

Statement of Basis – Narrative – Proposed – 11-4-22

NSR Permit

This version shows changes since 4-20-22 draft version released for public review

Type of Permit Action: Regular-Significant Revision

Entire Facility: Los Alamos National Laboratory

Specific Facility Subject to this NSR permit: Target Fabrication Facility

Company: U.S. Department of Energy, National Nuclear Security Administration, and Triad National Security, LLC (collectively the “permittees”)

Permit No(s): 632-M1 and P100-R2M1 (and P100-R3 in process, hearing TBD)

Tempo/IDEA ID No.: 856 - PRN20210004

Permit Writer: James E. Nellesen

Fee Tracking (not required for Title V)

Tracking	NSR tracking entries completed: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
	NSR tracking page attached to front cover of permit folder: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
	Paid Invoice Attached: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
	Balance Due Invoice Attached: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
	Invoice Comments: Balance paid in full

Permit Review	Date to Enforcement: N/A*	Date of Enforcement Reply: N/A*
	Date to Applicant: 3/24/2022	Date of Applicant Reply: 4/8/2022
	Date to EPA: <u>N/A/9/23/2022</u>	Date of EPA Reply: <u>N/ATBD</u>
	Date to Supervisor: March 21, 2022	

*Enforcement is not reviewing draft permits at this time.

1.0 Plant Process Description – Target Fabrication Facility:

Permittee’s Process Description/Purpose of Work: Machining of small beryllium parts currently takes place at TA-35 Building 213 using programmable precision instruments. Machining which takes place is conducted on a micro-scale level. Prior to machining, a single target is typically a few mm³ (cubic millimeters) in size to several hundred mm³ with a total mass per part ranging from approximately 6 to 4700 milligrams. A small quantity of the total mass, up to 165 mg, is removed over a range of time during precision machining to form a completed target.

Machining takes place within enclosures which are vented to a dedicated exhaust system and stack. All exhaust from machining is controlled with a pre-filter and a single-stage High Efficiency Particulate Air (HEPA) filter. The room is operated at a negative pressure within Building 213 to provide additional assurance any potential beryllium contamination is confined.

HEPA filters used must meet the procurement specifications of DOE Standard 3020-97 - Specification for HEPA Filters Used by DOE Contractors. This standard requires each filter to be tested prior to installation at a DOE filter test facility. Filters with leakage rates in excess of 0.03% (99.97% removal) must be rejected. Once in place, an annual challenge or aerosol penetration test is conducted. The installed filter must meet a leakage rate of less than 0.05% or conversely achieve 99.95% removal or greater. Continuous compliance is assured by monitoring the pressure drop across the filter.

To the above stated purpose/goals, currently within Los Alamos National Laboratory's (LANL) Target Fabrication Facility (Area TA-35-213) there is one old beryllium lathe (permitted back in 1985) that is wearing out and needs backup/replacement.

2.0 Description of this Modification:

The intent of this permit modification is to allow for the concurrent operation of two machining lathes in the same room in Building 213 and add a sputter coating operation in a separate room. This application includes installation and operation of two additional lathes beyond the one currently permitted. Two lathes will be allowed to operate simultaneously, while the third lathe serves as a backup if one of the lathes is out of service. At no time will more than two lathes be operated simultaneously. All machining will take place within enclosures which are vented to dedicated exhaust systems and stacks. All exhaust from machining will be controlled with a pre-filter and a single-stage High Efficiency Particulate Air (HEPA) filter. HEPA filters used must meet the procurement specifications of DOE Standard 3020-97 - Specification for HEPA Filters Used by DOE Contractors. This standard requires each filter to be tested prior to installation at a DOE filter test facility. Once in place, an annual challenge or aerosol penetration test is conducted. The installed filter must meet a leakage rate of less than 0.05% for 99.95% removal. Continuous compliance is assured by monitoring the pressure drop across the filters.

The new coating (etching) process is called magnetron sputtering. The beryllium (Be) target will be bombarded with energetic argon (Ar) ions, which will result in sputtering of Be atoms. The sputtered Be atoms will coat the substrate (which will have different shape and size depending on the application) and also will be coating the vacuum chamber walls, shields, etc. (this is where Be is lost). The sputtering process is conducted in a high vacuum chamber and sputtered Be is contained inside the chamber. During sputtering the chamber is pumped with two pumps linked in series: first going through the turbo-molecular pump followed secondly by the scroll pump. Hence, The exhaust from the turbo- molecular pump is always attached to the intake of the scroll pump which then goes to a ~~will be equipped with~~ HEPA filter as described above.

3.0 Source Determination:

1. The emission sources evaluated include: Target Fabrication Facility, TA-35-213.
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 – for Entire LANL Facility:

For the purposes of PSD and Title V, the entire LANL facility including all equipment and processes listed in the Title V permit is considered to be the source. Once a source is PSD major for any single pollutant, all other pollutants, other than non-attainment pollutants, must be evaluated against Table 20.2.74.502

Significant Emission Rate for applicability regardless if that pollutant is over the 100/250 tpy threshold per 20.2.74.200(d)(1), 74.302.A and 302.B NMAC. See Section A, PSD Applicability, of the 1990 Workshop Manual for details, but keep in mind that the regulation has changed since the guidance was published.

- A. The entire LANL facility source, as determined in 3.0 above, is a PSD synthetic minor source before and after this modification. ~~PSD does not apply to~~ The Target Fabrication Facility subject to this NSR permit is a portion of the entire ~~LANL facility~~ and therefore also a PSD minor source.

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. **Note: This table only displays Title V permit actions and history of this NSR Permit 632.**

Permit Number	Issue Date	Action Type	Description of Action (Changes)
632-M1	TBD	NSR Significant Revision	To add two additional beryllium (Be) lathes (current one is wearing out) and a beryllium coating process to the Target Fabrication Facility (TA-35-213). Be emissions will continue to be controlled by HEPA filters at 99.95% efficiency. The Be allowable emissions: gm/yr remain the same, gm/h are decreasing by a factor 2.9, and a new gm/24-hr limit is being added (which is far below the federal NESHAP standard at 40 CFR 61, Subpart C, 61.32).
P100-R3	TBD (had been due by 10/25/2020)	TV Renewal	To incorporate all applicable requirements since the most recent complete TV permit, P100-R2M1, issued Feb. 3, 2017. Application received on time on Feb. 26, 2019, ruled complete on April 26, 2019, draft permit ready July 2020, and 30-day public notice initiated on July 22, 2020. Application and draft permit are pending a public hearing.
*P100-R2M4	7/18/2019	TV Minor Mod	To add one evaporative sprayer at the SERF facility.
*P100-R2M3	10/17/2018	TV Admin	Update operator name to Triad National Security, LLC.
*P100-R2M2	5/7/2018	TV Admin	Update operator name to Los Alamos National Security, LLC, and Newport News Nuclear BWXT-Los Alamos, LLC.
*P100-R2M1	2/3/2017	Title V Minor Permit Modification	TA 54 SVE: This permit revision removed the conditions in Section A113 of the Title V Operating permit for the TA 54 MDL Soil Vapor Extraction (SVE) unit. This is because the requirement was completed to verify that the SVE air emissions are Title V Insignificant, activity number 1.a and 1.b. The condition required that the permittee, using data from the SVE stack, calculate and report the emission rates of HAPs and New Mexico TAPs. The SVE system is a Title V Insignificant Activity emissions of which must be included in the facility-wide HAPs emissions cap. The requirements of this condition were satisfied and no longer applied as of

Permit Number	Issue Date	Action Type	Description of Action (Changes)
			<p>March 9, 2016.</p> <p>Water Evaporator Sprayers TA-60: Add 5 floating evaporative sprayers to the Title V permit (units TA-60-EVAP-1 to -EVAP-5) for the LANL Sanitary Effluent Treatment Facility (SERF).</p> <p>Existing sprayer unit TA-60-EVAP, model number 420, is not authorized to operate and was shut down as of June 28, 2016 and then decommissioned as per Voluntary Disclosure and Corrective Action received on 7-18-16.</p> <p>The TSP NMAAQs is not an applicable requirement in title V, however, TSP is a regulated air pollutant subject to Title V permitting (see 20.2.70.7.AC(a)). Also per 20.2.70.302.A(8) NMAC fugitive emissions, as well as stack emissions, from a source are also subject to regulation in the operating permit.</p> <p>Hazardous Air Pollutants (HAPs) from the evaporative sprayers are verified in Condition A1507.A by calculating the tons per year emission rates using hours of operation and the most recent water analysis. Although New Mexico TAP (NM TAP) emission rates are too low to regulate for this source, the permit still requires verification of these emission rates and reporting to the Air Quality Bureau.</p> <p>Numerical air emission limits from the evaporative sprayers are not appropriate because the emission rates are minimal; they are fugitive and cannot be directly measured; TSP and PM10 pollutants from this source do not require air dispersion modeling; and hazardous air pollutants (HAPs), including those from the evaporative sprayers, must be inventoried and reported from the entire Laboratory every 6 months.</p> <p>Air emission rates estimated from ground water samples and reported in the application from the evaporative sprayers are: 1.40 pph/6.12 tpy TSP; 0.07 pph/0.29 tpy PM10; ton per year (tpy) emissions of the following HAPs are: 0.000000138 PCBs, 0.00000633 chloroform, 0.0000434 chloromethane, 0.000056 bromoform, 0.000129 cyanide, 0.000465 manganese, 0.00022 antimony, and 0.001 total HAPs. NM Toxic Air Pollutants (NMTAPs) are not subject to</p>

Permit Number	Issue Date	Action Type	Description of Action (Changes)
			permit requirements since each TAP is below the regulatory threshold that requires a permit.
P100-R2	2/27/2015	Title V Renewal	<p>Renewal of Title V permit. Incorporates changes since P100R1M3 issued 4/26/13.</p> <p>Petitioners petitioned title V Permit No. P100-R2 to the Environmental Improvement Board and a hearing was completed. See hearing record under EIB 15-02(A). A copy of the final decision is in the permit file.</p> <p>See statement of for P100R2 for information regarding fire fighter training and asbestos as it applies to the open burning regulation at 20.2.60 NMAC.</p>
P100R1M3	4/26/2013	Admin Rev	Removal of four retired boilers (TA-48-1-BS-2 & 6 and TA-59-1-BHW-1 & 2) from list of regulated sources.
P100R1M2	12/26/2012	Admin Rev	Retirement of four boilers (TA-48-1-BS-2 & 6 and TA-59-1-BHW-1 & 2) from list of regulated sources.
P100R1M1	6/15/2012	Title V Significant Modification	Incorporates NSR 2195B-M2.
P100-R1	8/7/09	Title V Renewal	Incorporates changes since P100R1: 2195NR1, 2195F-R2, P100M2, and 2195P. Also includes 1081-M1-R6, prior to P100M1. For specific changes see 2.0 Description of this Modification above.
P100-M2	7/16/07	Admin Amendment	Retired Beryllium operations at the Chemistry and Metallurgy Research Facility at TA-3-29.
P100-M1	6/15/06	Title V Modification	Removed the Paper Shredder located at TA-52-11 and replaced it with the Data Disintegrator; removed Boilers TA-16-1485-BS-1 and BS-2, and the portable rock crusher; and installed a new 25 MW simple cycle natural gas turbine at the Power Plant at TA-3. P100M1 supersedes permit P100.
P100	4/30/04	New Title V	New operating permit issued for the facility.
*632	12/26/85	New NSR	Construction and operation of a beryllium machine shop in TA-35, building 213.

6.0 Public Response/Concerns: Public comments were received on February 25 and 26, 2022 from at least a dozen interested organizations and/or individuals. The primary party submitting comments was the Concerned Citizens for Nuclear Safety (CCNS) which had multiple co-signees. Many of the other parties and individuals provided comments that were similar to those submitted by CCNS. The AQB acknowledged receipt of all comments on March 1, 2022, and sent out initial citizen letters (per 20.2.72.206 NMAC) on March 7, 2022. At such time the Department's analysis and draft permit is ready all of the commenters will be notified to initiate

a second 30-day public comment period.

7.0 Compliance Testing:

Unit No.	Compliance Test Description	Test Date(s)
TA-35-213-1	Startup test as required by the Part 61, Subpart C Beryllium NESHAP using EPA test methods 103 and 104, Part 61, Appendix B. NMED letter of December 6, 1986 accepted test results as demonstrating compliance.	9/9/1986
TA-35-213-1	As stated by permittee: Once in place, an annual challenge or aerosol penetration test is conducted. The installed filter must meet a leakage rate of less than 0.05% or conversely achieve 99.95% removal or greater. Continuous compliance is assured by monitoring the pressure drop across the filter.	annually

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? Yes
- 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, per NSR and TV permits.
- D. Does the facility have emissions due to routine or predictable startup, shutdown, and maintenance ([SSM](#))? No, [there are no permitted SSM emissions from the Target Fabrication Facility \(Be machining\), under NSR Permit 632-M1. Further, LANL has no permitted SSM for any other activities under the overall Title V permit umbrella](#)Yes, see Condition A107 in TV Permit P100-R2M1. If so, have all emissions from startup, shutdown, and scheduled maintenance operations been permitted?

9.0 Compliance and Enforcement Status [Title V and NSR/PSD new or modification].

Per email response on Feb. 1, 2022, from Teri Waldron in the Enforcement Section of AQB: There is no outstanding notice of violation and no settlement agreement for which all actions have not been completed.

10.0 Modeling: There are no specific modeling requirements for the type of activity in this action because there is no federal or state ambient air quality standard for beryllium. Federal standards for HAPs like beryllium are set in terms of an emission limit and/or a control technology method. [A waiver from conducting air dispersion modeling was granted by the Air Quality Bureau on Nov 2, 2021. The Target Fabrication Facility does not emit NOx, CO, VOC, SO2 or H2S. The emissions of beryllium, when considered as particulates, are less than the low emission rate waiver threshold established in AQB modeling guidelines. There is no ambient air quality standard specific to beryllium to which modeling results could be compared. LANL is a large diverse facility with multiple NSR \(construction\) permits. For informational purposes only, below is a brief summary of modeling performed for criteria air pollutants \(e.g.,](#)

nitrogen dioxide, carbon monoxide, sulfur dioxide, etc.) for LANL's power plant facility.

Prior Modeling:

NSR 2195B M3 (issued July 26, 2018 for power plant revisions): Modeling was submitted for this application for NO₂, SO₂, CO, TSP, PM₁₀, and PM_{2.5}. AQB modeling and review was conducted by David Heath (report 5/30/18) demonstrated that the facility neither caused nor contributed to any exceedances of applicable air quality standards.

11.0 State Regulatory Analysis (NMAC/AQCR) for the Target Fabrication Facility~~entire LANL Facility~~:

Citation 20 NMAC	Title	Applies (Y/N)	Unit(s) or Facility	Justification:
2.1	General Provisions	Yes, always	Target Fab 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, for NSR, No for TV	Entire LANL Facility including Target Fab Facility	NSR: 20.2.3 NMAC is a SIP approved regulation that limits the maximum allowable concentration of Sulfur Compounds, Carbon Monoxide and Nitrogen Dioxide. Applies to federal criteria pollutants with ambient air standards or state pollutants with standards such as H ₂ S. Although the Target Fabrication Facility does not emit specific pollutants identified in the rule, there are no provisions that would exempt or exclude the Target Fab Facility. Title V: 20.2.3.9 NMAC, LIMITATION OF APPLICABILITY TO 20.2.70 NMAC. The requirements of NMAAQs are not applicable requirements under 20.2.70 NMAC, as defined by 20.2.3.9 NMAC, 20.2.3.9 NMAC does not limit the applicability of this part to sources required to obtain a permit under the minor NSR regulation, 20.2.72 NMAC, nor does it limit which terms and conditions of NSR permits issued pursuant to 20.2.72 NMAC are applicable requirements in a Title V permit.
2.7	Excess Emissions	Yes, always	Target Fab Entire Facility	Applies to the Target Fabrication Facility through limitations and monitoring conditions in existing NSR and TV permits. all of the facility's sources.
2.70	Operating Permits	Yes	Entire LANL Facility	The source (entire LANL facility) is a Title V Major Source as defined at 20.2.70.7 NMAC. The Target Fabrication Facility is a component of LANL's Title V permit and regulated through the A700 Conditions in Permit P100-R2M1.
2.71	Operating Permit Fees	Yes	Entire LANL Facility	Source is subject to 20.2.70 NMAC as cited at 20.2.71.109 NMAC. The Target Fabrication Facility is a component of LANL's Title V.
2.72	Construction Permits	Yes	Target Fab Entire Facility	Per Section: 200.A(3) Existing NSR Permit is No. 632 from 1985.

Citation 20 NMAC	Title	Applies (Y/N)	Unit(s) or Facility	Justification:
2.73	NOI & Emissions Inventory Requirements	Yes, always	Target Fab Entire Facility	Applicable to all facilities that require a permit. PER > 10 tpy for a regulated air contaminant.
2.75	Construction Permit Fees	Yes	Target Fab Entire Facility	This facility is subject to 20.2.72 NMAC. TV: No, in accordance with 20.2.75.11.E an annual NSR enforcement and compliance fee shall not apply to sources subject to 20.2.71 NMAC.
2.78	Emissions Standards for HAPs	Yes	TA-35-213-1, 2, 3, and 4	This regulation applies to all sources emitting hazardous air pollutants, which are subject to the requirements of 40 CFR Part 61.

12.0 Federal Regulatory Analysis for [the Target Fabrication Facility](#)~~entire LANL facility~~:

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 LANL Facility	Independent of permit applicability; applies to all sources of emissions for which there is a Federal Ambient Air Quality Standard. Although the Target Fabrication Facility does not emit criteria pollutants (which have ambient standards), nevertheless, the Target Fab Facility falls under the bigger umbrella of the entire LANL facility.
NESHAP Subpart A (40 CFR 61)	General Provisions	Yes	TA-35-213-1, 2, 3, and 4	Applies if any other subpart applies and Subpart C for beryllium applies.
40 CFR 61 Subpart C	National Emission Standards for Beryllium	Yes	TA-35-213-1, 2, 3, and 4	The provisions of this subpart are applicable to the following stationary sources: (a) Extraction plants, ceramic plants, foundries, incinerators, and propellant plants which process beryllium ore, beryllium, beryllium oxide, beryllium alloys, or beryllium-containing waste. (b) Machine shops which process beryllium, beryllium oxides, or any alloy when such alloy contains more than 5 percent beryllium by weight. LANL houses facilities, and for this permit (No. 632 and 632-M1), applicable to TA-35-213, that contain machine shops which process beryllium, beryllium oxides, or any alloy when such alloy contains more than 5 percent beryllium by weight. Applicable to beryllium operations (§61.30). Emissions standard is at §61.32 which is an amount not to exceed 10 grams (0.022 lb) of beryllium over a 24-hour period.

13.0 Exempt and/or Insignificant Equipment that do not require monitoring:

No exempt equipment associated with this permitted activity.

14.0 New/Modified/Unique Conditions (Format: Condition#: Explanation):

Since this NSR is a revision from old 1985 letter format permit, nearly everything is new in this NSR Permit 632-M1. A more appropriate comparison is to the section of the current TV Permit P100-R2M1 that applies to this facility; Beryllium Activities, Sections A700-A707, and specifically to TA-35-213 the Target Fabrication Facility.

- A. Table 106.A Emission limits: Hourly limit is now 2.9 times lower than previous. New daily limit that is more than 6000 times smaller than the federal US EPA requirement. Annual limit remains the same as previous.
- B. A108 Hours of Operation limited to 11,424 hours per year (2 lathes combined, 5712 hours each lathe), and 5712 hours per year for sputter coating operation.
- C. A112 Location Requirements limited to building 213 and two rooms, one for lathing, one for coating.
- D. A113 Alternative Operating Scenarios to limit no more than any two lathes at a time.
- E. A600.A and A600.B Operational Requirements including Control Monitoring: Requirements, monitoring, reporting and recordkeeping are specified in much greater detail than in existing TV Permit P100-R2M1.

15.0 For Title V action: Cross Reference Table between NSR Permit 632-M1 and TV Permit P100-R2M1. NSR permit conditions cross referenced to the TV permit are federally enforceable conditions, and therefore brought forward into the TV permit:

Not applicable: This is an NSR action, not a TV action.

16.0 Permit specialist's notes to other NSR or Title V permitting staff concerning changes and updates to permit conditions.

- A. This NSR will need incorporation into LANL's TV permit.
- B. [Below is a table comparing the Be emission limits proposed in this permit action relative to the old NSR Permit 632 from 1985 \(and also to TV Permit P100-R2M1\) and to the federal Beryllium NESHAP, Subpart C:](#)

		Proposed emission limits as compared to current permits and compared to the federal NESHAP	
Time Period	Proposed Emission Limits (NSR Permit 632-M1)	Current (NSR Permit 632 dating from 1985; and current TV Permit P100-R2M1)	*40 CFR 61, Subpart C

Annual (gm/yr)	0.36	Same	*10,000 times smaller
24-hour (gm/24-hr)	0.0015	New limit (meaning the current permits had no limit other than the existing federal standard)	6,666 times smaller
1-hour (gm/hour)	0.0000625	3 times smaller	*6,666 times smaller

*Technically under the federal NESHAP there is only the 24-hour standard. Comparisons to annual and 1-hour figures were calculated extrapolations based on the 24-hour standard. The federal standard is 10 gm/24 hours. Extrapolating the federal figure to annual would result in 3650 gm/year, and extrapolating the federal figure to 1-hour would result in 0.42 gm/hour.