3.04	13.33	2.37	10.40	2.40	10.50	0.03	0.14	0.11	0.50	0.11	0.50	0.11	0.50	--	--	--	--
ENG-4	3.04	13.33	2.37	10.40	2.40	10.50	0.03	0.14	0.11	0.50	0.11	0.50	0.11	0.50	--	--	--	--
ENG-5	3.04	13.33	2.37	10.40	2.40	10.50	0.03	0.14	0.11	0.50	0.11	0.50	0.11	0.50	--	--	--	--
ENG-6	3.04	13.33	2.37	10.40	2.40	10.50	0.03	0.14	0.11	0.50	0.11	0.50	0.11	0.50	--	--	--	--
ENG-7	3.04	13.33	2.37	10.40	2.40	10.50	0.03	0.14	0.11	0.50	0.11	0.50	0.11	0.50	--	--	--	--
ENG-8	3.04	13.33	2.37	10.40	2.40	10.50	0.03	0.14	0.11	0.50	0.11	0.50	0.11	0.50	--	--	--	--
ENG-9	0.82	3.61	1.65	7.22	0.67	2.92	0.01	0.05	0.09	0.38	0.09	0.38	0.09	0.38	--	--	--	--
TK-1	--	--	--	--	1.13	4.96	--	--	--	--	--	--	--	--	--	--	--	--
TK 2-5	--	--	--	--	0.40	1.75	--	--	--	--	--	--	--	--	--	--	--	--
TK-6	--	--	--	--	0.04	0.19	--	--	--	--	--	--	--	--	--	--	--	--
PWTK-1	--	--	--	--	0.00	0.00	--	--	--	--	--	--	--	--	--	--	--	--
HTR-1	1.69	7.40	2.84	12.43	0.19	0.81	0.10	0.42	0.26	1.12	0.26	1.12	0.26	1.12	--	--	--	--
HTR-2	0.74	3.26	0.62	2.73	0.04	0.18	0.02	0.09	0.06	0.25	0.06	0.25	0.06	0.25	--	--	--	--
ONDLOAD-	--	--	--	--	33.47	9.16	--	--	--	--	--	--	--	--	--	--	--	--
OILLOAD-1	--	--	--	--	33.47	0.06	--	--	--	--	--	--	--	--	--	--		
FUG-1	--	--	--	--	3.37	14.97	--	--	--	--	--	--	--	--	0.00	0.00	--	--
FUG-2	--	--	--	--	0.01	0.06	--	--	--	--	--	--	--	--	0.00	0.00		
AMINE-1	--	--	--	--	2.91	4.09	--	--	--	--	--	--	--	--	--	--	--	--
COMP	--	--	--	--	0.11	0.50	--	--	--	--	--	--	--	--	--	--	--	--
PLANT BD	--	--	--	--	1640.18	0.82	--	--	--	--	--	--	--	--	--	--	--	--
TO-1	1.63	7.15	1.37	6.01	4.26	18.64	64.45	235.24	0.00	0.00	0.00	0.00	0.00	0.00	--	--	--	--
FL-1	170.49	26.44	777.23	120.53	93.36	16.00	6.30	1.34	5.75	0.88	5.75	0.88	5.75	0.88	--	--	--	--
FL-2	0.89	3.91	4.07	17.82	0.09	0.39	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.01	--	--	--	--
HR-1	--	--	--	--	--	--	--	--	12.49	0.23	3.18	0.06	0.32	0.01	--	--	--	--
MAIN-1	--	--	--	--	--	10.00	--	--	--	--	--	--	--	--	--	--	--	--
UP/MAL	--	--	--	--	--	10.00	--	--	--	--	--	--	--	--	--	--	--	--
Totals	197.57	145.06	805.07	242.44	1830.48	169.02	71.10	238.11	19.44	6.35	10.13	6.18	7.27	6.13	0.00	0.00	--	--

[1] **Condensable Particulate Matter:** Include condensable particulate matter emissions for PM10 and PM2.5 if the source is a combustion source. Do not include condensable particulate matter for PM unless PM is set equal to PM10 and PM2.5. Particulate matter (PM) is not subject to an ambient air quality standard, but it is a regulated air pollutant under PSD (20.2.74 NMAC) and Title V (20.2.70 NMAC).

* - Composite emissions represent worse case compressor engine emissions

Table 2-F: Additional Emissions during Startup, Shutdown, and Routine Maintenance (SSM)

☐ This table is intentionally left blank since all emissions at this facility due to routine or predictable startup, shutdown, or scehduled maintenance are no higher than those listed in Table 2-E and a malfunction emission limit is not already permitted or requested. If you are required to report GHG emissions as described in Section 6a, include any GHG emissions during Startup, Shutdown, and/or Scheduled Maintenance (SSM) in Table 2-P. Provide an explanations of SSM emissions in Section 6 and 6a.

All applications for facilities that have emissions during routine our predictable startup, shutdown or scheduled maintenance (SSM)[1], including NOI applications, must include in this table the Maximum Emissions during routine or predictable startup, shutdown and scheduled maintenance (20.2.7 NMAC, 20.2.72.203.A.3 NMAC, 20.2.73.200.D.2 NMAC). In Section 6 and 6a, provide emissions calculations for all SSM emissions reported in this table. Refer to "Guidance for Submittal of Startup, Shutdown, Maintenance Emissions in Permit Applications (https://www.env.nm.gov/aqb/permit/aqb_pol.html) for more detailed instructions. Numbers shall be expressed to at least 2 decimal points (e.g. 0.41, 1.41, or 1.41E-4).

Unit No.	NOx		CO		VOC		SOx		PM[2]		PM10[2]		PM2.5[2]		H_2S		Lead	
	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr
COMP	--	--	--	--	0.11	0.50	--	--	--	--	--	--	--	--	--	--	--	--
PLANT BD-1	--	--	--	--	1640.18	0.82	--	--	--	--	--	--	--	--	--	--	--	--
FL-1	0.05	0.22	0.23	1.01	0.04	0.16	0.01	0.05	0.00	0.01	0.00	0.01	0.00	0.01	--	--	--	--
MAIN-1	--	--	--	--	--	10.00	--	--	--	--	--	--	--	--	--	--	--	--
Totals	0.05	0.22	0.23	1.01	1640.33	11.48	0.01	0.05	0.00	0.01	0.00	0.01	0.00	0.01				

[1] **For instance**, if the short term steady-state Table 2-E emissions are 5 lb/hr and the SSM rate is 12 lb/hr, enter 7 lb/hr in this table. If the annual steady-state Table 2-E emissions are 21.9 TPY, and the number of scheduled SSM events result in annual emissions of 31.9 TPY, enter 10.0 TPY in the table below.

[2] **Condensable Particulate Matter:** Include condensable particulate matter emissions for PM10 and PM2.5 if the source is a combustion source. Do not include condensable particulate matter for PM unless PM is set equal to PM10 and PM2.5. Particulate matter (PM) is not subject to an ambient air quality standard, but it is a regulated air pollutant under PSD (20.2.74 NMAC) and Title V (20.2.70 NMAC).

Table 2-G: Stack Exit and Fugitive Emission Rates for Special Stacks

☑ I have elected to leave this table blank because this facility does not have any stacks/vents that split emissions from a single source or combine emissions from more than one source listed in table 2-A. Additionally, the emission rates of all stacks match the Requested allowable emission rates stated in Table 2-E.

Use this table to list stack emissions (requested allowable) from split and combined stacks. List Toxic Air Pollutants (TAPs) and Hazardous Air Pollutants (HAPs) in Table 2-I. List all fugitives that are associated with the normal, routine, and non-emergency operation of the facility. Unit and stack numbering must correspond throughout the application package. Refer to Table 2-E for instructions on use of the "-" symbol and on significant figures.

Stack No.	Serving Unit Number(s) from Table 2-A	NOx		CO		VOC		SOx		PM		PM10		PM2.5		☐ H_2S or ☐ Lead	
		lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr
Totals:																	

Table 2-H: Stack Exit Conditions

Unit and stack numbering must correspond throughout the application package. Include the stack exit conditions for each unit that emits from a stack, including blowdown venting parameters and tank emissions. If the facility has multiple operating scenarios, complete a separate Table 2-H for each scenario and, for each, type scenario name here:

Stack Number	Serving Unit Number(s) from Table 2-A	Orientation (H-Horizontal V=Vertical)	Rain Caps (Yes or No)	Height Above Ground (ft)	Temp. (F)	Flow Rate (acfs)	Flow Rate (dscfs)	Moisture by Volume (%)	Velocity (ft/sec)	Inside Diameter (ft)
ENG-1	ENG-1	V	No	15	931	73.6	53.2	9.3	136.1	0.8
ENG 2-8	ENG 2-8	V	No	25	992	152.1	110.2	9.0	193.7	1.0
ENG-9	ENG-9	V	No	6	1350	26.4	21.0	0.0	399.6	0.3
TK-1	TK-1	V	No	25	70	0.0	0.0	0.0	0.0	0.7
TK 2-5	TK 2-5	V	No	20	70	0.0	0.0	0.0	0.0	0.7
TK-6	TK-6	V	No	20	70	0.0	0.0	0.0	0.0	0.7
PWTK-1	PWTK-1	V	No	20	70	0.0	0.0	0.0	0.0	0.7
HTR-1	HTR-1	V	No	30	664	88.9	70.7	0.0	12.6	3.0
HTR-2	HTR-2	V	No	12	500	25.8	20.5	0.0	8.2	2.0
TO-1	TO-1	V	No	50	1400	256.9	204.5	0.0	15.0	4.7
FL-1	FL-1	V	No	100	1832	4343.6	3457.1	0.0	65.6	9.2
FL-2	FL-2	V	No	30	1832	261.6	208.2	0.0	65.6	2.3

Table 2-I: Stack Exit and Fugitive Emission Rates for HAPs and TAPs

In the table below, report the Potential to Emit for each HAP from each regulated emission unit listed in Table 2-A, only if the entire facility emits the HAP at a rate greater than or equal to one (1) ton per year For each such emission unit, HAPs shall be reported to the nearest 0.1 tpy. Each facility-wide Individual HAP total and the facility-wide Total HAPs shall be the sum of all HAP sources calculated to the nearest 0.1 ton per year. Per 20.2.72.403.A.1 NMAC, facilities not exempt [see 20.2.72.402.C NMAC] from TAP permitting shall report each TAP that has an uncontrolled emission rate in excess of its pounds per hour screening level specified in 20.2.72.502 NMAC. TAPs shall be reported using one more significant figure than the number of significant figures shown in the pound per hour threshold corresponding to the substance. Use the HAP nomenclature as it appears in Section 112 (b) of the 1990 CAAA and the TAP nomenclature as it listed in 20.2.72.502 NMAC. Include tank-flashing emissions estimates of HAPs in this table. For each HAP or TAP listed, fill all cells in this table with the emission numbers or a "-" symbol. A "-" symbol indicates that emissions of this pollutant are not expected or the pollutant is emitted in a quantity less than the threshold amounts described above.

Stack No.	Unit No.(s)	Total HAPs		Formaldehyde ☑ HAP or ☐ TAP		Acetaldehyde ☑ HAP or ☐ TAP		Acrolein ☑ HAP or ☐ TAP		Benzene ☑ HAP or ☐ TAP		Toluene ☑ HAP or ☐ TAP		Ethylbenzene ☑ HAP or ☐ TAP		Xylenes ☑ HAP or ☐ TAP		n-Hexane ☑ HAP or ☐ TAP		2,2,4 TMP ☑ HAP or ☐ TAP		Methanol ☑ HAP or ☐ TAP	
		lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr
ENG-1	ENG-1	0.4	1.8	0.3	1.4	0.0	0.2	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	--	--	--	--
ENG-2	ENG-2	0.4	2.0	0.3	1.2	0.1	0.4	0.1	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	--	--	--	--
ENG*	**ENG***	**0.4**	**2.0**	**0.3**	**1.4**	**0.1**	**0.4**	**0.1**	**0.3**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.1**	**--**	**--**	**--**	**--**
ENG-3	ENG-3	0.4	2.0	0.3	1.2	0.1	0.4	0.1	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	--	--	--	--
ENG-4	ENG-4	0.4	2.0	0.3	1.2	0.1	0.4	0.1	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	--	--	--	--
ENG-5	ENG-5	0.4	2.0	0.3	1.2	0.1	0.4	0.1	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	--	--	--	--
ENG-6	ENG-6	0.4	2.0	0.3	1.2	0.1	0.4	0.1	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	--	--	--	--
ENG-7	ENG-7	0.4	2.0	0.3	1.2	0.1	0.4	0.1	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	--	--	--	--
ENG-8	ENG-8	0.4	2.0	0.3	1.2	0.1	0.4	0.1	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	--	--	--	--
ENG-9	ENG-9	0.1	0.5	0.1	0.4	0.0	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	N/A	N/A			--	--
TK-1	TK-1	0.1	0.3	--	--	--	--	--	--	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	--	--
TK 2-5	TK 2-5	0.0	0.1	--	--	--	--	--	--	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	--	--
TK-6	TK-6	0.0	0.0	--	--	--	--	--	--	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	--	--
PWTK-1	PWTK-1	0.0	0.0	--	--	--	--	--	--	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	--	--
HTR-1	HTR-1	0.1	0.3	0.0	0.0	--	--	--	--	0.0	0.0	0.0	0.0	--	--	--	--	0.1	0.3	--	--	--	--
HTR-2	HTR-2	0.0	0.1	0.0	0.0	--	--	--	--	0.0	0.0	0.0	0.0	--	--	--	--	0.0	0.1	--	--	--	--
CONDLOAD-1	CONDLOAD-1	2.1	0.6	--	--	--	--	--	--	0.3	0.1	0.3	0.1	0.0	0.0	0.0	0.0	1.3	0.4	0.0	0.0	--	--
OILLOAD-1	OILLOAD-1	2.1	0.0	--	--	--	--	--	--	0.3	0.0	0.3	0.0	0.0	0.0	0.0	0.0	1.3	0.0	0.0	0.0	--	--
FUG-1	FUG-1	0.0	0.1	--	--	--	--	--	--	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	--	--
FUG-2	FUG-2	0.0	0.0	--	--	--	--	--	--	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	--	--
AMINE-1	AMINE-1	0.0	0.0	--	--	--	--	--	--	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	--	--
COMP	COMP	0.0	0.0	--	--	--	--	--	--	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	--	--
PLANT BD	PLANT BD	15.1	0.0	--	--	--	--	--	--	5.3	0.0	0.8	0.0	0.0	0.0	0.0	0.0	9.1	0.0	0.0	0.0	--	--
TO-1	TO-1	0.0	0.2	--	--	--	--	--	--	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	--	--
FL-1	FL-1	0.0	0.0	--	--	--	--	--	--	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	--	--
FL-2	FL-2	0.0	0.0	--	--	--	--	--	--	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	--	--
HR-1	HR-1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MAIN-1	MAIN-1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
UP/MAL-1	UP/MAL-1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Totals:		22.9	15.9	2.0	8.8	0.7	3.0	0.4	1.8	6.0	0.5	1.5	0.3	0.1	0.0	0.1	0.1	12.0	1.6	0.1	0.0	--	--

* - Composite emissions represent worse case engine emissions

Table 2-J: Fuel

Specify fuel characteristics and usage. Unit and stack numbering must correspond throughout the application package.

Unit No.	Fuel Type (low sulfur Diesel, ultra low sulfur diesel, Natural Gas, Coal, …)	Fuel Source: purchased commercial, pipeline quality natural gas, residue gas, raw/field natural gas, process gas (e.g. SRU tail gas) or other	Specify Units				
			Lower Heating Value	Hourly Usage (scf)	Annual Usage (scf)	% Sulfur	% Ash
ENG-1	Natural Gas	Residue Gas	1479.8 btu/scf	3,825.00	33,507,000.00	N/A	N/A
ENG 2-8	Natural Gas	Residue Gas	1479.8 btu/scf	7,669.20	67,182,192.00	N/A	N/A
ENG-9	Natural Gas	Residue Gas	1479.8 btu/scf	2,983.00	26,131,080.00	N/A	N/A
HTR-1	Natural Gas	Residue Gas	1479.8 btu/scf	33,788.35	295,985,944.05	N/A	N/A
HTR-2	Natural Gas	Residue Gas	1479.8 btu/scf	7,433.44	65,116,907.69	N/A	N/A
TO-1	Natural Gas	Residue Gas	1479.8 btu/scf	8,109.20	71,036,626.57	N/A	N/A
FL-1	Natural Gas	Residue Gas	1479.8 btu/scf	337.88	2,959,859.44	N/A	N/A
FL-2	Natural Gas	Residue Gas	1479.8 btu/scf	67.58	591,971.89	N/A	N/A

Table 2-K: Liquid Data for Tanks Listed in Table 2-L

For each tank, list the liquid(s) to be stored in each tank. If it is expected that a tank may store a variety of hydrocarbon liquids, enter "mixed hydrocarbons" in the Composition column for that tank and enter the corresponding data of the most volatile liquid to be stored in the tank. If tank is to be used for storage of different materials, list all the materials in the "All Calculations" attachment, run the newest version of TANKS on each, and use the material with the highest emission rate to determine maximum uncontrolled and requested allowable emissions rate. The permit will specify the most volatile category of liquids that may be stored in each tank. Include appropriate tank-flashing modeling input data. Use additional sheets if necessary. Unit and stack numbering must correspond throughout the application package.

Tank No.	SCC Code	Material Name	Composition	Liquid Density (lb/gal)	Vapor Molecular Weight (lb/lb*mol)	Average Storage Conditions		Max Storage Conditions	
						Temperature (°F)	True Vapor Pressure (psia)	Temperature (°F)	True Vapor Pressure (psia)
TK-1	40400301 / 40400302	Oil / Produced Water	Mixed Hydrocarbons	5.6	64	72.3	8.0	86.3	10.2
TK-2	31000212	Condensate	Mixed Hydrocarbons	5.6	64	72.3	8.0	86.3	10.2
TK-3	31000212	Condensate	Mixed Hydrocarbons	5.6	64	72.3	8.0	86.3	10.2
TK-4	31000212	Condensate	Mixed Hydrocarbons	5.6	64	72.3	8.0	86.3	10.2
TK-5	31000212	Condensate	Mixed Hydrocarbons	5.6	64	72.3	8.0	86.3	10.2
TK-6	40400301 / 40400302	Oil	Mixed Hydrocarbons	5.6	64	72.3	3.6	86.3	4.7
PWTK-1	40400301 / 40400302	Produced Water	Water / Mixed Hydrocarbons	8.3	19.8	72.3	0.4	86.3	0.64

Table 2-L: Tank Data

Include appropriate tank-flashing modeling input data. Use an addendum to this table for unlisted data categories. Unit and stack numbering must correspond throughout the application package. Use additional sheets if necessary. See reference Table 2-L2. Note: 1.00 bbl = 10.159 M3 = 42.0 gal

Tank No.	Date Installed	Materials Stored	Seal Type (refer to Table 2-LR below)	Roof Type (refer to Table 2-LR below)	Capacity		Diameter (M)	Vapor Space (M)	Color (from Table VI-C)		Paint Condition (from Table VI-C)	Annual Throughput (gal/yr)	Turn-overs (per year)
					(bbl)	(M^3)			Roof	Shell			
TK-1	4/2018	Oil / Produced Water	N/A	FX	500	79	3.7	3.81	OT (Green)	OT (Green)	Good	32,172	1.53
TK-2	1/8/2018	Condensate	N/A	FX	400	64	3.7	3.05	OT (Green)	OT (Green)	Good	2,299,500	136.88
TK-3	1/8/2018	Condensate	N/A	FX	400	64	3.7	3.05	OT (Green)	OT (Green)	Good	2,299,500	136.88
TK-4	1/8/2018	Condensate	N/A	FX	400	64	3.7	3.05	OT (Green)	OT (Green)	Good	2,299,500	136.88
TK-5	1/8/2018	Condensate	N/A	FX	400	64	3.7	3.05	OT (Green)	OT (Green)	Good	2,299,500	136.88
TK-6	1/8/2018	Oil	N/A	FX	400	64	3.7	3.05	OT (Green)	OT (Green)	Good	64,344	3.83
PWTK-1	4/2018	Produced Water	N/A	FX	400	64	3.7	3.05	OT (Green)	OT (Green)	Good	64,344	3.83

Table 2-L2: Liquid Storage Tank Data Codes Reference Table

Roof Type	Seal Type, Welded Tank Seal Type		Seal Type, Riveted Tank Seal Type		Roof, Shell Color	Paint Condition
	Mechanical Shoe Seal	Liquid-mounted resilient seal	Vapor-mounted resilient seal	Seal Type		
FX: Fixed Roof					**WH**: White	Good
IF: Internal Floating Roof	**A**: Primary only	**A**: Primary only	**A**: Primary only	**A**: Mechanical shoe, primary only	**AS**: Aluminum (specular)	Poor
EF: External Floating Roof	**B**: Shoe-mounted secondary	**B**: Weather shield	**B**: Weather shield	**B**: Shoe-mounted secondary	**AD**: Aluminum (diffuse)	
P: Pressure	**C**: Rim-mounted secondary	**C**: Rim-mounted secondary	**C**: Rim-mounted secondary	**C**: Rim-mounted secondary	**LG**: Light Gray	
					MG: Medium Gray	
					BL: Black	
					OT: Other (specify)	

Note: 1.00 bbl = 0.159 M^3 = 42.0 gal

Table 2-M: Materials Processed and Produced (Use additional sheets as necessary.)

Material Processed				Material Produced			
Description	Chemical Composition	Phase (Gas, Liquid, or Solid)	Quantity (specify units)	Description	Chemical Composition	Phase	Quantity (specify units)
Condensate	Mixed Hydrocarbons	Liquid	219,000 bbl/yr				
Slop Oil	Mixed Hydrocarbons	Liquid	1,532 bbl/yr				
Produced Water	Mixed Hydrocarbons	Liquid	1,532 bbl/yr				
Gas	Mixed Hydrocarbons	Gas	60 MMScf/day				

Table 2-N: CEM Equipment

Enter Continuous Emissions Measurement (CEM) Data in this table. If CEM data will be used as part of a federally enforceable permit condition, or used to satisfy the requirements of a state or federal regulation, include a copy of the CEM's manufacturer specification sheet in the Information Used to Determine Emissions attachment. Unit and stack numbering must correspond throughout the application package. Use additional sheets if necessary.

Stack No.	Pollutant(s)	Manufacturer	Model No.	Serial No.	Sample Frequency	Averaging Time	Range	Sensitivity	Accuracy
TBD									

Table 2-O: Parametric Emissions Measurement Equipment

Unit and stack numbering must correspond throughout the application package. Use additional sheets if necessary.

Unit No.	Parameter/Pollutant Measured	Location of Measurement	Unit of Measure	Acceptable Range	Frequency of Maintenance	Nature of Maintenance	Method of Recording	Averaging Time
N/A								

Table 2-P: Greenhouse Gas Emissions

Applications submitted under 20.2.70, 20.2.72, & 20.2.74 NMAC are required to complete this Table. Power plants, Title V major sources, and PSD major sources must report and calculate all GHG emissions for each unit. Applicants must report potential emission rates in short tons per year (see Section 6.a for assistance). Include GHG emissions during Startup, Shutdown, and Scheduled Maintenance in this table. For minor source facilities that are not power plants, are not Title V, or are not PSD, there are three options for reporting GHGs 1) report GHGs for each individual piece of equipment; 2) report all GHGs from a group of unit types, for example report all combustion source GHGs as a single unit and all venting GHG as a second separate unit; OR 3) check the following box □ By checking this box, the applicant acknowledges the total CO2e emissions are less than 75,000 tons per year.

		CO_2 ton/yr	N_2O ton/yr	CH_4 ton/yr	SF_6 ton/yr	PFC/HFC ton/yr[2]									Total GHG Mass Basis ton/yr[4]	Total CO_2e ton/yr[5]
Unit No.	**GWPs [1]**	1	298	25	22,800	footnote 3										
ENG-1	mass GHG	2900	0	0											2900	
	CO_2e	2900	2	1												2903
ENG-2	mass GHG	5837	0	0											5838	
	CO_2e	5837	3	3												5843
ENG-3	mass GHG	5837	0	0											5838	
	CO_2e	5837	3	3												5843
ENG-4	mass GHG	5837	0	0											5838	
	CO_2e	5837	3	3												5843
ENG-5	mass GHG	5837	0	0											5838	
	CO_2e	5837	3	3												5843
ENG-6	mass GHG	5837	0	0											5838	
	CO_2e	5837	3	3												5843
ENG-7	mass GHG	5837	0	0											5838	
	CO_2e	5837	3	3												5843
ENG-8	mass GHG	5837	0	0											5838	
	CO_2e	5837	3	3												5843
ENG-9	mass GHG	2262	0	0											2262	
	CO_2e	2262	1	1												2264
TK-1	mass GHG	0	0	0											0	
	CO_2e	0	0	7												7
TK 2-5	mass GHG	18	0	0											18	
	CO_2e	18	0	2												20
TK-6	mass GHG	2	0	0											2	
	CO_2e	2	0	0												2
PWTK-1	mass GHG	0	0	0											0	
	CO_2e	0	0	0												0
HTR-1	mass GHG	25618	0	0											25619	
	CO_2e	25618	14	12												25644
HTR-2	mass GHG	5636	0	0											5636	
	CO_2e	5636	3	3												5642
CONDLOAD-1	mass GHG	14	0	0											15	
	CO_2e	14	0	9												23
OILLOAD-1	mass GHG	0	0	0											0	
	CO_2e	0	0	0												0
FUG-1	mass GHG	122	0	828											950	
	CO_2e	122	0	20693												20815
AMINE-1	mass GHG	57169	0	347											57516	
	CO_2e	57169	0	8677												65846
COMP	mass GHG	1	0	1											2	
	CO_2e	1	0	34												35
PLANT BD	mass GHG	1	0	1											2	
	CO_2e	1	0	20												21
TO-1	mass GHG	8530	0	0											8530	
	CO_2e	8530	5	4												8539
FL-1	mass GHG	75685	0	1											75687	
	CO_2e	75685	43	36												75763
FL-2	mass GHG	6723	0	0											6723	
	CO_2e	6723	4	3												6730
HR-1	mass GHG	--	--	--											0	
	CO_2e	--	--	--												0
MAIN-1	mass GHG	0	0	10											10	
	CO2e	0	0	250												250
UP/MAL-1	mass GHG	0	0	10											10	
	CO2e	0	0	250												250
Total	mass GHG	222643	0	1201											223844	
	CO_2e	222643	93	30022												252758

[1] **GWP** (Global Warming Potential): Applicants must use the most current GWPs codified in Table A-1 of 40 CFR part 98. GWPs are subject to change, therefore, applicants need to check 40 CFR 98 to confirm GWP values.

[2] For **HFCs** or **PFCs** describe the specific HFC or PFC compound and use a separate column for each individual compound.

[3] For each new compound, enter the appropriate GWP for each HFC or PFC compound from Table A-1 in 40 CFR 98.

[4] Green house gas emissions on a **mass basis** is the ton per year green house gas emission before adjustment with its GWP.

[5] **CO_2e** means Carbon Dioxide Equivalent and is calculated by multiplying the TPY mass emissions of the green house gas by its GWP.

Section 3

Application Summary

The **Application Summary** shall include a brief description of the facility and its process, the type of permit application, the applicable regulation (i.e. 20.2.72.200.A.X, or 20.2.73 NMAC) under which the application is being submitted, and any air quality permit numbers associated with this site. If this facility is to be collocated with another facility, provide details of the other facility including permit number(s). In case of a revision or modification to a facility, provide the lowest level regulatory citation (i.e. 20.2.72.219.B.1.d NMAC) under which the revision or modification is being requested. Also describe the proposed changes from the original permit, how the proposed modification will affect the facility's operations and emissions, de-bottlenecking impacts, and changes to the facility's major/minor status (both PSD & Title V).

The **Process Summary** shall include a brief description of the facility and its processes.

Startup, Shutdown, and Maintenance (SSM) routine or predictable emissions: Provide an overview of how SSM emissions are accounted for in this application. Refer to "Guidance for Submittal of Startup, Shutdown, Maintenance Emissions in Permit Applications (http://www.env.nm.gov/aqb/permit/app_form.html) for more detailed instructions on SSM emissions.

Application Summary:

This application and accompanying material is a revision of New Source Review (NSR) Construction Permit No. 7482 for the 3Bear Libby Gas Plant (Libby), owned and operated by 3 Bear Delaware Operating – NM, LLC (3Bear). NSR Permit No. 7482 was issued on January 8, 2018. The facility will receive up to 60 MMscf/day of gas from three surrounding compressor stations owned and operated by 3Bear. Libby will separate natural gas liquids (NGL's) from the field gas, producing natural gas liquids and a residue gas for transmission to a pipeline owned by others. The process utilizes a cryogenic gas separation plant and associated compressors for collecting field gas from the gathering system nearby. Gas and NGL's will be piped to the respective nearby interconnect metering stations, by others. The plant is to be located within 5 miles of the residue gas and NGL pipelines. Changes to the application

The facility will consist of one of the compressor engine options listed in Table 3-1.

Table 3-1: Compressor Engine Options

Option No.	Unit Name	Make & Model
1	ENG-1	Caterpillar G3508
2	ENG-2	Caterpillar G3516

Notes:
The worst-case emissions are included in the total facility emissions.

In addition to the compressor engine option, the facility will consist of the following emission units: six additional compressor engines (3 inlet compressors and 3 residue compressors), one generator engine, one gunbarrel tank, four condensate tanks, one slop oil tank, one produced water tank, one hot oil heater, one regen gas heater, one amine unit, one condensate loadout, one oil loadout, one thermal oxidizer, one upset/maintenance flare, one tank flare, process piping fugitives, and haul road fugitives.

SSM Overview:

SSM emissions are expected at the facility and are included in the total facility wide emissions. The compressor blowdowns and plant blowdowns will be controlled by the maintenance flare. Additional maintenance flaring has been included in the application to account for other maintenance activities. Maintenance activities that cannot be controlled, such as painting and tank degassing, have been included in the application as well. An estimated 10 tpy has been used for these uncontrolled maintenance activities. In the event that the thermal oxidizer is down, the maintenance flare (FL-1) is used as a backup control device for the amine unit.

Section 4

Process Flow Sheet

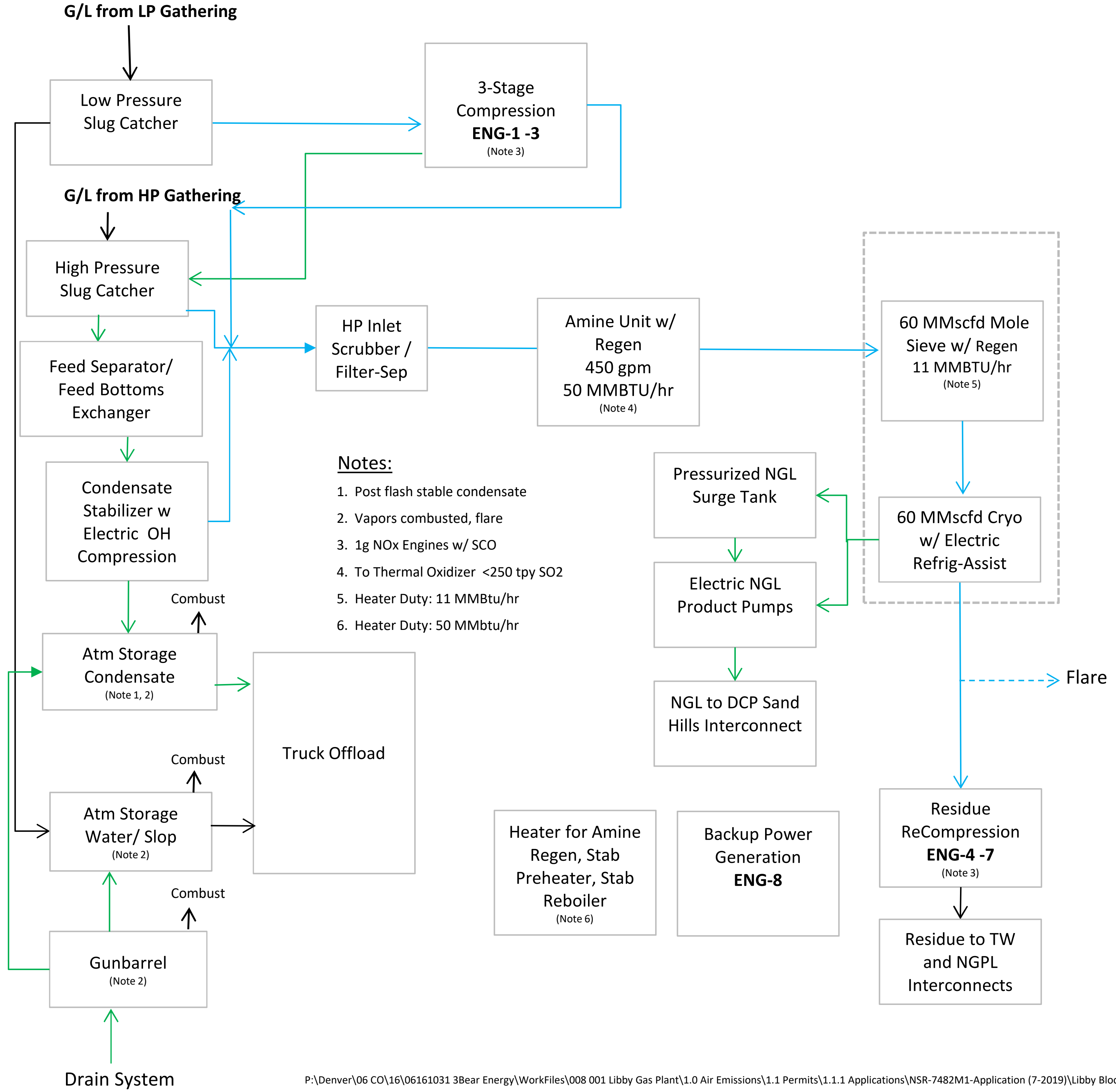
A **process flow sheet** and/or block diagram indicating the individual equipment, all emission points and types of control applied to those points. The unit numbering system should be consistent throughout this application.

The facility process flow sheet is provided on the next page.

Lea County NM

3Bear Libby - 60 MMscfd Cryo Plant

BFD Plant Site



P:\Denver\06 CO\16\06161031 3Bear Energy\WorkFiles\008 001 Libby Gas Plant\1.0 Air Emissions\1.1 Permits\1.1.1 Applications\NSR-7482M1-Application (7-2019)\Libby Block

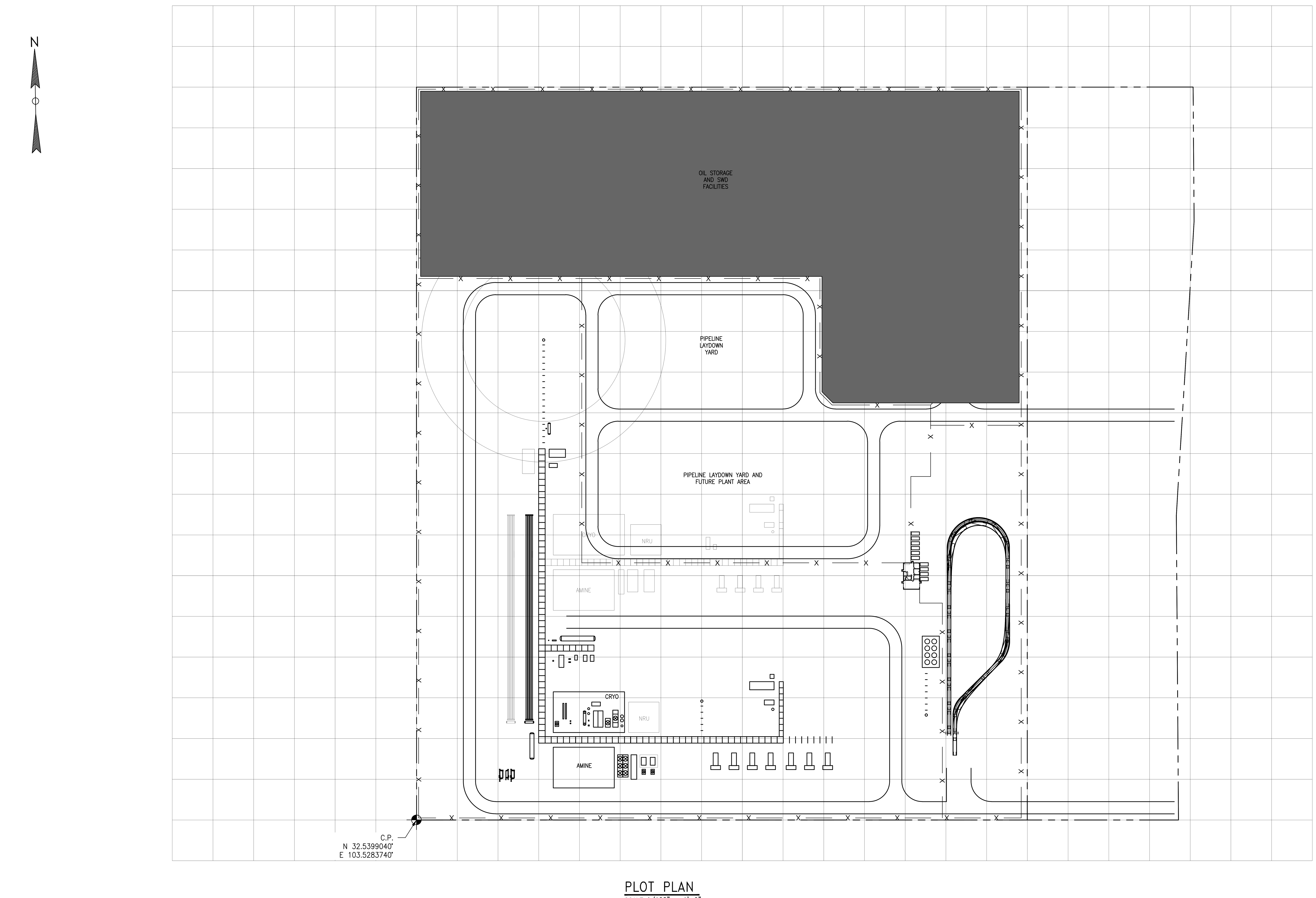
Flow Diagram rev 07012019.xlsx

Section 5

Plot Plan Drawn To Scale

A **plot plan drawn to scale** showing emissions points, roads, structures, tanks, and fences of property owned, leased, or under direct control of the applicant. This plot plan must clearly designate the restricted area as defined in UA1, Section 1-D.12. The unit numbering system should be consistent throughout this application.

The facility plot plan is provided on the next page.



PLOT PLAN
SCALE: 1/128" = 1'-0"

REFERENCED DRAWINGS

DRAWING NUMBER	TITLE
–	–

DRAWING REVISIONS

REV	DESCRIPTION	BY	CHK	APVD	DATE
A	ISSUED FOR REVIEW	ALS	RGJ	CES	07/19/17
B	ISSUED FOR REVIEW	ALS	RGJ	CES	07/28/17
C	ISSUED FOR PERMIT	ALS	RGJ	CES	08/02/17
D	ISSUED FOR PERMIT	ALS	RGJ	CES	09/05/17

ZAP ENGINEERING & CONSTRUCTION SERVICES, INC.

3Bear Energy

3BEAR ENERGY
LIBBY GAS PLANT
PLOT PLAN

JOB NO: 17101
DRAWING NO: 17101–SK–1001
REV: D
PLOT SIZE: ANSI D
SCALE: AS NOTED

Section 6

All Calculations

<u>Show all calculations</u> used to determine both the hourly and annual controlled and uncontrolled emission rates. All calculations shall be performed keeping a minimum of three significant figures. Document the source of each emission factor used (if an emission rate is carried forward and not revised, then a statement to that effect is required). If identical units are being permitted and will be subject to the same operating conditions, submit calculations for only one unit and a note specifying what other units to which the calculations apply. All formulas and calculations used to calculate emissions must be submitted. The "Calculations" tab in the UA2 has been provided to allow calculations to be linked to the emissions tables. Add additional "Calc" tabs as needed. If the UA2 or other spread sheets are used, all calculation spread sheet(s) shall be submitted electronically in Microsoft Excel compatible format so that formulas and input values can be checked. Format all spread sheets and calculations such that the reviewer can follow the logic and verify the input values. Define all variables. If calculation spread sheets are not used, provide the original formulas with defined variables. Additionally, provide subsequent formulas showing the input values for each variable in the formula. All calculations, including those calculations are imbedded in the Calc tab of the UA2 portion of the application, the printed Calc tab(s), should be submitted under this section.

Tank Flashing Calculations: The information provided to the AQB shall include a discussion of the method used to estimate tank-flashing emissions, relative thresholds (i.e., NOI, permit, or major source (NSPS, PSD or Title V)), accuracy of the model, the input and output from simulation models and software, all calculations, documentation of any assumptions used, descriptions of sampling methods and conditions, copies of any lab sample analysis. If Hysis is used, all relevant input parameters shall be reported, including separator pressure, gas throughput, and all other relevant parameters necessary for flashing calculation.

SSM Calculations: It is the applicant's responsibility to provide an estimate of SSM emissions or to provide justification for not doing so. In this Section, provide emissions calculations for Startup, Shutdown, and Routine Maintenance (SSM) emissions listed in the Section 2 SSM and/or Section 22 GHG Tables and the rational for why the others are reported as zero (or left blank in the SSM/GHG Tables). Refer to "Guidance for Submittal of Startup, Shutdown, Maintenance Emissions in Permit Applications (http://www.env.nm.gov/aqb/permit/app_form.html) for more detailed instructions on calculating SSM emissions. If SSM emissions are greater than those reported in the Section 2, Requested Allowables Table, modeling may be required to ensure compliance with the standards whether the application is NSR or Title V. Refer to the Modeling Section of this application for more guidance on modeling requirements.

Glycol Dehydrator Calculations: The information provided to the AQB shall include the manufacturer's maximum design recirculation rate for the glycol pump. If GRI-Glycalc is used, the full input summary report shall be included as well as a copy of the gas analysis that was used.

Road Calculations: Calculate fugitive particulate emissions and enter haul road fugitives in Tables 2-A, 2-D and 2-E for:

1. If you transport raw material, process material and/or product into or out of or within the facility and have PER emissions greater than 0.5 tpy.
2. If you transport raw material, process material and/or product into or out of the facility more frequently than one round trip per day.

Significant Figures:
A. All emissions standards are deemed to have at least two significant figures, but not more than three significant figures.
B. At least 5 significant figures shall be retained in all intermediate calculations.
C. In calculating emissions to determine compliance with an emission standard, the following rounding off procedures shall be used:

- **(1)** If the first digit to be discarded is less than the number 5, the last digit retained shall not be changed;
- **(2)** If the first digit discarded is greater than the number 5, or if it is the number 5 followed by at least one digit other than the number zero, the last figure retained shall be increased by one unit; **and**
- **(3)** If the first digit discarded is exactly the number 5, followed only by zeros, the last digit retained shall be rounded upward if it is an odd number, but no adjustment shall be made if it is an even number.
- **(4)** The final result of the calculation shall be expressed in the units of the standard.

Control Devices: In accordance with 20.2.72.203.A(3) and (8) NMAC, 20.2.70.300.D(5)(b) and (e) NMAC, and 20.2.73.200.B(7) NMAC, the permittee shall report all control devices and list each pollutant controlled by the control device regardless if the applicant takes credit for the reduction in emissions. The applicant can indicate in this section of the application if they chose to not take credit for the reduction in emission rates. For notices of intent submitted under 20.2.73 NMAC, only uncontrolled emission rates can be considered to determine applicability unless the state or federal Acts require the control. This information is necessary to determine if federally enforceable conditions are necessary for the control device, and/or if the control device produces its own regulated pollutants or increases emission rates of other pollutants.

Section 6.a

Green House Gas Emissions

(Submitting under 20.2.70, 20.2.72 20.2.74 NMAC)

Title V (20.2.70 NMAC), Minor NSR (20.2.72 NMAC), and PSD (20.2.74 NMAC) applicants must estimate and report greenhouse gas (GHG) emissions to verify the emission rates reported in the public notice, determine applicability to 40 CFR 60 Subparts, and to evaluate Prevention of Significant Deterioration (PSD) applicability. GHG emissions that are subject to air permit regulations consist of the sum of an aggregate group of these six greenhouse gases: carbon dioxide (CO_2), nitrous oxide (N_2O), methane (CH_4), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF_6).

Calculating GHG Emissions:

1. Calculate the ton per year (tpy) GHG mass emissions and GHG CO_2e emissions from your facility.
2. GHG mass emissions are the sum of the total annual tons of greenhouse gases without adjusting with the global warming potentials (GWPs). GHG CO_2e emissions are the sum of the mass emissions of each individual GHG multiplied by its GWP found in Table A-1 in 40 CFR 98 Mandatory Greenhouse Gas Reporting.
3. Emissions from routine or predictable start up, shut down, and maintenance must be included.
4. Report GHG mass and GHG CO_2e emissions in Table 2-P of this application. Emissions are reported in **short** tons per year and represent each emission unit's Potential to Emit (PTE).
5. All Title V major sources, PSD major sources, and all power plants, whether major or not, must calculate and report GHG mass and CO2e emissions for each unit in Table 2-P.
6. For minor source facilities that are not power plants, are not Title V, and are not PSD there are three options for reporting GHGs in Table 2-P: 1) report GHGs for each individual piece of equipment; 2) report all GHGs from a group of unit types, for example report all combustion source GHGs as a single unit and all venting GHGs as a second separate unit; 3) or check the following ☐ By checking this box, the applicant acknowledges the total CO2e emissions are less than 75,000 tons per year.

Sources for Calculating GHG Emissions:

- Manufacturer's Data
- AP-42 Compilation of Air Pollutant Emission Factors at http://www.epa.gov/ttn/chief/ap42/index.html
- EPA's Internet emission factor database WebFIRE at http://cfpub.epa.gov/webfire/
- 40 CFR 98 Mandatory Green House Gas Reporting except that tons should be reported in short tons rather than in metric tons for the purpose of PSD applicability.
- API Compendium of Greenhouse Gas Emissions Methodologies for the Oil and Natural Gas Industry. August 2009 or most recent version.
- Sources listed on EPA's NSR Resources for Estimating GHG Emissions at http://www.epa.gov/nsr/clean-air-act-permitting-greenhouse-gases:

Global Warming Potentials (GWP):
Applicants must use the Global Warming Potentials codified in Table A-1 of the most recent version of 40 CFR 98 Mandatory Greenhouse Gas Reporting. The GWP for a particular GHG is the ratio of heat trapped by one unit mass of the GHG to that of one unit mass of CO_2 over a specified time period.

"Greenhouse gas" for the purpose of air permit regulations is defined as the aggregate group of the following six gases: carbon dioxide, nitrous oxide, methane, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride. **(20.2.70.7 NMAC, 20.2.74.7 NMAC).** You may also find GHGs defined in 40 CFR 86.1818-12(a).

Metric to Short Ton Conversion:

Short tons for GHGs and other regulated pollutants are the standard unit of measure for PSD and title V permitting programs. 40 CFR 98 Mandatory Greenhouse Reporting requires metric tons.

1 metric ton = 1.10231 short tons (per Table A-2 to Subpart A of Part 98 – Units of Measure Conversions)

Summary of Uncontrolled Air Emission Units

			Potential Emissions Uncontrolled + No Product Recovered																	
Unit	Unit		NOx		CO		VOC		SO2		PM		PM10		PM2.5		H2S		HAPs	
Name	Description	Qty	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy
ENG*	Worst-Case Composite Engine Emissions	N/A	3.04	13.33	7.39	32.39	3.47	15.19	0.03	0.14	0.11	0.50	0.11	0.50	0.11	0.50	--	--	1.52	6.65
ENG 3-4	Inlet Compression	2	6.09	26.66	14.79	64.77	6.94	30.39	0.06	0.28	0.23	1.00	0.23	1.00	0.23	1.00	--	--	3.03	13.29
ENG 5-8	Residue Compression	4	12.17	53.31	29.58	129.55	13.88	60.78	0.13	0.56	0.46	1.99	0.46	1.99	0.46	1.99	--	--	6.07	26.58
ENG-9	Generator Engine	1	0.82	3.61	1.65	7.22	0.67	2.92	0.01	0.05	0.09	0.38	0.09	0.38	0.09	0.38	--	--	0.12	0.55
TK-1	Gunbarrel Tank	1	--	--	--	--	22.64	99.18	--	--	--	--	--	--	--	--	--	--	1.43	6.25
TK 2-5	Stabilized Condensate Tank	4	--	--	--	--	7.98	34.95	--	--	--	--	--	--	--	--	--	--	0.50	2.20
TK-6	Slop Oil Tank	1	--	--	--	--	0.85	3.72	--	--	--	--	--	--	--	--	--	--	0.05	0.23
PWTK-1	Produced Water Tank	1	--	--	--	--	0.00	0.00	--	--	--	--	--	--	--	--	--	--	0.00	0.00
HTR-1	Hot Oil Heater	1	1.69	7.40	2.84	12.43	0.19	0.81	0.10	0.42	0.26	1.12	0.26	1.12	0.26	1.12	--	--	0.06	0.28
HTR-2	Regen Gas Heater	1	0.74	3.26	0.62	2.73	0.04	0.18	0.02	0.09	0.06	0.25	0.06	0.25	0.06	0.25	--	--	0.01	0.06
CONDLOAD-1	Condensate Loadout	1	--	--	--	--	99.91	27.35	--	--	--	--	--	--	--	--	--	--	6.29	1.72
OILLOAD-1	Oil Loadout	1	--	--	--	--	99.91	0.19	--	--	--	--	--	--	--	--	--	--	6.29	0.01
FUG-1	Fugitives - OOOOa	N/A	--	--	--	--	11.30	51.24	--	--	--	--	--	--	--	--	0.00	0.00	0.10	0.47
FUG-2	Fugitives - Residue	N/A	--	--	--	--	0.01	0.06	--	--	--	--	--	--	--	--	0.00	0.00	0.00	0.00
AMINE-1	Amine Unit	1	--	--	--	--	41.44	181.50	--	--	--	--	--	--	--	--	--	--	0.29	1.25
COMP	Compressor Blowdowns	8	--	--	--	--	2.27	9.95	--	--	--	--	--	--	--	--	--	--	0.02	0.09
PLANT BD	Gas Plant Blowdown	1	--	--	--	--	32,803.52	16.40	--	--	--	--	--	--	--	--	--	--	302.73	0.15
TO-1	Thermal Oxidizer	1	1.18	5.15	0.99	4.33	4.26	18.64	--	--	--	--	--	--	--	--	--	--	0.04	0.17
FL-1	Upset/Maintenance Flare	1	0.03	0.15	0.16	0.68	0.44	1.94	--	--	--	--	--	--	--	--	--	--	0.00	0.00
FL-2	Tank Flare	1	0.01	0.03	0.03	0.14	0.09	0.39	--	--	--	--	--	--	--	--	--	--	0.00	0.00
HR-1	Road Dust	N/A	--	--	--	--	--	--	--	--	12.49	0.23	3.18	0.06	0.32	0.01	--	--	--	--
MAIN-1	Maintenance Activities	N/A	--	--	--	--	--	10.00	--	--	--	--	--	--	--	--	--	--	--	--
UP/MAL-1	Upsets/Malfunctions	N/A	--	--	--	--	--	10.00	--	--	--	--	--	--	--	--	--	--	--	--
	Facility-Wide Total Emissions		25.78	112.89	58.05	254.24	33119.80	575.79	0.35	1.53	13.68	5.47	4.38	5.30	1.51	5.24	0.00	0.00	328.57	59.96

Summary of Controlled Air Emission Units

			Potential Emissions Controlled + Product Recovery																		
Unit	Unit		NOx		CO		VOC		SO2		PM		PM10		PM2.5		H2S		HAPs		
Name	Description	Qty	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	CO2e
ENG*	Worst-Case Composite Engine Emissions	N/A	3.04	13.33	3.04	13.33	2.40	10.50	0.03	0.14	0.11	0.50	0.11	0.50	0.11	0.50	--	--	0.45	1.96	5,843
ENG 3-4	Inlet Compression	2	6.09	26.66	4.75	20.79	4.80	21.00	0.06	0.28	0.23	1.00	0.23	1.00	0.23	1.00	--	--	0.89	3.91	11,687
ENG 5-8	Residue Compression	4	12.17	53.31	9.49	41.58	9.59	42.01	0.13	0.56	0.46	1.99	0.46	1.99	0.46	1.99	--	--	1.79	7.82	23,374
ENG-9	Generator Engine	1	0.82	3.61	1.65	7.22	0.67	2.92	0.01	0.05	0.09	0.38	0.09	0.38	0.09	0.38	--	--	0.12	0.55	2,264
TK-1	Gunbarrel Tank	1	--	--	--	--	1.13	4.96	--	--	--	--	--	--	--	--	--	--	0.07	0.31	7
TK 2-5	Stabilized Condensate Tank	4	--	--	--	--	0.40	1.75	--	--	--	--	--	--	--	--	--	--	0.03	0.11	20
TK-6	Slop Oil Tank	1	--	--	--	--	0.04	0.19	--	--	--	--	--	--	--	--	--	--	0.00	0.01	2
PWTK-1	Produced Water Tank	1	--	--	--	--	0.00	0.00	--	--	--	--	--	--	--	--	--	--	0.00	0.00	0
HTR-1	Hot Oil Heater	1	1.69	7.40	2.84	12.43	0.19	0.81	0.10	0.42	0.26	1.12	0.26	1.12	0.26	1.12	--	--	0.06	0.28	25,644
HTR-2	Regen Gas Heater	1	0.74	3.26	0.62	2.73	0.04	0.18	0.02	0.09	0.06	0.25	0.06	0.25	0.06	0.25	--	--	0.01	0.06	5,642
CONDLOAD-1	Condensate Loadout	1	--	--	--	--	33.47	9.16	--	--	--	--	--	--	--	--	--	--	2.11	0.58	23
OILLOAD-1	Oil Loadout	1	--	--	--	--	33.47	0.06	--	--	--	--	--	--	--	--	--	--	2.11	0.00	0
FUG-1	Fugitives - OOOOa	N/A	--	--	--	--	3.37	14.97	--	--	--	--	--	--	--	--	0.00	0.00	0.03	0.14	20815
FUG-2	Fugitives - Residue	N/A	--	--	--	--	0.01	0.06	--	--	--	--	--	--	--	--	0.00	0.00	0.00	0.00	0
AMINE-1	Amine Unit	1	--	--	--	--	2.91	4.09	--	--	--	--	--	--	--	--	--	--	0.01	0.03	65,846
COMP	Compressor Blowdowns	3	--	--	--	--	0.11	0.50	--	--	--	--	--	--	--	--	--	--	0.00	0.00	35
PLANT BD	Gas Plant Blowdown	1	--	--	--	--	1,640.18	0.82	--	--	--	--	--	--	--	--	--	--	15.14	0.01	21
TO-1	Thermal Oxidizer	1	1.63	7.15	1.37	6.01	4.26	18.64	64.45	235.24	0.00	0.00	0.00	0.00	0.00	0.00	--	--	0.04	0.17	8,539
FL-1	Upset/Maintenance Flare	1	170.49	26.44	777.23	120.53	93.36	16.00	6.30	1.34	5.75	0.88	5.75	0.88	5.75	0.88	--	--	0.00	0.00	75,763
FL-2	Tank Flare	1	0.89	3.91	4.07	17.82	0.09	0.39	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.01	--	--	0.00	0.00	6,730
HR-1	Road Dust	N/A	--	--	--	--	--	--	--	--	12.49	0.23	3.18	0.06	0.32	0.01	--	--	--	--	--
MAIN-1	Maintenance Activities	N/A	--	--	--	--	--	10.00	--	--	--	--	--	--	--	--	--	--	--	--	250
UP/MAL-1	Upsets/Malfunctions	N/A	--	--	--	--	--	10.00	--	--	--	--	--	--	--	--	--	--	--	--	250
	Facility-Wide Total Emissions		197.57	145.06	805.07	242.44	1,830.48	169.02	71.10	238.11	19.44	6.35	10.13	6.18	7.27	6.13	0.00	0.00	22.86	15.94	252,758

* - Composite emissions represent worse case engine emissions

Summary of Uncontrolled HAP Emissions

Potential Emissions
Uncontrolled + No Product Recovered

Unit	Unit		Formaldehyde		Acetaldehyde		Acrolein		Benzene		Toluene		Ethylbenzene		Xylenes		n-Hexane		2,2,4-TMP	
Name	Description	Qty	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy
ENG*	Worst-Case Composite Engine Emissions	N/A	1.34	5.86	0.10	0.42	0.06	0.26	0.01	0.02	0.00	0.02	0.00	0.00	0.00	0.01	0.01	0.06	--	--
ENG 3-4	Inlet Compression	2	2.68	11.73	0.19	0.83	0.12	0.51	0.01	0.04	0.01	0.04	0.00	0.00	0.00	0.02	0.03	0.11	--	--
ENG 5-8	Residue Compression	4	5.35	23.45	0.38	1.67	0.23	1.03	0.02	0.09	0.02	0.08	0.00	0.01	0.01	0.04	0.05	0.22	--	--
ENG-9	Generator Engine	1	0.09	0.40	0.01	0.05	0.01	0.05	0.01	0.03	0.00	0.01	0.00	0.00	0.00	0.00	N/A	N/A	--	--
TK-1	Gunbarrel Tank	1	--	--	--	--	--	--	0.23	0.99	0.23	0.99	0.02	0.10	0.02	0.10	0.91	3.97	0.02	0.10
TK 2-5	Stabilized Condensate Tank	4	--	--	--	--	--	--	0.08	0.35	0.08	0.35	0.01	0.03	0.01	0.03	0.32	1.40	0.01	0.03
TK-6	Slop Oil Tank	1	--	--	--	--	--	--	0.01	0.04	0.01	0.04	0.00	0.00	0.00	0.00	0.03	0.15	0.00	0.00
PWTK-1	Produced Water Tank	1	--	--	--	--	--	--	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
HTR-1	Hot Oil Heater	1	0.00	0.01	--	--	--	--	0.00	0.00	0.00	0.00	--	--	--	--	0.06	0.27	--	--
HTR-2	Regen Gas Heater	1	0.00	0.00	--	--	--	--	0.00	0.00	0.00	0.00	--	--	--	--	0.01	0.06	--	--
CONDLOAD-1	Condensate Loadout	1	--	--	--	--	--	--	1.00	0.27	1.00	0.27	0.10	0.03	0.10	0.03	4.00	1.09	0.10	0.03
OILLOAD-1	Oil Loadout	1	--	--	--	--	--	--	1.00	0.00	1.00	0.00	0.10	0.00	0.10	0.00	4.00	0.01	0.10	0.00
FUG-1	Fugitives - OOOOa	N/A	--	--	--	--	--	--	0.04	0.16	0.01	0.02	0.00	0.00	0.00	0.00	0.06	0.28	0.00	0.00
FUG-2	Fugitives - Residue	N/A	--	--	--	--	--	--	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AMINE-1	Amine Unit	1	--	--	--	--	--	--	0.03	0.15	0.03	0.15	0.00	0.01	0.01	0.04	0.17	0.73	0.04	0.17
COMP	Compressor Blowdowns	3	--	--	--	--	--	--	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.00
PLANT BD	Gas Plant Blowdown	1	--	--	--	--	--	--	105.62	0.05	15.19	0.01	0.00	0.00	0.00	0.00	181.91	0.09	0.00	0.00
TO-1	Thermal Oxidizer	1	--	--	--	--	--	--	0.01	0.06	0.00	0.01	0.00	0.00	0.00	0.00	0.02	0.10	0.00	0.00
FL-1	Upset/Maintenance Flare	1	--	--	--	--	--	--	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00
FL-2	Tank Flare	1	--	--	--	--	--	--	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
HR-1	Road Dust	N/A	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MAIN-1	Maintenance Activities	N/A	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
UP/MAL-1	Upsets/Malfunctions	N/A	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	Facility-Wide Total HAP Emissions		9.46	41.45	0.68	2.97	0.42	1.85	108.07	2.28	17.58	2.00	0.24	0.19	0.26	0.28	191.58	8.56	0.27	0.34

Summary of Controlled HAP Emissions

Potential Emissions
Controlled + Product Recovery

Unit	Unit		Formaldehyde		Acetaldehyde		Acrolein		Benzene		Toluene		Ethylbenzene		Xylenes		n-Hexane		2,2,4-TMP	
Name	Description	Qty	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy
ENG*	Worst-Case Composite Engine Emissions	N/A	0.32	1.40	0.10	0.42	0.06	0.26	0.01	0.02	0.00	0.02	0.00	0.00	0.00	0.01	0.01	0.06	--	--
ENG 3-4	Inlet Compression	2	0.54	2.35	0.19	0.83	0.12	0.51	0.01	0.04	0.01	0.04	0.00	0.00	0.00	0.02	0.03	0.11	--	--
ENG 5-8	Residue Compression	4	1.07	4.69	0.38	1.67	0.23	1.03	0.02	0.09	0.02	0.08	0.00	0.01	0.01	0.04	0.05	0.22	--	--
ENG-9	Generator Engine	1	0.09	0.40	0.01	0.05	0.01	0.05	0.01	0.03	0.00	0.01	0.00	0.00	0.00	0.00	N/A	N/A	--	--
TK-1	Gunbarrel Tank	1	--	--	--	--	--	--	0.01	0.05	0.01	0.05	0.00	0.00	0.00	0.00	0.05	0.20	0.00	0.00
TK 2-5	Stabilized Condensate Tank	4	--	--	--	--	--	--	0.00	0.02	0.00	0.02	0.00	0.00	0.00	0.00	0.02	0.07	0.00	0.00
TK-6	Slop Oil Tank	1	--	--	--	--	--	--	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00
PWTK-1	Produced Water Tank	1	--	--	--	--	--	--	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
HTR-1	Hot Oil Heater	1	0.00	0.01	--	--	--	--	0.00	0.00	0.00	0.00	--	--	--	--	0.06	0.27	--	--
HTR-2	Regen Gas Heater	1	0.00	0.00	--	--	--	--	0.00	0.00	0.00	0.00	--	--	--	--	0.01	0.06	--	--
CONDLOAD-1	Condensate Loadout	1	--	--	--	--	--	--	0.33	0.09	0.33	0.09	0.03	0.01	0.03	0.01	1.34	0.37	0.03	0.01
OILLOAD-1	Oil Loadout	1	--	--	--	--	--	--	0.33	0.00	0.33	0.00	0.03	0.00	0.03	0.00	1.34	0.00	0.03	0.00
FUG-1	Fugitives - OOOOa	N/A	--	--	--	--	--	--	0.01	0.05	0.00	0.01	0.00	0.00	0.00	0.00	0.02	0.08	0.00	0.00
FUG-2	Fugitives - Residue	N/A	--	--	--	--	--	--	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AMINE-1	Amine Unit	1	--	--	--	--	--	--	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.00
COMP	Compressor Blowdowns	3	--	--	--	--	--	--	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PLANT BD	Gas Plant Blowdown	1	--	--	--	--	--	--	5.28	0.00	0.76	0.00	0.00	0.00	0.00	0.00	9.10	0.00	0.00	0.00
TO-1	Thermal Oxidizer	1	--	--	--	--	--	--	0.01	0.06	0.00	0.01	0.00	0.00	0.00	0.00	0.02	0.10	0.00	0.00
FL-1	Upset/Maintenance Flare	1	--	--	--	--	--	--	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
FL-2	Tank Flare	1	--	--	--	--	--	--	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
HR-1	Road Dust	N/A	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MAIN-1	Maintenance Activities	N/A	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
UP/MAL-1	Upsets/Malfunctions	N/A	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	Facility-Wide Total HAP Emissions		2.02	8.85	0.68	2.97	0.42	1.85	6.03	0.46	1.48	0.33	0.07	0.03	0.08	0.09	12.04	1.56	0.07	0.02

* - Composite emissions represent worse case engine emissions

Summary of Compressor Engine Air Emission Units

Option Number	Unit Name	Make & Model	Qty	Potential Emissions Uncontrolled + No Product Recovered NOx lb/hr	NOx tpy	CO lb/hr	CO tpy	VOC lb/hr	VOC tpy	SO2 lb/hr	SO2 tpy	PM10 lb/hr	PM10 tpy
1	ENG-1	Caterpillar G3508B		1.52	6.66	3.93	17.19	1.70	7.46	0.02	0.07	0.06	0.25
		Option 1 Total:	1	1.52	6.66	3.93	17.19	1.70	7.46	0.02	0.07	0.06	0.25
2	ENG-2	Caterpillar G3516		3.04	13.33	7.39	32.39	3.47	15.19	0.03174	0.13902	0.11	0.50
		Option 2 Total:	1	3.04	13.33	7.39	32.39	3.47	15.19	0.03	0.14	0.11	0.50
		Worst-Case Composite Engine Emissions		3.04	13.33	7.39	32.39	3.47	15.19	0.03	0.14	0.11	0.50

Option Number	Unit Name	Make & Model	Qty	Potential Emissions Controlled + Product Recovery NOx lb/hr	NOx tpy	CO lb/hr	CO tpy	VOC lb/hr	VOC tpy	SO2 lb/hr	SO2 tpy	PM10 lb/hr	PM10 tpy	CO2e tpy
1	ENG-1	Caterpillar G3508B		1.52	6.66	3.04	13.33	1.38	6.06	0.02	0.07	0.06	0.25	2903
		Option 1 Total:	1	1.52	6.66	3.04	13.33	1.38	6.06	0.02	0.07	0.06	0.25	2903
2	ENG-2	Caterpillar G3516		3.04	13.33	2.37	10.40	2.40	10.50	0.03	0.14	0.11	0.50	5843
		Option 2 Total:	1	3.04	13.33	2.37	10.40	2.40	10.50	0.03	0.14	0.11	0.50	5843
		Worst-Case Composite Engine Emissions		3.04	13.33	3.04	13.33	2.40	10.50	0.03	0.14	0.11	0.50	5843

Engine Emission Detail Sheet

Item	Value
Source Name	ENG-1
Description	Compressor Engine
Engine Use	Inlet Compression
Quantity	1
Make	Caterpillar
Model	Caterpillar G3508B
Serial Number	TBD
Manufacture Date	After 7/1/2010
Fuel Type	Natural Gas
Engine Type	4SLB

Item	Value	Units	Source
Rated Horsepower	690	hp	Manufacturer
Heat Rate	5.66	MMBtu/hr	Calculated
Fuel Consumption	8203	Btu/hp-hr	Manufacturer
Fuel Use	3825	scf/hr	Calculated
Fuel Heat Value	1479.8	btu/scf	Gas Analysis
Emisson Controls	Catalyst/AFR		Manufacturer
Control Efficiency CH2O	50%		Manufacturer/Permit Condition
Control Efficiency NOx	0%		Manufacturer/JJJJ
Control Efficiency VOC	19%		Manufacturer/JJJJ
Control Efficiency CO	22%		Manufacturer/JJJJ
Engine Speed	1400	RPM	Manufacturer
Potential Operation	8760	hr/yr	
Sulfur Content	9,476	grains/MMscf	Gas Analysis with Margin
Sulfur Margin	400%	%	

Total Potential Emissions

Pollutant	Uncontrolled Emissions		Controlled Emissions	
	(lb/hr)	(tpy)	(lb/hr)	(tpy)
NOx	1.52	6.66	1.52	6.66
VOC (less formaldehyde)	1.07	4.66	1.07	4.66
Total VOC	1.70	7.46	1.38	6.06
CO	3.93	17.19	3.04	13.33
SO2	0.02	0.07	0.02	0.07
PM10	0.06	0.25	0.06	0.25
Formaldehyde	0.64	2.80	0.32	1.40
Acetaldehyde	0.05	0.21	0.05	0.21
Acrolein	0.03	0.13	0.03	0.13
Benzene	0.00	0.01	0.00	0.01
Toluene	0.00	0.01	0.00	0.01
Ethylbenzene	0.00	0.00	0.00	0.00
Xylene	0.00	0.00	0.00	0.00
n-Hexane	0.01	0.03	0.01	0.03
Total HAPs	0.73	3.19	0.41	1.79

Potential Emissions Per Engine

Pollutant	Uncontrolled Emissions				Controlled Emissions				Source of Emission Factor
	EF	Units	(lb/hr)	(tpy)	EF	Units	(lb/hr)	(tpy)	
NOx	1.00*	g/hp-hr	1.52	6.66	1.00	g/hp-hr	1.52	6.66	40 CFR 60 Subpart JJJJ
VOC (less formaldehyde)	0.70*	g/hp-hr	1.07	4.66	0.70	g/hp-hr	1.07	4.66	40 CFR 60 Subpart JJJJ
Total VOC***	1.12	g/hp-hr	1.70	7.46	0.91	g/hp-hr	1.38	6.06	40 CFR 60 Subpart JJJJ + CH2O
CO	2.58**	g/hp-hr	3.93	17.19	2.00	g/hp-hr	3.04	13.33	40 CFR 60 Subpart JJJJ
SO2****	2.79E-03	lb/mmBtu	0.02	0.07	2.79E-03	lb/mmBtu	0.02	0.07	EPA AP-42 Table 3.2-2
PM10*****	9.99E-03	lb/mmBtu	0.06	0.25	9.99E-03	lb/mmBtu	0.06	0.25	EPA AP-42 Table 3.2-2
Formaldehyde	0.42	g/hp-hr	0.64	2.80	0.21	g/hp-hr	0.32	1.40	Permit Condition
Acetaldehyde	8.36E-03	lb/mmBtu	0.05	0.21	8.36E-03	lb/mmBtu	0.05	0.21	EPA AP-42 Table 3.2-2
Acrolein	5.14E-03	lb/mmBtu	0.03	0.13	5.14E-03	lb/mmBtu	0.03	0.13	EPA AP-42 Table 3.2-2
Benzene	4.40E-04	lb/mmBtu	0.00	0.01	4.40E-04	lb/mmBtu	0.00	0.01	EPA AP-42 Table 3.2-2
Toluene	4.08E-04	lb/mmBtu	0.00	0.01	4.08E-04	lb/mmBtu	0.00	0.01	EPA AP-42 Table 3.2-2
Ethylbenzene	3.97E-05	lb/mmBtu	0.00	0.00	3.97E-05	lb/mmBtu	0.00	0.00	EPA AP-42 Table 3.2-2
Xylene	1.84E-04	lb/mmBtu	0.00	0.00	1.84E-04	lb/mmBtu	0.00	0.00	EPA AP-42 Table 3.2-2
n-Hexane	1.11E-03	lb/mmBtu	0.01	0.03	1.11E-03	lb/mmBtu	0.01	0.03	EPA AP-42 Table 3.2-2
Total HAPs			0.73	3.19			0.41	1.79	

* - Uncontrolled and controlled NOx and VOC emission factors based on 40 CFR 60 Subpart JJJJ standards as manufacturer emission factors are lower than JJJJ standards.

** - Uncontrolled and controlled emission factors for CO were taken from the Manufacturer technical data sheets and 40 CFR 60 Subpart JJJJ emission standards, respectively.

*** - Total VOC emissions were calculated to include formaldehyde

**** - Sulfur emission factor from AP-42 Table 1.4-2 is ratio adjusted based on the max sulfur content when sulfur content is greater than 2,000 grains/MMsc

***** - PM10 emissions include filterable and condensable particulates

Sample Calculation for NOx

1.00 g/hp-hr * 690 hp / 453.59 g/lb * 8760 hr/yr / 2000 lb/ton = 6.66 tpy

Engine Emission Detail Sheet

Item	Value
Source Name	ENG-2
Description	Compressor Engine
Engine Use	Inlet Compression
Quantity	1
Make	Caterpillar
Model	Caterpillar G3516
Serial Number	TBD
Manufacture Date	After 7/1/2007
Fuel Type	Natural Gas
Engine Type	4SLB

Item	Value	Units	Source
Rated Horsepower	1380	hp	Manufacturer
Heat Rate	11.39	MMBtu/hr	Calculated
Fuel Consumption	8256	Btu/hp-hr	Manufacturer
Fuel Use	7699.20	scf/hr	Calculated
Fuel Heat Value	1479.8	btu/scf	Gas Analysis
Emisson Controls	Oxidation Catalyst		Manufacturer
Control Efficiency CH2O	80%		Manufacturer/Permit Condition
Control Efficiency NOx	0%		Manufacturer/JJJJ
Control Efficiency VOC	31%		Manufacturer/JJJJ
Control Efficiency CO	68%		Manufacturer/Permit Condition
Engine Speed	1400	RPM	Manufacturer
Potential Operation	8760	hr/yr	
Sulfur Content	9,476	grains/MMscf	Gas Analysis with Margin
Sulfur Margin	400%	%	

Total Potential Emissions

Pollutant	Uncontrolled Emissions		Controlled Emissions	
	(lb/hr)	(tpy)	(lb/hr)	(tpy)
NOx	3.04	13.33	3.04	13.33
VOC (less formaldehyde)	2.13	9.33	2.13	9.33
Total VOC	3.47	15.19	2.40	10.50
CO	7.39	32.39	2.37	10.40
SO2	0.03	0.14	0.03	0.14
PM10	0.11	0.50	0.11	0.50
Formaldehyde	1.34	5.86	0.27	1.17
Acetaldehyde	0.10	0.42	0.10	0.42
Acrolein	0.06	0.26	0.06	0.26
Benzene	0.01	0.02	0.01	0.02
Toluene	0.00	0.02	0.00	0.02
Ethylbenzene	0.00	0.00	0.00	0.00
Xylene	0.00	0.01	0.00	0.01
n-Hexane	0.01	0.06	0.01	0.06
Total HAPs	1.52	6.65	0.45	1.96

Potential Emissions Per Engine

Pollutant	Uncontrolled Emissions				Controlled Emissions				Source of Emission Factor
	EF	Units	(lb/hr)	(tpy)	EF	Units	(lb/hr)	(tpy)	
NOx	1.00*	g/hp-hr	3.04	13.33	1.00	g/hp-hr	3.04	13.33	40 CFR 60 Subpart JJJJ
VOC (less formaldehyde)	0.70*	g/hp-hr	2.13	9.33	0.70	g/hp-hr	2.13	9.33	40 CFR 60 Subpart JJJJ
Total VOC***	1.14	g/hp-hr	3.47	15.19	0.79	g/hp-hr	2.40	10.50	40 CFR 60 Subpart JJJJ + CH2O
CO	2.43**	g/hp-hr	7.39	32.39	0.78****	g/hp-hr	2.37	10.40	Permit Condition
SO2*****	2.79E-03	lb/mmBtu	0.03	0.14	2.79E-03	lb/mmBtu	0.03	0.14	EPA AP-42 Table 3.2-2
PM10******	9.99E-03	lb/mmBtu	0.11	0.50	9.99E-03	lb/mmBtu	0.11	0.50	EPA AP-42 Table 3.2-2
Formaldehyde	4.40E-01	g/hp-hr	1.34	5.86	8.80E-02	g/hp-hr	0.27	1.17	Permit Condition
Acetaldehyde	8.36E-03	lb/mmBtu	0.10	0.42	8.36E-03	lb/mmBtu	0.10	0.42	EPA AP-42 Table 3.2-2
Acrolein	5.14E-03	lb/mmBtu	0.06	0.26	5.14E-03	lb/mmBtu	0.06	0.26	EPA AP-42 Table 3.2-2
Benzene	4.40E-04	lb/mmBtu	0.01	0.02	4.40E-04	lb/mmBtu	0.01	0.02	EPA AP-42 Table 3.2-2
Toluene	4.08E-04	lb/mmBtu	0.00	0.02	4.08E-04	lb/mmBtu	0.00	0.02	EPA AP-42 Table 3.2-2
Ethylbenzene	3.97E-05	lb/mmBtu	0.00	0.00	3.97E-05	lb/mmBtu	0.00	0.00	EPA AP-42 Table 3.2-2
Xylene	1.84E-04	lb/mmBtu	0.00	0.01	1.84E-04	lb/mmBtu	0.00	0.01	EPA AP-42 Table 3.2-2
n-Hexane	1.11E-03	lb/mmBtu	0.01	0.06	1.11E-03	lb/mmBtu	0.01	0.06	EPA AP-42 Table 3.2-2
Total HAPs			1.52	6.65			0.45	1.96	

* - Uncontrolled and controlled emission factors for NOx and VOC are based on JJJJ standards as manufacturer uncontrolled emission factors are lower than JJJJ emission standards
** - Uncontrolled emission factor for CO was taken from the Manufacturer technical data sheets. Controlled emission factor for CO is a permit condition requested in this applicatior
*** - Uncontrolled and controlled emission factor for Total VOC was calculated to include formaldehyde.
**** - Controlled CO emission factor is a permit condition requested in this application.
***** - Sulfur emission factor from AP-42 Table 1.4-2 is ratio adjusted based on the max sulfur content when sulfur content is greater than 2,000 grains/MMscf
****** - PM10 emissions include filterable and condensable particulates.

Sample Calculation for NOx

1.00 g/hp-hr * 1380 hp / 453.59 g/lb * 8760 hr/yr / 2000 lb/ton = 13.33 tpy

Engine Emission Detail Sheet

Item	Value
Source Name	ENG 3-4
Description	Compressor Engine
Engine Use	Inlet Compression
Quantity	2
Make	Caterpillar
Model	Caterpillar G3516
Serial Number	TBD
Manufacture Date	After 7/1/2007
Fuel Type	Natural Gas
Engine Type	4SLB

Item	Value	Units	Source
Rated Horsepower	1380	hp	Manufacturer
Heat Rate	11.39	MMBtu/hr	Calculated
Fuel Consumption	8256	Btu/hp-hr	Manufacturer
Fuel Use	7699.20	scf/hr	Calculated
Fuel Heat Value	1479.8	btu/scf	Gas Analysis
Emisson Controls	Oxidation Catalyst		Manufacturer
Control Efficiency CH2O	80%		Manufacturer/Permit Condition
Control Efficiency NOx	0%		Manufacturer/JJJJ
Control Efficiency VOC	31%		Manufacturer/JJJJ
Control Efficiency CO	68%		Manufacturer/Permit Condition
Engine Speed	1400	RPM	Manufacturer
Potential Operation	8760	hr/yr	
Sulfur Content	9,476	grains/MMscf	Gas Analysis with Margin
Sulfur Margin	400%	%	

Total Potential Emissions

Pollutant	Uncontrolled Emissions		Controlled Emissions	
	(lb/hr)	(tpy)	(lb/hr)	(tpy)
NOx	6.09	26.66	6.09	26.66
VOC (less formaldehyde)	4.26	18.66	4.26	18.66
Total VOC	6.94	30.39	4.80	21.00
CO	14.79	64.77	4.75	20.79
SO2	0.06	0.28	0.06	0.28
PM10	0.23	1.00	0.23	1.00
Formaldehyde	2.68	11.73	0.54	2.35
Acetaldehyde	0.19	0.83	0.19	0.83
Acrolein	0.12	0.51	0.12	0.51
Benzene	0.01	0.04	0.01	0.04
Toluene	0.01	0.04	0.01	0.04
Ethylbenzene	0.00	0.00	0.00	0.00
Xylene	0.00	0.02	0.00	0.02
n-Hexane	0.03	0.11	0.03	0.11
Total HAPs	3.03	13.29	0.89	3.91

Potential Emissions Per Engine

Pollutant	Uncontrolled Emissions				Controlled Emissions				Source of Emission Factor
	EF	Units	(lb/hr)	(tpy)	EF	Units	(lb/hr)	(tpy)	
NOx	1.00*	g/hp-hr	3.04	13.33	1.00	g/hp-hr	3.04	13.33	40 CFR 60 Subpart JJJJ
VOC (less formaldehyde)	0.70*	g/hp-hr	2.13	9.33	0.70	g/hp-hr	2.13	9.33	40 CFR 60 Subpart JJJJ
Total VOC***	1.14	g/hp-hr	3.47	15.19	0.79	g/hp-hr	2.40	10.50	40 CFR 60 Subpart JJJJ + CH2O
CO	2.43**	g/hp-hr	7.39	32.39	0.78	g/hp-hr	2.37	10.40	Permit Condition
SO2*****	2.79E-03	lb/mmBtu	0.03	0.14	2.79E-03	lb/mmBtu	0.03	0.14	EPA AP-42 Table 3.2-2
PM10******	9.99E-03	lb/mmBtu	0.11	0.50	9.99E-03	lb/mmBtu	0.11	0.50	EPA AP-42 Table 3.2-2
Formaldehyde	4.40E-01	g/hp-hr	1.34	5.86	8.80E-02	g/hp-hr	0.27	1.17	Permit Condition
Acetaldehyde	8.36E-03	lb/mmBtu	0.10	0.42	8.36E-03	lb/mmBtu	0.10	0.42	EPA AP-42 Table 3.2-2
Acrolein	5.14E-03	lb/mmBtu	0.06	0.26	5.14E-03	lb/mmBtu	0.06	0.26	EPA AP-42 Table 3.2-2
Benzene	4.40E-04	lb/mmBtu	0.01	0.02	4.40E-04	lb/mmBtu	0.01	0.02	EPA AP-42 Table 3.2-2
Toluene	4.08E-04	lb/mmBtu	0.00	0.02	4.08E-04	lb/mmBtu	0.00	0.02	EPA AP-42 Table 3.2-2
Ethylbenzene	3.97E-05	lb/mmBtu	0.00	0.00	3.97E-05	lb/mmBtu	0.00	0.00	EPA AP-42 Table 3.2-2
Xylene	1.84E-04	lb/mmBtu	0.00	0.01	1.84E-04	lb/mmBtu	0.00	0.01	EPA AP-42 Table 3.2-2
n-Hexane	1.11E-03	lb/mmBtu	0.01	0.06	1.11E-03	lb/mmBtu	0.01	0.06	EPA AP-42 Table 3.2-2
Total HAPs			1.52	6.65			0.45	1.96	

* - Uncontrolled and controlled emission factors for NOx and VOC are based on JJJJ standards as manufacturer uncontrolled emission factors are lower than JJJJ emission standards
** - Uncontrolled emission factor for CO was taken from the Manufacturer technical data sheets. Controlled emission factor for CO is a permit condition requested in this applicatior
*** - Uncontrolled and controlled emission factor for Total VOC was calculated to include formaldehyde.
**** - Controlled CO emission factor is a permit condition requested in this application.
***** - Sulfur emission factor from AP-42 Table 1.4-2 is ratio adjusted based on the max sulfur content when sulfur content is greater than 2,000 grains/MMscf
****** - PM10 emissions include filterable and condensable particulates.

Sample Calculation for NOx
1.00 g/hp-hr * 1380 hp / 453.59 g/lb * 8760 hr/yr / 2000 lb/ton = 13.33 tpy

Engine Emission Detail Sheet

Item	Value
Source Name	ENG 5-8
Description	Compressor Engine
Engine Use	Residue Compression
Quantity	4
Make	Caterpillar
Model	Caterpillar G3516
Serial Number	TBD
Manufacture Date	11/20/2017, After 7/1/2007
Fuel Type	Natural Gas
Engine Type	4SLB

Item	Value	Units	Source
Rated Horsepower	1380	hp	Manufacturer
Heat Rate	11.39	MMBtu/hr	Calculated
Fuel Consumption	8256	Btu/hp-hr	Manufacturer
Fuel Use	7699.20	scf/hr	Calculated
Fuel Heat Value	1479.8	btu/scf	Gas Analysis
Emisson Controls	Oxidation Catalyst		Manufacturer
Control Efficiency CH2O	80%		Manufacturer/Permit Condition
Control Efficiency NOx	0%		Manufacturer/JJJJ
Control Efficiency VOC	31%		Manufacturer/JJJJ
Control Efficiency CO	68%		Manufacturer/Permit Condition
Engine Speed	1400	RPM	Manufacturer
Potential Operation	8760	hr/yr	
Sulfur Content	9,476	grains/MMscf	AP42 with margin
Sulfur Margin	400%	%	

Total Potential Emissions

Pollutant	Uncontrolled Emissions		Controlled Emissions	
	(lb/hr)	(tpy)	(lb/hr)	(tpy)
NOx	12.17	53.31	12.17	53.31
VOC (less formaldehyde)	8.52	37.32	8.52	37.32
Total VOC	13.88	60.78	9.59	42.01
CO	29.58	129.55	9.49	41.58
SO2	0.13	0.56	0.13	0.56
PM10	0.46	1.99	0.46	1.99
Formaldehyde	5.35	23.45	1.07	4.69
Acetaldehyde	0.38	1.67	0.38	1.67
Acrolein	0.23	1.03	0.23	1.03
Benzene	0.02	0.09	0.02	0.09
Toluene	0.02	0.08	0.02	0.08
Ethylbenzene	0.00	0.01	0.00	0.01
Xylene	0.01	0.04	0.01	0.04
n-Hexane	0.05	0.22	0.05	0.22
Total HAPs	6.07	26.58	1.79	7.82

Potential Emissions Per Engine

Pollutant	Uncontrolled Emissions				Controlled Emissions				Source of Emission Factor
	EF	Units	(lb/hr)	(tpy)	EF	Units	(lb/hr)	(tpy)	
NOx	1.00*	g/hp-hr	3.04	13.33	1.00	g/hp-hr	3.04	13.33	40 CFR 60 Subpart JJJJ
VOC (less formaldehyde)	0.70*	g/hp-hr	2.13	9.33	0.70	g/hp-hr	2.13	9.33	40 CFR 60 Subpart JJJJ
Total VOC***	1.14	g/hp-hr	3.47	15.19	0.79	g/hp-hr	2.40	10.50	40 CFR 60 Subpart JJJJ + CH2O
CO	2.43**	g/hp-hr	7.39	32.39	0.78	g/hp-hr	2.37	10.40	Permit Condition
SO2*****	2.79E-03	lb/mmBtu	0.03	0.14	2.79E-03	lb/mmBtu	0.03	0.14	EPA AP-42 Table 3.2-2
PM10******	9.99E-03	lb/mmBtu	0.11	0.50	9.99E-03	lb/mmBtu	0.11	0.50	EPA AP-42 Table 3.2-2
Formaldehyde	4.40E-01	g/hp-hr	1.34	5.86	8.80E-02	g/hp-hr	0.27	1.17	Permit Condition
Acetaldehyde	8.36E-03	lb/mmBtu	0.10	0.42	8.36E-03	lb/mmBtu	0.10	0.42	EPA AP-42 Table 3.2-2
Acrolein	5.14E-03	lb/mmBtu	0.06	0.26	5.14E-03	lb/mmBtu	0.06	0.26	EPA AP-42 Table 3.2-2
Benzene	4.40E-04	lb/mmBtu	0.01	0.02	4.40E-04	lb/mmBtu	0.01	0.02	EPA AP-42 Table 3.2-2
Toluene	4.08E-04	lb/mmBtu	0.00	0.02	4.08E-04	lb/mmBtu	0.00	0.02	EPA AP-42 Table 3.2-2
Ethylbenzene	3.97E-05	lb/mmBtu	0.00	0.00	3.97E-05	lb/mmBtu	0.00	0.00	EPA AP-42 Table 3.2-2
Xylene	1.84E-04	lb/mmBtu	0.00	0.01	1.84E-04	lb/mmBtu	0.00	0.01	EPA AP-42 Table 3.2-2
n-Hexane	1.11E-03	lb/mmBtu	0.01	0.06	1.11E-03	lb/mmBtu	0.01	0.06	EPA AP-42 Table 3.2-2
Total HAPs			1.52	6.65			0.45	1.96	

* - Uncontrolled and controlled emission factors for NOx and VOC are based on JJJJ standards as manufacturer uncontrolled emission factors are lower than JJJJ emission standards
** - Uncontrolled emission factor for CO was taken from the Manufacturer technical data sheets. Controlled emission factor for CO is a permit condition requested in this applicatior
*** - Uncontrolled and controlled emission factor for Total VOC was calculated to include formaldehyde.
**** - Controlled CO emission factor is a permit condition requested in this application.
***** - Sulfur emission factor from AP-42 Table 1.4-2 is ratio adjusted based on the max sulfur content when sulfur content is greater than 2,000 grains/MMscf
****** - PM10 emissions include filterable and condensable particulates.

Sample Calculation for NOx

1.00 g/hp-hr * 1380 hp / 453.59 g/lb * 8760 hr/yr / 2000 lb/ton = 13.33 tpy

Engine Emission Detail Sheet

Item	Value
Source Name	ENG-9
Description	Generator Engine
Engine Use	Generator
Quantity	1
Make	Olympian
Model	250LG6
Serial Number	TBD
Manufacture Date	After 7/1/2010
Fuel Type	Natural Gas
Engine Type	4SRB

Item	Value	Units	Source
Rated Horsepower	374	hp	Manufacturer
Heat Rate	4.41	MMBtu/hr	Calculated
Fuel Consumption	11803	Btu/hp-hr	Manufacturer
Fuel Use	2983	scf/hr	Calculated
Fuel Heat Value	1479.8	btu/scf	Gas Analysis
Emission Controls	TBD		Manufacturer
Control Efficiency CH2O	0%		AP42
Control Efficiency NOx	0%		JJJJ
Control Efficiency VOC	0%		JJJJ
Control Efficiency CO	0%		JJJJ
Engine Speed	1800	RPM	Manufacturer
Potential Operation	8760	hr/yr	
Sulfur Content	8,000	grains/MMscf	AP42 with margin
Sulfur Margin	400%	%	

Potential Emissions Per Engine

Pollutant	Uncontrolled Emissions				Controlled Emissions				Source of Emission Factor
	EF	Units	(lb/hr)	(tpy)	EF	Units	(lb/hr)	(tpy)	
Nox	1.00*	g/hp-hr	0.82	3.61	1.00	g/hp-hr	0.82	3.61	40 CFR 60 Subpart JJJJ
VOC (less formaldehyde)	0.70*	g/hp-hr	0.58	2.53	0.70	g/hp-hr	0.58	2.53	40 CFR 60 Subpart JJJJ
Total VOC**	0.81	g/hp-hr	0.67	2.92	0.81	g/hp-hr	0.67	2.92	40 CFR 60 Subpart JJJJ + CH2O
CO	2.00*	g/hp-hr	1.65	7.22	2.00	g/hp-hr	1.65	7.22	40 CFR 60 Subpart JJJJ
SO2****	2.35E-03	lb/mmBtu	0.01	0.05	2.35E-03	lb/mmBtu	0.01	0.05	EPA AP-42 Table 3.2-3
PM10*****	1.94E-02	lb/mmBtu	0.09	0.38	1.94E-02	lb/mmBtu	0.09	0.38	EPA AP-42 Table 3.2-3
Formaldehyde	2.05E-02	lb/mmBtu	0.09	0.40	2.05E-02	lb/mmBtu	0.09	0.40	EPA AP-42 Table 3.2-3
Acetaldehyde	2.79E-03	lb/mmBtu	0.01	0.05	2.79E-03	lb/mmBtu	0.01	0.05	EPA AP-42 Table 3.2-3
Acrolein	2.63E-03	lb/mmBtu	0.01	0.05	2.63E-03	lb/mmBtu	0.01	0.05	EPA AP-42 Table 3.2-3
Benzene	1.58E-03	lb/mmBtu	0.01	0.03	1.58E-03	lb/mmBtu	0.01	0.03	EPA AP-42 Table 3.2-3
Toluene	5.58E-04	lb/mmBtu	0.00	0.01	5.58E-04	lb/mmBtu	0.00	0.01	EPA AP-42 Table 3.2-3
Ethylbenzene	2.48E-05	lb/mmBtu	0.00	0.00	2.48E-05	lb/mmBtu	0.00	0.00	EPA AP-42 Table 3.2-3
Xylene	1.95E-04	lb/mmBtu	0.00	0.00	1.95E-04	lb/mmBtu	0.00	0.00	EPA AP-42 Table 3.2-3
n-Hexane	N/A	lb/mmBtu	N/A	N/A	N/A	lb/mmBtu	N/A	N/A	EPA AP-42 Table 3.2-3
Total HAPs			0.12	0.55			0.12	0.55	

* - Uncontrolled and controlled emission factors for NOx, CO, and VOC are based on JJJJ standards as manufacturer uncontrolled emission factors are lower than JJJJ emission standards.
** - Uncontrolled emission factor for Total VOC was calculated to include formaldehyde.
*** - Controlled emission factors are permit conditions requested in this application.
**** - Sulfur emission factor from AP-42 Table 1.4-2 is ratio adjusted based on the max sulfur content when sulfur content is greater than 2,000 grains/MMscf.
***** - PM10 emissions include filterable and condensable particulates.

Sample Calculation for NOx
1.00 g/hp-hr * 374 hp / 453.59 g/lb * 8760 hr/yr / 2000 lb/ton = 3.61 tpy

Tank Detail Sheet

Equipment Source Name	TK-1		Tank Height	25 ft	
Source Description	Gunbarrel Tank		Tank Diameter	12 ft	
Quantity	1		Potential Operation	8,760 hr/yr	
Tank Capacity	500	bbl (each)	Potential Oil Throughput	766 bbl/yr	2.1 avg. bbl/day
Total Tank Capacity	500	bbl	Potential Throughput Per Tank	766 bbl/yr/tk	2.1 avg. bbl/day/tk
Control Efficiency	95%		Throughput Margin	0.00%	
			Calendar Year	2019	

Total Potential Emissions

Pollutant	Uncontrolled		Controlled	
	(lb/hr)	(ton/yr)	(lb/hr)	(ton/yr)
VOC	22.64	99.18	1.13	4.96
Benzene	0.23	0.99	0.01	0.05
Toluene	0.23	0.99	0.01	0.05
Ethylbenzene	0.02	0.10	0.00	0.00
Xylenes	0.02	0.10	0.00	0.00
n-Hexane	0.91	3.97	0.05	0.20
2,2,4-Trimethylpentane	0.02	0.10	0.00	0.00
Total HAPs	1.43	6.25	0.07	0.31

Potential Emissions Per Tank

Pollutant	EF	Uncontrolled		Controlled		Source of Emission Factor
	(lb/bbl)	(lb/hr)	(ton/yr)	(lb/hr)	(ton/yr)	
VOC	258.95	22.64	99.18	1.13	4.96	Engineering Calculation
Benzene	2.59	0.23	0.99	0.01	0.05	Engineering Calculation
Toluene	2.59	0.23	0.99	0.01	0.05	Engineering Calculation
Ethylbenzene	0.26	0.02	0.10	0.00	0.00	Engineering Calculation
Xylenes	0.26	0.02	0.10	0.00	0.00	Engineering Calculation
n-Hexane	10.36	0.91	3.97	0.05	0.20	Engineering Calculation
2,2,4-Trimethylpentane	0.26	0.02	0.10	0.00	0.00	Engineering Calculation
Total HAPs		1.43	6.25	0.07	0.31	

Process Streams	39 To Flare	40 To Slop Oil
Composition	Solved	Solved
Phase: Total	VSSL-105	VSSL-105
	--	--
Mole Fraction	%	%
Methane	14.0050	0.095017
Ethane	15.1670	0.87808
Propane	28.5610	7.41773
i-Butane	9.11843	7.17785
n-Butane	26.0267	34.2548
i-Pentane	3.42445	12.6336
n-Pentane	2.60785	13.7462
n-Hexane	0.849356	20.9208
n-Heptane	0.0200098	1.87120
C8	0.00266528	1.00249
Water	0.00304587	0.000043916
N2	0.122357	0.000185748
CO2	0.091903	0.00194386
H2S	0.000283058	1.96086E-05
Triethylene Glycol	0	0
EG	0	0
MeOH	0	0
CHEMTHERM 550	0	0

Process Streams	39 To Flare	40 To Slop Oil
Composition	Solved	Solved
Phase: Total	VSSL-105	VSSL-105
Process Streams	39 To Flare	40 To Slop Oil
Mass Fraction	%	%
Methane	4.9915	0.0225109
Ethane	10.1321	0.389921
Propane	27.9801	4.83045
i-Butane	11.77447	6.16109
n-Butane	33.6078	29.4025
i-Pentane	5.48907	13.4610
n-Pentane	4.18014	14.6465
n-Hexane	1.62612	26.6246
n-Heptane	0.0445449	2.76896
C8	0.00676389	1.69113
Water	0.00121908	1.16839E-05
N2	0.076151	0.000076844
CO2	0.089858	0.00126337
H2S	0.000214321	9.86911E-06
Triethylene Glycol	0	0
EG	0	0
MeOH	0	0
CHEMTHERM 550	0	0

Process Streams		39 To Flare	40 To Slop Oil
Properties	Status:	Solved	Solved
Phase: Total	From Block:	VSSL-105	VSSL-105
	To Block:	--	--
Property	Units		
Temperature	°F	16.19949	16.19949
Pressure	psig	0.125*	0.125
Mole Fraction Vapor	%	100	0
Mole Fraction Light Liquid	%	0	100
Mole Fraction Heavy Liquid	%	0	0
Molecular Weight	lb/lbmol	45.0112	67.7141
Mass Density	lb/ft^3	0.1209179	40.1146
Molar Flow	lbmol/h	13.8689	6.79227
Mass Flow	lb/h	624.256	459.933
Vapor Volumetric Flow	ft^3/h	5162.64	11.4655
Liquid Volumetric Flow	gpm	643.654	1.42946
Std Vapor Volumetric Flow	MMSCFD	0.126313	0.0618614
Std Liquid Volumetric Flow	sgpm	2.45639	1.50085
Compressibility		0.978572	0.00443751
Specific Gravity		1.55412	0.643185
API Gravity			97.3979
Enthalpy	Btu/h	-665846	-501320
Mass Enthalpy	Btu/lb	-1066.62	-1089.99
Mass Cp	Btu/(lb*°F)	0.378222	0.521661
Ideal Gas CpCv Ratio		1.13354	1.08773
Dynamic Viscosity	cP	0.00739850	0.280324
Kinematic Viscosity	cSt	3.81972	0.436251
Thermal Conductivity	Btu/(h*ft*°F)	0.0089001	0.0713101?
Surface Tension	lbf/ft		0.00123561?
Net Ideal Gas Heating Value	Btu/ft^3	2353.24	3485.33
Net Liquid Heating Value	Btu/lb	19688.6	19372.5
Gross Ideal Gas Heating Value	Btu/ft^3	2557.29	3771.13
Gross Liquid Heating Value	Btu/lb	21409.2	20974.6

1 - Uncontrolled emissions were calculated from Promax output.

2- No HAP emissions are reported by Promax; therefore, these emissions were estimated based on the ration of HAP's to total VOC's from a conservative engineering assumption.

Tank Detail Sheet

Equipment Source Name	TK 2-5		Tank Height	20 ft	
Source Description	Stabilized Condensate Tank		Tank Diameter	12 ft	
Quantity	4		Potential Operation	8760 hr/yr	
Tank Capacity	400	bbl (each)	Potential Throughput	219,000 bbl/yr	600.0 avg. bbl/day
Total Tank Capacity	1600	bbl	Potential Throughput Per Tank	54,750 bbl/yr/tk	150.0 avg. bbl/day/tk
Control Efficiency	95%		Calendar Year	2019	

Total Potential Emissions

Pollutant	Uncontrolled		Controlled	
	(lb/hr)	(ton/yr)	(lb/hr)	(ton/yr)
VOC	7.98	34.95	0.40	1.75
Benzene	0.08	0.35	0.00	0.02
Toluene	0.08	0.35	0.00	0.02
Ethylbenzene	0.01	0.03	0.00	0.00
Xylenes	0.01	0.03	0.00	0.00
n-Hexane	0.32	1.40	0.02	0.07
2,2,4-Trimethylpentane	0.01	0.03	0.00	0.00
Total HAPs	0.50	2.20	0.03	0.11

Potential Emissions Per Tank

Pollutant	HAP Wt %	Uncontrolled		Controlled		Source of Emission Factor
	(%)	(lb/hr)	(ton/yr)	(lb/hr)	(ton/yr)	
VOC		1.99	8.74	0.10	0.44	EPA TANKS 4.0.9d
Benzene	1.00%	0.02	0.09	0.00	0.00	Engineering Calculation
Toluene	1.00%	0.02	0.09	0.00	0.00	Engineering Calculation
Ethylbenzene	0.10%	0.00	0.01	0.00	0.00	Engineering Calculation
Xylenes	0.10%	0.00	0.01	0.00	0.00	Engineering Calculation
n-Hexane	4.00%	0.08	0.35	0.00	0.02	Engineering Calculation
2,2,4-Trimethylpentane	0.10%	0.00	0.01	0.00	0.00	Engineering Calculation
Total HAPs		0.13	0.55	0.01	0.03	

1 - Uncontrolled emissions were taken directly from the EPA TANKS 4.0.9d output.

2 - No HAP emissions are reported by EPA Tanks 4.0.9d; therefore, these emissions were estimated based on the ration of HAP's to total VOC's from a conservative engineering assumption.

Tank Detail Sheet

Equipment Source Name	TK-6		Tank Height	20 ft	
Source Description	Slop Oil Tank		Tank Diameter	12 ft	
Quantity	1		Potential Operation	8760 hr/yr	
Tank Capacity	400	bbl (each)	Potential Throughput	1,532 bbl/yr	4.2 avg. bbl/day
Total Tank Capacity	400	bbl	Potential Throughput Per Tank	1,532 bbl/yr/tk	4.2 avg. bbl/day/tk
Control Efficiency	95%		Margin	100%	
			Calendar Year	2019	

Total Potential Emissions

Pollutant	Uncontrolled		Controlled	
	(lb/hr)	(ton/yr)	(lb/hr)	(ton/yr)
VOC	0.85	3.72	0.04	0.19
Benzene	0.01	0.04	0.00	0.00
Toluene	0.01	0.04	0.00	0.00
Ethylbenzene	0.00	0.00	0.00	0.00
Xylenes	0.00	0.00	0.00	0.00
n-Hexane	0.03	0.15	0.00	0.01
2,2,4-Trimethylpentane	0.00	0.00	0.00	0.00
Total HAPs	0.05	0.23	0.00	0.01

Potential Emissions Per Tank

Pollutant	HAP Wt %	Uncontrolled		Controlled		Source of Emission Factor
	(%)	(lb/hr)	(ton/yr)	(lb/hr)	(ton/yr)	
VOC		0.85	3.72	0.04	0.19	EPA TANKS 4.0.9d
Benzene	1.00%	0.01	0.04	0.00	0.00	Engineering Calculation
Toluene	1.00%	0.01	0.04	0.00	0.00	Engineering Calculation
Ethylbenzene	0.10%	0.00	0.00	0.00	0.00	Engineering Calculation
Xylenes	0.10%	0.00	0.00	0.00	0.00	Engineering Calculation
n-Hexane	4.00%	0.03	0.15	0.00	0.01	Engineering Calculation
2,2,4-Trimethylpentane	0.10%	0.00	0.00	0.00	0.00	Engineering Calculation
Total HAPs		0.05	0.23	0.00	0.01	

1 - Uncontrolled emissions were taken directly from the EPA TANKS 4.0.9d output.

2 - No HAP emissions are reported by EPA Tanks 4.0.9d; therefore, these emissions were estimated based on the ration of HAP's to total VOC's from a conservative engineering assumption.

Tank Detail Sheet

Equipment Source Name	PWTK-1		Tank Height	20	ft	
Source Description	Produced Water Tank		Tank Diameter	12	ft	
Quantity	1		Potential Operation	8760	hr/yr	
Tank Capacity	400	bbl (each)	Potential PW Throughput	1,532	bbl/yr	4.2 avg. bbl/day
Total Tank Capacity	400	bbl	Potential Oil from PW Throughput	15	bbl/yr	0.1 avg. bbl/day
Control Efficiency	95%		Potential Oil Throughput Per Tank	15	bbl/yr/tk	0.1 avg. bbl/day/tk
			Margin	100%		
			Calendar Year	2019		

Total Potential Emissions

Pollutant	Uncontrolled		Controlled	
	(lb/hr)	(ton/yr)	(lb/hr)	(ton/yr)
VOC	0.00	0.00	0.00	0.00
Benzene	0.00	0.00	0.00	0.00
Toluene	0.00	0.00	0.00	0.00
Ethylbenzene	0.00	0.00	0.00	0.00
Xylenes	0.00	0.00	0.00	0.00
n-Hexane	0.00	0.00	0.00	0.00
2,2,4-Trimethylpentane	0.00	0.00	0.00	0.00
Total HAPs	0.00	0.00	0.00	0.00

Potential Emissions Per Tank

Pollutant	HAP Wt %	Uncontrolled		Controlled		Source of Emission Factor
	(%)	(lb/hr)	(ton/yr)	(lb/hr)	(ton/yr)	
VOC		0.00	0.00	0.00	0.00	EPA TANKS 4.0.9d
Benzene	1.00%	0.00	0.00	0.00	0.00	Engineering Calculation
Toluene	1.00%	0.00	0.00	0.00	0.00	Engineering Calculation
Ethylbenzene	0.10%	0.00	0.00	0.00	0.00	Engineering Calculation
Xylenes	0.10%	0.00	0.00	0.00	0.00	Engineering Calculation
n-Hexane	4.00%	0.00	0.00	0.00	0.00	Engineering Calculation
2,2,4-Trimethylpentane	0.10%	0.00	0.00	0.00	0.00	Engineering Calculation
Total HAPs		0.00	0.00	0.00	0.00	

1 - Uncontrolled emissions were taken directly from the EPA TANKS 4.0.9d output.
2 - Uncontrolled emissions were calculated based on the assumption that 1% of the produced water throughput is condensate.
3 - No HAP emissions are reported by EPA Tanks 4.0.9d; therefore, these emissions were estimated based on the ration of HAP's to total VOC's from a conservative engineering assumption.
4 - Throughput includes margin to account for additional water streams dumping into the tank.

Heater / Boiler Detail Sheet

Equipment Source Name	HTR-1			
Source Description	Hot Oil Heater			
Equipment Usage	Hot Oil Heater	Potential operation	8760	hr/yr
Equipment Make	TBD	Fuel Heating Value	1479.8	Btu/scf
Equipment Model	TBD	Heat Rate	50.00	MMBtu/hr
Serial Number	TBD	Sulfur Content	9,476	grains/MMscf Gas Analysis with Margin
Quantity	1	Sulfur Margin	400%	%
Emission Controls	None			

Total Potential Emissions

Pollutant	Estimated Emissions (lb/hr)	(tpy)
NOx	1.69	7.40
CO	2.84	12.43
VOC	0.19	0.81
SOx	0.10	0.42
PM10	0.26	1.12
Benzene	0.00	0.00
n-Hexane	0.06	0.27
Toluene	0.00	0.00
CH_2O	0.00	0.01
Total HAPs	0.06	0.28

Potential Emissions Per Heater

Pollutant	EF (lb/MMscf)	Estimated Emissions (lb/hr)	(tpy)	Source of Emission Factor
NOx[2]	50	1.69	7.40	AP-42 Table 1.4-1
CO	84	2.84	12.43	AP-42 Table 1.4-1
VOC	5.5	0.19	0.81	AP-42 Table 1.4-2
SOx[1]	2.84	0.10	0.42	AP-42 Table 1.4-2
PM10	7.6	0.26	1.12	AP-42 Table 1.4-2
Benzene	0.0021	0.00	0.00	AP-42 Table 1.4-3
n-Hexane	1.80	0.06	0.27	AP-42 Table 1.4-3
Toluene	0.0034	0.00	0.00	AP-42 Table 1.4-3
CH_2O	0.075	0.00	0.01	AP-42 Table 1.4-3
Total HAPs		0.06	0.28	

1 - Sulfur emission factor from AP-42 Table 1.4-2 is ratio adjusted based on the max sulfur content when sulfur content is greater than 2,000 grains/MMscf.
2 - This is a low NOx burner.

Sample Calculation for NOx
50 lb/MMscf / 1479.80 Btu/scf * 50.000 MMBtu/hr = 1.69 lb/hr

Heater / Boiler Detail Sheet

Equipment Source Name	HTR-2			
Source Description	Regen Gas Heater			
Equipment Usage	Regen Gas Heater	Potential operation	8760	hr/yr
Equipment Make	TBD	Fuel Heating Value	1479.8	Btu/scf
Equipment Model	TBD	Heat Rate	11.00	MMBtu/hr
Serial Number	TBD	Sulfur Content	9,476	grains/MMscf Gas Analysis with Margin
Quantity	1	Sulfur Margin	400%	%
Emission Controls	None			

Total Potential Emissions

Pollutant	Estimated Emissions (lb/hr)	Estimated Emissions (tpy)
NOx	0.74	3.26
CO	0.62	2.73
VOC	0.04	0.18
SOx	0.02	0.09
PM10	0.06	0.25
Benzene	0.00	0.00
n-Hexane	0.01	0.06
Toluene	0.00	0.00
CH_2O	0.00	0.00
Total HAPs	0.01	0.06

Potential Emissions Per Heater

Pollutant	EF (lb/MMscf)	Estimated Emissions (lb/hr)	Estimated Emissions (tpy)	Source of Emission Factor
NOx	100	0.74	3.26	AP-42 Table 1.4-1
CO	84	0.62	2.73	AP-42 Table 1.4-1
VOC	5.5	0.04	0.18	AP-42 Table 1.4-2
SOx[1]	2.84	0.02	0.09	AP-42 Table 1.4-2
PM10	7.6	0.06	0.25	AP-42 Table 1.4-2
Benzene	0.0021	0.00	0.00	AP-42 Table 1.4-3
n-Hexane	1.80	0.01	0.06	AP-42 Table 1.4-3
Toluene	0.0034	0.00	0.00	AP-42 Table 1.4-3
CH_2O	0.075	0.00	0.00	AP-42 Table 1.4-3
Total HAPs		0.01	0.06	

1 - Sulfur emission factor from AP-42 Table 1.4-2 is ratio adjusted based on the max sulfur content when sulfur content is greater than 2,000 grains/MMscf.

Sample Calculation for NOx

100 lb/MMscf / 1479.80 Btu/scf * 11.000 MMBtu/hr = 0.74 lb/hr

Loadout Emissions Detail Sheet

Equipment Source Name	CONDLOAD-1	
Source Description	Condensate Loadout	
Quantity	1	
Potential Throughput	219,000	bbl/yr
LACT On Site?	No	
Estimated LACT Downtime	NA	
Control Device	Vapor Balance	
Control Efficiencies	95%	
Capture Efficiency	70%	

Potential Emissions

Pollutant	HAP Wt % (%)	Uncontrolled lb/hr	Uncontrolled tpy	Controlled lb/hr	Controlled tpy	Source of Emission Calculations
VOC		99.91	27.35	33.47	9.16	AP-42 Section 5.2.1
Benzene	1.00%	1.00	0.27	0.33	0.09	Engineering Calculation
Toluene	1.00%	1.00	0.27	0.33	0.09	Engineering Calculation
Ethylbenzene	0.10%	0.10	0.03	0.03	0.01	Engineering Calculation
Xylenes	0.10%	0.10	0.03	0.03	0.01	Engineering Calculation
n-Hexane	4.00%	4.00	1.09	1.34	0.37	Engineering Calculation
2,2,4-Trimethylpentane	0.10%	0.10	0.03	0.03	0.01	Engineering Calculation
Total HAPs		6.29	1.72	2.11	0.58	

Molecular Weight of Vapors, MW	64.0	lb/lb-mol	EPA TANKS 4.0.9d
True Vapor Pressure, Pva @ T	6.48	psia	Interpolation from AP-42 Table 7.1-2
Temperature of Bulk Liquid Loaded, T	61	F	Ambient Temperature
	521	R	
Saturation Factor	0.6		AP-42 Table 5.2.1
Efficiency of controlled loading (%)	0.0%		
Potential Annual Throughput, v	9,198	1000 gallons	
Loading losses, L @ tank	5.95	lb/1000 gallons	
L = 12.46 S P MW / T (1-eff)			
Potential annual losses @ tank, L*v	54,699.81	lb/yr	**27.35 tpy**
Max hourly fill rate[1]	16.8	1000 gallons/hr	Trucking Company
Max hourly emissions	**99.9**	**lb/hr**	Calculated

1 - Max hourly fill rate based on a 200-bbl truck filling every 30 minutes.

Sample Calculation

219000 bbl/yr * 42 gal/bbl / 1000 gal * 5.95 lb/1000 gal / 2000 lb/ton = 27.35 tpy

Loadout Emissions Detail Sheet

Equipment Source Name	OILLOAD-1	
Source Description	Oil Loadout	
Quantity	1	
Potential Throughput	1,532	bbl/yr
LACT On Site?	No	
Estimated LACT Downtime	NA	
Control Device	Vapor Balance	
Control Efficiencies	95%	
Capture Efficiency	70%	

Potential Emissions

Pollutant	HAP Wt % (%)	Uncontrolled lb/hr	Uncontrolled tpy	Controlled lb/hr	Controlled tpy	Source of Emission Calculations
VOC		99.91	0.19	33.47	0.06	AP-42 Section 5.2.1
Benzene	1.00%	1.00	0.00	0.33	0.00	Engineering Calculation
Toluene	1.00%	1.00	0.00	0.33	0.00	Engineering Calculation
Ethylbenzene	0.10%	0.10	0.00	0.03	0.00	Engineering Calculation
Xylenes	0.10%	0.10	0.00	0.03	0.00	Engineering Calculation
n-Hexane	4.00%	4.00	0.01	1.34	0.00	Engineering Calculation
2,2,4-Trimethylpentane	0.10%	0.10	0.00	0.03	0.00	Engineering Calculation
Total HAPs		6.29	0.01	2.11	0.00	

Molecular Weight of Vapors, MW	64.0	lb/lb-mol	EPA TANKS 4.0.9d
True Vapor Pressure, Pva @ T	6.48	psia	Interpolation from AP-42 Table 7.1-2
Temperature of Bulk Liquid Loaded, T	61	F	Ambient Temperature
	521	R	
Saturation Factor	0.6		AP-42 Table 5.2.1
Efficiency of controlled loading (%)	0.0%		
Potential Annual Throughput, v	64	1000 gallons	
Loading losses, L @ tank	5.95	lb/1000 gallons	
L = 12.46 S P MW / T (1-eff)			
Potential annual losses @ tank, L*v	382.65	lb/yr	**0.19 tpy**
Max hourly fill rate[1]	16.8	1000 gallons/hr	Trucking Company
Max hourly emissions	**99.9**	**lb/hr**	Calculated

1 - Max hourly fill rate based on a 200-bbl truck filling every 30 minutes.

Sample Calculation

1532 bbl/yr * 42 gal/bbl / 1000 gal * 5.95 lb/1000 gal / 2000 lb/ton = 0.19 tpy

Fugitive Emissions Detail Sheet

Equipment Source Name	FUG-1	Potential Operation	8760	hr/yr
Source Description	Fugitives - OOOOa			

Uncontrolled Potential Emissions

	HAP	Heavy Crude - Emissions		Light Crude - Emissions		Gas - Emissions		Total Emissions	
Pollutant	Wt. %	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy
VOC		0.00	0.00	5.00	23.68	6.29	27.56	11.30	51.24
H2S		NA	NA	NA	NA	0.00	0.00	0.00	0.00
Benzene	0.32%	0.00	0.00	0.02	0.08	0.02	0.09	0.04	0.16
Toluene	0.05%	0.00	0.00	0.00	0.01	0.00	0.01	0.01	0.02
Ethylbenzene	0.00%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Xylenes	0.00%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
n-Hexane	0.55%	0.00	0.00	0.03	0.13	0.03	0.15	0.06	0.28
2,2,4-Trimethylpentane	0.00%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total HAPs		0.00	0.00	0.05	0.22	0.06	0.25	0.10	0.47

Controlled Potential Emissions

	HAP	Heavy Crude - Emissions		Light Crude - Emissions		Gas - Emissions		Total Emissions	
Pollutant	Wt. %	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy
VOC		0.00	0.00	0.96	4.41	2.41	10.56	3.37	14.97
H2S		NA	NA	NA	NA	0.00	0.00	0.00	0.00
Benzene	0.32%	0.00	0.00	0.00	0.01	0.01	0.03	0.01	0.05
Toluene	0.05%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
Ethylbenzene	0.00%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Xylenes	0.00%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
n-Hexane	0.55%	0.00	0.00	0.01	0.02	0.01	0.06	0.02	0.08
2,2,4-Trimethylpentane	0.00%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total HAPs		0.00	0.00	0.01	0.04	0.02	0.10	0.03	0.14

Gas

				Control	Uncontrolled Emissions		Controlled Emissions	
Equipment Type	EF	Source	VOC	Efficiencies	VOC	VOC	VOC	VOC
	(kg/hr/source)	Count	Wt. %	%	(lb/hr)	(tpy)	(lb/hr)	(tpy)
Valve	4.50E-03	763	48%	96%	3.66	16.04	0.15	0.64
Flanges	3.90E-04	495	48%	81%	0.21	0.90	0.04	0.17
Connectors	2.00E-04	1155	48%	81%	0.25	1.08	0.05	0.21
Open Ended Lines	2.00E-03	0	48%		0.00	0.00	0.00	0.00
Pump Seals	2.40E-03	0	48%		0.00	0.00	0.00	0.00
Other Components	8.80E-03	232	48%		2.18	9.54	2.18	9.54
VOC Emissions					**6.29**	**27.56**	**2.41**	**10.56**

Gas VOC Wt% Margin 20.00%

Light Liquid[3]

				Control	Uncontrolled Emissions		Controlled Emissions	
Equipment Type	EF	Source	VOC	Efficiencies	VOC	VOC	VOC	VOC
	(kg/hr/source)	Count	Wt. %	%	(lb/hr)	(tpy)	(lb/hr)	(tpy)
Valve	2.50E-03	684	100%	95%	3.77	16.51	0.19	0.83
Flanges	1.10E-04	417	100%	81%	0.10	0.44	0.02	0.08
Connectors	2.10E-04	1020	100%	81%	0.47	2.07	0.09	0.39
Open Ended Lines	1.40E-03	0	100%		0.00	0.00	0.00	0.00
Pump Seals	1.30E-02	14	100%	88%	0.00	1.76	0.00	0.21
Other Components	7.50E-03	40	100%		0.66	2.90	0.66	2.90
VOC Emissions					**5.00**	**23.68**	**0.96**	**4.41**

Heavy Liquid[3]

				Control	Uncontrolled Emissions		Controlled Emissions	
Equipment Type	EF	Source	VOC	Efficiencies	VOC	VOC	VOC	VOC
	(kg/hr/source)	Count	Wt. %	%	(lb/hr)	(tpy)	(lb/hr)	(tpy)
Valve	8.40E-06	0	100%		0.00	0.00	0.00	0.00
Flanges	3.90E-06	1	100%	81%	0.00	0.00	0.00	0.00
Connectors	7.50E-06	1	100%	81%	0.00	0.00	0.00	0.00
Open Ended Lines	1.40E-04	0	100%		0.00	0.00	0.00	0.00
Pump Seals	N/A							
Other Components	3.20E-05	0	100%		0.00	0.00	0.00	0.00
VOC Emissions					**0.00**	**0.00**	**0.00**	**0.00**

1 - Component counts are actual facility component counts determined by Dexter ATC Field Services.
2 - Component leak rates taken from EPA's Oil and Gas Production Operations average equipment leak emission factors (EPA 453/R-95-017 dated November 1995) Table 2-4.
3 - Assuming heavy and light crude weight percentage is 100% VOC to be conservative in heavy and light crude fugitive emission calculations.
4 - Control efficiencies were obtained from Table 4.1 in "EPA Leak Detection and Repair - A Best Practices Guide"
5 - HAP Weight percentages based on a conservative engineering estimation.

Sample Calculation:
0.00250 kg/hr-source * 684 Sources * 2.20462 lb/kg * 100 % VOC Wt% * 8760 hr/yr /2000 lb/ton = 16.51 tpy

Fugitive Emissions Detail Sheet

Equipment Source Name	FUG-2	Potential Operation	8760	hr/yr
Source Description	Fugitives - Residue	Emission Controls	None	

Uncontrolled Potential Emissions

	HAP	Gas - Emissions		Total Emissions	
Pollutant	Wt. %	lb/hr	tpy	lb/hr	tpy
VOC		0.01	0.06	0.01	0.06
H2S		0.00	0.00	0.00	0.00
Benzene	0.00%	0.00	0.00	0.00	0.00
Toluene	0.00%	0.00	0.00	0.00	0.00
Ethylbenzene	0.00%	0.00	0.00	0.00	0.00
Xylenes	0.00%	0.00	0.00	0.00	0.00
n-Hexane	0.01%	0.00	0.00	0.00	0.00
2,2,4-Trimethylpentane	0.00%	0.00	0.00	0.00	0.00
Total HAPs		0.00	0.00	0.00	0.00

Controlled Potential Emissions

	HAP	Gas - Emissions		Total Emissions	
Pollutant	Wt. %	lb/hr	tpy	lb/hr	tpy
VOC		0.01	0.06	0.01	0.06
H2S		0.00	0.00	0.00	0.00
Benzene	0.00%	0.00	0.00	0.00	0.00
Toluene	0.00%	0.00	0.00	0.00	0.00
Ethylbenzene	0.00%	0.00	0.00	0.00	0.00
Xylenes	0.00%	0.00	0.00	0.00	0.00
n-Hexane	0.01%	0.00	0.00	0.00	0.00
2,2,4-Trimethylpentane	0.00%	0.00	0.00	0.00	0.00
Total HAPs		0.00	0.00	0.00	0.00

Gas HAP Wt% Margin 100.00%

Gas

Equipment Type	EF[3] (kg/hr/source)	Source Count	VOC Wt. %	Control Efficiencies %	Uncontrolled Emissions VOC (lb/hr)	Uncontrolled Emissions VOC (tpy)	Controlled Emissions VOC (lb/hr)	Controlled Emissions VOC (tpy)
Valve	4.50E-03	4	4%	0%	0.00	0.01	0.00	0.01
Flanges	3.90E-04	8	4%		0.00	0.00	0.00	0.00
Connectors	2.00E-04	300	4%	0%	0.00	0.02	0.00	0.02
Open Ended Lines	2.00E-03	0	4%		0.00	0.00	0.00	0.00
Pump Seals	2.40E-03	0	4%		0.00	0.00	0.00	0.00
Other Components	8.80E-03	10	4%		0.01	0.03	0.01	0.03
VOC Emissions					**0.01**	**0.06**	**0.01**	**0.06**

Gas VOC Wt% Margin 100.00%

Component Counts[1]	Total
Valve	4
Flanges	8
Connectors	300
Open Ended Lines	0
Pump Seals	0
Other Components	10
Total	322

1 - Component counts are engineering estimations.
2 - Component leak rates taken from EPA's Oil and Gas Production Operations average equipment leak emission factors (EPA 453/R-95-017 dated November 1995) Table 2-4.
3 - Gas VOC and HAP wt % percentage is based on stream 47 from Promax run with margin.

Sample Calculation:
0.00450 kg/hr-source * 4 Sources * 2.20462 lb/kg * 4 % VOC Wt% * 8760 hr/yr /2000 lb/ton = 0.01 tpy

Process and compressor Fugitives GHG Emissions

Fugitive GHG Summary

	CH_4	CO_2	CO_2e
Emissions TPY	827.73	122.06	**20,815.37**
Global Warming Potential (GWP)	25	1	

CH4 Emission Rate for Gas Processing Volume[1] = 2.5e-3 tonne CH4/MMscf processed
CH4 Emission Rate for Reciprocating Compressors[1] = 8.95e-3 tonne CH4/compressor-hr
CH4 Emission Rate for Centrifugal Compressors[1] = 1.7e-2 tonne CH4/compressor-hr

[1] API Compendium of Greenhouse Gas Emissions Methodologies for the Oil and Natural Gas Industry Table 6-5

Process gas CH4 molar percentage = 38.64% From modeled composition
Process gas CO2 molar percentage = 2.07% From modeled composition
CH4 molecular weight (lb/lb mol) 16
CO2 molecular weight (lb/lb mol) 44

Amount of gas throughput (MMscf/yr) = 21,900 (Max 60 MMSCFD * 365 days/yr)
Number of Reciprocating Compressors in Process = 7
Number of Centrifugal Compressors in Process = 1

CH4 Emission Calculation for Processing Volume

tonne CH4/MMscf processed	MMscf processed/year	ton CH4/ tonne CH4	ton CH4/year
0.0025	21,900	1.1	60.225

Total CH4 process emissions (ton/year) = 60.23

CO2 Emission Calculation for Processing Volume

ton CH4/year	CO2 mol % / CH4 mol %	CO2 mol wt/ CH4 mol wt	ton CO2 / year
60.225	0.05362	2.75	8.881

Total CO2 process emissions (ton/year) = 8.88

CH4 Emission Calculation for Reciprocating Compressors

tonne CH4/compressor-hr	hr/year	compressor number	ton CH4/ tonne CH4	ton CH4 /year
0.00895	8760.00	7	1.1	604

Total CH4 reciprocating compressor emissions (ton/year) = 603.70

CO2 Emission Calculation for Reciprocating Compressors

ton CH4/year	CO2 mol % / CH4 mol %	CO2 mol wt/ CH4 mol wt	ton CO2 / year
604	0.05362	2.75	89.023

Total CO2 reciprocating compressor emissions (ton/year) = 89.023

CH4 Emission Calculation for Centrifugal Compressors

tonne CH4/compressor-hr	hr/year	compressor number	ton CH4/ tonne CH4	ton CH4 /year
0.017	8760.00	1	1.1	164

Total CH4 centrifugal compressor emissions (ton/year) = 163.81

CO2 Emission Calculation for Centrifugal Compressors

ton CH4/year	CO2 mol % / CH4 mol %	CO2 mol wt/ CH4 mol wt	ton CO2 / year
164	0.05362	2.75	24.156

Total CO2 centrifugal compressor emissions (ton/year) = 24.156

Equipment Source Name	AMINE-1			
Source Description	Amine Unit	Potential Operation:	8760	hr/yr
Equipment Usage	Amine Unit	TO Downtime Allowance:	438	hr/yr
Equipment Make	TBD	TO Control Efficiency:	98%	
Equipment Model	TBD	TO Downtime Control Efficiency:	95%	FL-1 Control Efficiency
Serial Number	TBD	Margin added for operational flexibility:	30%	
QTY	1			

Emissions Summary

VOC Emissions Summary (tons/yr) with margin added

	Uncontrolled		Controlled		Uncontrolled TO Downtime		Controlled TO Downtime	
Emission Unit	lb/hr	tons/yr	lb/hr	tons/yr	lb/hr	tons/yr	lb/hr	tons/yr
AMINE-1 (Flash)	36.20	158.54	0.72	3.17	36.20	7.93	1.81	0.40
AMINE-1 (Still)	5.24	22.96	0.10	0.46	5.24	1.15	0.26	0.06

	Uncontrolled		Controlled	
	lb/hr	tons/yr	lb/hr	tons/yr
AMINE-1 Total	41.44	181.50	2.91	4.09

Uncontrolled HAP Emissions Summary (with margin)

Emission Unit	BZ	Tol	EB	Xyl	n-Hex	224-TMP	Total
AMINE-1 (Flash) (lb/hr)	0.03	0.03	0.00	0.01	0.14	0.03	0.25
AMINE-1 (Flash) (lb/yr)	254.97	258.97	14.66	75.38	1256.99	300.78	2161.75
AMINE-1 (Still) (lb/hr)	0.00	0.00	0.00	0.00	0.02	0.01	0.04
AMINE-1 (Still) (lb/yr)	39.89	40.52	2.29	11.79	196.68	47.06	338.24
Total AMINE-1 (lb/hr)	**0.03**	**0.03**	**0.00**	**0.01**	**0.17**	**0.04**	**0.29**
Total AMINE-1 (lb/yr)	**294.87**	**299.49**	**16.95**	**87.17**	**1453.66**	**347.85**	**2499.99**
Total AMINE-1 (TPY)	**0.15**	**0.15**	**0.01**	**0.04**	**0.73**	**0.17**	**1.25**

Controlled HAP Emissions (Normal Operation) Summary

Emission Unit	BZ	Tol	EB	Xyl	n-Hex	224-TMP	Total
AMINE-1 (Flash) (TO-1) (lb/yr)	5.48	5.57	0.32	1.62	27.03	6.47	46.48
AMINE-1 (Still) (TO-1) (lb/yr)	0.86	0.87	0.05	0.25	4.23	1.01	7.27
Total AMINE-1 (lb/hr)	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.01**
Total AMINE-1 (lb/yr)	**6.34**	**6.44**	**0.36**	**1.87**	**31.25**	**7.48**	**53.75**
Total AMINE-1 (TPY)	**0.00**	**0.00**	**0.00**	**0.00**	**0.02**	**0.00**	**0.03**

Equipment Source Name AMINE-1
ProMax Output File Summary

	AMINE-1			
	Amine Flash		**Amine Still**	
Specie	Mass flow [lb/h]	Mole Fraction [%]	Mass flow [lb/h]	Mole Fraction [%]
Methane	71.85	55.84%	7.40	0.14%
Ethane	29.58	12.27%	4.09	0.04%
Propane	20.09	5.68%	3.01	0.02%
Iso-Butane	0.59	0.13%	0.02	0.00%
N-Butane	5.18	1.11%	0.75	0.00%
Iso-Pentane	0.44	0.08%	0.03	0.00%
N-Pentane	0.77	0.13%	0.10	0.00%
Other Hexanes	0.48	0.07%	0.07	0.00%
n-Hexane	0.11	0.02%	0.02	0.00%
Heptane	0.06	0.01%	0.01	0.00%
2,2,4-Trimethylpentane	0.03	0.00%	0.00	0.00%
Octanes +	0.05	0.01%	0.01	0.00%
Benzene	0.02	0.00%	0.00	0.00%
Toluene	0.02	0.00%	0.00	0.00%
Ethylbenzene	0.00	0.00%	0.00	0.00%
Xylenes	0.01	0.00%	0.00	0.00%
Water	8.93	6.18%	410.47	7.14%
Hydrogen Sulfide	0.03	0.01%	11.22	0.10%
Carbon Dioxide	59.46	16.85%	12992.85	92.54%
Nitrogen	3.65	1.62%	0.12	0.00%
TOTAL	**201.34**	**1.00**	**13430.17**	**1.00**

Equipment Source Name	AMINE-1	
Molar flow [lbmol/h]	8.02	319.02
Std volumetric flow [MMSCFD]	0.07	2.91
Std volumetric flow [MMSCFD] with margi	0.09	3.78
Std volumetric flow [SCFH]	3956.52	157376.36
mmscf/yr	34.66	1378.62
TO downtime throughput mmscf/yr	1.73	68.93
VOC flow [lb/h]	27.84	4.03
HAP flow [lb/h]	0.19	0.03
VOC flow [lb/h] with margin	36.20	5.24
HAP flow [lb/h] with margin	0.25	0.04
Benzene with margin	0.03	0.00
Toluene with margin	0.03	0.00
Ethylbenzene with margin	0.00	0.00
o-Xylene with margin	0.01	0.00
nC6 with margin	0.14	0.02
2,2,4-Trimethylpentane with margin	0.03	0.01
Net Ideal Gas Heating Value (Btu/ft^3)	888.18	3.27
Btu/lbmol	438143.41	1613.99

Gas Analysis - AMINE-1 Flash

Gas Constituent	Molecular Weight (lb/lb-mol)	Mole %	Mole % Without Water	Weight (lb/lbmole Gas)	Weight %	Weight % Without Water	Total HC Corrected Weight * %	Total VOC Corrected Weight ** %
Methane	16.04	55.84%	59.52%	8.96	35.68%	37.34%	55.58%	NA
Ethane	30.07	12.27%	13.07%	3.69	14.69%	15.37%	22.88%	NA
Total HC (Non-VOC)		**68.10%**	**72.59%**		**50.38%**	**52.71%**	**78.46%**	**NA**
Propane	44.10	5.68%	6.05%	2.50	9.98%	10.44%	15.54%	72.15%
Iso-Butane	58.12	0.13%	0.13%	0.07	0.29%	0.31%	0.46%	2.12%
N-Butane	58.12	1.11%	1.18%	0.65	2.57%	2.69%	4.01%	18.61%
Iso-Pentane	72.15	0.08%	0.08%	0.06	0.22%	0.23%	0.34%	1.60%
N-Pentane	72.15	0.13%	0.14%	0.10	0.38%	0.40%	0.59%	2.75%
Other Hexanes	86.18	0.07%	0.07%	0.06	0.24%	0.25%	0.37%	1.71%
n-Hexane	86.18	0.02%	0.02%	0.01	0.05%	0.06%	0.09%	0.40%
Heptane	100.21	0.01%	0.01%	0.01	0.03%	0.03%	0.05%	0.21%
2,2,4-Trimethylpentane	114.23	0.00%	0.00%	0.00	0.01%	0.01%	0.02%	0.09%
Octanes +	114.23	0.01%	0.01%	0.01	0.02%	0.02%	0.04%	0.17%
Benzene	78.11	0.00%	0.00%	0.00	0.01%	0.01%	0.02%	0.08%
Toluene	92.14	0.00%	0.00%	0.00	0.01%	0.01%	0.02%	0.08%
Ethylbenzene	106.17	0.00%	0.00%	0.00	0.00%	0.00%	0.00%	0.00%
Xylenes	106.16	0.00%	0.00%	0.00	0.00%	0.00%	0.01%	0.02%
Total NMNE VOC		**7.23%**	**7.71%**	**3.47**	**13.83%**	**14.47%**	**21.54%**	**100.00%**
Total HAPs		**0.03%**	**0.03%**	**0.02**	**0.09%**	**0.10%**	**0.15%**	**0.68%**
Water	18.02	6.18%	NA	1.11	4.43%	NA	NA	NA
Hydrogen Sulfide	34.08	0.01%	0.01%	0.00	0.02%	0.02%	NA	NA
Carbon Dioxide	44.01	16.85%	17.96%	7.41	29.53%	30.90%	NA	NA
Nitrogen	28.01	1.62%	1.73%	0.45	1.81%	1.90%	NA	NA
Totals		100.00%	100.00%	25.10	100.00%	100.00%	100.00%	

Average Molecular Weight of VOCs: **47.98 lb/lb-mol**

Notes:

* Weight Percent corrected to remove Water, Carbon Dioxide,Nitrogen, and H2S content.

** Weight Percent corrected to remove non-VOC content.

Gas Analysis - AMINE-1 Still

Gas Constituent	Molecular Weight (lb/lb-mol)	Mole %	Mole % Without Water	Weight (lb/lbmole Gas)	Weight %	Weight % Without Water	Total HC Corrected Weight * %	Total VOC Corrected Weight ** %
Methane	16.04	0.14%	0.16%	0.02	0.06%	0.06%	47.67%	NA
Ethane	30.07	0.04%	0.05%	0.01	0.03%	0.03%	26.34%	NA
Total HC (Non-VOC)		**0.19%**	**0.20%**		**0.09%**	**0.09%**	**74.01%**	**NA**
Propane	44.10	0.02%	0.02%	0.01	0.02%	0.02%	19.38%	0.16%
Iso-Butane	58.12	0.00%	0.00%	0.00	0.00%	0.00%	0.15%	0.00%
N-Butane	58.12	0.00%	0.00%	0.00	0.01%	0.01%	4.82%	0.04%
Iso-Pentane	72.15	0.00%	0.00%	0.00	0.00%	0.00%	0.19%	0.00%
N-Pentane	72.15	0.00%	0.00%	0.00	0.00%	0.00%	0.66%	0.01%
Other Hexanes	86.18	0.00%	0.00%	0.00	0.00%	0.00%	0.48%	0.00%
n-Hexane	86.18	0.00%	0.00%	0.00	0.00%	0.00%	0.11%	0.00%
Heptane	100.21	0.00%	0.00%	0.00	0.00%	0.00%	0.06%	0.00%
2,2,4-Trimethylpentane	114.23	0.00%	0.00%	0.00	0.00%	0.00%	0.03%	0.00%
Octanes +	114.23	0.00%	0.00%	0.00	0.00%	0.00%	0.05%	0.00%
Benzene	78.11	0.00%	0.00%	0.00	0.00%	0.00%	0.02%	0.00%
Toluene	92.14	0.00%	0.00%	0.00	0.00%	0.00%	0.02%	0.00%
Ethylbenzene	106.17	0.00%	0.00%	0.00	0.00%	0.00%	0.00%	0.00%
Xylenes	106.16	0.00%	0.00%	0.00	0.00%	0.00%	0.01%	0.00%
Total NMNE VOC		**0.03%**	**0.03%**	**0.01**	**0.03%**	**0.03%**	**25.99%**	**0.22%**
Total HAPs		**0.00%**	**0.00%**	**0.00**	**0.00%**	**0.00%**	**0.19%**	**0.00%**
Water	18.02	7.14%	NA	1.29	3.06%	NA	NA	NA
Hydrogen Sulfide	34.08	0.10%	0.11%	0.04	0.08%	0.09%	NA	NA
Carbon Dioxide	44.01	92.54%	99.66%	40.73	96.74%	99.79%	NA	NA
Nitrogen	28.01	0.00%	0.00%	0.00	0.00%	0.00%	NA	NA
Totals		100.00%	100.00%	42.10	100.00%	100.00%	100.00%	

Average Molecular Weight of VOCs: **0.17 lb/lb-mol**

Notes:

* Weight Percent corrected to remove Water, Carbon Dioxide,Nitrogen, and H2S content.

** Weight Percent corrected to remove non-VOC content.

SO2 Assumptions:
SO2 Emissions Calculations from combustion of AMINE Unit vent stream
Assumes all H2S in the gas stream is removed by the AMINE units and oxidized to SO2 by the thermal oxidizer.
H2S Assumptions:
Based on 98% control efficiency, 2% not oxidized
H2S content "Pipeline spec"

	8	Grains H2S/100scf		using conversion factor
	80,000.00	grains H2S/MMscf		(Sulfur Measurement Handbook Rev7)
	127.74	ppm		1 pound = 7000 grains
Conversion factor	1.43E-04	lb/grains		
				MW
			H2S	34.1
	1.14E-05	lb H2S/scf	S	32.1
	1.08E-05	lb S/scf	SO2	64.1

AMINE-1

Throughput	6.00E+07	scfd
	21900.00	MMSCF/yr
	125.14	TPY H2S uncontrolled
	28.57	lbs/hr H2S uncontrolled
	98.00%	Control Efficiency
	2.50	TPY H2S controlled
	0.57	lbs/hr H2S controlled

SO2 emissions		
lb/hr	**lb/day**	**tpy**
64.45	1288.98	235.24

lb/hr Margin 20%

Compressor Blowdown Detail Sheet

Equipment Source Name:	COMP		
Equipment Name	Compressor Blowdowns		
Inlet Compressor Quantity	3		
Residue Compressor Quantity	4		
Refrigeration Compressor Quantity	1		
Source Description	Reciprocating		
Equipment Usage	Reciprocating Compressor	Potential operation	8760 hr/yr
Control Efficiency	95%		

Total Potential Emissions

Pollutant	Uncontrolled Emissions		Controlled Emissions	
	(lb/hr)	(tpy)	(lb/hr)	(tpy)
VOC	2.27	9.95	0.11	0.50
Benzene	0.01	0.03	0.00	0.00
Toluene	0.00	0.00	0.00	0.00
Ethylbenzene	0.00	0.00	0.00	0.00
Xylenes	0.00	0.00	0.00	0.00
n-Hexane	0.01	0.05	0.00	0.00
2 2 4-trimethylpentane	0.00	0.00	0.00	0.00
Total HAPs	0.02	0.09	0.00	0.00

Potential Emissions Per Inlet Compressor Blowdown

Pollutant	Emission Factor	Frequency		Uncontrolled Emissions		Controlled Emissions		Source of Emission Factor
	(Mscf/event)	(events/yr)	(ton/blowdown)	(lb/hr)	(tpy)	(lb/hr)	(tpy)	
VOC	2.00	120	0.0262	0.72	3.15	0.04	0.16	Engineering Estimation
Benzene				0.00	0.01	0.00	0.00	Engineering Calculation
Toluene				0.00	0.00	0.00	0.00	Engineering Calculation
Ethylbenzene				0.00	0.00	0.00	0.00	Engineering Calculation
Xylenes				0.00	0.00	0.00	0.00	Engineering Calculation
n-Hexane				0.00	0.02	0.00	0.00	Engineering Calculation
2 2 4-trimethylpentane				0.00	0.00	0.00	0.00	Engineering Calculation
Total HAPs				0.01	0.03	0.00	0.00	

Potential Emissions Per Residue Compressor Blowdown

Pollutant	Emission Factor	Frequency		Uncontrolled Emissions		Controlled Emissions		Source of Emission Factor
	(Mscf/event)	(events/yr)	(ton/blowdown)	(lb/hr)	(tpy)	(lb/hr)	(tpy)	
VOC	2.00	120	0.0008	0.02	0.10	0.00	0.00	Engineering Estimation
Benzene				0.00	0.00	0.00	0.00	Engineering Calculation
Toluene				0.00	0.00	0.00	0.00	Engineering Calculation
Ethylbenzene				0.00	0.00	0.00	0.00	Engineering Calculation
Xylenes				0.00	0.00	0.00	0.00	Engineering Calculation
n-Hexane				0.00	0.00	0.00	0.00	Engineering Calculation
2 2 4-trimethylpentane				0.00	0.00	0.00	0.00	Engineering Calculation
Total HAPs				0.00	0.00	0.00	0.00	

Based on 10%VOC

Potential Emissions Per Refrigeration Compressor Blowdown

Pollutant	Emission Factor	Frequency		Uncontrolled Emissions		Controlled Emissions		Source of Emission Factor
	(Mscf/event)	(events/yr)	(ton/blowdown)	(lb/hr)	(tpy)	(lb/hr)	(tpy)	
VOC	2.00	1	0.1164	0.03	0.12	0.00	0.01	Engineering Estimation
Benzene				0.00	0.00	0.00	0.00	Engineering Calculation
Toluene				0.00	0.00	0.00	0.00	Engineering Calculation
Ethylbenzene				0.00	0.00	0.00	0.00	Engineering Calculation
Xylenes				0.00	0.00	0.00	0.00	Engineering Calculation
n-Hexane				0.00	0.00	0.00	0.00	Engineering Calculation
2 2 4-trimethylpentane				0.00	0.00	0.00	0.00	Engineering Calculation
Total HAPs				0.00	0.00	0.00	0.00	

Sample Calculation

2.000 Mscf/event * 1000 scf/Mscf / 379 scf/lb-mol * 9.95 lb/lb-mol * 1/2000 lb/ton * 120 events/year = 3.15 tpy

Compressor Blowdown Detail Sheet

Equipment Source Name:	PLANT BD		
Equipment Name	Gas Plant Blowdown		
Quantity	1		
Source Description	Gas Plant Blowdown	Plant Volume	60.0 MMscf/day
Equipment Usage	Gas Plant Blowdown	Potential operation	8760 hr/yr
Control Efficiency	95%		

Total Potential Emissions

Pollutant	Uncontrolled Emissions		Controlled Emissions	
	(lb/hr)	(tpy)	(lb/hr)	(tpy)
VOC	32803.52	16.40	1640.18	0.82
Benzene	105.62	0.05	5.28	0.00
Toluene	15.19	0.01	0.76	0.00
Ethylbenzene	0.00	0.00	0.00	0.00
Xylenes	0.00	0.00	0.00	0.00
n-Hexane	181.91	0.09	9.10	0.00
2 2 4-trimethylpentane	0.00	0.00	0.00	0.00
Total HAPs	302.73	0.15	15.14	0.01

Potential Emissions Per Blowdown

Pollutant	Volume	Frequency	Event Duration	Uncontrolled Emissions		Controlled Emissions		Source of Emission Factor
	(MMScf/d)	(events/yr)	(hr/event)	(lb/hr)	(tpy)	(lb/hr)	(tpy)	
VOC	60.00	1	0.5	32803.52	16.40	1640.18	0.82	Engineering Calculation
Benzene				105.62	0.05	5.28	0.00	Engineering Calculation
Toluene				15.19	0.01	0.76	0.00	Engineering Calculation
Ethylbenzene				0.00	0.00	0.00	0.00	Engineering Calculation
Xylenes				0.00	0.00	0.00	0.00	Engineering Calculation
n-Hexane				181.91	0.09	9.10	0.00	Engineering Calculation
2 2 4-trimethylpentane				0.00	0.00	0.00	0.00	Engineering Calculation
Total HAPs				302.73	0.15	15.14	0.01	

Sample Calculation

60.000 Mscf/event * 1000 scf/Mscf / 379 scf/lb-mol * 9.95 lb/lb-mol * 1/2000 lb/ton * 1 events/year = 16.40 tpy

Flare Detail Sheet

Equipment Source Name	TO-1	Stack Height	30	ft
Source Description	Thermal Oxidizer	Potential Operation	8760	hr/yr
Equipment Make	TBD			
Equipment Model	TBD			
Quantity	1			
Destruction Efficiency	98%			

Total Emissions

Pollutant	Estimated Emissions	
	(lb/hr)	(tpy)
NOx	1.63	7.15
CO	1.37	6.01
VOC	4.26	18.64
SO2	64.45	235.24
PM10	0.00	0.00
Benzene	0.01	0.06
Toluene	0.00	0.01
Ethylbenzene	0.00	0.00
Xylenes	0.00	0.00
n-Hexane	0.02	0.10
2 2 4-trimethylpentane	0.00	0.00
Total HAPs	0.04	0.17

Pilot Stream

Pilot Rating	12.00	MMBtu/hr
Pilot Heat Value	1479.8	Btu/scf
Pilot Gas Flow Rate	8.109	Mscf/hr

Pollutant	EF	Estimated Emissions		Source of Emission Factor
	(lb/MMBtu)	(lb/hr)	(tpy)	
NOx	0.0980	1.18	5.15	AP-42 Table 1.4-1
CO	0.082	0.99	4.33	AP-42 Table 1.4-1
VOC	N/A	4.26	18.64	Engineering Calculation
Benzene	N/A	0.01	0.06	Engineering Calculation
Toluene	N/A	0.00	0.01	Engineering Calculation
Ethylbenzene	N/A	0.00	0.00	Engineering Calculation
Xylenes	N/A	0.00	0.00	Engineering Calculation
n-Hexane	N/A	0.02	0.10	Engineering Calculation
2 2 4-trimethylpentane	N/A	0.00	0.00	Engineering Calculation
Total HAPs		0.04	0.17	

Amine Flash Gas Waste Stream

Vapor Flow Rate	39.991	MMscf/yr	50.00% Margin
	4.565	Mscf/hr	
Total Emissions Heat Value	888.18	Btu/scf	Based on Amine Gas Analysis (Enerflex)

Pollutant	EF	Estimated Emissions		Source of Emission Factor
	(lb/MMBtu)	(lb/hr)	(tpy)	
NOx	0.0980	0.40	1.74	AP-42 Table 1.4-1
CO	0.082	0.33	1.46	AP-42 Table 1.4-1
VOC[1]	N/A	N/A	N/A	N/A
PM10	0.01	0.00	0.00	AP-42 Table 1.4-2

Amine Acid Gas Waste Stream

Vapor Flow Rate	1590.712	MMscf/yr	50.00% Margin
	181.588	Mscf/hr	
W&S Emissions Heat Value	3.272	Btu/scf	Based on Amine Gas Analysis (Enerflex)

Pollutant	EF	Estimated Emissions		Source of Emission Factor
	(lb/MMBtu)	(lb/hr)	(tpy)	
NOx	0.0980	0.06	0.26	AP-42 Table 1.4-1
CO	0.082	0.05	0.21	AP-42 Table 1.4-1
VOC[1]	N/A	N/A	N/A	N/A
PM10	0.01	0.00	0.00	AP-42 Table 1.4-2

1 - VOC emissions from produced gas stream are calculated using a mass balance and a 98% destruction efficiency. VOC emissions from waste streams are shown at the amine.

Sample Calculation for NOx from Tank Waste Stream

0.098 lb/MMBtu * 4.565 MMscf/yr * 0,888.2 Btu/scf / 8,760 hr/yr = 0.40 lb/hr

Flare Detail Sheet

Equipment Source Name	FL-1	Stack Height	100	ft
Source Description	Upset/Maintenance Flare	Potential Operation	8760	hr/yr
Equipment Make	TBD			
Equipment Model	TBD			
Quantity	1			
Destruction Efficiency	95%			

Total Emissions

Pollutant	Estimated Emissions (lb/hr)	(tpy)
NOx	170.49	26.44
CO	777.23	120.53
VOC	93.36	16.00
SO2	6.30	1.34
PM10	5.75	0.88
Benzene	0.00	0.00
Toluene	0.00	0.00
Ethylbenzene	0.00	0.00
Xylenes	0.00	0.00
n-Hexane	0.00	0.00
2 2 4-trimethylpentane	0.00	0.00
Total HAPs	0.00	0.00

Pilot Stream

Pilot Rating 0.50 MMBtu/hr
Pilot Heat Value 1479.8 Btu/scf
Pilot Gas Flow Rate 0.338 Mscf/hr

Pollutant	EF (lb/MMBtu)	Estimated Emissions (lb/hr)	(tpy)	Source of Emission Factor
NOx	0.0680	0.03	0.15	AP-42 Table 13.5-1
CO	0.310	0.16	0.68	AP-42 Table 13.5-2
VOC	N/A	0.44	1.94	Engineering Calculation
Benzene	N/A	0.00	0.01	Engineering Calculation
Toluene	N/A	0.00	0.00	Engineering Calculation
Ethylbenzene	N/A	0.00	0.00	Engineering Calculation
Xylenes	N/A	0.00	0.00	Engineering Calculation
n-Hexane	N/A	0.00	0.01	Engineering Calculation
2 2 4-trimethylpentane	N/A	0.00	0.00	Engineering Calculation
Total HAPs		0.00	0.02	

Residue Gas Stream

Produced Gas Flow Rate 693.4 MMscf/yr
79.2 Mscf/hr
Max Hourly Gas Flow Rate 2291.7 Mscf/hr
Gas Heating Value 1066.43 Btu/scf Based on Residue Gas Analysis
Max Sulfur Content[2] 2,000 grains/MMscf AP42 Chapter 3.2

Pollutant	EF (lb/MMBtu)	Estimated Emissions (lb/hr)	(tpy)	Source of Emission Factor
NOx	0.068	166.19	25.14	AP-42 Table 13.5-1
CO	0.31	757.61	114.62	AP-42 Table 13.5-2
VOC[1]	N/A	92.92	14.06	Engineering Calculation
SO2	N/A	1.31	0.20	Engineering Calculation
PM10[2]	40	5.72	0.87	AP-42 Table 13.5-1
Benzene	N/A	0.00	0.00	Engineering Calculation
Toluene	N/A	0.00	0.00	Engineering Calculation
Ethylbenzene	N/A	0.00	0.00	Engineering Calculation
Xylenes	N/A	0.00	0.00	Engineering Calculation
n-Hexane	N/A	0.00	0.00	Engineering Calculation
2 2 4-trimethylpentane	N/A	0.00	0.00	Engineering Calculation
Total HAPs		0.00	0.00	

Maintenance Waste Stream

Vapor Flow Rate
Compressor Blowdown 1,682.000 Mscf/yr
Plant Blowdown 2,500.000 Mscf/yr
Misc. Pipeline Flaring[1] 240.000 Mscf/yr
Total Vapor Flow Rate 4.422 MMscf/yr
0.505 Mscf/hr
Waste Stream Heat Value 1479.8 Btu/scf
Max Sulfur Content 80,000 grains/MMscf Maximum measured H2S concentration

Pollutant	EF (lb/MMBtu)	Estimated Emissions (lb/hr)	(tpy)	Source of Emission Factor
NOx	0.068	0.05	0.22	AP-42 Table 13.5-1
CO	0.31	0.23	1.01	AP-42 Table 13.5-2
VOC	N/A	0.04	0.16	Engineering Calculation
SO2	N/A	0.01	0.05	Engineering Calculation
PM10[2]	40	0.00	0.01	AP-42 Table 13.5-1

Thermal Oxidizer Downtime Waste Stream

TO Potential Downtime 438.0 hr/yr
Vapor Flow Rate 95.58 MMscf/yr
218.22 Mscf/hr
Waste Stream Heat Value 284.4 Btu/scf Engineering Calculation
Max Sulfur Content 80,000 grains/MMscf Maximum measured H2S concentration

Pollutant	EF (lb/MMBtu)	Estimated Emissions (lb/hr)	(tpy)	Source of Emission Factor
NOx	0.068	4.22	0.92	AP-42 Table 13.5-1
CO	0.31	19.24	4.21	AP-42 Table 13.5-2
VOC	N/A	N/A	N/A	N/A
SO2	N/A	4.98	1.09	Engineering Calculation
PM10[4]	40	0.03	0.01	AP-42 Table 13.5-1

1 - VOC emissions from process gas stream and miscellaneous pipeline flaring are calculated using a mass balance and a 95% destruction efficiency.
VOC emissions from maintenance and thermal oxidizer downtime waste streams are shown at compressor blowdowns, plant blowdowns and amine unit.
2 - PM10 emission factor in units of μg/L, assuming a lightly smoking flare.
3 - Maintenace volume includes 240 Mscf/yr for miscellaneous activities to be conservative in emission estimations.

Sample Calculation for NOx from Process Gas Stream

0.068 lb/MMBtu * 1E6 scf/MMscf * 693.44 MMscf/yr * 1,066.43 Btu/scf * MMBtu / 1E6 Btu / 8,760 hr/yr = 166.19 lb/hr

Sample Calculation for NOx from Tank Waste Stream

0.068 lb/MMBtu * 0.505 MMscf/yr * 1,479.8 Btu/scf / 8,760 hr/yr = 0.05 lb/hr

Flare Detail Sheet

Equipment Source Name	FL-2	Stack Height	TBD	ft
Source Description	Tank Flare	Potential Operation	8760	hr/yr
Equipment Make	TBD			
Equipment Model	TBD			
Quantity	1			
Destruction Efficiency	95%			

Total Emissions

Pollutant	Estimated Emissions (lb/hr)	(tpy)
NOx	0.89	3.91
CO	4.07	17.82
VOC	0.09	0.39
SO2	0.00	0.00
PM10	0.00	0.01
Benzene	0.00	0.00
Toluene	0.00	0.00
Ethylbenzene	0.00	0.00
Xylenes	0.00	0.00
n-Hexane	0.00	0.00
2 2 4-trimethylpentane	0.00	0.00
Total HAPs	0.00	0.00

Pilot Stream

Pilot Rating	0.10	MMBtu/hr
Pilot Heat Value	1479.8	Btu/scf
Pilot Gas Flow Rate	0.068	Mscf/hr

Pollutant	EF (lb/MMBtu)	Estimated Emissions (lb/hr)	(tpy)	Source of Emission Factor
NOx	0.0680	0.01	0.03	AP-42 Table 13.5-1
CO	0.310	0.03	0.14	AP-42 Table 13.5-2
VOC	N/A	0.09	0.39	Engineering Calculation
Benzene	N/A	0.00	0.00	Engineering Calculation
Toluene	N/A	0.00	0.00	Engineering Calculation
Ethylbenzene	N/A	0.00	0.00	Engineering Calculation
Xylenes	N/A	0.00	0.00	Engineering Calculation
n-Hexane	N/A	0.00	0.00	Engineering Calculation
2 2 4-trimethylpentane	N/A	0.00	0.00	Engineering Calculation
Total HAPs		0.00	0.00	

Tank Waste Stream

Vapor Density:			
Gunbarrel	0.1209	lb/scf	Promax
Condensate	0.0893	lb/scf	TANKS 4.0.9d
Oil	0.0893	lb/scf	TANKS 4.0.9d
Produced Water	0.0014	lb/scf	TANKS 4.0.9d
Tank Emissions:			
Gunbarrel	5,468,485.42	lb/yr	Promax
Condensate	69,897.16	lb/yr	TANKS 4.0.9d
Oil	7,438.04	lb/yr	TANKS 4.0.9d
Produced Water	9.51	lb/yr	TANKS 4.0.9d
Uncontrolled Recovery- Vapor:	46,097,576.69	scf/yr	
Vapor Margin:	20.00%		
Uncontrolled Recovery- Vapor With Margin :	151,554	scf/day	
Total Emissions Heat Value:	2050	Btu/scf	Engineering Estimation
Total Heat Flow:	310,685,037	Btu/day	
Total Heat Flow:	12.95	MMBtu/hr	

Pollutant	EF (lb/MMBtu)	Estimated Emissions (lb/hr)	(tpy)	Source of Emission Factor
NOx	0.068	0.88	3.86	AP-42 Table 13.5-1
CO	0.31	4.01	17.58	AP-42 Table 13.5-2
VOC[1]	N/A	N/A	N/A	N/A
PM10[2]	40	0.00	0.01	AP-42 Table 13.5-1

Loadout Waste Stream

Potential Emissions	55082.5	lb/yr	Based on AP-42 Section 5.2.1
Vapor Molecular Weight	64.0	lb/lb-mol	Based on TANKS 4.0.9d
Vapor Flow Rate	0.326	MMscf/yr	
	0.037	Mscf/hr	
Emissions Heat Value	2050	Btu/scf	Engineering Estimation

Pollutant	EF (lb/MMBtu)	Estimated Emissions (lb/hr)	(tpy)	Source of Emission Factor
NOx	0.068	0.01	0.02	AP-42 Table 13.5-1
CO	0.31	0.02	0.10	AP-42 Table 13.5-2
VOC[1]	N/A	N/A	N/A	N/A
PM10[2]	40	0.00	0.00	AP-42 Table 13.5-1

1 - VOC emissions from waste streams are shown at tanks and loadout.
2 - PM10 emission factor in units of μg/L, assuming a lightly smoking flare.

Sample Calculation for NOx from Tank Waste Stream

0.068 lb/MMBtu * 12.945 MMBtu/hr = 0.88 lb/hr

Fugitive Dust Emissions Detail Sheet

Equipment Source Name: HR-1
Source Description: Road Dust
Operation: 24 hr/day 365 days/yr
Emission Controls: None

Potential Emissions

Pollutant	Estimated Potential Emissions				Source of Emission Calculations
	Uncontrolled		Controlled		
	lb/hr	tpy	lb/hr	tpy	
PM30*	12.49	0.23	12.49	0.23	AP-42 Section 13.2.2
PM10	3.18	0.06	3.18	0.06	AP-42 Section 13.2.2
PM 2.5	0.32	0.01	0.32	0.01	AP-42 Section 13.2.2

* Assumed equivalent to total suspended particulate matter (TSP)

Mean Vehicle Weight (W)			17.7 tons	Engineering Calculation
Surface Material Silt Content (s)			4.8 %	NMED Default[2]
Mean # of Days with > 0.01 inch of precipitation			70 Days	NMED Default[2]
Material moisture content (%water)			2 %	NMED Default[2]
Mean Wind Speed			11 mph	NMED Default[2]
Oil Production Trucked	100%	of max throughput	4.2 bbl/day	
Condensate Production Trucked	100%	of max throughput	600.0 bbl/day	
Produced Water Production trucked	100%	of max throughput	4.2 bbl/day	

Tech Truck[1]	5,000 lb			
	1 trips/day			
	0.26 miles/day			
	1.49 lb/day	PM30		
	0.38 lb/day	PM10		
	0.04 lb/day	PM 2.5		
Oil Hauler[3]	200 BBL Oil/trip	Truck capacity	12,000	lb Empty weight
	41,820 lb		7.1	lb/gal (oil)
	0.02 trips/day			
	0.01 miles/day			
	0.03 lb/day	PM30		
	0.01 lb/day	PM10		
	0.00 lb/day	PM 2.5		
Condensate Hauler[3]	200 BBL Condensate	Truck capacity	12,000	lb Empty weight
	35,520 lb		5.6	lb/gal (Condensate RVP 12)
	3 trips/day			
	52 miles/day			
	298.09 lb/day	PM30		
	75.97 lb/day	PM10		
	7.60 lb/day	PM 2.5		
Produced Water Hauler[4]	140 BBL PW/trip	Truck capacity	12,000	Empty weight
	36,402 lb	(12,000 empty weight)	8.3	lb/gal (water)
	0 trips/day			
	0.01 miles/day			
	0.04 lb/day	PM30		
	0.01 lb/day	PM10		
	0.00 lb/day	PM 2.5		

52.27 Total miles/day (Tech Truck + Oil Hauler + Produced Water Hauler)
2.18 Total miles/hr
19080 Total miles/yr

Fugitive Dust (PM30) per mile traveled	5.73 lb/VMT	AP-42 Eqn 13.2.2-1a &2
Fugitive Dust (PM10) per mile traveled	1.46 lb/VMT	AP-42 Eqn 13.2.2-1a &2
Fugitive Dust (PM2.5) per mile traveled	0.15 lb/VMT	AP-42 Eqn 13.2.2-1a &2
Vehicle miles traveled	0.26 miles/trip	Engineering Estimation

Notes:
1 - Based on the weight of a Ford F-150
2 - NMED Department Accepted Values for: Aggregate Handling, Storage Pile, and Haul Road Emissions
3 - Based on the assumption each hauler can carry 200 bbls of oil per visit
4 - Based on the assumption each hauler can carry 140 bbls of produced water per visit

Sample Calculation for PM30
5.73 lb/VMT * (0.01 + 0.01 + 0.26) miles/day * 365 days/yr / 2000 lb/ton * (365-70)/ 365 = 0.23 tpy

Uncontrolled MSS Activities

Equipment Source Name: MAIN-1
Source Description: Maintenance Activities

Emission Summary

Activity
Aerosol
Painting
Tank Degassing
Tank Cleaning
Engine Startup/Warmup
Sump Cleanout
Pipeline Degassing
Pigging
Filter Changes

	lb/hr*	tpy
TOTAL VOC Emissions	--	10.00

Notes:
* - Hourly emission limits are not appropriate for this operating situation.

Libby Gas Plant Gas Sample dated 1/9/2019

Gas Constituent	Molecular Weight (lb/lb-mol)	Mole %	Mole % Without Water	Weight (lb/lbmole Gas)	Weight %	Weight % Without Water	Total HC Corrected Weight * %	Total VOC Corrected Weight ** %
Methane	16.04	61.85%	61.85%	9.92	38.64%	38.64%	40.23%	NA
Ethane	30.07	15.96%	15.96%	4.80	18.69%	18.69%	19.45%	NA
Total HC (Non-VOC)		**77.81%**	**77.81%**		**57.33%**	**57.33%**	**59.68%**	**NA**
Propane	44.10	11.39%	11.39%	5.02	19.56%	19.56%	20.36%	50.50%
Iso-Butane	58.12	1.64%	1.64%	0.95	3.71%	3.71%	3.86%	9.58%
N-Butane	58.12	4.17%	4.17%	2.42	9.43%	9.43%	9.82%	24.35%
Iso-Pentane	72.15	0.85%	0.85%	0.62	2.40%	2.40%	2.50%	6.20%
N-Pentane	72.15	0.83%	0.83%	0.60	2.34%	2.34%	2.44%	6.04%
Other Hexanes	86.18	0.26%	0.26%	0.22	0.86%	0.86%	0.90%	2.23%
n-Hexane	86.18	0.0640%	0.06%	0.06	0.21%	0.21%	0.22%	0.55%
Heptane	100.21	0.0130%	0.01%	0.01	0.05%	0.05%	0.05%	0.13%
2,2,4-Trimethylpentane	114.23	0.0000%	0.00%	0.00	0.00%	0.00%	0.00%	0.00%
Octanes	114.23	0.0020%	0.00%	0.00	0.01%	0.01%	0.01%	0.02%
Nonanes	128.20	0.0020%	0.00%	0.00	0.01%	0.01%	0.01%	0.03%
Decanes+	142.29	0.0000%	0.00%	0.00	0.00%	0.00%	0.00%	0.00%
Benzene	78.11	0.0410%	0.04%	0.03	0.12%	0.12%	0.13%	0.32%
Toluene	92.14	0.0050%	0.01%	0.00	0.02%	0.02%	0.02%	0.05%
Ethylbenzene	106.17	0.0000%	0.00%	0.00	0.00%	0.00%	0.00%	0.00%
Xylenes	106.16	0.0000%	0.00%	0.00	0.00%	0.00%	0.00%	0.00%
Total NMNE VOC		**19.27%**	**19.27%**	**9.95**	**38.73%**	**38.73%**	**40.32%**	**100.00%**
Total HAPs		**0.11%**	**0.11%**	**0.09**	**0.36%**	**0.36%**	**0.37%**	**0.92%**
Water	18.02	0.00%	NA	0.00	0.00%	NA	NA	NA
Hydrogen Sulfide	34.08	0.00%	0.00%	0.00	0.00%	0.00%	NA	NA
Carbon Dioxide	44.01	1.21%	1.21%	0.53	2.07%	2.07%	NA	NA
Nitrogen	28.01	1.71%	1.71%	0.48	1.87%	1.87%	NA	NA
Totals		100.00%	100.00%	25.68	100.00%	100.00%	100.00%	

Average Molecular Weight of VOCs: **51.62 lb/lb-mol**

Notes:

* Weight Percent corrected to remove Water, Carbon Dioxide,Nitrogen, and H2S content.

** Weight Percent corrected to remove non-VOC content.

Libby Gas Plant - Promax Stream 47

Gas Constituent	Molecular Weight (lb/lb-mol)	Mole %	Weight (lb/lbmole Gas)	Weight %	Total HC Corrected Weight * %	Total VOC Corrected Weight ** %
Methane	16.04	88.38%	14.18	79.96%	82.72%	NA
Ethane	30.07	8.83%	2.66	14.97%	15.49%	NA
Total HC (Non-VOC)		97.21%		94.93%	98.21%	NA
Propane	44.10	0.62%	0.28	1.55%	1.61%	89.53%
Iso-Butane	58.12	0.02%	0.01	0.07%	0.07%	3.83%
N-Butane	58.12	0.03%	0.02	0.11%	0.11%	6.08%
Iso-Pentane	72.15	0.00%	0.00	0.01%	0.01%	0.31%
N-Pentane	72.15	0.00%	0.00	0.00%	0.00%	0.22%
Other Hexanes	86.18	0.00%	0.00	0.00%	0.00%	0.02%
n-Hexane	86.18	0.00%	0.00	0.00%	0.00%	0.00%
Heptane	100.21	0.00%	0.00	0.00%	0.00%	0.00%
2,2,4-Trimethylpentane	114.23	0.00%	0.00	0.00%	0.00%	0.00%
Octanes+	114.23	0.00%	0.00	0.00%	0.00%	0.00%
Benzene	78.11	0.00%	0.00	0.00%	0.00%	0.00%
Toluene	92.14	0.00%	0.00	0.00%	0.00%	0.00%
Ethylbenzene	106.17	0.00%	0.00	0.00%	0.00%	0.00%
Xylenes	106.16	0.00%	0.00	0.00%	0.00%	0.00%
Total NMNE VOC		**0.68%**	**0.31**	**1.73%**	**1.79%**	**100.00%**
Hydrogen Sulfide	34.08	0.00%	0.00	0.00%	NA	NA
Carbon Dioxide	44.01	0.01%	0.00	0.01%	NA	NA
Nitrogen	28.01	2.10%	0.59	3.32%	NA	NA
Totals		100.00%	17.73	100.00%	100.00%	

Average Molecular Weight of VOCs: **45.28 lb/lb-mol**

Lumped C6+ Natural Gas Analysis Conversion

Hexane+ Mol % from Gas Analysis	0.0001%

(Reference: Typical speciated C6+ from GRI-GLYCalc Help System)

	Production Weighted Mol % of C6***	Production Total Gas Mol %	Molecular Weight (lb/lb-mol)	Weight (lb/lb-mol Gas)	Weight% of C6+	Total Gas Weight%	Total VOC Corrected Weight%
Other Hexanes	63.85%	0.00005961%	86.18	55.03	62.25%	0.00%	0.002%
n-Hexane	14.79%	0.00001381%	86.18	12.75	14.42%	0.00%	0.001%
Heptane	6.87%	0.00000641%	100.2	6.88	7.79%	0.00%	0.000%
2,2,4-Trimethylpentane	2.67%	0.00000249%	114.23	3.05	3.45%	0.00%	0.000%
Octanes +	4.80%	0.00000448%	114.23	5.48	6.20%	0.00%	0.000%
Benzene	3.31%	0.00000309%	78.11	2.59	2.92%	0.00%	0.000%
Toluene	2.85%	0.00000266%	92.13	2.63	2.97%	0.00%	0.000%
Ethylbenzene	0.14%	0.00000013%	106.17	0.15	0.17%	0.00%	0.000%
Xylenes	0.72%	0.00000067%	106.17	0.76	0.86%	0.00%	0.000%
Totals C6+	**100.00%**	**0.0001%**					0.004%
Total HAPs						**0.0000%**	

Notes:
* Weight Percent corrected to remove Carbon Dioxide,Nitrogen, and H2S content.
** Weight Percent corrected to remove non-VOC content.
*** GRY-GLYCalc C6+ typical gas composition from Help System used to speciate Hexanes+ for HAP emissions.

Process Streams		47
Composition	Status:	Solved
Phase: **Total**	From Block:	PIPE-1
	To Block:	--
Mole Fraction		%
Methane		88.38%
Ethane		8.83%
Propane		0.62%
i-Butane		0.02%
n-Butane		0.03%
i-Pentane		0.0013388%
n-Pentane		0.0009551%
n-Hexane		0.0000918%
n-Heptane		0.0000014%
C8		0.0000001%
Water		0.00%
N2		2.10%
CO2		0.01%
H2S		0.00%
Triethylene Glycol		0.00%
EG		0.00%
MeOH		0.00%
MDEA		0.00%
CHEMTHERM 550		0.00%

Process Streams		47
Properties	Status:	Solved
Phase: **Total**	From Block:	PIPE-1
	To Block:	--
Property	**Units**	
Temperature	°F	75.1253
Pressure	psig	828.3127315
Mole Fraction Vapor	%	100
Mole Fraction Light Liquid	%	0
Mole Fraction Heavy Liquid	%	0
Molecular Weight	lb/lbmol	17.7327
Mass Density	lb/ft^3	2.99494
Molar Flow	lbmol/h	2275.60
Mass Flow	lb/h	40352.7
Vapor Volumetric Flow	ft^3/h	13473.6
Liquid Volumetric Flow	gpm	1679.83
Std Vapor Volumetric Flow	MMSCFD	20.7253
Std Liquid Volumetric Flow	sgpm	255.058
Compressibility		0.868260
Specific Gravity		0.612266
API Gravity		
Enthalpy	Btu/h	-7.37803E+07
Mass Enthalpy	Btu/lb	-1828.39
Mass Cp	Btu/(lb*°F)	0.617786
Ideal Gas CpCv Ratio		1.28750
Dynamic Viscosity	cP	0.01245206
Kinematic Viscosity	cSt	0.259557
Thermal Conductivity	Btu/(h*ft*°F	0.0218038
Surface Tension	lbf/ft	
Net Ideal Gas Heating Value	Btu/ft^3	962.820
Net Liquid Heating Value	Btu/lb	20579.0
Gross Ideal Gas Heating Value	Btu/ft^3	1066.43
Gross Liquid Heating Value	Btu/lb	22796.7

Section 7

Information Used To Determine Emissions

Information Used to Determine Emissions shall include the following:

- ☑ If manufacturer data are used, include specifications for emissions units and control equipment, including control efficiencies specifications and sufficient engineering data for verification of control equipment operation, including design drawings, test reports, and design parameters that affect normal operation.
- ☐ If test data are used, include a copy of the complete test report. If the test data are for an emissions unit other than the one being permitted, the emission units must be identical. Test data may not be used if any difference in operating conditions of the unit being permitted and the unit represented in the test report significantly effect emission rates.
- ☑ If the most current copy of AP-42 is used, reference the section and date located at the bottom of the page. Include a copy of the page containing the emissions factors, and clearly mark the factors used in the calculations.
- ☐ If an older version of AP-42 is used, include a complete copy of the section.
- ☑ If an EPA document or other material is referenced, include a complete copy.
- ☐ Fuel specifications sheet.
- ☑ If computer models are used to estimate emissions, include an input summary (if available) and a detailed report, and a disk containing the input file(s) used to run the model. For tank-flashing emissions, include a discussion of the method used to estimate tank-flashing emissions, relative thresholds (i.e., permit or major source (NSPS, PSD or Title V)), accuracy of the model, the input and output from simulation models and software, all calculations, documentation of any assumptions used, descriptions of sampling methods and conditions, copies of any lab sample analysis.

Information included in this section:

1. Promax information
2. Tanks 4.0.9d information
3. Amine Enerflex information
4. Equipment information
5. 40 CFR 60 Subpart JJJJ Table-1
6. AP-42 Tables/Figures/Equations:
    a. Table 1.4-1,1.4-2,1.4-3 – Heaters / Thermal Oxidizer
    b. Table 3.2-2 – Lean Burn Engines
    c. Table 5.2-1 – Loadout
    d. Table 7.1-2 – Loadout
    e. Table 13.5-1 & Table 13.5-2 – Flare
    f. Table 13.2.2-2, Figure 13.2.2-1, Equation 13.2.2-1a – Road Dust
7. Fugitives:
    a. Dexter ATC Field Services Fugitive Counts
    b. EPA Office of Air Quality Planning and Standards, Protocol for Equipment Leak Emission Estimates, Table 2-4, EPA-453/R-95-017, November 1995
    c. EPA Office of Enforcement and Compliance Assurance, Leak Detection and Repair, A Best Practices Guide, Table 4.1, EPA-305-D-07-001, October 2007
    d. API Publ 4615, Emission Factors for Oil and Gas Production Operations, Table 5, January 1995
    e. API Compendium of Greenhouse Gas Emissions Methodologies for the Oil and Natural Gas Industry Table 6-5
    f. 40 CFR 98 Subpart W, Tables W-1A and W-1C
8. Department Accepted Values For: Aggregate Handling, Storage Pile and Haul Road Emissions
9. Inlet Gas Analysis data – Sample dated 1/9/2019
10. Residue Gas Analysis data - Promax

Process Streams		39 To Flare	40 To Slop Oil
Composition	Status:	Solved	Solved
Phase: Total	From Block:	VSSL-105	VSSL-105
	To Block:	--	--
Mole Fraction		%	%
Methane		14.0050	0.0950170
Ethane		15.1670	0.878083
Propane		28.5610	7.41773
i-Butane		9.11843	7.17785
n-Butane		26.0267	34.2548
i-Pentane		3.42445	12.6336
n-Pentane		2.60785	13.7462
n-Hexane		0.849356	20.9208
n-Heptane		0.0200098	1.87120
C8		0.00266528	1.00249
Water		0.00304587	4.39162E-05
N2		0.122357	0.000185748
CO2		0.0919030	0.00194386
H2S		0.000283058	1.96086E-05
Triethylene Glycol		0	0
EG		0	0
MeOH		0	0
CHEMTHERM 550		0	0
Molar Flow		lbmol/h	lbmol/h
Methane		1.94234	0.00645381
Ethane		2.10350	0.0596418
Propane		3.96110	0.503833
i-Butane		1.26463	0.487539
n-Butane		3.60962	2.32668
i-Pentane		0.474933	0.858106
n-Pentane		0.361680	0.933682
n-Hexane		0.117796	1.42100
n-Heptane		0.00277514	0.127097
C8		0.000369645	0.0680921
Water		0.000422429	2.98291E-06
N2		0.0169696	1.26165E-05
CO2		0.0127460	0.000132032
H2S		3.92570E-05	1.33187E-06
Triethylene Glycol		0	0
EG		0	0
MeOH		0	0
CHEMTHERM 550		0	0
Mass Fraction		%	%
Methane		4.99151	0.0225109
Ethane		10.1321	0.389921
Propane		27.9801	4.83045
i-Butane		11.7745	6.16109
n-Butane		33.6078	29.4025
i-Pentane		5.48907	13.4610
n-Pentane		4.18014	14.6465
n-Hexane		1.62612	26.6246
n-Heptane		0.0445449	2.76896
C8		0.00676389	1.69113
Water		0.00121908	1.16839E-05
N2		0.0761510	7.68442E-05
CO2		0.0898578	0.00126337
H2S		0.000214321	9.86911E-06
Triethylene Glycol		0	0
EG		0	0
MeOH		0	0
CHEMTHERM 550		0	0

Process Streams		39 To Flare	40 To Slop Oil
Properties	Status:	Solved	Solved
Phase: **Total**	From Block:	VSSL-105	VSSL-105
	To Block:	--	--
Property	**Units**		
Temperature	°F	16.1995	16.1995
Pressure	psig	0.125*	0.125
Mole Fraction Vapor	%	100	0
Mole Fraction Light Liquid	%	0	100
Mole Fraction Heavy Liquid	%	0	0
Molecular Weight	lb/lbmol	45.0112	67.7141
Mass Density	lb/ft^3	0.120918	40.1146
Molar Flow	lbmol/h	13.8689	6.79227
Mass Flow	lb/h	624.256	459.933
Vapor Volumetric Flow	ft^3/h	5162.64	11.4655
Liquid Volumetric Flow	gpm	643.654	1.42946
Std Vapor Volumetric Flow	MMSCFD	0.126313	0.0618614
Std Liquid Volumetric Flow	sgpm	2.45639	1.50085
Compressibility		0.978572	0.00443751
Specific Gravity		1.55412	0.643185
API Gravity			97.3979
Enthalpy	Btu/h	-665846	-501320
Mass Enthalpy	Btu/lb	-1066.62	-1089.99
Mass Cp	Btu/(lb*°F)	0.378222	0.521661
Ideal Gas CpCv Ratio		1.13354	1.08773
Dynamic Viscosity	cP	0.00739850	0.280324
Kinematic Viscosity	cSt	3.81972	0.436251
Thermal Conductivity	Btu/(h*ft*°F)	0.00890005	0.0713101?
Surface Tension	lbf/ft		0.00123561?
Net Ideal Gas Heating Value	Btu/ft^3	2353.24	3485.33
Net Liquid Heating Value	Btu/lb	19688.6	19372.5
Gross Ideal Gas Heating Value	Btu/ft^3	2557.29	3771.13
Gross Liquid Heating Value	Btu/lb	21409.2	20974.6

TANKS 4.0.9d
Emissions Report - Detail Format
Tank Indentification and Physical Characteristics

Identification	
User Identification:	400-bbl Condensate Tank
City:	
State:	
Company:	
Type of Tank:	Vertical Fixed Roof Tank
Description:	Modeled for one tank
Tank Dimensions	
Shell Height (ft):	20.00
Diameter (ft):	12.00
Liquid Height (ft) :	20.00
Avg. Liquid Height (ft):	10.00
Volume (gallons):	16,920.59
Turnovers:	135.90
Net Throughput(gal/yr):	2,299,500.00
Is Tank Heated (y/n):	N
Paint Characteristics	
Shell Color/Shade:	Gray/Medium
Shell Condition	Good
Roof Color/Shade:	Gray/Medium
Roof Condition:	Good
Roof Characteristics	
Type:	Cone
Height (ft)	0.00
Slope (ft/ft) (Cone Roof)	0.06
Breather Vent Settings	
Vacuum Settings (psig):	-0.03
Pressure Settings (psig)	0.03

Meterological Data used in Emissions Calculations: Roswell, New Mexico (Avg Atmospheric Pressure = 12.73 psia)

TANKS 4.0.9d
Emissions Report - Detail Format
Liquid Contents of Storage Tank

400-bbl Condensate Tank - Vertical Fixed Roof Tank

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F) Avg.	Min.	Max.	Liquid Bulk Temp (deg F)	Vapor Pressure (psia) Avg.	Min.	Max.	Vapor Mol. Weight.	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
Gasoline (RVP 12)	All	72.26	58.28	86.25	63.90	7.9687	6.1503	10.1886	64.0000			92.00	Option 4: RVP=12, ASTM Slope=3

TANKS 4.0.9d
Emissions Report - Detail Format
Detail Calculations (AP-42)

400-bbl Condensate Tank - Vertical Fixed Roof Tank

Annual Emission Calcaulations	
Standing Losses (lb):	6,656.7261
Vapor Space Volume (cu ft):	1,145.1105
Vapor Density (lb/cu ft):	0.0893
Vapor Space Expansion Factor:	0.9405
Vented Vapor Saturation Factor:	0.1895
Tank Vapor Space Volume:	
Vapor Space Volume (cu ft):	1,145.1105
Tank Diameter (ft):	12.0000
Vapor Space Outage (ft):	10.1250
Tank Shell Height (ft):	20.0000
Average Liquid Height (ft):	10.0000
Roof Outage (ft):	0.1250
Roof Outage (Cone Roof)	
Roof Outage (ft):	0.1250
Roof Height (ft):	0.0000
Roof Slope (ft/ft):	0.0625
Shell Radius (ft):	6.0000
Vapor Density	
Vapor Density (lb/cu ft):	0.0893
Vapor Molecular Weight (lb/lb-mole):	64.0000
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	7.9687
Daily Avg. Liquid Surface Temp. (deg. R):	531.9348
Daily Average Ambient Temp. (deg. F):	60.8167
Ideal Gas Constant R (psia cuft / (lb-mol-deg R)):	10.731
Liquid Bulk Temperature (deg. R):	523.5667
Tank Paint Solar Absorptance (Shell):	0.6800
Tank Paint Solar Absorptance (Roof):	0.6800
Daily Total Solar Insulation Factor (Btu/sqft day):	1,810.0000
Vapor Space Expansion Factor	
Vapor Space Expansion Factor:	0.9405
Daily Vapor Temperature Range (deg. R):	55.9424
Daily Vapor Pressure Range (psia):	4.0383
Breather Vent Press. Setting Range(psia):	0.0600
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	7.9687
Vapor Pressure at Daily Minimum Liquid Surface Temperature (psia):	6.1503
Vapor Pressure at Daily Maximum Liquid Surface Temperature (psia):	10.1886
Daily Avg. Liquid Surface Temp. (deg R):	531.9348
Daily Min. Liquid Surface Temp. (deg R):	517.9492
Daily Max. Liquid Surface Temp. (deg R):	545.9204
Daily Ambient Temp. Range (deg. R):	29.8333
Vented Vapor Saturation Factor	
Vented Vapor Saturation Factor:	0.1895
Vapor Pressure at Daily Average Liquid: Surface Temperature (psia):	7.9687
Vapor Space Outage (ft):	10.1250
Working Losses (lb):	10,817.5647
Vapor Molecular Weight (lb/lb-mole):	64.0000
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	7.9687
Annual Net Throughput (gal/yr.):	2,299,500.0000
Annual Turnovers:	135.8995
Turnover Factor:	0.3874
Maximum Liquid Volume (gal):	16,920.5925
Maximum Liquid Height (ft):	20.0000
Tank Diameter (ft):	12.0000
Working Loss Product Factor:	1.0000
Total Losses (lb):	17,474.2907

00251

TANKS 4.0.9d
Emissions Report - Detail Format
Individual Tank Emission Totals

Emissions Report for: Annual

400-bbl Condensate Tank - Vertical Fixed Roof Tank

	Losses(lbs)		
Components	Working Loss	Breathing Loss	Total Emissions
Gasoline (RVP 12)	10,817.56	6,656.73	17,474.29

TANKS 4.0.9d
Emissions Report - Detail Format
Tank Indentification and Physical Characteristics

Identification	
User Identification:	400-bbl Oil Tank
City:	
State:	
Company:	
Type of Tank:	Vertical Fixed Roof Tank
Description:	Modeled for one tank
Tank Dimensions	
Shell Height (ft):	20.00
Diameter (ft):	12.00
Liquid Height (ft) :	20.00
Avg. Liquid Height (ft):	10.00
Volume (gallons):	16,800.00
Turnovers:	3.83
Net Throughput(gal/yr):	64,344.00
Is Tank Heated (y/n):	N
Paint Characteristics	
Shell Color/Shade:	Gray/Medium
Shell Condition	Good
Roof Color/Shade:	Gray/Medium
Roof Condition:	Good
Roof Characteristics	
Type:	Cone
Height (ft)	0.00
Slope (ft/ft) (Cone Roof)	0.06
Breather Vent Settings	
Vacuum Settings (psig):	-0.03
Pressure Settings (psig)	0.03

Meterological Data used in Emissions Calculations: Roswell, New Mexico (Avg Atmospheric Pressure = 12.73 psia)

TANKS 4.0.9d
Emissions Report - Detail Format
Liquid Contents of Storage Tank

400-bbl Oil Tank - Vertical Fixed Roof Tank

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F) Avg.	Min.	Max.	Liquid Bulk Temp (deg F)	Vapor Pressure (psia) Avg.	Min.	Max.	Vapor Mol. Weight.	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
Gasoline (RVP 12)	All	72.26	58.28	86.25	63.90	7.9687	6.1503	10.1886	64.0000			92.00	Option 4: RVP=12, ASTM Slope=3

TANKS 4.0.9d
Emissions Report - Detail Format
Detail Calculations (AP-42)

400-bbl Oil Tank - Vertical Fixed Roof Tank

Annual Emission Calcaulations	
Standing Losses (lb):	6,656.7261
Vapor Space Volume (cu ft):	1,145.1105
Vapor Density (lb/cu ft):	0.0893
Vapor Space Expansion Factor:	0.9405
Vented Vapor Saturation Factor:	0.1895
Tank Vapor Space Volume:	
Vapor Space Volume (cu ft):	1,145.1105
Tank Diameter (ft):	12.0000
Vapor Space Outage (ft):	10.1250
Tank Shell Height (ft):	20.0000
Average Liquid Height (ft):	10.0000
Roof Outage (ft):	0.1250
Roof Outage (Cone Roof)	
Roof Outage (ft):	0.1250
Roof Height (ft):	0.0000
Roof Slope (ft/ft):	0.0625
Shell Radius (ft):	6.0000
Vapor Density	
Vapor Density (lb/cu ft):	0.0893
Vapor Molecular Weight (lb/lb-mole):	64.0000
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	7.9687
Daily Avg. Liquid Surface Temp. (deg. R):	531.9348
Daily Average Ambient Temp. (deg. F):	60.8167
Ideal Gas Constant R (psia cuft / (lb-mol-deg R)):	10.731
Liquid Bulk Temperature (deg. R):	523.5667
Tank Paint Solar Absorptance (Shell):	0.6800
Tank Paint Solar Absorptance (Roof):	0.6800
Daily Total Solar Insulation Factor (Btu/sqft day):	1,810.0000
Vapor Space Expansion Factor	
Vapor Space Expansion Factor:	0.9405
Daily Vapor Temperature Range (deg. R):	55.9424
Daily Vapor Pressure Range (psia):	4.0383
Breather Vent Press. Setting Range(psia):	0.0600
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	7.9687
Vapor Pressure at Daily Minimum Liquid Surface Temperature (psia):	6.1503
Vapor Pressure at Daily Maximum Liquid Surface Temperature (psia):	10.1886
Daily Avg. Liquid Surface Temp. (deg R):	531.9348
Daily Min. Liquid Surface Temp. (deg R):	517.9492
Daily Max. Liquid Surface Temp. (deg R):	545.9204
Daily Ambient Temp. Range (deg. R):	29.8333
Vented Vapor Saturation Factor	
Vented Vapor Saturation Factor:	0.1895
Vapor Pressure at Daily Average Liquid: Surface Temperature (psia):	7.9687
Vapor Space Outage (ft):	10.1250
Working Losses (lb):	781.3117

Vapor Molecular Weight (lb/lb-mole):	64.0000
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	7.9687
Annual Net Throughput (gal/yr.):	64,344.0000
Annual Turnovers:	3.8300
Turnover Factor:	1.0000
Maximum Liquid Volume (gal):	16,800.0000
Maximum Liquid Height (ft):	20.0000
Tank Diameter (ft):	12.0000
Working Loss Product Factor:	1.0000
Total Losses (lb):	7,438.0377

TANKS 4.0.9d
Emissions Report - Detail Format
Individual Tank Emission Totals

Emissions Report for: Annual

400-bbl Oil Tank - Vertical Fixed Roof Tank

	Losses(lbs)		
Components	Working Loss	Breathing Loss	Total Emissions
Gasoline (RVP 12)	781.31	6,656.73	7,438.04

TANKS 4.0.9d
Emissions Report - Detail Format
Tank Indentification and Physical Characteristics

Identification	
User Identification:	400-bbl Produced Water Tank
City:	
State:	
Company:	
Type of Tank:	Vertical Fixed Roof Tank
Description:	Modeled for one tank
Tank Dimensions	
Shell Height (ft):	20.00
Diameter (ft):	12.00
Liquid Height (ft) :	20.00
Avg. Liquid Height (ft):	10.00
Volume (gallons):	16,920.59
Turnovers:	3.80
Net Throughput(gal/yr):	64,344.00
Is Tank Heated (y/n):	N
Paint Characteristics	
Shell Color/Shade:	Gray/Medium
Shell Condition	Good
Roof Color/Shade:	Gray/Medium
Roof Condition:	Good
Roof Characteristics	
Type:	Cone
Height (ft)	0.00
Slope (ft/ft) (Cone Roof)	0.06
Breather Vent Settings	
Vacuum Settings (psig):	-0.03
Pressure Settings (psig)	0.03

Meterological Data used in Emissions Calculations: Roswell, New Mexico (Avg Atmospheric Pressure = 12.73 psia)

TANKS 4.0.9d
Emissions Report - Detail Format
Liquid Contents of Storage Tank

400-bbl Produced Water Tank - Vertical Fixed Roof Tank

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F) Avg.	Min.	Max.	Liquid Bulk Temp (deg F)	Vapor Pressure (psia) Avg.	Min.	Max.	Vapor Mol. Weight.	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
Produced Water	All	72.26	58.28	86.25	63.90	0.4070	0.2525	0.6393	19.7975			18.17	
Gasoline (RVP 12)						7.9687	6.1503	10.1886	64.0000	0.0100	0.1250	92.00	Option 4: RVP=12, ASTM Slope=3
Water						0.3921	0.2408	0.6204	18.0200	0.9900	0.8750	18.02	Option 2: A=8.10765, B=1750.286, C=235

00259

TANKS 4.0.9d
Emissions Report - Detail Format
Detail Calculations (AP-42)

400-bbl Produced Water Tank - Vertical Fixed Roof Tank

Annual Emission Calcaulations	
Standing Losses (lb):	63.7690
Vapor Space Volume (cu ft):	1,145.1105
Vapor Density (lb/cu ft):	0.0014
Vapor Space Expansion Factor:	0.1317
Vented Vapor Saturation Factor:	0.8207
Tank Vapor Space Volume:	
Vapor Space Volume (cu ft):	1,145.1105
Tank Diameter (ft):	12.0000
Vapor Space Outage (ft):	10.1250
Tank Shell Height (ft):	20.0000
Average Liquid Height (ft):	10.0000
Roof Outage (ft):	0.1250
Roof Outage (Cone Roof)	
Roof Outage (ft):	0.1250
Roof Height (ft):	0.0000
Roof Slope (ft/ft):	0.0625
Shell Radius (ft):	6.0000
Vapor Density	
Vapor Density (lb/cu ft):	0.0014
Vapor Molecular Weight (lb/lb-mole):	19.7975
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.4070
Daily Avg. Liquid Surface Temp. (deg. R):	531.9348
Daily Average Ambient Temp. (deg. F):	60.8167
Ideal Gas Constant R (psia cuft / (lb-mol-deg R)):	10.731
Liquid Bulk Temperature (deg. R):	523.5667
Tank Paint Solar Absorptance (Shell):	0.6800
Tank Paint Solar Absorptance (Roof):	0.6800
Daily Total Solar Insulation Factor (Btu/sqft day):	1,810.0000
Vapor Space Expansion Factor	
Vapor Space Expansion Factor:	0.1317
Daily Vapor Temperature Range (deg. R):	55.9424
Daily Vapor Pressure Range (psia):	0.3868
Breather Vent Press. Setting Range(psia):	0.0600
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.4070
Vapor Pressure at Daily Minimum Liquid Surface Temperature (psia):	0.2525
Vapor Pressure at Daily Maximum Liquid Surface Temperature (psia):	0.6393
Daily Avg. Liquid Surface Temp. (deg R):	531.9348
Daily Min. Liquid Surface Temp. (deg R):	517.9492
Daily Max. Liquid Surface Temp. (deg R):	545.9204
Daily Ambient Temp. Range (deg. R):	29.8333
Vented Vapor Saturation Factor	
Vented Vapor Saturation Factor:	0.8207
Vapor Pressure at Daily Average Liquid: Surface Temperature (psia):	0.4070
Vapor Space Outage (ft):	10.1250
Working Losses (lb):	12.3450
Vapor Molecular Weight (lb/lb-mole):	19.7975
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.4070
Annual Net Throughput (gal/yr.):	64,344.0000
Annual Turnovers:	3.8027
Turnover Factor:	1.0000
Maximum Liquid Volume (gal):	16,920.5925
Maximum Liquid Height (ft):	20.0000
Tank Diameter (ft):	12.0000
Working Loss Product Factor:	1.0000
Total Losses (lb):	76.1140

TANKS 4.0.9d
Emissions Report - Detail Format
Individual Tank Emission Totals

Emissions Report for: Annual

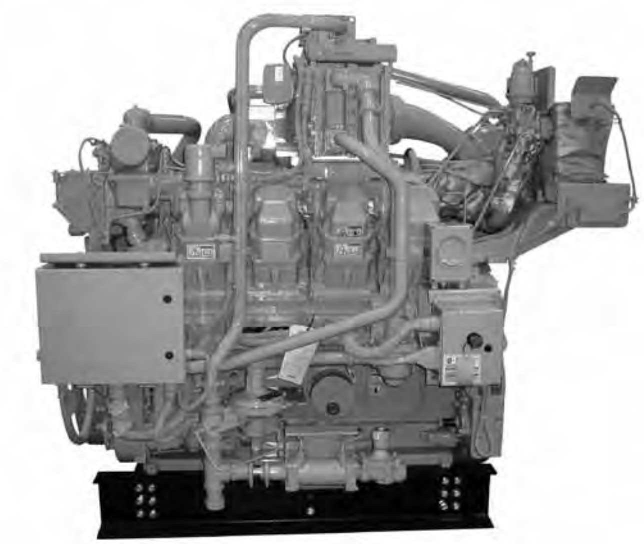
400-bbl Produced Water Tank - Vertical Fixed Roof Tank

	Losses(lbs)		
Components	Working Loss	Breathing Loss	Total Emissions
Produced Water	12.34	63.77	76.11
Water	10.80	55.80	66.60
Gasoline (RVP 12)	1.54	7.97	9.51

CATERPILLAR®

G3508B LE Gas Petroleum Engine

515 bkW (690 bhp)
1400 rpm



0.5 g/bhp-hr NOx or 1.0 g/bhp-hr NOx (NTE)

CAT® ENGINE SPECIFICATIONS

V-8, 4-Stroke-Cycle

Bore	170 mm (6.7 in.)
Stroke	190 mm (7.5 in.)
Displacement	34.6 L (2115 cu. in.)
Aspiration	Turbocharged-2 Stage Aftercooled
Digital Engine Management	
Governor and Protection	Electronic (ADEM™ A3)
Combustion	Low Emissions (Lean Burn)
Engine Weight	
net dry (approx)	3941 kg (8688 lb)
Power Density	7.7 kg/kW (12.6 lb/hp)
Power per Displacement	19.9 bhp/L
Total Cooling System Capacity	130.5 L (34.4 gal)
Jacket Water	119 L (31.4 gal)
Aftercooler Circuit	11.5 L (3 gal)
Lube Oil System (refill)	220 L (58 gal)
Oil Change Interval	1000 hours
Rotation (from flywheel end)	Counterclockwise
Flywheel and Flywheel Housing	SAE No. 00
Flywheel Teeth	183

FEATURES

Engine Design
- Built on G3500 LE proven reliability and durability
- Ability to burn a wide spectrum of gaseous fuels
- Robust diesel strength design prolongs life and lowers owning and operating costs
- Broad operating speed range at lower site air densities (high altitude/hot ambient temperatures)
- Higher power density improves fleet management
- Quality engine diagnostics
- Detonation-sensitive timing control for individual cylinders

Ultra Lean Burn Technology (ULB)
ULB technology uses an advanced control system, a better turbo match, improved air and fuel mixing, and a more sophisticated combustion recipe to provide:
- Lowest engine-out emissions
- Highest fuel efficiency
- Improved altitude and speed turndown
- Stable load acceptance and load rejection

Emissions
- Meets U.S. EPA Spark Ignited Stationary NSPS emissions for 2010 and some non-attainment areas
- Lean air/fuel mixture provides best available emissions and fuel efficiency for engines of this bore size

Advanced Digital Engine Management
ADEM A3 engine management system integrates speed control, air/fuel ratio control, and ignition/detonation controls into a complete engine management system. ADEM A3 has improved: user interface, display system, shutdown controls, and system diagnostics.

Full Range of Attachments
Large variety of factory-installed engine attachments reduces packaging time.

Testing
Every engine is full-load tested to ensure proper engine performance.

Gas Engine Rating Pro
GERP is a PC-based program designed to provide site performance capabilities for Cat® natural gas engines for the gas compression industry. GERP provides engine data for your site's altitude, ambient temperature, fuel, engine coolant heat rejection, performance data, installation drawings, spec sheets, and pump curves.

Product Support Offered Through Global Cat Dealer Network
More than 2,200 dealer outlets

Cat factory-trained dealer technicians service every aspect of your petroleum engine

Cat parts and labor warranty

Preventive maintenance agreements available for repair-before-failure options

S•O•S℠ program matches your oil and coolant samples against Caterpillar set standards to determine:
- Internal engine component condition
- Presence of unwanted fluids
- Presence of combustion by-products
- Site-specific oil change interval

Over 80 Years of Engine Manufacturing Experience
Over 60 years of natural gas engine production

Ownership of these manufacturing processes enables Caterpillar to produce high quality, dependable products
- Cast engine blocks, heads, cylinder liners, and flywheel housings
- Machine critical components
- Assemble complete engine

Web Site
For all your petroleum power requirements, visit www.catoilandgas.cat.com.

G3508B

GAS COMPRESSION APPLICATION

GAS ENGINE SITE SPECIFIC TECHNICAL DATA
G3508ULB-Aaron Alvarez

CATERPILLAR®

ENGINE SPEED (rpm):	1400
COMPRESSION RATIO:	8:1
AFTERCOOLER TYPE:	SCAC
AFTERCOOLER - STAGE 2 INLET (°F):	130
AFTERCOOLER - STAGE 1 INLET (°F):	201
JACKET WATER OUTLET (°F):	203
ASPIRATION:	TA
COOLING SYSTEM:	JW+OC+1AC, 2AC
CONTROL SYSTEM:	ADEM3
EXHAUST MANIFOLD:	DRY
COMBUSTION:	LOW EMISSION
NOx EMISSION LEVEL (g/bhp-hr NOx):	0.5
SET POINT TIMING:	30

RATING STRATEGY:	STANDARD
RATING LEVEL:	CONTINUOUS
FUEL SYSTEM:	CAT WIDE RANGE WITH AIR FUEL RATIO CONTROL

SITE CONDITIONS:

FUEL:	Nat Gas
FUEL PRESSURE RANGE(psig):	7.0-40.0
FUEL METHANE NUMBER:	84.8
FUEL LHV (Btu/scf):	905
ALTITUDE(ft):	500
MAXIMUM INLET AIR TEMPERATURE(°F):	100
STANDARD RATED POWER:	690 bhp@1400rpm

				MAXIMUM RATING	SITE RATING AT MAXIMUM INLET AIR TEMPERATURE		
RATING		NOTES	LOAD	100%	100%	75%	50%
ENGINE POWER	(WITHOUT FAN)	(1)	bhp	690	690	517	345
INLET AIR TEMPERATURE			°F	100	100	100	100
ENGINE DATA							
FUEL CONSUMPTION (LHV)		(2)	Btu/bhp-hr	7395	7395	7849	8535
FUEL CONSUMPTION (HHV)		(2)	Btu/bhp-hr	8203	8203	8707	9468
AIR FLOW (@inlet air temp, 14.7 psia)	(WET)	(3)(4)	ft3/min	1665	1664	1291	898
AIR FLOW	(WET)	(3)(4)	lb/hr	7073	7073	5491	3817
FUEL FLOW (60ºF, 14.7 psia)			scfm	94	94	75	54
INLET MANIFOLD PRESSURE		(5)	in Hg(abs)	95.3	95.3	77.0	54.1
EXHAUST TEMPERATURE - ENGINE OUTLET		(6)	°F	931	931	929	999
EXHAUST GAS FLOW (@engine outlet temp, 14.5 psia)	(WET)	(7)(4)	ft3/min	4455	4455	3458	2531
EXHAUST GAS MASS FLOW	(WET)	(7)(4)	lb/hr	7330	7330	5695	3965
EMISSIONS DATA - ENGINE OUT							
NOx (as NO2)		(8)(9)	g/bhp-hr	0.50	0.50	0.50	0.50
CO		(8)(9)	g/bhp-hr	2.58	2.58	2.75	2.71
THC (mol. wt. of 15.84)		(8)(9)	g/bhp-hr	5.49	5.49	5.81	5.59
NMHC (mol. wt. of 15.84)		(8)(9)	g/bhp-hr	0.82	0.82	0.87	0.84
NMNEHC (VOCs) (mol. wt. of 15.84)		(8)(9)(10)	g/bhp-hr	0.55	0.55	0.58	0.56
HCHO (Formaldehyde)		(8)(9)	g/bhp-hr	0.42	0.42	0.46	0.48
CO2		(8)(9)	g/bhp-hr	477	477	505	547
EXHAUST OXYGEN		(8)(11)	% DRY	9.3	9.3	9.0	8.5
HEAT REJECTION							
HEAT REJ. TO JACKET WATER (JW)		(12)	Btu/min	10787	10787	9234	8396
HEAT REJ. TO ATMOSPHERE		(12)	Btu/min	3498	3498	2915	2332
HEAT REJ. TO LUBE OIL (OC)		(12)	Btu/min	2650	2650	2405	2103
HEAT REJ. TO A/C - STAGE 1 (1AC)		(12)(13)	Btu/min	5988	5988	5102	1965
HEAT REJ. TO A/C - STAGE 2 (2AC)		(12)(13)	Btu/min	3222	3222	2991	1848

COOLING SYSTEM SIZING CRITERIA			
TOTAL JACKET WATER CIRCUIT (JW+OC+1AC)	(13)(14)	Btu/min	21333
TOTAL AFTERCOOLER CIRCUIT (2AC)	(13)(14)	Btu/min	3383
A cooling system safety factor of 0% has been added to the cooling system sizing criteria.			

CONDITIONS AND DEFINITIONS

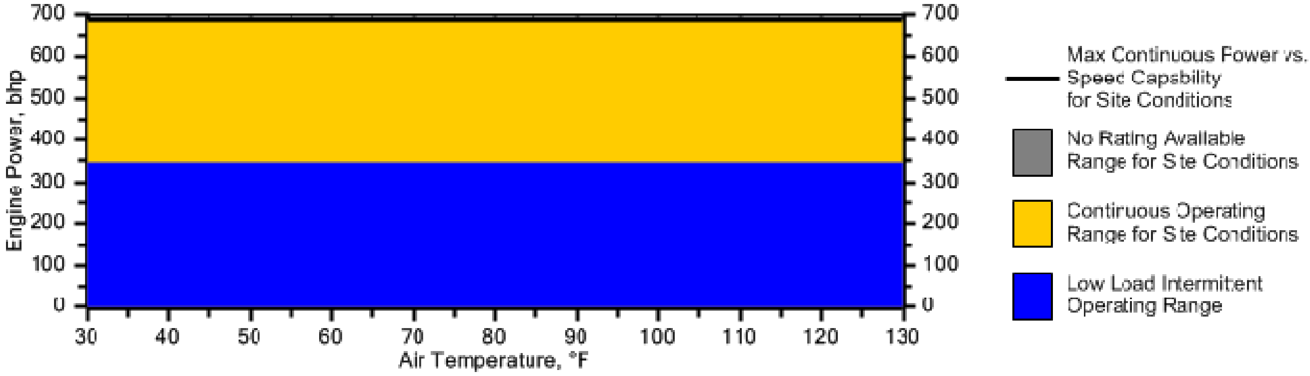
Engine rating obtained and presented in accordance with ISO 3046/1, adjusted for fuel, site altitude and site inlet air temperature. 100% rating at maximum inlet air temperature is the maximum engine capability for the specified fuel at site altitude and maximum site inlet air temperature. Max. rating is the maximum capability for the specified fuel at site altitude and reduced inlet air temperature. Lowest load point is the lowest continuous duty operating load allowed. No overload permitted at rating shown.

For notes information consult page three.

PREPARED BY: Bradley Johnson, Compressor Systems Inc.
Data generated by Gas Engine Rating Pro Version 4.06.01
Ref. Data Set DM8826-03-001, Printed 20Feb2014

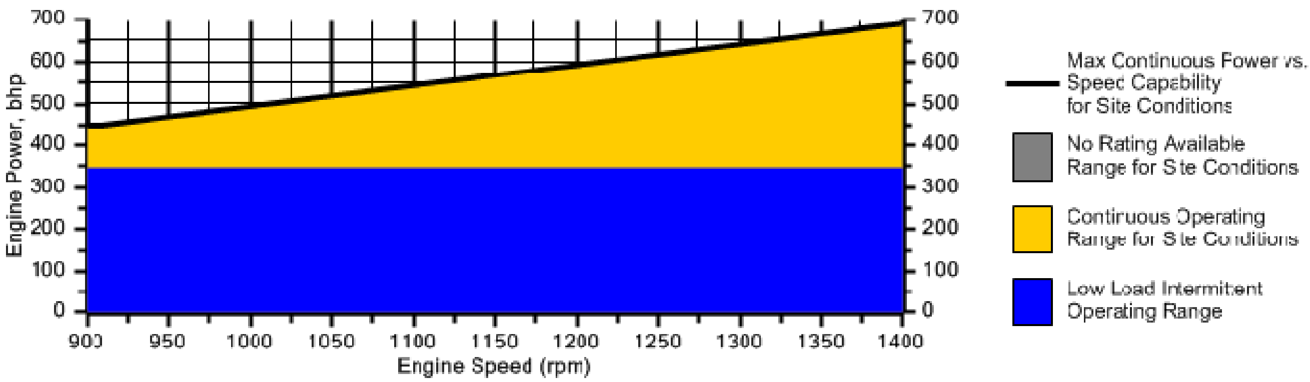
Engine Power vs. Inlet Air Temperature

Data represents temperature sweep at 500 ft and 1400 rpm



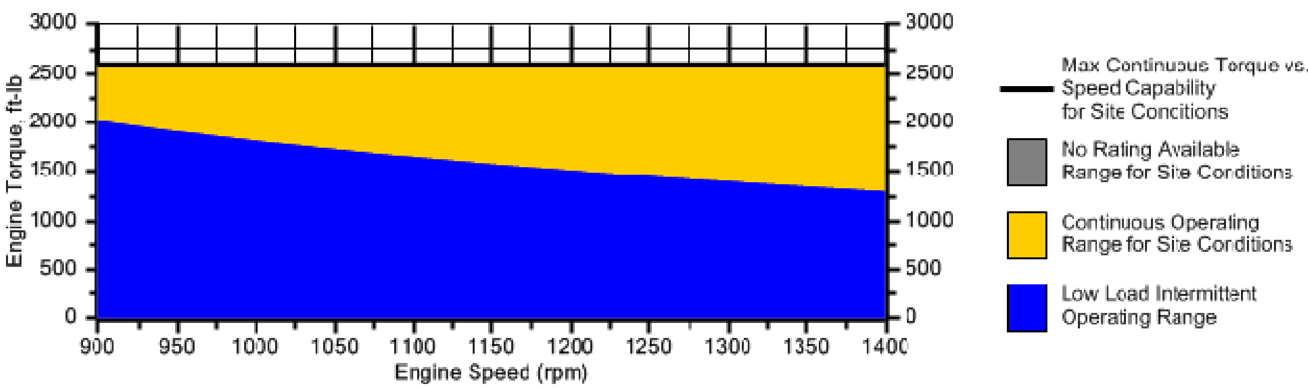
Engine Power vs. Engine Speed

Data represents speed sweep at 500 ft and 100 °F



Engine Torque vs. Engine Speed

Data represents speed sweep at 500 ft and 100 °F



Note: At site conditions of 500 ft and 100℉ inlet air temp., constant torque can be maintained down to 900 rpm. The minimum speed for loading at these conditions is 900 rpm.

GAS ENGINE SITE SPECIFIC TECHNICAL DATA
G3508ULB-Aaron Alvarez

NOTES

1. Engine rating is with two engine driven water pumps. Tolerance is ± 3% of full load.

2. Fuel consumption tolerance is ± 3.0% of full load data.

3. Air flow value is on a 'wet' basis. Flow is a nominal value with a tolerance of ± 5 %.

4. Inlet and Exhaust Restrictions must not exceed A&I limits based on full load flow rates from the standard technical data sheet.

5. Inlet manifold pressure is a nominal value with a tolerance of ± 5 %.

6. Exhaust temperature is a nominal value with a tolerance of (+)63°F, (-)54°F.

7. Exhaust flow value is on a "wet" basis. Flow is a nominal value with a tolerance of ± 6 %.

8. Emissions data is at engine exhaust flange prior to any after treatment.

9. Emission values are based on engine operating at steady state conditions. Fuel methane number cannot vary more than ± 3. Values listed are higher than nominal levels to allow for instrumentation, measurement, and engine-to-engine variations. They indicate "Not to Exceed" values. THC, NMHC, and NMNEHC do not include aldehydes. An oxidation catalyst may be required to meet Federal, State or local CO or HC requirements.

10. VOCs - Volatile organic compounds as defined in US EPA 40 CFR 60, subpart JJJJ

11. Exhaust Oxygen level is the result of adjusting the engine to operate at the specified NOx level. Tolerance is ± 0.5.

12. Heat rejection values are nominal. Tolerances, based on treated water, are ± 10% for jacket water circuit, ± 50% for radiation, ± 20% for lube oil circuit, and ± 5% for aftercooler circuit.

13. Aftercooler heat rejection includes an aftercooler heat rejection factor for the site elevation and inlet air temperature specified. Aftercooler heat rejection values at part load are for reference only. Do not use part load data for heat exchanger sizing.

14. Cooling system sizing criteria are maximum circuit heat rejection for the site, with applied tolerances.

Constituent	Abbrev	Mole %	Norm
Water Vapor	H2O	0.0000	0.0000
Methane	CH4	92.2700	92.2700
Ethane	C2H6	2.5000	2.5000
Propane	C3H8	0.5000	0.5000
Isobutane	iso-C4H1O	0.0000	0.0000
Norbutane	nor-C4H1O	0.2000	0.2000
Isopentane	iso-C5H12	0.0000	0.0000
Norpentane	nor-C5H12	0.1000	0.1000
Hexane	C6H14	0.0500	0.0500
Heptane	C7H16	0.0000	0.0000
Nitrogen	N2	3.4800	3.4800
Carbon Dioxide	CO2	0.9000	0.9000
Hydrogen Sulfide	H2S	0.0000	0.0000
Carbon Monoxide	CO	0.0000	0.0000
Hydrogen	H2	0.0000	0.0000
Oxygen	O2	0.0000	0.0000
Helium	HE	0.0000	0.0000
Neopentane	neo-C5H12	0.0000	0.0000
Octane	C8H18	0.0000	0.0000
Nonane	C9H20	0.0000	0.0000
Ethylene	C2H4	0.0000	0.0000
Propylene	C3H6	0.0000	0.0000
TOTAL (Volume %)		100.0000	100.0000

Fuel Makeup:	Nat Gas
Unit of Measure:	English

Calculated Fuel Properties

Caterpillar Methane Number:	84.8
Lower Heating Value (Btu/scf):	905
Higher Heating Value (Btu/scf):	1004
WOBBE Index (Btu/scf):	1168
THC: Free Inert Ratio:	21.83
Total % Inerts (% N2, CO2, He):	4.38%
RPC (%) (To 905 Btu/scf Fuel):	100%
Compressibility Factor:	0.998
Stoich A/F Ratio (Vol/Vol):	9.45
Stoich A/F Ratio (Mass/Mass):	15.75
Specific Gravity (Relative to Air):	0.600
Specific Heat Constant (K):	1.313

CONDITIONS AND DEFINITIONS

Caterpillar Methane Number represents the knock resistance of a gaseous fuel. It should be used with the Caterpillar Fuel Usage Guide for the engine and rating to determine the rating for the fuel specified. A Fuel Usage Guide for each rating is included on page 2 of its standard technical data sheet.

RPC always applies to naturally aspirated (NA) engines, and turbocharged (TA or LE) engines only when they are derated for altitude and ambient site conditions.

Project specific technical data sheets generated by the Caterpillar Gas Engine Rating Pro program take the Caterpillar Methane Number and RPC into account when generating a site rating.

Fuel properties for Btu/scf calculations are at 60F and 14.696 psia.

Caterpillar shall have no liability in law or equity, for damages, consequently or otherwise, arising from use of program and related material or any part thereof.

FUEL LIQUIDS

Field gases, well head gases, and associated gases typically contain liquid water and heavy hydrocarbons entrained in the gas. To prevent detonation and severe damage to the engine, hydrocarbon liquids must not be allowed to enter the engine fuel system. To remove liquids, a liquid separator and coalescing filter are recommended, with an automatic drain and collection tank to prevent contamination of the ground in accordance with local codes and standards.

To avoid water condensation in the engine or fuel lines, limit the relative humidity of water in the fuel to 80% at the minimum fuel operating temperature.

G3516B

GAS COMPRESSION APPLICATION

GAS ENGINE SITE SPECIFIC TECHNICAL DATA

CATERPILLAR®

ENGINE SPEED (rpm):	1400	RATING STRATEGY:	STANDARD
COMPRESSION RATIO:	8:1	FUEL SYSTEM:	CAT WIDE RANGE WITH AIR FUEL RATIO CONTROL
AFTERCOOLER TYPE:	SCAC		
AFTERCOOLER - STAGE 2 INLET (°F):	130	**SITE CONDITIONS:**	
AFTERCOOLER - STAGE 1 INLET (°F):	201	FUEL:	Nat Gas
JACKET WATER OUTLET (°F):	210	FUEL PRESSURE RANGE(psig):	7.0-40.0
ASPIRATION:	TA	FUEL METHANE NUMBER:	84.8
COOLING SYSTEM:	JW+OC+1AC, 2AC	FUEL LHV (Btu/scf):	905
CONTROL SYSTEM:	ADEM3	ALTITUDE(ft):	500
EXHAUST MANIFOLD:	DRY	MAXIMUM INLET AIR TEMPERATURE(°F):	77
COMBUSTION:	Low Emission	STANDARD RATED POWER:	1380 bhp@1400rpm
NOx EMISSION LEVEL (g/bhp-hr NOx):	0.5		
SET POINT TIMING:	30		

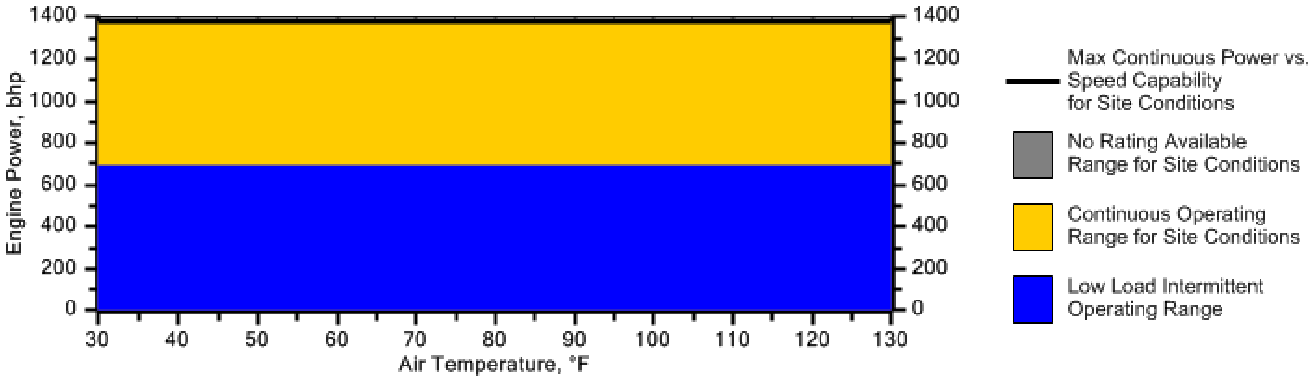
			MAXIMUM RATING	SITE RATING AT MAXIMUM INLET AIR TEMPERATURE		
RATING	**NOTES**	**LOAD**	**100%**	**100%**	**75%**	**50%**
ENGINE POWER (WITHOUT FAN)	(1)	bhp	1380	1380	1035	690
INLET AIR TEMPERATURE		°F	77	77	77	77
ENGINE DATA						
FUEL CONSUMPTION (LHV)	(2)	Btu/bhp-hr	7443	7443	7972	8562
FUEL CONSUMPTION (HHV)	(2)	Btu/bhp-hr	8256	8256	8843	9498
AIR FLOW (@inlet air temp, 14.7 psia) (WET)	(3)(4)	ft3/min	3126	3126	2452	1715
AIR FLOW (WET)	(3)(4)	lb/hr	13862	13862	10874	7602
FUEL FLOW (60ºF, 14.7 psia)		scfm	189	189	152	109
INLET MANIFOLD PRESSURE	(5)	in Hg(abs)	94.6	94.6	76.8	54.0
EXHAUST TEMPERATURE - ENGINE OUTLET	(6)	°F	992	992	986	1006
EXHAUST GAS FLOW (@engine outlet temp, 14.5 psia) (WET)	(7)(4)	ft3/min	9126	9126	7138	5065
EXHAUST GAS MASS FLOW (WET)	(7)(4)	lb/hr	14380	14380	11290	7900
EMISSIONS DATA - ENGINE OUT						
NOx (as NO2)	(8)(9)	g/bhp-hr	0.50	0.50	0.50	0.50
CO	(8)(9)	g/bhp-hr	2.43	2.43	2.61	2.56
THC (mol. wt. of 15.84)	(8)(9)	g/bhp-hr	4.77	4.77	5.11	5.19
NMHC (mol. wt. of 15.84)	(8)(9)	g/bhp-hr	0.72	0.72	0.77	0.78
NMNEHC (VOCs) (mol. wt. of 15.84)	(8)(9)(10)	g/bhp-hr	0.48	0.48	0.51	0.52
HCHO (Formaldehyde)	(8)(9)	g/bhp-hr	0.44	0.44	0.43	0.42
CO2	(8)(9)	g/bhp-hr	474	474	506	549
EXHAUST OXYGEN	(8)(11)	% DRY	9.0	9.0	8.7	8.3
HEAT REJECTION						
HEAT REJ. TO JACKET WATER (JW)	(12)	Btu/min	23412	23412	21533	19930
HEAT REJ. TO ATMOSPHERE	(12)	Btu/min	6110	6110	5092	4074
HEAT REJ. TO LUBE OIL (OC)	(12)	Btu/min	4475	4475	3978	3363
HEAT REJ. TO A/C - STAGE 1 (1AC)	(12)(13)	Btu/min	10046	10046	8308	2813
HEAT REJ. TO A/C - STAGE 2 (2AC)	(12)(13)	Btu/min	5358	5358	5063	3334
COOLING SYSTEM SIZING CRITERIA						
TOTAL JACKET WATER CIRCUIT (JW+OC+1AC)	(13)(14)	Btu/min	41672			
TOTAL AFTERCOOLER CIRCUIT (2AC)	(13)(14)	Btu/min	5626			
A cooling system safety factor of 0% has been added to the cooling system sizing criteria.						

CONDITIONS AND DEFINITIONS

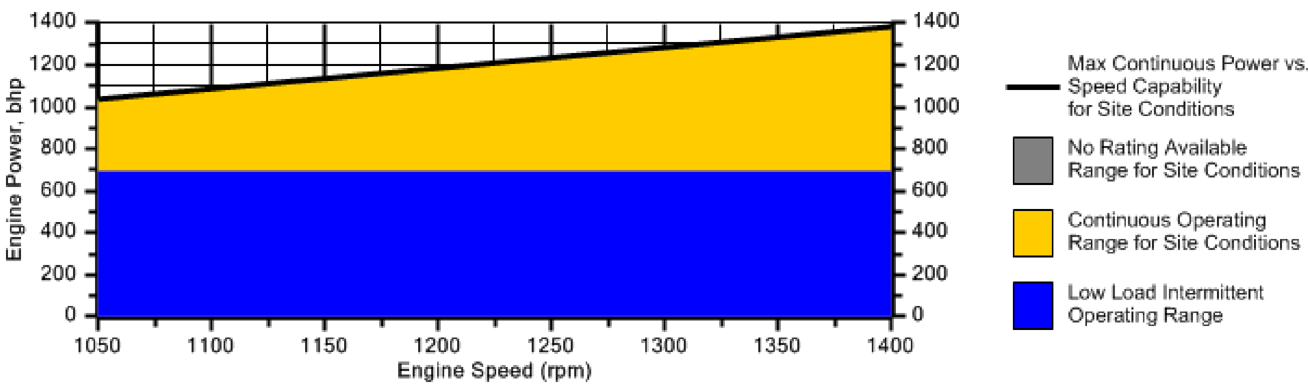
Engine rating obtained and presented in accordance with ISO 3046/1, adjusted for fuel, site altitude and site inlet air temperature. 100% rating at maximum inlet air temperature is the maximum engine capability for the specified fuel at site altitude and maximum site inlet air temperature. Max. rating is the maximum capability for the specified fuel at site altitude and reduced inlet air temperature. Lowest load point is the lowest continuous duty operating load allowed. No overload permitted at rating shown.

For notes information consult page three.

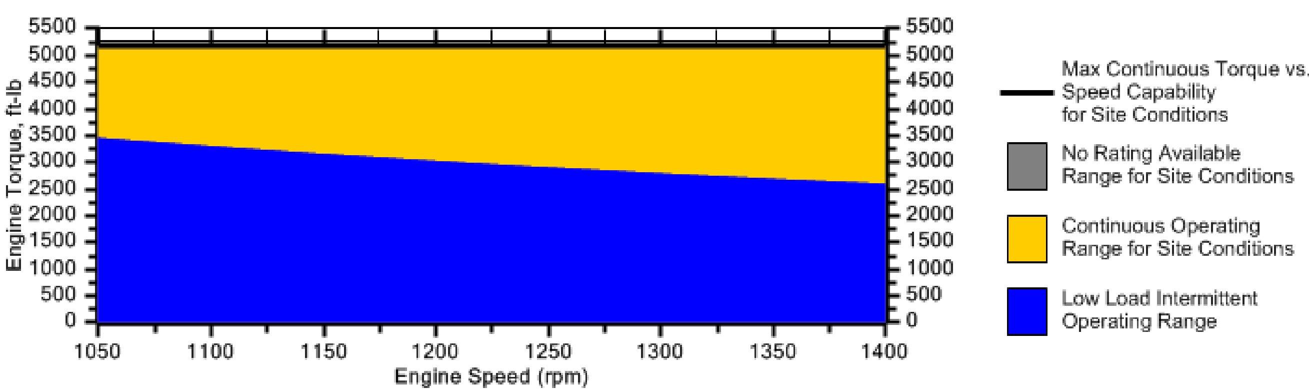
Engine Power vs. Inlet Air Temperature
Data represents temperature sweep at 500 ft and 1400 rpm



Engine Power vs. Engine Speed
Data represents speed sweep at 500 ft and 77 °F



Engine Torque vs. Engine Speed
Data represents speed sweep at 500 ft and 77 °F



Note: At site conditions of 500 ft and 77°F inlet air temp., constant torque can be maintained down to 1050 rpm. The minimum speed for loading at these conditions is 1050 rpm.

NOTES

1. Engine rating is with two engine driven water pumps. Tolerance is ± 3% of full load.

2. Fuel consumption tolerance is ± 3.0% of full load data.

3. Air flow value is on a 'wet' basis. Flow is a nominal value with a tolerance of ± 5 %.

4. Inlet and Exhaust Restrictions must not exceed A&I limits based on full load flow rates from the standard technical data sheet.

5. Inlet manifold pressure is a nominal value with a tolerance of ± 5 %.

6. Exhaust temperature is a nominal value with a tolerance of (+)63°F, (-)54°F.

7. Exhaust flow value is on a "wet" basis. Flow is a nominal value with a tolerance of ± 6 %.

8. Emissions data is at engine exhaust flange prior to any after treatment.

9. Emission values are based on engine operating at steady state conditions. Fuel methane number cannot vary more than ± 3. Values listed are higher than nominal levels to allow for instrumentation, measurement, and engine-to-engine variations. They indicate "Not to Exceed" values. THC, NMHC, and NMNEHC do not include aldehydes. An oxidation catalyst may be required to meet Federal, State or local CO or HC requirements.

10. VOCs - Volatile organic compounds as defined in US EPA 40 CFR 60, subpart JJJJ

11. Exhaust Oxygen level is the result of adjusting the engine to operate at the specified NOx level. Tolerance is ± 0.5.

12. Heat rejection values are nominal. Tolerances, based on treated water, are ± 10% for jacket water circuit, ± 50% for radiation, ± 20% for lube oil circuit, and ± 5% for aftercooler circuit.

13. Aftercooler heat rejection includes an aftercooler heat rejection factor for the site elevation and inlet air temperature specified. Aftercooler heat rejection values at part load are for reference only. Do not use part load data for heat exchanger sizing.

14. Cooling system sizing criteria are maximum circuit heat rejection for the site, with applied tolerances.

Constituent	Abbrev	Mole %	Norm
Water Vapor	H2O	0.0000	0.0000
Methane	CH4	92.2700	92.2700
Ethane	C2H6	2.5000	2.5000
Propane	C3H8	0.5000	0.5000
Isobutane	iso-C4H1O	0.0000	0.0000
Norbutane	nor-C4H1O	0.2000	0.2000
Isopentane	iso-C5H12	0.0000	0.0000
Norpentane	nor-C5H12	0.1000	0.1000
Hexane	C6H14	0.0500	0.0500
Heptane	C7H16	0.0000	0.0000
Nitrogen	N2	3.4800	3.4800
Carbon Dioxide	CO2	0.9000	0.9000
Hydrogen Sulfide	H2S	0.0000	0.0000
Carbon Monoxide	CO	0.0000	0.0000
Hydrogen	H2	0.0000	0.0000
Oxygen	O2	0.0000	0.0000
Helium	HE	0.0000	0.0000
Neopentane	neo-C5H12	0.0000	0.0000
Octane	C8H18	0.0000	0.0000
Nonane	C9H20	0.0000	0.0000
Ethylene	C2H4	0.0000	0.0000
Propylene	C3H6	0.0000	0.0000
TOTAL (Volume %)		100.0000	100.0000

Fuel Makeup:	Nat Gas
Unit of Measure:	English

Calculated Fuel Properties

Caterpillar Methane Number:	84.8
Lower Heating Value (Btu/scf):	905
Higher Heating Value (Btu/scf):	1004
WOBBE Index (Btu/scf):	1168
THC: Free Inert Ratio:	21.83
Total % Inerts (% N2, CO2, He):	4.38%
RPC (%) (To 905 Btu/scf Fuel):	100%
Compressibility Factor:	0.998
Stoich A/F Ratio (Vol/Vol):	9.45
Stoich A/F Ratio (Mass/Mass):	15.75
Specific Gravity (Relative to Air):	0.600
Specific Heat Constant (K):	1.313

CONDITIONS AND DEFINITIONS

Caterpillar Methane Number represents the knock resistance of a gaseous fuel. It should be used with the Caterpillar Fuel Usage Guide for the engine and rating to determine the rating for the fuel specified. A Fuel Usage Guide for each rating is included on page 2 of its standard technical data sheet.

RPC always applies to naturally aspirated (NA) engines, and turbocharged (TA or LE) engines only when they are derated for altitude and ambient site conditions.

Project specific technical data sheets generated by the Caterpillar Gas Engine Rating Pro program take the Caterpillar Methane Number and RPC into account when generating a site rating.

Fuel properties for Btu/scf calculations are at 60F and 14.696 psia.

FUEL LIQUIDS

Field gases, well head gases, and associated gases typically contain liquid water and heavy hydrocarbons entrained in the gas. To prevent detonation and severe damage to the engine, hydrocarbon liquids must not be allowed to enter the engine fuel system. To remove liquids, a liquid separator and coalescing filter are recommended, with an automatic drain and collection tank to prevent contamination of the ground in accordance with local codes and standards.

To avoid water condensation in the engine or fuel lines, limit the relative humidity of water in the fuel to 80% at the minimum fuel operating temperature.

Table 1 to Subpart JJJJ of Part 60—NO_X, CO, and VOC Emission Standards for Stationary Non-Emergency SI Engines ≥100 HP (Except Gasoline and Rich Burn LPG), Stationary SI Landfill/Digester Gas Engines, and Stationary Emergency Engines >25 HP

Engine type and fuel	Maximum engine power	Manufacture date	Emission standards[a]					
			g/HP-hr			ppmvd at 15% O_2		
			NO_X	CO	VOC[d]	NO_X	CO	VOC[d]
Non-Emergency SI Natural Gas[b] and Non-Emergency SI Lean Burn LPG[b]	100≤HP<500	7/1/2008	2.0	4.0	1.0	160	540	86
		1/1/2011	1.0	2.0	0.7	82	270	60
Non-Emergency SI Lean Burn Natural Gas and LPG	500≤HP<1,350	1/1/2008	2.0	4.0	1.0	160	540	86
		7/1/2010	1.0	2.0	0.7	82	270	60
Non-Emergency SI Natural Gas and Non-Emergency SI Lean Burn LPG (except lean burn 500≤HP<1,350)	HP≥500	7/1/2007	2.0	4.0	1.0	160	540	86
	HP≥500	7/1/2010	1.0	2.0	0.7	82	270	60
Landfill/Digester Gas (except lean burn 500≤HP<1,350)	HP<500	7/1/2008	3.0	5.0	1.0	220	610	80
		1/1/2011	2.0	5.0	1.0	150	610	80
	HP≥500	7/1/2007	3.0	5.0	1.0	220	610	80
		7/1/2010	2.0	5.0	1.0	150	610	80
Landfill/Digester Gas Lean Burn	500≤HP<1,350	1/1/2008	3.0	5.0	1.0	220	610	80
		7/1/2010	2.0	5.0	1.0	150	610	80
Emergency	25<HP<130	1/1/2009	[c]10	387	N/A	N/A	N/A	N/A
	HP≥130		2.0	4.0	1.0	160	540	86

[a]Owners and operators of stationary non-certified SI engines may choose to comply with the emission standards in units of either g/HP-hr or ppmvd at 15 percent O_2.

[b]Owners and operators of new or reconstructed non-emergency lean burn SI stationary engines with a site rating of greater than or equal to 250 brake HP located at a major source that are meeting the requirements of 40 CFR part 63, subpart ZZZZ, Table 2a do not have to comply with the CO emission standards of Table 1 of this subpart.

[c]The emission standards applicable to emergency engines between 25 HP and 130 HP are in terms of NO_X + HC.

[d]For purposes of this subpart, when calculating emissions of volatile organic compounds, emissions of formaldehyde should not be included.

Table 1.4-1. EMISSION FACTORS FOR NITROGEN OXIDES (NO_x) AND CARBON MONOXIDE (CO) FROM NATURAL GAS COMBUSTION[a]

Combustor Type (MMBtu/hr Heat Input) [SCC]	NO_x[b]		CO	
	Emission Factor (lb/10^6 scf)	Emission Factor Rating	Emission Factor (lb/10^6 scf)	Emission Factor Rating
Large Wall-Fired Boilers (>100) [1-01-006-01, 1-02-006-01, 1-03-006-01]				
Uncontrolled (Pre-NSPS)[c]	280	A	84	B
Uncontrolled (Post-NSPS)[c]	190	A	84	B
Controlled - Low NO_x burners	140	A	84	B
Controlled - Flue gas recirculation	100	D	84	B
Small Boilers (<100) [1-01-006-02, 1-02-006-02, 1-03-006-02, 1-03-006-03]				
Uncontrolled	100	B	84	B
Controlled - Low NO_x burners	50	D	84	B
Controlled - Low NO_x burners/Flue gas recirculation	32	C	84	B
Tangential-Fired Boilers (All Sizes) [1-01-006-04]				
Uncontrolled	170	A	24	C
Controlled - Flue gas recirculation	76	D	98	D
Residential Furnaces (<0.3) [No SCC]				
Uncontrolled	94	B	40	B

[a] Reference 11. Units are in pounds of pollutant per million standard cubic feet of natural gas fired. To convert from lb/10^6 scf to kg/10^6 m^3, multiply by 16. Emission factors are based on an average natural gas higher heating value of 1,020 Btu/scf. To convert from 1b/10^6 scf to lb/MMBtu, divide by 1,020. The emission factors in this table may be converted to other natural gas heating values by multiplying the given emission factor by the ratio of the specified heating value to this average heating value. SCC = Source Classification Code. ND = no data. NA = not applicable.

[b] Expressed as NO_2. For large and small wall fired boilers with SNCR control, apply a 24 percent reduction to the appropriate NO_x emission factor. For tangential-fired boilers with SNCR control, apply a 13 percent reduction to the appropriate NO_x emission factor.

[c] NSPS=New Source Performance Standard as defined in 40 CFR 60 Subparts D and Db. Post-NSPS units are boilers with greater than 250 MMBtu/hr of heat input that commenced construction modification, or reconstruction after August 17, 1971, and units with heat input capacities between 100 and 250 MMBtu/hr that commenced construction modification, or reconstruction after June 19, 1984.

TABLE 1.4-2. EMISSION FACTORS FOR CRITERIA POLLUTANTS AND GREENHOUSE GASES FROM NATURAL GAS COMBUSTION[a]

Pollutant	Emission Factor ($lb/10^6$ scf)	Emission Factor Rating
CO_2[b]	120,000	A
Lead	0.0005	D
N_2O (Uncontrolled)	2.2	E
N_2O (Controlled-low-NO_X burner)	0.64	E
PM (Total)[c]	7.6	D
PM (Condensable)[c]	5.7	D
PM (Filterable)[c]	1.9	B
SO_2[d]	0.6	A
TOC	11	B
Methane	2.3	B
VOC	5.5	C

[a] Reference 11. Units are in pounds of pollutant per million standard cubic feet of natural gas fired. Data are for all natural gas combustion sources. To convert from $lb/10^6$ scf to $kg/10^6$ m^3, multiply by 16. To convert from $lb/10^6$ scf to 1b/MMBtu, divide by 1,020. The emission factors in this table may be converted to other natural gas heating values by multiplying the given emission factor by the ratio of the specified heating value to this average heating value. TOC = Total Organic Compounds. VOC = Volatile Organic Compounds.

[b] Based on approximately 100% conversion of fuel carbon to CO_2. CO_2[$lb/10^6$ scf] = (3.67) (CON) (C)(D), where CON = fractional conversion of fuel carbon to CO_2, C = carbon content of fuel by weight (0.76), and D = density of fuel, $4.2x10^4$ $lb/10^6$ scf.

[c] All PM (total, condensible, and filterable) is assumed to be less than 1.0 micrometer in diameter. Therefore, the PM emission factors presented here may be used to estimate PM_{10}, $PM_{2.5}$ or PM_1 emissions. Total PM is the sum of the filterable PM and condensible PM. Condensible PM is the particulate matter collected using EPA Method 202 (or equivalent). Filterable PM is the particulate matter collected on, or prior to, the filter of an EPA Method 5 (or equivalent) sampling train.

[d] Based on 100% conversion of fuel sulfur to SO_2.
Assumes sulfur content is natural gas of 2,000 grains/10^6 scf. The SO_2 emission factor in this table can be converted to other natural gas sulfur contents by multiplying the SO_2 emission factor by the ratio of the site-specific sulfur content (grains/10^6 scf) to 2,000 grains/10^6 scf.

TABLE 1.4-3. EMISSION FACTORS FOR SPECIATED ORGANIC COMPOUNDS FROM NATURAL GAS COMBUSTION[a]

CAS No.	Pollutant	Emission Factor ($lb/10^6$ scf)	Emission Factor Rating
91-57-6	2-Methylnaphthalene[b, c]	2.4E-05	D
56-49-5	3-Methylchloranthrene[b, c]	<1.8E-06	E
	7,12-Dimethylbenz(a)anthracene[b,c]	<1.6E-05	E
83-32-9	Acenaphthene[b,c]	<1.8E-06	E
203-96-8	Acenaphthylene[b,c]	<1.8E-06	E
120-12-7	Anthracene[b,c]	<2.4E-06	E
56-55-3	Benz(a)anthracene[b,c]	<1.8E-06	E
71-43-2	Benzene[b]	2.1E-03	B
50-32-8	Benzo(a)pyrene[b,c]	<1.2E-06	E
205-99-2	Benzo(b)fluoranthene[b,c]	<1.8E-06	E
191-24-2	Benzo(g,h,i)perylene[b,c]	<1.2E-06	E
205-82-3	Benzo(k)fluoranthene[b,c]	<1.8E-06	E
106-97-8	Butane	2.1E+00	E
218-01-9	Chrysene[b,c]	<1.8E-06	E
53-70-3	Dibenzo(a,h)anthracene[b,c]	<1.2E-06	E
25321-22-6	Dichlorobenzene[b]	1.2E-03	E
74-84-0	Ethane	3.1E+00	E
206-44-0	Fluoranthene[b,c]	3.0E-06	E
86-73-7	Fluorene[b,c]	2.8E-06	E
50-00-0	Formaldehyde[b]	7.5E-02	B
110-54-3	Hexane[b]	1.8E+00	E
193-39-5	Indeno(1,2,3-cd)pyrene[b,c]	<1.8E-06	E
91-20-3	Naphthalene[b]	6.1E-04	E
109-66-0	Pentane	2.6E+00	E
85-01-8	Phenanathrene[b,c]	1.7E-05	D

TABLE 1.4-3. EMISSION FACTORS FOR SPECIATED ORGANIC COMPOUNDS FROM NATURAL GAS COMBUSTION (Continued)

CAS No.	Pollutant	Emission Factor ($lb/10^6$ scf)	Emission Factor Rating
74-98-6	Propane	1.6E+00	E
129-00-0	Pyrene[b, c]	5.0E-06	E
108-88-3	Toluene[b]	3.4E-03	C

[a] Reference 11. Units are in pounds of pollutant per million standard cubic feet of natural gas fired. Data are for all natural gas combustion sources. To convert from $lb/10^6$ scf to $kg/10^6$ m^3, multiply by 16. To convert from $1b/10^6$ scf to lb/MMBtu, divide by 1,020. Emission Factors preceeded with a less-than symbol are based on method detection limits.

[b] Hazardous Air Pollutant (HAP) as defined by Section 112(b) of the Clean Air Act.

[c] HAP because it is Polycyclic Organic Matter (POM). POM is a HAP as defined by Section 112(b) of the Clean Air Act.

[d] The sum of individual organic compounds may exceed the VOC and TOC emission factors due to differences in test methods and the availability of test data for each pollutant.

Table 3.2-2. UNCONTROLLED EMISSION FACTORS FOR 4-STROKE LEAN-BURN ENGINES[a]
(SCC 2-02-002-54)

Pollutant	Emission Factor (lb/MMBtu)[b] (fuel input)	Emission Factor Rating
Criteria Pollutants and Greenhouse Gases		
NO_x[c] 90 - 105% Load	4.08 E+00	B
NO_x[c] <90% Load	8.47 E-01	B
CO[c] 90 - 105% Load	3.17 E-01	C
CO[c] <90% Load	5.57 E-01	B
CO_2[d]	1.10 E+02	A
SO_2[e]	5.88 E-04	A
TOC[f]	1.47 E+00	A
Methane[g]	1.25 E+00	C
VOC[h]	1.18 E-01	C
PM10 (filterable)[i]	7.71 E-05	D
PM2.5 (filterable)[i]	7.71 E-05	D
PM Condensable[j]	9.91 E-03	D
Trace Organic Compounds		
1,1,2,2-Tetrachloroethane[k]	<4.00 E-05	E
1,1,2-Trichloroethane[k]	<3.18 E-05	E
1,1-Dichloroethane	<2.36 E-05	E
1,2,3-Trimethylbenzene	2.30 E-05	D
1,2,4-Trimethylbenzene	1.43 E-05	C
1,2-Dichloroethane	<2.36 E-05	E
1,2-Dichloropropane	<2.69 E-05	E
1,3,5-Trimethylbenzene	3.38 E-05	D
1,3-Butadiene[k]	2.67E-04	D
1,3-Dichloropropene[k]	<2.64 E-05	E
2-Methylnaphthalene[k]	3.32 E-05	C
2,2,4-Trimethylpentane[k]	2.50 E-04	C
Acenaphthene[k]	1.25 E-06	C

Table 3.2-2. UNCONTROLLED EMISSION FACTORS FOR 4-STROKE LEAN-BURN ENGINES (Continued)

Pollutant	Emission Factor (lb/MMBtu)[b] (fuel input)	Emission Factor Rating
Acenaphthylene[k]	5.53 E-06	C
Acetaldehyde[k,l]	8.36 E-03	A
Acrolein[k,l]	5.14 E-03	A
Benzene[k]	4.40 E-04	A
Benzo(b)fluoranthene[k]	1.66 E-07	D
Benzo(e)pyrene[k]	4.15 E-07	D
Benzo(g,h,i)perylene[k]	4.14 E-07	D
Biphenyl[k]	2.12 E-04	D
Butane	5.41 E-04	D
Butyr/Isobutyraldehyde	1.01 E-04	C
Carbon Tetrachloride[k]	<3.67 E-05	E
Chlorobenzene[k]	<3.04 E-05	E
Chloroethane	1.87 E-06	D
Chloroform[k]	<2.85 E-05	E
Chrysene[k]	6.93 E-07	C
Cyclopentane	2.27 E-04	C
Ethane	1.05 E-01	C
Ethylbenzene[k]	3.97 E-05	B
Ethylene Dibromide[k]	<4.43 E-05	E
Fluoranthene[k]	1.11 E-06	C
Fluorene[k]	5.67 E-06	C
Formaldehyde[k,l]	5.28 E-02	A
Methanol[k]	2.50 E-03	B
Methylcyclohexane	1.23 E-03	C
Methylene Chloride[k]	2.00 E-05	C
n-Hexane[k]	1.11 E-03	C
n-Nonane	1.10 E-04	C

Table 3.2-2. UNCONTROLLED EMISSION FACTORS FOR 4-STROKE LEAN-BURN ENGINES
(Continued)

Pollutant	Emission Factor (lb/MMBtu)[b] (fuel input)	Emission Factor Rating
n-Octane	3.51 E-04	C
n-Pentane	2.60 E-03	C
Naphthalene[k]	7.44 E-05	C
PAH[k]	2.69 E-05	D
Phenanthrene[k]	1.04 E-05	D
Phenol[k]	2.40 E-05	D
Propane	4.19 E-02	C
Pyrene[k]	1.36 E-06	C
Styrene[k]	<2.36 E-05	E
Tetrachloroethane[k]	2.48 E-06	D
Toluene[k]	4.08 E-04	B
Vinyl Chloride[k]	1.49 E-05	C
Xylene[k]	1.84 E-04	B

[a] Reference 7. Factors represent uncontrolled levels. For NO_x, CO, and PM10, “uncontrolled” means no combustion or add-on controls; however, the factor may include turbocharged units. For all other pollutants, “uncontrolled” means no oxidation control; the data set may include units with control techniques used for NOx control, such as PCC and SCR for lean burn engines, and PSC for rich burn engines. Factors are based on large population of engines. Factors are for engines at all loads, except as indicated. SCC = Source Classification Code. TOC = Total Organic Compounds. PM-10 = Particulate Matter $\leq$ 10 microns (μm) aerodynamic diameter. A “<“ sign in front of a factor means that the corresponding emission factor is based on one-half of the method detection limit.

[b] Emission factors were calculated in units of (lb/MMBtu) based on procedures in EPA Method 19. To convert from (lb/MMBtu) to (lb/10^6 scf), multiply by the heat content of the fuel. If the heat content is not available, use 1020 Btu/scf. To convert from (lb/MMBtu) to (lb/hp-hr) use the following equation:

$$\text{lb/hp-hr} = (\text{lb/MMBtu})\ (\text{heat input, MMBtu/hr})\ (\text{1/operating HP, 1/hp})$$

[c] Emission tests with unreported load conditions were not included in the data set.

[d] Based on 99.5% conversion of the fuel carbon to CO_2. CO_2 [lb/MMBtu] = (3.67)(%CON)(C)(D)(1/h), where %CON = percent conversion of fuel carbon to CO_2, C = carbon content of fuel by weight (0.75), D = density of fuel, 4.1 E+04 lb/10^6 scf, and

Table 3.2-3. UNCONTROLLED EMISSION FACTORS FOR 4-STROKE RICH-BURN ENGINES[a]
(SCC 2-02-002-53)

Pollutant	Emission Factor (lb/MMBtu)[b] (fuel input)	Emission Factor Rating
Criteria Pollutants and Greenhouse Gases		
NO_x[c] 90 - 105% Load	2.21 E+00	A
NO_x[c] <90% Load	2.27 E+00	C
CO[c] 90 - 105% Load	3.72 E+00	A
CO[c] <90% Load	3.51 E+00	C
CO_2[d]	1.10 E+02	A
SO_2[e]	5.88 E-04	A
TOC[f]	3.58 E-01	C
Methane[g]	2.30 E-01	C
VOC[h]	2.96 E-02	C
PM10 (filterable)[i,j]	9.50 E-03	E
PM2.5 (filterable)[j]	9.50 E-03	E
PM Condensable[k]	9.91 E-03	E
Trace Organic Compounds		
1,1,2,2-Tetrachloroethane[l]	2.53 E-05	C
1,1,2-Trichloroethane[l]	<1.53 E-05	E
1,1-Dichloroethane	<1.13 E-05	E
1,2-Dichloroethane	<1.13 E-05	E
1,2-Dichloropropane	<1.30 E-05	E
1,3-Butadiene[l]	6.63 E-04	D
1,3-Dichloropropene[l]	<1.27 E-05	E
Acetaldehyde[l,m]	2.79 E-03	C
Acrolein[l,m]	2.63 E-03	C
Benzene[l]	1.58 E-03	B
Butyr/isobutyraldehyde	4.86 E-05	D
Carbon Tetrachloride[l]	<1.77 E-05	E

Table 3.2-3. UNCONTROLLED EMISSION FACTORS FOR 4-STROKE RICH-BURN ENGINES (Concluded)

Pollutant	Emission Factor (lb/MMBtu)[b] (fuel input)	Emission Factor Rating
Chlorobenzene[l]	<1.29 E-05	E
Chloroform[l]	<1.37 E-05	E
Ethane[n]	7.04 E-02	C
Ethylbenzene[l]	<2.48 E-05	E
Ethylene Dibromide[l]	<2.13 E-05	E
Formaldehyde[l,m]	2.05 E-02	A
Methanol[l]	3.06 E-03	D
Methylene Chloride[l]	4.12 E-05	C
Naphthalene[l]	<9.71 E-05	E
PAH[l]	1.41 E-04	D
Styrene[l]	<1.19 E-05	E
Toluene[l]	5.58 E-04	A
Vinyl Chloride[l]	<7.18 E-06	E
Xylene[l]	1.95 E-04	A

[a] Reference 7. Factors represent uncontrolled levels. For NO_x, CO, and PM-10, "uncontrolled" means no combustion or add-on controls; however, the factor may include turbocharged units. For all other pollutants, "uncontrolled" means no oxidation control; the data set may include units with control techniques used for NOx control, such as PCC and SCR for lean burn engines, and PSC for rich burn engines. Factors are based on large population of engines. Factors are for engines at all loads, except as indicated. SCC = Source Classification Code. TOC = Total Organic Compounds. PM10 = Particulate Matter $\leq$ 10 microns (μm) aerodynamic diameter. A "<" sign in front of a factor means that the corresponding emission factor is based on one-half of the method detection limit.

[b] Emission factors were calculated in units of (lb/MMBtu) based on procedures in EPA Method 19. To convert from (lb/MMBtu) to (lb/10^6 scf), multiply by the heat content of the fuel. If the heat content is not available, use 1020 Btu/scf. To convert from (lb/MMBtu) to (lb/hp-hr) use the following equation:

$$\text{lb/hp-hr} = (\text{lb/MMBtu})\,(\text{heat input, MMBtu/hr})\,(1/\text{operating HP, 1/hp})$$

[c] Emission tests with unreported load conditions were not included in the data set.

[d] Based on 99.5% conversion of the fuel carbon to CO_2. CO_2 [lb/MMBtu] = (3.67)(%CON)(C)(D)(1/h), where %CON = percent conversion of fuel carbon to CO_2,

C = carbon content of fuel by weight (0.75), D = density of fuel, 4.1 E+04 lb/10^6 scf, and h = heating value of natural gas (assume 1020 Btu/scf at 60°F).

[e] Based on 100% conversion of fuel sulfur to SO_2. Assumes sulfur content in natural gas of 2,000 gr/10^6scf.

[f] Emission factor for TOC is based on measured emission levels from 6 source tests.

[g] Emission factor for methane is determined by subtracting the VOC and ethane emission factors from the TOC emission factor.

[h] VOC emission factor is based on the sum of the emission factors for all speciated organic compounds. Methane and ethane emissions were not measured for this engine category.

[i] No data were available for uncontrolled engines. PM10 emissions are for engines equipped with a PCC.

[j] Considered $\leq$ 1 μm in aerodynamic diameter. Therefore, for filterable PM emissions, PM10(filterable) = PM2.5(filterable).

[k] No data were available for condensable emissions. The presented emission factor reflects emissions from 4SLB engines.

[l] Hazardous Air Pollutant as defined by Section 112(b) of the Clean Air Act.

[m] For rich-burn engines, no interference is suspected in quantifying aldehyde emissions. The presented emission factors are based on FTIR and CARB 430 emissions data measurements.

[n] Ethane emission factor is determined by subtracting the VOC emission factor from the NMHC emission factor.

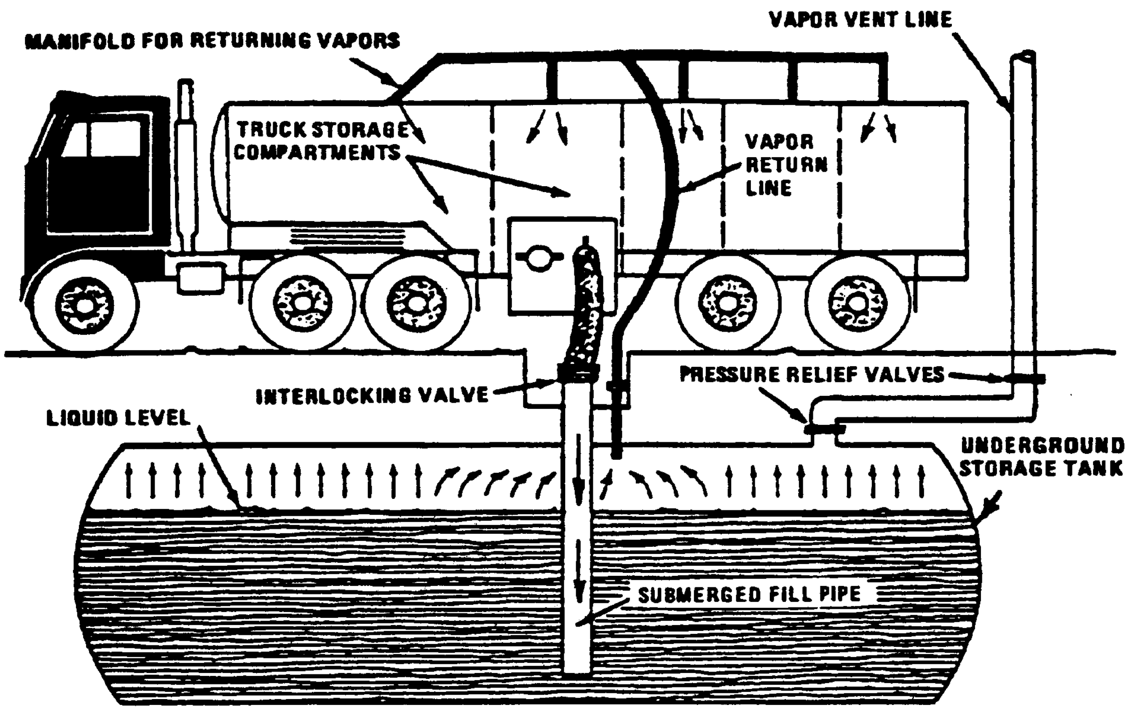


Figure 5.2-5. Tank truck unloading into a service station underground storage tank and practicing "vapor balance" form of emission control.

Table 5.2-1. SATURATION (S) FACTORS FOR CALCULATING PETROLEUM LIQUID LOADING LOSSES

Cargo Carrier	Mode Of Operation	S Factor
Tank trucks and rail tank cars	Submerged loading of a clean cargo tank	0.50
	Submerged loading: dedicated normal service	0.60
	Submerged loading: dedicated vapor balance service	1.00
	Splash loading of a clean cargo tank	1.45
	Splash loading: dedicated normal service	1.45
	Splash loading: dedicated vapor balance service	1.00
Marine vessels[a]	Submerged loading: ships	0.2
	Submerged loading: barges	0.5

[a] For products other than gasoline and crude oil. For marine loading of gasoline, use factors from Table 5.2-2. For marine loading of crude oil, use Equations 2 and 3 and Table 5.2-3.

Table 7.1-2. PROPERTIES (M_V, P_{VA}, W_L) OF SELECTED PETROLEUM LIQUIDS[a]

Petroleum Liquid	Vapor Molecular Weight at 60°F, M_V (lb/lb-mole)	Liquid Density At 60°F, W_L (lb/gal)	True Vapor Pressure, P_{VA} (psi)						
			40°F	50°F	60°F	70°F	80°F	90°F	100°F
Crude oil RVP 5	50	7.1	1.8	2.3	2.8	3.4	4.0	4.8	5.7
Distillate fuel oil No. 2	130	7.1	0.0031	0.0045	0.0065	0.0090	0.012	0.016	0.022
Gasoline RVP 7	68	5.6	2.3	2.9	3.5	4.3	5.2	6.2	7.4
Gasoline RVP 7.8	68	5.6	2.5929	3.2079	3.9363	4.793	5.7937	6.9552	8.2952
Gasoline RVP 8.3	68	5.6	2.7888	3.444	4.2188	5.1284	6.1891	7.4184	8.8344
Gasoline RVP 10	66	5.6	3.4	4.2	5.2	6.2	7.4	8.8	10.5
Gasoline RVP 11.5	65	5.6	4.087	4.9997	6.069	7.3132	8.7519	10.4053	12.2949
Gasoline RVP 13	62	5.6	4.7	5.7	6.9	8.3	9.9	11.7	13.8
Gasoline RVP 13.5	62	5.6	4.932	6.0054	7.2573	8.7076	10.3774	12.2888	14.4646
Gasoline RVP 15.0	60	5.6	5.5802	6.774	8.1621	9.7656	11.6067	13.7085	16.0948
Jet kerosene	130	7.0	0.0041	0.0060	0.0085	0.011	0.015	0.021	0.029
Jet naphtha (JP-4)	80	6.4	0.8	1.0	1.3	1.6	1.9	2.4	2.7
Residual oil No. 6	190	7.9	0.00002	0.00003	0.00004	0.00006	0.00009	0.00013	0.00019

[a] References 10 and 11

Table 13.5-1 (English Units). THC, NOx AND SOOT EMISSIONS FACTORS FOR FLARE OPERATIONS[a]

EMISSIONS FACTOR RATING: B

Pollutant	SCC[d]	Emissions Factor Value	Emissions Factor Units
Total hydrocarbons[b]	30190099; 30119701; 30119705; 30119709; 30119741	0.14	$lb/10^6$ Btu
Nitrogen oxides[c]		0.068	$lb/10^6$ Btu
Soot[c]		0 - 274	µg/L

[a] Reference 1. Based on tests using crude propylene containing 80% propylene and 20% propane.
[b] Measured as methane equivalent. The THC emissions factor may not be appropriate for reporting VOC emissions when a VOC emissions factor exists.
[c] Soot in concentration values: nonsmoking flares, 0 micrograms per liter (µg/L); lightly smoking flares, 40 µg/L; average smoking flares, 177 µg/L; and heavily smoking flares, 274 µg/L.
[d] See Table 13.5-3 for a description of these SCCs.

Table 13.5-2 (English Units). VOC and CO EMISSIONS FACTORS FOR FLARE OPERATIONS[a]

Pollutant	SCC[d]	Emissions Factor (lb/10^6 Btu)	Representativeness
Volatile organic compounds[b]	30190099; 30600904; 30119701; 30119705; 30119709; 30119741; 30119799; 30130115; 30600201; 30600401; 30600508; 30600903; 30600999; 30601701; 30601801; 30688801; 40600240	0.66	Poorly
Carbon monoxide[c]		0.31	Poorly

[a] These factors apply to well operated flares achieving at least 98% destruction efficiency and operating in compliance with the current General Provisions requirements of 40 CFR Part 60, i.e. >300 btu/scf net heating value in the vent gas and less than the specified maximum flare tip velocity. The VOC emissions factor data set had an average destruction efficiency of 98.9%, and the CO emissions factor data set had an average destruction efficiency of 99.1% (based on test reports where destruction efficiency was provided). These factors are based on steam-assisted and air-assisted flares burning a variety of vent gases.
[b] References 4-9 and 11.
[c] References 1, 4-8 and 11.
[d] See Table 13.5-3 for a description of these SCCs.

The following empirical expressions may be used to estimate the quantity in pounds (lb) of size-specific particulate emissions from an unpaved road, per vehicle mile traveled (VMT):

For vehicles traveling on unpaved surfaces at industrial sites, emissions are estimated from the following equation:

$$E = k\ (s/12)^a (W/3)^b \tag{1a}$$

and, for vehicles traveling on publicly accessible roads, dominated by light duty vehicles, emissions may be estimated from the following:

$$E = \frac{k\ (s/12)^a (S/30)^d}{(M/0.5)^c} - C \tag{1b}$$

where k, a, b, c and d are empirical constants (Reference 6) given below and

E = size-specific emission factor (lb/VMT)
s = surface material silt content (%)
W = mean vehicle weight (tons)
M = surface material moisture content (%)
S = mean vehicle speed (mph)
C = emission factor for 1980's vehicle fleet exhaust, brake wear and tire wear.

The source characteristics s, W and M are referred to as correction parameters for adjusting the emission estimates to local conditions. The metric conversion from lb/VMT to grams (g) per vehicle kilometer traveled (VKT) is as follows:

1 lb/VMT = 281.9 g/VKT

The constants for Equations 1a and 1b based on the stated aerodynamic particle sizes are shown in Tables 13.2.2-2 and 13.2.2-4. The PM-2.5 particle size multipliers (k-factors) are taken from Reference 27.

Table 13.2.2-2. CONSTANTS FOR EQUATIONS 1a AND 1b

Constant	Industrial Roads (Equation 1a)			Public Roads (Equation 1b)		
	PM-2.5	PM-10	PM-30*	PM-2.5	PM-10	PM-30*
k (lb/VMT)	0.15	1.5	4.9	0.18	1.8	6.0
a	0.9	0.9	0.7	1	1	1
b	0.45	0.45	0.45	-	-	-
c	-	-	-	0.2	0.2	0.3
d	-	-	-	0.5	0.5	0.3
Quality Rating	B	B	B	B	B	B

*Assumed equivalent to total suspended particulate matter (TSP)
"-" = not used in the emission factor equation

Table 13.2.2-2 also contains the quality ratings for the various size-specific versions of Equation 1a and 1b. The equation retains the assigned quality rating, if applied within the ranges of source conditions, shown in Table 13.2.2-3, that were tested in developing the equation:

Table 13.2.2-3. RANGE OF SOURCE CONDITIONS USED IN DEVELOPING EQUATION 1a AND 1b

Emission Factor	Surface Silt Content, %	Mean Vehicle Weight		Mean Vehicle Speed		Mean No. of Wheels	Surface Moisture Content, %
		Mg	ton	km/hr	mph		
Industrial Roads (Equation 1a)	1.8-25.2	1.8-260	2-290	8-69	5-43	4-17[a]	0.03-13
Public Roads (Equation 1b)	1.8-35	1.4-2.7	1.5-3	16-88	10-55	4-4.8	0.03-13

[a] See discussion in text.

As noted earlier, the models presented as Equations 1a and 1b were developed from tests of traffic on unpaved surfaces. Unpaved roads have a hard, generally nonporous surface that usually dries quickly after a rainfall or watering, because of traffic-enhanced natural evaporation. (Factors influencing how fast a road dries are discussed in Section 13.2.2.3, below.) The quality ratings given above pertain to the mid-range of the measured source conditions for the equation. A higher mean vehicle weight and a higher than normal traffic rate may be justified when performing a worst-case analysis of emissions from unpaved roads.

The emission factors for the exhaust, brake wear and tire wear of a 1980's vehicle fleet (*C*) was obtained from EPA's MOBILE6.2 model [23]. The emission factor also varies with aerodynamic size range

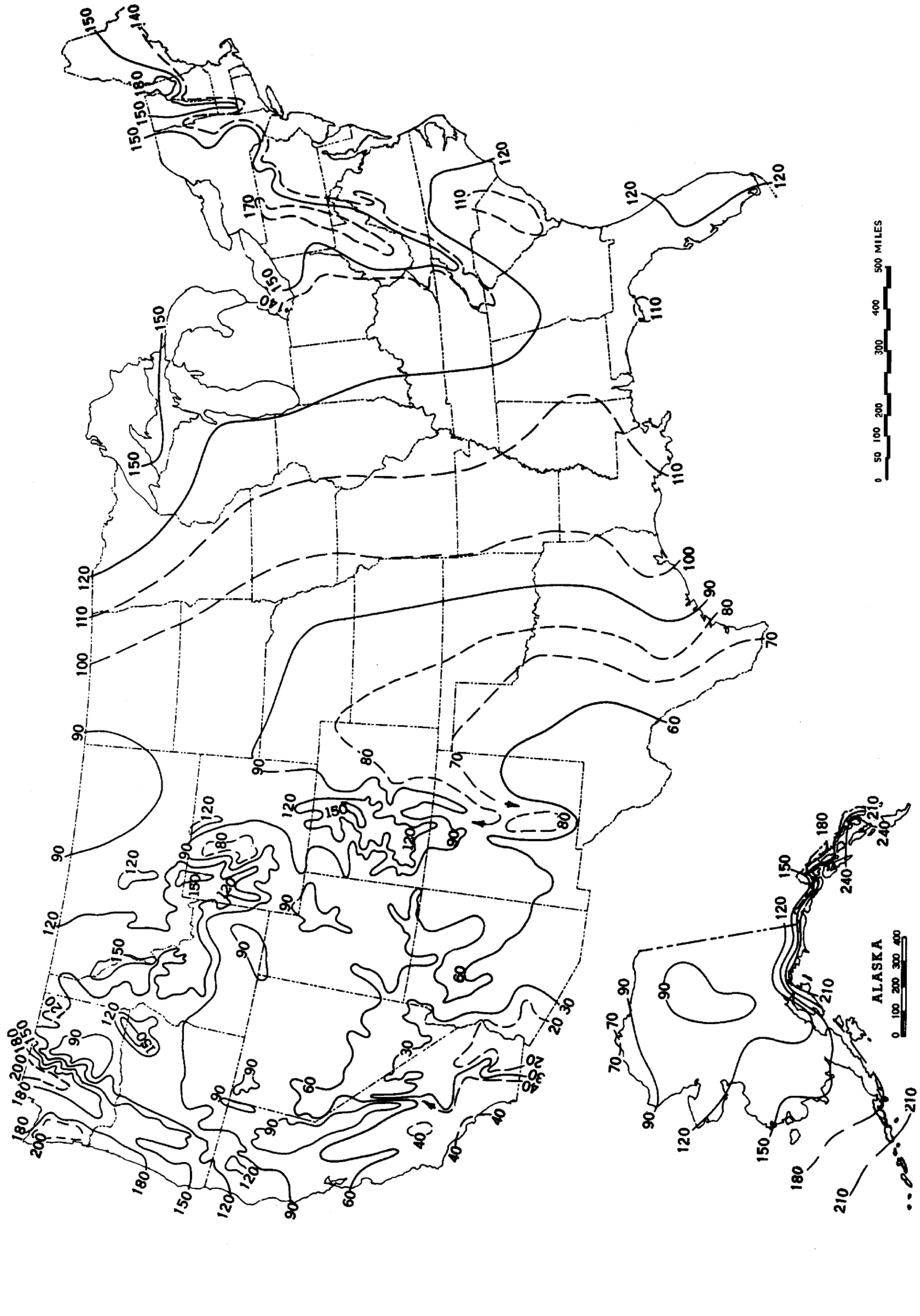


Figure 13.2.2-1. Mean number of days with 0.01 inch or more of precipitation in United States.

Component - Count Totals by Regulation-Proc Unit (RPT 570)

Count of components by regulation and Proc Unit

Site: **3 Bear Libby Gas Plant**
Proc Unit: CONDENSATE STABILIZATIO
Regulation: NSPS OOOOa
As of Date: 8/12/2019 11:59:59 PM

Equip Cat	Chemical State	Mon Frequency	Vis Frequency	EX	DM	UM	Explanation (EX | DM | UM)	CVS	NDE	Tag Count
Compressor	Vapor	Yearly (Mar)	Never (SS)	☐	☐	☐		☐	☑	1
Connector	Heavy Liquid	Yearly (Mar)	Never (SS)	☐	☐	☐		☐	☐	2
Connector	Light Liquid	Yearly (Mar)	Never (SS)	☐	☐	☐		☐	☐	302
Connector	Vapor	Yearly (Mar)	Never (SS)	☐	☐	☐		☐	☐	304
CVS w/Hard Pipi	Light Liquid	Yearly (Mar)	Never (SS)	☐	☐	☐		☐	☐	20
CVS w/Hard Pipi	Vapor	Yearly (Mar)	Never (SS)	☐	☐	☐		☐	☐	37
Press Relief Dev	Light Liquid	Never (SS)	Never (SS)	☑	☐	☐	ex:Vented to Flare (EV)	☐	☐	7
Press Relief Dev	Vapor	Never (SS)	Never (SS)	☑	☐	☐	ex:Vented to Flare (EV)	☐	☐	7
Press Relief Dev	Vapor	Never (SS)	Never (SS)	☑	☐	☐	ex:Exempt - to process (EV)	☐	☐	1
Pump	Light Liquid	Monthly (SS)	Weekly (SS)	☐	☐	☐		☐	☐	4
Valve	Light Liquid	3rd month Quarte	Never (SS)	☐	☐	☐		☐	☐	164
Valve	Vapor	3rd month Quarte	Never (SS)	☐	☐	☐		☐	☐	147
									Proc Unit Total:	**996**

Component - Count Totals by Regulation-Proc Unit (RPT 570)

Count of components by regulation and Proc Unit

Site: **3 Bear Libby Gas Plant**
Proc Unit: CRYOGENICS PROCESS
Regulation: NSPS OOOOa
As of Date: 8/12/2019 11:59:59 PM

Equip Cat	Chemical State	Mon Frequency	Vis Frequency	EX	DM	UM	Explanation (EX | DM | UM)	CVS	NDE	Tag Count
Compressor	Vapor	Yearly (Feb)	Never (SS)	☐	☐	☐		☐	☐	1
Connector	Light Liquid	Yearly (Feb)	Never (SS)	☐	☐	☐		☐	☐	896
Connector	Vapor	Yearly (Feb)	Never (SS)	☐	☐	☐		☐	☐	962
Connector	Light Liquid	Yearly (Mar)	Never (SS)	☐	☐	☐		☐	☐	156
Connector	Vapor	Yearly (Mar)	Never (SS)	☐	☐	☐		☐	☐	56
Connector	Vapor	Yearly (Mar)	Never (SS)	☐	☐	☐		☑	☐	10
CVS w/Hard Pipi	Vapor	Yearly (Feb)	Never (SS)	☐	☐	☐		☐	☐	104
Press Relief Dev	Vapor	3rd month Quarte	Never (SS)	☐	☐	☐		☐	☐	9
Press Relief Dev	Light Liquid	Never (SS)	Never (SS)	☑	☐	☐	ex:Vented to Flare (EV)	☑	☐	1
Press Relief Dev	Light Liquid	Never (SS)	Never (SS)	☑	☐	☐	ex:Exempt - to process (LL)	☐	☐	12
Press Relief Dev	Vapor	Never (SS)	Never (SS)	☑	☐	☐	ex:Vented to Flare (EV)	☑	☐	9
Press Relief Dev	Vapor	Never (SS)	Never (SS)	☑	☐	☐	ex:Exempt - to process (EV)	☐	☐	3
Pump	Light Liquid	Monthly (SS)	Weekly (SS)	☐	☐	☐		☐	☐	8
Pump	Light Liquid	Yearly (Mar)	Never (SS)	☐	☐	☐		☐	☑	2
Valve	Light Liquid	2nd month Quart	Never (SS)	☐	☐	☐		☐	☐	390
Valve	Vapor	2nd month Quart	Never (SS)	☐	☐	☐		☐	☐	415
Valve	Light Liquid	3rd month Quarte	Never (SS)	☐	☐	☐		☐	☐	70
Valve	Vapor	3rd month Quarte	Never (SS)	☐	☐	☐		☐	☐	18
Valve	Vapor	Yearly (Feb)	Never (SS)	☐	☑	☐	dm:Personnel elevated > 2M to monitor	☐	☐	1
Valve	Vapor	Yearly (Mar)	Never (SS)	☐	☐	☐		☑	☐	2
									Proc Unit Total:	**3125**

Component - Count Totals by Regulation-Proc Unit (RPT 570)

Count of components by regulation and Proc Unit

Site: **3 Bear Libby Gas Plant**
Proc Unit: GAS TREATING
Regulation: NSPS OOOOa
As of Date: 8/12/2019 11:59:59 PM

Equip Cat	Chemical State	Mon Frequency	Vis Frequency	EX	DM	UM	Explanation (EX | DM | UM)	CVS	NDE	Tag Count
Connector	Light Liquid	Yearly (Jan)	Never (SS)	☐	☐	☐		☐	☐	11
Connector	Vapor	Yearly (Jan)	Never (SS)	☐	☐	☐		☐	☐	161
CVS w/Hard Pipi	Vapor	Yearly (Jan)	Never (SS)	☐	☐	☐		☐	☐	46
Press Relief Dev	Vapor	Never (SS)	Never (SS)	☑	☐	☐	ex:Vented to Flare (EV)	☐	☐	11
Valve	Light Liquid	1st month Quarte	Never (SS)	☐	☐	☐		☐	☐	6
Valve	Vapor	1st month Quarte	Never (SS)	☐	☐	☐		☐	☐	96
Valve	Vapor	Yearly (Jan)	Never (SS)	☐	☑	☐	dm:Personnel elevated > 2M to monitor	☐	☐	1
Valve	Vapor	Yearly (Jan)	Never (SS)	☐	☐	☐		☐	☑	2
									Proc Unit Total:	**334**

00291

Component - Count Totals by Regulation-Proc Unit (RPT 570)

Count of components by regulation and Proc Unit

Site: **3 Bear Libby Gas Plant**
Proc Unit: INLET GAS PROCESSING
Regulation: NSPS OOOOa
As of Date: 8/12/2019 11:59:59 PM

Equip Cat	Chemical State	Mon Frequency	Vis Frequency	EX	DM	UM	Explanation (EX | DM | UM)	CVS	NDE	Tag Count
Connector	Light Liquid	Yearly (Jan)	Never (SS)	☐	☐	☐		☐	☐	72
Connector	Vapor	Yearly (Jan)	Never (SS)	☐	☐	☐		☐	☐	157
CVS w/Hard Pipi	Vapor	Yearly (Jan)	Never (SS)	☐	☐	☐		☐	☐	2
Press Relief Dev	Vapor	Never (SS)	Never (SS)	☑	☐	☐	ex:Vented to Flare (EV)	☐	☐	1
Valve	Light Liquid	1st month Quarte	Never (SS)	☐	☐	☐		☐	☐	54
Valve	Vapor	1st month Quarte	Never (SS)	☐	☐	☐		☐	☐	81
									Proc Unit Total:	**367**
									Site Total:	**4822**

TABLE 2-4. OIL AND GAS PRODUCTION OPERATIONS AVERAGE EM SS N FACTORS (kg/hr/source)

Equipment Type	Service[a]	Emission Factor (kg/hr/sourc)[b]
Valves	Gas	4.5E-03
	Heavy Oil	8.4E-06
	Light Oil	2.5E-03
	Water/Oil	9.8E-05
Pump seals	Gas	2.4E-03
	Heavy Oil	NA
	Light Oil	1.3E-02
	Water/Oil	2.4E-05
Others[c]	Gas	8.8E-03
	Heavy Oil	3.2E-05
	Light Oil	7.5E-03
	Water/Oil	1.4E-02
Connectors	Gas	2.0E-04
	Heavy Oil	7.5E-06
	Light Oil	2.1E-04
	Water/Oil	1.1E-04
Flanges	Gas	3.9E-04
	Heavy Oil	3.9E-07
	Light Oil	1.1E-04
	Water/Oil	2.9E-06
Open-ended lines	Gas	2.0E-03
	Heavy Oil	1.4E-04
	Light Oil	1.4E-03
	Water/Oil	2.5E-04

[a]Water/Oil emission factors apply to water streams in oil servic with a water content greater than 50%, from the point of origin to the point where the water content reaches 99%. For water streams with a water content greater than 99%, the emission rat is considered negligible.

[b]These factors are for total organic compound emission rat s (including non-VOC's such as methane and ethane) and apply to light crude, heavy crude, gas plant, gas production, and off shore facilities. "NA" indicates that not enough data were available to develop the indicated emission factor.

[c]The "other" equipment type was derived from compressors, diaphrams, drains, dump arms, hatches, instruments, meters, pressure relief valves, polished rods, relief valves, and v nts This "other" equipment type should be applied for any equipm nt type other than connectors, flanges, open-ended lines, pumps, or valves.

4.0 What Are the Benefits of an LDAR Program?

When the LDAR requirements were developed, EPA estimated that petroleum refineries could reduce emissions from equipment leaks by 63% by implementing a facility LDAR program. Additionally, EPA estimated that chemical facilities could reduce VOC emissions by 56% by implementing such a program.

Table 4.1 presents the control effectiveness of an LDAR program for different monitoring intervals and leak definitions at chemical process units and petroleum refineries.

Emissions reductions from implementing an LDAR program potentially reduce product losses, increase safety for workers and operators, decrease exposure of the surrounding community, reduce emissions fees, and help facilities avoid enforcement actions.

Example – Emissions reductions at a typical SOCMI facility.

Applying the equipment modifications and LDAR requirements of the HON to the sources of uncontrolled emissions in the typical facility presented in Tables 3.2 and 3.3 would reduce the emissions per facility by approximately 582 tons per year of emissions, an 89% reduction.

Table 4.1 – Control effectiveness for an LDAR program at a chemical process unit and a refinery.

Equipment Type and Service	Control Effectiveness (% Reduction)		
	Monthly Monitoring 10,000 ppmv Leak Definition	Quarterly Monitoring 10,000 ppmv Leak Definition	500 ppm Leak Definition[a]
Chemical Process Unit			
Valves – Gas Service[b]	87	67	92
Valves – Light Liquid Service[c]	84	61	88
Pumps – Light Liquid Service[c]	69	45	75
Connectors – All Services			93
Refinery			
Valves – Gas Service[b]	88	70	96
Valves – Light Liquid Service[c]	76	61	95
Pumps – Light Liquid Service[c]	68	45	88
Connectors – All Services			81

Source: Protocol for Equipment Leak Emission Estimates, EPA-453/R-95-017, Nov 1995.

[a] Control effectiveness attributable to the HON-negotiated equipment leak regulation (40 CFR 63, Subpart H) is estimated based on equipment-specific leak definitions and performance levels. However, pumps subject to the HON at existing process units have a 1,000 to 5,000 ppm leak definition, depending on the type of process.
[b] Gas (vapor) service means the material in contact with the equipment component is in a gaseous state at the process operating conditions.
[c] Light liquid service means the material in contact with the equipment component is in a liquid state in which the sum of the concentration of individual constituents with a vapor pressure above 0.3 kilopascals (kPa) at 20°C is greater than or equal to 20% by weight.

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Emission Factors for Oil and Gas Production Operations

STEP Strategies for Today's Environmental Partnership

American Petroleum Institute

possible in all cases to determine whether the corrected screening values were zero or some number between 1 and 9 ppmv. To be conservative, they were assumed to have screening values of 10 ppmv above background. Emissions from connections and open end lines in this group were calculated using the appropriate EPA default zeros; emission rates for flanges, pumps, valves, and other components in this category were calculated at a screening value of 10 ppmv. Table 4 shows the emission rates used to calculate the emissions of these components.

Table 4. Emission Rates Used for "Non-Emitters" (lb/component-day)

	EPA Default Zero	Equivalent Equation ppmv	Non-Emitter ppmv used	Non-Emitter Emission Rate used
Connection	0.000441	10.25	10.25	0.000441
Flange	0.000528	3.18	10.00	0.001183
Open End	0.000671	12.40	12.40	0.000671
Pump	0.001621	0.48	10.00	0.010348
Valve	0.000644	9.50	10.00	0.000671
Others	0.000209	0.13	10.00	0.002703

"Others" category includes instruments, loading arms, pressure relief valves, stuffing boxes, compressor seals, dump lever arms, and vents.

Adjustment for Flange and Other Connector Designations. The API 1993 database separates components as connection, valve, open-ended line, pump seal, compressor seal, pressure relief valve, instrument, hatch, polished rod stuffing box, dump lever arm, vent, meter, and drain. The database does not differentiate between non-emitting connections and non-emitting flanges; both types of components are included in a single category. Calculations in this report are based on a division of the connections into two categories: flange and other connections. Table 5 shows the assumptions used for assigning components to each category. These assumptions were based on component counts at sites 21 through 24 and additional inventory work at two light crude production sites. The sensitivity of the emission factors to these assumptions is discussed later in this report.

Table 5. Assumptions for Dividing API Connections by Type

Type of Site	Connection	Flange
Onshore Light Crude Production	71%	29%
Onshore Heavy Crude Production	71%	29%
Onshore Gas Production	86%	14%
Onshore Gas Plants	70%	30%
Offshore Oil and Gas Production	79%	21%

Table 6–5. Fugitive CH_4 Emission Factors for Natural Gas Processing Equipment

Equipment Basis	Reference CH_4 Emission Factor [a,b], Original Units		Uncertainty [c] (± %)	CH_4 Emission Factor [d], Converted Units	
Gas processing volume [e]	130.563	scf/MMscf processed	58.1	2.50E-03	tonne/MMscf processed
				8.84E-02	tonne/10^6 m^3 processed
Reciprocating compressors	11,198	scfd/compressor	95.2	8.95E-03	tonne/compressor-hr
Centrifugal compressors	21,230	scfd/compressor	51.8	1.70E-02	tonne/compressor-hr

Footnotes and Sources:

[a] Harrison, M.R., L.M. Campbell, T.M. Shires, and R.M. Cowgill. *Methane Emissions from the Natural Gas Industry, Volume 2: Technical Report*, Final Report, GRI-94/0257.1 and EPA-600/R-96-080b. Gas Research Institute and U.S. Environmental Protection Agency, June 1996.

[b] Hummel, K.E., L.M. Campbell, and M.R. Harrison. *Methane Emissions from the Natural Gas Industry, Volume 8: Equipment Leaks,* Final Report, GRI-94/0257.25 and EPA-600/R-96-080h. Gas Research Institute and U.S. Environmental Protection Agency, June 1996.

[c] Uncertainty is based on a 95% confidence interval from the data used to develop the original emission factor.

[d] Emission factors converted from scfy are based on 60 °F and 14.7 psia. The average CH_4 concentration associated with these emission factors provided in Table E-4 is 86.8 mole %. If the actual CH_4 content differs from the default value, the emission factors shown above can be adjusted by the ratio of the site CH_4 content to the default concentration.

[e] See derivation in Appendix C.

and outer diameter greater than or equal to 2.375 inch.

Tubing systems means piping equal to or less than one half inch diameter as per nominal pipe size.

Turbine meter means a flow meter in which a gas or liquid flow rate through the calibrated tube spins a turbine from which the spin rate is detected and calibrated to measure the fluid flow rate.

Vented emissions means intentional or designed releases of CH_4 or CO_2 containing natural gas or hydrocarbon gas (not including stationary combustion flue gas), including process designed flow to the atmosphere through seals or vent pipes, equipment blowdown for maintenance, and direct venting of gas used to power equipment (such as pneumatic devices).

Vertical well means a well bore that is primarily vertical but has some unintentional deviation or one or more intentional deviations to enter one or more subsurface targets that are offset horizontally from the surface location, intercepting the targets either vertically or at an angle.

Well testing venting and flaring means venting and/or flaring of natural gas at the time the production rate of a well is determined for regulatory, commercial, or technical purposes. If well testing is conducted immediately after well completion or workover, then it is considered part of well completion or workover.

[75 FR 74488, Nov. 30, 2010, as amended at 76 FR 80590, Dec. 23, 2011]

TABLE W–1A OF SUBPART W—DEFAULT WHOLE GAS EMISSION FACTORS FOR ONSHORE PETROLEUM AND NATURAL GAS PRODUCTION

Onshore petroleum and natural gas production	Emission factor (scf/hour/component)
Eastern U.S.	
Population Emission Factors—All Components, Gas Service [1]	
Valve	0.640
Connector	0.083
Open-ended Line	1.46
Pressure Relief Valve	0.97
Low Continuous Bleed Pneumatic Device Vents [2]	1.39
High Continuous Bleed Pneumatic Device Vents [2]	37.3
Intermittent Bleed Pneumatic Device Vents [2]	13.5
Pneumatic Pumps [3]	10.3
Population Emission Factors—All Components, Light Crude Service [4]	
Valve	0.04
Flange	0.002
Connector	0.005
Open-ended Line	0.04
Pump	0.01
Other [5]	0.23
Population Emission Factors—All Components, Heavy Crude Service [6]	
Valve	0.0004
Flange	0.0007
Connector (other)	0.0002
Open-ended Line	0.004
Other [5]	0.002
Western U.S.	
Population Emission Factors—All Components, Gas Service [1]	
Valve	2.903
Connector	0.396
Open-ended Line	0.748
Pressure Relief Valve	4.631
Low Continuous Bleed Pneumatic Device Vents [2]	1.77
High Continuous Bleed Pneumatic Device Vents [2]	47.4
Intermittent Bleed Pneumatic Device Vents [2]	17.1
Pneumatic Pumps [3]	10.3

Onshore petroleum and natural gas production	Emission factor (scf/hour/ component)
Population Emission Factors—All Components, Light Crude Service [4]	
Valve	0.04
Flange	0.002
Connector	0.005
Open-ended Line	0.04
Pump	0.01
Other [5]	0.23
Population Emission Factors—All Components, Heavy Crude Service [6]	
Valve	0.0004
Flange	0.0007
Connector (other)	0.0002
Open-ended Line	0.004
Other [5]	0.002

[1] For multi-phase flow that includes gas, use the gas service emissions factors.
[2] Emission Factor is in units of ''scf/hour/device.''
[3] Emission Factor is in units of ''scf/hour/pump.''
[4] Hydrocarbon liquids greater than or equal to 20°API are considered ''light crude.''
[5] ''Others'' category includes instruments, loading arms, pressure relief valves, stuffing boxes, compressor seals, dump lever arms, and vents.
[6] Hydrocarbon liquids less than 20°API are considered ''heavy crude.''

[76 FR 80591, Dec. 23, 2011]

TABLE W–1B TO SUBPART W OF PART 98—DEFAULT AVERAGE COMPONENT COUNTS FOR MAJOR ONSHORE NATURAL GAS PRODUCTION EQUIPMENT

Major equipment	Valves	Connectors	Open-ended lines	Pressure relief valves
Eastern U.S.				
Wellheads	8	38	0.5	0
Separators	1	6	0	0
Meters/piping	12	45	0	0
Compressors	12	57	0	0
In-line heaters	14	65	2	1
Dehydrators	24	90	2	2
Western U.S.				
Wellheads	11	36	1	0
Separators	34	106	6	2
Meters/piping	14	51	1	1
Compressors	73	179	3	4
In-line heaters	14	65	2	1
Dehydrators	24	90	2	2

TABLE W–1C TO SUBPART W OF PART 98—DEFAULT AVERAGE COMPONENT COUNTS FOR MAJOR CRUDE OIL PRODUCTION EQUIPMENT

Major equipment	Valves	Flanges	Connectors	Open-ended lines	Other components
Eastern U.S.					
Wellhead	5	10	4	0	1
Separator	6	12	10	0	0
Heater-treater	8	12	20	0	0
Header	5	10	4	0	0
Western U.S.					
Wellhead	5	10	4	0	1
Separator	6	12	10	0	0
Heater-treater	8	12	20	0	0
Header	5	10	4	0	0

TABLE W–1D OF SUBPART W OF PART 98—DESIGNATION OF EASTERN AND WESTERN U.S.

Eastern U.S.	Western U.S.
Connecticut	Alabama
Delaware	Alaska
Florida	Arizona
Georgia	Arkansas
Illinois	California
Indiana	Colorado
Kentucky	Hawaii
Maine	Idaho
Maryland	Iowa
Massachusetts	Kansas
Michigan	Louisiana
New Hampshire	Minnesota
New Jersey	Mississippi
New York	Missouri

TABLE W–1D OF SUBPART W OF PART 98—DESIGNATION OF EASTERN AND WESTERN U.S.—Continued

Eastern U.S.	Western U.S.
North Carolina	Montana
Ohio	Nebraska
Pennsylvania	Nevada
Rhode Island	New Mexico
South Carolina	North Dakota
Tennessee	Oklahoma
Vermont	Oregon
Virginia	South Dakota
West Virginia	Texas
Wisconsin	Utah
	Washington
	Wyoming

TABLE W–2 OF SUBPART W—DEFAULT TOTAL HYDROCARBON EMISSION FACTORS FOR ONSHORE NATURAL GAS PROCESSING

Onshore natural gas processing plants	Emission factor (scf/hour/component)
Leaker Emission Factors—Compressor Components, Gas Service	
Valve [1]	14.84
Connector	5.59
Open-Ended Line	17.27
Pressure Relief Valve	39.66
Meter	19.33
Leaker Emission Factors—Non-Compressor Components, Gas Service	
Valve [1]	6.42
Connector	5.71
Open-Ended Line	11.27
Pressure Relief Valve	2.01
Meter	2.93

[1] Valves include control valves, block valves and regulator valves.

[76 FR 80592, Dec. 23, 2011]

TABLE W–3 OF SUBPART W—DEFAULT TOTAL HYDROCARBON EMISSION FACTORS FOR ONSHORE NATURAL GAS TRANSMISSION COMPRESSION

Onshore natural gas transmission compression	Emission factor (scf/hour/component)
Leaker Emission Factors—Compressor Components, Gas Service	
Valve [1]	14.84
Connector	5.59
Open-Ended Line	17.27
Pressure Relief Valve	39.66
Meter	19.33
Leaker Emission Factors—Non-Compressor Components, Gas Service	
Valve [1]	6.42
Connector	5.71
Open-Ended Line	11.27
Pressure Relief Valve	2.01
Meter	2.93
Population Emission Factors—Gas Service	
Low Continuous Bleed Pneumatic Device Vents [2]	1.37
High Continuous Bleed Pneumatic Device Vents [2]	18.20

Inlet Gas Analysis

LABORATORY SERVICES

www.permianls.com

575.397.3713 2609 W MARLAND HOBBS, NEW MEXICO 88240

EXTENDED GAS REPORT
SUMMARY OF CHROMATOGRAPHIC ANALYSIS

Sample Name:	Libby Gas Plant		**For:**	3 Bear
Sample Date:	01/09/2019		**Identification:**	Before Upstream Amine
Sampled By:	RH		**Company:**	3 Bear
Time Sampled:	14:10		**Analysis Date:**	01/11/2019
Sample Temp:	63.5 F		**Analysis By:**	TG
Sample Press:	907.0	**H_2S (PPM) = 4.0**	**Data File:**	LS_2253.D

Component	Mole%	GPM REAL	GPM IDEAL
H_2S	0.000		
Nitrogen	1.712		
Methane	61.850		
CO2	1.209		
Ethane	15.957	4.266	4.257
Propane	11.391	3.137	3.130
Isobutane	1.639	0.536	0.535
N-Butane	4.167	1.313	1.310
Isopentane	0.854	0.312	0.312
N-Pentane	0.833	0.302	0.301
Hexanes+	0.388	0.148	0.148
Total	100.000	10.014	9.993

CALCULATED PARAMETERS

TOTAL ANALYSIS SUMMARY

MOLE WT:	25.679
VAPOR PRESS PSIA:	3245.3
SPECIFIC GRAVITY	
AIR = 1 (REAL):	0.8910
AIR = 1 (IDEAL):	0.8866
H2O = 1 (IDEAL):	0.389
REPORTED BASIS:	14.73
Unnormalized Total:	99.589

HEATING VALUE

BTU/CUFT (DRY)	1479.8
BTU/CUFT (WET)	1454.7

BTEX SUMMARY

WT% BENZENE	9.668
WT% TOLUENE	1.391
WT% E BENZENE	0.000
WT% XYLENES	0.000

LAB MANAGER

Constants: GPA 2145
Method(s): GPA 2286.m ; GPA 2172.m

Report Rev 18-05.16
Template: eC6+ Gas

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575.397.3713 2609 W MARLAND HOBBS, NEW MEXICO 88240

Sample Name: Libby Gas Plant
Company: 3 Bear

Data File: LS_2253.D

*ANALYSIS OF HEXANES PLUS

Component	MOLE%	WT%
2,2 DIMETHYL BUTANE	0.004	0.015
CYCLOPENTANE	0.051	0.155
2-METHYLPENTANE	0.081	0.260
3-METHYLPENTANE	0.039	0.129
HEXANE (C6)	0.064	0.216
DIMETHYLPENTANES	0.001	0.007
METHYLCYCLOPENTANE	0.036	0.117
2,2,3 TRIMETHYLBUTANE	0.000	0.000
BENZENE	0.041	0.123
CYCLOHEXANE	0.035	0.114
2-METHYLHEXANE	0.003	0.012
3-METHYLHEXANE	0.005	0.019
DIMETHYCYCLOPENTANES	0.002	0.007
HEPTANE (C7)	0.004	0.017
METHYLCYCLOHEXANE	0.009	0.036
2,5 DIMETHYLHEXANE	0.000	0.000
TOLUENE	0.005	0.019
2-METHYLHEPTANE	0.000	0.002
OTHER OCTANES	0.001	0.010
OCTANE (C8)	0.001	0.002
ETHYLCYCLOHEXANE	0.000	0.001
ETHYL BENZENE	0.000	0.001
M,P-XYLENE	0.000	0.001
O-XYLENE	0.000	0.000
OTHER NONANES	0.002	0.010
NONANE (C-9)	0.000	0.000
IC3 BENZENE	0.000	0.000
CYCLOOCTANE	0.000	0.000
NC3 BENZENE	0.000	0.000
TM BENZENE(S)	0.000	0.000
IC4 BENZENE	0.000	0.000
NC4 BENZENE	0.000	0.000
DECANES + (C10+)	0.000	0.002

*HEXANES PLUS SUMMARY

AVG MOLE WT	85.605
VAPOR PRESS PSIA	5.242
API GRAVITY @ 60F	67.8
SPECIFIC GRAVITY	
AIR = 1 (IDEAL):	2.952
H2O = 1 (IDEAL):	0.710

COMPONENT RATIOS

HEXANES	(C6)	MOLE%	60.745
HEPTANES	(C7)	MOLE%	33.955
OCTANES	(C8)	MOLE%	4.601
NONANES	(C9)	MOLE%	0.643
DECANES+	(C10+)	MOLE%	0.056

HEXANES	(C6)	WT%	59.909
HEPTANES	(C7)	WT%	33.723
OCTANES	(C8)	WT%	5.341
NONANES	(C9)	WT%	0.932
DECANES+	(C10+)	WT%	0.095

Remarks:

* Hexane+ portion calculated by Allocation Process

Constants: GPA 2145
Method(s): GPA 2286.m ; GPA 2172.m

Report Rev 18-05.16
Template: eC6+ Gas

Amine Gas Analysis

Stream		1	2	3	4	5	6	10	11	12	13
Water	mol %	0.04	90.11	0.29	86.48	6.18	7.14	86.56	86.56	86.56	90.05
Hydrogen Sulfide	mol %	0.01	0.00	0.0000004	0.00	0.01	0.10	0.00	0.00	0.00439	0.00
Carbon Dioxide	mol %	4.50	0.15	0.00010	4.06	16.85	92.54	4.04	4.04	4.04	0.16
GAS/SPEC CS-1160	mol %	0.00	9.74	0.00	9.37	0.00	0.00	9.38	9.38	9.38	9.79
Methane	mol %	65.72	0.00	68.64	0.07	55.84	0.14	0.01	0.01	0.01	0.00
Ethane	mol %	14.08	0.00	14.71	0.01	12.27	0.04	0.00	0.00	0.00	0.00
Propane	mol %	7.39	0.00	7.72	0.01	5.68	0.02	0.00	0.00	0.00	0.00
n-Butane	mol %	1.81	0.00	1.89	0.00	1.11	0.00	0.00	0.00	0.00	0.00
Isobutane	mol %	0.65	0.00	0.68	0.00	0.13	0.00	0.00	0.00	0.00	0.00
n-Pentane	mol %	0.28	0.00	0.29	0.00	0.13	0.00	0.00	0.00	0.00	0.00
Isopentane	mol %	0.29	0.00	0.30	0.00	0.08	0.00	0.00	0.00	0.00	0.00
n-Hexane	mol %	0.24	0.00	0.25	0.00	0.11	0.00	0.00	0.00	0.00	0.00
Nitrogen	mol %	5.00	0.00	5.23	0.00	1.62	0.00	0.00	0.00	0.00	0.00
** Total Flow	lbmol/hr	6588.22	7297.58	6300.82	7585.57	8.02	319.02	7577.55	7577.55	7577.55	7257.47
Frac Vapor		1.00	0.00	1.00	0.00	1.00	1.00	0.00	0.00	0.01	0.00
Molec Wt		23.47	27.17	22.50	27.84	25.10	42.10	27.84	27.84	27.84	27.22
Temperature	Fahrenheit	120.00	131.08	131.25	172.09	171.78	120.00	171.78	205.00	197.68	253.30
Pressure	psia	914.70	1014.70	910.54	914.70	89.70	24.04	89.70	84.70	34.70	27.96
Mass Flow	lb/hr	154646.71	198264.94	141744.57	211181.42	201.33	13430.16	210980.10	210980.10	210980.10	197531.27
Volume Flow	USgal/min		389.98		394.43			394.37			404.84
	MMSCFD	60.00		57.38		0.07	2.91				
Enthalpy	Btu/lb	-13.82	-694.34	-7.21	-657.11	35.93	8.50	-657.75	-631.26	-631.26	-585.30
Entropy	Btu/lb-R	-0.28	-0.96	-0.29	-0.91	0.03	0.01	-0.90	-0.86	-0.86	-0.78
Heat Capacity	Btu/lb-R	0.58	0.86	0.60	0.79	0.43	0.22	0.78			0.91
Density	lb/cuft	4.23	63.38	3.89	66.75	0.34	0.16	66.70	64.35	15.52	60.83
Viscosity	cP	0.01	2.40	0.01	1.52	0.01	0.02	1.52			0.71
Thermal Conductivity	Btu/hr-ft-F	0.02	0.26	0.02	0.27	0.02	0.01	0.27			0.28
Cp/Cv		1.52		1.48		1.25	1.29				
ZFactor		0.82		0.83		0.98	0.99				
Surface Tension	dyne/cm		47.70		44.76			44.78			38.63
Vapor Pressure	psi		2.02		867.32			89.70			27.96
pH			10.50		8.26			8.27			9.30
GAS/SPEC CS-1160	wt %		40.00		37.55			37.58			40.14
Hydrogen Sulfide	Loading		0.00		0.00			0.00			0.00
Carbon Dioxide	Loading		0.02		0.43			0.43			0.02

Residue Gas Analysis

Process Streams		47
Composition	**Status:**	**Solved**
Phase: **Total**	**From Block:**	**PIPE-1**
	To Block:	--
Mole Fraction		**%**
Methane		88.3822
Ethane		8.83026
Propane		0.623978
i-Butane		0.0202484
n-Butane		0.0321374
i-Pentane		0.00133883
n-Pentane		0.000955080
n-Hexane		9.18127E-05
n-Heptane		1.44007E-06
C8		1.09978E-07
Water		0
N2		2.10355
CO2		0.00508109
H2S		0.000132132
Triethylene Glycol		0
EG		0
MeOH		0
MDEA		0
CHEMTHERM 550		0

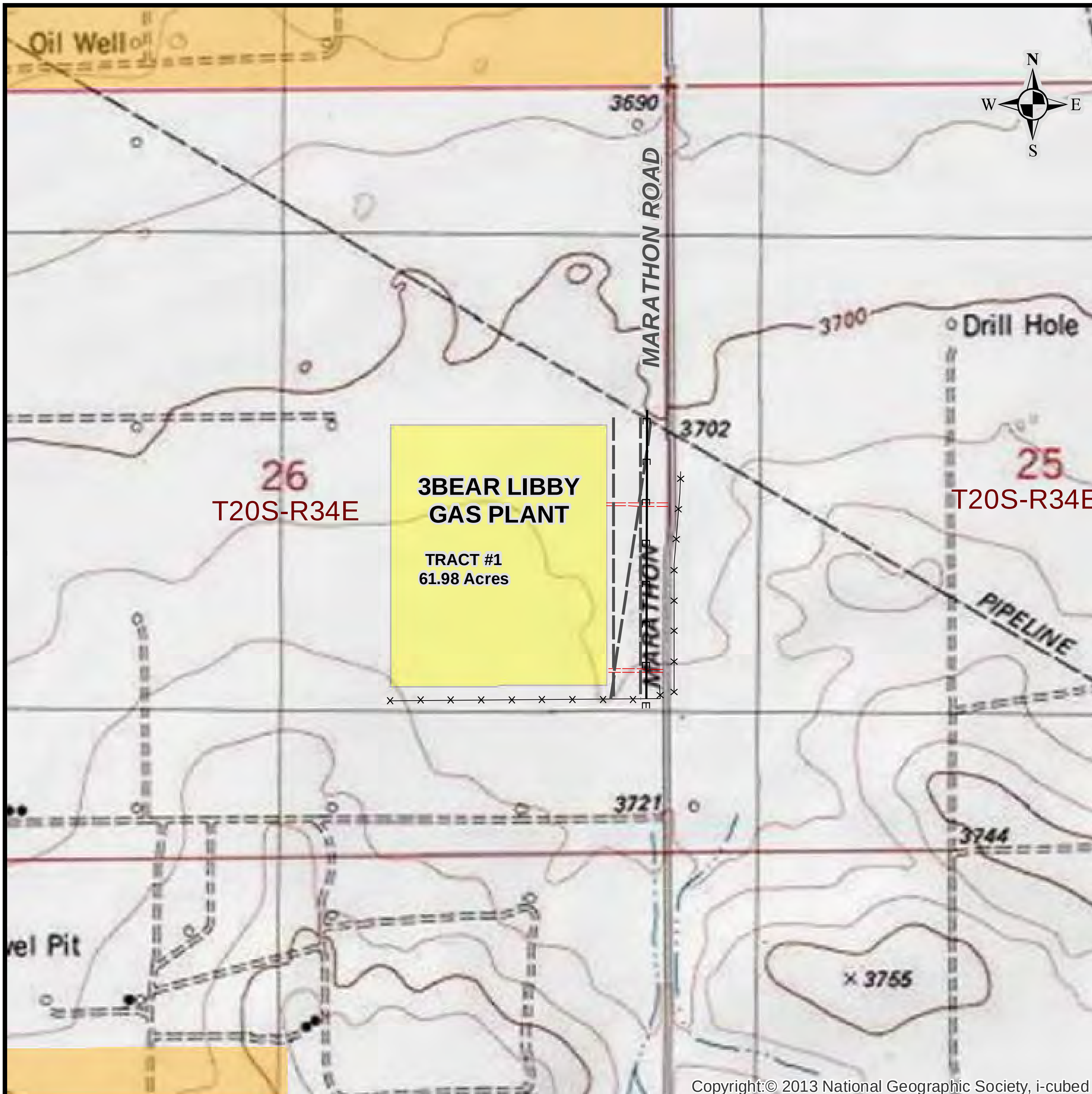
Section 8

Map(s)

A map such as a 7.5 minute topographic quadrangle showing the exact location of the source. The map shall also include the following:

The UTM or Longitudinal coordinate system on both axes	An indicator showing which direction is north
A minimum radius around the plant of 0.8km (0.5 miles)	Access and haul roads
Topographic features of the area	Facility property boundaries
The name of the map	The area which will be restricted to public access
A graphical scale	

A map is provided on the following page.



3BEAR LIBBY GAS PLANT
3BEAR DELAWARE OPERATING - NM, LLC

SECTION 26, T20S, R34E
LEA COUNTY, NEW MEXICO

- PROPOSED ACCESS ROAD
- OVERHEAD ELECTRIC
- EXISING PIPELINE
- EXISTING FENCE
- 3BEAR LIBBY COMPLEX - TRACT 1
- BLM LAND

1,000 500 0 1,000
Feet Feet

DATE: 9/1/2017

FILE: 3Bear-Libby-Gas-Plant-Topo

Coordinate System: NAD 1983 2011 StatePlane New Mexico East FIPS 3001 Ft US
Projection: Transverse Mercator
Datum: NAD 1983 2011

Section 9

Proof of Public Notice

(for NSR applications submitting under 20.2.72 or 20.2.74 NMAC)
(This proof is required by: 20.2.72.203.A.14 NMAC "Documentary Proof of applicant's public notice")

☑ **I have read the AQB "Guidelines for Public Notification for Air Quality Permit Applications"**
This document provides detailed instructions about public notice requirements for various permitting actions. It also provides public notice examples and certification forms. Material mistakes in the public notice will require a re-notice before issuance of the permit.

Unless otherwise allowed elsewhere in this document, the following items document proof of the applicant's Public Notification. Please include this page in your proof of public notice submittal with checkmarks indicating which documents are being submitted with the application.

New Permit and **Significant Permit Revision** public notices must include all items in this list.

Technical Revision public notices require only items 1, 5, 9, and 10.

Per the Guidelines for Public Notification document mentioned above, include:

1. ☑ A copy of the certified letter receipts with post marks (20.2.72.203.B NMAC)
2. ☑ A list of the places where the public notice has been posted in at least four publicly accessible and conspicuous places, including the proposed or existing facility entrance. (e.g: post office, library, grocery, etc.)
3. ☑ A copy of the property tax record (20.2.72.203.B NMAC).
4. ☑ A sample of the letters sent to the owners of record.
5. ☑ A sample of the letters sent to counties, municipalities, and Indian tribes.
6. ☑ A sample of the public notice posted and a verification of the local postings.
7. ☑ A table of the noticed citizens, counties, municipalities and tribes and to whom the notices were sent in each group.
8. ☑ A copy of the public service announcement (PSA) sent to a local radio station and documentary proof of submittal.
9. ☑ A copy of the classified or legal ad including the page header (date and newspaper title) or its affidavit of publication stating the ad date, and a copy of the ad. When appropriate, this ad shall be printed in both English and Spanish.
10. ☑ A copy of the display ad including the page header (date and newspaper title) or its affidavit of publication stating the ad date, and a copy of the ad. When appropriate, this ad shall be printed in both English and Spanish.
11. ☑ A map with a graphic scale showing the facility boundary and the surrounding area in which owners of record were notified by mail. This is necessary for verification that the correct facility boundary was used in determining distance for notifying land owners of record.

Certified Letter Receipts with Post Marks

7019 0140 0001 1140 8713

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For delivery information, visit our website at www.usps.com®.

CARLSBAD, NM 88220 OFFICIAL USE

Certified Mail Fee $	$3.50
Extra Services & Fees (check box, add fee as appropriate)	$2.80
☐ Return Receipt (hardcopy) $	$0.00
☐ Return Receipt (electronic) $	$0.00
☐ Certified Mail Restricted Delivery $	$0.00
☐ Adult Signature Required $	$0.00
☐ Adult Signature Restricted Delivery $	$0.00
Postage $	$0.70
Total Postage and Fees $	$7.00

0197
40
Postmark Here
FORT COLLINS CO 80521 AUG 28 2019 USPS
08/30/2019

Sent To Mr. + Mrs. Skeen
Street and Apt. No., or PO Box No. 1508 Riverside Dr.
City, State, ZIP+4® Carlsbad, NM 88220

PS Form 3800, April 2015 PSN 7530-02-000-9047 See Reverse for Instructions

7019 0140 0001 1140 8751

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EUNICE, NM 88231 OFFICIAL USE

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Extra Services & Fees (check box, add fee as appropriate)	$2.80
☐ Return Receipt (hardcopy) $	$0.00
☐ Return Receipt (electronic) $	$0.00
☐ Certified Mail Restricted Delivery $	$0.00
☐ Adult Signature Required $	$0.00
☐ Adult Signature Restricted Delivery $	
Postage $	$0.70
Total Postage and Fees $	$7.00

0197
40
Postmark Here
FORT COLLINS CO 80521 AUG 28 2019 USPS
08/30/2019

Sent To The Merchant Livestock Co., Inc.
Street and Apt. No., or PO Box No. PO Box 1105
City, State, ZIP+4® Eunice, NM 88231

PS Form 3800, April 2015 PSN 7530-02-000-9047 See Reverse for Instructions

7019 0140 0001 1140 8706

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CARLSBAD, NM 88220 OFFICIAL USE

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Extra Services & Fees (check box, add fee as appropriate)	$2.80
☐ Return Receipt (hardcopy) $	$0.00
☐ Return Receipt (electronic) $	$0.00
☐ Certified Mail Restricted Delivery $	$0.00
☐ Adult Signature Required $	$0.00
☐ Adult Signature Restricted Delivery $	$0.70
Postage $	
Total Postage and Fees $	$7.00

0197
40
Postmark Here
FORT COLLINS CO 80521 AUG 28 2019 USPS
08/30/2019

Sent To Ms. Skeen
Street and Apt. No., or PO Box No. 301 S. Canyon
City, State, ZIP+4® Carlsbad, NM 80220

PS Form 3800, April 2015 PSN 7530-02-000-9047 See Reverse for Instructions

7019 0140 0001 1140 8720

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Extra Services & Fees (check box, add fee as appropriate)	$2.80
☐ Return Receipt (hardcopy) $	$0.00
☐ Return Receipt (electronic) $	$0.00
☐ Certified Mail Restricted Delivery $	$0.00
☐ Adult Signature Required $	$0.00
☐ Adult Signature Restricted Delivery $	
Postage $	$0.70
Total Postage and Fees $	$7.00

0197
40
Postmark Here
FORT COLLINS CO 80521 AUG 28 2019 USPS
08/30/2019

Sent To T Over V Ranch Land LLLP
Street and Apt. No., or PO Box No. PO Box 160
City, State, ZIP+4® Eunice, NM 88231

PS Form 3800, April 2015 PSN 7530-02-000-9047 See Reverse for Instructions

7019 0140 0001 1140 8737

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SANTA FE, NM 87508 OFFICIAL USE

Certified Mail Fee $	$3.50
Extra Services & Fees (check box, add fee as appropriate)	$2.80
☐ Return Receipt (hardcopy) $	$0.00
☐ Return Receipt (electronic) $	$0.00
☐ Certified Mail Restricted Delivery $	$0.00
☐ Adult Signature Required $	$0.00
☐ Adult Signature Restricted Delivery $	$0.00
Postage $	$0.70
Total Postage and Fees $	$7.00

0197
40
Postmark Here
FORT COLLINS CO 80521 AUG 28 2019 USPS
08/30/2019

Sent To BLM
Street and Apt. No., or PO Box No. 301 Dinosaur Trail
City, State, ZIP+4® Santa Fe, NM 87508

PS Form 3800, April 2015 PSN 7530-02-000-9047 See Reverse for Instructions

7019 0140 0001 1140 8744

U.S. Postal Service™
CERTIFIED MAIL® RECEIPT
Domestic Mail Only

For delivery information, visit our website at www.usps.com®.

SANTA FE, NM 87501 OFFICIAL USE

Certified Mail Fee $	$3.50
Extra Services & Fees (check box, add fee as appropriate)	$2.80
☐ Return Receipt (hardcopy) $	$0.00
☐ Return Receipt (electronic) $	$0.00
☐ Certified Mail Restricted Delivery $	$0.00
☐ Adult Signature Required $	$0.00
☐ Adult Signature Restricted Delivery $	
Postage $	$0.70
Total Postage and Fees $	$7.00

0197
40
Postmark Here
FORT COLLINS CO 80521 AUG 28 2019 USPS
08/30/2019

Sent To Land Office New Mexico State
Street and Apt. No., or PO Box No. 310 Old Santa Fe Trail
City, State, ZIP+4® Santa Fe, NM 87501

PS Form 3800, April 2015 PSN 7530-02-000-9047 See Reverse for Instructions

7019 0140 0001 1140 8690

U.S. Postal Service™
CERTIFIED MAIL® RECEIPT
Domestic Mail Only

For delivery information, visit our website at *www.usps.com®*.

OFFICIAL USE

EUNICE, NM 88231

Certified Mail Fee $ $3.50	0197 40
Extra Services & Fees *(check box, add fee as appropriate)* $2.80 ☐ Return Receipt (hardcopy) $ $0.00 ☐ Return Receipt (electronic) $ $0.00 ☐ Certified Mail Restricted Delivery $ $0.00 ☐ Adult Signature Required $ $0.00 ☐ Adult Signature Restricted Delivery $ $0.00	Postmark Here FORT COLLINS CO 80521 AUG 28 2019 USPS
Postage $ $0.70	
Total Postage and Fees $ $7.00	08/30/2019

Sent To S&S Inc.

Street and Apt. No., or PO Box No. PO Box 1046

City, State, ZIP+4® Eunice, NM 88231

PS Form 3800, April 2015 PSN 7530-02-000-9047 See Reverse for Instructions

List of Public Notice Postings

1. Eunice Public Library - 1003 Avenue N, Eunice, NM 88231
2. Eunice City Hall - 1106 Ave J, Eunice, NM 88231
3. Lowe's Pay-N-Save - 1326 Ave J, Eunice, NM 88231

Property Tax Record

PLANT SITE

KENNETH SMITH, INC.
267 Smith Ranch Rd.
Hobbs, NM 88240
(575) 681-9739

First American Title Insurance Company
Commitment for Title Insurance No. FAM17-119
SCHEDULE B - Section Two
Exceptions

Date: August 15, 2017

Prepared by: Amanda Baker

GF#:**17-1193**
Borrower: **3 Bear Energy, LLC**

Property Tax Information:
2016 Tax Information
Tax ID Owner #: 40142
Bill #: 16-31882
Base Amount: $4,053.23
Taxes have been Paid in full

Sample Letter Sent To Owners, Counties, Municipalities, Indian Tribes

August 30, 2019

CERTIFIED MAIL 7019 0140 0001 1140 8751
RETURN RECEIPT REQUESTED *(certified mail is required, **return receipt is optional**)*

To Whom it May Concern,
3 Bear Delaware Operating – NM, LLC announces its application submittal to the New Mexico Environment Department for an air quality permit for the **construction** of its **3Bear Libby Gas Plant** facility. The expected date of application submittal to the Air Quality Bureau is **September, 2019.**

The exact location for the proposed facility known as, **3Bear Libby Gas Plant**, will be at latitude 32 deg**,** 32 min, 34.04 sec and longitude -103 deg**,** 31 min, 33.91 sec. From the intersection of US-180 W/US-62 and W/W Marland Blvd in Hobbs, NM, head west on US-180 W/US-62 for 22.6 miles. Turn Left (Southerly) onto Co Rd 27A for 6.5 miles. The facility location will be on the right. The approximate location of this facility is **16.2** miles **Southwest** of **Monument** in **Lea** county.

The proposed **construction** consists of: seven compressor engines, one generator engine, one gunbarrel tank, four condensate tanks, one slop oil tank, one produced water tank, one amine regenerator heater, one hot oil heater, one amine unit, one condensate loadout, one thermal oxidizer, one maintenance flare, one tank flare, process piping fugitives, and haul road fugitives.

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Nitrogen Oxides (NO_x)	197.4 pph	144.4 tpy
Carbon Monoxide (CO)	804.4 pph	239.5 tpy
Volatile Organic Compounds (VOC)	1,842.9 pph	224.0 tpy
Total sum of all Hazardous Air Pollutants (HAPs)	23.7 pph	19.4 tpy
Green House Gas Emissions as Total CO_2e	n/a	251,995 tpy

The standard operating schedule of the facility will be from 12:00 a.m. to 11:59 p.m. 7 days a week and a maximum of 52 weeks per year. The maximum operating schedule will be from 12:00 a.m. to 11:59 p.m. 7days a week and a maximum of 52 weeks per year.

Owners and operators of the facility include
3 Bear Delaware Operating – NM, LLC
1512 Larimer St. Suite 540 Denver, CO 80202
Denver, CO 80202

If you have any comments about the construction or operation of this facility, and you want your comments to be made as part of the permit review process, you must submit your comments in writing to this address: Permit Programs Manager; New Mexico Environment Department; Air Quality Bureau; 525 Camino de los Marquez, Suite 1; Santa Fe, New Mexico; 87505-1816; (505) 476-4300; 1 800 224-7009; https://www.env.nm.gov/aqb/permit/aqb_draft_permits.html. Other comments and questions may be submitted verbally.

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Attención

Este es un aviso de la Agencia de Calidad de Aire del Departamento de Medio Ambiente de Nuevo México, acerca de las emisiones producidas por un establecimiento en esta área. Si usted desea información en español, por favor de comunicarse con la oficina de Calidad de Aire al teléfono 505-476-5557.

Sincerely,
Stephanie Swanson

1512 Larimer St. Suite 540
Denver, CO 80202

Notice of Non-Discrimination

NMED does not discriminate on the basis of race, color, national origin, disability, age or sex in the administration of its programs or activities, as required by applicable laws and regulations. NMED is responsible for coordination of compliance efforts and receipt of inquiries concerning non-discrimination requirements implemented by 40 C.F.R. Part 7, including Title VI of the Civil Rights Act of 1964, as amended; Section 504 of the Rehabilitation Act of 1973; the Age Discrimination Act of 1975, Title IX of the Education Amendments of 1972, and Section 13 of the Federal Water Pollution Control Act Amendments of 1972. If you have any questions about this notice or any of NMED's non- discrimination programs, policies or procedures, you may contact: Kristine Pintado, Non-Discrimination Coordinator, New Mexico Environment Department, 1190 St. Francis Dr., Suite N4050, P.O. Box 5469, Santa Fe, NM 87502, (505) 827-2855, nd.coordinator@state.nm.us. If you believe that you have been discriminated against with respect to a NMED program or activity, you may contact the Non-Discrimination Coordinator identified above or visit our website at https://www.env.nm.gov/NMED/EJ/index.html to learn how and where to file a complaint of discrimination.

Sample of Public Notice Posting and Verification of Posting

NOTICE

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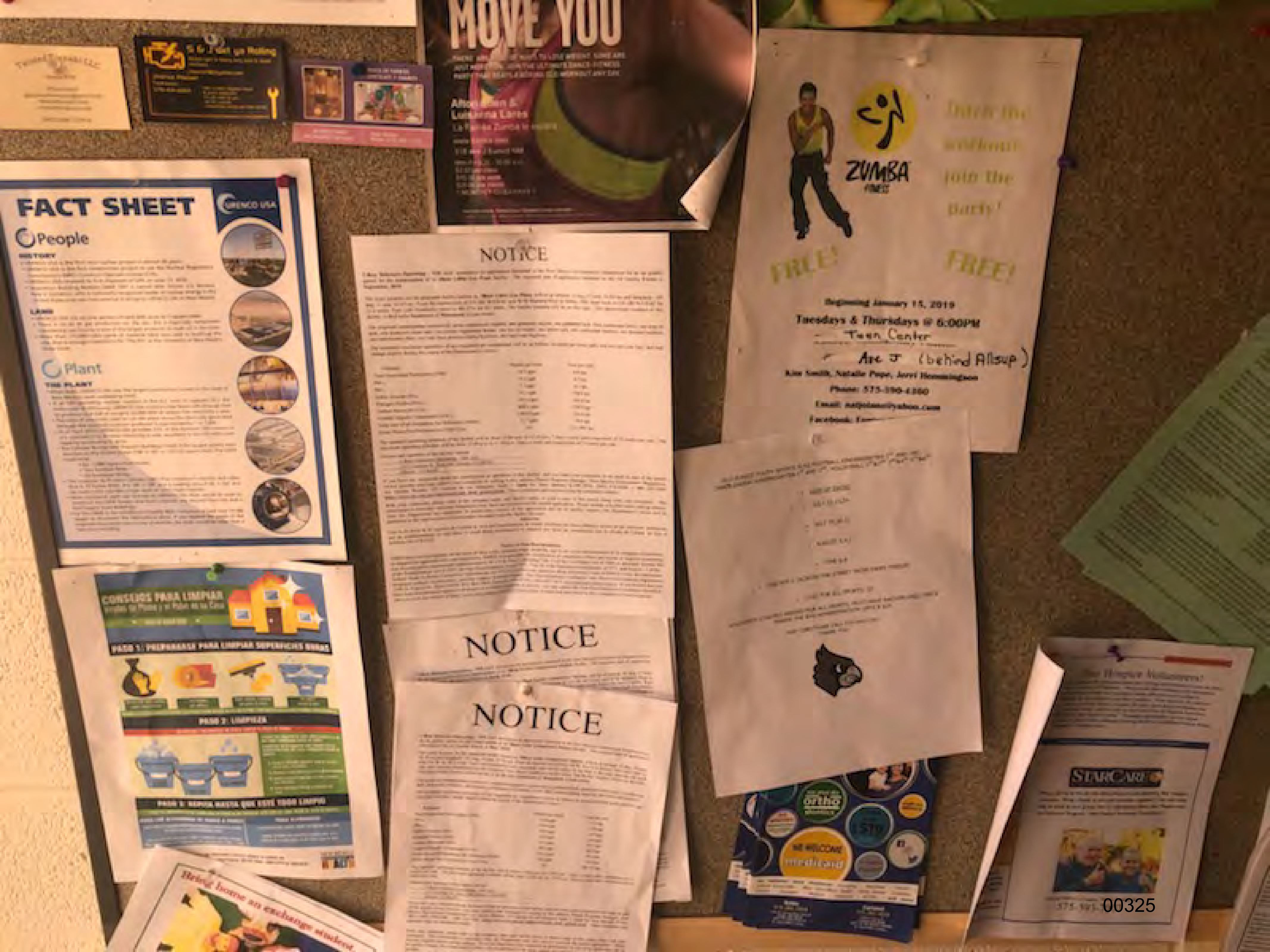
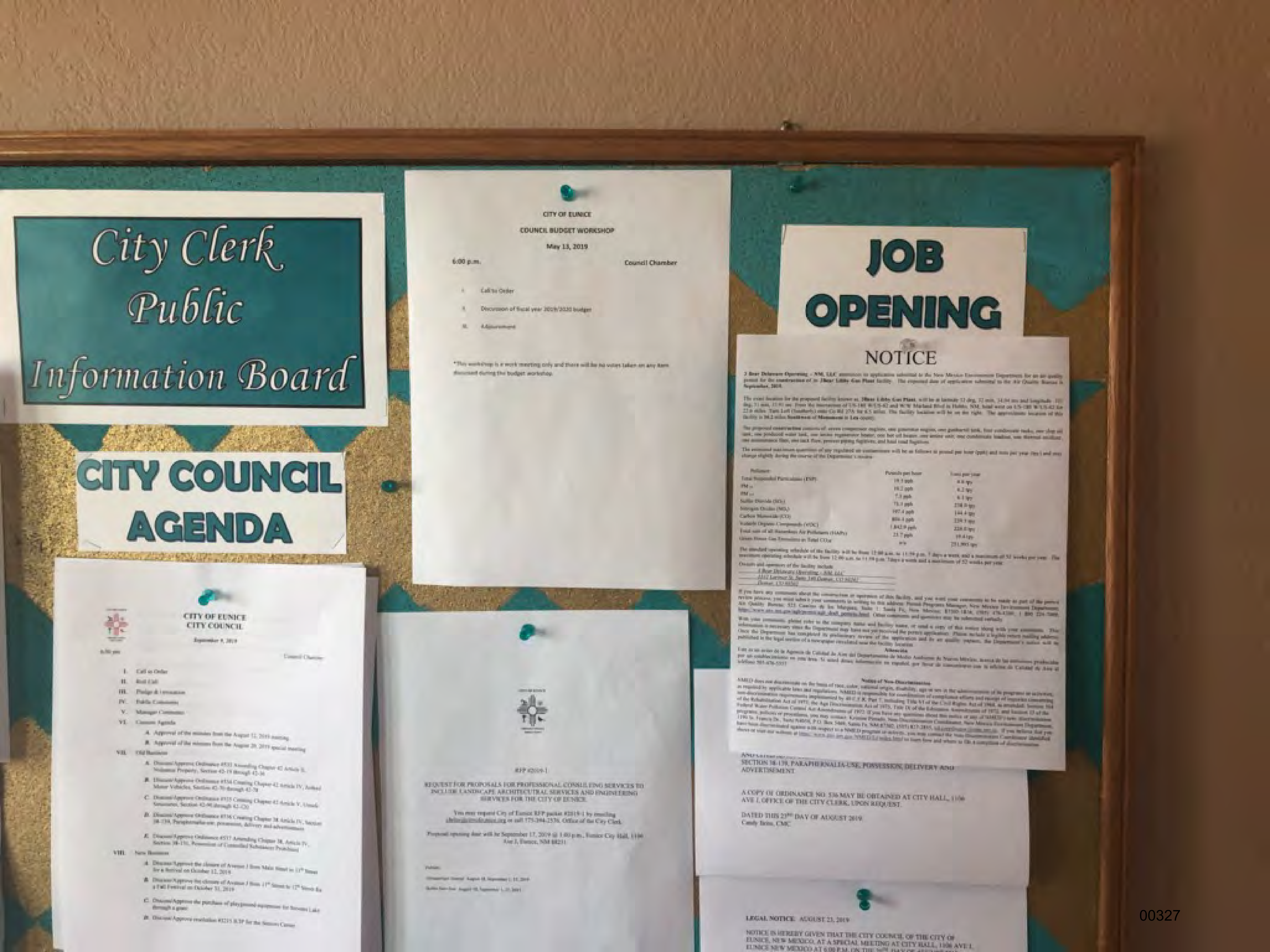

MOVE YOU
FACT SHEET
URENCO USA
People
HISTORY
LAND
Plant
THE PLANT
NOTICE
ZUMBA
FITNESS
Ditch the workout join the party!
FREE!
FREE!
Beginning January 15, 2019
Tuesdays & Thursdays @ 6:00PM
Teen Center
Ave J (behind Allsup)
Kim Smith, Natalie Pope, Jerri Hemmingson
CONSEJOS PARA LIMPIAR
PASO 1: PREPARARSE PARA LIMPIAR SUPERFICIES SUCIAS
PASO 2: LIMPIEZA
NOTICE
NOTICE
WE WELCOME medicaid
STARCARE
Bring home an exchange student

Market Community Bulletin Board
NOTICE
NOTICE
NOTICE
CONFERENCIA DE VERANO
FOR RENT
One bedroom studio apartment. For more information call (575)-318-5413
Our Lady of Guadalupe Family Fair 2019
Doggy Care
Garage Sale
LOTS MORE!!
ALL PRICED TO SALE!
Come Look!
bow wow
Loving
Energetic
Happy
pups need homes
RV'S For Rent In Eunice!!!
RV Includes utilities, cable, Washer and dryer onsite
For more information Please call (575)441-9318
Free
FOOD4ALL
Reward offered
Please call
Laundry Service
Pick-Up and Delivery
MEET & GREET
Story Hour for the Eunice Public Library starting August 14th
The CLeaning
ZUMBA

00326



City Clerk Public Information Board
CITY COUNCIL AGENDA
CITY OF EUNICE
COUNCIL BUDGET WORKSHOP
May 13, 2019
6:00 p.m.
Council Chamber
JOB OPENING
NOTICE
CITY OF EUNICE
CITY COUNCIL
LEGAL NOTICE AUGUST 23, 2019

00327

General Posting of Notices – Certification

I, _______Stephanie Swanson_______, the undersigned, certify that on **September 11, 2019** posted a true and correct copy of the attached Public Notice in the following publicly accessible and conspicuous places in the **City** of **Eunice** County, State of New Mexico on the following dates:

1. Facility entrance – 9/11/19

2. Public Library – 1003 Avenue N, Eunice, NM 88231 - 9/7/2019

3. City Hall – 1106 Ave J, Eunice, NM 88231 - 9/7/2019

4. Lowe's Pay-N-Save – 1326 Ave J, Eunice, NM 88231 - 9/7/2019

Signed this 11th day of Sept., 2019.

Signature ______________________ Date 9/11/2019

Stephanie Swanson
Printed Name

Manager of Engineering
Title

Table of Notified Citizens, Counties, Municipalities, Tribes

S & S Inc.
PO Box 1046
Eunice, NM 88231

Ms. Martha W. Skeen
301 South Canyon
Carlsbad, NM 80220

Mr. & Mrs. Curtis K. Skeen
1508 Riverside Drive
Carlsbad, NM 88220

T Over V Ranch Land LLLP
PO Box 160
Eunice, NM 88231

Bureau of Land Management
301 Dinosaur Trail
Santa Fe, NM 87508

Land Office New Mexico State
310 Old Santa Fe Trail
Santa Fe, NM 87501

The Merchant Livestock Co., Inc.
PO Box 1105
Eunice, NM 88231

Copy of Public Service Announcement

Submittal of Public Service Announcement – Certification

I, ______Stephanie Swanson___________, the undersigned, certify that on August 28, 2019, submitted a public service announcement to **KZOR Radio** that serves the City of **Hobbs**, **Lea** County, New Mexico, in which the source is or is proposed to be located and that **KZOR DID NOT RESPOND THAT IT WOULD AIR THE ANNOUNCEMENT.**

Signed this __5th__ day of _September________________, __2019_____,

Signature ______________________________

__9/5/2019____________
Date

___Stephanie Swanson__________________
Printed Name

__Manager of Engineering________________
Title

Copy of Classified or Legal Ad and Display Ad

Affidavit of Publication

STATE OF NEW MEXICO
COUNTY OF LEA

I, Daniel Russell, Publisher of the Hobbs News-Sun, a newspaper published at Hobbs, New Mexico, solemnly swear that the clipping attached hereto was published in the regular and entire issue of said newspaper, and not a supplement thereof for a period of 1 issue(s).

Beginning with the issue dated
September 10, 2019
and ending with the issue dated
September 10, 2019.

Daniel Russell

Publisher

Sworn and subscribed to before me this 10th day of September 2019.

Gussie Black

Business Manager

My commission expires
January 29, 2023
(Seal)

OFFICIAL SEAL
GUSSIE BLACK
Notary Public
State of New Mexico
My Commission Expires 1-29-23

This newspaper is duly qualified to publish legal notices or advertisements within the meaning of Section 3, Chapter 167, Laws of 1937 and payment of fees for said

NOTICE OF AIR QUALITY PERMIT APPLICATION

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General information about air quality and the permitting process can be found at the Air Quality Bureau's web site. The reg with public participation in the permit review process is 20.2.72.206 NMAC. This regulation can be found in the "Permits" web site.

Attención

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67114577 00233236

STEPHANIE SWANSON
3 BEAR DELAWARE OPERATING - NM, LLC
1512 LARIMER ST., STE. 540
DENVER, CO 80202

Affidavit of Publication

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COUNTY OF LEA

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Beginning with the issue dated
September 10, 2019
and ending with the issue dated
September 10, 2019.

Daniel Russell

Publisher

Sworn and subscribed to before me this 10th day of September 2019.

Gussie Black

Business Manager

My commission expires
January 29, 2023
(Seal)

OFFICIAL SEAL
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Notary Public
State of New Mexico
My Commission Expires 1-29-23

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LEGAL NOTICE
SEPTEMBER 10, 2019

NOTICE OF AIR QUALITY PERMIT APPLICATION

3 Bear Delaware Operating – NM, LLC announces its application submittal to the New Mexico Environment Department for an air quality permit for the construction of its **3Bear Libby Gas Plant** facility. The expected date of application submittal to the Air Quality Bureau is **September, 2019.**

The exact location for the proposed facility known as, **3Bear Libby Gas Plant,** will be at latitude 32 deg, 32 min, 34.04 sec and longitude -103 deg, 31 min, 33.91 sec. From the intersection of US-180 W/US-62 and W/W Marland Blvd in Hobbs, NM, head west on US-180 W/US-62 for 22.6 miles. Turn Left (Southerly) onto Co Rd 27A for 6.5 miles. The facility location will be on the right. The approximate location of this facility is **16.2** miles **Southwest** of **Monument** in **Lea** county.

The proposed **construction** consists of: seven compressor engines, one generator engine, one gunbarrel tank, four condensate tanks, one slop oil tank, one produced water tank, one amine regenerator heater, one hot oil heater, one amine unit, one condensate loadout, one thermal oxidizer, one maintenance flare, one tank flare, process piping fugitives, and haul road fugitives.
The estimated maximum quantities of any regulated air contaminant will be as follows in pound per hour (pph) and tons per year (tpy) and may change slightly during the course of the Department's review:

Pollutant:	Pounds per hour	Tons per year
Total Suspended Particulates (TSP)	19.5 pph	6.6 tpy
PM 10	10.2 pph	6.2 tpy
PM 2.5	7.3 pph	6.1 tpy
Sulfur Dioxide (SO2)	71.1 pph	238.0 tpy
Nitrogen Oxides (NOx)	197.4 pph	144.4 tpy
Carbon Monoxide (CO)	804.4 pph	239.5 tpy
Volatile Organic Compounds (VOC)	1,842.9 pph	224.0 tpy
Total sum of all Hazardous Air Pollutants (HAPs)	23.7 pph	19.4 tpy
Green House Gas Emissions as Total CO2e	n/a	251,995 tpy

The standard operating schedule of the facility will be from 12:00 a.m. to 11:59 p.m. 7 days a week and a maximum of 52 weeks per year. The maximum operating schedule will be from 12:00 a.m. to 11:59 p.m. 7days a week and a maximum of 52 weeks per year.

Owners and operators of the facility include
3 Bear Delaware Operating – NM, LLC
1512 Larimer St. Suite 540 Denver, CO 80202
Denver, CO 80202

If you have any comments about the construction or operation of this facility, and you want your comments to be made as part of the permit review process, you must submit your comments in writing to this address: Permit Programs Manager; New Mexico Environment Department; Air Quality Bureau; 525 Camino de los Marquez, Suite 1; Santa Fe, New Mexico; 87505-1816; (505) 476-4300; 1 800 224-7009; https://www.env.nm.gov/aqb/permit/aqb_draft_permits.html. Other comments and questions may be submitted verbally.

With your comments, please refer to the company name and facility name, or send a copy of this notice along with your comments. This information is necessary since the Department may have not yet received the permit application. Please include a legible return mailing address. Once the Department has completed its preliminary review of the application and its air quality impacts, the Department's notice will be published in the legal section of a newspaper circulated near the facility location.

General information about air quality and the permitting process can be found at the Air Quality Bureau's web site. The regulation dealing with public participation in the permit review process is 20.2.72.206 NMAC. This regulation can be found in the "Permits" section of this web site.

Attención

Este es un aviso de la Agencia de Calidad de Aire del Departamento de Medio Ambiente de Nuevo México, acerca de las emisiones producidas por un establecimiento en esta área. Si usted desea información en español, por favor de comunicarse con la oficina de Calidad de Aire al teléfono 505-476-5557.

Notice of Non-Discrimination

NMED does not discriminate on the basis of race, color, national origin, disability, age or sex in the administration of its programs or activities, as required by applicable laws and regulations. NMED is responsible for coordination of compliance efforts and receipt of inquiries concerning non-discrimination requirements implemented by 40 C.F.R. Part 7, including Title VI of the Civil Rights Act of 1964, as amended; Section 504 of the Rehabilitation Act of 1973; the Age Discrimination Act of 1975, Title IX of the Education Amendments of 1972, and Section 13 of the Federal Water Pollution Control Act Amendments of 1972. If you have any questions about this notice or any of NMED's non-discrimination programs, policies or procedures, you may contact: Kristine Pintado, Non-Discrimination Coordinator, New Mexico Environment Department, 1190 St. Francis Dr., Suite N4050, P.O. Box 5469, Santa Fe, NM 87502, (505) 827-2855, nd.coordinator@state.nm.us. If you believe that you have been discriminated against with respect to a NMED program or activity, you may contact the Non-Discrimination Coordinator identified above or visit our website at https://www.env.nm.gov/NMED/EJ/index.html to learn how and where to file a complaint of discrimination.
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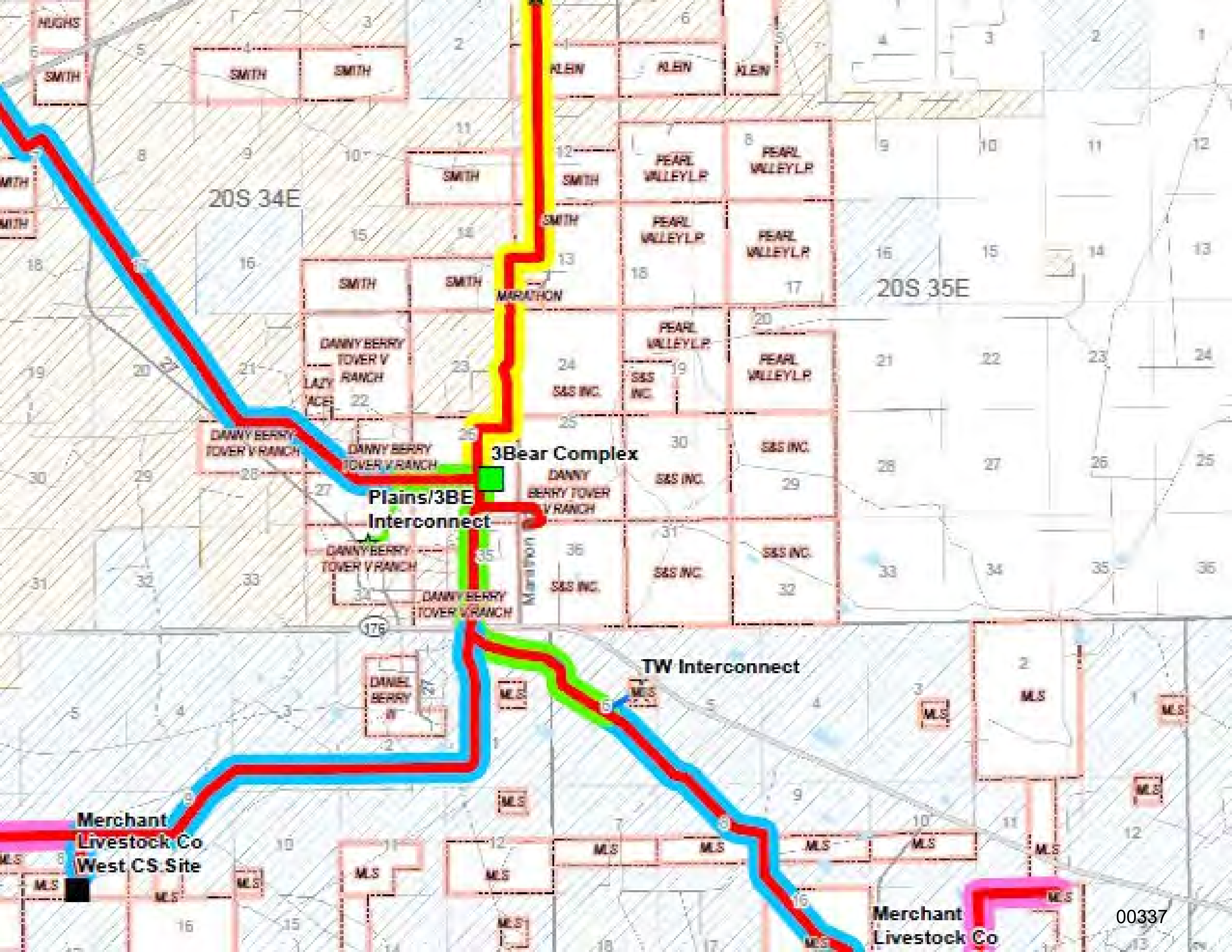
STEPHANIE SWANSON
3 BEAR DELAWARE OPERATING - NM, LLC
1512 LARIMER ST., STE. 540
DENVER, CO 80202

Map of Facility Boundary and Surrounding Area


20S 34E
20S 35E
3Bear Complex
Plains/3BE Interconnect
TW Interconnect
Merchant Livestock Co West CS Site
Merchant Livestock Co
SMITH
KLEIN
PEARL VALLEY L.P.
MARATHON
DANNY BERRY TOVER V RANCH
LAZY ACE
S&S INC.
DANIEL BERRY III
MLS
HUGHS
Marathon
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Section 10

Written Description of the Routine Operations of the Facility

<u>A written description of the routine operations of the facility</u>. Include a description of how each piece of equipment will be operated, how controls will be used, and the fate of both the products and waste generated. For modifications and/or revisions, explain how the changes will affect the existing process. In a separate paragraph describe the major process bottlenecks that limit production. The purpose of this description is to provide sufficient information about plant operations for the permit writer to determine appropriate emission sources.

The 3Bear Libby Gas Plant will be equipped to gather natural gas from three surrounding compressor stations: 3Bear Aztec Compressor Station, 3Bear Outland Compressor Station, and 3Bear Lariat Compressor Station, which are owned and operated by 3Bear. The gas from the compressor stations is sent to the gas processing plant for treatment.

Libby will separate natural gas liquids (NGL's) from the field gas, producing natural gas liquids and a residue gas for transmission to a pipeline owned by others. The process utilizes a cryogenic gas separation plant and associated compressors for collecting field gas from the gathering system nearby. Gas and NGL's will be piped to the respective nearby interconnect metering stations, by others. The plant is to be located within 5 miles of the residue gas and NGL pipelines.

Compressor engines on site (ENG 1-4) will compress inlet gas and send the gas to the processing plant where an amine unit (AMINE-1) on site will treat and sweeten the gas. The amine unit is controlled by a thermal oxidizer (TO-1), and in the event that the thermal oxidizer is down, the gas will be sent to a flare (FL-1). The NGLs produced will be stored in pressurized vessels. Liquids from process drains will be sent to a gunbarrel tank (TK-1) for hydrocarbon separation. Oil from the gunbarrel separation will be stored in one 400-bbl slop oil tank (TK-6) and produced water will be stored in produced water tank (PWTK-1). Condensate tanks will store stabilized condensate (TK 2-5). A tank flare (FL-2) controls all tanks on site, and condensate and oil will be trucked off site (CONDLOAD-1 and OILLOAD-1). An emergency and maintenance flare (FL-1) will control compressor blowdowns (COMP), plant blowdowns (PLANT BD), and emergency upset conditions. Fugitive emissions occur from process piping and other components (FUG 1-2). Road dust emissions occur from daily routine traffic to the production facility (HR-1). Additional equipment on site will include: residue compressor engines (ENG 5-8), one generator engine (ENG-9), one 50 MMBtu/hr hot oil heater (HTR-1), and one 11 MMBtu/hr regen gas heater (HTR-2).

Section 11

Source Determination

Source submitting under 20.2.70, 20.2.72, 20.2.73, and 20.2.74 NMAC

Sources applying for a construction permit, PSD permit, or operating permit shall evaluate surrounding and/or associated sources (including those sources directly connected to this source for business reasons) and complete this section. Responses to the following questions shall be consistent with the Air Quality Bureau's permitting guidance, Single Source Determination Guidance, which may be found on the Applications Page in the Permitting Section of the Air Quality Bureau website.

Typically, buildings, structures, installations, or facilities that have the same SIC code, that are under common ownership or control, and that are contiguous or adjacent constitute a single stationary source for 20.2.70, 20.2.72, 20.2.73, and 20.2.74 NMAC applicability purposes. Submission of your analysis of these factors in support of the responses below is optional, unless requested by NMED.

A. Identify the emission sources evaluated in this section (list and describe):

3Bear evaluated the Libby Gas Plant with respect to two nearby facilities that will also be owned and operated by 3Bear:

- The Libby plant site is located south of a new crude oil terminal, associated pipeline pumps, and containment area. The crude storage system pumps oil to a nearby oil pipeline.

- The plant site is also located south of a central liquid waste treatment and storage system that includes tank battery and containment with oil-water separators, filtration, and treatment equipment for receiving drill pad waste liquids for processing.

As defined by 40 CFR Part 70.2, "*Major source* means any stationary source (or any group of stationary sources that are located on one or more continuous or adjacent properties, and are under common control of the same person (or persons under common control)) belonging to a single major industrial grouping and that are described in paragraph (1), (2), or (3) of this definition. For the purposes of defining "major source," a stationary source or group of stationary sources shall be considered part of a single industrial grouping if all of the pollutant emitting activities at such source or group of sources on contiguous or adjacent properties belong to the same Major Group (*i.e.*, all have the same two-digit code) as described in the Standard Industrial Classification Manual, 1987. State programs may adopt the following provision: For onshore activities belonging to Standard Industrial Classification (SIC) Major Group 13: Oil and Gas Extraction, pollutant emitting activities shall be considered adjacent if they are located on the same surface site; or if they are located on surface sites that are located within 1⁄4 mile of one another (measured from the center of the equipment on the surface site) and they share equipment. Shared equipment includes, but is not limited to, produced fluids storage tanks, phase separators, natural gas dehydrators or emissions control devices. Surface site, as used in the introductory text of this definition, has the same meaning as in 40 CFR 63.761."

Per 40 CFR 63.761, *Surface site* means any combination of one or more graded pad sites, gravel pad sites, foundations, platforms, or the immediate physical location upon which equipment is physically affixed.

The crude oil terminal and liquid waste treatment and storage system are on the same property owned by 3Bear but are not associated with plant operations and do not share equipment. The facilities will each have their own separate fence-lines and entrances. The Libby plant site is separated from the liquid waste treatment site by a pipeline laydown yard and the crude oil terminal as well as the separate fence-lines and entrances.

The oil terminal operates under SIC 5171, whereas, the Libby plant and the liquid waste treatment and storage system both operate under 2-digit SIC 13.

Based on this analysis, the three facilities are not on the same surface site and do not share equipment, therefore, they are not adjacent as defined by the regulation. Air authorization/permit applications for both nearby facilities will be submitted under separate cover.

B. Apply the 3 criteria for determining a single source:

SIC Code: Surrounding or associated sources belong to the same 2-digit industrial grouping (2-digit SIC code) as this facility, OR surrounding or associated sources that belong to different 2-digit SIC codes are support facilities for this source.

☑ **Yes** ☐ **No**

Common Ownership or Control: Surrounding or associated sources are under common ownership or control as this source.

☑ **Yes** ☐ **No**

Contiguous or Adjacent: Surrounding or associated sources are contiguous or adjacent with this source.

☐ **Yes** ☑ **No**

C. Make a determination:

☑ The source, as described in this application, constitutes the entire source for 20.2.70, 20.2.72, 20.2.73, or 20.2.74 NMAC applicability purposes. If in "A" above you evaluated only the source that is the subject of this application, all "**YES**" boxes should be checked. If in "A" above you evaluated other sources as well, you must check **AT LEAST ONE** of the boxes "**NO**" to conclude that the source, as described in the application, is the entire source for 20.2.70, 20.2.72, 20.2.73, and 20.2.74 NMAC applicability purposes.

☐ The source, as described in this application, **does not** constitute the entire source for 20.2.70, 20.2.72, 20.2.73, or 20.2.74 NMAC applicability purposes (A permit may be issued for a portion of a source). The entire source consists of the following facilities or emissions sources (list and describe):

Section 12

Section 12.A

PSD Applicability Determination for All Sources

(Submitting under 20.2.72, 20.2.74 NMAC)

A PSD applicability determination for all sources. For sources applying for a significant permit revision, apply the applicable requirements of 20.2.74.AG and 20.2.74.200 NMAC and to determine whether this facility is a major or minor PSD source, and whether this modification is a major or a minor PSD modification. It may be helpful to refer to the procedures for Determining the Net Emissions Change at a Source as specified by Table A-5 (Page A.45) of the EPA New Source Review Workshop Manual to determine if the revision is subject to PSD review.

A. This facility is:

- ☑ **a minor PSD source before and after this modification (if so, delete C and D below).**
- ☐ **a major PSD source before this modification. This modification will make this a PSD minor source.**
- ☐ **an existing PSD Major Source that has never had a major modification requiring a BACT analysis.**
- ☐ **an existing PSD Major Source that has had a major modification requiring a BACT analysis**
- ☐ **a new PSD Major Source after this modification.**

B. **This facility [is not] one of the listed 20.2.74.501 Table I – PSD Source Categories. The "project" emissions** for this modification are **[not significant]. The "project" emissions listed below [do not] only result from changes described in this permit application, thus no emissions from other [revisions or modifications, past or future] to this facility. Also, specifically discuss whether this project results in "de-bottlenecking", or other associated emissions resulting in higher emissions. The project emissions (before netting) for this project are as follows [see Table 2 in 20.2.74.502 NMAC for a complete list of significance levels]:**

a. **NOx: 145.1 TPY**
b. **CO: 242.4 TPY**
c. **VOC: 169.0 TPY**
d. **SOx: 238.0 TPY**
e. **PM: 6.4 TPY**
f. **PM10: 6.2 TPY**
g. **PM2.5: 6.1 TPY**
h. **Fluorides: N/A TPY**
i. **Lead: N/A TPY**
j. **Sulfur compounds (listed in Table 2): N/A TPY**
k. **GHG: 252,758 TPY**

C. If this is an existing PSD major source, or any facility with emissions greater than 250 TPY (or 100 TPY for 20.2.74.501 Table 1 – PSD Source Categories), determine whether any permit modifications are related, or could be considered a single project with this action, and provide an explanation for your determination whether a PSD modification is triggered.

Section 13

Determination of State & Federal Air Quality Regulations

This section lists each state and federal air quality regulation that may apply to your facility and/or equipment that are stationary sources of regulated air pollutants.

Not all state and federal air quality regulations are included in this list. Go to the Code of Federal Regulations (CFR) or to the Air Quality Bureau's regulation page to see the full set of air quality regulations.

Required Information for Specific Equipment:
For regulations that apply to specific source types, in the 'Justification' column **provide any information needed to determine if the regulation does or does not apply**. **For example**, to determine if emissions standards at 40 CFR 60, Subpart IIII apply to your three identical stationary engines, we need to know the construction date as defined in that regulation; the manufacturer date; the date of reconstruction or modification, if any; if they are or are not fire pump engines; if they are or are not emergency engines as defined in that regulation; their site ratings; and the cylinder displacement.

Required Information for Regulations that Apply to the Entire Facility:
See instructions in the 'Justification' column for the information that is needed to determine if an 'Entire Facility' type of regulation applies (e.g. 20.2.70 or 20.2.73 NMAC).

Regulatory Citations for Regulations That Do Not, but Could Apply:
If there is a state or federal air quality regulation that does not apply, but you have a piece of equipment in a source category for which a regulation has been promulgated, you must **provide the low level regulatory citation showing why your piece of equipment is not subject to or exempt from the regulation. For example** if you have a stationary internal combustion engine that is not subject to 40 CFR 63, Subpart ZZZZ because it is an existing 2 stroke lean burn stationary RICE with a site rating of more than 500 brake HP located at a major source of HAP emissions, your citation would be 40 CFR 63.6590(b)(3)(i). **We don't want a discussion of every non-applicable regulation, but if it is possible a regulation could apply, explain why it does not. For example,** if your facility is a power plant, you do not need to include a citation to show that 40 CFR 60, Subpart OOO does not apply to your non-existent rock crusher.

Regulatory Citations for Emission Standards:
For each unit that is subject to an emission standard in a source specific regulation, such as 40 CFR 60, Subpart OOO or 40 CFR 63, Subpart HH, include the low level regulatory citation of that emission standard. Emission standards can be numerical emission limits, work practice standards, or other requirements such as maintenance. **Here are examples:** a glycol dehydrator is subject to the general standards at 63.764C(1)(i) through (iii); an engine is subject to 63.6601, Tables 2a and 2b; a crusher is subject to 60.672(b), Table 3 and all transfer points are subject to 60.672(e)(1)

Federally Enforceable Conditions:
All federal regulations are federally enforceable. All Air Quality Bureau State regulations are federally enforceable except for the following: affirmative defense portions at 20.2.7.6.B, 20.2.7.110(B)(15), 20.2.7.11 through 20.2.7.113, 20.2.7.115, and 20.2.7.116; 20.2.37; 20.2.42; 20.2.43; 20.2.62; 20.2.63; 20.2.86; 20.2.89; and 20.2.90 NMAC. Federally enforceable means that EPA can enforce the regulation as well as the Air Quality Bureau and federally enforceable regulations can count toward determining a facility's potential to emit (PTE) for the Title V, PSD, and nonattainment permit regulations.

INCLUDE ANY OTHER INFORMATION NEEDED TO COMPLETE AN APPLICABILITY DETERMINATION OR THAT IS RELEVENT TO YOUR FACILITY'S NOTICE OF INTENT OR PERMIT.

EPA Applicability Determination Index for 40 CFR 60, 61, 63, etc: http://cfpub.epa.gov/adi/

Example of a Table for STATE REGULATIONS:

STATE REGU-LATIONS CITATION	Title	Applies? Enter Yes or No	Unit(s) or Facility	JUSTIFICATION: (You may delete instructions or statements that do not apply in the justification column to shorten the document.)
20.2.1 NMAC	General Provisions	Yes	Facility	General Provisions apply to Notice of Intent, Construction, and Title V permit applications.
20.2.3 NMAC	Ambient Air Quality Standards NMAAQS	Yes	Facility	This facility is located in New Mexico, therefore the requirements of this part applicable.
20.2.7 NMAC	Excess Emissions	Yes	Facility	This facility is subject to Air Quality Control Regulations, as defined in 20.2.7 NMAC, and is thus subject to the requirements of this regulation.
20.2.23 NMAC	Fugitive Dust Control	No	Facility	This is a permitted facility therefore this regulation does not apply.
20.2.33 NMAC	Gas Burning Equipment - Nitrogen Dioxide	No		This facility DOES NOT have new gas burning equipment **(external combustion emission sources, such as gas fired boilers and heaters)** having a heat input of greater than 1,000,000 million British Thermal Units per year per unit This facility DOES NOT have existing gas burning equipment having a heat input of greater than 1,000,000 million British Thermal Units per year per unit Note: "New gas burning equipment" means gas burning equipment, the construction or modification of which is commenced after February 17, 1972.
20.2.34 NMAC	Oil Burning Equipment: NO_2	No		This facility DOES NOT have oil burning equipment **(external combustion emission sources, such as oil fired boilers and heaters)** having a heat input of greater than 1,000,000 million British Thermal Units per year per unit.
20.2.35 NMAC	Natural Gas Processing Plant – Sulfur	Yes	Facility	This facility is a natural gas processing plant; therefore it is subject to the requirements of NMAC 2.35 for "New Natural **Gas Processing** Plants" as defined by the rule.
20.2.37 and 20.2.36 NMAC	Petroleum Processing Facilities and Petroleum Refineries	N/A	N/A	**These regulations were repealed by the Environmental Improvement Board. If you had equipment subject to 20.2.37 NMAC before the repeal, your combustion emission sources are now subject to 20.2.61 NMAC.**
20.2.38 NMAC	Hydrocarbon Storage Facility	Yes	TK 2-6	This regulation applies to the oil and condensate storage tanks at the facility. The tanks will be manifolded to a flare to meet the requirements of this regulation.
20.2.39 NMAC	Sulfur Recovery Plant - Sulfur	No		This facility is NOT a sulfur recovery plant.
20.2.61.109 NMAC	Smoke & Visible Emissions	Yes	ENG 1-9, HTR 1-2, TO-1, FL 1-2	Engines, generators, heaters, and flares are Stationary Combustion Equipment.
20.2.70 NMAC	Operating Permits	Yes	Facility	As proposed, this facility is a Title V Major source and is in turn subject to 20.2.70.
20.2.71 NMAC	Operating Permit Fees	Yes	Facility	This facility is subject to 20.2.70 NMAC and is in turn subject to 20.2.71 NMAC.
20.2.72 NMAC	Construction Permits	Yes	Facility	This facility is subject to 20.2.72 NMAC.
20.2.73 NMAC	NOI & Emissions Inventory Requirements	Yes	Facility	**Emissions Inventory Reporting:** 20.2.73.300 NMAC applies. This facility will be issued a permit under 20.2.72 NMAC, therefore it will meet the applicability requirements of 20.2.73.300 NMAC.

STATE REGU-LATIONS CITATION	Title	Applies? Enter Yes or No	Unit(s) or Facility	JUSTIFICATION: (You may delete instructions or statements that do not apply in the justification column to shorten the document.)
20.2.74 NMAC	Permits – Prevention of Significant Deterioration (PSD)	No	Facility	This facility is NOT a PSD major source.
20.2.75 NMAC	Construction Permit Fees	Yes	Facility	Subject to 20.2.72 NMAC and is in turn subject to 20.2.75 NMAC.
20.2.77 NMAC	New Source Performance	Yes	ENG 1-9, HTR 1-2, FUG-1, COMP, AMINE-1	HTR 1-2 are subject to NSPS Dc ENG 1-9 are subject to NSPS Subpart JJJJ. FUG-1, COMP, AMINE-1 are subject to NSPS Subpart OOOOa.
20.2.78 NMAC	Emission Standards for HAPS	No		This facility DOES NOT emit hazardous air pollutants which are subject to the requirements of 40 CFR Part 61, as amended through January 31, 2009.
20.2.79 NMAC	Permits – Nonattainment Areas	No		This facility is located in an attainment area for all regulated pollutants. PTE is major for NOx, CO, and SO2. The significance levels for NOx, CO and SO2 will meet the national ambient air quality standard, therefore this regulation is not applicable to those pollutants.
20.2.80 NMAC	Stack Heights	Yes		3Bear considered GEP requirements in the analysis. Stack heights do not exceed GEP.
20.2.82 NMAC	MACT Standards for source categories of HAPS	Yes	ENG 1-9	This regulation applies to all sources emitting hazardous air pollutants, which are subject to the requirements of 40 CFR Part 63. Applies if other MACT subpart applies. The MACT Subpart ZZZZ applies as discussed below.

Example of a Table for Applicable FEDERAL REGULATIONS (Note: This is not an exhaustive list):

FEDERAL REGU-LATIONS CITATION	Title	Applies? Enter Yes or No	Unit(s) or Facility	JUSTIFICATION:
40 CFR 50	NAAQS	Yes	Facility	Applies since the source emits air pollutants subject to NAAQS. Defined as applicable at 20.2.70.7.E.11, any national ambient air quality standard. See Section 16 for modeled demonstration of NAAQS compliance.

FEDERAL REGU-LATIONS CITATION	Title	Applies? Enter Yes or No	Unit(s) or Facility	JUSTIFICATION:
NSPS 40 CFR 60, Subpart A	General Provisions	Yes	ENG 1-9, HTR 1-2, FUG-1, COMP, AMINE-1	HTR 1-2 are subject to NSPS Dc ENG 1-9 are subject to NSPS Subpart JJJJ. FUG-1, COMP, AMINE-1 are subject to NSPS Subpart OOOOa.
NSPS 40 CFR60.40a, Subpart Da	Subpart Da, Performance Standards for **Electric Utility Steam Generating Units**	No		There is not a steam generating unit that commenced construction, modification, or reconstruction after September 18, 1978, and that is capable of combusting more than 73 megawatts (MW) (250 million British thermal units per hour (MMBtu/hr)), therefore this facility is not applicable to this regulation.
NSPS 40 CFR60.40b Subpart Db	**Electric Utility Steam Generating Units**	No		There is not a steam generating unit that commenced construction, modification, or reconstruction after June 19, 1984, and that has a heat input capacity from fuels combusted in the steam generating unit of greater than 29 megawatts (MW) (100 million British thermal units per hour (MMBtu/hr)), therefore this facility is not applicable to this regulation.
40 CFR 60.40c, Subpart Dc	Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units	Yes	HTR 1-2	This facility has steam generating units for which construction, modification, or reconstruction is commenced after June 9, 1989 and that has a maximum design heat input capacity of 29 megawatts (MW) (100 million British thermal units per hour (MMBtu/h)) or less, but greater than or equal to 2.9 MW (10 MMBtu/h). This regulation therefore, applies to the specified heaters.
NSPS 40 CFR 60, Subpart Ka	Standards of Performance for **Storage Vessels for Petroleum Liquids** for which Construction, Reconstruction, or Modification Commenced After May 18, 1978, and **Prior** to July 23, 1984	No		This facility does not have storage vessels greater than 151,416 liters (40,000 gallons) that are used to store petroleum liquids for which construction is commenced after May 18, 1978, therefore the facility is not applicable to this regulation.
NSPS 40 CFR 60, Subpart Kb	Standards of Performance for **Volatile Organic Liquid Storage Vessels** (Including Petroleum Liquid Storage Vessels) for Which Construction, Reconstruction, or	No		Gunbarrel TK-1 is a vessel with capacity greater than or equal to 75 cubic meters (m^3) but less than 1,589,874 m^3 but does not meet the definition of storage vessel, therefore is not applicable to this subpart. TK 2-6 and PWTK-1 are not storage vessels with capacities greater than or equal to 75 cubic meters (m^3) but less than 1,589,874 m^3 that are used to store volatile organic liquids (VOL) for which construction, reconstruction, or modification commenced after July 23, 1984.

FEDERAL REGU-LATIONS CITATION	Title	Applies? Enter Yes or No	Unit(s) or Facility	JUSTIFICATION:
	Modification Commenced **After** July 23, 1984			
NSPS 40 CFR 60.330 Subpart GG	**Stationary Gas Turbines**	No		There are no stationary gas turbines exceeding 10 MMBtu/hr at this facility.
NSPS 40 CFR 60, Subpart KKK	Leaks of VOC from **Onshore Gas Plants**	No		This facility is an onshore natural gas processing plant that will commence construction, reconstruction, or modification AFTER August 23, 2011, therefore the facility is not applicable to this subpart.
NSPS 40 CFR Part 60 Subpart LLL	Standards of Performance for **Onshore Natural Gas Processing**: SO_2 Emissions	No		This facility is an onshore natural gas processing plant that will commence construction, reconstruction, or modification AFTER August 23, 2011, therefore the facility is not applicable to this subpart.
NSPS 40 CFR Part 60 Subpart OOOO	Standards of Performance for Crude Oil and Natural Gas Production, Transmission, and Distribution for which construction, modification or reconstruction commenced after August 23, 2011 and before September 18, 2015	No		The facility is NOT subject to the provisions of NSPS Subpart OOOO because the facility will be constructed after September 18, 2015.
NSPS 40 CFR Part 60 Subpart OOOOa	Standards of Performance for Crude Oil and Natural Gas Facilities for which Construction, Modification or Reconstruction Commenced After September 18, 2015	Yes	FUG-1, COMP, AMINE-1	The facility IS subject to the provisions of NSPS Subpart OOOOa listed below because: - The compressors (COMP) are not co-located with a wellhead, so the reciprocating compressor requirements are applicable. - AMINE-1 is a sweetening unit located at onshore natural gas processing plants that process natural gas produced from onshore wells. - This is an onshore natural gas processing plant therefore the equipment leak standards apply to the affected facilities (FUG-1). The facility is NOT subject to the provisions of NSPS Subpart OOOOa listed below because: - There are no gas-fired, continuous high bleed pneumatic controllers at this site, so the pneumatic controller requirements are not applicable. - TK-1 is a process vessel not a storage vessel, therefore the storage vessel affected facility requirements are not applicable. - TK 2-6 and PWTK-1 are storage vessels that emit less than 6 tpy VOC, therefore the storage vessel affected facility requirements are not applicable.
NSPS 40 CFR 60 Subpart IIII	Standards of performance for Stationary Compression Ignition Internal Combustion Engines	No		The engines on site are not combustion ignition engines, therefore this facility is not subject to this subpart.

FEDERAL REGU-LATIONS CITATION	Title	Applies? Enter Yes or No	Unit(s) or Facility	JUSTIFICATION:
NSPS 40 CFR Part 60 Subpart JJJJ	Standards of Performance for Stationary Spark Ignition Internal Combustion Engines	Yes	ENG 1-9	ENG-1 is subject to NSPS Subpart JJJJ because the engine has a manufacture date after July 1, 2007 and has a maximum engine power greater than or equal to 500 hp and less than 1,350 hp. ENG 2-8 are subject to NSPS Subpart JJJJ because the engines have a manufacture date after July 1, 2007 and have a maximum engine power greater than 500 hp. ENG-9 is subject to NSPS Subpart JJJJ because the engine has a manufacture date after July 1, 2008 and has a maximum engine power less than 500 hp.
NSPS 40 CFR 60 Subpart TTTT	Standards of Performance for Greenhouse Gas Emissions for Electric Generating Units	No		There are not any steam generating units, integrated gasification combined cycle (IGCC), or stationary combustion turbines on site, therefore this facility is not subject to this subpart.
NSPS 40 CFR 60 Subpart UUUU	Emissions Guidelines for Greenhouse Gas Emissions and Compliance Times for Electric Utility Generating Units	No		There are not any steam generating units, integrated gasification combined cycle (IGCC), or stationary combustion turbines on site, therefore this facility is not subject to this subpart.
NSPS 40 CFR 60, Subparts WWW, XXX, Cc, and Cf	Standards of performance for Municipal Solid Waste (MSW) Landfills	No		This facility is not a landfill; therefore, it is not applicable to this subpart.
NESHAP 40 CFR 61 Subpart A	General Provisions	No		This facility DOES NOT emit HAP's in quantities that trigger these requirements.
NESHAP 40 CFR 61 Subpart E	National Emission Standards for **Mercury**	No		This facility DOES NOT process mercury ore to recover mercury, use mercury chlor-alkali cells to produce chlorine gas and alkali metal hydroxide, and incinerate or dry wastewater treatment plant sludge.
NESHAP 40 CFR 61 Subpart V	National Emission Standards for **Equipment Leaks** (Fugitive Emission Sources)	No		The provisions of this subpart apply to each of the following sources that are intended to operate in volatile hazardous air pollutant (VHAP) service: pumps, compressors, pressure relief devices, sampling connection systems, open-ended valves or lines, valves, connectors, surge control vessels, bottoms receivers, and control devices or systems required by this subpart. VHAP service means a piece of equipment either contains or contacts a fluid (liquid or gas) that is at least 10 percent by weight of VHAP. VHAP means a substance regulated under this subpart for which a standard for equipment leaks of the substance has been promulgated. Benzene is a VHAP (See 40 CFR 61 Subpart J). Link to 40 CFR 61 Subpart V Note: If 40 CFR 60 also applies source only needs to comply with this part. No equipment at this facility contains or contacts a fluid with at least 10 percent by weight of a VHAP.
MACT 40 CFR 63, Subpart A	General Provisions	Yes	ENG 1-9	This regulation applies to all sources emitting hazardous air pollutants, which are subject to the requirements of 40 CFR Part 63. Applies if other MACT subpart applies. The MACT Subpart ZZZZ applies as discussed below.

FEDERAL REGU-LATIONS CITATION	Title	Applies? Enter Yes or No	Unit(s) or Facility	JUSTIFICATION:
MACT 40 CFR 63.760 Subpart HH	**Oil and Natural Gas Production Facilities**	No		There are no dehydrators located at this facility. This facility is not a major source of HAPs.
MACT 40 CFR 63 Subpart HHH		No		This facility IS NOT a natural gas transmission and storage facility or a major source of HAPs.
MACT 40 CFR 63 Subpart DDDDD	National Emission Standards for Hazardous Air Pollutants for Major Industrial, Commercial, and Institutional Boilers & Process Heaters	No		This facility is not a major source of HAPs, therefore it is not subject to this subpart.
MACT 40 CFR 63 Subpart UUUUU	National Emission Standards for Hazardous Air Pollutants Coal & Oil Fire Electric Utility Steam Generating Unit	No		There are not any coal and oil fired electric utility steam generating units on site, therefore it is not subject to this subpart.
MACT 40 CFR 63 Subpart ZZZZ	National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines (**RICE MACT**)	Yes	ENG 1-9	40 CFR 63, Subpart ZZZZ establishes national emission limitations and operating limitations for hazardous air pollutants (HAP) emitted from existing, new, modified and reconstructed stationary reciprocating internal combustion engines (RICE) located at major and area sources of HAP emissions. The regulation contains provisions for initial and continuous compliance demonstration. The facility is an **area** source of HAP, as defined under the regulation. Under §63.6590(a)(2)(iii) and (a)(3)(iii), a RICE located at an area source of HAP is a *new* or *reconstructed* unit if it is constructed or reconstructed on or after June 12, 2006. Under §63.6590(c)(1), a *new* or *reconstructed* SI RICE at an area source of HAP must meet the requirements of the part by meeting the requirements of 40 CFR 60, Subpart JJJJ (NSPS for Stationary Spark Ignition Internal Combustion Engines).

FEDERAL REGU-LATIONS CITATION	Title	Applies? Enter Yes or No	Unit(s) or Facility	JUSTIFICATION:
40 CFR 64	**Compliance Assurance Monitoring**	No		The amine sweetening unit has pre-control VOC and H2S emissions greater than 100 TPY and uses a control device to achieve compliance with an emission limitation or standard. The amine sweetening unit is an affected facility under NSPS OOOOa, therefore, it is exempt under §64.2(b)(1)(i) for control of H2S. 3Bear believes the performance testing and compliance demonstrations required to confirm H2S destruction are adequate to also demonstrate VOC destruction. Therefore, 3Bear believes this facility IS NOT subject to 40 CFR 64.
40 CFR 68	**Chemical Accident Prevention**	Yes		This facility will handle naturally occurring hydrocarbon mixtures at a natural gas processing plant and the Accidental Release Prevention Provisions may be applicable to this facility. The facility may be required to submit the appropriate accidental release emergency response program plan prior to operation of the facility with more than the threshold quantity of a regulated substance.
Title IV – Acid Rain 40 CFR 72	**Acid Rain**	No		Not an affected facility.
Title IV – Acid Rain 40 CFR 73	**Sulfur Dioxide** Allowance Emissions	No		Not an affected facility.
Title IV-Acid Rain 40 CFR 75	**Continuous Emissions Monitoring**	No		Not an affected facility.
Title IV – Acid Rain 40 CFR 76	**Acid Rain** Nitrogen Oxides **Emission Reduction Program**	No		Not an affected facility.
Title VI – 40 CFR 82	Protection of **Stratospheric Ozone**	N/A	N/A	Not Applicable –facility will not “service”, “maintain” or “repair” class I or class II appliances nor “disposes” of the appliances.

Section 14

Operational Plan to Mitigate Emissions

(Submitting under 20.2.70, 20.2.72, 20.2.74 NMAC)

☐ **Title V Sources** (20.2.70 NMAC)**:** By checking this box and certifying this application the permittee certifies that it has developed an **Operational Plan to Mitigate Emissions During Startups, Shutdowns, and Emergencies** defining the measures to be taken to mitigate source emissions during startups, shutdowns, and emergencies as required by 20.2.70.300.D.5(f) and (g) NMAC. This plan shall be kept on site to be made available to the Department upon request. This plan should not be submitted with this application.

☑ **NSR** (20.2.72 NMAC)**, PSD** (20.2.74 NMAC) **& Nonattainment** (20.2.79 NMAC) **Sources:** By checking this box and certifying this application the permittee certifies that it has developed an **Operational Plan to Mitigate Source Emissions During Malfunction, Startup, or Shutdown** defining the measures to be taken to mitigate source emissions during malfunction, startup, or shutdown as required by 20.2.72.203.A.5 NMAC. This plan shall be kept on site to be made available to the Department upon request. This plan should not be submitted with this application.

☑ **Title V** (20.2.70 NMAC)**, NSR** (20.2.72 NMAC)**, PSD** (20.2.74 NMAC) **& Nonattainment** (20.2.79 NMAC) **Sources:** By checking this box and certifying this application the permittee certifies that it has established and implemented a Plan to Minimize Emissions During Routine or Predictable Startup, Shutdown, and Scheduled Maintenance through work practice standards and good air pollution control practices as required by 20.2.7.14.A and B NMAC. This plan shall be kept on site or at the nearest field office to be made available to the Department upon request. This plan should not be submitted with this application.

Section 15

Alternative Operating Scenarios

(Submitting under 20.2.70, 20.2.72, 20.2.74 NMAC)

Alternative Operating Scenarios: Provide all information required by the department to define alternative operating scenarios. This includes process, material and product changes; facility emissions information; air pollution control equipment requirements; any applicable requirements; monitoring, recordkeeping, and reporting requirements; and compliance certification requirements. Please ensure applicable Tables in this application are clearly marked to show alternative operating scenario.

Construction Scenarios: When a permit is modified authorizing new construction to an existing facility, NMED includes a condition to clearly address which permit condition(s) (from the previous permit and the new permit) govern during the interval between the date of issuance of the modification permit and the completion of construction of the modification(s). There are many possible variables that need to be addressed such as: Is simultaneous operation of the old and new units permitted and, if so for example, for how long and under what restraints? In general, these types of requirements will be addressed in Section A100 of the permit, but additional requirements may be added elsewhere. Look in A100 of our NSR and/or TV permit template for sample language dealing with these requirements. Find these permit templates at: https://www.env.nm.gov/aqb/permit/aqb_pol.html. Compliance with standards must be maintained during construction, which should not usually be a problem unless simultaneous operation of old and new equipment is requested.

In this section, under the bolded title "Construction Scenarios", specify any information necessary to write these conditions, such as: conservative-realistic estimated time for completion of construction of the various units, whether simultaneous operation of old and new units is being requested (and, if so, modeled), whether the old units will be removed or decommissioned, any PSD ramifications, any temporary limits requested during phased construction, whether any increase in emissions is being requested as SSM emissions or will instead be handled as a separate Construction Scenario (with corresponding emission limits and conditions, etc.

Please see Table 3-1.

Section 16

Air Dispersion Modeling

1) Minor Source Construction (20.2.72 NMAC) and Prevention of Significant Deterioration (PSD) (20.2.74 NMAC) ambient impact analysis (modeling): Provide an ambient impact analysis as required at 20.2.72.203.A(4) and/or 20.2.74.303 NMAC and as outlined in the Air Quality Bureau's Dispersion Modeling Guidelines found on the Planning Section's modeling website. If air dispersion modeling has been waived for one or more pollutants, attach the AQB Modeling Section modeling waiver approval documentation.
2) SSM Modeling: Applicants must conduct dispersion modeling for the total short term emissions during routine or predictable startup, shutdown, or maintenance (SSM) using realistic worst case scenarios following guidance from the Air Quality Bureau's dispersion modeling section. Refer to "Guidance for Submittal of Startup, Shutdown, Maintenance Emissions in Permit Applications (http://www.env.nm.gov/aqb/permit/app_form.html) for more detailed instructions on SSM emissions modeling requirements.
3) Title V (20.2.70 NMAC) ambient impact analysis: Title V applications must specify the construction permit and/or Title V Permit number(s) for which air quality dispersion modeling was last approved. Facilities that have only a Title V permit, such as landfills and air curtain incinerators, are subject to the same modeling required for preconstruction permits required by 20.2.72 and 20.2.74 NMAC.

What is the purpose of this application?	Enter an X for each purpose that applies
New PSD major source or PSD major modification (20.2.74 NMAC). See #1 above.	
New Minor Source or significant permit revision under 20.2.72 NMAC (20.2.72.219.D NMAC). See #1 above. **Note:** Neither modeling nor a modeling waiver is required for VOC emissions.	**X**
Reporting existing pollutants that were not previously reported.	
Reporting existing pollutants where the ambient impact is being addressed for the first time.	
Title V application (new, renewal, significant, or minor modification. 20.2.70 NMAC). See #3 above.	
Relocation (20.2.72.202.B.4 or 72.202.D.3.c NMAC)	
Minor Source Technical Permit Revision 20.2.72.219.B.1.d.vi NMAC for like-kind unit replacements.	
Other: i.e. SSM modeling. See #2 above.	
This application does not require modeling since this is a No Permit Required (NPR) application.	
This application does not require modeling since this is a Notice of Intent (NOI) application (20.2.73 NMAC).	
This application does not require modeling according to 20.2.70.7.E(11), 20.2.72.203.A(4), 20.2.74.303, 20.2.79.109.D NMAC and in accordance with the Air Quality Bureau's Modeling Guidelines.	

Check each box that applies:

☐ See attached, approved modeling **waiver for all** pollutants from the facility.
☐ See attached, approved modeling **waiver for some** pollutants from the facility.
☑ Attached in Universal Application Form 4 (UA4) is a **modeling report for all** pollutants from the facility.
☐ Attached in UA4 is a **modeling report for some** pollutants from the facility.
☐ No modeling is required.

Universal Application 4

Air Dispersion Modeling Report

Refer to and complete Section 16 of the Universal Application form (UA3) to assist your determination as to whether modeling is required. If, after filling out Section 16, you are still unsure if modeling is required, e-mail the completed Section 16 to the AQB Modeling Manager for assistance in making this determination. If modeling is required, a modeling protocol would be submitted and approved prior to an application submittal. The protocol should be emailed to the modeling manager. A protocol is recommended but optional for minor sources and is required for new PSD sources or PSD major modifications. Fill out and submit this portion of the Universal Application form (UA4), the "Air Dispersion Modeling Report", only if air dispersion modeling is required for this application submittal. This serves as your modeling report submittal and should contain all the information needed to describe the modeling. No other modeling report or modeling protocol should be submitted with this permit application.

16-A: Identification

1	Name of facility: 3Bear Libby Gas Plant
2	Name of company: 3 Bear Delaware Operating – NM, LLC
3	Current Permit number: NSR No. 7482
4	Name of applicant's modeler: Trenton Wade, Barr Engineering, Co.
5	Phone number of modeler: (970) 381-0564
6	E-mail of modeler: TWade@barr.com

16-B: Brief

1	Why is the modeling being done? Adding new equipment		
2	Describe the permit changes relevant to the modeling. Updated flaring volumes and engine emission rates.		
3	What geodetic datum was used in the modeling? WGS84		
4	How long will the facility be at this location? Permanently		
5	Is the facility a major source with respect to Prevention of Significant Deterioration (PSD)?	Yes	No **X**
6	Identify the Air Quality Control Region (AQCR) in which the facility is located. AQCR 155		

7	List the PSD baseline dates for this region (minor or major, as appropriate). The facility is located in AQCR 155 which has triggered the Minor Source Baseline Date for NO_2 (March 16, 1988), SO2 (July 28, 1978), PM10 (February 20, 1979), and PM2.5 (November 13, 2013).
8	Provide the name and distance to Class I areas within 50 km of the facility (300 km for PSD permits). There are no Class I areas within 50 km of the 3Bear Libby Gas Plant
9	Is the facility located in a non-attainment area? If so, describe. The facility is not located in a non-attainment area.
10	Describe any special modeling requirements, such as streamline permit requirements. N/A

16-C: Modeling History of Facility

1	Describe the modeling history of the facility, including the air permit numbers, the pollutants modeled, the National Ambient Air Quality Standards (NAAQS), New Mexico AAQS (NMAAQS), and PSD increments modeled. (Do not include modeling waivers).			
	Pollutant	Latest permit and modification number that modeled the pollutant facility-wide.	Date of Permit	Comments
	CO	7482	January 8, 2018	NAAQs/NMAAQs
	NO_2	7482	January 8, 2018	NAAQs/NMAAQs/PSD
	SO_2	7482	January 8, 2018	NAAQs/NMAAQs/PSD
	H_2S	N/A		
	PM2.5	7482	January 8, 2018	NAAQs/NMAAQs/PSD
	PM10	7482	January 8, 2018	NAAQs/NMAAQs/PSD
	~~TSP~~[1]	N/A		
	Lead	N/A		
	Ozone (PSD only)	N/A		
	NM Toxic Air Pollutants (20.2.72.402 NMAC)	N/A		

1. The New Mexico Ambient Air Quality Standard for TSP was repealed by the Environmental Improvement Board effective November 30, 2018.

16-D: Modeling performed for this application

1	For each pollutant, indicate the modeling performed and submitted with this application. Choose the most complicated modeling applicable for that pollutant, i.e., culpability analysis assumes ROI and cumulative analysis were also performed.

	Pollutant	ROI	Cumulative analysis	Culpability analysis	Waiver approved	Pollutant not emitted or not changed.
	CO	N/A				
	NO_2	61.8 km	Background added			
	SO_2	54.2 km		X		
	H_2S	Combusted at thermal oxidizer			Submitted under Separate Cover	
	PM2.5	0.56 km	X			
	PM10	0.18 km	X			
	Lead					X
	Ozone					X
	State air toxic(s) (20.2.72.402 NMAC)					X

16-E: New Mexico toxic air pollutants modeling

1	List any New Mexico toxic air pollutants (NMTAPs) from Tables A and B in 20.2.72.502 NMAC that are modeled for this application. The facility does not emit any toxic air pollutants listed in Tables A and B in 20.2.72.502 NMAC.
	List any NMTAPs that are emitted but not modeled because stack height correction factor. Add additional rows to the table below, if required.

	Pollutant	Emission Rate (pounds/hour)	Emission Rate Screening Level (pounds/hour)	Stack Height (meters)	Correction Factor	Emission Rate/ Correction Factor

16-F: Modeling options

1	What model(s) were used for the modeling? Why? The AerMod dispersion model was used in this analysis. BEEST for Windows (Version 11.14) was used to facilitate the modeling effort. BEEST for Windows is a modeling manager used to prepare and run AerMod.
2	What model options were used and why were they considered appropriate to the application? 3Bear ran the model in Regulatory Default mode with the following options:

	• the use of stack-tip downwash; • incorporating the effects of elevated terrain; • including the calms and missing data processing routines; • forcing the use of a 4-hour half-life when modeling SO in an urban source (not applicable for this location); and • disallowing for exponential decay for other applications. To estimate NO2 concentrations, the non-default mode was selected using the Ambient Ratio Method 2 (ARM2) technique. 3Bear used 0.5 as the national default for minimum ambient ratio and the default maximum ratio of 0.9.

16-G: Surrounding source modeling

1	If the surrounding source inventory provided by the Air Quality Bureau was believed to be inaccurate, describe how the sources modeled differ from the inventory provided. If changes to the surrounding source inventory were made, use the unmerged list of sources to describe the changes. No changes to the NM database have been changed for these model runs.	
2	Date of surrounding source retrieval. Near source information was obtained from the NMED (Supplied by email from Mr. Eric Peters to Mr. Trenton Wade on August 26, 2019).	
	AQB Source ID	Description of Corrections

16-H: Building and structure downwash

1	How many buildings are present at the facility?	The following structures were included in the modeling scenario: • One Office Building • One MCC Building • One Instrument Air Building • One Condensate Storage Vessel • Three Slug Catchers • Seven Compressor Skids • One Generator Skid • Two Heater Skids • One Condensate Stabilizer Tower • One Amine Contactor • One Amine Still • One Demethanizer Tower • One Maintenance Building

2	How many above ground storage tanks are present at the facility?	The following tanks were included in the modeling scenario: • One Gunbarrel Tank • Four Condensate Tanks • One Slop Oil Tank • One Produced Water Tank	
3	Was building downwash modeled for all buildings?	Yes **X**	No
4	If not, explain why.		
5	Building comments		

16-I: Receptors and modeled property boundary

1	"Restricted Area" is an area to which public entry is effectively precluded. Effective barriers include continuous fencing, continuous walls, or other continuous barriers approved by the Department, such as rugged physical terrain with a steep grade that would require special equipment to traverse. If a large property is completely enclosed by fencing, a restricted area within the property may be identified with signage only. Public roads cannot be part of a Restricted Area. A Restricted Area is required in order to exclude receptors from the facility property. If the facility does not have a Restricted Area, then receptors shall be placed within the property boundaries of the facility. Describe the fence or other physical barrier at the facility that defines the restricted area. 3Bear will install a continuous barrier around the 3Bear Libby Gas Plant with No Trespassing signage identifying the area as a limited access area.		
2	Receptors must be placed along publicly accessible roads in the restricted area. Are there public roads passing through the restricted area?	Yes	No **X**
3	Are restricted area boundary coordinates included in the modeling files?	Yes **X**	No
4	Describe the receptor grids and their spacing. The CO, NO2, SO2, PM2.5, and PM10 models used a Cartesian grid beyond the fence line as follows: 50-meter spacing was used out to 500 meters, 100-meter spacing was used out to 1 km, 250-meter spacing was used out to 5 km, and finally, an outer Cartesian grid with 1,000-meter spacing was used from 5 km out to a distance of 50km from the facility fence line in all directions. Insignificant receptors were deleted for cumulative NAAQS and PSD increment modeling.		
5	Describe receptor spacing along the fence line. Fence line receptors were spaced every 50 meters along the property boundary		
6	Describe the PSD Class I area receptors. The closest Class I area is Carlsbad Caverns National Park but is 88.8 km from the facility, so no receptors are analyzed there for this study.		

16-J: Sensitive areas

1	Are there schools or hospitals or other sensitive areas near the facility? This information is optional (and purposely undefined), but may help determine issues related to public notice.	Yes	No **X**
2	If so, describe.		
3	The modeling review process may need to be accelerated if there is a public hearing. Are there likely to be public comments opposing the permit application?	Yes	No **X**

16-K: Modeling Scenarios

1	Identify, define, and describe all modeling scenarios. Examples of modeling scenarios include using different production rates, times of day, times of year, simultaneous or alternate operation of old and new equipment during transition periods, etc. Alternative operating scenarios should correspond to all parts of the Universal Application and should be fully described in Section 15 of the Universal Application (UA3). One engine scenario is included in the application. Only one of the engine scenarios will be included in any given run as proposed in the list of engine options listed earlier in the application.
2	Which scenario produces the highest concentrations? Why? ENG-1 is the engine that was included in the modeling to capture worst case emissions for NO_2. ENG-1 and ENG-2 were modeled with the rest of the facility at a reduced receptor spacing of 1 km. ENG-2 had the highest concentration; therefore, it is the more conservative option. These modeling results are provided in the application.

3	Were emission factor sets used to limit emission rates or hours of operation? (This question pertains to the "SEASON", "MONTH", "HROFDY" and related factor sets, not to the factors used for calculating the maximum emission rate.)	Yes	No
4	If so, describe factors for each group of sources. List the sources in each group before the factor table for that group. (Modify or duplicate table as necessary. It’s ok to put the table below section 16-K if it makes formatting easier.) Sources:		

5

Hour of Day	Factor	Hour of Day	Factor								
1		13									
2		14									
3		15									
4		16									
5		17									
6		18									
7		19									
8		20									
9		21									
10		22									
11		23									
12		24									

If hourly, variable emission rates were used that were not described above, describe them here:

6	Were different emission rates used for short-term and annual modeling?	Yes	No **X**
7	If yes, describe.		

16-L: NO_2 Modeling

1	Which types of NO_2 modeling were used? Check all that apply.	
		100% NO_X to NO_2 conversion
		ARM
		PVMRM
		OLM
	X	ARM2
		Other:
2	Describe the NO_2 modeling. To estimate NO2 concentrations, the non-default mode was selected using the Ambient Ratio Method 2 (ARM2) technique. 3Bear used 0.5 as the national default for minimum ambient ratio and the default maximum ratio of 0.9.	
3	In-stack NO_2/NO_X ratio(s) used in modeling. 3Bear used 0.5 as the national default for minimum ambient ratio and the default maximum ratio of 0.9.	
4	Equilibrium NO_2/NO_X ratio(s) used in modeling. Minimum – 0.5 Maximum – 0.9	
5	Describe/justify the use of the ratios chosen. The 2019 NM AQB Air Dispersion Modeling Guidelines state to use 0.5 as the national default for minimum ambient ratio and the default maximum ratio of 0.9.	
6	Describe the design value used for each averaging period modeled. 1-hour: High eighth high	

16-M: Particulate Matter Modeling

1	Select the pollutants for which plume depletion modeling was used.	
		PM2.5
		PM10

	X	None		
2	Describe the particle size distributions used. Include the source of information. Particle size distribution was only used for haul road emissions which used AP42 eqn 13.2.2-1a and AP42 Table 13.2.2-2 to determine emissions for $PM_{2.5}$ and PM_{10}.			
3	Was secondary PM modeled for PM2.5? Only required for PSD major modifications that are significant for NOx and/or SOx. Optional for minor sources, but allows use of high eighth high.		Yes	No **X**

16-N: Setback Distances and Source Classification			
1	Portable sources or sources that need flexibility in their site configuration requires that setback distances be determined between the emission sources and the restricted area boundary (e.g. fence line) for both the initial location and future locations. Describe the setback distances for the initial location. Setback distances were not used at this facility.		
2	Describe the requested, modeled, setback distances for future locations, if this permit is for a portable stationary source. Include a haul road in the relocation modeling. N/A		
3	The unit numbers in the Tables 2-A, 2-B, 2-C, 2-E, 2-F, and 2-I should match the ones in the modeling files. Do these match?	Yes **X**	No
4	Provide a cross-reference table between unit numbers if they do not match. It's ok to place the table below section 16-N for easier formatting. N/A		
5	The emission rates in the Tables 2-E and 2-F should match the ones in the modeling files. Do these match?	Yes	No **X**
6	If not, explain why. The max hourly emissions from haul road traffic listed in Tables 2-E and 2-F for $PM_{2.5}$ and PM_{10} do not match the emissions listed in the model. Hourly emissions from haul road traffic in the modeling files were calculated based on an hourly average of the annual emission rate.		
7	Have the minor NSR exempt sources or Title V Insignificant Activities" (Table 2-B) sources been modeled?	Yes **X**	No
8	Which units consume increment for which pollutants? See Table 16-1 for a list of units emitting increment consuming pollutants.		
9	PSD increment description for sources. (for unusual cases, i.e., baseline unit expanded emissions after baseline date). The facility is located in AQCR 155 which has triggered the Minor Source Baseline Date for NO_2 (March 16, 1988), SO2 (July 28, 1978), PM10 (February 20, 1979), and PM2.5 (November 13, 2013).		

10	Are all the actual installation dates included in Table 2A of the application form, as required?	Yes **X**	No
11	If not please explain how increment consumption status is determined for the missing installation dates. All sources at this facility are included in the increment consumption analysis since any unit will have an installation date after the baseline date for NO_2 (March 16, 1988), SO2 (July 28, 1978), PM10 (February 20, 1979), and PM2.5 (November 13, 2013).		

16-O: Flare Modeling

1	For each flare or flaring scenario, complete the following			
	Flare ID (and scenario)	Average Molecular Weight	Gross Heat Release (cal/s)	Effective Flare Diameter (m)
	FL-1	25.68 lb/lb-mol	7.83×10^6 cal/s	2.80 m
	FL-2	64.00 lb/lb-mol	5.66×10^4 cal/s	0.75 m

16-P: Volume and Related Sources

1	Were the dimensions of volume sources different from standard dimensions in the Air Quality Bureau (AQB) Modeling Guidelines?	Yes	No **X**
2	If the dimensions of volume sources are different from standard dimensions in the AQB Modeling Guidelines, describe how the dimensions were determined.		
3	Describe the determination of sigma-Y and sigma-Z for fugitive sources. Sigma-Y and Sigma-Z were determined by following the haul road guidelines listed in the NM AQB 2019 Air Dispersion Modeling Guidelines: Sigma-Y was calculated by dividing the width of the road (W) by 2.15 Sigma-Z was taken from the 'Large Trucks' information listed in Table 28 of the NM AQB 2019 Air Dispersion Modeling Guidelines.		
4	Describe how the volume sources are related to unit numbers. Or say they are the same. See Table 16-1 for cross-referencing of unit numbers.		
5	Describe any open pits. There are no open pits at this facility.		
6	Describe emission units included in each open pit. N/A		

16-Q: Background Concentrations

1	Identify and justify the background concentrations used. Background concentrations were added to NO_2, CO, $PM_{2.5}$, PM_{10}, and SO_2. The values used were provided by NM AQB Air Dispersion Modeling Guidelines (Revised June 6, 2019). These concentrations are shown in Section 16-V.		
2	Were background concentrations refined to monthly or hourly values?	Yes	No **X**

16-R: Meteorological Data

1	Identify and justify the meteorological data set(s) used. The one-year Hobbs met data set (HOBBS_Artesia-NWS_Midland-ua_2015. HOBBS_Artesia-NWS_Midland-ua_2015.PFL) collected from January 2015 to December 2015 was used for modeling as provided by NMED. It is a complete and recent data set representative of meteorological conditions in similar terrain of like elevation surrounding the 3Bear Libby Gas Plant.
2	Discuss how missing data were handled, how stability class was determined, and how the data were processed, if the Bureau did not provide the data. N/A

16-S: Terrain

1	Was complex terrain used in the modeling? If no, describe why. Yes
2	What was the source of the terrain data? The elevations of receptors were determined using the AERMAP terrain processor and seamless DEM terrain data downloaded from the USGS *The National Map* server. The DEM terrain data was processed such that an actual, true elevation is assigned to each receptor as determined through satellite data. The area within the inner property boundary will be graded and assumed to be constant elevation.

16-T: Modeling Files

1	Describe the modeling files:		
	File name (or folder and file name)	Pollutant(s)	Purpose (ROI/SIA, cumulative, culpability analysis, other)
	ENG Option Test:		
	3Bear Libby Gas Plant_NOx_ENG1.BST	NOx	ROI/SIA
	3Bear Libby Gas Plant_NOx_ENG1_2015_NO2.GRF .LST	NOx	ROI/SIA
	Source Only:		
	3Bear Libby Gas Plant_CO.BST	CO	ROI/SIA
	3Bear Libby Gas Plant_CO_2015_CO.GRF .LST	CO	ROI/SIA
	3Bear Libby Gas Plant_NOx.BST	NOx	ROI/SIA
	3Bear Libby Gas Plant_NOx_2015_NO2.GRF .LST	NOx	ROI/SIA
	3Bear Libby Gas Plant_PM2.5.BST	$PM_{2.5}$	ROI/SIA
	3Bear Libby Gas Plant_PM2.5_2015_1993_PM2.5.GRF .LST	$PM_{2.5}$	ROI/SIA
	3Bear Libby Gas Plant_PM10.BST	PM_{10}	ROI/SIA
	3Bear Libby Gas Plant_PM10_2015_PM10.GRF .LST	PM_{10}	ROI/SIA
	3Bear Libby Gas Plant_SO2.BST	SO2	ROI/SIA
	3Bear Libby Gas Plant_SO2_2015_SO2.GRF .LST	SO2	ROI/SIA
	Near Source:		
	3Bear Libby Gas Plant_ PM2.5_Cumulative.BST	$PM_{2.5}$	Cumulative
	3Bear Libby Gas Plant_PM2.5_Cumulative_2015_PM2.5.GRF .LST	$PM_{2.5}$	Cumulative
	3Bear Libby Gas Plant_ PM10-Cumulative.BST	PM_{10}	Cumulative
	3Bear Libby Gas Plant_ PM10-Cumulative_2015_PM10.GRF .LST	PM_{10}	Cumulative
	3Bear Libby Gas Plant_SO2_Cumulative.BST	SO2	Cumulative
	3Bear Libby Gas Plant_SO2_Cumulative_2015_SO2.GRF .LST	SO2	Cumulative
	Culpability:		
	3Bear Libby Gas Plant_SO2_Cumulative_Culpability.BST	SO2	Culpability
	3Bear Libby Gas Plant_SO2_Cumulative_Culpability_2015_SO2.GRF .LST	SO2	Culpability
	3Bear Libby Gas Plant_SO2_PSD_Culpability.BST	SO2	Culpability
	3Bear Libby Gas Plant_SO2_PSD_Culpability_2015_SO2.GRF .LST	SO2	Culpability
	PSD Increment:		
	3Bear Libby Gas Plant_PM2.5_PSD.BST	$PM_{2.5}$	Other (PSD Increment)
	3Bear Libby Gas Plant_PM2.5_PSD_2015_PM2.5.GRF .LST	$PM_{2.5}$	Other (PSD Increment)
	3Bear Libby Gas Plant_PM10-PSD.BST	PM_{10}	Other (PSD Increment)
	3Bear Libby Gas Plant_PM10-PSD_2015_PM10.GRF .LST	PM_{10}	Other (PSD Increment)
	3Bear Libby Gas Plant_SO2-PSD.BST	SO2	Other (PSD Increment)
	3Bear Libby Gas Plant_SO2-PSD_2015_SO2.GRF .LST	SO2	Other (PSD Increment)

16-U: PSD New or Major Modification Applications

1	A new PSD major source or a major modification to an existing PSD major source requires additional analysis. Was preconstruction monitoring done (see 20.2.74.306 NMAC and PSD Preapplication Guidance on the AQB website)?	Yes	No
2	If not, did AQB approve an exemption from preconstruction monitoring?	Yes	No
3	Describe how preconstruction monitoring has been addressed or attach the approved preconstruction monitoring or monitoring exemption.		
4	Describe the additional impacts analysis required at 20.2.74.304 NMAC.		
5	If required, have ozone and secondary PM2.5 ambient impacts analyses been completed?		

16-V: Modeling Results

1	If ambient standards are exceeded because of surrounding sources, a culpability analysis is required for the source to show that the contribution from this source is less than the significance levels for the specific pollutant. Source only modeling was performed for NOx, CO, PM 2.5, PM10, and SO2. Near source modeling was performed for PM 2.5, PM10, and SO2. PSD increment modeling was performed for NOx, PM 2.5, PM10, and SO2. Inputs files (.BST) and Output files (.GRF, and .LST) are provided for each run.
2	Identify the maximum concentrations from the modeling analysis.

Pollutant	Period	Facility Concentration (µg/m3)	Total Modeled Concentration (µg/m3)	Total Modeled Concentration (PPM)	Background Concentration	Cumulative Concentration	Standard	Value of Standard	Units of Standard, Background, and Total	Percent of Standard
CO	1-hr	685.13	685.13	0.677	N/A	685.13	NAAQS	40,069.60	µg/m^3	1.7%
CO	1-hr	685.13	685.13	0.677	N/A	685.13	NMAAQS	14,997.50	µg/m^3	4.6%
CO	8-hr	229.78	229.78	0.227	N/A	229.78	NAAQS	10,303.60	µg/m^3	2.2%
CO	8-hr	229.78	229.78	0.227	N/A	229.78	NMAAQS	9,960.10	µg/m^3	2.3%
NO_2	1-hr	97.84	97.84	0.059	64.2	162.04	NAAQS	188.03	µg/m^3	86.2%
NO_2	24-hr	55.60	55.60	0.033	N/A	55.60	NMAAQS	188.03	µg/m^3	29.6%
NO_2	Annual	7.09	7.09	0.004	8.1	15.19	NAAQS	99.66	µg/m^3	15.2%
NO_2	Annual	7.09	7.09	0.004	8.1	15.19	NMAAQS	94.02	µg/m^3	16.2%
NO_2	Annual	7.09	7.09	0.004	8.1	15.19	PSD Class II Increment	25	µg/m^3	60.7%
$PM_{2.5}$	24-hr	3.94	8.25	N/A	13.4	21.65	NAAQS	35	µg/m^3	61.9%

$PM_{2.5}$	24-hr	3.94	3.95	N/A	N/A	3.95	PSD Class II Increment	9	$\mu g/m^3$	43.9%
$PM_{2.5}$	Annual	0.50	1.44	N/A	5.9	7.34	NAAQS	12	$\mu g/m^3$	61.2%
$PM_{2.5}$	Annual	0.50	0.54	N/A	N/A	0.54	PSD Class II Increment	4	$\mu g/m^3$	13.5%
PM_{10}	24-hr	4.20	4.20	N/A	N/A	4.20	NAAQS	150	$\mu g/m^3$	2.8%
PM_{10}	24-hr	4.20	4.23	N/A	N/A	4.23	PSD Class II Increment	30	$\mu g/m^3$	14.1%
PM_{10}	Annual	1.13	1.21	N/A	N/A	1.21	PSD Class II Increment	17	$\mu g/m^3$	7.1%
SO2	1-hr	184.18	184.18	0.07955	N/A	184.18	NAAQS	196.4	$\mu g/m^3$	93.8%
SO2	3-hr	157.19	157.19	0.06789	N/A	157.19	NAAQS	1309.3	$\mu g/m^3$	12.0%
SO2	24-hr	61.00	61.00	0.02635	N/A	61.00	NMAAQS	261.9	$\mu g/m^3$	23.3%
SO2	Annual	5.68	5.68	0.00245	0.67	6.35	NMAAQS	52.4	$\mu g/m^3$	12.1%
SO2	3-hr	157.19	157.19	0.06789	N/A	157.19	PSD Class II Increment	512	$\mu g/m^4$	30.7%
SO2	24-hr	61.00	61.00	0.02635	N/A	61.00	PSD Class II Increment	91	$\mu g/m^5$	67.0%
SO2	Annual	5.68	5.68	0.00245	0.67	6.35	PSD Class II Increment	20	$\mu g/m^6$	31.8%

1- Compliance with 1-hour NAAQS automatically demonstrates compliance with 24-hour NMAAQS
2- SO2 culpability analysis can be found in Table 16-2 and Table 16-3
3- of the Modeling Appendix

16-W: Location of maximum concentrations

1	Identify the locations of the maximum concentrations.

Pollutant	Period	UTM East (m)	UTM North (m)	Elevation (ft)	Distance (m)	Radius of Impact (ROI) (m)
NO_2	1-hr	638400	3601150	1133.53	362	61,769
NO_2	24-hr	638450	3601150	1133.26	361	6,897
NO_2	Annual	638646.7	3601488	1134.18	218	2,081
CO	1-hr	638300	3601100	1134.16	431	N/A
CO	8-hr	638300	3601100	1134.16	431	N/A
$PM_{2.5}$	24-hr	638646.7	3601438	1134.18	229	561
$PM_{2.5}$	Annual	638646.7	3601488	1134.18	218	464
PM_{10}	24-hr	638646.7	3601438	1134.18	229	N/A
PM_{10}	Annual	638646.7	3601438	1134.18	229	175
SO2	1-hr	638400	3601050	1134.2	461	54,201

SO2	3-hr	638350	3601200	1133.44	321	13,644
SO2	24-hr	638350	3601200	1133.44	321	5,981
SO2	Annual	638646.7	3601488	1134.18	218	1,580

16-X: Summary/conclusions

1

A statement that modeling requirements have been satisfied and that the permit can be issued.

The facility was modeled for NO2, CO, PM2.5, PM10, and SO2 impacts. Source-only modeling was completed for each pollutant to determine the existence of significant impacts. Then a cumulative NAAQS/NMAAQS analysis for each pollutant exceeding the significance levels was completed.

Source only NO2, CO, PM2.5, PM10, and SO2 modeling results are presented in Section 16-V for the proposed facility and define the air quality impacts associated with the proposed facility. NO2, PM2.5, PM10, and SO2 impacts are above the Significance Levels, while CO impacts are below the Significance Levels. A radius of impact analysis was performed for each pollutant as illustrated in Figures 1 through 10.

Additional background concentrations were added to 8th high 1-hr NO2 and the annual NO2. The results demonstrated compliance with both the NAAQS, NMAAQS, and PSD Class II as seen in Section 16-V. Compliance with 1-hour NAAQS automatically demonstrates compliance with 24-hour NMAAQS.

Additional modeling for cumulative impacts was performed for PM2.5 and PM10 which included appropriate background sources and background concentrations per NMED guidelines. The cumulative PM2.5 and PM10 modeling results demonstrated compliance with both the NAAQS, NMAAQS, and PSD Class II as seen in Section 16-V. The PSD increment modeling included impacts from appropriate increment consuming or expanding sources received from the NMED.

Additional modeling for cumulative impacts was performed for SO2 which included appropriate background sources per NMED guidelines. The cumulative SO2 modeling results did not demonstrate compliance with both the NAAQS, NMAAQS, and PSD so a culpability analysis was conducted as seen in Table 16-2 and Table 16-3. In the culpability analysis, receptors that exceeded the NAAQS were modeled with Libby Gas Plant and the background sources provided by Eric Peters. The receptors were also modeled with only the background sources without the sources at Libby Gas Plant. As shown in Table 16-2 and Table 16-3, Libby Gas Plant does not contribute to any exceedances.

The modeling results show that all modeled pollutants demonstrate compliance with the NAAQS, NMAAQS, and PSD Class II increment standards.

All figures and tables can be found in the attached modeling appendix.

Modeling Appendix

Source Only **NO_2 Annual ROI: 2.1 km** **Max: 7.1 ug/m^3**

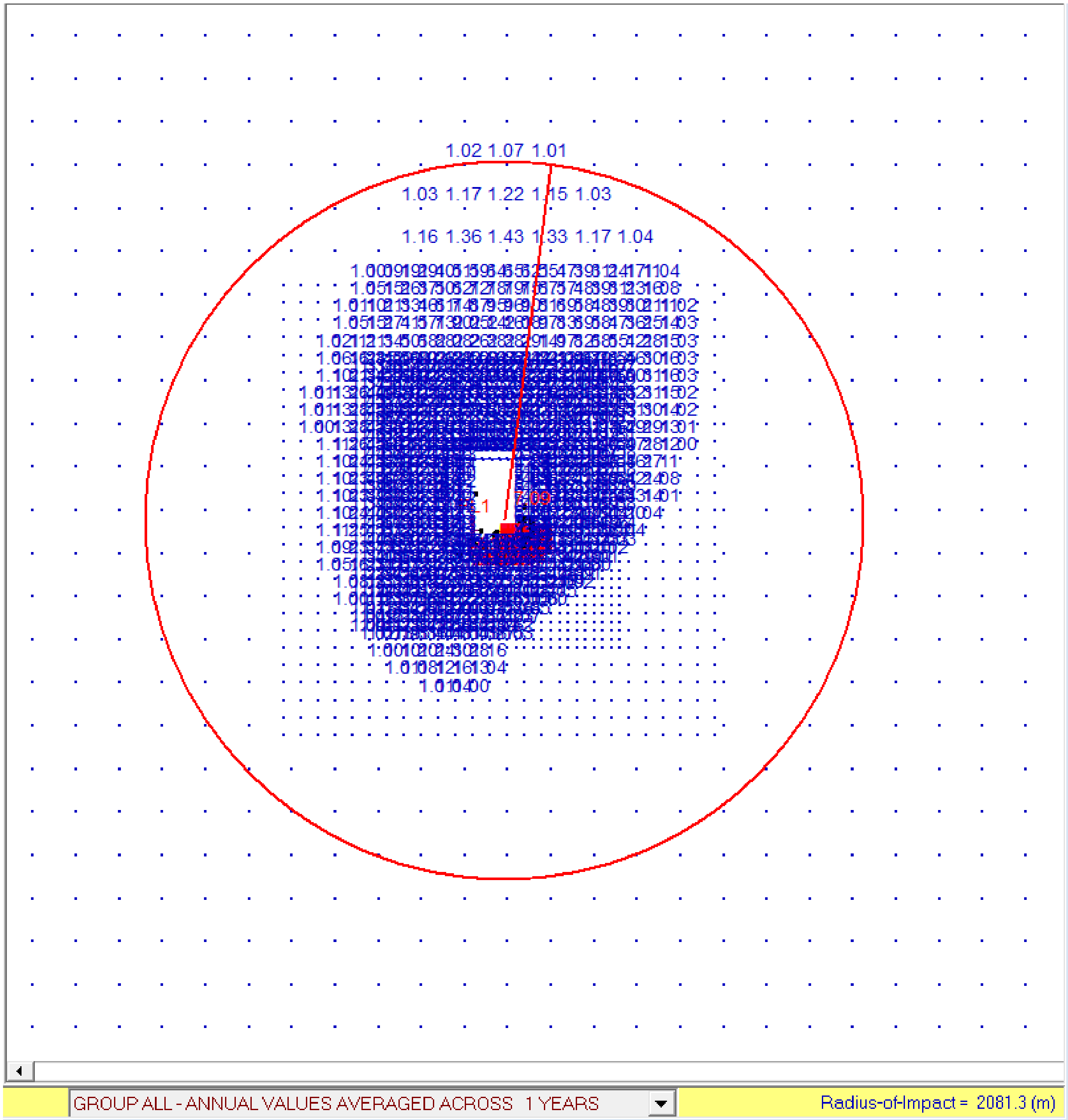

Figure 1

Source Only High 1ST High NO_2 24-hr ROI: 6.9 km Max: 55.6 ug/m^3

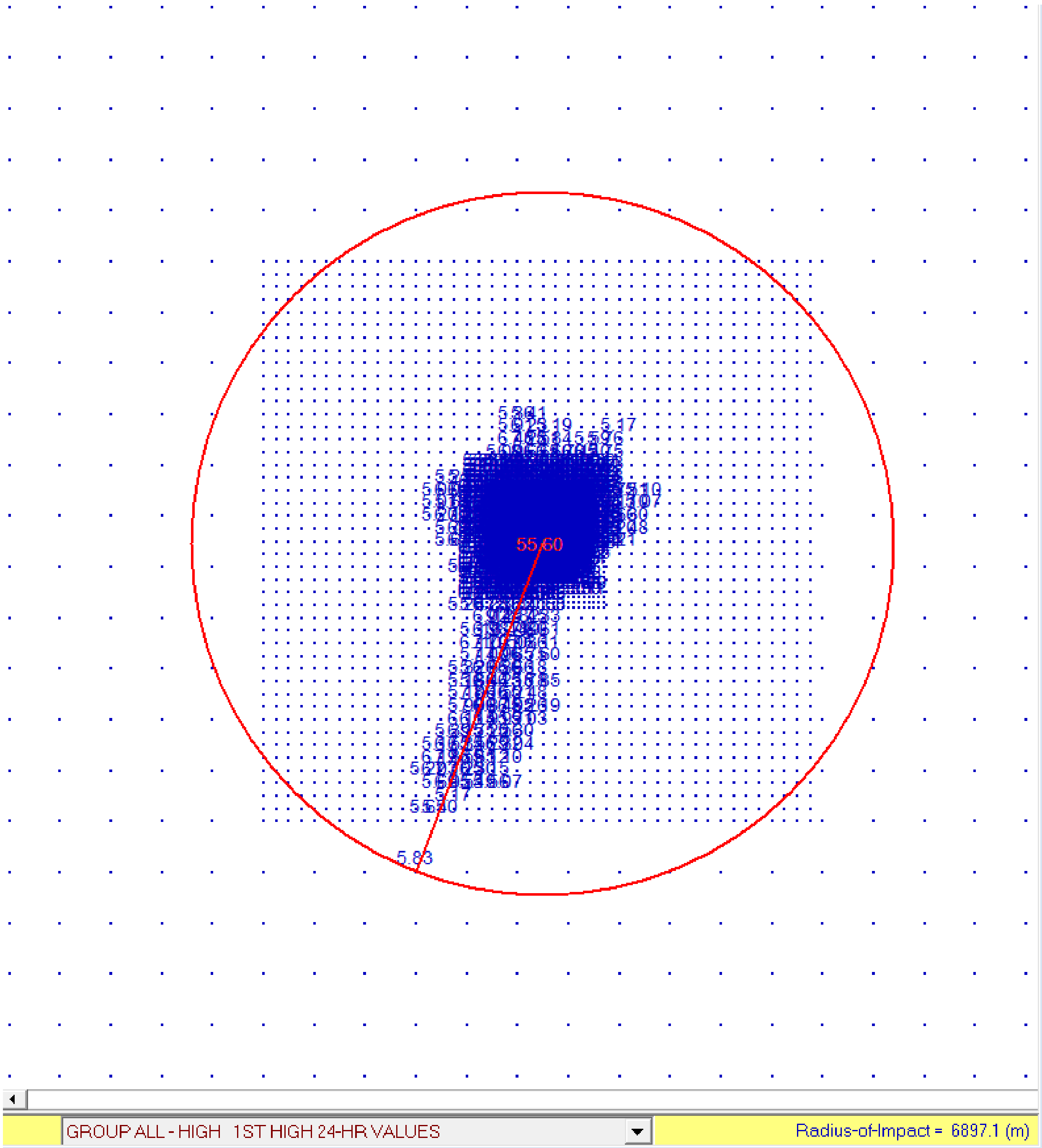

Figure 2

Source Only High 1st High NO_2 1-hr ROI: 61.8 km Max: 255.2 ug/m^3

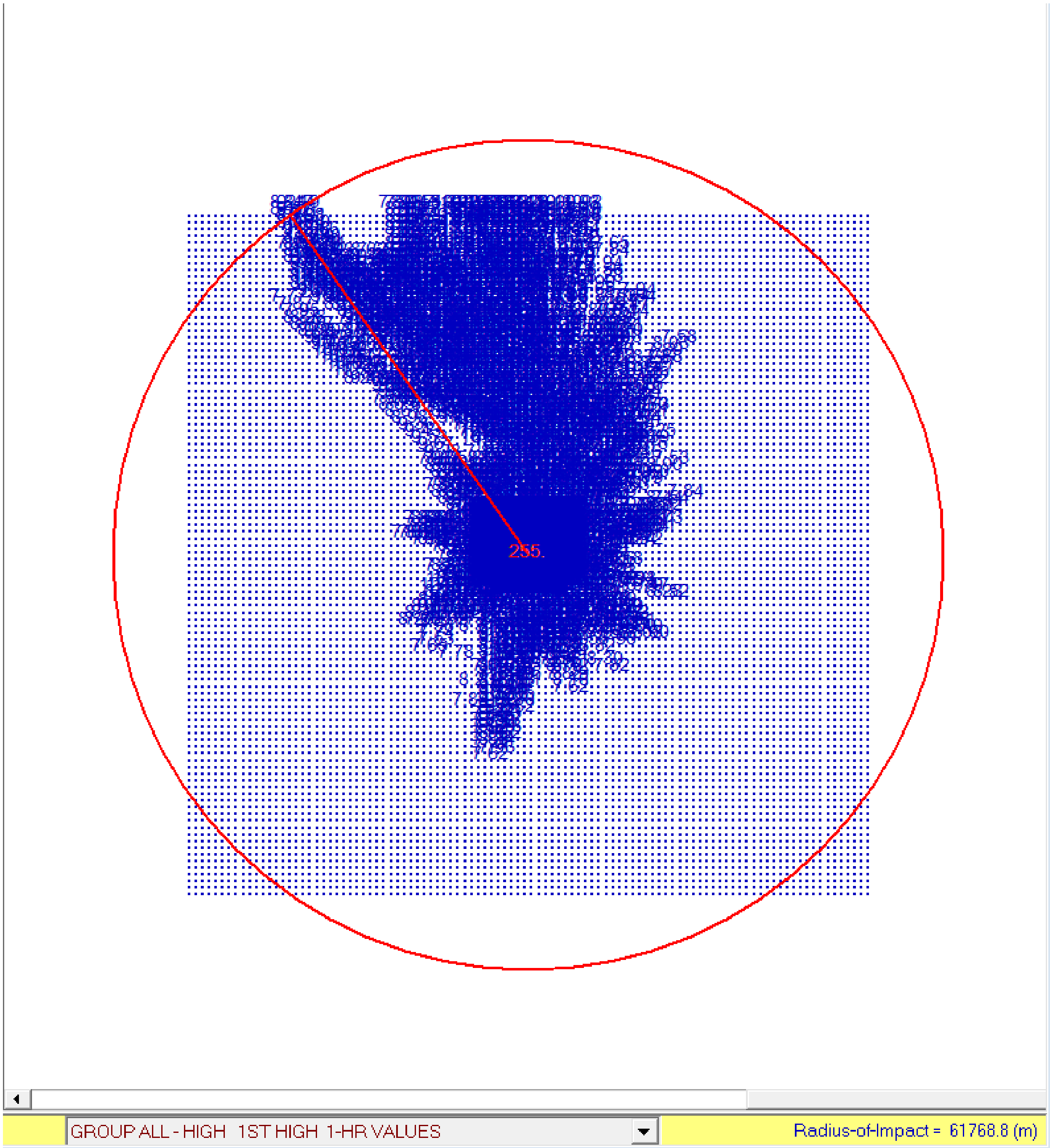

Figure 3

Source Only **$PM_{2.5}$ Annual ROI: 464.4 m** **Max: 0.50 ug/m^3**

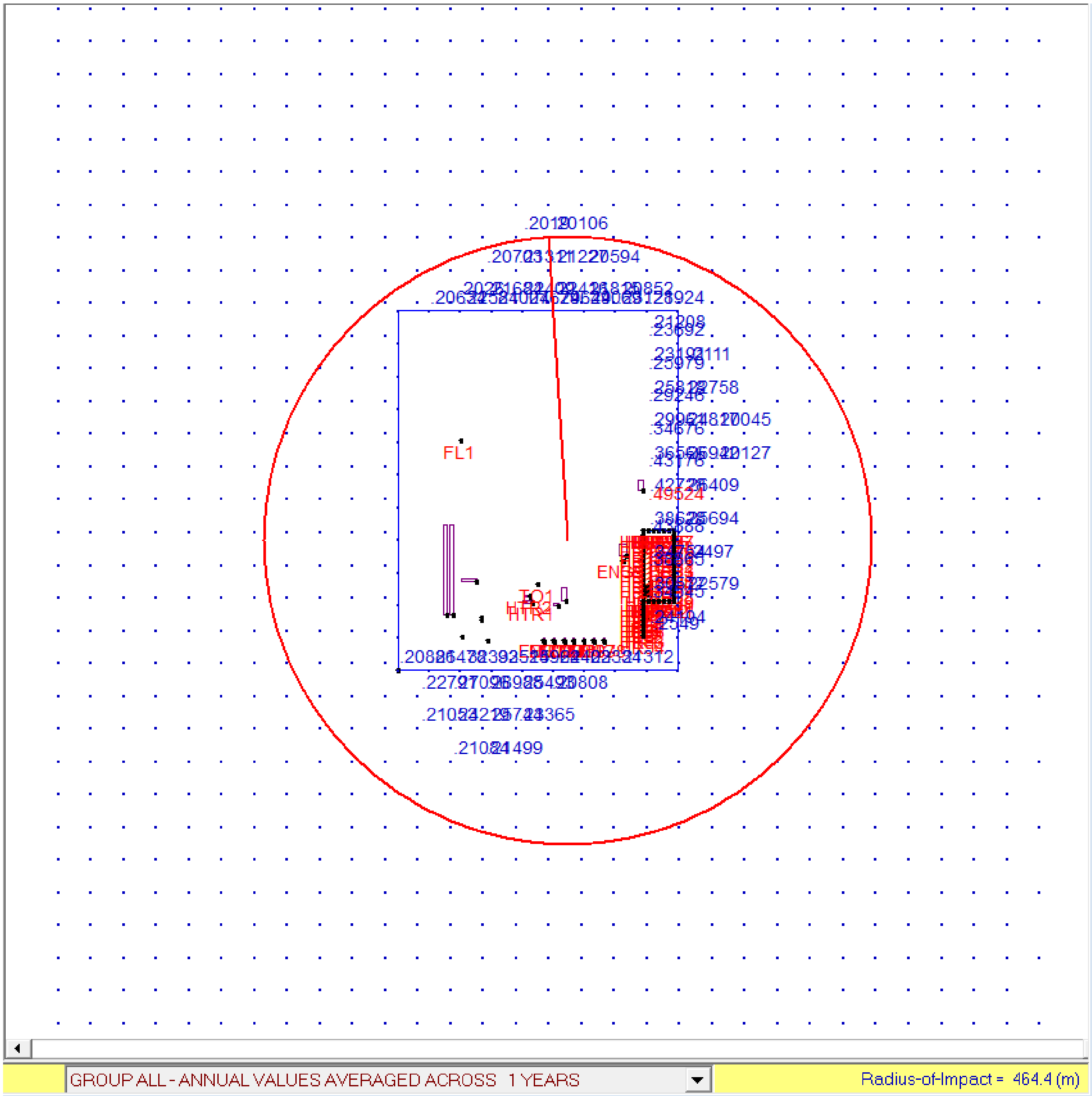

Figure 4

Source Only High 1st High $PM_{2.5}$ 24-hr ROI: 560.5 m Max: 4.3 ug/m^3

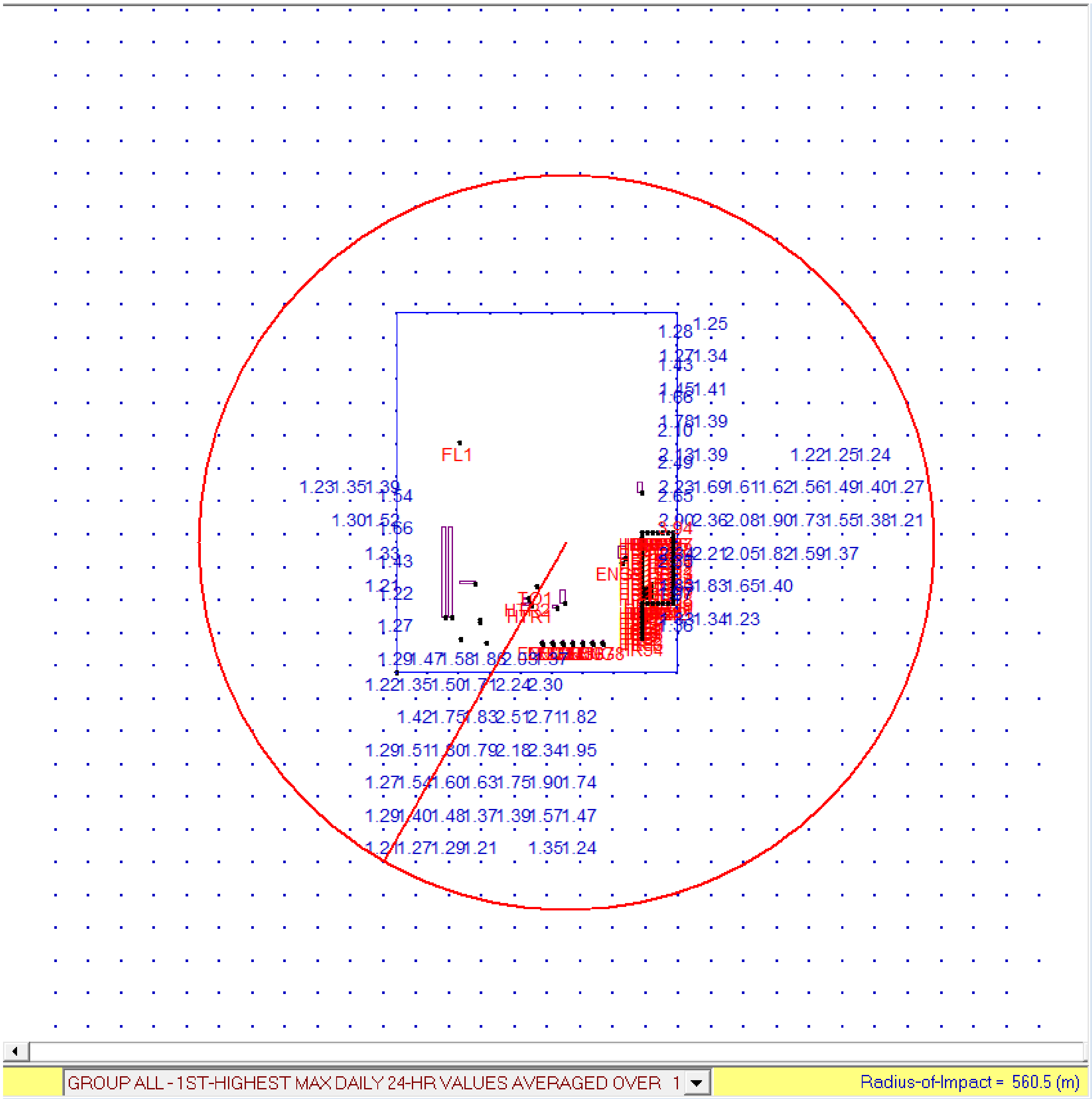

Figure 5

Source Only **PM_{10} Annual ROI: 175.2 m** **Max: 1.3 ug/m^3**

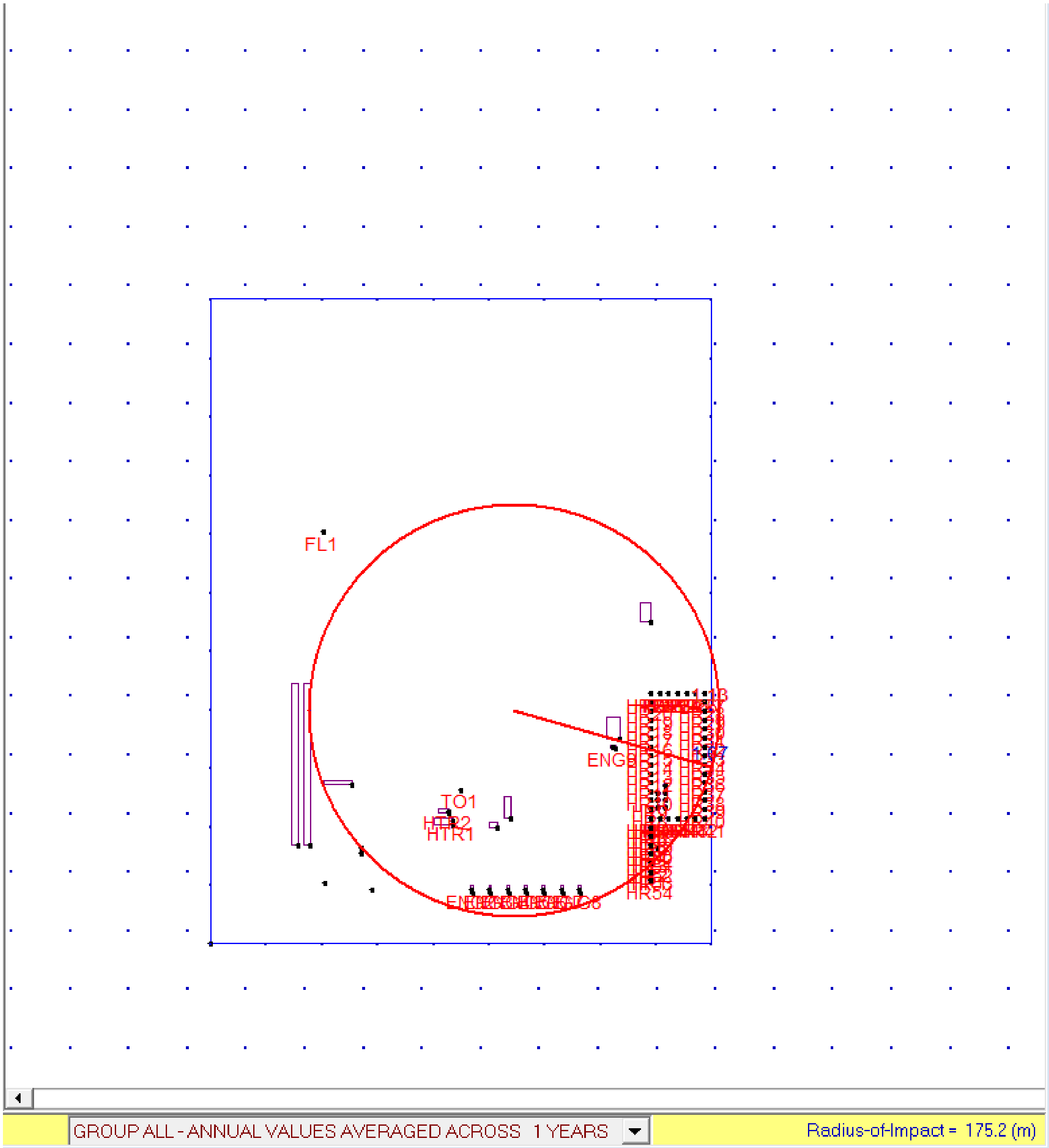

Figure 6

Source Only **SO2 Annual ROI: 1.6 km** **Max: 5.7 ug/m^3**

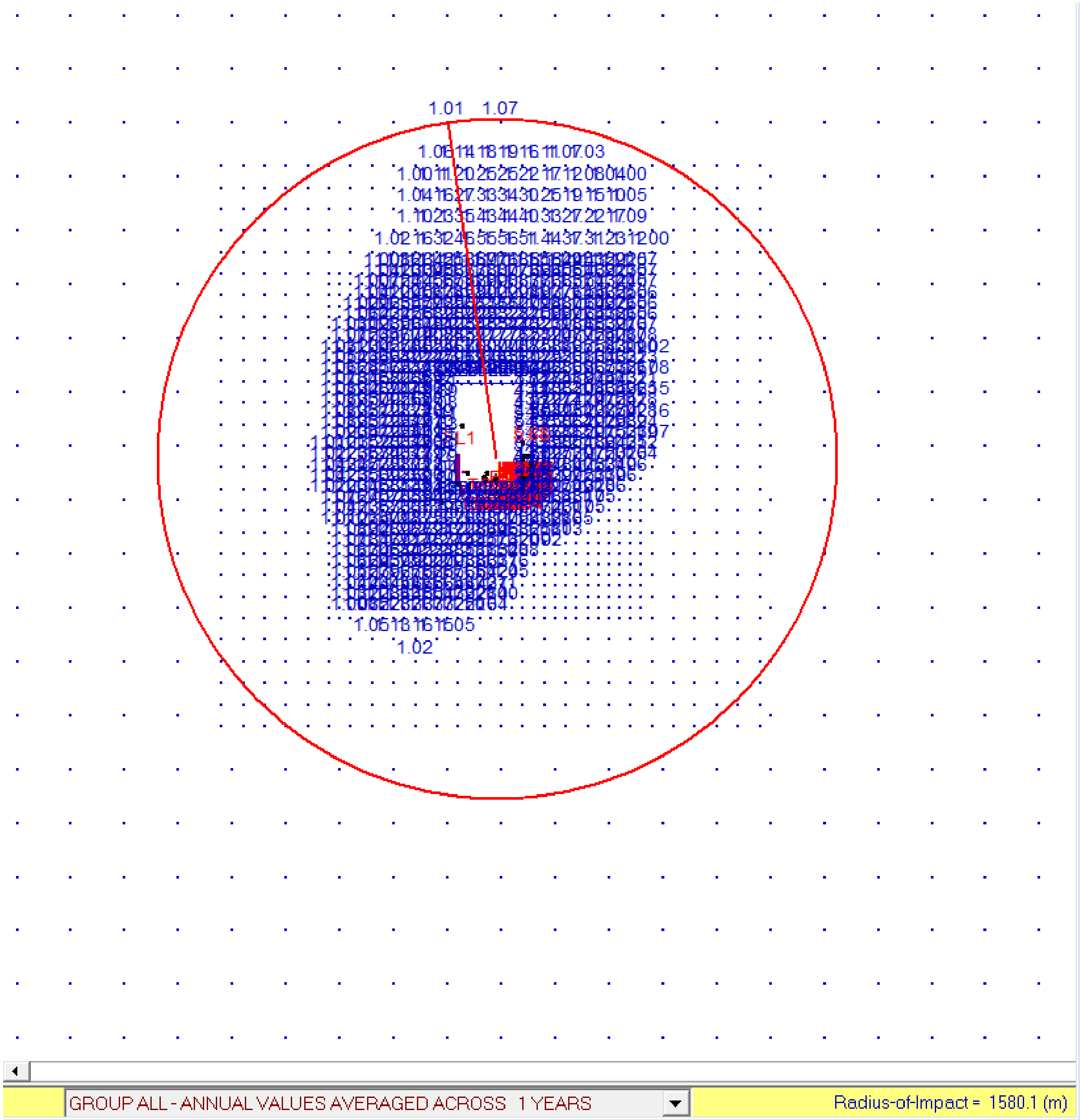

Figure 7

Source Only High 1st High SO2 1-hr ROI: 54.2 km Max: 518.6 ug/m^3

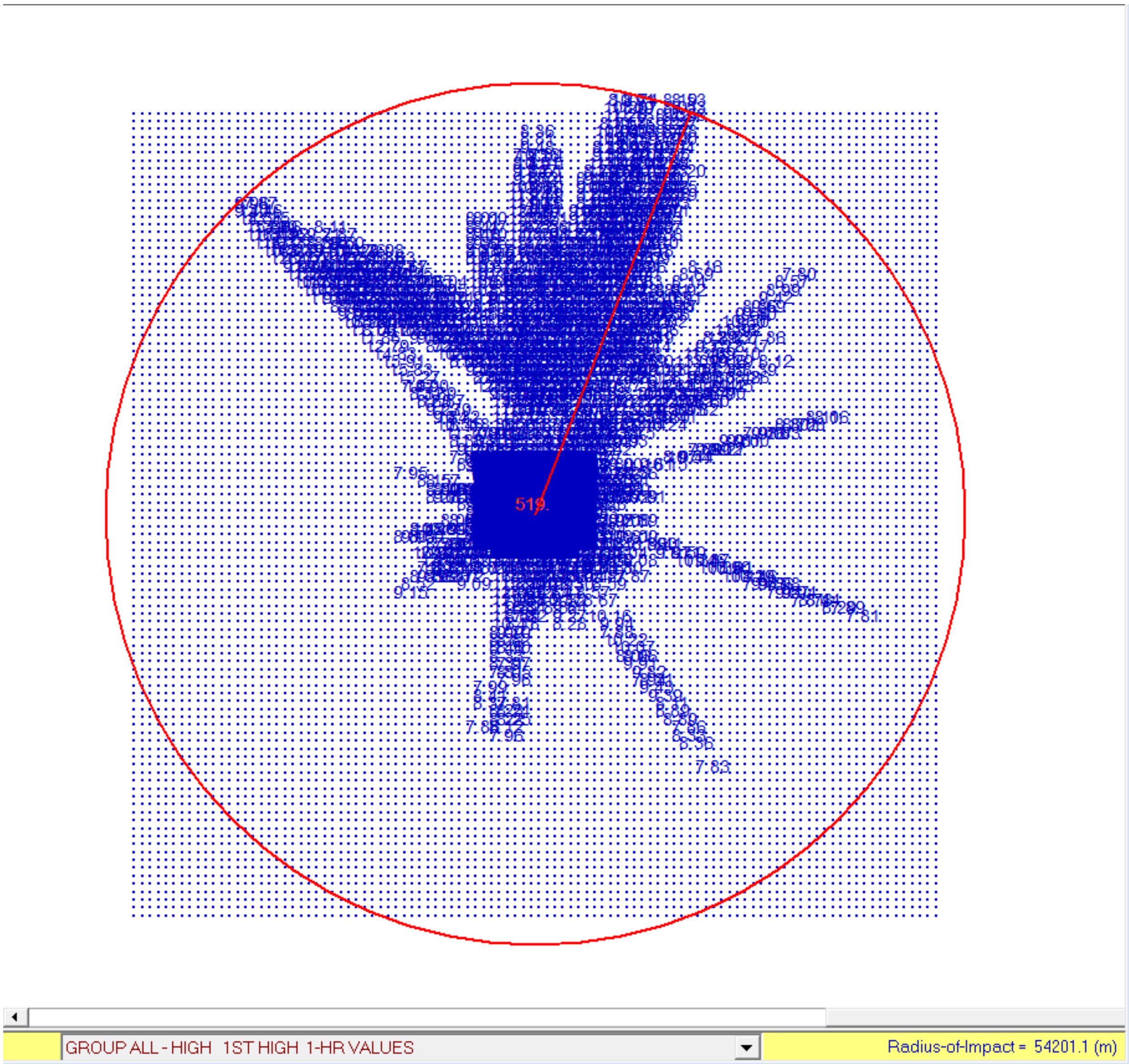

Figure 8

Source Only High 1st High SO2 3-hr ROI: 13.6 km Max: 173.0 ug/m³

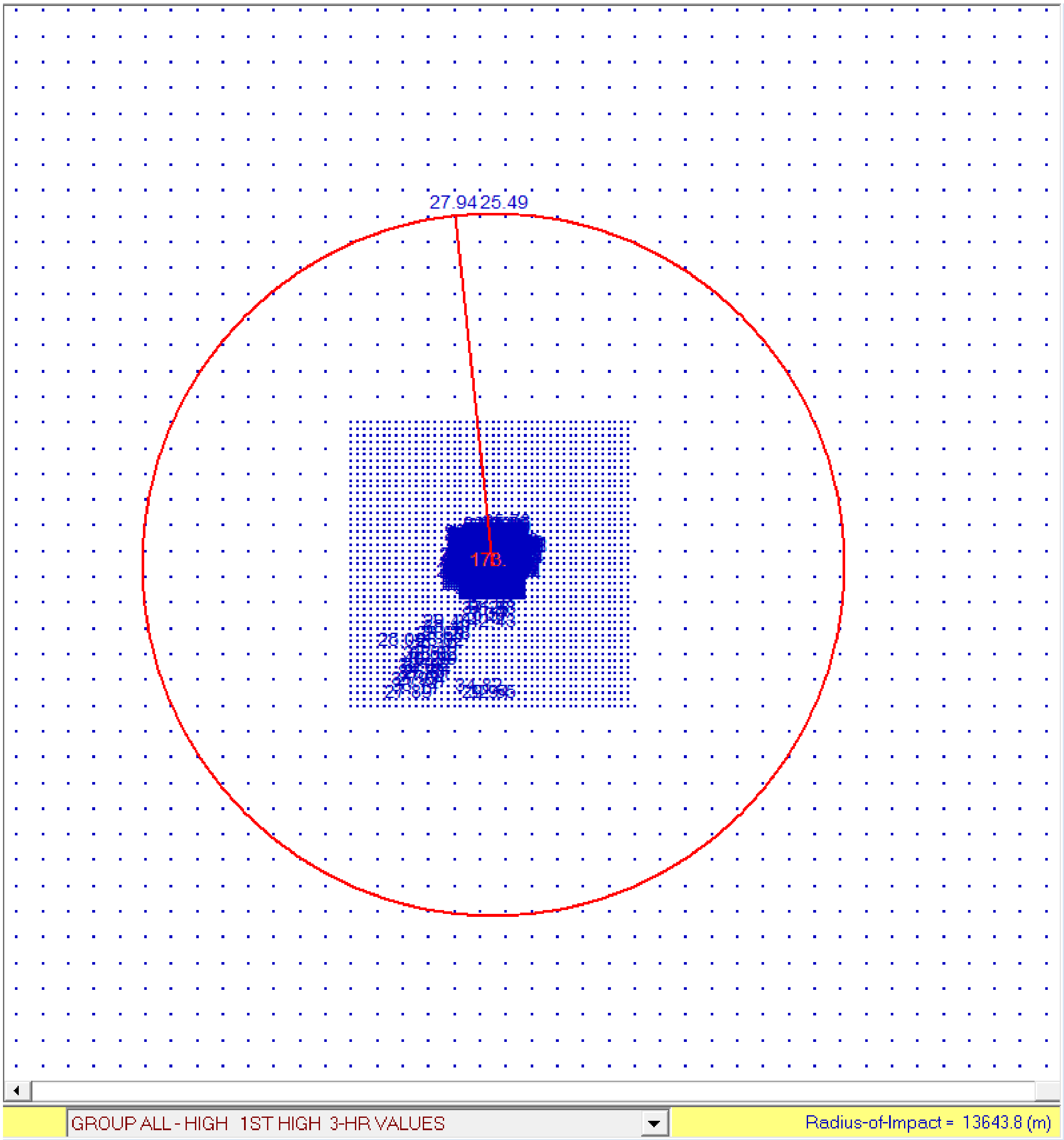

Figure 9

Source Only High 1st High SO2 24-hr ROI: 6.0 km Max: 61.1 ug/m^3

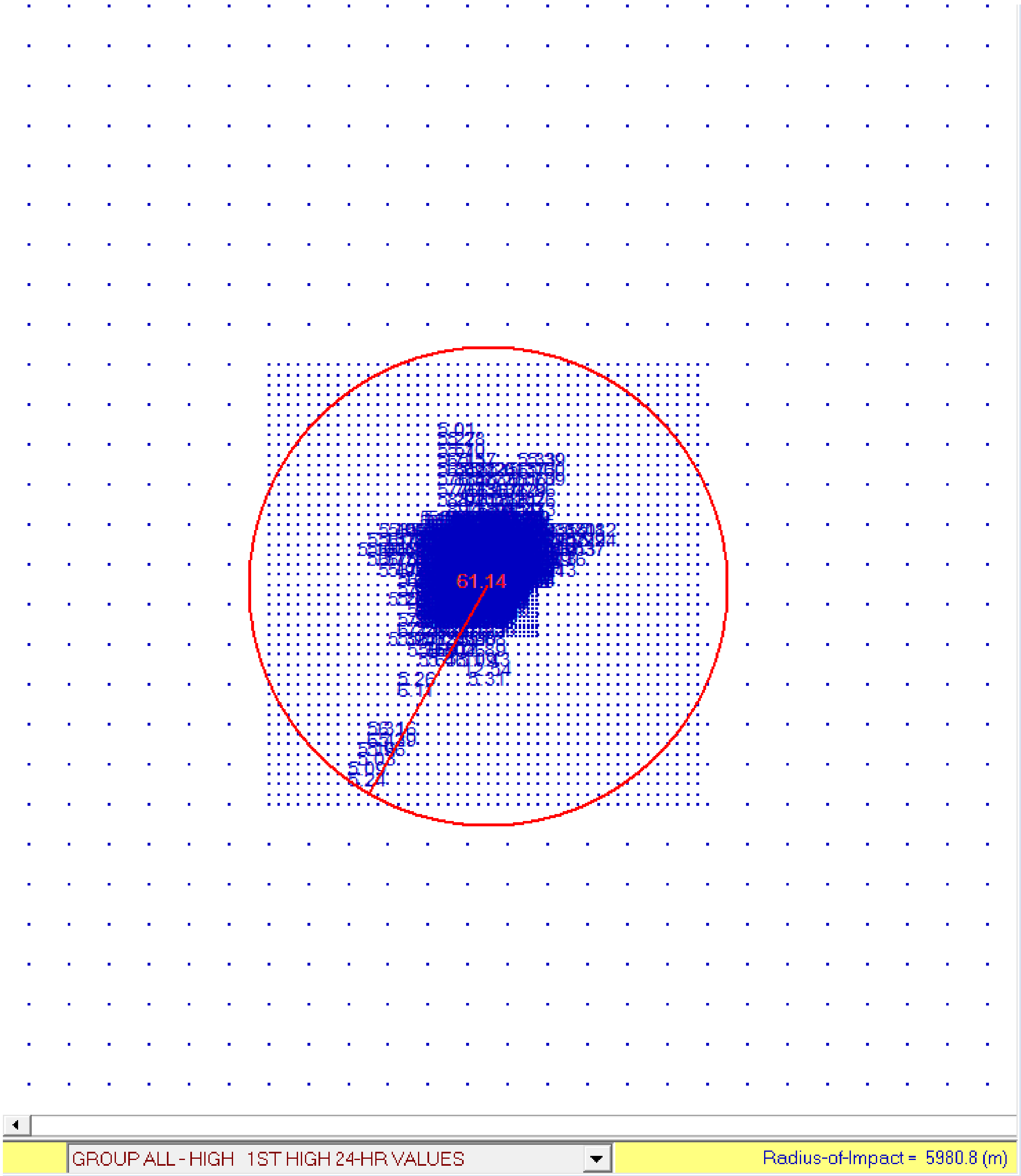

Figure 10

Table 16-1: Unit Number Cross Reference and PSD Increment Consumption

				PSD Increment Consumption			
				Emission Rate			
BEEST Source ID	Unit Number ID	Source Type	Emission Unit Description	NOx (lb/hr)	PM2.5 (lb/hr)	PM10 (lb/hr)	SO2 (lb/hr)
ENG1	ENG-1	Point	Compressor Engine	1.52E+00	5.65E-02	5.65E-02	1.58E-02
ENG2	ENG-2	Point	Compressor Engine	3.04E+00	1.14E-01	1.14E-01	3.17E-02
ENG3	ENG-3	Point	Compressor Engine	3.04E+00	1.14E-01	1.14E-01	3.17E-02
ENG4	ENG-4	Point	Compressor Engine	3.04E+00	1.14E-01	1.14E-01	3.17E-02
ENG5	ENG-5	Point	Compressor Engine	3.04E+00	1.14E-01	1.14E-01	3.17E-02
ENG6	ENG-6	Point	Compressor Engine	3.04E+00	1.14E-01	1.14E-01	3.17E-02
ENG7	ENG-7	Point	Compressor Engine	3.04E+00	1.14E-01	1.14E-01	3.17E-02
ENG8	ENG-8	Point	Compressor Engine	3.04E+00	1.14E-01	1.14E-01	3.17E-02
ENG9	ENG-9	Point	Compressor Engine	8.25E-01	8.57E-02	8.57E-02	1.04E-02
HTR1	HTR-1	Point	Hot Oil Heater	1.69E+00	2.57E-01	2.57E-01	9.61E-02
HTR2	HTR-2	Point	Regen Heater	7.43E-01	5.65E-02	5.65E-02	2.11E-02
TO	TO-1	Point	Thermal Oxidizer	1.63E+00	8.66E-05	8.66E-05	6.44E+01
FL1	FL-1	Point	Upset/Maintenance Flare	1.70E+02	5.75E+00	5.75E+00	6.30E+00
FL2	FL-2	Point	Tank Flare	8.92E-01	1.89E-03	1.89E-03	0.00E+00
HR1	HR-1	Volume	Road Dust	0.00E+00	4.76E-05	4.76E-04	0.00E+00
HR2	HR-1	Volume	Road Dust	0.00E+00	4.76E-05	4.76E-04	0.00E+00
HR3	HR-1	Volume	Road Dust	0.00E+00	4.76E-05	4.76E-04	0.00E+00
HR4	HR-1	Volume	Road Dust	0.00E+00	4.76E-05	4.76E-04	0.00E+00
HR5	HR-1	Volume	Road Dust	0.00E+00	4.76E-05	4.76E-04	0.00E+00
HR6	HR-1	Volume	Road Dust	0.00E+00	4.76E-05	4.76E-04	0.00E+00
HR7	HR-1	Volume	Road Dust	0.00E+00	4.76E-05	4.76E-04	0.00E+00
HR8	HR-1	Volume	Road Dust	0.00E+00	4.76E-05	4.76E-04	0.00E+00
HR9	HR-1	Volume	Road Dust	0.00E+00	4.76E-05	4.76E-04	0.00E+00
HR10	HR-1	Volume	Road Dust	0.00E+00	4.76E-05	4.76E-04	0.00E+00
HR11	HR-1	Volume	Road Dust	0.00E+00	4.76E-05	4.76E-04	0.00E+00
HR12	HR-1	Volume	Road Dust	0.00E+00	4.76E-05	4.76E-04	0.00E+00
HR13	HR-1	Volume	Road Dust	0.00E+00	4.76E-05	4.76E-04	0.00E+00
HR14	HR-1	Volume	Road Dust	0.00E+00	4.76E-05	4.76E-04	0.00E+00
HR15	HR-1	Volume	Road Dust	0.00E+00	4.76E-05	4.76E-04	0.00E+00
HR16	HR-1	Volume	Road Dust	0.00E+00	4.76E-05	4.76E-04	0.00E+00
HR17	HR-1	Volume	Road Dust	0.00E+00	4.76E-05	4.76E-04	0.00E+00
HR18	HR-1	Volume	Road Dust	0.00E+00	4.76E-05	4.76E-04	0.00E+00
HR19	HR-1	Volume	Road Dust	0.00E+00	4.76E-05	4.76E-04	0.00E+00
HR20	HR-1	Volume	Road Dust	0.00E+00	4.76E-05	4.76E-04	0.00E+00
HR21	HR-1	Volume	Road Dust	0.00E+00	4.76E-05	4.76E-04	0.00E+00
HR22	HR-1	Volume	Road Dust	0.00E+00	4.76E-05	4.76E-04	0.00E+00

HR23	HR-1	Volume	Road Dust	0.00E+00	4.76E-05	4.76E-04	0.00E+00
HR24	HR-1	Volume	Road Dust	0.00E+00	4.76E-05	4.76E-04	0.00E+00
HR25	HR-1	Volume	Road Dust	0.00E+00	4.76E-05	4.76E-04	0.00E+00
HR26	HR-1	Volume	Road Dust	0.00E+00	4.76E-05	4.76E-04	0.00E+00
HR27	HR-1	Volume	Road Dust	0.00E+00	4.76E-05	4.76E-04	0.00E+00
HR28	HR-1	Volume	Road Dust	0.00E+00	4.76E-05	4.76E-04	0.00E+00
HR29	HR-1	Volume	Road Dust	0.00E+00	4.76E-05	4.76E-04	0.00E+00
HR30	HR-1	Volume	Road Dust	0.00E+00	4.76E-05	4.76E-04	0.00E+00
HR31	HR-1	Volume	Road Dust	0.00E+00	4.76E-05	4.76E-04	0.00E+00
HR32	HR-1	Volume	Road Dust	0.00E+00	4.76E-05	4.76E-04	0.00E+00
HR33	HR-1	Volume	Road Dust	0.00E+00	4.76E-05	4.76E-04	0.00E+00
HR34	HR-1	Volume	Road Dust	0.00E+00	4.76E-05	4.76E-04	0.00E+00
HR35	HR-1	Volume	Road Dust	0.00E+00	4.76E-05	4.76E-04	0.00E+00
HR36	HR-1	Volume	Road Dust	0.00E+00	4.76E-05	4.76E-04	0.00E+00
HR37	HR-1	Volume	Road Dust	0.00E+00	4.76E-05	4.76E-04	0.00E+00
HR38	HR-1	Volume	Road Dust	0.00E+00	4.76E-05	4.76E-04	0.00E+00
HR39	HR-1	Volume	Road Dust	0.00E+00	4.76E-05	4.76E-04	0.00E+00
HR40	HR-1	Volume	Road Dust	0.00E+00	4.76E-05	4.76E-04	0.00E+00
HR41	HR-1	Volume	Road Dust	0.00E+00	4.76E-05	4.76E-04	0.00E+00
HR42	HR-1	Volume	Road Dust	0.00E+00	4.76E-05	4.76E-04	0.00E+00
HR43	HR-1	Volume	Road Dust	0.00E+00	4.76E-05	4.76E-04	0.00E+00
HR44	HR-1	Volume	Road Dust	0.00E+00	4.76E-05	4.76E-04	0.00E+00
HR45	HR-1	Volume	Road Dust	0.00E+00	4.76E-05	4.76E-04	0.00E+00
HR46	HR-1	Volume	Road Dust	0.00E+00	4.76E-05	4.76E-04	0.00E+00
HR47	HR-1	Volume	Road Dust	0.00E+00	4.76E-05	4.76E-04	0.00E+00
HR48	HR-1	Volume	Road Dust	0.00E+00	4.76E-05	4.76E-04	0.00E+00
HR49	HR-1	Volume	Road Dust	0.00E+00	4.76E-05	4.76E-04	0.00E+00
HR50	HR-1	Volume	Road Dust	0.00E+00	4.76E-05	4.76E-04	0.00E+00
HR51	HR-1	Volume	Road Dust	0.00E+00	4.76E-05	4.76E-04	0.00E+00
HR52	HR-1	Volume	Road Dust	0.00E+00	4.76E-05	4.76E-04	0.00E+00
HR53	HR-1	Volume	Road Dust	0.00E+00	4.76E-05	4.76E-04	0.00E+00
HR54	HR-1	Volume	Road Dust	0.00E+00	4.76E-05	4.76E-04	0.00E+00

Table 16-2: Cumulative Culpability

Pollutant	Averaging Period	Cumulative Concentration	UTM E	UTM N	Source Description
SO2	Annual	12.91172	605000	3635000	Libby GP with Surrounding Sources
SO2	4th High 1-hr	3286.382	605000	3635000	Libby GP with Surrounding Sources
SO2	2nd High 3-hr	1718.759	605000	3635000	Libby GP with Surrounding Sources
SO2	2nd High 24-hr	235.7298	605000	3635000	Libby GP with Surrounding Sources

Pollutant	Averaging Period	Cumulative Concentration	UTM E	UTM N	Source Description
SO2	Annual	12.87682	605000	3635000	Surrounding Sources w/o Libby GP
SO2	4th High 1-hr	3286.339	605000	3635000	Surrounding Sources w/o Libby GP
SO2	2nd High 3-hr	1718.705	605000	3635000	Surrounding Sources w/o Libby GP
SO2	2nd High 24-hr	235.7195	605000	3635000	Surrounding Sources w/o Libby GP

Pollutant	Averaging Period	Cumulative Concentration Difference
SO2	Annual	0.03490
SO2	4th High 1-hr	0.04300
SO2	2nd High 3-hr	0.05400
SO2	2nd High 24-hr	0.01030

Table 16-3: PSD Culpability

Pollutant	Averaging Period	PSD Class II Concentration	UTM E	UTM N	Source Description
SO2	Annual	2123.659	661000	3620000	Libby GP with Surrounding Sources
SO2	4th High 1-hr	47846.88	660000	3619000	Libby GP with Surrounding Sources
SO2	2nd High 3-hr	42850.36	660000	3619000	Libby GP with Surrounding Sources
SO2	2nd High 24-hr	18065.78	660000	3619000	Libby GP with Surrounding Sources

Pollutant	Averaging Period	PSD Class II Concentration	UTM E	UTM N	Source Description
SO2	Annual	2123.616	661000	3620000	Surrounding Sources w/o Libby GP
SO2	4th High 1-hr	47846.87	660000	3619000	Surrounding Sources w/o Libby GP
SO2	2nd High 3-hr	42850.36	660000	3619000	Surrounding Sources w/o Libby GP
SO2	2nd High 24-hr	18065.77	660000	3619000	Surrounding Sources w/o Libby GP

Pollutant	Averaging Period	PSD Class II Concentration Difference
SO2	Annual	0.04300
SO2	4th High 1-hr	0.01000
SO2	2nd High 3-hr	0.00000
SO2	2nd High 24-hr	0.01000

Section 17

Compliance Test History

(Submitting under 20.2.70, 20.2.72, 20.2.74 NMAC)

Compliance Test History Table

Unit No.	Test Description	Test Date
ENG-2 (Previously ENG-1b)	Tested in accordance with EPA test methods as required by NSR permit 7482.	4/16/2019
ENG-3 (Previously ENG-2)	Tested in accordance with EPA test methods as required by NSR permit 7482.	4/18/2019

EMISSIONS TEST REPORT

ON

EXHAUST EMISSIONS

FROM ONE

CATERPILLAR 3516B LE (ENG-1B)
RECIPROCATING INTERNAL COMBUSTION ENGINE

IN SERVICE AT

3BEAR LIBBY GAS PLANT

PREPARED FOR

3BEAR DELAWARE OPERATING

NEW MEXICO ENVIRONMENT DEPARTMENT AIR QUALITY BUREAU
PERMIT NUMBER 7482, AIRS NUMBER 35-025-1281

PREPARED BY

COMPLIANCE SERVICES AND TESTING, LLC

PROJECT NUMBER 1930

CST
COMPLIANCE SERVICES & TESTING

P.O. Box 94191-87199
7108 Washington St. NE
Suite A
Albuquerque, NM 87109
(505) 681-4909 Phone
www.comptesting.com

Summary of Results

An exhaust emission test was performed on one spark-ignited reciprocating internal combustion engine operated by 3Bear Delaware Operating. The engine was operating at the maximum load available at the time of testing. Analytical analyzers specific for the criteria pollutants of NO_x, CO, THC, and diluents of O_2 and CO_2 were continuously monitored from the exhaust streams. CST's measured emissions are on a part per million basis or percent volume and the calculated mass emission rates of NO_x, CO, and VOC's in grams per horsepower-hour, pounds per hour, and tons per year.

Table 2 – Summarized Emissions Results

	NOx		***CO***		***VOC***
Limits	*(3.0/13.3)*	*(1.0)*	*(2.4/10.4)*	*(2.0)*	*(0.7)*
ENG-1b	0.81/3.55	0.37	0.18/0.80	0.08	0.54

EMISSIONS TEST REPORT
ON
EXHAUST EMISSIONS

FROM ONE
CATERPILLAR 3516B LE (ENG-2)
RECIPROCATING INTERNAL COMBUSTION ENGINE

IN SERVICE AT
3BEAR LIBBY GAS PLANT

PREPARED FOR
3BEAR DELAWARE OPERATING

NEW MEXICO ENVIRONMENT DEPARTMENT AIR QUALITY BUREAU
PERMIT NUMBER 7482, AIRS NUMBER 35-025-1281

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Table 2 – Summarized Emissions Results

	NOx		***CO***		***VOC***
Limits	*(3.0/13.3)*	*(1.0)*	*(2.4/10.4)*	*(2.0)*	*(0.7)*
ENG-2	0.98/4.31	0.57	0.13/0.57	0.08	0.51

Section 20

Other Relevant Information

Other relevant information. Use this attachment to clarify any part in the application that you think needs explaining. Reference the section, table, column, and/or field. Include any additional text, tables, calculations or clarifying information.

Additionally, the applicant may propose specific permit language for AQB consideration. In the case of a revision to an existing permit, the applicant should provide the old language and the new language in track changes format to highlight the proposed changes. If proposing language for a new facility or language for a new unit, submit the proposed operating condition(s), along with the associated monitoring, recordkeeping, and reporting conditions. In either case, please limit the proposed language to the affected portion of the permit.

The following permit conditions are requested for the 3Bear Libby Gas Plant:

1. Requesting emission limits as specified in the summary table in Section 6 that are greater than 0.5 lb/hr and 0.5 tpy.
2. Individual HAP emissions will be less than 10 tpy. Facility wide HAP emissions will be less than 25 tpy.
3. Engine Emission Limits:
   - CO emissions on ENG 2-8 will be limited to 0.78 g/hp-hr
4. TK 1-6 and PWTK-1 will be controlled with a 95% control efficiency.

Section 22: Certification

Company Name: 3 Bear Delaware Operating – NM, LLC

I, Stephanie Swanson, hereby certify that the information and data submitted in this application are true and as accurate as possible, to the best of my knowledge and professional expertise and experience.

Signed this ____ day of ~~July~~ Sept. 6, 2019, ______, upon my oath or affirmation, before a notary of the State of

______________________.

*Signature

Sept. 6, 2019
Date

Stephanie Swanson
Printed Name

Manager of Engineering
Title

Scribed and sworn before me on this 6th day of September, 2019.

My authorization as a notary of the State of Colorado expires on the

8th day of May, 2022.

Notary's Signature

09.06.2019
Date

Robin G Machholz
Notary's Printed Name

Robin G Machholz
Notary Public
State of Colorado
Notary ID 20024015288
My Commission Expires May 08, 2022

*For Title V applications, the signature must be of the Responsible Official as defined in 20.2.70.7.AE NMAC.

New Mexico
ENVIRONMENT DEPARTMENT

525 Camino de los Marquez, Suite 1
Santa Fe, NM 87505-1816
Phone (505) 476-4300
Fax (505) 476-4375
www.env.nm.gov

MICHELLE LUJAN GRISHAM
GOVERNOR

HOWIE C. MORALES
LT. GOVERNOR

JAMES C. KENNEY
CABINET SECRETARY

JENNIFER J. PRUETT
DEPUTY SECRETARY

October 11, 2019

CERTIFIED MAIL NO. 7018 0040 0000 1910 1268

Stephanie Swanson
Manager of Engineering
3 Bear Delaware Operating – NM, LLC
1512 Larimer St., Suite 540
Denver, CO 80202

Re: Air Quality Permit Application No. 7482M1 (IDEA ID No. 38067 - PRN20190001)

Dear Ms. Swanson:

This letter is in response to your air quality permit application dated September 11, 2019 to modify the 3 Bear Delaware Operating, NM, LLC - 3 Bear Libby Gas Plant located 16.2 miles southwest of Monument, in Lea County, New Mexico.

The application was received by the Department on September 13, 2019. This letter addresses the Completeness Determination, Legal Notice and Comment, and Invoice for Permit Fee and is intended for use by the applicant, interested individuals and groups, and the appropriate NMED Field Office.

Completeness Determination

A preliminary review has been completed and the information provided is sufficient to complete an evaluation of your permit application. Therefore, your application was ruled administratively complete on October 11, 2019. Under the requirements of 20.2.72 NMAC, the Department anticipates issuing or denying this permit on or before January 9, 2020.

Public Notice and Comment

The Department will publish a legal notice that will be sent to the NMED district or field office nearest the source (see enclosed). It describes the proposed facility, a summary of estimated emissions and ambient impact, the Department's preliminary intent to issue the permit, and the provisions for public comment.

The Department's analysis includes the Statement of Basis and is prepared as part of the technical review of the permit application. All interested persons have thirty (30) days from the date the public notice is published to notify the Department in writing of their interest in the permit application. The Department will notify all such persons of when and where the Department's analysis may be reviewed. Interested persons may review the Department's analysis for thirty (30) days after it becomes available at the NMED district or field office nearest the source. Written comments on the analysis or permit application and requests for a public hearing may be submitted to the Department during this second thirty (30) day period or any time before the permit is issued or denied.

The Department will hold a public hearing if the Secretary determines there is significant public interest in the permit application. The Department will also determine the time, date, and place of the hearing and shall notify the applicant and the public. At the hearing, all interested persons shall be given a reasonable chance to submit data, views or arguments orally or in writing, and to examine witnesses testifying at the hearing.

After the permit is issued or denied, the Department will mail written notice of the action taken on a permit application to all persons who submitted written comments or evidence on the application.

Invoice for Permit Fee

In accordance with 20.2.75 NMAC, this letter includes an invoice for the required permit fee in the amount of $11,651.00. This fee is due within thirty (30) days of the date ruled administratively complete. 20.2.75 NMAC states that the Department shall deny any permit application or request for permit revision if the required permit fee has not been paid. This fee is not refundable. An enforcement/compliance fee will also be assessed annually. All fees shall be remitted in the form of a corporate check, certified check, or money order made payable to the New Mexico Environment Department and shall be accompanied by the enclosed remittance slip. Fees shall be submitted to NM Environment Department, AQB at the address shown on the invoice.

20.2.72.200.E NMAC states: "for all sources subject to this regulation applications for permits shall be filed prior to the commencement of construction, modification, or installation. Regardless of the anticipated commencement date, no construction, modification, or installation shall begin prior to issuance of the permit."

If you have any questions, please contact me in Santa Fe at 505-476-4376.

Sincerely,

Julia Kuhn
Permit Section
Air Quality Bureau

cc by email: Lori Marquez, Barr Engineering Co., LMarquez@barr.com
Trent Wade, Barr Engineering Co., TWade@barr.com
cc by regular mail: Hobbs NMED District/Field Office

Enclosures Sent with Letter:
- Legal Notice – Attachment A
- Permit fee invoice
- Compact Disk (CD) Copy of Application – Only the NMED District or Field office receives the CD
- NMED District or Field Office Request – Attachment B

Public Notice Only (no complete letter copy, or other enclosures are provided):
Individuals on the 20.2.72.206 NMAC, Section A(4) Public Notice List, by email
Public Notice only to EPA Region 6 by email to r6airpermits@epa.gov

LEGAL NOTICE
and
Preliminary Determination for an Air Quality Permit for
3 Bear Delaware Operating - NM LLC

3 Bear Delaware Operating - NM LLC, 1512 Larimer St, Suite 540, Denver, CO has submitted an air quality permit application to the Air Quality Bureau (AQB), New Mexico Environment Department (NMED) for an air quality permit to modify 3 Bear Libby Gas Plant. The application file has been assigned Permit No. 7482M1. The exact location of the facility is at latitude 32 degrees, 32 minutes, 32.5 seconds and longitude -103 degrees, 31 minutes, 32.6 seconds, Datum: WGS84. This facility is located approximately 16.2 miles SW of Monument, in Lea County, NM.

The proposed modification will consist of equipment addition to the facility and revision of emissions resulting in increased quantities of regulated air contaminants. The facility will receive up to 60 MMscf/day of gas from three surrounding compressor stations owned and operated by 3 Bear Libby to separate natural gas liquids from the field gas, producing natural gas liquids and a residue gas for transmission to a pipeline. The proposed construction will consist of eight compressor engines, one generator engine, one gunbarrel tank, four condensate tanks, one slope oil tank, one produced water tank, one amine regenerator heater, one hot oil heater, one amine unit, one condensate loadout, one thermal oxidizer, one maintenance flare, one tank flare, process piping fugitives and haul road fugitives.

Total air pollutant emissions to the atmosphere are estimated to be approximately as follow: Parentheses note changes in emissions from previous construction permit – 7482. The emissions for the facility are expressed in tons per year (tpy). Nitrogen Oxides (NOx) at 145.1 tpy (+21.1 tpy); Carbon Monoxide (CO) at 242.4 tpy (+ 114.5 tpy); Volatile Organic Compounds (VOC) at 169.0 tpy (+82.2 tpy); Sulfur Dioxide (SO_2) at 238.1 tpy (-0.7 tpy); Particulate Matter (PM) at 6.4 tpy (-1.5 tpy), Particulate Matter 10 microns or less (PM10) at 6.2 tpy (-0.4 tpy), and Particulate Matter 2.5 microns or less ($PM_{2.5}$) at 6.1 tpy (-0.1 tpy), and greenhouse gas (CO_2e) > 75,000 tpy. These emission estimates could change slightly during the course of the Department's review of the application.

The NMED has conducted a preliminary review of the information submitted with the permit application. The preliminary review and applicant's analysis of ambient air quality impacts indicates that the facility's air emissions will meet the air quality standards for NOx, CO, SO_2, PM, PM_{10} and $PM_{2.5}$. VOCs are a pre-cursor to ozone and the NMED does not require an individual ozone ambient impact analysis for each application. To determine compliance with national ambient air quality standards for ozone, NMED uses air monitors to monitor ozone concentrations. A full review will evaluate the estimated emission rates for the pollutants listed in this public notice and determine compliance with ambient air quality requirements and standards.

Based on the applicant's analysis, a preliminary determination is that this facility will comply with the requirements of Title 20, New Mexico Administrative Code (NMAC), Chapter 2, Parts 1, 3, 7, 35, 38, 61, 70, 71, 72, 73, 75, 77, 80 and 82; 40 CFR 50; 40 CFR 60 Subparts Dc, JJJJ and OOOOa; 40 CFR 63 Subparts ZZZZ; 40 CFR 68 and the New Mexico Air Quality Control Act. Therefore, the preliminary intent of NMED is to issue the air quality permit on or before January 9, 2020. This source is a PSD minor source according to 20.2.74 NMAC.

To ensure compliance with state and federal air regulations, the permit is expected to include conditions that limit the emissions and conditions that will require record keeping and reporting to the Department.

The permit application is available for review in electronic or hard copy at the Air Quality Bureau Office, 525 Camino de los Marquez Suite 1, Santa Fe, New Mexico. To arrange viewing of this application contact Arianna Espinoza, at 505-476-4367 or arianna.espinoza@state.nm.us. The permit application is also available at the NMED Hobbs Field Office, located at 2120 N. Alto, Hobbs, NM 88240 for public review**.**

All interested persons have thirty (30) days from the date this notice is published, to notify the Department in writing of their interest in the permit application. The written comments should refer to the company name, facility name and Permit No. (or send a copy of this notice along with your comments). The written comments shall state the nature of the issues raised and how it relates to the requirements of applicable state and federal air quality regulations and the Clean Air Act. The written comments should be mailed to Julia Kuhn, New Mexico Environment Dept., Air Quality Bureau, Permit Section, 525 Camino de los Marquez Suite 1, Santa Fe, NM 87505-1816.

The Department will notify all persons, who have provided written comments as to when and where the Department's analysis may be reviewed. Although all written comments will be made part of the public record, any person who does not express interest in writing before the end of this first thirty (30) day period will not receive such notification.

If the Department receives written public comment before the end of the Department's thirty (30) day public notice, the Department's analysis will be made available for review for thirty (30) days at the NMED district or field office nearest to the source before the permit will be issued. Written comments on the analysis or permit application may be submitted to the Department during this second thirty (30) day period or at any time before the permit is issued or denied.

Questions or comments not intended to be part of the public record can be directed to Julia Kuhn at 505-476-4376. General information about air quality and the permitting process can be found at the Air Quality Bureau's web site. The regulation dealing with public participation in the permit review process is 20.2.72.206 NMAC. This regulation can be found in the "Permits" section of this web site. Este es un aviso de la oficina de Calidad del Aire del Departamento del Medio Ambiente de Nuevo México, acerca de las emisiones producidas por un establecimiento en esta área. Si usted desea información en español, por favor comuníquese con esa oficina al teléfono 505-476-5557.

Notice of Non-Discrimination

NMED does not discriminate on the basis of race, color, national origin, disability, age or sex in the administration of its programs or activities, as required by applicable laws and regulations. NMED is responsible for coordination of compliance efforts and receipt of inquiries concerning non-discrimination requirements implemented by 40 C.F.R. Part 7, including Title VI of the Civil Rights Act of 1964, as amended; Section 504 of the Rehabilitation Act of 1973; the Age Discrimination Act of 1975, Title IX of the Education Amendments of 1972, and Section 13 of the Federal Water Pollution Control Act Amendments of 1972. If you have any questions about this notice or any of NMED's non-discrimination programs, policies or procedures, or if you believe that you have been discriminated against with respect to a NMED program or activity, you may contact: Kristine Yurdin, Non-Discrimination Coordinator, NMED, 1190 St. Francis Dr., Suite N4050, P.O. Box 5469, Santa Fe, NM 87502, (505) 827-2855, nd.coordinator@state.nm.us. You may also visit our website at https://www.env.nm.gov/non-employee-discrimination-complaint-page/ to learn how and where to file a complaint of discrimination.

State of New Mexico Environment Department

Air Quality Bureau

525 Camino de los Marquez, Suite 1
Santa Fe, NM 87505-1816

Telephone: (505) 476-4300 Fax: (505) 476-4375

INVOICE

Primary Billing Party:
3 Bear Delaware Operating - NM LLC
1512 Larimer St
Suite 540
Denver, CO 80202

Agency Interest:
38067 - 3 Bear - 3 Bear Libby Gas Plant
16.2 mi SW of Monument
Monument, NM 88240

INVOICE ID: 159964

INVOICE DATE: 10/11/2019
INVOICE DUE DATE: 11/12/2019

When you provide the check as payment you authorize the State of New Mexico to use information from your check to make a one-time electronic fund transfer from your account or to process the payment as a check transaction.

ASSESSMENTS

Air Quality, PRN20190001, Air - NSR Filing Fee	$500.00	
Air Quality, PRN20190001, Air - General Review Fee	$11,651.00	
INVOICED AMOUNT		$12,151.00

CREDITS

Payment (09/16/2019)	$500.00	
Total Credits:		$500.00
BALANCE DUE		$11,651.00

Cut Here and Include Lower Portion with Payment

Primary Billing Party:
3 Bear Delaware Operating - NM LLC
1512 Larimer St
Suite 540
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Amount Enclosed______________________________

Please make checks payable to:
Mail payments to:
NMED Federal Tax ID#: 85-6000565

New Mexico Environment Department, AQB
Air Quality Bureau
525 Camino de los Marquez, Suite 1
Santa Fe, NM 87505-1816
Telephone: (505) 476-4300 Fax: (505) 476-4375

District or Field Office Request

- The permit application available in Tempo and on the enclosed electronic disk and the attached Legal Notice are being sent to your office in accordance with 20.2.72.206 NMAC - Public Notice and Participation, which states: "the Department shall make available for public inspection the permit application, the Department's analysis, and the Department's preliminary determination. This material shall be available both at the Department's central office and the district or field office nearest to the proposed source." The Legal Notice contains the Department's preliminary determination.

- Please make these records available to public for a period one (1) year unless otherwise requested by the Air Quality Bureau.

Points-Based Fee Calculator
20.2.75 NMAC

Permit Number & Site Name	7482M1 3 Bear Libby Gas Plant		
Engineer Name & Telephone:	Julie Kuhn		
Date of First Invoice:	10/11/19		
Date of Second Invoice:	NA		
CPI Adjusted Point Fee	Fee ($/point)	$419	per point

Balance Due: $11,651

PERMITTING ACTIONS		Total Points
Technical Complexity	# of Units	
Emission Units -	9	9
(does not include 202 exempt)	"x" if present or req'd	
Fugitive Emissions	X	5
Nonattainment Area		0
Modeling Review	X	15
Air Toxics	"x" if present or req'd	
Level 1		0
Level II		
BACT		0
Health Assessment		0
Applicable Regulations	# of app. regs.	
20.2.X NMAC(number of regs)		0
NSPS (number of NSPS)		0
NESHAPs (number of NESHAPS)		0
	"x" if present or req'd	
Case-by-case MACT		0
PSD		
PSD Netting (no other analysis)		0
PSD review, with any netting eval.		0
Other Actions		
General Permit		0
Streamlined (# of Sites)		0
Technical Review		0
TOTAL OTHER ACTIONS		0
Small business or accel review?		
Amount submitted with Application	500	
Filing fee (enter 500 or 1000)	500	
Credit/Debits	0	

Non-applicable regulations: (do not count these)

NMAC Parts	NSPS	NESHAP
1	Subpart A	40 CFR 61 Subpart A
2		40 CFR 61 Subpart M
3		40 CFR 63 Subpart A
5		
7		
8		
60		
70		
71		
72		
73		
74		
75		
77		
78		
79		
80		
82		

COMMENTS:
5 new units and 4 units had revised emissions.
Fugitive emissions reviewed since VOC are major.
Modeling review.

Total Points	29
Fee	$ 12,151.00
Small business discount N/A	N/A
Fee (minus filling fee)	$ 11,651.00
Credits/Debits	$ -
Balance Due	$ 11,651.00
First Invoice Amount:	$ -
Second Invoice Amount:	$ -

DIRECTIONS:
Lines 25, 26, 27 (Applicable Regs): Insert number of applicable regulations using tables above to identify regs
Insert "X" or any symbol for other applicable fee points
Line 12 (Emission Units): Insert number of units - only count those emission units for which there is an applicable requirement in the permit. Do not add any fugitive sources to the total units listed in cell 12B
Line 14 (Fugitive Emissions): If fugitive sources are present that have applicable requirements in the permit, put an "X" in cell 14B

Do not charge for a reg that is not applicable to the current revision.

rev. 1/1/2019

State of New Mexico Environment Department

Air Quality Bureau

525 Camino de los Marquez, Suite 1
Santa Fe, NM 87505-1816

Telephone: (505) 476-4300 Fax: (505) 476-4375

INVOICE

Primary Billing Party:
3 Bear Delaware Operating - NM LLC
1512 Larimer St
Suite 540
Denver, CO 80202

Agency Interest:
38067 - 3 Bear - 3 Bear Libby Gas Plant
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Invoice Amount: $11,651.00

Amount Enclosed______________________________

Please make checks payable to: **New Mexico Environment Department, AQB**

Mail payments to: **Air Quality Bureau**
525 Camino de los Marquez, Suite 1
Santa Fe, NM 87505-1816
Telephone: (505) 476-4300 Fax: (505) 476-4375

NMED Federal Tax ID#: 85-6000565

LEGAL NOTICE

and

Preliminary Determination for an Air Quality Permit for

3 Bear Delaware Operating - NM LLC

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The proposed modification will consist of equipment addition to the facility and revision of emissions resulting in increased quantities of regulated air contaminants. The facility will receive up to 60 MMscf/day of gas from three surrounding compressor stations owned and operated by 3 Bear Libby to separate natural gas liquids from the field gas, producing natural gas liquids and a residue gas for transmission to a pipeline. The proposed construction will consist of eight compressor engines, one generator engine, one gunbarrel tank, four condensate tanks, one slope oil tank, one produced water tank, one amine regenerator heater, one hot oil heater, one amine unit, one condensate loadout, one thermal oxidizer, one maintenance flare, one tank flare, process piping fugitives and haul road fugitives.

Total air pollutant emissions to the atmosphere are estimated to be approximately as follow: Parentheses note changes in emissions from previous construction permit – 7482. The emissions for the facility are expressed in tons per year (tpy). Nitrogen Oxides (NOx) at 145.1 tpy (+21.1 tpy); Carbon Monoxide (CO) at 242.4 tpy (+ 114.5 tpy); Volatile Organic Compounds (VOC) at 169.0 tpy (+82.2 tpy); Sulfur Dioxide (SO_2) at 238.1 tpy (-0.7 tpy); Particulate Matter (PM) at 6.4 tpy (-1.5 tpy), Particulate Matter 10 microns or less (PM10) at 6.2 tpy (-0.4 tpy), and Particulate Matter 2.5 microns or less ($PM_{2.5}$) at 6.1 tpy (-0.1 tpy), and greenhouse gas (CO_2e) > 75,000 tpy. These emission estimates could change slightly during the course of the Department's review of the application.

The NMED has conducted a preliminary review of the information submitted with the permit application. The preliminary review and applicant's analysis of ambient air quality impacts indicates that the facility's air emissions will meet the air quality standards for NOx, CO, SO_2, PM, PM_{10} and $PM_{2.5}$. VOCs are a pre-cursor to ozone and the NMED does not require an individual ozone ambient impact analysis for each application. To determine compliance with national ambient air quality standards for ozone, NMED uses air monitors to monitor ozone concentrations. A full review will evaluate the estimated emission rates for the pollutants listed in this public notice and determine compliance with ambient air quality requirements and standards.

Based on the applicant's analysis, a preliminary determination is that this facility will comply with the requirements of Title 20, New Mexico Administrative Code (NMAC), Chapter 2, Parts 1, 3, 7, 35, 38, 61, 70, 71, 72, 73, 75, 77, 80 and 82; 40 CFR 50; 40 CFR 60 Subparts Dc, JJJJ and OOOOa; 40 CFR 63 Subparts ZZZZ; 40 CFR 68 and the New Mexico Air Quality Control Act. Therefore, the preliminary intent of NMED is to issue the air quality permit on or before January 9, 2020. This source is a PSD minor source according to 20.2.74 NMAC.

To ensure compliance with state and federal air regulations, the permit is expected to include conditions that limit the emissions and conditions that will require record keeping and reporting to the Department.

The permit application is available for review in electronic or hard copy at the Air Quality Bureau Office, 525 Camino de los Marquez Suite 1, Santa Fe, New Mexico. To arrange viewing of this application contact Arianna Espinoza, at 505-476-4367 or arianna.espinoza@state.nm.us. The permit application is also available at the NMED Hobbs Field Office, located at 2120 N. Alto, Hobbs, NM 88240 for public review.

All interested persons have thirty (30) days from the date this notice is published, to notify the Department in writing of their interest in the permit application. The written comments should refer to the company name, facility name and Permit No. (or send a copy of this notice along with your comments). The written comments shall state the nature of the issues raised and how it relates to the requirements of applicable state and federal air quality regulations and the Clean Air Act. The written comments should be mailed to Julia Kuhn, New Mexico Environment Dept., Air Quality Bureau, Permit Section, 525 Camino de los Marquez Suite 1, Santa Fe, NM 87505-1816.

The Department will notify all persons, who have provided written comments as to when and where the Department's analysis may be reviewed. Although all written comments will be made part of the public record, any person who does not express interest in writing before the end of this first thirty (30) day period will not receive such notification.

If the Department receives written public comment before the end of the Department's thirty (30) day public notice, the Department's analysis will be made available for review for thirty (30) days at the NMED district or field office nearest to the source before the permit will be issued. Written comments on the analysis or permit application may be submitted to the Department during this second thirty (30) day period or at any time before the permit is issued or denied.

Questions or comments not intended to be part of the public record can be directed to Julia Kuhn at 505-476-4376. General information about air quality and the permitting process can be found at the Air Quality Bureau's web site. The regulation dealing with public participation in the permit review process is 20.2.72.206 NMAC. This regulation can be found in the "Permits" section of this web site. Este es un aviso de la oficina de Calidad del Aire del Departamento del Medio Ambiente de Nuevo México, acerca de las emisiones producidas por un establecimiento en esta área. Si usted desea información en español, por favor comuníquese con esa oficina al teléfono 505-476-5557.

Notice of Non-Discrimination

NMED does not discriminate on the basis of race, color, national origin, disability, age or sex in the administration of its programs or activities, as required by applicable laws and regulations. NMED is responsible for coordination of compliance efforts and receipt of inquiries concerning non-discrimination requirements implemented by 40 C.F.R. Part 7, including Title VI of the Civil Rights Act of 1964, as amended; Section 504 of the Rehabilitation Act of 1973; the Age Discrimination Act of 1975, Title IX of the Education Amendments of 1972, and Section 13 of the Federal Water Pollution Control Act Amendments of 1972. If you have any questions about this notice or any of NMED's non-discrimination programs, policies or procedures, or if you believe that you have been discriminated against with respect to a NMED program or activity, you may contact: Kristine Yurdin, Non-Discrimination Coordinator, NMED, 1190 St. Francis Dr., Suite N4050, P.O. Box 5469, Santa Fe, NM 87502, (505) 827-2855, nd.coordinator@state.nm.us. You may also visit our website at https://www.env.nm.gov/non-employee-discrimination-complaint-page/ to learn how and where to file a complaint of discrimination.

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The newspaper public notice is the public notice required by regulation. Thus, the date published in the newspaper establishes the regulatory public notice time frame. Of course, whether your comments fall within the regulatory time frame to establish you as an "interested party" or not, we will consider all public comments received within a reasonable time frame.

For additional information on applications with public interest, public meetings or public hearings go
here.

Date Posted	Company Name / Facility Name	Permit No.	Location
10/11/2019	3 Bear Delaware Operating – NM LLC / 3 Bear Libby Gas Plant	NSR-7482M1	This facility is located approximately 16.2 miles SW of Monument, in Lea County.

New Mexico
ENVIRONMENT DEPARTMENT

525 Camino de los Marquez, Suite 1
Santa Fe, NM 87505-1816
Phone (505) 476-4300
Fax (505) 476-4375
www.env.nm.gov

MICHELLE LUJAN GRISHAM
GOVERNOR

HOWIE C. MORALES
LT. GOVERNOR

JAMES C. KENNEY
CABINET SECRETARY

JENNIFER J. PRUETT
DEPUTY SECRETARY

October 11, 2019

Jesse Chacon
State of Texas
PO Box 13087
Director Operating Permit Division(MC163)
Austin, TX 78711-3087

Sending via email to: AIRPERM@tceq.texas.gov

SUBJECT: Notification to government entity:
Air Quality New Source Review Permit Application No. 7482M1
TEMPO/IDEA ID No.38067 - PRN20190001

Dear Mr. Chacon:

The New Mexico Environment Department, Air Quality Bureau has received a NSR Construction Permit application from 3 Bear Delaware Operating - NM LLC for its 3 Bear Libby Gas Plant on September 13, 2019.

This plant is located in Section: 26, Range: 34E, Township: 20S, UTMZ: 13 , UTMH: 638430, UTMV: 3601510, Datum: WGS84 in Lea County, New Mexico. Since this plant is within 50 km (31 miles) of your border, we are required to notify your organization per 20.2.72.206.A (7) NMAC.

In accordance with the New Mexico Administrative Code, Title 20, Chapter 2, Part 72 (20.2.72.206.A.7 NMAC), please find attached the Public Notice issued by the New Mexico Air Quality Bureau for the facility.

If you have any questions, please feel free to contact me at 505-476-4376.

Sincerely,

Julia Kuhn
Air Permit Specialist
Major Source Unit
Air Quality Bureau

Enclosure: Public Notice

Table 2-A: Regulated Emission Sources

Unit and stack numbering must correspond throughout the application package. If applying for a NOI under 20.2.73 NMAC, equipment exemptions under 2.72.202 NMAC do not apply.

Unit Number[1]	Source Description	Make	Model #	Serial #	Manufacturer's Rated Capacity[3] (Specify Units)	Requested Permitted Capacity[3] (Specify Units)	Date of Manufacture[2] Date of Construction/ Reconstruction[2]	Controlled by Unit # Emissions vented to Stack #	Source Classification Code (SCC)	For Each Piece of Equipment, Check One	RICE Ignition Type (CI, SI, 4SLB, 4SRB, 2SLB)[4]	Replacing Unit No.
ENG-1	Inlet Compressor Engine, x1	Caterpillar	G3508	TBD	690 hp	690 hp	> 7/1/2010 >6/12/2006	N/A ENG-1	20200254	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	4SLB	N/A
ENG 2-4	Inlet Compressor Engine, x3	Caterpillar	G3516	TBD	1,380 hp	1,380 hp	11/20/2017 , > 7/1/2010, TBD >6/12/2006	N/A ENG 2-4	20200254	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	4SLB	N/A
ENG 5-8	Residue Compressor Engine, x4	Caterpillar	G3516	TBD	1,380 hp	1,380 hp	> 7/1/2010 >6/12/2006	N/A ENG 5-8	20200254	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	4SLB	N/A
TK-1	Gunbarrel Tank, x1	TBD	TBD	TBD	500 bbl	500 bbl	4/2018 4/2018	FL-2 TK-1	40400301 / 40400302	☐ Existing (unchanged) ☐ To be Removed ☑ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
TK 2-5	Stabilized Condensate Tanks, x4	TBD	TBD	TBD	400 bbl	400 bbl	4/2018 1/8/2018	FL-2 TK 2-5	31000212	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
TK-6	Slop Oil Tanks, x1	TBD	TBD	TBD	400 bbl	400 bbl	4/2018 1/8/2018	FL-2 TK-6	40400301 / 40400302	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
PWTK-1	Produced Water Tank, x1	TBD	TBD	TBD	400 bbl	400 bbl	4/2018 4/2018	FL-2 PWTK-1	40400301 / 40400302	☐ Existing (unchanged) ☐ To be Removed ☑ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
HTR-1	Hot Oil Heater, x1	TBD	TBD	TBD	49.42 MMBtu/hr	49.42 MMBtu/hr	4/2018 1/8/2018	N/A HTR-1	30600105	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
HTR-2	Regen Gas Heater, x1	TBD	TBD	TBD	11 MMBtu/hr	11 MMBtu/hr	4/2018 1/8/2018	N/A HTR-2	30600105	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
CONDLOAD-1	Truck Loading (Cond Loadout)	N/A	N/A	N/A	N/A	N/A	N/A N/A	FL-2 N/A	2310021030	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
OILLOAD-1	Truck Loading (Oil Loadout)	N/A	N/A	N/A	N/A	N/A	N/A N/A	FL-2 N/A	2310021030	☐ Existing (unchanged) ☐ To be Removed ☑ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
FUG-1	Equipment Leaks (OOOOa Fugitives)	N/A	N/A	N/A	N/A	N/A	N/A > 9/18/2015	N/A N/A	31088811	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
FUG-2	Equipment Leaks (Residue Fugitives)	N/A	N/A	N/A	N/A	N/A	N/A N/A	N/A N/A	31088811	☐ Existing (unchanged) ☐ To be Removed ☑ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
AMINE-1	Amine Unit, x1	TBD	TBD	TBD	60 MMScf/d	60 MMScf/d	2018 1/8/2018	TO-1 AMINE-1	31000305	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
COMP	Compressor Blowdowns, x7	TBD	TBD	N/A	N/A	N/A	N/A N/A	FL-1 N/A	31000313	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
PLANT BD	Plant Blowdown, x1	TBD	TBD	N/A	N/A	N/A	N/A N/A	FL-1 N/A	31000199	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
TO-1	Thermal Oxidizer, x1	TBD	TBD	TBD	N/A	N/A	2/2018 1/8/2018	N/A TO-1	31000199	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
FL-1	Upset/Maintenance Flare, x1	TBD	TBD	TBD	N/A	N/A	N/A 1/8/2018	N/A FL-1	31000160	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
FL-2	Tank Flare, x1	TBD	TBD	TBD	N/A	N/A	N/A 1/8/2018	N/A FL-2	31000160	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
HR 1	Road Dust, x1	N/A	N/A	N/A	N/A	N/A	N/A N/A	N/A N/A	31000199	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
MAIN-1	Maintenance Activities	N/A	N/A	N/A	N/A	N/A	N/A N/A	N/A N/A	31000199	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
UP/MAL	Upsets/Malfunctions	N/A	N/A	N/A	N/A	N/A	N/A N/A	N/A N/A	31000199	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A

[1] Unit numbers must correspond to unit numbers in the previous permit unless a complete cross reference table of all units in both permits is provided.
[2] Specify dates required to determine regulatory applicability. Date of construction/reconstruction is the approval date of NSR Permit No. 7482.
[3] To properly account for power conversion efficiencies, generator set rated capacity shall be reported as the rated capacity of the engine in horsepower, not the kilowatt capacity of the generator set.
[4] "4SLB" means four stroke lean burn engine, "4SRB" means four stroke rich burn engine, "2SLB" means two stroke lean burn engine, "CI" means compression ignition, and "SI" means spark ignition

Table 2-B: Insignificant Activities[1] (20.2.70 NMAC) OR Exempted Equipment (20.2.72 NMAC)

All 20.2.70 NMAC (Title V) applications must list all Insignificant Activities in this table. All 20.2.72 NMAC applications must list Exempted Equipment in this table. If equipment listed on this table is exempt under 20.2.72.202.B.5, include emissions calculations and emissions totals for 202.B.5 "similar functions" units, operations, and activities in Section 6, Calculations. Equipment and activities exempted under 20.2.72.202 NMAC may not necessarily be Insignificant under 20.2.70 NMAC (and vice versa). Unit & stack numbering must be consistent throughout the application package. Per Exemptions Policy 02-012.00 (see http://www.env.nm.gov/aqb/permit/aqb_pol.html), 20.2.72.202.B NMAC Exemptions do not apply, but 20.2.72.202.A NMAC exemptions do apply to NOI facilities under 20.2.73 NMAC. List 20.2.72.301.D.4 NMAC Auxiliary Equipment for Streamline applications in Table 2-A. The List of Insignificant Activities (for TV) can be found online at http://www.env.nm.gov/aqb/forms/InsignificantListTitleV.pdf . TV sources may elect to enter both TV Insignificant Activities and Part 72 Exemptions on this form.

Unit Number	Source Description	Manufacturer	Model No.	Max Capacity	List Specific 20.2.72.202 NMAC Exemption (e.g. 20.2.72.202.B.5)	Date of Manufacture /Reconstruction[2]	For Each Piece of Equipment, Check Onc
			Serial No.	Capacity Units	Insignificant Activity citation (e.g. IA List Item #1.a)	Date of Installation /Construction[2]	
N/A	Misc. Insignificant Tanks	N/A	TBD	TBD	20.2.72.202.B.5	TBD	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
			TBD	TBD	N/A	TBD	
ENG-9	Generator Engine	Olympian	250LG6	374	20.2.72.202.B.3	After 7/1/2010	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
			TBD	hp	N/A	N/A	
GEN-1	Generator Engine	Generac	TBD	65	20.2.72.202.B.3	2019	☐ Existing (unchanged) ☐ To be Removed ☑ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
			TBD	hp	N/A	N/A	
							☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
							☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
							☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
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							☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced

[1] Insignificant activities exempted due to size or production rate are defined in 20.2.70.300.D.6, 20.2.70.7.Q NMAC, and the NMED/AQB List of Insignificant Activities, dated September 15, 2008. Emissions from these insignificant activities do not need to be reported, unless specifically requested.

[2] Specify date(s) required to determine regulatory applicability.

Table 2-C: Emissions Control Equipment

Unit and stack numbering must correspond throughout the application package. Only list control equipment for TAPs if the TAP's maximum uncontrolled emissions rate is over its respective threshold as listed in 20.2.72 NMAC, Subpart V, Tables A and B. In accordance with 20.2.72.203.A(3) and (8) NMAC, 20.2.70.300.D(5)(b) and (e) NMAC, and 20.2.73.200.B(7) NMAC, the permittee shall report all control devices and list each pollutant controlled by the control device regardless if the applicant takes credit for the reduction in emissions.

Control Equipment Unit No.	Control Equipment Description	Date Installed	Controlled Pollutant(s)	Controlling Emissions for Unit Number(s)[1]	Efficiency (% Control by Weight)	Method used to Estimate Efficiency
ENG-1	Oxidation Catalyst amd Air Fuel Ratio Controller	>6/12/2006	VOC, CO and CH2O	ENG-1	19% VOC, 22% CO and 50% CH2O	Subpart JJJJ (VOC and CO) / Permit Condition (CH2O)
ENG 2-8	Oxidation Catalyst amd Air Fuel Ratio Controller	>6/12/2006	VOC, CO and CH2O	ENG 2-8	31% VOC, 68% CO and 80% CH2O	Subpart JJJJ (VOC) / Permit Condition (CO and CH2O)
TO-1	Thermal Oxidizer	1/8/2018	VOC, H2S	AMINE-1	98%	Engineering Assumption
FL-1	Upset/Maintenance Flare	1/8/2018	VOC	AMINE-1 (Backup), COMP, PLANT BD, Misc Maintenance	95%	Engineering Assumption
FL-2	Tank Flare	1/8/2018	VOC	TK 1-6, PWTK-1, CONDLOAD-1, OILLOAD-1	95%	Engineering Assumption

[1] List each control device on a separate line. For each control device, list all emission units controlled by the control device.

Table 2-D: Maximum Emissions (under normal operating conditions)

☐ **This Table was intentionally left blank because it would be identical to Table 2-E.**

Maximum Emissions are the emissions at maximum capacity and prior to (in the absence of) pollution control, emission-reducing process equipment, or any other emission reduction. Calculate the hourly emissions using the worst case hourly emissions for each pollutant. For each pollutant, calculate the annual emissions as if the facility were operating at maximum plant capacity without pollution controls for 8760 hours per year, unless otherwise approved by the Department. List Hazardous Air Pollutants (HAP) & Toxic Air Pollutants (TAPs) in Table 2-I. Unit & stack numbering must be consistent throughout the application package. Fill all cells in this table with the emission numbers or a "-" symbol. A "-" symbol indicates that emissions of this pollutant are not expected. Numbers shall be expressed to at least 2 decimal points (e.g. 0.41, 1.41, or 1.41E-4).

Unit No.	NOx		CO		VOC		SOx		PM[1]		PM10[1]		PM2.5[1]		H_2S		Lead	
	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr
ENG-1	1.52	6.66	3.93	17.19	1.70	7.46	0.02	0.07	0.06	0.25	0.06	0.25	0.06	0.25	--	--	--	--
ENG-2	3.04	13.33	7.39	32.39	3.47	15.19	0.03	0.14	0.11	0.50	0.11	0.50	0.11	0.50	--	--	--	--
ENG*	**3.04**	**13.33**	**7.39**	**32.39**	**3.47**	**15.19**	**0.03**	**0.14**	**0.11**	**0.50**	**0.11**	**0.50**	**0.11**	**0.50**	**--**	**--**	**--**	**--**
ENG-3	3.04	13.33	7.39	32.39	3.47	15.19	0.03	0.14	0.11	0.50	0.11	0.50	0.11	0.50	--	--	--	--
ENG-4	3.04	13.33	7.39	32.39	3.47	15.19	0.03	0.14	0.11	0.50	0.11	0.50	0.11	0.50	--	--	--	--
ENG-5	3.04	13.33	7.39	32.39	3.47	15.19	0.03	0.14	0.11	0.50	0.11	0.50	0.11	0.50	--	--	--	--
ENG-6	3.04	13.33	7.39	32.39	3.47	15.19	0.03	0.14	0.11	0.50	0.11	0.50	0.11	0.50	--	--	--	--
ENG-7	3.04	13.33	7.39	32.39	3.47	15.19	0.03	0.14	0.11	0.50	0.11	0.50	0.11	0.50	--	--	--	--
ENG-8	3.04	13.33	7.39	32.39	3.47	15.19	0.03	0.14	0.11	0.50	0.11	0.50	0.11	0.50	--	--	--	--
TK-1	--	--	--	--	22.64	99.18	--	--	--	--	--	--	--	--	--	--	--	--
TK 2-5	--	--	--	--	7.98	34.95	--	--	--	--	--	--	--	--	--	--	--	--
TK-6	--	--	--	--	0.85	3.72	--	--	--	--	--	--	--	--	--	--	--	--
PWTK-1	--	--	--	--	0.00	0.00	--	--	--	--	--	--	--	--	--	--	--	--
HTR-1	2.42	10.61	4.07	17.82	0.27	1.17	0.14	0.60	0.37	1.61	0.37	1.61	0.37	1.61	--	--	--	--
HTR-2	1.08	4.72	0.91	3.97	0.06	0.26	0.03	0.13	0.08	0.36	0.08	0.36	0.08	0.36	--	--	--	--
CONDLOAD-1	--	--	--	--	99.91	27.35	--	--	--	--	--	--	--	--	--	--	--	--
OILLOAD-1	--	--	--	--	99.91	0.19	--	--	--	--	--	--	--	--	--	--	--	--
FUG-1	--	--	--	--	11.30	51.24	--	--	--	--	--	--	--	--	0.00	0.00	--	--
FUG-2	--	--	--	--	0.05	0.23	--	--	--	--	--	--	--	--	0.00	0.00	--	--
AMINE-1	--	--	--	--	39.84	174.52	--	--	--	--	--	--	--	--	--	--	--	--
COMP	--	--	--	--	2.27	9.95	--	--	--	--	--	--	--	--	--	--	--	--
PLANT BD	--	--	--	--	32803.52	16.40	--	--	--	--	--	--	--	--	--	--	--	--
TO-1	1.56	6.82	1.31	5.73	0.19	0.83	64.45	235.24	0.00	0.00	0.00	0.00	0.00	0.00	--	--	--	--
FL-1	251.60	26.48	1147.00	120.70	92.94	14.14	6.15	1.31	5.75	0.88	5.75	0.88	5.75	0.88	--	--	--	--
FL-2	0.89	3.91	4.07	17.82	0.00	0.02	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.01	--	--	--	--
HR-1	--	--	--	--	--	--	--	--	12.49	0.23	3.18	0.06	0.32	0.01	--	--	--	--
MAIN-1	--	--	--	--	--	10.00	--	--	--	--	--	--	--	--	--	--	--	--
UP/MAL	--	--	--	--	--	10.00	--	--	--	--	--	--	--	--	--	--	--	--
Totals	278.85	145.83	1209.11	392.74	33206.02	560.51	70.99	238.26	19.49	6.58	10.18	6.41	7.32	6.35	0.00	0.00	--	--

[1]**Condensable Particulate Matter:** Include condensable particulate matter emissions for PM10 and PM2.5 if the source is a combustion source. Do not include condensable particulate matter for PM unless PM is set equal to PM10 and PM2.5. Particulate matter (PM) is not subject to an ambient air quality standard, but PM is a regulated air pollutant under PSD (20.2.74 NMAC) and Title V (20.2.70 NMAC).

* - Composite emissions represent worse case compressor engine emissions

Table 2-E: Requested Allowable Emissions

Unit & stack numbering must be consistent throughout the application package. Fill all cells in this table with the emission numbers or a "-" symbol. A "-" symbol indicates that emissions of this pollutant are not expected. Numbers shall be expressed to at least 2 decimal points (e.g. 0.41, 1.41, or $1.41E^{-4}$).

Unit No.	NOx		CO		VOC		SOx		PM[1]		PM10[1]		PM2.5[1]		H_2S		Lead	
	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr
ENG-1	1.52	6.66	3.04	13.33	1.38	6.06	0.02	0.07	0.06	0.25	0.06	0.25	0.06	0.25	--	--	--	--
ENG-2	3.04	13.33	2.37	10.40	2.40	10.50	0.03	0.14	0.11	0.50	0.11	0.50	0.11	0.50	--	--	--	--
ENG*	**3.04**	**13.33**	**3.04**	**13.33**	**2.40**	**10.50**	**0.03**	**0.14**	**0.11**	**0.50**	**0.11**	**0.50**	**0.11**	**0.50**	**--**	**--**	**--**	**--**
ENG-3	3.04	13.33	2.37	10.40	2.40	10.50	0.03	0.14	0.11	0.50	0.11	0.50	0.11	0.50	--	--	--	--
ENG-4	3.04	13.33	2.37	10.40	2.40	10.50	0.03	0.14	0.11	0.50	0.11	0.50	0.11	0.50	--	--	--	--
ENG-5	3.04	13.33	2.37	10.40	2.40	10.50	0.03	0.14	0.11	0.50	0.11	0.50	0.11	0.50	--	--	--	--
ENG-6	3.04	13.33	2.37	10.40	2.40	10.50	0.03	0.14	0.11	0.50	0.11	0.50	0.11	0.50	--	--	--	--
ENG-7	3.04	13.33	2.37	10.40	2.40	10.50	0.03	0.14	0.11	0.50	0.11	0.50	0.11	0.50	--	--	--	--
ENG-8	3.04	13.33	2.37	10.40	2.40	10.50	0.03	0.14	0.11	0.50	0.11	0.50	0.11	0.50	--	--	--	--
TK-1	--	--	--	--	1.13	4.96	--	--	--	--	--	--	--	--	--	--	--	--
TK 2-5	--	--	--	--	0.40	1.75	--	--	--	--	--	--	--	--	--	--	--	--
TK-6	--	--	--	--	0.04	0.19	--	--	--	--	--	--	--	--	--	--	--	--
PWTK-1	--	--	--	--	0.00	0.00	--	--	--	--	--	--	--	--	--	--	--	--
HTR-1	2.42	10.61	4.07	17.82	0.27	1.17	0.14	0.60	0.37	1.61	0.37	1.61	0.37	1.61	--	--	--	--
HTR-2	1.08	4.72	0.91	3.97	0.06	0.26	0.03	0.13	0.08	0.36	0.08	0.36	0.08	0.36	--	--	--	--
ONDLOAD-	--	--	--	--	33.47	9.16	--	--	--	--	--	--	--	--	--	--	--	--
OILLOAD-1	--	--	--	--	33.47	0.06	--	--	--	--	--	--	--	--	--	--	--	--
FUG-1	--	--	--	--	11.30	51.24	--	--	--	--	--	--	--	--	0.00	0.00	--	--
FUG-2	--	--	--	--	0.05	0.23	--	--	--	--	--	--	--	--	0.00	0.00	--	--
AMINE-1	--	--	--	--	2.79	3.93	--	--	--	--	--	--	--	--	--	--	--	--
COMP	--	--	--	--	0.11	0.50	--	--	--	--	--	--	--	--	--	--	--	--
PLANT BD	--	--	--	--	1640.18	0.82	--	--	--	--	--	--	--	--	--	--	--	--
TO-1	1.56	6.82	1.31	5.73	0.19	0.83	64.45	235.24	0.00	0.00	0.00	0.00	0.00	0.00	--	--	--	--
FL-1	251.60	26.48	1147.00	120.70	92.94	14.14	6.15	1.31	5.75	0.88	5.75	0.88	5.75	0.88	--	--	--	--
FL-2	0.89	3.91	4.07	17.82	0.00	0.02	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.01	--	--	--	--
HR-1	--	--	--	--	--	--	--	--	12.49	0.23	3.18	0.06	0.32	0.01	--	--	--	--
MAIN-1	--	--	--	--	--	10.00	--	--	--	--	--	--	--	--	--	--	--	--
UP/MAL	--	--	--	--	--	10.00	--	--	--	--	--	--	--	--	--	--	--	--
Totals	278.85	145.83	1174.63	241.74	1833.18	182.77	70.99	238.26	19.49	6.58	10.18	6.41	7.32	6.35	0.00	0.00	--	--

[1] **Condensable Particulate Matter:** Include condensable particulate matter emissions for PM10 and PM2.5 if the source is a combustion source. Do not include condensable particulate matter for PM unless PM is set equal to PM10 and PM2.5. Particulate matter (PM) is not subject to an ambient air quality standard, but it is a regulated air pollutant under PSD (20.2.74 NMAC) and Title V (20.2.70 NMAC).

* - Composite emissions represent worse case compressor engine emissions

Table 2-F: Additional Emissions during Startup, Shutdown, and Routine Maintenance (SSM)

☐ This table is intentionally left blank since all emissions at this facility due to routine or predictable startup, shutdown, or scehduled maintenance are no higher than those listed in Table 2-E and a malfunction emission limit is not already permitted or requested. If you are required to report GHG emissions as described in Section 6a, include any GHG emissions during Startup, Shutdown, and/or Scheduled Maintenance (SSM) in Table 2-P. Provide an explanations of SSM emissions in Section 6 and 6a.

All applications for facilities that have emissions during routine our predictable startup, shutdown or scheduled maintenance (SSM)[1], including NOI applications, must include in this table the Maximum Emissions during routine or predictable startup, shutdown and scheduled maintenance (20.2.7 NMAC, 20.2.72.203.A.3 NMAC, 20.2.73.200.D.2 NMAC). In Section 6 and 6a, provide emissions calculations for all SSM emissions reported in this table. Refer to "Guidance for Submittal of Startup, Shutdown, Maintenance Emissions in Permit Applications (https://www.env.nm.gov/aqb/permit/aqb_pol.html) for more detailed instructions. Numbers shall be expressed to at least 2 decimal points (e.g. 0.41, 1.41, or 1.41E-4).

Unit No.	NOx		CO		VOC		SOx		PM[2]		PM10[2]		PM2.5[2]		H_2S		Lead	
	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr
COMP	--	--	--	--	0.11	0.50	--	--	--	--	--	--	--	--	--	--	--	--
PLANT BD-1	--	--	--	--	1640.18	0.82	--	--	--	--	--	--	--	--	--	--	--	--
FL-1	251.60	26.48	1147.00	120.70	92.94	14.14	6.15	1.31	5.75	0.88	5.75	0.88	5.75	0.88	--	--	--	--
MAIN-1	--	--	--	--	--	10.00	--	--	--	--	--	--	--	--	--	--	--	--
Totals	251.60	26.48	1147.00	120.70	1733.23	25.46	6.15	1.31	5.75	0.88	5.75	0.88	5.75	0.88				

[1] **For instance**, if the short term steady-state Table 2-E emissions are 5 lb/hr and the SSM rate is 12 lb/hr, enter 7 lb/hr in this table. If the annual steady-state Table 2-E emissions are 21.9 TPY, and the number of scheduled SSM events result in annual emissions of 31.9 TPY, enter 10.0 TPY in the table below.

[2] **Condensable Particulate Matter:** Include condensable particulate matter emissions for PM10 and PM2.5 if the source is a combustion source. Do not include condensable particulate matter for PM unless PM is set equal to PM10 and PM2.5. Particulate matter (PM) is not subject to an ambient air quality standard, but it is a regulated air pollutant under PSD (20.2.74 NMAC) and Title V (20.2.70 NMAC).

Table 2-G: Stack Exit and Fugitive Emission Rates for Special Stacks

☑ I have elected to leave this table blank because this facility does not have any stacks/vents that split emissions from a single source or combine emissions from more than one source listed in table 2-A. Additionally, the emission rates of all stacks match the Requested allowable emission rates stated in Table 2-E.

Use this table to list stack emissions (requested allowable) from split and combined stacks. List Toxic Air Pollutants (TAPs) and Hazardous Air Pollutants (HAPs) in Table 2-I. List all fugitives that are associated with the normal, routine, and non-emergency operation of the facility. Unit and stack numbering must correspond throughout the application package. Refer to Table 2-E for instructions on use of the "-" symbol and on significant figures.

Stack No.	Serving Unit Number(s) from Table 2-A	NOx		CO		VOC		SOx		PM		PM10		PM2.5		□ H_2S or □ Lead	
		lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr
Totals:																	

Table 2-H: Stack Exit Conditions

Unit and stack numbering must correspond throughout the application package. Include the stack exit conditions for each unit that emits from a stack, including blowdown venting parameters and tank emissions. If the facility has multiple operating scenarios, complete a separate Table 2-H for each scenario and, for each, type scenario name here:

Stack Number	Serving Unit Number(s) from Table 2-A	Orientation (H-Horizontal V=Vertical)	Rain Caps (Yes or No)	Height Above Ground (ft)	Temp. (F)	Flow Rate (acfs)	Flow Rate (dscfs)	Moisture by Volume (%)	Velocity (ft/sec)	Inside Diameter (ft)
ENG-1	ENG-1	V	No	15	931	73.6	53.2	9.3	136.1	0.8
ENG 2-8	ENG 2-8	V	No	25	992	152.1	110.2	9.0	193.7	1.0
TK-1	TK-1	V	No	25	70	0.0	0.0	0.0	0.0	0.7
TK 2-5	TK 2-5	V	No	20	70	0.0	0.0	0.0	0.0	0.7
TK-6	TK-6	V	No	20	70	0.0	0.0	0.0	0.0	0.7
PWTK-1	PWTK-1	V	No	20	70	0.0	0.0	0.0	0.0	0.7
HTR-1	HTR-1	V	No	30	664	88.9	70.7	0.0	12.6	3.0
HTR-2	HTR-2	V	No	12	500	25.8	20.5	0.0	8.2	2.0
TO-1	TO-1	V	No	50	1400	256.9	204.5	0.0	15.0	4.7
FL-1	FL-1	V	No	100	1832	4416.7	3515.4	0.0	65.6	9.3
FL-2	FL-2	V	No	30	1832	314.1	250.0	0.0	65.6	2.5

Table 2-I: Stack Exit and Fugitive Emission Rates for HAPs and TAPs

In the table below, report the Potential to Emit for each HAP from each regulated emission unit listed in Table 2-A, only if the entire facility emits the HAP at a rate greater than or equal to one (1) ton per year For each such emission unit, HAPs shall be reported to the nearest 0.1 tpy. Each facility-wide Individual HAP total and the facility-wide Total HAPs shall be the sum of all HAP sources calculated to the nearest 0.1 ton per year. Per 20.2.72.403.A.1 NMAC, facilities not exempt [see 20.2.72.402.C NMAC] from TAP permitting shall report each TAP that has an uncontrolled emission rate in excess of its pounds per hour screening level specified in 20.2.72.502 NMAC. TAPs shall be reported using one more significant figure than the number of significant figures shown in the pound per hour threshold corresponding to the substance. Use the HAP nomenclature as it appears in Section 112 (b) of the 1990 CAAA and the TAP nomenclature as it listed in 20.2.72.502 NMAC. Include tank-flashing emissions estimates of HAPs in this table. For each HAP or TAP listed, fill all cells in this table with the emission numbers or a "-" symbol. A “-” symbol indicates that emissions of this pollutant are not expected or the pollutant is emitted in a quantity less than the threshold amounts described above.

Stack No.	Unit No.(s)	Total HAPs		Formaldehyde ☑ HAP or ☐ TAP		Acetaldehyde ☑ HAP or ☐ TAP		Acrolein ☑ HAP or ☐ TAP		Benzene ☑ HAP or ☐ TAP		Toluene ☑ HAP or ☐ TAP		Ethylbenzene ☑ HAP or ☐ TAP		Xylenes ☑ HAP or ☐ TAP		n-Hexane ☑ HAP or ☐ TAP		2,2,4 TMP ☑ HAP or ☐ TAP		Methanol ☑ HAP or ☐ TAP	
		lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr
ENG-1	ENG-1	0.4	1.8	0.3	1.4	0.0	0.2	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	--	--	--	--
ENG-2	ENG-2	0.4	2.0	0.3	1.2	0.1	0.4	0.1	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	--	--	--	--
ENG*	**ENG***	**0.4**	**2.0**	**0.3**	**1.4**	**0.1**	**0.4**	**0.1**	**0.3**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.1**	**--**	**--**	**--**	**--**
ENG-3	ENG-3	0.4	2.0	0.3	1.2	0.1	0.4	0.1	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	--	--	--	--
ENG-4	ENG-4	0.4	2.0	0.3	1.2	0.1	0.4	0.1	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	--	--	--	--
ENG-5	ENG-5	0.4	2.0	0.3	1.2	0.1	0.4	0.1	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	--	--	--	--
ENG-6	ENG-6	0.4	2.0	0.3	1.2	0.1	0.4	0.1	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	--	--	--	--
ENG-7	ENG-7	0.4	2.0	0.3	1.2	0.1	0.4	0.1	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	--	--	--	--
ENG-8	ENG-8	0.4	2.0	0.3	1.2	0.1	0.4	0.1	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	--	--	--	--
TK-1	TK-1	0.1	0.3	--	--	--	--	--	--	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	--	--
TK 2-5	TK 2-5	0.0	0.1	--	--	--	--	--	--	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	--	--
TK-6	TK-6	0.0	0.0	--	--	--	--	--	--	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	--	--
PWTK-1	PWTK-1	0.0	0.0	--	--	--	--	--	--	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	--	--
HTR-1	HTR-1	0.1	0.4	0.0	0.0	--	--	--	--	0.0	0.0	0.0	0.0	--	--	--	--	0.1	0.4	--	--	--	--
HTR-2	HTR-2	0.0	0.1	0.0	0.0	--	--	--	--	0.0	0.0	0.0	0.0	--	--	--	--	0.0	0.1	--	--	--	--
CONDLOAD-1	CONDLOAD-1	2.1	0.6	--	--	--	--	--	--	0.3	0.1	0.3	0.1	0.0	0.0	0.0	0.0	1.3	0.4	0.0	0.0	--	--
OILLOAD-1	OILLOAD-1	2.1	0.0	--	--	--	--	--	--	0.3	0.0	0.3	0.0	0.0	0.0	0.0	0.0	1.3	0.0	0.0	0.0	--	--
FUG-1	FUG-1	0.1	0.5	--	--	--	--	--	--	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.3	0.0	0.0	--	--
FUG-2	FUG-2	0.0	0.0	--	--	--	--	--	--	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	--	--
AMINE-1	AMINE-1	0.0	0.0	--	--	--	--	--	--	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	--	--
COMP	COMP	0.0	0.0	--	--	--	--	--	--	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	--	--
PLANT BD	PLANT BD	15.1	0.0	--	--	--	--	--	--	5.3	0.0	0.8	0.0	0.0	0.0	0.0	0.0	9.1	0.0	0.0	0.0	--	--
TO-1	TO-1	0.0	0.0	--	--	--	--	--	--	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	--	--
FL-1	FL-1	0.0	0.0	--	--	--	--	--	--	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	--	--
FL-2	FL-2	0.0	0.0	--	--	--	--	--	--	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	--	--
HR-1	HR-1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MAIN-1	MAIN-1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
UP/MAL-1	UP/MAL-1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Totals:		22.8	15.7	1.9	8.5	0.7	2.9	0.4	1.8	6.0	0.5	1.5	0.3	0.1	0.0	0.1	0.1	12.1	1.8	0.1	0.0	--	--

* - Composite emissions represent worse case engine emissions

Table 2-J: Fuel

Specify fuel characteristics and usage. Unit and stack numbering must correspond throughout the application package.

Unit No.	Fuel Type (low sulfur Diesel, ultra low sulfur diesel, Natural Gas, Coal, …)	Fuel Source: purchased commercial, pipeline quality natural gas, residue gas, raw/field natural gas, process gas (e.g. SRU tail gas) or other	Specify Units				
			Lower Heating Value	Hourly Usage (scf)	Annual Usage (scf)	% Sulfur	% Ash
ENG-1	Natural Gas	Residue Gas	1066.43 btu/scf	5,307.48	46,493,490.51	N/A	N/A
ENG 2-8	Natural Gas	Residue Gas	1066.43 btu/scf	10,683.54	93,587,774.63	N/A	N/A
HTR-1	Natural Gas	Residue Gas	1066.43 btu/scf	46,338.38	405,924,215.65	N/A	N/A
HTR-2	Natural Gas	Residue Gas	1066.43 btu/scf	10,314.76	90,357,256.29	N/A	N/A
TO-1	Natural Gas	Residue Gas	1066.43 btu/scf	11,252.46	98,571,549.60	N/A	N/A
FL-1	Natural Gas	Residue Gas	1066.43 btu/scf	468.85	4,107,148.01	N/A	N/A
FL-2	Natural Gas	Residue Gas	1066.43 btu/scf	93.77	821,429.60	N/A	N/A

Table 2-K: Liquid Data for Tanks Listed in Table 2-L

For each tank, list the liquid(s) to be stored in each tank. If it is expected that a tank may store a variety of hydrocarbon liquids, enter "mixed hydrocarbons" in the Composition column for that tank and enter the corresponding data of the most volatile liquid to be stored in the tank. If tank is to be used for storage of different materials, list all the materials in the "All Calculations" attachment, run the newest version of TANKS on each, and use the material with the highest emission rate to determine maximum uncontrolled and requested allowable emissions rate. The permit will specify the most volatile category of liquids that may be stored in each tank. Include appropriate tank-flashing modeling input data. Use additional sheets if necessary. Unit and stack numbering must correspond throughout the application package.

Tank No.	SCC Code	Material Name	Composition	Liquid Density (lb/gal)	Vapor Molecular Weight (lb/lb*mol)	Average Storage Conditions		Max Storage Conditions	
						Temperature (°F)	True Vapor Pressure (psia)	Temperature (°F)	True Vapor Pressure (psia)
TK-1	40400301 / 40400302	Oil / Produced Water	Mixed Hydrocarbons	5.6	64	72.3	8.0	86.3	10.2
TK-2	31000212	Condensate	Mixed Hydrocarbons	5.6	64	72.3	8.0	86.3	10.2
TK-3	31000212	Condensate	Mixed Hydrocarbons	5.6	64	72.3	8.0	86.3	10.2
TK-4	31000212	Condensate	Mixed Hydrocarbons	5.6	64	72.3	8.0	86.3	10.2
TK-5	31000212	Condensate	Mixed Hydrocarbons	5.6	64	72.3	8.0	86.3	10.2
TK-6	40400301 / 40400302	Oil	Mixed Hydrocarbons	5.6	64	72.3	3.6	86.3	4.7
PWTK-1	40400301 / 40400302	Produced Water	Water / Mixed Hydrocarbons	8.3	19.8	72.3	0.4	86.3	0.64

Table 2-L: Tank Data

Include appropriate tank-flashing modeling input data. Use an addendum to this table for unlisted data categories. Unit and stack numbering must correspond throughout the application package. Use additional sheets if necessary. See reference Table 2-L2. Note: 1.00 bbl = 10.159 M3 = 42.0 gal

Tank No.	Date Installed	Materials Stored	Seal Type (refer to Table 2-LR below)	Roof Type (refer to Table 2-LR below)	Capacity		Diameter (M)	Vapor Space (M)	Color (from Table VI-C)		Paint Condition (from Table VI-C)	Annual Throughput (gal/yr)	Turn-overs (per year)
					(bbl)	(M^3)			Roof	Shell			
TK-1	4/2018	Oil / Produced Water	N/A	FX	500	79	3.7	3.81	OT (Green)	OT (Green)	Good	32,172	1.53
TK-2	1/8/2018	Condensate	N/A	FX	400	64	3.7	3.05	OT (Green)	OT (Green)	Good	2,299,500	136.88
TK-3	1/8/2018	Condensate	N/A	FX	400	64	3.7	3.05	OT (Green)	OT (Green)	Good	2,299,500	136.88
TK-4	1/8/2018	Condensate	N/A	FX	400	64	3.7	3.05	OT (Green)	OT (Green)	Good	2,299,500	136.88
TK-5	1/8/2018	Condensate	N/A	FX	400	64	3.7	3.05	OT (Green)	OT (Green)	Good	2,299,500	136.88
TK-6	1/8/2018	Oil	N/A	FX	400	64	3.7	3.05	OT (Green)	OT (Green)	Good	64,344	3.83
PWTK-1	4/2018	Produced Water	N/A	FX	400	64	3.7	3.05	OT (Green)	OT (Green)	Good	64,344	3.83

Table 2-L2: Liquid Storage Tank Data Codes Reference Table

Roof Type	Seal Type, Welded Tank Seal Type		Seal Type, Riveted Tank Seal Type		Roof, Shell Color	Paint Condition
	Mechanical Shoe Seal	**Liquid-mounted resilient seal**	**Vapor-mounted resilient seal**	**Seal Type**		
FX: Fixed Roof					**WH**: White	Good
IF: Internal Floating Roof	**A**: Primary only	**A**: Primary only	**A**: Primary only	**A**: Mechanical shoe, primary only	**AS**: Aluminum (specular)	Poor
EF: External Floating Roof	**B**: Shoe-mounted secondary	**B**: Weather shield	**B**: Weather shield	**B**: Shoe-mounted secondary	**AD**: Aluminum (diffuse)	
P: Pressure	**C**: Rim-mounted secondary	**C**: Rim-mounted secondary	**C**: Rim-mounted secondary	**C**: Rim-mounted secondary	**LG**: Light Gray	
					MG: Medium Gray	
					BL: Black	
					OT: Other (specify)	

Note: 1.00 bbl = 0.159 M^3 = 42.0 gal

Table 2-M: Materials Processed and Produced (Use additional sheets as necessary.)

Material Processed				Material Produced			
Description	**Chemical Composition**	**Phase (Gas, Liquid, or Solid)**	**Quantity (specify units)**	**Description**	**Chemical Composition**	**Phase**	**Quantity (specify units)**
Condensate	Mixed Hydrocarbons	Liquid	219,000 bbl/yr				
Slop Oil	Mixed Hydrocarbons	Liquid	1,532 bbl/yr				
Produced Water	Mixed Hydrocarbons	Liquid	1,532 bbl/yr				
Gas	Mixed Hydrocarbons	Gas	60 MMScf/day				

Table 2-N: CEM Equipment

Enter Continuous Emissions Measurement (CEM) Data in this table. If CEM data will be used as part of a federally enforceable permit condition, or used to satisfy the requirements of a state or federal regulation, include a copy of the CEM's manufacturer specification sheet in the Information Used to Determine Emissions attachment. Unit and stack numbering must correspond throughout the application package. Use additional sheets if necessary.

Stack No.	Pollutant(s)	Manufacturer	Model No.	Serial No.	Sample Frequency	Averaging Time	Range	Sensitivity	Accuracy
TBD									

Table 2-O: Parametric Emissions Measurement Equipment

Unit and stack numbering must correspond throughout the application package. Use additional sheets if necessary.

Unit No.	Parameter/Pollutant Measured	Location of Measurement	Unit of Measure	Acceptable Range	Frequency of Maintenance	Nature of Maintenance	Method of Recording	Averaging Time
N/A								

Table 2-P: Greenhouse Gas Emissions

Applications submitted under 20.2.70, 20.2.72, & 20.2.74 NMAC are required to complete this Table. Power plants, Title V major sources, and PSD major sources must report and calculate all GHG emissions for each unit. Applicants must report potential emission rates in short tons per year (see Section 6.a for assistance). Include GHG emissions during Startup, Shutdown, and Scheduled Maintenance in this table. For minor source facilities that are not power plants, are not Title V, or are not PSD, there are three options for reporting GHGs 1) report GHGs for each individual piece of equipment; 2) report all GHGs from a group of unit types, for example report all combustion source GHGs as a single unit and all venting GHG as a second separate unit; OR 3) check the following box ☐ By checking this box, the applicant acknowledges the total CO2e emissions are less than 75,000 tons per year.

		CO_2 ton/yr	N_2O ton/yr	CH_4 ton/yr	SF_6 ton/yr	PFC/HFC ton/yr[2]									Total GHG Mass Basis ton/yr[4]	Total CO_2e ton/yr[5]
Unit No.	**GWPs [1]**	**1**	**298**	**25**	**22,800**	**footnote 3**										
ENG-1	mass GHG	2900	0	0											2900	
	CO_2e	2900	2	1												2903
ENG-2	mass GHG	5837	0	0											5838	
	CO_2e	5837	3	3												5843
ENG-3	mass GHG	5837	0	0											5838	
	CO_2e	5837	3	3												5843
ENG-4	mass GHG	5837	0	0											5838	
	CO_2e	5837	3	3												5843
ENG-5	mass GHG	5837	0	0											5838	
	CO_2e	5837	3	3												5843
ENG-6	mass GHG	5837	0	0											5838	
	CO_2e	5837	3	3												5843
ENG-7	mass GHG	5837	0	0											5838	
	CO_2e	5837	3	3												5843
ENG-8	mass GHG	5837	0	0											5838	
	CO_2e	5837	3	3												5843
TK-1	mass GHG	0	0	0											0	
	CO_2e	0	0	7												7
TK 2-5	mass GHG	18	0	0											18	
	CO_2e	18	0	2												20
TK-6	mass GHG	2	0	0											2	
	CO_2e	2	0	0												2
PWTK-1	mass GHG	0	0	0											0	
	CO_2e	0	0	0												0
HTR-1	mass GHG	25319	0	0											25320	
	CO_2e	25319	14	12												25345
HTR-2	mass GHG	5636	0	0											5636	
	CO_2e	5636	3	3												5642
CONDLOAD-1	mass GHG	14	0	0											15	
	CO_2e	14	0	9												23
OILLOAD-1	mass GHG	0	0	0											0	
	CO_2e	0	0	0												0
FUG-1	mass GHG	122	0	828											950	
	CO_2e	122	0	20693												20815
AMINE-1	mass GHG	57169	0	347											57516	
	CO_2e	57169	0	8677												65846
COMP	mass GHG	1	0	1											2	
	CO_2e	1	0	34												35
PLANT BD	mass GHG	1	0	1											2	
	CO_2e	1	0	20												21
TO-1	mass GHG	8133	0	0											8133	
	CO_2e	8133	5	4												8142
FL-1	mass GHG	76959	0	1											76960	
	CO_2e	76959	43	36												77038
FL-2	mass GHG	6723	0	0											6723	
	CO_2e	6723	4	3												6730
HR-1	mass GHG	--	--	--											0	
	CO_2e	--	--	--												0
MAIN-1	mass GHG	0	0	10											10	
	CO2e	0	0	250												250
UP/MAL-1	mass GHG	0	0	10											10	
	CO2e	0	0	250												250
Total	mass GHG	220960	0	1201											222161	
	CO_2e	220960	92	30021												251072

[1] **GWP** (Global Warming Potential): Applicants must use the most current GWPs codified in Table A-1 of 40 CFR part 98. GWPs are subject to change, therefore, applicants need to check 40 CFR 98 to confirm GWP values.

[2] For **HFCs** or **PFCs** describe the specific HFC or PFC compound and use a separate column for each individual compound.

[3] For each new compound, enter the appropriate GWP for each HFC or PFC compound from Table A-1 in 40 CFR 98.

[4] Green house gas emissions on a **mass basis** is the ton per year green house gas emission before adjustment with its GWP.

[5] **CO_2e** means Carbon Dioxide Equivalent and is calculated by multiplying the TPY mass emissions of the green house gas by its GWP.

Summary of Uncontrolled Air Emission Units

Potential Emissions
Uncontrolled + No Product Recovered

Unit	Unit		NOx		CO		VOC		SO2		PM		PM10		PM2.5		H2S		HAPs	
Name	Description	Qty	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy
ENG*	Worst-Case Composite Engine Emissions	N/A	3.04	13.33	7.39	32.39	3.47	15.19	0.03	0.14	0.11	0.50	0.11	0.50	0.11	0.50	--	--	1.52	6.65
ENG 3-4	Inlet Compression	2	6.09	26.66	14.79	64.77	6.94	30.39	0.06	0.28	0.23	1.00	0.23	1.00	0.23	1.00	--	--	3.03	13.29
ENG 5-8	Residue Compression	4	12.17	53.31	29.58	129.55	13.88	60.78	0.13	0.56	0.46	1.99	0.46	1.99	0.46	1.99	--	--	6.07	26.58
ENG-9	Generator Engine	1	0.82	0.21	1.65	0.41	0.64	0.16	0.01	0.00	0.06	0.02	0.06	0.02	0.06	0.02	--	--	0.09	0.02
GEN-1	Generator Engine	1	0.80	0.20	0.53	0.13	0.20	0.05	0.00	0.00	0.13	0.00	0.13	0.00	0.13	0.00	--	--	0.00	0.00
TK-1	Gunbarrel Tank	1	--	--	--	--	22.64	99.18	--	--	--	--	--	--	--	--	--	--	1.43	6.25
TK 2-5	Stabilized Condensate Tank	4	--	--	--	--	7.98	34.95	--	--	--	--	--	--	--	--	--	--	0.50	2.20
TK-6	Slop Oil Tank	1	--	--	--	--	0.85	3.72	--	--	--	--	--	--	--	--	--	--	0.05	0.23
PWTK-1	Produced Water Tank	1	--	--	--	--	0.00	0.00	--	--	--	--	--	--	--	--	--	--	0.00	0.00
HTR-1	Hot Oil Heater	1	2.42	10.61	4.07	17.82	0.27	1.17	0.14	0.60	0.37	1.61	0.37	1.61	0.37	1.61	--	--	0.09	0.40
HTR-2	Regen Gas Heater	1	1.08	4.72	0.91	3.97	0.06	0.26	0.03	0.13	0.08	0.36	0.08	0.36	0.08	0.36	--	--	0.02	0.09
CONDLOAD-1	Condensate Loadout	1	--	--	--	--	99.91	27.35	--	--	--	--	--	--	--	--	--	--	6.29	1.72
OILLOAD-1	Oil Loadout	1	--	--	--	--	99.91	0.19	--	--	--	--	--	--	--	--	--	--	6.29	0.01
FUG-1	Fugitives - OOOOa	N/A	--	--	--	--	11.30	51.24	--	--	--	--	--	--	--	--	0.00	0.00	0.10	0.47
FUG-2	Fugitives - Residue	N/A	--	--	--	--	0.05	0.23	--	--	--	--	--	--	--	--	0.00	0.00	0.00	0.00
AMINE-1	Amine Unit	1	--	--	--	--	39.84	174.52	--	--	--	--	--	--	--	--	--	--	0.27	1.20
COMP	Compressor Blowdowns	8	--	--	--	--	2.27	9.95	--	--	--	--	--	--	--	--	--	--	0.02	0.09
PLANT BD	Gas Plant Blowdown	1	--	--	--	--	32,803.52	16.40	--	--	--	--	--	--	--	--	--	--	302.73	0.15
TO-1	Thermal Oxidizer	1	1.18	5.15	0.99	4.33	0.19	0.83	--	--	--	--	--	--	--	--	--	--	0.00	0.01
FL-1	Upset/Maintenance Flare	1	0.03	0.15	0.16	0.68	0.02	0.09	--	--	--	--	--	--	--	--	--	--	0.00	0.00
FL-2	Tank Flare	1	0.01	0.03	0.03	0.14	0.00	0.02	--	--	--	--	--	--	--	--	--	--	0.00	0.00
HR-1	Road Dust	N/A	--	--	--	--	--	--	--	--	12.49	0.23	3.18	0.06	0.32	0.01	--	--	--	--
MAIN-1	Maintenance Activities	N/A	--	--	--	--	--	10.00	--	--	--	--	--	--	--	--	--	--	--	--
UP/MAL-1	Upsets/Malfunctions	N/A	--	--	--	--	--	10.00	--	--	--	--	--	--	--	--	--	--	--	--
	Facility-Wide Total Emissions Including Exempt Equipment		27.64	114.37	60.09	254.19	33113.94	546.66	0.40	1.71	13.92	5.71	4.62	5.53	1.75	5.48	0.00	0.00	328.53	59.37
	Facility-Wide Total Emissions Less Exempt Equipment		26.02	113.96	57.91	253.64	33113.10	546.45	0.39	1.71	13.73	5.69	4.43	5.52	1.56	5.47	0.00	0.00	328.43	59.35

Summary of Controlled Air Emission Units

Potential Emissions
Controlled + Product Recovery

Unit	Unit		NOx		CO		VOC		SO2		PM		PM10		PM2.5		H2S		HAPs		
Name	Description	Qty	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	CO2e
ENG*	Worst-Case Composite Engine Emissions	N/A	3.04	13.33	3.04	13.33	2.40	10.50	0.03	0.14	0.11	0.50	0.11	0.50	0.11	0.50	--	--	0.4	2.0	5,843
ENG 3-4	Inlet Compression	2	6.09	26.66	4.75	20.79	4.80	21.00	0.06	0.28	0.23	1.00	0.23	1.00	0.23	1.00	--	--	0.9	3.9	11,687
ENG 5-8	Residue Compression	4	12.17	53.31	9.49	41.58	9.59	42.01	0.13	0.56	0.46	1.99	0.46	1.99	0.46	1.99	--	--	1.8	7.8	23,374
ENG-9	Generator Engine	1	0.82	0.21	1.65	0.41	0.64	0.16	0.01	0.00	0.06	0.02	0.06	0.02	0.06	0.02	--	--	0.1	0.0	93
GEN-1	Generator Engine	1	0.80	0.20	0.53	0.13	0.20	0.05	0.00	0.00	0.13	0.00	0.13	0.00	0.13	0.00	--	--	0.0	0.0	27
TK-1	Gunbarrel Tank	1	--	--	--	--	1.13	4.96	--	--	--	--	--	--	--	--	--	--	0.1	0.3	7
TK 2-5	Stabilized Condensate Tank	4	--	--	--	--	0.40	1.75	--	--	--	--	--	--	--	--	--	--	0.0	0.1	20
TK-6	Slop Oil Tank	1	--	--	--	--	0.04	0.19	--	--	--	--	--	--	--	--	--	--	0.0	0.0	2
PWTK-1	Produced Water Tank	1	--	--	--	--	0.00	0.00	--	--	--	--	--	--	--	--	--	--	0.0	0.0	0
HTR-1	Hot Oil Heater	1	2.42	10.61	4.07	17.82	0.27	1.17	0.14	0.60	0.37	1.61	0.37	1.61	0.37	1.61	--	--	0.1	0.4	25,345
HTR-2	Regen Gas Heater	1	1.08	4.72	0.91	3.97	0.06	0.26	0.03	0.13	0.08	0.36	0.08	0.36	0.08	0.36	--	--	0.0	0.1	5,642
CONDLOAD-1	Condensate Loadout	1	--	--	--	--	33.47	9.16	--	--	--	--	--	--	--	--	--	--	2.1	0.6	23
OILLOAD-1	Oil Loadout	1	--	--	--	--	33.47	0.06	--	--	--	--	--	--	--	--	--	--	2.1	0.0	0
FUG-1	Fugitives - OOOOa	N/A	--	--	--	--	11.30	51.24	--	--	--	--	--	--	--	--	0.00	0.00	0.10	0.47	20815
FUG-2	Fugitives - Residue	N/A	--	--	--	--	0.05	0.23	--	--	--	--	--	--	--	--	0.00	0.00	0.0	0.0	0
AMINE-1	Amine Unit	1	--	--	--	--	2.79	3.93	--	--	--	--	--	--	--	--	--	--	0.0	0.0	65,846
COMP	Compressor Blowdowns	3	--	--	--	--	0.11	0.50	--	--	--	--	--	--	--	--	--	--	0.0	0.0	35
PLANT BD	Gas Plant Blowdown	1	--	--	--	--	1,640.18	0.82	--	--	--	--	--	--	--	--	--	--	15.1	0.0	21
TO-1	Thermal Oxidizer	1	1.56	6.82	1.31	5.73	0.19	0.83	64.45	235.24	0.00	0.00	0.00	0.00	0.00	0.00	--	--	0.0	0.0	8,142
FL-1	Upset/Maintenance Flare	1	251.60	26.48	1,147.00	120.70	92.94	14.14	6.15	1.31	5.75	0.88	5.75	0.88	5.75	0.88	--	--	0.0	0.0	77,038
FL-2	Tank Flare	1	0.89	3.91	4.07	17.82	0.00	0.02	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.01	--	--	0.0	0.0	6,730
HR-1	Road Dust	N/A	--	--	--	--	--	--	--	--	12.49	0.23	3.18	0.06	0.32	0.01	--	--	--	--	--
MAIN-1	Maintenance Activities	N/A	--	--	--	--	--	10.00	--	--	--	--	--	--	--	--	--	--	--	--	250
UP/MAL-1	Upsets/Malfunctions	N/A	--	--	--	--	--	10.00	--	--	--	--	--	--	--	--	--	--	--	--	250
	Facility-Wide Total Emissions Including Exempt Equipment		280.48	146.24	1,176.82	242.28	1,834.03	182.98	71.00	238.26	19.68	6.59	10.37	6.42	7.51	6.37	0.00	0.00	22.89	15.73	251,192
	Facility-Wide Total Emissions Less Exempt Equipment		278.85	145.83	1,174.63	241.74	1,833.18	182.77	70.99	238.26	19.49	6.58	10.18	6.41	7.32	6.35	0.00	0.00	22.80	15.71	251,072

* - Composite emissions represent worse case engine emissions

Summary of Uncontrolled HAP Emissions

			Potential Emissions Uncontrolled + No Product Recovered																	
Unit	Unit		Formaldehyde		Acetaldehyde		Acrolein		Benzene		Toluene		Ethylbenzene		Xylenes		n-Hexane		2,2,4-TMP	
Name	Description	Qty	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy
ENG*	Worst-Case Composite Engine Emissions	N/A	1.34	5.86	0.10	0.42	0.06	0.26	0.01	0.02	0.00	0.02	0.00	0.00	0.00	0.01	0.01	0.06	--	--
ENG 3-4	Inlet Compression	2	2.68	11.73	0.19	0.83	0.12	0.51	0.01	0.04	0.01	0.04	0.00	0.00	0.00	0.02	0.03	0.11	--	--
ENG 5-8	Residue Compression	4	5.35	23.45	0.38	1.67	0.23	1.03	0.02	0.09	0.02	0.08	0.00	0.01	0.01	0.04	0.05	0.22	--	--
ENG-9	Generator Engine	1	0.07	0.02	0.01	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	N/A	N/A	--	--
GEN-1	Generator Engine	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	N/A	N/A	0.00	0.00	N/A	N/A	--	--
TK-1	Gunbarrel Tank	1	--	--	--	--	--	--	0.23	0.99	0.23	0.99	0.02	0.10	0.02	0.10	0.91	3.97	0.02	0.10
TK 2-5	Stabilized Condensate Tank	4	--	--	--	--	--	--	0.08	0.35	0.08	0.35	0.01	0.03	0.01	0.03	0.32	1.40	0.01	0.03
TK-6	Slop Oil Tank	1	--	--	--	--	--	--	0.01	0.04	0.01	0.04	0.00	0.00	0.00	0.00	0.03	0.15	0.00	0.00
PWTK-1	Produced Water Tank	1	--	--	--	--	--	--	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
HTR-1	Hot Oil Heater	1	0.00	0.02	--	--	--	--	0.00	0.00	0.00	0.00	--	--	--	--	0.09	0.38	--	--
HTR-2	Regen Gas Heater	1	0.00	0.00	--	--	--	--	0.00	0.00	0.00	0.00	--	--	--	--	0.02	0.09	--	--
CONDLOAD-1	Condensate Loadout	1	--	--	--	--	--	--	1.00	0.27	1.00	0.27	0.10	0.03	0.10	0.03	4.00	1.09	0.10	0.03
OILLOAD-1	Oil Loadout	1	--	--	--	--	--	--	1.00	0.00	1.00	0.00	0.10	0.00	0.10	0.00	4.00	0.01	0.10	0.00
FUG-1	Fugitives - OOOOa	N/A	--	--	--	--	--	--	0.04	0.16	0.01	0.02	0.00	0.00	0.00	0.00	0.06	0.28	0.00	0.00
FUG-2	Fugitives - Residue	N/A	--	--	--	--	--	--	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AMINE-1	Amine Unit	1	--	--	--	--	--	--	0.03	0.14	0.03	0.14	0.00	0.01	0.01	0.04	0.16	0.70	0.04	0.17
COMP	Compressor Blowdowns	3	--	--	--	--	--	--	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.00
PLANT BD	Gas Plant Blowdown	1	--	--	--	--	--	--	105.62	0.05	15.19	0.01	0.00	0.00	0.00	0.00	181.91	0.09	0.00	0.00
TO-1	Thermal Oxidizer	1	--	--	--	--	--	--	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
FL-1	Upset/Maintenance Flare	1	--	--	--	--	--	--	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
FL-2	Tank Flare	1	--	--	--	--	--	--	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
HR-1	Road Dust	N/A	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MAIN-1	Maintenance Activities	N/A	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
UP/MAL-1	Upsets/Malfunctions	N/A	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Facility-Wide Total HAP Emissions Including Exempt Equipment			9.44	41.08	0.68	2.92	0.42	1.80	108.05	2.18	17.58	1.98	0.24	0.19	0.26	0.27	191.58	8.57	0.27	0.33
Facility-Wide Total HAP Emissions Less Exempt Equipment			9.37	41.06	0.67	2.92	0.41	1.80	108.04	2.18	17.58	1.97	0.24	0.19	0.26	0.27	191.58	8.57	0.27	0.33

Summary of Controlled HAP Emissions

			Potential Emissions Controlled + Product Recovery																	
Unit	Unit		Formaldehyde		Acetaldehyde		Acrolein		Benzene		Toluene		Ethylbenzene		Xylenes		n-Hexane		2,2,4-TMP	
Name	Description	Qty	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy
ENG*	Worst-Case Composite Engine Emissions	N/A	0.32	1.40	0.10	0.42	0.06	0.26	0.01	0.02	0.00	0.02	0.00	0.00	0.00	0.01	0.01	0.06	--	--
ENG 3-4	Inlet Compression	2	0.54	2.35	0.19	0.83	0.12	0.51	0.01	0.04	0.01	0.04	0.00	0.00	0.00	0.02	0.03	0.11	--	--
ENG 5-8	Residue Compression	4	1.07	4.69	0.38	1.67	0.23	1.03	0.02	0.09	0.02	0.08	0.00	0.01	0.01	0.04	0.05	0.22	--	--
ENG-9	Generator Engine	1	0.07	0.02	0.01	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	N/A	N/A	--	--
GEN-1	Generator Engine	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	N/A	N/A	0.00	0.00	N/A	N/A	--	--
TK-1	Gunbarrel Tank	1	--	--	--	--	--	--	0.01	0.05	0.01	0.05	0.00	0.00	0.00	0.00	0.05	0.20	0.00	0.00
TK 2-5	Stabilized Condensate Tank	4	--	--	--	--	--	--	0.00	0.02	0.00	0.02	0.00	0.00	0.00	0.00	0.02	0.07	0.00	0.00
TK-6	Slop Oil Tank	1	--	--	--	--	--	--	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00
PWTK-1	Produced Water Tank	1	--	--	--	--	--	--	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
HTR-1	Hot Oil Heater	1	0.00	0.02	--	--	--	--	0.00	0.00	0.00	0.00	--	--	--	--	0.09	0.38	--	--
HTR-2	Regen Gas Heater	1	0.00	0.00	--	--	--	--	0.00	0.00	0.00	0.00	--	--	--	--	0.02	0.09	--	--
CONDLOAD-1	Condensate Loadout	1	--	--	--	--	--	--	0.33	0.09	0.33	0.09	0.03	0.01	0.03	0.01	1.34	0.37	0.03	0.01
OILLOAD-1	Oil Loadout	1	--	--	--	--	--	--	0.33	0.00	0.33	0.00	0.03	0.00	0.03	0.00	1.34	0.00	0.03	0.00
FUG-1	Fugitives - OOOOa	N/A	--	--	--	--	--	--	0.04	0.16	0.01	0.02	0.00	0.00	0.00	0.00	0.06	0.28	0.00	0.00
FUG-2	Fugitives - Residue	N/A	--	--	--	--	--	--	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AMINE-1	Amine Unit	1	--	--	--	--	--	--	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.00
COMP	Compressor Blowdowns	3	--	--	--	--	--	--	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PLANT BD	Gas Plant Blowdown	1	--	--	--	--	--	--	5.28	0.00	0.76	0.00	0.00	0.00	0.00	0.00	9.10	0.00	0.00	0.00
TO-1	Thermal Oxidizer	1	--	--	--	--	--	--	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
FL-1	Upset/Maintenance Flare	1	--	--	--	--	--	--	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
FL-2	Tank Flare	1	--	--	--	--	--	--	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
HR-1	Road Dust	N/A	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MAIN-1	Maintenance Activities	N/A	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
UP/MAL-1	Upsets/Malfunctions	N/A	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Facility-Wide Total HAP Emissions Including Exempt Equipment			2.00	8.47	0.68	2.92	0.42	1.80	6.04	0.49	1.49	0.33	0.07	0.03	0.08	0.08	12.10	1.81	0.07	0.02
Facility-Wide Total HAP Emissions Less Exempt Equipment			1.93	8.46	0.67	2.92	0.41	1.80	6.04	0.49	1.48	0.33	0.07	0.03	0.08	0.08	12.10	1.81	0.07	0.02

* - Composite emissions represent worse case engine emissions

Summary of Compressor Engine Air Emission Units

Option Number	Unit Name	Make & Model	Qty	Potential Emissions Uncontrolled + No Product Recovered NOx lb/hr	NOx tpy	CO lb/hr	CO tpy	VOC lb/hr	VOC tpy	SO2 lb/hr	SO2 tpy	PM10 lb/hr	PM10 tpy
1	ENG-1	Caterpillar G3508B		1.52	6.66	3.93	17.19	1.70	7.46	0.02	0.07	0.06	0.25
		Option 1 Total:	1	1.52	6.66	3.93	17.19	1.70	7.46	0.02	0.07	0.06	0.25
2	ENG-2	Caterpillar G3516		3.04	13.33	7.39	32.39	3.47	15.19	0.03174	0.13902	0.11	0.50
		Option 2 Total:	1	3.04	13.33	7.39	32.39	3.47	15.19	0.03	0.14	0.11	0.50
	Worst-Case Composite Engine Emissions			3.04	13.33	7.39	32.39	3.47	15.19	0.03	0.14	0.11	0.50

Option Number	Unit Name	Make & Model	Qty	Potential Emissions Controlled + Product Recovery NOx lb/hr	NOx tpy	CO lb/hr	CO tpy	VOC lb/hr	VOC tpy	SO2 lb/hr	SO2 tpy	PM10 lb/hr	PM10 tpy	CO2e tpy
1	ENG-1	Caterpillar G3508B		1.52	6.66	3.04	13.33	1.38	6.06	0.02	0.07	0.06	0.25	2903
		Option 1 Total:	1	1.52	6.66	3.04	13.33	1.38	6.06	0.02	0.07	0.06	0.25	2903
2	ENG-2	Caterpillar G3516		3.04	13.33	2.37	10.40	2.40	10.50	0.03	0.14	0.11	0.50	5843
		Option 2 Total:	1	3.04	13.33	2.37	10.40	2.40	10.50	0.03	0.14	0.11	0.50	5843
	Worst-Case Composite Engine Emissions			3.04	13.33	3.04	13.33	2.40	10.50	0.03	0.14	0.11	0.50	5843

Engine Emission Detail Sheet

Item	Value
Source Name	ENG-1
Description	Compressor Engine
Engine Use	Inlet Compression
Quantity	1
Make	Caterpillar
Model	Caterpillar G3508B
Serial Number	TBD
Manufacture Date	After 7/1/2010
Fuel Type	Natural Gas
Engine Type	4SLB

Item	Value	Units	Source
Rated Horsepower	690	hp	Manufacturer
Heat Rate	5.66	MMBtu/hr	Calculated
Fuel Consumption	8203	Btu/hp-hr	Manufacturer
Fuel Use	5307.5	scf/hr	Calculated
Fuel Heat Value	1066.43	btu/scf	Gas Analysis
Emisson Controls	Catalyst/AFR		Manufacturer
Control Efficiency CH2O	50%		Manufacturer/Permit Condition
Control Efficiency NOx	0%		Manufacturer/JJJJ
Control Efficiency VOC	19%		Manufacturer/JJJJ
Control Efficiency CO	22%		Manufacturer/JJJJ
Engine Speed	1400	RPM	Manufacturer
Potential Operation	8760	hr/yr	
Sulfur Content	9,476	grains/MMscf	Gas Analysis with Margin
Sulfur Margin	400%	%	

Total Potential Emissions

Pollutant	Uncontrolled Emissions		Controlled Emissions	
	(lb/hr)	(tpy)	(lb/hr)	(tpy)
NOx	1.52	6.66	1.52	6.66
VOC (less formaldehyde)	1.07	4.66	1.07	4.66
Total VOC	1.70	7.46	1.38	6.06
CO	3.93	17.19	3.04	13.33
SO2	0.02	0.07	0.02	0.07
PM10	0.06	0.25	0.06	0.25
Formaldehyde	0.64	2.80	0.32	1.40
Acetaldehyde	0.05	0.21	0.05	0.21
Acrolein	0.03	0.13	0.03	0.13
Benzene	0.00	0.01	0.00	0.01
Toluene	0.00	0.01	0.00	0.01
Ethylbenzene	0.00	0.00	0.00	0.00
Xylene	0.00	0.00	0.00	0.00
n-Hexane	0.01	0.03	0.01	0.03
Total HAPs	0.73	3.19	0.41	1.79

Potential Emissions Per Engine

Pollutant	Uncontrolled Emissions				Controlled Emissions				Source of Emission Factor
	EF	Units	(lb/hr)	(tpy)	EF	Units	(lb/hr)	(tpy)	
NOx	1.00*	g/hp-hr	1.52	6.66	1.00	g/hp-hr	1.52	6.66	40 CFR 60 Subpart JJJJ
VOC (less formaldehyde)	0.70*	g/hp-hr	1.07	4.66	0.70	g/hp-hr	1.07	4.66	40 CFR 60 Subpart JJJJ
Total VOC***	1.12	g/hp-hr	1.70	7.46	0.91	g/hp-hr	1.38	6.06	40 CFR 60 Subpart JJJJ + CH2O
CO	2.58**	g/hp-hr	3.93	17.19	2.00	g/hp-hr	3.04	13.33	40 CFR 60 Subpart JJJJ
SO2****	2.79E-03	lb/mmBtu	0.02	0.07	2.79E-03	lb/mmBtu	0.02	0.07	EPA AP-42 Table 3.2-2
PM10*****	9.99E-03	lb/mmBtu	0.06	0.25	9.99E-03	lb/mmBtu	0.06	0.25	EPA AP-42 Table 3.2-2
Formaldehyde	0.42	g/hp-hr	0.64	2.80	0.21	g/hp-hr	0.32	1.40	Permit Condition
Acetaldehyde	8.36E-03	lb/mmBtu	0.05	0.21	8.36E-03	lb/mmBtu	0.05	0.21	EPA AP-42 Table 3.2-2
Acrolein	5.14E-03	lb/mmBtu	0.03	0.13	5.14E-03	lb/mmBtu	0.03	0.13	EPA AP-42 Table 3.2-2
Benzene	4.40E-04	lb/mmBtu	0.00	0.01	4.40E-04	lb/mmBtu	0.00	0.01	EPA AP-42 Table 3.2-2
Toluene	4.08E-04	lb/mmBtu	0.00	0.01	4.08E-04	lb/mmBtu	0.00	0.01	EPA AP-42 Table 3.2-2
Ethylbenzene	3.97E-05	lb/mmBtu	0.00	0.00	3.97E-05	lb/mmBtu	0.00	0.00	EPA AP-42 Table 3.2-2
Xylene	1.84E-04	lb/mmBtu	0.00	0.00	1.84E-04	lb/mmBtu	0.00	0.00	EPA AP-42 Table 3.2-2
n-Hexane	1.11E-03	lb/mmBtu	0.01	0.03	1.11E-03	lb/mmBtu	0.01	0.03	EPA AP-42 Table 3.2-2
Total HAPs			0.73	3.19			0.41	1.79	

* - Uncontrolled and controlled NOx and VOC emission factors based on 40 CFR 60 Subpart JJJJ standards as manufacturer emission factors are lower than JJJJ standards.
** - Uncontrolled and controlled emission factors for CO were taken from the Manufacturer technical data sheets and 40 CFR 60 Subpart JJJJ emission standards, respectively.
*** - Total VOC emissions were calculated to include formaldehyde.
**** - Sulfur emission factor from AP-42 Table 1.4-2 is ratio adjusted based on the max sulfur content when sulfur content is greater than 2,000 grains/MMscf.
***** - PM10 emissions include filterable and condensable particulates.

Sample Calculation for NOx

1.00 g/hp-hr * 690 hp / 453.59 g/lb * 8760 hr/yr / 2000 lb/ton = 6.66 tpy

Engine Emission Detail Sheet

Item	Value
Source Name	ENG-2
Description	Compressor Engine
Engine Use	Inlet Compression
Quantity	1
Make	Caterpillar
Model	Caterpillar G3516
Serial Number	TBD
Manufacture Date	After 7/1/2007
Fuel Type	Natural Gas
Engine Type	4SLB

Item	Value	Units	Source
Rated Horsepower	1380	hp	Manufacturer
Heat Rate	11.39	MMBtu/hr	Calculated
Fuel Consumption	8256	Btu/hp-hr	Manufacturer
Fuel Use	10683.54	scf/hr	Calculated
Fuel Heat Value	1066.43	btu/scf	Gas Analysis
Emisson Controls	Oxidation Catalyst		Manufacturer
Control Efficiency CH2O	80%		Manufacturer/Permit Condition
Control Efficiency NOx	0%		Manufacturer/JJJJ
Control Efficiency VOC	31%		Manufacturer/JJJJ
Control Efficiency CO	68%		Manufacturer/Permit Condition
Engine Speed	1400	RPM	Manufacturer
Potential Operation	8760	hr/yr	
Sulfur Content	9,476	grains/MMscf	Gas Analysis with Margin
Sulfur Margin	400%	%	

Total Potential Emissions

Pollutant	Uncontrolled Emissions		Controlled Emissions	
	(lb/hr)	(tpy)	(lb/hr)	(tpy)
NOx	3.04	13.33	3.04	13.33
VOC (less formaldehyde)	2.13	9.33	2.13	9.33
Total VOC	3.47	15.19	2.40	10.50
CO	7.39	32.39	2.37	10.40
SO2	0.03	0.14	0.03	0.14
PM10	0.11	0.50	0.11	0.50
Formaldehyde	1.34	5.86	0.27	1.17
Acetaldehyde	0.10	0.42	0.10	0.42
Acrolein	0.06	0.26	0.06	0.26
Benzene	0.01	0.02	0.01	0.02
Toluene	0.00	0.02	0.00	0.02
Ethylbenzene	0.00	0.00	0.00	0.00
Xylene	0.00	0.01	0.00	0.01
n-Hexane	0.01	0.06	0.01	0.06
Total HAPs	1.52	6.65	0.45	1.96

Potential Emissions Per Engine

Pollutant	Uncontrolled Emissions				Controlled Emissions				Source of Emission Factor
	EF	Units	(lb/hr)	(tpy)	EF	Units	(lb/hr)	(tpy)	
NOx	1.00*	g/hp-hr	3.04	13.33	1.00	g/hp-hr	3.04	13.33	40 CFR 60 Subpart JJJJ
VOC (less formaldehyde)	0.70*	g/hp-hr	2.13	9.33	0.70	g/hp-hr	2.13	9.33	40 CFR 60 Subpart JJJJ
Total VOC***	1.14	g/hp-hr	3.47	15.19	0.79	g/hp-hr	2.40	10.50	40 CFR 60 Subpart JJJJ + CH2O
CO	2.43**	g/hp-hr	7.39	32.39	0.78****	g/hp-hr	2.37	10.40	Permit Condition
SO2*****	2.79E-03	lb/mmBtu	0.03	0.14	2.79E-03	lb/mmBtu	0.03	0.14	EPA AP-42 Table 3.2-2
PM10******	9.99E-03	lb/mmBtu	0.11	0.50	9.99E-03	lb/mmBtu	0.11	0.50	EPA AP-42 Table 3.2-2
Formaldehyde	4.40E-01	g/hp-hr	1.34	5.86	8.80E-02	g/hp-hr	0.27	1.17	Permit Condition
Acetaldehyde	8.36E-03	lb/mmBtu	0.10	0.42	8.36E-03	lb/mmBtu	0.10	0.42	EPA AP-42 Table 3.2-2
Acrolein	5.14E-03	lb/mmBtu	0.06	0.26	5.14E-03	lb/mmBtu	0.06	0.26	EPA AP-42 Table 3.2-2
Benzene	4.40E-04	lb/mmBtu	0.01	0.02	4.40E-04	lb/mmBtu	0.01	0.02	EPA AP-42 Table 3.2-2
Toluene	4.08E-04	lb/mmBtu	0.00	0.02	4.08E-04	lb/mmBtu	0.00	0.02	EPA AP-42 Table 3.2-2
Ethylbenzene	3.97E-05	lb/mmBtu	0.00	0.00	3.97E-05	lb/mmBtu	0.00	0.00	EPA AP-42 Table 3.2-2
Xylene	1.84E-04	lb/mmBtu	0.00	0.01	1.84E-04	lb/mmBtu	0.00	0.01	EPA AP-42 Table 3.2-2
n-Hexane	1.11E-03	lb/mmBtu	0.01	0.06	1.11E-03	lb/mmBtu	0.01	0.06	EPA AP-42 Table 3.2-2
Total HAPs			1.52	6.65			0.45	1.96	

* - Uncontrolled and controlled emission factors for NOx and VOC are based on JJJJ standards as manufacturer uncontrolled emission factors are lower than JJJJ emission standards.
** - Uncontrolled emission factor for CO was taken from the Manufacturer technical data sheets. Controlled emission factor for CO is a permit condition requested in this application.
*** - Uncontrolled and controlled emission factor for Total VOC was calculated to include formaldehyde.
**** - Controlled CO emission factor is a permit condition requested in this application.
***** - Sulfur emission factor from AP-42 Table 1.4-2 is ratio adjusted based on the max sulfur content when sulfur content is greater than 2,000 grains/MMscf.
****** - PM10 emissions include filterable and condensable particulates.

Sample Calculation for NOx
1.00 g/hp-hr * 1380 hp / 453.59 g/lb * 8760 hr/yr / 2000 lb/ton = 13.33 tpy

Engine Emission Detail Sheet

Item	Value
Source Name	ENG 3-4
Description	Compressor Engine
Engine Use	Inlet Compression
Quantity	2
Make	Caterpillar
Model	Caterpillar G3516
Serial Number	TBD
Manufacture Date	After 7/1/2007
Fuel Type	Natural Gas
Engine Type	4SLB

Item	Value	Units	Source
Rated Horsepower	1380	hp	Manufacturer
Heat Rate	11.39	MMBtu/hr	Calculated
Fuel Consumption	8256	Btu/hp-hr	Manufacturer
Fuel Use	10683.54	scf/hr	Calculated
Fuel Heat Value	1066.43	btu/scf	Gas Analysis
Emisson Controls	Oxidation Catalyst		Manufacturer
Control Efficiency CH2O	80%		Manufacturer/Permit Condition
Control Efficiency NOx	0%		Manufacturer/JJJJ
Control Efficiency VOC	31%		Manufacturer/JJJJ
Control Efficiency CO	68%		Manufacturer/Permit Condition
Engine Speed	1400	RPM	Manufacturer
Potential Operation	8760	hr/yr	
Sulfur Content	9,476	grains/MMscf	Gas Analysis with Margin
Sulfur Margin	400%	%	

Total Potential Emissions

Pollutant	Uncontrolled Emissions		Controlled Emissions	
	(lb/hr)	(tpy)	(lb/hr)	(tpy)
NOx	6.09	26.66	6.09	26.66
VOC (less formaldehyde)	4.26	18.66	4.26	18.66
Total VOC	6.94	30.39	4.80	21.00
CO	14.79	64.77	4.75	20.79
SO2	0.06	0.28	0.06	0.28
PM10	0.23	1.00	0.23	1.00
Formaldehyde	2.68	11.73	0.54	2.35
Acetaldehyde	0.19	0.83	0.19	0.83
Acrolein	0.12	0.51	0.12	0.51
Benzene	0.01	0.04	0.01	0.04
Toluene	0.01	0.04	0.01	0.04
Ethylbenzene	0.00	0.00	0.00	0.00
Xylene	0.00	0.02	0.00	0.02
n-Hexane	0.03	0.11	0.03	0.11
Total HAPs	3.03	13.29	0.89	3.91

Potential Emissions Per Engine

Pollutant	Uncontrolled Emissions				Controlled Emissions				Source of Emission Factor
	EF	Units	(lb/hr)	(tpy)	EF	Units	(lb/hr)	(tpy)	
NOx	1.00*	g/hp-hr	3.04	13.33	1.00	g/hp-hr	3.04	13.33	40 CFR 60 Subpart JJJJ
VOC (less formaldehyde)	0.70*	g/hp-hr	2.13	9.33	0.70	g/hp-hr	2.13	9.33	40 CFR 60 Subpart JJJJ
Total VOC***	1.14	g/hp-hr	3.47	15.19	0.79	g/hp-hr	2.40	10.50	40 CFR 60 Subpart JJJJ + CH2O
CO	2.43**	g/hp-hr	7.39	32.39	0.78	g/hp-hr	2.37	10.40	Permit Condition
SO2*****	2.79E-03	lb/mmBtu	0.03	0.14	2.79E-03	lb/mmBtu	0.03	0.14	EPA AP-42 Table 3.2-2
PM10******	9.99E-03	lb/mmBtu	0.11	0.50	9.99E-03	lb/mmBtu	0.11	0.50	EPA AP-42 Table 3.2-2
Formaldehyde	4.40E-01	g/hp-hr	1.34	5.86	8.80E-02	g/hp-hr	0.27	1.17	Permit Condition
Acetaldehyde	8.36E-03	lb/mmBtu	0.10	0.42	8.36E-03	lb/mmBtu	0.10	0.42	EPA AP-42 Table 3.2-2
Acrolein	5.14E-03	lb/mmBtu	0.06	0.26	5.14E-03	lb/mmBtu	0.06	0.26	EPA AP-42 Table 3.2-2
Benzene	4.40E-04	lb/mmBtu	0.01	0.02	4.40E-04	lb/mmBtu	0.01	0.02	EPA AP-42 Table 3.2-2
Toluene	4.08E-04	lb/mmBtu	0.00	0.02	4.08E-04	lb/mmBtu	0.00	0.02	EPA AP-42 Table 3.2-2
Ethylbenzene	3.97E-05	lb/mmBtu	0.00	0.00	3.97E-05	lb/mmBtu	0.00	0.00	EPA AP-42 Table 3.2-2
Xylene	1.84E-04	lb/mmBtu	0.00	0.01	1.84E-04	lb/mmBtu	0.00	0.01	EPA AP-42 Table 3.2-2
n-Hexane	1.11E-03	lb/mmBtu	0.01	0.06	1.11E-03	lb/mmBtu	0.01	0.06	EPA AP-42 Table 3.2-2
Total HAPs			1.52	6.65			0.45	1.96	

* - Uncontrolled and controlled emission factors for NOx and VOC are based on JJJJ standards as manufacturer uncontrolled emission factors are lower than JJJJ emission standards.
** - Uncontrolled emission factor for CO was taken from the Manufacturer technical data sheets. Controlled emission factor for CO is a permit condition requested in this application.
*** - Uncontrolled and controlled emission factor for Total VOC was calculated to include formaldehyde.
**** - Controlled CO emission factor is a permit condition requested in this application.
***** - Sulfur emission factor from AP-42 Table 1.4-2 is ratio adjusted based on the max sulfur content when sulfur content is greater than 2,000 grains/MMscf.
****** - PM10 emissions include filterable and condensable particulates.

Sample Calculation for NOx

1.00 g/hp-hr * 1380 hp / 453.59 g/lb * 8760 hr/yr / 2000 lb/ton = 13.33 tpy

Engine Emission Detail Sheet

Item	Value
Source Name	ENG 5-8
Description	Compressor Engine
Engine Use	Residue Compression
Quantity	4
Make	Caterpillar
Model	Caterpillar G3516
Serial Number	TBD
Manufacture Date	11/20/2017, After 7/1/2007
Fuel Type	Natural Gas
Engine Type	4SLB

Item	Value	Units	Source
Rated Horsepower	1380	hp	Manufacturer
Heat Rate	11.39	MMBtu/hr	Calculated
Fuel Consumption	8256	Btu/hp-hr	Manufacturer
Fuel Use	10683.54	scf/hr	Calculated
Fuel Heat Value	1066.43	btu/scf	Gas Analysis
Emisson Controls	Oxidation Catalyst		Manufacturer
Control Efficiency CH2O	80%		Manufacturer/Permit Condition
Control Efficiency NOx	0%		Manufacturer/JJJJ
Control Efficiency VOC	31%		Manufacturer/JJJJ
Control Efficiency CO	68%		Manufacturer/Permit Condition
Engine Speed	1400	RPM	Manufacturer
Potential Operation	8760	hr/yr	
Sulfur Content	9,476	grains/MMscf	AP42 with margin
Sulfur Margin	400%	%	

Total Potential Emissions

Pollutant	Uncontrolled Emissions		Controlled Emissions	
	(lb/hr)	(tpy)	(lb/hr)	(tpy)
NOx	12.17	53.31	12.17	53.31
VOC (less formaldehyde)	8.52	37.32	8.52	37.32
Total VOC	13.88	60.78	9.59	42.01
CO	29.58	129.55	9.49	41.58
SO2	0.13	0.56	0.13	0.56
PM10	0.46	1.99	0.46	1.99
Formaldehyde	5.35	23.45	1.07	4.69
Acetaldehyde	0.38	1.67	0.38	1.67
Acrolein	0.23	1.03	0.23	1.03
Benzene	0.02	0.09	0.02	0.09
Toluene	0.02	0.08	0.02	0.08
Ethylbenzene	0.00	0.01	0.00	0.01
Xylene	0.01	0.04	0.01	0.04
n-Hexane	0.05	0.22	0.05	0.22
Total HAPs	6.07	26.58	1.79	7.82

Potential Emissions Per Engine

Pollutant	Uncontrolled Emissions				Controlled Emissions				Source of Emission Factor
	EF	Units	(lb/hr)	(tpy)	EF	Units	(lb/hr)	(tpy)	
NOx	1.00*	g/hp-hr	3.04	13.33	1.00	g/hp-hr	3.04	13.33	40 CFR 60 Subpart JJJJ
VOC (less formaldehyde)	0.70*	g/hp-hr	2.13	9.33	0.70	g/hp-hr	2.13	9.33	40 CFR 60 Subpart JJJJ
Total VOC***	1.14	g/hp-hr	3.47	15.19	0.79	g/hp-hr	2.40	10.50	40 CFR 60 Subpart JJJJ + CH2O
CO	2.43**	g/hp-hr	7.39	32.39	0.78	g/hp-hr	2.37	10.40	Permit Condition
SO2*****	2.79E-03	lb/mmBtu	0.03	0.14	2.79E-03	lb/mmBtu	0.03	0.14	EPA AP-42 Table 3.2-2
PM10******	9.99E-03	lb/mmBtu	0.11	0.50	9.99E-03	lb/mmBtu	0.11	0.50	EPA AP-42 Table 3.2-2
Formaldehyde	4.40E-01	g/hp-hr	1.34	5.86	8.80E-02	g/hp-hr	0.27	1.17	Permit Condition
Acetaldehyde	8.36E-03	lb/mmBtu	0.10	0.42	8.36E-03	lb/mmBtu	0.10	0.42	EPA AP-42 Table 3.2-2
Acrolein	5.14E-03	lb/mmBtu	0.06	0.26	5.14E-03	lb/mmBtu	0.06	0.26	EPA AP-42 Table 3.2-2
Benzene	4.40E-04	lb/mmBtu	0.01	0.02	4.40E-04	lb/mmBtu	0.01	0.02	EPA AP-42 Table 3.2-2
Toluene	4.08E-04	lb/mmBtu	0.00	0.02	4.08E-04	lb/mmBtu	0.00	0.02	EPA AP-42 Table 3.2-2
Ethylbenzene	3.97E-05	lb/mmBtu	0.00	0.00	3.97E-05	lb/mmBtu	0.00	0.00	EPA AP-42 Table 3.2-2
Xylene	1.84E-04	lb/mmBtu	0.00	0.01	1.84E-04	lb/mmBtu	0.00	0.01	EPA AP-42 Table 3.2-2
n-Hexane	1.11E-03	lb/mmBtu	0.01	0.06	1.11E-03	lb/mmBtu	0.01	0.06	EPA AP-42 Table 3.2-2
Total HAPs			1.52	6.65			0.45	1.96	

* - Uncontrolled and controlled emission factors for NOx and VOC are based on JJJJ standards as manufacturer uncontrolled emission factors are lower than JJJJ emission standards.
** - Uncontrolled emission factor for CO was taken from the Manufacturer technical data sheets. Controlled emission factor for CO is a permit condition requested in this application.
*** - Uncontrolled and controlled emission factor for Total VOC was calculated to include formaldehyde.
**** - Controlled CO emission factor is a permit condition requested in this application.
***** - Sulfur emission factor from AP-42 Table 1.4-2 is ratio adjusted based on the max sulfur content when sulfur content is greater than 2,000 grains/MMscf.
****** - PM10 emissions include filterable and condensable particulates.

Sample Calculation for NOx
1.00 g/hp-hr * 1380 hp / 453.59 g/lb * 8760 hr/yr / 2000 lb/ton = 13.33 tpy

Engine Emission Detail Sheet

Item	Value
Source Name	ENG-9
Description	Generator Engine
Engine Use	Generator
Quantity	1
Make	Olympian
Model	250LG6
Serial Number	TBD
Manufacture Date	After 7/1/2010
Fuel Type	Natural Gas
Engine Type	4SRB

Item	Value	Units	Source
Rated Horsepower	374	hp	Manufacturer
Heat Rate	3.18	MMBtu/hr	Calculated
Fuel Consumption	8506	Btu/hp-hr	Manufacturer
Fuel Use	2983	scf/hr	Calculated
Fuel Heat Value	1066.43	btu/scf	Gas Analysis
Emission Controls	TBD		Manufacturer
Control Efficiency CH2O	0%		AP42
Control Efficiency NOx	0%		JJJJ
Control Efficiency VOC	0%		JJJJ
Control Efficiency CO	0%		JJJJ
Engine Speed	1800	RPM	Manufacturer
Potential Operation	499	hr/yr	
Sulfur Content	8,000	grains/MMscf	AP42 with margin
Sulfur Margin	400%	%	

Potential Emissions Per Engine

Pollutant	Uncontrolled Emissions				Controlled Emissions				Source of Emission Factor
	EF	Units	(lb/hr)	(tpy)	EF	Units	(lb/hr)	(tpy)	
Nox	1.00*	g/hp-hr	0.82	0.21	1.00	g/hp-hr	0.82	0.21	40 CFR 60 Subpart JJJJ
VOC (less formaldehyde)	0.70*	g/hp-hr	0.58	0.14	0.70	g/hp-hr	0.58	0.14	40 CFR 60 Subpart JJJJ
Total VOC**	0.78	g/hp-hr	0.64	0.16	0.78	g/hp-hr	0.64	0.16	40 CFR 60 Subpart JJJJ + CH2O
CO	2.00*	g/hp-hr	1.65	0.41	2.00	g/hp-hr	1.65	0.41	40 CFR 60 Subpart JJJJ
SO2****	2.35E-03	lb/mmBtu	0.01	0.00	2.35E-03	lb/mmBtu	0.01	0.00	EPA AP-42 Table 3.2-3
PM10*****	1.94E-02	lb/mmBtu	0.06	0.02	1.94E-02	lb/mmBtu	0.06	0.02	EPA AP-42 Table 3.2-3
Formaldehyde	2.05E-02	lb/mmBtu	0.07	0.02	2.05E-02	lb/mmBtu	0.07	0.02	EPA AP-42 Table 3.2-3
Acetaldehyde	2.79E-03	lb/mmBtu	0.01	0.00	2.79E-03	lb/mmBtu	0.01	0.00	EPA AP-42 Table 3.2-3
Acrolein	2.63E-03	lb/mmBtu	0.01	0.00	2.63E-03	lb/mmBtu	0.01	0.00	EPA AP-42 Table 3.2-3
Benzene	1.58E-03	lb/mmBtu	0.01	0.00	1.58E-03	lb/mmBtu	0.01	0.00	EPA AP-42 Table 3.2-3
Toluene	5.58E-04	lb/mmBtu	0.00	0.00	5.58E-04	lb/mmBtu	0.00	0.00	EPA AP-42 Table 3.2-3
Ethylbenzene	2.48E-05	lb/mmBtu	0.00	0.00	2.48E-05	lb/mmBtu	0.00	0.00	EPA AP-42 Table 3.2-3
Xylene	1.95E-04	lb/mmBtu	0.00	0.00	1.95E-04	lb/mmBtu	0.00	0.00	EPA AP-42 Table 3.2-3
n-Hexane	N/A	lb/mmBtu	N/A	N/A	N/A	lb/mmBtu	N/A	N/A	EPA AP-42 Table 3.2-3
Total HAPs			0.09	0.02			0.09	0.02	

* - Uncontrolled and controlled emission factors for NOx, CO, and VOC are based on JJJJ standards as manufacturer uncontrolled emission factors are lower than JJJJ emission standards.
** - Uncontrolled emission factor for Total VOC was calculated to include formaldehyde.
*** - Controlled emission factors are permit conditions requested in this application.
**** - Sulfur emission factor from AP-42 Table 1.4-2 is ratio adjusted based on the max sulfur content when sulfur content is greater than 2,000 grains/MMscf.
***** - PM10 emissions include filterable and condensable particulates.

Sample Calculation for NOx
1.00 g/hp-hr * 374 hp / 453.59 g/lb * 499 hr/yr / 2000 lb/ton = 0.21 tpy

Engine Emission Detail Sheet

Item	Value	
Source Name	GEN-1	
Description	Generator Engine	
Quantity	1	
Make	Generac	
Model	TBD	
Serial Number	TBD	
Manufacture Date	2019	
Fuel Type	Diesel Tier 3	
Engine Type	Diesel	
Liters	3.4	L
Cylinders	4	

Item	Value	Units	Source		
Rated Horsepower	65	hp	Manufacturer		
	48	kW	Manufacturer	20.00%	Efficiency
	40	kWe	Manufacturer		
Heat Rate	0.65	MMBtu/hr	Calculated		
Fuel Consumption	10000	Btu/hp-hr	Engineering Estimate		
Heating Value	137000	Btu/gal			
Heat Rate	0.65	MMBtu/hr			
Emisson Controls	TBD		Manufacturer		
Engine Speed	TBD	RPM	Manufacturer		
Potential Operation	499	hr/yr			

Potential Emissions Per Engine

Pollutant	Uncontrolled Emissions				Controlled Emissions				Source of Emission Factor
	EF	Units	(lb/hr)	(tpy)	EF	Units	(lb/hr)	(tpy)	
NOx	5.59	g/hp-hr	0.80	0.20	5.59	g/hp-hr	0.80	0.20	40 CFR 89.112
Total VOC	1.40	g/hp-hr	0.20	0.05	1.40	g/hp-hr	0.20	0.05	40 CFR 89.112
CO	3.73	g/hp-hr	0.53	0.13	3.73	g/hp-hr	0.53	0.13	40 CFR 89.112
SO2*	3.80E-04	lb/mmBtu	0.00	0.00	3.80E-04	lb/mmBtu	0.00	0.00	Engineering Calculation
PM10	8.95E-01	g/hp-hr	0.13	0.00	8.95E-01	g/hp-hr	0.13	0.00	40 CFR 89.112
Formaldehyde	1.18E-03	lb/mmBtu	0.00	0.00	1.18E-03	lb/mmBtu	0.00	0.00	AP42 Table 3.3-2
Acetaldehyde	7.67E-04	lb/mmBtu	0.00	0.00	7.67E-04	lb/mmBtu	0.00	0.00	AP42 Table 3.3-2
Acrolein	9.25E-05	lb/mmBtu	0.00	0.00	9.25E-05	lb/mmBtu	0.00	0.00	AP42 Table 3.3-2
Benzene	9.33E-04	lb/mmBtu	0.00	0.00	9.33E-04	lb/mmBtu	0.00	0.00	AP42 Table 3.3-2
Ethylbenzene	N/A	lb/mmBtu	N/A	N/A	N/A	lb/mmBtu	N/A	N/A	AP42 Table 3.3-2
n-Hexane	N/A	lb/mmBtu	N/A	N/A	N/A	lb/mmBtu	N/A	N/A	AP42 Table 3.3-2
Toluene	4.09E-04	lb/mmBtu	0.00	0.00	4.09E-04	lb/mmBtu	0.00	0.00	AP42 Table 3.3-2
Xylene	2.85E-04	lb/mmBtu	0.00	0.00	2.85E-04	lb/mmBtu	0.00	0.00	AP42 Table 3.3-2
Total HAPs			0.00	0.00			0.00	0.00	

* - Sulfur Dioxide emissions based on the fuel sulfur requirement of 15 ppm/gallon (40 CFR 80.510).

NOx and VOC % of total based on ratio provided from NM		
Pollutant	lb/hp-hr	% of Total
NOx	0.03	75.00%
TOC Exhaust	0.00	25.00%
Total	0.03	100.00%

1 kW =	1.341	hp	
Conversion of EPA Tier 3 Standard			
Pollutant	g/kW-hr	g/kW-hr	g/hp-hr
NOx	7.5	7.50	5.59
VOC		1.88	1.40
CO	5	5.00	3.73
PM10	1.2	1.20	0.89
* NOx and VOC apportioned using the AP-42 Table 3.3-1			

Sample Calculation for NOx

5.59 g/hp-hr * 65 hp / 453.59 g/lb * 499 hr/yr / 2000 lb/ton = 0.20 tpy

Tank Detail Sheet

Equipment Source Name	TK-1		Tank Height	25	ft	
Source Description	Gunbarrel Tank		Tank Diameter	12	ft	
Quantity	1		Potential Operation	8,760	hr/yr	
Tank Capacity	500	bbl (each)	Potential Oil Throughput	766	bbl/yr	2.1 avg. bbl/day
Total Tank Capacity	500	bbl	Potential Throughput Per Tank	766	bbl/yr/tk	2.1 avg. bbl/day/tk
Control Efficiency	95%		Throughput Margin	0.00%		
			Calendar Year	2019		

Total Potential Emissions

Pollutant	Uncontrolled		Controlled	
	(lb/hr)	(ton/yr)	(lb/hr)	(ton/yr)
VOC	22.64	99.18	1.13	4.96
Benzene	0.23	0.99	0.01	0.05
Toluene	0.23	0.99	0.01	0.05
Ethylbenzene	0.02	0.10	0.00	0.00
Xylenes	0.02	0.10	0.00	0.00
n-Hexane	0.91	3.97	0.05	0.20
2,2,4-Trimethylpentane	0.02	0.10	0.00	0.00
Total HAPs	1.43	6.25	0.07	0.31

Potential Emissions Per Tank

Pollutant	EF	Uncontrolled		Controlled		Source of Emission Factor
	(lb/bbl)	(lb/hr)	(ton/yr)	(lb/hr)	(ton/yr)	
VOC	258.95	22.64	99.18	1.13	4.96	Engineering Calculation
Benzene	2.59	0.23	0.99	0.01	0.05	Engineering Calculation
Toluene	2.59	0.23	0.99	0.01	0.05	Engineering Calculation
Ethylbenzene	0.26	0.02	0.10	0.00	0.00	Engineering Calculation
Xylenes	0.26	0.02	0.10	0.00	0.00	Engineering Calculation
n-Hexane	10.36	0.91	3.97	0.05	0.20	Engineering Calculation
2,2,4-Trimethylpentane	0.26	0.02	0.10	0.00	0.00	Engineering Calculation
Total HAPs		1.43	6.25	0.07	0.31	

Process Streams	39 To Flare	40 To Slop Oil
Composition	Solved	Solved
Phase: Total	VSSL-105	VSSL-105
	--	--
Mole Fraction	%	%
Methane	14.0050	0.095017
Ethane	15.1670	0.87808
Propane	28.5610	7.41773
i-Butane	9.11843	7.17785
n-Butane	26.0267	34.2548
i-Pentane	3.42445	12.6336
n-Pentane	2.60785	13.7462
n-Hexane	0.849356	20.9208
n-Heptane	0.0200098	1.87120
C8	0.00266528	1.00249
Water	0.00304587	0.000043916
N2	0.122357	0.000185748
CO2	0.091903	0.00194386
H2S	0.000283058	1.96086E-05
Triethylene Glycol	0	0
EG	0	0
MeOH	0	0
CHEMTHERM 550	0	0

Process Streams	39 To Flare	40 To Slop Oil
Composition	Solved	Solved
Phase: Total	VSSL-105	VSSL-105
Process Streams	39 To Flare	40 To Slop Oil
Mass Fraction	%	%
Methane	4.9915	0.0225109
Ethane	10.1321	0.389921
Propane	27.9801	4.83045
i-Butane	11.77447	6.16109
n-Butane	33.6078	29.4025
i-Pentane	5.48907	13.4610
n-Pentane	4.18014	14.6465
n-Hexane	1.62612	26.6246
n-Heptane	0.0445449	2.76896
C8	0.00676389	1.69113
Water	0.00121908	1.16839E-05
N2	0.076151	0.000076844
CO2	0.089858	0.00126337
H2S	0.000214321	9.86911E-06
Triethylene Glycol	0	0
EG	0	0
MeOH	0	0
CHEMTHERM 550	0	0

Process Streams		39 To Flare	40 To Slop Oil
Properties	Status:	Solved	Solved
Phase: Total	From Block:	VSSL-105	VSSL-105
	To Block:	--	--
Property	Units		
Temperature	°F	16.19949	16.19949
Pressure	psig	0.125*	0.125
Mole Fraction Vapor	%	100	0
Mole Fraction Light Liquid	%	0	100
Mole Fraction Heavy Liquid	%	0	0
Molecular Weight	lb/lbmol	45.0112	67.7141
Mass Density	lb/ft^3	0.1209179	40.1146
Molar Flow	lbmol/h	13.8689	6.79227
Mass Flow	lb/h	624.256	459.933
Vapor Volumetric Flow	ft^3/h	5162.64	11.4655
Liquid Volumetric Flow	gpm	643.654	1.42946
Std Vapor Volumetric Flow	MMSCFD	0.126313	0.0618614
Std Liquid Volumetric Flow	sgpm	2.45639	1.50085
Compressibility		0.978572	0.00443751
Specific Gravity		1.55412	0.643185
API Gravity			97.3979
Enthalpy	Btu/h	-665846	-501320
Mass Enthalpy	Btu/lb	-1066.62	-1089.99
Mass Cp	Btu/(lb*°F)	0.378222	0.521661
Ideal Gas CpCv Ratio		1.13354	1.08773
Dynamic Viscosity	cP	0.00739850	0.280324
Kinematic Viscosity	cSt	3.81972	0.436251
Thermal Conductivity	Btu/(h*ft*°F)	0.0089001	0.0713101?
Surface Tension	lbf/ft		0.00123561?
Net Ideal Gas Heating Value	Btu/ft^3	2353.24	3485.33
Net Liquid Heating Value	Btu/lb	19688.6	19372.5
Gross Ideal Gas Heating Value	Btu/ft^3	2557.29	3771.13
Gross Liquid Heating Value	Btu/lb	21409.2	20974.6

1 - Uncontrolled emissions were calculated from Promax output.

2- No HAP emissions are reported by Promax; therefore, these emissions were estimated based on the ration of HAP's to total VOC's from a conservative engineering assumption.

Tank Detail Sheet

Equipment Source Name	TK 2-5		Tank Height	20	ft	
Source Description	Stabilized Condensate Tank		Tank Diameter	12	ft	
Quantity	4		Potential Operation	8760	hr/yr	
Tank Capacity	400	bbl (each)	Potential Throughput	219,000	bbl/yr	600.0 avg. bbl/day
Total Tank Capacity	1600	bbl	Potential Throughput Per Tank	54,750	bbl/yr/tk	150.0 avg. bbl/day/tk
Control Efficiency	95%		Calendar Year	2019		

Total Potential Emissions

Pollutant	Uncontrolled		Controlled	
	(lb/hr)	(ton/yr)	(lb/hr)	(ton/yr)
VOC	7.98	34.95	0.40	1.75
Benzene	0.08	0.35	0.00	0.02
Toluene	0.08	0.35	0.00	0.02
Ethylbenzene	0.01	0.03	0.00	0.00
Xylenes	0.01	0.03	0.00	0.00
n-Hexane	0.32	1.40	0.02	0.07
2,2,4-Trimethylpentane	0.01	0.03	0.00	0.00
Total HAPs	0.50	2.20	0.03	0.11

Potential Emissions Per Tank

Pollutant	HAP Wt %	Uncontrolled		Controlled		Source of Emission Factor
	(%)	(lb/hr)	(ton/yr)	(lb/hr)	(ton/yr)	
VOC		1.99	8.74	0.10	0.44	EPA TANKS 4.0.9d
Benzene	1.00%	0.02	0.09	0.00	0.00	Engineering Calculation
Toluene	1.00%	0.02	0.09	0.00	0.00	Engineering Calculation
Ethylbenzene	0.10%	0.00	0.01	0.00	0.00	Engineering Calculation
Xylenes	0.10%	0.00	0.01	0.00	0.00	Engineering Calculation
n-Hexane	4.00%	0.08	0.35	0.00	0.02	Engineering Calculation
2,2,4-Trimethylpentane	0.10%	0.00	0.01	0.00	0.00	Engineering Calculation
Total HAPs		0.13	0.55	0.01	0.03	

1 - Uncontrolled emissions were taken directly from the EPA TANKS 4.0.9d output.

2 - No HAP emissions are reported by EPA Tanks 4.0.9d; therefore, these emissions were estimated based on the ration of HAP's to total VOC's from a conservative engineering assumption.

Tank Detail Sheet

Equipment Source Name	TK-6		Tank Height	20	ft	
Source Description	Slop Oil Tank		Tank Diameter	12	ft	
Quantity	1		Potential Operation	8760	hr/yr	
Tank Capacity	400	bbl (each)	Potential Throughput	1,532	bbl/yr	4.2 avg. bbl/day
Total Tank Capacity	400	bbl	Potential Throughput Per Tank	1,532	bbl/yr/tk	4.2 avg. bbl/day/tk
Control Efficiency	95%		Margin	100%		
			Calendar Year	2019		

Total Potential Emissions

Pollutant	Uncontrolled		Controlled	
	(lb/hr)	(ton/yr)	(lb/hr)	(ton/yr)
VOC	0.85	3.72	0.04	0.19
Benzene	0.01	0.04	0.00	0.00
Toluene	0.01	0.04	0.00	0.00
Ethylbenzene	0.00	0.00	0.00	0.00
Xylenes	0.00	0.00	0.00	0.00
n-Hexane	0.03	0.15	0.00	0.01
2,2,4-Trimethylpentane	0.00	0.00	0.00	0.00
Total HAPs	0.05	0.23	0.00	0.01

Potential Emissions Per Tank

Pollutant	HAP Wt %	Uncontrolled		Controlled		Source of Emission Factor
	(%)	(lb/hr)	(ton/yr)	(lb/hr)	(ton/yr)	
VOC		0.85	3.72	0.04	0.19	EPA TANKS 4.0.9d
Benzene	1.00%	0.01	0.04	0.00	0.00	Engineering Calculation
Toluene	1.00%	0.01	0.04	0.00	0.00	Engineering Calculation
Ethylbenzene	0.10%	0.00	0.00	0.00	0.00	Engineering Calculation
Xylenes	0.10%	0.00	0.00	0.00	0.00	Engineering Calculation
n-Hexane	4.00%	0.03	0.15	0.00	0.01	Engineering Calculation
2,2,4-Trimethylpentane	0.10%	0.00	0.00	0.00	0.00	Engineering Calculation
Total HAPs		0.05	0.23	0.00	0.01	

1 - Uncontrolled emissions were taken directly from the EPA TANKS 4.0.9d output.

2 - No HAP emissions are reported by EPA Tanks 4.0.9d; therefore, these emissions were estimated based on the ration of HAP's to total VOC's from a conservative engineering assumption.

Tank Detail Sheet

Equipment Source Name	PWTK-1		Tank Height	20 ft	
Source Description	Produced Water Tank		Tank Diameter	12 ft	
Quantity	1		Potential Operation	8760 hr/yr	
Tank Capacity	400	bbl (each)	Potential PW Throughput	1,532 bbl/yr	4.2 avg. bbl/day
Total Tank Capacity	400	bbl	Potential Oil from PW Throughput	15 bbl/yr	0.1 avg. bbl/day
Control Efficiency	95%		Potential Oil Throughput Per Tank	15 bbl/yr/tk	0.1 avg. bbl/day/tk
			Margin	100%	
			Calendar Year	2019	

Total Potential Emissions

Pollutant	Uncontrolled		Controlled	
	(lb/hr)	(ton/yr)	(lb/hr)	(ton/yr)
VOC	0.00	0.00	0.00	0.00
Benzene	0.00	0.00	0.00	0.00
Toluene	0.00	0.00	0.00	0.00
Ethylbenzene	0.00	0.00	0.00	0.00
Xylenes	0.00	0.00	0.00	0.00
n-Hexane	0.00	0.00	0.00	0.00
2,2,4-Trimethylpentane	0.00	0.00	0.00	0.00
Total HAPs	0.00	0.00	0.00	0.00

Potential Emissions Per Tank

Pollutant	HAP Wt %	Uncontrolled		Controlled		Source of Emission Factor
	(%)	(lb/hr)	(ton/yr)	(lb/hr)	(ton/yr)	
VOC		0.00	0.00	0.00	0.00	EPA TANKS 4.0.9d
Benzene	1.00%	0.00	0.00	0.00	0.00	Engineering Calculation
Toluene	1.00%	0.00	0.00	0.00	0.00	Engineering Calculation
Ethylbenzene	0.10%	0.00	0.00	0.00	0.00	Engineering Calculation
Xylenes	0.10%	0.00	0.00	0.00	0.00	Engineering Calculation
n-Hexane	4.00%	0.00	0.00	0.00	0.00	Engineering Calculation
2,2,4-Trimethylpentane	0.10%	0.00	0.00	0.00	0.00	Engineering Calculation
Total HAPs		0.00	0.00	0.00	0.00	

1 - Uncontrolled emissions were taken directly from the EPA TANKS 4.0.9d output.
2 - Uncontrolled emissions were calculated based on the assumption that 1% of the produced water throughput is condensate.
3 - No HAP emissions are reported by EPA Tanks 4.0.9d; therefore, these emissions were estimated based on the ration of HAP's to total VOC's from a conservative engineering assumption.
4 - Throughput includes margin to account for additional water streams dumping into the tank.

Heater / Boiler Detail Sheet

Equipment Source Name	HTR-1				
Source Description	Hot Oil Heater				
Equipment Usage	Hot Oil Heater	Potential operation	8760	hr/yr	
Equipment Make	TBD	Fuel Heating Value	1066.43	Btu/scf	Residue Gas Heating Value (not used in calculation)
Equipment Model	TBD	Heat Rate	49.42	MMBtu/hr	Mfr. Rate Heat Input
Serial Number	TBD	Sulfur Content	9,476	grains/MMscf	Gas Analysis with Margin
Quantity	1	Sulfur Margin	400%	%	
Emission Controls	None				

Total Potential Emissions

Pollutant	Estimated Emissions (lb/hr)	(tpy)
NOx	2.42	10.61
CO	4.07	17.82
VOC	0.27	1.17
SOx	0.14	0.60
PM10	0.37	1.61
Benzene	0.00	0.00
n-Hexane	0.09	0.38
Toluene	0.00	0.00
CH_2O	0.00	0.02
Total HAPs	0.09	0.40

Potential Emissions Per Heater

Pollutant	EF (lb/MMscf)	EF (lb/MMBtu)[3]	Estimated Emissions (lb/hr)	(tpy)	Source of Emission Factor
NOx[2]	50	0.049	2.42	10.61	AP-42 Table 1.4-1
CO	84	0.082	4.07	17.82	AP-42 Table 1.4-1
VOC	5.5	0.005	0.27	1.17	AP-42 Table 1.4-2
SOx[1]	2.84	0.003	0.14	0.60	AP-42 Table 1.4-2
PM10	7.6	0.007	0.37	1.61	AP-42 Table 1.4-2
Benzene	0.0021	0.000	0.00	0.00	AP-42 Table 1.4-3
n-Hexane	1.80	0.002	0.09	0.38	AP-42 Table 1.4-3
Toluene	0.0034	0.000	0.00	0.00	AP-42 Table 1.4-3
CH_2O	0.075	0.000	0.00	0.02	AP-42 Table 1.4-3
Total HAPs			0.09	0.40	

1 - Sulfur emission factor from AP-42 Table 1.4-2 is ratio adjusted based on the max sulfur content when sulfur content is greater than 2,000 grains/MMscf.
2 - This is a low NOx burner.
3 - Emission factor is calculated by converting from lb/MMscf to lb/MMbtu based AP-42 Table 1.4-1 note (a).

Sample Calculation for NOx

50 lb/MMscf / 1066.43 Btu/scf * 49.417 MMBtu/hr = 2.42 lb/hr

Heater / Boiler Detail Sheet

Equipment Source Name	HTR-2				
Source Description	Regen Gas Heater				
Equipment Usage	Regen Gas Heater	Potential operation	8760	hr/yr	
Equipment Make	TBD	Fuel Heating Value	1066.43	Btu/scf	Residue Gas Heating Value (not used in calculation)
Equipment Model	TBD	Heat Rate	11.00	MMBtu/hr	Mfr. Rate Heat Input
Serial Number	TBD	Sulfur Content	9,476	grains/MMscf	Gas Analysis with Margin
Quantity	1	Sulfur Margin	400%	%	
Emission Controls	None				

Total Potential Emissions

Pollutant	Estimated Emissions (lb/hr)	(tpy)
NOx	1.08	4.72
CO	0.91	3.97
VOC	0.06	0.26
SOx	0.03	0.13
PM10	0.08	0.36
Benzene	0.00	0.00
n-Hexane	0.02	0.09
Toluene	0.00	0.00
CH_2O	0.00	0.00
Total HAPs	0.02	0.09

Potential Emissions Per Heater

Pollutant	EF (lb/MMscf)	EF (lb/MMBtu)[2]	Estimated Emissions (lb/hr)	(tpy)	Source of Emission Factor
NOx	100	0.098	1.08	4.72	AP-42 Table 1.4-1
CO	84	0.082	0.91	3.97	AP-42 Table 1.4-1
VOC	5.5	0.005	0.06	0.26	AP-42 Table 1.4-2
SOx[1]	2.84	0.003	0.03	0.13	AP-42 Table 1.4-2
PM10	7.6	0.007	0.08	0.36	AP-42 Table 1.4-2
Benzene	0.0021	0.000	0.00	0.00	AP-42 Table 1.4-3
n-Hexane	1.80	0.002	0.02	0.09	AP-42 Table 1.4-3
Toluene	0.0034	0.000	0.00	0.00	AP-42 Table 1.4-3
CH_2O	0.075	0.000	0.00	0.00	AP-42 Table 1.4-3
Total HAPs			0.02	0.09	

1 - Sulfur emission factor from AP-42 Table 1.4-2 is ratio adjusted based on the max sulfur content when sulfur content is greater than 2,000 grains/MMscf.
2 - Emission factor is calculated by converting from lb/MMscf to lb/MMbtu based AP-42 Table 1.4-1 note (a).

Sample Calculation for NOx
100 lb/MMscf / 1066.43 Btu/scf * 11.000 MMBtu/hr = 1.08 lb/hr

Loadout Emissions Detail Sheet

Equipment Source Name	CONDLOAD-1	
Source Description	Condensate Loadout	
Quantity	1	
Potential Throughput	219,000	bbl/yr
LACT On Site?	No	
Estimated LACT Downtime	NA	
Control Device	Vapor Balance	
Control Efficiencies	95%	
Capture Efficiency	70%	

Potential Emissions

Pollutant	HAP Wt % (%)	Uncontrolled lb/hr	Uncontrolled tpy	Controlled lb/hr	Controlled tpy	Source of Emission Calculations
VOC		99.91	27.35	33.47	9.16	AP-42 Section 5.2.1
Benzene	1.00%	1.00	0.27	0.33	0.09	Engineering Calculation
Toluene	1.00%	1.00	0.27	0.33	0.09	Engineering Calculation
Ethylbenzene	0.10%	0.10	0.03	0.03	0.01	Engineering Calculation
Xylenes	0.10%	0.10	0.03	0.03	0.01	Engineering Calculation
n-Hexane	4.00%	4.00	1.09	1.34	0.37	Engineering Calculation
2,2,4-Trimethylpentane	0.10%	0.10	0.03	0.03	0.01	Engineering Calculation
Total HAPs		6.29	1.72	2.11	0.58	

Molecular Weight of Vapors, MW	64.0	lb/lb-mol	EPA TANKS 4.0.9d
True Vapor Pressure, Pva @ T	6.48	psia	Interpolation from AP-42 Table 7.1-2
Temperature of Bulk Liquid Loaded, T	61	F	Ambient Temperature
	521	R	
Saturation Factor	0.6		AP-42 Table 5.2.1
Efficiency of controlled loading (%)	0.0%		
Potential Annual Throughput, v	9,198	1000 gallons	
Loading losses, L @ tank	5.95	lb/1000 gallons	
L = 12.46 S P MW / T (1-eff)			
Potential annual losses @ tank, L*v	54,699.81	lb/yr	**27.35 tpy**
Max hourly fill rate[1]	16.8	1000 gallons/hr	Trucking Company
Max hourly emissions	**99.9**	**lb/hr**	Calculated

1 - Max hourly fill rate based on a 200-bbl truck filling every 30 minutes.

Sample Calculation

219000 bbl/yr * 42 gal/bbl / 1000 gal * 5.95 lb/1000 gal / 2000 lb/ton = 27.35 tpy

Loadout Emissions Detail Sheet

Equipment Source Name	OILLOAD-1	
Source Description	Oil Loadout	
Quantity	1	
Potential Throughput	1,532	bbl/yr
LACT On Site?	No	
Estimated LACT Downtime	NA	
Control Device	Vapor Balance	
Control Efficiencies	95%	
Capture Efficiency	70%	

Potential Emissions

Pollutant	HAP Wt % (%)	Uncontrolled lb/hr	Uncontrolled tpy	Controlled lb/hr	Controlled tpy	Source of Emission Calculations
VOC		99.91	0.19	33.47	0.06	AP-42 Section 5.2.1
Benzene	1.00%	1.00	0.00	0.33	0.00	Engineering Calculation
Toluene	1.00%	1.00	0.00	0.33	0.00	Engineering Calculation
Ethylbenzene	0.10%	0.10	0.00	0.03	0.00	Engineering Calculation
Xylenes	0.10%	0.10	0.00	0.03	0.00	Engineering Calculation
n-Hexane	4.00%	4.00	0.01	1.34	0.00	Engineering Calculation
2,2,4-Trimethylpentane	0.10%	0.10	0.00	0.03	0.00	Engineering Calculation
Total HAPs		6.29	0.01	2.11	0.00	

Molecular Weight of Vapors, MW	64.0	lb/lb-mol	EPA TANKS 4.0.9d
True Vapor Pressure, Pva @ T	6.48	psia	Interpolation from AP-42 Table 7.1-2
Temperature of Bulk Liquid Loaded, T	61	F	Ambient Temperature
	521	R	
Saturation Factor	0.6		AP-42 Table 5.2.1
Efficiency of controlled loading (%)	0.0%		
Potential Annual Throughput, v	64	1000 gallons	
Loading losses, L @ tank	5.95	lb/1000 gallons	
L = 12.46 S P MW / T (1-eff)			
Potential annual losses @ tank, L*v	382.65	lb/yr	**0.19 tpy**
Max hourly fill rate[1]	16.8	1000 gallons/hr	Trucking Company
Max hourly emissions	**99.9**	**lb/hr**	Calculated

1 - Max hourly fill rate based on a 200-bbl truck filling every 30 minutes.

Sample Calculation

1532 bbl/yr * 42 gal/bbl / 1000 gal * 5.95 lb/1000 gal / 2000 lb/ton = 0.19 tpy

Fugitive Emissions Detail Sheet

Equipment Source Name	FUG-1	Potential Operation	8760	hr/yr
Source Description	Fugitives - OOOOa			

Uncontrolled Potential Emissions

	HAP	Heavy Crude - Emissions		Light Crude - Emissions		Gas - Emissions		Total Emissions	
Pollutant	Wt. %	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy
VOC		0.00	0.00	5.00	23.68	6.29	27.56	11.30	51.24
H2S		NA	NA	NA	NA	0.00	0.00	0.00	0.00
Benzene	0.32%	0.00	0.00	0.02	0.08	0.02	0.09	0.04	0.16
Toluene	0.05%	0.00	0.00	0.00	0.01	0.00	0.01	0.01	0.02
Ethylbenzene	0.00%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Xylenes	0.00%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
n-Hexane	0.55%	0.00	0.00	0.03	0.13	0.03	0.15	0.06	0.28
2,2,4-Trimethylpentane	0.00%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total HAPs		0.00	0.00	0.05	0.22	0.06	0.25	0.10	0.47

Controlled Potential Emissions - Not used for NM Permitting purposes.

	HAP	Heavy Crude - Emissions		Light Crude - Emissions		Gas - Emissions		Total Emissions	
Pollutant	Wt. %	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy
VOC		0.00	0.00	0.96	4.41	2.41	10.56	3.37	14.97
H2S		NA	NA	NA	NA	0.00	0.00	0.00	0.00
Benzene	0.32%	0.00	0.00	0.00	0.01	0.01	0.03	0.01	0.05
Toluene	0.05%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
Ethylbenzene	0.00%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Xylenes	0.00%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
n-Hexane	0.55%	0.00	0.00	0.01	0.02	0.01	0.06	0.02	0.08
2,2,4-Trimethylpentane	0.00%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total HAPs		0.00	0.00	0.01	0.04	0.02	0.10	0.03	0.14

Gas

Equipment Type	EF (kg/hr/source)	Source Count	VOC Wt. %	Control Efficiencies %	Uncontrolled Emissions VOC (lb/hr)	Uncontrolled Emissions VOC (tpy)	Controlled Emissions VOC (lb/hr)	Controlled Emissions VOC (tpy)
Valve	4.50E-03	763	48%	96%	3.66	16.04	0.15	0.64
Flanges	3.90E-04	495	48%	81%	0.21	0.90	0.04	0.17
Connectors	2.00E-04	1155	48%	81%	0.25	1.08	0.05	0.21
Open Ended Lines	2.00E-03	0	48%		0.00	0.00	0.00	0.00
Pump Seals	2.40E-03	0	48%		0.00	0.00	0.00	0.00
Other Components	8.80E-03	232	48%		2.18	9.54	2.18	9.54
VOC Emissions					**6.29**	**27.56**	**2.41**	**10.56**

Gas VOC Wt% Margin 20.00%

Light Liquid[3]

Equipment Type	EF (kg/hr/source)	Source Count	VOC Wt. %	Control Efficiencies %	Uncontrolled Emissions VOC (lb/hr)	Uncontrolled Emissions VOC (tpy)	Controlled Emissions VOC (lb/hr)	Controlled Emissions VOC (tpy)
Valve	2.50E-03	684	100%	95%	3.77	16.51	0.19	0.83
Flanges	1.10E-04	417	100%	81%	0.10	0.44	0.02	0.08
Connectors	2.10E-04	1020	100%	81%	0.47	2.07	0.09	0.39
Open Ended Lines	1.40E-03	0	100%		0.00	0.00	0.00	0.00
Pump Seals	1.30E-02	14	100%	88%	0.00	1.76	0.00	0.21
Other Components	7.50E-03	40	100%		0.66	2.90	0.66	2.90
VOC Emissions					**5.00**	**23.68**	**0.96**	**4.41**

Heavy Liquid[3]

Equipment Type	EF (kg/hr/source)	Source Count	VOC Wt. %	Control Efficiencies %	Uncontrolled Emissions VOC (lb/hr)	Uncontrolled Emissions VOC (tpy)	Controlled Emissions VOC (lb/hr)	Controlled Emissions VOC (tpy)
Valve	8.40E-06	0	100%		0.00	0.00	0.00	0.00
Flanges	3.90E-06	1	100%	81%	0.00	0.00	0.00	0.00
Connectors	7.50E-06	1	100%	81%	0.00	0.00	0.00	0.00
Open Ended Lines	1.40E-04	0	100%		0.00	0.00	0.00	0.00
Pump Seals	N/A							
Other Components	3.20E-05	0	100%		0.00	0.00	0.00	0.00
VOC Emissions					**0.00**	**0.00**	**0.00**	**0.00**

1 - Component counts are actual facility component counts determined by Dexter ATC Field Services.
2 - Component leak rates taken from EPA's Oil and Gas Production Operations average equipment leak emission factors (EPA 453/R-95-017 dated November 1995) Table 2-4.
3 - Assuming heavy and light crude weight percentage is 100% VOC to be conservative in heavy and light crude fugitive emission calculations.
4 - Control efficiencies were obtained from Table 4.1 in "EPA Leak Detection and Repair - A Best Practices Guide"
5 - HAP Weight percentages based on a conservative engineering estimation.

Sample Calculation:
0.00250 kg/hr-source * 684 Sources * 2.20462 lb/kg * 100 % VOC Wt% * 8760 hr/yr /2000 lb/ton = 16.51 tpy

Fugitive Emissions Detail Sheet

Equipment Source Name	FUG-2	Potential Operation	8760	hr/yr
Source Description	Fugitives - Residue	Emission Controls	None	

Uncontrolled Potential Emissions

	HAP	Gas - Emissions		Total Emissions	
Pollutant	Wt. %	lb/hr	tpy	lb/hr	tpy
VOC		0.05	0.23	0.05	0.23
H2S		0.00	0.00	0.00	0.00
Benzene	0.00%	0.00	0.00	0.00	0.00
Toluene	0.00%	0.00	0.00	0.00	0.00
Ethylbenzene	0.00%	0.00	0.00	0.00	0.00
Xylenes	0.00%	0.00	0.00	0.00	0.00
n-Hexane	0.01%	0.00	0.00	0.00	0.00
2,2,4-Trimethylpentane	0.00%	0.00	0.00	0.00	0.00
Total HAPs		0.00	0.00	0.00	0.00

Controlled Potential Emissions

	HAP	Gas - Emissions		Total Emissions	
Pollutant	Wt. %	lb/hr	tpy	lb/hr	tpy
VOC		0.05	0.23	0.05	0.23
H2S		0.00	0.00	0.00	0.00
Benzene	0.00%	0.00	0.00	0.00	0.00
Toluene	0.00%	0.00	0.00	0.00	0.00
Ethylbenzene	0.00%	0.00	0.00	0.00	0.00
Xylenes	0.00%	0.00	0.00	0.00	0.00
n-Hexane	0.01%	0.00	0.00	0.00	0.00
2,2,4-Trimethylpentane	0.00%	0.00	0.00	0.00	0.00
Total HAPs		0.00	0.00	0.00	0.00

Gas HAP Wt% Margin 100.00%

Gas

				Control	Uncontrolled Emissions		Controlled Emissions	
Equipment Type	EF[3]	Source	VOC	Efficiencies	VOC	VOC	VOC	VOC
	(kg/hr/source)	Count	Wt. %	%	(lb/hr)	(tpy)	(lb/hr)	(tpy)
Valve	4.50E-03	16	4%	0%	0.01	0.02	0.01	0.02
Flanges	3.90E-04	32	4%		0.00	0.00	0.00	0.00
Connectors	2.00E-04	1200	4%	0%	0.02	0.08	0.02	0.08
Open Ended Lines	2.00E-03	0	4%		0.00	0.00	0.00	0.00
Pump Seals	2.40E-03	0	4%		0.00	0.00	0.00	0.00
Other Components	8.80E-03	40	4%		0.03	0.12	0.03	0.12
VOC Emissions					**0.05**	**0.23**	**0.05**	**0.23**

Gas VOC Wt% Margin 100.00%

Component Counts[1]	
	Total
Valve	16
Flanges	32
Connectors	1200
Open Ended Lines	0
Pump Seals	0
Other Components	40
Total	1288

1 - Component counts are engineering estimations.
2 - Component leak rates taken from EPA's Oil and Gas Production Operations average equipment leak emission factors (EPA 453/R-95-017 dated November 1995) Table 2-4.
3 - Gas VOC and HAP wt % percentage is based on stream 47 from Promax run with margin.

Sample Calculation:
0.00450 kg/hr-source * 16 Sources * 2.20462 lb/kg * 4 % VOC Wt% * 8760 hr/yr /2000 lb/ton = 0.02 tpy

Process and compressor Fugitives GHG Emissions

Fugitive GHG Summary

	CH_4	CO_2	CO_2e
Emissions TPY	827.73	122.06	**20,815.37**
Global Warming Potential (GWP)	25	1	

CH4 Emission Rate for Gas Processing Volume[1] = 2.5e-3 tonne CH4/MMscf processed
CH4 Emission Rate for Reciprocating Compressors[1] = 8.95e-3 tonne CH4/compressor-hr
CH4 Emission Rate for Centrifugal Compressors[1] = 1.7e-2 tonne CH4/compressor-hr

[1] API Compendium of Greenhouse Gas Emissions Methodologies for the Oil and Natural Gas Industry Table 6-5

Process gas CH4 molar percentage = 38.64% From modeled composition
Process gas CO2 molar percentage = 2.07% From modeled composition
CH4 molecular weight (lb/lb mol) 16
CO2 molecular weight (lb/lb mol) 44

Amount of gas throughput (MMscf/yr) = 21,900 (Max 60 MMSCFD * 365 days/yr)
Number of Reciprocating Compressors in Process = 7
Number of Centrifugal Compressors in Process = 1

CH4 Emission Calculation for Processing Volume

tonne CH4/MMscf processed	MMscf processed/year	ton CH4/ tonne CH4	ton CH4/year
0.0025	21,900	1.1	60.225

Total CH4 process emissions (ton/year) = 60.23

CO2 Emission Calculation for Processing Volume

ton CH4/year	CO2 mol % / CH4 mol %	CO2 mol wt/ CH4 mol wt	ton CO2 / year
60.225	0.05362	2.75	8.881

Total CO2 process emissions (ton/year) = 8.88

CH4 Emission Calculation for Reciprocating Compressors

tonne CH4/compressor-hr	hr/year	compressor number	ton CH4/ tonne CH4	ton CH4 /year
0.00895	8760.00	7	1.1	604

Total CH4 reciprocating compressor emissions (ton/year) = 603.70

CO2 Emission Calculation for Reciprocating Compressors

ton CH4/year	CO2 mol % / CH4 mol %	CO2 mol wt/ CH4 mol wt	ton CO2 / year
604	0.05362	2.75	89.023

Total CO2 reciprocating compressor emissions (ton/year) = 89.023

CH4 Emission Calculation for Centrifugal Compressors

tonne CH4/compressor-hr	hr/year	compressor number	ton CH4/ tonne CH4	ton CH4 /year
0.017	8760.00	1	1.1	164

Total CH4 centrifugal compressor emissions (ton/year) = 163.81

CO2 Emission Calculation for Centrifugal Compressors

ton CH4/year	CO2 mol % / CH4 mol %	CO2 mol wt/ CH4 mol wt	ton CO2 / year
164	0.05362	2.75	24.156

Total CO2 centrifugal compressor emissions (ton/year) = 24.156

Equipment Source Name	AMINE-1
Source Description	Amine Unit
Equipment Usage	Amine Unit
Equipment Make	TBD
Equipment Model	TBD
Serial Number	TBD
QTY	1

Potential Operation:	8760 hr/yr
TO Downtime Allowance:	438 hr/yr
TO Control Efficiency:	98%
TO Downtime Control Efficiency:	95% FL-1 Control Efficiency
Margin added for operational flexibility:	25%

Emissions Summary

VOC Emissions Summary (tons/yr) with margin added

	Uncontrolled		Controlled		Uncontrolled TO Downtime		Controlled TO Downtime	
Emission Unit	lb/hr	tons/yr	lb/hr	tons/yr	lb/hr	tons/yr	lb/hr	tons/yr
AMINE-1 (Flash)	34.80	152.44	0.70	3.05	34.80	7.62	1.74	0.38
AMINE-1 (Still)	5.04	22.08	0.10	0.44	5.04	1.10	0.25	0.06

	Uncontrolled		Controlled	
	lb/hr	tons/yr	lb/hr	tons/yr
AMINE-1 Total	39.84	174.52	2.79	3.93

Uncontrolled HAP Emissions Summary (with margin)

Emission Unit	**BZ**	**Tol**	**EB**	**Xyl**	**n-Hex**	**224-TMP**	**Total**
AMINE-1 (Flash) (lb/hr)	0.03	0.03	0.00	0.01	0.14	0.03	0.24
AMINE-1 (Flash) (lb/yr)	245.16	249.01	14.09	72.48	1208.64	289.22	2078.60
AMINE-1 (Still) (lb/hr)	0.00	0.00	0.00	0.00	0.02	0.01	0.04
AMINE-1 (Still) (lb/yr)	38.36	38.96	2.21	11.34	189.11	45.25	325.23
Total AMINE-1 (lb/hr)	**0.03**	**0.03**	**0.00**	**0.01**	**0.16**	**0.04**	**0.27**
Total AMINE-1 (lb/yr)	**283.52**	**287.97**	**16.30**	**83.82**	**1397.75**	**334.47**	**2403.84**
Total AMINE-1 (TPY)	**0.14**	**0.14**	**0.01**	**0.04**	**0.70**	**0.17**	**1.20**

Controlled HAP Emissions (Normal Operation) Summary

Emission Unit	**BZ**	**Tol**	**EB**	**Xyl**	**n-Hex**	**224-TMP**	**Total**
AMINE-1 (Flash) (TO-1) (lb/yr)	5.27	5.35	0.30	1.56	25.99	6.22	44.69
AMINE-1 (Still) (TO-1) (lb/yr)	0.82	0.84	0.05	0.24	4.07	0.97	6.99
Total AMINE-1 (lb/hr)	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.01**
Total AMINE-1 (lb/yr)	**6.10**	**6.19**	**0.35**	**1.80**	**30.05**	**7.19**	**51.68**
Total AMINE-1 (TPY)	**0.00**	**0.00**	**0.00**	**0.00**	**0.02**	**0.00**	**0.03**

Equipment Source Name AMINE-1
ProMax Output File Summary

	AMINE-1			
	Amine Flash		**Amine Still**	
	Mass flow	Mole Fraction	Mass flow	Mole Fraction
Specie	[lb/h]	[%]	[lb/h]	[%]
Methane	71.85	55.84%	7.40	0.14%
Ethane	29.58	12.27%	4.09	0.04%
Propane	20.09	5.68%	3.01	0.02%
Iso-Butane	0.59	0.13%	0.02	0.00%
N-Butane	5.18	1.11%	0.75	0.00%
Iso-Pentane	0.44	0.08%	0.03	0.00%
N-Pentane	0.77	0.13%	0.10	0.00%
Other Hexanes	0.48	0.07%	0.07	0.00%
n-Hexane	0.11	0.02%	0.02	0.00%
Heptane	0.06	0.01%	0.01	0.00%
2,2,4-Trimethylpentane	0.03	0.00%	0.00	0.00%
Octanes +	0.05	0.01%	0.01	0.00%
Benzene	0.02	0.00%	0.00	0.00%
Toluene	0.02	0.00%	0.00	0.00%
Ethylbenzene	0.00	0.00%	0.00	0.00%
Xylenes	0.01	0.00%	0.00	0.00%
Water	8.93	6.18%	410.47	7.14%
Hydrogen Sulfide	0.03	0.01%	11.22	0.10%
Carbon Dioxide	59.46	16.85%	12992.85	92.54%
Nitrogen	3.65	1.62%	0.12	0.00%
TOTAL	**201.34**	**1.00**	**13430.17**	**1.00**

Equipment Source Name	AMINE-1	
Molar flow [lbmol/h]	8.02	319.02
Std volumetric flow [MMSCFD]	0.07	2.91
Std volumetric flow [MMSCFD] with margir	0.09	3.63
Std volumetric flow [SCFH]	3804.35	151323.42
mmscf/yr	33.33	1325.59
TO downtime throughput mmscf/yr	1.67	66.28
VOC flow [lb/h]	27.84	4.03
HAP flow [lb/h]	0.19	0.03
VOC flow [lb/h] with margin	34.80	5.04
HAP flow [lb/h] with margin	0.24	0.04
Benzene with margin	0.03	0.00
Toluene with margin	0.03	0.00
Ethylbenzene with margin	0.00	0.00
o-Xylene with margin	0.01	0.00
nC6 with margin	0.14	0.02
2,2,4-Trimethylpentane with margin	0.03	0.01
Net Ideal Gas Heating Value (Btu/ft^3)	888.18	3.27
Btu/lbmol	421291.74	1551.91

Gas Analysis - AMINE-1 Flash

Gas Constituent	Molecular Weight (lb/lb-mol)	Mole %	Mole % Without Water	Weight (lb/lbmole Gas)	Weight %	Weight % Without Water	Total HC Corrected Weight * %	Total VOC Corrected Weight ** %
Methane	16.04	55.84%	59.52%	8.96	35.68%	37.34%	55.58%	NA
Ethane	30.07	12.27%	13.07%	3.69	14.69%	15.37%	22.88%	NA
Total HC (Non-VOC)		**68.10%**	**72.59%**		**50.38%**	**52.71%**	**78.46%**	**NA**
Propane	44.10	5.68%	6.05%	2.50	9.98%	10.44%	15.54%	72.15%
Iso-Butane	58.12	0.13%	0.13%	0.07	0.29%	0.31%	0.46%	2.12%
N-Butane	58.12	1.11%	1.18%	0.65	2.57%	2.69%	4.01%	18.61%
Iso-Pentane	72.15	0.08%	0.08%	0.06	0.22%	0.23%	0.34%	1.60%
N-Pentane	72.15	0.13%	0.14%	0.10	0.38%	0.40%	0.59%	2.75%
Other Hexanes	86.18	0.07%	0.07%	0.06	0.24%	0.25%	0.37%	1.71%
n-Hexane	86.18	0.02%	0.02%	0.01	0.05%	0.06%	0.09%	0.40%
Heptane	100.21	0.01%	0.01%	0.01	0.03%	0.03%	0.05%	0.21%
2,2,4-Trimethylpentane	114.23	0.00%	0.00%	0.00	0.01%	0.01%	0.02%	0.09%
Octanes +	114.23	0.01%	0.01%	0.01	0.02%	0.02%	0.04%	0.17%
Benzene	78.11	0.00%	0.00%	0.00	0.01%	0.01%	0.02%	0.08%
Toluene	92.14	0.00%	0.00%	0.00	0.01%	0.01%	0.02%	0.08%
Ethylbenzene	106.17	0.00%	0.00%	0.00	0.00%	0.00%	0.00%	0.00%
Xylenes	106.16	0.00%	0.00%	0.00	0.00%	0.00%	0.01%	0.02%
Total NMNE VOC		**7.23%**	**7.71%**	**3.47**	**13.83%**	**14.47%**	**21.54%**	**100.00%**
Total HAPs		**0.03%**	**0.03%**	**0.02**	**0.09%**	**0.10%**	**0.15%**	**0.68%**
Water	18.02	6.18%	NA	1.11	4.43%	NA	NA	NA
Hydrogen Sulfide	34.08	0.01%	0.01%	0.00	0.02%	0.02%	NA	NA
Carbon Dioxide	44.01	16.85%	17.96%	7.41	29.53%	30.90%	NA	NA
Nitrogen	28.01	1.62%	1.73%	0.45	1.81%	1.90%	NA	NA
Totals		100.00%	100.00%	25.10	100.00%	100.00%	100.00%	

Average Molecular Weight of VOCs: **47.98 lb/lb-mol**

Notes:

* Weight Percent corrected to remove Water, Carbon Dioxide,Nitrogen, and H2S content.

** Weight Percent corrected to remove non-VOC content.

Gas Analysis - AMINE-1 Still

Gas Constituent	Molecular Weight (lb/lb-mol)	Mole %	Mole % Without Water	Weight (lb/lbmole Gas)	Weight %	Weight % Without Water	Total HC Corrected Weight * %	Total VOC Corrected Weight ** %
Methane	16.04	0.14%	0.16%	0.02	0.06%	0.06%	47.67%	NA
Ethane	30.07	0.04%	0.05%	0.01	0.03%	0.03%	26.34%	NA
Total HC (Non-VOC)		**0.19%**	**0.20%**		**0.09%**	**0.09%**	**74.01%**	**NA**
Propane	44.10	0.02%	0.02%	0.01	0.02%	0.02%	19.38%	0.16%
Iso-Butane	58.12	0.00%	0.00%	0.00	0.00%	0.00%	0.15%	0.00%
N-Butane	58.12	0.00%	0.00%	0.00	0.01%	0.01%	4.82%	0.04%
Iso-Pentane	72.15	0.00%	0.00%	0.00	0.00%	0.00%	0.19%	0.00%
N-Pentane	72.15	0.00%	0.00%	0.00	0.00%	0.00%	0.66%	0.01%
Other Hexanes	86.18	0.00%	0.00%	0.00	0.00%	0.00%	0.48%	0.00%
n-Hexane	86.18	0.00%	0.00%	0.00	0.00%	0.00%	0.11%	0.00%
Heptane	100.21	0.00%	0.00%	0.00	0.00%	0.00%	0.06%	0.00%
2,2,4-Trimethylpentane	114.23	0.00%	0.00%	0.00	0.00%	0.00%	0.03%	0.00%
Octanes +	114.23	0.00%	0.00%	0.00	0.00%	0.00%	0.05%	0.00%
Benzene	78.11	0.00%	0.00%	0.00	0.00%	0.00%	0.02%	0.00%
Toluene	92.14	0.00%	0.00%	0.00	0.00%	0.00%	0.02%	0.00%
Ethylbenzene	106.17	0.00%	0.00%	0.00	0.00%	0.00%	0.00%	0.00%
Xylenes	106.16	0.00%	0.00%	0.00	0.00%	0.00%	0.01%	0.00%
Total NMNE VOC		**0.03%**	**0.03%**	**0.01**	**0.03%**	**0.03%**	**25.99%**	**0.22%**
Total HAPs		**0.00%**	**0.00%**	**0.00**	**0.00%**	**0.00%**	**0.19%**	**0.00%**
Water	18.02	7.14%	NA	1.29	3.06%	NA	NA	NA
Hydrogen Sulfide	34.08	0.10%	0.11%	0.04	0.08%	0.09%	NA	NA
Carbon Dioxide	44.01	92.54%	99.66%	40.73	96.74%	99.79%	NA	NA
Nitrogen	28.01	0.00%	0.00%	0.00	0.00%	0.00%	NA	NA
Totals		100.00%	100.00%	42.10	100.00%	100.00%	100.00%	

Average Molecular Weight of VOCs: **0.17 lb/lb-mol**

Notes:

* Weight Percent corrected to remove Water, Carbon Dioxide,Nitrogen, and H2S content.

** Weight Percent corrected to remove non-VOC content.

SO2 Assumptions:
SO2 Emissions Calculations from combustion of AMINE Unit vent stream
Assumes all H2S in the gas stream is removed by the AMINE units and oxidized to SO2 by the thermal oxidizer.
H2S Assumptions:
Based on 98% control efficiency, 2% not oxidized
H2S content "Pipeline spec"

	8 Grains H2S/100scf		using conversion factor	
	80,000.00 grains H2S/MMscf		(Sulfur Measurement Handbook Rev7)	
	127.74 ppm		1 pound = 7000 grains	
Conversion factor	1.43E-04 lb/grains			
			MW	
		H2S	34.1	
	1.14E-05 lb H2S/scf	S	32.1	
	1.08E-05 lb S/scf	SO2	64.1	

AMINE-1

Throughput	6.00E+07 scfd
	21900.00 MMSCF/yr
	125.14 TPY H2S uncontrolled
	28.57 lbs/hr H2S uncontrolled
	98.00% Control Efficiency
	2.50 TPY H2S controlled
	0.57 lbs/hr H2S controlled

SO2 emissions		
lb/hr	**lb/day**	**tpy**
64.45	1288.98	235.24

lb/hr Margin 20%

Compressor Blowdown Detail Sheet

Equipment Source Name:	COMP		
Equipment Name	Compressor Blowdowns		
Inlet Compressor Quantity	3		
Residue Compressor Quantity	4		
Refrigeration Compressor Quantity	1		
Source Description	Reciprocating		
Equipment Usage	Reciprocating Compressor	Potential operation	8760 hr/yr
Control Efficiency	95%		

Total Potential Emissions

Pollutant	Uncontrolled Emissions		Controlled Emissions	
	(lb/hr)	(tpy)	(lb/hr)	(tpy)
VOC	2.27	9.95	0.11	0.50
Benzene	0.01	0.03	0.00	0.00
Toluene	0.00	0.00	0.00	0.00
Ethylbenzene	0.00	0.00	0.00	0.00
Xylenes	0.00	0.00	0.00	0.00
n-Hexane	0.01	0.05	0.00	0.00
2 2 4-trimethylpentane	0.00	0.00	0.00	0.00
Total HAPs	0.02	0.09	0.00	0.00

Potential Emissions Per Inlet Compressor Blowdown

Pollutant	Emission Factor (Mscf/event)	Frequency (events/yr)	(ton/blowdown)	Uncontrolled Emissions (lb/hr)	Uncontrolled Emissions (tpy)	Controlled Emissions (lb/hr)	Controlled Emissions (tpy)	Source of Emission Factor
VOC	2.00	120	0.0262	0.72	3.15	0.04	0.16	Engineering Estimation
Benzene				0.00	0.01	0.00	0.00	Engineering Calculation
Toluene				0.00	0.00	0.00	0.00	Engineering Calculation
Ethylbenzene				0.00	0.00	0.00	0.00	Engineering Calculation
Xylenes				0.00	0.00	0.00	0.00	Engineering Calculation
n-Hexane				0.00	0.02	0.00	0.00	Engineering Calculation
2 2 4-trimethylpentane				0.00	0.00	0.00	0.00	Engineering Calculation
Total HAPs				0.01	0.03	0.00	0.00	

Potential Emissions Per Residue Compressor Blowdown

Pollutant	Emission Factor (Mscf/event)	Frequency (events/yr)	(ton/blowdown)	Uncontrolled Emissions (lb/hr)	Uncontrolled Emissions (tpy)	Controlled Emissions (lb/hr)	Controlled Emissions (tpy)	Source of Emission Factor
VOC	2.00	120	0.0008	0.02	0.10	0.00	0.00	Engineering Estimation
Benzene				0.00	0.00	0.00	0.00	Engineering Calculation
Toluene				0.00	0.00	0.00	0.00	Engineering Calculation
Ethylbenzene				0.00	0.00	0.00	0.00	Engineering Calculation
Xylenes				0.00	0.00	0.00	0.00	Engineering Calculation
n-Hexane				0.00	0.00	0.00	0.00	Engineering Calculation
2 2 4-trimethylpentane				0.00	0.00	0.00	0.00	Engineering Calculation
Total HAPs				0.00	0.00	0.00	0.00	

Based on 10%VOC

Potential Emissions Per Refrigeration Compressor Blowdown

Pollutant	Emission Factor (Mscf/event)	Frequency (events/yr)	(ton/blowdown)	Uncontrolled Emissions (lb/hr)	Uncontrolled Emissions (tpy)	Controlled Emissions (lb/hr)	Controlled Emissions (tpy)	Source of Emission Factor
VOC	2.00	1	0.1164	0.03	0.12	0.00	0.01	Engineering Estimation
Benzene				0.00	0.00	0.00	0.00	Engineering Calculation
Toluene				0.00	0.00	0.00	0.00	Engineering Calculation
Ethylbenzene				0.00	0.00	0.00	0.00	Engineering Calculation
Xylenes				0.00	0.00	0.00	0.00	Engineering Calculation
n-Hexane				0.00	0.00	0.00	0.00	Engineering Calculation
2 2 4-trimethylpentane				0.00	0.00	0.00	0.00	Engineering Calculation
Total HAPs				0.00	0.00	0.00	0.00	

Sample Calculation

2.000 Mscf/event * 1000 scf/Mscf / 379 scf/lb-mol * 9.95 lb/lb-mol * 1/2000 lb/ton * 120 events/year = 3.15 tpy

Compressor Blowdown Detail Sheet

Equipment Source Name:	PLANT BD		
Equipment Name	Gas Plant Blowdown		
Quantity	1		
Source Description	Gas Plant Blowdown	Plant Volume	60.0 MMscf/day
Equipment Usage	Gas Plant Blowdown	Potential operation	8760 hr/yr
Control Efficiency	95%		

Total Potential Emissions

Pollutant	Uncontrolled Emissions		Controlled Emissions	
	(lb/hr)	(tpy)	(lb/hr)	(tpy)
VOC	32803.52	16.40	1640.18	0.82
Benzene	105.62	0.05	5.28	0.00
Toluene	15.19	0.01	0.76	0.00
Ethylbenzene	0.00	0.00	0.00	0.00
Xylenes	0.00	0.00	0.00	0.00
n-Hexane	181.91	0.09	9.10	0.00
2 2 4-trimethylpentane	0.00	0.00	0.00	0.00
Total HAPs	302.73	0.15	15.14	0.01

Potential Emissions Per Blowdown

Pollutant	Volume	Frequency	Event Duration	Uncontrolled Emissions		Controlled Emissions		Source of Emission Factor
	(MMScf/d)	(events/yr)	(hr/event)	(lb/hr)	(tpy)	(lb/hr)	(tpy)	
VOC	60.00	1	0.5	32803.52	16.40	1640.18	0.82	Engineering Calculation
Benzene				105.62	0.05	5.28	0.00	Engineering Calculation
Toluene				15.19	0.01	0.76	0.00	Engineering Calculation
Ethylbenzene				0.00	0.00	0.00	0.00	Engineering Calculation
Xylenes				0.00	0.00	0.00	0.00	Engineering Calculation
n-Hexane				181.91	0.09	9.10	0.00	Engineering Calculation
2 2 4-trimethylpentane				0.00	0.00	0.00	0.00	Engineering Calculation
Total HAPs				302.73	0.15	15.14	0.01	

Sample Calculation

60.000 Mscf/event * 1000 scf/Mscf / 379 scf/lb-mol * 9.95 lb/lb-mol * 1/2000 lb/ton * 1 events/year = 16.40 tpy

Flare Detail Sheet

Equipment Source Name	TO-1	Stack Height	30	ft
Source Description	Thermal Oxidizer	Potential Operation	8760	hr/yr
Equipment Make	TBD			
Equipment Model	TBD			
Quantity	1			
Destruction Efficiency	98%			

Total Emissions

Pollutant	Estimated Emissions	
	(lb/hr)	(tpy)
NOx	1.56	6.82
CO	1.31	5.73
VOC	0.19	0.83
SO2	64.45	235.24
PM10	0.00	0.00
Benzene	0.00	0.00
Toluene	0.00	0.00
Ethylbenzene	0.00	0.00
Xylenes	0.00	0.00
n-Hexane	0.00	0.00
2 2 4-trimethylpentane	0.00	0.00
Total HAPs	0.00	0.01

Pilot Stream

Pilot Rating	12.00 MMBtu/hr
Pilot Heat Value	1066.43 Btu/scf
Pilot Gas Flow Rate	11.252 Mscf/hr

Pollutant	EF	Estimated Emissions		Source of Emission Factor
	(lb/MMBtu)	(lb/hr)	(tpy)	
NOx	0.0980	1.18	5.15	AP-42 Table 1.4-1
CO	0.082	0.99	4.33	AP-42 Table 1.4-1
VOC	N/A	0.19	0.83	Engineering Calculation
Benzene	N/A	0.00	0.00	Engineering Calculation
Toluene	N/A	0.00	0.00	Engineering Calculation
Ethylbenzene	N/A	0.00	0.00	Engineering Calculation
Xylenes	N/A	0.00	0.00	Engineering Calculation
n-Hexane	N/A	0.00	0.00	Engineering Calculation
2 2 4-trimethylpentane	N/A	0.00	0.00	Engineering Calculation
Total HAPs		0.00	0.01	

Amine Flash Gas Waste Stream				
Vapor Flow Rate	33.326 MMscf/yr		25.00% Margin	
	3.804 Mscf/hr			
Total Emissions Heat Value	888.18 Btu/scf		Based on Amine Gas Analysis (Enerflex)	

Pollutant	EF (lb/MMBtu)	Estimated Emissions (lb/hr)	Estimated Emissions (tpy)	Source of Emission Factor
NOx	0.0980	0.33	1.45	AP-42 Table 1.4-1
CO	0.082	0.28	1.22	AP-42 Table 1.4-1
VOC[1]	N/A	N/A	N/A	N/A
PM10	0.01	0.00	0.00	AP-42 Table 1.4-2

Amine Acid Gas Waste Stream				
Vapor Flow Rate	1325.593 MMscf/yr		25.00% Margin	
	151.323 Mscf/hr			
W&S Emissions Heat Value	3.272 Btu/scf		Based on Amine Gas Analysis (Enerflex)	

Pollutant	EF (lb/MMBtu)	Estimated Emissions (lb/hr)	Estimated Emissions (tpy)	Source of Emission Factor
NOx	0.0980	0.05	0.21	AP-42 Table 1.4-1
CO	0.082	0.04	0.18	AP-42 Table 1.4-1
VOC[1]	N/A	N/A	N/A	N/A
PM10	0.01	0.00	0.00	AP-42 Table 1.4-2

1 - VOC emissions from produced gas stream are calculated using a mass balance and a 98% destruction efficiency. VOC emissions from waste streams are shown at the amine.

Sample Calculation for NOx from Tank Waste Stream

0.098 lb/MMBtu * 3.804 MMscf/yr * 0,888.2 Btu/scf / 8,760 hr/yr = 0.33 lb/hr

Flare Detail Sheet

Equipment Source Name	FL-1	Stack Height	100	ft
Source Description	Upset/Maintenance Flare	Potential Operation	8760	hr/yr
Equipment Make	TBD			
Equipment Model	TBD			
Quantity	1			
Destruction Efficiency	95%			

Total Emissions

Pollutant	Estimated Emissions	
	(lb/hr)	(tpy)
NOx	251.60	26.48
CO	1147.00	120.70
VOC	92.94	14.14
SO2	6.15	1.31
PM10	5.75	0.88
Benzene	0.00	0.00
Toluene	0.00	0.00
Ethylbenzene	0.00	0.00
Xylenes	0.00	0.00
n-Hexane	0.00	0.00
2 2 4-trimethylpentane	0.00	0.00
Total HAPs	0.00	0.00

Pilot Stream

Pilot Rating	0.50	MMBtu/hr
Pilot Heat Value	1066.43	Btu/scf
Pilot Gas Flow Rate	0.469	Mscf/hr

Pollutant	EF	Estimated Emissions		Source of Emission Factor
	(lb/MMBtu)	(lb/hr)	(tpy)	
NOx	0.0680	0.03	0.15	AP-42 Table 13.5-1
CO	0.310	0.16	0.68	AP-42 Table 13.5-2
VOC	N/A	0.02	0.09	Engineering Calculation
Benzene	N/A	0.00	0.00	Engineering Calculation
Toluene	N/A	0.00	0.00	Engineering Calculation
Ethylbenzene	N/A	0.00	0.00	Engineering Calculation
Xylenes	N/A	0.00	0.00	Engineering Calculation
n-Hexane	N/A	0.00	0.00	Engineering Calculation
2 2 4-trimethylpentane	N/A	0.00	0.00	Engineering Calculation
Total HAPs		0.00	0.00	

Residue Gas Stream

Produced Gas Flow Rate	693.4	MMscf/yr	
	79.2	Mscf/hr	
Max Hourly Gas Flow Rate	2291.7	Mscf/hr	
Gas Heating Value	1066.43	Btu/scf	Based on Residue Gas Analysis
Max Sulfur Content[2]	2,000	grains/MMscf	AP42 Chapter 3.2

Pollutant	EF	Estimated Emissions		Source of Emission Factor
	(lb/MMBtu)	(lb/hr)	(tpy)	
NOx	0.068	166.19	25.14	AP-42 Table 13.5-1
CO	0.31	757.61	114.62	AP-42 Table 13.5-2
VOC[1]	N/A	92.92	14.06	Engineering Calculation
SO2	N/A	1.31	0.20	Engineering Calculation
PM10[2]	40	5.72	0.87	AP-42 Table 13.5-1
Benzene	N/A	0.00	0.00	Engineering Calculation
Toluene	N/A	0.00	0.00	Engineering Calculation
Ethylbenzene	N/A	0.00	0.00	Engineering Calculation
Xylenes	N/A	0.00	0.00	Engineering Calculation
n-Hexane	N/A	0.00	0.00	Engineering Calculation
2 2 4-trimethylpentane	N/A	0.00	0.00	Engineering Calculation
Total HAPs		0.00	0.00	

Maintenance Waste Stream				
Vapor Flow Rate				
Compressor Blowdown	1,682.000	Mscf/yr		
Plant Blowdown	2,500.000	Mscf/yr		
Misc. Pipeline Flaring[1]	240.000	Mscf/yr		
Total Vapor Flow Rate	4.422	MMscf/yr		
	0.505	Mscf/hr		
Waste Stream Heat Value	1479.8	Btu/scf		
Max Sulfur Content	80,000	grains/MMscf	Maximum measured H2S concentration	

Pollutant	EF (lb/MMBtu)	Estimated Emissions (lb/hr)	Estimated Emissions (tpy)	Source of Emission Factor
NOx	0.068	251.57	0.22	AP-42 Table 13.5-1
CO	0.31	1146.85	1.01	AP-42 Table 13.5-2
VOC	N/A	0.04	0.16	Engineering Calculation
SO2	N/A	0.01	0.05	Engineering Calculation
PM10[2]	40	0.00	0.01	AP-42 Table 13.5-1

Thermal Oxidizer Downtime Waste Stream				
TO Potential Downtime	438.0	hr/yr		
Vapor Flow Rate	92.86	MMscf/yr		
	212.01	Mscf/hr		
Waste Stream Heat Value	304.4	Btu/scf	Engineering Calculation	
Max Sulfur Content	80,000	grains/MMscf	Maximum measured H2S concentration	

Pollutant	EF (lb/MMBtu)	Estimated Emissions (lb/hr)	Estimated Emissions (tpy)	Source of Emission Factor
NOx	0.068	4.39	0.96	AP-42 Table 13.5-1
CO	0.31	20.01	4.38	AP-42 Table 13.5-2
VOC	N/A	N/A	N/A	N/A
SO2	N/A	4.84	1.06	Engineering Calculation
PM10[4]	40	0.03	0.01	AP-42 Table 13.5-1

1 - VOC emissions from process gas stream and miscellaneous pipeline flaring are calculated using a mass balance and a 95% destruction efficiency.
VOC emissions from maintenance and thermal oxidizer downtime waste streams are shown at compressor blowdowns, plant blowdowns and amine unit.

2 - PM10 emission factor in units of µg/L, assuming a lightly smoking flare.

3 - Maintenace volume includes 240 Mscf/yr for miscellaneous activities to be conservative in emission estimations.

Sample Calculation for NOx from Process Gas Stream

0.068 lb/MMBtu * 1E6 scf/MMscf * 693.44 MMscf/yr * 1,066.43 Btu/scf * MMBtu / 1E6 Btu / 8,760 hr/yr = 166.19 lb/hr

Sample Calculation for NOx from Tank Waste Stream

0.068 lb/MMBtu * 0.505 MMscf/yr * 1,479.8 Btu/scf / 8,760 hr/yr = 251.57 lb/hr

Flare Detail Sheet

Equipment Source Name	FL-2	Stack Height	TBD	ft
Source Description	Tank Flare	Potential Operation	8760	hr/yr
Equipment Make	TBD			
Equipment Model	TBD			
Quantity	1			
Destruction Efficiency	95%			

Total Emissions

Pollutant	Estimated Emissions (lb/hr)	(tpy)
NOx	0.89	3.91
CO	4.07	17.82
VOC	0.00	0.02
SO2	0.00	0.00
PM10	0.00	0.01
Benzene	0.00	0.00
Toluene	0.00	0.00
Ethylbenzene	0.00	0.00
Xylenes	0.00	0.00
n-Hexane	0.00	0.00
2 2 4-trimethylpentane	0.00	0.00
Total HAPs	0.00	0.00

Pilot Stream

Pilot Rating	0.10	MMBtu/hr
Pilot Heat Value	1066.43	Btu/scf
Pilot Gas Flow Rate	0.094	Mscf/hr

Pollutant	EF (lb/MMBtu)	Estimated Emissions (lb/hr)	(tpy)	Source of Emission Factor
NOx	0.0680	0.01	0.03	AP-42 Table 13.5-1
CO	0.310	0.03	0.14	AP-42 Table 13.5-2
VOC	N/A	0.00	0.02	Engineering Calculation
Benzene	N/A	0.00	0.00	Engineering Calculation
Toluene	N/A	0.00	0.00	Engineering Calculation
Ethylbenzene	N/A	0.00	0.00	Engineering Calculation
Xylenes	N/A	0.00	0.00	Engineering Calculation
n-Hexane	N/A	0.00	0.00	Engineering Calculation
2 2 4-trimethylpentane	N/A	0.00	0.00	Engineering Calculation
Total HAPs		0.00	0.00	

Tank Waste Stream

Vapor Density:			
Gunbarrel	0.1209	lb/scf	Promax
Condensate	0.0893	lb/scf	TANKS 4.0.9d
Oil	0.0893	lb/scf	TANKS 4.0.9d
Produced Water	0.0014	lb/scf	TANKS 4.0.9d
Tank Emissions:			
Gunbarrel	5,468,485.42	lb/yr	Promax
Condensate	69,897.16	lb/yr	TANKS 4.0.9d
Oil	7,438.04	lb/yr	TANKS 4.0.9d
Produced Water	9.51	lb/yr	TANKS 4.0.9d
Uncontrolled Recovery- Vapor:	46,097,576.69	scf/yr	
Vapor Margin:	20.00%		
Uncontrolled Recovery- Vapor With Margin :	151,554	scf/day	
Total Emissions Heat Value:	2050	Btu/scf	Engineering Estimation
Total Heat Flow:	310,685,037	Btu/day	
Total Heat Flow:	12.95	MMBtu/hr	

Pollutant	EF (lb/MMBtu)	Estimated Emissions (lb/hr)	(tpy)	Source of Emission Factor
NOx	0.068	0.88	3.86	AP-42 Table 13.5-1
CO	0.31	4.01	17.58	AP-42 Table 13.5-2
VOC[1]	N/A	N/A	N/A	N/A
PM10[2]	40	0.00	0.01	AP-42 Table 13.5-1

Loadout Waste Stream		
Potential Emissions	55082.5 lb/yr	Based on AP-42 Section 5.2.1
Vapor Molecular Weight	64.0 lb/lb-mol	Based on TANKS 4.0.9d
Vapor Flow Rate	0.326 MMscf/yr	
	0.037 Mscf/hr	
Emissions Heat Value	2050 Btu/scf	Engineering Estimation

Pollutant	EF	Estimated Emissions		Source of Emission Factor
	(lb/MMBtu)	(lb/hr)	(tpy)	
NOx	0.068	0.01	0.02	AP-42 Table 13.5-1
CO	0.31	0.02	0.10	AP-42 Table 13.5-2
VOC[1]	N/A	N/A	N/A	N/A
PM10[2]	40	0.00	0.00	AP-42 Table 13.5-1

1 - VOC emissions from waste streams are shown at tanks and loadout.

2 - PM10 emission factor in units of µg/L, assuming a lightly smoking flare.

Sample Calculation for NOx from Tank Waste Stream

0.068 lb/MMBtu * 12.945 MMBtu/hr = 0.88 lb/hr

Fugitive Dust Emissions Detail Sheet

Equipment Source Name:	HR-1		
Source Description:	Road Dust		
Operation:	24	hr/day	365 days/yr
Emission Controls:	None		

Potential Emissions

Pollutant	Estimated Potential Emissions				Source of Emission Calculations
	Uncontrolled		Controlled		
	lb/hr	tpy	lb/hr	tpy	
PM30*	12.49	0.23	12.49	0.23	AP-42 Section 13.2.2
PM10	3.18	0.06	3.18	0.06	AP-42 Section 13.2.2
PM 2.5	0.32	0.01	0.32	0.01	AP-42 Section 13.2.2

* Assumed equivalent to total suspended particulate matter (TSP)

Mean Vehicle Weight (W)		17.7 tons	Engineering Calculation
Surface Material Silt Content (s)		4.8 %	NMED Default[2]
Mean # of Days with > 0.01 inch of precipitation		70 Days	NMED Default[2]
Material moisture content (%water)		2 %	NMED Default[2]
Mean Wind Speed		11 mph	NMED Default[2]
Oil Production Trucked	100% of max throughput	4.2 bbl/day	
Condensate Production Trucked	100% of max throughput	600.0 bbl/day	
Produced Water Production trucked	100% of max throughput	4.2 bbl/day	

Tech Truck[1]	5,000 lb		
	1 trips/day		
	0.26 miles/day		
	1.49 lb/day	PM30	
	0.38 lb/day	PM10	
	0.04 lb/day	PM 2.5	
Oil Hauler[3]	200 BBL Oil/trip	Truck capacity	12,000 lb Empty weight
	41,820 lb		7.1 lb/gal (oil)
	0.02 trips/day		
	0.01 miles/day		
	0.03 lb/day	PM30	
	0.01 lb/day	PM10	
	0.00 lb/day	PM 2.5	
Condensate Hauler[3]	200 BBL Condensate	Truck capacity	12,000 lb Empty weight
	35,520 lb		5.6 lb/gal (Condensate RVP 12)
	3 trips/day		
	52 miles/day		
	298.09 lb/day	PM30	
	75.97 lb/day	PM10	
	7.60 lb/day	PM 2.5	
Produced Water Hauler[4]	140 BBL PW/trip	Truck capacity	12,000 Empty weight
	36,402 lb	(12,000 empty weight)	8.3 lb/gal (water)
	0 trips/day		
	0.01 miles/day		
	0.04 lb/day	PM30	
	0.01 lb/day	PM10	
	0.00 lb/day	PM 2.5	

52.27 Total miles/day (Tech Truck + Oil Hauler + Produced Water Hauler)
2.18 Total miles/hr
19080 Total miles/yr

Fugitive Dust (PM30) per mile traveled	5.73 lb/VMT	AP-42 Eqn 13.2.2-1a &2
Fugitive Dust (PM10) per mile traveled	1.46 lb/VMT	AP-42 Eqn 13.2.2-1a &2
Fugitive Dust (PM2.5) per mile traveled	0.15 lb/VMT	AP-42 Eqn 13.2.2-1a &2
Vehicle miles traveled	0.26 miles/trip	Engineering Estimation

Notes:

1 - Based on the weight of a Ford F-150

2 - NMED Department Accepted Values for: Aggregate Handling, Storage Pile, and Haul Road Emissions

3 - Based on the assumption each hauler can carry 200 bbls of oil per visit

4 - Based on the assumption each hauler can carry 140 bbls of produced water per visit

Sample Calculation for PM30

5.73 lb/VMT * (0.01 + 0.01 + 0.26) miles/day * 365 days/yr / 2000 lb/ton * (365-70)/ 365 = 0.23 tpy

Haul Road Modeling Calculations

Plume Height	6.80 m	NM AQB 2019 Modeling Guidance Chapter 5.3.3
Vehicle Height	4 m	NM AQB 2019 Modeling Guidance Table 28
Initial Vertical Dimension	3.16 m	NM AQB 2019 Modeling Guidance Chapter 5.3.3
Release Height	3.40 m	NM AQB 2019 Modeling Guidance Chapter 5.3.3
Adjusted Road Width	13.6 m	NM AQB 2019 Modeling Guidance Chapter 5.3.3
Road Width	7.62 m	Engineering Estimation
Initial Horizontal Dimensioı	6.33 m	NM AQB 2019 Modeling Guidance Chapter 5.3.3
Number of Volume Source	55 sources	Engineering Estimation

Uncontrolled MSS Activities

Equipment Source Name MAIN-1
Source Description: Maintenance Activities

Emission Summary

Activity
Aerosol
Painting
Tank Degassing
Tank Cleaning
Engine Startup/Warmup
Sump Cleanout
Pipeline Degassing
Pigging
Filter Changes

	lb/hr*	tpy
TOTAL VOC Emissions	--	10.00

Notes:
* - Hourly emission limits are not appropriate for this operating situation.

Libby Gas Plant Gas Sample dated 1/9/2019

Gas Constituent	Molecular Weight (lb/lb-mol)	Mole %	Mole % Without Water	Weight (lb/lbmole Gas)	Weight %	Weight % Without Water	Total HC Corrected Weight * %	Total VOC Corrected Weight ** %
Methane	16.04	61.85%	61.85%	9.92	38.64%	38.64%	40.23%	NA
Ethane	30.07	15.96%	15.96%	4.80	18.69%	18.69%	19.45%	NA
Total HC (Non-VOC)		**77.81%**	**77.81%**		**57.33%**	**57.33%**	**59.68%**	**NA**
Propane	44.10	11.39%	11.39%	5.02	19.56%	19.56%	20.36%	50.50%
Iso-Butane	58.12	1.64%	1.64%	0.95	3.71%	3.71%	3.86%	9.58%
N-Butane	58.12	4.17%	4.17%	2.42	9.43%	9.43%	9.82%	24.35%
Iso-Pentane	72.15	0.85%	0.85%	0.62	2.40%	2.40%	2.50%	6.20%
N-Pentane	72.15	0.83%	0.83%	0.60	2.34%	2.34%	2.44%	6.04%
Other Hexanes	86.18	0.26%	0.26%	0.22	0.86%	0.86%	0.90%	2.23%
n-Hexane	86.18	0.0640%	0.06%	0.06	0.21%	0.21%	0.22%	0.55%
Heptane	100.21	0.0130%	0.01%	0.01	0.05%	0.05%	0.05%	0.13%
2,2,4-Trimethylpentane	114.23	0.0000%	0.00%	0.00	0.00%	0.00%	0.00%	0.00%
Octanes	114.23	0.0020%	0.00%	0.00	0.01%	0.01%	0.01%	0.02%
Nonanes	128.20	0.0020%	0.00%	0.00	0.01%	0.01%	0.01%	0.03%
Decanes+	142.29	0.0000%	0.00%	0.00	0.00%	0.00%	0.00%	0.00%
Benzene	78.11	0.0410%	0.04%	0.03	0.12%	0.12%	0.13%	0.32%
Toluene	92.14	0.0050%	0.01%	0.00	0.02%	0.02%	0.02%	0.05%
Ethylbenzene	106.17	0.0000%	0.00%	0.00	0.00%	0.00%	0.00%	0.00%
Xylenes	106.16	0.0000%	0.00%	0.00	0.00%	0.00%	0.00%	0.00%
Total NMNE VOC		**19.27%**	**19.27%**	**9.95**	**38.73%**	**38.73%**	**40.32%**	**100.00%**
Total HAPs		**0.11%**	**0.11%**	**0.09**	**0.36%**	**0.36%**	**0.37%**	**0.92%**
Water	18.02	0.00%	NA	0.00	0.00%	NA	NA	NA
Hydrogen Sulfide	34.08	0.00%	0.00%	0.00	0.00%	0.00%	NA	NA
Carbon Dioxide	44.01	1.21%	1.21%	0.53	2.07%	2.07%	NA	NA
Nitrogen	28.01	1.71%	1.71%	0.48	1.87%	1.87%	NA	NA
Totals		100.00%	100.00%	25.68	100.00%	100.00%	100.00%	

Average Molecular Weight of VOCs: **51.62 lb/lb-mol**

Notes:

* Weight Percent corrected to remove Water, Carbon Dioxide,Nitrogen, and H2S content.

** Weight Percent corrected to remove non-VOC content.

Libby Gas Plant - Promax Stream 47

Gas Constituent	Molecular Weight (lb/lb-mol)	Mole %	Weight (lb/lbmole Gas)	Weight %	Total HC Corrected Weight * %	Total VOC Corrected Weight ** %
Methane	16.04	88.38%	14.18	79.96%	82.72%	NA
Ethane	30.07	8.83%	2.66	14.97%	15.49%	NA
Total HC (Non-VOC)		97.21%		94.93%	98.21%	NA
Propane	44.10	0.62%	0.28	1.55%	1.61%	89.53%
Iso-Butane	58.12	0.02%	0.01	0.07%	0.07%	3.83%
N-Butane	58.12	0.03%	0.02	0.11%	0.11%	6.08%
Iso-Pentane	72.15	0.00%	0.00	0.01%	0.01%	0.31%
N-Pentane	72.15	0.00%	0.00	0.00%	0.00%	0.22%
Other Hexanes	86.18	0.00%	0.00	0.00%	0.00%	0.02%
n-Hexane	86.18	0.00%	0.00	0.00%	0.00%	0.00%
Heptane	100.21	0.00%	0.00	0.00%	0.00%	0.00%
2,2,4-Trimethylpentane	114.23	0.00%	0.00	0.00%	0.00%	0.00%
Octanes+	114.23	0.00%	0.00	0.00%	0.00%	0.00%
Benzene	78.11	0.00%	0.00	0.00%	0.00%	0.00%
Toluene	92.14	0.00%	0.00	0.00%	0.00%	0.00%
Ethylbenzene	106.17	0.00%	0.00	0.00%	0.00%	0.00%
Xylenes	106.16	0.00%	0.00	0.00%	0.00%	0.00%
Total NMNE VOC		**0.68%**	**0.31**	**1.73%**	**1.79%**	**100.00%**
Hydrogen Sulfide	34.08	0.00%	0.00	0.00%	NA	NA
Carbon Dioxide	44.01	0.01%	0.00	0.01%	NA	NA
Nitrogen	28.01	2.10%	0.59	3.32%	NA	NA
Totals		100.00%	17.73	100.00%	100.00%	

Average Molecular Weight of VOCs: **45.28 lb/lb-mol**

Lumped C6+ Natural Gas Analysis Conversion

Hexane+ Mol % from Gas Analysis	0.0001%

(Reference: Typical speciated C6+ from GRI-GLYCalc Help System)

	Production Weighted Mol % of C6***	Production Total Gas Mol %	Molecular Weight (lb/lb-mol)	Weight (lb/lb-mol Gas)	Weight% of C6+	Total Gas Weight%	Total VOC Corrected Weight%
Other Hexanes	63.85%	0.00005961%	86.18	55.03	62.25%	0.00%	0.002%
n-Hexane	14.79%	0.00001381%	86.18	12.75	14.42%	0.00%	0.001%
Heptane	6.87%	0.00000641%	100.2	6.88	7.79%	0.00%	0.000%
2,2,4-Trimethylpentane	2.67%	0.00000249%	114.23	3.05	3.45%	0.00%	0.000%
Octanes +	4.80%	0.00000448%	114.23	5.48	6.20%	0.00%	0.000%
Benzene	3.31%	0.00000309%	78.11	2.59	2.92%	0.00%	0.000%
Toluene	2.85%	0.00000266%	92.13	2.63	2.97%	0.00%	0.000%
Ethylbenzene	0.14%	0.00000013%	106.17	0.15	0.17%	0.00%	0.000%
Xylenes	0.72%	0.00000067%	106.17	0.76	0.86%	0.00%	0.000%
Totals C6+	**100.00%**	**0.0001%**					0.004%
Total HAPs						**0.0000%**	

Notes:
* Weight Percent corrected to remove Carbon Dioxide,Nitrogen, and H2S content.
** Weight Percent corrected to remove non-VOC content.
*** GRY-GLYCalc C6+ typical gas composition from Help System used to speciate Hexanes+ for HAP emissions.

Process Streams		**47**
Composition	Status:	Solved
Phase: **Total**	From Block:	PIPE-1
	To Block:	--
Mole Fraction		%
Methane		88.38%
Ethane		8.83%
Propane		0.62%
i-Butane		0.02%
n-Butane		0.03%
i-Pentane		0.0013388%
n-Pentane		0.0009551%
n-Hexane		0.0000918%
n-Heptane		0.0000014%
C8		0.0000001%
Water		0.00%
N2		2.10%
CO2		0.01%
H2S		0.00%
Triethylene Glycol		0.00%
EG		0.00%
MeOH		0.00%
MDEA		0.00%
CHEMTHERM 550		0.00%

Process Streams		**47**
Properties	Status:	Solved
Phase: **Total**	From Block:	PIPE-1
	To Block:	--
Property	**Units**	
Temperature	°F	75.1253
Pressure	psig	828.3127315
Mole Fraction Vapor	%	100
Mole Fraction Light Liquid	%	0
Mole Fraction Heavy Liquid	%	0
Molecular Weight	lb/lbmol	17.7327
Mass Density	lb/ft^3	2.99494
Molar Flow	lbmol/h	2275.60
Mass Flow	lb/h	40352.7
Vapor Volumetric Flow	ft^3/h	13473.6
Liquid Volumetric Flow	gpm	1679.83
Std Vapor Volumetric Flow	MMSCFD	20.7253
Std Liquid Volumetric Flow	sgpm	255.058
Compressibility		0.868260
Specific Gravity		0.612266
API Gravity		
Enthalpy	Btu/h	-7.37803E+07
Mass Enthalpy	Btu/lb	-1828.39
Mass Cp	Btu/(lb*°F)	0.617786
Ideal Gas CpCv Ratio		1.28750
Dynamic Viscosity	cP	0.01245206
Kinematic Viscosity	cSt	0.259557
Thermal Conductivity	Btu/(h*ft*°F)	0.0218038
Surface Tension	lbf/ft	
Net Ideal Gas Heating Value	Btu/ft^3	962.820
Net Liquid Heating Value	Btu/lb	20579.0
Gross Ideal Gas Heating Value	Btu/ft^3	1066.43
Gross Liquid Heating Value	Btu/lb	22796.7

Table 2-A: Regulated Emission Sources

Unit and stack numbering must correspond throughout the application package. If applying for a NOI under 20.2.73 NMAC, equipment exemptions under 2.72.202 NMAC do not apply.

Unit Number[1]	Source Description	Make	Model #	Serial #	Manufact-urer's Rated Capacity[3] (Specify Units)	Requested Permitted Capacity[3] (Specify Units)	Date of Manufacture[2] Date of Construction/ Reconstruction[2]	Controlled by Unit # Emissions vented to Stack #	Source Classi-fication Code (SCC)	For Each Piece of Equipment, Check One	RICE Ignition Type (CI, SI, 4SLB, 4SRB, 2SLB)[4]	Replacing Unit No.
ENG-1	Inlet Compressor Engine, x1	Caterpillar	G3508	TBD	690 hp	690 hp	> 7/1/2010 >6/12/2006	N/A ENG-1	20200254	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	4SLB	N/A
ENG 2-4	Inlet Compressor Engine, x3	Caterpillar	G3516	TBD	1,380 hp	1,380 hp	11/20/2017 , > 7/1/2010, TBD >6/12/2006	N/A ENG 2-4	20200254	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	4SLB	N/A
ENG 5-8	Residue Compressor Engine, x4	Caterpillar	G3516	TBD	1,380 hp	1,380 hp	> 7/1/2010 >6/12/2006	N/A ENG 5-8	20200254	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	4SLB	N/A
TK-1	Gunbarrel Tank, x1	TBD	TBD	TBD	500 bbl	500 bbl	4/2018 4/2018	FL-2 TK-1	40400301 / 40400302	☐ Existing (unchanged) ☐ To be Removed ☑ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
TK 2-5	Stabilized Condensate Tanks, x4	TBD	TBD	TBD	400 bbl	400 bbl	4/2018 1/8/2018	FL-2 TK 2-5	31000212	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
TK-6	Slop Oil Tanks, x1	TBD	TBD	TBD	400 bbl	400 bbl	4/2018 1/8/2018	FL-2 TK-6	40400301 / 40400302	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
PWTK-1	Produced Water Tank, x1	TBD	TBD	TBD	400 bbl	400 bbl	4/2018 4/2018	FL-2 PWTK-1	40400301 / 40400302	☐ Existing (unchanged) ☐ To be Removed ☑ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
HTR-1	Hot Oil Heater, x1	TBD	TBD	TBD	49.42 MMBtu/hr	49.42 MMBtu/hr	4/2018 1/8/2018	N/A HTR-1	30600105	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
HTR-2	Regen Gas Heater, x1	TBD	TBD	TBD	11 MMBtu/hr	11 MMBtu/hr	4/2018 1/8/2018	N/A HTR-2	30600105	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
CONDLOAD-1	Truck Loading (Cond Loadout)	N/A	N/A	N/A	N/A	N/A	N/A N/A	FL-2 N/A	2310021030	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
OILLOAD-1	Truck Loading (Oil Loadout)	N/A	N/A	N/A	N/A	N/A	N/A N/A	FL-2 N/A	2310021030	☐ Existing (unchanged) ☐ To be Removed ☑ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
FUG-1	Equipment Leaks (OOOOa Fugitives)	N/A	N/A	N/A	N/A	N/A	N/A > 9/18/2015	N/A N/A	31088811	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
FUG-2	Equipment Leaks (Residue Fugitives)	N/A	N/A	N/A	N/A	N/A	N/A N/A	N/A N/A	31088811	☐ Existing (unchanged) ☐ To be Removed ☑ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
AMINE-1	Amine Unit, x1	TBD	TBD	TBD	60 MMScf/d	60 MMScf/d	2018 1/8/2018	TO-1 AMINE-1	31000305	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
COMP	Compressor Blowdowns, x7	TBD	TBD	N/A	N/A	N/A	N/A N/A	FL-1 N/A	31000313	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
PLANT BD	Plant Blowdown, x1	TBD	TBD	N/A	N/A	N/A	N/A N/A	FL-1 N/A	31000199	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
TO-1	Thermal Oxidizer, x1	TBD	TBD	TBD	N/A	N/A	2/2018 1/8/2018	N/A TO-1	31000199	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
FL-1	Upset/Maintenance Flare, x1	TBD	TBD	TBD	N/A	N/A	N/A 1/8/2018	N/A FL-1	31000160	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
FL-2	Tank Flare, x1	TBD	TBD	TBD	N/A	N/A	N/A 1/8/2018	N/A FL-2	31000160	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
HR 1	Road Dust, x1	N/A	N/A	N/A	N/A	N/A	N/A N/A	N/A N/A	31000199	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
MAIN-1	Maintenance Activities	N/A	N/A	N/A	N/A	N/A	N/A N/A	N/A N/A	31000199	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
UP/MAL	Upsets/Malfunctions	N/A	N/A	N/A	N/A	N/A	N/A N/A	N/A N/A	31000199	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A

[1] Unit numbers must correspond to unit numbers in the previous permit unless a complete cross reference table of all units in both permits is provided.
[2] Specify dates required to determine regulatory applicability. Date of construction/reconstruction is the approval date of NSR Permit No. 7482.
[3] To properly account for power conversion efficiencies, generator set rated capacity shall be reported as the rated capacity of the engine in horsepower, not the kilowatt capacity of the generator set.
[4] "4SLB" means four stroke lean burn engine, "4SRB" means four stroke rich burn engine, "2SLB" means two stroke lean burn engine, "CI" means compression ignition, and "SI" means spark ignition

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Table 2-B: Insignificant Activities[1] (20.2.70 NMAC) OR Exempted Equipment (20.2.72 NMAC)

All 20.2.70 NMAC (Title V) applications must list all Insignificant Activities in this table. All 20.2.72 NMAC applications must list Exempted Equipment in this table. If equipment listed on this table is exempt under 20.2.72.202.B.5, include emissions calculations and emissions totals for 202.B.5 "similar functions" units, operations, and activities in Section 6, Calculations. Equipment and activities exempted under 20.2.72.202 NMAC may not necessarily be Insignificant under 20.2.70 NMAC (and vice versa). Unit & stack numbering must be consistent throughout the application package. Per Exemptions Policy 02-012.00 (see http://www.env.nm.gov/aqb/permit/aqb_pol.html), 20.2.72.202.B NMAC Exemptions do not apply, but 20.2.72.202.A NMAC exemptions do apply to NOI facilities under 20.2.73 NMAC. List 20.2.72.301.D.4 NMAC Auxiliary Equipment for Streamline applications in Table 2-A. The List of Insignificant Activities (for TV) can be found online at http://www.env.nm.gov/aqb/forms/InsignificantListTitleV.pdf . TV sources may elect to enter both TV Insignificant Activities and Part 72 Exemptions on this form.

Unit Number	Source Description	Manufacturer	Model No.	Max Capacity	List Specific 20.2.72.202 NMAC Exemption (e.g. 20.2.72.202.B.5)	Date of Manufacture /Reconstruction[2]	For Each Piece of Equipment, Check Onc
			Serial No.	Capacity Units	Insignificant Activity citation (e.g. IA List Item #1.a)	Date of Installation /Construction[2]	
N/A	Misc. Insignificant Tanks	N/A	TBD	TBD	20.2.72.202.B.5	TBD	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
			TBD	TBD	N/A	TBD	
ENG-9	Generator Engine	Olympian	250LG6	374	20.2.72.202.B.3	After 7/1/2010	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
			TBD	hp	N/A	N/A	
GEN-1	Generator Engine	Generac	TBD	65	20.2.72.202.B.3	2019	☐ Existing (unchanged) ☐ To be Removed ☑ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
			TBD	hp	N/A	N/A	
							☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
							☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
							☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
							☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
							☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
							☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
							☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
							☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
							☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
							☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced

[1] Insignificant activities exempted due to size or production rate are defined in 20.2.70.300.D.6, 20.2.70.7.Q NMAC, and the NMED/AQB List of Insignificant Activities, dated September 15, 2008. Emissions from these insignificant activities do not need to be reported, unless specifically requested.

[2] Specify date(s) required to determine regulatory applicability.

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Table 2-C: Emissions Control Equipment

Unit and stack numbering must correspond throughout the application package. Only list control equipment for TAPs if the TAP's maximum uncontrolled emissions rate is over its respective threshold as listed in 20.2.72 NMAC, Subpart V, Tables A and B. In accordance with 20.2.72.203.A(3) and (8) NMAC, 20.2.70.300.D(5)(b) and (e) NMAC, and 20.2.73.200.B(7) NMAC, the permittee shall report all control devices and list each pollutant controlled by the control device regardless if the applicant takes credit for the reduction in emissions.

Control Equipment Unit No.	Control Equipment Description	Date Installed	Controlled Pollutant(s)	Controlling Emissions for Unit Number(s)[1]	Efficiency (% Control by Weight)	Method used to Estimate Efficiency
ENG-1	Oxidation Catalyst amd Air Fuel Ratio Controller	>6/12/2006	VOC, CO and CH2O	ENG-1	19% VOC, 22% CO and 50% CH2O	Subpart JJJJ (VOC and CO) / Permit Condition (CH2O)
ENG 2-8	Oxidation Catalyst amd Air Fuel Ratio Controller	>6/12/2006	VOC, CO and CH2O	ENG 2-8	31% VOC, 68% CO and 80% CH2O	Subpart JJJJ (VOC) / Permit Condition (CO and CH2O)
TO-1	Thermal Oxidizer	1/8/2018	VOC, H2S	AMINE-1	98%	Engineering Assumption
FL-1	Upset/Maintenance Flare	1/8/2018	VOC	AMINE-1 (Backup), COMP, PLANT BD, Misc Maintenance	95%	Engineering Assumption
FL-2	Tank Flare	1/8/2018	VOC	TK 1-6, PWTK-1, CONDLOAD-1, OILLOAD-1	95%	Engineering Assumption

[1] List each control device on a separate line. For each control device, list all emission units controlled by the control device.

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Table 2-D: Maximum Emissions (under normal operating conditions)

☐ **This Table was intentionally left blank because it would be identical to Table 2-E.**

Maximum Emissions are the emissions at maximum capacity and prior to (in the absence of) pollution control, emission-reducing process equipment, or any other emission reduction. Calculate the hourly emissions using the worst case hourly emissions for each pollutant. For each pollutant, calculate the annual emissions as if the facility were operating at maximum plant capacity without pollution controls for 8760 hours per year, unless otherwise approved by the Department. List Hazardous Air Pollutants (HAP) & Toxic Air Pollutants (TAPs) in Table 2-I. Unit & stack numbering must be consistent throughout the application package. Fill all cells in this table with the emission numbers or a "-" symbol. A "-" symbol indicates that emissions of this pollutant are not expected. Numbers shall be expressed to at least 2 decimal points (e.g. 0.41, 1.41, or 1.41E-4).

Unit No.	NOx		CO		VOC		SOx		PM[1]		PM10[1]		PM2.5[1]		H_2S		Lead	
	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr
ENG-1	1.52	6.66	3.93	17.19	1.70	7.46	0.02	0.07	0.06	0.25	0.06	0.25	0.06	0.25	--	--	--	--
ENG-2	3.04	13.33	7.39	32.39	3.47	15.19	0.03	0.14	0.11	0.50	0.11	0.50	0.11	0.50	--	--	--	--
ENG*	**3.04**	**13.33**	**7.39**	**32.39**	**3.47**	**15.19**	**0.03**	**0.14**	**0.11**	**0.50**	**0.11**	**0.50**	**0.11**	**0.50**	**--**	**--**	**--**	**--**
ENG-3	3.04	13.33	7.39	32.39	3.47	15.19	0.03	0.14	0.11	0.50	0.11	0.50	0.11	0.50	--	--	--	--
ENG-4	3.04	13.33	7.39	32.39	3.47	15.19	0.03	0.14	0.11	0.50	0.11	0.50	0.11	0.50	--	--	--	--
ENG-5	3.04	13.33	7.39	32.39	3.47	15.19	0.03	0.14	0.11	0.50	0.11	0.50	0.11	0.50	--	--	--	--
ENG-6	3.04	13.33	7.39	32.39	3.47	15.19	0.03	0.14	0.11	0.50	0.11	0.50	0.11	0.50	--	--	--	--
ENG-7	3.04	13.33	7.39	32.39	3.47	15.19	0.03	0.14	0.11	0.50	0.11	0.50	0.11	0.50	--	--	--	--
ENG-8	3.04	13.33	7.39	32.39	3.47	15.19	0.03	0.14	0.11	0.50	0.11	0.50	0.11	0.50	--	--	--	--
TK-1	--	--	--	--	22.64	99.18	--	--	--	--	--	--	--	--	--	--	--	--
TK 2-5	--	--	--	--	7.98	34.95	--	--	--	--	--	--	--	--	--	--	--	--
TK-6	--	--	--	--	0.85	3.72	--	--	--	--	--	--	--	--	--	--	--	--
PWTK-1	--	--	--	--	0.00	0.00	--	--	--	--	--	--	--	--	--	--	--	--
HTR-1	2.42	10.61	4.07	17.82	0.27	1.17	0.14	0.60	0.37	1.61	0.37	1.61	0.37	1.61	--	--	--	--
HTR-2	1.08	4.72	0.91	3.97	0.06	0.26	0.03	0.13	0.08	0.36	0.08	0.36	0.08	0.36	--	--	--	--
CONDLOAD-1	--	--	--	--	99.91	27.35	--	--	--	--	--	--	--	--	--	--	--	--
OILLOAD-1	--	--	--	--	99.91	0.19	--	--	--	--	--	--	--	--	--	--	--	--
FUG-1	--	--	--	--	11.70	51.24	--	--	--	--	--	--	--	--	0.00	0.00	--	--
FUG-2	--	--	--	--	0.05	0.23	--	--	--	--	--	--	--	--	0.00	0.00	--	--
AMINE-1	--	--	--	--	39.84	174.52	--	--	--	--	--	--	--	--	--	--	--	--
COMP	--	--	--	--	2.27	9.95	--	--	--	--	--	--	--	--	--	--	--	--
PLANT BD	--	--	--	--	32803.52	16.40	--	--	--	--	--	--	--	--	--	--	--	--
TO-1	1.56	6.82	1.31	5.73	0.19	0.83	64.45	235.24	0.00	0.00	0.00	0.00	0.00	0.00	--	--	--	--
FL-1	251.60	26.48	1147.00	120.70	92.94	14.14	6.15	1.31	5.75	0.88	5.75	0.88	5.75	0.88	--	--	--	--
FL-2	0.89	3.91	4.07	17.82	0.00	0.02	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.01	--	--	--	--
HR-1	--	--	--	--	--	--	--	--	12.49	0.23	3.18	0.06	0.32	0.01	--	--	--	--
MAIN-1	--	--	--	--	--	10.00	--	--	--	--	--	--	--	--	--	--	--	--
UP/MAL	--	--	--	--	--	10.00	--	--	--	--	--	--	--	--	--	--	--	--
Totals	278.85	145.83	1209.11	392.74	33206.42	560.51	70.99	238.26	19.49	6.58	10.18	6.41	7.32	6.35	0.00	0.00	--	--

[1] **Condensable Particulate Matter:** Include condensable particulate matter emissions for PM10 and PM2.5 if the source is a combustion source. Do not include condensable particulate matter for PM unless PM is set equal to PM10 and PM2.5. Particulate matter (PM) is not subject to an ambient air quality standard, but PM is a regulated air pollutant under PSD (20.2.74 NMAC) and Title V (20.2.70 NMAC).

* - Composite emissions represent worse case compressor engine emissions

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Table 2-E: Requested Allowable Emissions

Unit & stack numbering must be consistent throughout the application package. Fill all cells in this table with the emission numbers or a "-" symbol. A "-" symbol indicates that emissions of this pollutant are not expected. Numbers shall be expressed to at least 2 decimal points (e.g. 0.41, 1.41, or 1.41E^{-4}).

Unit No.	NOx		CO		VOC		SOx		PM[1]		PM10[1]		PM2.5[1]		H_2S		Lead	
	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr
ENG-1	1.52	6.66	3.04	13.33	1.38	6.06	0.02	0.07	0.06	0.25	0.06	0.25	0.06	0.25	--	--	--	--
ENG-2	3.04	13.33	2.37	10.40	2.40	10.50	0.03	0.14	0.11	0.50	0.11	0.50	0.11	0.50	--	--	--	--
ENG*	**3.04**	**13.33**	**3.04**	**13.33**	**2.40**	**10.50**	**0.03**	**0.14**	**0.11**	**0.50**	**0.11**	**0.50**	**0.11**	**0.50**	**--**	**--**	**--**	**--**
ENG-3	3.04	13.33	2.37	10.40	2.40	10.50	0.03	0.14	0.11	0.50	0.11	0.50	0.11	0.50	--	--	--	--
ENG-4	3.04	13.33	2.37	10.40	2.40	10.50	0.03	0.14	0.11	0.50	0.11	0.50	0.11	0.50	--	--	--	--
ENG-5	3.04	13.33	2.37	10.40	2.40	10.50	0.03	0.14	0.11	0.50	0.11	0.50	0.11	0.50	--	--	--	--
ENG-6	3.04	13.33	2.37	10.40	2.40	10.50	0.03	0.14	0.11	0.50	0.11	0.50	0.11	0.50	--	--	--	--
ENG-7	3.04	13.33	2.37	10.40	2.40	10.50	0.03	0.14	0.11	0.50	0.11	0.50	0.11	0.50	--	--	--	--
ENG-8	3.04	13.33	2.37	10.40	2.40	10.50	0.03	0.14	0.11	0.50	0.11	0.50	0.11	0.50	--	--	--	--
TK-1	--	--	--	--	1.13	4.96	--	--	--	--	--	--	--	--	--	--	--	--
TK 2-5	--	--	--	--	0.40	1.75	--	--	--	--	--	--	--	--	--	--	--	--
TK-6	--	--	--	--	0.04	0.19	--	--	--	--	--	--	--	--	--	--	--	--
PWTK-1	--	--	--	--	0.00	0.00	--	--	--	--	--	--	--	--	--	--	--	--
HTR-1	2.42	10.61	4.07	17.82	0.27	1.17	0.14	0.60	0.37	1.61	0.37	1.61	0.37	1.61	--	--	--	--
HTR-2	1.08	4.72	0.91	3.97	0.06	0.26	0.03	0.13	0.08	0.36	0.08	0.36	0.08	0.36	--	--	--	--
ONDLOAD	--	--	--	--	33.47	9.16	--	--	--	--	--	--	--	--	--	--	--	--
OILLOAD-1	--	--	--	--	33.47	0.06	--	--	--	--	--	--	--	--	--	--	--	--
FUG-1	--	--	--	--	11.70	51.24	--	--	--	--	--	--	--	--	0.00	0.00	--	--
FUG-2	--	--	--	--	0.05	0.23	--	--	--	--	--	--	--	--	0.00	0.00	--	--
AMINE-1	--	--	--	--	2.79	3.93	--	--	--	--	--	--	--	--	--	--	--	--
COMP	--	--	--	--	0.11	0.50	--	--	--	--	--	--	--	--	--	--	--	--
PLANT BD	--	--	--	--	1640.18	0.82	--	--	--	--	--	--	--	--	--	--	--	--
TO-1	1.56	6.82	1.31	5.73	0.19	0.83	64.45	235.24	0.00	0.00	0.00	0.00	0.00	0.00	--	--	--	--
FL-1	251.60	26.48	1147.00	120.70	92.94	14.14	6.15	1.31	5.75	0.88	5.75	0.88	5.75	0.88	--	--	--	--
FL-2	0.89	3.91	4.07	17.82	0.00	0.02	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.01	--	--	--	--
HR-1	--	--	--	--	--	--	--	--	12.49	0.23	3.18	0.06	0.32	0.01	--	--	--	--
MAIN-1	--	--	--	--	--	10.00	--	--	--	--	--	--	--	--	--	--	--	--
UP/MAL	--	--	--	--	--	10.00	--	--	--	--	--	--	--	--	--	--	--	--
Totals	278.85	145.83	1174.63	241.74	1833.59	182.77	70.99	238.26	19.49	6.58	10.18	6.41	7.32	6.35	0.00	0.00	--	--

[1] **Condensable Particulate Matter:** Include condensable particulate matter emissions for PM10 and PM2.5 if the source is a combustion source. Do not include condensable particulate matter for PM unless PM is set equal to PM10 and PM2.5. Particulate matter (PM) is not subject to an ambient air quality standard, but it is a regulated air pollutant under PSD (20.2.74 NMAC) and Title V (20.2.70 NMAC).

* - Composite emissions represent worse case compressor engine emissions

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Table 2-F: Additional Emissions during Startup, Shutdown, and Routine Maintenance (SSM)

☐ This table is intentionally left blank since all emissions at this facility due to routine or predictable startup, shutdown, or scehduled maintenance are no higher than those listed in Table 2-E and a malfunction emission limit is not already permitted or requested. If you are required to report GHG emissions as described in Section 6a, include any GHG emissions during Startup, Shutdown, and/or Scheduled Maintenance (SSM) in Table 2-P. Provide an explanations of SSM emissions in Section 6 and 6a.

All applications for facilities that have emissions during routine our predictable startup, shutdown or scheduled maintenance (SSM)[1], including NOI applications, must include in this table the Maximum Emissions during routine or predictable startup, shutdown and scheduled maintenance (20.2.7 NMAC, 20.2.72.203.A.3 NMAC, 20.2.73.200.D.2 NMAC). In Section 6 and 6a, provide emissions calculations for all SSM emissions reported in this table. Refer to "Guidance for Submittal of Startup, Shutdown, Maintenance Emissions in Permit Applications (https://www.env.nm.gov/aqb/permit/aqb_pol.html) for more detailed instructions. Numbers shall be expressed to at least 2 decimal points (e.g. 0.41, 1.41, or 1.41E-4).

Unit No.	NOx		CO		VOC		SOx		PM[2]		PM10[2]		PM2.5[2]		H_2S		Lead	
	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr
COMP	--	--	--	--	0.11	0.50	--	--	--	--	--	--	--	--	--	--	--	--
PLANT BD-1	--	--	--	--	1640.18	0.82	--	--	--	--	--	--	--	--	--	--	--	--
FL-1	251.60	26.48	1147.00	120.70	92.94	14.14	6.15	1.31	5.75	0.88	5.75	0.88	5.75	0.88	--	--	--	--
MAIN-1	--	--	--	--	--	10.00	--	--	--	--	--	--	--	--	--	--	--	--
Totals	251.60	26.48	1147.00	120.70	1733.23	25.46	6.15	1.31	5.75	0.88	5.75	0.88	5.75	0.88				

[1] **For instance**, if the short term steady-state Table 2-E emissions are 5 lb/hr and the SSM rate is 12 lb/hr, enter 7 lb/hr in this table. If the annual steady-state Table 2-E emissions are 21.9 TPY, and the number of scheduled SSM events result in annual emissions of 31.9 TPY, enter 10.0 TPY in the table below.

[2] **Condensable Particulate Matter:** Include condensable particulate matter emissions for PM10 and PM2.5 if the source is a combustion source. Do not include condensable particulate matter for PM unless PM is set equal to PM10 and PM2.5. Particulate matter (PM) is not subject to an ambient air quality standard, but it is a regulated air pollutant under PSD (20.2.74 NMAC) and Title V (20.2.70 NMAC).

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Table 2-G: Stack Exit and Fugitive Emission Rates for Special Stacks

☑ I have elected to leave this table blank because this facility does not have any stacks/vents that split emissions from a single source or combine emissions from more than one source listed in table 2-A. Additionally, the emission rates of all stacks match the Requested allowable emission rates stated in Table 2-E.

Use this table to list stack emissions (requested allowable) from split and combined stacks. List Toxic Air Pollutants (TAPs) and Hazardous Air Pollutants (HAPs) in Table 2-I. List all fugitives that are associated with the normal, routine, and non-emergency operation of the facility. Unit and stack numbering must correspond throughout the application package. Refer to Table 2-E for instructions on use of the "- " symbol and on significant figures.

Stack No.	Serving Unit Number(s) from Table 2-A	NOx		CO		VOC		SOx		PM		PM10		PM2.5		☐ H_2S or ☐ Lead	
		lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr
Totals:																	

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Table 2-H: Stack Exit Conditions

Unit and stack numbering must correspond throughout the application package. Include the stack exit conditions for each unit that emits from a stack, including blowdown venting parameters and tank emissions. If the facility has multiple operating scenarios, complete a separate Table 2-H for each scenario and, for each, type scenario name here:

Stack Number	Serving Unit Number(s) from Table 2-A	Orientation (H-Horizontal V=Vertical)	Rain Caps (Yes or No)	Height Above Ground (ft)	Temp. (F)	Flow Rate (acfs)	Flow Rate (dscfs)	Moisture by Volume (%)	Velocity (ft/sec)	Inside Diameter (ft)
ENG-1	ENG-1	V	No	15	931	73.6	53.2	9.3	136.1	0.8
ENG 2-8	ENG 2-8	V	No	25	992	152.1	110.2	9.0	193.7	1.0
TK-1	TK-1	V	No	25	70	0.0	0.0	0.0	0.0	0.7
TK 2-5	TK 2-5	V	No	20	70	0.0	0.0	0.0	0.0	0.7
TK-6	TK-6	V	No	20	70	0.0	0.0	0.0	0.0	0.7
PWTK-1	PWTK-1	V	No	20	70	0.0	0.0	0.0	0.0	0.7
HTR-1	HTR-1	V	No	30	664	88.9	70.7	0.0	12.6	3.0
HTR-2	HTR-2	V	No	12	500	25.8	20.5	0.0	8.2	2.0
TO-1	TO-1	V	No	50	1400	256.9	204.5	0.0	15.0	4.7
FL-1	FL-1	V	No	100	1832	4416.7	3515.4	0.0	65.6	9.3
FL-2	FL-2	V	No	30	1832	314.1	250.0	0.0	65.6	2.5

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Table 2-I: Stack Exit and Fugitive Emission Rates for HAPs and TAPs

In the table below, report the Potential to Emit for each HAP from each regulated emission unit listed in Table 2-A, only if the entire facility emits the HAP at a rate greater than or equal to one (1) ton per year For each such emission unit, HAPs shall be reported to the nearest 0.1 tpy. Each facility-wide Individual HAP total and the facility-wide Total HAPs shall be the sum of all HAP sources calculated to the nearest 0.1 ton per year. Per 20.2.72.403.A.1 NMAC, facilities not exempt [see 20.2.72.402.C NMAC] from TAP permitting shall report each TAP that has an uncontrolled emission rate in excess of its pounds per hour screening level specified in 20.2.72.502 NMAC. TAPs shall be reported using one more significant figure than the number of significant figures shown in the pound per hour threshold corresponding to the substance. Use the HAP nomenclature as it appears in Section 112 (b) of the 1990 CAAA and the TAP nomenclature as it listed in 20.2.72.502 NMAC. Include tank-flashing emissions estimates of HAPs in this table. For each HAP or TAP listed, fill all cells in this table with the emission numbers or a "-" symbol. A "-" symbol indicates that emissions of this pollutant are not expected or the pollutant is emitted in a quantity less than the threshold amounts described above.

Stack No.	Unit No.(s)	Total HAPs		Formaldehyde ☑ HAP or ☐ TAP		Acetaldehyde ☑ HAP or ☐ TAP		Acrolein ☑ HAP or ☐ TAP		Benzene ☑ HAP or ☐ TAP		Toluene ☑ HAP or ☐ TAP		Ethylbenzene ☑ HAP or ☐ TAP		Xylenes ☑ HAP or ☐ TAP		n-Hexane ☑ HAP or ☐ TAP		2,2,4 TMP ☑ HAP or ☐ TAP		Methanol ☑ HAP or ☐ TAP	
		lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr
ENG-1	ENG-1	0.4	1.8	0.3	1.4	0.0	0.2	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	--	--	--	--
ENG-2	ENG-2	0.4	2.0	0.3	1.2	0.1	0.4	0.1	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	--	--	--	--
ENG*	**ENG***	**0.4**	**2.0**	**0.3**	**1.4**	**0.1**	**0.4**	**0.1**	**0.3**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.1**	**--**	**--**	**--**	**--**
ENG-3	ENG-3	0.4	2.0	0.3	1.2	0.1	0.4	0.1	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	--	--	--	--
ENG-4	ENG-4	0.4	2.0	0.3	1.2	0.1	0.4	0.1	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	--	--	--	--
ENG-5	ENG-5	0.4	2.0	0.3	1.2	0.1	0.4	0.1	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	--	--	--	--
ENG-6	ENG-6	0.4	2.0	0.3	1.2	0.1	0.4	0.1	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	--	--	--	--
ENG-7	ENG-7	0.4	2.0	0.3	1.2	0.1	0.4	0.1	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	--	--	--	--
ENG-8	ENG-8	0.4	2.0	0.3	1.2	0.1	0.4	0.1	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	--	--	--	--
TK-1	TK-1	0.1	0.3	--	--	--	--	--	--	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	--	--
TK 2-5	TK 2-5	0.0	0.1	--	--	--	--	--	--	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	--	--
TK-6	TK-6	0.0	0.0	--	--	--	--	--	--	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	--	--
PWTK-1	PWTK-1	0.0	0.0	--	--	--	--	--	--	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	--	--
HTR-1	HTR-1	0.1	0.4	0.0	0.0	--	--	--	--	0.0	0.0	0.0	0.0	--	--	--	--	0.1	0.4	--	--	--	--
HTR-2	HTR-2	0.0	0.1	0.0	0.0	--	--	--	--	0.0	0.0	0.0	0.0	--	--	--	--	0.0	0.1	--	--	--	--
CONDLOAD-1	CONDLOAD-1	2.1	0.6	--	--	--	--	--	--	0.3	0.1	0.3	0.1	0.0	0.0	0.0	0.0	1.3	0.4	0.0	0.0	--	--
OILLOAD-1	OILLOAD-1	2.1	0.0	--	--	--	--	--	--	0.3	0.0	0.3	0.0	0.0	0.0	0.0	0.0	1.3	0.0	0.0	0.0	--	--
FUG-1	FUG-1	0.1	0.5	--	--	--	--	--	--	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.3	0.0	0.0	--	--
FUG-2	FUG-2	0.0	0.0	--	--	--	--	--	--	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	--	--
AMINE-1	AMINE-1	0.0	0.0	--	--	--	--	--	--	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	--	--
COMP	COMP	0.0	0.0	--	--	--	--	--	--	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	--	--
PLANT BD	PLANT BD	15.1	0.0	--	--	--	--	--	--	5.3	0.0	0.8	0.0	0.0	0.0	0.0	0.0	9.1	0.0	0.0	0.0	--	--
TO-1	TO-1	0.0	0.0	--	--	--	--	--	--	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	--	--
FL-1	FL-1	0.0	0.0	--	--	--	--	--	--	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	--	--
FL-2	FL-2	0.0	0.0	--	--	--	--	--	--	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	--	--
HR-1	HR-1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MAIN-1	MAIN-1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
UP/MAL-1	UP/MAL-1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Totals:		22.8	15.7	1.9	8.5	0.7	2.9	0.4	1.8	6.0	0.5	1.5	0.3	0.1	0.0	0.1	0.1	12.1	1.8	0.1	0.0	--	--

* - Composite emissions represent worse case engine emissions

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Table 2-J: Fuel

Specify fuel characteristics and usage. Unit and stack numbering must correspond throughout the application package.

Unit No.	Fuel Type (low sulfur Diesel, ultra low sulfur diesel, Natural Gas, Coal, …)	Fuel Source: purchased commercial, pipeline quality natural gas, residue gas, raw/field natural gas, process gas (e.g. SRU tail gas) or other	Specify Units				
			Lower Heating Value	Hourly Usage (scf)	Annual Usage (scf)	% Sulfur	% Ash
ENG-1	Natural Gas	Residue Gas	1066.43 btu/scf	5,307.48	46,493,490.51	N/A	N/A
ENG 2-8	Natural Gas	Residue Gas	1066.43 btu/scf	10,683.54	93,587,774.63	N/A	N/A
HTR-1	Natural Gas	Residue Gas	1066.43 btu/scf	46,338.38	405,924,215.65	N/A	N/A
HTR-2	Natural Gas	Residue Gas	1066.43 btu/scf	10,314.76	90,357,256.29	N/A	N/A
TO-1	Natural Gas	Residue Gas	1066.43 btu/scf	11,252.46	98,571,549.60	N/A	N/A
FL-1	Natural Gas	Residue Gas	1066.43 btu/scf	468.85	4,107,148.01	N/A	N/A
FL-2	Natural Gas	Residue Gas	1066.43 btu/scf	93.77	821,429.60	N/A	N/A

Table 2-K: Liquid Data for Tanks Listed in Table 2-L

For each tank, list the liquid(s) to be stored in each tank. If it is expected that a tank may store a variety of hydrocarbon liquids, enter "mixed hydrocarbons" in the Composition column for that tank and enter the corresponding data of the most volatile liquid to be stored in the tank. If tank is to be used for storage of different materials, list all the materials in the "All Calculations" attachment, run the newest version of TANKS on each, and use the material with the highest emission rate to determine maximum uncontrolled and requested allowable emissions rate. The permit will specify the most volatile category of liquids that may be stored in each tank. Include appropriate tank-flashing modeling input data. Use additional sheets if necessary. Unit and stack numbering must correspond throughout the application package.

Tank No.	SCC Code	Material Name	Composition	Liquid Density (lb/gal)	Vapor Molecular Weight (lb/lb*mol)	Average Storage Conditions		Max Storage Conditions	
						Temperature (°F)	True Vapor Pressure (psia)	Temperature (°F)	True Vapor Pressure (psia)
TK-1	40400301 / 40400302	Oil / Produced Water	Mixed Hydrocarbons	5.6	64	72.3	8.0	86.3	10.2
TK-2	31000212	Condensate	Mixed Hydrocarbons	5.6	64	72.3	8.0	86.3	10.2
TK-3	31000212	Condensate	Mixed Hydrocarbons	5.6	64	72.3	8.0	86.3	10.2
TK-4	31000212	Condensate	Mixed Hydrocarbons	5.6	64	72.3	8.0	86.3	10.2
TK-5	31000212	Condensate	Mixed Hydrocarbons	5.6	64	72.3	8.0	86.3	10.2
TK-6	40400301 / 40400302	Oil	Mixed Hydrocarbons	5.6	64	72.3	3.6	86.3	4.7
PWTK-1	40400301 / 40400302	Produced Water	Water / Mixed Hydrocarbons	8.3	19.8	72.3	0.4	86.3	0.64

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Table 2-L: Tank Data

Include appropriate tank-flashing modeling input data. Use an addendum to this table for unlisted data categories. Unit and stack numbering must correspond throughout the application package. Use additional sheets if necessary. See reference Table 2-L2. Note: 1.00 bbl = 10.159 M3 = 42.0 gal

Tank No.	Date Installed	Materials Stored	Seal Type (refer to Table 2-LR below)	Roof Type (refer to Table 2-LR below)	Capacity		Diameter (M)	Vapor Space (M)	Color (from Table VI-C)		Paint Condition (from Table VI-C)	Annual Throughput (gal/yr)	Turn-overs (per year)
					(bbl)	(M^3)			Roof	Shell			
TK-1	4/2018	Oil / Produced Water	N/A	FX	500	79	3.7	3.81	OT (Green)	OT (Green)	Good	32,172	1.53
TK-2	1/8/2018	Condensate	N/A	FX	400	64	3.7	3.05	OT (Green)	OT (Green)	Good	2,299,500	136.88
TK-3	1/8/2018	Condensate	N/A	FX	400	64	3.7	3.05	OT (Green)	OT (Green)	Good	2,299,500	136.88
TK-4	1/8/2018	Condensate	N/A	FX	400	64	3.7	3.05	OT (Green)	OT (Green)	Good	2,299,500	136.88
TK-5	1/8/2018	Condensate	N/A	FX	400	64	3.7	3.05	OT (Green)	OT (Green)	Good	2,299,500	136.88
TK-6	1/8/2018	Oil	N/A	FX	400	64	3.7	3.05	OT (Green)	OT (Green)	Good	64,344	3.83
PWTK-1	4/2018	Produced Water	N/A	FX	400	64	3.7	3.05	OT (Green)	OT (Green)	Good	64,344	3.83

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Table 2-L2: Liquid Storage Tank Data Codes Reference Table

Roof Type	Seal Type, Welded Tank Seal Type		Seal Type, Riveted Tank Seal Type		Roof, Shell Color	Paint Condition
	Mechanical Shoe Seal	**Liquid-mounted resilient seal**	**Vapor-mounted resilient seal**	**Seal Type**		
FX: Fixed Roof					**WH**: White	Good
IF: Internal Floating Roof	**A**: Primary only	**A**: Primary only	**A**: Primary only	**A**: Mechanical shoe, primary only	**AS**: Aluminum (specular)	Poor
EF: External Floating Roof	**B**: Shoe-mounted secondary	**B**: Weather shield	**B**: Weather shield	**B**: Shoe-mounted secondary	**AD**: Aluminum (diffuse)	
P: Pressure	**C**: Rim-mounted secondary	**C**: Rim-mounted secondary	**C**: Rim-mounted secondary	**C**: Rim-mounted secondary	**LG**: Light Gray	
					MG: Medium Gray	
					BL: Black	
					OT: Other (specify)	

Note: 1.00 bbl = 0.159 M^3 = 42.0 gal

Table 2-M: Materials Processed and Produced (Use additional sheets as necessary.)

Material Processed				Material Produced			
Description	**Chemical Composition**	**Phase (Gas, Liquid, or Solid)**	**Quantity (specify units)**	**Description**	**Chemical Composition**	**Phase**	**Quantity (specify units)**
Condensate	Mixed Hydrocarbons	Liquid	219,000 bbl/yr				
Slop Oil	Mixed Hydrocarbons	Liquid	1,532 bbl/yr				
Produced Water	Mixed Hydrocarbons	Liquid	1,532 bbl/yr				
Gas	Mixed Hydrocarbons	Gas	60 MMScf/day				

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Table 2-N: CEM Equipment

Enter Continuous Emissions Measurement (CEM) Data in this table. If CEM data will be used as part of a federally enforceable permit condition, or used to satisfy the requirements of a state or federal regulation, include a copy of the CEM's manufacturer specification sheet in the Information Used to Determine Emissions attachment. Unit and stack numbering must correspond throughout the application package. Use additional sheets if necessary.

Stack No.	Pollutant(s)	Manufacturer	Model No.	Serial No.	Sample Frequency	Averaging Time	Range	Sensitivity	Accuracy
TBD									

Table 2-O: Parametric Emissions Measurement Equipment

Unit and stack numbering must correspond throughout the application package. Use additional sheets if necessary.

Unit No.	Parameter/Pollutant Measured	Location of Measurement	Unit of Measure	Acceptable Range	Frequency of Maintenance	Nature of Maintenance	Method of Recording	Averaging Time
N/A								

Table 2-P: Greenhouse Gas Emissions

Applications submitted under 20.2.70, 20.2.72, & 20.2.74 NMAC are required to complete this Table. Power plants, Title V major sources, and PSD major sources must report and calculate all GHG emissions for each unit. Applicants must report potential emission rates in short tons per year (see Section 6.a for assistance). Include GHG emissions during Startup, Shutdown, and Scheduled Maintenance in this table. For minor source facilities that are not power plants, are not Title V, or are not PSD, there are three options for reporting GHGs 1) report GHGs for each individual piece of equipment; 2) report all GHGs from a group of unit types, for example report all combustion source GHGs as a single unit and all venting GHG as a second separate unit; OR 3) check the following box ☐ By checking this box, the applicant acknowledges the total CO2e emissions are less than 75,000 tons per year.

		CO_2 ton/yr	N_2O ton/yr	CH_4 ton/yr	SF_6 ton/yr	PFC/HFC ton/yr[2]									Total GHG Mass Basis ton/yr[4]	Total CO_2e ton/yr[5]
Unit No.	**GWPs [1]**	**1**	**298**	**25**	**22,800**	**footnote 3**										
ENG-1	mass GHG	2900	0	0											2900	
	CO_2e	2900	2	1												2903
ENG-2	mass GHG	5837	0	0											5838	
	CO_2e	5837	3	3												5843
ENG-3	mass GHG	5837	0	0											5838	
	CO_2e	5837	3	3												5843
ENG-4	mass GHG	5837	0	0											5838	
	CO_2e	5837	3	3												5843
ENG-5	mass GHG	5837	0	0											5838	
	CO_2e	5837	3	3												5843
ENG-6	mass GHG	5837	0	0											5838	
	CO_2e	5837	3	3												5843
ENG-7	mass GHG	5837	0	0											5838	
	CO_2e	5837	3	3												5843
ENG-8	mass GHG	5837	0	0											5838	
	CO_2e	5837	3	3												5843
TK-1	mass GHG	0	0	0											0	
	CO_2e	0	0	7												7
TK 2-5	mass GHG	18	0	0											18	
	CO_2e	18	0	2												20
TK-6	mass GHG	2	0	0											2	
	CO_2e	2	0	0												2
PWTK-1	mass GHG	0	0	0											0	
	CO_2e	0	0	0												0
HTR-1	mass GHG	25319	0	0											25320	
	CO_2e	25319	14	12												25345
HTR-2	mass GHG	5636	0	0											5636	
	CO_2e	5636	3	3												5642
CONDLOAD-1	mass GHG	14	0	0											15	
	CO_2e	14	0	9												23
OILLOAD-1	mass GHG	0	0	0											0	
	CO_2e	0	0	0												0
FUG-1	mass GHG	122	0	828											950	
	CO_2e	122	0	20693												20815
AMINE-1	mass GHG	57169	0	347											57516	
	CO_2e	57169	0	8677												65846
COMP	mass GHG	1	0	1											2	
	CO_2e	1	0	34												35
PLANT BD	mass GHG	1	0	1											2	
	CO_2e	1	0	20												21
TO-1	mass GHG	8133	0	0											8133	
	CO_2e	8133	5	4												8142
FL-1	mass GHG	76959	0	1											76960	
	CO_2e	76959	43	36												77038
FL-2	mass GHG	6723	0	0											6723	
	CO_2e	6723	4	3												6730
HR-1	mass GHG	--	--	--											0	
	CO_2e	--	--	--												0
MAIN-1	mass GHG	0	0	10											10	
	CO2e	0	0	250												250
UP/MAL-1	mass GHG	0	0	10											10	
	CO2e	0	0	250												250
Total	mass GHG	220960	0	1201											222161	
	CO_2e	220960	92	30021												251072

[1] **GWP** (Global Warming Potential): Applicants must use the most current GWPs codified in Table A-1 of 40 CFR part 98. GWPs are subject to change, therefore, applicants need to check 40 CFR 98 to confirm GWP values.

[2] For **HFCs** or **PFCs** describe the specific HFC or PFC compound and use a separate column for each individual compound.

[3] For each new compound, enter the appropriate GWP for each HFC or PFC compound from Table A-1 in 40 CFR 98.

[4] Green house gas emissions on a **mass basis** is the ton per year green house gas emission before adjustment with its GWP.

[5] **CO_2e** means Carbon Dioxide Equivalent and is calculated by multiplying the TPY mass emissions of the green house gas by its GWP.

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Summary of Uncontrolled Air Emission Units

Unit Name	Unit Description	Qty	Potential Emissions Uncontrolled + No Product Recovered NOx lb/hr	NOx tpy	CO lb/hr	CO tpy	VOC lb/hr	VOC tpy	SO2 lb/hr	SO2 tpy	PM lb/hr	PM tpy	PM10 lb/hr	PM10 tpy	PM2.5 lb/hr	PM2.5 tpy	H2S lb/hr	H2S tpy	HAPs lb/hr	HAPs tpy
ENG*	Worst-Case Composite Engine Emissions	N/A	3.04	13.33	7.39	32.39	3.47	15.19	0.03	0.14	0.11	0.50	0.11	0.50	0.11	0.50	--	--	1.52	6.65
ENG 3-4	Inlet Compression	2	6.09	26.66	14.79	64.77	6.94	30.39	0.06	0.28	0.23	1.00	0.23	1.00	0.23	1.00	--	--	3.03	13.29
ENG 5-8	Residue Compression	4	12.17	53.31	29.58	129.55	13.88	60.78	0.13	0.56	0.46	1.99	0.46	1.99	0.46	1.99	--	--	6.07	26.58
ENG-9	Generator Engine	1	0.82	0.21	1.65	0.41	0.64	0.16	0.01	0.00	0.06	0.02	0.06	0.02	0.06	0.02	--	--	0.09	0.02
GEN-1	Generator Engine	1	0.80	0.20	0.53	0.13	0.20	0.05	0.00	0.00	0.13	0.00	0.13	0.00	0.13	0.00	--	--	0.00	0.00
TK-1	Gunbarrel Tank	1	--	--	--	--	22.64	99.18	--	--	--	--	--	--	--	--	--	--	1.43	6.25
TK 2-5	Stabilized Condensate Tank	4	--	--	--	--	7.98	34.95	--	--	--	--	--	--	--	--	--	--	0.50	2.20
TK-6	Slop Oil Tank	1	--	--	--	--	0.85	3.72	--	--	--	--	--	--	--	--	--	--	0.05	0.23
PWTK-1	Produced Water Tank	1	--	--	--	--	0.00	0.00	--	--	--	--	--	--	--	--	--	--	0.00	0.00
HTR-1	Hot Oil Heater	1	2.42	10.61	4.07	17.82	0.27	1.17	0.14	0.60	0.37	1.61	0.37	1.61	0.37	1.61	--	--	0.09	0.40
HTR-2	Regen Gas Heater	1	1.08	4.72	0.91	3.97	0.06	0.26	0.03	0.13	0.08	0.36	0.08	0.36	0.08	0.36	--	--	0.02	0.09
CONDLOAD-1	Condensate Loadout	1	--	--	--	--	99.91	27.35	--	--	--	--	--	--	--	--	--	--	6.29	1.72
OILLOAD-1	Oil Loadout	1	--	--	--	--	99.91	0.19	--	--	--	--	--	--	--	--	--	--	6.29	0.01
FUG-1	Fugitives - OOOOa	N/A	--	--	--	--	11.70	51.24	--	--	--	--	--	--	--	--	0.00	0.00	0.11	0.47
FUG-2	Fugitives - Residue	N/A	--	--	--	--	0.05	0.23	--	--	--	--	--	--	--	--	0.00	0.00	0.00	0.00
AMINE-1	Amine Unit	1	--	--	--	--	39.84	174.52	--	--	--	--	--	--	--	--	--	--	0.27	1.20
COMP	Compressor Blowdowns	8	--	--	--	--	2.27	9.95	--	--	--	--	--	--	--	--	--	--	0.02	0.09
PLANT BD	Gas Plant Blowdown	1	--	--	--	--	32,803.52	16.40	--	--	--	--	--	--	--	--	--	--	302.73	0.15
TO-1	Thermal Oxidizer	1	1.18	5.15	0.99	4.33	0.19	0.83	--	--	--	--	--	--	--	--	--	--	0.00	0.01
FL-1	Upset/Maintenance Flare	1	0.03	0.15	0.16	0.68	0.02	0.09	--	--	--	--	--	--	--	--	--	--	0.00	0.00
FL-2	Tank Flare	1	0.01	0.03	0.03	0.14	0.00	0.02	--	--	--	--	--	--	--	--	--	--	0.00	0.00
HR-1	Road Dust	N/A	--	--	--	--	--	--	--	--	12.49	0.23	3.18	0.06	0.32	0.01	--	--	--	--
MAIN-1	Maintenance Activities	N/A	--	--	--	--	--	10.00	--	--	--	--	--	--	--	--	--	--	--	--
UP/MAL-1	Upsets/Malfunctions	N/A	--	--	--	--	--	10.00	--	--	--	--	--	--	--	--	--	--	--	--
	Facility-Wide Total Emissions Including Exempt Equipment		27.64	114.37	60.09	254.19	33114.34	546.66	0.40	1.71	13.92	5.71	4.62	5.53	1.75	5.48	0.00	0.00	328.53	59.37
	Facility-Wide Total Emissions Less Exempt Equipment		26.02	113.96	57.91	253.64	33113.50	546.45	0.39	1.71	13.73	5.69	4.43	5.52	1.56	5.47	0.00	0.00	328.44	59.35

Summary of Controlled Air Emission Units

Unit Name	Unit Description	Qty	Potential Emissions Controlled + Product Recovery NOx lb/hr	NOx tpy	CO lb/hr	CO tpy	VOC lb/hr	VOC tpy	SO2 lb/hr	SO2 tpy	PM lb/hr	PM tpy	PM10 lb/hr	PM10 tpy	PM2.5 lb/hr	PM2.5 tpy	H2S lb/hr	H2S tpy	HAPs lb/hr	HAPs tpy	CO2e
ENG*	Worst-Case Composite Engine Emissions	N/A	3.04	13.33	3.04	13.33	2.40	10.50	0.03	0.14	0.11	0.50	0.11	0.50	0.11	0.50	--	--	0.4	2.0	5,843
ENG 3-4	Inlet Compression	2	6.09	26.66	4.75	20.79	4.80	21.00	0.06	0.28	0.23	1.00	0.23	1.00	0.23	1.00	--	--	0.9	3.9	11,687
ENG 5-8	Residue Compression	4	12.17	53.31	9.49	41.58	9.59	42.01	0.13	0.56	0.46	1.99	0.46	1.99	0.46	1.99	--	--	1.8	7.8	23,374
ENG-9	Generator Engine	1	0.82	0.21	1.65	0.41	0.64	0.16	0.01	0.00	0.06	0.02	0.06	0.02	0.06	0.02	--	--	0.1	0.0	93
GEN-1	Generator Engine	1	0.80	0.20	0.53	0.13	0.20	0.05	0.00	0.00	0.13	0.00	0.13	0.00	0.13	0.00	--	--	0.0	0.0	27
TK-1	Gunbarrel Tank	1	--	--	--	--	1.13	4.96	--	--	--	--	--	--	--	--	--	--	0.1	0.3	7
TK 2-5	Stabilized Condensate Tank	4	--	--	--	--	0.40	1.75	--	--	--	--	--	--	--	--	--	--	0.0	0.1	20
TK-6	Slop Oil Tank	1	--	--	--	--	0.04	0.19	--	--	--	--	--	--	--	--	--	--	0.0	0.0	2
PWTK-1	Produced Water Tank	1	--	--	--	--	0.00	0.00	--	--	--	--	--	--	--	--	--	--	0.0	0.0	0
HTR-1	Hot Oil Heater	1	2.42	10.61	4.07	17.82	0.27	1.17	0.14	0.60	0.37	1.61	0.37	1.61	0.37	1.61	--	--	0.1	0.4	25,345
HTR-2	Regen Gas Heater	1	1.08	4.72	0.91	3.97	0.06	0.26	0.03	0.13	0.08	0.36	0.08	0.36	0.08	0.36	--	--	0.0	0.1	5,642
CONDLOAD-1	Condensate Loadout	1	--	--	--	--	33.47	9.16	--	--	--	--	--	--	--	--	--	--	2.1	0.6	23
OILLOAD-1	Oil Loadout	1	--	--	--	--	33.47	0.06	--	--	--	--	--	--	--	--	--	--	2.1	0.0	0
FUG-1	Fugitives - OOOOa	N/A	--	--	--	--	11.70	51.24	--	--	--	--	--	--	--	--	0.00	0.00	0.11	0.47	20815
FUG-2	Fugitives - Residue	N/A	--	--	--	--	0.05	0.23	--	--	--	--	--	--	--	--	0.00	0.00	0.0	0.0	0
AMINE-1	Amine Unit	1	--	--	--	--	2.79	3.93	--	--	--	--	--	--	--	--	--	--	0.0	0.0	65,846
COMP	Compressor Blowdowns	3	--	--	--	--	0.11	0.50	--	--	--	--	--	--	--	--	--	--	0.0	0.0	35
PLANT BD	Gas Plant Blowdown	1	--	--	--	--	1,640.18	0.82	--	--	--	--	--	--	--	--	--	--	15.1	0.0	21
TO-1	Thermal Oxidizer	1	1.56	6.82	1.31	5.73	0.19	0.83	64.45	235.24	0.00	0.00	0.00	0.00	0.00	0.00	--	--	0.0	0.0	8,142
FL-1	Upset/Maintenance Flare	1	251.60	26.48	1,147.00	120.70	92.94	14.14	6.15	1.31	5.75	0.88	5.75	0.88	5.75	0.88	--	--	0.0	0.0	77,038
FL-2	Tank Flare	1	0.89	3.91	4.07	17.82	0.00	0.02	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.01	--	--	0.0	0.0	6,730
HR-1	Road Dust	N/A	--	--	--	--	--	--	--	--	12.49	0.23	3.18	0.06	0.32	0.01	--	--	--	--	--
MAIN-1	Maintenance Activities	N/A	--	--	--	--	--	10.00	--	--	--	--	--	--	--	--	--	--	--	--	250
UP/MAL-1	Upsets/Malfunctions	N/A	--	--	--	--	--	10.00	--	--	--	--	--	--	--	--	--	--	--	--	250
	Facility-Wide Total Emissions Including Exempt Equipment		280.48	146.24	1,176.82	242.28	1,834.43	182.98	71.00	238.26	19.68	6.59	10.37	6.42	7.51	6.37	0.00	0.00	22.90	15.73	251,192
	Facility-Wide Total Emissions Less Exempt Equipment		278.85	145.83	1,174.63	241.74	1,833.59	182.77	70.99	238.26	19.49	6.58	10.18	6.41	7.32	6.35	0.00	0.00	22.81	15.71	251,072

* - Composite emissions represent worse case engine emissions

Summary of Uncontrolled HAP Emissions

Potential Emissions
Uncontrolled + No Product Recovered

Unit Name	Unit Description	Qty	Formaldehyde lb/hr	Formaldehyde tpy	Acetaldehyde lb/hr	Acetaldehyde tpy	Acrolein lb/hr	Acrolein tpy	Benzene lb/hr	Benzene tpy	Toluene lb/hr	Toluene tpy	Ethylbenzene lb/hr	Ethylbenzene tpy	Xylenes lb/hr	Xylenes tpy	n-Hexane lb/hr	n-Hexane tpy	2,2,4-TMP lb/hr	2,2,4-TMP tpy
ENG*	Worst-Case Composite Engine Emissions	N/A	1.34	5.86	0.10	0.42	0.06	0.26	0.01	0.02	0.00	0.02	0.00	0.00	0.00	0.01	0.01	0.06	--	--
ENG 3-4	Inlet Compression	2	2.68	11.73	0.19	0.83	0.12	0.51	0.01	0.04	0.01	0.04	0.00	0.00	0.00	0.02	0.03	0.11	--	--
ENG 5-8	Residue Compression	4	5.35	23.45	0.38	1.67	0.23	1.03	0.02	0.09	0.02	0.08	0.00	0.01	0.01	0.04	0.05	0.22	--	--
ENG-9	Generator Engine	1	0.07	0.02	0.01	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	N/A	N/A	--	--
GEN-1	Generator Engine	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	N/A	N/A	0.00	0.00	N/A	N/A	--	--
TK-1	Gunbarrel Tank	1	--	--	--	--	--	--	0.23	0.99	0.23	0.99	0.02	0.10	0.02	0.10	0.91	3.97	0.02	0.10
TK 2-5	Stabilized Condensate Tank	4	--	--	--	--	--	--	0.08	0.35	0.08	0.35	0.01	0.03	0.01	0.03	0.32	1.40	0.01	0.03
TK-6	Slop Oil Tank	1	--	--	--	--	--	--	0.01	0.04	0.01	0.04	0.00	0.00	0.00	0.00	0.03	0.15	0.00	0.00
PWTK-1	Produced Water Tank	1	--	--	--	--	--	--	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
HTR-1	Hot Oil Heater	1	0.00	0.02	--	--	--	--	0.00	0.00	0.00	0.00	--	--	--	--	0.09	0.38	--	--
HTR-2	Regen Gas Heater	1	0.00	0.00	--	--	--	--	0.00	0.00	0.00	0.00	--	--	--	--	0.02	0.09	--	--
CONDLOAD-1	Condensate Loadout	1	--	--	--	--	--	--	1.00	0.27	1.00	0.27	0.10	0.03	0.10	0.03	4.00	1.09	0.10	0.03
OILLOAD-1	Oil Loadout	1	--	--	--	--	--	--	1.00	0.00	1.00	0.00	0.10	0.00	0.10	0.00	4.00	0.01	0.10	0.00
FUG-1	Fugitives - OOOOa	N/A	--	--	--	--	--	--	0.04	0.16	0.01	0.02	0.00	0.00	0.00	0.00	0.06	0.28	0.00	0.00
FUG-2	Fugitives - Residue	N/A	--	--	--	--	--	--	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AMINE-1	Amine Unit	1	--	--	--	--	--	--	0.03	0.14	0.03	0.14	0.00	0.01	0.01	0.04	0.16	0.70	0.04	0.17
COMP	Compressor Blowdowns	3	--	--	--	--	--	--	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.00
PLANT BD	Gas Plant Blowdown	1	--	--	--	--	--	--	105.62	0.05	15.19	0.01	0.00	0.00	0.00	0.00	181.91	0.09	0.00	0.00
TO-1	Thermal Oxidizer	1	--	--	--	--	--	--	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
FL-1	Upset/Maintenance Flare	1	--	--	--	--	--	--	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
FL-2	Tank Flare	1	--	--	--	--	--	--	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
HR-1	Road Dust	N/A	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MAIN-1	Maintenance Activities	N/A	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
UP/MAL-1	Upsets/Malfunctions	N/A	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Facility-Wide Total HAP Emissions Including Exempt Equipment			9.44	41.08	0.68	2.92	0.42	1.80	108.05	2.18	17.58	1.98	0.24	0.19	0.26	0.27	191.59	8.57	0.27	0.33
Facility-Wide Total HAP Emissions Less Exempt Equipment			9.37	41.06	0.67	2.92	0.41	1.80	108.04	2.18	17.58	1.97	0.24	0.19	0.26	0.27	191.59	8.57	0.27	0.33

Summary of Controlled HAP Emissions

Potential Emissions
Controlled + Product Recovery

Unit Name	Unit Description	Qty	Formaldehyde lb/hr	Formaldehyde tpy	Acetaldehyde lb/hr	Acetaldehyde tpy	Acrolein lb/hr	Acrolein tpy	Benzene lb/hr	Benzene tpy	Toluene lb/hr	Toluene tpy	Ethylbenzene lb/hr	Ethylbenzene tpy	Xylenes lb/hr	Xylenes tpy	n-Hexane lb/hr	n-Hexane tpy	2,2,4-TMP lb/hr	2,2,4-TMP tpy
ENG*	Worst-Case Composite Engine Emissions	N/A	0.32	1.40	0.10	0.42	0.06	0.26	0.01	0.02	0.00	0.02	0.00	0.00	0.00	0.01	0.01	0.06	--	--
ENG 3-4	Inlet Compression	2	0.54	2.35	0.19	0.83	0.12	0.51	0.01	0.04	0.01	0.04	0.00	0.00	0.00	0.02	0.03	0.11	--	--
ENG 5-8	Residue Compression	4	1.07	4.69	0.38	1.67	0.23	1.03	0.02	0.09	0.02	0.08	0.00	0.01	0.01	0.04	0.05	0.22	--	--
ENG-9	Generator Engine	1	0.07	0.02	0.01	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	N/A	N/A	--	--
GEN-1	Generator Engine	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	N/A	N/A	0.00	0.00	N/A	N/A	--	--
TK-1	Gunbarrel Tank	1	--	--	--	--	--	--	0.01	0.05	0.01	0.05	0.00	0.00	0.00	0.00	0.05	0.20	0.00	0.00
TK 2-5	Stabilized Condensate Tank	4	--	--	--	--	--	--	0.00	0.02	0.00	0.02	0.00	0.00	0.00	0.00	0.02	0.07	0.00	0.00
TK-6	Slop Oil Tank	1	--	--	--	--	--	--	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00
PWTK-1	Produced Water Tank	1	--	--	--	--	--	--	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
HTR-1	Hot Oil Heater	1	0.00	0.02	--	--	--	--	0.00	0.00	0.00	0.00	--	--	--	--	0.09	0.38	--	--
HTR-2	Regen Gas Heater	1	0.00	0.00	--	--	--	--	0.00	0.00	0.00	0.00	--	--	--	--	0.02	0.09	--	--
CONDLOAD-1	Condensate Loadout	1	--	--	--	--	--	--	0.33	0.09	0.33	0.09	0.03	0.01	0.03	0.01	1.34	0.37	0.03	0.01
OILLOAD-1	Oil Loadout	1	--	--	--	--	--	--	0.33	0.00	0.33	0.00	0.03	0.00	0.03	0.00	1.34	0.00	0.03	0.00
FUG-1	Fugitives - OOOOa	N/A	--	--	--	--	--	--	0.04	0.16	0.01	0.02	0.00	0.00	0.00	0.00	0.06	0.28	0.00	0.00
FUG-2	Fugitives - Residue	N/A	--	--	--	--	--	--	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AMINE-1	Amine Unit	1	--	--	--	--	--	--	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.00
COMP	Compressor Blowdowns	3	--	--	--	--	--	--	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PLANT BD	Gas Plant Blowdown	1	--	--	--	--	--	--	5.28	0.00	0.76	0.00	0.00	0.00	0.00	0.00	9.10	0.00	0.00	0.00
TO-1	Thermal Oxidizer	1	--	--	--	--	--	--	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
FL-1	Upset/Maintenance Flare	1	--	--	--	--	--	--	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
FL-2	Tank Flare	1	--	--	--	--	--	--	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
HR-1	Road Dust	N/A	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MAIN-1	Maintenance Activities	N/A	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
UP/MAL-1	Upsets/Malfunctions	N/A	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Facility-Wide Total HAP Emissions Including Exempt Equipment			2.00	8.47	0.68	2.92	0.42	1.80	6.05	0.49	1.49	0.33	0.07	0.03	0.08	0.08	12.10	1.81	0.07	0.02
Facility-Wide Total HAP Emissions Less Exempt Equipment			1.93	8.46	0.67	2.92	0.41	1.80	6.04	0.49	1.48	0.33	0.07	0.03	0.08	0.08	12.10	1.81	0.07	0.02

* - Composite emissions represent worse case engine emissions

Summary of Compressor Engine Air Emission Units

Option Number	Unit Name	Make & Model	Qty	Potential Emissions Uncontrolled + No Product Recovered NOx lb/hr	NOx tpy	CO lb/hr	CO tpy	VOC lb/hr	VOC tpy	SO2 lb/hr	SO2 tpy	PM10 lb/hr	PM10 tpy
1	ENG-1	Caterpillar G3508B		1.52	6.66	3.93	17.19	1.70	7.46	0.02	0.07	0.06	0.25
		Option 1 Total:	1	1.52	6.66	3.93	17.19	1.70	7.46	0.02	0.07	0.06	0.25
2	ENG-2	Caterpillar G3516		3.04	13.33	7.39	32.39	3.47	15.19	0.03174	0.13902	0.11	0.50
		Option 2 Total:	1	3.04	13.33	7.39	32.39	3.47	15.19	0.03	0.14	0.11	0.50
	Worst-Case Composite Engine Emissions			3.04	13.33	7.39	32.39	3.47	15.19	0.03	0.14	0.11	0.50

Option Number	Unit Name	Make & Model	Qty	Potential Emissions Controlled + Product Recovery NOx lb/hr	NOx tpy	CO lb/hr	CO tpy	VOC lb/hr	VOC tpy	SO2 lb/hr	SO2 tpy	PM10 lb/hr	PM10 tpy	CO2e tpy
1	ENG-1	Caterpillar G3508B		1.52	6.66	3.04	13.33	1.38	6.06	0.02	0.07	0.06	0.25	2903
		Option 1 Total:	1	1.52	6.66	3.04	13.33	1.38	6.06	0.02	0.07	0.06	0.25	2903
2	ENG-2	Caterpillar G3516		3.04	13.33	2.37	10.40	2.40	10.50	0.03	0.14	0.11	0.50	5843
		Option 2 Total:	1	3.04	13.33	2.37	10.40	2.40	10.50	0.03	0.14	0.11	0.50	5843
	Worst-Case Composite Engine Emissions			3.04	13.33	3.04	13.33	2.40	10.50	0.03	0.14	0.11	0.50	5843

Engine Emission Detail Sheet

Item	Value
Source Name	ENG-1
Description	Compressor Engine
Engine Use	Inlet Compression
Quantity	1
Make	Caterpillar
Model	Caterpillar G3508B
Serial Number	TBD
Manufacture Date	After 7/1/2010
Fuel Type	Natural Gas
Engine Type	4SLB

Item	Value	Units	Source
Rated Horsepower	690	hp	Manufacturer
Heat Rate	5.66	MMBtu/hr	Calculated
Fuel Consumption	8203	Btu/hp-hr	Manufacturer
Fuel Use	5307.5	scf/hr	Calculated
Fuel Heat Value	1066.43	btu/scf	Gas Analysis
Emisson Controls	Catalyst/AFR		Manufacturer
Control Efficiency CH2O	50%		Manufacturer/Permit Condition
Control Efficiency NOx	0%		Manufacturer/JJJJ
Control Efficiency VOC	19%		Manufacturer/JJJJ
Control Efficiency CO	22%		Manufacturer/JJJJ
Engine Speed	1400	RPM	Manufacturer
Potential Operation	8760	hr/yr	
Sulfur Content	9,476	grains/MMscf	Gas Analysis with Margin
Sulfur Margin	400%	%	

Total Potential Emissions

Pollutant	Uncontrolled Emissions		Controlled Emissions	
	(lb/hr)	(tpy)	(lb/hr)	(tpy)
NOx	1.52	6.66	1.52	6.66
VOC (less formaldehyde)	1.07	4.66	1.07	4.66
Total VOC	1.70	7.46	1.38	6.06
CO	3.93	17.19	3.04	13.33
SO2	0.02	0.07	0.02	0.07
PM10	0.06	0.25	0.06	0.25
Formaldehyde	0.64	2.80	0.32	1.40
Acetaldehyde	0.05	0.21	0.05	0.21
Acrolein	0.03	0.13	0.03	0.13
Benzene	0.00	0.01	0.00	0.01
Toluene	0.00	0.01	0.00	0.01
Ethylbenzene	0.00	0.00	0.00	0.00
Xylene	0.00	0.00	0.00	0.00
n-Hexane	0.01	0.03	0.01	0.03
Total HAPs	0.73	3.19	0.41	1.79

Potential Emissions Per Engine

Pollutant	Uncontrolled Emissions				Controlled Emissions				Source of Emission Factor
	EF	Units	(lb/hr)	(tpy)	EF	Units	(lb/hr)	(tpy)	
NOx	1.00*	g/hp-hr	1.52	6.66	1.00	g/hp-hr	1.52	6.66	40 CFR 60 Subpart JJJJ
VOC (less formaldehyde)	0.70*	g/hp-hr	1.07	4.66	0.70	g/hp-hr	1.07	4.66	40 CFR 60 Subpart JJJJ
Total VOC***	1.12	g/hp-hr	1.70	7.46	0.91	g/hp-hr	1.38	6.06	40 CFR 60 Subpart JJJJ + CH2O
CO	2.58**	g/hp-hr	3.93	17.19	2.00	g/hp-hr	3.04	13.33	40 CFR 60 Subpart JJJJ
SO2****	2.79E-03	lb/mmBtu	0.02	0.07	2.79E-03	lb/mmBtu	0.02	0.07	EPA AP-42 Table 3.2-2
PM10*****	9.99E-03	lb/mmBtu	0.06	0.25	9.99E-03	lb/mmBtu	0.06	0.25	EPA AP-42 Table 3.2-2
Formaldehyde	0.42	g/hp-hr	0.64	2.80	0.21	g/hp-hr	0.32	1.40	Permit Condition
Acetaldehyde	8.36E-03	lb/mmBtu	0.05	0.21	8.36E-03	lb/mmBtu	0.05	0.21	EPA AP-42 Table 3.2-2
Acrolein	5.14E-03	lb/mmBtu	0.03	0.13	5.14E-03	lb/mmBtu	0.03	0.13	EPA AP-42 Table 3.2-2
Benzene	4.40E-04	lb/mmBtu	0.00	0.01	4.40E-04	lb/mmBtu	0.00	0.01	EPA AP-42 Table 3.2-2
Toluene	4.08E-04	lb/mmBtu	0.00	0.01	4.08E-04	lb/mmBtu	0.00	0.01	EPA AP-42 Table 3.2-2
Ethylbenzene	3.97E-05	lb/mmBtu	0.00	0.00	3.97E-05	lb/mmBtu	0.00	0.00	EPA AP-42 Table 3.2-2
Xylene	1.84E-04	lb/mmBtu	0.00	0.00	1.84E-04	lb/mmBtu	0.00	0.00	EPA AP-42 Table 3.2-2
n-Hexane	1.11E-03	lb/mmBtu	0.01	0.03	1.11E-03	lb/mmBtu	0.01	0.03	EPA AP-42 Table 3.2-2
Total HAPs			0.73	3.19			0.41	1.79	

* - Uncontrolled and controlled NOx and VOC emission factors based on 40 CFR 60 Subpart JJJJ standards as manufacturer emission factors are lower than JJJJ standards.
** - Uncontrolled and controlled emission factors for CO were taken from the Manufacturer technical data sheets and 40 CFR 60 Subpart JJJJ emission standards, respectively.
*** - Total VOC emissions were calculated to include formaldehyde.
**** - Sulfur emission factor from AP-42 Table 1.4-2 is ratio adjusted based on the max sulfur content when sulfur content is greater than 2,000 grains/MMscf.
***** - PM10 emissions include filterable and condensable particulates.

Sample Calculation for NOx

1.00 g/hp-hr * 690 hp / 453.59 g/lb * 8760 hr/yr / 2000 lb/ton = 6.66 tpy

Engine Emission Detail Sheet

Item	Value
Source Name	ENG-2
Description	Compressor Engine
Engine Use	Inlet Compression
Quantity	1
Make	Caterpillar
Model	Caterpillar G3516
Serial Number	TBD
Manufacture Date	After 7/1/2007
Fuel Type	Natural Gas
Engine Type	4SLB

Item	Value	Units	Source
Rated Horsepower	1380	hp	Manufacturer
Heat Rate	11.39	MMBtu/hr	Calculated
Fuel Consumption	8256	Btu/hp-hr	Manufacturer
Fuel Use	10683.54	scf/hr	Calculated
Fuel Heat Value	1066.43	btu/scf	Gas Analysis
Emisson Controls	Oxidation Catalyst		Manufacturer
Control Efficiency CH2O	80%		Manufacturer/Permit Condition
Control Efficiency NOx	0%		Manufacturer/JJJJ
Control Efficiency VOC	31%		Manufacturer/JJJJ
Control Efficiency CO	68%		Manufacturer/Permit Condition
Engine Speed	1400	RPM	Manufacturer
Potential Operation	8760	hr/yr	
Sulfur Content	9,476	grains/MMscf	Gas Analysis with Margin
Sulfur Margin	400%	%	

Total Potential Emissions

Pollutant	Uncontrolled Emissions		Controlled Emissions	
	(lb/hr)	(tpy)	(lb/hr)	(tpy)
NOx	3.04	13.33	3.04	13.33
VOC (less formaldehyde)	2.13	9.33	2.13	9.33
Total VOC	3.47	15.19	2.40	10.50
CO	7.39	32.39	2.37	10.40
SO2	0.03	0.14	0.03	0.14
PM10	0.11	0.50	0.11	0.50
Formaldehyde	1.34	5.86	0.27	1.17
Acetaldehyde	0.10	0.42	0.10	0.42
Acrolein	0.06	0.26	0.06	0.26
Benzene	0.01	0.02	0.01	0.02
Toluene	0.00	0.02	0.00	0.02
Ethylbenzene	0.00	0.00	0.00	0.00
Xylene	0.00	0.01	0.00	0.01
n-Hexane	0.01	0.06	0.01	0.06
Total HAPs	1.52	6.65	0.45	1.96

Potential Emissions Per Engine

Pollutant	Uncontrolled Emissions				Controlled Emissions				Source of Emission Factor
	EF	Units	(lb/hr)	(tpy)	EF	Units	(lb/hr)	(tpy)	
NOx	1.00*	g/hp-hr	3.04	13.33	1.00	g/hp-hr	3.04	13.33	40 CFR 60 Subpart JJJJ
VOC (less formaldehyde)	0.70*	g/hp-hr	2.13	9.33	0.70	g/hp-hr	2.13	9.33	40 CFR 60 Subpart JJJJ
Total VOC***	1.14	g/hp-hr	3.47	15.19	0.79	g/hp-hr	2.40	10.50	40 CFR 60 Subpart JJJJ + CH2O
CO	2.43**	g/hp-hr	7.39	32.39	0.78****	g/hp-hr	2.37	10.40	Permit Condition
SO2*****	2.79E-03	lb/mmBtu	0.03	0.14	2.79E-03	lb/mmBtu	0.03	0.14	EPA AP-42 Table 3.2-2
PM10******	9.99E-03	lb/mmBtu	0.11	0.50	9.99E-03	lb/mmBtu	0.11	0.50	EPA AP-42 Table 3.2-2
Formaldehyde	4.40E-01	g/hp-hr	1.34	5.86	8.80E-02	g/hp-hr	0.27	1.17	Permit Condition
Acetaldehyde	8.36E-03	lb/mmBtu	0.10	0.42	8.36E-03	lb/mmBtu	0.10	0.42	EPA AP-42 Table 3.2-2
Acrolein	5.14E-03	lb/mmBtu	0.06	0.26	5.14E-03	lb/mmBtu	0.06	0.26	EPA AP-42 Table 3.2-2
Benzene	4.40E-04	lb/mmBtu	0.01	0.02	4.40E-04	lb/mmBtu	0.01	0.02	EPA AP-42 Table 3.2-2
Toluene	4.08E-04	lb/mmBtu	0.00	0.02	4.08E-04	lb/mmBtu	0.00	0.02	EPA AP-42 Table 3.2-2
Ethylbenzene	3.97E-05	lb/mmBtu	0.00	0.00	3.97E-05	lb/mmBtu	0.00	0.00	EPA AP-42 Table 3.2-2
Xylene	1.84E-04	lb/mmBtu	0.00	0.01	1.84E-04	lb/mmBtu	0.00	0.01	EPA AP-42 Table 3.2-2
n-Hexane	1.11E-03	lb/mmBtu	0.01	0.06	1.11E-03	lb/mmBtu	0.01	0.06	EPA AP-42 Table 3.2-2
Total HAPs			1.52	6.65			0.45	1.96	

* - Uncontrolled and controlled emission factors for NOx and VOC are based on JJJJ standards as manufacturer uncontrolled emission factors are lower than JJJJ emission standards.
** - Uncontrolled emission factor for CO was taken from the Manufacturer technical data sheets. Controlled emission factor for CO is a permit condition requested in this application.
*** - Uncontrolled and controlled emission factor for Total VOC was calculated to include formaldehyde.
**** - Controlled CO emission factor is a permit condition requested in this application.
***** - Sulfur emission factor from AP-42 Table 1.4-2 is ratio adjusted based on the max sulfur content when sulfur content is greater than 2,000 grains/MMscf.
****** - PM10 emissions include filterable and condensable particulates.

Sample Calculation for NOx

1.00 g/hp-hr * 1380 hp / 453.59 g/lb * 8760 hr/yr / 2000 lb/ton = 13.33 tpy

Engine Emission Detail Sheet

Item	Value
Source Name	ENG 3-4
Description	Compressor Engine
Engine Use	Inlet Compression
Quantity	2
Make	Caterpillar
Model	Caterpillar G3516
Serial Number	TBD
Manufacture Date	After 7/1/2007
Fuel Type	Natural Gas
Engine Type	4SLB

Item	Value	Units	Source
Rated Horsepower	1380	hp	Manufacturer
Heat Rate	11.39	MMBtu/hr	Calculated
Fuel Consumption	8256	Btu/hp-hr	Manufacturer
Fuel Use	10683.54	scf/hr	Calculated
Fuel Heat Value	1066.43	btu/scf	Gas Analysis
Emisson Controls	Oxidation Catalyst		Manufacturer
Control Efficiency CH2O	80%		Manufacturer/Permit Condition
Control Efficiency NOx	0%		Manufacturer/JJJJ
Control Efficiency VOC	31%		Manufacturer/JJJJ
Control Efficiency CO	68%		Manufacturer/Permit Condition
Engine Speed	1400	RPM	Manufacturer
Potential Operation	8760	hr/yr	
Sulfur Content	9,476	grains/MMscf	Gas Analysis with Margin
Sulfur Margin	400%	%	

Total Potential Emissions

Pollutant	Uncontrolled Emissions		Controlled Emissions	
	(lb/hr)	(tpy)	(lb/hr)	(tpy)
NOx	6.09	26.66	6.09	26.66
VOC (less formaldehyde)	4.26	18.66	4.26	18.66
Total VOC	6.94	30.39	4.80	21.00
CO	14.79	64.77	4.75	20.79
SO2	0.06	0.28	0.06	0.28
PM10	0.23	1.00	0.23	1.00
Formaldehyde	2.68	11.73	0.54	2.35
Acetaldehyde	0.19	0.83	0.19	0.83
Acrolein	0.12	0.51	0.12	0.51
Benzene	0.01	0.04	0.01	0.04
Toluene	0.01	0.04	0.01	0.04
Ethylbenzene	0.00	0.00	0.00	0.00
Xylene	0.00	0.02	0.00	0.02
n-Hexane	0.03	0.11	0.03	0.11
Total HAPs	3.03	13.29	0.89	3.91

Potential Emissions Per Engine

Pollutant	Uncontrolled Emissions				Controlled Emissions				Source of Emission Factor
	EF	Units	(lb/hr)	(tpy)	EF	Units	(lb/hr)	(tpy)	
NOx	1.00*	g/hp-hr	3.04	13.33	1.00	g/hp-hr	3.04	13.33	40 CFR 60 Subpart JJJJ
VOC (less formaldehyde)	0.70*	g/hp-hr	2.13	9.33	0.70	g/hp-hr	2.13	9.33	40 CFR 60 Subpart JJJJ
Total VOC***	1.14	g/hp-hr	3.47	15.19	0.79	g/hp-hr	2.40	10.50	40 CFR 60 Subpart JJJJ + CH2O
CO	2.43**	g/hp-hr	7.39	32.39	0.78	g/hp-hr	2.37	10.40	Permit Condition
SO2*****	2.79E-03	lb/mmBtu	0.03	0.14	2.79E-03	lb/mmBtu	0.03	0.14	EPA AP-42 Table 3.2-2
PM10******	9.99E-03	lb/mmBtu	0.11	0.50	9.99E-03	lb/mmBtu	0.11	0.50	EPA AP-42 Table 3.2-2
Formaldehyde	4.40E-01	g/hp-hr	1.34	5.86	8.80E-02	g/hp-hr	0.27	1.17	Permit Condition
Acetaldehyde	8.36E-03	lb/mmBtu	0.10	0.42	8.36E-03	lb/mmBtu	0.10	0.42	EPA AP-42 Table 3.2-2
Acrolein	5.14E-03	lb/mmBtu	0.06	0.26	5.14E-03	lb/mmBtu	0.06	0.26	EPA AP-42 Table 3.2-2
Benzene	4.40E-04	lb/mmBtu	0.01	0.02	4.40E-04	lb/mmBtu	0.01	0.02	EPA AP-42 Table 3.2-2
Toluene	4.08E-04	lb/mmBtu	0.00	0.02	4.08E-04	lb/mmBtu	0.00	0.02	EPA AP-42 Table 3.2-2
Ethylbenzene	3.97E-05	lb/mmBtu	0.00	0.00	3.97E-05	lb/mmBtu	0.00	0.00	EPA AP-42 Table 3.2-2
Xylene	1.84E-04	lb/mmBtu	0.00	0.01	1.84E-04	lb/mmBtu	0.00	0.01	EPA AP-42 Table 3.2-2
n-Hexane	1.11E-03	lb/mmBtu	0.01	0.06	1.11E-03	lb/mmBtu	0.01	0.06	EPA AP-42 Table 3.2-2
Total HAPs			1.52	6.65			0.45	1.96	

* - Uncontrolled and controlled emission factors for NOx and VOC are based on JJJJ standards as manufacturer uncontrolled emission factors are lower than JJJJ emission standards.
** - Uncontrolled emission factor for CO was taken from the Manufacturer technical data sheets. Controlled emission factor for CO is a permit condition requested in this application.
*** - Uncontrolled and controlled emission factor for Total VOC was calculated to include formaldehyde.
**** - Controlled CO emission factor is a permit condition requested in this application.
***** - Sulfur emission factor from AP-42 Table 1.4-2 is ratio adjusted based on the max sulfur content when sulfur content is greater than 2,000 grains/MMscf.
****** - PM10 emissions include filterable and condensable particulates.

Sample Calculation for NOx
1.00 g/hp-hr * 1380 hp / 453.59 g/lb * 8760 hr/yr / 2000 lb/ton = 13.33 tpy

Engine Emission Detail Sheet

Item	Value
Source Name	ENG 5-8
Description	Compressor Engine
Engine Use	Residue Compression
Quantity	4
Make	Caterpillar
Model	Caterpillar G3516
Serial Number	TBD
Manufacture Date	11/20/2017, After 7/1/2007
Fuel Type	Natural Gas
Engine Type	4SLB

Item	Value	Units	Source
Rated Horsepower	1380	hp	Manufacturer
Heat Rate	11.39	MMBtu/hr	Calculated
Fuel Consumption	8256	Btu/hp-hr	Manufacturer
Fuel Use	10683.54	scf/hr	Calculated
Fuel Heat Value	1066.43	btu/scf	Gas Analysis
Emisson Controls	Oxidation Catalyst		Manufacturer
Control Efficiency CH2O	80%		Manufacturer/Permit Condition
Control Efficiency NOx	0%		Manufacturer/JJJJ
Control Efficiency VOC	31%		Manufacturer/JJJJ
Control Efficiency CO	68%		Manufacturer/Permit Condition
Engine Speed	1400	RPM	Manufacturer
Potential Operation	8760	hr/yr	
Sulfur Content	9,476	grains/MMscf	AP42 with margin
Sulfur Margin	400%	%	

Total Potential Emissions

Pollutant	Uncontrolled Emissions		Controlled Emissions	
	(lb/hr)	(tpy)	(lb/hr)	(tpy)
NOx	12.17	53.31	12.17	53.31
VOC (less formaldehyde)	8.52	37.32	8.52	37.32
Total VOC	13.88	60.78	9.59	42.01
CO	29.58	129.55	9.49	41.58
SO2	0.13	0.56	0.13	0.56
PM10	0.46	1.99	0.46	1.99
Formaldehyde	5.35	23.45	1.07	4.69
Acetaldehyde	0.38	1.67	0.38	1.67
Acrolein	0.23	1.03	0.23	1.03
Benzene	0.02	0.09	0.02	0.09
Toluene	0.02	0.08	0.02	0.08
Ethylbenzene	0.00	0.01	0.00	0.01
Xylene	0.01	0.04	0.01	0.04
n-Hexane	0.05	0.22	0.05	0.22
Total HAPs	6.07	26.58	1.79	7.82

Potential Emissions Per Engine

Pollutant	Uncontrolled Emissions				Controlled Emissions				Source of Emission Factor
	EF	Units	(lb/hr)	(tpy)	EF	Units	(lb/hr)	(tpy)	
NOx	1.00*	g/hp-hr	3.04	13.33	1.00	g/hp-hr	3.04	13.33	40 CFR 60 Subpart JJJJ
VOC (less formaldehyde)	0.70*	g/hp-hr	2.13	9.33	0.70	g/hp-hr	2.13	9.33	40 CFR 60 Subpart JJJJ
Total VOC***	1.14	g/hp-hr	3.47	15.19	0.79	g/hp-hr	2.40	10.50	40 CFR 60 Subpart JJJJ + CH2O
CO	2.43**	g/hp-hr	7.39	32.39	0.78	g/hp-hr	2.37	10.40	Permit Condition
SO2*****	2.79E-03	lb/mmBtu	0.03	0.14	2.79E-03	lb/mmBtu	0.03	0.14	EPA AP-42 Table 3.2-2
PM10******	9.99E-03	lb/mmBtu	0.11	0.50	9.99E-03	lb/mmBtu	0.11	0.50	EPA AP-42 Table 3.2-2
Formaldehyde	4.40E-01	g/hp-hr	1.34	5.86	8.80E-02	g/hp-hr	0.27	1.17	Permit Condition
Acetaldehyde	8.36E-03	lb/mmBtu	0.10	0.42	8.36E-03	lb/mmBtu	0.10	0.42	EPA AP-42 Table 3.2-2
Acrolein	5.14E-03	lb/mmBtu	0.06	0.26	5.14E-03	lb/mmBtu	0.06	0.26	EPA AP-42 Table 3.2-2
Benzene	4.40E-04	lb/mmBtu	0.01	0.02	4.40E-04	lb/mmBtu	0.01	0.02	EPA AP-42 Table 3.2-2
Toluene	4.08E-04	lb/mmBtu	0.00	0.02	4.08E-04	lb/mmBtu	0.00	0.02	EPA AP-42 Table 3.2-2
Ethylbenzene	3.97E-05	lb/mmBtu	0.00	0.00	3.97E-05	lb/mmBtu	0.00	0.00	EPA AP-42 Table 3.2-2
Xylene	1.84E-04	lb/mmBtu	0.00	0.01	1.84E-04	lb/mmBtu	0.00	0.01	EPA AP-42 Table 3.2-2
n-Hexane	1.11E-03	lb/mmBtu	0.01	0.06	1.11E-03	lb/mmBtu	0.01	0.06	EPA AP-42 Table 3.2-2
Total HAPs			1.52	6.65			0.45	1.96	

* - Uncontrolled and controlled emission factors for NOx and VOC are based on JJJJ standards as manufacturer uncontrolled emission factors are lower than JJJJ emission standards.
** - Uncontrolled emission factor for CO was taken from the Manufacturer technical data sheets. Controlled emission factor for CO is a permit condition requested in this application.
*** - Uncontrolled and controlled emission factor for Total VOC was calculated to include formaldehyde.
**** - Controlled CO emission factor is a permit condition requested in this application.
***** - Sulfur emission factor from AP-42 Table 1.4-2 is ratio adjusted based on the max sulfur content when sulfur content is greater than 2,000 grains/MMscf.
****** - PM10 emissions include filterable and condensable particulates.

Sample Calculation for NOx

1.00 g/hp-hr * 1380 hp / 453.59 g/lb * 8760 hr/yr / 2000 lb/ton = 13.33 tpy

Engine Emission Detail Sheet

Item	Value
Source Name	ENG-9
Description	Generator Engine
Engine Use	Generator
Quantity	1
Make	Olympian
Model	250LG6
Serial Number	TBD
Manufacture Date	After 7/1/2010
Fuel Type	Natural Gas
Engine Type	4SRB

Item	Value	Units	Source
Rated Horsepower	374	hp	Manufacturer
Heat Rate	3.18	MMBtu/hr	Calculated
Fuel Consumption	8506	Btu/hp-hr	Manufacturer
Fuel Use	2983	scf/hr	Calculated
Fuel Heat Value	1066.43	btu/scf	Gas Analysis
Emission Controls	TBD		Manufacturer
Control Efficiency CH2O	0%		AP42
Control Efficiency NOx	0%		JJJJ
Control Efficiency VOC	0%		JJJJ
Control Efficiency CO	0%		JJJJ
Engine Speed	1800	RPM	Manufacturer
Potential Operation	499	hr/yr	
Sulfur Content	8,000	grains/MMscf	AP42 with margin
Sulfur Margin	400%	%	

Potential Emissions Per Engine

Pollutant	Uncontrolled Emissions				Controlled Emissions				Source of Emission Factor
	EF	Units	(lb/hr)	(tpy)	EF	Units	(lb/hr)	(tpy)	
Nox	1.00*	g/hp-hr	0.82	0.21	1.00	g/hp-hr	0.82	0.21	40 CFR 60 Subpart JJJJ
VOC (less formaldehyde)	0.70*	g/hp-hr	0.58	0.14	0.70	g/hp-hr	0.58	0.14	40 CFR 60 Subpart JJJJ
Total VOC**	0.78	g/hp-hr	0.64	0.16	0.78	g/hp-hr	0.64	0.16	40 CFR 60 Subpart JJJJ + CH2O
CO	2.00*	g/hp-hr	1.65	0.41	2.00	g/hp-hr	1.65	0.41	40 CFR 60 Subpart JJJJ
SO2****	2.35E-03	lb/mmBtu	0.01	0.00	2.35E-03	lb/mmBtu	0.01	0.00	EPA AP-42 Table 3.2-3
PM10*****	1.94E-02	lb/mmBtu	0.06	0.02	1.94E-02	lb/mmBtu	0.06	0.02	EPA AP-42 Table 3.2-3
Formaldehyde	2.05E-02	lb/mmBtu	0.07	0.02	2.05E-02	lb/mmBtu	0.07	0.02	EPA AP-42 Table 3.2-3
Acetaldehyde	2.79E-03	lb/mmBtu	0.01	0.00	2.79E-03	lb/mmBtu	0.01	0.00	EPA AP-42 Table 3.2-3
Acrolein	2.63E-03	lb/mmBtu	0.01	0.00	2.63E-03	lb/mmBtu	0.01	0.00	EPA AP-42 Table 3.2-3
Benzene	1.58E-03	lb/mmBtu	0.01	0.00	1.58E-03	lb/mmBtu	0.01	0.00	EPA AP-42 Table 3.2-3
Toluene	5.58E-04	lb/mmBtu	0.00	0.00	5.58E-04	lb/mmBtu	0.00	0.00	EPA AP-42 Table 3.2-3
Ethylbenzene	2.48E-05	lb/mmBtu	0.00	0.00	2.48E-05	lb/mmBtu	0.00	0.00	EPA AP-42 Table 3.2-3
Xylene	1.95E-04	lb/mmBtu	0.00	0.00	1.95E-04	lb/mmBtu	0.00	0.00	EPA AP-42 Table 3.2-3
n-Hexane	N/A	lb/mmBtu	N/A	N/A	N/A	lb/mmBtu	N/A	N/A	EPA AP-42 Table 3.2-3
Total HAPs			0.09	0.02			0.09	0.02	

* - Uncontrolled and controlled emission factors for NOx, CO, and VOC are based on JJJJ standards as manufacturer uncontrolled emission factors are lower than JJJJ emission standards.
** - Uncontrolled emission factor for Total VOC was calculated to include formaldehyde.
*** - Controlled emission factors are permit conditions requested in this application.
**** - Sulfur emission factor from AP-42 Table 1.4-2 is ratio adjusted based on the max sulfur content when sulfur content is greater than 2,000 grains/MMscf.
***** - PM10 emissions include filterable and condensable particulates.

Sample Calculation for NOx

1.00 g/hp-hr * 374 hp / 453.59 g/lb * 499 hr/yr / 2000 lb/ton = 0.21 tpy

Engine Emission Detail Sheet

Item	Value	
Source Name	GEN-1	
Description	Generator Engine	
Quantity	1	
Make	Generac	
Model	TBD	
Serial Number	TBD	
Manufacture Date	2019	
Fuel Type	Diesel Tier 3	
Engine Type	Diesel	
Liters	3.4	L
Cylinders	4	

Item	Value	Units	Source		
Rated Horsepower	65	hp	Manufacturer		
	48	kW	Manufacturer	20.00%	Efficiency
	40	kWe	Manufacturer		
Heat Rate	0.65	MMBtu/hr	Calculated		
Fuel Consumption	10000	Btu/hp-hr	Engineering Estimate		
Heating Value	137000	Btu/gal			
Heat Rate	0.65	MMBtu/hr			
Emisson Controls	TBD		Manufacturer		
Engine Speed	TBD	RPM	Manufacturer		
Potential Operation	499	hr/yr			

Potential Emissions Per Engine

Pollutant	Uncontrolled Emissions				Controlled Emissions				Source of Emission Factor
	EF	Units	(lb/hr)	(tpy)	EF	Units	(lb/hr)	(tpy)	
NOx	5.59	g/hp-hr	0.80	0.20	5.59	g/hp-hr	0.80	0.20	40 CFR 89.112
Total VOC	1.40	g/hp-hr	0.20	0.05	1.40	g/hp-hr	0.20	0.05	40 CFR 89.112
CO	3.73	g/hp-hr	0.53	0.13	3.73	g/hp-hr	0.53	0.13	40 CFR 89.112
SO2*	3.80E-04	lb/mmBtu	0.00	0.00	3.80E-04	lb/mmBtu	0.00	0.00	Engineering Calculation
PM10	8.95E-01	g/hp-hr	0.13	0.00	8.95E-01	g/hp-hr	0.13	0.00	40 CFR 89.112
Formaldehyde	1.18E-03	lb/mmBtu	0.00	0.00	1.18E-03	lb/mmBtu	0.00	0.00	AP42 Table 3.3-2
Acetaldehyde	7.67E-04	lb/mmBtu	0.00	0.00	7.67E-04	lb/mmBtu	0.00	0.00	AP42 Table 3.3-2
Acrolein	9.25E-05	lb/mmBtu	0.00	0.00	9.25E-05	lb/mmBtu	0.00	0.00	AP42 Table 3.3-2
Benzene	9.33E-04	lb/mmBtu	0.00	0.00	9.33E-04	lb/mmBtu	0.00	0.00	AP42 Table 3.3-2
Ethylbenzene	N/A	lb/mmBtu	N/A	N/A	N/A	lb/mmBtu	N/A	N/A	AP42 Table 3.3-2
n-Hexane	N/A	lb/mmBtu	N/A	N/A	N/A	lb/mmBtu	N/A	N/A	AP42 Table 3.3-2
Toluene	4.09E-04	lb/mmBtu	0.00	0.00	4.09E-04	lb/mmBtu	0.00	0.00	AP42 Table 3.3-2
Xylene	2.85E-04	lb/mmBtu	0.00	0.00	2.85E-04	lb/mmBtu	0.00	0.00	AP42 Table 3.3-2
Total HAPs			0.00	0.00			0.00	0.00	

* - Sulfur Dioxide emissions based on the fuel sulfur requirement of 15 ppm/gallon (40 CFR 80.510).

NOx and VOC % of total based on ratio provided from NM		
Pollutant	lb/hp-hr	% of Total
NOx	0.03	75.00%
TOC Exhaust	0.00	25.00%
Total	0.03	100.00%

1 kW =	1.341	hp	
Conversion of EPA Tier 3 Standard			
Pollutant	g/kW-hr	g/kW-hr	g/hp-hr
NOx	7.5	7.50	5.59
VOC		1.88	1.40
CO	5	5.00	3.73
PM10	1.2	1.20	0.89
* NOx and VOC apportioned using the AP-42 Table 3.3-1			

Sample Calculation for NOx

5.59 g/hp-hr * 65 hp / 453.59 g/lb * 499 hr/yr / 2000 lb/ton = 0.20 tpy

Tank Detail Sheet

Equipment Source Name	TK-1		Tank Height	25	ft		
Source Description	Gunbarrel Tank		Tank Diameter	12	ft		
Quantity	1		Potential Operation	8,760	hr/yr		
Tank Capacity	500	bbl (each)	Potential Oil Throughput	766	bbl/yr	2.1	avg. bbl/day
Total Tank Capacity	500	bbl	Potential Throughput Per Tank	766	bbl/yr/tk	2.1	avg. bbl/day/tk
Control Efficiency	95%		Throughput Margin	0.00%			
			Calendar Year	2019			

Total Potential Emissions

Pollutant	Uncontrolled		Controlled	
	(lb/hr)	(ton/yr)	(lb/hr)	(ton/yr)
VOC	22.64	99.18	1.13	4.96
Benzene	0.23	0.99	0.01	0.05
Toluene	0.23	0.99	0.01	0.05
Ethylbenzene	0.02	0.10	0.00	0.00
Xylenes	0.02	0.10	0.00	0.00
n-Hexane	0.91	3.97	0.05	0.20
2,2,4-Trimethylpentane	0.02	0.10	0.00	0.00
Total HAPs	1.43	6.25	0.07	0.31

Potential Emissions Per Tank

Pollutant	EF	Uncontrolled		Controlled		Source of Emission Factor
	(lb/bbl)	(lb/hr)	(ton/yr)	(lb/hr)	(ton/yr)	
VOC	258.95	22.64	99.18	1.13	4.96	Engineering Calculation
Benzene	2.59	0.23	0.99	0.01	0.05	Engineering Calculation
Toluene	2.59	0.23	0.99	0.01	0.05	Engineering Calculation
Ethylbenzene	0.26	0.02	0.10	0.00	0.00	Engineering Calculation
Xylenes	0.26	0.02	0.10	0.00	0.00	Engineering Calculation
n-Hexane	10.36	0.91	3.97	0.05	0.20	Engineering Calculation
2,2,4-Trimethylpentane	0.26	0.02	0.10	0.00	0.00	Engineering Calculation
Total HAPs		1.43	6.25	0.07	0.31	

Process Streams	**39 To Flare**	**40 To Slop Oil**
Composition	**Solved**	**Solved**
Phase: **Total**	**VSSL-105**	**VSSL-105**
	--	--
Mole Fraction	**%**	**%**
Methane	14.0050	0.095017
Ethane	15.1670	0.87808
Propane	28.5610	7.41773
i-Butane	9.11843	7.17785
n-Butane	26.0267	34.2548
i-Pentane	3.42445	12.6336
n-Pentane	2.60785	13.7462
n-Hexane	0.849356	20.9208
n-Heptane	0.0200098	1.87120
C8	0.00266528	1.00249
Water	0.00304587	0.000043916
N2	0.122357	0.000185748
CO2	0.091903	0.00194386
H2S	0.000283058	1.96086E-05
Triethylene Glycol	0	0
EG	0	0
MeOH	0	0
CHEMTHERM 550	0	0

Process Streams	**39 To Flare**	**40 To Slop Oil**
Composition	**Solved**	**Solved**
Phase: **Total**	**VSSL-105**	**VSSL-105**
Process Streams	**39 To Flare**	**40 To Slop Oil**
Mass Fraction	**%**	**%**
Methane	4.9915	0.0225109
Ethane	10.1321	0.389921
Propane	27.9801	4.83045
i-Butane	11.77447	6.16109
n-Butane	33.6078	29.4025
i-Pentane	5.48907	13.4610
n-Pentane	4.18014	14.6465
n-Hexane	1.62612	26.6246
n-Heptane	0.0445449	2.76896
C8	0.00676389	1.69113
Water	0.00121908	1.16839E-05
N2	0.076151	0.000076844
CO2	0.089858	0.00126337
H2S	0.000214321	9.86911E-06
Triethylene Glycol	0	0
EG	0	0
MeOH	0	0
CHEMTHERM 550	0	0

Process Streams		**39 To Flare**	**40 To Slop Oil**
Properties	**Status:**	**Solved**	**Solved**
Phase: **Total**	**From Block:**	**VSSL-105**	**VSSL-105**
	To Block:	--	--
Property	**Units**		
Temperature	°F	16.19949	16.19949
Pressure	psig	0.125*	0.125
Mole Fraction Vapor	%	100	0
Mole Fraction Light Liquid	%	0	100
Mole Fraction Heavy Liquid	%	0	0
Molecular Weight	lb/lbmol	45.0112	67.7141
Mass Density	lb/ft^3	0.1209179	40.1146
Molar Flow	lbmol/h	13.8689	6.79227
Mass Flow	lb/h	624.256	459.933
Vapor Volumetric Flow	ft^3/h	5162.64	11.4655
Liquid Volumetric Flow	gpm	643.654	1.42946
Std Vapor Volumetric Flow	MMSCFD	0.126313	0.0618614
Std Liquid Volumetric Flow	sgpm	2.45639	1.50085
Compressibility		0.978572	0.00443751
Specific Gravity		1.55412	0.643185
API Gravity			97.3979
Enthalpy	Btu/h	-665846	-501320
Mass Enthalpy	Btu/lb	-1066.62	-1089.99
Mass Cp	Btu/(lb*°F)	0.378222	0.521661
Ideal Gas CpCv Ratio		1.13354	1.08773
Dynamic Viscosity	cP	0.00739850	0.280324
Kinematic Viscosity	cSt	3.81972	0.436251
Thermal Conductivity	Btu/(h*ft*°F)	0.0089001	0.0713101?
Surface Tension	lbf/ft		0.00123561?
Net Ideal Gas Heating Value	Btu/ft^3	2353.24	3485.33
Net Liquid Heating Value	Btu/lb	19688.6	19372.5
Gross Ideal Gas Heating Value	Btu/ft^3	2557.29	3771.13
Gross Liquid Heating Value	Btu/lb	21409.2	20974.6

1 - Uncontrolled emissions were calculated from Promax output.

2- No HAP emissions are reported by Promax; therefore, these emissions were estimated based on the ration of HAP's to total VOC's from a conservative engineering assumption.

Tank Detail Sheet

Equipment Source Name	TK 2-5		Tank Height	20	ft		
Source Description	Stabilized Condensate Tank		Tank Diameter	12	ft		
Quantity	4		Potential Operation	8760	hr/yr		
Tank Capacity	400	bbl (each)	Potential Throughput	219,000	bbl/yr	600.0	avg. bbl/day
Total Tank Capacity	1600	bbl	Potential Throughput Per Tank	54,750	bbl/yr/tk	150.0	avg. bbl/day/tk
Control Efficiency	95%		Calendar Year	2019			

Total Potential Emissions

Pollutant	Uncontrolled		Controlled	
	(lb/hr)	(ton/yr)	(lb/hr)	(ton/yr)
VOC	7.98	34.95	0.40	1.75
Benzene	0.08	0.35	0.00	0.02
Toluene	0.08	0.35	0.00	0.02
Ethylbenzene	0.01	0.03	0.00	0.00
Xylenes	0.01	0.03	0.00	0.00
n-Hexane	0.32	1.40	0.02	0.07
2,2,4-Trimethylpentane	0.01	0.03	0.00	0.00
Total HAPs	0.50	2.20	0.03	0.11

Potential Emissions Per Tank

Pollutant	HAP Wt %	Uncontrolled		Controlled		Source of Emission Factor
	(%)	(lb/hr)	(ton/yr)	(lb/hr)	(ton/yr)	
VOC		1.99	8.74	0.10	0.44	EPA TANKS 4.0.9d
Benzene	1.00%	0.02	0.09	0.00	0.00	Engineering Calculation
Toluene	1.00%	0.02	0.09	0.00	0.00	Engineering Calculation
Ethylbenzene	0.10%	0.00	0.01	0.00	0.00	Engineering Calculation
Xylenes	0.10%	0.00	0.01	0.00	0.00	Engineering Calculation
n-Hexane	4.00%	0.08	0.35	0.00	0.02	Engineering Calculation
2,2,4-Trimethylpentane	0.10%	0.00	0.01	0.00	0.00	Engineering Calculation
Total HAPs		0.13	0.55	0.01	0.03	

1 - Uncontrolled emissions were taken directly from the EPA TANKS 4.0.9d output.

2 - No HAP emissions are reported by EPA Tanks 4.0.9d; therefore, these emissions were estimated based on the ration of HAP's to total VOC's from a conservative engineering assumption.

Tank Detail Sheet

Equipment Source Name	TK-6		Tank Height	20	ft	
Source Description	Slop Oil Tank		Tank Diameter	12	ft	
Quantity	1		Potential Operation	8760	hr/yr	
Tank Capacity	400	bbl (each)	Potential Throughput	1,532	bbl/yr	4.2 avg. bbl/day
Total Tank Capacity	400	bbl	Potential Throughput Per Tank	1,532	bbl/yr/tk	4.2 avg. bbl/day/tk
Control Efficiency	95%		Margin	100%		
			Calendar Year	2019		

Total Potential Emissions

Pollutant	Uncontrolled		Controlled	
	(lb/hr)	(ton/yr)	(lb/hr)	(ton/yr)
VOC	0.85	3.72	0.04	0.19
Benzene	0.01	0.04	0.00	0.00
Toluene	0.01	0.04	0.00	0.00
Ethylbenzene	0.00	0.00	0.00	0.00
Xylenes	0.00	0.00	0.00	0.00
n-Hexane	0.03	0.15	0.00	0.01
2,2,4-Trimethylpentane	0.00	0.00	0.00	0.00
Total HAPs	0.05	0.23	0.00	0.01

Potential Emissions Per Tank

Pollutant	HAP Wt %	Uncontrolled		Controlled		Source of Emission Factor
	(%)	(lb/hr)	(ton/yr)	(lb/hr)	(ton/yr)	
VOC		0.85	3.72	0.04	0.19	EPA TANKS 4.0.9d
Benzene	1.00%	0.01	0.04	0.00	0.00	Engineering Calculation
Toluene	1.00%	0.01	0.04	0.00	0.00	Engineering Calculation
Ethylbenzene	0.10%	0.00	0.00	0.00	0.00	Engineering Calculation
Xylenes	0.10%	0.00	0.00	0.00	0.00	Engineering Calculation
n-Hexane	4.00%	0.03	0.15	0.00	0.01	Engineering Calculation
2,2,4-Trimethylpentane	0.10%	0.00	0.00	0.00	0.00	Engineering Calculation
Total HAPs		0.05	0.23	0.00	0.01	

1 - Uncontrolled emissions were taken directly from the EPA TANKS 4.0.9d output.

2 - No HAP emissions are reported by EPA Tanks 4.0.9d; therefore, these emissions were estimated based on the ration of HAP's to total VOC's from a conservative engineering assumption.

Tank Detail Sheet

Equipment Source Name	PWTK-1		Tank Height	20	ft		
Source Description	Produced Water Tank		Tank Diameter	12	ft		
Quantity	1		Potential Operation	8760	hr/yr		
Tank Capacity	400	bbl (each)	Potential PW Throughput	1,532	bbl/yr	4.2	avg. bbl/day
Total Tank Capacity	400	bbl	Potential Oil from PW Throughput	15	bbl/yr	0.1	avg. bbl/day
Control Efficiency	95%		Potential Oil Throughput Per Tank	15	bbl/yr/tk	0.1	avg. bbl/day/tk
			Margin	100%			
			Calendar Year	2019			

Total Potential Emissions

Pollutant	Uncontrolled		Controlled	
	(lb/hr)	(ton/yr)	(lb/hr)	(ton/yr)
VOC	0.00	0.00	0.00	0.00
Benzene	0.00	0.00	0.00	0.00
Toluene	0.00	0.00	0.00	0.00
Ethylbenzene	0.00	0.00	0.00	0.00
Xylenes	0.00	0.00	0.00	0.00
n-Hexane	0.00	0.00	0.00	0.00
2,2,4-Trimethylpentane	0.00	0.00	0.00	0.00
Total HAPs	0.00	0.00	0.00	0.00

Potential Emissions Per Tank

Pollutant	HAP Wt %	Uncontrolled		Controlled		Source of Emission Factor
	(%)	(lb/hr)	(ton/yr)	(lb/hr)	(ton/yr)	
VOC		0.00	0.00	0.00	0.00	EPA TANKS 4.0.9d
Benzene	1.00%	0.00	0.00	0.00	0.00	Engineering Calculation
Toluene	1.00%	0.00	0.00	0.00	0.00	Engineering Calculation
Ethylbenzene	0.10%	0.00	0.00	0.00	0.00	Engineering Calculation
Xylenes	0.10%	0.00	0.00	0.00	0.00	Engineering Calculation
n-Hexane	4.00%	0.00	0.00	0.00	0.00	Engineering Calculation
2,2,4-Trimethylpentane	0.10%	0.00	0.00	0.00	0.00	Engineering Calculation
Total HAPs		0.00	0.00	0.00	0.00	

1 - Uncontrolled emissions were taken directly from the EPA TANKS 4.0.9d output.
2 - Uncontrolled emissions were calculated based on the assumption that 1% of the produced water throughput is condensate.
3 - No HAP emissions are reported by EPA Tanks 4.0.9d; therefore, these emissions were estimated based on the ration of HAP's to total VOC's from a conservative engineering assumption.
4 - Throughput includes margin to account for additional water streams dumping into the tank.

Heater / Boiler Detail Sheet

Equipment Source Name	HTR-1				
Source Description	Hot Oil Heater				
Equipment Usage	Hot Oil Heater	Potential operation	8760	hr/yr	
Equipment Make	TBD	Fuel Heating Value	1066.43	Btu/scf	Residue Gas Heating Value (not used in calculation)
Equipment Model	TBD	Heat Rate	49.42	MMBtu/hr	Mfr. Rate Heat Input
Serial Number	TBD	Sulfur Content	9,476	grains/MMscf	Gas Analysis with Margin
Quantity	1	Sulfur Margin	400%	%	
Emission Controls	None				

Total Potential Emissions

Pollutant	Estimated Emissions (lb/hr)	(tpy)
NOx	2.42	10.61
CO	4.07	17.82
VOC	0.27	1.17
SOx	0.14	0.60
PM10	0.37	1.61
Benzene	0.00	0.00
n-Hexane	0.09	0.38
Toluene	0.00	0.00
CH_2O	0.00	0.02
Total HAPs	0.09	0.40

Potential Emissions Per Heater

Pollutant	EF (lb/MMscf)	EF (lb/MMBtu)[3]	Estimated Emissions (lb/hr)	(tpy)	Source of Emission Factor
NOx[2]	50	0.049	2.42	10.61	AP-42 Table 1.4-1
CO	84	0.082	4.07	17.82	AP-42 Table 1.4-1
VOC	5.5	0.005	0.27	1.17	AP-42 Table 1.4-2
SOx[1]	2.84	0.003	0.14	0.60	AP-42 Table 1.4-2
PM10	7.6	0.007	0.37	1.61	AP-42 Table 1.4-2
Benzene	0.0021	0.000	0.00	0.00	AP-42 Table 1.4-3
n-Hexane	1.80	0.002	0.09	0.38	AP-42 Table 1.4-3
Toluene	0.0034	0.000	0.00	0.00	AP-42 Table 1.4-3
CH_2O	0.075	0.000	0.00	0.02	AP-42 Table 1.4-3
Total HAPs			0.09	0.40	

1 - Sulfur emission factor from AP-42 Table 1.4-2 is ratio adjusted based on the max sulfur content when sulfur content is greater than 2,000 grains/MMscf.
2 - This is a low NOx burner.
3 - Emission factor is calculated by converting from lb/MMscf to lb/MMbtu based AP-42 Table 1.4-1 note (a).

Sample Calculation for NOx

50 lb/MMscf / 1066.43 Btu/scf * 49.417 MMBtu/hr = 2.42 lb/hr

Heater / Boiler Detail Sheet

Equipment Source Name	HTR-2				
Source Description	Regen Gas Heater				
Equipment Usage	Regen Gas Heater	Potential operation	8760	hr/yr	
Equipment Make	TBD	Fuel Heating Value	1066.43	Btu/scf	Residue Gas Heating Value (not used in calculation)
Equipment Model	TBD	Heat Rate	11.00	MMBtu/hr	Mfr. Rate Heat Input
Serial Number	TBD	Sulfur Content	9,476	grains/MMscf	Gas Analysis with Margin
Quantity	1	Sulfur Margin	400%	%	
Emission Controls	None				

Total Potential Emissions

Pollutant	Estimated Emissions (lb/hr)	(tpy)
NOx	1.08	4.72
CO	0.91	3.97
VOC	0.06	0.26
SOx	0.03	0.13
PM10	0.08	0.36
Benzene	0.00	0.00
n-Hexane	0.02	0.09
Toluene	0.00	0.00
CH_2O	0.00	0.00
Total HAPs	0.02	0.09

Potential Emissions Per Heater

Pollutant	EF (lb/MMscf)	EF (lb/MMBtu)[2]	Estimated Emissions (lb/hr)	(tpy)	Source of Emission Factor
NOx	100	0.098	1.08	4.72	AP-42 Table 1.4-1
CO	84	0.082	0.91	3.97	AP-42 Table 1.4-1
VOC	5.5	0.005	0.06	0.26	AP-42 Table 1.4-2
SOx[1]	2.84	0.003	0.03	0.13	AP-42 Table 1.4-2
PM10	7.6	0.007	0.08	0.36	AP-42 Table 1.4-2
Benzene	0.0021	0.000	0.00	0.00	AP-42 Table 1.4-3
n-Hexane	1.80	0.002	0.02	0.09	AP-42 Table 1.4-3
Toluene	0.0034	0.000	0.00	0.00	AP-42 Table 1.4-3
CH_2O	0.075	0.000	0.00	0.00	AP-42 Table 1.4-3
Total HAPs			0.02	0.09	

1 - Sulfur emission factor from AP-42 Table 1.4-2 is ratio adjusted based on the max sulfur content when sulfur content is greater than 2,000 grains/MMscf.
2 - Emission factor is calculated by converting from lb/MMscf to lb/MMbtu based AP-42 Table 1.4-1 note (a).

Sample Calculation for NOx
100 lb/MMscf / 1066.43 Btu/scf * 11.000 MMBtu/hr = 1.08 lb/hr

Loadout Emissions Detail Sheet

Equipment Source Name	CONDLOAD-1	
Source Description	Condensate Loadout	
Quantity	1	
Potential Throughput	219,000	bbl/yr
LACT On Site?	No	
Estimated LACT Downtime	NA	
Control Device	Vapor Balance	
Control Efficiencies	95%	
Capture Efficiency	70%	

Potential Emissions

Pollutant	HAP Wt % (%)	Uncontrolled lb/hr	Uncontrolled tpy	Controlled lb/hr	Controlled tpy	Source of Emission Calculations
VOC		99.91	27.35	33.47	9.16	AP-42 Section 5.2.1
Benzene	1.00%	1.00	0.27	0.33	0.09	Engineering Calculation
Toluene	1.00%	1.00	0.27	0.33	0.09	Engineering Calculation
Ethylbenzene	0.10%	0.10	0.03	0.03	0.01	Engineering Calculation
Xylenes	0.10%	0.10	0.03	0.03	0.01	Engineering Calculation
n-Hexane	4.00%	4.00	1.09	1.34	0.37	Engineering Calculation
2,2,4-Trimethylpentane	0.10%	0.10	0.03	0.03	0.01	Engineering Calculation
Total HAPs		6.29	1.72	2.11	0.58	

Molecular Weight of Vapors, MW	64.0	lb/lb-mol	EPA TANKS 4.0.9d
True Vapor Pressure, Pva @ T	6.48	psia	Interpolation from AP-42 Table 7.1-2
Temperature of Bulk Liquid Loaded, T	61	F	Ambient Temperature
	521	R	
Saturation Factor	0.6		AP-42 Table 5.2.1
Efficiency of controlled loading (%)	0.0%		
Potential Annual Throughput, v	9,198	1000 gallons	
Loading losses, L @ tank	5.95	lb/1000 gallons	
L = 12.46 S P MW / T (1-eff)			
Potential annual losses @ tank, L*v	54,699.81	lb/yr	**27.35 tpy**
Max hourly fill rate[1]	16.8	1000 gallons/hr	Trucking Company
Max hourly emissions	**99.9**	**lb/hr**	Calculated

1 - Max hourly fill rate based on a 200-bbl truck filling every 30 minutes.

Sample Calculation

219000 bbl/yr * 42 gal/bbl / 1000 gal * 5.95 lb/1000 gal / 2000 lb/ton = 27.35 tpy

Loadout Emissions Detail Sheet

Equipment Source Name	OILLOAD-1	
Source Description	Oil Loadout	
Quantity	1	
Potential Throughput	1,532	bbl/yr
LACT On Site?	No	
Estimated LACT Downtime	NA	
Control Device	Vapor Balance	
Control Efficiencies	95%	
Capture Efficiency	70%	

Potential Emissions

Pollutant	HAP Wt %	Uncontrolled		Controlled		Source of Emission Calculations
	(%)	lb/hr	tpy	lb/hr	tpy	
VOC		99.91	0.19	33.47	0.06	AP-42 Section 5.2.1
Benzene	1.00%	1.00	0.00	0.33	0.00	Engineering Calculation
Toluene	1.00%	1.00	0.00	0.33	0.00	Engineering Calculation
Ethylbenzene	0.10%	0.10	0.00	0.03	0.00	Engineering Calculation
Xylenes	0.10%	0.10	0.00	0.03	0.00	Engineering Calculation
n-Hexane	4.00%	4.00	0.01	1.34	0.00	Engineering Calculation
2,2,4-Trimethylpentane	0.10%	0.10	0.00	0.03	0.00	Engineering Calculation
Total HAPs		6.29	0.01	2.11	0.00	

Molecular Weight of Vapors, MW	64.0	lb/lb-mol	EPA TANKS 4.0.9d
True Vapor Pressure, Pva @ T	6.48	psia	Interpolation from AP-42 Table 7.1-2
Temperature of Bulk Liquid Loaded, T	61	F	Ambient Temperature
	521	R	
Saturation Factor	0.6		AP-42 Table 5.2.1
Efficiency of controlled loading (%)	0.0%		
Potential Annual Throughput, v	64	1000 gallons	
Loading losses, L @ tank	5.95	lb/1000 gallons	
L = 12.46 S P MW / T (1-eff)			
Potential annual losses @ tank, L*v	382.65	lb/yr	**0.19 tpy**
Max hourly fill rate[1]	16.8	1000 gallons/hr	Trucking Company
Max hourly emissions	**99.9**	**lb/hr**	Calculated

1 - Max hourly fill rate based on a 200-bbl truck filling every 30 minutes.

Sample Calculation

1532 bbl/yr * 42 gal/bbl / 1000 gal * 5.95 lb/1000 gal / 2000 lb/ton = 0.19 tpy

Fugitive Emissions Detail Sheet

Equipment Source Name FUG-1 Potential Operation 8760 hr/yr
Source Description Fugitives - OOOOa

Uncontrolled Potential Emissions

	HAP	Heavy Crude - Emissions		Light Crude - Emissions		Gas - Emissions		Total Emissions	
Pollutant	Wt. %	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy
VOC		0.00	0.00	5.41	23.68	6.29	27.56	11.70	51.24
H2S		NA	NA	NA	NA	0.00	0.00	0.00	0.00
Benzene	0.32%	0.00	0.00	0.02	0.08	0.02	0.09	0.04	0.16
Toluene	0.05%	0.00	0.00	0.00	0.01	0.00	0.01	0.01	0.02
Ethylbenzene	0.00%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Xylenes	0.00%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
n-Hexane	0.55%	0.00	0.00	0.03	0.13	0.03	0.15	0.06	0.28
2,2,4-Trimethylpentane	0.00%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total HAPs		0.00	0.00	0.05	0.22	0.06	0.25	0.11	0.47

Controlled Potential Emissions - Not used for NM Permitting purposes.

	HAP	Heavy Crude - Emissions		Light Crude - Emissions		Gas - Emissions		Total Emissions	
Pollutant	Wt. %	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy
VOC		0.00	0.00	1.01	4.41	2.41	10.56	3.42	14.97
H2S		NA	NA	NA	NA	0.00	0.00	0.00	0.00
Benzene	0.32%	0.00	0.00	0.00	0.01	0.01	0.03	0.01	0.05
Toluene	0.05%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
Ethylbenzene	0.00%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Xylenes	0.00%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
n-Hexane	0.55%	0.00	0.00	0.01	0.02	0.01	0.06	0.02	0.08
2,2,4-Trimethylpentane	0.00%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total HAPs		0.00	0.00	0.01	0.04	0.02	0.10	0.03	0.14

Gas

Equipment Type	EF (kg/hr/source)	Source Count	VOC Wt. %	Control Efficiencies %	Uncontrolled Emissions VOC (lb/hr)	Uncontrolled Emissions VOC (tpy)	Controlled Emissions VOC (lb/hr)	Controlled Emissions VOC (tpy)
Valve	4.50E-03	763	48%	96%	3.66	16.04	0.15	0.64
Flanges	3.90E-04	495	48%	81%	0.21	0.90	0.04	0.17
Connectors	2.00E-04	1155	48%	81%	0.25	1.08	0.05	0.21
Open Ended Lines	2.00E-03	0	48%		0.00	0.00	0.00	0.00
Pump Seals	2.40E-03	0	48%		0.00	0.00	0.00	0.00
Other Components	8.80E-03	232	48%		2.18	9.54	2.18	9.54
VOC Emissions					**6.29**	**27.56**	**2.41**	**10.56**

Gas VOC Wt% Margin 20.00%

Light Liquid[3]

Equipment Type	EF (kg/hr/source)	Source Count	VOC Wt. %	Control Efficiencies %	Uncontrolled Emissions VOC (lb/hr)	Uncontrolled Emissions VOC (tpy)	Controlled Emissions VOC (lb/hr)	Controlled Emissions VOC (tpy)
Valve	2.50E-03	684	100%	95%	3.77	16.51	0.19	0.83
Flanges	1.10E-04	417	100%	81%	0.10	0.44	0.02	0.08
Connectors	2.10E-04	1020	100%	81%	0.47	2.07	0.09	0.39
Open Ended Lines	1.40E-03	0	100%		0.00	0.00	0.00	0.00
Pump Seals	1.30E-02	14	100%	88%	0.40	1.76	0.05	0.21
Other Components	7.50E-03	40	100%		0.66	2.90	0.66	2.90
VOC Emissions					**5.41**	**23.68**	**1.01**	**4.41**

Heavy Liquid[3]

Equipment Type	EF (kg/hr/source)	Source Count	VOC Wt. %	Control Efficiencies %	Uncontrolled Emissions VOC (lb/hr)	Uncontrolled Emissions VOC (tpy)	Controlled Emissions VOC (lb/hr)	Controlled Emissions VOC (tpy)
Valve	8.40E-06	0	100%		0.00	0.00	0.00	0.00
Flanges	3.90E-06	1	100%	81%	0.00	0.00	0.00	0.00
Connectors	7.50E-06	1	100%	81%	0.00	0.00	0.00	0.00
Open Ended Lines	1.40E-04	0	100%		0.00	0.00	0.00	0.00
Pump Seals	N/A							

Other Components	3.20E-05	0	100%	0.00	0.00	0.00	0.00
VOC Emissions				**0.00**	**0.00**	**0.00**	**0.00**

1 - Component counts are actual facility component counts determined by Dexter ATC Field Services.
2 - Component leak rates taken from EPA's Oil and Gas Production Operations average equipment leak emission factors (EPA 453/R-95-017 dated November 1995) Table 2-4.
3 - Assuming heavy and light crude weight percentage is 100% VOC to be conservative in heavy and light crude fugitive emission calculations.
4 - Control efficiencies were obtained from Table 4.1 in "EPA Leak Detection and Repair - A Best Practices Guide"
5 - HAP Weight percentages based on a conservative engineering estimation.

Sample Calculation:
0.00250 kg/hr-source * 684 Sources * 2.20462 lb/kg * 100 % VOC Wt% * 8760 hr/yr /2000 lb/ton = 16.51 tpy

Fugitive Emissions Detail Sheet

Equipment Source Name	FUG-2	Potential Operation	8760	hr/yr
Source Description	Fugitives - Residue	Emission Controls	None	

Uncontrolled Potential Emissions

	HAP	Gas - Emissions		Total Emissions	
Pollutant	Wt. %	lb/hr	tpy	lb/hr	tpy
VOC		0.05	0.23	0.05	0.23
H2S		0.00	0.00	0.00	0.00
Benzene	0.00%	0.00	0.00	0.00	0.00
Toluene	0.00%	0.00	0.00	0.00	0.00
Ethylbenzene	0.00%	0.00	0.00	0.00	0.00
Xylenes	0.00%	0.00	0.00	0.00	0.00
n-Hexane	0.01%	0.00	0.00	0.00	0.00
2,2,4-Trimethylpentane	0.00%	0.00	0.00	0.00	0.00
Total HAPs		0.00	0.00	0.00	0.00

Controlled Potential Emissions

	HAP	Gas - Emissions		Total Emissions	
Pollutant	Wt. %	lb/hr	tpy	lb/hr	tpy
VOC		0.05	0.23	0.05	0.23
H2S		0.00	0.00	0.00	0.00
Benzene	0.00%	0.00	0.00	0.00	0.00
Toluene	0.00%	0.00	0.00	0.00	0.00
Ethylbenzene	0.00%	0.00	0.00	0.00	0.00
Xylenes	0.00%	0.00	0.00	0.00	0.00
n-Hexane	0.01%	0.00	0.00	0.00	0.00
2,2,4-Trimethylpentane	0.00%	0.00	0.00	0.00	0.00
Total HAPs		0.00	0.00	0.00	0.00

Gas HAP Wt% Margin 100.00%

Gas

Equipment Type	EF[3] (kg/hr/source)	Source Count	VOC Wt. %	Control Efficiencies %	Uncontrolled Emissions VOC (lb/hr)	Uncontrolled Emissions VOC (tpy)	Controlled Emissions VOC (lb/hr)	Controlled Emissions VOC (tpy)
Valve	4.50E-03	16	4%	0%	0.01	0.02	0.01	0.02
Flanges	3.90E-04	32	4%		0.00	0.00	0.00	0.00
Connectors	2.00E-04	1200	4%	0%	0.02	0.08	0.02	0.08
Open Ended Lines	2.00E-03	0	4%		0.00	0.00	0.00	0.00
Pump Seals	2.40E-03	0	4%		0.00	0.00	0.00	0.00
Other Components	8.80E-03	40	4%		0.03	0.12	0.03	0.12
VOC Emissions					**0.05**	**0.23**	**0.05**	**0.23**

Gas VOC Wt% Margin 100.00%

Component Counts[1]	Total
Valve	16
Flanges	32
Connectors	1200
Open Ended Lines	0
Pump Seals	0
Other Components	40
Total	1288

1 - Component counts are engineering estimations.
2 - Component leak rates taken from EPA's Oil and Gas Production Operations average equipment leak emission factors (EPA 453/R-95-017 dated November 1995) Table 2-4.
3 - Gas VOC and HAP wt % percentage is based on stream 47 from Promax run with margin.

Sample Calculation:
0.00450 kg/hr-source * 16 Sources * 2.20462 lb/kg * 4 % VOC Wt% * 8760 hr/yr /2000 lb/ton = 0.02 tpy

Process and compressor Fugitives GHG Emissions

Fugitive GHG Summary

	CH4	CO2	CO2e
Emissions TPY	827.73	122.06	**20,815.37**
Global Warming Potential (GWP)	25	1	

CH4 Emission Rate for Gas Processing Volume[1] = 2.5e-3 tonne CH4/MMscf processed
CH4 Emission Rate for Reciprocating Compressors[1] = 8.95e-3 tonne CH4/compressor-hr
CH4 Emission Rate for Centrifugal Compressors[1] = 1.7e-2 tonne CH4/compressor-hr

[1] API Compendium of Greenhouse Gas Emissions Methodologies for the Oil and Natural Gas Industry Table 6-5

Process gas CH4 molar percentage = 38.64% From modeled composition
Process gas CO2 molar percentage = 2.07% From modeled composition
CH4 molecular weight (lb/lb mol) 16
CO2 molecular weight (lb/lb mol) 44

Amount of gas throughput (MMscf/yr) = 21,900 (Max 60 MMSCFD * 365 days/yr)
Number of Reciprocating Compressors in Process = 7
Number of Centrifugal Compressors in Process = 1

CH4 Emission Calculation for Processing Volume

tonne CH4/MMscf processed	MMscf processed/year	ton CH4/ tonne CH4	ton CH4/year
0.0025	21,900	1.1	60.225

Total CH4 process emissions (ton/year) = 60.23

CO2 Emission Calculation for Processing Volume

ton CH4/year	CO2 mol % / CH4 mol %	CO2 mol wt/ CH4 mol wt	ton CO2 / year
60.225	0.05362	2.75	8.881

Total CO2 process emissions (ton/year) = 8.88

CH4 Emission Calculation for Reciprocating Compressors

tonne CH4/compressor-hr	hr/year	compressor number	ton CH4/ tonne CH4	ton CH4 /year
0.00895	8760.00	7	1.1	604

Total CH4 reciprocating compressor emissions (ton/year) = 603.70

CO2 Emission Calculation for Reciprocating Compressors

ton CH4/year	CO2 mol % / CH4 mol %	CO2 mol wt/ CH4 mol wt	ton CO2 / year
604	0.05362	2.75	89.023

Total CO2 reciprocating compressor emissions (ton/year) = 89.023

CH4 Emission Calculation for Centrifugal Compressors

tonne CH4/compressor-hr	hr/year	compressor number	ton CH4/ tonne CH4	ton CH4 /year
0.017	8760.00	1	1.1	164

Total CH4 centrifugal compressor emissions (ton/year) = 163.81

CO2 Emission Calculation for Centrifugal Compressors

ton CH4/year	CO2 mol % / CH4 mol %	CO2 mol wt/ CH4 mol wt	ton CO2 / year
164	0.05362	2.75	24.156

Total CO2 centrifugal compressor emissions (ton/year) = 24.156

Equipment Source Name	AMINE-1		
Source Description	Amine Unit	Potential Operation:	8760 hr/yr
Equipment Usage	Amine Unit	TO Downtime Allowance:	438 hr/yr
Equipment Make	TBD	TO Control Efficiency:	98%
Equipment Model	TBD	TO Downtime Control Efficiency:	95% FL-1 Control Efficiency
Serial Number	TBD	Margin added for operational flexibility:	25%
QTY	1		

Emissions Summary

VOC Emissions Summary (tons/yr) with margin added

	Uncontrolled		Controlled		Uncontrolled TO Downtime		Controlled TO Downtime	
Emission Unit	lb/hr	tons/yr	lb/hr	tons/yr	lb/hr	tons/yr	lb/hr	tons/yr
AMINE-1 (Flash)	34.80	152.44	0.70	3.05	34.80	7.62	1.74	0.38
AMINE-1 (Still)	5.04	22.08	0.10	0.44	5.04	1.10	0.25	0.06

	Uncontrolled		Controlled	
	lb/hr	tons/yr	lb/hr	tons/yr
AMINE-1 Total	39.84	174.52	2.79	3.93

Uncontrolled HAP Emissions Summary (with margin)

Emission Unit	BZ	Tol	EB	Xyl	n-Hex	224-TMP	Total
AMINE-1 (Flash) (lb/hr)	0.03	0.03	0.00	0.01	0.14	0.03	0.24
AMINE-1 (Flash) (lb/yr)	245.16	249.01	14.09	72.48	1208.64	289.22	2078.60
AMINE-1 (Still) (lb/hr)	0.00	0.00	0.00	0.00	0.02	0.01	0.04
AMINE-1 (Still) (lb/yr)	38.36	38.96	2.21	11.34	189.11	45.25	325.23
Total AMINE-1 (lb/hr)	**0.03**	**0.03**	**0.00**	**0.01**	**0.16**	**0.04**	**0.27**
Total AMINE-1 (lb/yr)	**283.52**	**287.97**	**16.30**	**83.82**	**1397.75**	**334.47**	**2403.84**
Total AMINE-1 (TPY)	**0.14**	**0.14**	**0.01**	**0.04**	**0.70**	**0.17**	**1.20**

Controlled HAP Emissions (Normal Operation) Summary

Emission Unit	BZ	Tol	EB	Xyl	n-Hex	224-TMP	Total
AMINE-1 (Flash) (TO-1) (lb/yr)	5.27	5.35	0.30	1.56	25.99	6.22	44.69
AMINE-1 (Still) (TO-1) (lb/yr)	0.82	0.84	0.05	0.24	4.07	0.97	6.99
Total AMINE-1 (lb/hr)	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.01**
Total AMINE-1 (lb/yr)	**6.10**	**6.19**	**0.35**	**1.80**	**30.05**	**7.19**	**51.68**
Total AMINE-1 (TPY)	**0.00**	**0.00**	**0.00**	**0.00**	**0.02**	**0.00**	**0.03**

Equipment Source Name AMINE-1
ProMax Output File Summary

	AMINE-1			
	Amine Flash		Amine Still	
Specie	Mass flow [lb/h]	Mole Fraction [%]	Mass flow [lb/h]	Mole Fraction [%]
Methane	71.85	55.84%	7.40	0.14%
Ethane	29.58	12.27%	4.09	0.04%
Propane	20.09	5.68%	3.01	0.02%
Iso-Butane	0.59	0.13%	0.02	0.00%
N-Butane	5.18	1.11%	0.75	0.00%
Iso-Pentane	0.44	0.08%	0.03	0.00%
N-Pentane	0.77	0.13%	0.10	0.00%
Other Hexanes	0.48	0.07%	0.07	0.00%
n-Hexane	0.11	0.02%	0.02	0.00%
Heptane	0.06	0.01%	0.01	0.00%
2,2,4-Trimethylpentane	0.03	0.00%	0.00	0.00%
Octanes +	0.05	0.01%	0.01	0.00%
Benzene	0.02	0.00%	0.00	0.00%
Toluene	0.02	0.00%	0.00	0.00%
Ethylbenzene	0.00	0.00%	0.00	0.00%
Xylenes	0.01	0.00%	0.00	0.00%
Water	8.93	6.18%	410.47	7.14%
Hydrogen Sulfide	0.03	0.01%	11.22	0.10%
Carbon Dioxide	59.46	16.85%	12992.85	92.54%
Nitrogen	3.65	1.62%	0.12	0.00%
TOTAL	**201.34**	**1.00**	**13430.17**	**1.00**

Equipment Source Name	AMINE-1	
Molar flow [lbmol/h]	8.02	319.02
Std volumetric flow [MMSCFD]	0.07	2.91
Std volumetric flow [MMSCFD] with margin	0.09	3.63
Std volumetric flow [SCFH]	3804.35	151323.42
mmscf/yr	33.33	1325.59
TO downtime throughput mmscf/yr	1.67	66.28
VOC flow [lb/h]	27.84	4.03
HAP flow [lb/h]	0.19	0.03
VOC flow [lb/h] with margin	34.80	5.04
HAP flow [lb/h] with margin	0.24	0.04
Benzene with margin	0.03	0.00
Toluene with margin	0.03	0.00
Ethylbenzene with margin	0.00	0.00
o-Xylene with margin	0.01	0.00
nC6 with margin	0.14	0.02
2,2,4-Trimethylpentane with margin	0.03	0.01
Net Ideal Gas Heating Value (Btu/ft^3)	888.18	3.27
Btu/lbmol	421291.74	1551.91

Gas Analysis - AMINE-1 Flash

Gas Constituent	Molecular Weight (lb/lb-mol)	Mole %	Mole % Without Water	Weight (lb/lbmole Gas)	Weight %	Weight % Without Water	Total HC Corrected Weight * %	Total VOC Corrected Weight ** %
Methane	16.04	55.84%	59.52%	8.96	35.68%	37.34%	55.58%	NA
Ethane	30.07	12.27%	13.07%	3.69	14.69%	15.37%	22.88%	NA
Total HC (Non-VOC)		**68.10%**	**72.59%**		**50.38%**	**52.71%**	**78.46%**	**NA**
Propane	44.10	5.68%	6.05%	2.50	9.98%	10.44%	15.54%	72.15%
Iso-Butane	58.12	0.13%	0.13%	0.07	0.29%	0.31%	0.46%	2.12%
N-Butane	58.12	1.11%	1.18%	0.65	2.57%	2.69%	4.01%	18.61%
Iso-Pentane	72.15	0.08%	0.08%	0.06	0.22%	0.23%	0.34%	1.60%
N-Pentane	72.15	0.13%	0.14%	0.10	0.38%	0.40%	0.59%	2.75%
Other Hexanes	86.18	0.07%	0.07%	0.06	0.24%	0.25%	0.37%	1.71%
n-Hexane	86.18	0.02%	0.02%	0.01	0.05%	0.06%	0.09%	0.40%
Heptane	100.21	0.01%	0.01%	0.01	0.03%	0.03%	0.05%	0.21%
2,2,4-Trimethylpentane	114.23	0.00%	0.00%	0.00	0.01%	0.01%	0.02%	0.09%
Octanes +	114.23	0.01%	0.01%	0.01	0.02%	0.02%	0.04%	0.17%
Benzene	78.11	0.00%	0.00%	0.00	0.01%	0.01%	0.02%	0.08%
Toluene	92.14	0.00%	0.00%	0.00	0.01%	0.01%	0.02%	0.08%
Ethylbenzene	106.17	0.00%	0.00%	0.00	0.00%	0.00%	0.00%	0.00%
Xylenes	106.16	0.00%	0.00%	0.00	0.00%	0.00%	0.01%	0.02%
Total NMNE VOC		**7.23%**	**7.71%**	**3.47**	**13.83%**	**14.47%**	**21.54%**	**100.00%**
Total HAPs		**0.03%**	**0.03%**	**0.02**	**0.09%**	**0.10%**	**0.15%**	**0.68%**
Water	18.02	6.18%	NA	1.11	4.43%	NA	NA	NA
Hydrogen Sulfide	34.08	0.01%	0.01%	0.00	0.02%	0.02%	NA	NA
Carbon Dioxide	44.01	16.85%	17.96%	7.41	29.53%	30.90%	NA	NA
Nitrogen	28.01	1.62%	1.73%	0.45	1.81%	1.90%	NA	NA
Totals		100.00%	100.00%	25.10	100.00%	100.00%	100.00%	

Average Molecular Weight of VOCs: **47.98 lb/lb-mol**

Notes:

* Weight Percent corrected to remove Water, Carbon Dioxide,Nitrogen, and H2S content.

** Weight Percent corrected to remove non-VOC content.

Gas Analysis - AMINE-1 Still

Gas Constituent	Molecular Weight (lb/lb-mol)	Mole %	Mole % Without Water	Weight (lb/lbmole Gas)	Weight %	Weight % Without Water	Total HC Corrected Weight * %	Total VOC Corrected Weight ** %
Methane	16.04	0.14%	0.16%	0.02	0.06%	0.06%	47.67%	NA
Ethane	30.07	0.04%	0.05%	0.01	0.03%	0.03%	26.34%	NA
Total HC (Non-VOC)		**0.19%**	**0.20%**		**0.09%**	**0.09%**	**74.01%**	**NA**
Propane	44.10	0.02%	0.02%	0.01	0.02%	0.02%	19.38%	0.16%
Iso-Butane	58.12	0.00%	0.00%	0.00	0.00%	0.00%	0.15%	0.00%
N-Butane	58.12	0.00%	0.00%	0.00	0.01%	0.01%	4.82%	0.04%
Iso-Pentane	72.15	0.00%	0.00%	0.00	0.00%	0.00%	0.19%	0.00%
N-Pentane	72.15	0.00%	0.00%	0.00	0.00%	0.00%	0.66%	0.01%
Other Hexanes	86.18	0.00%	0.00%	0.00	0.00%	0.00%	0.48%	0.00%
n-Hexane	86.18	0.00%	0.00%	0.00	0.00%	0.00%	0.11%	0.00%
Heptane	100.21	0.00%	0.00%	0.00	0.00%	0.00%	0.06%	0.00%
2,2,4-Trimethylpentane	114.23	0.00%	0.00%	0.00	0.00%	0.00%	0.03%	0.00%
Octanes +	114.23	0.00%	0.00%	0.00	0.00%	0.00%	0.05%	0.00%
Benzene	78.11	0.00%	0.00%	0.00	0.00%	0.00%	0.02%	0.00%
Toluene	92.14	0.00%	0.00%	0.00	0.00%	0.00%	0.02%	0.00%
Ethylbenzene	106.17	0.00%	0.00%	0.00	0.00%	0.00%	0.00%	0.00%
Xylenes	106.16	0.00%	0.00%	0.00	0.00%	0.00%	0.01%	0.00%
Total NMNE VOC		**0.03%**	**0.03%**	**0.01**	**0.03%**	**0.03%**	**25.99%**	**0.22%**
Total HAPs		**0.00%**	**0.00%**	**0.00**	**0.00%**	**0.00%**	**0.19%**	**0.00%**
Water	18.02	7.14%	NA	1.29	3.06%	NA	NA	NA
Hydrogen Sulfide	34.08	0.10%	0.11%	0.04	0.08%	0.09%	NA	NA
Carbon Dioxide	44.01	92.54%	99.66%	40.73	96.74%	99.79%	NA	NA
Nitrogen	28.01	0.00%	0.00%	0.00	0.00%	0.00%	NA	NA
Totals		100.00%	100.00%	42.10	100.00%	100.00%	100.00%	

Average Molecular Weight of VOCs: **0.17 lb/lb-mol**

Notes:

* Weight Percent corrected to remove Water, Carbon Dioxide,Nitrogen, and H2S content.

** Weight Percent corrected to remove non-VOC content.

SO2 Assumptions:
SO2 Emissions Calculations from combustion of AMINE Unit vent stream
Assumes all H2S in the gas stream is removed by the AMINE units and oxidized to SO2 by the thermal oxidizer.
H2S Assumptions:
Based on 98% control efficiency, 2% not oxidized
H2S content "Pipeline spec"

	8	Grains H2S/100scf		using conversion factor
	80,000.00	grains H2S/MMscf		(Sulfur Measurement Handbook Rev7)
	127.74	ppm		1 pound = 7000 grains
Conversion factor	1.43E-04	lb/grains		
				MW
			H2S	34.1
	1.14E-05	lb H2S/scf	S	32.1
	1.08E-05	lb S/scf	SO2	64.1

AMINE-1

Throughput	6.00E+07	scfd
	21900.00	MMSCF/yr
	125.14	TPY H2S uncontrolled
	28.57	lbs/hr H2S uncontrolled
	98.00%	Control Efficiency
	2.50	TPY H2S controlled
	0.57	lbs/hr H2S controlled

SO2 emissions		
lb/hr	**lb/day**	**tpy**
64.45	1288.98	235.24

lb/hr Margin 20%

Compressor Blowdown Detail Sheet

Equipment Source Name:	COMP
Equipment Name	Compressor Blowdowns
Inlet Compressor Quantity	3
Residue Compressor Quantity	4
Refrigeration Compressor Quantity	1
Source Description	Reciprocating
Equipment Usage	Reciprocating Compressor
Control Efficiency	95%

Potential operation 8760 hr/yr

Total Potential Emissions

Pollutant	Uncontrolled Emissions		Controlled Emissions	
	(lb/hr)	(tpy)	(lb/hr)	(tpy)
VOC	2.27	9.95	0.11	0.50
Benzene	0.01	0.03	0.00	0.00
Toluene	0.00	0.00	0.00	0.00
Ethylbenzene	0.00	0.00	0.00	0.00
Xylenes	0.00	0.00	0.00	0.00
n-Hexane	0.01	0.05	0.00	0.00
2 2 4-trimethylpentane	0.00	0.00	0.00	0.00
Total HAPs	0.02	0.09	0.00	0.00

Potential Emissions Per Inlet Compressor Blowdown

Pollutant	Emission Factor (Mscf/event)	Frequency (events/yr)	(ton/blowdown)	Uncontrolled Emissions		Controlled Emissions		Source of Emission Factor
				(lb/hr)	(tpy)	(lb/hr)	(tpy)	
VOC	2.00	120	0.0262	0.72	3.15	0.04	0.16	Engineering Estimation
Benzene				0.00	0.01	0.00	0.00	Engineering Calculation
Toluene				0.00	0.00	0.00	0.00	Engineering Calculation
Ethylbenzene				0.00	0.00	0.00	0.00	Engineering Calculation
Xylenes				0.00	0.00	0.00	0.00	Engineering Calculation
n-Hexane				0.00	0.02	0.00	0.00	Engineering Calculation
2 2 4-trimethylpentane				0.00	0.00	0.00	0.00	Engineering Calculation
Total HAPs				0.01	0.03	0.00	0.00	

Potential Emissions Per Residue Compressor Blowdown

Pollutant	Emission Factor (Mscf/event)	Frequency (events/yr)	(ton/blowdown)	Uncontrolled Emissions		Controlled Emissions		Source of Emission Factor
				(lb/hr)	(tpy)	(lb/hr)	(tpy)	
VOC	2.00	120	0.0008	0.02	0.10	0.00	0.00	Engineering Estimation
Benzene				0.00	0.00	0.00	0.00	Engineering Calculation
Toluene				0.00	0.00	0.00	0.00	Engineering Calculation
Ethylbenzene				0.00	0.00	0.00	0.00	Engineering Calculation
Xylenes				0.00	0.00	0.00	0.00	Engineering Calculation
n-Hexane				0.00	0.00	0.00	0.00	Engineering Calculation
2 2 4-trimethylpentane				0.00	0.00	0.00	0.00	Engineering Calculation
Total HAPs				0.00	0.00	0.00	0.00	

Based on 10%VOC

Potential Emissions Per Refrigeration Compressor Blowdown

Pollutant	Emission Factor (Mscf/event)	Frequency (events/yr)	(ton/blowdown)	Uncontrolled Emissions		Controlled Emissions		Source of Emission Factor
				(lb/hr)	(tpy)	(lb/hr)	(tpy)	
VOC	2.00	1	0.1164	0.03	0.12	0.00	0.01	Engineering Estimation
Benzene				0.00	0.00	0.00	0.00	Engineering Calculation
Toluene				0.00	0.00	0.00	0.00	Engineering Calculation
Ethylbenzene				0.00	0.00	0.00	0.00	Engineering Calculation
Xylenes				0.00	0.00	0.00	0.00	Engineering Calculation
n-Hexane				0.00	0.00	0.00	0.00	Engineering Calculation
2 2 4-trimethylpentane				0.00	0.00	0.00	0.00	Engineering Calculation
Total HAPs				0.00	0.00	0.00	0.00	

Sample Calculation

2.000 Mscf/event * 1000 scf/Mscf / 379 scf/lb-mol * 9.95 lb/lb-mol * 1/2000 lb/ton * 120 events/year = 3.15 tpy

Compressor Blowdown Detail Sheet

Equipment Source Name:	PLANT BD			
Equipment Name	Gas Plant Blowdown			
Quantity	1			
Source Description	Gas Plant Blowdown	Plant Volume	60.0	MMscf/day
Equipment Usage	Gas Plant Blowdown	Potential operation	8760	hr/yr
Control Efficiency	95%			

Total Potential Emissions

Pollutant	Uncontrolled Emissions		Controlled Emissions	
	(lb/hr)	(tpy)	(lb/hr)	(tpy)
VOC	32803.52	16.40	1640.18	0.82
Benzene	105.62	0.05	5.28	0.00
Toluene	15.19	0.01	0.76	0.00
Ethylbenzene	0.00	0.00	0.00	0.00
Xylenes	0.00	0.00	0.00	0.00
n-Hexane	181.91	0.09	9.10	0.00
2 2 4-trimethylpentane	0.00	0.00	0.00	0.00
Total HAPs	302.73	0.15	15.14	0.01

Potential Emissions Per Blowdown

Pollutant	Volume	Frequency	Event Duration	Uncontrolled Emissions		Controlled Emissions		Source of Emission Factor
	(MMScf/d)	(events/yr)	(hr/event)	(lb/hr)	(tpy)	(lb/hr)	(tpy)	
VOC	60.00	1	0.5	32803.52	16.40	1640.18	0.82	Engineering Calculation
Benzene				105.62	0.05	5.28	0.00	Engineering Calculation
Toluene				15.19	0.01	0.76	0.00	Engineering Calculation
Ethylbenzene				0.00	0.00	0.00	0.00	Engineering Calculation
Xylenes				0.00	0.00	0.00	0.00	Engineering Calculation
n-Hexane				181.91	0.09	9.10	0.00	Engineering Calculation
2 2 4-trimethylpentane				0.00	0.00	0.00	0.00	Engineering Calculation
Total HAPs				302.73	0.15	15.14	0.01	

Sample Calculation

60.000 Mscf/event * 1000 scf/Mscf / 379 scf/lb-mol * 9.95 lb/lb-mol * 1/2000 lb/ton * 1 events/year = 16.40 tpy

Flare Detail Sheet

Equipment Source Name	TO-1	Stack Height	30	ft
Source Description	Thermal Oxidizer	Potential Operation	8760	hr/yr
Equipment Make	TBD			
Equipment Model	TBD			
Quantity	1			
Destruction Efficiency	98%			

Total Emissions

Pollutant	Estimated Emissions	
	(lb/hr)	(tpy)
NOx	1.56	6.82
CO	1.31	5.73
VOC	0.19	0.83
SO2	64.45	235.24
PM10	0.00	0.00
Benzene	0.00	0.00
Toluene	0.00	0.00
Ethylbenzene	0.00	0.00
Xylenes	0.00	0.00
n-Hexane	0.00	0.00
2 2 4-trimethylpentane	0.00	0.00
Total HAPs	0.00	0.01

Pilot Stream

Pilot Rating	12.00	MMBtu/hr
Pilot Heat Value	1066.43	Btu/scf
Pilot Gas Flow Rate	11.252	Mscf/hr

Pollutant	EF	Estimated Emissions		Source of Emission Factor
	(lb/MMBtu)	(lb/hr)	(tpy)	
NOx	0.0980	1.18	5.15	AP-42 Table 1.4-1
CO	0.082	0.99	4.33	AP-42 Table 1.4-1
VOC	N/A	0.19	0.83	Engineering Calculation
Benzene	N/A	0.00	0.00	Engineering Calculation
Toluene	N/A	0.00	0.00	Engineering Calculation
Ethylbenzene	N/A	0.00	0.00	Engineering Calculation
Xylenes	N/A	0.00	0.00	Engineering Calculation
n-Hexane	N/A	0.00	0.00	Engineering Calculation
2 2 4-trimethylpentane	N/A	0.00	0.00	Engineering Calculation
Total HAPs		0.00	0.01	

Amine Flash Gas Waste Stream				
Vapor Flow Rate	33.326 MMscf/yr		25.00% Margin	
	3.804 Mscf/hr			
Total Emissions Heat Value	888.18 Btu/scf		Based on Amine Gas Analysis (Enerflex)	
Pollutant	EF (lb/MMBtu)	Estimated Emissions (lb/hr)	Estimated Emissions (tpy)	Source of Emission Factor
NOx	0.0980	0.33	1.45	AP-42 Table 1.4-1
CO	0.082	0.28	1.22	AP-42 Table 1.4-1
VOC[1]	N/A	N/A	N/A	N/A
PM10	0.01	0.00	0.00	AP-42 Table 1.4-2

Amine Acid Gas Waste Stream				
Vapor Flow Rate	1325.593 MMscf/yr		25.00% Margin	
	151.323 Mscf/hr			
W&S Emissions Heat Value	3.272 Btu/scf		Based on Amine Gas Analysis (Enerflex)	
Pollutant	EF (lb/MMBtu)	Estimated Emissions (lb/hr)	Estimated Emissions (tpy)	Source of Emission Factor
NOx	0.0980	0.05	0.21	AP-42 Table 1.4-1
CO	0.082	0.04	0.18	AP-42 Table 1.4-1
VOC[1]	N/A	N/A	N/A	N/A
PM10	0.01	0.00	0.00	AP-42 Table 1.4-2

1 - VOC emissions from produced gas stream are calculated using a mass balance and a 98% destruction efficiency. VOC emissions from waste streams are shown at the amine.

Sample Calculation for NOx from Tank Waste Stream

0.098 lb/MMBtu * 3.804 MMscf/yr * 0,888.2 Btu/scf / 8,760 hr/yr = 0.33 lb/hr

Flare Detail Sheet

Equipment Source Name	FL-1	Stack Height	100	ft
Source Description	Upset/Maintenance Flare	Potential Operation	8760	hr/yr
Equipment Make	TBD			
Equipment Model	TBD			
Quantity	1			
Destruction Efficiency	95%			

Total Emissions

Pollutant	Estimated Emissions (lb/hr)	Estimated Emissions (tpy)
NOx	251.60	26.48
CO	1147.00	120.70
VOC	92.94	14.14
SO2	6.15	1.31
PM10	5.75	0.88
Benzene	0.00	0.00
Toluene	0.00	0.00
Ethylbenzene	0.00	0.00
Xylenes	0.00	0.00
n-Hexane	0.00	0.00
2 2 4-trimethylpentane	0.00	0.00
Total HAPs	0.00	0.00

Pilot Stream

Pilot Rating	0.50	MMBtu/hr
Pilot Heat Value	1066.43	Btu/scf
Pilot Gas Flow Rate	0.469	Mscf/hr

Pollutant	EF (lb/MMBtu)	Estimated Emissions (lb/hr)	Estimated Emissions (tpy)	Source of Emission Factor
NOx	0.0680	0.03	0.15	AP-42 Table 13.5-1
CO	0.310	0.16	0.68	AP-42 Table 13.5-2
VOC	N/A	0.02	0.09	Engineering Calculation
Benzene	N/A	0.00	0.00	Engineering Calculation
Toluene	N/A	0.00	0.00	Engineering Calculation
Ethylbenzene	N/A	0.00	0.00	Engineering Calculation
Xylenes	N/A	0.00	0.00	Engineering Calculation
n-Hexane	N/A	0.00	0.00	Engineering Calculation
2 2 4-trimethylpentane	N/A	0.00	0.00	Engineering Calculation
Total HAPs		0.00	0.00	

Residue Gas Stream

Produced Gas Flow Rate	693.4	MMscf/yr	
	79.2	Mscf/hr	
Max Hourly Gas Flow Rate	2291.7	Mscf/hr	
Gas Heating Value	1066.43	Btu/scf	Based on Residue Gas Analysis
Max Sulfur Content[2]	2,000	grains/MMscf	AP42 Chapter 3.2

Pollutant	EF (lb/MMBtu)	Estimated Emissions (lb/hr)	Estimated Emissions (tpy)	Source of Emission Factor
NOx	0.068	166.19	25.14	AP-42 Table 13.5-1
CO	0.31	757.61	114.62	AP-42 Table 13.5-2
VOC[1]	N/A	92.92	14.06	Engineering Calculation
SO2	N/A	1.31	0.20	Engineering Calculation
PM10[2]	40	5.72	0.87	AP-42 Table 13.5-1
Benzene	N/A	0.00	0.00	Engineering Calculation
Toluene	N/A	0.00	0.00	Engineering Calculation
Ethylbenzene	N/A	0.00	0.00	Engineering Calculation
Xylenes	N/A	0.00	0.00	Engineering Calculation
n-Hexane	N/A	0.00	0.00	Engineering Calculation
2 2 4-trimethylpentane	N/A	0.00	0.00	Engineering Calculation
Total HAPs		0.00	0.00	

Maintenance Waste Stream			
Vapor Flow Rate			
Compressor Blowdown	1,682.000	Mscf/yr	
Plant Blowdown	2,500.000	Mscf/yr	
Misc. Pipeline Flaring[1]	240.000	Mscf/yr	
Total Vapor Flow Rate	4.422	MMscf/yr	
	0.505	Mscf/hr	
Waste Stream Heat Value	1479.8	Btu/scf	
Max Sulfur Content	80,000	grains/MMscf	Maximum measured H2S concentration

Pollutant	EF (lb/MMBtu)	Estimated Emissions (lb/hr)	(tpy)	Source of Emission Factor
NOx	0.068	251.57	0.22	AP-42 Table 13.5-1
CO	0.31	1146.85	1.01	AP-42 Table 13.5-2
VOC	N/A	0.04	0.16	Engineering Calculation
SO2	N/A	0.01	0.05	Engineering Calculation
PM10[2]	40	0.00	0.01	AP-42 Table 13.5-1

Thermal Oxidizer Downtime Waste Stream			
TO Potential Downtime	438.0	hr/yr	
Vapor Flow Rate	92.86	MMscf/yr	
	212.01	Mscf/hr	
Waste Stream Heat Value	304.4	Btu/scf	Engineering Calculation
Max Sulfur Content	80,000	grains/MMscf	Maximum measured H2S concentration

Pollutant	EF (lb/MMBtu)	Estimated Emissions (lb/hr)	(tpy)	Source of Emission Factor
NOx	0.068	4.39	0.96	AP-42 Table 13.5-1
CO	0.31	20.01	4.38	AP-42 Table 13.5-2
VOC	N/A	N/A	N/A	N/A
SO2	N/A	4.84	1.06	Engineering Calculation
PM10[4]	40	0.03	0.01	AP-42 Table 13.5-1

1 - VOC emissions from process gas stream and miscellaneous pipeline flaring are calculated using a mass balance and a 95% destruction efficiency. VOC emissions from maintenance and thermal oxidizer downtime waste streams are shown at compressor blowdowns, plant blowdowns and amine unit.
2 - PM10 emission factor in units of μg/L, assuming a lightly smoking flare.
3 - Maintenace volume includes 240 Mscf/yr for miscellaneous activities to be conservative in emission estimations.

Sample Calculation for NOx from Process Gas Stream
0.068 lb/MMBtu * 1E6 scf/MMscf * 693.44 MMscf/yr * 1,066.43 Btu/scf * MMBtu / 1E6 Btu / 8,760 hr/yr = 166.19 lb/hr

Sample Calculation for NOx from Tank Waste Stream
0.068 lb/MMBtu * 0.505 MMscf/yr * 1,479.8 Btu/scf / 8,760 hr/yr = 251.57 lb/hr

Flare Detail Sheet

Equipment Source Name	FL-2	Stack Height	TBD	ft
Source Description	Tank Flare	Potential Operation	8760	hr/yr
Equipment Make	TBD			
Equipment Model	TBD			
Quantity	1			
Destruction Efficiency	95%			

Total Emissions

Pollutant	Estimated Emissions	
	(lb/hr)	(tpy)
NOx	0.89	3.91
CO	4.07	17.82
VOC	0.00	0.02
SO2	0.00	0.00
PM10	0.00	0.01
Benzene	0.00	0.00
Toluene	0.00	0.00
Ethylbenzene	0.00	0.00
Xylenes	0.00	0.00
n-Hexane	0.00	0.00
2 2 4-trimethylpentane	0.00	0.00
Total HAPs	0.00	0.00

Pilot Stream

Pilot Rating	0.10	MMBtu/hr
Pilot Heat Value	1066.43	Btu/scf
Pilot Gas Flow Rate	0.094	Mscf/hr

Pollutant	EF	Estimated Emissions		Source of Emission Factor
	(lb/MMBtu)	(lb/hr)	(tpy)	
NOx	0.0680	0.01	0.03	AP-42 Table 13.5-1
CO	0.310	0.03	0.14	AP-42 Table 13.5-2
VOC	N/A	0.00	0.02	Engineering Calculation
Benzene	N/A	0.00	0.00	Engineering Calculation
Toluene	N/A	0.00	0.00	Engineering Calculation
Ethylbenzene	N/A	0.00	0.00	Engineering Calculation
Xylenes	N/A	0.00	0.00	Engineering Calculation
n-Hexane	N/A	0.00	0.00	Engineering Calculation
2 2 4-trimethylpentane	N/A	0.00	0.00	Engineering Calculation
Total HAPs		0.00	0.00	

Tank Waste Stream

Vapor Density:			
Gunbarrel	0.1209	lb/scf	Promax
Condensate	0.0893	lb/scf	TANKS 4.0.9d
Oil	0.0893	lb/scf	TANKS 4.0.9d
Produced Water	0.0014	lb/scf	TANKS 4.0.9d
Tank Emissions:			
Gunbarrel	5,468,485.42	lb/yr	Promax
Condensate	69,897.16	lb/yr	TANKS 4.0.9d
Oil	7,438.04	lb/yr	TANKS 4.0.9d
Produced Water	9.51	lb/yr	TANKS 4.0.9d
Uncontrolled Recovery- Vapor:	46,097,576.69	scf/yr	
Vapor Margin:	20.00%		
Uncontrolled Recovery- Vapor With Margin :	151,554	scf/day	
Total Emissions Heat Value:	2050	Btu/scf	Engineering Estimation
Total Heat Flow:	310,685,037	Btu/day	
Total Heat Flow:	12.95	MMBtu/hr	

Pollutant	EF	Estimated Emissions		Source of Emission Factor
	(lb/MMBtu)	(lb/hr)	(tpy)	
NOx	0.068	0.88	3.86	AP-42 Table 13.5-1
CO	0.31	4.01	17.58	AP-42 Table 13.5-2
VOC[1]	N/A	N/A	N/A	N/A

PM10[2]	40	0.00	0.01	AP-42 Table 13.5-1

Loadout Waste Stream

Potential Emissions	55082.5	lb/yr	Based on AP-42 Section 5.2.1
Vapor Molecular Weight	64.0	lb/lb-mol	Based on TANKS 4.0.9d
Vapor Flow Rate	0.326	MMscf/yr	
	0.037	Mscf/hr	
Emissions Heat Value	2050	Btu/scf	Engineering Estimation

Pollutant	EF (lb/MMBtu)	Estimated Emissions (lb/hr)	Estimated Emissions (tpy)	Source of Emission Factor
NOx	0.068	0.01	0.02	AP-42 Table 13.5-1
CO	0.31	0.02	0.10	AP-42 Table 13.5-2
VOC[1]	N/A	N/A	N/A	N/A
PM10[2]	40	0.00	0.00	AP-42 Table 13.5-1

1 - VOC emissions from waste streams are shown at tanks and loadout.
2 - PM10 emission factor in units of μg/L, assuming a lightly smoking flare.

Sample Calculation for NOx from Tank Waste Stream

0.068 lb/MMBtu * 12.945 MMBtu/hr = 0.88 lb/hr

Fugitive Dust Emissions Detail Sheet

Equipment Source Name:	HR-1		
Source Description:	Road Dust		
Operation:	24	hr/day	365 days/yr
Emission Controls:	None		

Potential Emissions

Pollutant	Estimated Potential Emissions				Source of Emission Calculations
	Uncontrolled		Controlled		
	lb/hr	tpy	lb/hr	tpy	
PM30*	12.49	0.23	12.49	0.23	AP-42 Section 13.2.2
PM10	3.18	0.06	3.18	0.06	AP-42 Section 13.2.2
PM 2.5	0.32	0.01	0.32	0.01	AP-42 Section 13.2.2

* Assumed equivalent to total suspended particulate matter (TSP)

Mean Vehicle Weight (W)		17.7	tons	Engineering Calculation
Surface Material Silt Content (s)		4.8	%	NMED Default[2]
Mean # of Days with > 0.01 inch of precipitation		70	Days	NMED Default[2]
Material moisture content (%water)		2	%	NMED Default[2]
Mean Wind Speed		11	mph	NMED Default[2]
Oil Production Trucked	100% of max throughput	4.2	bbl/day	
Condensate Production Trucked	100% of max throughput	600.0	bbl/day	
Produced Water Production trucked	100% of max throughput	4.2	bbl/day	

Tech Truck[1]	5,000 lb				
	1 trips/day				
	0.26 miles/day				
	1.49 lb/day	PM30			
	0.38 lb/day	PM10			
	0.04 lb/day	PM 2.5			
Oil Hauler[3]	200 BBL Oil/trip	Truck capacity		12,000	lb Empty weight
	41,820 lb			7.1	lb/gal (oil)
	0.02 trips/day				
	0.01 miles/day				
	0.03 lb/day	PM30			
	0.01 lb/day	PM10			
	0.00 lb/day	PM 2.5			
Condensate Hauler[3]	200 BBL Condensate	Truck capacity		12,000	lb Empty weight
	35,520 lb			5.6	lb/gal (Condensate RVP 12)
	3 trips/day				
	52 miles/day				
	298.09 lb/day	PM30			
	75.97 lb/day	PM10			
	7.60 lb/day	PM 2.5			
Produced Water Hauler[4]	140 BBL PW/trip	Truck capacity		12,000	Empty weight
	36,402 lb	(12,000 empty weight)		8.3	lb/gal (water)
	0 trips/day				
	0.01 miles/day				
	0.04 lb/day	PM30			
	0.01 lb/day	PM10			
	0.00 lb/day	PM 2.5			

52.27 Total miles/day (Tech Truck + Oil Hauler + Produced Water Hauler)
2.18 Total miles/hr
19080 Total miles/yr

Fugitive Dust (PM30) per mile traveled	5.73 lb/VMT	AP-42 Eqn 13.2.2-1a &2
Fugitive Dust (PM10) per mile traveled	1.46 lb/VMT	AP-42 Eqn 13.2.2-1a &2
Fugitive Dust (PM2.5) per mile traveled	0.15 lb/VMT	AP-42 Eqn 13.2.2-1a &2
Vehicle miles traveled	0.26 miles/trip	Engineering Estimation

Notes:

1 - Based on the weight of a Ford F-150

2 - NMED Department Accepted Values for: Aggregate Handling, Storage Pile, and Haul Road Emissions

3 - Based on the assumption each hauler can carry 200 bbls of oil per visit

4 - Based on the assumption each hauler can carry 140 bbls of produced water per visit

Sample Calculation for PM30

5.73 lb/VMT * (0.01 + 0.01 + 0.26) miles/day * 365 days/yr / 2000 lb/ton * (365-70)/ 365 = 0.23 tpy

Haul Road Modeling Calculations

Plume Height	6.80 m	NM AQB 2019 Modeling Guidance Chapter 5.3.3
Vehicle Height	4 m	NM AQB 2019 Modeling Guidance Table 28
Initial Vertical Dimension	3.16 m	NM AQB 2019 Modeling Guidance Chapter 5.3.3
Release Height	3.40 m	NM AQB 2019 Modeling Guidance Chapter 5.3.3
Adjusted Road Width	13.6 m	NM AQB 2019 Modeling Guidance Chapter 5.3.3
Road Width	7.62 m	Engineering Estimation
Initial Horizontal Dimensior	6.33 m	NM AQB 2019 Modeling Guidance Chapter 5.3.3
Number of Volume Source	55 sources	Engineering Estimation

Uncontrolled MSS Activities

Equipment Source Name MAIN-1
Source Description: Maintenance Activities

Emission Summary

Activity
Aerosol
Painting
Tank Degassing
Tank Cleaning
Engine Startup/Warmup
Sump Cleanout
Pipeline Degassing
Pigging
Filter Changes

	lb/hr*	tpy
TOTAL VOC Emissions	--	10.00

Notes:
* - Hourly emission limits are not appropriate for this operating situation.

Libby Gas Plant Gas Sample dated 1/9/2019

Gas Constituent	Molecular Weight (lb/lb-mol)	Mole %	Mole % Without Water	Weight (lb/lbmole Gas)	Weight %	Weight % Without Water	Total HC Corrected Weight * %	Total VOC Corrected Weight ** %
Methane	16.04	61.85%	61.85%	9.92	38.64%	38.64%	40.23%	NA
Ethane	30.07	15.96%	15.96%	4.80	18.69%	18.69%	19.45%	NA
Total HC (Non-VOC)		**77.81%**	**77.81%**		**57.33%**	**57.33%**	**59.68%**	**NA**
Propane	44.10	11.39%	11.39%	5.02	19.56%	19.56%	20.36%	50.50%
Iso-Butane	58.12	1.64%	1.64%	0.95	3.71%	3.71%	3.86%	9.58%
N-Butane	58.12	4.17%	4.17%	2.42	9.43%	9.43%	9.82%	24.35%
Iso-Pentane	72.15	0.85%	0.85%	0.62	2.40%	2.40%	2.50%	6.20%
N-Pentane	72.15	0.83%	0.83%	0.60	2.34%	2.34%	2.44%	6.04%
Other Hexanes	86.18	0.26%	0.26%	0.22	0.86%	0.86%	0.90%	2.23%
n-Hexane	86.18	0.0640%	0.06%	0.06	0.21%	0.21%	0.22%	0.55%
Heptane	100.21	0.0130%	0.01%	0.01	0.05%	0.05%	0.05%	0.13%
2,2,4-Trimethylpentane	114.23	0.0000%	0.00%	0.00	0.00%	0.00%	0.00%	0.00%
Octanes	114.23	0.0020%	0.00%	0.00	0.01%	0.01%	0.01%	0.02%
Nonanes	128.20	0.0020%	0.00%	0.00	0.01%	0.01%	0.01%	0.03%
Decanes+	142.29	0.0000%	0.00%	0.00	0.00%	0.00%	0.00%	0.00%
Benzene	78.11	0.0410%	0.04%	0.03	0.12%	0.12%	0.13%	0.32%
Toluene	92.14	0.0050%	0.01%	0.00	0.02%	0.02%	0.02%	0.05%
Ethylbenzene	106.17	0.0000%	0.00%	0.00	0.00%	0.00%	0.00%	0.00%
Xylenes	106.16	0.0000%	0.00%	0.00	0.00%	0.00%	0.00%	0.00%
Total NMNE VOC		**19.27%**	**19.27%**	**9.95**	**38.73%**	**38.73%**	**40.32%**	**100.00%**
Total HAPs		**0.11%**	**0.11%**	**0.09**	**0.36%**	**0.36%**	**0.37%**	**0.92%**
Water	18.02	0.00%	NA	0.00	0.00%	NA	NA	NA
Hydrogen Sulfide	34.08	0.00%	0.00%	0.00	0.00%	0.00%	NA	NA
Carbon Dioxide	44.01	1.21%	1.21%	0.53	2.07%	2.07%	NA	NA
Nitrogen	28.01	1.71%	1.71%	0.48	1.87%	1.87%	NA	NA
Totals		100.00%	100.00%	25.68	100.00%	100.00%	100.00%	

Average Molecular Weight of VOCs: **51.62 lb/lb-mol**

Notes:

* Weight Percent corrected to remove Water, Carbon Dioxide,Nitrogen, and H2S content.

** Weight Percent corrected to remove non-VOC content.

Libby Gas Plant - Promax Stream 47

Gas Constituent	Molecular Weight (lb/lb-mol)	Mole %	Weight (lb/lbmole Gas)	Weight %	Total HC Corrected Weight * %	Total VOC Corrected Weight ** %
Methane	16.04	88.38%	14.18	79.96%	82.72%	NA
Ethane	30.07	8.83%	2.66	14.97%	15.49%	NA
Total HC (Non-VOC)		97.21%		94.93%	98.21%	NA
Propane	44.10	0.62%	0.28	1.55%	1.61%	89.53%
Iso-Butane	58.12	0.02%	0.01	0.07%	0.07%	3.83%
N-Butane	58.12	0.03%	0.02	0.11%	0.11%	6.08%
Iso-Pentane	72.15	0.00%	0.00	0.01%	0.01%	0.31%
N-Pentane	72.15	0.00%	0.00	0.00%	0.00%	0.22%
Other Hexanes	86.18	0.00%	0.00	0.00%	0.00%	0.02%
n-Hexane	86.18	0.00%	0.00	0.00%	0.00%	0.00%
Heptane	100.21	0.00%	0.00	0.00%	0.00%	0.00%
2,2,4-Trimethylpentane	114.23	0.00%	0.00	0.00%	0.00%	0.00%
Octanes+	114.23	0.00%	0.00	0.00%	0.00%	0.00%
Benzene	78.11	0.00%	0.00	0.00%	0.00%	0.00%
Toluene	92.14	0.00%	0.00	0.00%	0.00%	0.00%
Ethylbenzene	106.17	0.00%	0.00	0.00%	0.00%	0.00%
Xylenes	106.16	0.00%	0.00	0.00%	0.00%	0.00%
Total NMNE VOC		**0.68%**	**0.31**	**1.73%**	**1.79%**	**100.00%**
Hydrogen Sulfide	34.08	0.00%	0.00	0.00%	NA	NA
Carbon Dioxide	44.01	0.01%	0.00	0.01%	NA	NA
Nitrogen	28.01	2.10%	0.59	3.32%	NA	NA
Totals		100.00%	17.73	100.00%	100.00%	

Average Molecular Weight of VOCs: **45.28 lb/lb-mol**

Lumped C6+ Natural Gas Analysis Conversion

Hexane+ Mol % from Gas Analysis	0.0001%

(Reference: Typical speciated C6+ from GRI-GLYCalc Help System)

	Production Weighted Mol % of C6***	Production Total Gas Mol %	Molecular Weight (lb/lb-mol)	Weight (lb/lb-mol Gas)	Weight% of C6+	Total Gas Weight%	Total VOC Corrected Weight%
Other Hexanes	63.85%	0.00005961%	86.18	55.03	62.25%	0.00%	0.002%
n-Hexane	14.79%	0.00001381%	86.18	12.75	14.42%	0.00%	0.001%
Heptane	6.87%	0.00000641%	100.2	6.88	7.79%	0.00%	0.000%
2,2,4-Trimethylpentane	2.67%	0.00000249%	114.23	3.05	3.45%	0.00%	0.000%
Octanes +	4.80%	0.00000448%	114.23	5.48	6.20%	0.00%	0.000%
Benzene	3.31%	0.00000309%	78.11	2.59	2.92%	0.00%	0.000%
Toluene	2.85%	0.00000266%	92.13	2.63	2.97%	0.00%	0.000%
Ethylbenzene	0.14%	0.00000013%	106.17	0.15	0.17%	0.00%	0.000%
Xylenes	0.72%	0.00000067%	106.17	0.76	0.86%	0.00%	0.000%
Totals C6+	**100.00%**	**0.0001%**					0.004%
Total HAPs						**0.0000%**	

Notes:

* Weight Percent corrected to remove Carbon Dioxide,Nitrogen, and H2S content.

** Weight Percent corrected to remove non-VOC content.

*** GRY-GLYCalc C6+ typical gas composition from Help System used to speciate Hexanes+ for HAP emissions.

Process Streams		**47**
Composition	**Status:**	**Solved**
Phase: **Total**	**From Block:**	**PIPE-1**
	To Block:	--
Mole Fraction		**%**
Methane		88.38%
Ethane		8.83%
Propane		0.62%
i-Butane		0.02%
n-Butane		0.03%
i-Pentane		0.0013388%
n-Pentane		0.0009551%
n-Hexane		0.0000918%
n-Heptane		0.0000014%
C8		0.0000001%
Water		0.00%
N2		2.10%
CO2		0.01%
H2S		0.00%
Triethylene Glycol		0.00%
EG		0.00%
MeOH		0.00%
MDEA		0.00%
CHEMTHERM 550		0.00%

Process Streams		**47**
Properties	**Status:**	**Solved**
Phase: **Total**	**From Block:**	**PIPE-1**
	To Block:	--
Property	**Units**	
Temperature	°F	75.1253
Pressure	psig	828.3127315
Mole Fraction Vapor	%	100
Mole Fraction Light Liquid	%	0
Mole Fraction Heavy Liquid	%	0
Molecular Weight	lb/lbmol	17.7327
Mass Density	lb/ft^3	2.99494
Molar Flow	lbmol/h	2275.60
Mass Flow	lb/h	40352.7
Vapor Volumetric Flow	ft^3/h	13473.6
Liquid Volumetric Flow	gpm	1679.83
Std Vapor Volumetric Flow	MMSCFD	20.7253
Std Liquid Volumetric Flow	sgpm	255.058
Compressibility		0.868260
Specific Gravity		0.612266
API Gravity		
Enthalpy	Btu/h	-7.37803E+07
Mass Enthalpy	Btu/lb	-1828.39
Mass Cp	Btu/(lb*°F)	0.617786
Ideal Gas CpCv Ratio		1.28750
Dynamic Viscosity	cP	0.01245206
Kinematic Viscosity	cSt	0.259557
Thermal Conductivity	Btu/(h*ft*°F)	0.0218038
Surface Tension	lbf/ft	
Net Ideal Gas Heating Value	Btu/ft^3	962.820
Net Liquid Heating Value	Btu/lb	20579.0
Gross Ideal Gas Heating Value	Btu/ft^3	1066.43
Gross Liquid Heating Value	Btu/lb	22796.7

Table 2-A: Regulated Emission Sources

Unit and stack numbering must correspond throughout the application package. If applying for a NOI under 20.2.73 NMAC, equipment exemptions under 2.72.202 NMAC do not apply.

Unit Number[1]	Source Description	Make	Model #	Serial #	Manufacturer's Rated Capacity[3] (Specify Units)	Requested Permitted Capacity[3] (Specify Units)	Date of Manufacture[2] Date of Construction/ Reconstruction[2]	Controlled by Unit # Emissions vented to Stack #	Source Classification Code (SCC)	For Each Piece of Equipment, Check One	RICE Ignition Type (CI, SI, 4SLB, 4SRB, 2SLB)[4]	Replacing Unit No.
ENG-1	Inlet Compressor Engine, x1	Caterpillar	G3508	TBD	690 hp	690 hp	> 7/1/2010 >6/12/2006	N/A ENG-1	20200254	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	4SLB	N/A
ENG 2-4	Inlet Compressor Engine, x3	Caterpillar	G3516	TBD	1,380 hp	1,380 hp	11/20/2017 , > 7/1/2010, TBD >6/12/2006	N/A ENG 2-4	20200254	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	4SLB	N/A
ENG 5-8	Residue Compressor Engine, x4	Caterpillar	G3516	TBD	1,380 hp	1,380 hp	> 7/1/2010 >6/12/2006	N/A ENG 5-8	20200254	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	4SLB	N/A
ENG 9-12	Residue Compressor Engine, x4	Waukesha	7044	TBD	1,680 hp	1,680 hp	> 7/1/2010 >6/12/2006	N/A ENG 9-12	20200253	☐ Existing (unchanged) ☐ To be Removed ☑ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	4SRB	N/A
TK-1	Gunbarrel Tank, x1	TBD	TBD	TBD	500 bbl	500 bbl	4/2018 4/2018	FL-2 TK-1	40400301 / 40400302	☐ Existing (unchanged) ☐ To be Removed ☑ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
TK 2-5	Stabilized Condensate Tanks, x4	TBD	TBD	TBD	400 bbl	400 bbl	4/2018 1/8/2018	FL-2 TK 2-5	31000212	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
TK-6	Slop Oil Tanks, x1	TBD	TBD	TBD	400 bbl	400 bbl	4/2018 1/8/2018	FL-2 TK-6	40400301 / 40400302	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
PWTK-1	Produced Water Tank, x1	TBD	TBD	TBD	400 bbl	400 bbl	4/2018 4/2018	FL-2 PWTK-1	40400301 / 40400302	☐ Existing (unchanged) ☐ To be Removed ☑ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
HTR-1	Hot Oil Heater, x1	TBD	TBD	TBD	49.42 MMBtu/hr	49.42 MMBtu/hr	4/2018 1/8/2018	N/A HTR-1	30600105	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
HTR-2	Regen Gas Heater, x1	TBD	TBD	TBD	11 MMBtu/hr	11 MMBtu/hr	4/2018 1/8/2018	N/A HTR-2	30600105	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
CONDLOAD-1	Truck Loading (Cond Loadout)	N/A	N/A	N/A	N/A	N/A	N/A N/A	FL-2 N/A	2310021030	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
OILLOAD-1	Truck Loading (Oil Loadout)	N/A	N/A	N/A	N/A	N/A	N/A N/A	FL-2 N/A	2310021030	☐ Existing (unchanged) ☐ To be Removed ☑ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
FUG-1	Equipment Leaks (OOOOa Fugitives)	N/A	N/A	N/A	N/A	N/A	N/A > 9/18/2015	N/A N/A	31088811	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
FUG-2	Equipment Leaks (Residue Fugitives)	N/A	N/A	N/A	N/A	N/A	N/A N/A	N/A N/A	31088811	☐ Existing (unchanged) ☐ To be Removed ☑ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
AMINE-1	Amine Unit, x1	TBD	TBD	TBD	60 MMScf/d	60 MMScf/d	2018 1/8/2018	TO-1 AMINE-1	31000305	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
COMP	Compressor Blowdowns, x7	TBD	TBD	N/A	N/A	N/A	N/A N/A	FL-1 N/A	31000313	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
PLANT BD	Plant Blowdown, x1	TBD	TBD	N/A	N/A	N/A	N/A N/A	FL-1 N/A	31000199	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
TO-1	Thermal Oxidizer, x1	TBD	TBD	TBD	N/A	N/A	2/2018 1/8/2018	N/A TO-1	31000199	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
FL-1	Upset/Maintenance Flare, x1	TBD	TBD	TBD	N/A	N/A	N/A 1/8/2018	N/A FL-1	31000160	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
FL-2	Tank Flare, x1	TBD	TBD	TBD	N/A	N/A	N/A 1/8/2018	N/A FL-2	31000160	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
HR 1	Road Dust, x1	N/A	N/A	N/A	N/A	N/A	N/A N/A	N/A N/A	31000199	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
MAIN-1	Maintenance Activities	N/A	N/A	N/A	N/A	N/A	N/A N/A	N/A N/A	31000199	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
UP/MAL	Upsets/Malfunctions	N/A	N/A	N/A	N/A	N/A	N/A N/A	N/A N/A	31000199	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A

[1] Unit numbers must correspond to unit numbers in the previous permit unless a complete cross reference table of all units in both permits is provided.
[2] Specify dates required to determine regulatory applicability. Date of construction/reconstruction is the approval date of NSR Permit No. 7482.
[3] To properly account for power conversion efficiencies, generator set rated capacity shall be reported as the rated capacity of the engine in horsepower, not the kilowatt capacity of the generator set.
[4] "4SLB" means four stroke lean burn engine, "4SRB" means four stroke rich burn engine, "2SLB" means two stroke lean burn engine, "CI" means compression ignition, and "SI" means spark ignition

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Table 2-B: Insignificant Activities[1] (20.2.70 NMAC) OR Exempted Equipment (20.2.72 NMAC)

All 20.2.70 NMAC (Title V) applications must list all Insignificant Activities in this table. All 20.2.72 NMAC applications must list Exempted Equipment in this table. If equipment listed on this table is exempt under 20.2.72.202.B.5, include emissions calculations and emissions totals for 202.B.5 "similar functions" units, operations, and activities in Section 6, Calculations. Equipment and activities exempted under 20.2.72.202 NMAC may not necessarily be Insignificant under 20.2.70 NMAC (and vice versa). Unit & stack numbering must be consistent throughout the application package. Per Exemptions Policy 02-012.00 (see http://www.env.nm.gov/aqb/permit/aqb_pol.html), 20.2.72.202.B NMAC Exemptions do not apply, but 20.2.72.202.A NMAC exemptions do apply to NOI facilities under 20.2.73 NMAC. List 20.2.72.301.D.4 NMAC Auxiliary Equipment for Streamline applications in Table 2-A. The List of Insignificant Activities (for TV) can be found online at http://www.env.nm.gov/aqb/forms/InsignificantListTitleV.pdf . TV sources may elect to enter both TV Insignificant Activities and Part 72 Exemptions on this form.

Unit Number	Source Description	Manufacturer	Model No.	Max Capacity	List Specific 20.2.72.202 NMAC Exemption (e.g. 20.2.72.202.B.5)	Date of Manufacture /Reconstruction[2]	For Each Piece of Equipment, Check Onc
			Serial No.	Capacity Units	Insignificant Activity citation (e.g. IA List Item #1.a)	Date of Installation /Construction[2]	
N/A	Misc. Insignificant Tanks	N/A	TBD	TBD	20.2.72.202.B.5	TBD	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
			TBD	TBD	N/A	TBD	
GEN-1	Generator Engine	Olympian	250LG6	374	20.2.72.202.B.3	After 7/1/2010	☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
			TBD	hp	N/A	N/A	
GEN-2	Generator Engine	Generac	TBD	65	20.2.72.202.B.3	2019	☐ Existing (unchanged) ☐ To be Removed ☑ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
			TBD	hp	N/A	N/A	
							☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
							☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
							☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
							☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
							☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
							☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
							☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
							☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
							☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
							☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced

[1] Insignificant activities exempted due to size or production rate are defined in 20.2.70.300.D.6, 20.2.70.7.Q NMAC, and the NMED/AQB List of Insignificant Activities, dated September 15, 2008. Emissions from these insignificant activities do not need to be reported, unless specifically requested.

[2] Specify date(s) required to determine regulatory applicability.

Table 2-C: Emissions Control Equipment

Unit and stack numbering must correspond throughout the application package. Only list control equipment for TAPs if the TAP's maximum uncontrolled emissions rate is over its respective threshold as listed in 20.2.72 NMAC, Subpart V, Tables A and B. In accordance with 20.2.72.203.A(3) and (8) NMAC, 20.2.70.300.D(5)(b) and (e) NMAC, and 20.2.73.200.B(7) NMAC, the permittee shall report all control devices and list each pollutant controlled by the control device regardless if the applicant takes credit for the reduction in emissions.

Control Equipment Unit No.	Control Equipment Description	Date Installed	Controlled Pollutant(s)	Controlling Emissions for Unit Number(s)[1]	Efficiency (% Control by Weight)	Method used to Estimate Efficiency
ENG-1	Oxidation Catalyst amd Air Fuel Ratio Controller	>6/12/2006	VOC, CO and CH2O	ENG-1	19% VOC, 22% CO and 50% CH2O	Subpart JJJJ (VOC and CO) / Permit Condition (CH2O)
ENG 2-8	Oxidation Catalyst amd Air Fuel Ratio Controller	>6/12/2006	VOC, CO and CH2O	ENG 2-8	31% VOC, 68% CO and 80% CH2O	Subpart JJJJ (VOC) / Permit Condition (CO and CH2O)
ENG 9-12	Non Selective Catalytic Reduction	>6/12/2006	NOx, CO	ENG 9-12	96% NOx, 96% CO	Performance Data
TO-1	Thermal Oxidizer	1/8/2018	VOC, H2S	AMINE-1	98%	Engineering Assumption
FL-1	Upset/Maintenance Flare	1/8/2018	VOC	AMINE-1 (Backup), COMP, PLANT BD, Misc Maintenance	95%	Engineering Assumption
FL-2	Tank Flare	1/8/2018	VOC	TK 1-6, PWTK-1, CONDLOAD-1, OILLOAD-1	95%	Engineering Assumption

[1] List each control device on a separate line. For each control device, list all emission units controlled by the control device.

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Table 2-D: Maximum Emissions (under normal operating conditions)

☐ **This Table was intentionally left blank because it would be identical to Table 2-E.**

Maximum Emissions are the emissions at maximum capacity and prior to (in the absence of) pollution control, emission-reducing process equipment, or any other emission reduction. Calculate the hourly emissions using the worst case hourly emissions for each pollutant. For each pollutant, calculate the annual emissions as if the facility were operating at maximum plant capacity without pollution controls for 8760 hours per year, unless otherwise approved by the Department. List Hazardous Air Pollutants (HAP) & Toxic Air Pollutants (TAPs) in Table 2-I. Unit & stack numbering must be consistent throughout the application package. Fill all cells in this table with the emission numbers or a "-" symbol. A "-" symbol indicates that emissions of this pollutant are not expected. Numbers shall be expressed to at least 2 decimal points (e.g. 0.41, 1.41, or 1.41E-4).

Unit No.	NOx		CO		VOC		SOx		PM[1]		PM10[1]		PM2.5[1]		H_2S		Lead	
	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr
ENG-1	1.52	6.66	3.93	17.19	1.70	7.46	0.02	0.07	0.06	0.25	0.06	0.25	0.06	0.25	--	--	--	--
ENG-2	3.04	13.33	7.39	32.39	3.47	15.19	0.03	0.14	0.11	0.50	0.11	0.50	0.11	0.50	--	--	--	--
ENG 1-2*	**3.04**	**13.33**	**7.39**	**32.39**	**3.47**	**15.19**	**0.03**	**0.14**	**0.11**	**0.50**	**0.11**	**0.50**	**0.11**	**0.50**	**--**	**--**	**--**	**--**
ENG-3	3.04	13.33	7.39	32.39	3.47	15.19	0.03	0.14	0.11	0.50	0.11	0.50	0.11	0.50	--	--	--	--
ENG-4	3.04	13.33	7.39	32.39	3.47	15.19	0.03	0.14	0.11	0.50	0.11	0.50	0.11	0.50	--	--	--	--
ENG-5	3.04	13.33	7.39	32.39	3.47	15.19	0.03	0.14	0.11	0.50	0.11	0.50	0.11	0.50	--	--	--	--
ENG-6	3.04	13.33	7.39	32.39	3.47	15.19	0.03	0.14	0.11	0.50	0.11	0.50	0.11	0.50	--	--	--	--
ENG-7	3.04	13.33	7.39	32.39	3.47	15.19	0.03	0.14	0.11	0.50	0.11	0.50	0.11	0.50	--	--	--	--
ENG-8	3.04	13.33	7.39	32.39	3.47	15.19	0.03	0.14	0.11	0.50	0.11	0.50	0.11	0.50	--	--	--	--
ENG-9	49.27	215.80	42.60	186.59	0.65	2.84	0.04	0.16	0.26	1.13	0.26	1.13	0.26	1.13	--	--	--	--
ENG-10	49.27	215.80	42.60	186.59	0.65	2.84	0.04	0.16	0.26	1.13	0.26	1.13	0.26	1.13	--	--	--	--
ENG-11	49.27	215.80	42.60	186.59	0.65	2.84	0.04	0.16	0.26	1.13	0.26	1.13	0.26	1.13	--	--	--	--
ENG-12	49.27	215.80	42.60	186.59	0.65	2.84	0.04	0.16	0.26	1.13	0.26	1.13	0.26	1.13	--	--	--	--
ENG 5-12*	**197.07**	**863.18**	**170.40**	**746.36**	**13.88**	**60.78**	**0.15**	**0.65**	**1.03**	**4.50**	**1.03**	**4.50**	**1.03**	**4.50**	**--**	**--**	**--**	**--**
TK-1	--	--	--	--	22.64	99.18	--	--	--	--	--	--	--	--	--	--	--	--
TK 2-5	--	--	--	--	7.98	34.95	--	--	--	--	--	--	--	--	--	--	--	--
TK-6	--	--	--	--	0.85	3.72	--	--	--	--	--	--	--	--	--	--	--	--
PWTK-1	--	--	--	--	0.00	0.00	--	--	--	--	--	--	--	--	--	--	--	--
HTR-1	2.42	10.61	4.07	17.82	0.27	1.17	0.14	0.60	0.37	1.61	0.37	1.61	0.37	1.61	--	--	--	--
HTR-2	1.08	4.72	0.91	3.97	0.06	0.26	0.03	0.13	0.08	0.36	0.08	0.36	0.08	0.36	--	--	--	--
CONDLOAD-1	--	--	--	--	99.91	27.35	--	--	--	--	--	--	--	--	--	--	--	--
OILLOAD-1	--	--	--	--	99.91	0.19	--	--	--	--	--	--	--	--	--	--	--	--
FUG-1	--	--	--	--	11.70	51.24	--	--	--	--	--	--	--	--	0.00	0.00	--	--
FUG-2	--	--	--	--	0.05	0.23	--	--	--	--	--	--	--	--	0.00	0.00	--	--
AMINE-1	--	--	--	--	39.84	174.52	--	--	--	--	--	--	--	--	--	--	--	--
COMP	--	--	--	--	2.27	9.95	--	--	--	--	--	--	--	--	--	--	--	--
PLANT BD	--	--	--	--	32803.52	16.40	--	--	--	--	--	--	--	--	--	--	--	--
TO-1	1.56	6.82	1.31	5.73	0.19	0.83	64.45	235.24	0.00	0.00	0.00	0.00	0.00	0.00	--	--	--	--
FL-1	251.60	26.48	1147.00	120.70	92.94	14.14	57.09	1.31	6.25	0.88	6.25	0.88	6.25	0.88	--	--	--	--
FL-2	0.89	3.91	4.07	17.82	0.00	0.02	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.01	--	--	--	--
HR-1	--	--	--	--	--	--	--	--	12.49	0.23	3.18	0.06	0.32	0.01	--	--	--	--
MAIN-1	--	--	--	--	--	10.00	--	--	--	--	--	--	--	--	--	--	--	--
UP/MAL	--	--	--	--	--	10.00	--	--	--	--	--	--	--	--	--	--	--	--
Totals	463.75	955.70	1349.94	1009.56	33206.42	560.51	121.95	238.35	20.55	9.09	11.25	8.91	8.39	8.86	0.00	0.00	--	--

[1]**Condensable Particulate Matter:** Include condensable particulate matter emissions for PM10 and PM2.5 if the source is a combustion source. Do not include condensable particulate matter for PM unless PM is set equal to PM10 and PM2.5. Particulate matter (PM) is not subject to an ambient air quality standard, but PM is a regulated air pollutant under PSD (20.2.74 NMAC) and Title V (20.2.70 NMAC).

* - Composite emissions represent worse case compressor engine emissions

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Table 2-E: Requested Allowable Emissions

Unit & stack numbering must be consistent throughout the application package. Fill all cells in this table with the emission numbers or a "-" symbol. A "-" symbol indicates that emissions of this pollutant are not expected. Numbers shall be expressed to at least 2 decimal points (e.g. 0.41, 1.41, or 1.41E^{-4}).

Unit No.	NOx		CO		VOC		SOx		PM[1]		PM10[1]		PM2.5[1]		H_2S		Lead	
	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr
ENG-1	1.52	6.66	3.04	13.33	1.38	6.06	0.02	0.07	0.06	0.25	0.06	0.25	0.06	0.25	--	--	--	--
ENG-2	3.04	13.33	2.37	10.40	2.40	10.50	0.03	0.14	0.11	0.50	0.11	0.50	0.11	0.50	--	--	--	--
ENG 1-2*	**3.04**	**13.33**	**3.04**	**13.33**	**2.40**	**10.50**	**0.03**	**0.14**	**0.11**	**0.50**	**0.11**	**0.50**	**0.11**	**0.50**	--	--	--	--
ENG-3	3.04	13.33	2.37	10.40	2.40	10.50	0.03	0.14	0.11	0.50	0.11	0.50	0.11	0.50	--	--	--	--
ENG-4	3.04	13.33	2.37	10.40	2.40	10.50	0.03	0.14	0.11	0.50	0.11	0.50	0.11	0.50	--	--	--	--
ENG-5	3.04	13.33	2.37	10.40	2.40	10.50	0.03	0.14	0.11	0.50	0.11	0.50	0.11	0.50	--	--	--	--
ENG-6	3.04	13.33	2.37	10.40	2.40	10.50	0.03	0.14	0.11	0.50	0.11	0.50	0.11	0.50	--	--	--	--
ENG-7	3.04	13.33	2.37	10.40	2.40	10.50	0.03	0.14	0.11	0.50	0.11	0.50	0.11	0.50	--	--	--	--
ENG-8	3.04	13.33	2.37	10.40	2.40	10.50	0.03	0.14	0.11	0.50	0.11	0.50	0.11	0.50	--	--	--	--
ENG-9	1.90	8.32	1.57	6.90	0.65	2.84	0.04	0.16	0.26	1.13	0.26	1.13	0.26	1.13	--	--	--	--
ENG-10	1.90	8.32	1.57	6.90	0.65	2.84	0.04	0.16	0.26	1.13	0.26	1.13	0.26	1.13	--	--	--	--
ENG-11	1.90	8.32	1.57	6.90	0.65	2.84	0.04	0.16	0.26	1.13	0.26	1.13	0.26	1.13	--	--	--	--
ENG-12	1.90	8.32	1.57	6.90	0.65	2.84	0.04	0.16	0.26	1.13	0.26	1.13	0.26	1.13	--	--	--	--
ENG 5-12*	**12.17**	**53.31**	**9.49**	**41.58**	**9.59**	**42.01**	**0.15**	**0.65**	**1.03**	**4.50**	**1.03**	**4.50**	**1.03**	**4.50**	--	--	--	--
TK-1	--	--	--	--	1.13	4.96	--	--	--	--	--	--	--	--	--	--	--	--
TK 2-5	--	--	--	--	0.40	1.75	--	--	--	--	--	--	--	--	--	--	--	--
TK-6	--	--	--	--	0.04	0.19	--	--	--	--	--	--	--	--	--	--	--	--
PWTK-1	--	--	--	--	0.00	0.00	--	--	--	--	--	--	--	--	--	--	--	--
HTR-1	2.42	10.61	4.07	17.82	0.27	1.17	0.14	0.60	0.37	1.61	0.37	1.61	0.37	1.61	--	--	--	--
HTR-2	1.08	4.72	0.91	3.97	0.06	0.26	0.03	0.13	0.08	0.36	0.08	0.36	0.08	0.36	--	--	--	--
ONDLOAD	--	--	--	--	33.47	9.16	--	--	--	--	--	--	--	--	--	--	--	--
OILLOAD-1	--	--	--	--	33.47	0.06	--	--	--	--	--	--	--	--	--	--	--	--
FUG-1	--	--	--	--	11.70	51.24	--	--	--	--	--	--	--	--	0.00	0.00	--	--
FUG-2	--	--	--	--	0.05	0.23	--	--	--	--	--	--	--	--	0.00	0.00	--	--
AMINE-1	--	--	--	--	2.79	3.93	--	--	--	--	--	--	--	--	--	--	--	--
COMP	--	--	--	--	0.11	0.50	--	--	--	--	--	--	--	--	--	--	--	--
PLANT BD	--	--	--	--	1640.18	0.82	--	--	--	--	--	--	--	--	--	--	--	--
TO-1	1.56	6.82	1.31	5.73	0.19	0.83	64.45	235.24	0.00	0.00	0.00	0.00	0.00	0.00	--	--	--	--
FL-1	251.60	26.48	1147.00	120.70	92.94	14.14	57.09	1.31	6.25	0.88	6.25	0.88	6.25	0.88	--	--	--	--
FL-2	0.89	3.91	4.07	17.82	0.00	0.02	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.01	--	--	--	--
HR-1	--	--	--	--	--	--	--	--	12.49	0.23	3.18	0.06	0.32	0.01	--	--	--	--
MAIN-1	--	--	--	--	--	10.00	--	--	--	--	--	--	--	--	--	--	--	--
UP/MAL	--	--	--	--	--	10.00	--	--	--	--	--	--	--	--	--	--	--	--
Totals	278.85	145.83	1174.63	241.74	1833.59	182.77	121.95	238.35	20.55	9.09	11.25	8.91	8.39	8.86	0.00	0.00	--	--

[1] **Condensable Particulate Matter:** Include condensable particulate matter emissions for PM10 and PM2.5 if the source is a combustion source. Do not include condensable particulate matter for PM unless PM is set equal to PM10 and PM2.5. Particulate matter (PM) is not subject to an ambient air quality standard, but it is a regulated air pollutant under PSD (20.2.74 NMAC) and Title V (20.2.70 NMAC).

* - Composite emissions represent worse case compressor engine emissions

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Table 2-F: Additional Emissions during Startup, Shutdown, and Routine Maintenance (SSM)

☐ This table is intentionally left blank since all emissions at this facility due to routine or predictable startup, shutdown, or scehduled maintenance are no higher than those listed in Table 2-E and a malfunction emission limit is not already permitted or requested. If you are required to report GHG emissions as described in Section 6a, include any GHG emissions during Startup, Shutdown, and/or Scheduled Maintenance (SSM) in Table 2-P. Provide an explanations of SSM emissions in Section 6 and 6a.

All applications for facilities that have emissions during routine our predictable startup, shutdown or scheduled maintenance (SSM)[1], including NOI applications, must include in this table the Maximum Emissions during routine or predictable startup, shutdown and scheduled maintenance (20.2.7 NMAC, 20.2.72.203.A.3 NMAC, 20.2.73.200.D.2 NMAC). In Section 6 and 6a, provide emissions calculations for all SSM emissions reported in this table. Refer to "Guidance for Submittal of Startup, Shutdown, Maintenance Emissions in Permit Applications (https://www.env.nm.gov/aqb/permit/aqb_pol.html) for more detailed instructions. Numbers shall be expressed to at least 2 decimal points (e.g. 0.41, 1.41, or 1.41E-4).

Unit No.	NOx		CO		VOC		SOx		PM[2]		PM10[2]		PM2.5[2]		H_2S		Lead	
	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr
COMP	--	--	--	--	0.11	0.50	--	--	--	--	--	--	--	--	--	--	--	--
PLANT BD-1	--	--	--	--	1640.18	0.82	--	--	--	--	--	--	--	--	--	--	--	--
FL-1	251.60	0.37	1147.00	1.69	0.06	0.24	57.09	0.05	0.00	0.01	0.00	0.01	0.00	0.01	--	--	--	--
MAIN-1	--	--	--	--	--	10.00	--	--	--	--	--	--	--	--	--	--	--	--
Totals	251.60	0.37	1147.00	1.69	1640.35	11.56	57.09	0.05	0.00	0.01	0.00	0.01	0.00	0.01				

[1] **For instance**, if the short term steady-state Table 2-E emissions are 5 lb/hr and the SSM rate is 12 lb/hr, enter 7 lb/hr in this table. If the annual steady-state Table 2-E emissions are 21.9 TPY, and the number of scheduled SSM events result in annual emissions of 31.9 TPY, enter 10.0 TPY in the table below.

[2] **Condensable Particulate Matter:** Include condensable particulate matter emissions for PM10 and PM2.5 if the source is a combustion source. Do not include condensable particulate matter for PM unless PM is set equal to PM10 and PM2.5. Particulate matter (PM) is not subject to an ambient air quality standard, but it is a regulated air pollutant under PSD (20.2.74 NMAC) and Title V (20.2.70 NMAC).

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Table 2-G: Stack Exit and Fugitive Emission Rates for Special Stacks

☑ I have elected to leave this table blank because this facility does not have any stacks/vents that split emissions from a single source or combine emissions from more than one source listed in table 2-A. Additionally, the emission rates of all stacks match the Requested allowable emission rates stated in Table 2-E.

Use this table to list stack emissions (requested allowable) from split and combined stacks. List Toxic Air Pollutants (TAPs) and Hazardous Air Pollutants (HAPs) in Table 2-I. List all fugitives that are associated with the normal, routine, and non-emergency operation of the facility. Unit and stack numbering must correspond throughout the application package. Refer to Table 2-E for instructions on use of the "-" symbol and on significant figures.

Stack No.	Serving Unit Number(s) from Table 2-A	NOx		CO		VOC		SOx		PM		PM10		PM2.5		☐ H_2S or ☐ Lead	
		lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr
Totals:																	

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Table 2-H: Stack Exit Conditions

Unit and stack numbering must correspond throughout the application package. Include the stack exit conditions for each unit that emits from a stack, including blowdown venting parameters and tank emissions. If the facility has multiple operating scenarios, complete a separate Table 2-H for each scenario and, for each, type scenario name here:

Stack Number	Serving Unit Number(s) from Table 2-A	Orientation (H-Horizontal V=Vertical)	Rain Caps (Yes or No)	Height Above Ground (ft)	Temp. (F)	Flow Rate (acfs)	Flow Rate (dscfs)	Moisture by Volume (%)	Velocity (ft/sec)	Inside Diameter (ft)
ENG-1	ENG-1	V	No	15	931	73.6	53.2	9.3	136.1	0.8
ENG 2-8	ENG 2-8	V	No	25	992	152.1	110.2	9.0	193.7	1.0
ENG 9-12	ENG 9-12	V	No	25	1179	137.6	109.2	0.3	77.8	1.5
TK-1	TK-1	V	No	25	70	0.0	0.0	0.0	0.0	0.7
TK 2-5	TK 2-5	V	No	20	70	0.0	0.0	0.0	0.0	0.7
TK-6	TK-6	V	No	20	70	0.0	0.0	0.0	0.0	0.7
PWTK-1	PWTK-1	V	No	20	70	0.0	0.0	0.0	0.0	0.7
HTR-1	HTR-1	V	No	30	664	88.9	70.7	0.0	12.6	3.0
HTR-2	HTR-2	V	No	12	500	25.8	20.5	0.0	8.2	2.0
TO-1	TO-1	V	No	50	1400	256.9	204.5	0.0	15.0	4.7
FL-1	FL-1	V	No	100	1832	4416.7	3515.4	0.0	65.6	9.3
FL-2	FL-2	V	No	30	1832	314.1	250.0	0.0	65.6	2.5

Table 2-I: Stack Exit and Fugitive Emission Rates for HAPs and TAPs

In the table below, report the Potential to Emit for each HAP from each regulated emission unit listed in Table 2-A, only if the entire facility emits the HAP at a rate greater than or equal to one (1) ton per year For each such emission unit, HAPs shall be reported to the nearest 0.1 tpy. Each facility-wide Individual HAP total and the facility-wide Total HAPs shall be the sum of all HAP sources calculated to the nearest 0.1 ton per year. Per 20.2.72.403.A.1 NMAC, facilities not exempt [see 20.2.72.402.C NMAC] from TAP permitting shall report each TAP that has an uncontrolled emission rate in excess of its pounds per hour screening level specified in 20.2.72.502 NMAC. TAPs shall be reported using one more significant figure than the number of significant figures shown in the pound per hour threshold corresponding to the substance. Use the HAP nomenclature as it appears in Section 112 (b) of the 1990 CAAA and the TAP nomenclature as it listed in 20.2.72.502 NMAC. Include tank-flashing emissions estimates of HAPs in this table. For each HAP or TAP listed, fill all cells in this table with the emission numbers or a "-" symbol. A "-" symbol indicates that emissions of this pollutant are not expected or the pollutant is emitted in a quantity less than the threshold amounts described above.

Stack No.	Unit No.(s)	Total HAPs		Formaldehyde ☑ HAP or ☐ TAP		Acetaldehyde ☑ HAP or ☐ TAP		Acrolein ☑ HAP or ☐ TAP		Benzene ☑ HAP or ☐ TAP		Toluene ☑ HAP or ☐ TAP		Ethylbenzene ☑ HAP or ☐ TAP		Xylenes ☑ HAP or ☐ TAP		n-Hexane ☑ HAP or ☐ TAP		2,2,4 TMP ☑ HAP or ☐ TAP		Methanol ☑ HAP or ☐ TAP	
		lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr
ENG-1	ENG-1	0.4	1.8	0.3	1.4	0.0	0.2	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	--	--	--	--
ENG-2	ENG-2	0.4	2.0	0.3	1.2	0.1	0.4	0.1	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	--	--	--	--
ENG 1-2*	**ENG 1-2***	**0.4**	**2.0**	**0.3**	**1.4**	**0.1**	**0.4**	**0.1**	**0.3**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.1**	--	--	--	--
ENG-3	ENG-3	0.4	2.0	0.3	1.2	0.1	0.4	0.1	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	--	--	--	--
ENG-4	ENG-4	0.4	2.0	0.3	1.2	0.1	0.4	0.1	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	--	--	--	--
ENG-5	ENG-5	0.4	2.0	0.3	1.2	0.1	0.4	0.1	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	--	--	--	--
ENG-6	ENG-6	0.4	2.0	0.3	1.2	0.1	0.4	0.1	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	--	--	--	--
ENG-7	ENG-7	0.4	2.0	0.3	1.2	0.1	0.4	0.1	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	--	--	--	--
ENG-8	ENG-8	0.4	2.0	0.3	1.2	0.1	0.4	0.1	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	--	--	--	--
ENG-9	ENG-9	0.3	1.3	0.2	0.8	0.0	0.2	0.0	0.2	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	N/A	N/A	--	--	--	--
ENG-10	ENG-10	0.3	1.3	0.2	0.8	0.0	0.2	0.0	0.2	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	N/A	N/A	--	--	--	--
ENG-11	ENG-11	0.3	1.3	0.2	0.8	0.0	0.2	0.0	0.2	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	N/A	N/A	--	--	--	--
ENG-12	ENG-12	0.3	1.3	0.2	0.8	0.0	0.2	0.0	0.2	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	N/A	N/A	--	--	--	--
ENG 9-12*	**ENG 9-12***	**1.8**	**7.8**	**1.1**	**4.7**	**0.4**	**1.7**	**0.2**	**1.0**	**0.1**	**0.4**	**0.0**	**0.1**	**0.0**	**0.0**	**0.0**	**0.0**	**0.1**	**0.2**	--	--	--	--
TK-1	TK-1	0.1	0.3	--	--	--	--	--	--	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	--	--
TK 2-5	TK 2-5	0.0	0.1	--	--	--	--	--	--	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	--	--
TK-6	TK-6	0.0	0.0	--	--	--	--	--	--	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	--	--
PWTK-1	PWTK-1	0.0	0.0	--	--	--	--	--	--	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	--	--
HTR-1	HTR-1	0.1	0.4	0.0	0.0	--	--	--	--	0.0	0.0	0.0	0.0	--	--	--	--	0.1	0.4	--	--	--	--
HTR-2	HTR-2	0.0	0.1	0.0	0.0	--	--	--	--	0.0	0.0	0.0	0.0	--	--	--	--	0.0	0.1	--	--	--	--
CONDLOAD-1	CONDLOAD-1	2.1	0.6	--	--	--	--	--	--	0.3	0.1	0.3	0.1	0.0	0.0	0.0	0.0	1.3	0.4	0.0	0.0	--	--
OILLOAD-1	OILLOAD-1	2.1	0.0	--	--	--	--	--	--	0.3	0.0	0.3	0.0	0.0	0.0	0.0	0.0	1.3	0.0	0.0	0.0	--	--
FUG-1	FUG-1	0.1	0.5	--	--	--	--	--	--	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.3	0.0	0.0	--	--
FUG-2	FUG-2	0.0	0.0	--	--	--	--	--	--	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	--	--
AMINE-1	AMINE-1	0.0	0.0	--	--	--	--	--	--	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	--	--
COMP	COMP	0.0	0.0	--	--	--	--	--	--	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	--	--
PLANT BD	PLANT BD	15.1	0.0	--	--	--	--	--	--	5.3	0.0	0.8	0.0	0.0	0.0	0.0	0.0	9.1	0.0	0.0	0.0	--	--
TO-1	TO-1	0.0	0.0	--	--	--	--	--	--	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	--	--
FL-1	FL-1	0.0	0.0	--	--	--	--	--	--	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	--	--
FL-2	FL-2	0.0	0.0	--	--	--	--	--	--	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	--	--
HR-1	HR-1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MAIN-1	MAIN-1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
UP/MAL-1	UP/MAL-1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Totals:		22.8	15.7	1.9	8.5	0.7	2.9	0.4	1.8	6.1	0.8	1.5	0.4	0.1	0.0	0.1	0.1	12.1	1.8	0.1	0.0	--	--

* - Composite emissions represent worse case engine emissions

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Table 2-J: Fuel

Specify fuel characteristics and usage. Unit and stack numbering must correspond throughout the application package.

Unit No.	Fuel Type (low sulfur Diesel, ultra low sulfur diesel, Natural Gas, Coal, …)	Fuel Source: purchased commercial, pipeline quality natural gas, residue gas, raw/field natural gas, process gas (e.g. SRU tail gas) or other	Specify Units				
			Lower Heating Value	Hourly Usage (scf)	Annual Usage (scf)	% Sulfur	% Ash
ENG-1	Natural Gas	Residue Gas	1066.43 btu/scf	5,307.48	46,493,490.51	N/A	N/A
ENG 2-8	Natural Gas	Residue Gas	1066.43 btu/scf	10,683.54	93,587,774.63	N/A	N/A
ENG 9-12	Natural Gas	Residue Gas	1066.43 btu/scf	12,415.29	108,757,936.53	N/A	N/A
HTR-1	Natural Gas	Residue Gas	1066.43 btu/scf	46,338.38	405,924,215.65	N/A	N/A
HTR-2	Natural Gas	Residue Gas	1066.43 btu/scf	10,314.76	90,357,256.29	N/A	N/A
TO-1	Natural Gas	Residue Gas	1066.43 btu/scf	11,252.46	98,571,549.60	N/A	N/A
FL-1	Natural Gas	Residue Gas	1066.43 btu/scf	468.85	4,107,148.01	N/A	N/A
FL-2	Natural Gas	Residue Gas	1066.43 btu/scf	93.77	821,429.60	N/A	N/A

Table 2-K: Liquid Data for Tanks Listed in Table 2-L

For each tank, list the liquid(s) to be stored in each tank. If it is expected that a tank may store a variety of hydrocarbon liquids, enter "mixed hydrocarbons" in the Composition column for that tank and enter the corresponding data of the most volatile liquid to be stored in the tank. If tank is to be used for storage of different materials, list all the materials in the "All Calculations" attachment, run the newest version of TANKS on each, and use the material with the highest emission rate to determine maximum uncontrolled and requested allowable emissions rate. The permit will specify the most volatile category of liquids that may be stored in each tank. Include appropriate tank-flashing modeling input data. Use additional sheets if necessary. Unit and stack numbering must correspond throughout the application package.

Tank No.	SCC Code	Material Name	Composition	Liquid Density (lb/gal)	Vapor Molecular Weight (lb/lb*mol)	Average Storage Conditions		Max Storage Conditions	
						Temperature (°F)	True Vapor Pressure (psia)	Temperature (°F)	True Vapor Pressure (psia)
TK-1	40400301 / 40400302	Oil / Produced Water	Mixed Hydrocarbons	5.6	64	72.3	8.0	86.3	10.2
TK-2	31000212	Condensate	Mixed Hydrocarbons	5.6	64	72.3	8.0	86.3	10.2
TK-3	31000212	Condensate	Mixed Hydrocarbons	5.6	64	72.3	8.0	86.3	10.2
TK-4	31000212	Condensate	Mixed Hydrocarbons	5.6	64	72.3	8.0	86.3	10.2
TK-5	31000212	Condensate	Mixed Hydrocarbons	5.6	64	72.3	8.0	86.3	10.2
TK-6	40400301 / 40400302	Oil	Mixed Hydrocarbons	5.6	64	72.3	3.6	86.3	4.7
PWTK-1	40400301 / 40400302	Produced Water	Water / Mixed Hydrocarbons	8.3	19.8	72.3	0.4	86.3	0.64

Table 2-L: Tank Data

Include appropriate tank-flashing modeling input data. Use an addendum to this table for unlisted data categories. Unit and stack numbering must correspond throughout the application package. Use additional sheets if necessary. See reference Table 2-L2. Note: 1.00 bbl = 10.159 M3 = 42.0 gal

Tank No.	Date Installed	Materials Stored	Seal Type (refer to Table 2-LR below)	Roof Type (refer to Table 2-LR below)	Capacity		Diameter (M)	Vapor Space (M)	Color (from Table VI-C)		Paint Condition (from Table VI-C)	Annual Throughput (gal/yr)	Turn-overs (per year)
					(bbl)	(M^3)			Roof	Shell			
TK-1	4/2018	Oil / Produced Water	N/A	FX	500	79	3.7	3.81	OT (Green)	OT (Green)	Good	32,172	1.53
TK-2	1/8/2018	Condensate	N/A	FX	400	64	3.7	3.05	OT (Green)	OT (Green)	Good	2,299,500	136.88
TK-3	1/8/2018	Condensate	N/A	FX	400	64	3.7	3.05	OT (Green)	OT (Green)	Good	2,299,500	136.88
TK-4	1/8/2018	Condensate	N/A	FX	400	64	3.7	3.05	OT (Green)	OT (Green)	Good	2,299,500	136.88
TK-5	1/8/2018	Condensate	N/A	FX	400	64	3.7	3.05	OT (Green)	OT (Green)	Good	2,299,500	136.88
TK-6	1/8/2018	Oil	N/A	FX	400	64	3.7	3.05	OT (Green)	OT (Green)	Good	64,344	3.83
PWTK-1	4/2018	Produced Water	N/A	FX	400	64	3.7	3.05	OT (Green)	OT (Green)	Good	64,344	3.83

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Table 2-L2: Liquid Storage Tank Data Codes Reference Table

Roof Type	Seal Type, Welded Tank Seal Type		Seal Type, Riveted Tank Seal Type		Roof, Shell Color	Paint Condition
FX: Fixed Roof	**Mechanical Shoe Seal**	**Liquid-mounted resilient seal**	**Vapor-mounted resilient seal**	**Seal Type**	**WH**: White	Good
IF: Internal Floating Roof	**A**: Primary only	**A**: Primary only	**A**: Primary only	**A**: Mechanical shoe, primary only	**AS**: Aluminum (specular)	Poor
EF: External Floating Roof	**B**: Shoe-mounted secondary	**B**: Weather shield	**B**: Weather shield	**B**: Shoe-mounted secondary	**AD**: Aluminum (diffuse)	
P: Pressure	**C**: Rim-mounted secondary	**C**: Rim-mounted secondary	**C**: Rim-mounted secondary	**C**: Rim-mounted secondary	**LG**: Light Gray	
					MG: Medium Gray	
					BL: Black	
					OT: Other (specify)	

Note: 1.00 bbl = 0.159 M^3 = 42.0 gal

Table 2-M: Materials Processed and Produced (Use additional sheets as necessary.)

Material Processed				Material Produced			
Description	**Chemical Composition**	**Phase (Gas, Liquid, or Solid)**	**Quantity (specify units)**	**Description**	**Chemical Composition**	**Phase**	**Quantity (specify units)**
Condensate	Mixed Hydrocarbons	Liquid	219,000 bbl/yr				
Slop Oil	Mixed Hydrocarbons	Liquid	1,532 bbl/yr				
Produced Water	Mixed Hydrocarbons	Liquid	1,532 bbl/yr				
Gas	Mixed Hydrocarbons	Gas	60 MMScf/day				

Table 2-N: CEM Equipment

Enter Continuous Emissions Measurement (CEM) Data in this table. If CEM data will be used as part of a federally enforceable permit condition, or used to satisfy the requirements of a state or federal regulation, include a copy of the CEM's manufacturer specification sheet in the Information Used to Determine Emissions attachment. Unit and stack numbering must correspond throughout the application package. Use additional sheets if necessary.

Stack No.	Pollutant(s)	Manufacturer	Model No.	Serial No.	Sample Frequency	Averaging Time	Range	Sensitivity	Accuracy
TBD									

Table 2-O: Parametric Emissions Measurement Equipment

Unit and stack numbering must correspond throughout the application package. Use additional sheets if necessary.

Unit No.	Parameter/Pollutant Measured	Location of Measurement	Unit of Measure	Acceptable Range	Frequency of Maintenance	Nature of Maintenance	Method of Recording	Averaging Time
N/A								

Table 2-P: Greenhouse Gas Emissions

Applications submitted under 20.2.70, 20.2.72, & 20.2.74 NMAC are required to complete this Table. Power plants, Title V major sources, and PSD major sources must report and calculate all GHG emissions for each unit. Applicants must report potential emission rates in short tons per year (see Section 6.a for assistance). Include GHG emissions during Startup, Shutdown, and Scheduled Maintenance in this table. For minor source facilities that are not power plants, are not Title V, or are not PSD, there are three options for reporting GHGs 1) report GHGs for each individual piece of equipment; 2) report all GHGs from a group of unit types, for example report all combustion source GHGs as a single unit and all venting GHG as a second separate unit; OR 3) check the following box ☐ By checking this box, the applicant acknowledges the total CO2e emissions are less than 75,000 tons per year.

		CO_2 ton/yr	N_2O ton/yr	CH_4 ton/yr	SF_6 ton/yr	PFC/HFC ton/yr[2]									Total GHG Mass Basis ton/yr[4]	Total CO_2e ton/yr[5]
Unit No.	**GWPs [1]**	1	298	25	22,800	footnote 3										
ENG-1	mass GHG	2900	0	0											2900	
	CO_2e	2900	2	1												2903
ENG-2	mass GHG	5837	0	0											5838	
	CO_2e	5837	3	3												5843
ENG-3	mass GHG	5837	0	0											5838	
	CO_2e	5837	3	3												5843
ENG-4	mass GHG	5837	0	0											5838	
	CO_2e	5837	3	3												5843
ENG-5	mass GHG	5837	0	0											5838	
	CO_2e	5837	3	3												5843
ENG-6	mass GHG	5837	0	0											5838	
	CO_2e	5837	3	3												5843
ENG-7	mass GHG	5837	0	0											5838	
	CO_2e	5837	3	3												5843
ENG-8	mass GHG	5837	0	0											5838	
	CO_2e	5837	3	3												5843
ENG-9	mass GHG	6784	0	0											6784	
	CO_2e	6784	4	3												6791
ENG-10	mass GHG	6784	0	0											6784	
	CO_2e	6784	4	3												6791
ENG-11	mass GHG	6784	0	0											6784	
	CO_2e	6784	4	3												6791
ENG-12	mass GHG	6784	0	0											6784	
	CO_2e	6784	4	3												6791
TK-1	mass GHG	0	0	0											0	
	CO_2e	0	0	7												7
TK 2-5	mass GHG	18	0	0											18	
	CO_2e	18	0	2												20
TK-6	mass GHG	2	0	0											2	
	CO_2e	2	0	0												2
PWTK-1	mass GHG	0	0	0											0	
	CO_2e	0	0	0												0
HTR-1	mass GHG	25319	0	0											25320	
	CO_2e	25319	14	12												25345
HTR-2	mass GHG	5636	0	0											5636	
	CO_2e	5636	3	3												5642
CONDLOAD-1	mass GHG	14	0	0											15	
	CO_2e	14	0	9												23
OILLOAD-1	mass GHG	0	0	0											0	
	CO_2e	0	0	0												0
FUG-1	mass GHG	122	0	828											950	
	CO_2e	122	0	20693												20815
AMINE-1	mass GHG	57169	0	347											57516	
	CO_2e	57169	0	8677												65846
COMP	mass GHG	1	0	1											2	
	CO_2e	1	0	34												35
PLANT BD	mass GHG	1	0	1											2	
	CO_2e	1	0	20												21
TO-1	mass GHG	8133	0	0											8133	
	CO_2e	8133	5	4												8142
FL-1	mass GHG	76959	0	1											76960	
	CO_2e	76959	43	36												77038
FL-2	mass GHG	6723	0	0											6723	
	CO_2e	6723	4	3												6730
HR-1	mass GHG	--	--	--											0	
	CO_2e	--	--	--												0
MAIN-1	mass GHG	0	0	10											10	
	CO2e	0	0	250												250
UP/MAL-1	mass GHG	0	0	10											10	
	CO2e	0	0	250												250
Total	mass GHG	224744	0	1201											225946	
	CO_2e	224744	94	30023												254861

[1] **GWP** (Global Warming Potential): Applicants must use the most current GWPs codified in Table A-1 of 40 CFR part 98. GWPs are subject to change, therefore, applicants need to check 40 CFR 98 to confirm GWP values.

[2] For **HFCs** or **PFCs** describe the specific HFC or PFC compound and use a separate column for each individual compound.

[3] For each new compound, enter the appropriate GWP for each HFC or PFC compound from Table A-1 in 40 CFR 98.

[4] Green house gas emissions on a **mass basis** is the ton per year green house gas emission before adjustment with its GWP.

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[5] **CO_2e** means Carbon Dioxide Equivalent and is calculated by multiplying the TPY mass emissions of the green house gas by its GWP.

Section 3

Application Summary

The **Application Summary** shall include a brief description of the facility and its process, the type of permit application, the applicable regulation (i.e. 20.2.72.200.A.X, or 20.2.73 NMAC) under which the application is being submitted, and any air quality permit numbers associated with this site. If this facility is to be collocated with another facility, provide details of the other facility including permit number(s). In case of a revision or modification to a facility, provide the lowest level regulatory citation (i.e. 20.2.72.219.B.1.d NMAC) under which the revision or modification is being requested. Also describe the proposed changes from the original permit, how the proposed modification will affect the facility's operations and emissions, de-bottlenecking impacts, and changes to the facility's major/minor status (both PSD & Title V).

The **Process Summary** shall include a brief description of the facility and its processes.

Startup, Shutdown, and Maintenance (SSM) routine or predictable emissions: Provide an overview of how SSM emissions are accounted for in this application. Refer to "Guidance for Submittal of Startup, Shutdown, Maintenance Emissions in Permit Applications (http://www.env.nm.gov/aqb/permit/app_form.html) for more detailed instructions on SSM emissions.

Application Summary:

This application and accompanying material is a revision of New Source Review (NSR) Construction Permit No. 7482 for the 3Bear Libby Gas Plant (Libby), owned and operated by 3 Bear Delaware Operating – NM, LLC (3Bear). NSR Permit No. 7482 was issued on January 8, 2018. The facility will receive up to 60 MMscf/day of gas from three surrounding compressor stations owned and operated by 3Bear. Libby will separate natural gas liquids (NGL's) from the field gas, producing natural gas liquids and a residue gas for transmission to a pipeline owned by others. The process utilizes a cryogenic gas separation plant and associated compressors for collecting field gas from the gathering system nearby. Gas and NGL's will be piped to the respective nearby interconnect metering stations, by others. The plant is to be located within 5 miles of the residue gas and NGL pipelines. Changes to the last application since the last permit issuance include: addition of residue compressor engine options, addition of generator engine, corrected tank battery configuration and process, removal of methanol tank, addition of loadout, updated fugitive emissions, and updated flaring volumes.

The facility will consist of one of the inlet compressor engine options listed in Table 3-1.

Table 3-1: Compressor Engine Options

Option No.	Unit Name	Make & Model
1	ENG-1	Caterpillar G3508
2	ENG-2	Caterpillar G3516

The facility will consist of one of the residue compressor engine options listed in Table 3-2.

Table 3-2: Compressor Engine Options

Option No.	Unit Name	Make & Model
1	ENG 5-8	Caterpillar G3516
2	ENG 9-12	Waukesha 7044GSI

Notes:
The worst-case emissions are included in the total facility emissions.

In addition to the compressor engine options, the facility will consist of the following emission units: two additional inlet compressor engines, one gunbarrel tank, four condensate tanks, one slop oil tank, one produced water tank, one hot oil heater, one regen gas heater, one amine unit, one condensate loadout, one oil loadout, one thermal oxidizer, one upset/maintenance flare, one tank flare, process piping fugitives, and haul road fugitives. The facility will also have two generators (GEN 1-2) on site that are exempt under 20.2.72.202.B.3.

SSM Overview:

SSM emissions are expected at the facility and are included in the total facility wide emissions. The compressor blowdowns and plant blowdowns will be controlled by the maintenance flare. Additional maintenance flaring has been included in the application to account for other maintenance activities. Maintenance activities that cannot be controlled, such as painting and tank degassing, have been included in the application as well. An estimated 10 tpy has been used for these uncontrolled maintenance activities. In the event that the thermal oxidizer is down, the maintenance flare (FL-1) is used as a backup control device for the amine unit.

Section 4

Process Flow Sheet

A **process flow sheet** and/or block diagram indicating the individual equipment, all emission points and types of control applied to those points. The unit numbering system should be consistent throughout this application.

The facility process flow sheet is provided on the next page.

Section 5

Plot Plan Drawn To Scale

A **plot plan drawn to scale** showing emissions points, roads, structures, tanks, and fences of property owned, leased, or under direct control of the applicant. This plot plan must clearly designate the restricted area as defined in UA1, Section 1-D.12. The unit numbering system should be consistent throughout this application.

The facility plot plan is provided on the next page.

Section 6

All Calculations

Show all calculations used to determine both the hourly and annual controlled and uncontrolled emission rates. All calculations shall be performed keeping a minimum of three significant figures. Document the source of each emission factor used (if an emission rate is carried forward and not revised, then a statement to that effect is required). If identical units are being permitted and will be subject to the same operating conditions, submit calculations for only one unit and a note specifying what other units to which the calculations apply. All formulas and calculations used to calculate emissions must be submitted. The "Calculations" tab in the UA2 has been provided to allow calculations to be linked to the emissions tables. Add additional "Calc" tabs as needed. If the UA2 or other spread sheets are used, all calculation spread sheet(s) shall be submitted electronically in Microsoft Excel compatible format so that formulas and input values can be checked. Format all spread sheets and calculations such that the reviewer can follow the logic and verify the input values. Define all variables. If calculation spread sheets are not used, provide the original formulas with defined variables. Additionally, provide subsequent formulas showing the input values for each variable in the formula. All calculations, including those calculations are imbedded in the Calc tab of the UA2 portion of the application, the printed Calc tab(s), should be submitted under this section.

Tank Flashing Calculations: The information provided to the AQB shall include a discussion of the method used to estimate tank-flashing emissions, relative thresholds (i.e., NOI, permit, or major source (NSPS, PSD or Title V)), accuracy of the model, the input and output from simulation models and software, all calculations, documentation of any assumptions used, descriptions of sampling methods and conditions, copies of any lab sample analysis. If Hysis is used, all relevant input parameters shall be reported, including separator pressure, gas throughput, and all other relevant parameters necessary for flashing calculation.

SSM Calculations: It is the applicant's responsibility to provide an estimate of SSM emissions or to provide justification for not doing so. In this Section, provide emissions calculations for Startup, Shutdown, and Routine Maintenance (SSM) emissions listed in the Section 2 SSM and/or Section 22 GHG Tables and the rational for why the others are reported as zero (or left blank in the SSM/GHG Tables). Refer to "Guidance for Submittal of Startup, Shutdown, Maintenance Emissions in Permit Applications (http://www.env.nm.gov/aqb/permit/app_form.html) for more detailed instructions on calculating SSM emissions. If SSM emissions are greater than those reported in the Section 2, Requested Allowables Table, modeling may be required to ensure compliance with the standards whether the application is NSR or Title V. Refer to the Modeling Section of this application for more guidance on modeling requirements.

Glycol Dehydrator Calculations: The information provided to the AQB shall include the manufacturer's maximum design recirculation rate for the glycol pump. If GRI-Glycalc is used, the full input summary report shall be included as well as a copy of the gas analysis that was used.

Road Calculations: Calculate fugitive particulate emissions and enter haul road fugitives in Tables 2-A, 2-D and 2-E for:

1. If you transport raw material, process material and/or product into or out of or within the facility and have PER emissions greater than 0.5 tpy.
2. If you transport raw material, process material and/or product into or out of the facility more frequently than one round trip per day.

Significant Figures:
A. All emissions standards are deemed to have at least two significant figures, but not more than three significant figures.
B. At least 5 significant figures shall be retained in all intermediate calculations.
C. In calculating emissions to determine compliance with an emission standard, the following rounding off procedures shall be used:

- **(1)** If the first digit to be discarded is less than the number 5, the last digit retained shall not be changed;
- **(2)** If the first digit discarded is greater than the number 5, or if it is the number 5 followed by at least one digit other than the number zero, the last figure retained shall be increased by one unit; **and**
- **(3)** If the first digit discarded is exactly the number 5, followed only by zeros, the last digit retained shall be rounded upward if it is an odd number, but no adjustment shall be made if it is an even number.
- **(4)** The final result of the calculation shall be expressed in the units of the standard.

Control Devices: In accordance with 20.2.72.203.A(3) and (8) NMAC, 20.2.70.300.D(5)(b) and (e) NMAC, and 20.2.73.200.B(7) NMAC, the permittee shall report all control devices and list each pollutant controlled by the control device regardless if the applicant takes credit for the reduction in emissions. The applicant can indicate in this section of the application if they chose to not take credit for the reduction in emission rates. For notices of intent submitted under 20.2.73 NMAC, only uncontrolled emission rates can be considered to determine applicability unless the state or federal Acts require the control. This information is necessary to determine if federally enforceable conditions are necessary for the control device, and/or if the control device produces its own regulated pollutants or increases emission rates of other pollutants.

Section 6.a

Green House Gas Emissions

(Submitting under 20.2.70, 20.2.72 20.2.74 NMAC)

Title V (20.2.70 NMAC), Minor NSR (20.2.72 NMAC), and PSD (20.2.74 NMAC) applicants must estimate and report greenhouse gas (GHG) emissions to verify the emission rates reported in the public notice, determine applicability to 40 CFR 60 Subparts, and to evaluate Prevention of Significant Deterioration (PSD) applicability. GHG emissions that are subject to air permit regulations consist of the sum of an aggregate group of these six greenhouse gases: carbon dioxide (CO_2), nitrous oxide (N_2O), methane (CH_4), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF_6).

Calculating GHG Emissions:

1. Calculate the ton per year (tpy) GHG mass emissions and GHG CO_2e emissions from your facility.
2. GHG mass emissions are the sum of the total annual tons of greenhouse gases without adjusting with the global warming potentials (GWPs). GHG CO_2e emissions are the sum of the mass emissions of each individual GHG multiplied by its GWP found in Table A-1 in 40 CFR 98 Mandatory Greenhouse Gas Reporting.
3. Emissions from routine or predictable start up, shut down, and maintenance must be included.
4. Report GHG mass and GHG CO_2e emissions in Table 2-P of this application. Emissions are reported in **short** tons per year and represent each emission unit's Potential to Emit (PTE).
5. All Title V major sources, PSD major sources, and all power plants, whether major or not, must calculate and report GHG mass and CO2e emissions for each unit in Table 2-P.
6. For minor source facilities that are not power plants, are not Title V, and are not PSD there are three options for reporting GHGs in Table 2-P: 1) report GHGs for each individual piece of equipment; 2) report all GHGs from a group of unit types, for example report all combustion source GHGs as a single unit and all venting GHGs as a second separate unit; 3) or check the following ☐ By checking this box, the applicant acknowledges the total CO2e emissions are less than 75,000 tons per year.

Sources for Calculating GHG Emissions:

- Manufacturer's Data
- AP-42 Compilation of Air Pollutant Emission Factors at http://www.epa.gov/ttn/chief/ap42/index.html
- EPA's Internet emission factor database WebFIRE at http://cfpub.epa.gov/webfire/
- 40 CFR 98 Mandatory Green House Gas Reporting except that tons should be reported in short tons rather than in metric tons for the purpose of PSD applicability.
- API Compendium of Greenhouse Gas Emissions Methodologies for the Oil and Natural Gas Industry. August 2009 or most recent version.
- Sources listed on EPA's NSR Resources for Estimating GHG Emissions at http://www.epa.gov/nsr/clean-air-act-permitting-greenhouse-gases:

Global Warming Potentials (GWP):
Applicants must use the Global Warming Potentials codified in Table A-1 of the most recent version of 40 CFR 98 Mandatory Greenhouse Gas Reporting. The GWP for a particular GHG is the ratio of heat trapped by one unit mass of the GHG to that of one unit mass of CO_2 over a specified time period.

"Greenhouse gas" for the purpose of air permit regulations is defined as the aggregate group of the following six gases: carbon dioxide, nitrous oxide, methane, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride. **(20.2.70.7 NMAC, 20.2.74.7 NMAC).** You may also find GHGs defined in 40 CFR 86.1818-12(a).

Metric to Short Ton Conversion:

Short tons for GHGs and other regulated pollutants are the standard unit of measure for PSD and title V permitting programs. 40 CFR 98 Mandatory Greenhouse Reporting requires metric tons.
1 metric ton = 1.10231 short tons (per Table A-2 to Subpart A of Part 98 – Units of Measure Conversions)

Section 7

Information Used To Determine Emissions

Information Used to Determine Emissions shall include the following:

- ☑ If manufacturer data are used, include specifications for emissions units and control equipment, including control efficiencies specifications and sufficient engineering data for verification of control equipment operation, including design drawings, test reports, and design parameters that affect normal operation.
- ☐ If test data are used, include a copy of the complete test report. If the test data are for an emissions unit other than the one being permitted, the emission units must be identical. Test data may not be used if any difference in operating conditions of the unit being permitted and the unit represented in the test report significantly effect emission rates.
- ☑ If the most current copy of AP-42 is used, reference the section and date located at the bottom of the page. Include a copy of the page containing the emissions factors, and clearly mark the factors used in the calculations.
- ☐ If an older version of AP-42 is used, include a complete copy of the section.
- ☑ If an EPA document or other material is referenced, include a complete copy.
- ☐ Fuel specifications sheet.
- ☑ If computer models are used to estimate emissions, include an input summary (if available) and a detailed report, and a disk containing the input file(s) used to run the model. For tank-flashing emissions, include a discussion of the method used to estimate tank-flashing emissions, relative thresholds (i.e., permit or major source (NSPS, PSD or Title V)), accuracy of the model, the input and output from simulation models and software, all calculations, documentation of any assumptions used, descriptions of sampling methods and conditions, copies of any lab sample analysis.

Information included in this section:

1. Promax information
2. Tanks 4.0.9d information
3. Amine Enerflex information
4. Equipment information
5. 40 CFR 60 Subpart JJJJ Table-1
6. AP-42 Tables/Figures/Equations:
    a. Table 1.4-1,1.4-2,1.4-3 – Heaters / Thermal Oxidizer
    b. Table 3.2-2 – Lean Burn Engines
    c. Table 5.2-1 – Loadout
    d. Table 7.1-2 – Loadout
    e. Table 13.5-1 & Table 13.5-2 – Flare
    f. Table 13.2.2-2, Figure 13.2.2-1, Equation 13.2.2-1a – Road Dust
7. Fugitives:
    a. Dexter ATC Field Services Fugitive Counts
    b. EPA Office of Air Quality Planning and Standards, Protocol for Equipment Leak Emission Estimates, Table 2-4, EPA-453/R-95-017, November 1995
    c. EPA Office of Enforcement and Compliance Assurance, Leak Detection and Repair, A Best Practices Guide, Table 4.1, EPA-305-D-07-001, October 2007
    d. API Publ 4615, Emission Factors for Oil and Gas Production Operations, Table 5, January 1995
    e. API Compendium of Greenhouse Gas Emissions Methodologies for the Oil and Natural Gas Industry Table 6-5
    f. 40 CFR 98 Subpart W, Tables W-1A and W-1C
8. Department Accepted Values For: Aggregate Handling, Storage Pile and Haul Road Emissions
9. Inlet Gas Analysis data – Sample dated 1/9/2019
10. Residue Gas Analysis data - Promax

Section 8

Map(s)

A map such as a 7.5 minute topographic quadrangle showing the exact location of the source. The map shall also include the following:

The UTM or Longitudinal coordinate system on both axes	An indicator showing which direction is north
A minimum radius around the plant of 0.8km (0.5 miles)	Access and haul roads
Topographic features of the area	Facility property boundaries
The name of the map	The area which will be restricted to public access
A graphical scale	

A map is provided on the following page.

Section 9

Proof of Public Notice

(for NSR applications submitting under 20.2.72 or 20.2.74 NMAC)
(This proof is required by: 20.2.72.203.A.14 NMAC "Documentary Proof of applicant's public notice")

☑ **I have read the AQB "Guidelines for Public Notification for Air Quality Permit Applications"**
This document provides detailed instructions about public notice requirements for various permitting actions. It also provides public notice examples and certification forms. Material mistakes in the public notice will require a re-notice before issuance of the permit.

Unless otherwise allowed elsewhere in this document, the following items document proof of the applicant's Public Notification. Please include this page in your proof of public notice submittal with checkmarks indicating which documents are being submitted with the application.

New Permit and **Significant Permit Revision** public notices must include all items in this list.

Technical Revision public notices require only items 1, 5, 9, and 10.

Per the Guidelines for Public Notification document mentioned above, include:

1. ☑ A copy of the certified letter receipts with post marks (20.2.72.203.B NMAC)
2. ☑ A list of the places where the public notice has been posted in at least four publicly accessible and conspicuous places, including the proposed or existing facility entrance. (e.g: post office, library, grocery, etc.)
3. ☑ A copy of the property tax record (20.2.72.203.B NMAC).
4. ☑ A sample of the letters sent to the owners of record.
5. ☑ A sample of the letters sent to counties, municipalities, and Indian tribes.
6. ☑ A sample of the public notice posted and a verification of the local postings.
7. ☑ A table of the noticed citizens, counties, municipalities and tribes and to whom the notices were sent in each group.
8. ☑ A copy of the public service announcement (PSA) sent to a local radio station and documentary proof of submittal.
9. ☑ A copy of the classified or legal ad including the page header (date and newspaper title) or its affidavit of publication stating the ad date, and a copy of the ad. When appropriate, this ad shall be printed in both English and Spanish.
10. ☑ A copy of the display ad including the page header (date and newspaper title) or its affidavit of publication stating the ad date, and a copy of the ad. When appropriate, this ad shall be printed in both English and Spanish.
11. ☑ A map with a graphic scale showing the facility boundary and the surrounding area in which owners of record were notified by mail. This is necessary for verification that the correct facility boundary was used in determining distance for notifying land owners of record.

Section 10

Written Description of the Routine Operations of the Facility

A written description of the routine operations of the facility. Include a description of how each piece of equipment will be operated, how controls will be used, and the fate of both the products and waste generated. For modifications and/or revisions, explain how the changes will affect the existing process. In a separate paragraph describe the major process bottlenecks that limit production. The purpose of this description is to provide sufficient information about plant operations for the permit writer to determine appropriate emission sources.

The 3Bear Libby Gas Plant will be equipped to gather natural gas from three surrounding compressor stations: 3Bear Aztec Compressor Station, 3Bear Outland Compressor Station, and 3Bear Lariat Compressor Station, which are owned and operated by 3Bear. The gas from the compressor stations is sent to the gas processing plant for treatment.

Libby will separate natural gas liquids (NGL's) from the field gas, producing natural gas liquids and a residue gas for transmission to a pipeline owned by others. The process utilizes a cryogenic gas separation plant and associated compressors for collecting field gas from the gathering system nearby. Gas and NGL's will be piped to the respective nearby interconnect metering stations, by others. The plant is to be located within 5 miles of the residue gas and NGL pipelines.

Compressor engines on site (ENG 1-4) will compress inlet gas and send the gas to the processing plant where an amine unit (AMINE-1) on site will treat and sweeten the gas. The amine unit is controlled by a thermal oxidizer (TO-1), and in the event that the thermal oxidizer is down, the gas will be sent to a flare (FL-1). The NGLs produced will be stored in pressurized vessels. Liquids from process drains will be sent to a gunbarrel tank (TK-1) for hydrocarbon separation. Oil from the gunbarrel separation will be stored in one 400-bbl slop oil tank (TK-6) and produced water will be stored in produced water tank (PWTK-1). Condensate tanks will store stabilized condensate (TK 2-5). A tank flare (FL-2) controls all tanks on site, and condensate and oil will be trucked off site (CONDLOAD-1 and OILLOAD-1). An emergency and maintenance flare (FL-1) will control compressor blowdowns (COMP), plant blowdowns (PLANT BD), and emergency upset conditions. Fugitive emissions occur from process piping and other components (FUG 1-2). Road dust emissions occur from daily routine traffic to the production facility (HR-1). Additional equipment on site will include: residue compressor engines (Either ENG 5-8 or ENG 9-12), two generator engines (GEN 1-2), one 50 MMBtu/hr hot oil heater (HTR-1), and one 11 MMBtu/hr regen gas heater (HTR-2).

Section 11
Source Determination

Source submitting under 20.2.70, 20.2.72, 20.2.73, and 20.2.74 NMAC

Sources applying for a construction permit, PSD permit, or operating permit shall evaluate surrounding and/or associated sources (including those sources directly connected to this source for business reasons) and complete this section. Responses to the following questions shall be consistent with the Air Quality Bureau's permitting guidance, Single Source Determination Guidance, which may be found on the Applications Page in the Permitting Section of the Air Quality Bureau website.

Typically, buildings, structures, installations, or facilities that have the same SIC code, that are under common ownership or control, and that are contiguous or adjacent constitute a single stationary source for 20.2.70, 20.2.72, 20.2.73, and 20.2.74 NMAC applicability purposes. Submission of your analysis of these factors in support of the responses below is optional, unless requested by NMED.

A. Identify the emission sources evaluated in this section (list and describe):

3Bear evaluated the Libby Gas Plant with respect to two nearby facilities that will also be owned and operated by 3Bear:

- The Libby plant site is located south of a new crude oil terminal, associated pipeline pumps, and containment area. The crude storage system pumps oil to a nearby oil pipeline.
- The plant site is also located south of a central liquid waste treatment and storage system that includes tank battery and containment with oil-water separators, filtration, and treatment equipment for receiving drill pad waste liquids for processing.

As defined by 40 CFR Part 70.2, "*Major source* means any stationary source (or any group of stationary sources that are located on one or more continuous or adjacent properties, and are under common control of the same person (or persons under common control)) belonging to a single major industrial grouping and that are described in paragraph (1), (2), or (3) of this definition. For the purposes of defining "major source," a stationary source or group of stationary sources shall be considered part of a single industrial grouping if all of the pollutant emitting activities at such source or group of sources on contiguous or adjacent properties belong to the same Major Group (*i.e.,* all have the same two-digit code) as described in the Standard Industrial Classification Manual, 1987. State programs may adopt the following provision: For onshore activities belonging to Standard Industrial Classification (SIC) Major Group 13: Oil and Gas Extraction, pollutant emitting activities shall be considered adjacent if they are located on the same surface site; or if they are located on surface sites that are located within 1⁄4 mile of one another (measured from the center of the equipment on the surface site) and they share equipment. Shared equipment includes, but is not limited to, produced fluids storage tanks, phase separators, natural gas dehydrators or emissions control devices. Surface site, as used in the introductory text of this definition, has the same meaning as in 40 CFR 63.761."

Per 40 CFR 63.761, *Surface site* means any combination of one or more graded pad sites, gravel pad sites, foundations, platforms, or the immediate physical location upon which equipment is physically affixed.

The crude oil terminal and liquid waste treatment and storage system are on the same property owned by 3Bear but are not associated with plant operations and do not share equipment. The facilities will each have their own separate fence-lines and entrances. The Libby plant site is separated from the liquid waste treatment site by a pipeline laydown yard and the crude oil terminal as well as the separate fence-lines and entrances.

The oil terminal operates under SIC 5171, whereas, the Libby plant and the liquid waste treatment and storage system both operate under 2-digit SIC 13.

Based on this analysis, the three facilities are not on the same surface site and do not share equipment, therefore, they are not adjacent as defined by the regulation. Air authorization/permit applications for both nearby facilities will be submitted under separate cover.

B. Apply the 3 criteria for determining a single source:

SIC Code: Surrounding or associated sources belong to the same 2-digit industrial grouping (2-digit SIC code) as this facility, OR surrounding or associated sources that belong to different 2-digit SIC codes are support facilities for this source.

☑ **Yes** ☐ **No**

Common Ownership or Control: Surrounding or associated sources are under common ownership or control as this source.

☑ **Yes** ☐ **No**

Contiguous or Adjacent: Surrounding or associated sources are contiguous or adjacent with this source.

☐ **Yes** ☑ **No**

C. Make a determination:

☑ The source, as described in this application, constitutes the entire source for 20.2.70, 20.2.72, 20.2.73, or 20.2.74 NMAC applicability purposes. If in "A" above you evaluated only the source that is the subject of this application, all "**YES**" boxes should be checked. If in "A" above you evaluated other sources as well, you must check **AT LEAST ONE** of the boxes "**NO**" to conclude that the source, as described in the application, is the entire source for 20.2.70, 20.2.72, 20.2.73, and 20.2.74 NMAC applicability purposes.

☐ The source, as described in this application, **does not** constitute the entire source for 20.2.70, 20.2.72, 20.2.73, or 20.2.74 NMAC applicability purposes (A permit may be issued for a portion of a source). The entire source consists of the following facilities or emissions sources (list and describe):

Section 12

Section 12.A

PSD Applicability Determination for All Sources

(Submitting under 20.2.72, 20.2.74 NMAC)

A PSD applicability determination for all sources. For sources applying for a significant permit revision, apply the applicable requirements of 20.2.74.AG and 20.2.74.200 NMAC and to determine whether this facility is a major or minor PSD source, and whether this modification is a major or a minor PSD modification. It may be helpful to refer to the procedures for Determining the Net Emissions Change at a Source as specified by Table A-5 (Page A.45) of the EPA New Source Review Workshop Manual to determine if the revision is subject to PSD review.

A. This facility is:

- ☑ **a minor PSD source before and after this modification (if so, delete C and D below).**
- ☐ **a major PSD source before this modification. This modification will make this a PSD minor source.**
- ☐ **an existing PSD Major Source that has never had a major modification requiring a BACT analysis.**
- ☐ **an existing PSD Major Source that has had a major modification requiring a BACT analysis**
- ☐ **a new PSD Major Source after this modification.**

B. **This facility [is not] one of the listed 20.2.74.501 Table I – PSD Source Categories. The "project" emissions** for this modification are **[not significant]. The "project" emissions listed below [do not] only result from changes described in this permit application, thus no emissions from other [revisions or modifications, past or future] to this facility. Also, specifically discuss whether this project results in "de-bottlenecking", or other associated emissions resulting in higher emissions. The project emissions (before netting) for this project are as follows [see Table 2 in 20.2.74.502 NMAC for a complete list of significance levels]:**

a. **NOx: 145.8 TPY**
b. **CO: 241.7 TPY**
c. **VOC: 182.8 TPY**
d. **SOx: 238.4 TPY**
e. **PM: 9.1 TPY**
f. **PM10: 8.9 TPY**
g. **PM2.5: 8.9 TPY**
h. **Fluorides: N/A TPY**
i. **Lead: N/A TPY**
j. **Sulfur compounds (listed in Table 2): N/A TPY**
k. **GHG: 254,861 TPY**

C. If this is an existing PSD major source, or any facility with emissions greater than 250 TPY (or 100 TPY for 20.2.74.501 Table 1 – PSD Source Categories), determine whether any permit modifications are related, or could be considered a single project with this action, and provide an explanation for your determination whether a PSD modification is triggered.

Section 13

Determination of State & Federal Air Quality Regulations

<u>This section lists each state and federal air quality regulation that may apply to your facility and/or equipment that are stationary sources of regulated air pollutants.</u>

Not all state and federal air quality regulations are included in this list. Go to the Code of Federal Regulations (CFR) or to the Air Quality Bureau's regulation page to see the full set of air quality regulations.

Required Information for Specific Equipment:
For regulations that apply to specific source types, in the 'Justification' column **provide any information needed to determine if the regulation does or does not apply**. **For example**, to determine if emissions standards at 40 CFR 60, Subpart IIII apply to your three identical stationary engines, we need to know the construction date as defined in that regulation; the manufacturer date; the date of reconstruction or modification, if any; if they are or are not fire pump engines; if they are or are not emergency engines as defined in that regulation; their site ratings; and the cylinder displacement.

Required Information for Regulations that Apply to the Entire Facility:
See instructions in the 'Justification' column for the information that is needed to determine if an 'Entire Facility' type of regulation applies (e.g. 20.2.70 or 20.2.73 NMAC).

Regulatory Citations for Regulations That Do Not, but Could Apply:
If there is a state or federal air quality regulation that does not apply, but you have a piece of equipment in a source category for which a regulation has been promulgated, you must **provide the low level regulatory citation showing why your piece of equipment is not subject to or exempt from the regulation. For example** if you have a stationary internal combustion engine that is not subject to 40 CFR 63, Subpart ZZZZ because it is an existing 2 stroke lean burn stationary RICE with a site rating of more than 500 brake HP located at a major source of HAP emissions, your citation would be 40 CFR 63.6590(b)(3)(i). **We don't want a discussion of every non-applicable regulation, but if it is possible a regulation could apply, explain why it does not. For example,** if your facility is a power plant, you do not need to include a citation to show that 40 CFR 60, Subpart OOO does not apply to your non-existent rock crusher.

Regulatory Citations for Emission Standards:
For each unit that is subject to an emission standard in a source specific regulation, such as 40 CFR 60, Subpart OOO or 40 CFR 63, Subpart HH, include the low level regulatory citation of that emission standard. Emission standards can be numerical emission limits, work practice standards, or other requirements such as maintenance. **Here are examples:** a glycol dehydrator is subject to the general standards at 63.764C(1)(i) through (iii); an engine is subject to 63.6601, Tables 2a and 2b; a crusher is subject to 60.672(b), Table 3 and all transfer points are subject to 60.672(e)(1)

Federally Enforceable Conditions:
All federal regulations are federally enforceable. All Air Quality Bureau State regulations are federally enforceable except for the following: affirmative defense portions at 20.2.7.6.B, 20.2.7.110(B)(15), 20.2.7.11 through 20.2.7.113, 20.2.7.115, and 20.2.7.116; 20.2.37; 20.2.42; 20.2.43; 20.2.62; 20.2.63; 20.2.86; 20.2.89; and 20.2.90 NMAC. Federally enforceable means that EPA can enforce the regulation as well as the Air Quality Bureau and federally enforceable regulations can count toward determining a facility's potential to emit (PTE) for the Title V, PSD, and nonattainment permit regulations.

INCLUDE ANY OTHER INFORMATION NEEDED TO COMPLETE AN APPLICABILITY DETERMINATION OR THAT IS RELEVENT TO YOUR FACILITY'S NOTICE OF INTENT OR PERMIT.

EPA Applicability Determination Index for 40 CFR 60, 61, 63, etc: http://cfpub.epa.gov/adi/

Example of a Table for STATE REGULATIONS:

STATE REGU-LATIONS CITATION	Title	Applies? Enter Yes or No	Unit(s) or Facility	JUSTIFICATION: (You may delete instructions or statements that do not apply in the justification column to shorten the document.)
20.2.1 NMAC	General Provisions	Yes	Facility	General Provisions apply to Notice of Intent, Construction, and Title V permit applications.
20.2.3 NMAC	Ambient Air Quality Standards NMAAQS	Yes	Facility	This facility is located in New Mexico, therefore the requirements of this part applicable.
20.2.7 NMAC	Excess Emissions	Yes	Facility	This facility is subject to Air Quality Control Regulations, as defined in 20.2.7 NMAC, and is thus subject to the requirements of this regulation.
20.2.23 NMAC	Fugitive Dust Control	No	Facility	This is a permitted facility therefore this regulation does not apply.
20.2.33 NMAC	Gas Burning Equipment - Nitrogen Dioxide	No		This facility DOES NOT have new gas burning equipment **(external combustion emission sources, such as gas fired boilers and heaters)** having a heat input of greater than 1,000,000 million British Thermal Units per year per unit This facility DOES NOT have existing gas burning equipment having a heat input of greater than 1,000,000 million British Thermal Units per year per unit Note: "New gas burning equipment" means gas burning equipment, the construction or modification of which is commenced after February 17, 1972.
20.2.34 NMAC	Oil Burning Equipment: NO_2	No		This facility DOES NOT have oil burning equipment **(external combustion emission sources, such as oil fired boilers and heaters)** having a heat input of greater than 1,000,000 million British Thermal Units per year per unit.
20.2.35 NMAC	Natural Gas Processing Plant – Sulfur	Yes	Facility	This facility is a natural gas processing plant; therefore it is subject to the requirements of NMAC 2.35 for “New Natural **Gas Processing** Plants” as defined by the rule.
20.2.37 and 20.2.36 NMAC	Petroleum Processing Facilities and Petroleum Refineries	N/A	N/A	**These regulations were repealed by the Environmental Improvement Board. If you had equipment subject to 20.2.37 NMAC before the repeal, your combustion emission sources are now subject to 20.2.61 NMAC.**
20.2.38 NMAC	Hydrocarbon Storage Facility	Yes	TK 2-6	This regulation applies to the oil and condensate storage tanks at the facility. The tanks will be manifolded to a flare to meet the requirements of this regulation.
20.2.39 NMAC	Sulfur Recovery Plant - Sulfur	No		This facility is NOT a sulfur recovery plant.
20.2.61.109 NMAC	Smoke & Visible Emissions	Yes	ENG 1-12, GEN 1-2, HTR 1-2, TO-1, FL 1-2	Engines, generators, heaters, and flares are Stationary Combustion Equipment.
20.2.70 NMAC	Operating Permits	Yes	Facility	As proposed, this facility is a Title V Major source and is in turn subject to 20.2.70.
20.2.71 NMAC	Operating Permit Fees	Yes	Facility	This facility is subject to 20.2.70 NMAC and is in turn subject to 20.2.71 NMAC.
20.2.72 NMAC	Construction Permits	Yes	Facility	This facility is subject to 20.2.72 NMAC.
20.2.73 NMAC	NOI & Emissions Inventory Requirements	Yes	Facility	**Emissions Inventory Reporting:** 20.2.73.300 NMAC applies. This facility will be issued a permit under 20.2.72 NMAC, therefore it will meet the applicability requirements of 20.2.73.300 NMAC.

STATE REGU-LATIONS CITATION	Title	Applies? Enter Yes or No	Unit(s) or Facility	JUSTIFICATION: (You may delete instructions or statements that do not apply in the justification column to shorten the document.)
20.2.74 NMAC	Permits – Prevention of Significant Deterioration (PSD)	No	Facility	This facility is NOT a PSD major source.
20.2.75 NMAC	Construction Permit Fees	Yes	Facility	Subject to 20.2.72 NMAC and is in turn subject to 20.2.75 NMAC.
20.2.77 NMAC	New Source Performance	Yes	ENG 1-12, GEN 1-2, HTR 1-2, FUG-1, COMP, AMINE-1	HTR 1-2 are subject to NSPS Dc ENG 1-12 and GEN-1 are subject to NSPS Subpart JJJJ. GEN-2 is subject to NSPS Subpart IIII. FUG-1, COMP, AMINE-1 are subject to NSPS Subpart OOOOa.
20.2.78 NMAC	Emission Standards for HAPS	No		This facility DOES NOT emit hazardous air pollutants which are subject to the requirements of 40 CFR Part 61, as amended through January 31, 2009.
20.2.79 NMAC	Permits – Nonattainment Areas	No		This facility is located in an attainment area for all regulated pollutants. PTE is major for NOx, CO, and SO2. The significance levels for NOx, CO and SO2 will meet the national ambient air quality standard, therefore this regulation is not applicable to those pollutants.
20.2.80 NMAC	Stack Heights	Yes		3Bear considered GEP requirements in the analysis. Stack heights do not exceed GEP.
20.2.82 NMAC	MACT Standards for source categories of HAPS	Yes	ENG 1-12, GEN 1-2	This regulation applies to all sources emitting hazardous air pollutants, which are subject to the requirements of 40 CFR Part 63. Applies if other MACT subpart applies. The MACT Subpart ZZZZ applies as discussed below.

Example of a Table for Applicable FEDERAL REGULATIONS (Note: This is not an exhaustive list):

FEDERAL REGU-LATIONS CITATION	Title	Applies? Enter Yes or No	Unit(s) or Facility	JUSTIFICATION:
40 CFR 50	NAAQS	Yes	Facility	Applies since the source emits air pollutants subject to NAAQS. Defined as applicable at 20.2.70.7.E.11, any national ambient air quality standard.

FEDERAL REGU-LATIONS CITATION	Title	Applies? Enter Yes or No	Unit(s) or Facility	JUSTIFICATION:
				See Section 16 for modeled demonstration of NAAQS compliance.
NSPS 40 CFR 60, Subpart A	General Provisions	Yes	ENG 1-12, GEN 1-2, HTR 1-2, FUG-1, COMP, AMINE-1	HTR 1-2 are subject to NSPS Dc ENG 1-12 and GEN-1 are subject to NSPS Subpart JJJJ. GEN-2 is subject to NSPS Subpart IIII. FUG-1, COMP, AMINE-1 are subject to NSPS Subpart OOOOa.
NSPS 40 CFR60.40a, Subpart Da	Subpart Da, Performance Standards for **Electric Utility Steam Generating Units**	No		There is not a steam generating unit that commenced construction, modification, or reconstruction after September 18, 1978, and that is capable of combusting more than 73 megawatts (MW) (250 million British thermal units per hour (MMBtu/hr)), therefore this facility is not applicable to this regulation.
NSPS 40 CFR60.40b Subpart Db	**Electric Utility Steam Generating Units**	No		There is not a steam generating unit that commenced construction, modification, or reconstruction after June 19, 1984, and that has a heat input capacity from fuels combusted in the steam generating unit of greater than 29 megawatts (MW) (100 million British thermal units per hour (MMBtu/hr)), therefore this facility is not applicable to this regulation.
40 CFR 60.40c, Subpart Dc	Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units	Yes	HTR 1-2	This facility has steam generating units for which construction, modification, or reconstruction is commenced after June 9, 1989 and that has a maximum design heat input capacity of 29 megawatts (MW) (100 million British thermal units per hour (MMBtu/h)) or less, but greater than or equal to 2.9 MW (10 MMBtu/h). This regulation therefore, applies to the specified heaters.
NSPS 40 CFR 60, Subpart Ka	Standards of Performance for **Storage Vessels for Petroleum Liquids** for which Construction, Reconstruction, or Modification Commenced After May 18, 1978, and **Prior** to July 23, 1984	No		This facility does not have storage vessels greater than 151,416 liters (40,000 gallons) that are used to store petroleum liquids for which construction is commenced after May 18, 1978, therefore the facility is not applicable to this regulation.
NSPS 40 CFR 60, Subpart Kb	Standards of Performance for **Volatile Organic Liquid Storage Vessels** (Including Petroleum Liquid Storage Vessels) for	No		Gunbarrel TK-1 is a vessel with capacity greater than or equal to 75 cubic meters (m^3) but less than 1,589,874 m^3 but does not meet the definition of storage vessel, therefore is not applicable to this subpart. TK 2-6 and PWTK-1 are not storage vessels with capacities greater than or equal to 75 cubic meters (m^3) but less than 1,589,874 m^3 that are used to store volatile organic liquids (VOL) for which construction, reconstruction, or modification

FEDERAL REGU-LATIONS CITATION	Title	Applies? Enter Yes or No	Unit(s) or Facility	JUSTIFICATION:
	Which Construction, Reconstruction, or Modification Commenced **After** July 23, 1984			commenced after July 23, 1984.
NSPS 40 CFR 60.330 Subpart GG	**Stationary Gas Turbines**	No		There are no stationary gas turbines exceeding 10 MMBtu/hr at this facility.
NSPS 40 CFR 60, Subpart KKK	Leaks of VOC from **Onshore Gas Plants**	No		This facility is an onshore natural gas processing plant that will commence construction, reconstruction, or modification AFTER August 23, 2011, therefore the facility is not applicable to this subpart.
NSPS 40 CFR Part 60 Subpart LLL	Standards of Performance for **Onshore Natural Gas Processing**: SO_2 Emissions	No		This facility is an onshore natural gas processing plant that will commence construction, reconstruction, or modification AFTER August 23, 2011, therefore the facility is not applicable to this subpart.
NSPS 40 CFR Part 60 Subpart OOOO	Standards of Performance for Crude Oil and Natural Gas Production, Transmission, and Distribution for which construction, modification or reconstruction commenced after August 23, 2011 and before September 18, 2015	No		The facility is NOT subject to the provisions of NSPS Subpart OOOO because the facility will be constructed after September 18, 2015.
NSPS 40 CFR Part 60 Subpart OOOOa	Standards of Performance for Crude Oil and Natural Gas Facilities for which Construction, Modification or Reconstruction Commenced After September 18, 2015	Yes	FUG-1, COMP, AMINE-1	The facility IS subject to the provisions of NSPS Subpart OOOOa listed below because: - The compressors (COMP) are not co-located with a wellhead, so the reciprocating compressor requirements are applicable. - AMINE-1 is a sweetening unit located at onshore natural gas processing plants that process natural gas produced from onshore wells. - This is an onshore natural gas processing plant therefore the equipment leak standards apply to the affected facilities (FUG-1). The facility is NOT subject to the provisions of NSPS Subpart OOOOa listed below because: - There are no gas-fired, continuous high bleed pneumatic controllers at this site, so the pneumatic controller requirements are not applicable. - TK-1 is a process vessel not a storage vessel, therefore the storage vessel affected facility requirements are not applicable. - TK 2-6 and PWTK-1 are storage vessels that emit less than 6 tpy VOC, therefore the storage vessel affected facility requirements are not applicable.
NSPS 40 CFR 60 Subpart IIII	Standards of performance for Stationary Compression Ignition Internal	Yes	GEN-2	GEN-2 is a stationary CI that commenced construction after July 11, 2005 where the stationary CI ICE was manufactured after April 1, 2006. This engine is not a fire pump engine.

FEDERAL REGU-LATIONS CITATION	Title	Applies? Enter Yes or No	Unit(s) or Facility	JUSTIFICATION:
	Combustion Engines			
NSPS 40 CFR Part 60 Subpart JJJJ	Standards of Performance for Stationary Spark Ignition Internal Combustion Engines	Yes	ENG 1-12	ENG-1 is subject to NSPS Subpart JJJJ because the engine has a manufacture date after July 1, 2007 and has a maximum engine power greater than or equal to 500 hp and less than 1,350 hp. ENG 2-12 are subject to NSPS Subpart JJJJ because the engines have a manufacture date after July 1, 2007 and have a maximum engine power greater than 500 hp. GEN-1 is subject to NSPS Subpart JJJJ because the engine has a manufacture date after July 1, 2008 and has a maximum engine power less than 500 hp.
NSPS 40 CFR 60 Subpart TTTT	Standards of Performance for Greenhouse Gas Emissions for Electric Generating Units	No		There are not any steam generating units, integrated gasification combined cycle (IGCC), or stationary combustion turbines on site, therefore this facility is not subject to this subpart.
NSPS 40 CFR 60 Subpart UUUU	Emissions Guidelines for Greenhouse Gas Emissions and Compliance Times for Electric Utility Generating Units	No		There are not any steam generating units, integrated gasification combined cycle (IGCC), or stationary combustion turbines on site, therefore this facility is not subject to this subpart.
NSPS 40 CFR 60, Subparts WWW, XXX, Cc, and Cf	Standards of performance for Municipal Solid Waste (MSW) Landfills	No		This facility is not a landfill; therefore, it is not applicable to this subpart.
NESHAP 40 CFR 61 Subpart A	General Provisions	No		This facility DOES NOT emit HAP's in quantities that trigger these requirements.
NESHAP 40 CFR 61 Subpart E	National Emission Standards for **Mercury**	No		This facility DOES NOT process mercury ore to recover mercury, use mercury chlor-alkali cells to produce chlorine gas and alkali metal hydroxide, and incinerate or dry wastewater treatment plant sludge.
NESHAP 40 CFR 61 Subpart V	National Emission Standards for **Equipment Leaks** (Fugitive Emission Sources)	No		The provisions of this subpart apply to each of the following sources that are intended to operate in volatile hazardous air pollutant (VHAP) service: pumps, compressors, pressure relief devices, sampling connection systems, open-ended valves or lines, valves, connectors, surge control vessels, bottoms receivers, and control devices or systems required by this subpart. VHAP service means a piece of equipment either contains or contacts a fluid (liquid or gas) that is at least 10 percent by weight of VHAP. VHAP means a substance regulated under this subpart for which a standard for equipment leaks of the substance has been promulgated. Benzene is a VHAP (See 40 CFR 61 Subpart J). Link to 40 CFR 61 Subpart V Note: If 40 CFR 60 also applies source only needs to comply with this part. No equipment at this facility contains or contacts a fluid with at least 10 percent by weight of a VHAP.
MACT 40 CFR 63,	General Provisions	Yes	ENG 1-12, GEN	This regulation applies to all sources emitting hazardous air pollutants, which are subject to the requirements of 40 CFR Part 63.

FEDERAL REGU-LATIONS CITATION	Title	Applies? Enter Yes or No	Unit(s) or Facility	JUSTIFICATION:
Subpart A			1-2	Applies if other MACT subpart applies. The MACT Subpart ZZZZ applies as discussed below.
MACT 40 CFR 63.760 Subpart HH	**Oil and Natural Gas Production Facilities**	No		There are no dehydrators located at this facility. This facility is not a major source of HAPs.
MACT 40 CFR 63 Subpart HHH		No		This facility IS NOT a natural gas transmission and storage facility or a major source of HAPs.
MACT 40 CFR 63 Subpart DDDDD	National Emission Standards for Hazardous Air Pollutants for Major Industrial, Commercial, and Institutional Boilers & Process Heaters	No		This facility is not a major source of HAPs, therefore it is not subject to this subpart.
MACT 40 CFR 63 Subpart UUUUU	National Emission Standards for Hazardous Air Pollutants Coal & Oil Fire Electric Utility Steam Generating Unit	No		There are not any coal and oil fired electric utility steam generating units on site, therefore it is not subject to this subpart.
MACT 40 CFR 63 Subpart ZZZZ	National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines (**RICE MACT**)	Yes	ENG 1-12, GEN 1-2	40 CFR 63, Subpart ZZZZ establishes national emission limitations and operating limitations for hazardous air pollutants (HAP) emitted from existing, new, modified and reconstructed stationary reciprocating internal combustion engines (RICE) located at major and area sources of HAP emissions. The regulation contains provisions for initial and continuous compliance demonstration. The facility is an **area** source of HAP, as defined under the regulation. **ENG 1-2 and GEN-1:** Under §63.6590(a)(2)(iii) and (a)(3)(iii), a RICE located at an area source of HAP is a *new* or *reconstructed* unit if it is constructed or reconstructed on or after June 12, 2006. Under §63.6590(c)(1), a *new* or *reconstructed* SI RICE at an area source of HAP must meet the requirements of the part by meeting the requirements of 40 CFR 60, Subpart JJJJ (NSPS for Stationary Spark Ignition Internal Combustion Engines). **GEN-2** Under §63.6590(a)(2)(iii) and (a)(3)(iii), a RICE located at an area source of HAP is a *new* or *reconstructed* unit if it is constructed or reconstructed on or after June 12, 2006. Under §63.6590(c)(1), a *new* or *reconstructed* SI RICE at an area source of HAP must meet the requirements of the part by meeting the requirements of 40 CFR 60, Subpart IIII (NSPS for Stationary Compression Ignition Engines).

FEDERAL REGU-LATIONS CITATION	Title	Applies? Enter Yes or No	Unit(s) or Facility	JUSTIFICATION:
40 CFR 64	**Compliance Assurance Monitoring**	No		The amine sweetening unit has pre-control VOC and H2S emissions greater than 100 TPY and uses a control device to achieve compliance with an emission limitation or standard. The amine sweetening unit is an affected facility under NSPS OOOOa, therefore, it is exempt under §64.2(b)(1)(i) for control of H2S. 3Bear believes the performance testing and compliance demonstrations required to confirm H2S destruction are adequate to also demonstrate VOC destruction. Therefore, 3Bear believes this facility IS NOT subject to 40 CFR 64.
40 CFR 68	**Chemical Accident Prevention**	Yes		This facility will handle naturally occurring hydrocarbon mixtures at a natural gas processing plant and the Accidental Release Prevention Provisions may be applicable to this facility. The facility may be required to submit the appropriate accidental release emergency response program plan prior to operation of the facility with more than the threshold quantity of a regulated substance.
Title IV – Acid Rain 40 CFR 72	**Acid Rain**	No		Not an affected facility.
Title IV – Acid Rain 40 CFR 73	**Sulfur Dioxide** Allowance Emissions	No		Not an affected facility.
Title IV-Acid Rain 40 CFR 75	**Continuous Emissions Monitoring**	No		Not an affected facility.
Title IV – Acid Rain 40 CFR 76	**Acid Rain** Nitrogen Oxides **Emission Reduction Program**	No		Not an affected facility.
Title VI – 40 CFR 82	Protection of **Stratospheric Ozone**	N/A	N/A	Not Applicable –facility will not “service”, “maintain” or “repair” class I or class II appliances nor “disposes” of the appliances.

Section 14

Operational Plan to Mitigate Emissions

(Submitting under 20.2.70, 20.2.72, 20.2.74 NMAC)

☐ **Title V Sources** (20.2.70 NMAC)**:** By checking this box and certifying this application the permittee certifies that it has developed an **Operational Plan to Mitigate Emissions During Startups, Shutdowns, and Emergencies** defining the measures to be taken to mitigate source emissions during startups, shutdowns, and emergencies as required by 20.2.70.300.D.5(f) and (g) NMAC. This plan shall be kept on site to be made available to the Department upon request. This plan should not be submitted with this application.

☑ **NSR** (20.2.72 NMAC)**, PSD** (20.2.74 NMAC) **& Nonattainment** (20.2.79 NMAC) **Sources:** By checking this box and certifying this application the permittee certifies that it has developed an **Operational Plan to Mitigate Source Emissions During Malfunction, Startup, or Shutdown** defining the measures to be taken to mitigate source emissions during malfunction, startup, or shutdown as required by 20.2.72.203.A.5 NMAC. This plan shall be kept on site to be made available to the Department upon request. This plan should not be submitted with this application.

☑ **Title V** (20.2.70 NMAC)**, NSR** (20.2.72 NMAC)**, PSD** (20.2.74 NMAC) **& Nonattainment** (20.2.79 NMAC) **Sources:** By checking this box and certifying this application the permittee certifies that it has established and implemented a Plan to Minimize Emissions During Routine or Predictable Startup, Shutdown, and Scheduled Maintenance through work practice standards and good air pollution control practices as required by 20.2.7.14.A and B NMAC. This plan shall be kept on site or at the nearest field office to be made available to the Department upon request. This plan should not be submitted with this application.

Section 15

Alternative Operating Scenarios

(Submitting under 20.2.70, 20.2.72, 20.2.74 NMAC)

Alternative Operating Scenarios: Provide all information required by the department to define alternative operating scenarios. This includes process, material and product changes; facility emissions information; air pollution control equipment requirements; any applicable requirements; monitoring, recordkeeping, and reporting requirements; and compliance certification requirements. Please ensure applicable Tables in this application are clearly marked to show alternative operating scenario.

Construction Scenarios: When a permit is modified authorizing new construction to an existing facility, NMED includes a condition to clearly address which permit condition(s) (from the previous permit and the new permit) govern during the interval between the date of issuance of the modification permit and the completion of construction of the modification(s). There are many possible variables that need to be addressed such as: Is simultaneous operation of the old and new units permitted and, if so for example, for how long and under what restraints? In general, these types of requirements will be addressed in Section A100 of the permit, but additional requirements may be added elsewhere. Look in A100 of our NSR and/or TV permit template for sample language dealing with these requirements. Find these permit templates at: https://www.env.nm.gov/aqb/permit/aqb_pol.html. Compliance with standards must be maintained during construction, which should not usually be a problem unless simultaneous operation of old and new equipment is requested.

In this section, under the bolded title “Construction Scenarios”, specify any information necessary to write these conditions, such as: conservative-realistic estimated time for completion of construction of the various units, whether simultaneous operation of old and new units is being requested (and, if so, modeled), whether the old units will be removed or decommissioned, any PSD ramifications, any temporary limits requested during phased construction, whether any increase in emissions is being requested as SSM emissions or will instead be handled as a separate Construction Scenario (with corresponding emission limits and conditions, etc.

Please see Table 3-1 and Table 3-2.

Section 16

Air Dispersion Modeling

1) Minor Source Construction (20.2.72 NMAC) and Prevention of Significant Deterioration (PSD) (20.2.74 NMAC) ambient impact analysis (modeling): Provide an ambient impact analysis as required at 20.2.72.203.A(4) and/or 20.2.74.303 NMAC and as outlined in the Air Quality Bureau's Dispersion Modeling Guidelines found on the Planning Section's modeling website. If air dispersion modeling has been waived for one or more pollutants, attach the AQB Modeling Section modeling waiver approval documentation.
2) SSM Modeling: Applicants must conduct dispersion modeling for the total short term emissions during routine or predictable startup, shutdown, or maintenance (SSM) using realistic worst case scenarios following guidance from the Air Quality Bureau's dispersion modeling section. Refer to "Guidance for Submittal of Startup, Shutdown, Maintenance Emissions in Permit Applications (http://www.env.nm.gov/aqb/permit/app_form.html) for more detailed instructions on SSM emissions modeling requirements.
3) Title V (20.2.70 NMAC) ambient impact analysis: Title V applications must specify the construction permit and/or Title V Permit number(s) for which air quality dispersion modeling was last approved. Facilities that have only a Title V permit, such as landfills and air curtain incinerators, are subject to the same modeling required for preconstruction permits required by 20.2.72 and 20.2.74 NMAC.

What is the purpose of this application?	Enter an X for each purpose that applies
New PSD major source or PSD major modification (20.2.74 NMAC). See #1 above.	
New Minor Source or significant permit revision under 20.2.72 NMAC (20.2.72.219.D NMAC). See #1 above. **Note:** Neither modeling nor a modeling waiver is required for VOC emissions.	**X**
Reporting existing pollutants that were not previously reported.	
Reporting existing pollutants where the ambient impact is being addressed for the first time.	
Title V application (new, renewal, significant, or minor modification. 20.2.70 NMAC). See #3 above.	
Relocation (20.2.72.202.B.4 or 72.202.D.3.c NMAC)	
Minor Source Technical Permit Revision 20.2.72.219.B.1.d.vi NMAC for like-kind unit replacements.	
Other: i.e. SSM modeling. See #2 above.	
This application does not require modeling since this is a No Permit Required (NPR) application.	
This application does not require modeling since this is a Notice of Intent (NOI) application (20.2.73 NMAC).	
This application does not require modeling according to 20.2.70.7.E(11), 20.2.72.203.A(4), 20.2.74.303, 20.2.79.109.D NMAC and in accordance with the Air Quality Bureau's Modeling Guidelines.	

Check each box that applies:

☐ See attached, approved modeling **waiver for all** pollutants from the facility.
☐ See attached, approved modeling **waiver for some** pollutants from the facility.
☑ Attached in Universal Application Form 4 (UA4) is a **modeling report for all** pollutants from the facility.
☐ Attached in UA4 is a **modeling report for some** pollutants from the facility.
☐ No modeling is required.

Section 17

Compliance Test History

(Submitting under 20.2.70, 20.2.72, 20.2.74 NMAC)

Compliance Test History Table

Unit No.	Test Description	Test Date
ENG-2 (Previously ENG-1b)	Tested in accordance with EPA test methods as required by NSR permit 7482.	4/16/2019
ENG-3 (Previously ENG-2)	Tested in accordance with EPA test methods as required by NSR permit 7482.	4/18/2019

Section 20

Other Relevant Information

Other relevant information. Use this attachment to clarify any part in the application that you think needs explaining. Reference the section, table, column, and/or field. Include any additional text, tables, calculations or clarifying information.

Additionally, the applicant may propose specific permit language for AQB consideration. In the case of a revision to an existing permit, the applicant should provide the old language and the new language in track changes format to highlight the proposed changes. If proposing language for a new facility or language for a new unit, submit the proposed operating condition(s), along with the associated monitoring, recordkeeping, and reporting conditions. In either case, please limit the proposed language to the affected portion of the permit.

The following permit conditions are requested for the 3Bear Libby Gas Plant:

1. Requesting emission limits as specified in the summary table in Section 6 that are greater than 0.5 lb/hr and 0.5 tpy.

2. Individual HAP emissions will be less than 10 tpy. Facility wide HAP emissions will be less than 25 tpy.

3. Engine Emission Limits:
   - CO emissions on ENG 2-8 will be limited to 0.78 g/hp-hr

4. TK 1-6 and PWTK-1 will be controlled with a 95% control efficiency.

Section 22: Certification

Company Name: ______3 Bear Delaware Operating – NM, LLC_____________________________________

I, _______Stephanie Swanson__________________________, hereby certify that the information and data submitted in this application are true and as accurate as possible, to the best of my knowledge and professional expertise and experience.

Signed this ____ day of _____July__________, ________, upon my oath or affirmation, before a notary of the State of

__________________________________.

_______________________________________ _______________________
*Signature Date

__Stephanie Swanson_______________________ _____Manager of Engineering_________
Printed Name Title

Scribed and sworn before me on this ____ day of _________________________, _________.

My authorization as a notary of the State of _______________________________ expires on the

________________ day of ______________________, _____________.

_______________________________________ _______________________
Notary's Signature Date

____
Notary's Printed Name

*For Title V applications, the signature must be of the Responsible Official as defined in 20.2.70.7.AE NMAC.

Summary of Uncontrolled Air Emission Units

Unit Name	Unit Description	Qty	Potential Emissions Uncontrolled + No Product Recovered NOx lb/hr	NOx tpy	CO lb/hr	CO tpy	VOC lb/hr	VOC tpy	SO2 lb/hr	SO2 tpy	PM lb/hr	PM tpy	PM10 lb/hr	PM10 tpy	PM2.5 lb/hr	PM2.5 tpy	H2S lb/hr	H2S tpy	HAPs lb/hr	HAPs tpy
ENG 1-2*	Worst-Case Composite Inlet Compression Engine Emissions	N/A	3.04	13.33	7.39	32.39	3.47	15.19	0.03	0.14	0.11	0.50	0.11	0.50	0.11	0.50	--	--	1.52	6.65
ENG 3-4	Inlet Compression	2	6.09	26.66	14.79	64.77	6.94	30.39	0.06	0.28	0.23	1.00	0.23	1.00	0.23	1.00	--	--	3.03	13.29
ENG 5-12*	Worst-Case Composite Residue Compression Engine Emissions	N/A	197.07	863.18	170.40	746.36	13.88	60.78	0.15	0.65	1.03	4.50	1.03	4.50	1.03	4.50	--	--	6.07	26.58
GEN-1	Generator Engine	1	0.82	0.21	1.65	0.41	0.64	0.16	0.01	0.00	0.06	0.02	0.06	0.02	0.06	0.02	--	--	0.09	0.02
GEN-2	Generator Engine	1	0.80	0.20	0.53	0.13	0.20	0.05	0.00	0.00	0.13	0.00	0.13	0.00	0.13	0.00	--	--	0.00	0.00
TK-1	Gunbarrel Tank	1	--	--	--	--	22.64	99.18	--	--	--	--	--	--	--	--	--	--	1.43	6.25
TK 2-5	Stabilized Condensate Tank	4	--	--	--	--	7.98	34.95	--	--	--	--	--	--	--	--	--	--	0.50	2.20
TK-6	Slop Oil Tank	1	--	--	--	--	0.85	3.72	--	--	--	--	--	--	--	--	--	--	0.05	0.23
PWTK-1	Produced Water Tank	1	--	--	--	--	0.00	0.00	--	--	--	--	--	--	--	--	--	--	0.00	0.00
HTR-1	Hot Oil Heater	1	2.42	10.61	4.07	17.82	0.27	1.17	0.14	0.60	0.37	1.61	0.37	1.61	0.37	1.61	--	--	0.09	0.40
HTR-2	Regen Gas Heater	1	1.08	4.72	0.91	3.97	0.06	0.26	0.03	0.13	0.08	0.36	0.08	0.36	0.08	0.36	--	--	0.02	0.09
CONDLOAD-1	Condensate Loadout	1	--	--	--	--	99.91	27.35	--	--	--	--	--	--	--	--	--	--	6.29	1.72
OILLOAD-1	Oil Loadout	1	--	--	--	--	99.91	0.19	--	--	--	--	--	--	--	--	--	--	6.29	0.01
FUG-1	Fugitives - OOOOa	N/A	--	--	--	--	11.70	51.24	--	--	--	--	--	--	--	--	0.00	0.00	0.11	0.47
FUG-2	Fugitives - Residue	N/A	--	--	--	--	0.05	0.23	--	--	--	--	--	--	--	--	0.00	0.00	0.00	0.00
AMINE-1	Amine Unit	1	--	--	--	--	39.84	174.52	--	--	--	--	--	--	--	--	--	--	0.27	1.20
COMP	Compressor Blowdowns	8	--	--	--	--	2.27	9.95	--	--	--	--	--	--	--	--	--	--	0.02	0.09
PLANT BD	Gas Plant Blowdown	1	--	--	--	--	32,803.52	16.40	--	--	--	--	--	--	--	--	--	--	302.73	0.15
TO-1	Thermal Oxidizer	1	1.18	5.15	0.99	4.33	0.19	0.83	--	--	--	--	--	--	--	--	--	--	0.00	0.01
FL-1	Upset/Maintenance Flare	1	0.03	0.15	0.16	0.68	0.02	0.09	--	--	--	--	--	--	--	--	--	--	0.00	0.00
FL-2	Tank Flare	1	0.01	0.03	0.03	0.14	0.00	0.02	--	--	--	--	--	--	--	--	--	--	0.00	0.00
HR-1	Road Dust	N/A	--	--	--	--	--	--	--	--	12.49	0.23	3.18	0.06	0.32	0.01	--	--	--	--
MAIN-1	Maintenance Activities	N/A	--	--	--	--	--	10.00	--	--	--	--	--	--	--	--	--	--	--	--
UP/MAL-1	Upsets/Malfunctions	N/A	--	--	--	--	--	10.00	--	--	--	--	--	--	--	--	--	--	--	--
	Facility-Wide Total Emissions Including Exempt Equipment		212.55	924.24	200.92	871.00	33114.34	546.66	0.42	1.80	14.50	8.22	5.19	8.04	2.33	7.99	0.00	0.00	328.53	59.37
	Facility-Wide Total Emissions Less Exempt Equipment		210.92	923.83	198.73	870.46	33113.50	546.45	0.41	1.80	14.31	8.20	5.00	8.03	2.14	7.98	0.00	0.00	328.44	59.35

Summary of Controlled Air Emission Units

Unit Name	Unit Description	Qty	Potential Emissions Controlled + Product Recovery NOx lb/hr	NOx tpy	CO lb/hr	CO tpy	VOC lb/hr	VOC tpy	SO2 lb/hr	SO2 tpy	PM lb/hr	PM tpy	PM10 lb/hr	PM10 tpy	PM2.5 lb/hr	PM2.5 tpy	H2S lb/hr	H2S tpy	HAPs lb/hr	HAPs tpy	CO2e
ENG 1-2*	Worst-Case Composite Inlet Compression Engine Emissions	N/A	3.04	13.33	3.04	13.33	2.40	10.50	0.03	0.14	0.11	0.50	0.11	0.50	0.11	0.50	--	--	0.4	2.0	5,843
ENG 3-4	Inlet Compression	2	6.09	26.66	4.75	20.79	4.80	21.00	0.06	0.28	0.23	1.00	0.23	1.00	0.23	1.00	--	--	0.9	3.9	11,687
ENG 5-12*	Worst-Case Composite Residue Compression Engine Emissions	N/A	12.17	53.31	9.49	41.58	9.59	42.01	0.15	0.65	1.03	4.50	1.03	4.50	1.03	4.50	--	--	1.8	7.8	27,163
GEN-1	Generator Engine	1	0.82	0.21	1.65	0.41	0.64	0.16	0.01	0.00	0.06	0.02	0.06	0.02	0.06	0.02	--	--	0.1	0.0	93
GEN-2	Generator Engine	1	0.80	0.20	0.53	0.13	0.20	0.05	0.00	0.00	0.13	0.00	0.13	0.00	0.13	0.00	--	--	0.0	0.0	27
TK-1	Gunbarrel Tank	1	--	--	--	--	1.13	4.96	--	--	--	--	--	--	--	--	--	--	0.1	0.3	7
TK 2-5	Stabilized Condensate Tank	4	--	--	--	--	0.40	1.75	--	--	--	--	--	--	--	--	--	--	0.0	0.1	20
TK-6	Slop Oil Tank	1	--	--	--	--	0.04	0.19	--	--	--	--	--	--	--	--	--	--	0.0	0.0	2
PWTK-1	Produced Water Tank	1	--	--	--	--	0.00	0.00	--	--	--	--	--	--	--	--	--	--	0.0	0.0	0
HTR-1	Hot Oil Heater	1	2.42	10.61	4.07	17.82	0.27	1.17	0.14	0.60	0.37	1.61	0.37	1.61	0.37	1.61	--	--	0.1	0.4	25,345
HTR-2	Regen Gas Heater	1	1.08	4.72	0.91	3.97	0.06	0.26	0.03	0.13	0.08	0.36	0.08	0.36	0.08	0.36	--	--	0.0	0.1	5,642
CONDLOAD-1	Condensate Loadout	1	--	--	--	--	33.47	9.16	--	--	--	--	--	--	--	--	--	--	2.1	0.6	23
OILLOAD-1	Oil Loadout	1	--	--	--	--	33.47	0.06	--	--	--	--	--	--	--	--	--	--	2.1	0.0	0
FUG-1	Fugitives - OOOOa	N/A	--	--	--	--	11.70	51.24	--	--	--	--	--	--	--	--	0.00	0.00	0.11	0.47	20815
FUG-2	Fugitives - Residue	N/A	--	--	--	--	0.05	0.23	--	--	--	--	--	--	--	--	0.00	0.00	0.0	0.0	0
AMINE-1	Amine Unit	1	--	--	--	--	2.79	3.93	--	--	--	--	--	--	--	--	--	--	0.0	0.0	65,846
COMP	Compressor Blowdowns	3	--	--	--	--	0.11	0.50	--	--	--	--	--	--	--	--	--	--	0.0	0.0	35
PLANT BD	Gas Plant Blowdown	1	--	--	--	--	1,640.18	0.82	--	--	--	--	--	--	--	--	--	--	15.1	0.0	21
TO-1	Thermal Oxidizer	1	1.56	6.82	1.31	5.73	0.19	0.83	64.45	235.24	0.00	0.00	0.00	0.00	0.00	0.00	--	--	0.0	0.0	8,142
FL-1	Upset/Maintenance Flare	1	251.60	26.48	1,147.00	120.70	92.94	14.14	57.09	1.31	6.25	0.88	6.25	0.88	6.25	0.88	--	--	0.0	0.0	77,038
FL-2	Tank Flare	1	0.89	3.91	4.07	17.82	0.00	0.02	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.01	--	--	0.0	0.0	6,730
HR-1	Road Dust	N/A	--	--	--	--	--	--	--	--	12.49	0.23	3.18	0.06	0.32	0.01	--	--	--	--	--
MAIN-1	Maintenance Activities	N/A	--	--	--	--	--	10.00	--	--	--	--	--	--	--	--	--	--	--	--	250
UP/MAL-1	Upsets/Malfunctions	N/A	--	--	--	--	--	10.00	--	--	--	--	--	--	--	--	--	--	--	--	250
	Facility-Wide Total Emissions Including Exempt Equipment		280.48	146.24	1,176.82	242.28	1,834.43	182.98	121.95	238.35	20.74	9.10	11.44	8.93	8.58	8.88	0.00	0.00	22.90	15.73	254,981
	Facility-Wide Total Emissions Less Exempt Equipment		278.85	145.83	1,174.63	241.74	1,833.59	182.77	121.95	238.35	20.55	9.09	11.25	8.91	8.39	8.86	0.00	0.00	22.81	15.71	254,861

* - Composite emissions represent worse case engine emissions

Summary of Uncontrolled HAP Emissions

Unit Name	Unit Description	Qty	Formaldehyde lb/hr	Formaldehyde tpy	Acetaldehyde lb/hr	Acetaldehyde tpy	Acrolein lb/hr	Acrolein tpy	Benzene lb/hr	Benzene tpy	Toluene lb/hr	Toluene tpy	Ethylbenzene lb/hr	Ethylbenzene tpy	Xylenes lb/hr	Xylenes tpy	n-Hexane lb/hr	n-Hexane tpy	2,2,4-TMP lb/hr	2,2,4-TMP tpy
			Potential Emissions Uncontrolled + No Product Recovered																	
ENG 1-2*	Worst-Case Composite Inlet Compression Engine Emissions	N/A	1.34	5.86	0.10	0.42	0.06	0.26	0.01	0.02	0.00	0.02	0.00	0.00	0.00	0.01	0.01	0.06	--	--
ENG 3-4	Inlet Compression	2	2.68	11.73	0.19	0.83	0.12	0.51	0.01	0.04	0.01	0.04	0.00	0.00	0.00	0.02	0.03	0.11	--	--
ENG 5-12*	Worst-Case Composite Residue Compression Engine Emissions	N/A	5.35	23.45	0.38	1.67	0.23	1.03	0.08	0.37	0.03	0.13	0.00	0.01	0.01	0.05	0.05	0.22	--	--
GEN-1	Generator Engine	1	0.07	0.02	0.01	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	N/A	N/A	--	--
GEN-2	Generator Engine	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	N/A	N/A	0.00	0.00	N/A	N/A	--	--
TK-1	Gunbarrel Tank	1	--	--	--	--	--	--	0.23	0.99	0.23	0.99	0.02	0.10	0.02	0.10	0.91	3.97	0.02	0.10
TK 2-5	Stabilized Condensate Tank	4	--	--	--	--	--	--	0.08	0.35	0.08	0.35	0.01	0.03	0.01	0.03	0.32	1.40	0.01	0.03
TK-6	Slop Oil Tank	1	--	--	--	--	--	--	0.01	0.04	0.01	0.04	0.00	0.00	0.00	0.00	0.03	0.15	0.00	0.00
PWTK-1	Produced Water Tank	1	--	--	--	--	--	--	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
HTR-1	Hot Oil Heater	1	0.00	0.02	--	--	--	--	0.00	0.00	0.00	0.00	--	--	--	--	0.09	0.38	--	--
HTR-2	Regen Gas Heater	1	0.00	0.00	--	--	--	--	0.00	0.00	0.00	0.00	--	--	--	--	0.02	0.09	--	--
CONDLOAD-1	Condensate Loadout	1	--	--	--	--	--	--	1.00	0.27	1.00	0.27	0.10	0.03	0.10	0.03	4.00	1.09	0.10	0.03
OILLOAD-1	Oil Loadout	1	--	--	--	--	--	--	1.00	0.00	1.00	0.00	0.10	0.00	0.10	0.00	4.00	0.01	0.10	0.00
FUG-1	Fugitives - OOOOa	N/A	--	--	--	--	--	--	0.04	0.16	0.01	0.02	0.00	0.00	0.00	0.00	0.06	0.28	0.00	0.00
FUG-2	Fugitives - Residue	N/A	--	--	--	--	--	--	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AMINE-1	Amine Unit	1	--	--	--	--	--	--	0.03	0.14	0.03	0.14	0.00	0.01	0.01	0.04	0.16	0.70	0.04	0.17
COMP	Compressor Blowdowns	3	--	--	--	--	--	--	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.00
PLANT BD	Gas Plant Blowdown	1	--	--	--	--	--	--	105.62	0.05	15.19	0.01	0.00	0.00	0.00	0.00	181.91	0.09	0.00	0.00
TO-1	Thermal Oxidizer	1	--	--	--	--	--	--	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
FL-1	Upset/Maintenance Flare	1	--	--	--	--	--	--	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
FL-2	Tank Flare	1	--	--	--	--	--	--	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
HR-1	Road Dust	N/A	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MAIN-1	Maintenance Activities	N/A	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
UP/MAL-1	Upsets/Malfunctions	N/A	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Facility-Wide Total HAP Emissions Including Exempt Equipment			9.44	41.08	0.68	2.92	0.42	1.80	108.11	2.46	17.59	2.02	0.24	0.19	0.26	0.28	191.59	8.57	0.27	0.33
Facility-Wide Total HAP Emissions Less Exempt Equipment			9.37	41.06	0.67	2.92	0.41	1.80	108.11	2.46	17.59	2.02	0.24	0.19	0.26	0.28	191.59	8.57	0.27	0.33

Summary of Controlled HAP Emissions

Unit Name	Unit Description	Qty	Formaldehyde lb/hr	Formaldehyde tpy	Acetaldehyde lb/hr	Acetaldehyde tpy	Acrolein lb/hr	Acrolein tpy	Benzene lb/hr	Benzene tpy	Toluene lb/hr	Toluene tpy	Ethylbenzene lb/hr	Ethylbenzene tpy	Xylenes lb/hr	Xylenes tpy	n-Hexane lb/hr	n-Hexane tpy	2,2,4-TMP lb/hr	2,2,4-TMP tpy
			Potential Emissions Controlled + Product Recovery																	
ENG 1-2*	Worst-Case Composite Inlet Compression Engine Emissions	N/A	0.32	1.40	0.10	0.42	0.06	0.26	0.01	0.02	0.00	0.02	0.00	0.00	0.00	0.01	0.01	0.06	--	--
ENG 3-4	Inlet Compression	2	0.54	2.35	0.19	0.83	0.12	0.51	0.01	0.04	0.01	0.04	0.00	0.00	0.00	0.02	0.03	0.11	--	--
ENG 5-12*	Worst-Case Composite Residue Compression Engine Emissions	N/A	1.07	4.69	0.38	1.67	0.23	1.03	0.08	0.37	0.03	0.13	0.00	0.01	0.01	0.05	0.05	0.22	--	--
GEN-1	Generator Engine	1	0.07	0.02	0.01	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	N/A	N/A	--	--
GEN-2	Generator Engine	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	N/A	N/A	0.00	0.00	N/A	N/A	--	--
TK-1	Gunbarrel Tank	1	--	--	--	--	--	--	0.01	0.05	0.01	0.05	0.00	0.00	0.00	0.00	0.05	0.20	0.00	0.00
TK 2-5	Stabilized Condensate Tank	4	--	--	--	--	--	--	0.00	0.02	0.00	0.02	0.00	0.00	0.00	0.00	0.02	0.07	0.00	0.00
TK-6	Slop Oil Tank	1	--	--	--	--	--	--	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00
PWTK-1	Produced Water Tank	1	--	--	--	--	--	--	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
HTR-1	Hot Oil Heater	1	0.00	0.02	--	--	--	--	0.00	0.00	0.00	0.00	--	--	--	--	0.09	0.38	--	--
HTR-2	Regen Gas Heater	1	0.00	0.00	--	--	--	--	0.00	0.00	0.00	0.00	--	--	--	--	0.02	0.09	--	--
CONDLOAD-1	Condensate Loadout	1	--	--	--	--	--	--	0.33	0.09	0.33	0.09	0.03	0.01	0.03	0.01	1.34	0.37	0.03	0.01
OILLOAD-1	Oil Loadout	1	--	--	--	--	--	--	0.33	0.00	0.33	0.00	0.03	0.00	0.03	0.00	1.34	0.00	0.03	0.00
FUG-1	Fugitives - OOOOa	N/A	--	--	--	--	--	--	0.04	0.16	0.01	0.02	0.00	0.00	0.00	0.00	0.06	0.28	0.00	0.00
FUG-2	Fugitives - Residue	N/A	--	--	--	--	--	--	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AMINE-1	Amine Unit	1	--	--	--	--	--	--	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.00
COMP	Compressor Blowdowns	3	--	--	--	--	--	--	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PLANT BD	Gas Plant Blowdown	1	--	--	--	--	--	--	5.28	0.00	0.76	0.00	0.00	0.00	0.00	0.00	9.10	0.00	0.00	0.00
TO-1	Thermal Oxidizer	1	--	--	--	--	--	--	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
FL-1	Upset/Maintenance Flare	1	--	--	--	--	--	--	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
FL-2	Tank Flare	1	--	--	--	--	--	--	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
HR-1	Road Dust	N/A	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MAIN-1	Maintenance Activities	N/A	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
UP/MAL-1	Upsets/Malfunctions	N/A	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Facility-Wide Total HAP Emissions Including Exempt Equipment			2.00	8.47	0.68	2.92	0.42	1.80	6.11	0.77	1.50	0.38	0.07	0.03	0.09	0.09	12.10	1.81	0.07	0.02
Facility-Wide Total HAP Emissions Less Exempt Equipment			1.93	8.46	0.67	2.92	0.41	1.80	6.10	0.77	1.49	0.38	0.07	0.03	0.09	0.09	12.10	1.81	0.07	0.02

* - Composite emissions represent worse case engine emissions

Summary of Inlet Compressor Engine Air Emission Units

Option Number	Unit Name	Make & Model	Qty	Potential Emissions Uncontrolled + No Product Recovered NOx lb/hr	NOx tpy	CO lb/hr	CO tpy	VOC lb/hr	VOC tpy	SO2 lb/hr	SO2 tpy	PM10 lb/hr	PM10 tpy
1	ENG-1	Caterpillar G3508B		1.52	6.66	3.93	17.19	1.70	7.46	0.02	0.07	0.06	0.25
		Option 1 Total:	1	1.52	6.66	3.93	17.19	1.70	7.46	0.02	0.07	0.06	0.25
2	ENG-2	Caterpillar G3516		3.04	13.33	7.39	32.39	3.47	15.19	0.03174	0.13902	0.11	0.50
		Option 2 Total:	1	3.04	13.33	7.39	32.39	3.47	15.19	0.03	0.14	0.11	0.50
Worst-Case Composite Inlet Compression Engine Emissions				3.04	13.33	7.39	32.39	3.47	15.19	0.03	0.14	0.11	0.50

Option Number	Unit Name	Make & Model	Qty	Potential Emissions Controlled + Product Recovery NOx lb/hr	NOx tpy	CO lb/hr	CO tpy	VOC lb/hr	VOC tpy	SO2 lb/hr	SO2 tpy	PM10 lb/hr	PM10 tpy	CO2e tpy
1	ENG-1	Caterpillar G3508B		1.52	6.66	3.04	13.33	1.38	6.06	0.02	0.07	0.06	0.25	2903
		Option 1 Total:	1	1.52	6.66	3.04	13.33	1.38	6.06	0.02	0.07	0.06	0.25	2903
2	ENG-2	Caterpillar G3516		3.04	13.33	2.37	10.40	2.40	10.50	0.03	0.14	0.11	0.50	5843
		Option 2 Total:	1	3.04	13.33	2.37	10.40	2.40	10.50	0.03	0.14	0.11	0.50	5843
Worst-Case Composite Inlet Compression Engine Emissions				3.04	13.33	3.04	13.33	2.40	10.50	0.03	0.14	0.11	0.50	5843

Summary of Residue Compressor Engine Air Emission Units

Option Number	Unit Name	Make & Model	Qty	NOx lb/hr	NOx tpy	CO lb/hr	CO tpy	VOC lb/hr	VOC tpy	SO2 lb/hr	SO2 tpy	PM10 lb/hr	PM10 tpy
				Potential Emissions Uncontrolled + No Product Recovered									
1	ENG 5-8	Caterpillar G3516		3.04	13.33	7.39	32.39	3.47	15.19	0.03	0.14	0.11	0.50
		Option 1 Total:	4	12.17	53.31	29.58	129.55	13.88	60.78	0.13	0.56	0.46	1.99
2	ENG 9-12	Waukesha 7044GSI		49.27	215.80	42.60	186.59	1.33	5.84	0.04	0.16	0.26	1.13
		Option 2 Total:	4	197.07	863.18	170.40	746.36	5.33	23.36	0.15	0.65	1.03	4.50
Worst-Case Composite Residue Compression Engine Emissions				197.07	863.18	170.40	746.36	13.88	60.78	0.15	0.65	1.03	4.50

Option Number	Unit Name	Make & Model	Qty	NOx lb/hr	NOx tpy	CO lb/hr	CO tpy	VOC lb/hr	VOC tpy	SO2 lb/hr	SO2 tpy	PM10 lb/hr	PM10 tpy	CO2e tpy
				Potential Emissions Controlled + Product Recovery										
1	ENG 5-8	Caterpillar G3516		3.04	13.33	2.37	10.40	2.40	10.50	0.03	0.14	0.11	0.50	5843
		Option 1 Total:	4	12.17	53.31	9.49	41.58	9.59	42.01	0.13	0.56	0.46	1.99	23374
2	ENG 9-12	Waukesha 7044GSI		1.90	8.32	1.57	6.90	0.65	2.84	0.04	0.16	0.26	1.13	6791
		Option 2 Total:	4	7.59	33.26	6.30	27.58	2.59	11.36	0.15	0.65	1.03	4.50	27163
Worst-Case Composite Residue Compression Engine Emissions				12.17	53.31	9.49	41.58	9.59	42.01	0.15	0.65	1.03	4.50	27163

Engine Emission Detail Sheet

Item	Value
Source Name	ENG-1
Description	Compressor Engine
Engine Use	Inlet Compression
Quantity	1
Make	Caterpillar
Model	Caterpillar G3508B
Serial Number	TBD
Manufacture Date	After 7/1/2010
Fuel Type	Natural Gas
Engine Type	4SLB

Item	Value	Units	Source
Rated Horsepower	690	hp	Manufacturer
Heat Rate	5.66	MMBtu/hr	Calculated
Fuel Consumption	8203	Btu/hp-hr	Manufacturer
Fuel Use	5307.5	scf/hr	Calculated
Fuel Heat Value	1066.43	btu/scf	Gas Analysis
Emisson Controls	Catalyst/AFR		Manufacturer
Control Efficiency CH2O	50%		Manufacturer/Permit Condition
Control Efficiency NOx	0%		Manufacturer/JJJJ
Control Efficiency VOC	19%		Manufacturer/JJJJ
Control Efficiency CO	22%		Manufacturer/JJJJ
Engine Speed	1400	RPM	Manufacturer
Potential Operation	8760	hr/yr	
Sulfur Content	9,476	grains/MMscf	Gas Analysis with Margin
Sulfur Margin	400%	%	

Total Potential Emissions

Pollutant	Uncontrolled Emissions		Controlled Emissions	
	(lb/hr)	(tpy)	(lb/hr)	(tpy)
NOx	1.52	6.66	1.52	6.66
VOC (less formaldehyde)	1.07	4.66	1.07	4.66
Total VOC	1.70	7.46	1.38	6.06
CO	3.93	17.19	3.04	13.33
SO2	0.02	0.07	0.02	0.07
PM10	0.06	0.25	0.06	0.25
Formaldehyde	0.64	2.80	0.32	1.40
Acetaldehyde	0.05	0.21	0.05	0.21
Acrolein	0.03	0.13	0.03	0.13
Benzene	0.00	0.01	0.00	0.01
Toluene	0.00	0.01	0.00	0.01
Ethylbenzene	0.00	0.00	0.00	0.00
Xylene	0.00	0.00	0.00	0.00
n-Hexane	0.01	0.03	0.01	0.03
Total HAPs	0.73	3.19	0.41	1.79

Potential Emissions Per Engine

Pollutant	Uncontrolled Emissions				Controlled Emissions				Source of Emission Factor
	EF	Units	(lb/hr)	(tpy)	EF	Units	(lb/hr)	(tpy)	
NOx	1.00*	g/hp-hr	1.52	6.66	1.00	g/hp-hr	1.52	6.66	40 CFR 60 Subpart JJJJ
VOC (less formaldehyde)	0.70*	g/hp-hr	1.07	4.66	0.70	g/hp-hr	1.07	4.66	40 CFR 60 Subpart JJJJ
Total VOC***	1.12	g/hp-hr	1.70	7.46	0.91	g/hp-hr	1.38	6.06	40 CFR 60 Subpart JJJJ + CH2O
CO	2.58**	g/hp-hr	3.93	17.19	2.00	g/hp-hr	3.04	13.33	40 CFR 60 Subpart JJJJ
SO2****	2.79E-03	lb/mmBtu	0.02	0.07	2.79E-03	lb/mmBtu	0.02	0.07	EPA AP-42 Table 3.2-2
PM10*****	9.99E-03	lb/mmBtu	0.06	0.25	9.99E-03	lb/mmBtu	0.06	0.25	EPA AP-42 Table 3.2-2
Formaldehyde	0.42	g/hp-hr	0.64	2.80	0.21	g/hp-hr	0.32	1.40	Permit Condition
Acetaldehyde	8.36E-03	lb/mmBtu	0.05	0.21	8.36E-03	lb/mmBtu	0.05	0.21	EPA AP-42 Table 3.2-2
Acrolein	5.14E-03	lb/mmBtu	0.03	0.13	5.14E-03	lb/mmBtu	0.03	0.13	EPA AP-42 Table 3.2-2
Benzene	4.40E-04	lb/mmBtu	0.00	0.01	4.40E-04	lb/mmBtu	0.00	0.01	EPA AP-42 Table 3.2-2
Toluene	4.08E-04	lb/mmBtu	0.00	0.01	4.08E-04	lb/mmBtu	0.00	0.01	EPA AP-42 Table 3.2-2
Ethylbenzene	3.97E-05	lb/mmBtu	0.00	0.00	3.97E-05	lb/mmBtu	0.00	0.00	EPA AP-42 Table 3.2-2
Xylene	1.84E-04	lb/mmBtu	0.00	0.00	1.84E-04	lb/mmBtu	0.00	0.00	EPA AP-42 Table 3.2-2
n-Hexane	1.11E-03	lb/mmBtu	0.01	0.03	1.11E-03	lb/mmBtu	0.01	0.03	EPA AP-42 Table 3.2-2
Total HAPs			0.73	3.19			0.41	1.79	

* - Uncontrolled and controlled NOx and VOC emission factors based on 40 CFR 60 Subpart JJJJ standards as manufacturer emission factors are lower than JJJJ standards.
** - Uncontrolled and controlled emission factors for CO were taken from the Manufacturer technical data sheets and 40 CFR 60 Subpart JJJJ emission standards, respectively.
*** - Total VOC emissions were calculated to include formaldehyde.
**** - Sulfur emission factor from AP-42 Table 3.2-2 is ratio adjusted based on the max sulfur content when sulfur content is greater than 2,000 grains/MMscf.
***** - PM10 emissions include filterable and condensable particulates.

Sample Calculation for NOx

1.00 g/hp-hr * 690 hp / 453.59 g/lb * 8760 hr/yr / 2000 lb/ton = 6.66 tpy

Engine Emission Detail Sheet

Item	Value
Source Name	ENG-2
Description	Compressor Engine
Engine Use	Inlet Compression
Quantity	1
Make	Caterpillar
Model	Caterpillar G3516
Serial Number	TBD
Manufacture Date	After 7/1/2007
Fuel Type	Natural Gas
Engine Type	4SLB

Item	Value	Units	Source
Rated Horsepower	1380	hp	Manufacturer
Heat Rate	11.39	MMBtu/hr	Calculated
Fuel Consumption	8256	Btu/hp-hr	Manufacturer
Fuel Use	10683.54	scf/hr	Calculated
Fuel Heat Value	1066.43	btu/scf	Gas Analysis
Emisson Controls	Oxidation Catalyst		Manufacturer
Control Efficiency CH2O	80%		Manufacturer/Permit Condition
Control Efficiency NOx	0%		Manufacturer/JJJJ
Control Efficiency VOC	31%		Manufacturer/JJJJ
Control Efficiency CO	68%		Manufacturer/Permit Condition
Engine Speed	1400	RPM	Manufacturer
Potential Operation	8760	hr/yr	
Sulfur Content	9,476	grains/MMscf	Gas Analysis with Margin
Sulfur Margin	400%	%	

Total Potential Emissions

Pollutant	Uncontrolled Emissions		Controlled Emissions	
	(lb/hr)	(tpy)	(lb/hr)	(tpy)
NOx	3.04	13.33	3.04	13.33
VOC (less formaldehyde)	2.13	9.33	2.13	9.33
Total VOC	3.47	15.19	2.40	10.50
CO	7.39	32.39	2.37	10.40
SO2	0.03	0.14	0.03	0.14
PM10	0.11	0.50	0.11	0.50
Formaldehyde	1.34	5.86	0.27	1.17
Acetaldehyde	0.10	0.42	0.10	0.42
Acrolein	0.06	0.26	0.06	0.26
Benzene	0.01	0.02	0.01	0.02
Toluene	0.00	0.02	0.00	0.02
Ethylbenzene	0.00	0.00	0.00	0.00
Xylene	0.00	0.01	0.00	0.01
n-Hexane	0.01	0.06	0.01	0.06
Total HAPs	1.52	6.65	0.45	1.96

Potential Emissions Per Engine

Pollutant	Uncontrolled Emissions				Controlled Emissions				Source of Emission Factor
	EF	Units	(lb/hr)	(tpy)	EF	Units	(lb/hr)	(tpy)	
NOx	1.00*	g/hp-hr	3.04	13.33	1.00	g/hp-hr	3.04	13.33	40 CFR 60 Subpart JJJJ
VOC (less formaldehyde)	0.70*	g/hp-hr	2.13	9.33	0.70	g/hp-hr	2.13	9.33	40 CFR 60 Subpart JJJJ
Total VOC***	1.14	g/hp-hr	3.47	15.19	0.79	g/hp-hr	2.40	10.50	40 CFR 60 Subpart JJJJ + CH2O
CO	2.43**	g/hp-hr	7.39	32.39	0.78****	g/hp-hr	2.37	10.40	Permit Condition
SO2*****	2.79E-03	lb/mmBtu	0.03	0.14	2.79E-03	lb/mmBtu	0.03	0.14	EPA AP-42 Table 3.2-2
PM10******	9.99E-03	lb/mmBtu	0.11	0.50	9.99E-03	lb/mmBtu	0.11	0.50	EPA AP-42 Table 3.2-2
Formaldehyde	4.40E-01	g/hp-hr	1.34	5.86	8.80E-02	g/hp-hr	0.27	1.17	Permit Condition
Acetaldehyde	8.36E-03	lb/mmBtu	0.10	0.42	8.36E-03	lb/mmBtu	0.10	0.42	EPA AP-42 Table 3.2-2
Acrolein	5.14E-03	lb/mmBtu	0.06	0.26	5.14E-03	lb/mmBtu	0.06	0.26	EPA AP-42 Table 3.2-2
Benzene	4.40E-04	lb/mmBtu	0.01	0.02	4.40E-04	lb/mmBtu	0.01	0.02	EPA AP-42 Table 3.2-2
Toluene	4.08E-04	lb/mmBtu	0.00	0.02	4.08E-04	lb/mmBtu	0.00	0.02	EPA AP-42 Table 3.2-2
Ethylbenzene	3.97E-05	lb/mmBtu	0.00	0.00	3.97E-05	lb/mmBtu	0.00	0.00	EPA AP-42 Table 3.2-2
Xylene	1.84E-04	lb/mmBtu	0.00	0.01	1.84E-04	lb/mmBtu	0.00	0.01	EPA AP-42 Table 3.2-2
n-Hexane	1.11E-03	lb/mmBtu	0.01	0.06	1.11E-03	lb/mmBtu	0.01	0.06	EPA AP-42 Table 3.2-2
Total HAPs			1.52	6.65			0.45	1.96	

* - Uncontrolled and controlled emission factors for NOx and VOC are based on JJJJ standards as manufacturer uncontrolled emission factors are lower than JJJJ emission standards.
** - Uncontrolled emission factor for CO was taken from the Manufacturer technical data sheets. Controlled emission factor for CO is a permit condition requested in this application.
*** - Uncontrolled and controlled emission factor for Total VOC was calculated to include formaldehyde.
**** - Controlled CO emission factor is a permit condition requested in this application.
***** - Sulfur emission factor from AP-42 Table 3.2-2 is ratio adjusted based on the max sulfur content when sulfur content is greater than 2,000 grains/MMscf.
****** - PM10 emissions include filterable and condensable particulates.

Sample Calculation for NOx

1.00 g/hp-hr * 1380 hp / 453.59 g/lb * 8760 hr/yr / 2000 lb/ton = 13.33 tpy

Engine Emission Detail Sheet

Item	Value
Source Name	ENG 3-4
Description	Compressor Engine
Engine Use	Inlet Compression
Quantity	2
Make	Caterpillar
Model	Caterpillar G3516
Serial Number	TBD
Manufacture Date	After 7/1/2007
Fuel Type	Natural Gas
Engine Type	4SLB

Item	Value	Units	Source
Rated Horsepower	1380	hp	Manufacturer
Heat Rate	11.39	MMBtu/hr	Calculated
Fuel Consumption	8256	Btu/hp-hr	Manufacturer
Fuel Use	10683.54	scf/hr	Calculated
Fuel Heat Value	1066.43	btu/scf	Gas Analysis
Emisson Controls	Oxidation Catalyst		Manufacturer
Control Efficiency CH2O	80%		Manufacturer/Permit Condition
Control Efficiency NOx	0%		Manufacturer/JJJJ
Control Efficiency VOC	31%		Manufacturer/JJJJ
Control Efficiency CO	68%		Manufacturer/Permit Condition
Engine Speed	1400	RPM	Manufacturer
Potential Operation	8760	hr/yr	
Sulfur Content	9,476	grains/MMscf	Gas Analysis with Margin
Sulfur Margin	400%	%	

Total Potential Emissions

Pollutant	Uncontrolled Emissions		Controlled Emissions	
	(lb/hr)	(tpy)	(lb/hr)	(tpy)
NOx	6.09	26.66	6.09	26.66
VOC (less formaldehyde)	4.26	18.66	4.26	18.66
Total VOC	6.94	30.39	4.80	21.00
CO	14.79	64.77	4.75	20.79
SO2	0.06	0.28	0.06	0.28
PM10	0.23	1.00	0.23	1.00
Formaldehyde	2.68	11.73	0.54	2.35
Acetaldehyde	0.19	0.83	0.19	0.83
Acrolein	0.12	0.51	0.12	0.51
Benzene	0.01	0.04	0.01	0.04
Toluene	0.01	0.04	0.01	0.04
Ethylbenzene	0.00	0.00	0.00	0.00
Xylene	0.00	0.02	0.00	0.02
n-Hexane	0.03	0.11	0.03	0.11
Total HAPs	3.03	13.29	0.89	3.91

Potential Emissions Per Engine

Pollutant	Uncontrolled Emissions				Controlled Emissions				Source of Emission Factor
	EF	Units	(lb/hr)	(tpy)	EF	Units	(lb/hr)	(tpy)	
NOx	1.00*	g/hp-hr	3.04	13.33	1.00	g/hp-hr	3.04	13.33	40 CFR 60 Subpart JJJJ
VOC (less formaldehyde)	0.70*	g/hp-hr	2.13	9.33	0.70	g/hp-hr	2.13	9.33	40 CFR 60 Subpart JJJJ
Total VOC***	1.14	g/hp-hr	3.47	15.19	0.79	g/hp-hr	2.40	10.50	40 CFR 60 Subpart JJJJ + CH2O
CO	2.43**	g/hp-hr	7.39	32.39	0.78	g/hp-hr	2.37	10.40	Permit Condition
SO2*****	2.79E-03	lb/mmBtu	0.03	0.14	2.79E-03	lb/mmBtu	0.03	0.14	EPA AP-42 Table 3.2-2
PM10******	9.99E-03	lb/mmBtu	0.11	0.50	9.99E-03	lb/mmBtu	0.11	0.50	EPA AP-42 Table 3.2-2
Formaldehyde	4.40E-01	g/hp-hr	1.34	5.86	8.80E-02	g/hp-hr	0.27	1.17	Permit Condition
Acetaldehyde	8.36E-03	lb/mmBtu	0.10	0.42	8.36E-03	lb/mmBtu	0.10	0.42	EPA AP-42 Table 3.2-2
Acrolein	5.14E-03	lb/mmBtu	0.06	0.26	5.14E-03	lb/mmBtu	0.06	0.26	EPA AP-42 Table 3.2-2
Benzene	4.40E-04	lb/mmBtu	0.01	0.02	4.40E-04	lb/mmBtu	0.01	0.02	EPA AP-42 Table 3.2-2
Toluene	4.08E-04	lb/mmBtu	0.00	0.02	4.08E-04	lb/mmBtu	0.00	0.02	EPA AP-42 Table 3.2-2
Ethylbenzene	3.97E-05	lb/mmBtu	0.00	0.00	3.97E-05	lb/mmBtu	0.00	0.00	EPA AP-42 Table 3.2-2
Xylene	1.84E-04	lb/mmBtu	0.00	0.01	1.84E-04	lb/mmBtu	0.00	0.01	EPA AP-42 Table 3.2-2
n-Hexane	1.11E-03	lb/mmBtu	0.01	0.06	1.11E-03	lb/mmBtu	0.01	0.06	EPA AP-42 Table 3.2-2
Total HAPs			1.52	6.65			0.45	1.96	

* - Uncontrolled and controlled emission factors for NOx and VOC are based on JJJJ standards as manufacturer uncontrolled emission factors are lower than JJJJ emission standards.
** - Uncontrolled emission factor for CO was taken from the Manufacturer technical data sheets. Controlled emission factor for CO is a permit condition requested in this application.
*** - Uncontrolled and controlled emission factor for Total VOC was calculated to include formaldehyde.
**** - Controlled CO emission factor is a permit condition requested in this application.
***** - Sulfur emission factor from AP-42 Table 3.2-2 is ratio adjusted based on the max sulfur content when sulfur content is greater than 2,000 grains/MMscf.
****** - PM10 emissions include filterable and condensable particulates.

Sample Calculation for NOx

1.00 g/hp-hr * 1380 hp / 453.59 g/lb * 8760 hr/yr / 2000 lb/ton = 13.33 tpy

Engine Emission Detail Sheet

Item	Value
Source Name	ENG 5-8
Description	Compressor Engine
Engine Use	Residue Compression
Quantity	4
Make	Caterpillar
Model	Caterpillar G3516
Serial Number	TBD
Manufacture Date	11/20/2017, After 7/1/2007
Fuel Type	Natural Gas
Engine Type	4SLB

Item	Value	Units	Source
Rated Horsepower	1380	hp	Manufacturer
Heat Rate	11.39	MMBtu/hr	Calculated
Fuel Consumption	8256	Btu/hp-hr	Manufacturer
Fuel Use	10683.54	scf/hr	Calculated
Fuel Heat Value	1066.43	btu/scf	Gas Analysis
Emisson Controls	Oxidation Catalyst		Manufacturer
Control Efficiency CH2O	80%		Manufacturer/Permit Condition
Control Efficiency NOx	0%		Manufacturer/JJJJ
Control Efficiency VOC	31%		Manufacturer/JJJJ
Control Efficiency CO	68%		Manufacturer/Permit Condition
Engine Speed	1400	RPM	Manufacturer
Potential Operation	8760	hr/yr	
Sulfur Content	9,476	grains/MMscf	AP42 with margin
Sulfur Margin	400%	%	

Total Potential Emissions

Pollutant	Uncontrolled Emissions		Controlled Emissions	
	(lb/hr)	(tpy)	(lb/hr)	(tpy)
NOx	12.17	53.31	12.17	53.31
VOC (less formaldehyde)	8.52	37.32	8.52	37.32
Total VOC	13.88	60.78	9.59	42.01
CO	29.58	129.55	9.49	41.58
SO2	0.13	0.56	0.13	0.56
PM10	0.46	1.99	0.46	1.99
Formaldehyde	5.35	23.45	1.07	4.69
Acetaldehyde	0.38	1.67	0.38	1.67
Acrolein	0.23	1.03	0.23	1.03
Benzene	0.02	0.09	0.02	0.09
Toluene	0.02	0.08	0.02	0.08
Ethylbenzene	0.00	0.01	0.00	0.01
Xylene	0.01	0.04	0.01	0.04
n-Hexane	0.05	0.22	0.05	0.22
Total HAPs	6.07	26.58	1.79	7.82

Potential Emissions Per Engine

Pollutant	Uncontrolled Emissions				Controlled Emissions				Source of Emission Factor
	EF	Units	(lb/hr)	(tpy)	EF	Units	(lb/hr)	(tpy)	
NOx	1.00*	g/hp-hr	3.04	13.33	1.00	g/hp-hr	3.04	13.33	40 CFR 60 Subpart JJJJ
VOC (less formaldehyde)	0.70*	g/hp-hr	2.13	9.33	0.70	g/hp-hr	2.13	9.33	40 CFR 60 Subpart JJJJ
Total VOC***	1.14	g/hp-hr	3.47	15.19	0.79	g/hp-hr	2.40	10.50	40 CFR 60 Subpart JJJJ + CH2O
CO	2.43**	g/hp-hr	7.39	32.39	0.78	g/hp-hr	2.37	10.40	Permit Condition
SO2*****	2.79E-03	lb/mmBtu	0.03	0.14	2.79E-03	lb/mmBtu	0.03	0.14	EPA AP-42 Table 3.2-2
PM10******	9.99E-03	lb/mmBtu	0.11	0.50	9.99E-03	lb/mmBtu	0.11	0.50	EPA AP-42 Table 3.2-2
Formaldehyde	4.40E-01	g/hp-hr	1.34	5.86	8.80E-02	g/hp-hr	0.27	1.17	Permit Condition
Acetaldehyde	8.36E-03	lb/mmBtu	0.10	0.42	8.36E-03	lb/mmBtu	0.10	0.42	EPA AP-42 Table 3.2-2
Acrolein	5.14E-03	lb/mmBtu	0.06	0.26	5.14E-03	lb/mmBtu	0.06	0.26	EPA AP-42 Table 3.2-2
Benzene	4.40E-04	lb/mmBtu	0.01	0.02	4.40E-04	lb/mmBtu	0.01	0.02	EPA AP-42 Table 3.2-2
Toluene	4.08E-04	lb/mmBtu	0.00	0.02	4.08E-04	lb/mmBtu	0.00	0.02	EPA AP-42 Table 3.2-2
Ethylbenzene	3.97E-05	lb/mmBtu	0.00	0.00	3.97E-05	lb/mmBtu	0.00	0.00	EPA AP-42 Table 3.2-2
Xylene	1.84E-04	lb/mmBtu	0.00	0.01	1.84E-04	lb/mmBtu	0.00	0.01	EPA AP-42 Table 3.2-2
n-Hexane	1.11E-03	lb/mmBtu	0.01	0.06	1.11E-03	lb/mmBtu	0.01	0.06	EPA AP-42 Table 3.2-2
Total HAPs			1.52	6.65			0.45	1.96	

* - Uncontrolled and controlled emission factors for NOx and VOC are based on JJJJ standards as manufacturer uncontrolled emission factors are lower than JJJJ emission standards.
** - Uncontrolled emission factor for CO was taken from the Manufacturer technical data sheets. Controlled emission factor for CO is a permit condition requested in this application.
*** - Uncontrolled and controlled emission factor for Total VOC was calculated to include formaldehyde.
**** - Controlled CO emission factor is a permit condition requested in this application.
***** - Sulfur emission factor from AP-42 Table 3.2-2 is ratio adjusted based on the max sulfur content when sulfur content is greater than 2,000 grains/MMscf.
****** - PM10 emissions include filterable and condensable particulates.

Sample Calculation for NOx

1.00 g/hp-hr * 1380 hp / 453.59 g/lb * 8760 hr/yr / 2000 lb/ton = 13.33 tpy

Engine Emission Detail Sheet

Item	Value
Source Name	ENG 9-12
Description	Compressor Engine
Engine Use	Residue Compression
Quantity	4
Make	Waukesha
Model	Waukesha 7044GSI
Serial Number	TBD
Manufacture Date	After 7/1/2010
Fuel Type	Natural Gas
Engine Type	4SRB

Item	Value	Units	Source
Rated Horsepower	1680	hp	Manufacturer
Heat Rate	13.24	MMBtu/hr	Calculated
Fuel Consumption	7881	Btu/hp-hr	Manufacturer
Fuel Use	12415.29	scf/hr	Calculated
Fuel Heat Value	1066.43	btu/scf	Gas Analysis
Emisson Controls	NSCR		Manufacturer
Control Efficiency CH2O	0%		Performance Data
Control Efficiency NOx	96%		Performance Data
Control Efficiency VOC	51%		Performance Data
Control Efficiency CO	96%		Performance Data
Engine Speed	1200	RPM	Manufacturer
Potential Operation	8760	hr/yr	
Sulfur Content	9,476	grains/MMscf	AP42 with margin
Sulfur Margin	400%	%	

Total Potential Emissions

Pollutant	Uncontrolled Emissions		Controlled Emissions	
	(lb/hr)	(tpy)	(lb/hr)	(tpy)
NOx	197.07	863.18	7.59	33.26
VOC (less formaldehyde)	N/A	N/A	N/A	N/A
Total VOC	5.33	23.36	2.59	11.36
CO	170.40	746.36	6.30	27.58
SO2	0.15	0.65	0.15	0.65
PM10	1.03	4.50	1.03	4.50
Formaldehyde	0.74	3.24	0.74	3.25
Acetaldehyde	0.15	0.65	0.15	0.65
Acrolein	0.14	0.61	0.14	0.61
Benzene	0.08	0.37	0.08	0.37
Toluene	0.03	0.13	0.03	0.13
Ethylbenzene	0.00	0.01	0.00	0.01
Xylene	0.01	0.05	0.01	0.05
n-Hexane	N/A	N/A	N/A	N/A
Total HAPs	1.15	5.05	1.15	5.05

Potential Emissions Per Engine

Pollutant	Uncontrolled Emissions				Controlled Emissions						Source of Emission Factor
	EF	Units	(lb/hr)	(tpy)	EF	Safety Factor	EF With Safety Factor	Units	(lb/hr)	(tpy)	
NOx**	13.30***	g/hp-hr	49.27	215.80	0.41	25%	0.51	g/hp-hr	1.90	8.32	Performance Data
VOC (less formaldehyde)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total VOC****	0.36*	g/hp-hr	1.33	5.84	0.14	25%	0.18	g/hp-hr	0.65	2.84	Performance Data
CO**	11.50***	g/hp-hr	42.60	186.59	0.34	25%	0.43	g/hp-hr	1.57	6.90	Performance Data
SO2*****	2.79E-03	lb/mmBtu	0.04	0.16	2.79E-03	N/A	N/A	lb/mmBtu	0.04	0.16	EPA AP-42 Table 3.2-3
PM10******	1.94E-02	lb/mmBtu	0.26	1.13	1.94E-02	N/A	N/A	lb/mmBtu	0.26	1.13	EPA AP-42 Table 3.2-3
Formaldehyde	5.00E-02	g/hp-hr	0.19	0.81	5.00E-02	N/A	N/A	g/hp-hr	0.19	0.81	Performance Data
Acetaldehyde	2.79E-03	lb/mmBtu	0.04	0.16	2.79E-03	N/A	N/A	lb/mmBtu	0.04	0.16	EPA AP-42 Table 3.2-3
Acrolein	2.63E-03	lb/mmBtu	0.03	0.15	2.63E-03	N/A	N/A	lb/mmBtu	0.03	0.15	EPA AP-42 Table 3.2-3
Benzene	1.58E-03	lb/mmBtu	0.02	0.09	1.58E-03	N/A	N/A	lb/mmBtu	0.02	0.09	EPA AP-42 Table 3.2-3
Toluene	5.58E-04	lb/mmBtu	0.01	0.03	5.58E-04	N/A	N/A	lb/mmBtu	0.01	0.03	EPA AP-42 Table 3.2-3
Ethylbenzene	2.48E-05	lb/mmBtu	0.00	0.00	2.48E-05	N/A	N/A	lb/mmBtu	0.00	0.00	EPA AP-42 Table 3.2-3
Xylene	1.95E-04	lb/mmBtu	0.00	0.01	1.95E-04	N/A	N/A	lb/mmBtu	0.00	0.01	EPA AP-42 Table 3.2-3
n-Hexane	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	EPA AP-42 Table 3.2-3
Total HAPs			0.29	1.26					0.29	1.26	

* - Uncontrolled emission factor for VOC is based on NMHC emission factor from performance data sheet.
** - Controlled emission factor for VOC is based on performance data sheet. A 25% safety factor was added to the controlled VOC emission factor.
*** - Uncontrolled and controlled emission factor for NOx and CO were taken from the performance data sheet. A 25% safety factor was added to controlled emission factors for NOx and CO.

**** - Uncontrolled and controlled emission factor for Total VOC was calculated to include formaldehyde.
***** - Sulfur emission factor from AP-42 Table 3.2-3 is ratio adjusted based on the max sulfur content when sulfur content is greater than 2,000 grains/MMscf.
****** - PM10 emissions include filterable and condensable particulates.

Sample Calculation for NOx

0.41 g/hp-hr * 1680 hp / 453.59 g/lb * 8760 hr/yr / 2000 lb/ton = 8.32 tpy

Engine Emission Detail Sheet

Item	Value
Source Name	GEN-1
Description	Generator Engine
Engine Use	Generator
Quantity	1
Make	Olympian
Model	250LG6
Serial Number	TBD
Manufacture Date	After 7/1/2010
Fuel Type	Natural Gas
Engine Type	4SRB

Item	Value	Units	Source
Rated Horsepower	374	hp	Manufacturer
Heat Rate	3.18	MMBtu/hr	Calculated
Fuel Consumption	8506	Btu/hp-hr	Manufacturer
Fuel Use	2983	scf/hr	Calculated
Fuel Heat Value	1066.43	btu/scf	Gas Analysis
Emission Controls	TBD		Manufacturer
Control Efficiency CH2O	0%		AP42
Control Efficiency NOx	0%		JJJJ
Control Efficiency VOC	0%		JJJJ
Control Efficiency CO	0%		JJJJ
Engine Speed	1800	RPM	Manufacturer
Potential Operation	499	hr/yr	
Sulfur Content	8,000	grains/MMscf	AP42 with margin
Sulfur Margin	400%	%	

Potential Emissions Per Engine

Pollutant	Uncontrolled Emissions				Controlled Emissions				Source of Emission Factor
	EF	Units	(lb/hr)	(tpy)	EF	Units	(lb/hr)	(tpy)	
Nox	1.00*	g/hp-hr	0.82	0.21	1.00	g/hp-hr	0.82	0.21	40 CFR 60 Subpart JJJJ
VOC (less formaldehyde)	0.70*	g/hp-hr	0.58	0.14	0.70	g/hp-hr	0.58	0.14	40 CFR 60 Subpart JJJJ
Total VOC**	0.78	g/hp-hr	0.64	0.16	0.78	g/hp-hr	0.64	0.16	40 CFR 60 Subpart JJJJ + CH2O
CO	2.00*	g/hp-hr	1.65	0.41	2.00	g/hp-hr	1.65	0.41	40 CFR 60 Subpart JJJJ
SO2****	2.35E-03	lb/mmBtu	0.01	0.00	2.35E-03	lb/mmBtu	0.01	0.00	EPA AP-42 Table 3.2-3
PM10*****	1.94E-02	lb/mmBtu	0.06	0.02	1.94E-02	lb/mmBtu	0.06	0.02	EPA AP-42 Table 3.2-3
Formaldehyde	2.05E-02	lb/mmBtu	0.07	0.02	2.05E-02	lb/mmBtu	0.07	0.02	EPA AP-42 Table 3.2-3
Acetaldehyde	2.79E-03	lb/mmBtu	0.01	0.00	2.79E-03	lb/mmBtu	0.01	0.00	EPA AP-42 Table 3.2-3
Acrolein	2.63E-03	lb/mmBtu	0.01	0.00	2.63E-03	lb/mmBtu	0.01	0.00	EPA AP-42 Table 3.2-3
Benzene	1.58E-03	lb/mmBtu	0.01	0.00	1.58E-03	lb/mmBtu	0.01	0.00	EPA AP-42 Table 3.2-3
Toluene	5.58E-04	lb/mmBtu	0.00	0.00	5.58E-04	lb/mmBtu	0.00	0.00	EPA AP-42 Table 3.2-3
Ethylbenzene	2.48E-05	lb/mmBtu	0.00	0.00	2.48E-05	lb/mmBtu	0.00	0.00	EPA AP-42 Table 3.2-3
Xylene	1.95E-04	lb/mmBtu	0.00	0.00	1.95E-04	lb/mmBtu	0.00	0.00	EPA AP-42 Table 3.2-3
n-Hexane	N/A	lb/mmBtu	N/A	N/A	N/A	lb/mmBtu	N/A	N/A	EPA AP-42 Table 3.2-3
Total HAPs			0.09	0.02			0.09	0.02	

* - Uncontrolled and controlled emission factors for NOx, CO, and VOC are based on JJJJ standards as manufacturer uncontrolled emission factors are lower than JJJJ emission standards.
** - Uncontrolled emission factor for Total VOC was calculated to include formaldehyde.
*** - Controlled emission factors are permit conditions requested in this application.
**** - Sulfur emission factor from AP-42 Table 1.4-2 is ratio adjusted based on the max sulfur content when sulfur content is greater than 2,000 grains/MMscf.
***** - PM10 emissions include filterable and condensable particulates.

Sample Calculation for NOx

1.00 g/hp-hr * 374 hp / 453.59 g/lb * 499 hr/yr / 2000 lb/ton = 0.21 tpy

Engine Emission Detail Sheet

Item	Value	
Source Name	GEN-2	
Description	Generator Engine	
Quantity	1	
Make	Generac	
Model	TBD	
Serial Number	TBD	
Manufacture Date	2019	
Fuel Type	Diesel Tier 3	
Engine Type	Diesel	
Liters	3.4	L
Cylinders	4	

Item	Value	Units	Source		
Rated Horsepower	65	hp	Manufacturer		
	48	kW	Manufacturer	20.00%	Efficiency
	40	kWe	Manufacturer		
Heat Rate	0.65	MMBtu/hr	Calculated		
Fuel Consumption	10000	Btu/hp-hr	Engineering Estimate		
Heating Value	137000	Btu/gal			
Heat Rate	0.65	MMBtu/hr			
Emisson Controls	TBD		Manufacturer		
Engine Speed	TBD	RPM	Manufacturer		
Potential Operation	499	hr/yr			

Potential Emissions Per Engine

Pollutant	Uncontrolled Emissions				Controlled Emissions				Source of Emission Factor
	EF	Units	(lb/hr)	(tpy)	EF	Units	(lb/hr)	(tpy)	
NOx	5.59	g/hp-hr	0.80	0.20	5.59	g/hp-hr	0.80	0.20	40 CFR 89.112
Total VOC	1.40	g/hp-hr	0.20	0.05	1.40	g/hp-hr	0.20	0.05	40 CFR 89.112
CO	3.73	g/hp-hr	0.53	0.13	3.73	g/hp-hr	0.53	0.13	40 CFR 89.112
SO2*	3.80E-04	lb/mmBtu	0.00	0.00	3.80E-04	lb/mmBtu	0.00	0.00	Engineering Calculation
PM10	8.95E-01	g/hp-hr	0.13	0.00	8.95E-01	g/hp-hr	0.13	0.00	40 CFR 89.112
Formaldehyde	1.18E-03	lb/mmBtu	0.00	0.00	1.18E-03	lb/mmBtu	0.00	0.00	AP42 Table 3.3-2
Acetaldehyde	7.67E-04	lb/mmBtu	0.00	0.00	7.67E-04	lb/mmBtu	0.00	0.00	AP42 Table 3.3-2
Acrolein	9.25E-05	lb/mmBtu	0.00	0.00	9.25E-05	lb/mmBtu	0.00	0.00	AP42 Table 3.3-2
Benzene	9.33E-04	lb/mmBtu	0.00	0.00	9.33E-04	lb/mmBtu	0.00	0.00	AP42 Table 3.3-2
Ethylbenzene	N/A	lb/mmBtu	N/A	N/A	N/A	lb/mmBtu	N/A	N/A	AP42 Table 3.3-2
n-Hexane	N/A	lb/mmBtu	N/A	N/A	N/A	lb/mmBtu	N/A	N/A	AP42 Table 3.3-2
Toluene	4.09E-04	lb/mmBtu	0.00	0.00	4.09E-04	lb/mmBtu	0.00	0.00	AP42 Table 3.3-2
Xylene	2.85E-04	lb/mmBtu	0.00	0.00	2.85E-04	lb/mmBtu	0.00	0.00	AP42 Table 3.3-2
Total HAPs			0.00	0.00			0.00	0.00	

* - Sulfur Dioxide emissions based on the fuel sulfur requirement of 15 ppm/gallon (40 CFR 80.510).

NOx and VOC % of total based on ratio provided from NM		
Pollutant	lb/hp-hr	% of Total
NOx	0.03	75.00%
TOC Exhaust	0.00	25.00%
Total	0.03	100.00%

1 kW =	1.341	hp	
Conversion of EPA Tier 3 Standard			
Pollutant	g/kW-hr	g/kW-hr	g/hp-hr
NOx	7.5	7.50	5.59
VOC		1.88	1.40
CO	5	5.00	3.73
PM10	1.2	1.20	0.89
* NOx and VOC apportioned using the AP-42 Table 3.3-1			

Sample Calculation for NOx

5.59 g/hp-hr * 65 hp / 453.59 g/lb * 499 hr/yr / 2000 lb/ton = 0.20 tpy

Tank Detail Sheet

Equipment Source Name	TK-1		Tank Height	25 ft	
Source Description	Gunbarrel Tank		Tank Diameter	12 ft	
Quantity	1		Potential Operation	8,760 hr/yr	
Tank Capacity	500	bbl (each)	Potential Oil Throughput	766 bbl/yr	2.1 avg. bbl/day
Total Tank Capacity	500	bbl	Potential Throughput Per Tank	766 bbl/yr/tk	2.1 avg. bbl/day/tk
Control Efficiency	95%		Throughput Margin	0.00%	
			Calendar Year	2019	

Total Potential Emissions

Pollutant	Uncontrolled		Controlled	
	(lb/hr)	(ton/yr)	(lb/hr)	(ton/yr)
VOC	22.64	99.18	1.13	4.96
Benzene	0.23	0.99	0.01	0.05
Toluene	0.23	0.99	0.01	0.05
Ethylbenzene	0.02	0.10	0.00	0.00
Xylenes	0.02	0.10	0.00	0.00
n-Hexane	0.91	3.97	0.05	0.20
2,2,4-Trimethylpentane	0.02	0.10	0.00	0.00
Total HAPs	1.43	6.25	0.07	0.31

Potential Emissions Per Tank

Pollutant	EF	Uncontrolled		Controlled		Source of Emission Factor
	(lb/bbl)	(lb/hr)	(ton/yr)	(lb/hr)	(ton/yr)	
VOC	258.95	22.64	99.18	1.13	4.96	Engineering Calculation
Benzene	2.59	0.23	0.99	0.01	0.05	Engineering Calculation
Toluene	2.59	0.23	0.99	0.01	0.05	Engineering Calculation
Ethylbenzene	0.26	0.02	0.10	0.00	0.00	Engineering Calculation
Xylenes	0.26	0.02	0.10	0.00	0.00	Engineering Calculation
n-Hexane	10.36	0.91	3.97	0.05	0.20	Engineering Calculation
2,2,4-Trimethylpentane	0.26	0.02	0.10	0.00	0.00	Engineering Calculation
Total HAPs		1.43	6.25	0.07	0.31	

Process Streams	39 To Flare	40 To Slop Oil
Composition	Solved	Solved
Phase: Total	VSSL-105	VSSL-105
	--	--
Mole Fraction	%	%
Methane	14.0050	0.095017
Ethane	15.1670	0.87808
Propane	28.5610	7.41773
i-Butane	9.11843	7.17785
n-Butane	26.0267	34.2548
i-Pentane	3.42445	12.6336
n-Pentane	2.60785	13.7462
n-Hexane	0.849356	20.9208
n-Heptane	0.0200098	1.87120
C8	0.00266528	1.00249
Water	0.00304587	0.000043916
N2	0.122357	0.000185748
CO2	0.091903	0.00194386
H2S	0.000283058	1.96086E-05
Triethylene Glycol	0	0
EG	0	0
MeOH	0	0
CHEMTHERM 550	0	0

Process Streams	39 To Flare	40 To Slop Oil
Composition	Solved	Solved
Phase: Total	VSSL-105	VSSL-105
Process Streams	39 To Flare	40 To Slop Oil
Mass Fraction	%	%
Methane	4.9915	0.0225109
Ethane	10.1321	0.389921
Propane	27.9801	4.83045
i-Butane	11.77447	6.16109
n-Butane	33.6078	29.4025
i-Pentane	5.48907	13.4610
n-Pentane	4.18014	14.6465
n-Hexane	1.62612	26.6246
n-Heptane	0.0445449	2.76896
C8	0.00676389	1.69113
Water	0.00121908	1.16839E-05
N2	0.076151	0.000076844
CO2	0.089858	0.00126337
H2S	0.000214321	9.86911E-06
Triethylene Glycol	0	0
EG	0	0
MeOH	0	0
CHEMTHERM 550	0	0

Process Streams		39 To Flare	40 To Slop Oil
Properties	Status:	Solved	Solved
Phase: Total	From Block:	VSSL-105	VSSL-105
	To Block:	--	--
Property	Units		
Temperature	°F	16.19949	16.19949
Pressure	psig	0.125*	0.125
Mole Fraction Vapor	%	100	0
Mole Fraction Light Liquid	%	0	100
Mole Fraction Heavy Liquid	%	0	0
Molecular Weight	lb/lbmol	45.0112	67.7141
Mass Density	lb/ft^3	0.1209179	40.1146
Molar Flow	lbmol/h	13.8689	6.79227
Mass Flow	lb/h	624.256	459.933
Vapor Volumetric Flow	ft^3/h	5162.64	11.4655
Liquid Volumetric Flow	gpm	643.654	1.42946
Std Vapor Volumetric Flow	MMSCFD	0.126313	0.0618614
Std Liquid Volumetric Flow	sgpm	2.45639	1.50085
Compressibility		0.978572	0.00443751
Specific Gravity		1.55412	0.643185
API Gravity			97.3979
Enthalpy	Btu/h	-665846	-501320
Mass Enthalpy	Btu/lb	-1066.62	-1089.99
Mass Cp	Btu/(lb*°F)	0.378222	0.521661
Ideal Gas CpCv Ratio		1.13354	1.08773
Dynamic Viscosity	cP	0.00739850	0.280324
Kinematic Viscosity	cSt	3.81972	0.436251
Thermal Conductivity	Btu/(h*ft*°F)	0.0089001	0.0713101?
Surface Tension	lbf/ft		0.00123561?
Net Ideal Gas Heating Value	Btu/ft^3	2353.24	3485.33
Net Liquid Heating Value	Btu/lb	19688.6	19372.5
Gross Ideal Gas Heating Value	Btu/ft^3	2557.29	3771.13
Gross Liquid Heating Value	Btu/lb	21409.2	20974.6

1 - Uncontrolled emissions were calculated from Promax output.

2- No HAP emissions are reported by Promax; therefore, these emissions were estimated based on the ration of HAP's to total VOC's from a conservative engineering assumption.

Tank Detail Sheet

Equipment Source Name	TK 2-5		Tank Height	20 ft	
Source Description	Stabilized Condensate Tank		Tank Diameter	12 ft	
Quantity	4		Potential Operation	8760 hr/yr	
Tank Capacity	400	bbl (each)	Potential Throughput	219,000 bbl/yr	600.0 avg. bbl/day
Total Tank Capacity	1600	bbl	Potential Throughput Per Tank	54,750 bbl/yr/tk	150.0 avg. bbl/day/tk
Control Efficiency	95%		Calendar Year	2019	

Total Potential Emissions

Pollutant	Uncontrolled		Controlled	
	(lb/hr)	(ton/yr)	(lb/hr)	(ton/yr)
VOC	7.98	34.95	0.40	1.75
Benzene	0.08	0.35	0.00	0.02
Toluene	0.08	0.35	0.00	0.02
Ethylbenzene	0.01	0.03	0.00	0.00
Xylenes	0.01	0.03	0.00	0.00
n-Hexane	0.32	1.40	0.02	0.07
2,2,4-Trimethylpentane	0.01	0.03	0.00	0.00
Total HAPs	0.50	2.20	0.03	0.11

Potential Emissions Per Tank

Pollutant	HAP Wt %	Uncontrolled		Controlled		Source of Emission Factor
	(%)	(lb/hr)	(ton/yr)	(lb/hr)	(ton/yr)	
VOC		1.99	8.74	0.10	0.44	EPA TANKS 4.0.9d
Benzene	1.00%	0.02	0.09	0.00	0.00	Engineering Calculation
Toluene	1.00%	0.02	0.09	0.00	0.00	Engineering Calculation
Ethylbenzene	0.10%	0.00	0.01	0.00	0.00	Engineering Calculation
Xylenes	0.10%	0.00	0.01	0.00	0.00	Engineering Calculation
n-Hexane	4.00%	0.08	0.35	0.00	0.02	Engineering Calculation
2,2,4-Trimethylpentane	0.10%	0.00	0.01	0.00	0.00	Engineering Calculation
Total HAPs		0.13	0.55	0.01	0.03	

1 - Uncontrolled emissions were taken directly from the EPA TANKS 4.0.9d output.

2 - No HAP emissions are reported by EPA Tanks 4.0.9d; therefore, these emissions were estimated based on the ration of HAP's to total VOC's from a conservative engineering assumption.

Tank Detail Sheet

Equipment Source Name	TK-6		Tank Height	20	ft		
Source Description	Slop Oil Tank		Tank Diameter	12	ft		
Quantity	1		Potential Operation	8760	hr/yr		
Tank Capacity	400	bbl (each)	Potential Throughput	1,532	bbl/yr	4.2	avg. bbl/day
Total Tank Capacity	400	bbl	Potential Throughput Per Tank	1,532	bbl/yr/tk	4.2	avg. bbl/day/tk
Control Efficiency	95%		Margin	100%			
			Calendar Year	2019			

Total Potential Emissions

Pollutant	Uncontrolled		Controlled	
	(lb/hr)	(ton/yr)	(lb/hr)	(ton/yr)
VOC	0.85	3.72	0.04	0.19
Benzene	0.01	0.04	0.00	0.00
Toluene	0.01	0.04	0.00	0.00
Ethylbenzene	0.00	0.00	0.00	0.00
Xylenes	0.00	0.00	0.00	0.00
n-Hexane	0.03	0.15	0.00	0.01
2,2,4-Trimethylpentane	0.00	0.00	0.00	0.00
Total HAPs	0.05	0.23	0.00	0.01

Potential Emissions Per Tank

Pollutant	HAP Wt %	Uncontrolled		Controlled		Source of Emission Factor
	(%)	(lb/hr)	(ton/yr)	(lb/hr)	(ton/yr)	
VOC		0.85	3.72	0.04	0.19	EPA TANKS 4.0.9d
Benzene	1.00%	0.01	0.04	0.00	0.00	Engineering Calculation
Toluene	1.00%	0.01	0.04	0.00	0.00	Engineering Calculation
Ethylbenzene	0.10%	0.00	0.00	0.00	0.00	Engineering Calculation
Xylenes	0.10%	0.00	0.00	0.00	0.00	Engineering Calculation
n-Hexane	4.00%	0.03	0.15	0.00	0.01	Engineering Calculation
2,2,4-Trimethylpentane	0.10%	0.00	0.00	0.00	0.00	Engineering Calculation
Total HAPs		0.05	0.23	0.00	0.01	

1 - Uncontrolled emissions were taken directly from the EPA TANKS 4.0.9d output.

2 - No HAP emissions are reported by EPA Tanks 4.0.9d; therefore, these emissions were estimated based on the ration of HAP's to total VOC's from a conservative engineering assumption.

Tank Detail Sheet

Equipment Source Name	PWTK-1		Tank Height	20 ft	
Source Description	Produced Water Tank		Tank Diameter	12 ft	
Quantity	1		Potential Operation	8760 hr/yr	
Tank Capacity	400	bbl (each)	Potential PW Throughput	1,532 bbl/yr	4.2 avg. bbl/day
Total Tank Capacity	400	bbl	Potential Oil from PW Throughput	15 bbl/yr	0.1 avg. bbl/day
Control Efficiency	95%		Potential Oil Throughput Per Tank	15 bbl/yr/tk	0.1 avg. bbl/day/tk
			Margin	100%	
			Calendar Year	2019	

Total Potential Emissions

Pollutant	Uncontrolled		Controlled	
	(lb/hr)	(ton/yr)	(lb/hr)	(ton/yr)
VOC	0.00	0.00	0.00	0.00
Benzene	0.00	0.00	0.00	0.00
Toluene	0.00	0.00	0.00	0.00
Ethylbenzene	0.00	0.00	0.00	0.00
Xylenes	0.00	0.00	0.00	0.00
n-Hexane	0.00	0.00	0.00	0.00
2,2,4-Trimethylpentane	0.00	0.00	0.00	0.00
Total HAPs	0.00	0.00	0.00	0.00

Potential Emissions Per Tank

Pollutant	HAP Wt %	Uncontrolled		Controlled		Source of Emission Factor
	(%)	(lb/hr)	(ton/yr)	(lb/hr)	(ton/yr)	
VOC		0.00	0.00	0.00	0.00	EPA TANKS 4.0.9d
Benzene	1.00%	0.00	0.00	0.00	0.00	Engineering Calculation
Toluene	1.00%	0.00	0.00	0.00	0.00	Engineering Calculation
Ethylbenzene	0.10%	0.00	0.00	0.00	0.00	Engineering Calculation
Xylenes	0.10%	0.00	0.00	0.00	0.00	Engineering Calculation
n-Hexane	4.00%	0.00	0.00	0.00	0.00	Engineering Calculation
2,2,4-Trimethylpentane	0.10%	0.00	0.00	0.00	0.00	Engineering Calculation
Total HAPs		0.00	0.00	0.00	0.00	

1 - Uncontrolled emissions were taken directly from the EPA TANKS 4.0.9d output.
2 - Uncontrolled emissions were calculated based on the assumption that 1% of the produced water throughput is condensate.
3 - No HAP emissions are reported by EPA Tanks 4.0.9d; therefore, these emissions were estimated based on the ration of HAP's to total VOC's from a conservative engineering assumption.
4 - Throughput includes margin to account for additional water streams dumping into the tank.

Heater / Boiler Detail Sheet

Equipment Source Name	HTR-1				
Source Description	Hot Oil Heater				
Equipment Usage	Hot Oil Heater	Potential operation	8760	hr/yr	
Equipment Make	TBD	Fuel Heating Value	1066.43	Btu/scf	Residue Gas Heating Value (not used in calculation)
Equipment Model	TBD	Heat Rate	49.42	MMBtu/hr	Mfr. Rate Heat Input
Serial Number	TBD	Sulfur Content	9,476	grains/MMscf	Gas Analysis with Margin
Quantity	1	Sulfur Margin	400%	%	
Emission Controls	None				

Total Potential Emissions

Pollutant	Estimated Emissions (lb/hr)	(tpy)
NOx	2.42	10.61
CO	4.07	17.82
VOC	0.27	1.17
SOx	0.14	0.60
PM10	0.37	1.61
Benzene	0.00	0.00
n-Hexane	0.09	0.38
Toluene	0.00	0.00
CH_2O	0.00	0.02
Total HAPs	0.09	0.40

Potential Emissions Per Heater

Pollutant	EF (lb/MMscf)	EF (lb/MMBtu)[3]	Estimated Emissions (lb/hr)	(tpy)	Source of Emission Factor
NOx[2]	50	0.049	2.42	10.61	AP-42 Table 1.4-1
CO	84	0.082	4.07	17.82	AP-42 Table 1.4-1
VOC	5.5	0.005	0.27	1.17	AP-42 Table 1.4-2
SOx[1]	2.84	0.003	0.14	0.60	AP-42 Table 1.4-2
PM10	7.6	0.007	0.37	1.61	AP-42 Table 1.4-2
Benzene	0.0021	0.000	0.00	0.00	AP-42 Table 1.4-3
n-Hexane	1.80	0.002	0.09	0.38	AP-42 Table 1.4-3
Toluene	0.0034	0.000	0.00	0.00	AP-42 Table 1.4-3
CH_2O	0.075	0.000	0.00	0.02	AP-42 Table 1.4-3
Total HAPs			0.09	0.40	

1 - Sulfur emission factor from AP-42 Table 1.4-2 is ratio adjusted based on the max sulfur content when sulfur content is greater than 2,000 grains/MMscf.
2 - This is a low NOx burner.
3 - Emission factor is calculated by converting from lb/MMscf to lb/MMbtu based AP-42 Table 1.4-1 note (a).

Sample Calculation for NOx

50 lb/MMscf / 1066.43 Btu/scf * 49.417 MMBtu/hr = 2.42 lb/hr

Heater / Boiler Detail Sheet

Equipment Source Name	HTR-2				
Source Description	Regen Gas Heater				
Equipment Usage	Regen Gas Heater	Potential operation	8760	hr/yr	
Equipment Make	TBD	Fuel Heating Value	1066.43	Btu/scf	Residue Gas Heating Value (not used in calculation)
Equipment Model	TBD	Heat Rate	11.00	MMBtu/hr	Mfr. Rate Heat Input
Serial Number	TBD	Sulfur Content	9,476	grains/MMscf	Gas Analysis with Margin
Quantity	1	Sulfur Margin	400%	%	
Emission Controls	None				

Total Potential Emissions

Pollutant	Estimated Emissions (lb/hr)	(tpy)
NOx	1.08	4.72
CO	0.91	3.97
VOC	0.06	0.26
SOx	0.03	0.13
PM10	0.08	0.36
Benzene	0.00	0.00
n-Hexane	0.02	0.09
Toluene	0.00	0.00
CH_2O	0.00	0.00
Total HAPs	0.02	0.09

Potential Emissions Per Heater

Pollutant	EF (lb/MMscf)	EF (lb/MMBtu)[2]	Estimated Emissions (lb/hr)	(tpy)	Source of Emission Factor
NOx	100	0.098	1.08	4.72	AP-42 Table 1.4-1
CO	84	0.082	0.91	3.97	AP-42 Table 1.4-1
VOC	5.5	0.005	0.06	0.26	AP-42 Table 1.4-2
SOx[1]	2.84	0.003	0.03	0.13	AP-42 Table 1.4-2
PM10	7.6	0.007	0.08	0.36	AP-42 Table 1.4-2
Benzene	0.0021	0.000	0.00	0.00	AP-42 Table 1.4-3
n-Hexane	1.80	0.002	0.02	0.09	AP-42 Table 1.4-3
Toluene	0.0034	0.000	0.00	0.00	AP-42 Table 1.4-3
CH_2O	0.075	0.000	0.00	0.00	AP-42 Table 1.4-3
Total HAPs			0.02	0.09	

1 - Sulfur emission factor from AP-42 Table 1.4-2 is ratio adjusted based on the max sulfur content when sulfur content is greater than 2,000 grains/MMscf.
2 - Emission factor is calculated by converting from lb/MMscf to lb/MMbtu based AP-42 Table 1.4-1 note (a).

Sample Calculation for NOx

100 lb/MMscf / 1066.43 Btu/scf * 11.000 MMBtu/hr = 1.08 lb/hr

Loadout Emissions Detail Sheet

Equipment Source Name	CONDLOAD-1	
Source Description	Condensate Loadout	
Quantity	1	
Potential Throughput	219,000	bbl/yr
LACT On Site?	No	
Estimated LACT Downtime	NA	
Control Device	Vapor Balance	
Control Efficiencies	95%	
Capture Efficiency	70%	

Potential Emissions

Pollutant	HAP Wt %	Uncontrolled		Controlled		Source of Emission Calculations
	(%)	lb/hr	tpy	lb/hr	tpy	
VOC		99.91	27.35	33.47	9.16	AP-42 Section 5.2.1
Benzene	1.00%	1.00	0.27	0.33	0.09	Engineering Calculation
Toluene	1.00%	1.00	0.27	0.33	0.09	Engineering Calculation
Ethylbenzene	0.10%	0.10	0.03	0.03	0.01	Engineering Calculation
Xylenes	0.10%	0.10	0.03	0.03	0.01	Engineering Calculation
n-Hexane	4.00%	4.00	1.09	1.34	0.37	Engineering Calculation
2,2,4-Trimethylpentane	0.10%	0.10	0.03	0.03	0.01	Engineering Calculation
Total HAPs		6.29	1.72	2.11	0.58	

Molecular Weight of Vapors, MW	64.0	lb/lb-mol	EPA TANKS 4.0.9d
True Vapor Pressure, Pva @ T	6.48	psia	Interpolation from AP-42 Table 7.1-2
Temperature of Bulk Liquid Loaded, T	61	F	Ambient Temperature
	521	R	
Saturation Factor	0.6		AP-42 Table 5.2.1
Efficiency of controlled loading (%)	0.0%		
Potential Annual Throughput, v	9,198	1000 gallons	
Loading losses, L @ tank	5.95	lb/1000 gallons	
L = 12.46 S P MW / T (1-eff)			
Potential annual losses @ tank, L*v	54,699.81	lb/yr	**27.35 tpy**
Max hourly fill rate[1]	16.8	1000 gallons/hr	Trucking Company
Max hourly emissions	**99.9**	**lb/hr**	Calculated

1 - Max hourly fill rate based on a 200-bbl truck filling every 30 minutes.

Sample Calculation

219000 bbl/yr * 42 gal/bbl / 1000 gal * 5.95 lb/1000 gal / 2000 lb/ton = 27.35 tpy

Loadout Emissions Detail Sheet

Equipment Source Name	OILLOAD-1	
Source Description	Oil Loadout	
Quantity	1	
Potential Throughput	1,532	bbl/yr
LACT On Site?	No	
Estimated LACT Downtime	NA	
Control Device	Vapor Balance	
Control Efficiencies	95%	
Capture Efficiency	70%	

Potential Emissions

Pollutant	HAP Wt %	Uncontrolled		Controlled		Source of Emission Calculations
	(%)	lb/hr	tpy	lb/hr	tpy	
VOC		99.91	0.19	33.47	0.06	AP-42 Section 5.2.1
Benzene	1.00%	1.00	0.00	0.33	0.00	Engineering Calculation
Toluene	1.00%	1.00	0.00	0.33	0.00	Engineering Calculation
Ethylbenzene	0.10%	0.10	0.00	0.03	0.00	Engineering Calculation
Xylenes	0.10%	0.10	0.00	0.03	0.00	Engineering Calculation
n-Hexane	4.00%	4.00	0.01	1.34	0.00	Engineering Calculation
2,2,4-Trimethylpentane	0.10%	0.10	0.00	0.03	0.00	Engineering Calculation
Total HAPs		6.29	0.01	2.11	0.00	

Molecular Weight of Vapors, MW	64.0	lb/lb-mol	EPA TANKS 4.0.9d
True Vapor Pressure, Pva @ T	6.48	psia	Interpolation from AP-42 Table 7.1-2
Temperature of Bulk Liquid Loaded, T	61	F	Ambient Temperature
	521	R	
Saturation Factor	0.6		AP-42 Table 5.2.1
Efficiency of controlled loading (%)	0.0%		
Potential Annual Throughput, v	64	1000 gallons	
Loading losses, L @ tank	5.95	lb/1000 gallons	
L = 12.46 S P MW / T (1-eff)			
Potential annual losses @ tank, L*v	382.65	lb/yr	**0.19 tpy**
Max hourly fill rate[1]	16.8	1000 gallons/hr	Trucking Company
Max hourly emissions	**99.9**	**lb/hr**	Calculated

1 - Max hourly fill rate based on a 200-bbl truck filling every 30 minutes.

Sample Calculation

1532 bbl/yr * 42 gal/bbl / 1000 gal * 5.95 lb/1000 gal / 2000 lb/ton = 0.19 tpy

Fugitive Emissions Detail Sheet

Equipment Source Name	FUG-1	Potential Operation	8760	hr/yr
Source Description	Fugitives - OOOOa			

Uncontrolled Potential Emissions

	HAP	Heavy Crude - Emissions		Light Crude - Emissions		Gas - Emissions		Total Emissions	
Pollutant	Wt. %	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy
VOC		0.00	0.00	5.41	23.68	6.29	27.56	11.70	51.24
H2S		NA	NA	NA	NA	0.00	0.00	0.00	0.00
Benzene	0.32%	0.00	0.00	0.02	0.08	0.02	0.09	0.04	0.16
Toluene	0.05%	0.00	0.00	0.00	0.01	0.00	0.01	0.01	0.02
Ethylbenzene	0.00%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Xylenes	0.00%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
n-Hexane	0.55%	0.00	0.00	0.03	0.13	0.03	0.15	0.06	0.28
2,2,4-Trimethylpentane	0.00%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total HAPs		0.00	0.00	0.05	0.22	0.06	0.25	0.11	0.47

Controlled Potential Emissions - Not used for NM Permitting purposes.

	HAP	Heavy Crude - Emissions		Light Crude - Emissions		Gas - Emissions		Total Emissions	
Pollutant	Wt. %	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy
VOC		0.00	0.00	1.01	4.41	2.41	10.56	3.42	14.97
H2S		NA	NA	NA	NA	0.00	0.00	0.00	0.00
Benzene	0.32%	0.00	0.00	0.00	0.01	0.01	0.03	0.01	0.05
Toluene	0.05%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
Ethylbenzene	0.00%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Xylenes	0.00%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
n-Hexane	0.55%	0.00	0.00	0.01	0.02	0.01	0.06	0.02	0.08
2,2,4-Trimethylpentane	0.00%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total HAPs		0.00	0.00	0.01	0.04	0.02	0.10	0.03	0.14

Gas

Equipment Type	EF (kg/hr/source)	Source Count	VOC Wt. %	Control Efficiencies %	Uncontrolled Emissions VOC (lb/hr)	Uncontrolled Emissions VOC (tpy)	Controlled Emissions VOC (lb/hr)	Controlled Emissions VOC (tpy)
Valve	4.50E-03	763	48%	96%	3.66	16.04	0.15	0.64
Flanges	3.90E-04	495	48%	81%	0.21	0.90	0.04	0.17
Connectors	2.00E-04	1155	48%	81%	0.25	1.08	0.05	0.21
Open Ended Lines	2.00E-03	0	48%		0.00	0.00	0.00	0.00
Pump Seals	2.40E-03	0	48%		0.00	0.00	0.00	0.00
Other Components	8.80E-03	232	48%		2.18	9.54	2.18	9.54
VOC Emissions					**6.29**	**27.56**	**2.41**	**10.56**

Gas VOC Wt% Margin 20.00%

Light Liquid[3]

Equipment Type	EF (kg/hr/source)	Source Count	VOC Wt. %	Control Efficiencies %	Uncontrolled Emissions VOC (lb/hr)	Uncontrolled Emissions VOC (tpy)	Controlled Emissions VOC (lb/hr)	Controlled Emissions VOC (tpy)
Valve	2.50E-03	684	100%	95%	3.77	16.51	0.19	0.83
Flanges	1.10E-04	417	100%	81%	0.10	0.44	0.02	0.08
Connectors	2.10E-04	1020	100%	81%	0.47	2.07	0.09	0.39
Open Ended Lines	1.40E-03	0	100%		0.00	0.00	0.00	0.00
Pump Seals	1.30E-02	14	100%	88%	0.40	1.76	0.05	0.21
Other Components	7.50E-03	40	100%		0.66	2.90	0.66	2.90
VOC Emissions					**5.41**	**23.68**	**1.01**	**4.41**

Heavy Liquid[3]

Equipment Type	EF (kg/hr/source)	Source Count	VOC Wt. %	Control Efficiencies %	Uncontrolled Emissions VOC (lb/hr)	Uncontrolled Emissions VOC (tpy)	Controlled Emissions VOC (lb/hr)	Controlled Emissions VOC (tpy)
Valve	8.40E-06	0	100%		0.00	0.00	0.00	0.00
Flanges	3.90E-06	1	100%	81%	0.00	0.00	0.00	0.00
Connectors	7.50E-06	1	100%	81%	0.00	0.00	0.00	0.00
Open Ended Lines	1.40E-04	0	100%		0.00	0.00	0.00	0.00
Pump Seals	N/A							

Other Components	3.20E-05	0	100%	0.00	0.00	0.00	0.00
VOC Emissions				**0.00**	**0.00**	**0.00**	**0.00**

1 - Component counts are actual facility component counts determined by Dexter ATC Field Services.
2 - Component leak rates taken from EPA's Oil and Gas Production Operations average equipment leak emission factors (EPA 453/R-95-017 dated November 1995) Table 2-4.
3 - Assuming heavy and light crude weight percentage is 100% VOC to be conservative in heavy and light crude fugitive emission calculations.
4 - Control efficiencies were obtained from Table 4.1 in "EPA Leak Detection and Repair - A Best Practices Guide"
5 - HAP Weight percentages based on a conservative engineering estimation.

Sample Calculation:
0.00250 kg/hr-source * 684 Sources * 2.20462 lb/kg * 100 % VOC Wt% * 8760 hr/yr /2000 lb/ton = 16.51 tpy

Fugitive Emissions Detail Sheet

Equipment Source Name	FUG-2	Potential Operation	8760	hr/yr
Source Description	Fugitives - Residue	Emission Controls	None	

Uncontrolled Potential Emissions

	HAP	Gas - Emissions		Total Emissions	
Pollutant	Wt. %	lb/hr	tpy	lb/hr	tpy
VOC		0.05	0.23	0.05	0.23
H2S		0.00	0.00	0.00	0.00
Benzene	0.00%	0.00	0.00	0.00	0.00
Toluene	0.00%	0.00	0.00	0.00	0.00
Ethylbenzene	0.00%	0.00	0.00	0.00	0.00
Xylenes	0.00%	0.00	0.00	0.00	0.00
n-Hexane	0.01%	0.00	0.00	0.00	0.00
2,2,4-Trimethylpentane	0.00%	0.00	0.00	0.00	0.00
Total HAPs		0.00	0.00	0.00	0.00

Controlled Potential Emissions

	HAP	Gas - Emissions		Total Emissions	
Pollutant	Wt. %	lb/hr	tpy	lb/hr	tpy
VOC		0.05	0.23	0.05	0.23
H2S		0.00	0.00	0.00	0.00
Benzene	0.00%	0.00	0.00	0.00	0.00
Toluene	0.00%	0.00	0.00	0.00	0.00
Ethylbenzene	0.00%	0.00	0.00	0.00	0.00
Xylenes	0.00%	0.00	0.00	0.00	0.00
n-Hexane	0.01%	0.00	0.00	0.00	0.00
2,2,4-Trimethylpentane	0.00%	0.00	0.00	0.00	0.00
Total HAPs		0.00	0.00	0.00	0.00

Gas HAP Wt% Margin 100.00%

Gas

Equipment Type	EF[3] (kg/hr/source)	Source Count	VOC Wt. %	Control Efficiencies %	Uncontrolled Emissions VOC (lb/hr)	Uncontrolled Emissions VOC (tpy)	Controlled Emissions VOC (lb/hr)	Controlled Emissions VOC (tpy)
Valve	4.50E-03	16	4%	0%	0.01	0.02	0.01	0.02
Flanges	3.90E-04	32	4%		0.00	0.00	0.00	0.00
Connectors	2.00E-04	1200	4%	0%	0.02	0.08	0.02	0.08
Open Ended Lines	2.00E-03	0	4%		0.00	0.00	0.00	0.00
Pump Seals	2.40E-03	0	4%		0.00	0.00	0.00	0.00
Other Components	8.80E-03	40	4%		0.03	0.12	0.03	0.12
VOC Emissions					**0.05**	**0.23**	**0.05**	**0.23**

Gas VOC Wt% Margin 100.00%

Component Counts[1]	
	Total
Valve	16
Flanges	32
Connectors	1200
Open Ended Lines	0
Pump Seals	0
Other Components	40
Total	1288

1 - Component counts are engineering estimations.
2 - Component leak rates taken from EPA's Oil and Gas Production Operations average equipment leak emission factors (EPA 453/R-95-017 dated November 1995) Table 2-4.
3 - Gas VOC and HAP wt % percentage is based on stream 47 from Promax run with margin.

Sample Calculation:
0.00450 kg/hr-source * 16 Sources * 2.20462 lb/kg * 4 % VOC Wt% * 8760 hr/yr /2000 lb/ton = 0.02 tpy

Process and compressor Fugitives GHG Emissions

Fugitive GHG Summary

	CH_4	CO_2	CO_2e
Emissions TPY	827.73	122.06	**20,815.37**
Global Warming Potential (GWP)	25	1	

CH_4 Emission Rate for Gas Processing Volume[1] = 2.5e-3 tonne CH_4/MMscf processed
CH_4 Emission Rate for Reciprocating Compressors[1] = 8.95e-3 tonne CH_4/compressor-hr
CH_4 Emission Rate for Centrifugal Compressors[1] = 1.7e-2 tonne CH_4/compressor-hr

[1] API Compendium of Greenhouse Gas Emissions Methodologies for the Oil and Natural Gas Industry Table 6-5

Process gas CH_4 molar percentage = 38.64% From modeled composition
Process gas CO_2 molar percentage = 2.07% From modeled composition
CH_4 molecular weight (lb/lb mol) 16
CO_2 molecular weight (lb/lb mol) 44

Amount of gas throughput (MMscf/yr) = 21,900 (Max 60 MMSCFD * 365 days/yr)
Number of Reciprocating Compressors in Process = 7
Number of Centrifugal Compressors in Process = 1

CH_4 Emission Calculation for Processing Volume

tonne CH_4/MMscf processed	MMscf processed/year	ton CH_4/ tonne CH_4	ton CH_4/year
0.0025	21,900	1.1	60.225

Total CH_4 process emissions (ton/year) = 60.23

CO_2 Emission Calculation for Processing Volume

ton CH_4/year	CO_2 mol % / CH_4 mol %	CO_2 mol wt/ CH_4 mol wt	ton CO_2 / year
60.225	0.05362	2.75	8.881

Total CO_2 process emissions (ton/year) = 8.88

CH_4 Emission Calculation for Reciprocating Compressors

tonne CH_4/compressor-hr	hr/year	compressor number	ton CH_4/ tonne CH_4	ton CH_4 /year
0.00895	8760.00	7	1.1	604

Total CH_4 reciprocating compressor emissions (ton/year) = 603.70

CO_2 Emission Calculation for Reciprocating Compressors

ton CH_4/year	CO_2 mol % / CH_4 mol %	CO_2 mol wt/ CH_4 mol wt	ton CO_2 / year
604	0.05362	2.75	89.023

Total CO_2 reciprocating compressor emissions (ton/year) = 89.023

CH_4 Emission Calculation for Centrifugal Compressors

tonne CH_4/compressor-hr	hr/year	compressor number	ton CH_4/ tonne CH_4	ton CH_4 /year
0.017	8760.00	1	1.1	164

Total CH_4 centrifugal compressor emissions (ton/year) = 163.81

CO_2 Emission Calculation for Centrifugal Compressors

ton CH_4/year	CO_2 mol % / CH_4 mol %	CO_2 mol wt/ CH_4 mol wt	ton CO_2 / year
164	0.05362	2.75	24.156

Total CO_2 centrifugal compressor emissions (ton/year) = 24.156

Equipment Source Name	AMINE-1			
Source Description	Amine Unit	Potential Operation:	8760	hr/yr
Equipment Usage	Amine Unit	TO Downtime Allowance:	438	hr/yr
Equipment Make	TBD	TO Control Efficiency:	98%	
Equipment Model	TBD	TO Downtime Control Efficiency:	95%	FL-1 Control Efficiency
Serial Number	TBD	Margin added for operational flexibility:	25%	
QTY	1			

Emissions Summary

VOC Emissions Summary (tons/yr) with margin added

	Uncontrolled		Controlled		Uncontrolled TO Downtime		Controlled TO Downtime	
Emission Unit	lb/hr	tons/yr	lb/hr	tons/yr	lb/hr	tons/yr	lb/hr	tons/yr
AMINE-1 (Flash)	34.80	152.44	0.70	3.05	34.80	7.62	1.74	0.38
AMINE-1 (Still)	5.04	22.08	0.10	0.44	5.04	1.10	0.25	0.06

	Uncontrolled		Controlled	
	lb/hr	tons/yr	lb/hr	tons/yr
AMINE-1 Total	39.84	174.52	2.79	3.93

Uncontrolled HAP Emissions Summary (with margin)

Emission Unit	BZ	Tol	EB	Xyl	n-Hex	224-TMP	Total
AMINE-1 (Flash) (lb/hr)	0.03	0.03	0.00	0.01	0.14	0.03	0.24
AMINE-1 (Flash) (lb/yr)	245.16	249.01	14.09	72.48	1208.64	289.22	2078.60
AMINE-1 (Still) (lb/hr)	0.00	0.00	0.00	0.00	0.02	0.01	0.04
AMINE-1 (Still) (lb/yr)	38.36	38.96	2.21	11.34	189.11	45.25	325.23
Total AMINE-1 (lb/hr)	**0.03**	**0.03**	**0.00**	**0.01**	**0.16**	**0.04**	**0.27**
Total AMINE-1 (lb/yr)	**283.52**	**287.97**	**16.30**	**83.82**	**1397.75**	**334.47**	**2403.84**
Total AMINE-1 (TPY)	**0.14**	**0.14**	**0.01**	**0.04**	**0.70**	**0.17**	**1.20**

Controlled HAP Emissions (Normal Operation) Summary

Emission Unit	BZ	Tol	EB	Xyl	n-Hex	224-TMP	Total
AMINE-1 (Flash) (TO-1) (lb/yr)	5.27	5.35	0.30	1.56	25.99	6.22	44.69
AMINE-1 (Still) (TO-1) (lb/yr)	0.82	0.84	0.05	0.24	4.07	0.97	6.99
Total AMINE-1 (lb/hr)	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.01**
Total AMINE-1 (lb/yr)	**6.10**	**6.19**	**0.35**	**1.80**	**30.05**	**7.19**	**51.68**
Total AMINE-1 (TPY)	**0.00**	**0.00**	**0.00**	**0.00**	**0.02**	**0.00**	**0.03**

Equipment Source Name AMINE-1
ProMax Output File Summary

	AMINE-1			
	Amine Flash		**Amine Still**	
Specie	Mass flow [lb/h]	Mole Fraction [%]	Mass flow [lb/h]	Mole Fraction [%]
Methane	71.85	55.84%	7.40	0.14%
Ethane	29.58	12.27%	4.09	0.04%
Propane	20.09	5.68%	3.01	0.02%
Iso-Butane	0.59	0.13%	0.02	0.00%
N-Butane	5.18	1.11%	0.75	0.00%
Iso-Pentane	0.44	0.08%	0.03	0.00%
N-Pentane	0.77	0.13%	0.10	0.00%
Other Hexanes	0.48	0.07%	0.07	0.00%
n-Hexane	0.11	0.02%	0.02	0.00%
Heptane	0.06	0.01%	0.01	0.00%
2,2,4-Trimethylpentane	0.03	0.00%	0.00	0.00%
Octanes +	0.05	0.01%	0.01	0.00%
Benzene	0.02	0.00%	0.00	0.00%
Toluene	0.02	0.00%	0.00	0.00%
Ethylbenzene	0.00	0.00%	0.00	0.00%
Xylenes	0.01	0.00%	0.00	0.00%
Water	8.93	6.18%	410.47	7.14%
Hydrogen Sulfide	0.03	0.01%	11.22	0.10%
Carbon Dioxide	59.46	16.85%	12992.85	92.54%
Nitrogen	3.65	1.62%	0.12	0.00%
TOTAL	**201.34**	**1.00**	**13430.17**	**1.00**

Equipment Source Name	AMINE-1	
Molar flow [lbmol/h]	8.02	319.02
Std volumetric flow [MMSCFD]	0.07	2.91
Std volumetric flow [MMSCFD] with margin	0.09	3.63
Std volumetric flow [SCFH]	3804.35	151323.42
mmscf/yr	33.33	1325.59
TO downtime throughput mmscf/yr	1.67	66.28
VOC flow [lb/h]	27.84	4.03
HAP flow [lb/h]	0.19	0.03
VOC flow [lb/h] with margin	34.80	5.04
HAP flow [lb/h] with margin	0.24	0.04
Benzene with margin	0.03	0.00
Toluene with margin	0.03	0.00
Ethylbenzene with margin	0.00	0.00
o-Xylene with margin	0.01	0.00
nC6 with margin	0.14	0.02
2,2,4-Trimethylpentane with margin	0.03	0.01
Net Ideal Gas Heating Value (Btu/ft^3)	888.18	3.27
Btu/lbmol	421291.74	1551.91

Gas Analysis - AMINE-1 Flash

Gas Constituent	Molecular Weight (lb/lb-mol)	Mole %	Mole % Without Water	Weight (lb/lbmole Gas)	Weight %	Weight % Without Water	Total HC Corrected Weight * %	Total VOC Corrected Weight ** %
Methane	16.04	55.84%	59.52%	8.96	35.68%	37.34%	55.58%	NA
Ethane	30.07	12.27%	13.07%	3.69	14.69%	15.37%	22.88%	NA
Total HC (Non-VOC)		**68.10%**	**72.59%**		**50.38%**	**52.71%**	**78.46%**	**NA**
Propane	44.10	5.68%	6.05%	2.50	9.98%	10.44%	15.54%	72.15%
Iso-Butane	58.12	0.13%	0.13%	0.07	0.29%	0.31%	0.46%	2.12%
N-Butane	58.12	1.11%	1.18%	0.65	2.57%	2.69%	4.01%	18.61%
Iso-Pentane	72.15	0.08%	0.08%	0.06	0.22%	0.23%	0.34%	1.60%
N-Pentane	72.15	0.13%	0.14%	0.10	0.38%	0.40%	0.59%	2.75%
Other Hexanes	86.18	0.07%	0.07%	0.06	0.24%	0.25%	0.37%	1.71%
n-Hexane	86.18	0.02%	0.02%	0.01	0.05%	0.06%	0.09%	0.40%
Heptane	100.21	0.01%	0.01%	0.01	0.03%	0.03%	0.05%	0.21%
2,2,4-Trimethylpentane	114.23	0.00%	0.00%	0.00	0.01%	0.01%	0.02%	0.09%
Octanes +	114.23	0.01%	0.01%	0.01	0.02%	0.02%	0.04%	0.17%
Benzene	78.11	0.00%	0.00%	0.00	0.01%	0.01%	0.02%	0.08%
Toluene	92.14	0.00%	0.00%	0.00	0.01%	0.01%	0.02%	0.08%
Ethylbenzene	106.17	0.00%	0.00%	0.00	0.00%	0.00%	0.00%	0.00%
Xylenes	106.16	0.00%	0.00%	0.00	0.00%	0.00%	0.01%	0.02%
Total NMNE VOC		**7.23%**	**7.71%**	**3.47**	**13.83%**	**14.47%**	**21.54%**	**100.00%**
Total HAPs		**0.03%**	**0.03%**	**0.02**	**0.09%**	**0.10%**	**0.15%**	**0.68%**
Water	18.02	6.18%	NA	1.11	4.43%	NA	NA	NA
Hydrogen Sulfide	34.08	0.01%	0.01%	0.00	0.02%	0.02%	NA	NA
Carbon Dioxide	44.01	16.85%	17.96%	7.41	29.53%	30.90%	NA	NA
Nitrogen	28.01	1.62%	1.73%	0.45	1.81%	1.90%	NA	NA
Totals		100.00%	100.00%	25.10	100.00%	100.00%	100.00%	

Average Molecular Weight of VOCs: **47.98 lb/lb-mol**

Notes:

* Weight Percent corrected to remove Water, Carbon Dioxide,Nitrogen, and H2S content.

** Weight Percent corrected to remove non-VOC content.

Gas Analysis - AMINE-1 Still

Gas Constituent	Molecular Weight (lb/lb-mol)	Mole %	Mole % Without Water	Weight (lb/lbmole Gas)	Weight %	Weight % Without Water	Total HC Corrected Weight * %	Total VOC Corrected Weight ** %
Methane	16.04	0.14%	0.16%	0.02	0.06%	0.06%	47.67%	NA
Ethane	30.07	0.04%	0.05%	0.01	0.03%	0.03%	26.34%	NA
Total HC (Non-VOC)		**0.19%**	**0.20%**		**0.09%**	**0.09%**	**74.01%**	**NA**
Propane	44.10	0.02%	0.02%	0.01	0.02%	0.02%	19.38%	0.16%
Iso-Butane	58.12	0.00%	0.00%	0.00	0.00%	0.00%	0.15%	0.00%
N-Butane	58.12	0.00%	0.00%	0.00	0.01%	0.01%	4.82%	0.04%
Iso-Pentane	72.15	0.00%	0.00%	0.00	0.00%	0.00%	0.19%	0.00%
N-Pentane	72.15	0.00%	0.00%	0.00	0.00%	0.00%	0.66%	0.01%
Other Hexanes	86.18	0.00%	0.00%	0.00	0.00%	0.00%	0.48%	0.00%
n-Hexane	86.18	0.00%	0.00%	0.00	0.00%	0.00%	0.11%	0.00%
Heptane	100.21	0.00%	0.00%	0.00	0.00%	0.00%	0.06%	0.00%
2,2,4-Trimethylpentane	114.23	0.00%	0.00%	0.00	0.00%	0.00%	0.03%	0.00%
Octanes +	114.23	0.00%	0.00%	0.00	0.00%	0.00%	0.05%	0.00%
Benzene	78.11	0.00%	0.00%	0.00	0.00%	0.00%	0.02%	0.00%
Toluene	92.14	0.00%	0.00%	0.00	0.00%	0.00%	0.02%	0.00%
Ethylbenzene	106.17	0.00%	0.00%	0.00	0.00%	0.00%	0.00%	0.00%
Xylenes	106.16	0.00%	0.00%	0.00	0.00%	0.00%	0.01%	0.00%
Total NMNE VOC		**0.03%**	**0.03%**	**0.01**	**0.03%**	**0.03%**	**25.99%**	**0.22%**
Total HAPs		**0.00%**	**0.00%**	**0.00**	**0.00%**	**0.00%**	**0.19%**	**0.00%**
Water	18.02	7.14%	NA	1.29	3.06%	NA	NA	NA
Hydrogen Sulfide	34.08	0.10%	0.11%	0.04	0.08%	0.09%	NA	NA
Carbon Dioxide	44.01	92.54%	99.66%	40.73	96.74%	99.79%	NA	NA
Nitrogen	28.01	0.00%	0.00%	0.00	0.00%	0.00%	NA	NA
Totals		100.00%	100.00%	42.10	100.00%	100.00%	100.00%	

Average Molecular Weight of VOCs: **0.17 lb/lb-mol**

Notes:

* Weight Percent corrected to remove Water, Carbon Dioxide,Nitrogen, and H2S content.

** Weight Percent corrected to remove non-VOC content.

SO2 Assumptions:
SO2 Emissions Calculations from combustion of AMINE Unit vent stream
Assumes all H2S in the gas stream is removed by the AMINE units and oxidized to SO2 by the thermal oxidizer.
H2S Assumptions:
Based on 98% control efficiency, 2% not oxidized
H2S content "Pipeline spec"

	8	Grains H2S/100scf			using conversion factor
	80,000.00	grains H2S/MMscf			(Sulfur Measurement Handbook Rev7)
	127.74	ppm			1 pound = 7000 grains
Conversion factor	1.43E-04	lb/grains			
				MW	
			H2S	34.1	
	1.14E-05	lb H2S/scf	S	32.1	
	1.08E-05	lb S/scf	SO2	64.1	

AMINE-1

Throughput	6.00E+07	scfd
	21900.00	MMSCF/yr
	125.14	TPY H2S uncontrolled
	28.57	lbs/hr H2S uncontrolled
	98.00%	Control Efficiency
	2.50	TPY H2S controlled
	0.57	lbs/hr H2S controlled

SO2 emissions		
lb/hr	**lb/day**	**tpy**
64.45	1288.98	235.24

lb/hr Margin 20%

Compressor Blowdown Detail Sheet

Equipment Source Name:	COMP		
Equipment Name	Compressor Blowdowns		
Inlet Compressor Quantity	3		
Residue Compressor Quantity	4		
Refrigeration Compressor Quantity	1		
Source Description	Reciprocating		
Equipment Usage	Reciprocating Compressor	Potential operation	8760 hr/yr
Control Efficiency	95%		

Total Potential Emissions

Pollutant	Uncontrolled Emissions		Controlled Emissions	
	(lb/hr)	(tpy)	(lb/hr)	(tpy)
VOC	2.27	9.95	0.11	0.50
Benzene	0.01	0.03	0.00	0.00
Toluene	0.00	0.00	0.00	0.00
Ethylbenzene	0.00	0.00	0.00	0.00
Xylenes	0.00	0.00	0.00	0.00
n-Hexane	0.01	0.05	0.00	0.00
2 2 4-trimethylpentane	0.00	0.00	0.00	0.00
Total HAPs	0.02	0.09	0.00	0.00

Potential Emissions Per Inlet Compressor Blowdown

Pollutant	Emission Factor (Mscf/event)	Frequency (events/yr)	(ton/blowdown)	Uncontrolled Emissions (lb/hr)	Uncontrolled Emissions (tpy)	Controlled Emissions (lb/hr)	Controlled Emissions (tpy)	Source of Emission Factor
VOC	2.00	120	0.0262	0.72	3.15	0.04	0.16	Engineering Estimation
Benzene				0.00	0.01	0.00	0.00	Engineering Calculation
Toluene				0.00	0.00	0.00	0.00	Engineering Calculation
Ethylbenzene				0.00	0.00	0.00	0.00	Engineering Calculation
Xylenes				0.00	0.00	0.00	0.00	Engineering Calculation
n-Hexane				0.00	0.02	0.00	0.00	Engineering Calculation
2 2 4-trimethylpentane				0.00	0.00	0.00	0.00	Engineering Calculation
Total HAPs				0.01	0.03	0.00	0.00	

Potential Emissions Per Residue Compressor Blowdown

Pollutant	Emission Factor (Mscf/event)	Frequency (events/yr)	(ton/blowdown)	Uncontrolled Emissions (lb/hr)	Uncontrolled Emissions (tpy)	Controlled Emissions (lb/hr)	Controlled Emissions (tpy)	Source of Emission Factor
VOC	2.00	120	0.0008	0.02	0.10	0.00	0.00	Engineering Estimation
Benzene				0.00	0.00	0.00	0.00	Engineering Calculation
Toluene				0.00	0.00	0.00	0.00	Engineering Calculation
Ethylbenzene				0.00	0.00	0.00	0.00	Engineering Calculation
Xylenes				0.00	0.00	0.00	0.00	Engineering Calculation
n-Hexane				0.00	0.00	0.00	0.00	Engineering Calculation
2 2 4-trimethylpentane				0.00	0.00	0.00	0.00	Engineering Calculation
Total HAPs				0.00	0.00	0.00	0.00	

Based on 10%VOC

Potential Emissions Per Refrigeration Compressor Blowdown

Pollutant	Emission Factor (Mscf/event)	Frequency (events/yr)	(ton/blowdown)	Uncontrolled Emissions (lb/hr)	Uncontrolled Emissions (tpy)	Controlled Emissions (lb/hr)	Controlled Emissions (tpy)	Source of Emission Factor
VOC	2.00	1	0.1164	0.03	0.12	0.00	0.01	Engineering Estimation
Benzene				0.00	0.00	0.00	0.00	Engineering Calculation
Toluene				0.00	0.00	0.00	0.00	Engineering Calculation
Ethylbenzene				0.00	0.00	0.00	0.00	Engineering Calculation
Xylenes				0.00	0.00	0.00	0.00	Engineering Calculation
n-Hexane				0.00	0.00	0.00	0.00	Engineering Calculation
2 2 4-trimethylpentane				0.00	0.00	0.00	0.00	Engineering Calculation
Total HAPs				0.00	0.00	0.00	0.00	

Sample Calculation

2.000 Mscf/event * 1000 scf/Mscf / 379 scf/lb-mol * 9.95 lb/lb-mol * 1/2000 lb/ton * 120 events/year = 3.15 tpy

Compressor Blowdown Detail Sheet

Equipment Source Name:	PLANT BD		
Equipment Name	Gas Plant Blowdown		
Quantity	1		
Source Description	Gas Plant Blowdown	Plant Volume	60.0 MMscf/day
Equipment Usage	Gas Plant Blowdown	Potential operation	8760 hr/yr
Control Efficiency	95%		

Total Potential Emissions

Pollutant	Uncontrolled Emissions		Controlled Emissions	
	(lb/hr)	(tpy)	(lb/hr)	(tpy)
VOC	32803.52	16.40	1640.18	0.82
Benzene	105.62	0.05	5.28	0.00
Toluene	15.19	0.01	0.76	0.00
Ethylbenzene	0.00	0.00	0.00	0.00
Xylenes	0.00	0.00	0.00	0.00
n-Hexane	181.91	0.09	9.10	0.00
2 2 4-trimethylpentane	0.00	0.00	0.00	0.00
Total HAPs	302.73	0.15	15.14	0.01

Potential Emissions Per Blowdown

Pollutant	Volume	Frequency	Event Duration	Uncontrolled Emissions		Controlled Emissions		Source of Emission Factor
	(MMScf/d)	(events/yr)	(hr/event)	(lb/hr)	(tpy)	(lb/hr)	(tpy)	
VOC	60.00	1	0.5	32803.52	16.40	1640.18	0.82	Engineering Calculation
Benzene				105.62	0.05	5.28	0.00	Engineering Calculation
Toluene				15.19	0.01	0.76	0.00	Engineering Calculation
Ethylbenzene				0.00	0.00	0.00	0.00	Engineering Calculation
Xylenes				0.00	0.00	0.00	0.00	Engineering Calculation
n-Hexane				181.91	0.09	9.10	0.00	Engineering Calculation
2 2 4-trimethylpentane				0.00	0.00	0.00	0.00	Engineering Calculation
Total HAPs				302.73	0.15	15.14	0.01	

Sample Calculation

60.000 Mscf/event * 1000 scf/Mscf / 379 scf/lb-mol * 9.95 lb/lb-mol * 1/2000 lb/ton * 1 events/year = 16.40 tpy

Flare Detail Sheet

Equipment Source Name	TO-1	Stack Height	50	ft
Source Description	Thermal Oxidizer	Potential Operation	8760	hr/yr
Equipment Make	TBD			
Equipment Model	TBD			
Quantity	1			
Destruction Efficiency	98%			

Total Emissions

Pollutant	Estimated Emissions (lb/hr)	(tpy)
NOx	1.56	6.82
CO	1.31	5.73
VOC	0.19	0.83
SO2	64.45	235.24
PM10	0.00	0.00
Benzene	0.00	0.00
Toluene	0.00	0.00
Ethylbenzene	0.00	0.00
Xylenes	0.00	0.00
n-Hexane	0.00	0.00
2 2 4-trimethylpentane	0.00	0.00
Total HAPs	0.00	0.01

Pilot Stream

Pilot Rating	12.00	MMBtu/hr
Pilot Heat Value	1066.43	Btu/scf
Pilot Gas Flow Rate	11.252	Mscf/hr

Pollutant	EF (lb/MMBtu)	Estimated Emissions (lb/hr)	(tpy)	Source of Emission Factor
NOx	0.0980	1.18	5.15	AP-42 Table 1.4-1
CO	0.082	0.99	4.33	AP-42 Table 1.4-1
VOC	N/A	0.19	0.83	Engineering Calculation
Benzene	N/A	0.00	0.00	Engineering Calculation
Toluene	N/A	0.00	0.00	Engineering Calculation
Ethylbenzene	N/A	0.00	0.00	Engineering Calculation
Xylenes	N/A	0.00	0.00	Engineering Calculation
n-Hexane	N/A	0.00	0.00	Engineering Calculation
2 2 4-trimethylpentane	N/A	0.00	0.00	Engineering Calculation
Total HAPs		0.00	0.01	

Amine Flash Gas Waste Stream				
Vapor Flow Rate	33.326 MMscf/yr		25.00% Margin	
	3.804 Mscf/hr			
Total Emissions Heat Value	888.18 Btu/scf		Based on Amine Gas Analysis (Enerflex)	
Pollutant	EF	Estimated Emissions		Source of Emission Factor
	(lb/MMBtu)	(lb/hr)	(tpy)	
NOx	0.0980	0.33	1.45	AP-42 Table 1.4-1
CO	0.082	0.28	1.22	AP-42 Table 1.4-1
VOC[1]	N/A	N/A	N/A	N/A
PM10	0.01	0.00	0.00	AP-42 Table 1.4-2

Amine Acid Gas Waste Stream				
Vapor Flow Rate	1325.593 MMscf/yr		25.00% Margin	
	151.323 Mscf/hr			
W&S Emissions Heat Value	3.272 Btu/scf		Based on Amine Gas Analysis (Enerflex)	
Pollutant	EF	Estimated Emissions		Source of Emission Factor
	(lb/MMBtu)	(lb/hr)	(tpy)	
NOx	0.0980	0.05	0.21	AP-42 Table 1.4-1
CO	0.082	0.04	0.18	AP-42 Table 1.4-1
VOC[1]	N/A	N/A	N/A	N/A
PM10	0.01	0.00	0.00	AP-42 Table 1.4-2

1 - VOC emissions from produced gas stream are calculated using a mass balance and a 98% destruction efficiency. VOC emissions from waste streams are shown at the amine.

Sample Calculation for NOx from Tank Waste Stream

0.098 lb/MMBtu * 3.804 MMscf/yr * 0,888.2 Btu/scf / 8,760 hr/yr = 0.33 lb/hr

Flare Detail Sheet

Equipment Source Name	FL-1	Stack Height	100	ft
Source Description	Upset/Maintenance Flare	Potential Operation	8760	hr/yr
Equipment Make	TBD			
Equipment Model	TBD			
Quantity	1			
Destruction Efficiency	95%			

Total Emissions

Pollutant	Estimated Emissions	
	(lb/hr)	(tpy)
NOx	251.60	26.48
CO	1147.00	120.70
VOC	92.94	14.14
SO2	57.09	1.31
PM10	6.25	0.88
Benzene	0.00	0.00
Toluene	0.00	0.00
Ethylbenzene	0.00	0.00
Xylenes	0.00	0.00
n-Hexane	0.00	0.00
2 2 4-trimethylpentane	0.00	0.00
Total HAPs	0.00	0.00

Pilot Stream

Pilot Rating	0.50	MMBtu/hr
Pilot Heat Value	1066.43	Btu/scf
Pilot Gas Flow Rate	0.469	Mscf/hr

Pollutant	EF	Estimated Emissions		Source of Emission Factor
	(lb/MMBtu)	(lb/hr)	(tpy)	
NOx	0.0680	0.03	0.15	AP-42 Table 13.5-1
CO	0.310	0.16	0.68	AP-42 Table 13.5-2
VOC	N/A	0.02	0.09	Engineering Calculation
Benzene	N/A	0.00	0.00	Engineering Calculation
Toluene	N/A	0.00	0.00	Engineering Calculation
Ethylbenzene	N/A	0.00	0.00	Engineering Calculation
Xylenes	N/A	0.00	0.00	Engineering Calculation
n-Hexane	N/A	0.00	0.00	Engineering Calculation
2 2 4-trimethylpentane	N/A	0.00	0.00	Engineering Calculation
Total HAPs		0.00	0.00	

Residue Gas Stream

Produced Gas Flow Rate	693.4	MMscf/yr	
	79.2	Mscf/hr	
Max Hourly Gas Flow Rate	2291.7	Mscf/hr	
Gas Heating Value	1066.43	Btu/scf	Based on Residue Gas Analysis
Max Sulfur Content[2]	2,000	grains/MMscf	AP42 Chapter 3.2

Pollutant	EF	Estimated Emissions		Source of Emission Factor
	(lb/MMBtu)	(lb/hr)	(tpy)	
NOx	0.068	166.19	25.14	AP-42 Table 13.5-1
CO	0.31	757.61	114.62	AP-42 Table 13.5-2
VOC[1]	N/A	92.92	14.06	Engineering Calculation
SO2	N/A	1.31	0.20	Engineering Calculation
PM10[2]	40	5.72	0.87	AP-42 Table 13.5-1
Benzene	N/A	0.00	0.00	Engineering Calculation
Toluene	N/A	0.00	0.00	Engineering Calculation
Ethylbenzene	N/A	0.00	0.00	Engineering Calculation
Xylenes	N/A	0.00	0.00	Engineering Calculation
n-Hexane	N/A	0.00	0.00	Engineering Calculation
2 2 4-trimethylpentane	N/A	0.00	0.00	Engineering Calculation
Total HAPs		0.00	0.00	

Maintenance Waste Stream			
Vapor Flow Rate			
Compressor Blowdown	1,682.000	Mscf/yr	
Plant Blowdown	2,500.000	Mscf/yr	
Misc. Pipeline Flaring[1]	240.000	Mscf/yr	
Total Vapor Flow Rate	4.422	MMscf/yr	
	0.505	Mscf/hr	
Waste Stream Heat Value	1479.8	Btu/scf	
Max Sulfur Content	80,000	grains/MMscf	Maximum measured H2S concentration

Pollutant	EF (lb/MMBtu)	Estimated Emissions (lb/hr)	Estimated Emissions (tpy)	Source of Emission Factor
NOx	0.068	251.57	0.22	AP-42 Table 13.5-1
CO	0.31	1146.85	1.01	AP-42 Table 13.5-2
VOC	N/A	0.04	0.16	Engineering Calculation
SO2[4]	N/A	57.09	0.05	Engineering Calculation
PM10[2]	40	6.25	0.01	AP-42 Table 13.5-1

Thermal Oxidizer Downtime Waste Stream			
TO Potential Downtime	438.0	hr/yr	
Vapor Flow Rate	92.86	MMscf/yr	
	212.01	Mscf/hr	
Waste Stream Heat Value	304.4	Btu/scf	Engineering Calculation
Max Sulfur Content	80,000	grains/MMscf	Maximum measured H2S concentration

Pollutant	EF (lb/MMBtu)	Estimated Emissions (lb/hr)	Estimated Emissions (tpy)	Source of Emission Factor
NOx	0.068	4.39	0.96	AP-42 Table 13.5-1
CO	0.31	20.01	4.38	AP-42 Table 13.5-2
VOC	N/A	N/A	N/A	N/A
SO2	N/A	4.84	1.06	Engineering Calculation
PM10[4]	40	0.03	0.01	AP-42 Table 13.5-1

1 - VOC emissions from process gas stream and miscellaneous pipeline flaring are calculated using a mass balance and a 95% destruction efficiency. VOC emissions from maintenance and thermal oxidizer downtime waste streams are shown at compressor blowdowns, plant blowdowns and amine unit.

2 - PM10 emission factor in units of μg/L, assuming a lightly smoking flare.

3 - Maintenace volume includes 240 Mscf/yr for miscellaneous activities to be conservative in emission estimations.

4 - Hourly SO2 emissions shown at the maintenance waste stream would not occur while the Thermal Oxidizer is combusting. These emissions would only occur if the whole plant was blowing down.

Sample Calculation for NOx from Process Gas Stream

0.068 lb/MMBtu * 1E6 scf/MMscf * 693.44 MMscf/yr * 1,066.43 Btu/scf * MMBtu / 1E6 Btu / 8,760 hr/yr = 166.19 lb/hr

Sample Calculation for NOx from Tank Waste Stream

0.068 lb/MMBtu * 0.505 MMscf/yr * 1,479.8 Btu/scf / 8,760 hr/yr = 251.57 lb/hr

Flare Detail Sheet

Equipment Source Name	FL-2	Stack Height	TBD	ft
Source Description	Tank Flare	Potential Operation	8760	hr/yr
Equipment Make	TBD			
Equipment Model	TBD			
Quantity	1			
Destruction Efficiency	95%			

Total Emissions

Pollutant	Estimated Emissions	
	(lb/hr)	(tpy)
NOx	0.89	3.91
CO	4.07	17.82
VOC	0.00	0.02
SO2	0.00	0.00
PM10	0.00	0.01
Benzene	0.00	0.00
Toluene	0.00	0.00
Ethylbenzene	0.00	0.00
Xylenes	0.00	0.00
n-Hexane	0.00	0.00
2 2 4-trimethylpentane	0.00	0.00
Total HAPs	0.00	0.00

Pilot Stream

Pilot Rating	0.10	MMBtu/hr
Pilot Heat Value	1066.43	Btu/scf
Pilot Gas Flow Rate	0.094	Mscf/hr

Pollutant	EF	Estimated Emissions		Source of Emission Factor
	(lb/MMBtu)	(lb/hr)	(tpy)	
NOx	0.0680	0.01	0.03	AP-42 Table 13.5-1
CO	0.310	0.03	0.14	AP-42 Table 13.5-2
VOC	N/A	0.00	0.02	Engineering Calculation
Benzene	N/A	0.00	0.00	Engineering Calculation
Toluene	N/A	0.00	0.00	Engineering Calculation
Ethylbenzene	N/A	0.00	0.00	Engineering Calculation
Xylenes	N/A	0.00	0.00	Engineering Calculation
n-Hexane	N/A	0.00	0.00	Engineering Calculation
2 2 4-trimethylpentane	N/A	0.00	0.00	Engineering Calculation
Total HAPs		0.00	0.00	

Tank Waste Stream

Vapor Density:			
Gunbarrel	0.1209	lb/scf	Promax
Condensate	0.0893	lb/scf	TANKS 4.0.9d
Oil	0.0893	lb/scf	TANKS 4.0.9d
Produced Water	0.0014	lb/scf	TANKS 4.0.9d
Tank Emissions:			
Gunbarrel	5,468,485.42	lb/yr	Promax
Condensate	69,897.16	lb/yr	TANKS 4.0.9d
Oil	7,438.04	lb/yr	TANKS 4.0.9d
Produced Water	9.51	lb/yr	TANKS 4.0.9d
Uncontrolled Recovery- Vapor:	46,097,576.69	scf/yr	
Vapor Margin:	20.00%		
Uncontrolled Recovery- Vapor With Margin :	151,554	scf/day	
Total Emissions Heat Value:	2050	Btu/scf	Engineering Estimation
Total Heat Flow:	310,685,037	Btu/day	
Total Heat Flow:	12.95	MMBtu/hr	

Pollutant	EF	Estimated Emissions		Source of Emission Factor
	(lb/MMBtu)	(lb/hr)	(tpy)	
NOx	0.068	0.88	3.86	AP-42 Table 13.5-1
CO	0.31	4.01	17.58	AP-42 Table 13.5-2
VOC[1]	N/A	N/A	N/A	N/A
PM10[2]	40	0.00	0.01	AP-42 Table 13.5-1

Loadout Waste Stream

Potential Emissions	55082.5	lb/yr	Based on AP-42 Section 5.2.1
Vapor Molecular Weight	64.0	lb/lb-mol	Based on TANKS 4.0.9d
Vapor Flow Rate	0.326	MMscf/yr	
	0.037	Mscf/hr	
Emissions Heat Value	2050	Btu/scf	Engineering Estimation

Pollutant	EF	Estimated Emissions		Source of Emission Factor
	(lb/MMBtu)	(lb/hr)	(tpy)	
NOx	0.068	0.01	0.02	AP-42 Table 13.5-1
CO	0.31	0.02	0.10	AP-42 Table 13.5-2
VOC[1]	N/A	N/A	N/A	N/A
PM10[2]	40	0.00	0.00	AP-42 Table 13.5-1

1 - VOC emissions from waste streams are shown at tanks and loadout.
2 - PM10 emission factor in units of μg/L, assuming a lightly smoking flare.

Sample Calculation for NOx from Tank Waste Stream

0.068 lb/MMBtu * 12.945 MMBtu/hr = 0.88 lb/hr

Fugitive Dust Emissions Detail Sheet

Equipment Source Name:	HR-1		
Source Description:	Road Dust		
Operation:	24	hr/day	365 days/yr
Emission Controls:	None		

Potential Emissions

Pollutant	Estimated Potential Emissions				Source of Emission Calculations
	Uncontrolled		Controlled		
	lb/hr	tpy	lb/hr	tpy	
PM30*	12.49	0.23	12.49	0.23	AP-42 Section 13.2.2
PM10	3.18	0.06	3.18	0.06	AP-42 Section 13.2.2
PM 2.5	0.32	0.01	0.32	0.01	AP-42 Section 13.2.2

* Assumed equivalent to total suspended particulate matter (TSP)

Mean Vehicle Weight (W)		17.7 tons	Engineering Calculation
Surface Material Silt Content (s)		4.8 %	NMED Default[2]
Mean # of Days with > 0.01 inch of precipitation		70 Days	NMED Default[2]
Material moisture content (%water)		2 %	NMED Default[2]
Mean Wind Speed		11 mph	NMED Default[2]
Oil Production Trucked	100% of max throughput	4.2 bbl/day	
Condensate Production Trucked	100% of max throughput	600.0 bbl/day	
Produced Water Production trucked	100% of max throughput	4.2 bbl/day	

Tech Truck[1]	5,000 lb		
	1 trips/day		
	0.26 miles/day		
	1.49 lb/day	PM30	
	0.38 lb/day	PM10	
	0.04 lb/day	PM 2.5	
Oil Hauler[3]	200 BBL Oil/trip	Truck capacity	12,000 lb Empty weight
	41,820 lb		7.1 lb/gal (oil)
	0.02 trips/day		
	0.01 miles/day		
	0.03 lb/day	PM30	
	0.01 lb/day	PM10	
	0.00 lb/day	PM 2.5	
Condensate Hauler[3]	200 BBL Condensate	Truck capacity	12,000 lb Empty weight
	35,520 lb		5.6 lb/gal (Condensate RVP 12)
	3 trips/day		
	52 miles/day		
	298.09 lb/day	PM30	
	75.97 lb/day	PM10	
	7.60 lb/day	PM 2.5	
Produced Water Hauler[4]	140 BBL PW/trip	Truck capacity	12,000 Empty weight
	36,402 lb	(12,000 empty weight)	8.3 lb/gal (water)
	0 trips/day		
	0.01 miles/day		
	0.04 lb/day	PM30	
	0.01 lb/day	PM10	
	0.00 lb/day	PM 2.5	

52.27 Total miles/day (Tech Truck + Oil Hauler + Produced Water Hauler)
2.18 Total miles/hr
19080 Total miles/yr

Fugitive Dust (PM30) per mile traveled	5.73 lb/VMT	AP-42 Eqn 13.2.2-1a &2
Fugitive Dust (PM10) per mile traveled	1.46 lb/VMT	AP-42 Eqn 13.2.2-1a &2
Fugitive Dust (PM2.5) per mile traveled	0.15 lb/VMT	AP-42 Eqn 13.2.2-1a &2
Vehicle miles traveled	0.26 miles/trip	Engineering Estimation

Notes:

1 - Based on the weight of a Ford F-150

2 - NMED Department Accepted Values for: Aggregate Handling, Storage Pile, and Haul Road Emissions

3 - Based on the assumption each hauler can carry 200 bbls of oil per visit

4 - Based on the assumption each hauler can carry 140 bbls of produced water per visit

Sample Calculation for PM30

5.73 lb/VMT * (0.01 + 0.01 + 0.26) miles/day * 365 days/yr / 2000 lb/ton * (365-70)/ 365 = 0.23 tpy

Haul Road Modeling Calculations

Plume Height	6.80 m	NM AQB 2019 Modeling Guidance Chapter 5.3.3
Vehicle Height	4 m	NM AQB 2019 Modeling Guidance Table 28
Initial Vertical Dimension	3.16 m	NM AQB 2019 Modeling Guidance Chapter 5.3.3
Release Height	3.40 m	NM AQB 2019 Modeling Guidance Chapter 5.3.3
Adjusted Road Width	13.6 m	NM AQB 2019 Modeling Guidance Chapter 5.3.3
Road Width	7.62 m	Engineering Estimation
Initial Horizontal Dimensioi	6.33 m	NM AQB 2019 Modeling Guidance Chapter 5.3.3
Number of Volume Source	55 sources	Engineering Estimation

Uncontrolled MSS Activities

Equipment Source Name MAIN-1
Source Description: Maintenance Activities

Emission Summary

Activity
Aerosol
Painting
Tank Degassing
Tank Cleaning
Engine Startup/Warmup
Sump Cleanout
Pipeline Degassing
Pigging
Filter Changes

	lb/hr*	tpy
TOTAL VOC Emissions	--	10.00

Notes:
* - Hourly emission limits are not appropriate for this operating situation.

Libby Gas Plant Gas Sample dated 1/9/2019

Gas Constituent	Molecular Weight (lb/lb-mol)	Mole %	Mole % Without Water	Weight (lb/lbmole Gas)	Weight %	Weight % Without Water	Total HC Corrected Weight * %	Total VOC Corrected Weight ** %
Methane	16.04	61.85%	61.85%	9.92	38.64%	38.64%	40.23%	NA
Ethane	30.07	15.96%	15.96%	4.80	18.69%	18.69%	19.45%	NA
Total HC (Non-VOC)		**77.81%**	**77.81%**		**57.33%**	**57.33%**	**59.68%**	**NA**
Propane	44.10	11.39%	11.39%	5.02	19.56%	19.56%	20.36%	50.50%
Iso-Butane	58.12	1.64%	1.64%	0.95	3.71%	3.71%	3.86%	9.58%
N-Butane	58.12	4.17%	4.17%	2.42	9.43%	9.43%	9.82%	24.35%
Iso-Pentane	72.15	0.85%	0.85%	0.62	2.40%	2.40%	2.50%	6.20%
N-Pentane	72.15	0.83%	0.83%	0.60	2.34%	2.34%	2.44%	6.04%
Other Hexanes	86.18	0.26%	0.26%	0.22	0.86%	0.86%	0.90%	2.23%
n-Hexane	86.18	0.0640%	0.06%	0.06	0.21%	0.21%	0.22%	0.55%
Heptane	100.21	0.0130%	0.01%	0.01	0.05%	0.05%	0.05%	0.13%
2,2,4-Trimethylpentane	114.23	0.0000%	0.00%	0.00	0.00%	0.00%	0.00%	0.00%
Octanes	114.23	0.0020%	0.00%	0.00	0.01%	0.01%	0.01%	0.02%
Nonanes	128.20	0.0020%	0.00%	0.00	0.01%	0.01%	0.01%	0.03%
Decanes+	142.29	0.0000%	0.00%	0.00	0.00%	0.00%	0.00%	0.00%
Benzene	78.11	0.0410%	0.04%	0.03	0.12%	0.12%	0.13%	0.32%
Toluene	92.14	0.0050%	0.01%	0.00	0.02%	0.02%	0.02%	0.05%
Ethylbenzene	106.17	0.0000%	0.00%	0.00	0.00%	0.00%	0.00%	0.00%
Xylenes	106.16	0.0000%	0.00%	0.00	0.00%	0.00%	0.00%	0.00%
Total NMNE VOC		**19.27%**	**19.27%**	**9.95**	**38.73%**	**38.73%**	**40.32%**	**100.00%**
Total HAPs		**0.11%**	**0.11%**	**0.09**	**0.36%**	**0.36%**	**0.37%**	**0.92%**
Water	18.02	0.00%	NA	0.00	0.00%	NA	NA	NA
Hydrogen Sulfide	34.08	0.00%	0.00%	0.00	0.00%	0.00%	NA	NA
Carbon Dioxide	44.01	1.21%	1.21%	0.53	2.07%	2.07%	NA	NA
Nitrogen	28.01	1.71%	1.71%	0.48	1.87%	1.87%	NA	NA
Totals		100.00%	100.00%	25.68	100.00%	100.00%	100.00%	

Average Molecular Weight of VOCs: **51.62 lb/lb-mol**

Notes:

* Weight Percent corrected to remove Water, Carbon Dioxide,Nitrogen, and H2S content.

** Weight Percent corrected to remove non-VOC content.

Libby Gas Plant - Promax Stream 47

Gas Constituent	Molecular Weight (lb/lb-mol)	Mole %	Weight (lb/lbmole Gas)	Weight %	Total HC Corrected Weight * %	Total VOC Corrected Weight ** %
Methane	16.04	88.38%	14.18	79.96%	82.72%	NA
Ethane	30.07	8.83%	2.66	14.97%	15.49%	NA
Total HC (Non-VOC)		97.21%		94.93%	98.21%	NA
Propane	44.10	0.62%	0.28	1.55%	1.61%	89.53%
Iso-Butane	58.12	0.02%	0.01	0.07%	0.07%	3.83%
N-Butane	58.12	0.03%	0.02	0.11%	0.11%	6.08%
Iso-Pentane	72.15	0.00%	0.00	0.01%	0.01%	0.31%
N-Pentane	72.15	0.00%	0.00	0.00%	0.00%	0.22%
Other Hexanes	86.18	0.00%	0.00	0.00%	0.00%	0.02%
n-Hexane	86.18	0.00%	0.00	0.00%	0.00%	0.00%
Heptane	100.21	0.00%	0.00	0.00%	0.00%	0.00%
2,2,4-Trimethylpentane	114.23	0.00%	0.00	0.00%	0.00%	0.00%
Octanes+	114.23	0.00%	0.00	0.00%	0.00%	0.00%
Benzene	78.11	0.00%	0.00	0.00%	0.00%	0.00%
Toluene	92.14	0.00%	0.00	0.00%	0.00%	0.00%
Ethylbenzene	106.17	0.00%	0.00	0.00%	0.00%	0.00%
Xylenes	106.16	0.00%	0.00	0.00%	0.00%	0.00%
Total NMNE VOC		**0.68%**	**0.31**	**1.73%**	**1.79%**	**100.00%**
Hydrogen Sulfide	34.08	0.00%	0.00	0.00%	NA	NA
Carbon Dioxide	44.01	0.01%	0.00	0.01%	NA	NA
Nitrogen	28.01	2.10%	0.59	3.32%	NA	NA
Totals		100.00%	17.73	100.00%	100.00%	

Average Molecular Weight of VOCs: **45.28 lb/lb-mol**

Lumped C6+ Natural Gas Analysis Conversion

Hexane+ Mol % from Gas Analysis	0.0001%

(Reference: Typical speciated C6+ from GRI-GLYCalc Help System)

	Production Weighted Mol % of C6***	Production Total Gas Mol %	Molecular Weight (lb/lb-mol)	Weight (lb/lb-mol Gas)	Weight% of C6+	Total Gas Weight%	Total VOC Corrected Weight%
Other Hexanes	63.85%	0.00005961%	86.18	55.03	62.25%	0.00%	0.002%
n-Hexane	14.79%	0.00001381%	86.18	12.75	14.42%	0.00%	0.001%
Heptane	6.87%	0.00000641%	100.2	6.88	7.79%	0.00%	0.000%
2,2,4-Trimethylpentane	2.67%	0.00000249%	114.23	3.05	3.45%	0.00%	0.000%
Octanes +	4.80%	0.00000448%	114.23	5.48	6.20%	0.00%	0.000%
Benzene	3.31%	0.00000309%	78.11	2.59	2.92%	0.00%	0.000%
Toluene	2.85%	0.00000266%	92.13	2.63	2.97%	0.00%	0.000%
Ethylbenzene	0.14%	0.00000013%	106.17	0.15	0.17%	0.00%	0.000%
Xylenes	0.72%	0.00000067%	106.17	0.76	0.86%	0.00%	0.000%
Totals C6+	**100.00%**	**0.0001%**					0.004%
Total HAPs						**0.0000%**	

Notes:

* Weight Percent corrected to remove Carbon Dioxide,Nitrogen, and H2S content.

** Weight Percent corrected to remove non-VOC content.

*** GRY-GLYCalc C6+ typical gas composition from Help System used to speciate Hexanes+ for HAP emissions.

Process Streams		**47**
Composition	Status:	Solved
Phase: **Total**	From Block:	PIPE-1
	To Block:	--
Mole Fraction		**%**
Methane		88.382%
Ethane		8.830%
Propane		0.624%
i-Butane		0.020%
n-Butane		0.032%
i-Pentane		0.001%
n-Pentane		0.001%
n-Hexane		0.000%
n-Heptane		0.000%
C8		0.000%
Water		0.000%
N2		2.104%
CO2		0.005%
H2S		0.000%
Triethylene Glycol		0.000%
EG		0.000%
MeOH		0.000%
MDEA		0.000%
CHEMTHERM 550		0.000%

Process Streams		**47**
Properties	Status:	Solved
Phase: **Total**	From Block:	PIPE-1
	To Block:	--
Property	**Units**	
Temperature	°F	75.1253
Pressure	psig	828.3127315
Mole Fraction Vapor	%	100
Mole Fraction Light Liquid	%	0
Mole Fraction Heavy Liquid	%	0
Molecular Weight	lb/lbmol	17.7327
Mass Density	lb/ft^3	2.99494
Molar Flow	lbmol/h	2275.60
Mass Flow	lb/h	40352.7
Vapor Volumetric Flow	ft^3/h	13473.6
Liquid Volumetric Flow	gpm	1679.83
Std Vapor Volumetric Flow	MMSCFD	20.7253
Std Liquid Volumetric Flow	sgpm	255.058
Compressibility		0.868260
Specific Gravity		0.612266
API Gravity		
Enthalpy	Btu/h	-7.37803E+07
Mass Enthalpy	Btu/lb	-1828.39
Mass Cp	Btu/(lb*°F)	0.617786
Ideal Gas CpCv Ratio		1.28750
Dynamic Viscosity	cP	0.01245206
Kinematic Viscosity	cSt	0.259557
Thermal Conductivity	Btu/(h*ft*°F)	0.0218038
Surface Tension	lbf/ft	
Net Ideal Gas Heating Value	Btu/ft^3	962.820
Net Liquid Heating Value	Btu/lb	20579.0
Gross Ideal Gas Heating Value	Btu/ft^3	1066.43
Gross Liquid Heating Value	Btu/lb	22796.7

Summary of Uncontrolled Air Emission Units

Potential Emissions — Uncontrolled + No Product Recovered

Unit Name	Unit Description	Qty	NOx lb/hr	NOx tpy	CO lb/hr	CO tpy	VOC lb/hr	VOC tpy	SO2 lb/hr	SO2 tpy	PM lb/hr	PM tpy	PM10 lb/hr	PM10 tpy	PM2.5 lb/hr	PM2.5 tpy	H2S lb/hr	H2S tpy	HAPs lb/hr	HAPs tpy
ENG 1-2*	Worst-Case Composite Inlet Compression Engine Emissions	N/A	3.04	13.33	7.39	32.39	3.47	15.19	0.03	0.14	0.11	0.50	0.11	0.50	0.11	0.50	--	--	1.52	6.65
ENG 3-4	Inlet Compression	2	6.09	26.66	14.79	64.77	6.94	30.39	0.06	0.28	0.23	1.00	0.23	1.00	0.23	1.00	--	--	3.03	13.29
ENG 5-12*	Worst-Case Composite Residue Compression Engine Emissions	N/A	197.07	863.18	170.40	746.36	13.88	60.78	0.15	0.65	1.03	4.50	1.03	4.50	1.03	4.50	--	--	6.07	26.58
GEN-1	Generator Engine	1	0.82	0.21	1.65	0.41	0.64	0.16	0.01	0.00	0.06	0.02	0.06	0.02	0.06	0.02	--	--	0.09	0.02
GEN-2	Generator Engine	1	0.80	0.20	0.53	0.13	0.20	0.05	0.00	0.00	0.13	0.00	0.13	0.00	0.13	0.00	--	--	0.00	0.00
TK-1	Gunbarrel Tank	1	--	--	--	--	22.64	99.18	--	--	--	--	--	--	--	--	--	--	1.43	6.25
TK 2-5	Stabilized Condensate Tank	4	--	--	--	--	7.98	34.95	--	--	--	--	--	--	--	--	--	--	0.50	2.20
TK-6	Slop Oil Tank	1	--	--	--	--	0.85	3.72	--	--	--	--	--	--	--	--	--	--	0.05	0.23
PWTK-1	Produced Water Tank	1	--	--	--	--	0.00	0.00	--	--	--	--	--	--	--	--	--	--	0.00	0.00
HTR-1	Hot Oil Heater	1	2.42	10.61	4.07	17.82	0.27	1.17	0.14	0.60	0.37	1.61	0.37	1.61	0.37	1.61	--	--	0.09	0.40
HTR-2	Regen Gas Heater	1	1.08	4.72	0.91	3.97	0.06	0.26	0.03	0.13	0.08	0.36	0.08	0.36	0.08	0.36	--	--	0.02	0.09
CONDLOAD-1	Condensate Loadout	1	--	--	--	--	99.91	27.35	--	--	--	--	--	--	--	--	--	--	6.29	1.72
OILLOAD-1	Oil Loadout	1	--	--	--	--	99.91	0.19	--	--	--	--	--	--	--	--	--	--	6.29	0.01
FUG-1	Fugitives - OOOOa	N/A	--	--	--	--	11.70	51.24	--	--	--	--	--	--	--	--	0.00	0.00	0.11	0.47
FUG-2	Fugitives - Residue	N/A	--	--	--	--	0.05	0.23	--	--	--	--	--	--	--	--	0.00	0.00	0.00	0.00
AMINE-1	Amine Unit	1	--	--	--	--	39.84	174.52	--	--	--	--	--	--	--	--	--	--	0.27	1.20
COMP	Compressor Blowdowns	8	--	--	--	--	2.27	9.95	--	--	--	--	--	--	--	--	--	--	0.02	0.09
PLANT BD	Gas Plant Blowdown	1	--	--	--	--	32,803.52	16.40	--	--	--	--	--	--	--	--	--	--	302.73	0.15
TO-1	Thermal Oxidizer	1	1.18	5.15	0.99	4.33	0.19	0.83	--	--	--	--	--	--	--	--	--	--	0.00	0.01
FL-1	Upset/Maintenance Flare	1	0.03	0.15	0.16	0.68	0.02	0.09	--	--	--	--	--	--	--	--	--	--	0.00	0.00
FL-2	Tank Flare	1	0.01	0.03	0.03	0.14	0.00	0.02	--	--	--	--	--	--	--	--	--	--	0.00	0.00
HR-1	Road Dust	N/A	--	--	--	--	--	--	--	--	12.49	0.23	3.18	0.06	0.32	0.01	--	--	--	--
MAIN-1	Maintenance Activities	N/A	--	--	--	--	--	10.00	--	--	--	--	--	--	--	--	--	--	--	--
UP/MAL-1	Upsets/Malfunctions	N/A	--	--	--	--	--	10.00	--	--	--	--	--	--	--	--	--	--	--	--
	Facility-Wide Total Emissions Including Exempt Equipment		212.55	924.24	200.92	871.00	33114.34	546.66	0.42	1.80	14.50	8.22	5.19	8.04	2.33	7.99	0.00	0.00	328.53	59.37
	Facility-Wide Total Emissions Less Exempt Equipment		210.92	923.83	198.73	870.46	33113.50	546.45	0.41	1.80	14.31	8.20	5.00	8.03	2.14	7.98	0.00	0.00	328.44	59.35

Summary of Controlled Air Emission Units

Potential Emissions — Controlled + Product Recovery

Unit Name	Unit Description	Qty	NOx lb/hr	NOx tpy	CO lb/hr	CO tpy	VOC lb/hr	VOC tpy	SO2 lb/hr	SO2 tpy	PM lb/hr	PM tpy	PM10 lb/hr	PM10 tpy	PM2.5 lb/hr	PM2.5 tpy	H2S lb/hr	H2S tpy	HAPs lb/hr	HAPs tpy	CO2e
ENG 1-2*	Worst-Case Composite Inlet Compression Engine Emissions	N/A	3.04	13.33	3.04	13.33	2.40	10.50	0.03	0.14	0.11	0.50	0.11	0.50	0.11	0.50	--	--	0.4	2.0	5,843
ENG 3-4	Inlet Compression	2	6.09	26.66	4.75	20.79	4.80	21.00	0.06	0.28	0.23	1.00	0.23	1.00	0.23	1.00	--	--	0.9	3.9	11,687
ENG 5-12*	Worst-Case Composite Residue Compression Engine Emissions	N/A	12.17	53.31	9.49	41.58	9.59	42.01	0.15	0.65	1.03	4.50	1.03	4.50	1.03	4.50	--	--	1.8	7.8	27,163
GEN-1	Generator Engine	1	0.82	0.21	1.65	0.41	0.64	0.16	0.01	0.00	0.06	0.02	0.06	0.02	0.06	0.02	--	--	0.1	0.0	93
GEN-2	Generator Engine	1	0.80	0.20	0.53	0.13	0.20	0.05	0.00	0.00	0.13	0.00	0.13	0.00	0.13	0.00	--	--	0.0	0.0	27
TK-1	Gunbarrel Tank	1	--	--	--	--	1.13	4.96	--	--	--	--	--	--	--	--	--	--	0.1	0.3	7
TK 2-5	Stabilized Condensate Tank	4	--	--	--	--	0.40	1.75	--	--	--	--	--	--	--	--	--	--	0.0	0.1	20
TK-6	Slop Oil Tank	1	--	--	--	--	0.04	0.19	--	--	--	--	--	--	--	--	--	--	0.0	0.0	2
PWTK-1	Produced Water Tank	1	--	--	--	--	0.00	0.00	--	--	--	--	--	--	--	--	--	--	0.0	0.0	0
HTR-1	Hot Oil Heater	1	2.42	10.61	4.07	17.82	0.27	1.17	0.14	0.60	0.37	1.61	0.37	1.61	0.37	1.61	--	--	0.1	0.4	25,345
HTR-2	Regen Gas Heater	1	1.08	4.72	0.91	3.97	0.06	0.26	0.03	0.13	0.08	0.36	0.08	0.36	0.08	0.36	--	--	0.0	0.1	5,642
CONDLOAD-1	Condensate Loadout	1	--	--	--	--	33.47	9.16	--	--	--	--	--	--	--	--	--	--	2.1	0.6	23
OILLOAD-1	Oil Loadout	1	--	--	--	--	33.47	0.06	--	--	--	--	--	--	--	--	--	--	2.1	0.0	0
FUG-1	Fugitives - OOOOa	N/A	--	--	--	--	11.70	51.24	--	--	--	--	--	--	--	--	0.00	0.00	0.11	0.47	20815
FUG-2	Fugitives - Residue	N/A	--	--	--	--	0.05	0.23	--	--	--	--	--	--	--	--	0.00	0.00	0.0	0.0	0
AMINE-1	Amine Unit	1	--	--	--	--	2.79	3.93	--	--	--	--	--	--	--	--	--	--	0.0	0.0	65,846
COMP	Compressor Blowdowns	3	--	--	--	--	0.11	0.50	--	--	--	--	--	--	--	--	--	--	0.0	0.0	35
PLANT BD	Gas Plant Blowdown	1	--	--	--	--	1,640.18	0.82	--	--	--	--	--	--	--	--	--	--	15.1	0.0	21
TO-1	Thermal Oxidizer	1	1.56	6.82	1.31	5.73	0.19	0.83	64.45	235.24	0.00	0.00	0.00	0.00	0.00	0.00	--	--	0.0	0.0	8,142
FL-1	Upset/Maintenance Flare	1	251.60	26.48	1,147.00	120.70	92.94	14.14	57.09	1.31	6.25	0.88	6.25	0.88	6.25	0.88	--	--	0.0	0.0	77,038
FL-2	Tank Flare	1	0.89	3.91	4.07	17.82	0.00	0.02	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.01	--	--	0.0	0.0	6,730
HR-1	Road Dust	N/A	--	--	--	--	--	--	--	--	12.49	0.23	3.18	0.06	0.32	0.01	--	--	--	--	--
MAIN-1	Maintenance Activities	N/A	--	--	--	--	--	10.00	--	--	--	--	--	--	--	--	--	--	--	--	250
UP/MAL-1	Upsets/Malfunctions	N/A	--	--	--	--	--	10.00	--	--	--	--	--	--	--	--	--	--	--	--	250
	Facility-Wide Total Emissions Including Exempt Equipment		280.48	146.24	1,176.82	242.28	1,834.43	182.98	121.95	238.35	20.74	9.10	11.44	8.93	8.58	8.88	0.00	0.00	22.90	15.73	254,981
	Facility-Wide Total Emissions Less Exempt Equipment		278.85	145.83	1,174.63	241.74	1,833.59	182.77	121.95	238.35	20.55	9.09	11.25	8.91	8.39	8.86	0.00	0.00	22.81	15.71	254,861

* - Composite emissions represent worse case engine emissions

Summary of Uncontrolled HAP Emissions

Potential Emissions
Uncontrolled + No Product Recovered

Unit Name	Unit Description	Qty	Formaldehyde		Acetaldehyde		Acrolein		Benzene		Toluene		Ethylbenzene		Xylenes		n-Hexane		2,2,4-TMP	
			lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy
ENG 1-2*	Worst-Case Composite Inlet Compression Engine Emissions	N/A	1.34	5.86	0.10	0.42	0.06	0.26	0.01	0.02	0.00	0.02	0.00	0.00	0.00	0.01	0.01	0.06	--	--
ENG 3-4	Inlet Compression	2	2.68	11.73	0.19	0.83	0.12	0.51	0.01	0.04	0.01	0.04	0.00	0.00	0.00	0.02	0.03	0.11	--	--
ENG 5-12*	Worst-Case Composite Residue Compression Engine Emissions	N/A	5.35	23.45	0.38	1.67	0.23	1.03	0.08	0.37	0.03	0.13	0.00	0.01	0.01	0.05	0.05	0.22	--	--
GEN-1	Generator Engine	1	0.07	0.02	0.01	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	N/A	N/A	--	--
GEN-2	Generator Engine	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	N/A	N/A	0.00	0.00	N/A	N/A	--	--
TK-1	Gunbarrel Tank	1	--	--	--	--	--	--	0.23	0.99	0.23	0.99	0.02	0.10	0.02	0.10	0.91	3.97	0.02	0.10
TK 2-5	Stabilized Condensate Tank	4	--	--	--	--	--	--	0.08	0.35	0.08	0.35	0.01	0.03	0.01	0.03	0.32	1.40	0.01	0.03
TK-6	Slop Oil Tank	1	--	--	--	--	--	--	0.01	0.04	0.01	0.04	0.00	0.00	0.00	0.00	0.03	0.15	0.00	0.00
PWTK-1	Produced Water Tank	1	--	--	--	--	--	--	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
HTR-1	Hot Oil Heater	1	0.00	0.02	--	--	--	--	0.00	0.00	0.00	0.00	--	--	--	--	0.09	0.38	--	--
HTR-2	Regen Gas Heater	1	0.00	0.00	--	--	--	--	0.00	0.00	0.00	0.00	--	--	--	--	0.02	0.09	--	--
CONDLOAD-1	Condensate Loadout	1	--	--	--	--	--	--	1.00	0.27	1.00	0.27	0.10	0.03	0.10	0.03	4.00	1.09	0.10	0.03
OILLOAD-1	Oil Loadout	1	--	--	--	--	--	--	1.00	0.00	1.00	0.00	0.10	0.00	0.10	0.00	4.00	0.01	0.10	0.00
FUG-1	Fugitives - OOOOa	N/A	--	--	--	--	--	--	0.04	0.16	0.01	0.02	0.00	0.00	0.00	0.00	0.06	0.28	0.00	0.00
FUG-2	Fugitives - Residue	N/A	--	--	--	--	--	--	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AMINE-1	Amine Unit	1	--	--	--	--	--	--	0.03	0.14	0.03	0.14	0.00	0.01	0.01	0.04	0.16	0.70	0.04	0.17
COMP	Compressor Blowdowns	3	--	--	--	--	--	--	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.00
PLANT BD	Gas Plant Blowdown	1	--	--	--	--	--	--	105.62	0.05	15.19	0.01	0.00	0.00	0.00	0.00	181.91	0.09	0.00	0.00
TO-1	Thermal Oxidizer	1	--	--	--	--	--	--	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
FL-1	Upset/Maintenance Flare	1	--	--	--	--	--	--	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
FL-2	Tank Flare	1	--	--	--	--	--	--	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
HR-1	Road Dust	N/A	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MAIN-1	Maintenance Activities	N/A	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
UP/MAL-1	Upsets/Malfunctions	N/A	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Facility-Wide Total HAP Emissions Including Exempt Equipment			9.44	41.08	0.68	2.92	0.42	1.80	108.11	2.46	17.59	2.02	0.24	0.19	0.26	0.28	191.59	8.57	0.27	0.33
Facility-Wide Total HAP Emissions Less Exempt Equipment			9.37	41.06	0.67	2.92	0.41	1.80	108.11	2.46	17.59	2.02	0.24	0.19	0.26	0.28	191.59	8.57	0.27	0.33

Summary of Controlled HAP Emissions

Potential Emissions
Controlled + Product Recovery

Unit Name	Unit Description	Qty	Formaldehyde		Acetaldehyde		Acrolein		Benzene		Toluene		Ethylbenzene		Xylenes		n-Hexane		2,2,4-TMP	
			lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy
ENG 1-2*	Worst-Case Composite Inlet Compression Engine Emissions	N/A	0.32	1.40	0.10	0.42	0.06	0.26	0.01	0.02	0.00	0.02	0.00	0.00	0.00	0.01	0.01	0.06	--	--
ENG 3-4	Inlet Compression	2	0.54	2.35	0.19	0.83	0.12	0.51	0.01	0.04	0.01	0.04	0.00	0.00	0.00	0.02	0.03	0.11	--	--
ENG 5-12*	Worst-Case Composite Residue Compression Engine Emissions	N/A	1.07	4.69	0.38	1.67	0.23	1.03	0.08	0.37	0.03	0.13	0.00	0.01	0.01	0.05	0.05	0.22	--	--
GEN-1	Generator Engine	1	0.07	0.02	0.01	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	N/A	N/A	--	--
GEN-2	Generator Engine	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	N/A	N/A	0.00	0.00	N/A	N/A	--	--
TK-1	Gunbarrel Tank	1	--	--	--	--	--	--	0.01	0.05	0.01	0.05	0.00	0.00	0.00	0.00	0.05	0.20	0.00	0.00
TK 2-5	Stabilized Condensate Tank	4	--	--	--	--	--	--	0.00	0.02	0.00	0.02	0.00	0.00	0.00	0.00	0.02	0.07	0.00	0.00
TK-6	Slop Oil Tank	1	--	--	--	--	--	--	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00
PWTK-1	Produced Water Tank	1	--	--	--	--	--	--	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
HTR-1	Hot Oil Heater	1	0.00	0.02	--	--	--	--	0.00	0.00	0.00	0.00	--	--	--	--	0.09	0.38	--	--
HTR-2	Regen Gas Heater	1	0.00	0.00	--	--	--	--	0.00	0.00	0.00	0.00	--	--	--	--	0.02	0.09	--	--
CONDLOAD-1	Condensate Loadout	1	--	--	--	--	--	--	0.33	0.09	0.33	0.09	0.03	0.01	0.03	0.01	1.34	0.37	0.03	0.01
OILLOAD-1	Oil Loadout	1	--	--	--	--	--	--	0.33	0.00	0.33	0.00	0.03	0.00	0.03	0.00	1.34	0.00	0.03	0.00
FUG-1	Fugitives - OOOOa	N/A	--	--	--	--	--	--	0.04	0.16	0.01	0.02	0.00	0.00	0.00	0.00	0.06	0.28	0.00	0.00
FUG-2	Fugitives - Residue	N/A	--	--	--	--	--	--	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AMINE-1	Amine Unit	1	--	--	--	--	--	--	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.00
COMP	Compressor Blowdowns	3	--	--	--	--	--	--	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PLANT BD	Gas Plant Blowdown	1	--	--	--	--	--	--	5.28	0.00	0.76	0.00	0.00	0.00	0.00	0.00	9.10	0.00	0.00	0.00
TO-1	Thermal Oxidizer	1	--	--	--	--	--	--	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
FL-1	Upset/Maintenance Flare	1	--	--	--	--	--	--	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
FL-2	Tank Flare	1	--	--	--	--	--	--	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
HR-1	Road Dust	N/A	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MAIN-1	Maintenance Activities	N/A	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
UP/MAL-1	Upsets/Malfunctions	N/A	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Facility-Wide Total HAP Emissions Including Exempt Equipment			2.00	8.47	0.68	2.92	0.42	1.80	6.11	0.77	1.50	0.38	0.07	0.03	0.09	0.09	12.10	1.81	0.07	0.02
Facility-Wide Total HAP Emissions Less Exempt Equipment			1.93	8.46	0.67	2.92	0.41	1.80	6.10	0.77	1.49	0.38	0.07	0.03	0.09	0.09	12.10	1.81	0.07	0.02

* - Composite emissions represent worse case engine emissions

Summary of Inlet Compressor Engine Air Emission Units

Option Number	Unit Name	Make & Model	Qty	Potential Emissions Uncontrolled + No Product Recovered NOx lb/hr	NOx tpy	CO lb/hr	CO tpy	VOC lb/hr	VOC tpy	SO2 lb/hr	SO2 tpy	PM10 lb/hr	PM10 tpy
1	ENG-1	Caterpillar G3508B		1.52	6.66	3.93	17.19	1.70	7.46	0.02	0.07	0.06	0.25
		Option 1 Total:	1	1.52	6.66	3.93	17.19	1.70	7.46	0.02	0.07	0.06	0.25
2	ENG-2	Caterpillar G3516		3.04	13.33	7.39	32.39	3.47	15.19	0.03174	0.13902	0.11	0.50
		Option 2 Total:	1	3.04	13.33	7.39	32.39	3.47	15.19	0.03	0.14	0.11	0.50
Worst-Case Composite Inlet Compression Engine Emissions				3.04	13.33	7.39	32.39	3.47	15.19	0.03	0.14	0.11	0.50

Option Number	Unit Name	Make & Model	Qty	Potential Emissions Controlled + Product Recovery NOx lb/hr	NOx tpy	CO lb/hr	CO tpy	VOC lb/hr	VOC tpy	SO2 lb/hr	SO2 tpy	PM10 lb/hr	PM10 tpy	CO2e tpy
1	ENG-1	Caterpillar G3508B		1.52	6.66	3.04	13.33	1.38	6.06	0.02	0.07	0.06	0.25	2903
		Option 1 Total:	1	1.52	6.66	3.04	13.33	1.38	6.06	0.02	0.07	0.06	0.25	2903
2	ENG-2	Caterpillar G3516		3.04	13.33	2.37	10.40	2.40	10.50	0.03	0.14	0.11	0.50	5843
		Option 2 Total:	1	3.04	13.33	2.37	10.40	2.40	10.50	0.03	0.14	0.11	0.50	5843
Worst-Case Composite Inlet Compression Engine Emissions				3.04	13.33	3.04	13.33	2.40	10.50	0.03	0.14	0.11	0.50	5843

Summary of Residue Compressor Engine Air Emission Units

Option Number	Unit Name	Make & Model	Qty	NOx lb/hr	NOx tpy	CO lb/hr	CO tpy	VOC lb/hr	VOC tpy	SO2 lb/hr	SO2 tpy	PM10 lb/hr	PM10 tpy
				Potential Emissions Uncontrolled + No Product Recovered									
1	ENG 5-8	Caterpillar G3516		3.04	13.33	7.39	32.39	3.47	15.19	0.03	0.14	0.11	0.50
		Option 1 Total:	4	12.17	53.31	29.58	129.55	13.88	60.78	0.13	0.56	0.46	1.99
2	ENG 9-12	Waukesha 7044GSI		49.27	215.80	42.60	186.59	1.33	5.84	0.04	0.16	0.26	1.13
		Option 2 Total:	4	197.07	863.18	170.40	746.36	5.33	23.36	0.15	0.65	1.03	4.50
Worst-Case Composite Residue Compression Engine Emissions				197.07	863.18	170.40	746.36	13.88	60.78	0.15	0.65	1.03	4.50

Option Number	Unit Name	Make & Model	Qty	NOx lb/hr	NOx tpy	CO lb/hr	CO tpy	VOC lb/hr	VOC tpy	SO2 lb/hr	SO2 tpy	PM10 lb/hr	PM10 tpy	CO2e tpy
				Potential Emissions Controlled + Product Recovery										
1	ENG 5-8	Caterpillar G3516		3.04	13.33	2.37	10.40	2.40	10.50	0.03	0.14	0.11	0.50	5843
		Option 1 Total:	4	12.17	53.31	9.49	41.58	9.59	42.01	0.13	0.56	0.46	1.99	23374
2	ENG 9-12	Waukesha 7044GSI		1.90	8.32	1.57	6.90	0.65	2.84	0.04	0.16	0.26	1.13	6791
		Option 2 Total:	4	7.59	33.26	6.30	27.58	2.59	11.36	0.15	0.65	1.03	4.50	27163
Worst-Case Composite Residue Compression Engine Emissions				12.17	53.31	9.49	41.58	9.59	42.01	0.15	0.65	1.03	4.50	27163

Engine Emission Detail Sheet

Item	Value
Source Name	ENG-1
Description	Compressor Engine
Engine Use	Inlet Compression
Quantity	1
Make	Caterpillar
Model	Caterpillar G3508B
Serial Number	TBD
Manufacture Date	After 7/1/2010
Fuel Type	Natural Gas
Engine Type	4SLB

Item	Value	Units	Source
Rated Horsepower	690	hp	Manufacturer
Heat Rate	5.66	MMBtu/hr	Calculated
Fuel Consumption	8203	Btu/hp-hr	Manufacturer
Fuel Use	5307.5	scf/hr	Calculated
Fuel Heat Value	1066.43	btu/scf	Gas Analysis
Emisson Controls	Catalyst/AFR		Manufacturer
Control Efficiency CH2O	50%		Manufacturer/Permit Condition
Control Efficiency NOx	0%		Manufacturer/JJJJ
Control Efficiency VOC	19%		Manufacturer/JJJJ
Control Efficiency CO	22%		Manufacturer/JJJJ
Engine Speed	1400	RPM	Manufacturer
Potential Operation	8760	hr/yr	
Sulfur Content	9,476	grains/MMscf	Gas Analysis with Margin
Sulfur Margin	400%	%	

Total Potential Emissions

Pollutant	Uncontrolled Emissions		Controlled Emissions	
	(lb/hr)	(tpy)	(lb/hr)	(tpy)
NOx	1.52	6.66	1.52	6.66
VOC (less formaldehyde)	1.07	4.66	1.07	4.66
Total VOC	1.70	7.46	1.38	6.06
CO	3.93	17.19	3.04	13.33
SO2	0.02	0.07	0.02	0.07
PM10	0.06	0.25	0.06	0.25
Formaldehyde	0.64	2.80	0.32	1.40
Acetaldehyde	0.05	0.21	0.05	0.21
Acrolein	0.03	0.13	0.03	0.13
Benzene	0.00	0.01	0.00	0.01
Toluene	0.00	0.01	0.00	0.01
Ethylbenzene	0.00	0.00	0.00	0.00
Xylene	0.00	0.00	0.00	0.00
n-Hexane	0.01	0.03	0.01	0.03
Total HAPs	0.73	3.19	0.41	1.79

Potential Emissions Per Engine

Pollutant	Uncontrolled Emissions				Controlled Emissions				Source of Emission Factor
	EF	Units	(lb/hr)	(tpy)	EF	Units	(lb/hr)	(tpy)	
NOx	1.00*	g/hp-hr	1.52	6.66	1.00	g/hp-hr	1.52	6.66	40 CFR 60 Subpart JJJJ
VOC (less formaldehyde)	0.70*	g/hp-hr	1.07	4.66	0.70	g/hp-hr	1.07	4.66	40 CFR 60 Subpart JJJJ
Total VOC***	1.12	g/hp-hr	1.70	7.46	0.91	g/hp-hr	1.38	6.06	40 CFR 60 Subpart JJJJ + CH2O
CO	2.58**	g/hp-hr	3.93	17.19	2.00	g/hp-hr	3.04	13.33	40 CFR 60 Subpart JJJJ
SO2****	2.79E-03	lb/mmBtu	0.02	0.07	2.79E-03	lb/mmBtu	0.02	0.07	EPA AP-42 Table 3.2-2
PM10*****	9.99E-03	lb/mmBtu	0.06	0.25	9.99E-03	lb/mmBtu	0.06	0.25	EPA AP-42 Table 3.2-2
Formaldehyde	0.42	g/hp-hr	0.64	2.80	0.21	g/hp-hr	0.32	1.40	Permit Condition
Acetaldehyde	8.36E-03	lb/mmBtu	0.05	0.21	8.36E-03	lb/mmBtu	0.05	0.21	EPA AP-42 Table 3.2-2
Acrolein	5.14E-03	lb/mmBtu	0.03	0.13	5.14E-03	lb/mmBtu	0.03	0.13	EPA AP-42 Table 3.2-2
Benzene	4.40E-04	lb/mmBtu	0.00	0.01	4.40E-04	lb/mmBtu	0.00	0.01	EPA AP-42 Table 3.2-2
Toluene	4.08E-04	lb/mmBtu	0.00	0.01	4.08E-04	lb/mmBtu	0.00	0.01	EPA AP-42 Table 3.2-2
Ethylbenzene	3.97E-05	lb/mmBtu	0.00	0.00	3.97E-05	lb/mmBtu	0.00	0.00	EPA AP-42 Table 3.2-2
Xylene	1.84E-04	lb/mmBtu	0.00	0.00	1.84E-04	lb/mmBtu	0.00	0.00	EPA AP-42 Table 3.2-2
n-Hexane	1.11E-03	lb/mmBtu	0.01	0.03	1.11E-03	lb/mmBtu	0.01	0.03	EPA AP-42 Table 3.2-2
Total HAPs			0.73	3.19			0.41	1.79	

* - Uncontrolled and controlled NOx and VOC emission factors based on 40 CFR 60 Subpart JJJJ standards as manufacturer emission factors are lower than JJJJ standards.
** - Uncontrolled and controlled emission factors for CO were taken from the Manufacturer technical data sheets and 40 CFR 60 Subpart JJJJ emission standards, respectively.
*** - Total VOC emissions were calculated to include formaldehyde.
**** - Sulfur emission factor from AP-42 Table 3.2-2 is ratio adjusted based on the max sulfur content when sulfur content is greater than 2,000 grains/MMscf.
***** - PM10 emissions include filterable and condensable particulates.

Sample Calculation for NOx

1.00 g/hp-hr * 690 hp / 453.59 g/lb * 8760 hr/yr / 2000 lb/ton = 6.66 tpy

Engine Emission Detail Sheet

Item	Value
Source Name	ENG-2
Description	Compressor Engine
Engine Use	Inlet Compression
Quantity	1
Make	Caterpillar
Model	Caterpillar G3516
Serial Number	TBD
Manufacture Date	After 7/1/2007
Fuel Type	Natural Gas
Engine Type	4SLB

Item	Value	Units	Source
Rated Horsepower	1380	hp	Manufacturer
Heat Rate	11.39	MMBtu/hr	Calculated
Fuel Consumption	8256	Btu/hp-hr	Manufacturer
Fuel Use	10683.54	scf/hr	Calculated
Fuel Heat Value	1066.43	btu/scf	Gas Analysis
Emisson Controls	Oxidation Catalyst		Manufacturer
Control Efficiency CH2O	80%		Manufacturer/Permit Condition
Control Efficiency NOx	0%		Manufacturer/JJJJ
Control Efficiency VOC	31%		Manufacturer/JJJJ
Control Efficiency CO	68%		Manufacturer/Permit Condition
Engine Speed	1400	RPM	Manufacturer
Potential Operation	8760	hr/yr	
Sulfur Content	9,476	grains/MMscf	Gas Analysis with Margin
Sulfur Margin	400%	%	

Total Potential Emissions

Pollutant	Uncontrolled Emissions		Controlled Emissions	
	(lb/hr)	(tpy)	(lb/hr)	(tpy)
NOx	3.04	13.33	3.04	13.33
VOC (less formaldehyde)	2.13	9.33	2.13	9.33
Total VOC	3.47	15.19	2.40	10.50
CO	7.39	32.39	2.37	10.40
SO2	0.03	0.14	0.03	0.14
PM10	0.11	0.50	0.11	0.50
Formaldehyde	1.34	5.86	0.27	1.17
Acetaldehyde	0.10	0.42	0.10	0.42
Acrolein	0.06	0.26	0.06	0.26
Benzene	0.01	0.02	0.01	0.02
Toluene	0.00	0.02	0.00	0.02
Ethylbenzene	0.00	0.00	0.00	0.00
Xylene	0.00	0.01	0.00	0.01
n-Hexane	0.01	0.06	0.01	0.06
Total HAPs	1.52	6.65	0.45	1.96

Potential Emissions Per Engine

Pollutant	Uncontrolled Emissions				Controlled Emissions				Source of Emission Factor
	EF	Units	(lb/hr)	(tpy)	EF	Units	(lb/hr)	(tpy)	
NOx	1.00*	g/hp-hr	3.04	13.33	1.00	g/hp-hr	3.04	13.33	40 CFR 60 Subpart JJJJ
VOC (less formaldehyde)	0.70*	g/hp-hr	2.13	9.33	0.70	g/hp-hr	2.13	9.33	40 CFR 60 Subpart JJJJ
Total VOC***	1.14	g/hp-hr	3.47	15.19	0.79	g/hp-hr	2.40	10.50	40 CFR 60 Subpart JJJJ + CH2O
CO	2.43**	g/hp-hr	7.39	32.39	0.78****	g/hp-hr	2.37	10.40	Permit Condition
SO2*****	2.79E-03	lb/mmBtu	0.03	0.14	2.79E-03	lb/mmBtu	0.03	0.14	EPA AP-42 Table 3.2-2
PM10******	9.99E-03	lb/mmBtu	0.11	0.50	9.99E-03	lb/mmBtu	0.11	0.50	EPA AP-42 Table 3.2-2
Formaldehyde	4.40E-01	g/hp-hr	1.34	5.86	8.80E-02	g/hp-hr	0.27	1.17	Permit Condition
Acetaldehyde	8.36E-03	lb/mmBtu	0.10	0.42	8.36E-03	lb/mmBtu	0.10	0.42	EPA AP-42 Table 3.2-2
Acrolein	5.14E-03	lb/mmBtu	0.06	0.26	5.14E-03	lb/mmBtu	0.06	0.26	EPA AP-42 Table 3.2-2
Benzene	4.40E-04	lb/mmBtu	0.01	0.02	4.40E-04	lb/mmBtu	0.01	0.02	EPA AP-42 Table 3.2-2
Toluene	4.08E-04	lb/mmBtu	0.00	0.02	4.08E-04	lb/mmBtu	0.00	0.02	EPA AP-42 Table 3.2-2
Ethylbenzene	3.97E-05	lb/mmBtu	0.00	0.00	3.97E-05	lb/mmBtu	0.00	0.00	EPA AP-42 Table 3.2-2
Xylene	1.84E-04	lb/mmBtu	0.00	0.01	1.84E-04	lb/mmBtu	0.00	0.01	EPA AP-42 Table 3.2-2
n-Hexane	1.11E-03	lb/mmBtu	0.01	0.06	1.11E-03	lb/mmBtu	0.01	0.06	EPA AP-42 Table 3.2-2
Total HAPs			1.52	6.65			0.45	1.96	

* - Uncontrolled and controlled emission factors for NOx and VOC are based on JJJJ standards as manufacturer uncontrolled emission factors are lower than JJJJ emission standards.
** - Uncontrolled emission factor for CO was taken from the Manufacturer technical data sheets. Controlled emission factor for CO is a permit condition requested in this application.
*** - Uncontrolled and controlled emission factor for Total VOC was calculated to include formaldehyde.
**** - Controlled CO emission factor is a permit condition requested in this application.
***** - Sulfur emission factor from AP-42 Table 3.2-2 is ratio adjusted based on the max sulfur content when sulfur content is greater than 2,000 grains/MMscf.
****** - PM10 emissions include filterable and condensable particulates.

Sample Calculation for NOx

1.00 g/hp-hr * 1380 hp / 453.59 g/lb * 8760 hr/yr / 2000 lb/ton = 13.33 tpy

Engine Emission Detail Sheet

Item	Value
Source Name	ENG 3-4
Description	Compressor Engine
Engine Use	Inlet Compression
Quantity	2
Make	Caterpillar
Model	Caterpillar G3516
Serial Number	TBD
Manufacture Date	After 7/1/2007
Fuel Type	Natural Gas
Engine Type	4SLB

Item	Value	Units	Source
Rated Horsepower	1380	hp	Manufacturer
Heat Rate	11.39	MMBtu/hr	Calculated
Fuel Consumption	8256	Btu/hp-hr	Manufacturer
Fuel Use	10683.54	scf/hr	Calculated
Fuel Heat Value	1066.43	btu/scf	Gas Analysis
Emisson Controls	Oxidation Catalyst		Manufacturer
Control Efficiency CH2O	80%		Manufacturer/Permit Condition
Control Efficiency NOx	0%		Manufacturer/JJJJ
Control Efficiency VOC	31%		Manufacturer/JJJJ
Control Efficiency CO	68%		Manufacturer/Permit Condition
Engine Speed	1400	RPM	Manufacturer
Potential Operation	8760	hr/yr	
Sulfur Content	9,476	grains/MMscf	Gas Analysis with Margin
Sulfur Margin	400%	%	

Total Potential Emissions

Pollutant	Uncontrolled Emissions		Controlled Emissions	
	(lb/hr)	(tpy)	(lb/hr)	(tpy)
NOx	6.09	26.66	6.09	26.66
VOC (less formaldehyde)	4.26	18.66	4.26	18.66
Total VOC	6.94	30.39	4.80	21.00
CO	14.79	64.77	4.75	20.79
SO2	0.06	0.28	0.06	0.28
PM10	0.23	1.00	0.23	1.00
Formaldehyde	2.68	11.73	0.54	2.35
Acetaldehyde	0.19	0.83	0.19	0.83
Acrolein	0.12	0.51	0.12	0.51
Benzene	0.01	0.04	0.01	0.04
Toluene	0.01	0.04	0.01	0.04
Ethylbenzene	0.00	0.00	0.00	0.00
Xylene	0.00	0.02	0.00	0.02
n-Hexane	0.03	0.11	0.03	0.11
Total HAPs	3.03	13.29	0.89	3.91

Potential Emissions Per Engine

Pollutant	Uncontrolled Emissions				Controlled Emissions				Source of Emission Factor
	EF	Units	(lb/hr)	(tpy)	EF	Units	(lb/hr)	(tpy)	
NOx	1.00*	g/hp-hr	3.04	13.33	1.00	g/hp-hr	3.04	13.33	40 CFR 60 Subpart JJJJ
VOC (less formaldehyde)	0.70*	g/hp-hr	2.13	9.33	0.70	g/hp-hr	2.13	9.33	40 CFR 60 Subpart JJJJ
Total VOC***	1.14	g/hp-hr	3.47	15.19	0.79	g/hp-hr	2.40	10.50	40 CFR 60 Subpart JJJJ + CH2O
CO	2.43**	g/hp-hr	7.39	32.39	0.78	g/hp-hr	2.37	10.40	Permit Condition
SO2*****	2.79E-03	lb/mmBtu	0.03	0.14	2.79E-03	lb/mmBtu	0.03	0.14	EPA AP-42 Table 3.2-2
PM10******	9.99E-03	lb/mmBtu	0.11	0.50	9.99E-03	lb/mmBtu	0.11	0.50	EPA AP-42 Table 3.2-2
Formaldehyde	4.40E-01	g/hp-hr	1.34	5.86	8.80E-02	g/hp-hr	0.27	1.17	Permit Condition
Acetaldehyde	8.36E-03	lb/mmBtu	0.10	0.42	8.36E-03	lb/mmBtu	0.10	0.42	EPA AP-42 Table 3.2-2
Acrolein	5.14E-03	lb/mmBtu	0.06	0.26	5.14E-03	lb/mmBtu	0.06	0.26	EPA AP-42 Table 3.2-2
Benzene	4.40E-04	lb/mmBtu	0.01	0.02	4.40E-04	lb/mmBtu	0.01	0.02	EPA AP-42 Table 3.2-2
Toluene	4.08E-04	lb/mmBtu	0.00	0.02	4.08E-04	lb/mmBtu	0.00	0.02	EPA AP-42 Table 3.2-2
Ethylbenzene	3.97E-05	lb/mmBtu	0.00	0.00	3.97E-05	lb/mmBtu	0.00	0.00	EPA AP-42 Table 3.2-2
Xylene	1.84E-04	lb/mmBtu	0.00	0.01	1.84E-04	lb/mmBtu	0.00	0.01	EPA AP-42 Table 3.2-2
n-Hexane	1.11E-03	lb/mmBtu	0.01	0.06	1.11E-03	lb/mmBtu	0.01	0.06	EPA AP-42 Table 3.2-2
Total HAPs			1.52	6.65			0.45	1.96	

* - Uncontrolled and controlled emission factors for NOx and VOC are based on JJJJ standards as manufacturer uncontrolled emission factors are lower than JJJJ emission standards.
** - Uncontrolled emission factor for CO was taken from the Manufacturer technical data sheets. Controlled emission factor for CO is a permit condition requested in this application.
*** - Uncontrolled and controlled emission factor for Total VOC was calculated to include formaldehyde.
**** - Controlled CO emission factor is a permit condition requested in this application.
***** - Sulfur emission factor from AP-42 Table 3.2-2 is ratio adjusted based on the max sulfur content when sulfur content is greater than 2,000 grains/MMscf.
****** - PM10 emissions include filterable and condensable particulates.

Sample Calculation for NOx

1.00 g/hp-hr * 1380 hp / 453.59 g/lb * 8760 hr/yr / 2000 lb/ton = 13.33 tpy

Engine Emission Detail Sheet

Item	Value
Source Name	ENG 5-8
Description	Compressor Engine
Engine Use	Residue Compression
Quantity	4
Make	Caterpillar
Model	Caterpillar G3516
Serial Number	TBD
Manufacture Date	11/20/2017, After 7/1/2007
Fuel Type	Natural Gas
Engine Type	4SLB

Item	Value	Units	Source
Rated Horsepower	1380	hp	Manufacturer
Heat Rate	11.39	MMBtu/hr	Calculated
Fuel Consumption	8256	Btu/hp-hr	Manufacturer
Fuel Use	10683.54	scf/hr	Calculated
Fuel Heat Value	1066.43	btu/scf	Gas Analysis
Emisson Controls	Oxidation Catalyst		Manufacturer
Control Efficiency CH2O	80%		Manufacturer/Permit Condition
Control Efficiency NOx	0%		Manufacturer/JJJJ
Control Efficiency VOC	31%		Manufacturer/JJJJ
Control Efficiency CO	68%		Manufacturer/Permit Condition
Engine Speed	1400	RPM	Manufacturer
Potential Operation	8760	hr/yr	
Sulfur Content	9,476	grains/MMscf	AP42 with margin
Sulfur Margin	400%	%	

Total Potential Emissions

Pollutant	Uncontrolled Emissions		Controlled Emissions	
	(lb/hr)	(tpy)	(lb/hr)	(tpy)
NOx	12.17	53.31	12.17	53.31
VOC (less formaldehyde)	8.52	37.32	8.52	37.32
Total VOC	13.88	60.78	9.59	42.01
CO	29.58	129.55	9.49	41.58
SO2	0.13	0.56	0.13	0.56
PM10	0.46	1.99	0.46	1.99
Formaldehyde	5.35	23.45	1.07	4.69
Acetaldehyde	0.38	1.67	0.38	1.67
Acrolein	0.23	1.03	0.23	1.03
Benzene	0.02	0.09	0.02	0.09
Toluene	0.02	0.08	0.02	0.08
Ethylbenzene	0.00	0.01	0.00	0.01
Xylene	0.01	0.04	0.01	0.04
n-Hexane	0.05	0.22	0.05	0.22
Total HAPs	6.07	26.58	1.79	7.82

Potential Emissions Per Engine

Pollutant	Uncontrolled Emissions				Controlled Emissions				Source of Emission Factor
	EF	Units	(lb/hr)	(tpy)	EF	Units	(lb/hr)	(tpy)	
NOx	1.00*	g/hp-hr	3.04	13.33	1.00	g/hp-hr	3.04	13.33	40 CFR 60 Subpart JJJJ
VOC (less formaldehyde)	0.70*	g/hp-hr	2.13	9.33	0.70	g/hp-hr	2.13	9.33	40 CFR 60 Subpart JJJJ
Total VOC***	1.14	g/hp-hr	3.47	15.19	0.79	g/hp-hr	2.40	10.50	40 CFR 60 Subpart JJJJ + CH2O
CO	2.43**	g/hp-hr	7.39	32.39	0.78	g/hp-hr	2.37	10.40	Permit Condition
SO2*****	2.79E-03	lb/mmBtu	0.03	0.14	2.79E-03	lb/mmBtu	0.03	0.14	EPA AP-42 Table 3.2-2
PM10******	9.99E-03	lb/mmBtu	0.11	0.50	9.99E-03	lb/mmBtu	0.11	0.50	EPA AP-42 Table 3.2-2
Formaldehyde	4.40E-01	g/hp-hr	1.34	5.86	8.80E-02	g/hp-hr	0.27	1.17	Permit Condition
Acetaldehyde	8.36E-03	lb/mmBtu	0.10	0.42	8.36E-03	lb/mmBtu	0.10	0.42	EPA AP-42 Table 3.2-2
Acrolein	5.14E-03	lb/mmBtu	0.06	0.26	5.14E-03	lb/mmBtu	0.06	0.26	EPA AP-42 Table 3.2-2
Benzene	4.40E-04	lb/mmBtu	0.01	0.02	4.40E-04	lb/mmBtu	0.01	0.02	EPA AP-42 Table 3.2-2
Toluene	4.08E-04	lb/mmBtu	0.00	0.02	4.08E-04	lb/mmBtu	0.00	0.02	EPA AP-42 Table 3.2-2
Ethylbenzene	3.97E-05	lb/mmBtu	0.00	0.00	3.97E-05	lb/mmBtu	0.00	0.00	EPA AP-42 Table 3.2-2
Xylene	1.84E-04	lb/mmBtu	0.00	0.01	1.84E-04	lb/mmBtu	0.00	0.01	EPA AP-42 Table 3.2-2
n-Hexane	1.11E-03	lb/mmBtu	0.01	0.06	1.11E-03	lb/mmBtu	0.01	0.06	EPA AP-42 Table 3.2-2
Total HAPs			1.52	6.65			0.45	1.96	

* - Uncontrolled and controlled emission factors for NOx and VOC are based on JJJJ standards as manufacturer uncontrolled emission factors are lower than JJJJ emission standards.
** - Uncontrolled emission factor for CO was taken from the Manufacturer technical data sheets. Controlled emission factor for CO is a permit condition requested in this application.
*** - Uncontrolled and controlled emission factor for Total VOC was calculated to include formaldehyde.
**** - Controlled CO emission factor is a permit condition requested in this application.
***** - Sulfur emission factor from AP-42 Table 3.2-2 is ratio adjusted based on the max sulfur content when sulfur content is greater than 2,000 grains/MMscf.
****** - PM10 emissions include filterable and condensable particulates.

Sample Calculation for NOx

1.00 g/hp-hr * 1380 hp / 453.59 g/lb * 8760 hr/yr / 2000 lb/ton = 13.33 tpy

Engine Emission Detail Sheet

Item	Value
Source Name	ENG 9-12
Description	Compressor Engine
Engine Use	Residue Compression
Quantity	4
Make	Waukesha
Model	Waukesha 7044GSI
Serial Number	TBD
Manufacture Date	After 7/1/2010
Fuel Type	Natural Gas
Engine Type	4SRB

Item	Value	Units	Source
Rated Horsepower	1680	hp	Manufacturer
Heat Rate	13.24	MMBtu/hr	Calculated
Fuel Consumption	7881	Btu/hp-hr	Manufacturer
Fuel Use	12415.29	scf/hr	Calculated
Fuel Heat Value	1066.43	btu/scf	Gas Analysis
Emisson Controls	NSCR		Manufacturer
Control Efficiency CH2O	0%		Performance Data
Control Efficiency NOx	96%		Performance Data
Control Efficiency VOC	51%		Performance Data
Control Efficiency CO	96%		Performance Data
Engine Speed	1200	RPM	Manufacturer
Potential Operation	8760	hr/yr	
Sulfur Content	9,476	grains/MMscf	AP42 with margin
Sulfur Margin	400%	%	

Total Potential Emissions

Pollutant	Uncontrolled Emissions		Controlled Emissions	
	(lb/hr)	(tpy)	(lb/hr)	(tpy)
NOx	197.07	863.18	7.59	33.26
VOC (less formaldehyde)	N/A	N/A	N/A	N/A
Total VOC	5.33	23.36	2.59	11.36
CO	170.40	746.36	6.30	27.58
SO2	0.15	0.65	0.15	0.65
PM10	1.03	4.50	1.03	4.50
Formaldehyde	0.74	3.24	0.74	3.25
Acetaldehyde	0.15	0.65	0.15	0.65
Acrolein	0.14	0.61	0.14	0.61
Benzene	0.08	0.37	0.08	0.37
Toluene	0.03	0.13	0.03	0.13
Ethylbenzene	0.00	0.01	0.00	0.01
Xylene	0.01	0.05	0.01	0.05
n-Hexane	N/A	N/A	N/A	N/A
Total HAPs	1.15	5.05	1.15	5.05

Potential Emissions Per Engine

Pollutant	Uncontrolled Emissions				Controlled Emissions						Source of Emission Factor
	EF	Units	(lb/hr)	(tpy)	EF	Safety Factor	EF With Safety Factor	Units	(lb/hr)	(tpy)	
NOx**	13.30***	g/hp-hr	49.27	215.80	0.41	25%	0.51	g/hp-hr	1.90	8.32	Performance Data
VOC (less formaldehyde)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total VOC****	0.36*	g/hp-hr	1.33	5.84	0.14	25%	0.18	g/hp-hr	0.65	2.84	Performance Data
CO**	11.50***	g/hp-hr	42.60	186.59	0.34	25%	0.43	g/hp-hr	1.57	6.90	Performance Data
SO2*****	2.79E-03	lb/mmBtu	0.04	0.16	2.79E-03	N/A	N/A	lb/mmBtu	0.04	0.16	EPA AP-42 Table 3.2-3
PM10******	1.94E-02	lb/mmBtu	0.26	1.13	1.94E-02	N/A	N/A	lb/mmBtu	0.26	1.13	EPA AP-42 Table 3.2-3
Formaldehyde	5.00E-02	g/hp-hr	0.19	0.81	5.00E-02	N/A	N/A	g/hp-hr	0.19	0.81	Performance Data
Acetaldehyde	2.79E-03	lb/mmBtu	0.04	0.16	2.79E-03	N/A	N/A	lb/mmBtu	0.04	0.16	EPA AP-42 Table 3.2-3
Acrolein	2.63E-03	lb/mmBtu	0.03	0.15	2.63E-03	N/A	N/A	lb/mmBtu	0.03	0.15	EPA AP-42 Table 3.2-3
Benzene	1.58E-03	lb/mmBtu	0.02	0.09	1.58E-03	N/A	N/A	lb/mmBtu	0.02	0.09	EPA AP-42 Table 3.2-3
Toluene	5.58E-04	lb/mmBtu	0.01	0.03	5.58E-04	N/A	N/A	lb/mmBtu	0.01	0.03	EPA AP-42 Table 3.2-3
Ethylbenzene	2.48E-05	lb/mmBtu	0.00	0.00	2.48E-05	N/A	N/A	lb/mmBtu	0.00	0.00	EPA AP-42 Table 3.2-3
Xylene	1.95E-04	lb/mmBtu	0.00	0.01	1.95E-04	N/A	N/A	lb/mmBtu	0.00	0.01	EPA AP-42 Table 3.2-3
n-Hexane	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	EPA AP-42 Table 3.2-3
Total HAPs			0.29	1.26					0.29	1.26	

* - Uncontrolled emission factor for VOC is based on NMHC emission factor from performance data sheet.
** - Controlled emission factor for VOC is based on performance data sheet. A 25% safety factor was added to the controlled VOC emission factor.
*** - Uncontrolled and controlled emission factor for NOx and CO were taken from the performance data sheet. A 25% safety factor was added to controlled emission factors for NOx and CO.

**** - Uncontrolled and controlled emission factor for Total VOC was calculated to include formaldehyde.
***** - Sulfur emission factor from AP-42 Table 3.2-3 is ratio adjusted based on the max sulfur content when sulfur content is greater than 2,000 grains/MMscf.
****** - PM10 emissions include filterable and condensable particulates.

Sample Calculation for NOx

0.41 g/hp-hr * 1680 hp / 453.59 g/lb * 8760 hr/yr / 2000 lb/ton = 8.32 tpy

Engine Emission Detail Sheet

Item	Value
Source Name	GEN-1
Description	Generator Engine
Engine Use	Generator
Quantity	1
Make	Olympian
Model	250LG6
Serial Number	TBD
Manufacture Date	After 7/1/2010
Fuel Type	Natural Gas
Engine Type	4SRB

Item	Value	Units	Source
Rated Horsepower	374	hp	Manufacturer
Heat Rate	3.18	MMBtu/hr	Calculated
Fuel Consumption	8506	Btu/hp-hr	Manufacturer
Fuel Use	2983	scf/hr	Calculated
Fuel Heat Value	1066.43	btu/scf	Gas Analysis
Emission Controls	TBD		Manufacturer
Control Efficiency CH2O	0%		AP42
Control Efficiency NOx	0%		JJJJ
Control Efficiency VOC	0%		JJJJ
Control Efficiency CO	0%		JJJJ
Engine Speed	1800	RPM	Manufacturer
Potential Operation	499	hr/yr	
Sulfur Content	8,000	grains/MMscf	AP42 with margin
Sulfur Margin	400%	%	

Potential Emissions Per Engine

Pollutant	Uncontrolled Emissions				Controlled Emissions				Source of Emission Factor
	EF	Units	(lb/hr)	(tpy)	EF	Units	(lb/hr)	(tpy)	
Nox	1.00*	g/hp-hr	0.82	0.21	1.00	g/hp-hr	0.82	0.21	40 CFR 60 Subpart JJJJ
VOC (less formaldehyde)	0.70*	g/hp-hr	0.58	0.14	0.70	g/hp-hr	0.58	0.14	40 CFR 60 Subpart JJJJ
Total VOC**	0.78	g/hp-hr	0.64	0.16	0.78	g/hp-hr	0.64	0.16	40 CFR 60 Subpart JJJJ + CH2O
CO	2.00*	g/hp-hr	1.65	0.41	2.00	g/hp-hr	1.65	0.41	40 CFR 60 Subpart JJJJ
SO2****	2.35E-03	lb/mmBtu	0.01	0.00	2.35E-03	lb/mmBtu	0.01	0.00	EPA AP-42 Table 3.2-3
PM10*****	1.94E-02	lb/mmBtu	0.06	0.02	1.94E-02	lb/mmBtu	0.06	0.02	EPA AP-42 Table 3.2-3
Formaldehyde	2.05E-02	lb/mmBtu	0.07	0.02	2.05E-02	lb/mmBtu	0.07	0.02	EPA AP-42 Table 3.2-3
Acetaldehyde	2.79E-03	lb/mmBtu	0.01	0.00	2.79E-03	lb/mmBtu	0.01	0.00	EPA AP-42 Table 3.2-3
Acrolein	2.63E-03	lb/mmBtu	0.01	0.00	2.63E-03	lb/mmBtu	0.01	0.00	EPA AP-42 Table 3.2-3
Benzene	1.58E-03	lb/mmBtu	0.01	0.00	1.58E-03	lb/mmBtu	0.01	0.00	EPA AP-42 Table 3.2-3
Toluene	5.58E-04	lb/mmBtu	0.00	0.00	5.58E-04	lb/mmBtu	0.00	0.00	EPA AP-42 Table 3.2-3
Ethylbenzene	2.48E-05	lb/mmBtu	0.00	0.00	2.48E-05	lb/mmBtu	0.00	0.00	EPA AP-42 Table 3.2-3
Xylene	1.95E-04	lb/mmBtu	0.00	0.00	1.95E-04	lb/mmBtu	0.00	0.00	EPA AP-42 Table 3.2-3
n-Hexane	N/A	lb/mmBtu	N/A	N/A	N/A	lb/mmBtu	N/A	N/A	EPA AP-42 Table 3.2-3
Total HAPs			0.09	0.02			0.09	0.02	

* - Uncontrolled and controlled emission factors for NOx, CO, and VOC are based on JJJJ standards as manufacturer uncontrolled emission factors are lower than JJJJ emission standards.
** - Uncontrolled emission factor for Total VOC was calculated to include formaldehyde.
*** - Controlled emission factors are permit conditions requested in this application.
**** - Sulfur emission factor from AP-42 Table 1.4-2 is ratio adjusted based on the max sulfur content when sulfur content is greater than 2,000 grains/MMscf.
***** - PM10 emissions include filterable and condensable particulates.

Sample Calculation for NOx

1.00 g/hp-hr * 374 hp / 453.59 g/lb * 499 hr/yr / 2000 lb/ton = 0.21 tpy

Engine Emission Detail Sheet

Item	Value	
Source Name	GEN-2	
Description	Generator Engine	
Quantity	1	
Make	Generac	
Model	TBD	
Serial Number	TBD	
Manufacture Date	2019	
Fuel Type	Diesel Tier 3	
Engine Type	Diesel	
Liters	3.4	L
Cylinders	4	

Item	Value	Units	Source		
Rated Horsepower	65	hp	Manufacturer		
	48	kW	Manufacturer	20.00%	Efficiency
	40	kWe	Manufacturer		
Heat Rate	0.65	MMBtu/hr	Calculated		
Fuel Consumption	10000	Btu/hp-hr	Engineering Estimate		
Heating Value	137000	Btu/gal			
Heat Rate	0.65	MMBtu/hr			
Emisson Controls	TBD		Manufacturer		
Engine Speed	TBD	RPM	Manufacturer		
Potential Operation	499	hr/yr			

Potential Emissions Per Engine

Pollutant	Uncontrolled Emissions				Controlled Emissions				Source of Emission Factor
	EF	Units	(lb/hr)	(tpy)	EF	Units	(lb/hr)	(tpy)	
NOx	5.59	g/hp-hr	0.80	0.20	5.59	g/hp-hr	0.80	0.20	40 CFR 89.112
Total VOC	1.40	g/hp-hr	0.20	0.05	1.40	g/hp-hr	0.20	0.05	40 CFR 89.112
CO	3.73	g/hp-hr	0.53	0.13	3.73	g/hp-hr	0.53	0.13	40 CFR 89.112
SO2*	3.80E-04	lb/mmBtu	0.00	0.00	3.80E-04	lb/mmBtu	0.00	0.00	Engineering Calculation
PM10	8.95E-01	g/hp-hr	0.13	0.00	8.95E-01	g/hp-hr	0.13	0.00	40 CFR 89.112
Formaldehyde	1.18E-03	lb/mmBtu	0.00	0.00	1.18E-03	lb/mmBtu	0.00	0.00	AP42 Table 3.3-2
Acetaldehyde	7.67E-04	lb/mmBtu	0.00	0.00	7.67E-04	lb/mmBtu	0.00	0.00	AP42 Table 3.3-2
Acrolein	9.25E-05	lb/mmBtu	0.00	0.00	9.25E-05	lb/mmBtu	0.00	0.00	AP42 Table 3.3-2
Benzene	9.33E-04	lb/mmBtu	0.00	0.00	9.33E-04	lb/mmBtu	0.00	0.00	AP42 Table 3.3-2
Ethylbenzene	N/A	lb/mmBtu	N/A	N/A	N/A	lb/mmBtu	N/A	N/A	AP42 Table 3.3-2
n-Hexane	N/A	lb/mmBtu	N/A	N/A	N/A	lb/mmBtu	N/A	N/A	AP42 Table 3.3-2
Toluene	4.09E-04	lb/mmBtu	0.00	0.00	4.09E-04	lb/mmBtu	0.00	0.00	AP42 Table 3.3-2
Xylene	2.85E-04	lb/mmBtu	0.00	0.00	2.85E-04	lb/mmBtu	0.00	0.00	AP42 Table 3.3-2
Total HAPs			0.00	0.00			0.00	0.00	

* - Sulfur Dioxide emissions based on the fuel sulfur requirement of 15 ppm/gallon (40 CFR 80.510).

NOx and VOC % of total based on ratio provided from NM		
Pollutant	lb/hp-hr	% of Total
NOx	0.03	75.00%
TOC Exhaust	0.00	25.00%
Total	0.03	100.00%

1 kW =	1.341	hp	
Conversion of EPA Tier 3 Standard			
Pollutant	g/kW-hr	g/kW-hr	g/hp-hr
NOx	7.5	7.50	5.59
VOC		1.88	1.40
CO	5	5.00	3.73
PM10	1.2	1.20	0.89
* NOx and VOC apportioned using the AP-42 Table 3.3-1			

Sample Calculation for NOx

5.59 g/hp-hr * 65 hp / 453.59 g/lb * 499 hr/yr / 2000 lb/ton = 0.20 tpy

Tank Detail Sheet

Equipment Source Name	TK-1		Tank Height	25	ft		
Source Description	Gunbarrel Tank		Tank Diameter	12	ft		
Quantity	1		Potential Operation	8,760	hr/yr		
Tank Capacity	500	bbl (each)	Potential Oil Throughput	766	bbl/yr	2.1	avg. bbl/day
Total Tank Capacity	500	bbl	Potential Throughput Per Tank	766	bbl/yr/tk	2.1	avg. bbl/day/tk
Control Efficiency	95%		Throughput Margin	0.00%			
			Calendar Year	2019			

Total Potential Emissions

Pollutant	Uncontrolled		Controlled	
	(lb/hr)	(ton/yr)	(lb/hr)	(ton/yr)
VOC	22.64	99.18	1.13	4.96
Benzene	0.23	0.99	0.01	0.05
Toluene	0.23	0.99	0.01	0.05
Ethylbenzene	0.02	0.10	0.00	0.00
Xylenes	0.02	0.10	0.00	0.00
n-Hexane	0.91	3.97	0.05	0.20
2,2,4-Trimethylpentane	0.02	0.10	0.00	0.00
Total HAPs	1.43	6.25	0.07	0.31

Potential Emissions Per Tank

Pollutant	EF	Uncontrolled		Controlled		Source of Emission Factor
	(lb/bbl)	(lb/hr)	(ton/yr)	(lb/hr)	(ton/yr)	
VOC	258.95	22.64	99.18	1.13	4.96	Engineering Calculation
Benzene	2.59	0.23	0.99	0.01	0.05	Engineering Calculation
Toluene	2.59	0.23	0.99	0.01	0.05	Engineering Calculation
Ethylbenzene	0.26	0.02	0.10	0.00	0.00	Engineering Calculation
Xylenes	0.26	0.02	0.10	0.00	0.00	Engineering Calculation
n-Hexane	10.36	0.91	3.97	0.05	0.20	Engineering Calculation
2,2,4-Trimethylpentane	0.26	0.02	0.10	0.00	0.00	Engineering Calculation
Total HAPs		1.43	6.25	0.07	0.31	

Process Streams	39 To Flare	40 To Slop Oil
Composition	Solved	Solved
Phase: **Total**	VSSL-105	VSSL-105
	--	--
Mole Fraction	%	%
Methane	14.0050	0.095017
Ethane	15.1670	0.87808
Propane	28.5610	7.41773
i-Butane	9.11843	7.17785
n-Butane	26.0267	34.2548
i-Pentane	3.42445	12.6336
n-Pentane	2.60785	13.7462
n-Hexane	0.849356	20.9208
n-Heptane	0.0200098	1.87120
C8	0.00266528	1.00249
Water	0.00304587	0.000043916
N2	0.122357	0.000185748
CO2	0.091903	0.00194386
H2S	0.000283058	1.96086E-05
Triethylene Glycol	0	0
EG	0	0
MeOH	0	0
CHEMTHERM 550	0	0

Process Streams	39 To Flare	40 To Slop Oil
Composition	Solved	Solved
Phase: **Total**	VSSL-105	VSSL-105
Process Streams	**39 To Flare**	**40 To Slop Oil**
Mass Fraction	%	%
Methane	4.9915	0.0225109
Ethane	10.1321	0.389921
Propane	27.9801	4.83045
i-Butane	11.77447	6.16109
n-Butane	33.6078	29.4025
i-Pentane	5.48907	13.4610
n-Pentane	4.18014	14.6465
n-Hexane	1.62612	26.6246
n-Heptane	0.0445449	2.76896
C8	0.00676389	1.69113
Water	0.00121908	1.16839E-05
N2	0.076151	0.000076844
CO2	0.089858	0.00126337
H2S	0.000214321	9.86911E-06
Triethylene Glycol	0	0
EG	0	0
MeOH	0	0
CHEMTHERM 550	0	0

Process Streams		39 To Flare	40 To Slop Oil
Properties	Status:	Solved	Solved
Phase: **Total**	From Block:	VSSL-105	VSSL-105
	To Block:	--	--
Property	**Units**		
Temperature	°F	16.19949	16.19949
Pressure	psig	0.125*	0.125
Mole Fraction Vapor	%	100	0
Mole Fraction Light Liquid	%	0	100
Mole Fraction Heavy Liquid	%	0	0
Molecular Weight	lb/lbmol	45.0112	67.7141
Mass Density	lb/ft^3	0.1209179	40.1146
Molar Flow	lbmol/h	13.8689	6.79227
Mass Flow	lb/h	624.256	459.933
Vapor Volumetric Flow	ft^3/h	5162.64	11.4655
Liquid Volumetric Flow	gpm	643.654	1.42946
Std Vapor Volumetric Flow	MMSCFD	0.126313	0.0618614
Std Liquid Volumetric Flow	sgpm	2.45639	1.50085
Compressibility		0.978572	0.00443751
Specific Gravity		1.55412	0.643185
API Gravity			97.3979
Enthalpy	Btu/h	-665846	-501320
Mass Enthalpy	Btu/lb	-1066.62	-1089.99
Mass Cp	Btu/(lb*°F)	0.378222	0.521661
Ideal Gas CpCv Ratio		1.13354	1.08773
Dynamic Viscosity	cP	0.00739850	0.280324
Kinematic Viscosity	cSt	3.81972	0.436251
Thermal Conductivity	Btu/(h*ft*°F)	0.0089001	0.0713101?
Surface Tension	lbf/ft		0.00123561?
Net Ideal Gas Heating Value	Btu/ft^3	2353.24	3485.33
Net Liquid Heating Value	Btu/lb	19688.6	19372.5
Gross Ideal Gas Heating Value	Btu/ft^3	2557.29	3771.13
Gross Liquid Heating Value	Btu/lb	21409.2	20974.6

1 - Uncontrolled emissions were calculated from Promax output.

2- No HAP emissions are reported by Promax; therefore, these emissions were estimated based on the ration of HAP's to total VOC's from a conservative engineering assumption.

Tank Detail Sheet

Equipment Source Name	TK 2-5		Tank Height	20	ft		
Source Description	Stabilized Condensate Tank		Tank Diameter	12	ft		
Quantity	4		Potential Operation	8760	hr/yr		
Tank Capacity	400	bbl (each)	Potential Throughput	219,000	bbl/yr	600.0	avg. bbl/day
Total Tank Capacity	1600	bbl	Potential Throughput Per Tank	54,750	bbl/yr/tk	150.0	avg. bbl/day/tk
Control Efficiency	95%		Calendar Year	2019			

Total Potential Emissions

Pollutant	Uncontrolled		Controlled	
	(lb/hr)	(ton/yr)	(lb/hr)	(ton/yr)
VOC	7.98	34.95	0.40	1.75
Benzene	0.08	0.35	0.00	0.02
Toluene	0.08	0.35	0.00	0.02
Ethylbenzene	0.01	0.03	0.00	0.00
Xylenes	0.01	0.03	0.00	0.00
n-Hexane	0.32	1.40	0.02	0.07
2,2,4-Trimethylpentane	0.01	0.03	0.00	0.00
Total HAPs	0.50	2.20	0.03	0.11

Potential Emissions Per Tank

Pollutant	HAP Wt %	Uncontrolled		Controlled		Source of Emission Factor
	(%)	(lb/hr)	(ton/yr)	(lb/hr)	(ton/yr)	
VOC		1.99	8.74	0.10	0.44	EPA TANKS 4.0.9d
Benzene	1.00%	0.02	0.09	0.00	0.00	Engineering Calculation
Toluene	1.00%	0.02	0.09	0.00	0.00	Engineering Calculation
Ethylbenzene	0.10%	0.00	0.01	0.00	0.00	Engineering Calculation
Xylenes	0.10%	0.00	0.01	0.00	0.00	Engineering Calculation
n-Hexane	4.00%	0.08	0.35	0.00	0.02	Engineering Calculation
2,2,4-Trimethylpentane	0.10%	0.00	0.01	0.00	0.00	Engineering Calculation
Total HAPs		0.13	0.55	0.01	0.03	

1 - Uncontrolled emissions were taken directly from the EPA TANKS 4.0.9d output.

2 - No HAP emissions are reported by EPA Tanks 4.0.9d; therefore, these emissions were estimated based on the ration of HAP's to total VOC's from a conservative engineering assumption.

Tank Detail Sheet

Equipment Source Name	TK-6		Tank Height	20	ft		
Source Description	Slop Oil Tank		Tank Diameter	12	ft		
Quantity	1		Potential Operation	8760	hr/yr		
Tank Capacity	400	bbl (each)	Potential Throughput	1,532	bbl/yr	4.2	avg. bbl/day
Total Tank Capacity	400	bbl	Potential Throughput Per Tank	1,532	bbl/yr/tk	4.2	avg. bbl/day/tk
Control Efficiency	95%		Margin	100%			
			Calendar Year	2019			

Total Potential Emissions

Pollutant	Uncontrolled		Controlled	
	(lb/hr)	(ton/yr)	(lb/hr)	(ton/yr)
VOC	0.85	3.72	0.04	0.19
Benzene	0.01	0.04	0.00	0.00
Toluene	0.01	0.04	0.00	0.00
Ethylbenzene	0.00	0.00	0.00	0.00
Xylenes	0.00	0.00	0.00	0.00
n-Hexane	0.03	0.15	0.00	0.01
2,2,4-Trimethylpentane	0.00	0.00	0.00	0.00
Total HAPs	0.05	0.23	0.00	0.01

Potential Emissions Per Tank

Pollutant	HAP Wt %	Uncontrolled		Controlled		Source of Emission Factor
	(%)	(lb/hr)	(ton/yr)	(lb/hr)	(ton/yr)	
VOC		0.85	3.72	0.04	0.19	EPA TANKS 4.0.9d
Benzene	1.00%	0.01	0.04	0.00	0.00	Engineering Calculation
Toluene	1.00%	0.01	0.04	0.00	0.00	Engineering Calculation
Ethylbenzene	0.10%	0.00	0.00	0.00	0.00	Engineering Calculation
Xylenes	0.10%	0.00	0.00	0.00	0.00	Engineering Calculation
n-Hexane	4.00%	0.03	0.15	0.00	0.01	Engineering Calculation
2,2,4-Trimethylpentane	0.10%	0.00	0.00	0.00	0.00	Engineering Calculation
Total HAPs		0.05	0.23	0.00	0.01	

1 - Uncontrolled emissions were taken directly from the EPA TANKS 4.0.9d output.

2 - No HAP emissions are reported by EPA Tanks 4.0.9d; therefore, these emissions were estimated based on the ration of HAP's to total VOC's from a conservative engineering assumption.

Tank Detail Sheet

Equipment Source Name	PWTK-1		Tank Height	20	ft	
Source Description	Produced Water Tank		Tank Diameter	12	ft	
Quantity	1		Potential Operation	8760	hr/yr	
Tank Capacity	400	bbl (each)	Potential PW Throughput	1,532	bbl/yr	4.2 avg. bbl/day
Total Tank Capacity	400	bbl	Potential Oil from PW Throughput	15	bbl/yr	0.1 avg. bbl/day
Control Efficiency	95%		Potential Oil Throughput Per Tank	15	bbl/yr/tk	0.1 avg. bbl/day/tk
			Margin	100%		
			Calendar Year	2019		

Total Potential Emissions

Pollutant	Uncontrolled		Controlled	
	(lb/hr)	(ton/yr)	(lb/hr)	(ton/yr)
VOC	0.00	0.00	0.00	0.00
Benzene	0.00	0.00	0.00	0.00
Toluene	0.00	0.00	0.00	0.00
Ethylbenzene	0.00	0.00	0.00	0.00
Xylenes	0.00	0.00	0.00	0.00
n-Hexane	0.00	0.00	0.00	0.00
2,2,4-Trimethylpentane	0.00	0.00	0.00	0.00
Total HAPs	0.00	0.00	0.00	0.00

Potential Emissions Per Tank

Pollutant	HAP Wt %	Uncontrolled		Controlled		Source of Emission Factor
	(%)	(lb/hr)	(ton/yr)	(lb/hr)	(ton/yr)	
VOC		0.00	0.00	0.00	0.00	EPA TANKS 4.0.9d
Benzene	1.00%	0.00	0.00	0.00	0.00	Engineering Calculation
Toluene	1.00%	0.00	0.00	0.00	0.00	Engineering Calculation
Ethylbenzene	0.10%	0.00	0.00	0.00	0.00	Engineering Calculation
Xylenes	0.10%	0.00	0.00	0.00	0.00	Engineering Calculation
n-Hexane	4.00%	0.00	0.00	0.00	0.00	Engineering Calculation
2,2,4-Trimethylpentane	0.10%	0.00	0.00	0.00	0.00	Engineering Calculation
Total HAPs		0.00	0.00	0.00	0.00	

1 - Uncontrolled emissions were taken directly from the EPA TANKS 4.0.9d output.
2 - Uncontrolled emissions were calculated based on the assumption that 1% of the produced water throughput is condensate.
3 - No HAP emissions are reported by EPA Tanks 4.0.9d; therefore, these emissions were estimated based on the ration of HAP's to total VOC's from a conservative engineering assumption.
4 - Throughput includes margin to account for additional water streams dumping into the tank.

Heater / Boiler Detail Sheet

Equipment Source Name	HTR-1				
Source Description	Hot Oil Heater				
Equipment Usage	Hot Oil Heater	Potential operation	8760	hr/yr	
Equipment Make	TBD	Fuel Heating Value	1066.43	Btu/scf	Residue Gas Heating Value (not used in calculation)
Equipment Model	TBD	Heat Rate	49.42	MMBtu/hr	Mfr. Rate Heat Input
Serial Number	TBD	Sulfur Content	9,476	grains/MMscf	Gas Analysis with Margin
Quantity	1	Sulfur Margin	400%	%	
Emission Controls	None				

Total Potential Emissions

Pollutant	Estimated Emissions (lb/hr)	Estimated Emissions (tpy)
NOx	2.42	10.61
CO	4.07	17.82
VOC	0.27	1.17
SOx	0.14	0.60
PM10	0.37	1.61
Benzene	0.00	0.00
n-Hexane	0.09	0.38
Toluene	0.00	0.00
CH_2O	0.00	0.02
Total HAPs	0.09	0.40

Potential Emissions Per Heater

Pollutant	EF	EF	Estimated Emissions		Source of Emission Factor
	(lb/MMscf)	(lb/MMBtu)[3]	(lb/hr)	(tpy)	
NOx[2]	50	0.049	2.42	10.61	AP-42 Table 1.4-1
CO	84	0.082	4.07	17.82	AP-42 Table 1.4-1
VOC	5.5	0.005	0.27	1.17	AP-42 Table 1.4-2
SOx[1]	2.84	0.003	0.14	0.60	AP-42 Table 1.4-2
PM10	7.6	0.007	0.37	1.61	AP-42 Table 1.4-2
Benzene	0.0021	0.000	0.00	0.00	AP-42 Table 1.4-3
n-Hexane	1.80	0.002	0.09	0.38	AP-42 Table 1.4-3
Toluene	0.0034	0.000	0.00	0.00	AP-42 Table 1.4-3
CH_2O	0.075	0.000	0.00	0.02	AP-42 Table 1.4-3
Total HAPs			0.09	0.40	

1 - Sulfur emission factor from AP-42 Table 1.4-2 is ratio adjusted based on the max sulfur content when sulfur content is greater than 2,000 grains/MMscf.
2 - This is a low NOx burner.
3 - Emission factor is calculated by converting from lb/MMscf to lb/MMbtu based AP-42 Table 1.4-1 note (a).

Sample Calculation for NOx
50 lb/MMscf / 1066.43 Btu/scf * 49.417 MMBtu/hr = 2.42 lb/hr

Heater / Boiler Detail Sheet

Equipment Source Name	HTR-2				
Source Description	Regen Gas Heater				
Equipment Usage	Regen Gas Heater	Potential operation	8760	hr/yr	
Equipment Make	TBD	Fuel Heating Value	1066.43	Btu/scf	Residue Gas Heating Value (not used in calculation)
Equipment Model	TBD	Heat Rate	11.00	MMBtu/hr	Mfr. Rate Heat Input
Serial Number	TBD	Sulfur Content	9,476	grains/MMscf	Gas Analysis with Margin
Quantity	1	Sulfur Margin	400%	%	
Emission Controls	None				

Total Potential Emissions

Pollutant	Estimated Emissions	
	(lb/hr)	(tpy)
NOx	1.08	4.72
CO	0.91	3.97
VOC	0.06	0.26
SOx	0.03	0.13
PM10	0.08	0.36
Benzene	0.00	0.00
n-Hexane	0.02	0.09
Toluene	0.00	0.00
CH_2O	0.00	0.00
Total HAPs	0.02	0.09

Potential Emissions Per Heater

Pollutant	EF	EF	Estimated Emissions		Source of Emission Factor
	(lb/MMscf)	(lb/MMBtu)[2]	(lb/hr)	(tpy)	
NOx	100	0.098	1.08	4.72	AP-42 Table 1.4-1
CO	84	0.082	0.91	3.97	AP-42 Table 1.4-1
VOC	5.5	0.005	0.06	0.26	AP-42 Table 1.4-2
SOx[1]	2.84	0.003	0.03	0.13	AP-42 Table 1.4-2
PM10	7.6	0.007	0.08	0.36	AP-42 Table 1.4-2
Benzene	0.0021	0.000	0.00	0.00	AP-42 Table 1.4-3
n-Hexane	1.80	0.002	0.02	0.09	AP-42 Table 1.4-3
Toluene	0.0034	0.000	0.00	0.00	AP-42 Table 1.4-3
CH_2O	0.075	0.000	0.00	0.00	AP-42 Table 1.4-3
Total HAPs			0.02	0.09	

1 - Sulfur emission factor from AP-42 Table 1.4-2 is ratio adjusted based on the max sulfur content when sulfur content is greater than 2,000 grains/MMscf.
2 - Emission factor is calculated by converting from lb/MMscf to lb/MMbtu based AP-42 Table 1.4-1 note (a).

Sample Calculation for NOx

100 lb/MMscf / 1066.43 Btu/scf * 11.000 MMBtu/hr = 1.08 lb/hr

Loadout Emissions Detail Sheet

Equipment Source Name	CONDLOAD-1	
Source Description	Condensate Loadout	
Quantity	1	
Potential Throughput	219,000	bbl/yr
LACT On Site?	No	
Estimated LACT Downtime	NA	
Control Device	Vapor Balance	
Control Efficiencies	95%	
Capture Efficiency	70%	

Potential Emissions

Pollutant	HAP Wt % (%)	Uncontrolled lb/hr	Uncontrolled tpy	Controlled lb/hr	Controlled tpy	Source of Emission Calculations
VOC		99.91	27.35	33.47	9.16	AP-42 Section 5.2.1
Benzene	1.00%	1.00	0.27	0.33	0.09	Engineering Calculation
Toluene	1.00%	1.00	0.27	0.33	0.09	Engineering Calculation
Ethylbenzene	0.10%	0.10	0.03	0.03	0.01	Engineering Calculation
Xylenes	0.10%	0.10	0.03	0.03	0.01	Engineering Calculation
n-Hexane	4.00%	4.00	1.09	1.34	0.37	Engineering Calculation
2,2,4-Trimethylpentane	0.10%	0.10	0.03	0.03	0.01	Engineering Calculation
Total HAPs		6.29	1.72	2.11	0.58	

Molecular Weight of Vapors, MW	64.0	lb/lb-mol	EPA TANKS 4.0.9d
True Vapor Pressure, Pva @ T	6.48	psia	Interpolation from AP-42 Table 7.1-2
Temperature of Bulk Liquid Loaded, T	61	F	Ambient Temperature
	521	R	
Saturation Factor	0.6		AP-42 Table 5.2.1
Efficiency of controlled loading (%)	0.0%		
Potential Annual Throughput, v	9,198	1000 gallons	
Loading losses, L @ tank	5.95	lb/1000 gallons	
L = 12.46 S P MW / T (1-eff)			
Potential annual losses @ tank, L*v	54,699.81	lb/yr	**27.35 tpy**
Max hourly fill rate[1]	16.8	1000 gallons/hr	Trucking Company
Max hourly emissions	**99.9**	**lb/hr**	Calculated

1 - Max hourly fill rate based on a 200-bbl truck filling every 30 minutes.

Sample Calculation

219000 bbl/yr * 42 gal/bbl / 1000 gal * 5.95 lb/1000 gal / 2000 lb/ton = 27.35 tpy

Loadout Emissions Detail Sheet

Equipment Source Name	OILLOAD-1	
Source Description	Oil Loadout	
Quantity	1	
Potential Throughput	1,532	bbl/yr
LACT On Site?	No	
Estimated LACT Downtime	NA	
Control Device	Vapor Balance	
Control Efficiencies	95%	
Capture Efficiency	70%	

Potential Emissions

Pollutant	HAP Wt % (%)	Uncontrolled lb/hr	Uncontrolled tpy	Controlled lb/hr	Controlled tpy	Source of Emission Calculations
VOC		99.91	0.19	33.47	0.06	AP-42 Section 5.2.1
Benzene	1.00%	1.00	0.00	0.33	0.00	Engineering Calculation
Toluene	1.00%	1.00	0.00	0.33	0.00	Engineering Calculation
Ethylbenzene	0.10%	0.10	0.00	0.03	0.00	Engineering Calculation
Xylenes	0.10%	0.10	0.00	0.03	0.00	Engineering Calculation
n-Hexane	4.00%	4.00	0.01	1.34	0.00	Engineering Calculation
2,2,4-Trimethylpentane	0.10%	0.10	0.00	0.03	0.00	Engineering Calculation
Total HAPs		6.29	0.01	2.11	0.00	

Molecular Weight of Vapors, MW	64.0	lb/lb-mol	EPA TANKS 4.0.9d
True Vapor Pressure, Pva @ T	6.48	psia	Interpolation from AP-42 Table 7.1-2
Temperature of Bulk Liquid Loaded, T	61	F	Ambient Temperature
	521	R	
Saturation Factor	0.6		AP-42 Table 5.2.1
Efficiency of controlled loading (%)	0.0%		
Potential Annual Throughput, v	64	1000 gallons	
Loading losses, L @ tank	5.95	lb/1000 gallons	
L = 12.46 S P MW / T (1-eff)			
Potential annual losses @ tank, L*v	382.65	lb/yr	**0.19 tpy**
Max hourly fill rate[1]	16.8	1000 gallons/hr	Trucking Company
Max hourly emissions	**99.9**	**lb/hr**	Calculated

1 - Max hourly fill rate based on a 200-bbl truck filling every 30 minutes.

Sample Calculation

1532 bbl/yr * 42 gal/bbl / 1000 gal * 5.95 lb/1000 gal / 2000 lb/ton = 0.19 tpy

Fugitive Emissions Detail Sheet

Equipment Source Name FUG-1 Potential Operation 8760 hr/yr
Source Description Fugitives - OOOOa

Uncontrolled Potential Emissions

	HAP	Heavy Crude - Emissions		Light Crude - Emissions		Gas - Emissions		Total Emissions	
Pollutant	Wt. %	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy
VOC		0.00	0.00	5.41	23.68	6.29	27.56	11.70	51.24
H2S		NA	NA	NA	NA	0.00	0.00	0.00	0.00
Benzene	0.32%	0.00	0.00	0.02	0.08	0.02	0.09	0.04	0.16
Toluene	0.05%	0.00	0.00	0.00	0.01	0.00	0.01	0.01	0.02
Ethylbenzene	0.00%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Xylenes	0.00%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
n-Hexane	0.55%	0.00	0.00	0.03	0.13	0.03	0.15	0.06	0.28
2,2,4-Trimethylpentane	0.00%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total HAPs		0.00	0.00	0.05	0.22	0.06	0.25	0.11	0.47

Controlled Potential Emissions - Not used for NM Permitting purposes.

	HAP	Heavy Crude - Emissions		Light Crude - Emissions		Gas - Emissions		Total Emissions	
Pollutant	Wt. %	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy
VOC		0.00	0.00	1.01	4.41	2.41	10.56	3.42	14.97
H2S		NA	NA	NA	NA	0.00	0.00	0.00	0.00
Benzene	0.32%	0.00	0.00	0.00	0.01	0.01	0.03	0.01	0.05
Toluene	0.05%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
Ethylbenzene	0.00%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Xylenes	0.00%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
n-Hexane	0.55%	0.00	0.00	0.01	0.02	0.01	0.06	0.02	0.08
2,2,4-Trimethylpentane	0.00%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total HAPs		0.00	0.00	0.01	0.04	0.02	0.10	0.03	0.14

Gas

Equipment Type	EF (kg/hr/source)	Source Count	VOC Wt. %	Control Efficiencies %	Uncontrolled Emissions VOC (lb/hr)	Uncontrolled Emissions VOC (tpy)	Controlled Emissions VOC (lb/hr)	Controlled Emissions VOC (tpy)
Valve	4.50E-03	763	48%	96%	3.66	16.04	0.15	0.64
Flanges	3.90E-04	495	48%	81%	0.21	0.90	0.04	0.17
Connectors	2.00E-04	1155	48%	81%	0.25	1.08	0.05	0.21
Open Ended Lines	2.00E-03	0	48%		0.00	0.00	0.00	0.00
Pump Seals	2.40E-03	0	48%		0.00	0.00	0.00	0.00
Other Components	8.80E-03	232	48%		2.18	9.54	2.18	9.54
VOC Emissions					**6.29**	**27.56**	**2.41**	**10.56**

Gas VOC Wt% Margin 20.00%

Light Liquid[3]

Equipment Type	EF (kg/hr/source)	Source Count	VOC Wt. %	Control Efficiencies %	Uncontrolled Emissions VOC (lb/hr)	Uncontrolled Emissions VOC (tpy)	Controlled Emissions VOC (lb/hr)	Controlled Emissions VOC (tpy)
Valve	2.50E-03	684	100%	95%	3.77	16.51	0.19	0.83
Flanges	1.10E-04	417	100%	81%	0.10	0.44	0.02	0.08
Connectors	2.10E-04	1020	100%	81%	0.47	2.07	0.09	0.39
Open Ended Lines	1.40E-03	0	100%		0.00	0.00	0.00	0.00
Pump Seals	1.30E-02	14	100%	88%	0.40	1.76	0.05	0.21
Other Components	7.50E-03	40	100%		0.66	2.90	0.66	2.90
VOC Emissions					**5.41**	**23.68**	**1.01**	**4.41**

Heavy Liquid[3]

Equipment Type	EF (kg/hr/source)	Source Count	VOC Wt. %	Control Efficiencies %	Uncontrolled Emissions VOC (lb/hr)	Uncontrolled Emissions VOC (tpy)	Controlled Emissions VOC (lb/hr)	Controlled Emissions VOC (tpy)
Valve	8.40E-06	0	100%		0.00	0.00	0.00	0.00
Flanges	3.90E-06	1	100%	81%	0.00	0.00	0.00	0.00
Connectors	7.50E-06	1	100%	81%	0.00	0.00	0.00	0.00
Open Ended Lines	1.40E-04	0	100%		0.00	0.00	0.00	0.00
Pump Seals	N/A							

Other Components	3.20E-05	0	100%	0.00	0.00	0.00	0.00
VOC Emissions				**0.00**	**0.00**	**0.00**	**0.00**

1 - Component counts are actual facility component counts determined by Dexter ATC Field Services.
2 - Component leak rates taken from EPA's Oil and Gas Production Operations average equipment leak emission factors (EPA 453/R-95-017 dated November 1995) Table 2-4.
3 - Assuming heavy and light crude weight percentage is 100% VOC to be conservative in heavy and light crude fugitive emission calculations.
4 - Control efficiencies were obtained from Table 4.1 in "EPA Leak Detection and Repair - A Best Practices Guide"
5 - HAP Weight percentages based on a conservative engineering estimation.

Sample Calculation:
0.00250 kg/hr-source * 684 Sources * 2.20462 lb/kg * 100 % VOC Wt% * 8760 hr/yr /2000 lb/ton = 16.51 tpy

Fugitive Emissions Detail Sheet

Equipment Source Name	FUG-2	Potential Operation	8760	hr/yr
Source Description	Fugitives - Residue	Emission Controls	None	

Uncontrolled Potential Emissions

	HAP	Gas - Emissions		Total Emissions	
Pollutant	Wt. %	lb/hr	tpy	lb/hr	tpy
VOC		0.05	0.23	0.05	0.23
H2S		0.00	0.00	0.00	0.00
Benzene	0.00%	0.00	0.00	0.00	0.00
Toluene	0.00%	0.00	0.00	0.00	0.00
Ethylbenzene	0.00%	0.00	0.00	0.00	0.00
Xylenes	0.00%	0.00	0.00	0.00	0.00
n-Hexane	0.01%	0.00	0.00	0.00	0.00
2,2,4-Trimethylpentane	0.00%	0.00	0.00	0.00	0.00
Total HAPs		0.00	0.00	0.00	0.00

Controlled Potential Emissions

	HAP	Gas - Emissions		Total Emissions	
Pollutant	Wt. %	lb/hr	tpy	lb/hr	tpy
VOC		0.05	0.23	0.05	0.23
H2S		0.00	0.00	0.00	0.00
Benzene	0.00%	0.00	0.00	0.00	0.00
Toluene	0.00%	0.00	0.00	0.00	0.00
Ethylbenzene	0.00%	0.00	0.00	0.00	0.00
Xylenes	0.00%	0.00	0.00	0.00	0.00
n-Hexane	0.01%	0.00	0.00	0.00	0.00
2,2,4-Trimethylpentane	0.00%	0.00	0.00	0.00	0.00
Total HAPs		0.00	0.00	0.00	0.00

Gas HAP Wt% Margin 100.00%

Gas

Equipment Type	EF[3] (kg/hr/source)	Source Count	VOC Wt. %	Control Efficiencies %	**Uncontrolled Emissions** VOC (lb/hr)	VOC (tpy)	**Controlled Emissions** VOC (lb/hr)	VOC (tpy)
Valve	4.50E-03	16	4%	0%	0.01	0.02	0.01	0.02
Flanges	3.90E-04	32	4%		0.00	0.00	0.00	0.00
Connectors	2.00E-04	1200	4%	0%	0.02	0.08	0.02	0.08
Open Ended Lines	2.00E-03	0	4%		0.00	0.00	0.00	0.00
Pump Seals	2.40E-03	0	4%		0.00	0.00	0.00	0.00
Other Components	8.80E-03	40	4%		0.03	0.12	0.03	0.12
VOC Emissions					**0.05**	**0.23**	**0.05**	**0.23**

Gas VOC Wt% Margin 100.00%

Component Counts[1]	Total
Valve	16
Flanges	32
Connectors	1200
Open Ended Lines	0
Pump Seals	0
Other Components	40
Total	1288

1 - Component counts are engineering estimations.
2 - Component leak rates taken from EPA's Oil and Gas Production Operations average equipment leak emission factors (EPA 453/R-95-017 dated November 1995) Table 2-4.
3 - Gas VOC and HAP wt % percentage is based on stream 47 from Promax run with margin.

Sample Calculation:
0.00450 kg/hr-source * 16 Sources * 2.20462 lb/kg * 4 % VOC Wt% * 8760 hr/yr /2000 lb/ton = 0.02 tpy

Process and compressor Fugitives GHG Emissions

Fugitive GHG Summary

	CH_4	CO_2	CO_2e
Emissions TPY	827.73	122.06	**20,815.37**
Global Warming Potential (GWP)	25	1	

CH4 Emission Rate for Gas Processing Volume[1] = 2.5e-3 tonne CH4/MMscf processed
CH4 Emission Rate for Reciprocating Compressors[1] = 8.95e-3 tonne CH4/compressor-hr
CH4 Emission Rate for Centrifugal Compressors[1] = 1.7e-2 tonne CH4/compressor-hr

[1] API Compendium of Greenhouse Gas Emissions Methodologies for the Oil and Natural Gas Industry Table 6-5

Process gas CH4 molar percentage = 38.64% From modeled composition
Process gas CO2 molar percentage = 2.07% From modeled composition
CH4 molecular weight (lb/lb mol) 16
CO2 molecular weight (lb/lb mol) 44

Amount of gas throughput (MMscf/yr) = 21,900 (Max 60 MMSCFD * 365 days/yr)
Number of Reciprocating Compressors in Process = 7
Number of Centrifugal Compressors in Process = 1

CH4 Emission Calculation for Processing Volume

tonne CH4/MMscf processed	MMscf processed/year	ton CH4/ tonne CH4	ton CH4/year
0.0025	21,900	1.1	60.225

Total CH4 process emissions (ton/year) = 60.23

CO2 Emission Calculation for Processing Volume

ton CH4/year	CO2 mol % / CH4 mol %	CO2 mol wt/ CH4 mol wt	ton CO2 / year
60.225	0.05362	2.75	8.881

Total CO2 process emissions (ton/year) = 8.88

CH4 Emission Calculation for Reciprocating Compressors

tonne CH4/compressor-hr	hr/year	compressor number	ton CH4/ tonne CH4	ton CH4 /year
0.00895	8760.00	7	1.1	604

Total CH4 reciprocating compressor emissions (ton/year) = 603.70

CO2 Emission Calculation for Reciprocating Compressors

ton CH4/year	CO2 mol % / CH4 mol %	CO2 mol wt/ CH4 mol wt	ton CO2 / year
604	0.05362	2.75	89.023

Total CO2 reciprocating compressor emissions (ton/year) = 89.023

CH4 Emission Calculation for Centrifugal Compressors

tonne CH4/compressor-hr	hr/year	compressor number	ton CH4/ tonne CH4	ton CH4 /year
0.017	8760.00	1	1.1	164

Total CH4 centrifugal compressor emissions (ton/year) = 163.81

CO2 Emission Calculation for Centrifugal Compressors

ton CH4/year	CO2 mol % / CH4 mol %	CO2 mol wt/ CH4 mol wt	ton CO2 / year
164	0.05362	2.75	24.156

Total CO2 centrifugal compressor emissions (ton/year) = 24.156

Equipment Source Name	AMINE-1				
Source Description	Amine Unit	Potential Operation:	8760	hr/yr	
Equipment Usage	Amine Unit	TO Downtime Allowance:	438	hr/yr	
Equipment Make	TBD	TO Control Efficiency:	98%		
Equipment Model	TBD	TO Downtime Control Efficiency:	95%	FL-1 Control Efficiency	
Serial Number	TBD	Margin added for operational flexibility:	25%		
QTY	1				

Emissions Summary

VOC Emissions Summary (tons/yr) with margin added

	Uncontrolled		Controlled		Uncontrolled TO Downtime		Controlled TO Downtime	
Emission Unit	lb/hr	tons/yr	lb/hr	tons/yr	lb/hr	tons/yr	lb/hr	tons/yr
AMINE-1 (Flash)	34.80	152.44	0.70	3.05	34.80	7.62	1.74	0.38
AMINE-1 (Still)	5.04	22.08	0.10	0.44	5.04	1.10	0.25	0.06

	Uncontrolled		Controlled	
	lb/hr	tons/yr	lb/hr	tons/yr
AMINE-1 Total	39.84	174.52	2.79	3.93

Uncontrolled HAP Emissions Summary (with margin)

Emission Unit	BZ	Tol	EB	Xyl	n-Hex	224-TMP	Total
AMINE-1 (Flash) (lb/hr)	0.03	0.03	0.00	0.01	0.14	0.03	0.24
AMINE-1 (Flash) (lb/yr)	245.16	249.01	14.09	72.48	1208.64	289.22	2078.60
AMINE-1 (Still) (lb/hr)	0.00	0.00	0.00	0.00	0.02	0.01	0.04
AMINE-1 (Still) (lb/yr)	38.36	38.96	2.21	11.34	189.11	45.25	325.23
Total AMINE-1 (lb/hr)	**0.03**	**0.03**	**0.00**	**0.01**	**0.16**	**0.04**	**0.27**
Total AMINE-1 (lb/yr)	**283.52**	**287.97**	**16.30**	**83.82**	**1397.75**	**334.47**	**2403.84**
Total AMINE-1 (TPY)	**0.14**	**0.14**	**0.01**	**0.04**	**0.70**	**0.17**	**1.20**

Controlled HAP Emissions (Normal Operation) Summary

Emission Unit	BZ	Tol	EB	Xyl	n-Hex	224-TMP	Total
AMINE-1 (Flash) (TO-1) (lb/yr)	5.27	5.35	0.30	1.56	25.99	6.22	44.69
AMINE-1 (Still) (TO-1) (lb/yr)	0.82	0.84	0.05	0.24	4.07	0.97	6.99
Total AMINE-1 (lb/hr)	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.01**
Total AMINE-1 (lb/yr)	**6.10**	**6.19**	**0.35**	**1.80**	**30.05**	**7.19**	**51.68**
Total AMINE-1 (TPY)	**0.00**	**0.00**	**0.00**	**0.00**	**0.02**	**0.00**	**0.03**

Equipment Source Name AMINE-1
ProMax Output File Summary

	AMINE-1			
	Amine Flash		**Amine Still**	
Specie	Mass flow [lb/h]	Mole Fraction [%]	Mass flow [lb/h]	Mole Fraction [%]
Methane	71.85	55.84%	7.40	0.14%
Ethane	29.58	12.27%	4.09	0.04%
Propane	20.09	5.68%	3.01	0.02%
Iso-Butane	0.59	0.13%	0.02	0.00%
N-Butane	5.18	1.11%	0.75	0.00%
Iso-Pentane	0.44	0.08%	0.03	0.00%
N-Pentane	0.77	0.13%	0.10	0.00%
Other Hexanes	0.48	0.07%	0.07	0.00%
n-Hexane	0.11	0.02%	0.02	0.00%
Heptane	0.06	0.01%	0.01	0.00%
2,2,4-Trimethylpentane	0.03	0.00%	0.00	0.00%
Octanes +	0.05	0.01%	0.01	0.00%
Benzene	0.02	0.00%	0.00	0.00%
Toluene	0.02	0.00%	0.00	0.00%
Ethylbenzene	0.00	0.00%	0.00	0.00%
Xylenes	0.01	0.00%	0.00	0.00%
Water	8.93	6.18%	410.47	7.14%
Hydrogen Sulfide	0.03	0.01%	11.22	0.10%
Carbon Dioxide	59.46	16.85%	12992.85	92.54%
Nitrogen	3.65	1.62%	0.12	0.00%
TOTAL	**201.34**	**1.00**	**13430.17**	**1.00**

Equipment Source Name	AMINE-1	
Molar flow [lbmol/h]	8.02	319.02
Std volumetric flow [MMSCFD]	0.07	2.91
Std volumetric flow [MMSCFD] with margin	0.09	3.63
Std volumetric flow [SCFH]	3804.35	151323.42
mmscf/yr	33.33	1325.59
TO downtime throughput mmscf/yr	1.67	66.28
VOC flow [lb/h]	27.84	4.03
HAP flow [lb/h]	0.19	0.03
VOC flow [lb/h] with margin	34.80	5.04
HAP flow [lb/h] with margin	0.24	0.04
Benzene with margin	0.03	0.00
Toluene with margin	0.03	0.00
Ethylbenzene with margin	0.00	0.00
o-Xylene with margin	0.01	0.00
nC6 with margin	0.14	0.02
2,2,4-Trimethylpentane with margin	0.03	0.01
Net Ideal Gas Heating Value (Btu/ft^3)	888.18	3.27
Btu/lbmol	421291.74	1551.91

Gas Analysis - AMINE-1 Flash

Gas Constituent	Molecular Weight (lb/lb-mol)	Mole %	Mole % Without Water	Weight (lb/lbmole Gas)	Weight %	Weight % Without Water	Total HC Corrected Weight * %	Total VOC Corrected Weight ** %
Methane	16.04	55.84%	59.52%	8.96	35.68%	37.34%	55.58%	NA
Ethane	30.07	12.27%	13.07%	3.69	14.69%	15.37%	22.88%	NA
Total HC (Non-VOC)		**68.10%**	**72.59%**		**50.38%**	**52.71%**	**78.46%**	**NA**
Propane	44.10	5.68%	6.05%	2.50	9.98%	10.44%	15.54%	72.15%
Iso-Butane	58.12	0.13%	0.13%	0.07	0.29%	0.31%	0.46%	2.12%
N-Butane	58.12	1.11%	1.18%	0.65	2.57%	2.69%	4.01%	18.61%
Iso-Pentane	72.15	0.08%	0.08%	0.06	0.22%	0.23%	0.34%	1.60%
N-Pentane	72.15	0.13%	0.14%	0.10	0.38%	0.40%	0.59%	2.75%
Other Hexanes	86.18	0.07%	0.07%	0.06	0.24%	0.25%	0.37%	1.71%
n-Hexane	86.18	0.02%	0.02%	0.01	0.05%	0.06%	0.09%	0.40%
Heptane	100.21	0.01%	0.01%	0.01	0.03%	0.03%	0.05%	0.21%
2,2,4-Trimethylpentane	114.23	0.00%	0.00%	0.00	0.01%	0.01%	0.02%	0.09%
Octanes +	114.23	0.01%	0.01%	0.01	0.02%	0.02%	0.04%	0.17%
Benzene	78.11	0.00%	0.00%	0.00	0.01%	0.01%	0.02%	0.08%
Toluene	92.14	0.00%	0.00%	0.00	0.01%	0.01%	0.02%	0.08%
Ethylbenzene	106.17	0.00%	0.00%	0.00	0.00%	0.00%	0.00%	0.00%
Xylenes	106.16	0.00%	0.00%	0.00	0.00%	0.00%	0.01%	0.02%
Total NMNE VOC		**7.23%**	**7.71%**	**3.47**	**13.83%**	**14.47%**	**21.54%**	**100.00%**
Total HAPs		**0.03%**	**0.03%**	**0.02**	**0.09%**	**0.10%**	**0.15%**	**0.68%**
Water	18.02	6.18%	NA	1.11	4.43%	NA	NA	NA
Hydrogen Sulfide	34.08	0.01%	0.01%	0.00	0.02%	0.02%	NA	NA
Carbon Dioxide	44.01	16.85%	17.96%	7.41	29.53%	30.90%	NA	NA
Nitrogen	28.01	1.62%	1.73%	0.45	1.81%	1.90%	NA	NA
Totals		100.00%	100.00%	25.10	100.00%	100.00%	100.00%	

Average Molecular Weight of VOCs: **47.98 lb/lb-mol**

Notes:

* Weight Percent corrected to remove Water, Carbon Dioxide,Nitrogen, and H2S content.

** Weight Percent corrected to remove non-VOC content.

Gas Analysis - AMINE-1 Still

Gas Constituent	Molecular Weight (lb/lb-mol)	Mole %	Mole % Without Water	Weight (lb/lbmole Gas)	Weight %	Weight % Without Water	Total HC Corrected Weight * %	Total VOC Corrected Weight ** %
Methane	16.04	0.14%	0.16%	0.02	0.06%	0.06%	47.67%	NA
Ethane	30.07	0.04%	0.05%	0.01	0.03%	0.03%	26.34%	NA
Total HC (Non-VOC)		**0.19%**	**0.20%**		**0.09%**	**0.09%**	**74.01%**	**NA**
Propane	44.10	0.02%	0.02%	0.01	0.02%	0.02%	19.38%	0.16%
Iso-Butane	58.12	0.00%	0.00%	0.00	0.00%	0.00%	0.15%	0.00%
N-Butane	58.12	0.00%	0.00%	0.00	0.01%	0.01%	4.82%	0.04%
Iso-Pentane	72.15	0.00%	0.00%	0.00	0.00%	0.00%	0.19%	0.00%
N-Pentane	72.15	0.00%	0.00%	0.00	0.00%	0.00%	0.66%	0.01%
Other Hexanes	86.18	0.00%	0.00%	0.00	0.00%	0.00%	0.48%	0.00%
n-Hexane	86.18	0.00%	0.00%	0.00	0.00%	0.00%	0.11%	0.00%
Heptane	100.21	0.00%	0.00%	0.00	0.00%	0.00%	0.06%	0.00%
2,2,4-Trimethylpentane	114.23	0.00%	0.00%	0.00	0.00%	0.00%	0.03%	0.00%
Octanes +	114.23	0.00%	0.00%	0.00	0.00%	0.00%	0.05%	0.00%
Benzene	78.11	0.00%	0.00%	0.00	0.00%	0.00%	0.02%	0.00%
Toluene	92.14	0.00%	0.00%	0.00	0.00%	0.00%	0.02%	0.00%
Ethylbenzene	106.17	0.00%	0.00%	0.00	0.00%	0.00%	0.00%	0.00%
Xylenes	106.16	0.00%	0.00%	0.00	0.00%	0.00%	0.01%	0.00%
Total NMNE VOC		**0.03%**	**0.03%**	**0.01**	**0.03%**	**0.03%**	**25.99%**	**0.22%**
Total HAPs		**0.00%**	**0.00%**	**0.00**	**0.00%**	**0.00%**	**0.19%**	**0.00%**
Water	18.02	7.14%	NA	1.29	3.06%	NA	NA	NA
Hydrogen Sulfide	34.08	0.10%	0.11%	0.04	0.08%	0.09%	NA	NA
Carbon Dioxide	44.01	92.54%	99.66%	40.73	96.74%	99.79%	NA	NA
Nitrogen	28.01	0.00%	0.00%	0.00	0.00%	0.00%	NA	NA
Totals		100.00%	100.00%	42.10	100.00%	100.00%	100.00%	

Average Molecular Weight of VOCs: **0.17 lb/lb-mol**

Notes:

* Weight Percent corrected to remove Water, Carbon Dioxide,Nitrogen, and H2S content.

** Weight Percent corrected to remove non-VOC content.

SO2 Assumptions:
SO2 Emissions Calculations from combustion of AMINE Unit vent stream
Assumes all H2S in the gas stream is removed by the AMINE units and oxidized to SO2 by the thermal oxidizer.
H2S Assumptions:
Based on 98% control efficiency, 2% not oxidized
H2S content "Pipeline spec"

	8	Grains H2S/100scf		using conversion factor	
	80,000.00	grains H2S/MMscf		(Sulfur Measurement Handbook Rev7)	
	127.74	ppm		1 pound = 7000 grains	
Conversion factor	1.43E-04	lb/grains			
				MW	
			H2S	34.1	
	1.14E-05	lb H2S/scf	S	32.1	
	1.08E-05	lb S/scf	SO2	64.1	

AMINE-1

Throughput	6.00E+07	scfd
	21900.00	MMSCF/yr
	125.14	TPY H2S uncontrolled
	28.57	lbs/hr H2S uncontrolled
	98.00%	Control Efficiency
	2.50	TPY H2S controlled
	0.57	lbs/hr H2S controlled

SO2 emissions		
lb/hr	**lb/day**	**tpy**
64.45	1288.98	235.24

lb/hr Margin 20%

Compressor Blowdown Detail Sheet

Equipment Source Name:	COMP		
Equipment Name	Compressor Blowdowns		
Inlet Compressor Quantity	3		
Residue Compressor Quantity	4		
Refrigeration Compressor Quantity	1		
Source Description	Reciprocating		
Equipment Usage	Reciprocating Compressor	Potential operation	8760 hr/yr
Control Efficiency	95%		

Total Potential Emissions

Pollutant	Uncontrolled Emissions		Controlled Emissions	
	(lb/hr)	(tpy)	(lb/hr)	(tpy)
VOC	2.27	9.95	0.11	0.50
Benzene	0.01	0.03	0.00	0.00
Toluene	0.00	0.00	0.00	0.00
Ethylbenzene	0.00	0.00	0.00	0.00
Xylenes	0.00	0.00	0.00	0.00
n-Hexane	0.01	0.05	0.00	0.00
2 2 4-trimethylpentane	0.00	0.00	0.00	0.00
Total HAPs	0.02	0.09	0.00	0.00

Potential Emissions Per Inlet Compressor Blowdown

Pollutant	Emission Factor (Mscf/event)	Frequency (events/yr)	(ton/blowdown)	Uncontrolled Emissions (lb/hr)	Uncontrolled Emissions (tpy)	Controlled Emissions (lb/hr)	Controlled Emissions (tpy)	Source of Emission Factor
VOC	2.00	120	0.0262	0.72	3.15	0.04	0.16	Engineering Estimation
Benzene				0.00	0.01	0.00	0.00	Engineering Calculation
Toluene				0.00	0.00	0.00	0.00	Engineering Calculation
Ethylbenzene				0.00	0.00	0.00	0.00	Engineering Calculation
Xylenes				0.00	0.00	0.00	0.00	Engineering Calculation
n-Hexane				0.00	0.02	0.00	0.00	Engineering Calculation
2 2 4-trimethylpentane				0.00	0.00	0.00	0.00	Engineering Calculation
Total HAPs				0.01	0.03	0.00	0.00	

Potential Emissions Per Residue Compressor Blowdown

Pollutant	Emission Factor (Mscf/event)	Frequency (events/yr)	(ton/blowdown)	Uncontrolled Emissions (lb/hr)	Uncontrolled Emissions (tpy)	Controlled Emissions (lb/hr)	Controlled Emissions (tpy)	Source of Emission Factor
VOC	2.00	120	0.0008	0.02	0.10	0.00	0.00	Engineering Estimation
Benzene				0.00	0.00	0.00	0.00	Engineering Calculation
Toluene				0.00	0.00	0.00	0.00	Engineering Calculation
Ethylbenzene				0.00	0.00	0.00	0.00	Engineering Calculation
Xylenes				0.00	0.00	0.00	0.00	Engineering Calculation
n-Hexane				0.00	0.00	0.00	0.00	Engineering Calculation
2 2 4-trimethylpentane				0.00	0.00	0.00	0.00	Engineering Calculation
Total HAPs				0.00	0.00	0.00	0.00	

Based on 10%VOC

Potential Emissions Per Refrigeration Compressor Blowdown

Pollutant	Emission Factor (Mscf/event)	Frequency (events/yr)	(ton/blowdown)	Uncontrolled Emissions (lb/hr)	Uncontrolled Emissions (tpy)	Controlled Emissions (lb/hr)	Controlled Emissions (tpy)	Source of Emission Factor
VOC	2.00	1	0.1164	0.03	0.12	0.00	0.01	Engineering Estimation
Benzene				0.00	0.00	0.00	0.00	Engineering Calculation
Toluene				0.00	0.00	0.00	0.00	Engineering Calculation
Ethylbenzene				0.00	0.00	0.00	0.00	Engineering Calculation
Xylenes				0.00	0.00	0.00	0.00	Engineering Calculation
n-Hexane				0.00	0.00	0.00	0.00	Engineering Calculation
2 2 4-trimethylpentane				0.00	0.00	0.00	0.00	Engineering Calculation
Total HAPs				0.00	0.00	0.00	0.00	

Sample Calculation

2.000 Mscf/event * 1000 scf/Mscf / 379 scf/lb-mol * 9.95 lb/lb-mol * 1/2000 lb/ton * 120 events/year = 3.15 tpy

Compressor Blowdown Detail Sheet

Equipment Source Name:	PLANT BD		
Equipment Name	Gas Plant Blowdown		
Quantity	1		
Source Description	Gas Plant Blowdown	Plant Volume	60.0 MMscf/day
Equipment Usage	Gas Plant Blowdown	Potential operation	8760 hr/yr
Control Efficiency	95%		

Total Potential Emissions

Pollutant	Uncontrolled Emissions		Controlled Emissions	
	(lb/hr)	(tpy)	(lb/hr)	(tpy)
VOC	32803.52	16.40	1640.18	0.82
Benzene	105.62	0.05	5.28	0.00
Toluene	15.19	0.01	0.76	0.00
Ethylbenzene	0.00	0.00	0.00	0.00
Xylenes	0.00	0.00	0.00	0.00
n-Hexane	181.91	0.09	9.10	0.00
2 2 4-trimethylpentane	0.00	0.00	0.00	0.00
Total HAPs	302.73	0.15	15.14	0.01

Potential Emissions Per Blowdown

Pollutant	Volume	Frequency	Event Duration	Uncontrolled Emissions		Controlled Emissions		Source of Emission Factor
	(MMScf/d)	(events/yr)	(hr/event)	(lb/hr)	(tpy)	(lb/hr)	(tpy)	
VOC	60.00	1	0.5	32803.52	16.40	1640.18	0.82	Engineering Calculation
Benzene				105.62	0.05	5.28	0.00	Engineering Calculation
Toluene				15.19	0.01	0.76	0.00	Engineering Calculation
Ethylbenzene				0.00	0.00	0.00	0.00	Engineering Calculation
Xylenes				0.00	0.00	0.00	0.00	Engineering Calculation
n-Hexane				181.91	0.09	9.10	0.00	Engineering Calculation
2 2 4-trimethylpentane				0.00	0.00	0.00	0.00	Engineering Calculation
Total HAPs				302.73	0.15	15.14	0.01	

Sample Calculation

60.000 Mscf/event * 1000 scf/Mscf / 379 scf/lb-mol * 9.95 lb/lb-mol * 1/2000 lb/ton * 1 events/year = 16.40 tpy

Flare Detail Sheet

Equipment Source Name	TO-1	Stack Height	50	ft
Source Description	Thermal Oxidizer	Potential Operation	8760	hr/yr
Equipment Make	TBD			
Equipment Model	TBD			
Quantity	1			
Destruction Efficiency	98%			

Total Emissions

Pollutant	Estimated Emissions	
	(lb/hr)	(tpy)
NOx	1.56	6.82
CO	1.31	5.73
VOC	0.19	0.83
SO2	64.45	235.24
PM10	0.00	0.00
Benzene	0.00	0.00
Toluene	0.00	0.00
Ethylbenzene	0.00	0.00
Xylenes	0.00	0.00
n-Hexane	0.00	0.00
2 2 4-trimethylpentane	0.00	0.00
Total HAPs	0.00	0.01

Pilot Stream

Pilot Rating	12.00	MMBtu/hr
Pilot Heat Value	1066.43	Btu/scf
Pilot Gas Flow Rate	11.252	Mscf/hr

Pollutant	EF	Estimated Emissions		Source of Emission Factor
	(lb/MMBtu)	(lb/hr)	(tpy)	
NOx	0.0980	1.18	5.15	AP-42 Table 1.4-1
CO	0.082	0.99	4.33	AP-42 Table 1.4-1
VOC	N/A	0.19	0.83	Engineering Calculation
Benzene	N/A	0.00	0.00	Engineering Calculation
Toluene	N/A	0.00	0.00	Engineering Calculation
Ethylbenzene	N/A	0.00	0.00	Engineering Calculation
Xylenes	N/A	0.00	0.00	Engineering Calculation
n-Hexane	N/A	0.00	0.00	Engineering Calculation
2 2 4-trimethylpentane	N/A	0.00	0.00	Engineering Calculation
Total HAPs		0.00	0.01	

Amine Flash Gas Waste Stream				
Vapor Flow Rate	33.326 MMscf/yr		25.00% Margin	
	3.804 Mscf/hr			
Total Emissions Heat Value	888.18 Btu/scf		Based on Amine Gas Analysis (Enerflex)	

Pollutant	EF (lb/MMBtu)	Estimated Emissions (lb/hr)	Estimated Emissions (tpy)	Source of Emission Factor
NOx	0.0980	0.33	1.45	AP-42 Table 1.4-1
CO	0.082	0.28	1.22	AP-42 Table 1.4-1
VOC[1]	N/A	N/A	N/A	N/A
PM10	0.01	0.00	0.00	AP-42 Table 1.4-2

Amine Acid Gas Waste Stream				
Vapor Flow Rate	1325.593 MMscf/yr		25.00% Margin	
	151.323 Mscf/hr			
W&S Emissions Heat Value	3.272 Btu/scf		Based on Amine Gas Analysis (Enerflex)	

Pollutant	EF (lb/MMBtu)	Estimated Emissions (lb/hr)	Estimated Emissions (tpy)	Source of Emission Factor
NOx	0.0980	0.05	0.21	AP-42 Table 1.4-1
CO	0.082	0.04	0.18	AP-42 Table 1.4-1
VOC[1]	N/A	N/A	N/A	N/A
PM10	0.01	0.00	0.00	AP-42 Table 1.4-2

1 - VOC emissions from produced gas stream are calculated using a mass balance and a 98% destruction efficiency. VOC emissions from waste streams are shown at the amine.

Sample Calculation for NOx from Tank Waste Stream

0.098 lb/MMBtu * 3.804 MMscf/yr * 0,888.2 Btu/scf / 8,760 hr/yr = 0.33 lb/hr

Flare Detail Sheet

Equipment Source Name	FL-1	Stack Height	100	ft
Source Description	Upset/Maintenance Flare	Potential Operation	8760	hr/yr
Equipment Make	TBD			
Equipment Model	TBD			
Quantity	1			
Destruction Efficiency	95%			

Total Emissions

Pollutant	Estimated Emissions	
	(lb/hr)	(tpy)
NOx	251.60	26.48
CO	1147.00	120.70
VOC	92.94	14.14
SO2	57.09	1.31
PM10	6.25	0.88
Benzene	0.00	0.00
Toluene	0.00	0.00
Ethylbenzene	0.00	0.00
Xylenes	0.00	0.00
n-Hexane	0.00	0.00
2 2 4-trimethylpentane	0.00	0.00
Total HAPs	0.00	0.00

Pilot Stream

Pilot Rating	0.50	MMBtu/hr
Pilot Heat Value	1066.43	Btu/scf
Pilot Gas Flow Rate	0.469	Mscf/hr

Pollutant	EF	Estimated Emissions		Source of Emission Factor
	(lb/MMBtu)	(lb/hr)	(tpy)	
NOx	0.0680	0.03	0.15	AP-42 Table 13.5-1
CO	0.310	0.16	0.68	AP-42 Table 13.5-2
VOC	N/A	0.02	0.09	Engineering Calculation
Benzene	N/A	0.00	0.00	Engineering Calculation
Toluene	N/A	0.00	0.00	Engineering Calculation
Ethylbenzene	N/A	0.00	0.00	Engineering Calculation
Xylenes	N/A	0.00	0.00	Engineering Calculation
n-Hexane	N/A	0.00	0.00	Engineering Calculation
2 2 4-trimethylpentane	N/A	0.00	0.00	Engineering Calculation
Total HAPs		0.00	0.00	

Residue Gas Stream

Produced Gas Flow Rate	693.4	MMscf/yr	
	79.2	Mscf/hr	
Max Hourly Gas Flow Rate	2291.7	Mscf/hr	
Gas Heating Value	1066.43	Btu/scf	Based on Residue Gas Analysis
Max Sulfur Content[2]	2,000	grains/MMscf	AP42 Chapter 3.2

Pollutant	EF	Estimated Emissions		Source of Emission Factor
	(lb/MMBtu)	(lb/hr)	(tpy)	
NOx	0.068	166.19	25.14	AP-42 Table 13.5-1
CO	0.31	757.61	114.62	AP-42 Table 13.5-2
VOC[1]	N/A	92.92	14.06	Engineering Calculation
SO2	N/A	1.31	0.20	Engineering Calculation
PM10[2]	40	5.72	0.87	AP-42 Table 13.5-1
Benzene	N/A	0.00	0.00	Engineering Calculation
Toluene	N/A	0.00	0.00	Engineering Calculation
Ethylbenzene	N/A	0.00	0.00	Engineering Calculation
Xylenes	N/A	0.00	0.00	Engineering Calculation
n-Hexane	N/A	0.00	0.00	Engineering Calculation
2 2 4-trimethylpentane	N/A	0.00	0.00	Engineering Calculation
Total HAPs		0.00	0.00	

Maintenance Waste Stream		
Vapor Flow Rate		
Compressor Blowdown	1,682.000 Mscf/yr	
Plant Blowdown	2,500.000 Mscf/yr	
Misc. Pipeline Flaring[1]	240.000 Mscf/yr	
Total Vapor Flow Rate	4.422 MMscf/yr	
	0.505 Mscf/hr	
Waste Stream Heat Value	1479.8 Btu/scf	
Max Sulfur Content	80,000 grains/MMscf	Maximum measured H2S concentration

Pollutant	EF (lb/MMBtu)	Estimated Emissions (lb/hr)	Estimated Emissions (tpy)	Source of Emission Factor
NOx	0.068	251.57	0.22	AP-42 Table 13.5-1
CO	0.31	1146.85	1.01	AP-42 Table 13.5-2
VOC	N/A	0.04	0.16	Engineering Calculation
SO2[4]	N/A	57.09	0.05	Engineering Calculation
PM10[2]	40	6.25	0.01	AP-42 Table 13.5-1

Thermal Oxidizer Downtime Waste Stream		
TO Potential Downtime	438.0 hr/yr	
Vapor Flow Rate	92.86 MMscf/yr	
	212.01 Mscf/hr	
Waste Stream Heat Value	304.4 Btu/scf	Engineering Calculation
Max Sulfur Content	80,000 grains/MMscf	Maximum measured H2S concentration

Pollutant	EF (lb/MMBtu)	Estimated Emissions (lb/hr)	Estimated Emissions (tpy)	Source of Emission Factor
NOx	0.068	4.39	0.96	AP-42 Table 13.5-1
CO	0.31	20.01	4.38	AP-42 Table 13.5-2
VOC	N/A	N/A	N/A	N/A
SO2	N/A	4.84	1.06	Engineering Calculation
PM10[4]	40	0.03	0.01	AP-42 Table 13.5-1

1 - VOC emissions from process gas stream and miscellaneous pipeline flaring are calculated using a mass balance and a 95% destruction efficiency. VOC emissions from maintenance and thermal oxidizer downtime waste streams are shown at compressor blowdowns, plant blowdowns and amine unit.

2 - PM10 emission factor in units of μg/L, assuming a lightly smoking flare.

3 - Maintenace volume includes 240 Mscf/yr for miscellaneous activities to be conservative in emission estimations.

4 - Hourly SO2 emissions shown at the maintenance waste stream would not occur while the Thermal Oxidizer is combusting. These emissions would only occur if the whole plant was blowing down.

Sample Calculation for NOx from Process Gas Stream

0.068 lb/MMBtu * 1E6 scf/MMscf * 693.44 MMscf/yr * 1,066.43 Btu/scf * MMBtu / 1E6 Btu / 8,760 hr/yr = 166.19 lb/hr

Sample Calculation for NOx from Tank Waste Stream

0.068 lb/MMBtu * 0.505 MMscf/yr * 1,479.8 Btu/scf / 8,760 hr/yr = 251.57 lb/hr

Flare Detail Sheet

Equipment Source Name	FL-2	Stack Height	TBD	ft
Source Description	Tank Flare	Potential Operation	8760	hr/yr
Equipment Make	TBD			
Equipment Model	TBD			
Quantity	1			
Destruction Efficiency	95%			

Total Emissions

Pollutant	Estimated Emissions (lb/hr)	(tpy)
NOx	0.89	3.91
CO	4.07	17.82
VOC	0.00	0.02
SO2	0.00	0.00
PM10	0.00	0.01
Benzene	0.00	0.00
Toluene	0.00	0.00
Ethylbenzene	0.00	0.00
Xylenes	0.00	0.00
n-Hexane	0.00	0.00
2 2 4-trimethylpentane	0.00	0.00
Total HAPs	0.00	0.00

Pilot Stream

Pilot Rating	0.10	MMBtu/hr
Pilot Heat Value	1066.43	Btu/scf
Pilot Gas Flow Rate	0.094	Mscf/hr

Pollutant	EF (lb/MMBtu)	Estimated Emissions (lb/hr)	(tpy)	Source of Emission Factor
NOx	0.0680	0.01	0.03	AP-42 Table 13.5-1
CO	0.310	0.03	0.14	AP-42 Table 13.5-2
VOC	N/A	0.00	0.02	Engineering Calculation
Benzene	N/A	0.00	0.00	Engineering Calculation
Toluene	N/A	0.00	0.00	Engineering Calculation
Ethylbenzene	N/A	0.00	0.00	Engineering Calculation
Xylenes	N/A	0.00	0.00	Engineering Calculation
n-Hexane	N/A	0.00	0.00	Engineering Calculation
2 2 4-trimethylpentane	N/A	0.00	0.00	Engineering Calculation
Total HAPs		0.00	0.00	

Tank Waste Stream

Vapor Density:			
Gunbarrel	0.1209	lb/scf	Promax
Condensate	0.0893	lb/scf	TANKS 4.0.9d
Oil	0.0893	lb/scf	TANKS 4.0.9d
Produced Water	0.0014	lb/scf	TANKS 4.0.9d
Tank Emissions:			
Gunbarrel	5,468,485.42	lb/yr	Promax
Condensate	69,897.16	lb/yr	TANKS 4.0.9d
Oil	7,438.04	lb/yr	TANKS 4.0.9d
Produced Water	9.51	lb/yr	TANKS 4.0.9d
Uncontrolled Recovery- Vapor:	46,097,576.69	scf/yr	
Vapor Margin:	20.00%		
Uncontrolled Recovery- Vapor With Margin :	151,554	scf/day	
Total Emissions Heat Value:	2050	Btu/scf	Engineering Estimation
Total Heat Flow:	310,685,037	Btu/day	
Total Heat Flow:	12.95	MMBtu/hr	

Pollutant	EF (lb/MMBtu)	Estimated Emissions (lb/hr)	(tpy)	Source of Emission Factor
NOx	0.068	0.88	3.86	AP-42 Table 13.5-1
CO	0.31	4.01	17.58	AP-42 Table 13.5-2
VOC[1]	N/A	N/A	N/A	N/A
PM10[2]	40	0.00	0.01	AP-42 Table 13.5-1

Loadout Waste Stream

Potential Emissions	55082.5	lb/yr	Based on AP-42 Section 5.2.1
Vapor Molecular Weight	64.0	lb/lb-mol	Based on TANKS 4.0.9d
Vapor Flow Rate	0.326	MMscf/yr	
	0.037	Mscf/hr	
Emissions Heat Value	2050	Btu/scf	Engineering Estimation

Pollutant	EF (lb/MMBtu)	Estimated Emissions (lb/hr)	(tpy)	Source of Emission Factor
NOx	0.068	0.01	0.02	AP-42 Table 13.5-1
CO	0.31	0.02	0.10	AP-42 Table 13.5-2
VOC[1]	N/A	N/A	N/A	N/A
PM10[2]	40	0.00	0.00	AP-42 Table 13.5-1

1 - VOC emissions from waste streams are shown at tanks and loadout.
2 - PM10 emission factor in units of μg/L, assuming a lightly smoking flare.

Sample Calculation for NOx from Tank Waste Stream

0.068 lb/MMBtu * 12.945 MMBtu/hr = 0.88 lb/hr

Fugitive Dust Emissions Detail Sheet

Equipment Source Name:	HR-1		
Source Description:	Road Dust		
Operation:	24	hr/day	365 days/yr
Emission Controls:	None		

Potential Emissions

Pollutant	Estimated Potential Emissions				Source of Emission Calculations
	Uncontrolled		Controlled		
	lb/hr	tpy	lb/hr	tpy	
PM30*	12.49	0.23	12.49	0.23	AP-42 Section 13.2.2
PM10	3.18	0.06	3.18	0.06	AP-42 Section 13.2.2
PM 2.5	0.32	0.01	0.32	0.01	AP-42 Section 13.2.2

* Assumed equivalent to total suspended particulate matter (TSP)

Mean Vehicle Weight (W)		17.7	tons	Engineering Calculation
Surface Material Silt Content (s)		4.8	%	NMED Default[2]
Mean # of Days with > 0.01 inch of precipitation		70	Days	NMED Default[2]
Material moisture content (%water)		2	%	NMED Default[2]
Mean Wind Speed		11	mph	NMED Default[2]
Oil Production Trucked	100% of max throughput	4.2	bbl/day	
Condensate Production Trucked	100% of max throughput	600.0	bbl/day	
Produced Water Production trucked	100% of max throughput	4.2	bbl/day	

Tech Truck[1]	5,000 lb			
	1 trips/day			
	0.26 miles/day			
	1.49 lb/day	PM30		
	0.38 lb/day	PM10		
	0.04 lb/day	PM 2.5		
Oil Hauler[3]	200 BBL Oil/trip	Truck capacity	12,000 lb Empty weight	
	41,820 lb		7.1 lb/gal (oil)	
	0.02 trips/day			
	0.01 miles/day			
	0.03 lb/day	PM30		
	0.01 lb/day	PM10		
	0.00 lb/day	PM 2.5		
Condensate Hauler[3]	200 BBL Condensate	Truck capacity	12,000 lb Empty weight	
	35,520 lb		5.6 lb/gal (Condensate RVP 12)	
	3 trips/day			
	52 miles/day			
	298.09 lb/day	PM30		
	75.97 lb/day	PM10		
	7.60 lb/day	PM 2.5		
Produced Water Hauler[4]	140 BBL PW/trip	Truck capacity	12,000 Empty weight	
	36,402 lb	(12,000 empty weight)	8.3 lb/gal (water)	
	0 trips/day			
	0.01 miles/day			
	0.04 lb/day	PM30		
	0.01 lb/day	PM10		
	0.00 lb/day	PM 2.5		
	52.27 Total miles/day (Tech Truck + Oil Hauler + Produced Water Hauler)			
	2.18 Total miles/hr			
	19080 Total miles/yr			

Fugitive Dust (PM30) per mile traveled	5.73 lb/VMT	AP-42 Eqn 13.2.2-1a &2
Fugitive Dust (PM10) per mile traveled	1.46 lb/VMT	AP-42 Eqn 13.2.2-1a &2
Fugitive Dust (PM2.5) per mile traveled	0.15 lb/VMT	AP-42 Eqn 13.2.2-1a &2
Vehicle miles traveled	0.26 miles/trip	Engineering Estimation

Notes:

1 - Based on the weight of a Ford F-150

2 - NMED Department Accepted Values for: Aggregate Handling, Storage Pile, and Haul Road Emissions

3 - Based on the assumption each hauler can carry 200 bbls of oil per visit

4 - Based on the assumption each hauler can carry 140 bbls of produced water per visit

Sample Calculation for PM30

5.73 lb/VMT * (0.01 + 0.01 + 0.26) miles/day * 365 days/yr / 2000 lb/ton * (365-70)/ 365 = 0.23 tpy

Haul Road Modeling Calculations

Plume Height	6.80 m	NM AQB 2019 Modeling Guidance Chapter 5.3.3
Vehicle Height	4 m	NM AQB 2019 Modeling Guidance Table 28
Initial Vertical Dimension	3.16 m	NM AQB 2019 Modeling Guidance Chapter 5.3.3
Release Height	3.40 m	NM AQB 2019 Modeling Guidance Chapter 5.3.3
Adjusted Road Width	13.6 m	NM AQB 2019 Modeling Guidance Chapter 5.3.3
Road Width	7.62 m	Engineering Estimation
Initial Horizontal Dimensioı	6.33 m	NM AQB 2019 Modeling Guidance Chapter 5.3.3
Number of Volume Source	55 sources	Engineering Estimation

Uncontrolled MSS Activities

Equipment Source Name MAIN-1
Source Description: Maintenance Activities

Emission Summary

Activity
Aerosol
Painting
Tank Degassing
Tank Cleaning
Engine Startup/Warmup
Sump Cleanout
Pipeline Degassing
Pigging
Filter Changes

	lb/hr*	tpy
TOTAL VOC Emissions	--	10.00

Notes:
* - Hourly emission limits are not appropriate for this operating situation.

Libby Gas Plant Gas Sample dated 1/9/2019

Gas Constituent	Molecular Weight (lb/lb-mol)	Mole %	Mole % Without Water	Weight (lb/lbmole Gas)	Weight %	Weight % Without Water	Total HC Corrected Weight * %	Total VOC Corrected Weight ** %
Methane	16.04	61.85%	61.85%	9.92	38.64%	38.64%	40.23%	NA
Ethane	30.07	15.96%	15.96%	4.80	18.69%	18.69%	19.45%	NA
Total HC (Non-VOC)		**77.81%**	**77.81%**		**57.33%**	**57.33%**	**59.68%**	**NA**
Propane	44.10	11.39%	11.39%	5.02	19.56%	19.56%	20.36%	50.50%
Iso-Butane	58.12	1.64%	1.64%	0.95	3.71%	3.71%	3.86%	9.58%
N-Butane	58.12	4.17%	4.17%	2.42	9.43%	9.43%	9.82%	24.35%
Iso-Pentane	72.15	0.85%	0.85%	0.62	2.40%	2.40%	2.50%	6.20%
N-Pentane	72.15	0.83%	0.83%	0.60	2.34%	2.34%	2.44%	6.04%
Other Hexanes	86.18	0.26%	0.26%	0.22	0.86%	0.86%	0.90%	2.23%
n-Hexane	86.18	0.0640%	0.06%	0.06	0.21%	0.21%	0.22%	0.55%
Heptane	100.21	0.0130%	0.01%	0.01	0.05%	0.05%	0.05%	0.13%
2,2,4-Trimethylpentane	114.23	0.0000%	0.00%	0.00	0.00%	0.00%	0.00%	0.00%
Octanes	114.23	0.0020%	0.00%	0.00	0.01%	0.01%	0.01%	0.02%
Nonanes	128.20	0.0020%	0.00%	0.00	0.01%	0.01%	0.01%	0.03%
Decanes+	142.29	0.0000%	0.00%	0.00	0.00%	0.00%	0.00%	0.00%
Benzene	78.11	0.0410%	0.04%	0.03	0.12%	0.12%	0.13%	0.32%
Toluene	92.14	0.0050%	0.01%	0.00	0.02%	0.02%	0.02%	0.05%
Ethylbenzene	106.17	0.0000%	0.00%	0.00	0.00%	0.00%	0.00%	0.00%
Xylenes	106.16	0.0000%	0.00%	0.00	0.00%	0.00%	0.00%	0.00%
Total NMNE VOC		**19.27%**	**19.27%**	**9.95**	**38.73%**	**38.73%**	**40.32%**	**100.00%**
Total HAPs		**0.11%**	**0.11%**	**0.09**	**0.36%**	**0.36%**	**0.37%**	**0.92%**
Water	18.02	0.00%	NA	0.00	0.00%	NA	NA	NA
Hydrogen Sulfide	34.08	0.00%	0.00%	0.00	0.00%	0.00%	NA	NA
Carbon Dioxide	44.01	1.21%	1.21%	0.53	2.07%	2.07%	NA	NA
Nitrogen	28.01	1.71%	1.71%	0.48	1.87%	1.87%	NA	NA
Totals		100.00%	100.00%	25.68	100.00%	100.00%	100.00%	

Average Molecular Weight of VOCs: **51.62 lb/lb-mol**

Notes:

* Weight Percent corrected to remove Water, Carbon Dioxide,Nitrogen, and H2S content.

** Weight Percent corrected to remove non-VOC content.

Libby Gas Plant - Promax Stream 47

Gas Constituent	Molecular Weight (lb/lb-mol)	Mole %	Weight (lb/lbmole Gas)	Weight %	Total HC Corrected Weight * %	Total VOC Corrected Weight ** %
Methane	16.04	88.38%	14.18	79.96%	82.72%	NA
Ethane	30.07	8.83%	2.66	14.97%	15.49%	NA
Total HC (Non-VOC)		97.21%		94.93%	98.21%	NA
Propane	44.10	0.62%	0.28	1.55%	1.61%	89.53%
Iso-Butane	58.12	0.02%	0.01	0.07%	0.07%	3.83%
N-Butane	58.12	0.03%	0.02	0.11%	0.11%	6.08%
Iso-Pentane	72.15	0.00%	0.00	0.01%	0.01%	0.31%
N-Pentane	72.15	0.00%	0.00	0.00%	0.00%	0.22%
Other Hexanes	86.18	0.00%	0.00	0.00%	0.00%	0.02%
n-Hexane	86.18	0.00%	0.00	0.00%	0.00%	0.00%
Heptane	100.21	0.00%	0.00	0.00%	0.00%	0.00%
2,2,4-Trimethylpentane	114.23	0.00%	0.00	0.00%	0.00%	0.00%
Octanes+	114.23	0.00%	0.00	0.00%	0.00%	0.00%
Benzene	78.11	0.00%	0.00	0.00%	0.00%	0.00%
Toluene	92.14	0.00%	0.00	0.00%	0.00%	0.00%
Ethylbenzene	106.17	0.00%	0.00	0.00%	0.00%	0.00%
Xylenes	106.16	0.00%	0.00	0.00%	0.00%	0.00%
Total NMNE VOC		**0.68%**	**0.31**	**1.73%**	**1.79%**	**100.00%**
Hydrogen Sulfide	34.08	0.00%	0.00	0.00%	NA	NA
Carbon Dioxide	44.01	0.01%	0.00	0.01%	NA	NA
Nitrogen	28.01	2.10%	0.59	3.32%	NA	NA
Totals		100.00%	17.73	100.00%	100.00%	

Average Molecular Weight of VOCs: **45.28 lb/lb-mol**

Lumped C6+ Natural Gas Analysis Conversion

Hexane+ Mol % from Gas Analysis	0.0001%

(Reference: Typical speciated C6+ from GRI-GLYCalc Help System)

	Production Weighted Mol % of C6***	Production Total Gas Mol %	Molecular Weight (lb/lb-mol)	Weight (lb/lb-mol Gas)	Weight% of C6+	Total Gas Weight%	Total VOC Corrected Weight%
Other Hexanes	63.85%	0.00005961%	86.18	55.03	62.25%	0.00%	0.002%
n-Hexane	14.79%	0.00001381%	86.18	12.75	14.42%	0.00%	0.001%
Heptane	6.87%	0.00000641%	100.2	6.88	7.79%	0.00%	0.000%
2,2,4-Trimethylpentane	2.67%	0.00000249%	114.23	3.05	3.45%	0.00%	0.000%
Octanes +	4.80%	0.00000448%	114.23	5.48	6.20%	0.00%	0.000%
Benzene	3.31%	0.00000309%	78.11	2.59	2.92%	0.00%	0.000%
Toluene	2.85%	0.00000266%	92.13	2.63	2.97%	0.00%	0.000%
Ethylbenzene	0.14%	0.00000013%	106.17	0.15	0.17%	0.00%	0.000%
Xylenes	0.72%	0.00000067%	106.17	0.76	0.86%	0.00%	0.000%
Totals C6+	**100.00%**	**0.0001%**					0.004%
Total HAPs						**0.0000%**	

Notes:

* Weight Percent corrected to remove Carbon Dioxide,Nitrogen, and H2S content.

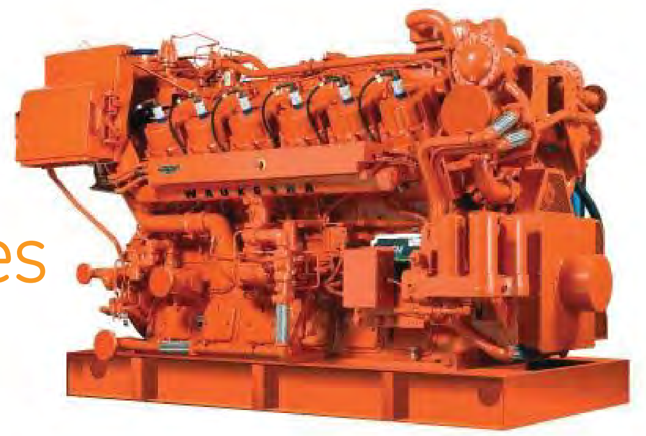
** Weight Percent corrected to remove non-VOC content.

*** GRY-GLYCalc C6+ typical gas composition from Help System used to speciate Hexanes+ for HAP emissions.

Process Streams		**47**
Composition	**Status:**	**Solved**
Phase: **Total**	**From Block:**	**PIPE-1**
	To Block:	--
Mole Fraction		**%**
Methane		88.382%
Ethane		8.830%
Propane		0.624%
i-Butane		0.020%
n-Butane		0.032%
i-Pentane		0.001%
n-Pentane		0.001%
n-Hexane		0.000%
n-Heptane		0.000%
C8		0.000%
Water		0.000%
N2		2.104%
CO2		0.005%
H2S		0.000%
Triethylene Glycol		0.000%
EG		0.000%
MeOH		0.000%
MDEA		0.000%
CHEMTHERM 550		0.000%

Process Streams		**47**
Properties	**Status:**	**Solved**
Phase: **Total**	**From Block:**	**PIPE-1**
	To Block:	--
Property	**Units**	
Temperature	°F	75.1253
Pressure	psig	828.3127315
Mole Fraction Vapor	%	100
Mole Fraction Light Liquid	%	0
Mole Fraction Heavy Liquid	%	0
Molecular Weight	lb/lbmol	17.7327
Mass Density	lb/ft^3	2.99494
Molar Flow	lbmol/h	2275.60
Mass Flow	lb/h	40352.7
Vapor Volumetric Flow	ft^3/h	13473.6
Liquid Volumetric Flow	gpm	1679.83
Std Vapor Volumetric Flow	MMSCFD	20.7253
Std Liquid Volumetric Flow	sgpm	255.058
Compressibility		0.868260
Specific Gravity		0.612266
API Gravity		
Enthalpy	Btu/h	-7.37803E+07
Mass Enthalpy	Btu/lb	-1828.39
Mass Cp	Btu/(lb*°F)	0.617786
Ideal Gas CpCv Ratio		1.28750
Dynamic Viscosity	cP	0.01245206
Kinematic Viscosity	cSt	0.259557
Thermal Conductivity	Btu/(h*ft*°F	0.0218038
Surface Tension	lbf/ft	
Net Ideal Gas Heating Value	Btu/ft^3	962.820
Net Liquid Heating Value	Btu/lb	20579.0
Gross Ideal Gas Heating Value	Btu/ft^3	1066.43
Gross Liquid Heating Value	Btu/lb	22796.7

GE Power & Water



Waukesha* gas engines VHP* Series Four*

L7044GSI

1120 - 1680 BHP (835 - 1253 kWb)

GE's Waukesha Series Four rich-burn engines are the engines of choice for the harshest and most demanding gas compression, power generation and mechanical drive applications. The Series Four engines can reliably produce more power on hot field gases, at high altitudes, and in remote locations, all while delivering low emissions when paired with a 3-way catalyst (NSCR).

technical data

Cylinders	V12
Piston displacement	7040 cu. in. (115 L)
Compression ratio	8:1
Bore & stroke	9.375" x 8.5" (238 x 216)
Jacket water system capacity	100 gal. (379 L)
Lube oil capacity	190 gal. (719 L)
Starting system	125 - 150 psi air/gas 24V electric

Dimensions l x w x h inch (mm)

147 (3734) x 85 (2159) x 97.83 (2485)

Weights lb (kg)

21,000 (9,525)

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performance data

Intercooler Water Temperature 130°F (54°C)		1200 RPM	1000 RPM
	Power bhp (kWb)	1680 (1253)	1400 (1044)
	BSFC (LHV) Btu/bhp-hr (kJ/kWh)	7881 (11149)	7693 (10882)
	Fuel Consumption Btu/hr x 1000 (kW)	13240 (3881)	10781 (3156)
Emissions	NOx g/bhp-hr (mg/Nm³ @ 5% O_2)	13.30 (4922)	12.90 (4782)
	CO g/bhp-hr (mg/Nm³ @ 5% O_2)	11.20 (4140)	9.40 (3477)
	NMHC g/bhp-hr (mg/Nm³ @ 5% 0_2)	0.35 (131)	0.34 (127)
	THC g/bhp-hr (mg/Nm³ @ 5% O_2)	2.40 (873)	2.30 (844)
Heat Balance	Heat to Jacket Water Btu/hr x 1000 (kW)	3849 (1128)	3227 (946)
	Heat to Lube Oil Btu/hr x 1000 (kW)	567 (166)	462 (135)
	Heat to Intercooler Btu/hr x 1000 (kW)	179 (53)	122 (36)
	Heat to Radiation Btu/hr x 1000 (kW)	724 (212)	642 (188)
	Total Exhaust Heat Btu/hr x 1000 (kW)	3900 (1143)	2962 (868)
Intake/ Exhaust System	Induction Air Flow scfm (Nm³/hr)	2424 (3651)	1972 (2970)
	Exhaust Flow lb/hr (kg/hr)	11273 (5113)	9171 (4160)
	Exhaust Temperature °F (°C)	1179 (637)	1112 (600)

All data according to full load and subject to technical development and modification.

Consult your local GE Power & Water's representative for system application assistance. The manufacturer reserves the right to change or modify without notice, the design or equipment specifications as herein set forth without incurring any obligation either with respect to equipment previously sold or in the process of construction except where otherwise specifically guaranteed by the manufacturer.

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GE Power & Water
1101 West Saint Paul Ave.
Waukesha, WI 53188-4999
P: 1.262.547.3311
F: 1.262.549.2759

Visit us online at:
www.ge-waukesha.com

7045 0413 GEA-18926

Prepared For:
Kyle Poycker
Archrock

Date: December 3, 2019

APPLICATION INFORMATION

DRIVER

Make:	Waukesha
Model:	L7044GSI
Horsepower:	1680
RPM:	1200
Compression Ratio:	8
Exhaust Flow Rate:	8253
Exhaust Temperature:	1179
Reference:	7044GSI EngCalc
Fuel:	Natural Gas
Annual Operating Hours:	8760

UNCONTROLLED EMISSIONS DATA

	g/bhp-hr	lb/hr	Tons/Year
NO_x:	13.30	49.26	215.76
CO:	11.50	42.59	186.56
THC:	2.40	8.89	38.93
NMHC:	0.36	1.33	5.84
NMNEHC:	0.06	0.22	0.97
HCHO:	0.05	0.19	0.81
Oxygen:	0.30%		

CATALYST ELEMENT

Model:	RT-2415-T
Catalyst Type:	NSCR, Standard Precious Metals Group
Substrate Type:	Brazed
Element Size:	Rectangle, 24" x 15" x 3.5"
Element Quantity:	5

POST CATALYST EMISSIONS DATA

	g/bhp-hr	lb/hr
NO_x:	< 0.41	1.52
CO	< 0.34	1.26
VOC	< 0.14	0.52

**POST CATALYST EMISSIONS ARE ONLY GUARANTEED FOR CATALYST ELEMENTS SUPPLIED BY EMIT

New Mexico
ENVIRONMENT DEPARTMENT

525 Camino de los Marquez, Suite 1
Santa Fe, NM 87505-1816
Phone (505) 476-4300
Fax (505) 476-4375
www.env.nm.gov

MICHELLE LUJAN GRISHAM
GOVERNOR

HOWIE C. MORALES
LT. GOVERNOR

JAMES C. KENNEY
CABINET SECRETARY

JENNIFER J. PRUETT
DEPUTY SECRETARY

PUBLIC INVOLVEMENT PLAN (PIP)

Air Quality Bureau Air Permit Application

Version P8.20.19

Date: December 4, 2019
Applicant: 3 Bear Delaware Operating – NM, LLC.
Facility Name: 3 Bear Libby Gas Plant
Air Quality Permit Application Number: 7482-M1
Location: This facility is located approximately 16.2 miles southwest of Monument, in Lea County, New Mexico.

Latitude: 32.542358 Longitude: -103.525728

1. Overview of Air Quality Bureau's plan of action for addressing the community's needs and concerns for processing Air Quality Permit Applications:

The New Mexico Environment Department (Department), Air Quality Bureau (AQB) developed this Public Involvement Plan (PIP) for the processing of air quality permit applications in accordance with the requirements at 20.2.72 NMAC for this facility. This air quality regulation does require public participation outreach throughout different stages of the permitting process. The AQB will meet the public participation requirements by following this PIP, which includes all applicable policy, regulatory and statutory public participation requirements.

In developing this PIP, community participation needs for this permitting action were assessed to ensure appropriate promotion of public outreach by identifying whether there is a combination of environmental and demographic factors (i.e., low income community, minority community, limited English proficiency individuals, Linguistically Isolated Households, etc.) that may impact public participation. This assessment identifies community outreach needs and provides for public access opportunities above and beyond statutorily mandated requirements, and underscores the provision of adequate public access to information about this permit application.

As much as possible, public participation and informational activities related to this permit application will be held within the regulatory timelines outlined below.

a. AQB regulations at 20.2.72 NMAC require that the application must be ruled complete or incomplete no more than 30 days after receipt, and that a public notice for this application must be published in a newspaper of general circulation where the facility is located. See section 4.c below for more information.

The public notice contains a paragraph in Spanish directing Spanish speaking interested parties to call the AQB at (505) 476-5557 to speak to Spanish speaking staff for additional information regarding this permitting action.

b. The AQB will provide a copy of the public notice, the air quality permit application, and this PIP to the NMED field office at:

Hobbs
2120 N. Alto
Hobbs, NM 88240
Phone (575) 397-6910
Fax (575) 397-6916

c. AQB regulations require that the public notice be sent to interested parties maintained on a mailing list. See Section 4.b below for more information.

d. AQB regulations require that the public notice be sent to the "appropriate agency" as defined at 20.2.72 NMAC. See Section 4.e below for more information.

e. Public notice shall be followed by a 30-day public comment period that starts on the day that the notice is published in the newspaper. See Section 4.g below for details.

f. AQB regulations require that the permit must be issued, issued subject to conditions, or denied within ninety (90) days after the department deems the application administratively complete.

2. Contact list of AQB staff with phone numbers and email addresses:

a. AQB contact for questions about this application or PIP (included in public notices and outreach materials):

Julia Kuhn
New Mexico Environment Department
Air Quality Bureau
525 Camino de los Marquez, Suite 1
Santa Fe, New Mexico, 87505
505-476-4376
Julia.Kuhn@state.nm.us

Electronic copies will be available at the following link, which will be included in public notices and outreach materials as appropriate: https://www.env.nm.gov/air-quality/aqb-p_current_permitting_activites/

b. Non-English Language Speaker Assistance and Accommodations

The AQB may hold public meetings, open houses, stakeholder meetings, and/or a formal hearing depending on the interest in the application. Language assistance services may be arranged for translation of documents for meetings, for translators during meetings and for obtaining services for persons with disabilities. A phone-based interpretation service may be available for languages other than English.

3. Description of the community/stakeholder groups:

To provide for adequate public participation opportunities and meaningful involvement of persons regarding this permit application and to address potential or existing environmental justice areas, the affected communities must first be identified, informed about proposed environmental actions affecting the community, and invited to share their comments and concerns. The EJSCREEN tool developed by the U.S. Environmental Protection Agency (EPA) helps identify communities that are low income and minority populations that may benefit from a variety of approaches for notification and outreach communication.

Using the 4-mile radius from the facility, the results of the EJScreen ACS Summary Report (attached) are listed in the table below.

Population and Income Data				
Total Population:	5		Per capita income of community:	$22,196
Minority Population, %:	78		US Per Capita Income*:	$29,829
Total number of households:	2		Total Number (and Percent) of Linguistically Isolated Households:	0 (0%)

*US Per Capita Income 2012-2016; https://www.census.gov/quickfacts/fact/table/US/HSG030210

Population by Race, %			**Population by Ability to Speak English, %**	
White	93		Speak Only English	53
Black	0		Non-English at Home	47
American Indian	0		Speak English "very well"	36
Asian	0		Speak English "well"	5
Pacific Islander	0		Speak English "not well"	6
Other Race	7		Speak English "not at all"	0
Two or More Races	0		Speak English "less than very well"	11

Linguistically Isolated Household Details, %			**List other Languages (if applicable)**
Speak Spanish	NA*		//
Speak Other Indo-European Languages	NA		
Speak Asian Pacific Island Languages	NA		
Speak Other Languages	NA		

In addition, the following community or stakeholder groups have been identified:

None.

History of public involvement in air permitting during the last 10 years: There has not been public involvement from citizens or groups during the last 10 years.

It is important for the AQB to incorporate the linguistic and communication needs of this community when conducting public outreach and participation activities. To help accomplish this, the AQB will provide information in English, in public comment notices, public meeting notices (if applicable), and other announcements (radio broadcasts, brochures, signs, postcards, etc.) and strive to make public participation efforts as inclusive as possible within AQB budget and time limitations. The NMED field office at Hobbs will serve as access areas for the AQB to leave hard copies of important documents and information about how to comment on this permit application.

4. Detailed actions and outreach activities the AQB Permitting Section will take to reach the affected public:

a. Overview

Based on the demographics report discussed in the PIP, the history of public involvement at the facility and the facility background, basic information about public involvement opportunities will be in English. This information will include how to request materials in Spanish or to speak with AQB staff through an interpreter. Further details about public participation for this activity are outlined below.

The AQB maintains information regarding this air quality permit application at the following locations:

i. **On the Air Quality Bureau website, see Section 2.a above.**
ii. **At the District Office listed in Section 1.b above.**
iii. **At the main office location:**
New Mexico Environment Department
Air Quality Bureau
525 Camino de los Marquez, Suite 1
Santa Fe, New Mexico, 87505

b. Postal Mailing or E-Mailing of Notices to Persons on the Facility-Specific Mailing List

AQB regulations require notification to persons who have expressed interest in applications. The AQB maintains a mailing list that includes individuals interested in permit applications from particular facilities or geographic areas. Notifications may be sent through physical mail and/or an email.

The list also includes addresses within fifty kilometers of the boundary of other states, Bernalillo county, or a Class I area.

c. Notices in the State Newspaper and Local Newspapers
The public notice for this permit application will be published in English in the Legal Section of the Hobbs News Sun newspaper.

Websites for this publication is listed below:

English: http://www.hobbsnews.com/

d. Mailing to the Governor or President of Indian Tribes, Pueblos or Nations
AQB regulations and the evaluation of the facility location and associated demographics, require notification to Tribes, Pueblos or Nations about this permit application for facilities located within a specified distance.

Department does not do this notification for NSR permits. Notification to Indian Tribes, Pueblos or Nations within 10 miles is required from the applicant for the NSR.

There are no Tribes, Pueblos, or Nations within 50 miles of this facility.

e. Affected Local, State, or Federal Government Agencies, and Active Land Grants
AQB regulations require identifying and notifying local, state or federal government agencies about this permit application.

The following affected Local, State, or Federal Government Agencies will be notified by email:

US EPA Region VI.
State of Texas.

f. Public Meeting Notices, Public Comment Notices, and Other Notices
AQB may hold public meetings, open houses, stakeholder meetings, and/or a formal hearing depending on the interest in the application. Based on historical information and the results of the initial screening, there is no public meeting planned at this time for this permit application. If it is determined that a public meeting will be required, notice will be provided to the community as follows:

1) Via a newspaper of general circulation in the area closest to the location of the facility.
2) Locations commonly frequented by the general public, such as a nearby post office, public library, or city hall.
3) All persons and organizations that have expressed interest and are on a list maintained by AQB.
4) Via a public service announcement to at least one radio or television station which serves the municipality or county in which the source is or is proposed to be located.
5) The notices will be translated for non-English speaking participants, if required.
6) The notices will include information for requesting accommodations for those with disabilities as listed in item 2b above.

AQB will locate an appropriate venue based on the availability to the community to access the meeting, and the specific needs of the affected community (e.g. size of community, community locations, impacts, etc.).

AQB may reschedule the meeting due to inclement weather. If rescheduled, AQB will provide as much advance notice as possible and reschedule for an appropriate time and date.

Meetings will be scheduled to make them as accessible and user-friendly as practical, considering work schedules, dinner hours and other community commitments. To the extent possible, the meeting will be held at a location that is local and convenient, and meet American with Disabilities Act (ADA) standards. In addition, whenever practical and appropriate, translators for limited-English speaking communities, or assistance for hearing-impaired individuals may be available. Information in public notices for a public meeting will adhere to AQB regulations, statutes and policies.

g. Public Comment Periods

AQB regulations require that all interested persons have thirty (30) days from the date the public notice is published to express an interest in writing in the permit application. If AQB receives written public comment before the end of the thirty (30) day public comment period, the analysis of the application will be made available for review for thirty (30) days on the Air Quality Bureau Website and at the NMED District office (address listed in Section 1.b above)

The PIP has been reviewed and approved by the AQB Bureau Chief.

_______________________ ___________________

Liz Bisbey-Kuehn Date approved
Bureau Chief
Air Quality Bureau

Attachments: EJSCREEN Printout

New Mexico
ENVIRONMENT DEPARTMENT

525 Camino de los Marquez, Suite 1
Santa Fe, NM 87505-1816
Phone (505) 476-4300
Fax (505) 476-4375
www.env.nm.gov

MICHELLE LUJAN GRISHAM
GOVERNOR

HOWIE C. MORALES
LT. GOVERNOR

JAMES C. KENNEY
CABINET SECRETARY

JENNIFER J. PRUETT
DEPUTY SECRETARY

Limited English Proficiency (LEP) Services Evaluation

Air Quality Bureau Air Permit Application

Version P05.09.19

Date: December 4, 2019
Applicant: 3 Bear Delaware Operating – NM, LLC.
Facility Name: 3 Bear Libby Gas Plant
Air Quality Permit Application Number: 7482-M1
Location: This facility is located approximately 16.2 miles southwest of Monument, in Lea County, New Mexico.

Latitude: 32.542358 Longitude: -103.525728

Factor 1 – Number and Proportion of LEP Individuals in the Community:

A. Total Number that Speak English "less than very well": Proportion, %: 11
B. Historical participation: The Bureau does not have records indicating any participation by LEP individuals or any member of the public regarding this facility.

Factor 2 – Frequency with Which LEP Individuals Come in Contact with the Program (Frequent, Occasional, Not Frequent):
There is no record of frequent or any contact with LEP individuals regarding this facility.

Factor 3 – Nature and Importance of the Activity (Moderately Important, Important, Very Important):
Important. Permits cannot be issued in accordance with 20.2.72 NMAC unless they demonstrate compliance with all state and federal regulations, including health-based New Mexico and National Ambient Air Quality Standards. This requirement protects the health of the residents in the vicinity of this facility.

Bureau regulations require that final action must be taken on this permit application no later than 90 days after the application has been ruled complete.

The Oil and Gas industry constitutes a significant source of revenue for the State. Permitting facilities that are demonstrated to be in compliance with state and federal regulations encourages responsible economic development for New Mexico.

Factor 4 – Resources Available to NMED and Associated Costs:
A. Costs associated with translation: $300

Costs associated with providing a translator: $1000-3000 depending on the length of the proceeding
Costs associated with hosting a public hearing: $1500-3000
Costs for a court reporter: $2000

B. The Department staff includes a Spanish translator and the Department has call in translator services available.

The Bureau has reviewed the above four factors. This NSR permit action consist of a significant revision that increases pollutant emission rates and incorporates an already issued construction permit (7482, January 08, 2018). Given the importance of this project, the limited involvement of LEP individuals or any member of the public regarding this facility in the past, and considering the current public notice already contains a paragraph in Spanish regarding how to speak with someone in the Bureau about the proposed project, the Bureau does not plan to provide additional LEP services regarding this permitting action.

The LEP Services Evaluation has been reviewed and approved by the AQB Bureau Chief.

________________________ ____________________

Liz Bisbey-Kuehn Date approved
Bureau Chief
Air Quality Bureau

EJSCREEN ACS Summary Report

Location: User-specified point center at 32.542358, -103.525728
Ring (buffer): 4-miles radius
Description: 3 Bear Libby Gas Plant

Summary of ACS Estimates	2013 - 2017
Population	5
Population Density (per sq. mile)	0
Minority Population	4
% Minority	78%
Households	2
Housing Units	2
Housing Units Built Before 1950	0
Per Capita Income	22,196
Land Area (sq. miles) (Source: SF1)	56.73
% Land Area	100%
Water Area (sq. miles) (Source: SF1)	0.02
% Water Area	0%

	2013 - 2017 ACS Estimates	Percent	MOE (±)
Population by Race			
Total	5	100%	276
Population Reporting One Race	5	100%	433
White	4	93%	281
Black	0	0%	12
American Indian	0	0%	48
Asian	0	0%	12
Pacific Islander	0	0%	12
Some Other Race	0	7%	68
Population Reporting Two or More Races	0	0%	12
Total Hispanic Population	4	78%	296
Total Non-Hispanic Population	1		
White Alone	1	22%	102
Black Alone	0	0%	12
American Indian Alone	0	0%	12
Non-Hispanic Asian Alone	0	0%	12
Pacific Islander Alone	0	0%	12
Other Race Alone	0	0%	12
Two or More Races Alone	0	0%	12
Population by Sex			
Male	2	50%	135
Female	2	50%	169
Population by Age			
Age 0-4	0	9%	69
Age 0-17	2	34%	107
Age 18+	3	66%	150
Age 65+	0	9%	52

Data Note: Detail may not sum to totals due to rounding. Hispanic population can be of any race.
N/A means not available. **Source:** U.S. Census Bureau, American Community Survey (ACS) 2013 - 2017 .

EJSCREEN ACS Summary Report

Location: User-specified point center at 32.542358, -103.525728
Ring (buffer): 4-miles radius
Description: 3 Bear Libby Gas Plant

	2013 - 2017 ACS Estimates	Percent	MOE (±)
Population 25+ by Educational Attainment			
Total	3	100%	132
Less than 9th Grade	0	11%	50
9th - 12th Grade, No Diploma	1	19%	71
High School Graduate	1	34%	88
Some College, No Degree	1	27%	67
Associate Degree	0	8%	38
Bachelor's Degree or more	0	8%	34
Population Age 5+ Years by Ability to Speak English			
Total	4	100%	247
Speak only English	2	53%	135
Non-English at Home[1+2+3+4]	2	47%	202
[1]Speak English "very well"	2	36%	156
[2]Speak English "well"	0	5%	47
[3]Speak English "not well"	0	6%	55
[4]Speak English "not at all"	0	0%	22
[3+4]Speak English "less than well"	0	6%	55
[2+3+4]Speak English "less than very well"	0	11%	72
Linguistically Isolated Households*			
Total	0	0%	24
Speak Spanish	0	0%	17
Speak Other Indo-European Languages	0	0%	12
Speak Asian-Pacific Island Languages	0	0%	12
Speak Other Languages	0	0%	12
Households by Household Income			
Household Income Base	2	100%	62
< $15,000	0	5%	22
$15,000 - $25,000	0	4%	24
$25,000 - $50,000	1	36%	64
$50,000 - $75,000	0	22%	44
$75,000 +	1	33%	58
Occupied Housing Units by Tenure			
Total	2	100%	62
Owner Occupied	1	77%	57
Renter Occupied	0	23%	46
Employed Population Age 16+ Years			
Total	3	100%	192
In Labor Force	2	53%	139
Civilian Unemployed in Labor Force	0	4%	41
Not In Labor Force	2	47%	104

Data Note: Datail may not sum to totals due to rounding. Hispanic population can be of anyrace.
N/A means not available. **Source:** U.S. Census Bureau, American Community Survey (ACS)
*Households in which no one 14 and over speaks English "very well" or speaks English only.

EJSCREEN ACS Summary Report

Location: User-specified point center at 32.542358, -103.525728
Ring (buffer): 4-miles radius
Description: 3 Bear Libby Gas Plant

	2013 - 2017 **ACS Estimates**	**Percent**	**MOE (±)**
Population by Language Spoken at Home*			
Total (persons age 5 and above)	N/A	N/A	N/A
English	N/A	N/A	N/A
Spanish	N/A	N/A	N/A
French	N/A	N/A	N/A
French Creole	N/A	N/A	N/A
Italian	N/A	N/A	N/A
Portuguese	N/A	N/A	N/A
German	N/A	N/A	N/A
Yiddish	N/A	N/A	N/A
Other West Germanic	N/A	N/A	N/A
Scandinavian	N/A	N/A	N/A
Greek	N/A	N/A	N/A
Russian	N/A	N/A	N/A
Polish	N/A	N/A	N/A
Serbo-Croatian	N/A	N/A	N/A
Other Slavic	N/A	N/A	N/A
Armenian	N/A	N/A	N/A
Persian	N/A	N/A	N/A
Gujarathi	N/A	N/A	N/A
Hindi	N/A	N/A	N/A
Urdu	N/A	N/A	N/A
Other Indic	N/A	N/A	N/A
Other Indo-European	N/A	N/A	N/A
Chinese	N/A	N/A	N/A
Japanese	N/A	N/A	N/A
Korean	N/A	N/A	N/A
Mon-Khmer, Cambodian	N/A	N/A	N/A
Hmong	N/A	N/A	N/A
Thai	N/A	N/A	N/A
Laotian	N/A	N/A	N/A
Vietnamese	N/A	N/A	N/A
Other Asian	N/A	N/A	N/A
Tagalog	N/A	N/A	N/A
Other Pacific Island	N/A	N/A	N/A
Navajo	N/A	N/A	N/A
Other Native American	N/A	N/A	N/A
Hungarian	N/A	N/A	N/A
Arabic	N/A	N/A	N/A
Hebrew	N/A	N/A	N/A
African	N/A	N/A	N/A
Other and non-specified	N/A	N/A	N/A
Total Non-English	N/A	N/A	N/A

Data Note: Detail may not sum to totals due to rounding. Hispanic popultion can be of any race.
N/A meansnot available. **Source:** U.S. Census Bureau, American Community Survey (ACS) 2013 - 2017.
*Population by Language Spoken at Home is available at the census tract summary level and up.

00650

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

LEGAL NOTICE

and

Preliminary Determination for an Air Quality Permit for

3 Bear Delaware Operating - NM LLC

3 Bear Delaware Operating - NM LLC, 1512 Larimer St, Suite 540, Denver, CO has submitted an air quality permit application to the Air Quality Bureau (AQB), New Mexico Environment Department (NMED) for an air quality permit to modify 3 Bear Libby Gas Plant. The application file has been assigned Permit No. 7482M1. The exact location of the facility is at latitude 32 degrees, 32 minutes, 32.5 seconds and longitude -103 degrees, 31 minutes, 32.6 seconds, Datum: WGS84. This facility is located approximately 16.2 miles SW of Monument, in Lea County, NM.

The proposed modification will consist of equipment addition to the facility and revision of emissions resulting in increased quantities of regulated air contaminants. The facility will receive up to 60 MMscf/day of gas from three surrounding compressor stations owned and operated by 3 Bear Libby to separate natural gas liquids from the field gas, producing natural gas liquids and a residue gas for transmission to a pipeline. The proposed construction will consist of eight operating compressor engines, one gunbarrel tank, four condensate tanks, one slope oil tank, one produced water tank, one amine regenerator heater, one hot oil heater, one amine unit, one condensate loadout, one thermal oxidizer, one maintenance flare, one tank flare, process piping fugitives and haul road fugitives. This public notice reflects a revision to the current application requesting the addition of four engines for an alternative operating scenario between Caterpillar and Waukesha engines.

Total air pollutant emissions to the atmosphere are estimated to be approximately as follow: Parentheses note changes in emissions from previous construction permit – 7482. The emissions for the facility are expressed in tons per year (tpy). Nitrogen Oxides (NOx) at 145.1 tpy (+21.1 tpy); Carbon Monoxide (CO) at 241.7 tpy (+113.8 tpy); Volatile Organic Compounds (VOC) at 182.8 tpy (+71.5 tpy); Sulfur Dioxide (SO_2) at 238.4 tpy (-0.4 tpy); Particulate Matter (PM) at 9.1 tpy (+1.2 tpy), Particulate Matter 10 microns or less (PM_{10}) at 8.9 tpy (+2.3 tpy), and Particulate Matter 2.5 microns or less ($PM_{2.5}$) at 8.9 tpy (+2.7 tpy), and greenhouse gas (CO_2e) > 75,000 tpy. These emission estimates could change slightly during the course of the Department's review of the application.

The NMED has conducted a preliminary review of the information submitted with the permit application. The preliminary review and applicant's analysis of ambient air quality impacts indicates that the facility's air emissions will meet the air quality standards for NOx, CO, SO_2, PM, PM_{10} and $PM_{2.5}$. VOCs are a pre-cursor to ozone and the NMED does not require an individual ozone ambient impact analysis for each application. To determine compliance with national ambient air quality standards for ozone, NMED uses air monitors to monitor ozone concentrations. A full review will evaluate the estimated emission rates for the pollutants listed in this public notice and determine compliance with ambient air quality requirements and standards.

Based on the applicant's analysis, a preliminary determination is that this facility will comply with the requirements of Title 20, New Mexico Administrative Code (NMAC), Chapter 2, Parts 1, 3, 7, 35, 38, 61, 70, 71, 72, 73, 75, 77, 80 and 82; 40 CFR 50; 40 CFR 60 Subparts Dc, JJJJ and OOOOa; 40 CFR 63 Subparts ZZZZ; 40 CFR 68 and the New Mexico Air Quality Control Act. Therefore, the preliminary intent of NMED is to issue the air quality permit on or before January 9, 2020. This source is a PSD minor source according to 20.2.74 NMAC.

To ensure compliance with state and federal air regulations, the permit is expected to include conditions that limit the emissions and conditions that will require record keeping and reporting to the Department.

The permit application is available for review in electronic or hard copy at the Air Quality Bureau Office, 525 Camino de los Marquez Suite 1, Santa Fe, New Mexico. To arrange viewing of this application contact Arianna Espinoza, at 505-476-4367 or arianna.espinoza@state.nm.us. The permit application is also available at the NMED Hobbs Field Office, located at 2120 N. Alto, Hobbs, NM 88240 for public review.

All interested persons have thirty (30) days from the date this notice is published, to notify the Department in writing of their interest in the permit application. The written comments should refer to the company name, facility name and Permit No. (or send a copy of this notice along with your comments). The written comments shall state the nature of the issues raised and how it relates to the requirements of applicable state and federal air quality regulations and the Clean Air Act. The written comments should be mailed to Julia Kuhn, New Mexico Environment Dept., Air Quality Bureau, Permit Section, 525 Camino de los Marquez Suite 1, Santa Fe, NM 87505-1816.

The Department will notify all persons, who have provided written comments as to when and where the Department's analysis may be reviewed. Although all written comments will be made part of the public record, any person who does not express interest in writing before the end of this first thirty (30) day period will not receive such notification.

If the Department receives written public comment before the end of the Department's thirty (30) day public notice, the Department's analysis will be made available for review for thirty (30) days at the NMED district or field office nearest to the source before the permit will be issued. Written comments on the analysis or permit application may be submitted to the Department during this second thirty (30) day period or at any time before the permit is issued or denied.

Questions or comments not intended to be part of the public record can be directed to Julia Kuhn at 505-476-4376. General information about air quality and the permitting process can be found at the Air Quality Bureau's web site. The regulation dealing with public participation in the permit review process is 20.2.72.206 NMAC. This regulation can be found in the "Permits" section of this web site. Este es un aviso de la oficina de Calidad del Aire del Departamento del Medio Ambiente de Nuevo México, acerca de las emisiones producidas por un establecimiento en esta área. Si usted desea información en español, por favor comuníquese con esa oficina al teléfono 505-476-5557.

Notice of Non-Discrimination

NMED does not discriminate on the basis of race, color, national origin, disability, age or sex in the administration of its programs or activities, as required by applicable laws and regulations. NMED is responsible for coordination of compliance efforts and receipt of inquiries concerning non-discrimination requirements implemented by 40 C.F.R. Part 7, including Title VI of the Civil Rights Act of 1964, as amended; Section 504 of the Rehabilitation Act of 1973; the Age Discrimination Act of 1975, Title IX of the Education Amendments of 1972, and Section 13 of the Federal Water Pollution Control Act Amendments of 1972. If you have any questions about this notice or any of NMED's non-discrimination programs, policies or procedures, or if you believe that you have been discriminated against with respect to a NMED program or activity, you may contact: Kristine Yurdin, Non-Discrimination Coordinator, NMED, 1190 St. Francis Dr., Suite N4050, P.O. Box 5469, Santa Fe, NM 87502, (505) 827-2855, nd.coordinator@state.nm.us. You may also visit our website at https://www.env.nm.gov/non-employee-discrimination-complaint-page/ to learn how and where to file a complaint of discrimination.

Air Quality
My Air
Permitting
Compliance and Enforcement
Planning
Monitoring
Public Notices of Permitting Actions
Frequently Asked Questions
Regulations
Air Quality Bureau Contacts

Public Notices of Permitting Actions

The newspaper public notice is the public notice required by regulation. Thus, the date published in the newspaper establishes the regulatory public notice time frame. Of course, whether your comments fall within the regulatory time frame to establish you as an "interested party" or not, we will consider all public comments received within a reasonable time frame.

For additional information on applications with public interest, public meetings or public hearings go here.

Date Posted	Company Name / Facility Name	Permit No.	Location
12/18/2019	Public Notice – 3 Bear Delaware Operating NM LLC / 3 Bear Libby Gas Plant	NSR 7482M1	This facility is located approximately 16.2 miles southwest of Monument in Lea County.
			This facility is

New Mexico
ENVIRONMENT DEPARTMENT

525 Camino de los Marquez, Suite 1
Santa Fe, NM 87505-1816
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LT. GOVERNOR

JAMES C. KENNEY
CABINET SECRETARY

JENNIFER J. PRUETT
DEPUTY SECRETARY

December 18, 2019

Jesse Chacon
State of Texas
PO Box 13087
Director Operating Permit Division(MC163)
Austin, TX 78711-3087

Sending via email to: AIRPERM@tceq.texas.gov

SUBJECT: Notification to government entity:
Air Quality New Source Review Permit Application No. 7482M1
TEMPO/IDEA ID No.38067 - PRN20190001

Dear Mr. Chacon:

The New Mexico Environment Department, Air Quality Bureau has received a NSR Construction Permit application from 3 Bear Delaware Operating - NM LLC for its 3 Bear Libby Gas Plant on September 13, 2019.

This plant is located in Section: 26, Range: 34E, Township: 20S, UTMZ: 13 , UTMH: 638430, UTMV: 3601510, Datum: WGS84 in Lea County, New Mexico. Since this plant is within 50 km (31 miles) of your border, we are required to notify your organization per 20.2.72.206.A (7) NMAC.

In accordance with the New Mexico Administrative Code, Title 20, Chapter 2, Part 72 (20.2.72.206.A.7 NMAC), please find attached the Public Notice issued by the New Mexico Air Quality Bureau for the facility.

If you have any questions, please feel free to contact me at 505-476-4376.

Sincerely,

Julia Kuhn
Air Permit Specialist
Major Source Unit
Air Quality Bureau

Enclosure: Public Notice

From:	Jeremy Nichols
To:	Kuhn, Julia, NMENV
Subject:	[EXT] Proposed Air Quality Permit, 3 Bear Operating, Libby Gas Plant, Permit No. 7482M1
Date:	Friday, January 17, 2020 8:47:48 PM
Attachments:	2020-1-17 WG 3 Bear Libby Gas Plant Permit Comments.pdf

Dear Ms. Kuhn:

Attached, please find initial comments from WildEarth Guardians regarding the New Mexico Environment Department's proposal to issue the subject air quality permit. Please feel free to contact me if you have any questions or concerns. We look forward to engaging further in this permitting process. Thank you.

Sincerely,

Jeremy Nichols

Climate and Energy Program Director

(303) 437-7663
www.wildearthguardians.org/climate-energy

January 17, 2020

BY ELECTRONIC MAIL

Julia Kuhn
New Mexico Environment Department
Air Quality Bureau
Permit Section
525 Camino de los Marquez, Suite 1
Santa Fe, NM 87505
Julia.kuhn@state.nm.us

Re: Notification of Interest, Proposed Clean Air Act Air Quality Permit, 3 Bear Delaware Operating, 3 Bear Libby Gas Plant, Permit No. 7482M1

Dear Ms. Kuhn:

WildEarth Guardians hereby notifies the New Mexico Environment Department ("NMED") of its interest in the air quality permit application submitted by 3 Bear Delaware Operating for the company to modify the 3 Bear Libby Gas Plant in Lea County, New Mexico. NMED has assigned the application file Permit No. 7482M1.

We are very concerned over NMED's conclusion that modification of the 3 Bear Libby Gas Plant will comply with all applicable requirements under the federal Clean Air Act and New Mexico Air Quality Control Act. We are particularly concerned that neither 3 Bear Delaware nor NMED have demonstrated that air pollution from the proposed facility will protect the National Ambient Air Quality Standards ("NAAQS").

The region where 3 Bear's facility will be modified is currently in violation of applicable NAAQS for ground-level ozone. One monitoring site in Lea County—in Hobbes—and two monitoring sites in neighboring Eddy County—one in Carlsbad Caverns National Park and one in Carlsbad—all regularly record exceedances of the ozone NAAQS. Based on most recent monitoring data, the design value (i.e., three-year average of the fourth highest annual 8-hour ozone levels) is 0.071 parts per million ("ppm") at the Hobbes monitor, 0.079 parts per million ("ppm") at the Carlsbad monitor, and 0.073 ppm at Carlsbad Caverns National Park. To protect public health, the 2015 ozone NAAQS limit concentrations to no more than 0.070 ppm over an eight-hour period. *See* 40 C.F.R. § 50.19.

This elevated ozone pollution is not anomalous. The tables below show that ozone levels in Lea and Eddy Counties have steadily worsened over the last several years, with 19 exceedances of the NAAQS reported in Carlsbad in 2019 and 8-hour ozone levels as high as 0.095 ppm recorded.[1] The design values at monitors in both Lea and Eddy Counties have steadily risen and Hobbs is now in violation of the ozone NAAQS. This worsening of ozone pollution coincides with a massive increase in oil and gas production in the region, including the development of new processing facilities.

Hobbs, NM 8-Hour Ozone Readings (in ppm), 2015-2019

	2015	2016	2017	2018	2019
1st Max.	0.070	0.069	0.080	0.083	0.082
2nd Max.	0.069	0.066	0.074	0.078	0.075
3rd Max.	0.069	0.065	0.072	0.077	0.073
4th Max.	0.067	0.065	0.069	0.076	0.070
Number of Days Above NAAQS	0	0	3	6	3

Carlsbad, NM 8-Hour Ozone Readings (in ppm), 2015-2019

	2015	2016	2017	2018	2019
1st Max.	0.069	0.065	0.082	0.096	0.095
2nd Max.	0.068	0.064	0.078	0.095	0.092
3rd Max.	0.067	0.064	0.077	0.091	0.084
4th Max.	0.067	0.063	0.076	0.083	0.080
Number of Days Above NAAQS	0	0	10	18	19

Carlsbad Caverns National Park 8-Hour Ozone Readings, 2015-2019

	2015	2016	2017	2018	2019
1st Max.	0.068	0.070	0.069	0.099	0.082
2nd Max.	0.068	0.069	0.065	0.081	0.080
3rd Max.	0.065	0.069	0.065	0.080	0.078
4th Max.	0.065	0.069	0.065	0.080	0.074
Number of Days Above NAAQS	0	0	0	10	6

[1] Ozone monitoring data from the U.S. Environmental Protection Agency's AirData website, https://www.epa.gov/outdoor-air-quality-data/monitor-values-report.

8-Hour Ozone Design Values for Lea and Eddy County, New Mexico Monitoring Sites

Monitor	Monitor ID	2015-2017 Design Value	2016-2018 Design Value	2017-2019 Design Value
Hobbs	350250008	0.067	0.070	0.071
Carlsbad	350151005	0.068	0.074	0.079
Carlsbad Caverns	350150010	0.066	0.071	0.073

In light of ozone levels in both Lea and Eddy Counties, there is no possible way for 3 Bear or NMED to conclude that modification of the 3 Bear Libby Gas Plant and Central Delivery Point would not cause or contribute to violations of the ozone NAAQS. The public notice for the proposed PSD permit indicates that both nitrogen oxides ("NOx") and volatile organic compounds ("VOCs")—both gases that react with sunlight to form ozone—will increase as a result of permit issuance. According to the public notice, NOx emissions are projected to increase by 21.1 tons per year and VOCs by 71.5 tons per year.

It is clear that approval of the proposed modification would lead to emissions that would contribute to violations of the ozone NAAQS in the region. Accordingly, NMED must deny the permit in accordance with 20.2.72.208(D) NMAC.

Thank you for the opportunity to provide these initial comments. We look forward to further reviewing the permit application, any proposed permit, and NMED's analysis. We intend to provide more detailed comments after an opportunity for further review.

Sincerely,

Jeremy Nichols
Climate and Energy Program Director
WildEarth Guardians
(303) 437-7663
jnichols@wildearthguardians.org

New Mexico
ENVIRONMENT DEPARTMENT

525 Camino de los Marquez, Suite 1
Santa Fe, NM 87505-1816
Phone (505) 476-4300
Fax (505) 476-4375
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HOWIE C. MORALES
LT. GOVERNOR

JAMES C. KENNEY
CABINET SECRETARY

JENNIFER J. PRUETT
DEPUTY SECRETARY

January 30, 2020

Re: Air Quality Permit Application No. 7482-M1 (IDEA ID No. 38067 - PRN20190001)
3 Bear Delaware Operating – NM, LLC, 3 Bear Libby Gas Plant, Lea County, NM

Dear Mr. Nichols,

The New Mexico Environment Department's Air Quality Bureau (AQB) has received your January 17, 2020 comments expressing concern about 3 Bear Delaware Operating's plans to modify the 3 Bear Libby Gas Plant near Monument in Lea County.

Your comments will be included as part of the permit application record.

This letter is intended to provide general information about the permit process. If you need additional information, please feel free to call me in Santa Fe at 505-476-4341.

You may also call 3 Bear Delaware Operating directly. The contact person is Stephanie Swanson at 303-862-3967 in Denver, CO.

WHAT IS AN AIR QUALITY PERMIT?

Air quality permits issued by the AQB authorize a company to construct or modify a facility which will emit one or more regulated air pollutants: sulfur dioxide, particulate matter, carbon monoxide, nitrogen dioxide, volatile organic compounds, and/or lead. In addition to these pollutants, facilities that emit certain toxic pollutants also may need to apply for a permit.

Our permitting regulation, New Mexico Administrative Code, Title 20, Chapter 2, Part 72 (20.2.72 NMAC) requires a pre-construction permit for any proposed new or modified facility that has a potential emission rate of more than 10 pounds per hour or 25 tons per year of air pollutants with ambient air quality standards. The potential emission rate of a facility is the emission rate prior to air pollution control equipment and prior to any enforceable limit on production rates or hours of operation. For New Mexico Toxic Air Pollutants, the potential emission rate threshold is usually much lower. Permits are also required for sources that are subject to certain federal air pollution control programs.

PUBLIC NOTICE REQUIREMENTS IN NEW MEXICO

You may have heard about the proposed project because 20.2.72 NMAC requires applicants to notify the public before an application is submitted.

1. PRE-APPLICATION REQUIREMENTS FOR THE APPLICANT. With a few exceptions, each company that applies for an air quality permit must satisfy comprehensive public notice requirements before the permit application can be ruled administratively complete. This is intended to inform the public and individuals who might be impacted by air emissions of this facility. The public often receives information about a permit application before the AQB. Public notice includes radio or television public service announcements, certified letters to landowners near the proposed or modified facility, public notice statements posted in at least four publicly accessible and conspicuous locations, certified letters to municipalities and counties in the area, and legal classified ads in a local newspaper.

2. PUBLIC NOTICE REQUIREMENTS FOR THE AQB. Once the AQB has completed a preliminary review of the permit application and deemed it administratively complete, it must make available for public inspection the permit application and publish a preliminary determination/public notice in a newspaper of general circulation in the area closest to the location of the facility. The notice will also be sent to the nearest NM Environment Department Field Office. In addition to describing the permit application (a summary of estimated emissions and ambient impact), the notice will affirm that all interested parties have thirty (30) days, from the date the notice is published, to notify the Department in writing of their desire to review and comment on the Department's analysis.

The Department's analysis includes a Statement of Basis and is prepared as part of the permit development process. Interested persons that submit a request prior to the end of the thirty (30) day period following the public notice, will be sent the notification of the availability of the Department's analysis (when it becomes available) and will be given thirty days (30) days to review the analysis before the permit is issued or denied. During that time, the public may submit written comments or evidence on the application and analysis and request a public hearing. This second thirty (30) day comment period will begin after the NMED Field Office receives the Department's analysis. The analysis for Associated Asphalt will be available for review on the Departments website at this link: https://www.env.nm.gov/air-quality/permit-applications-with-public-interest-public-meeting-or-public-hearing/ or the analysis can be viewed at the Department's Santa Fe office at 525 Camino de los Marquez, Suite 1, Santa Fe, NM 87505.

After the permit is issued or denied, the Department will mail written notice of the action taken on a permit application to all persons who submitted written comments or evidence on the application.

PUBLIC HEARINGS

20.2.72 NMAC also requires that a public hearing be held if the Secretary of the Environment determines that there is significant public interest. Public hearings will be held in the geographic area in which the source intends to locate and will be administered by a hearing officer. The applicant and the public will be notified of the place, date, and time of the hearing. A recording of the hearing will be made, and a transcript of the hearing can be made at the expense of the person requesting the transcript.

At the hearing, all interested persons will be a given a reasonable opportunity to submit data, views or arguments orally or in writing and to examine witnesses testifying at the hearing. The number of persons requesting a hearing is important to the Secretary's decision as well as the nature of the interested person's arguments. In a request for a public hearing, it is recommended that a summary of any data, views, or arguments be given so that the AQB understands the issues.

But please note. If opposition to the proposed construction or modification is not air quality related, the AQB will not be able to resolve that issue. Opposition to the construction or modification of a facility due to location, noise, traffic, etc., is often related to local zoning issues and not to air quality issues.

An option that you or your neighbors may wish to consider, prior to requesting a public hearing, is to contact the company and request a meeting so that the company can explain their facility operations. The AQB would be willing to attend and explain air quality issues.

PERMIT REVIEW PROCESS

The AQB requires the applicant to submit detailed information regarding the proposed construction. An application is ruled "administratively incomplete" if the Department did not receive enough information to adequately review the proposed project. After an application is ruled "administratively complete" the Department usually has 90 days to issue or deny the permit, depending on the particular process under which the application is being reviewed. It is during this time period that a public hearing would likely be held.

The AQB staff reviews each permit application and air quality analysis to determine whether or not the source will comply with applicable state and federal regulations and ambient air quality standards. If the permit is issued, it will contain conditions to ensure that the facility will operate as represented by the company in the application. If it is determined that the facility will not meet air quality regulations and standards, the permit will not be issued.

If you have any further comments, please submit them to me at the address at the top of this letter. Please specify the name and location of the facility, the permit application number if known, and be sure to provide your complete mailing address.

Sincerely,

Melinda Owens
TV Permit Program Manager
Permits Section
Air Quality Bureau

LEGAL NOTICE
and
Preliminary Determination for an Air Quality Permit for
3 Bear Delaware Operating - NM LLC

3 Bear Delaware Operating - NM LLC, 1512 Larimer St, Suite 540, Denver, CO has submitted an air quality permit application to the Air Quality Bureau (AQB), New Mexico Environment Department (NMED) for an air quality permit to modify 3 Bear Libby Gas Plant. The application file has been assigned Permit No. 7482M1. The exact location of the facility is at latitude 32 degrees, 32 minutes, 32.5 seconds and longitude -103 degrees, 31 minutes, 32.6 seconds, Datum: WGS84. This facility is located approximately 16.2 miles SW of Monument, in Lea County, NM.

The proposed modification will consist of equipment addition to the facility and revision of emissions resulting in increased quantities of regulated air contaminants. The facility will receive up to 60 MMscf/day of gas from three surrounding compressor stations owned and operated by 3 Bear Libby to separate natural gas liquids from the field gas, producing natural gas liquids and a residue gas for transmission to a pipeline. The proposed construction will consist of eight operating compressor engines, one gunbarrel tank, four condensate tanks, one slope oil tank, one produced water tank, one amine regenerator heater, one hot oil heater, one amine unit, one condensate loadout, one thermal oxidizer, one maintenance flare, one tank flare, process piping fugitives and haul road fugitives. This public notice reflects a revision to the current application requesting the addition of four engines for an alternative operating scenario between Caterpillar and Waukesha engines.

Total air pollutant emissions to the atmosphere are estimated to be approximately as follow: Parentheses note changes in emissions from previous construction permit – 7482. The emissions for the facility are expressed in tons per year (tpy). Nitrogen Oxides (NOx) at 145.1 tpy (+21.1 tpy); Carbon Monoxide (CO) at 241.7 tpy (+113.8 tpy); Volatile Organic Compounds (VOC) at 182.8 tpy (+71.5 tpy); Sulfur Dioxide (SO_2) at 238.4 tpy (-0.4 tpy); Particulate Matter (PM) at 9.1 tpy (+1.2 tpy), Particulate Matter 10 microns or less (PM_{10}) at 8.9 tpy (+2.3 tpy), and Particulate Matter 2.5 microns or less ($PM_{2.5}$) at 8.9 tpy (+2.7 tpy), and greenhouse gas (CO_2e) > 75,000 tpy. These emission estimates could change slightly during the course of the Department's review of the application.

The NMED has conducted a preliminary review of the information submitted with the permit application. The preliminary review and applicant's analysis of ambient air quality impacts indicates that the facility's air emissions will meet the air quality standards for NOx, CO, SO_2, PM, PM_{10} and $PM_{2.5}$. VOCs are a pre-cursor to ozone and the NMED does not require an individual ozone ambient impact analysis for each application. To determine compliance with national ambient air quality standards for ozone, NMED uses air monitors to monitor ozone concentrations. A full review will evaluate the estimated emission rates for the pollutants listed in this public notice and determine compliance with ambient air quality requirements and standards.

Based on the applicant's analysis, a preliminary determination is that this facility will comply with the requirements of Title 20, New Mexico Administrative Code (NMAC), Chapter 2, Parts 1, 3, 7, 35, 38, 61, 70, 71, 72, 73, 75, 77, 80 and 82; 40 CFR 50; 40 CFR 60 Subparts Dc, JJJJ and OOOOa; 40 CFR 63 Subparts ZZZZ; 40 CFR 68 and the New Mexico Air Quality Control Act. Therefore, the preliminary intent of NMED is to issue the air quality permit on or before April 8, 2020. This source is a PSD minor source according to 20.2.74 NMAC.

To ensure compliance with state and federal air regulations, the permit is expected to include conditions that limit the emissions and conditions that will require record keeping and reporting to the Department.

The permit application is available for review in electronic or hard copy at the Air Quality Bureau Office, 525 Camino de los Marquez Suite 1, Santa Fe, New Mexico. To arrange viewing of this application contact Arianna Espinoza, at 505-476-4367 or arianna.espinoza@state.nm.us. The permit application is also available at the NMED Hobbs Field Office, located at 2120 N. Alto, Hobbs, NM 88240 for public review.

All interested persons have thirty (30) days from the date this notice is published, to notify the Department in writing of their interest in the permit application. The written comments should refer to the company name, facility name and Permit No. (or send a copy of this notice along with your comments). The written comments shall state the nature of the issues raised and how it relates to the requirements of applicable state and federal air quality regulations and the Clean Air Act. The written comments should be mailed to Julia Kuhn, New Mexico Environment Dept., Air Quality Bureau, Permit Section, 525 Camino de los Marquez Suite 1, Santa Fe, NM 87505-1816.

The Department will notify all persons, who have provided written comments as to when and where the Department's analysis may be reviewed. Although all written comments will be made part of the public record, any person who does not express interest in writing before the end of this first thirty (30) day period will not receive such notification.

If the Department receives written public comment before the end of the Department's thirty (30) day public notice, the Department's analysis will be made available for review for thirty (30) days at the NMED district or field office nearest to the source before the permit will be issued. Written comments on the analysis or permit application may be submitted to the Department during this second thirty (30) day period or at any time before the permit is issued or denied.

Questions or comments not intended to be part of the public record can be directed to Julia Kuhn at 505-476-4376. General information about air quality and the permitting process can be found at the Air Quality Bureau's web site. The regulation dealing with public participation in the permit review process is 20.2.72.206 NMAC. This regulation can be found in the "Permits" section of this web site. Este es un aviso de la oficina de Calidad del Aire del Departamento del Medio Ambiente de Nuevo México, acerca de las emisiones producidas por un establecimiento en esta área. Si usted desea información en español, por favor comuníquese con esa oficina al teléfono 505-476-5557.

Notice of Non-Discrimination

NMED does not discriminate on the basis of race, color, national origin, disability, age or sex in the administration of its programs or activities, as required by applicable laws and regulations. NMED is responsible for coordination of compliance efforts and receipt of inquiries concerning non-discrimination requirements implemented by 40 C.F.R. Part 7, including Title VI of the Civil Rights Act of 1964, as amended; Section 504 of the Rehabilitation Act of 1973; the Age Discrimination Act of 1975, Title IX of the Education Amendments of 1972, and Section 13 of the Federal Water Pollution Control Act Amendments of 1972. If you have any questions about this notice or any of NMED's non-discrimination programs, policies or procedures, or if you believe that you have been discriminated against with respect to a NMED program or activity, you may contact: Kristine Yurdin, Non-Discrimination Coordinator, NMED, 1190 St. Francis Dr., Suite N4050, P.O. Box 5469, Santa Fe, NM 87502, (505) 827-2855, nd.coordinator@state.nm.us. You may also visit our website at https://www.env.nm.gov/non-employee-discrimination-complaint-page/ to learn how and where to file a complaint of discrimination.

2/4/2020	Public Notice – 3 Bear Delaware Operating NM LLC / 3 Bear Libby Gas Plant Applications with Public Interest	NSR 7482M1	This facility is located approximately 16.2 miles southwest of Monument in Lea County.

New Mexico
ENVIRONMENT DEPARTMENT

525 Camino de los Marquez, Suite 1
Santa Fe, NM 87505-1816
Phone (505) 476-4300
Fax (505) 476-4375
www.env.nm.gov

MICHELLE LUJAN GRISHAM
GOVERNOR

HOWIE C. MORALES
LT. GOVERNOR

JAMES C. KENNEY
CABINET SECRETARY

JENNIFER J. PRUETT
DEPUTY SECRETARY

February 3, 2020

Jesse Chacon
State of Texas
PO Box 13087
Director Operating Permit Division(MC163)
Austin, TX 78711-3087

Sending via email to: AIRPERM@tceq.texas.gov

SUBJECT: Notification to government entity:
Air Quality New Source Review Permit Application No. 7482M1
TEMPO/IDEA ID No.38067 - PRN20190001

Dear Mr. Chacon:

The New Mexico Environment Department, Air Quality Bureau has received a NSR Construction Permit application from 3 Bear Delaware Operating - NM LLC for its 3 Bear Libby Gas Plant on September 13, 2019.

This plant is located in Section: 26, Range: 34E, Township: 20S, UTMZ: 13 , UTMH: 638430, UTMV: 3601510, Datum: WGS84 in Lea County, New Mexico. Since this plant is within 50 km (31 miles) of your border, we are required to notify your organization per 20.2.72.206.A (7) NMAC.

In accordance with the New Mexico Administrative Code, Title 20, Chapter 2, Part 72 (20.2.72.206.A.7 NMAC), please find attached the Public Notice issued by the New Mexico Air Quality Bureau for the facility.

If you have any questions, please feel free to contact me at 505-476-4376.

Sincerely,

Julia Kuhn
Air Permit Specialist
Major Source Unit
Air Quality Bureau

Enclosure: Public Notice

NEW MEXICO
ENVIRONMENT DEPARTMENT

525 Camino de los Marquez, Suite 1
Santa Fe, New Mexico 87505
Phone (505) 476-4300 Fax (505) 476-4375
www.env.nm.gov

Michelle Lujan Grisham
Governor

Howie C. Morales
Lt. Governor

James C. Kenney
Cabinet Secretary

Jennifer J. Pruett
Deputy Secretary

AIR QUALITY BUREAU

March 5, 2020

Mr. Jeremy Nichols
Climate and Energy Program Director
WildEarth Guardians
301 N. Guadalupe Street, Suite 201
Santa Fe, NM 87501

Re: Air Quality Permit Application No. 7482-M1**,**
Company Name: 3 Bear Delaware Operating – NM, LLC
Facility Name: 3 Bear Libby Gas Plant
Notification Analysis is Available

Dear Mr. Nichols,

The Air Quality Bureau (AQB) thanks you for your interest in this permit application.

This letter, which is required by regulation, is to notify you that the AQB's analysis, called a Statement of Basis, of the referenced air quality permit application is available on this AQB website:
https://www.env.nm.gov/air-quality/permit-applications-with-public-interest-public-meeting-or-public-hearing/

You are receiving this notice that the analysis is available for your review because the AQB received your written comments on the application before the end of AQB's 30-day public notice period. See section 20.2.72.206 NMAC of the pre-construction air quality permit regulation that lists this notification requirement.

Contact Information for Questions and More Information about the Permit Application:

- **Air Quality Bureau Contact:** If you need additional information or have questions, please call me in Santa Fe at 505-476-4300, or directly at 505-476-4341, and at melinda.owens@state.nm.us.

- **Company-Applicant Contact:** You may also call or send an email to the company that is applying for the application. The contact information is: company plant contact Stephanie Swanson, at phone number 303-862-3967 in Denver, CO, and e-mail address of stephanie@3bearllc.com.

If you have any further comments, please submit them to me at the address at the top of this letter or by electronic mail. Please specify the name and location of the facility, the permit application number if known, and be sure to provide your complete mailing address.

Sincerely yours,

Melinda Owens
TV Permit Program Manager
Permits Section
Air Quality Bureau

March 27, 2020

BY ELECTRONIC MAIL

Melinda Owens
New Mexico Environment Department
Air Quality Bureau
Permit Section
525 Camino de los Marquez, Suite 1
Santa Fe, NM 87505
Melinda.owens@state.nm.us

Re: Comments on Proposed Clean Air Act Air Quality Permit, 3 Bear Delaware Operating, 3 Bear Libby Gas Plant, Permit No. 7482M1

Dear Ms. Owens:

WildEarth Guardians submits the following comments on the New Mexico Environment Department's ("NMED") proposed draft permit and statement of basis that would authorize 3 Bear Delaware Operating to modify the 3 Bear Libby Gas Plant in Lea County, New Mexico. NMED has assigned the application file Permit No. 7482M1. Notice of the draft permit and statement of basis was provided to WildEarth Guardians on March 5, 2020.

NMED cannot approve the draft permit and statement of basis as proposed. We are very concerned over NMED's conclusion that modification of the 3 Bear Libby Gas Plant will comply with all applicable requirements under the federal Clean Air Act and New Mexico Air Quality Control Act. We are particularly concerned that neither 3 Bear Delaware nor NMED have demonstrated that air pollution from the proposed modification will protect the National Ambient Air Quality Standards ("NAAQS") consistent with New Mexico law and regulation.

The region where 3 Bear's facility will be modified is currently in violation of applicable NAAQS for ground-level ozone. One monitoring site in Lea County—in Hobbes—and two monitoring sites in neighboring Eddy County—one in Carlsbad Caverns National Park and one in Carlsbad—all regularly record exceedances of the ozone NAAQS. Based on most recent monitoring data, the design value (i.e., three-year average of the fourth highest annual 8-hour ozone levels) is 0.071 parts per million ("ppm") at the Hobbes monitor, 0.079 parts per million ("ppm") at the Carlsbad monitor, and 0.073 ppm at Carlsbad Caverns National Park. To protect public health, the 2015 ozone NAAQS limit concentrations to no more than 0.070 ppm over an eight-hour period. *See* 40 C.F.R. § 50.19.

This elevated ozone pollution is not anomalous. The tables below show that ozone levels in Lea and Eddy Counties have steadily worsened over the last several years, with 19 exceedances of the NAAQS reported in Carlsbad in 2019 and 8-hour ozone levels as high as 0.095 ppm recorded.[1] The design values at monitors in both Lea and Eddy Counties have steadily risen and Hobbs is now in violation of the ozone NAAQS. This worsening of ozone pollution coincides with a massive increase in oil and gas production in the region, including the development of new processing facilities.

Hobbs, NM 8-Hour Ozone Readings (in ppm), 2015-2019

	2015	**2016**	**2017**	**2018**	**2019**
1st Max.	0.070	0.069	0.080	0.083	0.082
2nd Max.	0.069	0.066	0.074	0.078	0.075
3rd Max.	0.069	0.065	0.072	0.077	0.073
4th Max.	0.067	0.065	0.069	0.076	0.070
Number of Days Above NAAQS	0	0	3	6	3

Carlsbad, NM 8-Hour Ozone Readings (in ppm), 2015-2019

	2015	**2016**	**2017**	**2018**	**2019**
1st Max.	0.069	0.065	0.082	0.096	0.095
2nd Max.	0.068	0.064	0.078	0.095	0.092
3rd Max.	0.067	0.064	0.077	0.091	0.084
4th Max.	0.067	0.063	0.076	0.083	0.080
Number of Days Above NAAQS	0	0	10	18	19

Carlsbad Caverns National Park 8-Hour Ozone Readings, 2015-2019

	2015	**2016**	**2017**	**2018**	**2019**
1st Max.	0.068	0.070	0.069	0.099	0.082
2nd Max.	0.068	0.069	0.065	0.081	0.080
3rd Max.	0.065	0.069	0.065	0.080	0.078
4th Max.	0.065	0.069	0.065	0.080	0.074
Number of Days Above NAAQS	0	0	0	10	6

[1] Ozone monitoring data from the U.S. Environmental Protection Agency's AirData website, https://www.epa.gov/outdoor-air-quality-data/monitor-values-report.

8-Hour Ozone Design Values for Lea and Eddy County, New Mexico Monitoring Sites

Monitor	Monitor ID	2015-2017 Design Value	2016-2018 Design Value	2017-2019 Design Value
Hobbs	350250008	0.067	0.070	0.071
Carlsbad	350151005	0.068	0.074	0.079
Carlsbad Caverns	350150010	0.066	0.071	0.073

In light of ozone levels in both Lea and Eddy Counties, there is no possible way for 3 Bear or NMED to conclude that modification of the 3 Bear Libby Gas Plant and Central Delivery Point would not cause or contribute to violations of the ozone NAAQS.

Under the proposed permit, 3 Bear Delaware Operating would construct a number of new sources of air pollution, including compressor engines, tanks, heaters, loadout facilities, and more. The proposed permit would authorize increases in both nitrogen oxides ("NOx") and volatile organic compounds ("VOCs")—both gases that react with sunlight to form ozone—will increase as a result of permit issuance. According to the draft permit, NOx emissions are projected to increase by 21.1 tons per year and VOCs by 71.5 tons per year.

It is clear that approval of the proposed modification would lead to emissions that would contribute to violations of the ozone NAAQS in the region. Accordingly, NMED must deny the permit in accordance with 20.2.72.208(D) NMAC.

In the draft statement of basis, NMED does not even acknowledge that Lea County is currently in violation of the ozone NAAQS. Although the Department claims in the statement of basis that construction of the modification would comply with ambient air quality standards, this is simply not true. The modification, as proposed, would increase emissions of ozone precursors and therefore cause or contribute to violations of the ozone NAAQS.

Thank you for the opportunity to provide these comments. We look forward to being notified of NMED's action in this matter.

Sincerely,

Jeremy Nichols
Climate and Energy Program Director
WildEarth Guardians
(303) 437-7663
jnichols@wildearthguardians.org

MICHELLE LUJAN GRISHAM
GOVERNOR

HOWIE C. MORALES
LT. GOVERNOR

New Mexico
ENVIRONMENT DEPARTMENT

525 Camino de los Marquez, Suite 1
Santa Fe, NM 87505
Phone (505) 476-4300
Fax (505) 476-4375
www.env.nm.gov

JAMES C. KENNEY
CABINET SECRETARY

JENNIFER J. PRUETT
DEPUTY SECRETARY

AIR QUALITY BUREAU
NEW SOURCE REVIEW PERMIT
Issued under 20.2.72 NMAC

Note to Applicant for Draft Permit Reviews: **The AQB permit specialist provides this draft permit to the applicant as a courtesy to assist AQB with developing practically enforceable permit terms & conditions and correcting any technical errors. Please note that the draft permit may change following completion of the Department's internal reviews. If AQB makes additional changes, and as time allows, the applicant may be provided an opportunity for additional review before the permit is issued.**

Certified Mail No: xxxx xxxx xxxx xxxx **DRAFT AS OF 2/11/2020**
Return Receipt Requested

NSR Permit No:	7482-M1
Facility Name:	3 Bear Libby Gas Plant
Facility Owner/Operator:	3 Bear Delaware Operating – NM, LLC.
Mailing Address:	1512 Larimer St. Suite 540 Denver, CO 80202
TEMPO/IDEA ID No:	38067-PRN20190001
AIRS No:	35-025-1281
Permitting Action:	NSR – Significant Revision
Source Classification:	TV Major
Facility Location:	638430 m E by 3601510 m N, Zone 13; Datum WGS84
County:	Lea
Air Quality Bureau Contact	Julia Kuhn
Main AQB Phone No.	(505) 476-4300

______________________________ ______________________________________

Template version: 6/18/2019

Liz Bisbey-Kuehn **Date**
Bureau Chief
Air Quality Bureau

[Delete all below at time final permit submitted for signature.]
File Name: NSR_Permit_Parta_Master
Save Date: 6/18/2019
Print Date: 0/0/0000 0:00:00 AM

TABLE OF CONTENTS

PART A FACILITY SPECIFIC REQUIREMENTS

A100 Introduction

A. This permit, NSR 7482-M1, supersedes all portions of Air Quality Permit 7482, issued January 8, 2018, except portions requiring compliance tests. Compliance test conditions from previous permits, if not completed, are still in effect, in addition to compliance test requirements contained in this permit.

A101 Permit Duration (expiration)

A. The term of this permit is permanent unless withdrawn or cancelled by the Department.

A102 Facility: Description

A. The function of the 3 Bear Libby Gas Plant is to gather and receive up to 60MMScf/day of gas from three surrounding compressor stations owned and operated by 3Bear as well. Libby will separate natural gas liquids (NGL's) from the field gas, producing natural gas liquids and a residue gas for transmission to a pipeline owned by others. The process utilizes a cryogenic gas separation plant and associated compressors for collecting field gas from the gathering system nearby. Gas and NGL's will be piped to the respective nearby interconnect metering stations~~,~~ by others. The plant is to be located within 5 miles of the residue gas and NGL pipelines.

Commented [A1]: It looks like you didn't finish your thought 😉 It seems awkward

B. This facility is located approximately 16.2 miles southwest of Monument, in Lea County, New Mexico.

C. This modification consists of: (1) addition of residue compressor engine options, (2) addition of generator engine, (3) update to TK 1-6 as follows: one gunbarrel tank, four condensate tanks, one slop oil tank, (4) addition of one produced water tank, (5) removal of one methanol tank, (6) addition of one condensate loadout, (7) fugitive emissions update, (8) revision of compressor blowdowns, (9) revision of plant blowdowns, (10) update to emission unit IDs, and (11) increasing emission limits. The description of this modification is for informational purposes only and is not enforceable.

D. Tables 102.A and Table 102.B show the total potential emission rates (PER) from this facility for information only. This is not an enforceable condition and excludes emissions from Minor NSR exempt activities per 20.2.72.202 NMAC.

Table 102.A: Total Potential Emission Rate (PER) from Entire Facility

Pollutant	Emissions (tons per year)
Nitrogen Oxides (NOx)	145.8
Carbon Monoxide (CO)	241.7
Volatile Organic Compounds (VOC) [1]	182.8
Sulfur Dioxide (SO_2)	238.4
Particulate Matter (total suspended)	9.1
Particulate Matter 10 microns or less (PM_{10})	8.9
Particulate Matter 2.5 microns or less ($PM_{2.5}$)	8.9
Greenhouse Gas (GHG) as CO_2e	254,861

1. VOC total includes emissions from Fugitives, SSM and Malfunctions.
2. PM is a regulated new source review pollutant per 20.2.74 NMAC Prevention of Significant

Table 102.B: Total Potential Emissions Rate (PER) for *Hazardous Air Pollutants (HAPs) that exceed 1.0 ton per year

Pollutant	Emissions (tons per year)
Acetaldehyde	2.9
Acrolein	1.8
Formaldehyde	8.5
n-hexane	1.8
Total HAPs**	15.7

* HAP emissions are already included in the VOC emission total.

** The total HAP emissions may not agree with the sum of individual HAPs because only individual HAPs greater than 1.0 tons per year are listed here.

A103 <u>Facility: Applicable Regulations</u>

A. The permittee shall comply with all applicable sections of the requirements listed in Table 103.A.

Table 103.A: Applicable Requirements

Applicable Requirements	Federally Enforceable	Unit No.
20.2.1 NMAC General Provisions	X	Entire Facility
20.2.3 NMAC Ambient Air Quality Standards	X	Entire Facility
20.2.7 NMAC Excess Emissions	X	Entire Facility
20.2.38 NMAC Hydrocarbon Storage Facilities	X	TK 2-6
20.2.61 NMAC Smoke and Visible Emissions	X	ENG 1-12, HTR 1-2, TO-1, FL 1-2, GEN 1-2
20.2.70 NMAC Operating Permits	X	Entire Facility
20.2.71 NMAC Operating Permit Emission Fees	X	Entire Facility
20.2.72 NMAC Construction Permit	X	Entire Facility

Table 103.A: Applicable Requirements

Applicable Requirements	Federally Enforceable	Unit No.
20.2.73 NMAC Notice of Intent and Emissions Inventory Requirements	X	Entire Facility
20.2.74 NMAC Permits – Prevention of Significant Deterioration (PSD)	X	NA
20.2.75 NMAC Construction Permit Fees	X	Entire Facility
20.2.77 NMAC New Source Performance Standards	X	Units subject to 40 CFR 60 ENG 1-12 (potentially), HTR 1-2, FUG-1, COMP, AMINE-1, GEN 1-2
20.2.78 NMAC Emissions Standards for Hazardous Air Pollutants	X	NA Units subject to 40 CFR 61
20.2.82 NMAC Maximum Achievable Control Technology Standards for Source Categories of HAPs	X	Units subject to 40 CFR 63 ENG 1-12 (potentially), GEN 1-2
40 CFR 50 National Ambient Air Quality Standards	X	Entire Facility
40 CFR 60, Subpart A, General Provisions	X	ENG 1-12 (potentially), HTR 1-2, FUG-1, COMP, AMINE-1, GEN 1-2
40 CFR 60, Subpart Dc	X	HTR 1-2
40 CFR 60, Subpart IIII	X	GEN 2
40 CFR 60, Subpart JJJJ	X	ENG 1-12 (potentially), GEN-1
40 CFR 60, Subpart OOOOa	X	FUG-1, COMP, AMINE-1
40 CFR 63, Subpart A, General Provisions	X	ENG 1-12 (potentially), GEN 1-2
40 CFR 63, Subpart ZZZZ	X	ENG 1-12 (potentially), GEN 1-2

A104 <u>Facility: Regulated Source</u>

A. Table 104.A lists the emission units authorized for this facility. Emission units identified as exempt activities (as defined in 20.2.72.202 NMAC) and/or equipment not regulated pursuant to the Act are not included.

Unit No.	Unit Type	Make	Model No.	Serial No.	Yr of Construction	Yr of Manufacture	Operating Rate Max/Site	Operating Capacity Max/Site
[1]ENG-1	Engine Option #1							
[1]ENG-1	Caterpillar G3508 4 SLB RICE/Compressor Option 1	Caterpillar	G3508	TBD	12-JUN-06	01-JUL-10	690 hp / 690 hp	690 hp / 690 hp
[1]ENG-2	Engine Option #2							
[1]ENG-2	Caterpillar G3516 4 SLB RICE/Compressor Option 2	Caterpillar	G3516	TBD	12-JUN-06	01-JUL-10	1380 hp / 1380 hp	1380 hp / 1380 hp
ENG-3	Caterpillar G3516 4 SLB RICE/Compressors	Caterpillar	G3516	TBD	12-JUN-06	01-JUL-10	1380 hp / 1380 hp	1380 hp / 1380 hp
ENG-4	Caterpillar G3516 4 SLB RICE/Compressors	Caterpillar	G3516	TBD	12-JUN-06	01-JUL-10	1380 hp / 1380 hp	1380 hp / 1380 hp
[1]ENG 5-8	Engine Option #1							
[1]ENG-5	Caterpillar G3516 4 SLB RICE/Compressors	Caterpillar	G3516	TBD	12-JUN-06	01-JUL-10	1380 hp / 1380 hp	1380 hp / 1380 hp
[1]ENG-6	Caterpillar G3516 4 SLB RICE/Compressors	Caterpillar	G3516	TBD	12-JUN-06	01-JUL-10	1380 hp / 1380 hp	1380 hp / 1380 hp
[1]ENG-7	Caterpillar G3516 4 SLB RICE/Compressors	Caterpillar	G3516	TBD	12-JUN-06	01-JUL-10	1380 hp / 1380 hp	1380 hp / 1380 hp
[1]ENG-8	Caterpillar G3516 4 SLB RICE/Compressors	Caterpillar	G3516	TBD	12-JUN-06	01-JUL-10	1380 hp / 1380 hp	1380 hp / 1380 hp
[1]ENG 9-12	Engine Option #2							
[1]ENG-9	Waukesha 7044 4 SLB RICE/Compressors	Waukesha	7044	TBD	12-JUN-06	01-JUL-10	1680 hp / 1680 hp	1680 hp / 1680 hp
[1]ENG-10	Waukesha 7044 4 SLB RICE/Compressors	Waukesha	7044	TBD	12-JUN-06	01-JUL-10	1680 hp / 1680 hp	1680 hp / 1680 hp

Unit No.	Unit Type	Make	Model No.	Serial No.	Yr of Construction	Yr of Manufacture	Operating Rate Max/Site	Operating Capacity Max/Site
[1]ENG-11	Waukesha 7044 4 SLB RICE/Compressors	Waukesha	7044	TBD	12-JUN-06	01-JUL-10	1680 hp / 1680 hp	1680 hp / 1680 hp
[1]ENG-12	Waukesha 7044 4 SLB RICE/Compressors	Waukesha	7044	TBD	12-JUN-06	01-JUL-10	1680 hp / 1680 hp	1680 hp / 1680 hp
TK-1	Gunbarrel Tank	TBD	TBD	TBD	01-APR-18	01-APR-18	500 bbl / 500 bbl	500 bbl / 32172 gal/y
TK-2	Condensate Tank	TBD	TBD	TBD	08-JAN-18	01-APR-18	400 bbl / 400 bbl	400 bbl / 2299500 gal/y
TK-3	Condensate Tank	TBD	TBD	TBD	08-JAN-18	01-APR-18	400 bbl / 400 bbl	400 bbl / 2299500 gal/y
TK-4	Condensate Tank	TBD	TBD	TBD	08-JAN-18	01-APR-18	400 bbl / 400 bbl	400 bbl / 2299500 gal/y
TK-5	Condensate Tank	TBD	TBD	TBD	08-JAN-18	01-APR-18	400 bbl / 400 bbl	400 bbl / 2299500 gal/y
TK-6	Slop Oil Tank	TBD	TBD	TBD	08-JAN-18	01-APR-18	400 bbl / 400 bbl	400 bbl / 64344 gal/y
PWTK-1	Produced Water Tank	TBD	TBD	TBD	01-APR-18	01-APR-18	400 bbl / 400 bbl	400 bbl / 64344 gal/y
HTR-1	Heater	TBD	TBD	TBD	08-JAN-18	01-APR-18	49.42 MM BTU/h / 49.42 MM BTU/h	49.42 MM BTU/h / 49.42 MM BTU/h
HTR-2	Heater	TBD	TBD	TBD	08-JAN-18	01-APR-18	11 MM BTU/h / 11 MM BTU/h	11 MM BTU/h / 11 MM BTU/h
CONDLOAD -1	Truck Loading	NA	NA	NA	NA	NA	219000 bbl/y	219000 bbl/y
OILLOAD-1	Truck Loading	NA	NA	NA	NA	NA	1532 bbl/y	1532 bbl/y
FUG-1	Fugitives	NA	NA	NA	NA	NA	NA	NA
FUG-2	Fugitives	NA	NA	NA	NA	NA	NA	NA

Unit No.	Unit Type	Make	Model No.	Serial No.	Yr of Construction	Yr of Manufacture	Operating Rate Max/Site	Operating Capacity Max/Site
AMINE-1	Amine sweetening unit	TBD	TBD	TBD	08-JAN-18	NA	60 MM SCF/d / 60 MM SCF/d	60 MM SCF/d / 60 MM SCF/d
TO-1	Thermal Oxidizer (Incinerator)	TBD	TBD	TBD	08-JAN-18	1-FEB-2018	TBD	TBD
FL-1	Process Flare	TBD	TBD	TBD	08-JAN-18	NA	TBD	TBD
FL-2	Process Flare	TBD	TBD	TBD	08-JAN-18	NA	TBD	TBD
PLANT-BD	Plant Blowdown Flaring	TBD	TBD	NA	NA	NA	NA	NA
COMP	Compressor Blowdown Flaring	TBD	TBD	NA	NA	NA	NA	NA
MAIN-1	Maintenance Activities	NA	NA	NA	NA	NA	NA	NA
UP-MAL	Malfunctions Venting	NA	NA	NA	NA	NA	NA	NA

1. The Permittee has an option of installing either Unit ENG-1 or ENG-2 and installing either ENG-5 through ENG-8, or ENG-9 through ENG-12.
2. All TBD (to be determined) units and like-kind engine replacements must be evaluated for applicability to NSPS and requirements.

A105 Facility: Control Equipment

A. Table 105 lists all the pollution control equipment required for this facility. Each emission point is identified by the same number that was assigned to it in the permit application.

Table 105: Control Equipment List:

Control Equipment Unit No.	Control Description	Pollutant being controlled	Control for Unit Number(s)[1]
ENG-1	Oxidation Catalyst and Air Fuel Ratio Controller	VOC, CO and CH2O	ENG-1
ENG 2-8	Oxidation Catalyst and Air Fuel Ratio Controller	VOC, CO and CH2O	ENG 2-8
ENG 9-12	Non-Selective Catalytic Reduction	NOx, CO	ENG 9-12
TO	Thermal Oxidizer	VOC, H2S	AMINE-1

Table 105: Control Equipment List:

Control Equipment Unit No.	Control Description	Pollutant being controlled	Control for Unit Number(s)[1]
FL-1	Upset/Maintenance Flare	VOC	AMINE-1 (during TO downtime), COMP, PLANT BD
FL-2	Tank Flare	VOC	TK 1-6, PWTK-1, CONDLOAD-1, OILLOAD-1

1. Control for unit number refers to a unit number from the Regulated Equipment List.

A106 Facility: Allowable Emissions

A. The following Section lists the emission units and their allowable emission limits. (40 CFR 50, 40 CFR 60, Subparts A, Dc, JJJJ and OOOOa, 40 CFR 63, Subparts A and ZZZZ, 20.2.72.210.A and B.1 NMAC).

Table 106.A: Allowable Emissions

Unit No.	NO_x (pph.)	[1]NO_x (tpy.)	CO (pph)	CO (tpy)	VOC (pph)	VOC (tpy)	SO_2 (pph)	SO_2 (tpy)	PM_{10} (pph)	PM_{10} (tpy)	$PM_{2.5}$ (pph)	$PM_{2.5}$ (tpy)
[1]ENG-1	1.5	6.7	3.0	13.3	1.4	6.1	<	<	0.1	0.3	0.1	0.3
[1]ENG-2	3.0	13.3	2.4	10.4	2.4	10.5	<	<	0.1	0.5	0.1	0.5
ENG-3	3.0	13.3	2.4	10.4	2.4	10.5	<	<	0.1	0.5	0.1	0.5
ENG-4	3.0	13.3	2.4	10.4	2.4	10.5	<	<	0.1	0.5	0.1	0.5
[1]ENG-5	3.0	13.3	2.4	10.4	2.4	10.5	<	<	0.1	0.5	0.1	0.5
[1]ENG-6	3.0	13.3	2.4	10.4	2.4	10.5	<	<	0.1	0.5	0.1	0.5
[1]ENG-7	3.0	13.3	2.4	10.4	2.4	10.5	<	<	0.1	0.5	0.1	0.5
[1]ENG-8	3.0	13.3	2.4	10.4	2.4	10.5	<	<	0.1	0.5	0.1	0.5
[1]ENG-9	1.9	8.3	1.6	6.9	0.7	2.8	<	<	0.3	1.1	0.3	1.1
[1]ENG-10	1.9	8.3	1.6	6.9	0.7	2.8	<	<	0.3	1.1	0.3	1.1
[1]ENG-11	1.9	8.3	1.6	6.9	0.7	2.8	<	<	0.3	1.1	0.3	1.1
[1]ENG-12	1.9	8.3	1.6	6.9	0.7	2.8	<	<	0.3	1.1	0.3	1.1
TK-1	-	-	-	-	1.1	5.0	-	-	-	-	-	-
TK-2	-	-	-	-	0.1	0.4	-	-	-	-	-	-
TK-3	-	-	-	-	0.1	0.4	-	-	-	-	-	-
TK-4	-	-	-	-	0.1	0.4	-	-	-	-	-	-
TK-5	-	-	-	-	0.1	0.4	-	-	-	-	-	-
TK-6	-	-	-	-	0.04	0.2	-	-	-	-	-	-
HTR-1	2.4	10.6	4.1	17.8	<	1.2	<	<	0.4	1.6	0.4	1.6
HTR-2	1.1	4.7	<	4.0	<	<	<	<	0.1	0.4	0.1	0.4
CONDLOAD-1	-	-	-	-	*	9.2	-	-	-	-	-	-

Unit No.	NO_x (pph.)	[1]NO_x (tpy.)	CO (pph)	CO (tpy)	VOC (pph)	VOC (tpy)	SO_2 (pph)	SO_2 (tpy)	PM_{10} (pph)	PM_{10} (tpy)	$PM_{2.5}$ (pph)	$PM_{2.5}$ (tpy)
OILLOAD-1	-	-	-	-	*	<	-	-	-	-	-	-
FUG-1	-	-	-	-	11.7	51.2	-	-	-	-	-	-
AMINE-1	-	-	-	-	2.8	3.9	-	-	-	-	-	-
TO-1	1.6	6.8	1.3	5.7	<	<	64.5	235.2	-	-	-	-
FL-1 Pilot/Purge	0.03	0.15	0.16	0.68	0.02	0.09	0.0	0.0	6.3	0.9	6.3	0.9
FL-2	<	3.9	4.1	17.8	<	<	<	<	0.0	0.0	0.0	0.0
HR	-	-	-	-	-	-	-	-	3.2	0.1	0.3	0.0

1. The Permittee has an option of installing either Unit ENG-1 or ENG-2 and installing either ENG-5 through ENG-8, or ENG-9 through ENG-12.
2. Nitrogen dioxide emissions include all oxides of nitrogen expressed as NO_2.
3. For Title V facilities, the Title V annual fee assessments are based on the sum of allowable tons per year emission limits in Sections A106 and A107.
4. Compliance with emergency flare emission limits is demonstrated by limiting combustion to pilot and/or purge gas only.

"-" indicates the application represented emissions of this pollutant are not expected.

"<" indicates that the application represented the uncontrolled mass emission rates are less than 1.0 pph or 1.0 tpy for this emissions unit and this air pollutant. The Department determined that allowable mass emission limits were not required for this unit and this pollutant.

"*" indicates hourly emission limits are not appropriate for this operating situation.

5. To report excess emissions for sources with no pound per hour and/or ton per year emission limits, see condition B110F.

A107 Facility: Allowable Startup, Shutdown, & Maintenance (SSM) and Malfunction Emissions

A. The maximum allowable SSM and Malfunction emission limits for this facility are listed in Table 107.A and were relied upon by the Department to determine compliance with applicable regulations.

Table 107.A: Allowable SSM and Malfunction Units, Activities and Emission Limits

Unit No.	Description	NO_x pph	NO_x tpy	CO pph	CO tpy	VOC pph	VOC tpy	SO_2 pph	SO_2 tpy
SSM Venting	MAIN-1 (maintenance activities)[1]	-	-	-	-	*	10.0	-	-

Commented [A2]: I think we need to know what part of the system this covers. Is SSM venting only of engines, or gas after it has been processed?

Commented [A3]: Why aren't there other constituents? What part of the system does this cover?

Unit No.	Description	NO_x pph	NO_x tpy	CO pph	CO tpy	VOC pph	VOC tpy	SO_2 pph	SO_2 tpy
SSM Flaring to FL-1	COMP (compressor blowdowns), PLANT-BD (plant blowdowns), & TO-1 (thermal oxidizer downtime)	251.6	26.3	1146.9	120.0	92.9	14.1	57.1	1.3
Malfunction	Malfunction events	-	-	-	-	*	10.0	-	-

1. This authorization does not include VOC combustion emissions.
2. To report excess emissions for sources with no pound per hour and/or ton per year emission limits, see condition B110F.

- How is the dash defined?

Commented [A4]: Why not H2S? During a venting event, the sulfur will not be oxidized to SO2.Thermal oxidizer downtime needs to be clearly defined

Commented [A5]: What part of the facility is being permitted for malfunctions? This should be clear.Why isn't there SO2 and H2S? If the TO goes down from an unplanned event, this should be a malfunction. SSM events are considered only for ROUTINE OR PREDICTABLE EVENTS, for enforcement purposes and based on 20.2.7 wording.

B. The authorization of emission limits for startup, shutdown, maintenance, and malfunction does not supersede the requirements to minimize emissions according to General Conditions B101.F and B107.A.

C. SSM Venting Emissions

Requirement: The permittee shall perform a facility inlet gas analysis once every year based on a calendar year and complete the following recordkeeping to demonstrate compliance with routine and predictable startup, shutdown, and maintenance (SSM) emission limits in Table 107.A.
Monitoring: The permittee shall monitor the permitted routine and predictable startups and shutdowns and scheduled maintenance events.
Recordkeeping: (1) To demonstrate compliance, each month records shall be kept of the cumulative total of VOC emissions during the first 12 months due to SSM events and, thereafter of the monthly rolling 12-month total VOC emissions. (2) Records shall also be kept of the inlet gas analysis, the percent VOC of the gas based on the most recent gas analysis, and of the volume of total gas vented in MMscf used to calculate the VOC emissions due to SSM events. (3) The permittee shall record the demonstrated compliance in accordance with Condition B109, except the requirement in B109.C to record the start and end times of SSM events shall not apply to the venting of known quantities of VOC.
Reporting: The permittee shall report in accordance with Section B110.

D. SSM Flaring Emissions - Flare Unit FL-1

Requirement: Compliance with routine or predictable startup, shutdown, and maintenance (SSM) emission limits in Table 107.A shall be demonstrated by operating the flare in accordance

Commented [A6]: Key wording. If there is an equipment breakdown for example, that's not routine or predictable

with the requirements of Condition A206.A and A206.B of this permit and completing monitoring and recordkeeping as specified below. **Emissions Due to Preventable Events** Emissions that are due entirely or in part to poor maintenance, careless operation, or any other preventable equipment breakdown shall not be included under SSM emissions limits. These emissions shall be reported as excess emissions in accordance with 20.2.7.110 NMAC.
Monitoring: The permittee shall monitor the date, time, and duration of routine or predictable startup, shutdown, and scheduled maintenance events.
Recordkeeping: The permittee shall maintain records of all calculations and parameters used to determine emission rates in spreadsheet format and in accordance with Condition B109. **(1) Hourly Emissions Calculations:** The permittee shall calculate the pph NOx, CO, VOC, SO_2, and H_2S emission rates for each hour of each SSM event using these parameters: (a) the calculated average hourly flow rate/mass rate of all gas combusted by the flare including pilot, purge, and assist gas, if applicable, (Condition A206.B(1)); (b) H_2S content, total sulfur content, VOC content, and heating value (BTU/scf) of the gas (Condition A206.B(4)); (c) the current published emission factors for NOx and CO emission rates; and (d) VOC and H_2S emission rates calculated using a destruction efficiency of no more than 95%. **(2) Annual Emissions Calculations:** The permittee shall calculate the total tpy SSM emission rates as a monthly rolling 12-month total, using the pph emission rates for each hour of the month as follows: (a) During the first 12 months of this condition taking effect, the permittee shall record the monthly total tons of NOx, CO, VOC, SO_2, and H_2S emissions. (b) After the first 12 months of this condition taking affect, the permittee shall record the monthly rolling 12-month total tpy NOx, CO, VOC, SO_2, and H_2S emissions. **(3) SSM Events:** The permittee shall retain monitoring records including the date, time, and duration of each SSM event, as well as a description of the event including maintenance performed.
Reporting: The permittee shall report in accordance with Condition B110.

E. Malfunction Venting Emissions

Requirement: The permittee shall perform a facility inlet gas analysis once every year based on a calendar year and complete the following recordkeeping to demonstrate compliance with malfunction (Malfunction) emission limits in Table 107.A.
Monitoring: The permittee shall monitor all malfunction events that result in VOC emissions including identification of the equipment or activity that is the source of emissions.

Commented [A7]: More key wording. If the facility is trying to include this concept into their SSMs that is incorrect

Commented [A8]: This also needs to include the criteria pollutants because a malfunction could occur on the upstream side of the facility where there is sulfur. Or we need to ensure that the criteria pollutants will be reported per 20.2.7

Recordkeeping: (1) To demonstrate compliance, each month records shall be kept of the cumulative total of VOC emissions due to malfunction events during the first 12 months and, thereafter of the monthly rolling 12-month total VOC emissions due to malfunction events. (2) Records shall also be kept of the inlet gas analysis, the percent VOC of the gas based on the most recent gas analysis, of the volume of total gas vented in MMscf used to calculate the VOC emissions, and whether the emissions resulting from the event will be used toward the permitted malfunction emission limit or whether the event is reported as excess emissions of the pound per hour limits in Table 106.A (or the pound per hour limits in condition B110F, if applicable), under 20.2.7 NMAC. (3) The permittee shall record the demonstrated compliance in accordance with Condition B109, except the requirement in B109.C to record the start and end times of malfunction events shall not apply to the venting of known quantities of VOC.
Reporting: The permittee shall report in accordance with Section B110.

A108 Facility: Allowable Operations

A. This facility is authorized for continuous operation. Monitoring, recordkeeping, and reporting are not required to demonstrate compliance with continuous hours of operation.

B. The Facility Inlet Flowrate Limit

Requirement: The flowrate of process gas entering the facility shall not exceed 60 MMscf/day.
Monitoring: The Facility inlet flowrate shall be continuously monitored. The flowrate shall be determined using a monitoring instrument that directly measures natural gas flowrate into the facility with an accuracy of ± 2% or better.
Recordkeeping: The Permittee shall record the daily flowrate of process gas (MMscfd) received at the Facility inlet. Records indicating the daily gas flow shall be maintained onsite for a minimum of five (5) years from the time of recording and made available to Department personnel upon request.
Reporting: The permittee shall report in accordance with Section B110.

A109 Facility: Reporting Schedules

A. The permittee shall report according to the Specific Conditions and General Conditions of this permit.

A110 Facility: Fuel and Fuel Sulfur Requirements

A. Fuel and Fuel Sulfur Requirements (Units ENG-1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, and 12, HTR-1, HTR-2)

Requirement: All combustion emission units shall combust only natural gas containing no more than 0.95 grains of total sulfur per 100 dry standard cubic feet.
Monitoring: No monitoring is required. Compliance is demonstrated through records.
Recordkeeping: (1) The permittee shall demonstrate compliance with the natural gas or fuel oil limit on total sulfur content by maintaining records of a current, valid purchase contract, tariff sheet or transportation contract for the gaseous or liquid fuel, or fuel gas analysis, specifying the allowable limit or less. (2) If fuel gas analysis is used, the analysis shall not be older than one year. (3) Alternatively, compliance shall be demonstrated by keeping a receipt or invoice from a commercial fuel supplier, with each fuel delivery, which shall include the delivery date, the fuel type delivered, the amount of fuel delivered, and the maximum sulfur content of the fuel.
Reporting: The permittee shall report in accordance with Section B110.

A111 Facility: 20.2.61 NMAC Opacity

A. 20.2.61 NMAC Opacity Limit (Units ENG-1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, and 12, HTR-1, HTR-2)

Requirement: Visible emissions from all stationary combustion emission stacks shall not equal or exceed an opacity of 20 percent in accordance with the requirements at 20.2.61.109 NMAC.
Monitoring: (1) Use of natural gas fuel constitutes compliance with 20.2.61 NMAC unless opacity equals or exceeds 20% averaged over a 10-minute period. When any visible emissions are observed during operation other than during startup mode, opacity shall be measured over a 10-minute period, in accordance with the procedures at 40 CFR 60, Appendix A, Reference Method 9 (EPA Method 9) as required by 20.2.61.114 NMAC, or the operator will be allowed to shut down the equipment to perform maintenance/repair to eliminate the visible emissions. Following completion of equipment maintenance/repair, the operator shall conduct visible emission observations following startup in accordance with the following procedures: (a) Visible emissions observations shall be conducted over a 10-minute period during operation after completion of startup mode in accordance with the procedures at 40 CFR 60, Appendix A, Reference Method 22 (EPA Method 22). If no visible emissions are observed, no further action is required.

(b) If any visible emissions are observed during completion of the EPA Method 22 observation, subsequent opacity observations shall be conducted over a 10-minute period, in accordance with the procedures at EPA Method 9 as required by 20.2.61.114 NMAC. For the purposes of this condition, *Startup mode* is defined as the startup period that is described in the facility's startup plan.
Recordkeeping: (1) If any visible emissions observations were conducted, the permittee shall keep records in accordance with the requirements of Section B109 and as follows: (a) For any visible emissions observations conducted in accordance with EPA Method 22, record the information on the form referenced in EPA Method 22, Section 11.2. (b) For any opacity observations conducted in accordance with the requirements of EPA Method 9, record the information on the form referenced in EPA Method 9, Sections 2.2 and 2.4.
Reporting: The permittee shall report in accordance with Section B110.

<u>OIL AND GAS INDUSTRY</u>

A200 <u>Oil and Gas Industry</u>

A. This section has common equipment related to most Oil and Gas Operations.

A201 <u>Engines</u>

A. Initial Compliance Testing (Units ENG-1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, and 12)

Requirement: Compliance with the allowable emission limits in Table 106.A shall be demonstrated by performing an initial compliance test.
Monitoring: The permittee shall perform an initial compliance test in accordance with the General Testing Requirements of Section B111 Emission testing is required for NOx and CO. Test results that demonstrate compliance with the CO emission limits shall also be considered to demonstrate compliance with the VOC emission limits. The monitoring exemptions of Section B108 do not apply to this requirement. For units with g/hp-hr emission limits, the engine load shall be calculated by using the following equation: $$\text{Load(Hp)} = \frac{\text{Fuel consumption (scfh) x Measured fuel heating value (LHV btu/scf)}}{\text{Manufacturer's rated BSFC (btu/bhp-hr) at 100\% load or best efficiency}}$$

Recordkeeping: The permittee shall maintain records in accordance with the applicable Sections in B109, B110, and B111.
Reporting: The permittee shall report in accordance with the applicable Sections in B109, B110, and B111.

B. Periodic Emissions Testing (Units ENG-1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, and 12)

Requirement: Compliance with the allowable emission limits in Table 106.A shall be demonstrated by completing periodic emission tests during the monitoring period.
Monitoring: The permittee shall test using a portable analyzer or EPA Reference Methods subject to the requirements and limitations of Section B108, General Monitoring Requirements. Emission testing is required for NOx and CO and shall be carried out as described below. Test results that demonstrate compliance with the CO emission limits shall also be considered to demonstrate compliance with the VOC emission limits. For units with g/hp-hr emission limits, in addition to the requirements stated in Section B108, the engine load shall be calculated by using the following equation: $\text{Load(Hp)} = \dfrac{\text{Fuel consumption (scfh) x Measured fuel heating value (LHV btu/scf)}}{\text{Manufacturer's rated BSFC (btu/bhp-hr) at 100\% load or best efficiency}}$ (1) The testing shall be conducted as follows: (a) Testing frequency shall be once per quarter for units 1-12. (b) The monitoring period is defined as a calendar quarter for units 1-12. (2) The first test shall occur within the first monitoring period after completion of the initial compliance test. (3) All subsequent monitoring shall occur in each succeeding monitoring period. No two monitoring events shall occur closer together in time than 25% of a monitoring period. (4) The permittee shall follow the General Testing Procedures of Section B111. (5) Performance testing required by 40 CFR 60, Subpart JJJJ or IIII or 40 CFR 63, Subpart ZZZZ may be used to satisfy these periodic testing requirements if they meet the requirements of this condition and are completed during the specified monitoring period.
Recordkeeping: The permittee shall maintain records in accordance with Section B109, B110, and B111.
Reporting: The permittee shall report in accordance with Section B109, B110, and B111.

C. Catalytic Converter Operation (Units ENG-1, 2, 3, 4, 5, 6, 7, and 8); Non-Selective Catalytic Reduction Operation (Units 9, 10, 11, and 12)

Requirement: (1) The units ENG-1, 2, 3, 4, 5, 6, 7, and 8 shall be equipped and operated with an oxidation

catalytic converter to control CO, VOC, and HAP emissions. (2) The units 9, 10, 11, and 12 shall be equipped and operated with a non-selective catalytic converter to control NOx, CO, and VOC emissions. These units shall also be equipped with an AFR controlling device, or similar device that performs the same function of maintaining an appropriate air-fuel ratio. The permittee shall maintain the units according to manufacturer's or supplier's recommended maintenance, including replacement of oxygen sensor as necessary for oxygen-based controllers.
Monitoring: The unit(s) shall be operated with the catalytic converter, which includes catalyst maintenance periods. During periods of catalyst maintenance, the permittee shall either (1) shut down the engine(s); or (2) replace the catalyst with a functionally equivalent spare to allow the engine to remain in operation.
Recordkeeping: The permittee shall maintain records in accordance with Section B109.
Reporting: The permittee shall report in accordance with Section B110.

D. Air Fuel Ratio Operation (Units ENG-1, 2, 3, 4, 5, 6, 7, and 8)

Requirement: The units shall be equipped and operated with an AFR controlling device, or similar device that performs the same function of maintaining an appropriate air-fuel ratio. The permittee shall demonstrate that the manufacturer's or supplier's recommended maintenance is performed, including replacement of oxygen sensor as necessary for oxygen-based controllers.
Monitoring: The unit(s) shall be operated with the AFR, which includes maintenance periods. During periods of AFR maintenance, the permittee shall either (1) shut down the engine(s); or (2) replace the AFR with a functionally equivalent spare to allow the engine to remain in operation.
Recordkeeping: The permittee shall maintain records in accordance with Section B109, including a record of maintenance performed on AFR controllers and the manufacturer's or suppliers' recommended maintenance schedules for AFR Controllers.
Reporting: The permittee shall report in accordance with Section B110.

E. Notification of Engine Option Installation (Units ENG-1 or 2, and ENG-5, 6, 7, and 8 or ENG-9, 10, 11, and 12

Requirement: The permittee shall install only one engine option from the list of options requested in the application. The permittee shall notify the Permitting Section Chief at the Department in writing of the following: 1. the engine model/option selected (see Table 104.A, footnote 2) and the dates of installation of each unit within 60 days of installation; 2. removal of one option and installation of another option; 3. the resulting total allowable emissions from the facility
Monitoring: None
Recordkeeping: The permittee shall maintain records in accordance with the applicable Sections in B109, B110, and B111.
Reporting: The permittee shall report in accordance with the applicable Sections in B109, B110, and B111.

F. 40 CFR 60, Subpart JJJJ (Units ENG-1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, and 12; GEN-1)

Requirement: The units will be subject to 40 CFR 60, Subparts A and JJJJ if the unit is constructed (ordered) and manufactured after the applicability dates in 40 CFR 60.4230 and the permittee shall comply with the notification requirements in Subpart A and the specific requirements of Subpart JJJJ.
Monitoring: The permittee shall comply with all applicable monitoring requirements in 40 CFR 60, Subpart A and Subpart JJJJ, including but not limited to 60.4243.
Recordkeeping: The permittee shall comply with all applicable recordkeeping requirements in 40 CFR 60, Subpart A and Subpart JJJJ, including but not limited to 60.4245.
Reporting: The permittee shall comply with all applicable reporting requirements in 40 CFR 60, Subpart A and Subpart JJJJ, including but not limited to 60.4245.

G. 40 CFR 63, Subpart ZZZZ (Units ENG- ENG-1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, and 12; GEN-1 and 2)

Requirement: The units will be subject to 40 CFR 63, Subparts A and ZZZZ if they meet the applicability criteria in 40 CFR 63.6590. The permittee shall comply with any applicable notification requirements in Subpart A and any specific requirements of Subpart ZZZZ.
Monitoring: The permittee shall comply with all applicable monitoring requirements of 40 CFR 63, Subpart A and Subpart ZZZZ.
Recordkeeping: The permittee shall comply with all applicable recordkeeping requirements of 40 CFR 63, Subpart A and Subpart ZZZZ, including but not limited to 63.6655 and 63.10.
Reporting: The permittee shall comply with all applicable reporting requirements of 40 CFR

63, Subpart A and ZZZZ, including but not limited to 63.6645, 63.6650, 63.9, and 63.10.

H. 40 CFR 60, Subpart IIII (Unit GEN-2)

Requirement: The unit will be subject to 40 CFR 60, Subparts A and IIII and shall comply with the notification requirements in Subpart A and the specific requirements of Subpart IIII.
Monitoring: The permittee shall comply with all applicable monitoring requirements in 40 CFR 60, Subpart A and Subpart IIII, including but not limited to 60.4211.
Recordkeeping: The permittee shall comply with all applicable recordkeeping requirements in 40 CFR 60, Subpart A and Subpart IIII, including but not limited to 60.4214.
Reporting: The permittee shall comply with all applicable reporting requirements in 40 CFR 60, Subpart A and Subpart IIII, including but not limited to 60.4214.

A202 <u>Glycol Dehydrators</u> - Not required.

A203 <u>Tanks</u>

A. Tank Throughput (Units TK-2, 3, 4, and 5)

Requirement: Compliance with the allowable emission limits in Table 106.A shall be demonstrated by limiting the monthly rolling 12-month total condensate throughput to the units to 9,198,000 gallons per year (219,000 barrels/year) and routing all tank emissions to the tank flare Unit FL-2 in accordance with Condition A203.C.
Monitoring: The permittee shall monitor the monthly total throughput once per month.
Recordkeeping: The permittee shall record the monthly total throughput of liquids. Each month, during the first 12 months of monitoring, the permittee shall record the cumulative total liquid throughput and after the first 12 months of monitoring, the permittee shall calculate and record the monthly rolling 12-month total liquid throughput. Tank pre-control breathing and working emissions were calculated using the USEPA Tanks Program Version 4.0.9.d. Emission rates computed using the same parameters, but with a different Department approved algorithm that exceed these values will not be deemed non-compliance with this permit. Records shall also be maintained in accordance with Section B109.
Reporting: The permittee shall report in accordance with Section B110.

B. Truck Loading - Condensate Loadout (Unit OILLOAD-1)

Requirement: Compliance with the allowable emission limits in Table 106.A shall be demonstrated by limiting the total annual condensate loadout volume to 64,344 gallons per year (1532 barrels/year) and controlling emissions during load-out operations in accordance with Condition A203.C.
Monitoring: The permittee shall monitor the condensate truck loadout volume on a monthly

basis.
Recordkeeping: The permittee shall record the monthly condensate truck loadout volume. Each month during the first 12 months of monitoring the permittee shall record the cumulative condensate loadout volume and after the first 12 months of monitoring, the permittee shall calculate and record a monthly rolling 12-month total loadout volume. Records shall also be maintained in accordance with Section B109.
Reporting: The permittee shall report in accordance with Section B110.

C. Truck Loading - Condensate Loadout (Unit CONDLOAD-1)

Requirement: Compliance with the allowable emission limits in Table 106.A shall be demonstrated by limiting the total annual condensate loadout volume to 9,198,000 gallons per year (219,000 barrels/year) and controlling emissions during load-out operations in accordance with Condition A203.C.
Monitoring: The permittee shall monitor the condensate truck loadout volume on a monthly basis.
Recordkeeping: The permittee shall record the monthly condensate truck loadout volume. Each month during the first 12 months of monitoring the permittee shall record the cumulative condensate loadout volume and after the first 12 months of monitoring, the permittee shall calculate and record a monthly rolling 12-month total loadout volume. Records shall also be maintained in accordance with Section B109.
Reporting: The permittee shall report in accordance with Section B110.

D. Flare (FL-2) Collecting Vapors from Condensate (CONDLOAD), Gunbarrel Tank (TK-1), Tanks (TK-2, 3, 4, and 5), Slop Oil Tank (TK-6), and Oil Loadout control (OILLOAD-1)

Requirement: The permittee shall at all times, including during oil-load operations, operate tank Units TK-1 through TK-6 as a closed loop system that captures and routes all VOC emissions to flare FL-2 and do not vent to the atmosphere.
Monitoring At least once per quarter, the permittee shall inspect all piping from the flare and tanks connecting to the flare for defects that could result in air emissions. Defects include, but are not limited to, visible cracks, holes, or gaps; broken, cracked, or otherwise damaged seals or gaskets on closure devices; and broken or missing hatches, access covers, caps, or other closure devices. In the event that a leak or defect is detected, the permittee shall repair the leak or defect as soon as practicable and in a manner that minimizes VOC and HAP emissions to the atmosphere.
Recordkeeping: The permittee shall record the results of the inspections chronologically, noting any maintenance or repairs that are required.
Reporting: The permittee shall report in accordance with Section B110.

E. 20.2.38 NMAC, Hydrocarbon Storage Facilities (Units TK-2, 3, 4, 5 and 6)

Requirement: The permittee shall comply with 20.2.38.112 NMAC. The permittee shall install a flare to minimize hydrocarbon and hydrogen sulfide loss to the atmosphere and shall not operate the tank without the control device.
Monitoring: The permittee shall monitor the tanks operation.
Recordkeeping: None.
Reporting: The permittee shall report in accordance with Section B110.

A204 <u>Heaters/Boilers</u>

A. Operational Inspections of Heaters (Units HTR-1, HTR-2)

Requirement: (1) Compliance with the allowable emission limits in Table 106.A shall be demonstrated by performing annual inspections to ensure proper operation of the Units. (2) At a minimum, the operational inspections shall meet those recommended by the manufacturer or shall meet the facility specific procedure submitted to the Department. (3) If the permittee is using a facility specific procedure it shall submit an electronic version of the procedure to the Department's Permit Section Manager within 90 days of implementing the procedure. If the plan cannot be submitted within 90 days, the permittee shall obtain written approval to extend the deadline from the Department's Permit Section, either by regular or electronic mail. The permittee shall provide additional information or make changes to the plan as requested by the Department. (4) The permittee shall make changes or improvements to the inspection procedure based on experience with the unit and/or new information provided by the manufacturer. This updated procedure shall be made available to the Department upon request.
Monitoring: (1) Inspections shall be completed at least once per year or at the frequency recommended by the manufacturer. (2) At a minimum, inspections shall include the following: (a) checking indicators to verify that the optimal amount of excess combustion air is introduced into the boiler combustion process such as a blue colored, steady flame; (b) inspections of the unit's components and housing for cracks or worn parts.
Recordkeeping: (1) The permittee shall maintain records of operational inspections, including the indicators used to verify optimal excess combustion air, a description of the indicators, the unit component and housing inspections, and any adjustments needed to ensure optimal operation of the unit. (2) The permittee shall also keep records of the manufacturer's recommended or the permittee's facility specific operational inspection procedure and shall keep records of the percent of excess combustion air required for optimal performance.

(3) The permittee shall maintain records in accordance with Section B109.
Reporting: The permittee shall report in accordance with Section B110.

B. 40 CFR 60, Subpart Dc (Units HTR-1 and HTR-2)

Requirement: The units are subject to 40 CFR 60, Subpart Dc and the permittee shall comply with the applicable requirements of 40 CFR 60, Subpart A and Subpart Dc.
Monitoring: The permittee shall comply with all applicable monitoring and testing requirements of 40 CFR 60, Subpart Dc.
Recordkeeping: The permittee shall comply with the recordkeeping requirements of 40 CFR 60.48c.
Reporting: The permittee shall comply with the reporting requirements of 40 CFR 60.48c and the Section B110 of the permit.

A205 Turbines – Not required.

A206 Flares and Thermal Oxidizer

A. Visible Emissions for Flares and Thermal Oxidizer Flames (20.2.61 NMAC) (Units FL-1, FL-2, and TO-1)

Requirement: Compliance with the allowable emission limits in Sections A106 and A107 shall be demonstrated by the flares being equipped with a system to ensure that it is are operated with a flame present at all times and operated with no visible emissions. The flares and thermal oxidizer are subject to the 20% opacity standards in 20.2.61 NMAC and complying with the no visible emissions requirements demonstrates compliance with 20.2.61 NMAC opacity limit. To demonstrate compliance with the VOC and H_2S emission limits in Tables 106.A and 107.A, the flare (Unit FL-1) shall be equipped with a system to ensure that it is operated with a flame present at all times and operated with no visible emissions. The thermal oxidizer (Unit TO-1) shall be equipped with a pilot thermocouple and an alarm and notification system indicating when the Thermal Oxidizer fails to light, to ensure that it is operated with a flame present any time that vapors are routed to the unit.
Monitoring: **(1) Thermal Oxidizer and Flare Pilot Flame:** The permittee shall continuously monitor the presence of a thermal oxidizer and flare pilot flame using a thermocouple or any equivalent device approved by the Department and shall be equipped with a continuous recorder and alarm or equivalent, to detect the presence of a flame.

(2) Visible Emissions:

Annually, or whenever visible emissions are observed, the permittee shall conduct a visible emissions observation in accordance with the requirements at 40 CFR 60, Appendix A, Reference Method 22 to certify compliance with the no visible emission requirement on the process flare. The observation period is at least 2 consecutive hours where visible emissions are not to exceed a total of 5 minutes during any 2 consecutive hours.

At least once per year during a blow down event, the permittee shall conduct a visible emissions observation in accordance with the requirements at 40 CFR 60, Appendix A, Reference Method 22 to certify compliance with the no visible emission requirements. Each Method 22 test shall occur for the duration of the blow down event or for 30 minutes, whichever is less. Visible emissions shall not occur for more than 5 minutes during any consecutive 30-minute period. For blowdown events that occur for less than 30 minutes, visible emissions shall not occur for more the 15% during the duration of the blow down event.

If the flare is located at an unmanned site, used only for emergencies, and where there are no scheduled blowdown-maintenance events to observe flare combustion, the permittee shall at a minimum conduct the visible emissions observation in accordance with the requirements of EPA Method 22 on the pilot flame.

Recordkeeping:

(1) Thermal Oxidizer and Flare Pilot Flame:

The permittee shall record all instances of alarm activation, including the date and cause of alarm activation, actions taken to bring the flare into normal operating conditions, and maintenance activities.

Commented [A9]: This should also include a calculation and documentation of emissions released.

(2) Visible Emissions:

For any visible emissions observations conducted in accordance with EPA Method 22, the permittee shall record the information on the form referenced in EPA Method 22, Section 11.2.

For blowdown flares when a flaring event may occur without someone present:

For any visible emissions observations conducted in accordance with EPA Method 22, record the information on the form referenced in EPA Method 22, Section 11.2. If the visible emissions observation was conducted only on the pilot flame, the record shall also include the reasons that the test could not be conducted during a blowdown event.

Reporting: The permittee shall report in accordance with Section B110.

B. Gas Flow Monitoring and Gas Analysis for Flares and Thermal Oxidizer Operation (Units FL-1, FL-2, and TO-1)

Requirement: Compliance with the allowable emission limits in Tables 106.A and 107.A shall be demonstrated by completing the monitoring, recordkeeping, and reporting specified below.

Monitoring:

(1) Flow Monitoring:

a. Each flare shall be equipped with a gas flow or a mass flow meter, equipped with a chart recorder or data logger (electronic storage), to monitor gas flow/mass flow and record the total standard cubic feet (scf) of gas sent to Flare Units FL-1 and FL-2, and TO-1. b. The permittee: (i) May use manufacturer's specifications to determine pilot, purge, and assist gas flow rates. (ii) May use the manufacturer's specification or modeling estimations using Promax, E&P Tanks, or another approved method, to determine process gas flow rates. (2) Calibration: The flow meter(s), mass meter(s), totalizer(s), and if used, the inline monitor shall be operated, calibrated, and maintained as specified by the manufacturer or equivalent and as necessary to ensure correct and accurate readings. (3) Hourly Flow Rate: Gas flow or mass flow rates shall be logged during, or calculated for, each hour and each month that the flare/TO is in operation. (4) Gas Analysis: The permittee shall measure the H_2S content, the total sulfur content, the VOC content, and the heating value (Btu/scf) of the gas sent to the flare/TO for combustion or to the amine unit. H_2S shall be measured at least quarterly using a stain tube of the appropriate size range or an inline H_2S monitor; or measured annually with an extended gas analysis. The total sulfur content, VOC content, and heating value (Btu/scf) of the natural gas sent to the flare/TO shall be measured at least once annually with an extended gas analysis.
Recordkeeping: The following records shall be kept: (1) Flow Monitoring & (2) Calibration: Records of flowmeter or mass meter, totalizer, and inline monitor certifications, calibrations, breakdowns, reasons for the breakdown, and corrective actions. If manufacturer's specifications are used to determine pilot and purge fuel gas flow, the manufacturer's specification documentation must be maintained. (2) Hourly Flow Rate: Records of the calculated average hourly flowmeter/mass meter and flow/mass totalizer measurements of process and assist gas sent to the flare/TO or the amine unit in scf/hr. (3) Gas Analysis: Sample documentation as received from the laboratory including H_2S content, the total sulfur content, the VOC content, and the heating value (Btu/scf) and analysis method utilized. The permittee shall maintain all records in accordance with Section B109.
Reporting: The permittee shall report in accordance with Section B110.

C. Control Efficiency for Thermal Oxidizer (Unit TO-1)

Requirement: Compliance with the allowable emission limits in Table 106.A shall be demonstrated by maintaining a flame anytime gas is routed to the oxidizer and maintaining a burning temperature that achieves a destruction efficiency at or above 98% for VOCs and H2S, and monitoring unit downtime or malfunction. Temperature is used as the indicator for the

estimated destruction efficiency.
Monitoring: The permittee shall determine a combustion temperature that achieves the required destruction efficiency from periodic emissions testing performed in accordance with A206.G and monitor the combustion temperature of the Thermal Oxidizer continuously and record the temperature once per 24-hour period. Compliant combustion temperature is defined as within +/- 5% of the temperature during the emissions test.
Recordkeeping: The permittee shall maintain records including the date and time of each temperature reading, detail any deficiencies in operation identified, and record any corrective actions taken to restore the control device to operation. Records shall also be maintained in accordance with Section B109.
Reporting: The permittee shall report in accordance with Section B110.

Commented [A10]: If the TO goes down, H2S will be vented.

D. Emissions Calculation for Thermal Oxidizer (Unit TO-1)

Requirement: Compliance with the thermal oxidizer allowable emission limits in Table 106.A shall be demonstrated by operating the thermal oxidizer in accordance with the requirements, monitoring, and recordkeeping of Condition A206.D and completing emissions calculations as specified in this condition.
Monitoring: No monitoring is required. Compliance is demonstrated through records.
Recordkeeping: The permittee shall maintain records of all calculations and parameters used to determine emission rates in spreadsheet format and in accordance with Condition B109. **(1) Hourly Emissions Calculations:** The permittee shall calculate the pounds per hour (pph) NOx, CO, VOC, SO_2, and H_2S emission rates using these parameters: (a) the calculated average hourly flow rate of all gas combusted by the flare including pilot, purge, and assist gas, if applicable, (Condition A206.D(1)); (b) gas analysis including H_2S content, total sulfur content, VOC content, and heating value (BTU/scf) of the gas (Condition A206.D(2)); (c) the TNRCC RG-109 (high Btu; other) emission factors for NOx and AP-42 Tables 13.5-1 and 13.5-2emission factors for NOx and CO emission rates; and (d) VOC and H_2S emission rates calculated using a destruction efficiency of 98% based on the manufacturers guarantee. **(2) Annual Emissions Calculations:** The permittee shall calculate the total ton per year (tpy) emission rates as a monthly rolling 12-month total, using the totaled pph emission rates for each hour of the month: (a) During the first 12 months of this condition taking effect, the permittee shall record the total tons of NOx, CO, VOC, SO_2, and H_2S emissions.

(b) After the first 12 months of this condition taking affect, the permittee shall record the monthly rolling 12-month total tpy NOx, CO, VOC, SO_2, and H_2S emissions.
Reporting: The permittee shall report in accordance with Section B110.

E. Initial and Periodic Emissions Testing for Thermal Oxidizer (Unit TO-1)

Requirement: Compliance with the allowable emission limits in Table 106.A shall be demonstrated by emission tests for NOx and CO and calculating the destruction efficiency for VOCs and H2S of the thermal oxidizer during the monitoring period.
Monitoring: **NOx and CO:** The permittee shall complete an initial compliance test for NOx and CO using a portable analyzer or EPA Reference Method Test subject to the requirements and limitations of Section B111. The initial compliance test shall take place within 180 days of permit issuance. **VOC and H_2S Destruction Efficiency:** The permittee shall conduct periodic emissions tests using EPA Reference Method 25a or Method 18 subject to the requirements and limitations of Section B108, General Monitoring Requirements. Emission testing is required for un-speciated VOCs pre-control and post-TO (stack). Periodic emissions testing shall be carried out as described below. Test results for pre-control and post-control VOCs shall be used to calculate the destruction efficiency of the thermal oxidizer at the operating combustion temperature. Compliant destruction efficiency is defined as a percentage equal to or greater than 98%. Compliance with the destruction efficiency of 98% for VOCs shall also demonstrate compliance for H_2S. (1) The Periodic emissions tests shall be conducted as follows: (a) The first test shall take place within 180 days of permit issuance and thereafter; (b) Testing frequency shall be once per year. (c) The monitoring period is defined as a calendar year. (2) All subsequent monitoring shall occur in each succeeding monitoring period. No two monitoring events shall occur closer together in time than 25% of a monitoring period. (3) The permittee shall follow the General Testing Procedures of Section B111.
Recordkeeping: The permittee shall maintain records in accordance with Section B109, B110, and B111.
Reporting: The permittee shall report in accordance with Section B109, B110, and B111.

F. Emissions Calculation for Flares (Units FL-1, FL-2)

Requirement: Compliance with the flare allowable emission limits in Table 106.A shall be demonstrated by operating the flare in accordance with the requirements, monitoring, and recordkeeping of Condition A206.D and completing emissions calculations as specified in this condition.
Monitoring: No monitoring is required. Compliance is demonstrated through records.

Recordkeeping: The permittee shall maintain records of all calculations and parameters used to determine emission rates in spreadsheet format and in accordance with Condition B109. **(1) Hourly Emissions Calculations:** The permittee shall calculate the pounds per hour (pph) NOx, CO, VOC, SO_2, and H_2S emission rates using these parameters: (a) the calculated average hourly flow rate/mass rate of all gas combusted by the flare including pilot, purge, and assist gas, if applicable, (Condition A206.D(1)); (b) gas analysis including H_2S content, total sulfur content, VOC content, and heating value (BTU/scf) of the gas (Condition A206.D(4)); (c) the current published emission factors for NOx and CO emission rates; and (d) VOC and H_2S emission rates calculated using a destruction efficiency of no more than 98%. **(2) Annual Emissions Calculations:** The permittee shall calculate the total ton per year (tpy) emission rates as a monthly rolling 12-month total, using the totaled pph emission rates for each hour of the month: (a) During the first 12 months of this condition taking effect, the permittee shall record the total tons of NOx, CO, VOC, SO_2, and H_2S emissions. (b) After the first 12 months of this condition taking affect, the permittee shall record the monthly rolling 12-month total tpy NOx, CO, VOC, SO_2, and H_2S emissions.
Reporting: The permittee shall report in accordance with Section B110.

A207 <u>Sulfur Recovery Unit</u> – Not required

A208 <u>Amine Unit</u>

A. Extended Gas Analysis (AMINE-1)

Requirement: A. To demonstrate compliance with the allowable H2S emission limits in Table 106.A, the permittee shall conduct the following analyses: 1. An annual extended gas analysis on a representative sample upstream of the sweetening unit. 2. Verification sampling and analysis will be conducted biannually (every two years) on regenerator still vent emissions. B. Every two years, the extended gas analysis will include sampling and analysis for H2S. The value presented will be a numerical value, or if less than the laboratory method detectable limit, the minimum detection limit will be reported.
Monitoring: The permittee shall conduct an annual extended gas analysis of the inlet gas.

1. Confirmation testing on amine emission points (e.g. flash tank, regenerator, still vent) will be performed biannually (every two years).
Recordkeeping: Records shall be kept of the following: 1. Gas analysis H2S, CO2, VOC content of the inlet gas. 2. An annual calculation of the average hourly and total annual emissions for [H2S, VOC] based on the most recent annual extended gas analysis will be performed using, but not limited to, AmineCalc, HYSYS, or ProMax. 3. All parameters that were used as inputs to the model or calculations [i.e.; AmineCalc, HYSYS, or ProMax]. 4. Verification sampling and analysis on [flash tank] and/or [regenerator still vent] emissions.
Reporting: The permittee shall report in accordance with Section B110.

B. Amine pump circulation rate (AMINE-1)

Requirement: To demonstrate compliance with the allowable VOC emission limits in Table 106.A, the amine pump circulation rate for the unit shall not exceed 27,000 gallons per hour (450 gallons per minute).
Monitoring: Monitoring: The permittee shall monitor the circulation rate (gph) monthly.
Recordkeeping: Recordkeeping: The permittee shall keep records in accordance with Section B109 and of the following: 1. Pump flow rate in gph. 2. Basis for determination of flowrate.
Reporting: The permittee shall report in accordance with Section B110.

C. Sweetening Unit (AMINE-1) with Control Devices TO-1 (Thermal Oxidizer) and FL-1 (Flare)

Requirement: To demonstrate compliance with the allowable emission limits in Table 106.A, the amine sweetening unit shall have a closed system with still vent and flash tank emissions routed at all times to TO-1 except for TO-1 downtime. During TO-1 downtime, emissions shall be routed to FL-1. The closed vent system shall be designed and operated so that there are no leaks to the atmosphere. At no time shall any emissions be emitted directly to the atmosphere.
Monitoring: The permittee shall inspect the amine treatment unit and the control equipment semi-annually to ensure it is operating as initially designed or in accordance with the manufacturer's recommended procedures. The permittee shall inspect the pipe routed from the AMINE-1 still vent and flash tank to TO-2 and to FL-1 semi-annually to ensure that there is no degradation of welds or other deficiencies.

Recordkeeping: The permittee shall record the name of the person conducting the inspection and the results of all equipment and control device inspections chronologically, noting any maintenance or repairs needed to bring the amine treatment unit into compliance. The permittee shall maintain a copy of the manufacturer's maintenance recommendations.
Reporting: The permittee shall report in accordance with Section B110.

A209 Fugitives

A. 40 CFR 60, Subpart OOOOa (for all applicable process unit equipment, including Units FUG 1-2, COMP (Compressors for Units 1-12), and AMINE-1)

Requirement: Equipment in VOC or in wet gas service (as defined in 40 CFR §60.5430a) within process units FUG-1, COMP (Units 1-12), and AMINE-1 are subject to the GHG and VOC equipment leak standards at 40 CFR §60.5400a of 40 CFR 60, Subpart OOOOa. The permittee shall comply with all applicable requirements in Subparts A and OOOOa.
Monitoring: The permittee shall implement a leak detection and repair program and shall comply with the standards as specified at 40 CFR §60.5400a except as provided in §60.5401a.
Recordkeeping: The permittee shall comply with the recordkeeping requirements specified at 40 CFR §§60.5400a(e) and 60.486a except as provided in §§60.5401a and 60.5421a.
Reporting: The permittee shall comply with the reporting requirements specified at 40 CFR §§60.5400a(e) and 60.487a except as provided in §§60.5401a and 60.5422a.

PART B GENERAL CONDITIONS (Attached)

PART C MISCELLANEOUS: Supporting On-Line Documents; Definitions; Acronyms (Attached)

DRAFT AS OF 2/11/2020

Statement of Basis - Narrative

NSR Permit

Type of Permit Action: Regular-Significant Revision

Facility: 3 Bear Libby Gas Plant
Company: 3 Bear Delaware Operating – NM, LLC.
Permit No(s).: 7482-M1
Tempo/IDEA ID No.: 38067 - PRN20190001
Permit Writer: Julia Kuhn

Fee Tracking

Tracking	**NSR tracking entries completed:** [X] Yes [] No
	NSR tracking page attached to front cover of permit folder: [X] Yes [] No
	Paid Invoice Attached: [X] Yes [] No
	Balance Due Invoice Attached: [] Yes [X] No
	Invoice Comments: Invoice paid in full on 10/18/2019

Permit Review	**Date to Enforcement:** 2/11/2020	**Date of Enforcement Reply:** 3/3/2020
	Date to Applicant: 2/11/2020	**Date of Applicant Reply:** 3/3/2020
	Date to EPA: TBD or N/A	**Date of EPA Reply:** TBD or N/A
	Date to Supervisor: 1/15/2020	

1.0 Plant Process Description:

The 3 Bear Libby Gas Plant will be equipped to gather natural gas from three surrounding compressor stations: 3 Bear Aztec Compressor Station, 3Bear Outland Compressor Station, and 3Bear Lariat Compressor Station, which are owned and operated by 3Bear. The gas from the compressor stations is sent to the gas processing plant for treatment.

Libby will separate natural gas liquids (NGL's) from the field gas, producing natural gas liquids and a residue gas for transmission to a pipeline owned by others. The process utilizes a cryogenic gas separation plant and associated compressors for collecting field gas from the gathering system nearby. Gas and NGL's will be piped to the respective nearby interconnect metering stations, by others. The plant is to be located within 5 miles of the residue gas and NGL pipelines.

Compressor engines on site (ENG 1-4) will compress inlet gas and send the gas to the processing plant where an amine unit (AMINE-1) on site will treat and sweeten the gas. The amine unit is controlled by a thermal oxidizer (TO-1), and in the event that the thermal oxidizer is down, the gas will be sent to a flare (FL-1). The NGLs produced will be stored in pressurized vessels. Liquids from process drains will be sent to a gunbarrel tank (TK-1) for hydrocarbon separation. Oil from the gunbarrel separation will be stored in one 400-bbl slop oil tank (TK-6) and produced water will be stored in produced water tank (PWTK-1). Condensate tanks will store

Commented [MLS1]: Is waste gas disposal only through the thermal oxidizer?

stabilized condensate (TK 2-5). A tank flare (FL-2) controls all tanks on site, and condensate and oil will be trucked off site (CONDLOAD-1 and OILLOAD-1). An emergency and maintenance flare (FL-1) will control compressor blowdowns (COMP), plant blowdowns (PLANT BD), and emergency upset conditions. Fugitive emissions occur from process piping and other components (FUG 1-2). Road dust emissions occur from daily routine traffic to the production facility (HR-1). Additional equipment on site will include: residue compressor engines (Either ENG 5-8 or ENG 9-12), two generator engines (GEN 1-2 operating less than 500 hours), one 50 MMBtu/hr hot oil heater (HTR-1), and one 11 MMBtu/hr regen gas heater (HTR-2).

2.0 **Description of this Modification:**

The application and accompanying material revise the New Source Review (NSR) Construction Permit No. 7482 for the 3Bear Libby Gas Plant (Libby), owned and operated by 3 Bear Delaware Operating – NM, LLC (3Bear). NSR Permit No. 7482 was issued on January 8, 2018. The facility will receive up to 60 MMscf/day of gas from three surrounding compressor stations owned and operated by 3Bear. Libby will separate natural gas liquids (NGL's) from the field gas, producing natural gas liquids and a residue gas for transmission to a pipeline owned by others. The process utilizes a cryogenic gas separation plant and associated compressors for collecting field gas from the gathering system nearby. Gas and NGL's will be piped to the respective nearby interconnect metering stations, by others. The plant is to be located within 5 miles of the residue gas and NGL pipelines. Changes to the last application since the last permit issuance include: addition of residue compressor engine options, addition of generator engine, corrected tank battery configuration and process, removal of methanol tank, addition of loadout, updated fugitive emissions, and updated flaring volumes.

The facility will consist of one of the inlet compressor engine options listed in Table 1.

Table 1: Compressor Engine Options

Option No.	Unit Name	Make & Model
1	ENG-1	Caterpillar G3508
2	ENG 2	Caterpillar G3516

Note: The worst-case emissions are included in the total facility emissions.

The facility will consist of one of the residue compressor engine options listed in Table 2.

Table 2: Compressor Engine Options

Option No.	Unit Name	Make & Model
1	ENG 5-8	Caterpillar G3516
2	ENG 9-12	Waukesha 7044GSI

Note: The worst-case emissions are included in the total facility emissions.

In addition to the compressor engine options, the facility will consist of the following emission units: two additional inlet compressor engines, one gunbarrel tank, four condensate tanks, one slop oil tank, one produced water tank, one hot oil heater, one regen gas heater, one amine unit, one condensate loadout, one oil loadout, one thermal oxidizer, one upset/maintenance flare, one tank flare, process piping fugitives, and haul road fugitives. The facility will also have two generators (GEN 1-2) on site that are exempt under 20.2.72.202.B.3.

SSM Overview:

SSM emissions are expected at the facility and are included in the total facility wide emissions. The compressor blowdowns and plant blowdowns will be controlled by the maintenance flare. Additional maintenance flaring has been included in the application to account for other maintenance activities. Maintenance activities that cannot be controlled, such as painting and tank degassing, have been included in the application as well. An estimated 10 tpy has been used for these uncontrolled maintenance activities. In the event that the thermal oxidizer is down, the maintenance flare (FL-1) is used as a backup control device for the amine unit.

3.0 **Source Determination:**

1. The emission sources evaluated include the entire 3 Bear Libby Gas Plant.

2. Single Source Analysis:

A. SIC Code: Do the facilities belong to the same industrial grouping (i.e., same two-digit SIC code grouping, or support activity)? Yes

B. Common Ownership or Control: Are the facilities under common ownership or control? Yes

C. Contiguous or Adjacent: Are the facilities located on one or more contiguous or adjacent properties? Yes

3. Is the source, as described in the application, the entire source for 20.2.70, 20.2.72, 20.2.73, or 20.2.74 NMAC applicability purposes? Yes

4.0 **PSD Applicability:**

A. The source, as determined in 3.0 above, is a minor source before and after this modification. Note: CO and SO2 emissions are close to PSD level. Calculations were thoroughly reviewed. Amine unit and thermal oxidizer included a 25% safety factor.

5.0 **History (In descending chronological order, showing NSR and TV):** *The asterisk denotes the current active NSR and Title V permits that have not been superseded.

Permit Number	Issue Date	Action Type	Description of Action (Changes)
7482M1*	TBD	NSR - Significant Revision	Addition of residue compressor engine options (Waukesha), addition of generator engine (exempt under 20.2.72.202.B.3), corrected tank battery configuration and process, removal of methanol tank, addition of loadout, updated fugitive emissions, and updated flaring volumes.
P285	10/31/2019	Title V - New	Initial operating permit application Ruled Incomplete due to concurrent review of NSR permit.
7482	1/8/2018	NSR - New	Permitting for new 60MMscfd natural gas plant.

6.0 **Public Response/Concerns:** As of the date of permit issuance, this permit writer is not aware of any public comment or concern.

7.0 **Compliance Testing:**

Unit No.	Test Description	Test Date
ENG-5 (Previously ENG-1b)	Tested in accordance with EPA test methods as required by NSR permit 7482.	4/16/2019
ENG-6 (Previously ENG-2)	Tested in accordance with EPA test methods as required by NSR permit 7482.	4/18/2019

8.0 **Startup and Shutdown:**

A. If applicable, did the applicant indicate that a startup, shutdown, and emergency operational plan was developed in accordance with 20.2.70.300.D(5)(g) NMAC? No.
B. If applicable, did the applicant indicate that a malfunction, startup, or shutdown operational plan was developed in accordance with 20.2.72.203.A.5 NMAC? Yes.
C. Did the applicant indicate that a startup, shutdown, and scheduled maintenance plan was developed and implemented in accordance with 20.2.7.14.A and B NMAC? Yes.
D. Does the facility have emissions due to routine or predictable startup, shutdown, and maintenance? If so, have all emissions from startup, shutdown, and scheduled maintenance operations been permitted? Yes.

9.0 **Compliance and Enforcement Status:** There are no known outstanding compliance or enforcement cases or actions in process or pending.

10.0 **Modeling:** Modeling review provided by AQB Modeler Angela Raso on February 7, 2020 states the following: "*This modeling analysis demonstrates that operation of the facility described in this report neither causes nor contributes to any exceedances of* *applicable air quality standards. The standards relevant at this facility are NM/NAAQS for CO, NO_2, PM10, PM2.5, and SO_2; and Class II PSD increments for NO_2, PM2.5, PM10, and SO_2."*

Note: Modeling assumptions include engine options as stated in permit conditions.

11.0 **State Regulatory Analysis(NMAC/AQCR):**

STATE REGU-LATIONS CITATION 20 NMAC	Title	Applies (Y/N)	Unit(s) or Facility	JUSTIFICATION:
2.1	GENERAL PROVISIONS	Yes	Entire Facility	The facility is subject to Title 20 Environmental Protection Chapter 2 Air Quality of the New Mexico Administrative Code so is subject to Part 1 General Provisions, Update to Section 116 of regulation for Significant figures & rounding. Applicable with no permitting requirements.
2.3	Ambient Air Quality Standards	Yes	Entire Facility	**NSR:** 20.2.3 NMAC is a SIP approved regulation that limits the maximum allowable concentration of Total Suspended Particulates, Sulfur Compounds, Carbon Monoxide and Nitrogen Dioxide.
2.7	Excess Emissions	Yes	Entire Facility	Applies to all facilities' sources
2.33	Gas Burning Equipment - Nitrogen Dioxide	No		This facility DOES NOT have new gas burning equipment (external combustion emission sources, such as gas and oil-fired boilers and heaters) having a heat input of greater than 1,000,000 million British Thermal Units per year per unit. This facility DOES NOT have existing gas burning equipment having a heat input of greater than 1,000,000 million British Thermal Units per year per unit Note: **"New gas burning equipment"** means gas burning equipment, the construction or modification of which is commenced after February 17, 1972.
2.34	Oil Burning Equipment - Nitrogen Dioxide	No		This facility DOES NOT have oil burning equipment (external combustion emission sources, such as gas and oil-fired boilers and heaters) having a heat input of greater than 1,000,000 million British Thermal Units per year per unit.
2.35	Natural Gas Processing Plant – Sulfur	No		This facility is a natural gas processing plant but DOES NOT have a Sulfur Recovery Unit to reduce sulfur emissions.
2.38	Hydrocarbon Storage Facilities	Yes	TK 2-6	20.2.38 NMAC This regulation applies to oil and condensate storage tanks at the facility. The tanks will be manifold to a flare to meet the requirements of this regulation.

STATE REGU-LATIONS CITATION 20 NMAC	Title	Applies (Y/N)	Unit(s) or Facility	JUSTIFICATION:
2.39	Sulfur Recovery Plant - Sulfur	No		This facility is NOT a sulfur recovery plant.
2.61	Smoke and Visible Emissions	Yes	ENG 1-12, HTR 1-2, TO-1, FL 1-2 GEN-1, 2	This regulation that limits opacity to 20% applies to Stationary Combustion Equipment, such as engines, boilers, heaters, and flares. Generators are back up units exempt under 20.2.72.202.B.3.
2.70	Operating Permits	Yes	Entire Facility	This facility is a Title V Major Source as defined at 20.2.70.7 NMAC.
2.71	Operating Permit Fees	Yes	Entire Facility	Source is subject to 20.2.70 NMAC as cited at 20.2.71.109 NMAC.
2.72	Construction Permits	Yes	Entire Facility	NSR Permits are the applicable requirement, including 20.2.72 NMAC.
2.73	NOI & Emissions Inventory Requirements	Yes	Entire Facility	Emissions Inventory Reporting: 20.2.73.300 NMAC applies. This facility will be issued a permit under 20.2.72 NMAC, therefore it will meet the applicability requirements of 20.2.73.300 NMAC.
2.74	Permits-Prevention of Significant Deterioration	No		This facility is NOT a PSD major source.
2.75	Construction Permit Fees	Yes	Entire Facility	This facility is subject to 20.2.72 NMAC .
2.77	New Source Performance	Yes	ENG 1-12, HTR 1-2, FUG-1, COMP, AMINE-1 GEN-1, 2	Applies to any stationary source constructing or modifying and which is subject to the requirements of 40 CFR Part 60. HTR 1-2 are subject to NSPS Dc ENG 1-12 (potentially) and GEN-1 are subject to NSPS Subpart JJJJ. GEN-2 is subject to NSPS Subpart IIII FUG-1, COMP, AMINE-1 are subject to NSPS Subpart OOOOa. Generators are back up units exempt under 20.2.72.202.B.3.
2.78	Emissions Standards for HAPs	No		This facility DOES NOT emit hazardous air pollutants, which are subject to the requirements of 40 CFR Part 61. PTE for total HAPs is 15.7 tpy.
2.79	Permits Nonattainment Areas	No		This facility is not located in, not does it affect, a nonattainment area.
2.80	Stack Heights	Yes	ENG 1-12 HTR 1-2, TO-1, FL-1, FL-2	3 Bear considered GEP requirements in the analysis. Stack heights do not exceed GEP (40 CFR 51).

STATE REGU-LATIONS CITATION **20 NMAC**	**Title**	**Applies (Y/N)**	**Unit(s) or Facility**	**JUSTIFICATION:**
2.82	MACT Standards for Source Categories of HAPs	Yes	ENG 1-12 GEN 1-2	This regulation applies to all sources emitting hazardous air pollutants, which are subject to the requirements of 40 CFR Part 63. Generators are back up units exempt under 20.2.72.202.B.3.

12.0 **Federal Regulatory Analysis:**

Federal Regulation	**Title**	**Applies (Y/N)**	**Unit(s) or Facility**	**Comments**
Air Programs Subchapter C (40 CFR 50)	National Primary and Secondary Ambient Air Quality Standards	Yes	Entire Facility	Independent of permit applicability; applies to all sources of emissions for which there is a Federal Ambient Air Quality Standard.
NSPS Subpart A (40 CFR 60)	General Provisions	Yes	ENG 1-12, HTR 1-2, FUG-1, COMP, AMINE-1 GEN 1-2	Applies if any other subpart applies. HTR 1-2 are subject to NSPS Dc ENG 1-12 (potentially) are subject to NSPS Subpart JJJJ. FUG-1, COMP, AMINE-1 are subject to NSPS Subpart OOOOa. Generators are back up units exempt under 20.2.72.202.B.3.
40 CFR 60.40c, Subpart Dc	Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units	Yes	HTR 1-2	Facility has steam generating units for which construction, modification or reconstruction is commenced after June 9, 1989 and that have a maximum design heat input capacity of 29 MW) (100 million British thermal units per hour (MMBtu/h) or less, but greater than or equal to 2.9 MW. This regulation applies to units This regulation applies to the specified heaters
40 CFR 60, Subpart Ka	Standards of Performance for Storage Vessels for Petroleum Liquids for Which Construction, Reconstruction, or Modification Commenced After May 18, 1978, and **Prior** to July 23, 1984	No		This facility does not have storage capacity greater than 151,416 liters (40,000 gallons) that are used to store petroleum liquids for which construction is commenced after May 18, 1978, therefore the facility is not applicable to this regulation.
40 CFR 60, Subpart Kb	Standards of Performance for Storage Vessels for Volatile Organic Liquid Storage Vessels for	No		The facility does not have storage vessels with storage capacity greater than $75m^3$ that are used to store volatile organic liquids and for which construction,

Federal Regulation	Title	Applies (Y/N)	Unit(s) or Facility	Comments
	Which Construction, Reconstruction, or Modification Commenced **After** July 23, 1984			reconstruction, or modification commenced after 7/23/84, therefore the facility is not applicable to this regulation.
40 CFR 60.330 Subpart GG	Stationary Gas Turbines	No		There are no stationary gas turbines exceeding the 10 MMBtu/hour threshold at this facility.
40 CFR 60, Subpart KKK	Standards of Performance for Equipment Leaks of VOC from Onshore Natural Gas Processing Plants	No		This facility is an onshore gas plant that will commence construction, reconstruction, or modification after August 23, 2011, therefore the facility is not subject to the requirements of this subpart.
40 CFR Part 60 Subpart LLL	Standards of Performance for Onshore Natural Gas Processing: SO2 Emissions	No		This facility is an onshore natural gas processing plant that will commence construction, reconstruction, or modification after August 23, 2011, therefore the facility is not subject to the requirements of this subpart.
40 CFR Part 60 Subpart IIII (Quad-I)	Standards of Performance for Stationary Compression Ignition Internal Combustion Engines	Yes	GEN-2	GEN-2 is a stationary CI that commenced construction after July 11, 2005 where the stationary CI ICE was manufactured after April 1, 2006. GEN-2 unit is exempt under 20.2.72.202.B.3.
40 CFR Part 60 Subpart JJJJ (Quad -J)	Standards of Performance for Stationary Spark. Ignition Internal Combustion Engines	Yes	ENG 1-12, GEN-1	ENG-1 (potentially) is subject to NSPS Subpart JJJJ because the engine has a manufacture date after July 1, 2007 and has a maximum engine power greater than or equal to 500 hp and less than 1,350 hp. ENG 2-12 (potentially) are subject to NSPS Subpart JJJJ because the engines have a manufacture date after July 1, 2007 and have a maximum engine power greater than 500 hp. GEN-1 is subject to NSPS Subpart JJJJ because the engine has a manufacture date after July 1, 2008 and has a maximum engine power less than 500 hp. GEN-1 unit is exempt under 20.2.72.202.B.3.

Federal Regulation	**Title**	**Applies (Y/N)**	**Unit(s) or Facility**	**Comments**
40 CFR Part 60 Subpart KKKK	Standards of Performance for Stationary Combustion Turbines	No		There are no stationary gas turbines exceeding 10 MMBtu/hour at this facility.
NSPS 40 CFR Part 60 Subpart OOOO (Quad -O)	Standards of Performance for Crude Oil and Natural Gas Production, Transmission and Distribution for which construction, modification or reconstruction commenced after August 23, 2011 and before September 18, 2015	No		The facility is NOT subject to the provisions of NSPS Subpart OOOO because the facility will be constructed after September 18, 2015.
NSPS 40 CFR Part 60 Subpart OOOOa	Standards of Performance for Crude Oil and Natural Gas Facilities for which Construction, Modification or Reconstruction Commenced After September 18, 2015	Yes	FUG-1, COMP, AMINE-1	The facility IS subject to the provisions of NSPS Subpart OOOOa listed below because: - The compressors (COMP) are not co-located with a wellhead, so the reciprocating compressor requirements are applicable. - AMINE-1 is a sweetening unit located at onshore natural gas processing plants that process natural gas produced from onshore wells. - This is an onshore natural gas processing plant therefore the equipment-leak standards apply to the affected facilities (FUG 1-2). The facility is NOT subject to the provisions of NSPS Subpart OOOOa listed below because: - There are no gas-fired, continuous high bleed pneumatic controllers at this site, so the pneumatic controller requirements are not applicable. - TK-1 is a process vessel not a storage vessel, therefore the storage vessel affected facility requirements are not applicable. - TK 2-6 and PWTK-1 are storage vessels that emit less than 6 tpy VOC, therefore the storage vessel affected facility requirements are not applicable. - OOOOa is not applicable to FUG-2

Federal Regulation	Title	Applies (Y/N)	Unit(s) or Facility	Comments
				based on the residue side of the operation which does not have VOC wt% greater than 10%, 60.5400a(f)
NESHAP Subpart A (40 CFR 61)	General Provisions	No		This facility does not emit HAP's in quantities that trigger these requirements.
MACT Subpart A (40 CFR 63)	General Provisions	Yes	ENG 1-12 GEN 1-2	Applies if any other subpart applies. This regulation applies to all sources emitting hazardous air pollutants, which are subject to the requirements of 40 CFR Part 63. The MACT Subpart ZZZZ applies as discussed below.
40 CFR 63.760 Subpart HH	Oil and Natural Gas Production Facilities –	No		AREA SOURCE (Minor for HAPs): There are no affected sources (TEG glycol dehydrators, 63.760(b)(2)) at this facility.
40 CFR 63 Subpart HHH	National Emission Standards for Hazardous Air Pollutants from Natural Gas Transmission and Storage Facilities	No		This facility is not a natural gas transmission and storage facility or a major source of HAPs.
40 CFR 63 Subpart ZZZZ (Quad Z)	National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines (RICE MACT)	Yes	ENG 1-12 GEN 1-2	40 CFR 63, Subpart ZZZZ establishes national emission limitations and operating limitations for hazardous air pollutants (HAP) emitted from existing, new, modified and reconstructed stationary reciprocating internal combustion engines (RICE) located at major and area sources of HAP emissions. The regulation contains provisions for initial and continuous compliance demonstration. The facility is an area source of HAP, as defined under the regulation. ENG 1-12 (potentially) and GEN-1: Under §63.6590(a)(2)(iii) and (a)(3)(iii), a RICE located at an area source of HAP is a *new* or *reconstructed* unit if it is constructed or reconstructed on or after June 12, 2006. Under §63.6590(c)(1), a *new* or *reconstructed* SI RICE at an area source of HAP must meet the requirements of the part by meeting the requirements of 40 CFR 60, Subpart JJJJ (NSPS for Stationary Spark Ignition Internal

Federal Regulation	Title	Applies (Y/N)	Unit(s) or Facility	Comments
				Combustion Engines). GEN-2 Under §63.6590(a)(2)(iii) and (a)(3)(iii), a RICE located at an area source of HAP is a *new* or *reconstructed* unit if it is constructed or reconstructed on or after June 12, 2006. Under §63.6590(c)(1), a *new* or *reconstructed* SI RICE at an area source of HAP must meet the requirements of the part by meeting the requirements of 40 CFR 60, Subpart IIII (NSPS for Stationary Compression Ignition Engines). Generators are back up units exempt under 20.2.72.202.B.3.
40 CFR 64	Compliance Assurance Monitoring	No		The amine sweetening unit has pre-control VOC and H2S emissions greater than 100 TPY and uses a control device to achieve compliance with an emission limitation or standard. The amine sweetening unit is an affected facility under NSPS OOOOa, therefore, it is exempt under §64.2(b)(1)(i) for control of H2S. The facility is not subject to 40 CFR 64.
40 CFR 68	Chemical Accident Prevention	Yes	Entire Facility	An owner or operator of a stationary source that has more than a threshold quantity of a regulated substance in a process, as determined under §68.115 Threshold determination and 68.130 List of substances. This facility will handle naturally occurring hydrocarbon mixtures at a natural gas processing plant and the Accidental Release Prevention Provisions may be applicable to this facility. The facility may be required to submit the appropriate accidental release emergency response program plan prior to operation of the facility with more than the threshold quantity of a regulated substance.
40 CFR 70	Title V- State Operating Permit Programs	No		Operating Permit Program – is not applicable – New Mexico State has full delegated authority and Title V is administered under 20.2.70 NMAC.

Federal Regulation	Title	Applies (Y/N)	Unit(s) or Facility	Comments
Title VI – 40 CFR 82	Protection of Stratospheric Ozone	No		Not Applicable –facility will not "service", "maintain" or "repair" class I or class II appliances nor "disposes" of the appliances.

13.0 **<u>Exempt and/or Insignificant Equipment that do not require monitoring</u>**:

NSR Exempt Equipment

Source Description	JUSTIFICATION
Miscellaneous Insignificant Tanks	Activity has a potential emission rate of no more than one-half (1/2) ton per year of any pollutant set by national or New Mexico ambient air quality standards, 20.2.72.202.B.5
Olympian-Generator Engine (GEN-1)	Stand by generator operated less than 500 hour per year and accompanied by sufficient record keeping, to verify that it is operated less than 500 hours per year, 20.2.72.202.B.3
Generac-Generator Engine (GEN-2)	Standby generator operated less than 500 hour per year and accompanied by sufficient record keeping, to verify that it is operated less than 500 hours per year, 20.2.72.202.B.3

14.0 **<u>New/Modified/Unique Conditions</u>** <u>(Format: Condition#: Explanation):</u>

A. Date of Engine Monitoring Protocols used: December 11, 2019.
B. Date of Flare Monitoring Protocols used: July 12, 2017.
C. Date of VOC/HAPS LDAR Fugitive Monitoring Protocols used: September 15, 2017.
D. Date of Gas-Fired Heaters, Furnaces and Boilers Monitoring Protocols used: August 18, 2017.
E. Date of Tanks & Loading Monitoring Protocols used: September 19, 2017.

15.0 **<u>For Title V action: Cross Reference Table between NSR Permit 7482-M1 and TV Permit P285 . NSR permit conditions cross referenced to the TV permit are federally enforceable conditions, and therefore brought forward into the TV permit:</u>**

Not Required, P285 has not been issued.

16.0 **Permit specialist's notes to other NSR or Title V permitting staff concerning changes and updates to permit conditions.**

A. Section A201 of NSR permit 7482-M1 was updated to reflect current Engine Monitoring Protocols. The following conditions were added to this section: Non-Selective Catalytic Reduction Operation (C), Notification of Engine Option Installation (E), 40 CFR 60, Subpart JJJJ (F), 40 CFR 60, Subpart ZZZZ (G), and 40 CFR 60, Subpart IIII (H).
B. Revised section A202 to reflect correction of tank configuration and process.

DRAFT AS OF 2/11/2020

Data Base Summary (Statement of Basis)

NSR Permit

Type of Permit Action: Regular-Significant Revision

PSD or Not	Minor or Title V	Portable or Not
Minor (not PSD)	Major-Title V	Stationary

Facility:	3 Bear Libby Gas Plant
Company:	3 Bear Delaware Operating - NM LLC
Facility Type:	O&G-Gas Plant
Permit No. (NSR)	7482-M1
Operating Permit No. (TV)	NA
IDEA ID No.	38067 - PRN20190001
AIRS ID No.	350251281
SIC CODE:	1321: Natural gas liquids
Permit Writer:	Julia Kuhn
Application Notarized Date:	September 6, 2019
Receive Date:	September 13, 2019
Timeliness of TV Application:	NA
Ruled Incomplete:	NA
Ruled Complete:	October 11, 2019
APP. sent to Field Office:	TBD
PSD APP. Sent to EPA:	NA
Public Notice Date&Newspaper:	Initial - October 20, 2019, Hobbs News-Sun 2ND Public Notice (due to application revisions) December 22, 2019, Hobbs News-Sun 3RD Public Notice (due to issuance date extension) January 29, 2020, Hobbs News-Sun
Comments Due:	November 19, 2019 January 21, 2020 February 28, 2020
Analysis Review Begins:	NA
Analysis Review Ends:	NA
Public Hearing:	NA
Proposed Permit to EPA Acknowledged:	NA
Permit Due:	Initial - January 9, 2020. Extension - April 8, 2020
Permit Issued:	TBD
PSD Permit to EPA:	NA
Facility Location:	This facility is located approximately 16.2 miles SW of Monument, in Lea County, NM.

UTM ZONE:	13 ; Datum: WGS84
UTM Easting:	638430 meters
UTM Northing:	3601510 meters
Elevation:	3713 ft feet
County:	Lea
In a Sensitive Area:	No

Contact Name: Stephanie Swanson
Phone: 303-862-3967
Fax: NA
Email: stephanie@3bearllc.com

Contact Address: 1512 Larimer St., Suite 540
Denver, CO 80202

Consultant Name: Lori Marquez/Trent Wade
Barr Engineering Co.
Phone: 303-503-4735
Fax: NA
Email: LMarquez@barr.com; TWade@barr.com

Consultant Address: 1600 Broadway
Suite 1600
Denver, CO 80202

NSR AGENCY* NOTIFICATION:

Agency	Distance	Units	Date Email Sent
State - Texas	43	km	10/11/19, 12/18/19 and 2/3/20

*As required by 20.2.72.206.A.(7): Mail a copy of the public notice at the same time it is sent for publication to the appropriate agency in the following locations if the source will locate within 50 kilometers (31.1 miles) of the boundary of other states, Bernalillo County, or a Class I Area.

PART II - FACILITY SPECIFICATIONS

Table 102.A: Total Pollutant Emissions from Entire Facility:

Pollutant	**Emissions** (tons per year)	**Emission Type**	**Change in Emission since Permit 7482**
Nitrogen Dioxide	145.8	Allowable	+21.8
Carbon Monoxide	241.7	Allowable	+113.8
Volatile Organic Compounds (VOC)	182.8	Allowable	+71.5
Sulfur Dioxide	238.4	Allowable	-0.4
Particulate Matter (total suspended)	9.1	Allowable	+1.2

Table 102.A: Total Pollutant Emissions from Entire Facility:

Pollutant	**Emissions** (tons per year)	**Emission Type**	**Change in Emission since Permit 7482**
Particulate Matter (10 microns or less)	8.9	Allowable	+2.3
Particulate Matter (2.5 microns or less)	8.9	Allowable	+2.7
Greenhouse Gas (GHG) as CO_2e	254,861	Potential	+83,805

Note: Total Potential Pollutant Emissions in Table 102.A,may include fugitive emissions; routine or predictable, startup, shutdown, and maintenance emissions (SSM); and permitted malfunction allowances if these are a sources of regulated air pollutants from this facility.

Table 102.B: Total Potential Hazardous Air Pollutants (HAPs)* and State Toxic Air Pollutants (TAPs)

Pollutant	**Emissions** (tons per year)	**Emission Type**	**Change in Emission since Permit 7482**
Acetaldehyde; (Ethyl aldehyde)	2.9	Potential	-0.2
Acrolein	1.8	Potential	-0.1
Formaldehyde	8.5	Potential	-0.7
Hexane	1.8	Potential	-0.1
Total HAP	15.7	Potential	-1.4

* HAP emissions are included in the Table 102.A VOC emissions total.
** Total HAP emissions may not agree with the sum of individual HAPs because only individual HAPs emitted at a rate greater than 1.0 ton per year are listed in Table 102.B.

AIR POLLUTION CONTROL DEVICES:

Subject Item ID, Type, ID, (Unit #)	SI Description	Primary	Secondary	Control Equipment Mfg & model (or equivalent)
ENG-1	Caterpillar G3508 4 SLB RICE/Compressor Option 1	Catalytic Oxidation	Air Fuel Ratio Controller	Not reported
ENG-2	Caterpillar G3516 4 SLB RICE/Compressor Option 2	Catalytic Oxidation	Air Fuel Ratio Controller	Not reported
ENG-3	Caterpillar G3516 4 SLB RICE/Compressors	Catalytic Oxidation	Air Fuel Ratio Controller	Not reported
ENG-4	Caterpillar G3516 4 SLB RICE/Compressors	Catalytic Oxidation	Air Fuel Ratio Controller	Not reported
ENG-5	Caterpillar G3516 4 SLB RICE/Compressors	Catalytic Oxidation	Air Fuel Ratio Controller	Not reported
ENG-6	Caterpillar G3516 4 SLB RICE/Compressors	Catalytic Oxidation	Air Fuel Ratio Controller	Not reported
ENG-7	Caterpillar G3516 4 SLB RICE/Compressors	Catalytic Oxidation	Air Fuel Ratio Controller	Not reported
ENG-8	Caterpillar G3516 4 SLB RICE/Compressors	Catalytic Oxidation	Air Fuel Ratio Controller	Not reported
ENG-9	Waukesha 7044 4 SLB RICE/Compressors	NSCR (Non-Selective Catalytic Reduction)	NA	Not reported
ENG-10	Waukesha 7044 4 SLB RICE/Compressors	NSCR (Non-Selective Catalytic Reduction)	NA	Not reported
ENG-11	Waukesha 7044 4 SLB RICE/Compressors	NSCR (Non-Selective Catalytic Reduction)	NA	Not reported
ENG-12	Waukesha 7044 4 SLB RICE/Compressors	NSCR (Non-Selective Catalytic Reduction)	NA	Not reported
TK-1	Gunbarrel Tank 500 bbl	Flare	NA	Not reported

Subject Item ID, Type, ID, (Unit #)	SI Description	Primary	Secondary	Control Equipment Mfg & model (or equivalent)
TK-2	Stabilized Condensate Tank 400 bbl	Flare	NA	Not reported
TK-3	Stabilized Condensate Tank 400 bbl	Flare	NA	Not reported
TK-4	Stabilized Condensate Tank 400 bbl	Flare	NA	Not reported
TK-5	Stabilized Condensate Tank 400 bbl	Flare	NA	Not reported
TK-6	Slop Oil Tank 400 bbl	Flare	NA	Not reported
CONDLOAD -1	Truck Loading (Condensate Loadout)	Flare	NA	Not reported
OILLOAD-1	Truck Loading (Oil Loadout)	Flare	NA	Not reported
AMINE-1	Amine Unit	Thermal Oxidizer (Incinerator)	Flare (during thermal oxidizer downtime)	Not reported
COMP	Compressor Blowdown	Flare	NA	Not reported

EQUIPMENT SPECIFICATIONS (Active/Alternative):

Unit No.	Unit Type	Make	Model No.	Serial No.	Yr of Construction	Yr of Manufacture	Operating Rate Max/Site	Operating Capacity Max/Site	Subject Item Status	Subject Item Description
[1]ENG-1	Engine Option #1									
[1]ENG-1	Caterpillar G3508 4 SLB RICE/Compressor Option 1	Caterpillar	G3508	TBD	12-JUN-06	01-JUL-10	690 hp / 690 hp	690 hp / 690 hp	Active	Caterpillar G3508 4 SLB RICE/Compressor Option 1

[1]ENG-2	Engine Option #2									
[1]ENG-2	Caterpillar G3516 4 SLB RICE/Compressor Option 2	Caterpillar	G3516	TBD	12-JUN-06	01-JUL-10	1380 hp / 1380 hp	1380 hp / 1380 hp	Active	Caterpillar G3516 4 SLB RICE/Compressor Option 2
ENG-3	Caterpillar G3516 4 SLB RICE/Compressors	Caterpillar	G3516	TBD	12-JUN-06	01-JUL-10	1380 hp / 1380 hp	1380 hp / 1380 hp	Active	Caterpillar G3516 4 SLB RICE/Compressors
ENG-4	Caterpillar G3516 4 SLB RICE/Compressors	Caterpillar	G3516	TBD	12-JUN-06	01-JUL-10	1380 hp / 1380 hp	1380 hp / 1380 hp	Active	Caterpillar G3516 4 SLB RICE/Compressors
[1]ENG 5-8	Engine Option #1									
[1]ENG-5	Caterpillar G3516 4 SLB RICE/Compressors	Caterpillar	G3516	TBD	12-JUN-06	01-JUL-10	1380 hp / 1380 hp	1380 hp / 1380 hp	Active	Caterpillar G3516 4 SLB RICE/Compressors
[1]ENG-6	Caterpillar G3516 4 SLB RICE/Compressors	Caterpillar	G3516	TBD	12-JUN-06	01-JUL-10	1380 hp / 1380 hp	1380 hp / 1380 hp	Active	Caterpillar G3516 4 SLB RICE/Compressors

[1]ENG-7	Caterpillar G3516 4 SLB RICE/Compressors	Caterpillar	G3516	TBD	12-JUN-06	01-JUL-10	1380 hp / 1380 hp	1380 hp / 1380 hp	Active	Caterpillar G3516 4 SLB RICE/Compressors
[1]ENG-8	Caterpillar G3516 4 SLB RICE/Compressors	Caterpillar	G3516	TBD	12-JUN-06	01-JUL-10	1380 hp / 1380 hp	1380 hp / 1380 hp	Active	Caterpillar G3516 4 SLB RICE/Compressors
[1]ENG 9-12	Engine Option #2									
[1]ENG-9	Waukesha 7044 4 SLB RICE/Compressors	Waukesha	7044	TBD	12-JUN-06	01-JUL-10	1680 hp / 1680 hp	1680 hp / 1680 hp	Active	Waukesha 7044 4 SLB RICE/Compressors
[1]ENG-10	Waukesha 7044 4 SLB RICE/Compressors	Waukesha	7044	TBD	12-JUN-06	01-JUL-10	1680 hp / 1680 hp	1680 hp / 1680 hp	Active	Waukesha 7044 4 SLB RICE/Compressors
[1]ENG-11	Waukesha 7044 4 SLB RICE/Compressors	Waukesha	7044	TBD	12-JUN-06	01-JUL-10	1680 hp / 1680 hp	1680 hp / 1680 hp	Active	Waukesha 7044 4 SLB RICE/Compressors
[1]ENG-12	Waukesha 7044 4 SLB RICE/Compressors	Waukesha	7044	TBD	12-JUN-06	01-JUL-10	1680 hp / 1680 hp	1680 hp / 1680 hp	Active	Waukesha 7044 4 SLB RICE/Compressors
TK-1	Gunbarrel Tank	TBD	TBD	TBD	01-APR-18	01-APR-18	500 bbl / 500 bbl	500 bbl / 32172 gal/y	Active	Gunbarrel Tank 500 bbl
TK-2	Condensate Tank	TBD	TBD	TBD	08-JAN-18	01-APR-18	400 bbl / 400 bbl	400 bbl / 2299500 gal/y	Active	Stabilized Condensate Tank 400 bbl

TK-3	Condensate Tank	TBD	TBD	TBD	08-JAN-18	01-APR-18	400 bbl / 400 bbl	400 bbl / 2299500 gal/y	Active	Stabilized Condensate Tank 400 bbl
TK-4	Condensate Tank	TBD	TBD	TBD	08-JAN-18	01-APR-18	400 bbl / 400 bbl	400 bbl / 2299500 gal/y	Active	Stabilized Condensate Tank 400 bbl
TK-5	Condensate Tank	TBD	TBD	TBD	08-JAN-18	01-APR-18	400 bbl / 400 bbl	400 bbl / 2299500 gal/y	Active	Stabilized Condensate Tank 400 bbl
TK-6	Slop Oil Tank	TBD	TBD	TBD	08-JAN-18	01-APR-18	400 bbl / 400 bbl	400 bbl / 64344 gal/y	Active	Slop Oil Tank 400 bbl
PWTK-1	Produced Water Tank	TBD	TBD	TBD	01-APR-18	01-APR-18	400 bbl / 400 bbl	400 bbl / 64344 gal/y	Active	Produced Water 400 bbl
HTR-1	Hot Oil Heater	TBD	TBD	TBD	08-JAN-18	01-APR-18	49.42 MM BTU/h / 49.42 MM BTU/h	49.42 MM BTU/h / 49.42 MM BTU/h	Active	Hot Oil Heater
HTR-2	Regen Gas Heater	TBD	TBD	TBD	08-JAN-18	01-APR-18	11 MM BTU/h / 11 MM BTU/h	11 MM BTU/h / 11 MM BTU/h	Active	Regen Gas Heater
CONDLOAD -1	Truck Loading	NA	NA	NA	NA	NA	219000 bbl/y	219000 bbl/y	Active	Truck Loading (Condensate Loadout)
OILLOAD-1	Truck Loading	NA	NA	NA	NA	NA	1532 bbl/y	1532 bbl/y	Active	Truck Loading (Oil Loadout)
FUG-1	Fugitives	NA	NA	NA	NA	NA	NA	NA	Active	Equipment Leaks (Fugitives)

FUG-2	Fugitives	NA	NA	NA	NA	NA	NA	NA	Active	Equipment Leaks (Residue Fugitives)
AMINE-1	Amine sweetening unit	TBD	TBD	TBD	08-JAN-18	NA	60 MM SCF/d / 60 MM SCF/d	60 MM SCF/d / 60 MM SCF/d	Active	Amine Unit
TO-1	Thermal Oxidizer (Incinerator)	TBD	TBD	TBD	08-JAN-18	1-FEB-2018	TBD	TBD	Active	Thermal Oxidizer
FL-1	Process Flare	TBD	TBD	TBD	08-JAN-18	NA	TBD	TBD	Active	Upset/Maintenance Flare (pilot/purge emissions)
FL-2	Process Flare	TBD	TBD	TBD	08-JAN-18	NA	TBD	TBD	Active	Tank Flare
PLANT-BD	Plant Blowdown	TBD	TBD	NA	NA	NA	NA	NA	Active	Plant Blowdown
COMP	Compressor Blowdown	TBD	TBD	NA	NA	NA	NA	NA	Active	Compressor Blowdown
MAIN-1	Maintenance Activities	NA	NA	NA	NA	NA	NA	NA	Active	Maintenance Activities, Startup Shutdown
UP-MAL	Upsets Malfunctions	NA	NA	NA	NA	NA	NA	NA	Active	Upsets Malfunction
HR	Haul Road	NA	NA	NA	NA	NA	NA	NA	Active	Road Dust

1. The Permittee has an option of installing either Unit ENG-1 or ENG-2 and installing either ENG-5 through ENG-8, or ENG-9 through ENG-12.

EQUIPMENT SPECIFICATIONS (Inactive/Retired/Removed):

None. However, some of the equipment Unit No. has been re-labeled, thus causing some discrepancies between NSR permit 7482 and 7482-M1. For example, ENG-1a and ENG-1b are now ENG-1 and ENG-2, respectively.

EMISSIONS: Pollutant **Permitted** (Allowable) Emissions per piece of equipment or Subject Item as represented by applicant.

Unit No.	NO_x (pph.)	[1]NO_x (tpy.)	CO (pph)	CO (tpy)	VOC (pph)	VOC (tpy)	SO_2 (pph)	SO_2 (tpy)	PM_{10} (pph)	PM_{10} (tpy)	$PM_{2.5}$ (pph)	$PM_{2.5}$ (tpy)
[1]ENG-1	1.5	6.7	3.0	13.3	1.4	6.1	<	<	0.1	0.3	0.1	0.3
[1]ENG-2	3.0	13.3	2.4	10.4	2.4	10.5	<	<	0.1	0.5	0.1	0.5
ENG-3	3.0	13.3	2.4	10.4	2.4	10.5	<	<	0.1	0.5	0.1	0.5
ENG-4	3.0	13.3	2.4	10.4	2.4	10.5	<	<	0.1	0.5	0.1	0.5
[1]ENG-5	3.0	13.3	2.4	10.4	2.4	10.5	<	<	0.1	0.5	0.1	0.5
[1]ENG-6	3.0	13.3	2.4	10.4	2.4	10.5	<	<	0.1	0.5	0.1	0.5
[1]ENG-7	3.0	13.3	2.4	10.4	2.4	10.5	<	<	0.1	0.5	0.1	0.5
[1]ENG-8	3.0	13.3	2.4	10.4	2.4	10.5	<	<	0.1	0.5	0.1	0.5
[1]ENG-9	1.9	8.3	1.6	6.9	0.7	2.8	<	<	0.3	1.1	0.3	1.1
[1]ENG-10	1.9	8.3	1.6	6.9	0.7	2.8	<	<	0.3	1.1	0.3	1.1
[1]ENG-11	1.9	8.3	1.6	6.9	0.7	2.8	<	<	0.3	1.1	0.3	1.1
[1]ENG-12	1.9	8.3	1.6	6.9	0.7	2.8	<	<	0.3	1.1	0.3	1.1
TK-1	-	-	-	-	1.1	5.0	-	-	-	-	-	-
TK-2	-	-	-	-	0.1	0.4	-	-	-	-	-	-
TK-3	-	-	-	-	0.1	0.4	-	-	-	-	-	-
TK-4	-	-	-	-	0.1	0.4	-	-	-	-	-	-
TK-5	-	-	-	-	0.1	0.4	-	-	-	-	-	-
TK-6	-	-	-	-	0.04	0.2	-	-	-	-	-	-
HTR-1	2.4	10.6	4.1	17.8	<	1.2	<	<	0.4	1.6	0.4	1.6
HTR-2	1.1	4.7	<	4.0	<	<	<	<	0.1	0.4	0.1	0.4
CONDLOAD-1	-	-	-	-	*	9.2	-	-	-	-	-	-
OILLOAD-1	-	-	-	-	*	<	-	-	-	-	-	-
FUG-1	-	-	-	-	11.7	51.2	-	-	-	-	-	-

Unit No.	NO_x (pph.)	[1]NO_x (tpy.)	CO (pph)	CO (tpy)	VOC (pph)	VOC (tpy)	SO_2 (pph)	SO_2 (tpy)	PM_{10} (pph)	PM_{10} (tpy)	$PM_{2.5}$ (pph)	$PM_{2.5}$ (tpy)
AMINE-1	-	-	-	-	2.8	3.9	-	-	-	-	-	-
TO-1	1.6	6.8	1.3	5.7	<	<	64.5	235.2	-	-	-	-
FL-1 Pilot/Purge	0.03	0.15	0.16	0.68	0.02	0.09	0.0	0.0	6.3	0.9	6.3	0.9
FL-2	<	3.9	4.1	17.8	<	<	<	<	0.0	0.0	0.0	0.0
HR	-	-	-	-	-	-	-	-	3.2	0.1	0.3	0.0

1. The Permittee has an option of installing either Unit ENG-1 or ENG-2 and installing either ENG-5 through ENG-8, or ENG-9 through ENG-12.
2. Nitrogen dioxide emissions include all oxides of nitrogen expressed as NO_2.
3. For Title V facilities, the Title V annual fee assessments are based on the sum of allowable tons per year emission limits in Sections A106 and A107.
4. Compliance with emergency flare emission limits is demonstrated by limiting combustion to pilot and/or purge gas only.

"-" indicates the application represented emissions of this pollutant are not expected.
"<" indicates that the application represented the uncontrolled mass emission rates are less than 1.0 pph or 1.0 tpy for this emissions unit and this air pollutant. The Department determined that allowable mass emission limits were not required for this unit and this pollutant.
"*" indicates hourly emission limits are not appropriate for this operating situation.

5. To report excess emissions for sources with no pound per hour and/or ton per year emission limits, see condition B110F.

Allowable SSM Units, Activities, and Emission Limits

Unit No.	Description	NO_x pph	NO_x tpy	CO pph	CO tpy	VOC pph	VOC tpy	SO_2 pph	SO_2 tpy
SSM Venting	MAIN-1 (maintenance activities)[1]	-	-	-	-	*	10.0	-	-
SSM Flaring to FL-1	COMP (compressor blowdowns), PLANT-BD (plant blowdowns), & TO-1 (thermal oxidizer downtime)	251.6	26.3	1146.9	120.0	92.9	14.1	57.1	1.3
Malfunction	Malfunction events	-	-	-	-	*	10.0	-	-

Commented [MLS1]: It seems that you could have malfunctions upstream of processed gas. SSM are typically planned events.

Pollutant Unpermitted (Potential) Emissions (Non-regulated, without permitted emission limits): None.

POTENTIAL HAPS EMISSIONS FROM TEMPO, Table has the most common HAPS – it is not inclusive of all HAPS that might be entered in TEMPO. **All emissions are in tons/year**

Unit No.(s)	Total HAPs		Formaldehyde ☑ HAP/☐ TAP		Acetaldehyde ☑ HAP/☐ TAP		Acrolein ☑ HAP/☐ TAP		Benzene ☑ HAP/☐ TAP		Toluene ☑ HAP/☐ TAP		Ethylbenzene ☑ HAP/☐ TAP		Xylenes ☑ HAP/☐ TAP		n-Hexane ☑ HAP/☐ TAP		2,2,4 TMP ☑ HAP/ ☐ TAP	
	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr
ENG-1	0.4	1.8	0.3	1.4	0.0	0.2	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	--	--
ENG-2	0.4	2.0	0.3	1.2	0.1	0.4	0.1	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	--	--
ENG 1-2*	**0.4**	**2.0**	**0.3**	**1.4**	**0.1**	**0.4**	**0.1**	**0.3**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.1**	--	--
ENG-3	0.4	2.0	0.3	1.2	0.1	0.4	0.1	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	--	--
ENG-4	0.4	2.0	0.3	1.2	0.1	0.4	0.1	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	--	--
ENG-5	0.4	2.0	0.3	1.2	0.1	0.4	0.1	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	--	--
ENG-6	0.4	2.0	0.3	1.2	0.1	0.4	0.1	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	--	--
ENG-7	0.4	2.0	0.3	1.2	0.1	0.4	0.1	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	--	--
ENG-8	0.4	2.0	0.3	1.2	0.1	0.4	0.1	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	--	--
ENG-9	0.3	1.3	0.2	0.8	0.0	0.2	0.0	0.2	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	N/A	N/A	--	--
ENG-10	0.3	1.3	0.2	0.8	0.0	0.2	0.0	0.2	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	N/A	N/A	--	--
ENG-11	0.3	1.3	0.2	0.8	0.0	0.2	0.0	0.2	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	N/A	N/A	--	--
ENG-12	0.3	1.3	0.2	0.8	0.0	0.2	0.0	0.2	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	N/A	N/A	--	--
ENG 9-12*	**1.8**	**7.8**	**1.1**	**4.7**	**0.4**	**1.7**	**0.2**	**1.0**	**0.1**	**0.4**	**0.0**	**0.1**	**0.0**	**0.0**	**0.0**	**0.0**	**0.1**	**0.2**	--	--
TK-1	0.1	0.3	--	--	--	--	--	--	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0
TK 2-5	0.0	0.1	--	--	--	--	--	--	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0
TK-6	0.0	0.0	--	--	--	--	--	--	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PWTK-1	0.0	0.0	--	--	--	--	--	--	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
HTR-1	0.1	0.4	0.0	0.0	--	--	--	--	0.0	0.0	0.0	0.0	--	--	--	--	0.1	0.4	--	--
HTR-2	0.0	0.1	0.0	0.0	--	--	--	--	0.0	0.0	0.0	0.0	--	--	--	--	0.0	0.1	--	--
CONDLOAD-1	2.1	0.6	--	--	--	--	--	--	0.3	0.1	0.3	0.1	0.0	0.0	0.0	0.0	1.3	0.4	0.0	0.0
OILLOAD-1	2.1	0.0	--	--	--	--	--	--	0.3	0.0	0.3	0.0	0.0	0.0	0.0	0.0	1.3	0.0	0.0	0.0
FUG-1	0.1	0.5	--	--	--	--	--	--	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.3	0.0	0.0
FUG-2	0.0	0.0	--	--	--	--	--	--	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
AMINE-1	0.0	0.0	--	--	--	--	--	--	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
TO-1	0.0	0.0	--	--	--	--	--	--	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
FL-1	0.0	0.0	--	--	--	--	--	--	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
FL-2	0.0	0.0	--	--	--	--	--	--	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
COMP	0.0	0.0	--	--	--	--	--	--	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PLANT BD	15.1	0.0	--	--	--	--	--	--	5.3	0.0	0.8	0.0	0.0	0.0	0.0	0.0	9.1	0.0	0.0	0.0
MAIN-1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
UP/MAL-1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
HR-1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	22.8	15.7	1.9	8.5	0.7	2.9	0.4	1.8	6.1	0.8	1.5	0.4	0.1	0.0	0.1	0.1	12.1	1.8	0.1	0.0

*Composite emissions represent worse case engine emissions

**Totals are for information only and may not match the totals in the table "TOTAL HAPS and NM TAPS"

Air Dispersion Modeling Summary for Permit No. 7482M1

Report Date: 2/7/2020
NMED/AQB Modeler: Angela Raso

Facility Identification:
Project: 3Bear Libby Gas Plant   Company: 3 Bear Delaware Operating – NM, LLC
Permit number: 7482M1   TEMPO ID: 38067

Location Information:
The facility is located 15.5 miles west-southwest of Monument, in Lea County. The facility is located 20.7 miles west-northwest of Eunice.
UTM Coordinates: 638,430 m East, 3,601,510 m North, zone 13, Datum: NAD83
Elevation = 3713 feet
Air Quality Control Region (AQCR): 155
Airshed: Pr

Project Description:
Brief: 3 Bear Delaware Operating – NM, LLC has applied to the New Mexico Air Quality Bureau for a New Source Review air quality permit for the modification of the 3Bear Libby Gas Plant facility (the facility). The facility is a gas plant.

The following types of emission sources are included in the project: , Hot Oil Heater, Inlet Compressor, Inlet Compressor Engine, pset/Maintenance Flare,, Regen Gas Heater, Residue Compressor Engine, Tank Flare, and Thermal Oxidizer. The emission units are described in Table 1: Table of Emissions and Stack Parameters, below.

For this permit, modeling was required for the following pollutants: Carbon Monoxide (CO), Nitrogen Dioxide (NO_2), Particulate Matter 10 micrometers or less in aerodynamic diameter (PM10), Particulate Matter (2.5 microns or less) (PM2.5), and Sulfur Dioxide (SO2).

Table 1: Table of Maximum Total Facility Emissions

NO_2 Rate (lbs/hr)	CO Rate (lbs/hr)	SO_2 Rate (lbs/hr)	PM10 Rate (lbs/hr)	PM2.5 Rate (lbs/hr)
287.85	1,174.63	121.95	11.25	8.39

Air Dispersion Modeling Summary for Permit No. 7482M1

Table 2: Table of Point Sources[1]

Stack Number	Description	Stack Ht. (ft)	Dia. (ft)	Vel. (ft/s)	Temp. (°F)	NO_2 Rate (lbs/hr)	CO Rate (lbs/hr)	SO_2 Rate (lbs/hr)	PM_{10} Rate (lbs/hr)	$PM_{2.5}$ Rate (lbs/hr)
ENG1	Inlet Compressor	15.0	0.8	136.1	931	1.520	3.040	0.020	0.060	0.060
ENG2	Inlet Compressor	25.0	1.0	193.7	992	3.043	2.373	0.032	0.114	0.114
ENG3	Inlet Compressor	25.0	1.0	193.7	992	3.043	2.373	0.032	0.114	0.114
ENG4	Inlet Compressor	25.0	1.0	193.7	992	3.043	2.373	0.032	0.114	0.114
ENG5	Residue Compressor	25.0	1.0	193.7	992	3.043	2.373	0.032	0.114	0.114
ENG6	Residue Compressor	25.0	1.0	193.7	992	3.043	2.373	0.032	0.114	0.114
ENG7	Residue Compressor	25.0	1.0	193.7	992	3.043	2.373	0.032	0.114	0.114
ENG8	Residue Compressor	25.0	1.0	193.7	992	3.043	2.373	0.032	0.114	0.114
ENG9	Residue Compressor	25.0	1.5	77.8	1,179	1.900	1.570	0.040	0.260	0.260
ENG10	Residue Compressor	25.0	1.5	77.8	1,179	1.900	1.570	0.040	0.260	0.260
ENG11	Residue Compressor	25.0	1.5	77.8	1,179	1.900	1.570	0.040	0.260	0.260
ENG12	Residue Compressor	25.0	1.5	77.8	1,179	1.900	1.570	0.040	0.260	0.260
HTR1	Hot Oil Heater	30.0	3.0	12.6	664	2.420	4.070	0.140	0.370	0.370
HTR2	Regen Gas Heater	12.0	2.0	8.2	500	1.080	0.910	0.030	0.080	0.080
TO1	Thermal Oxidizer	50.0	4.7	15.0	1,400	1.560	1.310	64.449	0	0
FL1	Upset/Maintenance Flare	100.0	9.3	65.6	1,832	251.596	1,146.981	57.085	6.246	6.246
FL2	Tank Flare	30.0	2.5	65.6	1,832	0.892	4.068	0	0.002	0.002

Table 4: Table of Volume Sources[1]

Source ID	Description	Release Height (ft)	Horizontal Dimension (ft)	Vertical Dimension (ft)	PM10 Rate (lbs/hr)	PM2.5 Rate (lbs/hr)
HR1		11.2	20.8	10.4	0.037	0.004

[1] All values copied or converted from 3Bear Libby Gas Plant Permit Application.

Air Dispersion Modeling Summary for Permit No. 7482M1

Modeling Assumptions:
This application includes engine options.
Option1: ENG1, ENG3, ENG4, ENG5, ENG6, ENG7, ENG8
Option2: ENG2, ENG3, ENG4, ENG5, ENG6, ENG7, ENG8
Option3: ENG1, ENG3, ENG4, ENG9, ENG10, ENG11, ENG12
Option4: ENG2, ENG3, ENG4, ENG9, ENG10, ENG11, ENG12

Permit Conditions:
The permittee will only be allowed to operate engines in the combinations described above.

Conclusion:
This modeling analysis demonstrates that operation of the facility described in this report neither causes nor contributes to any exceedances of applicable air quality standards. The standards relevant at this facility are NM/NAAQS for CO, NO_2, PM10, PM2.5, and SO_2; and Class II PSD increments for NO_2, PM2.5, PM10, and SO_2.

Action: The permit can be issued based on this modeling analysis.

Modeling report submitted by Trent M. Wade (dated 9/13/2019)
Modeling was last revised on 12/5/2019.
The air quality analysis demonstrates compliance with applicable regulatory requirements.

Model(s) Used: AERMOD was used to run the modeling analysis.

Note: Complete modeling input and output files can be made available and are located in the Modeling Archives in the folder, "7482M1_3Bear Libby Gas Plant".

Number of Model Runs: AERMOD - 8 modeling runs were reviewed by NMED.

Modeling Parameters:
The AERMOD regulatory default parameters were included in assumptions made by the model.

Building downwash produced by buildings at the facility was considered. The following buildings were included in the modeling.

Table 5: Table of Buildings

Building Name	Height (m)	Diagonal Length (m)
AMINECON	15.2	0.9
AMINESTL	21.3	1.1
CONDTWR	18.3	1.2
CSV	4.9	24.7
DEMETH	33.5	1.5
ENG-2	4.6	7.3
ENG-3	4.6	7.3
ENG-4	4.6	7.3
ENG-5	4.6	7.3
ENG-6	4.6	7.3
ENG-7	4.6	7.3
ENG-8	4.6	7.3
HTR-1	3.0	15.9
HTR-2	3.0	9.6
IA	3.0	8.2
MAIN	4.9	17.8
MCC	4.9	19.3
OFFICE	3.7	22.0
SLUG1	1.8	137.3
SLUG2	1.8	137.3
TK-1	6.1	3.7
TK-2	6.1	3.7
TK-3	6.1	3.7
TK-4	6.1	3.7
TK-5	6.1	3.7
TK-6	6.1	3.7
TK-7	6.1	3.7

Air Dispersion Modeling Summary for Permit No. 7482M1

Complex Terrain Data:
Both simple and complex types of terrain were used to model the facility. Elevations of receptors, facility sources, and surrounding sources were obtained from digitized USGS 1/3 arc degree maps.

Receptor Grid: The following grids were used to determine the maximum concentration for each pollutant.

Table 4: Table of Receptors

Grid Type	Description	Shape	Spacing	Radius or Length
Cartesian	Rough	Square	1000 meters	10 kilometers
Cartesian	Intermediate	Square	500 meters	10 kilometers
Cartesian	Intermediate	Square	250 meters	4 kilometers
Cartesian	Fine	Square	100 meters	2 kilometers
Cartesian	Very fine	Square	50 meters	1 kilometers
Fence line	Very fine	Fence line	50 meters	Fence line

Receptors outside of the radii of impact were discarded for the surrounding source runs.

Meteorological Data: AERMOD – HOBBS_Artesia-NWS_Midland-ua_2015.SFC.

Adjacent Sources:
The Division's Modeling Guidance was used to select 110 sources within 50 km of the facility.
The facility is 2.0 km from Targa - Lea Compressor Station. The facility is 2.2 km from Plains - Lynch 176 Station. The facility is 2.8 km from Lynch Booster Station. The facility is 21.4 km from Targa - Monument Gas Plant. The facility is 21.6 km from Monument Compressor Station. The facility is 22.7 km from DCP - Eunice Gas Plant.

PSD Increment Information:
The facility is a minor source (for PSD purposes) located in AQCR 155. The minor source baseline dates here are 3/16/1988 for NO_2, 7/28/1978 for SO_2, 2/20/1979 for PM10, and 11/13/2013 for PM2.5.
The facility is 88.7 km from the Class I area Carlsbad Caverns National Park. Class I area impacts are negligible for minor sources over 50 km from a Class I area. Modeling is not required.

CO Analysis:
The 1-hour CO concentration (1004.7 $\mu g/m^3$)was below the significance level. No cumulative analysis is required.

Air Dispersion Modeling Summary for Permit No. 7482M1

The 8-hour CO concentration (336.7 μg/m^3)was below the significance level. No cumulative analysis is required.

NO_2 Analysis:
ARM2 was used with default options (0.5 minimum ratio, 0.9 maximum ratio) to determine the conversion of NO_X to NO_2.

Compliance with 1-hour NO_2 NAAQS automatically demonstrates compliance with air quality standards of other periods.

The maximum source alone 1-hour NO_2 concentration was 87.8 μg/m^3. This was 46.7% of the NAAQS. A background concentration of 64.2 μg/m^3 was added from the monitor 5ZS, at Hobbs - 2320 N. Jefferson St. The maximum total 1-hour NO_2 concentration was 152.0 μg/m^3. This was 80.8% of the NAAQS.

The maximum source alone annual NO_2 concentration was 6.6 μg/m^3. This was 7.0% of the NMAAQS. A background concentration of 8.1 μg/m^3 was added from the monitor 5ZS, at Hobbs - 2320 N. Jefferson St. The maximum total annual NO_2 concentration was 14.7 μg/m^3. This was 15.7% of the NMAAQS.

The maximum total annual NO_2 concentration was 14.723 μg/m^3. This was 58.9% of the PSD Class II increment.

PM2.5 Analysis:
The maximum source alone 24-hour PM2.5 concentration was 2.2 μg/m^3. This was 6.2% of the NAAQS. The maximum 24-hour PM2.5 concentration with surrounding sources was 2.2 μg/m^3. A background concentration of 13.4 μg/m^3 was added from the monitor 5ZS, at Hobbs - 2320 N. Jefferson St. The maximum total 24-hour PM2.5 concentration 15.6 μg/m^3. This was 44.5% of the NAAQS.

The maximum source alone annual PM2.5 concentration was 0.49 μg/m^3. This was 4.1% of the NAAQS. The maximum annual PM2.5 concentration with surrounding sources was 0.49 μg/m^3. A background concentration of 5.9 μg/m^3 was added from the monitor 5ZS, at Hobbs - 2320 N. Jefferson St. The maximum total annual PM2.5 concentration was 6.4 μg/m^3. This was 53.3% of the NAAQS.

The maximum 24-hour PM2.5 concentration with increment consuming sources was 3.8 μg/m^3. This was 41.7% of the PSD Class II increment.

The maximum annual PM2.5 concentration with increment consuming surrounding sources was 0.49 μg/m^3. This was 12.3% of the PSD Class II increment.

Air Dispersion Modeling Summary for Permit No. 7482M1

PM10 Analysis:
The 24-hour PM10 concentration (4.9 µg/m^3)was below the significance level. No cumulative analysis is required.

The maximum source alone annual PM10 concentration was 1.5 µg/m^3. This was 8.7% of the PSD Class II increment. The maximum annual PM10 concentration with surrounding sources was 1.5 µg/m^3. This was 8.7% of the PSD Class II increment

SO_2 Analysis:
Compliance with 1-hour SO_2 NAAQS automatically demonstrates compliance with air quality standards of other periods.

The maximum source alone 1-hour SO_2 concentration was 170.1 µg/m^3. This was 86.6% of the NAAQS. The maximum 1-hour SO_2 concentration with surrounding sources was 170.3 µg/m^3. This was 86.7% of the NAAQS.

The maximum source alone 3-hour SO_2 concentration was 157.5 µg/m^3. This was 30.8% of the PSD Class II increment. The maximum total 3-hour SO_2 concentration with increment consuming surrounding sources was 157.6 µg/m^3. This was 30.8% of the PSD Class II increment.

The maximum source alone 24-hour SO_2 concentration was 61.2 µg/m^3. This was 67.3% of the PSD Class II increment. The maximum 24-hour SO_2 concentration with surrounding sources was 61.3 µg/m^3. This was 67.4% of the PSD Class II increment.

The maximum source alone annual SO_2 concentration was 5.9 µg/m^3. This was 29.3% of the PSD Class II increment. The maximum annual SO_2 concentration with surrounding sources was 6.1 µg/m^3. This was 30.8% of the PSD Class II increment.

Air Dispersion Modeling Summary for Permit No. 7482M1

Table 5: Table of Ambient Impact from Emissions

Pollutant, Time Period, and Standard	Facility Concentration ($\mu g/m^3$)	Modeled Concentration with Surrounding Sources ($\mu g/m^3$)	Background Concentration ($\mu g/m^3$)	Cumulative Concentration ($\mu g/m^3$)	Value of Standard ($\mu g/m^3$)	Percent of Standard	Location		
							UTM E (m)	UTM N (m)	Elev. (ft)
CO 1-Hr Sig. Level	1004.7	-	-	1004.7	2000.	50.2	638,300	3,601,100	3721
CO 8-Hr Sig. Level	336.7	-	-	336.7	500.	67.3	638,300	3,601,100	3721
NO_2 1-Hr NAAQS	87.8	-	64.2	152.0	188.03	80.8	638,500	3,601,150	3717
NO_2 annual NMAAQS	6.6	-	8.1	14.7	94.02	15.7	638,410	3,601,238	3721
NO_2 annual PSD Class II increment	6.6	-	8.1	14.7	25	58.9	638,410	3,601,238	3721
PM2.5 24-Hr NAAQS	2.2	2.2	13.4	15.6	35	44.5	638,400	3,601,150	3719
PM2.5 annual NAAQS	0.49	0.49	5.9	6.4	12	53.3	638,647	3,601,388	3721
PM2.5 24-Hr PSD Class II increment	3.8	3.8	-	3.8	9	41.7	638,450	3,601,150	3718
PM2.5 annual PSD Class II increment	0.49	0.49	-	0.49	4	12.3	638,647	3,601,388	3721
PM10 24-Hr Sig. Level	4.9	-	-	4.9	5.0	98.0	638,647	3,601,338	3721
PM10 annual PSD Class II increment	1.5	1.5	-	1.5	17	8.8	638,647	3,601,338	3721
SO_2 1-Hr NAAQS	170.1	170.3	-	170.3	196.4	86.7	638,450	3,601,200	3717
SO_2 3-Hr PSD Class II increment	157.5	157.6	-	157.6	512	30.8	638,350	3,601,200	3719
SO_2 24-Hr PSD Class II increment	61.2	61.3	-	61.3	91	67.4	638,350	3,601,200	3719
SO_2 annual PSD Class II increment	5.9	6.1	-	6.1	20	30.8	638,647	3,601,488	3721

New Mexico
ENVIRONMENT DEPARTMENT

525 Camino de los Marquez, Suite 1
Santa Fe, NM 87505
Phone (505) 476-4300
Fax (505) 476-4375
www.env.nm.gov

MICHELLE LUJAN GRISHAM
GOVERNOR

HOWIE C. MORALES
LT. GOVERNOR

JAMES C. KENNEY
CABINET SECRETARY

JENNIFER J. PRUETT
DEPUTY SECRETARY

AIR QUALITY BUREAU
NEW SOURCE REVIEW PERMIT
Issued under 20.2.72 NMAC

Certified Mail No:
Return Receipt Requested

NSR Permit No:	7482-M1
Facility Name:	3 Bear Libby Gas Plant
Facility Owner/Operator:	3 Bear Delaware Operating – NM, LLC.
Mailing Address:	1512 Larimer St. Suite 540 Denver, CO 80202
TEMPO/IDEA ID No:	38067-PRN20190001
AIRS No:	35-025-1281
Permitting Action:	NSR – Significant Revision
Source Classification:	TV Major
Facility Location:	638430 m E by 3601510 m N, Zone 13; Datum WGS84
County:	Lea
Air Quality Bureau Contact	Julia Kuhn
Main AQB Phone No.	(505) 476-4300

LBKuehn
Liz Bisbey-Kuehn
Bureau Chief
Air Quality Bureau

4/8/20
Date

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PART A FACILITY SPECIFIC REQUIREMENTS

A100 Introduction

A. This permit, NSR 7482-M1, supersedes all portions of Air Quality Permit 7482, issued January 8, 2018, except portions requiring compliance tests. Compliance test conditions from previous permits, if not completed, are still in effect, in addition to compliance test requirements contained in this permit.

A101 Permit Duration (expiration)

A. The term of this permit is permanent unless withdrawn or cancelled by the Department.

A102 Facility: Description

A. The function of the 3 Bear Libby Gas Plant is to gather and receive up to 60MMScf/day of gas from three surrounding compressor stations owned and operated by 3Bear as well. Libby will separate natural gas liquids (NGLs) from the field gas, producing natural gas liquids and a residue gas for transmission to a pipeline owned by others. The process utilizes a cryogenic gas separation plant and associated compressors for collecting field gas from the gathering system nearby. Gas and NGLs will be piped to the respective nearby interconnect metering stations, by others. The plant is to be located within 5 miles of the residue gas and NGL pipelines.

B. This facility is located approximately 16.2 miles southwest of Monument, in Lea County, New Mexico.

C. This modification consists of: (1) addition of residue compressor engine options, (2) addition of generator engine, (3) update to TK 1-6 as follows: one gunbarrel tank, four condensate tanks, one slop oil tank, (4) addition of one produced water tank, (5) removal of one methanol tank, (6) addition of one condensate loadout, (7) fugitive emissions update, (8) revision of compressor blowdowns, (9) revision of plant blowdowns, (10) update to emission unit IDs, and (11) increasing emission limits. The description of this modification is for informational purposes only and is not enforceable.

D. Tables 102.A and Table 102.B show the total potential emission rates (PER) from this facility for information only. This is not an enforceable condition and excludes emissions from Minor NSR exempt activities per 20.2.72.202 NMAC.

Table 102.A: Total Potential Emission Rate (PER) from Entire Facility

Pollutant	Emissions (tons per year)
Nitrogen Oxides (NOx)	145.8
Carbon Monoxide (CO)	241.7
Volatile Organic Compounds (VOC) [1]	182.8
Sulfur Dioxide (SO_2)	238.4
Particulate Matter (total suspended)	9.1
Particulate Matter 10 microns or less (PM_{10})	8.9
Particulate Matter 2.5 microns or less ($PM_{2.5}$)	8.9
Greenhouse Gas (GHG) as CO_2e	254,861

1. VOC total includes emissions from Fugitives, SSM and Malfunctions.
2. PM is a regulated new source review pollutant per 20.2.74 NMAC Prevention of Significant

Table 102.B: Total Potential Emissions Rate (PER) for *Hazardous Air Pollutants (HAPs) that exceed 1.0 ton per year

Pollutant	Emissions (tons per year)
Acetaldehyde	2.9
Acrolein	1.8
Formaldehyde	8.5
n-hexane	1.8
Total HAPs**	15.7

* HAP emissions are already included in the VOC emission total.

** The total HAP emissions may not agree with the sum of individual HAPs because only individual HAPs greater than 1.0 tons per year are listed here.

A103 Facility: Applicable Regulations

A. The permittee shall comply with all applicable sections of the requirements listed in Table 103.A.

Table 103.A: Applicable Requirements

Applicable Requirements	Federally Enforceable	Unit No.
20.2.1 NMAC General Provisions	X	Entire Facility
20.2.3 NMAC Ambient Air Quality Standards	X	Entire Facility
20.2.7 NMAC Excess Emissions	X	Entire Facility
20.2.38 NMAC Hydrocarbon Storage Facilities	X	TK 2-6
20.2.61 NMAC Smoke and Visible Emissions	X	ENG 1-12, HTR 1-2, TO-1, FL 1-2
20.2.70 NMAC Operating Permits	X	Entire Facility
20.2.71 NMAC Operating Permit Emission Fees	X	Entire Facility
20.2.72 NMAC Construction Permit	X	Entire Facility

Table 103.A: Applicable Requirements

Applicable Requirements	Federally Enforceable	Unit No.
20.2.73 NMAC Notice of Intent and Emissions Inventory Requirements	X	Entire Facility
20.2.74 NMAC Permits – Prevention of Significant Deterioration (PSD)	X	NA
20.2.75 NMAC Construction Permit Fees	X	Entire Facility
20.2.77 NMAC New Source Performance Standards	X	Units subject to 40 CFR 60 ENG 1-12 (potentially), HTR 1-2, FUG-1, COMP, AMINE-1, GEN 1-2
20.2.78 NMAC Emissions Standards for Hazardous Air Pollutants	X	NA Units subject to 40 CFR 61
20.2.82 NMAC Maximum Achievable Control Technology Standards for Source Categories of HAPs	X	Units subject to 40 CFR 63 ENG 1-12 (potentially), GEN 1-2
40 CFR 50 National Ambient Air Quality Standards	X	Entire Facility
40 CFR 60, Subpart A, General Provisions	X	ENG 1-12 (potentially), HTR 1-2, FUG-1, COMP, AMINE-1, GEN 1-2
40 CFR 60, Subpart Dc	X	HTR 1-2
40 CFR 60, Subpart IIII	X	GEN 2
40 CFR 60, Subpart JJJJ	X	ENG 1-12 (potentially), GEN-1
40 CFR 60, Subpart OOOOa	X	FUG-1, COMP, AMINE-1
40 CFR 63, Subpart A, General Provisions	X	ENG 1-12 (potentially), GEN 1-2
40 CFR 63, Subpart ZZZZ	X	ENG 1-12 (potentially), GEN 1-2

A104 Facility: Regulated Source

A. Table 104.A lists the emission units authorized for this facility. Emission units identified as exempt activities (as defined in 20.2.72.202 NMAC) and/or equipment not regulated pursuant to the Act are not included.

Table 104.A: Regulated Sources List

Unit No.	Unit Type	Make	Model No.	Serial No.	Yr of Construction	Yr of Manufacture	Operating Rate Max/Site	Operating Capacity Max/Site
	Engine Option #1: ENG-1/Caterpillar G3508 or Option #2: ENG-2/Caterpillar G3516							
[1]ENG-1	Caterpillar G3508 4 SLB RICE/Compressor Option 1	Caterpillar	G3508	TBD	12-JUN-06	01-JUL-10	690 hp / 690 hp	690 hp / 690 hp
	Engine Option #1: ENG-1/Caterpillar G3508 or Option #2: ENG-2/Caterpillar G3516							
[1]ENG-2	Caterpillar G3516 4 SLB RICE/Compressor Option 2	Caterpillar	G3516	TBD	12-JUN-06	01-JUL-10	1380 hp / 1380 hp	1380 hp / 1380 hp
ENG-3	Caterpillar G3516 4 SLB RICE/Compressors	Caterpillar	G3516	TBD	12-JUN-06	01-JUL-10	1380 hp / 1380 hp	1380 hp / 1380 hp
ENG-4	Caterpillar G3516 4 SLB RICE/Compressors	Caterpillar	G3516	TBD	12-JUN-06	01-JUL-10	1380 hp / 1380 hp	1380 hp / 1380 hp
	Engine Option #1: ENG-5-8/Caterpillar G3516 or Engine Option #2: ENG-9-12/Waukesha 7044							
[1]ENG-5	Caterpillar G3516 4 SLB RICE/Compressors	Caterpillar	G3516	TBD	12-JUN-06	01-JUL-10	1380 hp / 1380 hp	1380 hp / 1380 hp
[1]ENG-6	Caterpillar G3516 4 SLB RICE/Compressors	Caterpillar	G3516	TBD	12-JUN-06	01-JUL-10	1380 hp / 1380 hp	1380 hp / 1380 hp
[1]ENG-7	Caterpillar G3516 4 SLB RICE/Compressors	Caterpillar	G3516	TBD	12-JUN-06	01-JUL-10	1380 hp / 1380 hp	1380 hp / 1380 hp
[1]ENG-8	Caterpillar G3516 4 SLB RICE/Compressors	Caterpillar	G3516	TBD	12-JUN-06	01-JUL-10	1380 hp / 1380 hp	1380 hp / 1380 hp
	Engine Option #1: ENG-5-8/Caterpillar G3516 or Engine Option #2: ENG-9-12/Waukesha 7044							
[1]ENG-9	Waukesha 7044 4 SLB RICE/Compressors	Waukesha	7044	TBD	12-JUN-06	01-JUL-10	1680 hp / 1680 hp	1680 hp / 1680 hp
[1]ENG-10	Waukesha 7044 4 SLB RICE/Compressors	Waukesha	7044	TBD	12-JUN-06	01-JUL-10	1680 hp / 1680 hp	1680 hp / 1680 hp

Unit No.	Unit Type	Make	Model No.	Serial No.	Yr of Construction	Yr of Manufacture	Operating Rate Max/Site	Operating Capacity Max/Site
[1]ENG-11	Waukesha 7044 4 SLB RICE/Compressors	Waukesha	7044	TBD	12-JUN-06	01-JUL-10	1680 hp / 1680 hp	1680 hp / 1680 hp
[1]ENG-12	Waukesha 7044 4 SLB RICE/Compressors	Waukesha	7044	TBD	12-JUN-06	01-JUL-10	1680 hp / 1680 hp	1680 hp / 1680 hp
TK-1	Gunbarrel Tank	TBD	TBD	TBD	01-APR-18	01-APR-18	500 bbl / 500 bbl	500 bbl / 32172 gal/y
TK-2	Condensate Tank	TBD	TBD	TBD	08-JAN-18	01-APR-18	400 bbl / 400 bbl	400 bbl / 2299500 gal/y
TK-3	Condensate Tank	TBD	TBD	TBD	08-JAN-18	01-APR-18	400 bbl / 400 bbl	400 bbl / 2299500 gal/y
TK-4	Condensate Tank	TBD	TBD	TBD	08-JAN-18	01-APR-18	400 bbl / 400 bbl	400 bbl / 2299500 gal/y
TK-5	Condensate Tank	TBD	TBD	TBD	08-JAN-18	01-APR-18	400 bbl / 400 bbl	400 bbl / 2299500 gal/y
TK-6	Slop Oil Tank	TBD	TBD	TBD	08-JAN-18	01-APR-18	400 bbl / 400 bbl	400 bbl / 64344 gal/y
PWTK-1	Produced Water Tank	TBD	TBD	TBD	01-APR-18	01-APR-18	400 bbl / 400 bbl	400 bbl / 64344 gal/y
HTR-1	Heater	TBD	TBD	TBD	08-JAN-18	01-APR-18	49.42 MM BTU/h / 49.42 MM BTU/h	49.42 MM BTU/h / 49.42 MM BTU/h
HTR-2	Heater	TBD	TBD	TBD	08-JAN-18	01-APR-18	11 MM BTU/h / 11 MM BTU/h	11 MM BTU/h / 11 MM BTU/h
CONDLOAD -1	Truck Loading	NA	NA	NA	NA	NA	219000 bbl/y	219000 bbl/y
OILLOAD-1	Truck Loading	NA	NA	NA	NA	NA	1532 bbl/y	1532 bbl/y
FUG-1	Fugities	NA	NA	NA	NA	NA	NA	NA

Unit No.	Unit Type	Make	Model No.	Serial No.	Yr of Construction	Yr of Manufacture	Operating Rate Max/Site	Operating Capacity Max/Site
AMINE-1	Amine sweetening unit	TBD	TBD	TBD	08-JAN-18	NA	60 MM SCF/d / 60 MM SCF/d	60 MM SCF/d / 60 MM SCF/d
TO-1	Thermal Oxidizer (Incinerator)	TBD	TBD	TBD	08-JAN-18	1-FEB-2018	TBD	TBD
FL-1	Process Flare	TBD	TBD	TBD	08-JAN-18	NA	TBD	TBD
FL-2	Process Flare	TBD	TBD	TBD	08-JAN-18	NA	TBD	TBD
PLANT-BD	Plant Blowdown Flaring	TBD	TBD	NA	NA	NA	NA	NA
COMP	Compressor Blowdown Flaring	TBD	TBD	NA	NA	NA	NA	NA
MAIN-1	Maintenance Activities	NA	NA	NA	NA	NA	NA	NA
UP-MAL	Malfunctions Venting	NA	NA	NA	NA	NA	NA	NA
*GEN-1	Generator Engine	Olympian	250LG6	TBD	After 01-JULY-10	TBD	374 hp / 374 hp	374 hp / 374 hp
*GEN-2	Generator Engine	Generac	TBD	TBD	2019	TBD	65 hp / 65 hp	65 hp / 65 hp

1. The Permittee has an option of installing either Unit ENG-1 or ENG-2 and installing either ENG-5 through ENG-8, or ENG-9 through ENG-12.
2. All TBD (to be determined) units and like-kind engine replacements must be evaluated for applicability to NSPS and requirements.
*Exempted equipment under 20.2.72.202.B.3. Added at the request of the permittee.

A105 Facility: Control Equipment

A. Table 105 lists all the pollution control equipment required for this facility. Each emission point is identified by the same number that was assigned to it in the permit application.

Table 105: Control Equipment List:

Control Equipment Unit No.	Control Description	Pollutant being controlled	Control for Unit Number(s)[1,2]
ENG-1	Oxidation Catalyst and Air Fuel Ratio Controller	VOC, CO and CH2O	ENG-1
ENG 2-8	Oxidation Catalyst and Air Fuel Ratio Controller	VOC, CO and CH2O	ENG 2-8

Table 105: Control Equipment List:

Control Equipment Unit No.	Control Description	Pollutant being controlled	Control for Unit Number(s)[1,2]
ENG 9-12	Non-Selective Catalytic Reduction	NOx, CO	ENG 9-12
TO	Thermal Oxidizer	VOC, H2S	AMINE-1
FL-1	Upset/Maintenance Flare	VOC	AMINE-1 (during TO downtime), COMP, PLANT BD
FL-2	Tank Flare	VOC	TK 1-6, PWTK-1, CONDLOAD-1, OILLOAD-1

1. Control for unit number refers to a unit number from the Regulated Equipment List.
2. During operation under scenario 1 or 2 each individual unit shall have the control device listed in Table 105 installed.

A106 Facility: Allowable Emissions

A. The following Section lists the emission units and their allowable emission limits. (40 CFR 50, 40 CFR 60, Subparts A, Dc, JJJJ and OOOOa, 40 CFR 63, Subparts A and ZZZZ, 20.2.72.210.A and B.1 NMAC).

Table 106.A: Allowable Emissions

Unit No.	NO_x (pph.)	[1]NO_x (tpy.)	CO (pph)	CO (tpy)	VOC (pph)	VOC (tpy)	SO_2 (pph)	SO_2 (tpy)	PM_{10} (pph)	PM_{10} (tpy)	$PM_{2.5}$ (pph)	$PM_{2.5}$ (tpy)
[1]ENG-1	1.5	6.7	3.0	13.3	1.4	6.1	<	<	<	<	<	<
[1]ENG-2	3.0	13.3	2.4	10.4	2.4	10.5	<	<	<	<	<	<
ENG-3	3.0	13.3	2.4	10.4	2.4	10.5	<	<	<	<	<	<
ENG-4	3.0	13.3	2.4	10.4	2.4	10.5	<	<	<	<	<	<
[1]ENG-5	3.0	13.3	2.4	10.4	2.4	10.5	<	<	<	<	<	<
[1]ENG-6	3.0	13.3	2.4	10.4	2.4	10.5	<	<	<	<	<	<
[1]ENG-7	3.0	13.3	2.4	10.4	2.4	10.5	<	<	<	<	<	<
[1]ENG-8	3.0	13.3	2.4	10.4	2.4	10.5	<	<	<	<	<	<
[1]ENG-9	1.9	8.3	1.6	6.9	0.7	2.8	<	<	<	<	<	<
[1]ENG-10	1.9	8.3	1.6	6.9	0.7	2.8	<	<	<	<	<	<
[1]ENG-11	1.9	8.3	1.6	6.9	0.7	2.8	<	<	<	<	<	<
[1]ENG-12	1.9	8.3	1.6	6.9	0.7	2.8	<	<	<	<	<	<
TK-1	-	-	-	-	1.1	5.0	-	-	-	-	-	-
TK-2	-	-	-	-	0.1	0.4	-	-	-	-	-	-
TK-3	-	-	-	-	0.1	0.4	-	-	-	-	-	-
TK-4	-	-	-	-	0.1	0.4	-	-	-	-	-	-
TK-5	-	-	-	-	0.1	0.4	-	-	-	-	-	-
TK-6	-	-	-	-	0.04	0.2	-	-	-	-	-	-

Unit No.	NO_x (pph.)	[1]NO_x (tpy.)	CO (pph)	CO (tpy)	VOC (pph)	VOC (tpy)	SO_2 (pph)	SO_2 (tpy)	PM_{10} (pph)	PM_{10} (tpy)	$PM_{2.5}$ (pph)	$PM_{2.5}$ (tpy)
HTR-1	2.4	10.6	4.1	17.8	<	1.2	<	<	<	1.6	<	1.6
HTR-2	1.1	4.7	<	4.0	<	<	<	<	<	<	<	<
CONDLOAD-1	-	-	-	-	*	9.2	-	-	-	-	-	-
OILLOAD-1	-	-	-	-	*	<	-	-	-	-	-	-
FUG-1	-	-	-	-	11.7	51.2	-	-	-	-	-	-
AMINE-1	-	-	-	-	2.8	3.9	-	-	-	-	-	-
TO-1	1.6	6.8	1.3	5.7	<	<	64.5	235.2	-	-	-	-
FL-1 Pilot/Purge	0.03	0.15	0.16	0.68	0.02	0.09	0.0	0.0	6.3	0.9	6.3	0.9
FL-2	<	3.9	4.1	17.8	<	<	<	<	0.0	0.0	0.0	0.0
HR	-	-	-	-	-	-	-	-	3.2	<	<	<

1. The Permittee has an option of installing either Unit ENG-1 or ENG-2 and installing either ENG-5 through ENG-8, or ENG-9 through ENG-12.
2. Nitrogen dioxide emissions include all oxides of nitrogen expressed as NO_2.
3. For Title V facilities, the Title V annual fee assessments are based on the sum of allowable tons per year emission limits in Sections A106 and A107.
4. Compliance with emergency flare emission limits is demonstrated by limiting combustion to pilot and/or purge gas only.

"-" indicates the application represented emissions of this pollutant are not expected.
"<" indicates that the application represented the uncontrolled mass emission rates are less than 1.0 pph or 1.0 tpy for this emissions unit and this air pollutant. The Department determined that allowable mass emission limits were not required for this unit and this pollutant.
"*" indicates hourly emission limits are not appropriate for this operating situation.

5. To report excess emissions for sources with no pound per hour and/or ton per year emission limits, see condition B110F.

A107 Facility: Allowable Startup, Shutdown, & Maintenance (SSM) and Malfunction Emissions

A. The maximum allowable SSM and Malfunction emission limits for this facility are listed in Table 107.A and were relied upon by the Department to determine compliance with applicable regulations.

Table 107.A: Allowable SSM and Malfunction Units, Activities and Emission Limits

Unit No.	Description	NO_x pph	NO_x tpy	CO pph	CO tpy	VOC pph	VOC tpy	SO_2 pph	SO_2 tpy
SSM Venting	MAIN-1 (maintenance activities)[1]	-	-	-	-	*	10.0	-	-

Unit No.	Description	NO_x pph	NO_x tpy	CO pph	CO tpy	VOC pph	VOC tpy	SO_2 pph	SO_2 tpy
SSM Flaring to FL-1	COMP (compressor blowdowns), PLANT-BD (plant blowdowns), & TO-1 (thermal oxidizer downtime)	251.6	26.3	1146.9	120.0	92.9	14.1	57.1	1.3
Malfunction	Malfunction events	-	-	-	-	*	10.0	-	-

1. This authorization does not include VOC combustion emissions.
2. To report excess emissions for sources with no pound per hour and/or ton per year emission limits, see condition B110F.

B. The authorization of emission limits for startup, shutdown, maintenance, and malfunction does not supersede the requirements to minimize emissions according to General Conditions B101.F and B107.A.

C. SSM Venting Emissions (Unit SSM Venting)

Requirement: The permittee shall perform a facility inlet gas analysis once every year based on a calendar year and complete the following recordkeeping to demonstrate compliance with routine and predictable startup, shutdown, and maintenance (SSM) emission limits in Table 107.A.
Monitoring: The permittee shall monitor each permitted routine and predictable startup and shutdown and scheduled maintenance event.
Recordkeeping: (1) To demonstrate compliance with the annual limit in Table 107.A, each month records shall be kept of the cumulative total of VOC emissions during the first 12 months due to SSM events and, thereafter of the monthly rolling 12-month total VOC emissions. (2) Records shall also be kept of the inlet gas analysis, the percent VOC of the gas based on the most recent gas analysis, and of the volume of total gas vented in MMscf used to calculate the VOC emissions due to SSM events. (3) The permittee shall record the demonstrated compliance in accordance with Condition B109, except the requirement in B109.C to record the start and end times of SSM events shall not apply to the venting of known quantities of VOC.
Reporting: The permittee shall report in accordance with Section B110.

D. SSM Flaring Emissions - Flare Unit FL-1

Requirement: Compliance with routine or predictable startup, shutdown, and maintenance (SSM) emission limits in Table 107.A shall be demonstrated by operating the flare in accordance with the requirements of Condition A206.A and A206.B of this permit and completing

monitoring and recordkeeping as specified below.

Emissions Due to Preventable Events
Emissions that are due entirely or in part to poor maintenance, careless operation, or any other preventable equipment breakdown shall not be included under SSM emissions limits. These emissions shall be reported as excess emissions in accordance with 20.2.7.110 NMAC.

Monitoring: The permittee shall monitor the date, time, and duration of routine or predictable startup, shutdown, and scheduled maintenance events.

Recordkeeping: The permittee shall maintain records of all calculations and parameters used to determine emission rates in spreadsheet format and in accordance with Condition B109.

(1) Hourly Emissions Calculations: The permittee shall calculate the pph NOx, CO, VOC, SO_2, and H_2S emission rates for each hour of each SSM event using these parameters:

(a) the calculated average hourly flow rate/mass rate of all gas combusted by the flare including pilot, purge, and assist gas, if applicable, (Condition A206.B(1));

(b) H_2S content, total sulfur content, VOC content, and heating value (BTU/scf) of the gas (Condition A206.B(4));

(c) the current published emission factors for NOx and CO emission rates; and

(d) VOC and H_2S emission rates calculated using a destruction efficiency of no more than 95%.

(2) Annual Emissions Calculations: The permittee shall calculate the total tpy SSM emission rates as a monthly rolling 12-month total, using the pph emission rates for each hour of the month as follows:

(a) During the first 12 months of this condition taking effect, the permittee shall record the monthly total tons of NOx, CO, VOC, SO_2, and H_2S emissions.

(b) After the first 12 months of this condition taking affect, the permittee shall record the monthly rolling 12-month total tpy NOx, CO, VOC, SO_2, and H_2S emissions.

(3) SSM Events: The permittee shall retain monitoring records including the date, time, and duration of each SSM event, as well as a description of the event including maintenance performed.

Reporting: The permittee shall report in accordance with Condition B110.

E. Malfunction Venting Emissions

Requirement: The permittee shall perform a facility inlet gas analysis once every year based on a calendar year and complete the following recordkeeping to demonstrate compliance with malfunction (Malfunction) emission limits in Table 107.A.

Monitoring: The permittee shall monitor all malfunction events that result in VOC emissions including, for each malfunction, the identification of the equipment or activity that is the source of emissions.

Recordkeeping: (1) To demonstrate compliance, each month records shall be kept of the cumulative total of VOC emissions due to malfunction events during the first 12 months and, thereafter of the monthly rolling 12-month total VOC emissions due to malfunction events. (2) Records shall also be kept of the inlet gas analysis, the percent VOC of the gas based on the most recent gas analysis, of the volume of total gas vented in MMscf used to calculate the VOC emissions, and whether the emissions resulting from the event will be used toward the permitted malfunction emission limit or whether the event is reported as excess emissions of the pound per hour limits in Table 106.A (or the pound per hour limits in condition B110F, if applicable), under 20.2.7 NMAC. (3) The permittee shall record the demonstrated compliance in accordance with Condition B109, except the requirement in B109.C to record the start and end times of malfunction events shall not apply to the venting of known quantities of VOC.
Reporting: The permittee shall report in accordance with Section B110.

A108 Facility: Allowable Operations

A. This facility is authorized for continuous operation. Monitoring, recordkeeping, and reporting are not required to demonstrate compliance with continuous hours of operation.

B. The Facility Inlet Flowrate Limit

Requirement: Multiple emission limits and the PSD minor source status of this facility were established by limiting the inlet throughput to this facility. Compliance with permitted limits and to ensure the PSD minor source status of this facility, the flowrate of process gas entering the facility shall not exceed 60 MMscf/day.
Monitoring: The Facility inlet flowrate shall be continuously monitored using a monitoring instrument that directly measures natural gas flowrate into the facility with an accuracy of ± 2% or better.
Recordkeeping: Each hour the Permittee shall record the hourly flowrate of process gas (MMscfd) and each day shall record the daily flowrate of process gas (MMscfd) received at the Facility inlet. Records indicating the gas flow shall be maintained onsite for a minimum of five (5) years from the time of recording and made available to Department personnel upon request.
Reporting: The permittee shall report in accordance with Section B110.

A109 Facility: Reporting Schedules

A. The permittee shall report according to the Specific Conditions and General Conditions of this permit.

A110 Facility: Fuel and Fuel Sulfur Requirements

A. Fuel and Fuel Sulfur Requirements (Units ENG-1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, and 12, HTR-1, HTR-2)

Requirement: All combustion emission units shall combust only natural gas containing no more than 0.95 grains of total sulfur per 100 dry standard cubic feet.
Monitoring: No monitoring is required. Compliance is demonstrated through records.
Recordkeeping: (1) The permittee shall demonstrate compliance with the natural gas or fuel oil limit on total sulfur content by maintaining records of a current, valid purchase contract, tariff sheet or transportation contract for the gaseous or liquid fuel, or fuel gas analysis, specifying the allowable limit or less. (2) If fuel gas analysis is used, the analysis shall not be older than one year. (3) Alternatively, compliance shall be demonstrated by keeping a receipt or invoice from a commercial fuel supplier, with each fuel delivery, which shall include the delivery date, the fuel type delivered, the amount of fuel delivered, and the maximum sulfur content of the fuel.
Reporting: The permittee shall report in accordance with Section B110.

A111 Facility: 20.2.61 NMAC Opacity

A. 20.2.61 NMAC Opacity Limit (Units ENG-1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, and 12, HTR-1, HTR-2)

Requirement: Visible emissions from all stationary combustion emission stacks shall not equal or exceed an opacity of 20 percent in accordance with the requirements at 20.2.61.109 NMAC.
Monitoring: (1) Use of natural gas fuel constitutes compliance with 20.2.61 NMAC unless opacity equals or exceeds 20% averaged over a 10-minute period. When any visible emissions are observed during operation other than during startup mode, opacity shall be measured over a 10-minute period, in accordance with the procedures at 40 CFR 60, Appendix A, Reference Method 9 (EPA Method 9) as required by 20.2.61.114 NMAC, or the operator will be allowed to shut down the equipment to perform maintenance/repair to eliminate the visible emissions. Following completion of equipment maintenance/repair, the operator shall conduct visible emission observations following startup in accordance with the following procedures: (a) Visible emissions observations shall be conducted over a 10-minute period during operation after completion of startup mode in accordance with the procedures at 40 CFR 60, Appendix A, Reference Method 22 (EPA Method 22). If no visible emissions are observed, no further action is required.

(b) If any visible emissions are observed during completion of the EPA Method 22 observation, subsequent opacity observations shall be conducted over a 10-minute period, in accordance with the procedures at EPA Method 9 as required by 20.2.61.114 NMAC. For the purposes of this condition, *Startup mode* is defined as the startup period that is described in the facility's startup plan.
Recordkeeping: (1) If any visible emissions observations were conducted, the permittee shall keep records in accordance with the requirements of Section B109 and as follows: (a) For any visible emissions observations conducted in accordance with EPA Method 22, record the information on the form referenced in EPA Method 22, Section 11.2. (b) For any opacity observations conducted in accordance with the requirements of EPA Method 9, record the information on the form referenced in EPA Method 9, Sections 2.2 and 2.4.
Reporting: The permittee shall report in accordance with Section B110.

OIL AND GAS INDUSTRY

A200 Oil and Gas Industry

A. This section has common equipment related to most Oil and Gas Operations.

A201 Engines

A. Initial Compliance Testing (Units ENG-1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, and 12)

Requirement: Compliance with the allowable emission limits in Table 106.A shall be demonstrated by performing an initial compliance test on each engine.
Monitoring: The permittee shall perform an initial compliance test in accordance with the General Testing Requirements of Section B111 Emission testing is required for NOx and CO. Test results that demonstrate compliance with the CO emission limits shall also be considered to demonstrate compliance with the VOC emission limits. The monitoring exemptions of Section B108 do not apply to this requirement. For units with g/hp-hr emission limits, the engine load shall be calculated by using the following equation: Load(Hp) = $\frac{\text{Fuel consumption (scfh) x Measured fuel heating value (LHV btu/scf)}}{\text{Manufacturer's rated BSFC (btu/bhp-hr) at 100\% load or best efficiency}}$

Recordkeeping: The permittee shall maintain records in accordance with the applicable Sections in B109, B110, and B111.
Reporting: The permittee shall report in accordance with the applicable Sections in B109, B110, and B111.

B. Periodic Emissions Testing (Units ENG-1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, and 12)

Requirement: Compliance with the allowable emission limits in Table 106.A shall be demonstrated by completing periodic emission tests during the monitoring period.
Monitoring: The permittee shall test using a portable analyzer or EPA Reference Methods subject to the requirements and limitations of Section B108, General Monitoring Requirements. Emission testing is required for NOx and CO and shall be carried out as described below. Test results that demonstrate compliance with the CO emission limits shall also be considered to demonstrate compliance with the VOC emission limits. For units with g/hp-hr emission limits, in addition to the requirements stated in Section B108, the engine load shall be calculated by using the following equation: $\text{Load(Hp)} = \dfrac{\text{Fuel consumption (scfh) x Measured fuel heating value (LHV btu/scf)}}{\text{Manufacturer's rated BSFC (btu/bhp-hr) at 100\% load or best efficiency}}$ (1) The testing shall be conducted as follows: (a) Testing frequency shall be once per quarter for units 1-12. (b) The monitoring period is defined as a calendar quarter for units 1-12. (2) The first test shall occur within the first monitoring period after completion of the initial compliance test. (3) All subsequent monitoring shall occur in each succeeding monitoring period. No two monitoring events shall occur closer together in time than 25% of a monitoring period. (4) The permittee shall follow the General Testing Procedures of Section B111. (5) Performance testing required by 40 CFR 60, Subpart JJJJ or IIII or 40 CFR 63, Subpart ZZZZ may be used to satisfy these periodic testing requirements if they meet the requirements of this condition and are completed during the specified monitoring period.
Recordkeeping: The permittee shall maintain records in accordance with Section B109, B110, and B111.
Reporting: The permittee shall report in accordance with Section B109, B110, and B111.

C. Oxidation Catalytic Converter Operation (Units ENG-1, 2, 3, 4, 5, 6, 7, and 8); Non-Selective Catalytic Reduction Operation (Units 9, 10, 11, and 12)

Requirement: (1) The units ENG-1, 2, 3, 4, 5, 6, 7, and 8 shall be equipped and operated with an oxidation

catalytic converter to control CO, VOC, and HAP emissions. (2) The units 9, 10, 11, and 12 shall be equipped and operated with a non-selective catalytic converter to control NOx, CO, and VOC emissions. These units shall also be equipped with an AFR controlling device, or similar device that performs the same function of maintaining an appropriate air-fuel ratio. The permittee shall maintain the units according to manufacturer's or supplier's recommended maintenance, including replacement of oxygen sensor as necessary for oxygen-based controllers.
Monitoring: The unit(s) shall be operated with the catalytic converter, which includes catalyst maintenance periods. During periods of catalyst maintenance, the permittee shall either (1) shut down the engine(s); or (2) replace the catalyst with a functionally equivalent spare to allow the engine to remain in operation.
Recordkeeping: The permittee shall maintain records in accordance with Section B109.
Reporting: The permittee shall report in accordance with Section B110.

D. Air Fuel Ratio Operation (Units ENG-1, 2, 3, 4, 5, 6, 7, and 8)

Requirement: The units shall be equipped and operated with an AFR controlling device, or similar device that performs the same function of maintaining an appropriate air-fuel ratio. The permittee shall demonstrate that the manufacturer's or supplier's recommended maintenance is performed, including replacement of oxygen sensor as necessary for oxygen-based controllers.
Monitoring: The unit(s) shall be operated with the AFR, which includes maintenance periods. During periods of AFR maintenance, the permittee shall either (1) shut down the engine(s); or (2) replace the AFR with a functionally equivalent spare to allow the engine to remain in operation.
Recordkeeping: The permittee shall maintain records in accordance with Section B109, including a record of maintenance performed on AFR controllers and the manufacturer's or suppliers' recommended maintenance schedules for AFR Controllers.
Reporting: The permittee shall report in accordance with Section B110.

E. Notification of Engine Option Installation (Units ENG-1 or 2, and ENG-5, 6, 7, and 8 or ENG-9, 10, 11, and 12)

Requirement: The permittee shall install only one engine option from the list of options requested in the application. The permittee shall notify the Permitting Section Chief at the Department in writing of the following: 1. the engine model/option selected (see Table 104.A, footnote 2) and the dates of installation of each unit within 60 days of installation; 2. removal of one option and installation of another option; 3. the resulting total allowable emissions from the facility
Monitoring: None
Recordkeeping: The permittee shall maintain records in accordance with the applicable Sections in B109, B110, and B111.
Reporting: The permittee shall report in accordance with the applicable Sections in B109, B110, and B111.

F. 40 CFR 60, Subpart JJJJ (Units ENG-1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, and 12; GEN-1)

Requirement: The units will be subject to 40 CFR 60, Subparts A and JJJJ if the unit is constructed (ordered) and manufactured after the applicability dates in 40 CFR 60.4230 and the permittee shall comply with the notification requirements in Subpart A and the specific requirements of Subpart JJJJ.
Monitoring: The permittee shall comply with all applicable monitoring requirements in 40 CFR 60, Subpart A and Subpart JJJJ, including but not limited to 60.4243.
Recordkeeping: The permittee shall comply with all applicable recordkeeping requirements in 40 CFR 60, Subpart A and Subpart JJJJ, including but not limited to 60.4245.
Reporting: The permittee shall comply with all applicable reporting requirements in 40 CFR 60, Subpart A and Subpart JJJJ, including but not limited to 60.4245.

G. 40 CFR 63, Subpart ZZZZ (Units ENG- ENG-1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, and 12; GEN-1 and 2)

Requirement: The units will be subject to 40 CFR 63, Subparts A and ZZZZ if they meet the applicability criteria in 40 CFR 63.6590. The permittee shall comply with any applicable notification requirements in Subpart A and any specific requirements of Subpart ZZZZ.
Monitoring: The permittee shall comply with all applicable monitoring requirements of 40 CFR 63, Subpart A and Subpart ZZZZ.
Recordkeeping: The permittee shall comply with all applicable recordkeeping requirements of 40 CFR 63, Subpart A and Subpart ZZZZ, including but not limited to 63.6655 and 63.10.
Reporting: The permittee shall comply with all applicable reporting requirements of 40 CFR

63, Subpart A and ZZZZ, including but not limited to 63.6645, 63.6650, 63.9, and 63.10.

H. 40 CFR 60, Subpart IIII (Unit GEN-2)

Requirement: The unit will be subject to 40 CFR 60, Subparts A and IIII and shall comply with the notification requirements in Subpart A and the specific requirements of Subpart IIII.
Monitoring: The permittee shall comply with all applicable monitoring requirements in 40 CFR 60, Subpart A and Subpart IIII, including but not limited to 60.4211.
Recordkeeping: The permittee shall comply with all applicable recordkeeping requirements in 40 CFR 60, Subpart A and Subpart IIII, including but not limited to 60.4214.
Reporting: The permittee shall comply with all applicable reporting requirements in 40 CFR 60, Subpart A and Subpart IIII, including but not limited to 60.4214.

A202 <u>Glycol Dehydrators</u> - Not required.

A203 <u>Tanks</u>

A. Tank Throughput (Units TK-2, 3, 4, and 5)

Requirement: Compliance with the allowable emission limits in Table 106.A shall be demonstrated by limiting the monthly rolling 12-month total condensate throughput to the units to 9,198,000 gallons per year (219,000 barrels/year) and routing all tank emissions to the tank flare Unit FL-2 in accordance with Condition A203.C.
Monitoring: The permittee shall monitor the monthly total throughput once per month.
Recordkeeping: The permittee shall record the monthly total throughput of liquids through each tank. Each month, during the first 12 months of monitoring, the permittee shall record the cumulative total liquid throughput and after the first 12 months of monitoring, the permittee shall calculate and record the monthly rolling 12-month total liquid throughput. Tank pre-control breathing and working emissions were calculated using the USEPA Tanks Program Version 4.0.9.d. Emission rates computed using the same parameters, but with a different Department approved algorithm that exceed these values will not be deemed non-compliance with this permit. Records shall also be maintained in accordance with Section B109.
Reporting: The permittee shall report in accordance with Section B110.

B. Truck Loading - Oil Loadout (Unit OILLOAD-1)

Requirement: Compliance with the allowable emission limits in Table 106.A shall be demonstrated by limiting the total annual oil loadout volume to 64,344 gallons per year (1532 barrels/year) and controlling emissions during load-out operations in accordance with Condition A203.D.
Monitoring: The permittee shall monitor the oil truck loadout volume on a monthly basis.

Recordkeeping: The permittee shall record the monthly oil truck loadout volume. Each month during the first 12 months of monitoring the permittee shall record the cumulative oil loadout volume and after the first 12 months of monitoring, the permittee shall calculate and record a monthly rolling 12-month total loadout volume. Records shall also be maintained in accordance with Section B109.
Reporting: The permittee shall report in accordance with Section B110.

C. Truck Loading - Condensate Loadout (Unit CONDLOAD-1)

Requirement: Compliance with the allowable emission limits in Table 106.A shall be demonstrated by limiting the total annual condensate loadout volume to 9,198,000 gallons per year (219,000 barrels/year) and controlling emissions during load-out operations in accordance with Condition A203.D.
Monitoring: The permittee shall monitor the condensate truck loadout volume on a monthly basis.
Recordkeeping: The permittee shall record the monthly condensate truck loadout volume. Each month during the first 12 months of monitoring the permittee shall record the cumulative condensate loadout volume and after the first 12 months of monitoring, the permittee shall calculate and record a monthly rolling 12-month total loadout volume. Records shall also be maintained in accordance with Section B109.
Reporting: The permittee shall report in accordance with Section B110.

D. Flare (FL-2) Collecting Vapors from Condensate (CONDLOAD), Gunbarrel Tank (TK-1), Tanks (TK-2, 3, 4, and 5), Slop Oil Tank (TK-6), and Oil Loadout control (OILLOAD-1)

Requirement: The permittee shall at all times, including during oil-load operations, operate tank Units TK-1 through TK-6 as a closed loop system that captures and routes all VOC emissions to flare FL-2 and do not vent to the atmosphere.
Monitoring At least once per quarter, the permittee shall inspect all piping from the flare and tanks connecting to the flare for defects that could result in air emissions. Defects include, but are not limited to, visible cracks, holes, or gaps; broken, cracked, or otherwise damaged seals or gaskets on closure devices; and broken or missing hatches, access covers, caps, or other closure devices. In the event that a leak or defect is detected, the permittee shall repair the leak or defect as soon as practicable and in a manner that minimizes VOC and HAP emissions to the atmosphere.
Recordkeeping: The permittee shall record the results of the inspections chronologically, noting any maintenance or repairs that are required.
Reporting: The permittee shall report in accordance with Section B110.

E. 20.2.38 NMAC, Hydrocarbon Storage Facilities (Units TK-2, 3, 4, 5 and 6)

Requirement: The permittee shall comply with 20.2.38.112 NMAC. The permittee shall install a flare to minimize hydrocarbon and hydrogen sulfide loss to the atmosphere and shall not operate the tank without the control device.
Monitoring: The permittee shall monitor the tanks operation.
Recordkeeping: None.
Reporting: The permittee shall report in accordance with Section B110.

A204 <u>Heaters/Boilers</u>

A. Operational Inspections of Heaters (Units HTR-1, HTR-2)

Requirement: (1) Compliance with the allowable emission limits in Table 106.A shall be demonstrated by performing annual inspections to ensure proper operation of the Units. (2) At a minimum, the operational inspections shall meet those recommended by the manufacturer or shall meet the facility specific procedure submitted to the Department. (3) If the permittee is using a facility specific procedure it shall submit an electronic version of the procedure to the Department's Permit Section Manager within 90 days of implementing the procedure. If the plan cannot be submitted within 90 days, the permittee shall obtain written approval to extend the deadline from the Department's Permit Section, either by regular or electronic mail. The permittee shall provide additional information or make changes to the plan as requested by the Department. (4) The permittee shall make changes or improvements to the inspection procedure based on experience with the unit and/or new information provided by the manufacturer. This updated procedure shall be made available to the Department upon request.
Monitoring: (1) Inspections shall be completed at least once per year or at the frequency recommended by the manufacturer. (2) At a minimum, inspections shall include the following: (a) checking indicators to verify that the optimal amount of excess combustion air is introduced into the boiler combustion process such as a blue colored, steady flame; (b) inspections of the unit's components and housing for cracks or worn parts.
Recordkeeping: (1) The permittee shall maintain records of operational inspections, including the indicators used to verify optimal excess combustion air, a description of the indicators, the unit component and housing inspections, and any adjustments needed to ensure optimal operation of the unit. (2) The permittee shall also keep records of the manufacturer's recommended or the permittee's facility specific operational inspection procedure and shall keep records of the percent of excess combustion air required for optimal performance.

(3) The permittee shall maintain records in accordance with Section B109.
Reporting: The permittee shall report in accordance with Section B110.

B. 40 CFR 60, Subpart Dc (Units HTR-1 and HTR-2)

Requirement: The units are subject to 40 CFR 60, Subpart Dc and the permittee shall comply with the applicable requirements of 40 CFR 60, Subpart A and Subpart Dc.
Monitoring: The permittee shall comply with all applicable monitoring and testing requirements of 40 CFR 60, Subpart Dc.
Recordkeeping: The permittee shall comply with the recordkeeping requirements of 40 CFR 60.48c.
Reporting: The permittee shall comply with the reporting requirements of 40 CFR 60.48c and the Section B110 of the permit.

A205 Turbines – Not required.

A206 Flares and Thermal Oxidizer

A. Visible Emissions for Flares and Thermal Oxidizer Flames (20.2.61 NMAC) (Units FL-1, FL-2, and TO-1)

Requirement: The flares and thermal oxidizer are subject to the 20% opacity standards in 20.2.61 NMAC and complying with the no visible emissions requirements demonstrates compliance with 20.2.61 NMAC opacity limit. Compliance with the VOC and H_2S emission limits in Tables 106.A and 107.A shall be demonstrated by equipping the flare (Units FL-1 and FL-2) with a system to ensure that it is operated with a flame present at all times and operated with no visible emissions. The thermal oxidizer (Unit TO-1) shall be equipped with a pilot thermocouple and an alarm and notification system indicating when the Thermal Oxidizer fails to light, to ensure that it is operated with a flame present any time that vapors are routed to the unit.
Monitoring: **(1) Thermal Oxidizer and Flare Pilot Flame:** The permittee shall continuously monitor the presence of a thermal oxidizer and flare pilot flame using a thermocouple or any equivalent device approved by the Department and shall be equipped with a continuous recorder and alarm or equivalent, to detect the presence of a flame. **(2) Visible Emissions:** Annually, or whenever visible emissions are observed, the permittee shall conduct a visible emissions observation in accordance with the requirements at 40 CFR 60,

Appendix A, Reference Method 22 to certify compliance with the no visible emission requirement on the process flare. The observation period is at least 2 consecutive hours where visible emissions are not to exceed a total of 5 minutes during any 2 consecutive hours.

At least once per year during a blow down event (Unit FL-1), the permittee shall conduct a visible emissions observation in accordance with the requirements at 40 CFR 60, Appendix A, Reference Method 22 to certify compliance with the no visible emission requirements. Each Method 22 test shall occur for the duration of the blow down event or for 30 minutes, whichever is less. Visible emissions shall not occur for more than 5 minutes during any consecutive 30-minute period. For blowdown events that occur for less than 30 minutes, visible emissions shall not occur for more the 15% during the duration of the blow down event.

If the flare is located at an unmanned site, used only for emergencies, and where there are no scheduled blowdown-maintenance events to observe flare combustion, the permittee shall at a minimum conduct the visible emissions observation in accordance with the requirements of EPA Method 22 on the pilot flame.

Recordkeeping:

(1) Thermal Oxidizer and Flare Pilot Flame:

The permittee shall record all instances of alarm activation, including the date and cause of alarm activation, actions taken to bring the flare into normal operating conditions, and maintenance activities.

(2) Visible Emissions:

For any visible emissions observations conducted in accordance with EPA Method 22, the permittee shall record the information on the form referenced in EPA Method 22, Section 11.2.

For blowdown flares when a flaring event may occur without someone present:

For any visible emissions observations conducted in accordance with EPA Method 22, record the information on the form referenced in EPA Method 22, Section 11.2. If the visible emissions observation was conducted only on the pilot flame, the record shall also include the reasons that the test could not be conducted during a blowdown event.

Reporting: The permittee shall report in accordance with Section B110.

B. Gas Flow Monitoring and Gas Analysis for Flares and Thermal Oxidizer Operation (Units FL-1, FL-2, and TO-1)

Requirement: Compliance with the allowable emission limits in Tables 106.A and 107.A shall be demonstrated by completing the monitoring, recordkeeping, and reporting specified below.

Monitoring:

(1) Flow Monitoring:

a. Each flare shall be equipped with a gas flow or a mass flow meter, equipped with a chart recorder or data logger (electronic storage), to monitor gas flow/mass flow and record the total standard cubic feet (scf) of gas sent to Flare Units FL-1 and FL-2, and TO-1.

b. The permittee:

(i) May use manufacturer's specifications to determine pilot, purge, and assist gas flow rates.

(ii) May use the manufacturer's specification or modeling estimations using Promax, E&P Tanks, or another approved method, to determine process gas flow rates.

(2) Calibration: The flow meter(s), mass meter(s), totalizer(s), and if used, the inline monitor shall be operated, calibrated, and maintained as specified by the manufacturer or equivalent and as necessary to ensure correct and accurate readings.

(3) Hourly Flow Rate: Gas flow or mass flow rates shall be logged during, or calculated for, each hour and each month that the flare/TO is in operation.

(4) Gas Analysis: The permittee shall measure the H_2S content, the total sulfur content, the VOC content, and the heating value (Btu/scf) of the gas sent to the flare/TO for combustion or to the amine unit. H_2S shall be measured at least quarterly using a stain tube of the appropriate size range or an inline H_2S monitor; or measured annually with an extended gas analysis. The total sulfur content, VOC content, and heating value (Btu/scf) of the natural gas sent to the flare/TO shall be measured at least once annually with an extended gas analysis.

Recordkeeping: The following records shall be kept:

(1) Flow Monitoring & (2) Calibration: Records of flowmeter or mass meter, totalizer, and inline monitor certifications, calibrations, breakdowns, reasons for the breakdown, and corrective actions. If manufacturer's specifications are used to determine pilot and purge fuel gas flow, the manufacturer's specification documentation must be maintained.

(2) Hourly Flow Rate: Records of the calculated average hourly flowmeter/mass meter and flow/mass totalizer measurements of process and assist gas sent to the flare/TO or the amine unit in scf/hr.

(3) Gas Analysis: Sample documentation as received from the laboratory including H_2S content, the total sulfur content, the VOC content, and the heating value (Btu/scf) and analysis method utilized.

The permittee shall maintain all records in accordance with Section B109.

Reporting: The permittee shall report in accordance with Section B110.

C. Control Efficiency for Thermal Oxidizer (Unit TO-1)

Requirement: Compliance with the allowable emission limits in Table 106.A shall be demonstrated by maintaining a flame anytime gas is routed to the oxidizer and maintaining a burning temperature that achieves a destruction efficiency at or above 98% for VOCs and H2S, and monitoring unit downtime or malfunction. Temperature is used as the indicator for the estimated destruction efficiency.

Monitoring: The permittee shall determine a combustion temperature that achieves the required destruction efficiency from periodic emissions testing performed in accordance with A206.G and monitor the combustion temperature of the Thermal Oxidizer continuously and record the temperature once per 24-hour period. Compliant combustion temperature is defined as within +/- 5% of the temperature during the emissions test.
Recordkeeping: The permittee shall maintain records including the date and time of each temperature reading, detail any deficiencies in operation identified, and record any corrective actions taken to restore the control device to operation. Records shall also be maintained in accordance with Section B109.
Reporting: The permittee shall report in accordance with Section B110.

D. Emissions Calculation for Thermal Oxidizer (Unit TO-1)

Requirement: Compliance with the thermal oxidizer allowable emission limits in Table 106.A shall be demonstrated by operating the thermal oxidizer in accordance with the requirements, monitoring, and recordkeeping of Condition A206.B and completing emissions calculations as specified in this condition.

Monitoring: .Monitoring as required to establish input values for the recordkeeping requirements. Compliance is demonstrated through records.

Recordkeeping: The permittee shall maintain records of all calculations and parameters used to determine emission rates in spreadsheet format and in accordance with Condition B109.

(1) **Hourly Emissions Calculations:** The permittee shall calculate the pounds per hour (pph) NOx, CO, VOC, SO_2, and H_2S emission rates using these parameters:

(a) the calculated average hourly flow rate of all gas combusted by the flare including pilot, purge, and assist gas, if applicable, (Condition A206.B(1));

(b) gas analysis including H_2S content, total sulfur content, VOC content, and heating value (BTU/scf) of the gas (Condition A206.B(2));

(c) the TNRCC RG-109 (high Btu; other) emission factors for NOx and AP-42 Tables 13.5-1 and 13.5-2emission factors for NOx and CO emission rates; and

(d) VOC and H_2S emission rates calculated using a destruction efficiency of 98% based on the manufacturers guarantee.

(2) **Annual Emissions Calculations:** The permittee shall calculate the total ton per year (tpy) emission rates as a monthly rolling 12-month total, using the totaled pph emission rates for each hour of the month:

(a) During the first 12 months of this condition taking effect, the permittee shall record the total tons of NOx, CO, VOC, SO_2, and H_2S emissions.

(b) After the first 12 months of this condition taking affect, the permittee shall record the monthly rolling 12-month total tpy NOx, CO, VOC, SO_2, and H_2S emissions.
Reporting: The permittee shall report in accordance with Section B110.

E. Initial and Periodic Emissions Testing for Thermal Oxidizer (Unit TO-1)

Requirement: Compliance with the allowable emission limits in Table 106.A shall be demonstrated by emission tests for NOx and CO and calculating the destruction efficiency for VOCs and H2S of the thermal oxidizer during the monitoring period.

Monitoring:

NOx and CO: The permittee shall complete an initial compliance test for NOx and CO using a portable analyzer or EPA Reference Method Test subject to the requirements and limitations of Section B111. The initial compliance test shall take place within 180 days of permit issuance.

VOC and H_2S Destruction Efficiency: The permittee shall conduct periodic emissions tests using EPA Reference Method 25a or Method 18 subject to the requirements and limitations of Section B108, General Monitoring Requirements. Emission testing is required for un-speciated VOCs pre-control and post-TO (stack). Periodic emissions testing shall be carried out as described below.

Test results for pre-control and post-control VOCs shall be used to calculate the destruction efficiency of the thermal oxidizer at the operating combustion temperature. Compliant destruction efficiency is defined as a percentage equal to or greater than 98%. Compliance with the destruction efficiency of 98% for VOCs shall also demonstrate compliance for H_2S.

(1) The Periodic emissions tests shall be conducted as follows:
- (a) The first test shall take place within 180 days of permit issuance and thereafter;
- (b) Testing frequency shall be once per year.
- (c) The monitoring period is defined as a calendar year.

(2) All subsequent monitoring shall occur in each succeeding monitoring period. No two monitoring events shall occur closer together in time than 25% of a monitoring period.

(3) The permittee shall follow the General Testing Procedures of Section B111.

Recordkeeping: The permittee shall maintain records in accordance with Section B109, B110, and B111.

Reporting: The permittee shall report in accordance with Section B109, B110, and B111.

F. Emissions Calculation for Flares (Units FL-1, FL-2)

Requirement: Compliance with the flare allowable emission limits in Table 106.A shall be demonstrated by operating the flare in accordance with the requirements, monitoring, and recordkeeping of Condition A206.D and completing emissions calculations as specified in this condition.

Monitoring: No monitoring is required. Compliance is demonstrated through records.

Recordkeeping: The permittee shall maintain records of all calculations and parameters used to determine emission rates in spreadsheet format and in accordance with Condition B109. **(1) Hourly Emissions Calculations:** The permittee shall calculate the pounds per hour (pph) NOx, CO, VOC, SO_2, and H_2S emission rates using these parameters: (a) the calculated average hourly flow rate/mass rate of all gas combusted by the flare including pilot, purge, and assist gas, if applicable, (Condition A206.D(1)); (b) gas analysis including H_2S content, total sulfur content, VOC content, and heating value (BTU/scf) of the gas (Condition A206.D(4)); (c) the current published emission factors for NOx and CO emission rates; and (d) VOC and H_2S emission rates calculated using a destruction efficiency of no more than 98%. **(2) Annual Emissions Calculations:** The permittee shall calculate the total ton per year (tpy) emission rates as a monthly rolling 12-month total, using the totaled pph emission rates for each hour of the month: (a) During the first 12 months of this condition taking effect, the permittee shall record the total tons of NOx, CO, VOC, SO_2, and H_2S emissions. (b) After the first 12 months of this condition taking affect, the permittee shall record the monthly rolling 12-month total tpy NOx, CO, VOC, SO_2, and H_2S emissions.
Reporting: The permittee shall report in accordance with Section B110.

A207 <u>Sulfur Recovery Unit</u> – Not required

A208 <u>Amine Unit</u>

A. Extended Gas Analysis (AMINE-1)

Requirement: A. To demonstrate compliance with the allowable H2S emission limits in Table 106.A, the permittee shall conduct the following analyses: 1. An annual extended gas analysis on a representative sample upstream of the sweetening unit. 2. Verification sampling and analysis will be conducted biannually (every two years) on regenerator still vent emissions. B. Every two years, the extended gas analysis will include sampling and analysis for H2S. The value presented will be a numerical value, or if less than the laboratory method detectable limit, the minimum detection limit will be reported.
Monitoring: The permittee shall conduct an annual extended gas analysis of the inlet gas.

1. Confirmation testing on amine emission points (e.g. flash tank, regenerator, still vent) will be performed biannually (every two years).
Recordkeeping: Records shall be kept of the following: 1. Gas analysis H2S, CO2, VOC content of the inlet gas. 2. An annual calculation of the average hourly and total annual emissions for [H2S, VOC] based on the most recent annual extended gas analysis will be performed using, but not limited to, AmineCalc, HYSYS, or ProMax. 3. All parameters that were used as inputs to the model or calculations [i.e.; AmineCalc, HYSYS, or ProMax]. 4. Verification sampling and analysis on flash tank and/or regenerator still vent emissions.
Reporting: The permittee shall report in accordance with Section B110.

B. Amine pump circulation rate (AMINE-1)

Requirement: To demonstrate compliance with the allowable VOC emission limits in Table 106.A, the amine pump circulation rate for the unit shall not exceed 27,000 gallons per hour (450 gallons per minute).
Monitoring: Monitoring: The permittee shall monitor the circulation rate (gph) monthly.
Recordkeeping: Recordkeeping: The permittee shall keep records in accordance with Section B109 and of the following: 1. Pump flow rate in gph. 2. Basis for determination of flowrate.
Reporting: The permittee shall report in accordance with Section B110.

C. Sweetening Unit (AMINE-1) with Control Devices TO-1 (Thermal Oxidizer) and FL-1 (Flare)

Requirement: To demonstrate compliance with the allowable emission limits in Table 106.A, the amine sweetening unit shall have a closed system with still vent and flash tank emissions routed at all times to TO-1 except for TO-1 downtime. During TO-1 downtime, emissions shall be routed to FL-1. The closed vent system shall be designed and operated so that there are no leaks to the atmosphere. At no time shall any emissions be emitted directly to the atmosphere.
Monitoring: The permittee shall inspect the amine treatment unit and the control equipment semi-annually to ensure it is operating as initially designed or in accordance with the manufacturer's recommended procedures. The permittee shall inspect the pipe routed from the AMINE-1 still vent and flash tank to TO-2 and to FL-1 semi-annually to ensure that there is no degradation of welds or other deficiencies.

Recordkeeping: The permittee shall record the name of the person conducting the inspection and the results of all equipment and control device inspections chronologically, noting any maintenance or repairs needed to bring the amine treatment unit into compliance. The permittee shall maintain a copy of the manufacturer's maintenance recommendations.
Reporting: The permittee shall report in accordance with Section B110.

A209 Fugitives

A. 40 CFR 60, Subpart OOOOa (for all applicable process unit equipment, including Units FUG 1, COMP (Compressors for Units 1-12), and AMINE-1)

Requirement: Equipment in VOC or in wet gas service (as defined in 40 CFR §60.5430a) within process units FUG-1, COMP (Units 1-12), and AMINE-1 are subject to the GHG and VOC equipment leak standards at 40 CFR §60.5400a of 40 CFR 60, Subpart OOOOa. The permittee shall comply with all applicable requirements in Subparts A and OOOOa.
Monitoring: The permittee shall implement a leak detection and repair program and shall comply with the standards as specified at 40 CFR §60.5400a except as provided in §60.5401a.
Recordkeeping: The permittee shall comply with the recordkeeping requirements specified at 40 CFR §§60.5400a(e) and 60.486a except as provided in §§60.5401a and 60.5421a.
Reporting: The permittee shall comply with the reporting requirements specified at 40 CFR §§60.5400a(e) and 60.487a except as provided in §§60.5401a and 60.5422a.

PART B GENERAL CONDITIONS (Attached)

PART C MISCELLANEOUS: Supporting On-Line Documents; Definitions; Acronyms (Attached)

AIR QUALITY BUREAU
NEW SOURCE REVIEW PERMIT
Issued under 20.2.72 NMAC

GENERAL CONDITIONS AND MISCELLANEOUS

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PART B GENERAL CONDITIONS

B100 Introduction

A. The Department has reviewed the permit application for the proposed construction/modification/revision and has determined that the provisions of the Act and ambient air quality standards will be met. Conditions have been imposed in this permit to assure continued compliance. 20.2.72.210.D NMAC, states that any term or condition imposed by the Department on a permit is enforceable to the same extent as a regulation of the Environmental Improvement Board.

B101 Legal

A. The contents of a permit application specifically identified by the Department shall become the terms and conditions of the permit or permit revision. Unless modified by conditions of this permit, the permittee shall construct or modify and operate the Facility in accordance with all representations of the application and supplemental submittals that the Department relied upon to determine compliance with applicable regulations and ambient air quality standards. If the Department relied on air quality modeling to issue this permit, any change in the parameters used for this modeling shall be submitted to the Department for review. Upon the Department's request, the permittee shall submit additional modeling for review by the Department. Results of that review may require a permit modification. (20.2.72.210.A NMAC)

B. Any future physical changes, changes in the method of operation or changes in restricted area may constitute a modification as defined by 20.2.72 NMAC, Construction Permits. Unless the source or activity is exempt under 20.2.72.202 NMAC, no modification shall begin prior to issuance of a permit. (20.2.72 NMAC Sections 200.A.2 and E, and 210.B.4)

C. Changes in plans, specifications, and other representations stated in the application documents shall not be made if they cause a change in the method of control of emissions or in the character of emissions, will increase the discharge of emissions or affect modeling results. Any such proposed changes shall be submitted as a revision or modification. (20.2.72 NMAC Sections 200.A.2 and E, and 210.B.4)

D. The permittee shall establish and maintain the property's Restricted Area as identified in plot plan submitted with the application. (20.2.72 NMAC Sections 200.A.2 and E, and 210.B.4)

E. Applications for permit revisions and modifications shall be submitted to:

Program Manager, Permits Section
New Mexico Environment Department

Air Quality Bureau
525 Camino de los Marquez, Suite 1
Santa Fe, NM 87505

F. The owner or operator of a source having an excess emission shall, to the extent practicable, operate the source, including associated air pollution control equipment, in a manner consistent with good air pollutant control practices for minimizing emissions. (20.2.7.109 NMAC). The establishment of allowable malfunction emission limits does not supersede this requirement.

B102 Authority

A. This permit is issued pursuant to the Air Quality Control Act (Act) and regulations adopted pursuant to the Act including Title 20, Chapter 2, Part 72 of the New Mexico Administrative Code (NMAC), (20.2.72 NMAC), Construction Permits and is enforceable pursuant to the Act and the air quality control regulations applicable to this source.

B. The Department is the Administrator for 40 CFR Parts 60, 61, and 63 pursuant to the delegation and exceptions of Section 10 of 20.2.77 NMAC (NSPS), 20.2.78 NMAC (NESHAP), and 20.2.82 NMAC (MACT).

B103 Annual Fee

A. The Department will assess an annual fee for this Facility. The regulation 20.2.75 NMAC set the fee amount at $1,500 through 2004 and requires it to be adjusted annually for the Consumer Price Index on January 1. The current fee amount is available by contacting the Department or can be found on the Department's website. The AQB will invoice the permittee for the annual fee amount at the beginning of each calendar year. This fee does not apply to sources which are assessed an annual fee in accordance with 20.2.71 NMAC. For sources that satisfy the definition of "small business" in 20.2.75.7.F NMAC, this annual fee will be divided by two. (20.2.75.11 NMAC)

B. All fees shall be remitted in the form of a corporate check, certified check, or money order made payable to the "NM Environment Department, AQB" mailed to the address shown on the invoice and shall be accompanied by the remittance slip attached to the invoice.

B104 Appeal Procedures

A. Any person who participated in a permitting action before the Department and who is adversely affected by such permitting action, may file a petition for hearing before the Environmental Improvement Board. The petition shall be made in writing to the

Environmental Improvement Board within thirty (30) days from the date notice is given of the Department's action and shall specify the portions of the permitting action to which the petitioner objects, certify that a copy of the petition has been mailed or hand-delivered and attach a copy of the permitting action for which review is sought. Unless a timely request for hearing is made, the decision of the Department shall be final. The petition shall be copied simultaneously to the Department upon receipt of the appeal notice. If the petitioner is not the applicant or permittee, the petitioner shall mail or hand-deliver a copy of the petition to the applicant or permittee. The Department shall certify the administrative record to the board. Petitions for a hearing shall be sent to: (20.2.72.207.F NMAC)

For Mailing:
Administrator, New Mexico Environmental Improvement Board
P.O. Box 5469
Santa Fe, NM 87502-5469

For Hand Delivery:
Administrator, New Mexico Environmental Improvement Board
1190 St. Francis Drive, Harold Runnels Bldg.
Santa Fe, New Mexico 87505

B105 Submittal of Reports and Certifications

A. Stack Test Protocols and Stack Test Reports shall be submitted electronically to Stacktest.AQB@state.nm.us or as directed by the Department.

B. Excess Emission Reports shall be submitted as directed by the Department. (20.2.7.110 NMAC)

C. Routine reports shall be submitted to the mailing address below, or as directed by the Department:

Manager, Compliance and Enforcement Section
New Mexico Environment Department
Air Quality Bureau
525 Camino de los Marquez, Suite 1
Santa Fe, NM 87505

B106 NSPS and/or MACT Startup, Shutdown, and Malfunction Operations

A. If a facility is subject to a NSPS standard in 40 CFR 60, each owner or operator that installs and operates a continuous monitoring device required by a NSPS regulation shall comply with the excess emissions reporting requirements in accordance with 40 CFR 60.7(c), unless specifically exempted in the applicable subpart.

B. If a facility is subject to a NSPS standard in 40 CFR 60, then in accordance with 40 CFR 60.8(c), emissions in excess of the level of the applicable emission limit during periods of startup, shutdown, and malfunction shall not be considered a violation of the applicable emission limit unless otherwise specified in the applicable standard.

C. If a facility is subject to a MACT standard in 40 CFR 63, then the facility is subject to the requirement for a Startup, Shutdown and Malfunction Plan (SSM) under 40 CFR 63.6(e)(3), unless specifically exempted in the applicable subpart.

B107 <u>Startup, Shutdown, and Maintenance Operations</u>

A. The establishment of permitted startup, shutdown, and maintenance (SSM) emission limits does not supersede the requirements of 20.2.7.14.A NMAC. Except for operations or equipment subject to Condition B106, the permittee shall establish and implement a plan to minimize emissions during routine or predictable start up, shut down, and scheduled maintenance (SSM work practice plan) and shall operate in accordance with the procedures set forth in the plan. (SSM work practice plan) (20.2.7.14.A NMAC)

B108 <u>General Monitoring Requirements</u>

A. These requirements do not supersede or relax requirements of federal regulations.

B. The following monitoring requirements shall be used to determine compliance with applicable requirements and emission limits. Any sampling, whether by portable analyzer or EPA reference method, that measures an emission rate over the applicable averaging period greater than an emission limit in this permit constitutes noncompliance with this permit. The Department may require, at its discretion, additional tests pursuant to EPA Reference Methods at any time, including when sampling by portable analyzer measures an emission rate greater than an emission limit in this permit; but such requirement shall not be construed as a determination that the sampling by portable analyzer does not establish noncompliance with this permit and shall not stay enforcement of such noncompliance based on the sampling by portable analyzer.

C. If the emission unit is shutdown at the time when periodic monitoring is due to be completed, the permittee is not required to restart the unit for the sole purpose of conducting the monitoring. Using electronic or written mail, the permittee shall notify the Department’s Compliance and Enforcement Section of a delay in emission tests prior to the deadline for completing the tests. Upon recommencing operation, the permittee shall submit pre-test notification(s) to the Department’s Compliance and Enforcement Section and shall complete the monitoring.

D. The requirement for monitoring during any monitoring period is based on the percentage of time that the unit has operated. However, to invoke the monitoring period exemption at B108.D(2), hours of operation shall be monitored and recorded.

(1) If the emission unit has operated for more than 25% of a monitoring period, then the permittee shall conduct monitoring during that period.

(2) If the emission unit has operated for 25% or less of a monitoring period then the monitoring is not required. After two successive periods without monitoring, the permittee shall conduct monitoring during the next period regardless of the time operated during that period, except that for any monitoring period in which a unit has operated for less than 10% of the monitoring period, the period will not be considered as one of the two successive periods.

(3) If invoking the monitoring **period** exemption in B108.D(2), the actual operating time of a unit shall not exceed the monitoring period required by this permit before the required monitoring is performed. For example, if the monitoring period is annual, the operating hours of the unit shall not exceed 8760 hours before monitoring is conducted. Regardless of the time that a unit actually operates, a minimum of one of each type of monitoring activity shall be conducted during any five-year period.

E. For all periodic monitoring events, except when a federal or state regulation is more stringent, three test runs shall be conducted at 90% or greater of the unit's capacity as stated in this permit, or in the permit application if not in the permit, and at additional loads when requested by the Department. If the 90% capacity cannot be achieved, the monitoring will be conducted at the maximum achievable load under prevailing operating conditions except when a federal or state regulation requires more restrictive test conditions. The load and the parameters used to calculate it shall be recorded to document operating conditions and shall be included with the monitoring report.

F. When requested by the Department, the permittee shall provide schedules of testing and monitoring activities. Compliance tests from previous NSR and Title V permits may be re-imposed if it is deemed necessary by the Department to determine whether the source is in compliance with applicable regulations or permit conditions.

G. If monitoring is new or is in addition to monitoring imposed by an existing applicable requirement, it shall become effective 120 days after the date of permit issuance. For emission units that have not commenced operation, the associated new or additional monitoring shall not apply until 120 days after the units commence operation. All pre-existing monitoring requirements incorporated in this permit shall continue to apply from the date of permit issuance.

H. Unless otherwise indicated by Specific Conditions or regulatory requirements, all instrumentation used to measure parameters including but not limited to flow, temperature, pressure and chemical composition, or used to continuously monitor emission rates and/or other process operating parameters, shall be subject to the following requirements:

(1) The owner or operator shall install, calibrate, operate and maintain monitoring instrumentation (monitor) according to the manufacturer's procedures and specifications and the following requirements.

(a) The monitor shall be located in a position that provides a representative measurement of the parameter that is being monitored.

(b) At a minimum, the monitor shall complete one cycle of operation (sampling, analyzing, and data recording) for each successive 15-minute period.

(c) At a minimum, the monitor shall be spanned to measure the normal range +/- 5% of the parameter that is being monitored.

(d) At least semi-annually, perform a visual inspection of all components of the monitor for physical and operational integrity and all electrical connections for oxidation and galvanic corrosion.

(e) Recalibrate the monitor in accordance with the manufacturer's procedures and specifications at the frequency specified by the manufacturer, or every two years, whichever is less.

(2) Except for malfunctions, associated repairs, and required quality assurance or control activities (including calibration checks and required zero and span adjustments), the permittee shall operate and maintain all monitoring equipment at all times that the emissions unit or the associated process is operating.

(3) The monitor shall measure data for a minimum of 90 percent of the time that the emissions unit or the associated process is in operation, based on a calendar monthly average.

(4) The owner or operator shall maintain records in accordance with Section B109 to demonstrate compliance with the requirements in B108H (1)-(3) above, as applicable.

B109 General Recordkeeping Requirements

A. The permittee shall maintain records to assure and verify compliance with the terms and conditions of this permit and any other applicable requirements that become effective after permit issuance. The minimum information to be included in these records is as follows:

(1) Records required for testing and sampling:

(a) equipment identification (include make, model and serial number for all tested equipment and emission controls)

(b) date(s) and time(s) of sampling or measurements

(c) date(s) analyses were performed

(d) the qualified entity that performed the analyses

(e) analytical or test methods used

(f) results of analyses or tests

(g) operating conditions existing at the time of sampling or measurement

(2) Records required for equipment inspections and/or maintenance required by this permit:

(a) equipment identification number (including make, model and serial number)

(b) date(s) and time(s) of inspection, maintenance, and/or repair

(c) date(s) any subsequent analyses were performed (if applicable)

(d) name of the person or qualified entity conducting the inspection, maintenance, and/or repair

(e) copy of the equipment manufacturer's or the owner or operator's maintenance or repair recommendations (if required to demonstrate compliance with a permit condition)

(f) description of maintenance or repair activities conducted

(g) all results of any required parameter readings

(h) a description of the physical condition of the equipment as found during any required inspection

(i) results of required equipment inspections including a description of any condition which required adjustment to bring the equipment back into compliance and a description of the required adjustments

B. Except as provided in the Specific Conditions, records shall be maintained on-site or at the permittee's local business office for a minimum of two (2) years from the time of recording and shall be made available to Department personnel upon request. Sources subject to 20.2.70 NMAC "Operating Permits" shall maintain records on-site for a minimum of five (5) years from the time of recording.

C. Unless otherwise indicated by Specific Conditions, the permittee shall keep the following records for malfunction emissions and routine or predictable emissions during startup, shutdown, and scheduled maintenance (SSM):

(1) The owner or operator of a source subject to a permit shall establish and implement a plan to minimize emissions during routine or predictable startup, shutdown, and scheduled maintenance through work practice standards and good air pollution control practices. This requirement shall not apply to any affected facility defined in and subject to an emissions standard and an equivalent plan under 40 CFR Part 60 (NSPS), 40 CFR Part 63 (MACT), or an equivalent plan under 20.2.72 NMAC - Construction Permits, 20.2.70 NMAC - Operating Permits, 20.2.74 NMAC -

Permits - Prevention of Significant Deterioration (PSD), or 20.2.79 NMAC - Permits - Nonattainment Areas. The permittee shall keep records of all sources subject to the plan to minimize emissions during routine or predictable SSM and shall record if the source is subject to an alternative plan and therefore, not subject to the plan requirements under 20.2.7.14.A NMAC.

(2) If the facility has allowable SSM emission limits in this permit, the permittee shall record all SSM events, including the date, the start time, the end time, a description of the event, and a description of the cause of the event. This record also shall include a copy of the manufacturer's, or equivalent, documentation showing that any maintenance qualified as scheduled. Scheduled maintenance is an activity that occurs at an established frequency pursuant to a written protocol published by the manufacturer or other reliable source. The authorization of allowable SSM emissions does not supersede any applicable federal or state standard. The most stringent requirement applies.

(3) If the facility has allowable malfunction emission limits in this permit, the permittee shall record all malfunction events to be applied against these limits. The permittee shall also include the date, the start time, the end time, and a description of the event. **Malfunction means** any sudden and unavoidable failure of air pollution control equipment or process equipment beyond the control of the owner or operator, including malfunction during startup or shutdown. A failure that is caused entirely or in part by poor maintenance, careless operation, or any other preventable equipment breakdown shall not be considered a malfunction. (20.2.7.7.E NMAC) The authorization of allowable malfunction emissions does not supersede any applicable federal or state standard. The most stringent requirement applies. This authorization only allows the permittee to avoid submitting reports under 20.2.7 NMAC for total annual emissions that are below the authorized malfunction emission limit.

(4) The owner or operator of a source shall meet the operational plan defining the measures to be taken to mitigate source emissions during malfunction, startup or shutdown. (20.2.72.203.A(5) NMAC)

B110 <u>General Reporting Requirements</u>
(20.2.72 NMAC Sections 210 and 212)

A. Records and reports shall be maintained on-site or at the permittee's local business office unless specifically required to be submitted to the Department or EPA by another condition of this permit or by a state or federal regulation. Records for unmanned sites may be kept at the nearest business office.

B. The permittee shall notify the Department's Compliance Reporting Section using the current Submittal Form posted to NMED's Air Quality web site under Compliance and Enforcement/Submittal Forms in writing of, or provide the Department with (20.2.72.212.A and B):

(1) the anticipated date of initial startup of each new or modified source not less than thirty (30) days prior to the date. Notification may occur prior to issuance of the permit, but actual startup shall not occur earlier than the permit issuance date;

(2) after receiving authority to construct, the equipment serial number as provided by the manufacturer or permanently affixed if shop-built and the actual date of initial startup of each new or modified source within fifteen (15) days after the startup date; and

(3) the date when each new or modified emission source reaches the maximum production rate at which it will operate within fifteen (15) days after that date.

C. The permittee shall notify the Department's Permitting Program Manager, in writing of, or provide the Department with (20.2.72.212.C and D):

(1) any change of operators or any equipment substitutions within fifteen (15) days of such change;

(2) any necessary update or correction no more than sixty (60) days after the operator knows or should have known of the condition necessitating the update or correction of the permit.

D. Results of emission tests and monitoring for each pollutant (except opacity) shall be reported in pounds per hour (unless otherwise specified) and tons per year. Opacity shall be reported in percent. The number of significant figures corresponding to the full accuracy inherent in the testing instrument or Method test used to obtain the data shall be used to calculate and report test results in accordance with 20.2.1.116.B and C NMAC. Upon request by the Department, CEMS and other tabular data shall be submitted in editable, MS Excel format.

E. The permittee shall submit reports of excess emissions in accordance with 20.2.7.110.A NMAC.

F. Allowable Emission Limits for Excess Emissions Reporting for Flares and Other Regulated Sources with No Pound per Hour (pph) and/or Ton per Year (tpy) Emission Limits.

(1) When a flare has no allowable pph and/or tpy emission limits in Sections A106 and/or A107, the authorized allowable emissions include only the combustion of pilot and/or purge gas. Compliance is demonstrated by limiting the gas stream to the flare to only pilot and/or purge gas.

(2) For excess emissions reporting as required by 20.2.7 NMAC, the allowable emission limits are 1.0 pph and 1.0 tpy for each regulated air pollutant (except for H2S) emitted by that source as follows:

(a) For flares, when there are no allowable emission limits in Sections A106 and/or A107.

(b) For regulated sources with emission limits in Sections A106 or A107 represented by the less than sign (“<”).

(c) For regulated sources that normally would not emit any regulated air pollutants, including but not limited to vents, pressure relief devices, connectors, etc.

(3) For excess emissions reporting as required by 20.2.7 NMAC for H2S, the allowable limits are 0.1 pph and 0.44 tpy for each applicable scenario addressed in paragraph (2) above.

B111 General Testing Requirements

Unless otherwise indicated by Specific Conditions or regulatory requirements, the permittee shall conduct testing in accordance with the requirements in Sections B111A, B, C, D and E, as applicable.

A. Initial Compliance Tests

The permittee shall conduct initial compliance tests in accordance with the following requirements:

(1) Initial compliance test requirements from previous permits (if any) are still in effect, unless the tests have been satisfactorily completed. Compliance tests may be re-imposed if it is deemed necessary by the Department to determine whether the source is in compliance with applicable regulations or permit conditions. (20.2.72 NMAC Sections 210.C and 213)

(2) Initial compliance tests shall be conducted within sixty (60) days after the unit(s) achieve the maximum normal production rate. If the maximum normal production rate does not occur within one hundred twenty (120) days of source startup, then the tests must be conducted no later than one hundred eighty (180) days after initial startup of the source.

(3) The default time period for each test run shall be **at least** 60 minutes and each performance test shall consist of three separate runs using the applicable test method. For the purpose of determining compliance with an applicable emission limit, the arithmetic mean of results of the three runs shall apply. In the event that a sample is accidentally lost or conditions occur in which one of the three runs must be discontinued because of forced shutdown, failure of an irreplaceable portion of the sample train, extreme meteorological conditions, or other circumstances, beyond the owner or operator's control, compliance may, upon the Department approval, be determined using the arithmetic mean of the results of the two other runs.

(4) Testing of emissions shall be conducted with the emissions unit operating at 90 to 100 percent of the maximum operating rate allowed by the permit. If it is not possible to test at that rate, the source may test at a lower operating rate

(5) Testing performed at less than 90 percent of permitted capacity will limit emission unit operation to 110 percent of the tested capacity until a new test is conducted.

(6) If conditions change such that unit operation above 110 percent of tested capacity is possible, the source must submit a protocol to the Department within 30 days of such change to conduct a new emissions test.

B. EPA Reference Method Tests

The test methods in Section B111.B(1) shall be used for all initial compliance tests and all Relative Accuracy Test Audits (RATAs), and shall be used if a permittee chooses to use EPA test methods for periodic monitoring. Test methods that are not listed in Section B111.B(1) may be used in accordance with the requirements at Section B111.B(2).

(1) All compliance tests required by this permit shall be conducted in accordance with the requirements of CFR Title 40, Part 60, Subpart A, General Provisions, and the following EPA Reference Methods as specified by CFR Title 40, Part 60, Appendix A:

(a) Methods 1 through 4 for stack gas flowrate

(b) Method 5 for particulate matter (PM)

(c) Method 6C SO_2

(d) Method 7E for NO_X (test results shall be expressed as nitrogen dioxide (NO_2) using a molecular weight of 46 lb/lb-mol in all calculations (each ppm of NO/NO_2 is equivalent to 1.194 x 10-7 lb/SCF)

(e) Method 9 for visual determination of opacity

(f) Method 10 for CO

(g) Method 19 for particulate, sulfur dioxide and nitrogen oxides emission rates. In addition, Method 19 may be used in lieu of Methods 1-4 for stack gas flowrate. The permittee shall provide a contemporaneous fuel gas analysis (preferably on the day of the test, but no earlier than three months prior to the test date) and a recent fuel flow meter calibration certificate (within the most recent quarter) with the final test report.

(h) Method 7E or 20 for Turbines per §60.335 or §60.4400

(i) Method 22 for visual determination of fugitive emissions from material sources and smoke emissions from flares

(j) Method 25A for VOC reduction efficiency

(k) Method 29 for Metals

(l) Method 30B for Mercury from Coal-Fired Combustion Sources Using Carbon Sorbent Traps

(m) Method 201A for filterable PM_{10} and $PM_{2.5}$

(n) Method 202 for condensable PM

(o) Method 320 for organic Hazardous Air Pollutants (HAPs)

(2) Permittees may propose test method(s) that are not listed in Section B111.B(1). These methods may be used if prior approval is received from the Department.

C. Periodic Monitoring and Portable Analyzer Requirements for the Determination of Nitrogen Oxides, Carbon Monoxide, and Oxygen Concentrations in Emissions from Reciprocating Engines, Combustion Turbines, Boilers, and Process Heaters

Periodic emissions tests (periodic monitoring) shall be conducted in accordance with the following requirements:

(1) Periodic emissions tests may be conducted in accordance with EPA Reference Methods or by utilizing a portable analyzer. Periodic monitoring utilizing a portable analyzer shall be conducted in accordance with the requirements of the current version of ASTM D 6522. However, if a facility has met a previously approved Department criterion for portable analyzers, the analyzer may be operated in accordance with that criterion until it is replaced.

(2) The default time period for each test run shall be **at least** 20 minutes.

Each performance test shall consist of three separate runs. The arithmetic mean of results of the three runs shall be used to determine compliance with the applicable emission limit.

(3) Testing of emissions shall be conducted in accordance with the requirements at Section B108.E.

(4) During emissions tests, pollutant and diluent concentration shall be monitored and recorded. Fuel flow rate shall be monitored and recorded if stack gas flow rate is determined utilizing Reference Method 19. This information shall be included with the test report furnished to the Department.

(5) Stack gas flow rate shall be calculated in accordance with Reference Method 19 utilizing fuel flow rate (scf) determined by a dedicated fuel flow meter and fuel heating value (Btu/scf). The permittee shall provide a contemporaneous fuel gas analysis (preferably on the day of the test, but no earlier than three months prior to the test date) and a recent fuel flow meter calibration certificate (within the most recent quarter) with the final test report. Alternatively, stack gas flow rate may be determined by using EPA Reference Methods 1-4.

(6) The permittee shall submit a notification and protocol for periodic emissions tests upon the request of the Department.

D. Initial Compliance Test and RATA Procedures

Permittees required to conduct initial compliance tests and/or RATAs shall comply with the following requirements:

(1) The permittee shall submit a notification and test protocol to the Department's Program Manager, Compliance and Enforcement Section, at least thirty (30) days before the test date and allow a representative of the Department to be present at the test. Proposals to use test method(s) that are not listed in Section B111.B(1) (if applicable) shall be included in this notification.

(2) Contents of test notifications, protocols and test reports shall conform to the format specified by the Department's Universal Test Notification, Protocol and Report Form and Instructions. Current forms and instructions are posted to NMED's Air Quality web site under Compliance and Enforcement Testing.

(3) The permittee shall provide (a) sampling ports adequate for the test methods applicable to the facility, (b) safe sampling platforms, (c) safe access to sampling platforms and (d) utilities for sampling and testing equipment.

(4) Where necessary to prevent cyclonic flow in the stack, flow straighteners shall be installed

E. General Compliance Test Procedures

The following requirements shall apply to all initial compliance and periodic emissions tests and all RATAs:

(1) Equipment shall be tested in the "as found" condition. Equipment may not be adjusted or tuned prior to any test for the purpose of lowering emissions, and then returned to previous settings or operating conditions after the test is complete.

(2) The stack shall be of sufficient height and diameter and the sample ports shall be located so that a representative test of the emissions can be performed in accordance with the requirements of EPA Reference Method 1 or the current version of ASTM D 6522, as applicable.

(3) Test reports shall be submitted to the Department no later than 30 days after completion of the test.

B112 Compliance

A. The Department shall be given the right to enter the facility at all reasonable times to verify the terms and conditions of this permit. Required records shall be organized by date and subject matter and shall at all times be readily available for inspection. The permittee, upon verbal or written request from an authorized representative of the Department who appears at the facility, shall immediately produce for inspection or copying any records required to be maintained at the facility. Upon written request at other times, the permittee shall deliver to the Department paper or electronic copies of any and all required records maintained on site or at an off-site location. Requested records shall be copied and delivered at the permittee's expense within three business days from receipt of request unless the Department allows additional time. Required records may include records required by permit and other information necessary to demonstrate compliance with terms and conditions of this permit. (NMSA 1978, Section 74-2-13)

B. A copy of the most recent permit(s) issued by the Department shall be kept at the permitted facility or (for unmanned sites) at the nearest company office and shall be made available to Department personnel for inspection upon request. (20.2.72.210.B.4 NMAC)

C. Emissions limits associated with the energy input of a Unit, i.e. lb/MMBtu, shall apply at all times unless stated otherwise in a Specific Condition of this permit. The averaging time for each emissions limit, including those based on energy input of a Unit (i.e. lb/MMBtu) is one (1) hour unless stated otherwise in a Specific Condition of this permit or in the applicable requirement that establishes the limit.

B113 Permit Cancellation and Revocation

A. The Department may revoke this permit if the applicant or permittee has knowingly and willfully misrepresented a material fact in the application for the permit. Revocation will be made in writing, and an administrative appeal may be taken to the Secretary of the Department within thirty (30) days. Appeals will be handled in accordance with the Department's Rules Governing Appeals From Compliance Orders.

B. The Department shall automatically cancel any permit for any source which ceases operation for five (5) years or more, or permanently. Reactivation of any source after the five (5) year period shall require a new permit. (20.2.72 NMAC)

C. The Department may cancel a permit if the construction or modification is not commenced within two (2) years from the date of issuance or if, during the construction or modification, work is suspended for a total of one (1) year. (20.2.72 NMAC)

B114 Notification to Subsequent Owners

A. The permit and conditions apply in the event of any change in control or ownership of the Facility. No permit modification is required in such case. However, in the event of any such change in control or ownership, the permittee shall notify the succeeding owner of the permit and conditions and shall notify the Department's Program Manager, Permits Section of the change in ownership within fifteen (15) days of that change. (20.2.72.212.C NMAC)

B. Any new owner or operator shall notify the Department's Program Manager, Permits Section, within thirty (30) days of assuming ownership, of the new owner's or operator's name and address. (20.2.73.200.E.3 NMAC)

B115 Asbestos Demolition

A. Before any asbestos demolition or renovation work, the permittee shall determine whether 40 CFR 61 Subpart M, National Emissions Standards for Asbestos applies. If required, the permittee shall notify the Department's Program Manager, Compliance and Enforcement Section using forms furnished by the Department.

B116 Short Term Engine Replacement

A. The following Alternative Operating Scenario (AOS) addresses engine breakdown or periodic maintenance and repair, which requires the use of a short term replacement engine. The following requirements do not apply to engines that are exempt per 20.2.72.202.B(3) NMAC. Changes to exempt engines must be reported in accordance with 20.2.72.202.B NMAC. A short term replacement engine may be substituted for any engine allowed by this permit for no more than 120 days in any rolling twelve month period per permitted engine. The compliance demonstrations required as part of this AOS are in addition to any other compliance demonstrations required by this permit.

(1) The permittee may temporarily replace an existing engine that is subject to the emission limits set forth in this permit with another engine regardless of manufacturer, model, and horsepower without modifying this permit. The permittee shall submit written notification to the Department within 15 days of the date of engine substitution according to condition B110.C(1).

(a) The potential emission rates of the replacement engine shall be determined using the replacement engine's manufacturer specifications and shall comply with the existing engine's permitted emission limits.

(b) The direction of the exhaust stack for the replacement engine shall be either vertical or the same direction as for the existing engine. The replacement engine's stack height and flow parameters shall be at least as effective in the dispersion of air pollutants as the modeled stack height and flow parameters for the existing permitted engine. The following equation may be used to show that the replacement engine disperses pollutants as well as the existing engine. The value calculated for the replacement engine on the right side of the equation shall be equal to or greater than the value for the existing engine on the left side of the equation. The permitting page of the Air Quality Bureau website contains a spreadsheet that performs this calculation.

<u>EXISTING ENGINE</u> <u>REPLACMENT ENGINE</u>

$$\frac{[(g) \times (h1)] + [(v1)^2/2] + [(c) \times (T1)]}{q1} <= \frac{[(g) \times (h2)] + [(v2)^2/2] + [(c) \times (T2)]}{q2}$$

Where
g = gravitational constant = 32.2 ft/sec^2
h1 = existing stack height, feet
v1 = exhaust velocity, existing engine, feet per second
c = specific heat of exhaust, 0.28 BTU/lb-degree F
T1 = absolute temperature of exhaust, existing engine = degree F + 460
q1 = permitted allowable emission rate, existing engine, lbs/hour
h2 = replacement stack height, feet
v2 = exhaust velocity, replacement engine, feet per second
T2 = absolute temperature of exhaust, replacement engine = degree F + 460
q2 = manufacturer's potential emission rate, replacement engine, lbs/hour

The permittee shall keep records showing that the replacement engine is at least as effective in the dispersion of air pollutants as the existing engine.

(c) Test measurement of NOx and CO emissions from the temporary replacement engine shall be performed in accordance with Section B111 with the exception of Condition B111A(2) and B111B for EPA Reference Methods Tests or Section B111C for portable analyzer test measurements. Compliance test(s) shall be conducted within fifteen (15) days after the unit begins operation, and records of the results shall be kept according to section B109.B. This test shall be performed even if the engine is removed prior to 15 days on site.

i. These compliance tests are not required for an engine certified under 40CFR60, subparts IIII, or JJJJ, or 40CFR63, subpart ZZZZ if the permittee demonstrates that one of these requirements causes such engine to comply with all emission limits of this permit. The permittee shall submit this demonstration to the Department within 48 hours of placing the new unit into operation. This submittal shall include documentation that the engine is certified, that the engine is within its useful life, as defined and specified in the applicable requirement, and shall include calculations showing that the applicable emissions standards result in compliance with the permit limits.

ii. These compliance tests are not required if a test was conducted by portable analyzer or by EPA Method test (including any required by 40CFR60, subparts IIII and JJJJ and 40CFR63, subpart ZZZZ) within the last 12 months. These previous tests are valid only if conducted at the same or lower elevation as the existing engine location prior to commencing operation as a temporary replacement. A copy of the test results shall be kept according to section B109.B.

(d) Compliance tests for NOx and CO shall be conducted if requested by the Department in writing to determine whether the replacement engine is in compliance with applicable regulations or permit conditions.

(e) Upon determining that emissions data developed according to B116.A.1(c) fail to indicate compliance with either the NOx or CO emission limits, the permittee shall notify the Department within 48 hours. Also within that time, the permittee shall implement one of the following corrective actions:

i. The engine shall be adjusted to reduce NOx and CO emissions and tested per B116.A.1(c) to demonstrate compliance with permit limits.

ii. The engine shall discontinue operation or be replaced with a different unit.

(2) Short term replacement engines, whether of the same manufacturer, model, and horsepower, or of a different manufacturer, model, or horsepower, are subject to all federal and state applicable requirements, regardless of whether they are set forth in this permit (including monitoring and recordkeeping), and shall be subject to any shield afforded by this permit.

(3) The permittee shall maintain a contemporaneous record documenting the unit number, manufacturer, model number, horsepower, emission factors, emission test results, and serial number of any existing engine that is replaced, and the replacement engine. Additionally, the record shall document the replacement duration in days, and the beginning and end dates of the short term engine replacement.

(4) The permittee shall maintain records of a regulatory applicability determination for each replacement engine (including 40CFR60, subparts IIII and JJJJ and 40CFR63, subpart ZZZZ) and shall comply with all associated regulatory requirements.

B. Additional requirements for replacement of engines at sources that are major as defined in regulation 20.2.74 NMAC, Permits – Prevention of Significant Deterioration, section 7.AG. For sources that are major under PSD, the total cumulative operating hours of the replacement engine shall be limited using the following procedure:

(1) Daily, the actual emissions from the replacement engine(s) of each pollutant regulated by this permit for the existing engine shall be calculated and recorded.

(2) The sum of the total actual emissions since the commencement of operation of the replacement engine(s) shall not equal or exceed the significant emission rates in Table 2 of 20.2.74 NMAC, section 502 for the time that the replacement engine is located at the facility.

C. All records required by this section shall be kept according to section B109.

PART C MISCELLANEOUS

C100 Supporting On-Line Documents

A. Copies of the following documents can be downloaded from NMED's web site under Compliance and Enforcement or requested from the Bureau.

(1) Excess Emission Form (for reporting deviations and emergencies)

(2) Universal Stack Test Notification, Protocol and Report Form and Instructions

C101 Definitions

A. **"Daylight"** is defined as the time period between sunrise and sunset, as defined by the Astronomical Applications Department of the U.S. Naval Observatory. (Data for one day or a table of sunrise/sunset for an entire year can be obtained at http://aa.usno.navy.mil/. Alternatively, these times can be obtained from a Farmer's Almanac or from http://www.almanac.com/rise/).

B. **"Decommission"** and **"Decommissioning"** applies to units left on site (not removed) and is defined as the complete disconnecting of equipment, emission sources or activities from the process by disconnecting all connections necessary for operation (i.e. piping, electrical, controls, ductwork, etc.).

C. **"Exempt Sources"** and **"Exempt Activities"** is defined as those sources or activities that are exempted in accordance with 20.2.72.202 NMAC. Note; exemptions are only valid for most 20.2.72 NMAC permitting actions.

D. **"Fugitive Emission"** means those emissions which could not reasonably pass through a stack, chimney, vent, or other functionally equivalent opening.

E. **"Insignificant Activities"** means those activities which have been listed by the department and approved by the administrator as insignificant on the basis of size, emissions or production rate. Note; insignificant activities are only valid for 20.2.70 NMAC permitting actions.

F. **"Malfunction"** for the requirements under 20.2.7 NMAC, means any sudden and unavoidable failure of air pollution control equipment or process equipment beyond the control of the owner or operator, including malfunction during startup or shutdown. A failure that is caused entirely or in part by poor maintenance, careless operation, or any other preventable equipment breakdown shall not be considered a malfunction. (20.2.7.7.E NMAC)

G. **"Natural Gas"** is defined as a naturally occurring fluid mixture of hydrocarbons that contains 20.0 grains or less of total sulfur per 100 standard cubic feet (SCF) and is either composed of at least 70% methane by volume or has a gross calorific value of between 950 and 1100 Btu per standard cubic foot. (40 CFR 60.631)

H. **“Natural Gas Liquids”** means the hydrocarbons, such as ethane, propane, butane, and pentane, that are extracted from field gas. (40 CFR 60.631)

I. **“National Ambient air Quality Standards”** means, unless otherwise modified, the primary (health-related) and secondary (welfare-based) federal ambient air quality standards promulgated by the US EPA pursuant to Section 109 of the Federal Act.

J. **“Night”** is the time period between sunset and sunrise, as defined by the Astronomical Applications Department of the U.S. Naval Observatory. (Data for one day or a table of sunrise/sunset for an entire year can be obtained at http://aa.usno.navy.mil/. Alternatively, these times can be obtained from a Farmer’s Almanac or from http://www.almanac.com/rise/).

K. **“Night Operation** or **Operation at Night”** is operating a source of emissions at night.

L. **“NO2”** or "Nitrogen dioxide" means the chemical compound containing one atom of nitrogen and two atoms of oxygen, for the purposes of ambient determinations. The term **"nitrogen dioxide,"** for the purposes of stack emissions monitoring, shall include nitrogen dioxide (the chemical compound containing one atom of nitrogen and two atoms of oxygen), nitric oxide (the chemical compound containing one atom of nitrogen and one atom of oxygen), and other oxides of nitrogen which may test as nitrogen dioxide and is sometimes referred to as NOx or NO_2. (20.2.2 NMAC)

M. “**NOx**” see NO_2

N. “**Paved Road**” is a road with a permanent solid surface that can be swept essentially free of dust or other material to reduce air re-entrainment of particulate matter. To the extent these surfaces remain solid and contiguous they qualify as paved roads: concrete, asphalt, chip seal, recycled asphalt and other surfaces approved by the Department in writing.

O. **“Potential Emission Rate”** means the emission rate of a source at its maximum capacity to emit a regulated air contaminant under its physical and operational design, provided any physical or operational limitation on the capacity of the source to emit a regulated air contaminant, including air pollution control equipment and restrictions on hours of operation or on the type or amount of material combusted, stored or processed, shall be treated as part of its physical and operational design only if the limitation or the effect it would have on emissions is enforceable by the department pursuant to the Air Quality Control Act or the federal Act.

P. “**Restricted Area**” is an area to which public entry is effectively precluded. Effective barriers include continuous fencing, continuous walls, or other continuous barriers approved by the Department, such as rugged physical terrain with a steep grade that would require special equipment to traverse. If a large property is completely enclosed by fencing, a restricted area within the property may be identified with signage only. Public roads cannot be part of a Restricted Area.

Q. **"Shutdown"** for requirements under 20.2.72 NMAC, means the cessation of operation of any air pollution control equipment, process equipment or process for any purpose, except routine phasing out of batch process units.

R. **"SSM"** for requirements under 20.2.7 NMAC, means routine or predictable startup, shutdown, or scheduled maintenance.

(1) **"Shutdown"** for requirements under 20.2.7 NMAC, means the cessation of operation of any air pollution control equipment or process equipment.

(2) **"Startup"** for requirements under 20.2.7 NMAC, means the setting into operation of any air pollution control equipment or process equipment.

S. **"Startup"** for requirements under 20.2.72 NMAC, means the setting into operation of any air pollution control equipment, process equipment or process for any purpose, except routine phasing in of batch process units.

C102 Acronyms

2SLB .... 2-stroke lean burn
4SLB .... 4-stroke lean burn
4SRB .... 4-stroke rich burn
acfm .... actual cubic feet per minute
AFR .... air fuel ratio
AP-42 .... EPA Air Pollutant Emission Factors
AQB .... Air Quality Bureau
AQCR .... Air Quality Control Region
ASTM .... American Society for Testing and Materials
Btu .... British thermal unit
CAA .... Clean Air Act of 1970 and 1990 Amendments
CEM .... continuous emissions monitoring
cfh .... cubic feet per hour
cfm .... cubic feet per minute
CFR .... Code of Federal Regulation
CI .... compression ignition
CO .... carbon monoxides
COMS .... continuous opacity monitoring system
EIB .... Environmental Improvement Board
EPA .... United States Environmental Protection Agency
gr/100 cf .... grains per one hundred cubic feet
gr/dscf .... grains per dry standard cubic foot
GRI .... Gas Research Institute
HAP .... hazardous air pollutant
hp .... horsepower
H_2S .... hydrogen sulfide
IC .... internal combustion
KW/hr .... kilowatts per hour

lb/hr .... pounds per hour
lb/MMBtu .... pounds per million British thermal unit
MACT .... Maximum Achievable Control Technology
MMcf/hr .... million cubic feet per hour
MMscf .... million standard cubic feet
N/A .... not applicable
NAAQS .... National Ambient Air Quality Standards
NESHAP .... National Emission Standards for Hazardous Air Pollutants
NG .... natural gas
NGL .... natural gas liquids
NMAAQS .... New Mexico Ambient Air Quality Standards
NMAC .... New Mexico Administrative Code
NMED .... New Mexico Environment Department
NMSA .... New Mexico Statues Annotated
NOx .... nitrogen oxides
NSCR .... non-selective catalytic reduction
NSPS .... New Source Performance Standard
NSR .... New Source Review
PEM .... parametric emissions monitoring
PM .... particulate matter (equivalent to TSP, total suspended particulate)
PM_{10} .... particulate matter 10 microns and less in diameter
$PM_{2.5}$ .... particulate matter 2.5 microns and less in diameter
pph .... pounds per hour
ppmv .... parts per million by volume
PSD .... Prevention of Significant Deterioration
RATA .... Relative Accuracy Test Assessment
RICE .... reciprocating internal combustion engine
rpm .... revolutions per minute
scfm .... standard cubic feet per minute
SI .... spark ignition
SO_2 .... sulfur dioxide
SSM .... Startup Shutdown Maintenance (see SSM definition)
TAP .... Toxic Air Pollutant
TBD .... to be determined
THC .... total hydrocarbons
TSP .... Total Suspended Particulates
tpy .... tons per year
ULSD .... ultra low sulfur diesel
USEPA .... United States Environmental Protection Agency
UTM .... Universal Transverse Mercator Coordinate system
UTMH .... Universal Transverse Mercator Horizontal
UTMV .... Universal Transverse Mercator Vertical
VHAP .... volatile hazardous air pollutant
VOC .... volatile organic compounds

Statement of Basis - Narrative

NSR Permit

Type of Permit Action: Regular-Significant Revision

Facility: 3 Bear Libby Gas Plant
Company: 3 Bear Delaware Operating – NM, LLC.
Permit No(s).: 7482-M1
Tempo/IDEA ID No.: 38067 - PRN20190001
Permit Writer: Julia Kuhn

Fee Tracking

Tracking	**NSR tracking entries completed:** [X] Yes [] No NA
	NSR tracking page attached to front cover of permit folder: [X] Yes [] No NA
	Paid Invoice Attached: [X] Yes [] No
	Balance Due Invoice Attached: [] Yes [X] No
	Invoice Comments: Invoice paid in full on 10/18/2019

Permit Review	**Date to Enforcement:** 2/11/2020	**Date of Enforcement Reply:** 3/3/2020
	Date to Applicant: 2/11/2020	**Date of Applicant Reply:** 3/3/2020
	Date to EPA: NA	**Date of EPA Reply:** NA
	Date to Supervisor: 1/15/2020, 3/25/2020	

1.0 **Plant Process Description:**

The 3 Bear Libby Gas Plant will be equipped to gather natural gas from three surrounding compressor stations: 3 Bear Aztec Compressor Station, 3Bear Outland Compressor Station, and 3Bear Lariat Compressor Station, which are owned and operated by 3Bear. The gas from the compressor stations is sent to the gas processing plant for treatment.

Libby will separate natural gas liquids (NGLs) from the field gas, producing natural gas liquids and residue gas for transmission to a pipeline owned by others. The process utilizes a cryogenic gas separation plant and associated compressors for collecting field gas from the gathering system nearby. Gas and NGLs will be piped to the respective nearby interconnect metering stations, by others. The plant is to be located within 5 miles of the residue gas and NGL pipelines.

Compressor engines on site (ENG 1-4) will compress inlet gas and send the gas to the processing plant where an amine unit (AMINE-1) on site will treat and sweeten the gas. The amine unit is controlled by a thermal oxidizer (TO-1), and in the event that the thermal oxidizer is down, the gas will be sent to a flare (FL-1). The NGLs produced will be stored in pressurized vessels. Liquids from process drains will be sent to a gunbarrel tank (TK-1) for hydrocarbon separation. Oil from the gunbarrel separation will be stored in one 400-bbl slop oil tank (TK-6) and produced water will be stored in produced water tank (PWTK-1). Condensate tanks will store stabilized condensate (TK 2-5). A tank flare (FL-2) controls all tanks on site, and condensate and oil will be trucked off site (CONDLOAD-1 and OILLOAD-1). An emergency and maintenance flare (FL-1) will control compressor blowdowns (COMP), plant blowdowns (PLANT BD), and emergency upset conditions. Fugitive emissions occur from process piping and other components (FUG 1-2). Road dust emissions occur from daily routine traffic to the production facility (HR-1). Additional equipment on site will include: residue compressor engines (Either ENG 5-8 or ENG 9-12), two generator engines (GEN 1-2 operating less than 500 hours), one 50 MMBtu/hr hot oil heater (HTR-1), and one 11 MMBtu/hr regen gas heater (HTR-2).

2.0 **Description of this Modification:**

The application and accompanying material revise the New Source Review (NSR) Construction Permit No. 7482 for the 3Bear Libby Gas Plant (Libby), owned and operated by 3 Bear Delaware Operating – NM, LLC (3Bear). NSR Permit No. 7482 was issued on January 8, 2018.

Changes since the last permit issuance include: addition of residue compressor engine options, addition of generator engine, changes to the numbering of the tank units, removal of methanol tank, addition of loadout, update to increased fugitive emissions, as well as increased flaring volumes.

The facility will consist of one of the inlet compressor engines options listed in Table 1.

Table 1: Compressor Engine Options

Option No.	Unit Name	Make & Model
1	ENG-1	Caterpillar G3508
2	ENG 2	Caterpillar G3516

Note: The worst-case emissions are included in the total facility emissions.

The facility will consist of one of the residue compressor engine options listed in Table 2.

Table 2: Compressor Engine Options

Option No.	Unit Name	Make & Model
1	ENG 5-8	Caterpillar G3516
2	ENG 9-12	Waukesha 7044GSI

Note: The worst-case emissions are included in the total facility emissions.

In addition to the compressor engine options, the facility will consist of the following emission units: two additional inlet compressor engines, one gunbarrel tank, four condensate tanks, one slop oil tank, one produced water tank, one hot oil heater, one regen gas heater, one amine unit, one condensate loadout, one oil loadout, one thermal oxidizer, one upset/maintenance flare, one tank flare, process piping fugitives, and haul road fugitives. The facility will also have two generators (GEN 1-2) on site that are exempt under 20.2.72.202.B.3.

SSM Overview:

SSM emissions are expected at the facility and are included in the total facility wide emissions. The compressor blowdowns and plant blowdowns will be controlled by the maintenance flare. Additional maintenance flaring has been included in the application to account for other maintenance activities. Maintenance activities that cannot be controlled, such as painting and tank degassing, have been included in the application as well. An estimated 10 tpy has been used for these uncontrolled maintenance activities. In the event that the thermal oxidizer is down, the maintenance flare (FL-1) is used as a backup control device for the amine unit.

3.0 **Source Determination:**

1. The emission sources evaluated include the entire 3 Bear Libby Gas Plant.

2. Single Source Analysis:

A. SIC Code: Do the facilities belong to the same industrial grouping (i.e., same two-digit SIC code grouping, or support activity)? Yes

B. Common Ownership or Control: Are the facilities under common ownership or control? Yes

C. Contiguous or Adjacent: Are the facilities located on one or more contiguous or adjacent properties? Yes

3. Is the source, as described in the application, the entire source for 20.2.70, 20.2.72, 20.2.73, or 20.2.74 NMAC applicability purposes? Yes

4.0 **PSD Applicability:**

A. The source, as determined in 3.0 above, is a minor source before and after this modification. Note: CO and SO2 emissions are close to PSD level. Calculations were thoroughly reviewed. Amine unit and thermal oxidizer included a 25% safety factor.

5.0 **History (In descending chronological order, showing NSR and TV):** *The asterisk denotes the current active NSR and Title V permits that have not been superseded.

Permit Number	Issue Date	Action Type	Description of Action (Changes)
7482M1*	TBD	NSR - Significant Revision	Addition of residue compressor engine options (Waukesha), addition of generator engine (exempt under 20.2.72.202.B.3), changes to the numbering of the tank units, removal of methanol tank, addition of loadout, update to increased fugitive emissions, as well as increased flaring volumes.
P285	10/31/2019	Title V - New	Initial operating permit application Ruled Incomplete due to concurrent review of NSR permit.
7482	1/8/2018	NSR - New	Permitting for new 60MMscfd natural gas plant.

6.0 **Public Response/Concerns:** Comments were received from WildEarth Guardians, via e-mail, on January 17, 2020. A copy of the comments can be found in the Administrative Record (file folder), as well as Tempo. The Draft Permit, Statement of Basis, and Database Summary were published on the AQB web-site "Permitting Actions with Public Interest" January 21, 2020. The first AQB citizen letter was sent to WildEarth Guardians on January 30, 2010. The second AQB citizen letter, including notification of Department analysis availability on the web-site, was sent March 5, 2020. A second letter from WildEarth Guardians was received on March 27, 2020. The AQB final citizen letter was sent to WildEarth Guardians on April 8, 2020.

7.0 **Compliance Testing:**

Unit No.	Test Description	Test Date
ENG-5 (Previously ENG-1b)	Tested in accordance with EPA test methods as required by NSR permit 7482.	4/16/2019
ENG-6 (Previously ENG-2)	Tested in accordance with EPA test methods as required by NSR permit 7482.	4/18/2019

8.0 **Startup and Shutdown:**

A. If applicable, did the applicant indicate that a startup, shutdown, and emergency operational plan was developed in accordance with 20.2.70.300.D(5)(g) NMAC? No.
B. If applicable, did the applicant indicate that a malfunction, startup, or shutdown operational plan was developed in accordance with 20.2.72.203.A.5 NMAC? Yes.
C. Did the applicant indicate that a startup, shutdown, and scheduled maintenance plan was developed and implemented in accordance with 20.2.7.14.A and B NMAC? Yes.
D. Does the facility have emissions due to routine or predictable startup, shutdown,

and maintenance? If so, have all emissions from startup, shutdown, and scheduled maintenance operations been permitted? Yes.

9.0 **Compliance and Enforcement Status:** There are no known outstanding compliance or enforcement cases or actions in process or pending.

10.0 **Modeling:** Modeling review provided by AQB Modeler Angela Raso on February 7, 2020 states the following: "*This modeling analysis demonstrates that operation of the facility described in this report neither causes nor contributes to any exceedances of applicable air quality standards. The standards relevant at this facility are NM/NAAQS for CO, NO_2, PM10, PM2.5, and SO_2; and Class II PSD increments for NO_2, PM2.5, PM10, and SO_2.*"

Note: Modeling assumptions include engine options as stated in permit conditions.

11.0 **State Regulatory Analysis(NMAC/AQCR):**

STATE REGU-LATIONS CITATION **20 NMAC**	**Title**	**Applies (Y/N)**	**Unit(s) or Facility**	**JUSTIFICATION:**
2.1	GENERAL PROVISIONS	Yes	Entire Facility	The facility is subject to Title 20 Environmental Protection Chapter 2 Air Quality of the New Mexico Administrative Code so is subject to Part 1 General Provisions, Update to Section 116 of regulation for Significant figures & rounding. Applicable with no permitting requirements.
2.3	Ambient Air Quality Standards	Yes	Entire Facility	**NSR:** 20.2.3 NMAC is a SIP approved regulation that limits the maximum allowable concentration of Total Suspended Particulates, Sulfur Compounds, Carbon Monoxide and Nitrogen Dioxide.
2.7	Excess Emissions	Yes	Entire Facility	Applies to all facilities' sources
2.33	Gas Burning Equipment - Nitrogen Dioxide	No		This facility DOES NOT have new gas burning equipment (external combustion emission sources, such as gas and oil-fired boilers and heaters) having a heat input of greater than 1,000,000 million British Thermal Units per year per unit. This facility DOES NOT have existing gas burning equipment having a heat input of greater than 1,000,000 million British Thermal Units per year per unit Note: **"New gas burning equipment"** means gas burning equipment, the construction or modification of which is commenced after February 17, 1972.

STATE REGU-LATIONS CITATION 20 NMAC	Title	Applies (Y/N)	Unit(s) or Facility	JUSTIFICATION:
2.34	Oil Burning Equipment - Nitrogen Dioxide	No		This facility DOES NOT have oil burning equipment (external combustion emission sources, such as gas and oil-fired boilers and heaters) having a heat input of greater than 1,000,000 million British Thermal Units per year per unit.
2.35	Natural Gas Processing Plant – Sulfur	No		This facility is a natural gas processing plant but DOES NOT have a Sulfur Recovery Unit to reduce sulfur emissions.
2.38	Hydrocarbon Storage Facilities	Yes	TK 2-6	20.2.38 NMAC This regulation applies to oil and condensate storage tanks at the facility. The tanks will be manifold to a flare to meet the requirements of this regulation.
2.39	Sulfur Recovery Plant - Sulfur	No		This facility is NOT a sulfur recovery plant.
2.61	Smoke and Visible Emissions	Yes	ENG 1-12, HTR 1-2, TO-1, FL 1-2 GEN-1, 2	This regulation that limits opacity to 20% applies to Stationary Combustion Equipment, such as engines, boilers, heaters, and flares. Generators are back up units exempt under 20.2.72.202.B.3.
2.70	Operating Permits	Yes	Entire Facility	This facility is a Title V Major Source as defined at 20.2.70.7 NMAC.
2.71	Operating Permit Fees	Yes	Entire Facility	Source is subject to 20.2.70 NMAC as cited at 20.2.71.109 NMAC.
2.72	Construction Permits	Yes	Entire Facility	NSR Permits are the applicable requirement, including 20.2.72 NMAC.
2.73	NOI & Emissions Inventory Requirements	Yes	Entire Facility	Emissions Inventory Reporting: 20.2.73.300 NMAC applies. This facility will be issued a permit under 20.2.72 NMAC, therefore it will meet the applicability requirements of 20.2.73.300 NMAC.
2.74	Permits-Prevention of Significant Deterioration	No		This facility is NOT a PSD major source.
2.75	Construction Permit Fees	Yes	Entire Facility	This facility is subject to 20.2.72 NMAC .

STATE REGU-LATIONS CITATION 20 NMAC	Title	Applies (Y/N)	Unit(s) or Facility	JUSTIFICATION:
2.77	New Source Performance	Yes	ENG 1-12, HTR 1-2, FUG-1, COMP, AMINE-1 GEN-1, 2	Applies to any stationary source constructing or modifying and which is subject to the requirements of 40 CFR Part 60. HTR 1-2 are subject to NSPS Dc ENG 1-12 (potentially) and GEN-1 are subject to NSPS Subpart JJJJ. GEN-2 is subject to NSPS Subpart IIII FUG-1, COMP, AMINE-1 are subject to NSPS Subpart OOOOa. Generators are back up units exempt under 20.2.72.202.B.3.
2.78	Emissions Standards for HAPs	No		This facility DOES NOT emit hazardous air pollutants, which are subject to the requirements of 40 CFR Part 61. PTE for total HAPs is 15.7 tpy.
2.79	Permits Nonattainment Areas	No		This facility is not located in, not does it affect, a nonattainment area.
2.80	Stack Heights	Yes	ENG 1-12 HTR 1-2, TO-1, FL-1, FL-2	3 Bear considered GEP requirements in the analysis. Stack heights do not exceed GEP (40 CFR 51).
2.82	MACT Standards for Source Categories of HAPs	Yes	ENG 1-12 GEN 1-2	This regulation applies to all sources emitting hazardous air pollutants, which are subject to the requirements of 40 CFR Part 63. Generators are back up units exempt under 20.2.72.202.B.3.

12.0 Federal Regulatory Analysis:

Federal Regulation	Title	Applies (Y/N)	Unit(s) or Facility	Comments
Air Programs Subchapter C (40 CFR 50)	National Primary and Secondary Ambient Air Quality Standards	Yes	Entire Facility	Independent of permit applicability; applies to all sources of emissions for which there is a Federal Ambient Air Quality Standard.
NSPS Subpart A (40 CFR 60)	General Provisions	Yes	ENG 1-12, HTR 1-2, FUG-1, COMP, AMINE-1 GEN 1-2	Applies if any other subpart applies. HTR 1-2 are subject to NSPS Dc ENG 1-12 (potentially) are subject to NSPS Subpart JJJJ. FUG-1, COMP, AMINE-1 are subject to NSPS Subpart OOOOa. Generators are back up units exempt under 20.2.72.202.B.3.
40 CFR 60.40c, Subpart Dc	Standards of Performance for Small Industrial-Commercial-Institutional	Yes	HTR 1-2	Facility has steam generating units for which construction, modification or reconstruction is commenced after June 9, 1989 and that have a

Federal Regulation	Title	Applies (Y/N)	Unit(s) or Facility	Comments
	Steam Generating Units			maximum design heat input capacity of 29 MW) (100 million British thermal units per hour (MMBtu/h) or less, but greater than or equal to 2.9 MW. This regulation applies to the specified heaters
40 CFR 60, Subpart Ka	Standards of Performance for Storage Vessels for Petroleum Liquids for Which Construction, Reconstruction, or Modification Commenced After May 18, 1978, and **Prior** to July 23, 1984	No		This facility does not have storage capacity greater than 151,416 liters (40,000 gallons) that are used to store petroleum liquids for which construction is commenced after May 18, 1978, therefore the regulation is not applicable to this facility.
40 CFR 60, Subpart Kb	Standards of Performance for Storage Vessels for Volatile Organic Liquid Storage Vessels for Which Construction, Reconstruction, or Modification Commenced **After** July 23, 1984	No		The facility does not have storage vessels with storage capacity greater than $75m^3$ that are used to store volatile organic liquids and for which construction, reconstruction, or modification commenced after 7/23/84, therefore the facility is not applicable to this regulation.
40 CFR 60.330 Subpart GG	Stationary Gas Turbines	No		There are no stationary gas turbines exceeding the 10 MMBtu/hour threshold at this facility.
40 CFR 60, Subpart KKK	Standards of Performance for Equipment Leaks of VOC from Onshore Natural Gas Processing Plants	No		This facility is an onshore gas plant that will commence construction, reconstruction, or modification after August 23, 2011, therefore the facility is not subject to the requirements of this subpart.
40 CFR Part 60 Subpart LLL	Standards of Performance for Onshore Natural Gas Processing: SO2 Emissions	No		This facility is an onshore natural gas processing plant that will commence construction, reconstruction, or modification after August 23, 2011, therefore the facility is not subject to the requirements of this subpart.
40 CFR Part 60 Subpart IIII (Quad-I)	Standards of Performance for Stationary Compression Ignition Internal Combustion Engines	Yes	GEN-2	GEN-2 is a stationary CI that commenced construction after July 11, 2005 where the stationary CI ICE was manufactured after April 1, 2006. GEN-2 unit is exempt under 20.2.72.202.B.3.
40 CFR Part 60 Subpart JJJJ (Quad -J)	Standards of Performance for Stationary Spark. Ignition Internal Combustion Engines	Yes	ENG 1-12, GEN-1	ENG-1 (potentially) is subject to NSPS Subpart JJJJ because the engine has a manufacture date after July 1, 2007 and has a maximum engine power greater than or equal to 500 hp and less than 1,350 hp.

Federal Regulation	Title	Applies (Y/N)	Unit(s) or Facility	Comments
				ENG 2-12 (potentially) are subject to NSPS Subpart JJJJ because the engines have a manufacture date after July 1, 2007 and have a maximum engine power greater than 500 hp. GEN-1 is subject to NSPS Subpart JJJJ because the engine has a manufacture date after July 1, 2008 and has a maximum engine power less than 500 hp. GEN-1 unit is exempt under 20.2.72.202.B.3.
40 CFR Part 60 Subpart KKKK	Standards of Performance for Stationary Combustion Turbines	No		There are no stationary gas turbines exceeding 10 MMBtu/hour at this facility.
NSPS 40 CFR Part 60 Subpart OOOO (Quad -O)	Standards of Performance for Crude Oil and Natural Gas Production, Transmission and Distribution for which construction, modification or reconstruction commenced after August 23, 2011 and before September 18, 2015	No		The facility is NOT subject to the provisions of NSPS Subpart OOOO because the facility will be constructed after September 18, 2015.
NSPS 40 CFR Part 60 Subpart OOOOa	Standards of Performance for Crude Oil and Natural Gas Facilities for which Construction, Modification or Reconstruction Commenced After September 18, 2015	Yes	FUG-1, COMP, AMINE-1	The facility IS subject to the provisions of NSPS Subpart OOOOa listed below because: - The compressors (COMP) are not co-located with a wellhead, so the reciprocating compressor requirements are applicable. - AMINE-1 is a sweetening unit located at onshore natural gas processing plants that process natural gas produced from onshore wells. - This is an onshore natural gas processing plant therefore the equipment-leak standards apply to the affected facilities (FUG 1). The facility is NOT subject to the provisions of NSPS Subpart OOOOa listed below because: - There are no gas-fired, continuous high bleed pneumatic controllers at this site, so the pneumatic controller requirements are not applicable. - TK-1 is a process vessel not a storage vessel, therefore the storage vessel affected facility requirements are not applicable.

Federal Regulation	Title	Applies (Y/N)	Unit(s) or Facility	Comments
				- TK 2-6 and PWTK-1 are storage vessels that emit less than 6 tpy VOC, therefore the storage vessel affected facility requirements are not applicable. - OOOOa is not applicable to FUG-2 based on the residue side of the operation which does not have VOC wt% greater than 10%, 60.5400a(f)
NESHAP Subpart A (40 CFR 61)	General Provisions	No		This facility does not emit HAP's in quantities that trigger these requirements.
MACT Subpart A (40 CFR 63)	General Provisions	Yes	ENG 1-12 GEN 1-2	Applies if any other subpart applies. This regulation applies to all sources emitting hazardous air pollutants, which are subject to the requirements of 40 CFR Part 63. The MACT Subpart ZZZZ applies as discussed below.
40 CFR 63.760 Subpart HH	Oil and Natural Gas Production Facilities –	No		AREA SOURCE (Minor for HAPs): There are no affected sources (TEG glycol dehydrators, 63.760(b)(2)) at this facility.
40 CFR 63 Subpart HHH	National Emission Standards for Hazardous Air Pollutants from Natural Gas Transmission and Storage Facilities	No		This facility is not a natural gas transmission and storage facility or a major source of HAPs.
40 CFR 63 Subpart ZZZZ (Quad Z)	National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines (RICE MACT)	Yes	ENG 1-12 GEN 1-2	40 CFR 63, Subpart ZZZZ establishes national emission limitations and operating limitations for hazardous air pollutants (HAP) emitted from existing, new, modified and reconstructed stationary reciprocating internal combustion engines (RICE) located at major and area sources of HAP emissions. The regulation contains provisions for initial and continuous compliance demonstration. The facility is an area source of HAP, as defined under the regulation. ENG 1-12 (potentially) and GEN-1: Under §63.6590(a)(2)(iii) and (a)(3)(iii), a RICE located at an area source of HAP is a *new* or *reconstructed* unit if it is constructed or reconstructed on or after June 12, 2006. Under §63.6590(c)(1), a *new* or *reconstructed* SI RICE at an area source of HAP must meet the requirements of the part by meeting the requirements of 40 CFR 60, Subpart JJJJ (NSPS for Stationary Spark Ignition Internal Combustion Engines).

Federal Regulation	Title	Applies (Y/N)	Unit(s) or Facility	Comments
				GEN-2 Under §63.6590(a)(2)(iii) and (a)(3)(iii), a RICE located at an area source of HAP is a *new* or *reconstructed* unit if it is constructed or reconstructed on or after June 12, 2006. Under §63.6590(c)(1), a *new* or *reconstructed* SI RICE at an area source of HAP must meet the requirements of the part by meeting the requirements of 40 CFR 60, Subpart IIII (NSPS for Stationary Compression Ignition Engines). Generators are back up units exempt under 20.2.72.202.B.3.
40 CFR 64	Compliance Assurance Monitoring	No		The amine sweetening unit has pre-control VOC and H2S emissions greater than 100 TPY and uses a control device to achieve compliance with an emission limitation or standard. The amine sweetening unit is an affected facility under NSPS OOOOa, therefore, it is exempt under §64.2(b)(1)(i) for control of H2S. The facility is not subject to 40 CFR 64.
40 CFR 68	Chemical Accident Prevention	Yes	Entire Facility	An owner or operator of a stationary source that has more than a threshold quantity of a regulated substance in a process, as determined under §68.115 Threshold determination and 68.130 List of substances. This facility will handle naturally occurring hydrocarbon mixtures at a natural gas processing plant and the Accidental Release Prevention Provisions may be applicable to this facility. The facility may be required to submit the appropriate accidental release emergency response program plan prior to operation of the facility with more than the threshold quantity of a regulated substance.
40 CFR 70	Title V- State Operating Permit Programs	No		Operating Permit Program – is not applicable – New Mexico State has full delegated authority and Title V is administered under 20.2.70 NMAC.
Title VI – 40 CFR 82	Protection of Stratospheric Ozone	No		Not Applicable –facility will not “service”, “maintain” or “repair” class I or class II appliances nor “disposes” of the appliances.

13.0 **Exempt and/or Insignificant Equipment that do not require monitoring**:

NSR Exempt Equipment

Source Description	JUSTIFICATION
Miscellaneous Insignificant Tanks	Activity has a potential emission rate of no more than one-half (1/2) ton per year of any pollutant set by national or New Mexico ambient air quality standards, 20.2.72.202.B.5
Olympian-Generator Engine (GEN-1)	Stand by generator operated less than 500 hour per year and accompanied by sufficient record keeping, to verify that it is operated less than 500 hours per year, 20.2.72.202.B.3
Generac-Generator Engine (GEN-2)	Standby generator operated less than 500 hour per year and accompanied by sufficient record keeping, to verify that it is operated less than 500 hours per year, 20.2.72.202.B.3

14.0 **New/Modified/Unique Conditions** (Format: Condition#: Explanation):

A. Date of Engine Monitoring Protocols used: December 11, 2019.
B. Date of Flare Monitoring Protocols used: July 12, 2017.
C. Date of VOC/HAPS LDAR Fugitive Monitoring Protocols used: September 15, 2017.
D. Date of Gas-Fired Heaters, Furnaces and Boilers Monitoring Protocols used: August 18, 2017.
E. Date of Tanks & Loading Monitoring Protocols used: September 19, 2017.

15.0 **For Title V action: Cross Reference Table between NSR Permit 7482-M1 and TV Permit P285 . NSR permit conditions cross referenced to the TV permit are federally enforceable conditions, and therefore brought forward into the TV permit:**

Not Required, P285 has not been issued.

16.0 **Permit specialist's notes to other NSR or Title V permitting staff concerning changes and updates to permit conditions.**

A. Section A201 of NSR permit 7482-M1 was updated to reflect current Engine Monitoring Protocols. The following conditions were added to this section: Non-Selective Catalytic Reduction Operation (C), Notification of Engine Option Installation (E), 40 CFR 60, Subpart JJJJ (F), 40 CFR 60, Subpart ZZZZ (G), and 40 CFR 60, Subpart IIII (H).
B. GEN-1 and GEN-2 are exempted equipment under 20.2.72.202.B.3. Although exempt equipment it is not regulated under the NSR permit, GEN-1 and GEN-2 will be subject to TV regulations. Per consultant approval, the generators were added to Tables A.103 and A.104, and Section A.201 of the NSR permit.
C. Revised section A202 to reflect correction of tank configuration and process. The new application resulted in changes to the numbering of the tank units deferring from previous permit.

Data Base Summary (Statement of Basis)
NSR Permit

Type of Permit Action: Regular-Significant Revision

PSD or Not	Minor or Title V	Portable or Not
Minor (not PSD)	**Major-Title V**	**Stationary**

Facility:	3 Bear Libby Gas Plant
Company:	3 Bear Delaware Operating - NM LLC
Facility Type:	O&G-Gas Plant
Permit No. (NSR)	7482-M1
Operating Permit No. (TV)	NA
IDEA ID No.	38067 - PRN20190001
AIRS ID No.	350251281
SIC CODE:	1321: Natural gas liquids
Permit Writer:	Julia Kuhn
Application Notarized Date:	September 6, 2019
Receive Date:	September 13, 2019
Timeliness of TV Application:	NA
Ruled Incomplete:	NA
Ruled Complete:	October 11, 2019
APP. sent to Field Office:	March 12, 2020 (updated version No3)
PSD APP. Sent to EPA:	NA
Public Notice Date & Newspaper:	Initial - October 20, 2019, Hobbs News-Sun 2ND Public Notice (due to application revisions) December 22, 2019, Hobbs News-Sun 3RD Public Notice (due to issuance date extension) January 29, 2020, Hobbs News-Sun
Comments Due:	November 19, 2019 January 21, 2020 February 28, 2020
Analysis Review Begins:	NA
Analysis Review Ends:	NA
Public Hearing:	NA
Proposed Permit to EPA Acknowledged:	NA
Permit Due:	Initial - January 9, 2020. Extension - April 8, 2020
Permit Issued:	April 8, 2020
PSD Permit to EPA:	NA
Facility Location:	This facility is located approximately 16.2 miles SW of Monument, in Lea County, NM.
UTM ZONE:	13; Datum: WGS84
UTM Easting:	638430 meters

UTM Northing:	3601510 meters
Elevation:	3713 ft feet
County:	Lea
In a Sensitive Area:	No

Contact Name: Stephanie Swanson
Phone: 303-862-3967
Fax: NA
Email: stephanie@3bearllc.com

Contact Address: 1512 Larimer St., Suite 540
Denver, CO 80202

Consultant Name: Lori Marquez/Trent Wade
Barr Engineering Co.
Phone: 303-503-4735
Fax: NA
Email: LMarquez@barr.com; TWade@barr.com

Consultant Address: 1600 Broadway
Suite 1600
Denver, CO 80202

NSR AGENCY* NOTIFICATION:

Agency	Distance	Units	Date Email Sent
State - Texas	43	km	10/11/19, 12/18/19 and 2/3/20

*As required by 20.2.72.206.A.(7): Mail a copy of the public notice at the same time it is sent for publication to the appropriate agency in the following locations if the source will locate within 50 kilometers (31.1 miles) of the boundary of other states, Bernalillo County, or a Class I Area.

PART II - FACILITY SPECIFICATIONS

Table 102.A: Total Pollutant Emissions from Entire Facility:

Pollutant	**Emissions** (tons per year)	Emission Type	Change in Emission since Permit 7482
Nitrogen Dioxide	145.8	Allowable	+21.8
Carbon Monoxide	241.7	Allowable	+113.8
Volatile Organic Compounds (VOC)	182.8	Allowable	+71.5
Sulfur Dioxide	238.4	Allowable	-0.4
Particulate Matter (total suspended)	9.1	Allowable	+1.2
Particulate Matter (10 microns or less)	8.9	Allowable	+2.3
Particulate Matter (2.5 microns or less)	8.9	Allowable	+2.7

Table 102.A: Total Pollutant Emissions from Entire Facility:

Pollutant	Emissions (tons per year)	Emission Type	Change in Emission since Permit 7482
Greenhouse Gas (GHG) as CO_2e	254,861	Potential	+83,805

Note: Total Potential Pollutant Emissions in Table 102.A,may include fugitive emissions; routine or predictable, startup, shutdown, and maintenance emissions (SSM); and permitted malfunction allowances if these are a sources of regulated air pollutants from this facility.

Table 102.B: Total Potential Hazardous Air Pollutants (HAPs)* and State Toxic Air Pollutants (TAPs)

Pollutant	Emissions (tons per year)	Emission Type	Change in Emission since Permit 7482
Acetaldehyde; (Ethyl aldehyde)	2.9	Potential	-0.2
Acrolein	1.8	Potential	-0.1
Formaldehyde	8.5	Potential	-0.7
Hexane	1.8	Potential	-0.1
Total HAP	15.7	Potential	-1.4

* HAP emissions are included in the Table 102.A VOC emissions total.
** Total HAP emissions may not agree with the sum of individual HAPs because only individual HAPs emitted at a rate greater than 1.0 ton per year are listed in Table 102.B.

AIR POLLUTION CONTROL DEVICES:

Subject Item ID, Type, ID, (Unit #)	SI Description	Primary	Secondary	Control Equipment Mfg & model (or equivalent)
ENG-1	Caterpillar G3508 4 SLB RICE/Compressor Option 1	Catalytic Oxidation	Air Fuel Ratio Controller	Not reported
ENG-2	Caterpillar G3516 4 SLB RICE/Compressor Option 2	Catalytic Oxidation	Air Fuel Ratio Controller	Not reported
ENG-3	Caterpillar G3516 4 SLB RICE/Compressors	Catalytic Oxidation	Air Fuel Ratio Controller	Not reported
ENG-4	Caterpillar G3516 4 SLB RICE/Compressors	Catalytic Oxidation	Air Fuel Ratio Controller	Not reported
ENG-5	Caterpillar G3516 4 SLB RICE/Compressors	Catalytic Oxidation	Air Fuel Ratio Controller	Not reported
ENG-6	Caterpillar G3516 4 SLB RICE/Compressors	Catalytic Oxidation	Air Fuel Ratio Controller	Not reported
ENG-7	Caterpillar G3516 4 SLB RICE/Compressors	Catalytic Oxidation	Air Fuel Ratio Controller	Not reported
ENG-8	Caterpillar G3516 4 SLB RICE/Compressors	Catalytic Oxidation	Air Fuel Ratio Controller	Not reported
ENG-9	Waukesha 7044 4 SLB RICE/Compressors	NSCR (Non-Selective Catalytic Reduction)	NA	Not reported
ENG-10	Waukesha 7044 4 SLB RICE/Compressors	NSCR (Non-Selective Catalytic Reduction)	NA	Not reported
ENG-11	Waukesha 7044 4 SLB RICE/Compressors	NSCR (Non-Selective Catalytic Reduction)	NA	Not reported
ENG-12	Waukesha 7044 4 SLB RICE/Compressors	NSCR (Non-Selective Catalytic Reduction)	NA	Not reported
TK-1	Gunbarrel Tank 500 bbl	Flare	NA	Not reported

Subject Item ID, Type, ID, (Unit #)	SI Description	Primary	Secondary	Control Equipment Mfg & model (or equivalent)
TK-2	Stabilized Condensate Tank 400 bbl	Flare	NA	Not reported
TK-3	Stabilized Condensate Tank 400 bbl	Flare	NA	Not reported
TK-4	Stabilized Condensate Tank 400 bbl	Flare	NA	Not reported
TK-5	Stabilized Condensate Tank 400 bbl	Flare	NA	Not reported
TK-6	Slop Oil Tank 400 bbl	Flare	NA	Not reported
CONDLOAD -1	Truck Loading (Condensate Loadout)	Flare	NA	Not reported
OILLOAD-1	Truck Loading (Oil Loadout)	Flare	NA	Not reported
AMINE-1	Amine Unit	Thermal Oxidizer (Incinerator)	Flare (during thermal oxidizer downtime)	Not reported
COMP	Compressor Blowdown	Flare	NA	Not reported

EQUIPMENT SPECIFICATIONS (Active/Alternative):

Unit No.	Unit Type	Make	Model No.	Serial No.	Yr of Construction	Yr of Manufacture	Operating Rate Max/Site	Operating Capacity Max/Site	Subject Item Status	Subject Item Description
[1]ENG-1	Engine Option #1									
[1]ENG-1	Caterpillar G3508 4 SLB RICE/Compressor Option 1	Caterpillar	G3508	TBD	12-JUN-06	01-JUL-10	690 hp / 690 hp	690 hp / 690 hp	Active	Caterpillar G3508 4 SLB RICE/Compressor Option 1

[1]ENG-2	Engine Option #2									
[1]ENG-2	Caterpillar G3516 4 SLB RICE/Compressor Option 2	Caterpillar	G3516	TBD	12-JUN-06	01-JUL-10	1380 hp / 1380 hp	1380 hp / 1380 hp	Active	Caterpillar G3516 4 SLB RICE/Compressor Option 2
ENG-3	Caterpillar G3516 4 SLB RICE/Compressors	Caterpillar	G3516	TBD	12-JUN-06	01-JUL-10	1380 hp / 1380 hp	1380 hp / 1380 hp	Active	Caterpillar G3516 4 SLB RICE/Compressors
ENG-4	Caterpillar G3516 4 SLB RICE/Compressors	Caterpillar	G3516	TBD	12-JUN-06	01-JUL-10	1380 hp / 1380 hp	1380 hp / 1380 hp	Active	Caterpillar G3516 4 SLB RICE/Compressors
[1]ENG 5-8	Engine Option #1									
[1]ENG-5	Caterpillar G3516 4 SLB RICE/Compressors	Caterpillar	G3516	TBD	12-JUN-06	01-JUL-10	1380 hp / 1380 hp	1380 hp / 1380 hp	Active	Caterpillar G3516 4 SLB RICE/Compressors
[1]ENG-6	Caterpillar G3516 4 SLB RICE/Compressors	Caterpillar	G3516	TBD	12-JUN-06	01-JUL-10	1380 hp / 1380 hp	1380 hp / 1380 hp	Active	Caterpillar G3516 4 SLB RICE/Compressors

[1]ENG-7	Caterpillar G3516 4 SLB RICE/Compressors	Caterpillar	G3516	TBD	12-JUN-06	01-JUL-10	1380 hp / 1380 hp	1380 hp / 1380 hp	Active	Caterpillar G3516 4 SLB RICE/Compressors
[1]ENG-8	Caterpillar G3516 4 SLB RICE/Compressors	Caterpillar	G3516	TBD	12-JUN-06	01-JUL-10	1380 hp / 1380 hp	1380 hp / 1380 hp	Active	Caterpillar G3516 4 SLB RICE/Compressors
[1]ENG 9-12	Engine Option #2									
[1]ENG-9	Waukesha 7044 4 SLB RICE/Compressors	Waukesha	7044	TBD	12-JUN-06	01-JUL-10	1680 hp / 1680 hp	1680 hp / 1680 hp	Active	Waukesha 7044 4 SLB RICE/Compressors
[1]ENG-10	Waukesha 7044 4 SLB RICE/Compressors	Waukesha	7044	TBD	12-JUN-06	01-JUL-10	1680 hp / 1680 hp	1680 hp / 1680 hp	Active	Waukesha 7044 4 SLB RICE/Compressors
[1]ENG-11	Waukesha 7044 4 SLB RICE/Compressors	Waukesha	7044	TBD	12-JUN-06	01-JUL-10	1680 hp / 1680 hp	1680 hp / 1680 hp	Active	Waukesha 7044 4 SLB RICE/Compressors
[1]ENG-12	Waukesha 7044 4 SLB RICE/Compressors	Waukesha	7044	TBD	12-JUN-06	01-JUL-10	1680 hp / 1680 hp	1680 hp / 1680 hp	Active	Waukesha 7044 4 SLB RICE/Compressors
TK-1	Gunbarrel Tank	TBD	TBD	TBD	01-APR-18	01-APR-18	500 bbl / 500 bbl	500 bbl / 32172 gal/y	Active	Gunbarrel Tank 500 bbl
TK-2	Condensate Tank	TBD	TBD	TBD	08-JAN-18	01-APR-18	400 bbl / 400 bbl	400 bbl / 2299500 gal/y	Active	Stabilized Condensate Tank 400 bbl

TK-3	Condensate Tank	TBD	TBD	TBD	08-JAN-18	01-APR-18	400 bbl / 400 bbl	400 bbl / 2299500 gal/y	Active	Stabilized Condensate Tank 400 bbl
TK-4	Condensate Tank	TBD	TBD	TBD	08-JAN-18	01-APR-18	400 bbl / 400 bbl	400 bbl / 2299500 gal/y	Active	Stabilized Condensate Tank 400 bbl
TK-5	Condensate Tank	TBD	TBD	TBD	08-JAN-18	01-APR-18	400 bbl / 400 bbl	400 bbl / 2299500 gal/y	Active	Stabilized Condensate Tank 400 bbl
TK-6	Slop Oil Tank	TBD	TBD	TBD	08-JAN-18	01-APR-18	400 bbl / 400 bbl	400 bbl / 64344 gal/y	Active	Slop Oil Tank 400 bbl
PWTK-1	Produced Water Tank	TBD	TBD	TBD	01-APR-18	01-APR-18	400 bbl / 400 bbl	400 bbl / 64344 gal/y	Active	Produced Water 400 bbl
HTR-1	Hot Oil Heater	TBD	TBD	TBD	08-JAN-18	01-APR-18	49.42 MM BTU/h / 49.42 MM BTU/h	49.42 MM BTU/h / 49.42 MM BTU/h	Active	Hot Oil Heater
HTR-2	Regen Gas Heater	TBD	TBD	TBD	08-JAN-18	01-APR-18	11 MM BTU/h / 11 MM BTU/h	11 MM BTU/h / 11 MM BTU/h	Active	Regen Gas Heater
CONDLOAD -1	Truck Loading	NA	NA	NA	NA	NA	219000 bbl/y	219000 bbl/y	Active	Truck Loading (Condensate Loadout)
OILLOAD-1	Truck Loading	NA	NA	NA	NA	NA	1532 bbl/y	1532 bbl/y	Active	Truck Loading (Oil Loadout)
FUG-1	Fugitives	NA	NA	NA	NA	NA	NA	NA	Active	Equipment Leaks (Fugitives)

FUG-2	Fugitives	NA	NA	NA	NA	NA	NA	NA	Active	Equipment Leaks (Residue Fugitives)
AMINE-1	Amine sweetening unit	TBD	TBD	TBD	08-JAN-18	NA	60 MM SCF/d / 60 MM SCF/d	60 MM SCF/d / 60 MM SCF/d	Active	Amine Unit
TO-1	Thermal Oxidizer (Incinerator)	TBD	TBD	TBD	08-JAN-18	1-FEB-2018	TBD	TBD	Active	Thermal Oxidizer
FL-1	Process Flare	TBD	TBD	TBD	08-JAN-18	NA	TBD	TBD	Active	Upset/Maintenance Flare (pilot/purge emissions)
FL-2	Process Flare	TBD	TBD	TBD	08-JAN-18	NA	TBD	TBD	Active	Tank Flare
PLANT-BD	Plant Blowdown	TBD	TBD	NA	NA	NA	NA	NA	Active	Plant Blowdown
COMP	Compressor Blowdown	TBD	TBD	NA	NA	NA	NA	NA	Active	Compressor Blowdown
MAIN-1	Maintenance Activities	NA	NA	NA	NA	NA	NA	NA	Active	Maintenance Activities, Startup Shutdown
UP-MAL	Upsets Malfunctions	NA	NA	NA	NA	NA	NA	NA	Active	Upsets Malfunction
HR	Haul Road	NA	NA	NA	NA	NA	NA	NA	Active	Road Dust

1. The Permittee has an option of installing either Unit ENG-1 or ENG-2 and installing either ENG-5 through ENG-8, or ENG-9 through ENG-12.

EQUIPMENT SPECIFICATIONS (Inactive/Retired/Removed):

None. However, some of the equipment Unit No. has been re-labeled, thus causing some discrepancies between NSR permit 7482 and 7482-M1. For example, ENG-1a and ENG-1b are now ENG-1 and ENG-2, respectively.

<u>EMISSIONS:</u> Pollutant **Permitted** (Allowable) Emissions per piece of equipment or Subject Item as represented by applicant.

Unit No.	**NO_x (pph.)**	**[1]NO_x (tpy.)**	**CO (pph)**	**CO (tpy)**	**VOC (pph)**	**VOC (tpy)**	**SO_2 (pph)**	**SO_2 (tpy)**	**PM_{10} (pph)**	**PM_{10} (tpy)**	**$PM_{2.5}$ (pph)**	**$PM_{2.5}$ (tpy)**
[1]ENG-1	1.5	6.7	3.0	13.3	1.4	6.1	<	<	0.1	0.3	0.1	0.3
[1]ENG-2	3.0	13.3	2.4	10.4	2.4	10.5	<	<	0.1	0.5	0.1	0.5
ENG-3	3.0	13.3	2.4	10.4	2.4	10.5	<	<	0.1	0.5	0.1	0.5
ENG-4	3.0	13.3	2.4	10.4	2.4	10.5	<	<	0.1	0.5	0.1	0.5
[1]ENG-5	3.0	13.3	2.4	10.4	2.4	10.5	<	<	0.1	0.5	0.1	0.5
[1]ENG-6	3.0	13.3	2.4	10.4	2.4	10.5	<	<	0.1	0.5	0.1	0.5
[1]ENG-7	3.0	13.3	2.4	10.4	2.4	10.5	<	<	0.1	0.5	0.1	0.5
[1]ENG-8	3.0	13.3	2.4	10.4	2.4	10.5	<	<	0.1	0.5	0.1	0.5
[1]ENG-9	1.9	8.3	1.6	6.9	0.7	2.8	<	<	0.3	1.1	0.3	1.1
[1]ENG-10	1.9	8.3	1.6	6.9	0.7	2.8	<	<	0.3	1.1	0.3	1.1
[1]ENG-11	1.9	8.3	1.6	6.9	0.7	2.8	<	<	0.3	1.1	0.3	1.1
[1]ENG-12	1.9	8.3	1.6	6.9	0.7	2.8	<	<	0.3	1.1	0.3	1.1
TK-1	-	-	-	-	1.1	5.0	-	-	-	-	-	-
TK-2	-	-	-	-	0.1	0.4	-	-	-	-	-	-
TK-3	-	-	-	-	0.1	0.4	-	-	-	-	-	-
TK-4	-	-	-	-	0.1	0.4	-	-	-	-	-	-
TK-5	-	-	-	-	0.1	0.4	-	-	-	-	-	-
TK-6	-	-	-	-	0.04	0.2	-	-	-	-	-	-
HTR-1	2.4	10.6	4.1	17.8	<	1.2	<	<	0.4	1.6	0.4	1.6
HTR-2	1.1	4.7	<	4.0	<	<	<	<	0.1	0.4	0.1	0.4
CONDLOAD-1	-	-	-	-	*	9.2	-	-	-	-	-	-
OILLOAD-1	-	-	-	-	*	<	-	-	-	-	-	-
FUG-1	-	-	-	-	11.7	51.2	-	-	-	-	-	-

Unit No.	NO_x (pph.)	[1]NO_x (tpy.)	CO (pph)	CO (tpy)	VOC (pph)	VOC (tpy)	SO_2 (pph)	SO_2 (tpy)	PM_{10} (pph)	PM_{10} (tpy)	$PM_{2.5}$ (pph)	$PM_{2.5}$ (tpy)
AMINE-1	-	-	-	-	2.8	3.9	-	-	-	-	-	-
TO-1	1.6	6.8	1.3	5.7	<	<	64.5	235.2	-	-	-	-
FL-1 Pilot/Purge	0.03	0.15	0.16	0.68	0.02	0.09	0.0	0.0	6.3	0.9	6.3	0.9
FL-2	<	3.9	4.1	17.8	<	<	<	<	0.0	0.0	0.0	0.0
HR	-	-	-	-	-	-	-	-	3.2	0.1	0.3	0.0

1. The Permittee has an option of installing either Unit ENG-1 or ENG-2 and installing either ENG-5 through ENG-8, or ENG-9 through ENG-12.
2. Nitrogen dioxide emissions include all oxides of nitrogen expressed as NO_2.
3. For Title V facilities, the Title V annual fee assessments are based on the sum of allowable tons per year emission limits in Sections A106 and A107.
4. Compliance with emergency flare emission limits is demonstrated by limiting combustion to pilot and/or purge gas only.

"-" indicates the application represented emissions of this pollutant are not expected.

"<" indicates that the application represented the uncontrolled mass emission rates are less than 1.0 pph or 1.0 tpy for this emissions unit and this air pollutant. The Department determined that allowable mass emission limits were not required for this unit and this pollutant.

"*" indicates hourly emission limits are not appropriate for this operating situation.

5. To report excess emissions for sources with no pound per hour and/or ton per year emission limits, see condition B110F.

Allowable SSM Units, Activities, and Emission Limits

Unit No.	Description	NO_x pph	NO_x tpy	CO pph	CO tpy	VOC pph	VOC tpy	SO_2 pph	SO_2 tpy
SSM Venting	MAIN-1 (maintenance activities)[1]	-	-	-	-	*	10.0	-	-
SSM Flaring to FL-1	COMP (compressor blowdowns), PLANT-BD (plant blowdowns), & TO-1 (thermal oxidizer downtime)	251.6	26.3	1146.9	120.0	92.9	14.1	57.1	1.3
Malfunction	Malfunction events	-	-	-	-	*	10.0	-	-

Pollutant Unpermitted (Potential) Emissions (Non-regulated, without permitted emission limits): None.

POTENTIAL HAPS EMISSIONS FROM TEMPO, Table has the most common HAPS – it is not inclusive of all HAPS that might be entered in TEMPO. **All emissions are in tons/year**

Unit No.(s)	Total HAPs		Formaldehyde ☑ HAP/☐ TAP		Acetaldehyde ☑ HAP/☐ TAP		Acrolein ☑ HAP/☐ TAP		Benzene ☑ HAP/☐ TAP		Toluene ☑ HAP/☐ TAP		Ethylbenzene ☑ HAP/☐ TAP		Xylenes ☑ HAP/☐ TAP		n-Hexane ☑ HAP/☐ TAP		2,2,4 TMP ☑ HAP/ ☐ TAP	
	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr
ENG-1	0.4	1.8	0.3	1.4	0.0	0.2	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	--	--
ENG-2	0.4	2.0	0.3	1.2	0.1	0.4	0.1	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	--	--
ENG 1-2*	**0.4**	**2.0**	**0.3**	**1.4**	**0.1**	**0.4**	**0.1**	**0.3**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.1**	--	--
ENG-3	0.4	2.0	0.3	1.2	0.1	0.4	0.1	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	--	--
ENG-4	0.4	2.0	0.3	1.2	0.1	0.4	0.1	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	--	--
ENG-5	0.4	2.0	0.3	1.2	0.1	0.4	0.1	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	--	--
ENG-6	0.4	2.0	0.3	1.2	0.1	0.4	0.1	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	--	--
ENG-7	0.4	2.0	0.3	1.2	0.1	0.4	0.1	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	--	--
ENG-8	0.4	2.0	0.3	1.2	0.1	0.4	0.1	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	--	--
ENG-9	0.3	1.3	0.2	0.8	0.0	0.2	0.0	0.2	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	N/A	N/A	--	--
ENG-10	0.3	1.3	0.2	0.8	0.0	0.2	0.0	0.2	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	N/A	N/A	--	--
ENG-11	0.3	1.3	0.2	0.8	0.0	0.2	0.0	0.2	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	N/A	N/A	--	--
ENG-12	0.3	1.3	0.2	0.8	0.0	0.2	0.0	0.2	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	N/A	N/A	--	--
ENG 9-12*	**1.8**	**7.8**	**1.1**	**4.7**	**0.4**	**1.7**	**0.2**	**1.0**	**0.1**	**0.4**	**0.0**	**0.1**	**0.0**	**0.0**	**0.0**	**0.0**	**0.1**	**0.2**	--	--
TK-1	0.1	0.3	--	--	--	--	--	--	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0
TK 2-5	0.0	0.1	--	--	--	--	--	--	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0
TK-6	0.0	0.0	--	--	--	--	--	--	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PWTK-1	0.0	0.0	--	--	--	--	--	--	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
HTR-1	0.1	0.4	0.0	0.0	--	--	--	--	0.0	0.0	0.0	0.0	--	--	--	--	0.1	0.4	--	--
HTR-2	0.0	0.1	0.0	0.0	--	--	--	--	0.0	0.0	0.0	0.0	--	--	--	--	0.0	0.1	--	--
CONDLOAD-1	2.1	0.6	--	--	--	--	--	--	0.3	0.1	0.3	0.1	0.0	0.0	0.0	0.0	1.3	0.4	0.0	0.0
OILLOAD-1	2.1	0.0	--	--	--	--	--	--	0.3	0.0	0.3	0.0	0.0	0.0	0.0	0.0	1.3	0.0	0.0	0.0
FUG-1	0.1	0.5	--	--	--	--	--	--	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.3	0.0	0.0
FUG-2	0.0	0.0	--	--	--	--	--	--	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
AMINE-1	0.0	0.0	--	--	--	--	--	--	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
TO-1	0.0	0.0	--	--	--	--	--	--	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
FL-1	0.0	0.0	--	--	--	--	--	--	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
FL-2	0.0	0.0	--	--	--	--	--	--	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
COMP	0.0	0.0	--	--	--	--	--	--	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PLANT BD	15.1	0.0	--	--	--	--	--	--	5.3	0.0	0.8	0.0	0.0	0.0	0.0	0.0	9.1	0.0	0.0	0.0
MAIN-1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
UP/MAL-1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
HR-1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	22.8	15.7	1.9	8.5	0.7	2.9	0.4	1.8	6.1	0.8	1.5	0.4	0.1	0.0	0.1	0.1	12.1	1.8	0.1	0.0

*Composite emissions represent worse case engine emissions

**Totals are for information only and may not match the totals in the table “TOTAL HAPS and NM TAPS”

New Mexico
ENVIRONMENT DEPARTMENT

525 Camino de los Marquez, Suite 1
Santa Fe, NM 87505-1816
Phone (505) 476-4300
Fax (505) 476-4375
www.env.nm.gov

MICHELLE LUJAN GRISHAM
GOVERNOR

HOWIE C. MORALES
LT. GOVERNOR

JAMES C. KENNEY
CABINET SECRETARY

JENNIFER J. PRUETT
DEPUTY SECRETARY

Citizen Response Final Letter

April 8, 2020

CERTIFIED MAIL NO.

Mr. Jeremy Nichols
Climate and Energy Program Director
WildEarth Guardians
301 N. Guadalupe Street, Suite 201
Santa Fe, NM 87501
jnichols@wildearthguardians.org

RE: Air Quality Permit No. 7482-M1 (IDEA ID No. 38067 - PRN20190001) - 3 Bear Delaware Operating - NM LLC – 3 Bear Libby Gas Plant

Dear Mr. Nichols:

This letter is in response to WildEarth Guardian's comments on the air quality permit application for the 3 Bear Libby Gas Plant dated September 6, 2019 and received by the Air Quality Bureau on September 13, 2019.

Following review of the permit application, the Department has identified the sources of emissions for this facility and has identified and quantified the air emissions. Based on this review and the conditions that are included in the permit, the Department believes that the applicable federal and state air quality control regulations will be met and that air emissions from this facility will not cause or contribute to exceedances of ambient air quality standards. For these reasons, the Department intends to issue Air Quality Permit No. 7482-M1 on April 8, 2020. A copy of this permit can be accessed and reviewed on the Air Quality Bureau website at the following web address:

> https://www.env.nm.gov/air-quality/permit-applications-with-public-interest-public-meeting-or-public-hearing/

Consistent with 20.2.72.7.T NMAC, the Air Quality Bureau has selected the Ozone Attainment Initiative as the reliable method by which the attainment/nonattainment status of the area around the Carlsbad ozone monitor will be determined. If the area around Carlsbad is designated as nonattainment, the boundaries of the nonattainment area will need to be defined prior to making the determination whether this facility lies within the defined area.

Further explanation regarding the Ozone Attainment Initiative can be found in the Air Quality Bureau's "How Ozone Trends at New Mexico's Ozone Monitoring Stations are Being Addressed" document (attached) and found at the above link on the Air Quality Bureau's web site.

The Department's final action of issuing this permit may be appealed in accordance with 20.2.72.207.F NMAC, which provides as follows:

> any person who participated in a permitting action before the Department and who is adversely affected by such permitting action may file a petition for hearing before the Environmental Improvement Board. The petition shall be made in writing to the board within thirty (30) days from the date notice is given of the Department's action and shall specify the portions of the permitting action to which the petitioner objects, certify that a copy of the petition has been mailed or hand-delivered as required by this paragraph, and attach a copy of the permitting action for which review is sought. Unless a timely request for hearing is made the decision of the division shall be final. The petition shall be copied simultaneously to the Department upon receipt of the appeal notice. If the petitioner is not the applicant or permittee, the petitioner shall mail or hand-deliver a copy of the petition to the applicant or permittee. The Department shall certify the administrative record to the board.

If a timely request for hearing is made, the Board shall hold a hearing within sixty (60) days of receipt of the petition in accordance with Section 74-2-7 NMSA 1978.

If you have any question regarding the permit or the hearing process, please contact me in Santa Fe at 505-476-4300.

Sincerely,

Melinda Owens Digitally signed by Melinda Owens
Date: 2020.04.09 09:00:03 -06'00'

Melinda Owens
TV Permit Program Manager
Permits Section
Air Quality Bureau

NEW MEXICO
ENVIRONMENT DEPARTMENT

525 Camino de los Marquez, Suite 1
Santa Fe, New Mexico 87505
Phone (505) 476-4300 Fax (505) 476-4375
www.env.nm.gov

Michelle Lujan Grisham
Governor

Howie C. Morales
Lt. Governor

James C. Kenney
Cabinet Secretary

Jennifer J. Pruett
Deputy Secretary

Date: April 1, 2020

From: New Mexico Environment Department Air Quality Bureau

Subject: How Ozone Trends at New Mexico's Ozone Monitoring Stations are Being Addressed

This document discusses how ozone is regulated, the recent trends in monitored ozone values in New Mexico, and the steps that the New Mexico Environment Department (NMED or Department) is taking to address this issue.

How does the Department regulate ozone?

The Department's Air Quality Bureau operates a network of ambient air monitors that continually sample the air across New Mexico, with the exception of Bernalillo County and tribal lands, which are not under the Department's jurisdiction. Click here to go to the NMED Air Monitoring web site, where you can view photos of the monitoring sites, and learn more about what pollutants we monitor and their potential health effects.

The federal national ambient air quality standard (NAAQS) for ozone is currently set at 70 parts per billion (70 ppb). As discussed below, two of New Mexico's ozone monitors (Carlsbad and Hobbs) have recently monitored ozone concentrations in excess of the federal standard. However, readings from monitors showing exceedances of the NAAQS do not in themselves trigger changes to permitting or other actions on the part of NMED. Instead, the vehicle for addressing exceedances of the NAAQS is through designation of particular areas as in "attainment" or "non-attainment".

The process of determining whether an area is in attainment or in nonattainment of a NAAQS is triggered when the 'design value' (DV) for a pollutant is shown to be in excess of the standard. The DV is the three-year average of the annual fourth-highest daily monitored value. Thus, each year, for each NAAQS standard, the DV is calculated by averaging the fourth highest monitored reading for the previous year with the fourth highest reading of the two previous years. The resulting calculated value is the DV for that pollutant for that year. For ozone, this calculated value is compared to the 8-hour NAAQS ozone standard, which is 0.070 ppm. If the calculated DV is 0.0705 or above, it is rounded up to 0.071 ppm (0.0704 is rounded down to 0.070). At 0.071 the design value is in exceedance of the 8-hour NAAQS ozone standard. DVs for each monitor for each year are submitted to EPA for verification.

What areas of the state are showing exceedances of the ozone NAAQS?

The Carlsbad monitor has monitored exceedances resulting in the DV exceeding the 8-hour ozone NAAQS in the years 2017, 2018, and 2019. The Carlsbad monitored design values are 0.076, 0.083, and

0.080 ppm, for each year, respectively. Similarly, the ozone monitor in Hobbs showed a DV exceedance in 2018. However, in 2019 the Hobbs monitor's DV demonstrated compliance with the NAAQS with a design value of 0.070 ppm. The first two-year (2017 and 2018) DVs for Carlsbad and Hobbs have been submitted to and verified by EPA. The 2019 DV for Carlsbad and Hobbs have been submitted but have yet to be verified by EPA.

How is the New Mexico Environment Department responding to these monitored exceedances?

The Air Quality Control Act requires the state to develop a plan, including regulations, to reduce ozone precursors in areas of the state that are exceeding 95% of the ozone standard. The AQB has been working diligently to address the rising ozone in those areas through its Ozone Attainment Initiative (OAI), which will include proposal of new regulations for reducing ozone precursors. The OAI is the vehicle through which NMED will investigate and implement strategies to ensure the region's 8-hour ozone levels return to full attainment status.

In order to fully understand the sources of VOC and NOx and what sectors are responsible for those pollutants, it is essential to determine whether and to what extent regional transport of these pollutants and mobile sources of these pollutants are contributing to the monitored exceedances. Thus, the state is currently conducting regional ozone modeling to determine what equipment, sources, and sectors are emitting the ozone precursors, and what portion of those emissions are being transported from other states and internationally. The results of this modeling will help guide what sources should be targeted for regulatory action to reduce their contribution to the ozone exceedances. The attached Fact Sheet provides further information regarding issues specific to ozone modeling.

Given the probability of contributions from oil and gas operations in the state, the first step of what will likely be several rulemakings under the OAI will be to reduce ozone precursors from the oil and gas industry located within the Permian and San Juan Basins. The Department intends to submit proposed rules to the Environmental Improvement Board by the end of 2020. It is anticipated that other rulemakings will follow, targeting emissions reductions from other industrial sectors, as well as the transportation sector.

The Department's current strategy is to rely upon the authority under its enabling statute, the Air Quality Control Act, to develop and implement the OAI and regulations to target and reduce the contributing ozone precursors. The plan and regulations implemented under the OAI will reduce those emissions, and the Department expects those reductions to reverse the current trend of rising ozone concentrations.

Questions?
Please contact Ted Schooley, Permit Section Chief, at 476-4334 or Kerwin Singleton, Planning Section Chief, at 476-4350.

NMED Fact Sheet on Ozone Modeling

How are ozone concentrations predicted?
Ozone is a secondary pollutant, meaning that rather than being directly emitted to the atmosphere from sources, it is created from a series of chemical reactions that occur between ozone precursors in the presence of sunlight. The precursor pollutants that contribute to ozone formation are nitrogen oxides (NO_X) and volatile organic compounds (VOC). Because chemical reactions must occur between precursors to form ozone, a chemical model (photochemical modeling) is required to predict ozone concentrations. Photochemical modeling is much more complex than the dispersion modeling typically performed for directly emitted pollutants.

How is ozone modeled?
Photochemical modeling (modeling chemical reactions in the presence of light) is generally conducted using gridded cells (or volumes) over the areas under evaluation. In each cell, pollutant concentrations are calculated using a series of mathematical equations that describe the physics and chemistry of the atmosphere. These mathematical equations describe emission rates in the cells, chemical reaction rates, and rates of mixing with neighboring cells. Chemical reaction rates within a cell will depend on the concentration of pollutants, the amount of sunlight, and temperature. Mixing to and from neighboring cells is determined using meteorological data and a separate meteorological model. Pollutant concentrations are then predicted by solving the set of mathematical equations.

How does ozone modeling differ from other criteria pollutant modeling?
Ozone (photochemical) modeling is significantly different from the dispersion modeling conducted for directly emitted criteria pollutants. In the atmosphere, the direction of criteria pollutants' flow and how the concentration disperses over time is controlled by meteorological factors. Dispersion modeling assumes that emissions from surrounding sources do not chemically interact. As described above, photochemical modeling predicts the mixing of NO_X and VOCs to calculate ozone concentrations.

Why is ozone modeled differently?
Chemical reactions govern the concentrations of ozone in the atmosphere. This is not true for most other criteria pollutants. Because chemical formation is the predominant source of ozone, chemistry must be considered. Additionally, interactions between precursors emitted from different sources can be quite important. Chemical formation and removal is significantly less important for other criteria pollutants.

When do we perform ozone modeling?
Due to the complexity of photochemical modeling, regulatory ozone modeling is typically performed only for the development or revision of state implementation plans (SIPs) or when there is a compelling reason for concern. This is currently the case in seven New Mexico counties, which have sources that cause or contribute to the high ozone concentrations. As discussed above, the initial step of the OAI will be photochemical modeling, to be performed by a contractor under the direction of the Bureau. This modeling effort will identify the different source categories that contribute to ozone formation and identify control strategies that will result in reduced ozone concentration in future years.

What is the cost of typical ozone modeling?
The cost of this modeling will be approximately two hundred and seventy thousand dollars ($270,000). A similar photochemical modeling project was completed for NMED, the Southern New Mexico Ozone Study, at a cost of approximately two hundred and fifty thousand dollars ($250,000).