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March 15, 2023

New Mexico Environment Department
Air Quality Bureau
Permits Section
525 Camino de los Marquez, Suite 1
Santa Fe, New Mexico 87505

RE: Title V P289 Permit Revision
Targa Northern Delaware LLC; Big Lizard Compressor Station

Permit Program Manager:

Targa Northern Delaware LLC is submitting a Title V Revision for the Big Lizard Compressor Station, currently authorized under Title V Permit No. P289. With this submission, Targa seeks to update the permit conditions for Startup, Shutdown, & Maintenance and Malfunction activities. This is in response to EPA's November 16, 2022, Order Granting in Part and Denying in Part Petitions for Objection to Permit for the Big Lizard Compressor Station, Permit P289. Attached you will find the following revised pages of the Universal Air Quality Permit Application for the Title V permit:

- Section 6: All Calculations
- Section 7: Information Used to Determine Emissions and
- Section 22: Certification

Please feel free to contact me at 713-584-1292 or by email at twallace@targaresources.com if you have any questions regarding this submission.

Sincerely,

Targa Northern Delaware LLC

Tammy H. Wallace

Tammy H. Wallace
Senior Environmental Specialist

Cc: Charles Bates (Targa Northern Delaware LLC)
Jason Fuentes (Targa Northern Delaware LLC)
Jaylen Fuentes (Targa Northern Delaware LLC)
Bill Grygar (Targa Northern Delaware LLC)

Air Quality Bureau TV Permit No. P289

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	VOC (tpy)	H_2S (pph)	H_2S (tpy)
SSM/M	[1]Venting of Gas Due to SSM and Malfunction	10.0	0.0	0.0

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 B110.E.

B. The authorization of emission limits for startup, shutdown, maintenance, and malfunction does not supersede the requirements to minimize emissions according to Conditions B101.C and B107.A.

C. Combined SSM and Malfunction Emissions (Venting of gas: VOCs and H2S)

Requirement:

(1) **Compliance Method**

The permittee shall perform a facility inlet and residue gas analysis once every calendar year.

On a monthly basis, the permittee shall complete the following monitoring and recordkeeping to demonstrate compliance with the allowable venting emission limits in Table 107.A for routine or predictable startup, shutdown, and maintenance (SSM); and/or malfunctions (M) herein referred to as SSM/M.

(2) **Emissions included in Permit Limit and/or Reported as Excess Emissions**

(a) All emissions due to routine or predictable startup, shutdown, and/or maintenance (SSM) must be included under and shall not exceed the 10 tpy SSM/M emission limit in this permit. For emissions due to malfunctions, the permittee has the option to report these as excess emissions of the pound per hour limits in Table 106.A (or the pound per hour limits in condition B110.F, if applicable), in accordance with 20.2.7 NMAC, or include the emissions under the 10 tpy limit.

(b) Once emissions from a malfunction event are submitted in the final report (due no later than ten days after the end of the excess emissions event) per 20.2.7.110.A(2) NMAC, the event is considered an excess emission and cannot be applied toward the 10 tpy SSM/M limit in this permit.

(3) **Emissions Exceeding the Permit Limit**
If the monthly rolling 12-month total of SSM/M exceeds the 10 tpy emission limit, the permittee shall report the emissions as excess emissions in accordance with 20.2.7.110NMAC.

(4) **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 the 10 tpy SSM/M emission limit. These emissions shall be 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) in accordance with 20.2.7 NMAC. (NSR 7960-M2, condition A107.C)

Monitoring: The permittee shall monitor all SSM/M events included in the table below:

Startup, Shutdown and Maintenance and Malfunction (SSM/M)		
Activities	**Emission Calculation Methodology**	**Emission Calculation Equation[1]**
Blowdowns Compressors	Mass Balance	Maximum Emissions (tpy) = [Volume of blowdown (scf/event)] x [MW of stream (lb/lb-mol)] x [wt % VOC or speciated constituent] x [frequency of events (events/yr)] / [379.5 (scf/lb-mol)] / [2,000 (lb/ton)] x [(100%-Control Device Efficiency (%))]

[1]or equivalent methodology

Recordkeeping:

(1) **Compliance Method**

(a) Each month records shall be kept of the cumulative total of all VOC emissions related to SSM/M during the first 12 months and, thereafter of the monthly rolling 12-month total of SSM/M VOC emissions. Any SSM/M emissions that have been reported in a final excess emissions report per 20.2.7.110.A(2) NMAC, shall be excluded from this total.

(b) Records shall also be kept of the inlet and residue gas analyses, the weight 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/M events.

(c) The permittee shall identify the equipment or activity and shall describe the event that is the source of emissions.

(2) **Emissions included Under Permit Limit or Reported as Excess Emissions**

The permittee shall record whether emissions are included under the 10 tpy permit limit for SSM/M or if the event is included in a final excess emissions report per 20.2.7.110.A(2) NMAC.

(3) **Condition B109 Records**

The permittee shall keep records in accordance with Condition B109 of this permit except for the following:

(a) The requirement to record the start and end times of SSM/M events shall not apply to venting of known quantities of VOCs as long as the emissions do not exceed the SSM/M emission limit.

(b) The requirement to record a description of the cause of the event shall not apply to SSM/M events as long as the emissions do not exceed the SSM/M emission limit.

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.

Detailed emission calculations are provided on the following pages.

Condensate/Oily Slop Tanks (Units TK-1 – TK-4)
Emissions from the four (4) slop tanks (TK-1 – TK-4) were calculated using Bryan Research and Engineering's Promax software. The simulation report detail and summary are included in Section 7.

Glycol Dehydrators (Units Dehy-1 – Dehy-3)
Emissions from the three (3) TEG Dehydrators (Dehy-1 – Dehy-3) were calculated using Promax. The simulation report is found in Section 7.

Amine Unit (Units AU-1)
Emissions from the amine system (AU-1) were calculated using Promax. The simulation report is found is Section 7.

Compressor Engines (Unit ENG-1 – ENG-10)
The ten (10) Caterpillar compressor engines (ENG-1 – ENG-10) are equipped with oxidative catalysts in order to meet the standard emission limits in the New Source Performance Standards (NSPS) for stationary spark ignition internal combustion engines, 40 Code of Federal Regulations (CFR) Part 60, Subpart JJJJ. Emissions data for the engines from the manufacturer have been included in Section 7. Emission rates for VOC, CO, NOx, and formaldehyde were calculated using the manufacturer's controlled emission factors. All other criteria pollutant emissions were calculated using AP-42 emission factors. As noted previously, the manufacturer's specification sheet has been included in Section 7 as well as Table 3.2-3 of AP-42 Section 3.2. The calculation tables show the source of the emission factors used in the calculations by pollutant.

Dehydrators (Unit RBL-1 - RPL-3) and Amine Reboilers (Unit AU_RB 1 and AU-RB 2)
Emissions from the dehydrator reboilers (RBL-1 –RBL-3) and amine reboilers (AU-RB 1 and AU-RB 2) have been calculated using AP-42 emission factors from Section 1.4, Tables 1.4-1 through 1.4-3. These tables are included in Section 7.

Unpaved Truck Hauling Emissions (Unit HAUL)
Fugitive haul road emissions (HAUL) were calculated based on Equations 1a and 2 of AP-42 Section 13.2.2. Relevant portions of AP-42 Section 13.2.2 are included in Section 7.

Truck Loading (Unit LOAD)
Truck loading emissions (LOAD) from loading of the slop tanks were calculated based on AP-42 Section 5.2, Table 5.2-5. Relevant portions of AP-42 Section 5.2 are included in Section 7.

Startup, Shutdown, and Maintenance/Malfunction (Unit SSM/M)
Targa is requesting 10 tpy VOC emissions associated with Startup, Shutdown and Maintenance (SSM) and Malfunction activities at the facility.

There is one type of blowdown events permitted: compressor blowdowns. Compressor blowdowns are typically associated with SSM activities because they are predictable and they can be scheduled in most cases. Compressor blowdowns occur when units are taken offline for maintenance and/or during startup.

There is potential for emergency events associated with compressors and cannot be anticipated. Emergency compressor shut downs are rare and thus would not be considered SSM events, they are considered malfunctions.

Based on the above description, Targa has determined to request a maximum VOC emission limit of 10 tons per year to account for Startup, Shutdown, and Maintenance/Malfunction (SSM/M). In accordance with "Implementation Guidance for permitting SSM Emissions and Excess Emission" document issued 7 June 2012, "Instead of permitting SSM and upset/malfunction emissions separately, the applicant may request that emissions from both SSM and upset/malfunction be consolidated in the permit with a total limit of 10 tons per year per pollutant per facility for the combined category to reduce concerns about the appropriateness of activities listed as SSM."

Fugitive Emissions (Unit FUG)
Facility fugitive emissions (FUG) were calculated using TCEQ's "Emissions Factors for Equipment Leak Fugitive Components" document and assumed component counts for a typical compressor station. Relevant portions of the TCEQ

Section 7

Information Used To Determine Emissions

Information Used to Determine Emissions shall include the following:

- **x** 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.
- **x** 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.
- **x** If an EPA document or other material is referenced, include a complete copy.
- **x** Fuel specifications sheet.
- **x** 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.

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1. Gas analyses for the facility inlet streams;
2. Manufacturer's data sheets for compressor engines (ENG-1 through ENG-10);
3. Tables C-1 and C-2 of 40 CFR 98, Subpart C for Greenhouse Gas emissions;
4. Tables 1.4-1 through 1.4-3 from AP-42 Section 1.4 for emission factors used for the Reboilers (RBL-1 – RBL-3; AU-RB1 – AU-RB2);
5. Unpaved Haul Road Emission Calculation Methodology from AP-42 Section 13.2.2 (HAUL);
6. Table 3.2-2 from AP-42 Section 3.2 for all other pollutants for the Compressor Engines (ENG-1 through ENG-10);
7. Table 5.2-5 of AP-42 Section 5.2 for Truck Loading (LOAD);
8. TCEQ Emissions Factors for Equipment Leak Fugitive Components for Facility Fugitives (FUG);
9. HAPCalc simulation output for HAPs emitted from reboilers (RBL-1 – RBL-3);
10. Promax simulation output file for the compressor station's tank losses;
11. Promax simulation output file for the amine system (AU-1);
12. Promax simulation output file for the dehydrator units (Dehy-1 through Dehy-3).
13. Compressor, engine and piping dimensions along with temperature and pressure use to determine the volume for compressor blow downs. Emissions from venting activities are calculated based on a mass balance calculation.

Targa Northern Delaware LLC: Big Lizard Compressor Station

SSM/M Emissions

Unit: SSM/M
Description: Startup, Shutdown, Maintenance, and Malfunction Venting
Control Equipment: N/A

Compressor Blowdowns

Compressor	Number of Compressors	Volume per Compressor (scf/event)	Annual events per compresor[1]	Annual Release (scf/yr)	Hourly Volume (scf/hr)	Molecular Weight (lb/lb-mol)	HAP (wt%)	VOC (wt%)	H_2S (wt%)	VOC (lb/hr)	VOC (tpy)	H_2S (lb/hr)	H_2S (tpy)	HAP (lb/hr)	HAP (tpy)	Benzene (lb/hr)	Benzene (tpy)
Cat 3516	2	3185.8	34	216,634	6,372	22.6	0.281	23%	0.00000%	87.19	1.48	0.00	0.00000	1.07	0.02	0.42	0.01
Cat 3606	6	4285.9	33	848,608	25,715	22.6	0.281	23%	0.00000%	351.90	5.81	0.00	0.00000	4.30	0.07	1.68	0.03
Cat 3608	2	6184.9	32	395,834	12,370	22.6	0.281	23%	0.00000%	169.28	2.71	0.00	0.00000	2.07	0.03	0.81	0.01
									Total:	608.37	10.00	0.00	0.00000	7.43	0.12	2.91	0.05
									Requested Limit [2]:	2.28	10.00	0.00	0.00000	7.43	0.12	2.91	0.05

1. Annual events account for malfunction and SSM event for the compressor blowdowns.
2. Requested limit is based on NMED guidance documents that allow facilities 10 tpy of combined SSM and Malfunction.

Basis of Calculation:
Emissions from venting activities are calculated based on a mass balance as follows:

Maximum Uncontrolled
Hourly Emissions (lb/hr) = [Volume of Gas Vented (scf/event)] x [MW of stream (lb/lb-mol)] x [wt % VOC or speciated constituent] / [379.5 (scf/lb-mol)]

Maximum
Uncontrolled Annual Emissions (tpy) = [Volume of Gas Vented (scf/yr)] x [MW of stream (lb/lb-mol)] x [wt % VOC or speciated constituent] / [379.5 (scf/lb-mol)] / [2,000 (lb/ton)]

*Volumes determined by field measurements of compressors. The actual volume is adjusted for temperature and pressure to determine the compressor blow down volume in SCF.

Unit	Engine	ES, N (ft3)	lbs VOC per event	Events per year	lbs/year	TPY
3347	Cat G3516	3185.8	43.6	34	1482.3	0.7
3346	Cat G3516	3185.8	43.6	34	1482.3	0.7
3171	Cat G3606 A4	4285.9	58.7	33	1935.5	1.0
3155	Cat G3606 A4	4285.9	58.7	33	1935.5	1.0
3338	Cat G3608	6184.9	84.6	32	2708.4	1.4
3339	Cat G3608	6184.9	84.6	32	2708.4	1.4
3319	Cat G3606 A4	4285.9	58.7	33	1935.5	1.0
3240	Cat G3606 A4	4285.9	58.7	33	1935.5	1.0
ENG-9	Cat G3606 A4	4285.9	58.7	33	1935.5	1.0
ENG-10	Cat G3606 A4	4285.9	58.7	33	1935.5	1.0
					Total:	10.00

Unit:	$ - KBE-4 13.5 Cc	Engine:	3516	Compressor:	KBE-4	
Ambient Air Temperature:	110					

	lbs/sq in (abs)	Temp (F)	Vol. (ft^3)	Actual CF	lbs/sq in (gage)	
1st Stage Suction	263.15	100.00	53.12	986.85	250.00	91,790.41
1st Stage Discharge	263.15	261.00	34.21	493.62	250.00	59,113.31
2nd Stage Suction	263.15	120.00	40.97	734.94	250.00	70,800.53
2nd Stage Discharge	263.15	248.00	20.81	305.75	250.00	35,955.17
3rd Stage Suction	263.15	120.00	19.13	343.22	250.00	33,063.89
3rd Stage Discharge	263.15	262.00	12.62	181.92	250.00	21,815.86
4th Stage Suction	13.15		0.00	0.00		0.00
4th Stage Discharge	13.15		0.00	0.00		35,955.17
Bypass (downstream of PCV)	263.15	120.00	7.78	139.52	250.00	13,440.29
Total			188.65	3,185.82		325,979.46

Settle Out Pressure (Gauge):	209.0
Settle Out Pressure @ Ambient Temp:	215.0
Settle Out Temperature (Degrees F):	156.0
Blowdown Volume (SCF):	3,185.8

	O.D. (in)	Nom. Thk. (in)	Actual ID (in)	L. (in.)	Volume/Lin.Ft	Shell Vol.	Head Vol.	Vol. (ft^3)
1st Stage Suction Piping - A	12"-SCH 100	0.432	5.761	30.13				0.454
1st Stage Suction Piping - B	Select One	0.000	0.000	0.00				0.000
1st Stage Suction Piping - C	Select One	0.000	0.000	0.00				0.000
1st Stage Suction Piping - D	Select One	0.000	0.000	0.00				0.000
1st Stage Suction Scrubber	30.00	0.500	29.000	78.00	4.587	29.815	1.848	33.510
1st Stage Suction Bottle	24.00	0.500	23.000	72.00	2.885	17.311	0.922	19.155
1st Stage Discharge Bottle	20.00	0.500	19.000	120.00	1.969	19.689	0.520	20.729
1st Stage Discharge Piping - A	8"-SCH 40	0.322	7.981	276.00				7.990
1st Stage Discharge Piping - B	Select One	0.000	0.000	0.00				0.000
1st Stage Discharge Piping - C	Select One	0.000	0.000	0.00				0.000
1st Stage Discharge Piping - D	Select One	0.000	0.000	0.00				0.000
1st Stage Compressor-Suction Passages	Volume (in^3)							0.000
1st Stage Compressor-Discharge Passages	Volume (in^3)							0.000
1st Stage Cooler Volume	Volume (in^3)							5.490
2nd Stage Suction Piping - A	8"-SCH 40	0.322	7.981	145.75				4.220
2nd Stage Suction Piping - B	8"-SCH 40	0.322	7.981	367.94				10.652
2nd Stage Suction Piping - C	Select One	0.000	0.000	0.00				0.000
2nd Stage Suction Piping - D	Select One	0.000	0.000	0.00				0.000
2nd Stage Suction Scrubber	24.00	0.500	23.000	72.00	2.885	17.311	0.922	19.155
2nd Stage Suction Bottle	20.00	0.500	19.000	36.00	1.969	5.907	0.520	6.946
2nd Stage Discharge Bottle	18.00	0.750	16.500	60.00	1.485	7.424	0.340	8.105
2nd Stage Discharge Piping - A	6"-SCH 40	0.280	6.065	243.31				4.068
2nd Stage Discharge Piping - B	6"-SCH 40	0.280	6.065	160.56				2.684
2nd Stage Discharge Piping - C	Select One	0.000	0.000	0.00				0.000
2nd Stage Discharge Piping - D	Select One	0.000	0.000	0.00				0.000
Bypass Piping - High Pressure Side - A	Select One	0.000	0.000	0.00				0.000
Bypass Piping - High Pressure Side - B1	Select One	0.000	0.000	0.00				0.000
Bypass Piping - High Pressure Side - B2	Select One	0.000	0.000	0.00				0.000
Bypass Piping - High Pressure Side - C	Select One	0.000	0.000	0.00				0.000
Bypass Piping - High Pressure Side - D	Select One	0.000	0.000	0.00				0.000
Bypass Piping - High Pressure Side - E	Select One	0.000	0.000	0.00				0.000
Bypass Piping - High Pressure Side - F	Select One	0.000	0.000	0.00				0.000
2nd Stage AC Piping - A	Select One	0.000	0.000	0.00				0.000
2nd Stage Compressor-Suction Passages	Volume (in^3)							0.000
2nd Stage Compressor-Discharge Passages	Volume (in^3)							0.000
2nd Stage Cooler Volume	Volume (in^3)							5.950
3rd Stage Suction Piping - A	6"-SCH 40	0.280	6.065	258.94				4.329
3rd Stage Suction Piping - B	4"-SCH 160	0.531	3.438	34.25				0.184
3rd Stage Suction Piping - C	Select One	0.000	0.000	0.00				0.000
3rd Stage Suction Piping - D	Select One	0.000	0.000	0.00				0.000
3rd Stage Suction Scrubber	20.00	0.812	18.376	72.00	1.841	11.045	0.470	11.985
3rd Stage Suction Bottle	14.00	0.500	13.000	30.00	0.921	2.303	0.166	2.636
3rd Stage Discharge Bottle	14.00	0.937	12.126	61.00	0.802	4.075	0.135	4.345
3rd Stage Discharge Piping - A	4"-SCH 120	0.438	3.624	241.81				1.443
3rd Stage Discharge Piping - B	4"-SCH 120	0.438	3.624	43.00				0.257
3rd Stage Discharge Piping - C	Select One	0.000	0.000	0.00				0.000
3rd Stage Discharge Piping - D	Select One	0.000	0.000	0.00				0.000
3rd Stage Compressor-Suction Passages	Volume (in^3)							
3rd Stage Compressor-Discharge Passages	Volume (in^3)							
3rd Stage Cooler Volume	Volume (in^3)							6.580
4th Stage Suction Piping - A	Select One	0.000	0.000	0.00				0.000
4th Stage Suction Piping - B	Select One	0.000	0.000	0.00				0.000
4th Stage Suction Piping - C	Select One	0.000	0.000	0.00				0.000
4th Stage Suction Piping - D	Select One	0.000	0.000	0.00				0.000
4th Stage Suction Scrubber			0.000	0.00	#DIV/0!	0.000	0.000	0.000
4th Stage Suction Bottle			0.000	0.00	#DIV/0!	0.000	0.000	0.000
4th Stage Discharge Bottle			0.000	0.00	#DIV/0!	0.000	0.000	0.000
4th Stage Discharge Piping - A	Select One	0.000	0.000	0.00				0.000
4th Stage Discharge Piping - B	Select One	0.000	0.000	0.00				0.000
4th Stage Discharge Piping - C	Select One	0.000	0.000	0.00				0.000
4th Stage Discharge Piping - D	Select One	0.000	0.000	0.00				0.000
4th Stage Compressor-Suction Passages	Volume (in^3)	---------->						
4th Stage Compressor-Discharge Passages	Volume (in^3)	---------->						
4th Stage Cooler Volume	---------->							
Bypass piping - A	6"-SCH 120	0.562	5.501	216.13				2.973
Bypass piping - B	6"-SCH 120	0.562	5.501	303.44				4.173
Bypass piping - C	4"-SCH 80 X	0.337	3.826	93.44				0.622
Bypass piping - D	1"-SCH 160	0.250	0.815	33.81				0.010

Unit:	606 - JGD-4 Conf	Engine:	3606	Compressor:	JGD-4	

Ambient Air Temperature:	110

	lbs/sq in (abs)	Temp (F)	Vol. (ft^3)	Actual CF	lbs/sq in (gage)	
1st Stage Suction	263.15	100.00	71.90	1,335.70	250.00	124,237.81
1st Stage Discharge	263.15	234.58	49.06	734.90	250.00	84,782.94
2nd Stage Suction	263.15	120.00	49.90	895.06	250.00	86,225.38
2nd Stage Discharge	263.15	250.92	31.29	457.94	250.00	54,073.19
3rd Stage Suction	263.15	120.00	22.80	408.94	250.00	39,395.05
3rd Stage Discharge	263.15	252.60	17.99	262.63	250.00	31,085.12
4th Stage Suction	13.15		0.00	0.00		0.00
4th Stage Discharge	13.15		0.00	0.00		54,073.19
Bypass (downstream of PCV)	263.15	120.00	10.63	190.76	250.00	18,377.13
Total			253.57	4,285.93		438,176.63

Settle Out Pressure (Gauge):	209.2
Settle Out Pressure @ Ambient Temp:	215.4
Settle Out Temperature (Degrees F):	155.5
Blowdown Volume (SCF):	4,285.9

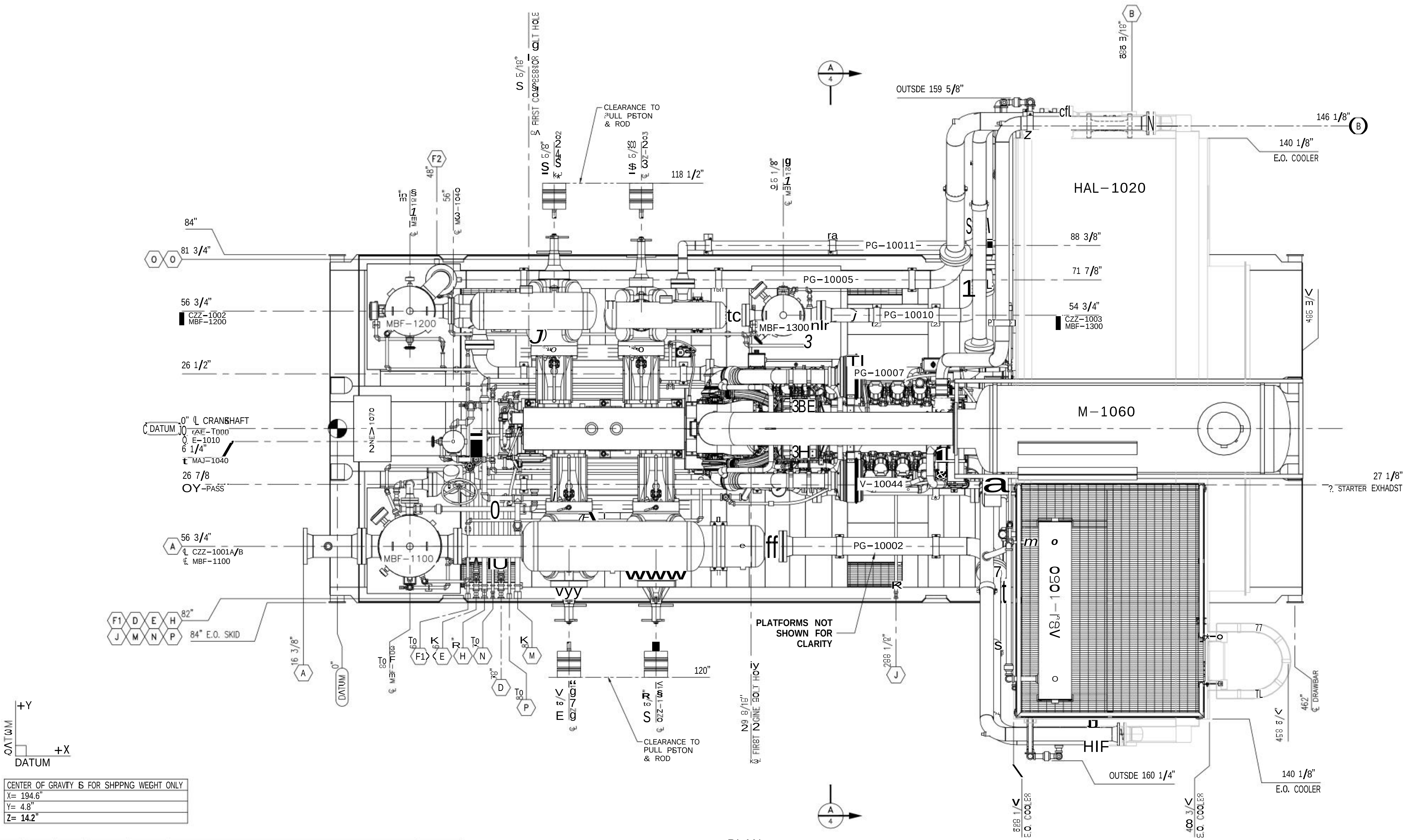
	O.D. (in)	Nom. Thk. (in)	Actual ID (in)	L. (in.)	Volume/Lin.Ft	Shell Vol.	Head Vol.	Vol. (ft^3)
1st Stage Suction Piping - A	12"-SCH 100	0.432	5.761	30.13				0.454
1st Stage Suction Piping - B	Select One	0.000	0.000	0.00				0.000
1st Stage Suction Piping - C	Select One	0.000	0.000	0.00				0.000
1st Stage Suction Piping - D	Select One	0.000	0.000	0.00				0.000
1st Stage Suction Scrubber	30.00	0.625	28.750	96.00	4.508	36.066	1.800	39.666
1st Stage Suction Bottle	30.00	0.625	28.750	75.00	4.508	28.176	1.800	31.777
1st Stage Discharge Bottle	24.00	0.562	22.876	132.00	2.854	31.396	0.907	33.210
1st Stage Discharge Piping - A	8"-SCH 40	0.322	7.981	281.65				8.154
1st Stage Discharge Piping - B	Select One	0.000	0.000	0.00				0.000
1st Stage Discharge Piping - C	Select One	0.000	0.000	0.00				0.000
1st Stage Discharge Piping - D	Select One	0.000	0.000	0.00				0.000
1st Stage Compressor-Suction Passages	Volume (in^3)							0.000
1st Stage Compressor-Discharge Passages	Volume (in^3)							0.000
1st Stage Cooler Volume	Volume (in^3)							7.700
2nd Stage Suction Piping - A	8"-SCH 40	0.322	7.981	415.31				12.024
2nd Stage Suction Piping - B	8"-SCH 40	0.322	7.981	151.06				4.373
2nd Stage Suction Piping - C	6"-SCH 160	0.718	5.189	31.13				0.381
2nd Stage Suction Piping - D	Select One	0.000	0.000	0.00				0.000
2nd Stage Suction Scrubber	24.00	0.562	22.876	90.00	2.854	21.407	0.907	23.220
2nd Stage Suction Bottle	24.00	0.562	22.876	34.00	2.854	8.087	0.907	9.901
2nd Stage Discharge Bottle	24.00	0.688	22.624	65.00	2.792	15.122	0.877	16.876
2nd Stage Discharge Piping - A	6"-SCH 40	0.280	6.065	440.00				7.356
2nd Stage Discharge Piping - B	Select One	0.000	0.000	0.00				0.000
2nd Stage Discharge Piping - C	Select One	0.000	0.000	0.00				0.000
2nd Stage Discharge Piping - D	Select One	0.000	0.000	0.00				0.000
Bypass Piping - High Pressure Side - A	Select One	0.000	0.000	0.00				0.000
Bypass Piping - High Pressure Side - B1	Select One	0.000	0.000	0.00				0.000
Bypass Piping - High Pressure Side - B2	Select One	0.000	0.000	0.00				0.000
Bypass Piping - High Pressure Side - C	Select One	0.000	0.000	0.00				0.000
Bypass Piping - High Pressure Side - D	Select One	0.000	0.000	0.00				0.000
Bypass Piping - High Pressure Side - E	Select One	0.000	0.000	0.00				0.000
Bypass Piping - High Pressure Side - F	Select One	0.000	0.000	0.00				0.000
2nd Stage AC Piping - A	Select One	0.000	0.000	0.00				0.000
2nd Stage Compressor-Suction Passages	Volume (in^3)							0.000
2nd Stage Compressor-Discharge Passages	Volume (in^3)							0.000
2nd Stage Cooler Volume	Volume (in^3)							7.060
3rd Stage Suction Piping - A	6"-SCH 40	0.280	6.065	259.00				4.330
3rd Stage Suction Piping - B	4"-SCH 160	0.531	3.438	46.75				0.251
3rd Stage Suction Piping - C	Select One	0.000	0.000	0.00				0.000
3rd Stage Suction Piping - D	Select One	0.000	0.000	0.00				0.000
3rd Stage Suction Scrubber	20.00	0.812	18.376	84.00	1.841	12.886	0.470	13.826
3rd Stage Suction Bottle	18.00	0.750	16.500	30.00	1.484	3.710	0.340	4.391
3rd Stage Discharge Bottle	16.00	1.031	13.938	66.00	1.059	5.825	0.205	6.235
3rd Stage Discharge Piping - A	4"-SCH 80 X	0.337	3.826	279.38				1.859
3rd Stage Discharge Piping - B	4"-SCH 80 X	0.337	3.826	30.88				0.205
3rd Stage Discharge Piping - C	Select One	0.000	0.000	0.00				0.000
3rd Stage Discharge Piping - D	Select One	0.000	0.000	0.00				0.000
3rd Stage Compressor-Suction Passages	Volume (in^3)							
3rd Stage Compressor-Discharge Passages	Volume (in^3)							
3rd Stage Cooler Volume	Volume (in^3)							9.690
4th Stage Suction Piping - A	Select One	0.000	0.000	0.00				0.000
4th Stage Suction Piping - B	Select One	0.000	0.000	0.00				0.000
4th Stage Suction Piping - C	Select One	0.000	0.000	0.00				0.000
4th Stage Suction Piping - D	Select One	0.000	0.000	0.00				0.000
4th Stage Suction Scrubber			0.000	0.00	#DIV/0!	0.000	0.000	0.000
4th Stage Suction Bottle			0.000	0.00	#DIV/0!	0.000	0.000	0.000
4th Stage Discharge Bottle			0.000	0.00	#DIV/0!	0.000	0.000	0.000
4th Stage Discharge Piping - A	Select One	0.000	0.000	0.00				0.000
4th Stage Discharge Piping - B	Select One	0.000	0.000	0.00				0.000
4th Stage Discharge Piping - C	Select One	0.000	0.000	0.00				0.000
4th Stage Discharge Piping - D	Select One	0.000	0.000	0.00				0.000
4th Stage Compressor-Suction Passages	Volume (in^3)	---------->						
4th Stage Compressor-Discharge Passages	Volume (in^3)	---------->						
4th Stage Cooler Volume	---------->							
Bypass piping - A	4"-SCH 80 X	0.337	3.826	93.44				0.622
Bypass piping - B	6"-SCH 40	0.280	6.065	598.38				10.004
Bypass piping - C	Select One	0.000	0.000	0.00				0.000
Bypass piping - D	1"-SCH 160	0.250	0.815	30.06				0.009

Unit:	3608 - JGC-4	Engine:	3608	Compressor:	JGC-4	
Ambient Air Temperature:	110					

	lbs/sq in (abs)	Temp (F)	Vol. (ft^3)	Actual CF	lbs/sq in (gage)	
1st Stage Suction	63.15	100.00	74.58	332.52	50.00	128,876.71
1st Stage Discharge	202.67	256.48	63.48	709.89	189.52	109,689.17
2nd Stage Suction	202.67	120.00	54.13	747.86	189.52	93,544.69
2nd Stage Discharge	494.11	245.50	38.48	1,065.44	480.96	66,491.06
3rd Stage Suction	494.11	120.00	27.43	923.82	480.96	47,397.30
3rd Stage Discharge	1,213.15	258.12	25.14	1,678.72	1200.00	43,433.56
4th Stage Suction	13.15		0.00	0.00		0.00
4th Stage Discharge	13.15		0.00	0.00		66,491.06
Bypass (downstream of PCV)	1,213.15	120.00	8.79	726.69	1200.00	15,185.44
Total			292.02	6,184.94		504,617.93

Settle Out Pressure (Gauge):	265.4
Settle Out Pressure @ Ambient Temp:	256.8
Settle Out Temperature (Degrees F):	193.7
Blowdown Volume (SCF):	6,184.9

	O.D. (in)	Nom. Thk. (in)	Actual ID (in)	L. (in.)	Volume/Lin.Ft	Shell Vol.	Head Vol.	Vol. (ft^3)
1st Stage Suction Piping - A	12"-SCH 100	0.432	5.761	24.00				0.362
1st Stage Suction Piping - B	10"-SCH 140	1.000	8.750	31.13				1.083
1st Stage Suction Piping - C	Select One	0.000	0.000	0.00				0.000
1st Stage Suction Piping - D	Select One	0.000	0.000	0.00				0.000
1st Stage Suction Scrubber	30.00	0.500	29.000	96.00	4.587	36.696	1.848	40.391
1st Stage Suction Bottle	30.00	0.500	29.000	76.00	4.587	29.051	1.848	32.746
1st Stage Discharge Bottle	24.00	0.500	23.000	144.00	2.885	34.623	0.922	36.466
1st Stage Discharge Piping - A	8"-SCH 40	0.322	7.981	263.94				7.641
1st Stage Discharge Piping - B	Select One	0.000	0.000	0.00				0.000
1st Stage Discharge Piping - C	Select One	0.000	0.000	0.00				0.000
1st Stage Discharge Piping - D	Select One	0.000	0.000	0.00				0.000
1st Stage Compressor-Suction Passages	Volume (in^3)							0.000
1st Stage Compressor-Discharge Passages	Volume (in^3)							0.000
1st Stage Cooler Volume	Volume (in^3)							19.370
2nd Stage Suction Piping - A	8"-SCH 40	0.322	7.981	853.50				24.710
2nd Stage Suction Piping - B	6"-SCH 120	0.562	5.501	49.88				0.686
2nd Stage Suction Piping - C	Select One	0.000	0.000	0.00				0.000
2nd Stage Suction Piping - D	Select One	0.000	0.000	0.00				0.000
2nd Stage Suction Scrubber	22.00	0.500	21.000	84.00	2.405	16.837	0.702	18.240
2nd Stage Suction Bottle	24.00	0.500	23.000	36.00	2.885	8.656	0.922	10.499
2nd Stage Discharge Bottle	24.00	0.688	22.624	68.50	2.792	15.936	0.877	17.690
2nd Stage Discharge Piping - A	6"-SCH 40	0.280	6.065	474.81				7.938
2nd Stage Discharge Piping - B	Select One	0.000	0.000	0.00				0.000
2nd Stage Discharge Piping - C	Select One	0.000	0.000	0.00				0.000
2nd Stage Discharge Piping - D	Select One	0.000	0.000	0.00				0.000
Bypass Piping - High Pressure Side - A	Select One	0.000	0.000	0.00				0.000
Bypass Piping - High Pressure Side - B1	Select One	0.000	0.000	0.00				0.000
Bypass Piping - High Pressure Side - B2	Select One	0.000	0.000	0.00				0.000
Bypass Piping - High Pressure Side - C	Select One	0.000	0.000	0.00				0.000
Bypass Piping - High Pressure Side - D	Select One	0.000	0.000	0.00				0.000
Bypass Piping - High Pressure Side - E	Select One	0.000	0.000	0.00				0.000
Bypass Piping - High Pressure Side - F	Select One	0.000	0.000	0.00				0.000
2nd Stage AC Piping - A	Select One	0.000	0.000	0.00				0.000
2nd Stage Compressor-Suction Passages	Volume (in^3)							0.000
2nd Stage Compressor-Discharge Passages	Volume (in^3)							0.000
2nd Stage Cooler Volume	Volume (in^3)							12.850
3rd Stage Suction Piping - A	6"-SCH 40	0.280	6.065	328.19				5.487
3rd Stage Suction Piping - B	4"-SCH 80 X	0.337	3.826	49.75				0.331
3rd Stage Suction Piping - C	Select One	0.000	0.000	0.00				0.000
3rd Stage Suction Piping - D	Select One	0.000	0.000	0.00				0.000
3rd Stage Suction Scrubber	20.00	0.500	19.000	84.00	1.968	13.776	0.520	14.815
3rd Stage Suction Bottle	20.00	0.594	18.812	36.00	1.929	5.788	0.504	6.796
3rd Stage Discharge Bottle	20.00	1.031	17.938	72.00	1.754	10.525	0.437	11.399
3rd Stage Discharge Piping - A	4"-SCH 80 X	0.337	3.826	578.88				3.851
3rd Stage Discharge Piping - B	2"-SCH 80 X	0.218	1.939	84.63				0.145
3rd Stage Discharge Piping - C	Select One	0.000	0.000	0.00				0.000
3rd Stage Discharge Piping - D	Select One	0.000	0.000	0.00				0.000
3rd Stage Compressor-Suction Passages	Volume (in^3)							
3rd Stage Compressor-Discharge Passages	Volume (in^3)							
3rd Stage Cooler Volume	Volume (in^3)							9.740
4th Stage Suction Piping - A	Select One	0.000	0.000	0.00				0.000
4th Stage Suction Piping - B	Select One	0.000	0.000	0.00				0.000
4th Stage Suction Piping - C	Select One	0.000	0.000	0.00				0.000
4th Stage Suction Piping - D	Select One	0.000	0.000	0.00				0.000
4th Stage Suction Scrubber			0.000	0.00	#DIV/0!	0.000	0.000	0.000
4th Stage Suction Bottle			0.000	0.00	#DIV/0!	0.000	0.000	0.000
4th Stage Discharge Bottle			0.000	0.00	#DIV/0!	0.000	0.000	0.000
4th Stage Discharge Piping - A	Select One	0.000	0.000	0.00				0.000
4th Stage Discharge Piping - B	Select One	0.000	0.000	0.00				0.000
4th Stage Discharge Piping - C	Select One	0.000	0.000	0.00				0.000
4th Stage Discharge Piping - D	Select One	0.000	0.000	0.00				0.000
4th Stage Compressor-Suction Passages	Volume (in^3)	---------->						
4th Stage Compressor-Discharge Passages	Volume (in^3)	---------->						
4th Stage Cooler Volume	---------->							
Bypass piping - A	6"-SCH 40	0.280	6.065	525.63				8.788
Bypass piping - B	Select One	0.000	0.000	0.00				0.000
Bypass piping - C	Select One	0.000	0.000	0.00				0.000
Bypass piping - D	Select One	0.000	0.000	0.00				0.000



PLAN

SCALE 1/2" = 1'-0"

CENTER OF GRAVTY S FOR SHPPNG WEGHT ONLY	
X= 194.6"	
Y= 4.8"	
Z= 14.2"	

MARK	QAN.	SIZE	RATNG	TYPE	SERVCE	ELEV.
P	1	1"	2000#	FNPT	PACKNG VENT DRAN	22 3/4"
O	4	2"	2000#	FNPT	SKD DRAN BOXES	6"
N	1	1"	2000#	FNPT	ENGNE/COMPRESSOR LUBE OL MAKE-UP	22 3/4"
M	1	2"	2000#	FNPT	DSTANCE PECE DRAN	23 5/16"
J	1	1"	2000#	FNPT	EJW/TAW LOW PONT DRAN	22 3/4"
H	1	2"	2000#	FNPT	ENGNE/COMPRESSOR OL DRAN	23 5/16"
F2	1	1"	2000#	FNPT	1ST/2ND NTERSTAGE SCRUBBER DRAN HEADER	22 3/4"
F1	1	1"	2000#	FNPT	SCRUBBER DRAN HEADER	22 3/4"
E	1	2"	2000#	FNPT	FUEL GAS NLET	23 5/16"
D	1	2"	2000#	FNPT	START GAS NLET	23 5/16"
B	1	4"	900#	RF	UNT DSCHARGE	17 9/16"
A	1	10"	300#	RF	UNT NLET	74 9/16

CUSTOMER CONNECTON SCHEDULE

COMPESSOR	ARIEL JGT-4
CYLINDERS	(2) 14-1/8"T CYL, (14.125" BORE)
	(1) 11"T CYL, (11.000" BORE)
	(1) 7-1/4"T CYL, (6.750" BORE)
DRIVER	CATERPILLAR, MODEL G3516J-LE
COUPLING	TB WOODS, FSH-70
COOLER	AIR-X-CHANGERS 156-EH
PANEL	EMIT

MAJOR COMPONENTS

UNIT DIMENSIONS	
OVERALL LENGTH	40'-2 1/8"
OVERALL WIDTH	26'-7 7/8"
OVERALL HEIGHT	24'-9 9/16"
SHIPPING LENGTH	39'-2"
SHIPPING WIDTH	15'-8 1/16"
SHIPPING HEIGHT	11'-2 5/8"

UNIT WEIGHTS	
MAIN SKID FOUNDATION WEIGHT	150,262#
MAIN SKID SHIPPING WEIGHT	120,614#
DRIVER WEIGHT	17,400#
COOLER WEIGHT W/PIPE	31,010#

REV	DESCRPTON	DATE	BY	CHK
3	AS-BULT	1/9/19	GG	KM
2	REVSED DMENSON & PANEL NFO	10/2/18	JR	HV
1	REMOVED SUCTON VENT LNE	9/25/18	GG	HV
0	SSUED FOR CONSTRUCTON	8/6/18	GG	SS

ALEGACY JOB #

1677-1704

ALEGACY®

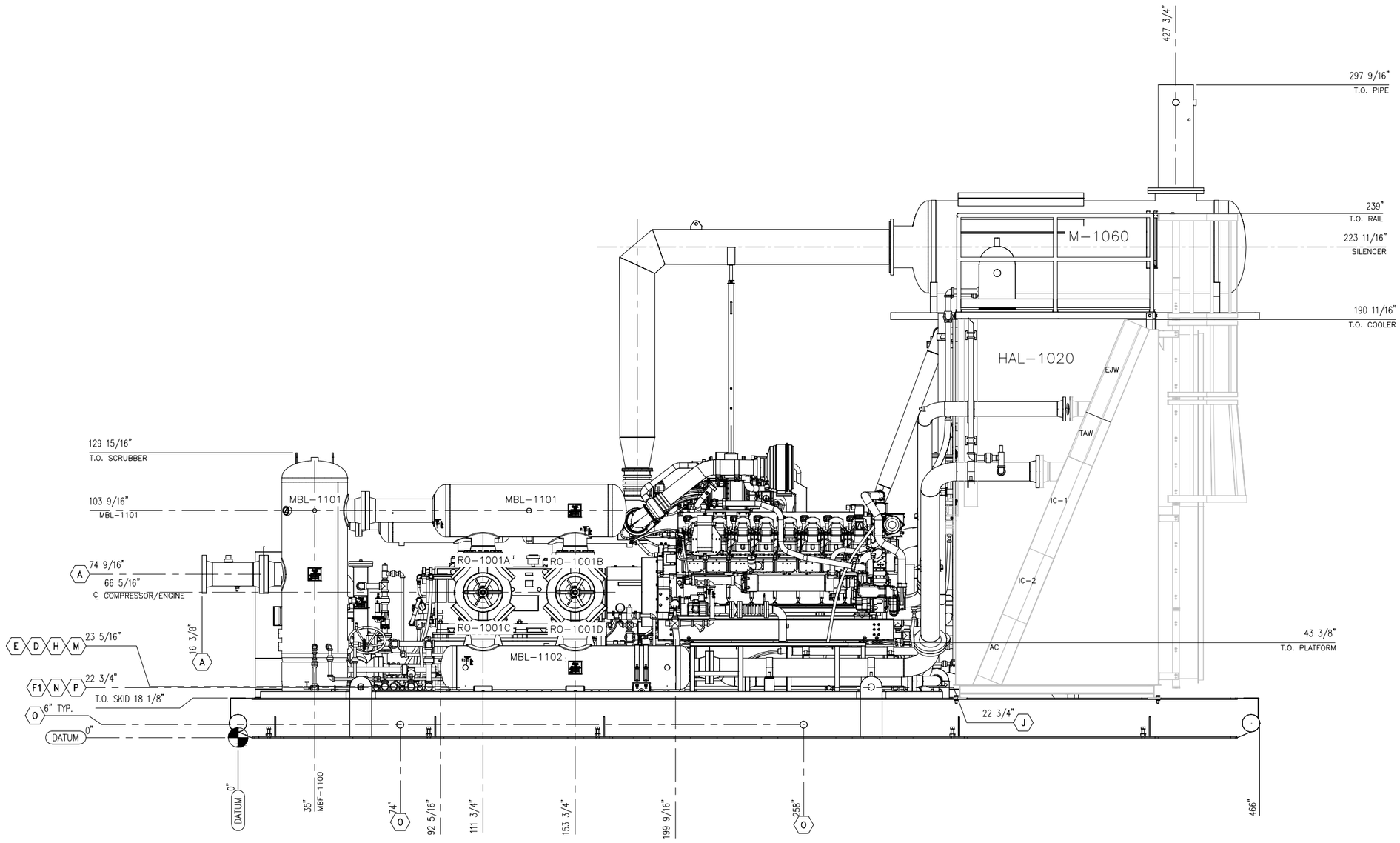
THS DRAWNG S THE PROPERTY OF ALEGACY EQPMENT AND S NOT TO BE USED FOR ANY PURPOSE OTHER THAN THAT FOR WHCH T S SPECFCALLY FURNSHED

CUSTOMER: KODAK GAS SERVCES

TTLE: **GENERAL ARRANGEMENT**
CAT G3516J-LE, AREL JGT-4/3 STAGE

DWN BY	DATE	CHK BY	DATE	SCALE
DET	03/04/14	BD	03/04/14	AS NOTED

DWG. NO. A-1677-201-01 SHT 1 OF 8 — REV 3



FRONT ELEVATION
SCALE 1/2" = 1'-0"

ALEGACY JOB #
1677-1704

REV	DESCRIPTION	DATE	BY	CHK
3	AS-BUILT	1/9/19	GG	KM
2	UPDATED VIEW	10/2/18	JR	HV
1	REMOVED SUCTION VENT LINE	9/25/18	GG	HV
0	ISSUED FOR CONSTRUCTION	8/6/18	GG	SS

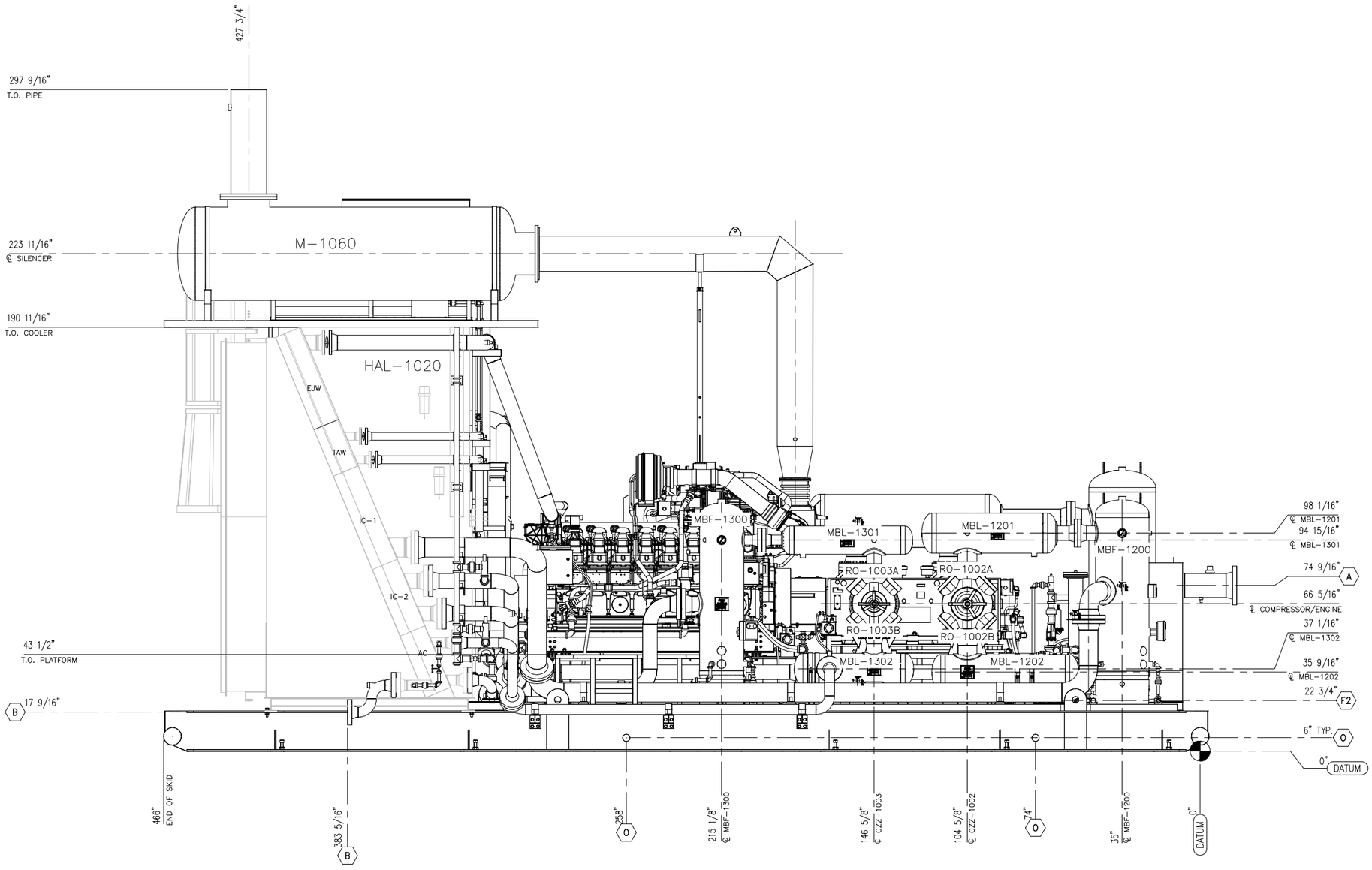
ALEGACY®

CUSTOMER: KODIAK GAS SERVICES

TITLE: GENERAL ARRANGEMENT
CAT G3516J-LE,ARIEL JGT-4/3 STAGE

DWN BY	DATE	CHK BY	DATE	SCALE
DET	03/04/14	BD	03/04/14	AS NOTED

DWG. NO. A-1677-201-02 SHT 2 OF 8 REV 3



BACK ELEVATION
SCALE 1/2" = 1'-0"

ALEGACY JOB #	
1677-1704	

REV	DESCRIPTION	DATE	BY	CHK
3	AS-BUILT	1/9/19	GG	KM
2	UPDATED VIEW	10/2/18	JR	HV
1	REMOVED SUCTION VENT LINE	9/25/18	GG	HV
0	ISSUED FOR CONSTRUCTION	8/6/18	GG	SS

ALEGACY®

CUSTOMER: KODIAK GAS SERVICES

TITLE: GENERAL ARRANGEMENT
CAT G3516J-LE,ARIEL JGT-4/3 STAGE

DWN BY	DATE	CHK BY	DATE	SCALE
DE	03/04/14	BD	03/04/14	AS NOTED

DWG. NO. A-1677-201-03 SHT 3 OF 8 REV 3

Section 22: Certification

Company Name: Targa Northern Delaware, LLC

I, Jimmy E Oxford, 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 7th day of March, 2023, upon my oath or affirmation, before a notary of the State of Texas.

*Signature — Date: 3/7/23

Jimmy E Oxford — Printed Name

VP operations — Title

Scribed and sworn before me on this 7th day of March, 2023.

My authorization as a notary of the State of TEXAS expires on the 1st day of October, 2024.

Notary's Signature — Date: 3/7/23

Russell Park — Notary's Printed Name

RUSSELL PARK
My Notary ID # 126679120
Expires October 1, 2024

*For Title V applications, the signature must be of the Responsible Official as defined in 20.2.70.7.AE NMAC.