AIR QUALITY BUREAU
NEW SOURCE REVIEW PERMIT – Proposed – 1-5-23
Issued under 20.2.72 NMAC

Certified Mail No:
Return Receipt Requested

NSR Permit No:	632-M1 (for Target Fabrication Facility)
Entire Facility Name:	Los Alamos National Laboratory
Facility Owner/Permittee:	U.S. Department of Energy, National Nuclear Security Administration
Operator Name/Permittee:	Triad National Security, LLC
Mailing Address:	P.O. Box 1663, MS K490 Los Alamos, New Mexico 87545
TEMPO/IDEA ID No:	856-PRN20210004
AIRS No:	35 0280001
Permitting Action:	NSR Significant Permit Revision
Source Classification:	TV Major, PSD Synthetic Minor
Facility Location:	380,790 m E by 3,970,800 m N; Zone 13 Datum NAD83
County:	Los Alamos
Air Quality Bureau Contact	James E. Nellessen
Main AQB Phone No.	(505) 476-4300

Liz Bisbey-Kuehn
Bureau Chief
Air Quality Bureau

Date

Template version: 06/30/2021

TABLE OF CONTENTS

PART A FACILITY SPECIFIC REQUIREMENTS

A100 Introduction

A. This permit, NSR 632-M1, supersedes all portions of Air Quality Permit 632, issued December 26, 1985, 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A. The term of this permit is permanent unless withdrawn or cancelled by the Department.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. Los Alamos National Laboratory (LANL or the Laboratory) conducts research and development. Regulated air pollutant emissions from LANL are primarily associated with mission support sources, such as boilers for electricity and steam generation, asphalt production for road repair, and standby generators to provide emergency power. Miscellaneous chemical usage throughout the Laboratory results in emissions of volatile organic compounds and hazardous air pollutants. This construction permit applies specifically to the Target Fabrication Facility, where millimeter size micro-machining and coating operations take place in support of inertial confinement fusion energy research.

B. The Laboratory is located in UTM Zone 13, UTMH 380.790 km, UTMV 3970.800 km, in and adjacent to Los Alamos, New Mexico in Los Alamos County.

C. This modification consists of the addition of two additional beryllium (Be) lathes 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. 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 the entire LANL facility, including all of the regulated sources encompassed by the LANL Title V permit P100R2M1 and is for information only. The PER for the Target Fabrication Facility covered by the NSR permit is 0 tpy for all pollutants listed in Table 102A. 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 LANL Facility[3]

Pollutant	Emissions (tons per year)
Nitrogen Oxides (NOx)	245
Carbon Monoxide (CO)	225
Volatile Organic Compounds (VOC) [1]	200
Sulfur Dioxide (SO_2)	150
Particulate Matter (PM)[2]	120
Particulate Matter 10 microns or less (PM_{10})	120
Particulate Matter 2.5 microns or less ($PM_{2.5}$)	120
Greenhouse Gas (GHG) as CO_2e	>75,000

1. VOC total includes emissions from Fugitives, SSM and Malfunctions.
2. PM is a regulated new source review pollutant per 20.2.70 NMAC Title V Permits, and 20.2.74 NMAC Prevention of Significant Deterioration. No ambient air quality standards apply to PM.
3. Emissions in this table apply to the entire LANL facility under Title V including the Target Fabrication Facility. This table is for information only.

Table 102.B: Total Potential Emissions Rate (PER) for [1]Hazardous Air Pollutants (HAPs) that exceed 1.0 ton per year

Pollutant	Emissions (tons per year)
[1,2]Individual HAP (limit for each/any individual HAP)	8.0
[3]Beryllium (Target Fabrication Facility, TA-35-213)	0.36 grams/year
[2]Total HAPs	24.0

1. HAP emissions are already included in the VOC emission total.
2. The individual and total HAPs emissions as listed are facility-wide emission caps for the entire LANL facility.
3. Annual beryllium limit for the Target Fabrication Facility (TA-35-213) covered by this NSR permit in grams per year.

A103 Facility: Applicable Regulations

A. The permittee shall comply with all applicable sections of the requirements listed in Table 103.A for the Target Fabrication Facility subject to this NSR permit.

Table 103.A: Applicable Requirements

Applicable Requirements	Federally Enforceable	Unit No.
20.2.1 NMAC General Provisions	X	Entire Target Fab Facility
20.2.3 NMAC Ambient Air Quality Standards	X	Entire Target Fab Facility
20.2.7 NMAC Excess Emissions	X	Entire Target Fab Facility
20.2.70 NMAC Operating Permits	X	Entire Target Fab Facility
20.2.71 NMAC Operating Permit Emission Fees	X	Entire Target Fab Facility
20.2.72 NMAC Construction Permit	X	Entire Target Fab Facility
20.2.73 NMAC Notice of Intent and Emissions Inventory Requirements	X	Entire Target Fab Facility

Table 103.A: Applicable Requirements

Applicable Requirements	Federally Enforceable	Unit No.
20.2.75 NMAC Construction Permit Fees	X	Entire Target Fab Facility
20.2.78 NMAC Emissions Standards for Hazardous Air Pollutants	X	TA-35-213-1, 2, 3, and 4
40 CFR 50 National Ambient Air Quality Standards	X	Entire Target Fab Facility
40 CFR 61, Subpart A, General Provisions	X	TA-35-213-1, 2, 3, and 4
40 CFR 61, Subpart C, Beryllium	X	TA-35-213-1, 2, 3, and 4

A104 Target Fabrication Facility: Regulated Sources

A. Table 104.A lists the emission units authorized for the Target Fabrication 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.	Source Description	Make	Model	Serial No.	Construction/ Reconstruction Date	Manufacture Date	Manufacturer Rated Capacity /Permitted Capacity
TA-35-213-1	Beryllium Machining: Beryllium Lathe	Moore Nanotech	350UPL	N/A	2004	2004	0.060 gm/hr Be removal rate
TA-35-213-2	Beryllium Machining: Beryllium Lathe	TBD	TBD	TBD	TBD	TBD	0.060 gm/hr Be removal rate
TA-35-213-3	Beryllium Machining: Beryllium Lathe	TBD	TBD	TBD	TBD	TBD	0.060 gm/hr Be removal rate
TA-35-213-4	Beryllium Coating-Etching	TBD	TBD	N/A	TBD	TBD	0.010 gm/hr Be application rate

1. All TBD (to be determined) units shall be reported to the Air Quality Bureau in accordance with the General Conditions at Section B110.
2. Be = beryllium; gm = grams; hr = hour.

A105 Target Fabrication Facility: Control Equipment

A. Table 105.A lists all the pollution control equipment required for the Target Fabrication Facility. Each emission point is identified by the same number that was assigned to it in the permit application.

Table 105.A: Control Equipment List:

Control Equipment Unit No.	Control Description	Pollutant being controlled	Control for Unit Number(s)[1]
HEPA-1	Primary: HEPA Particulate Air Filter (99.95%); with pre-filter before HEPA	Beryllium particulate matter	TA-35-213-1, and 2, and 3
HEPA-2	Primary: HEPA Particulate Air Filter (99.95%); with pre-filter before HEPA	Beryllium particulate matter	TA-35-213-4

1. Control for unit number refers to a unit number from the Regulated Equipment List

A106 Target Fabrication Facility: Allowable Emissions

A. The following Section lists the emission units and their allowable emission limits for the Target Fabrication Facility. (40 CFR 50, 40 CFR 61, Subpart C, 20.2.72.210.A, B.1 and B.3 NMAC).

Table 106.A: Allowable Emissions[2,3]

Unit No.	[1]Beryllium (Be) Particulate Matter (gm/yr)	Beryllium (Be) Particulate Matter (gm/24-hr)	Beryllium (Be) Particulate Matter (gm/hr)
TA-35-213-1 TA-35-213-2 TA-35-213-3 TA-35-213-4	0.36	0.0015	0.0000625

1 Be = beryllium; gm = grams; yr = year; 24-hr = 24 hour day. Allowable emission shown is total for all four units,
2 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.
3 To report excess emissions for sources with no pound per hour and/or ton per year emission limits, see condition B110.F.

B. Units TA-35-213-1, TA-35-213-2, TA-35-213-3, and TA-35-213-4 (all four units collectively) shall not emit more than 10 grams of beryllium over a 24-hour period (0.022 lbs/24-hours) to comply with the federal standard at 40 CFR 61, Subpart C (40 CFR 61.32).

A107 Target Fabrication Facility: Allowable Startup, Shutdown, & Maintenance (SSM) and Malfunction Emissions

A. Separate allowable SSM emission limits are not required for the Target Fabrication Facility since the SSM emissions are predicted to be less than the limits established in Table 106.A. The permittee shall maintain records in accordance with Condition B109.C.

A108 Target Fabrication Facility: Allowable Operations

A. The Target Fabrication Facility is authorized to operate anytime during the calendar year, but shall meet the monitoring, recordkeeping, and reporting requirements in Condition A108.B.

B. Hours of Operation

Requirement: To demonstrate compliance with the allowable emission limits in Table 106.A, the Target Fabrication Facility beryllium machining lathes (all three combined, TA-35-213-1, TA-35-213-2, and TA-35-213-3) shall be limited to a maximum of 11,424 hours per year based on the maximum of 5712 hours per lathe, where only two lathes are allowed to operate at any given time. The beryllium sputter coating operation (TA-35-213-4) shall be limited to a maximum of 5712 hours per year.
Monitoring: Daily, the permittee shall monitor and record the hours of operation of the machining lathes (TA-35-213-1, TA-35-213-2, and TA-35-213-3) and daily monitor and record the hours of operation of the sputter coating operation (TA-35-213-4) per Condition A600.A.
Recordkeeping: Each calendar month the permittee shall: (1) Calculate the monthly total hours of operation for combined Units TA-35-213-1, TA-35-213-2, and TA-35-213-3 and calculate a monthly rolling 12-month total hours of operation; and (2) Calculate the monthly total hours of operation for Unit TA-35-213-4 and calculate a monthly rolling 12-month total hours of operation. The permittee shall keep records in accordance with the requirements of Section B109
Reporting: The permittee shall report in accordance with Section B110 of this permit.

A109 Target Fabrication Facility: Reporting Schedules

A. The permittee shall report according to the Specific Conditions and General Conditions of this permit.

A110 Target Fabrication Facility: Fuel and Fuel Sulfur Requirements – Not required

A111 Target Fabrication Facility: 20.2.61 NMAC Opacity – Not required

A112 Target Fabrication Facility: Initial Location Requirements

A. The two new beryllium machining lathes (TA-35-213-2 and TA-35-213-3) shall be installed in the same room in building 213 as the existing lathe (TA-35-213-1). Only two lathes shall be allowed to operate at any one time. Up to three lathes may be installed at one time, but at no time shall three lathes be operating at the same time. The beryllium coating operation (TA-35-213-4) is located in a separate room. The permittee shall provide 7 days advance notification via email to the Department of need to relocate any of these units to other rooms in building 213. Any movement of these units/operations to a building other than building 213 shall require a permit modification.

A113 Alternative Operating Scenarios (AOS)

A. The permittee shall operate the machining lathes under only one of the following operating scenarios at a time. This permit authorizes the operation of three beryllium machining lathes (TA-35-213-1, TA-35-213-2, and TA-35-213-3) but no more than two of these units may operate simultaneously at any time as follows:

(1) Alternative Operating Scenario 1 (AOS1): TA-35-213-1 (the older Moore Nanotech constructed in 2004) and TA-35-213-2 (one of the new to be determined [TBD] units); or

(2) Alternative Operating Scenario 2 (AOS2): TA-35-213-1 (the older Moore Nanotech constructed in 2004) and TA-35-213-3 (one of the new to be determined [TBD] units); or

(3) Alternative Operating Scenario 3 (AOS3): TA-35-213-2 and TA-35-213-3 (both of which are the new to be determined [TBD] units).

B. The beryllium coating operation (TA-35-213-4) is a separate process and shall be allowed to operate during any of scenarios AOS1, AOS2, or AOS3 above at Condition A113.A, or to operate separately when the lathes are not operating.

EQUIPMENT SPECIFIC REQUIREMENTS

A200 Oil and Gas Industry – Not required

A300 Construction Industry – Not required

A400 Power Generation Industry – Not required

A500 Solid Waste Disposal (Landfills) Industry– Not Required

A600 Target Fabrication Facility (TA-35-213) – Beryllium Activities

A. Operating Requirements – Target Fabrication Facility Beryllium (Be) Activities (Machining Lathes and Coating Operation Units TA-35-213-1, TA-35-213-2, TA-35-213-3, and TA-35-213-4)

Requirements: To demonstrate compliance with the allowable emission limits in Table 106.A, the following operating requirements shall be met:

(1) Beryllium (Be) operations at the Target Fabrication Facility shall consist of only beryllium machining (up to two lathe machines operating at any one time), the beryllium coating (etching or sputtering) process, and associated cleanup activities.

(2) No more than two of the three Be machining lathes (TA-35-213-1, TA-35-213-2, and TA-35-213-3) shall be allowed to operate at the same time by complying with Condition A113.A.

(3) The Be coating operation (TA-35-213-4) shall be allowed to operate simultaneously with any Be machining lathes, and shall be allowed to operate separate from the lathe operations.

(4) **Process Limits:** Emissions calculations are based on the Be machining lathes operating at a maximum of 0.060 grams/hour Be removal rate and the Be coating operation at an application rate of 0.010 grams/hour. If changes to these rates result in emissions exceeding the limits in Table 106.A operations shall immediately cease and the Department shall be notified.

Monitoring: The permittee shall monitor the times and hours of operation of each beryllium machining lathe and the beryllium coating operation and shall monitor the mass of beryllium machined by performing the following monitoring activities:

(5) Lathe operators shall record the operating time(s) for each machining lathe (TA-35-213-1, TA-35-213-2, and TA-35-213-3) during a production shift to ensure that no more than two lathes operate at the same time (Condition A113.A) and that the total annual operating hours for all lathe machining operations combined does not exceed the 11,424 hours specified at Condition A108.B.

(6) Coating operators shall record the operating time(s) for the beryllium coating operation (TA-35-213-4) during a production shift to ensure that the total annual operating hours for this operation does not exceed the 5712 hours specified at Condition A108.B.

(7) Process Limits Be machining lathes: On a daily basis the permittee shall determine the mass of beryllium removed by the lathing operations (TA-35-213-1, TA-35-213-2, and TA-35-213-3) to calculate and verify that the process limits (paragraph (4) above under Requirements and Table 104.A) used to calculate beryllium emissions are met.

(8) Process Limits Be coating operation: On a daily basis the permittee shall determine the beryllium application rate by the coating operation (TA-35-213-4) to calculate and verify that the process limits (paragraph (4) above under Requirements and Table 104.A) used to calculate beryllium emissions are met.

Recordkeeping: Records of daily operating times during production shifts, monthly operating hours, and total annual operating hours shall be kept for lathing operations (TA-35-213-1, TA-35-213-2, and TA-35-213-3) and the coating operation (TA-35-213-4). Records of the daily mass of beryllium removed by machining and the sputtering application rate, as well as the corresponding process limits shall be kept for the lathing operations (TA-35-213-1, TA-35-213-2, and TA-35-213-3) and for the coating operation (TA-35-213-4). Records shall be kept at the facility and made available for inspection upon request by the Department and shall be kept in accordance with Section B109.

Reporting: The permittee shall submit reports in accordance with Section B110 of this permit and in accordance with the permittee's current valid Title V (TV) permit (as described in Section A109 of the TV permit).

B. Control Equipment Operating Requirements and Monitoring – Target Fabrication Facility Beryllium (Be) Activities (Units TA-35-213-1, TA-35-213-2, TA-35-213-3, and TA-35-213-4)

Requirements: To demonstrate compliance with the allowable emission limits in Table 106.A, the permittee shall install and operate High Efficiency Particulate Air (HEPA) filtration systems. All Be lathe machining shall be exhausted through the (HEPA) filtration systems prior to entering the atmosphere, and all filters, including pre-filters, shall be operating at all times when lathe machining is operating. The Be sputter coating process shall be exhausted through the (HEPA) filtration systems prior to entering the atmosphere, and all filters, including pre-filters, shall be operating at all times when sputter coating is operating. An annual challenge or aerosol penetration test shall be performed on each HEPA filter. Continuous compliance for the HEPA filters (lathe machining and sputter coating) shall be demonstrated by monitoring the pressure drop across the filters when the equipment is operating for either of these two process systems (lathe machining or sputter coating).
The permittee shall meet the following requirements:

(1) There shall be two emission stacks, one shared stack for the three machining lathes (TA-35-213-1, TA-35-213-2, and TA-35-213-3); and a second separate stack for the coating operation (TA-35-213-4).

(2) A pre-filter shall be installed and operated prior to each HEPA filter.

(3) Each stack shall have a HEPA filter and the filter shall be 99.95% effective in capturing/controlling Be particulate matter and shall meet any/all Department of Energy (DOE) standards.

(4) An annual challenge or aerosol penetration test shall be performed on each HEPA filter and records maintained for inspection.

(5) Combined stack emissions: Because there are two separate stacks, one for the Be lathes (TA-35-213-1, TA-35-213-2, TA-35-213-3), and one for the Be coating operation (TA-35-213-4) combined stack emissions shall not exceed the limits in Table 106.A. If at any time any of monitoring parameters listed below (under Monitoring) are not met, operations shall cease immediately and remain ceased until the monitoring parameters can be met. An excess emissions report shall be filed per 20.2.7 NMAC when any results of monitoring determine that an emission limit has been exceeded.

Monitoring: Stack testing performance is required for beryllium and shall be performed in accordance with US EPA reference Method 104: Determination of Beryllium Emissions from Stationary Sources (Appendix B of 40 CFR 61); or Method 29: Determination of Metals Emissions from Stationary Sources (Appendix A of 40 CFR 60) as described in 40 CFR 61, Subpart C (§61.33 Stack Sampling).
The permittee shall perform the following monitoring:

(6) Pressure drop across the HEPA filters shall be monitored continuously, including use of an alarm sound and/or warning light if the pressure goes out of range, when the equipment is in operation and shall meet the acceptable range as specified by the manufacturer.

(7) The annual challenge or aerosol penetration test shall be performed annually on each HEPA filter and the records shall be maintained for inspection.

(8) Stack tests: Because there are two separate stacks, one for the Be lathes (TA-35-213-1, TA-35-213-2, and TA-35-213-3), and one for the Be coating operation (TA-35-213-4), performance of two separate stack tests, at a minimum, is required. If the two new lathes are installed and commence operation at the same time, the lathe stack test shall be performed operating the two new lathes. If the two new lathes are installed and commence operation on different schedules each new lathe shall be involved in separate stack tests; in this scenario there will be three stack tests required.

(9) An initial stack test shall be performed for the Be lathe stack (TA-35-213-1, TA-35-213-2, and TA-35-213-3) within 90 days of startup (§61.33(a)(2)) or the commencing of operation of the new units TA-35-213-2 or TA-35-213-3 and shall

be performed by either Method 104 or Method 29. Two lathes shall be fully operating at maximum capacity simultaneously during the stack testing of the lathe stack to demonstrate compliance with the emission limits in Table 106.A at maximum capacity. Prior to conducting an initial test the permittee shall notify the Department at least 30 days prior to the test to arrange a pre-test meeting with the Department and the permittee shall advise the Department of any variations to the procedures.

(10) An initial stack test shall be performed for the Be coating stack (TA-35-213-4) within 90 days of startup (§61.33(a)(2)) or the commencing of operation of Be coating (TA-35-213-4) and shall be performed by either Method 104 or Method 29. Prior to conducting the initial test the permittee shall notify the Department at least 30 days prior to the test to arrange a pre-test meeting with the Department and the permittee shall advise the Department of any variations to the procedures.

(11) The sum of the results of the two stack tests (Be lathe stack and Be coating stack combined) shall be added together to demonstrate compliance with the emission limits in Table 106.A.

(12) All samples shall be analyzed and beryllium emissions shall be determined within 30 days after the source test (§61.33(d)).

(13) Method 103: Beryllium Screening Method (Appendix B of 40 CFR 61) is an EPA approved alternative method (§61.33(a)).

Recordkeeping: Records of stack emission test results and other data needed to determine total emissions shall be retained by the permittee at the facility and made available for inspection by the Department, for minimum of two years (40 CFR 61.33(e)). Records shall be kept of HEPA annual challenge tests and of results of monitoring of pressure drop across the filters. Recordkeeping shall be in accordance with Section B109.

Reporting: The results of each initial stack test shall be submitted to the Department within 45 days after completion of the initial tests. The permittee shall submit reports in accordance with Section B110 of this permit and in accordance with the permittee's current valid Title V (TV) permit (as described in Section A109 of the TV permit).

PART B GENERAL CONDITIONS (Attached)

PART C MISCELLANEOUS: Supporting On-Line Documents; Definitions; Acronyms (Attached)