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Emissions Inventory Report Summary for Los Alamos National Laboratory for Calendar Year 2016

Los Alamos
NATIONAL LABORATORY
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Prepared by the Environmental Protection Division

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Acronyms and Terms

AIRS	Aerometric Information Retrieval System
AQB	Air Quality Bureau
CAS	Chemical Abstracts Service
CFR	Code of Federal Regulations
CMRR	Chemistry and Metallurgy Research Replacement (Facility)
CO	carbon monoxide
EPA	United States Environmental Protection Agency
FGR	flue gas recirculation
gal.	gallon
HAP	hazardous air pollutant
LANL	Los Alamos National Laboratory
lb	pound
MMBTU/hr	1,000,000 British thermal units per hour
mmHg	millimeter of mercury
MSDS	material safety data sheet
NMAC	New Mexico Administrative Code
NMED	New Mexico Environment Department
NO_x	nitrogen oxides
oz.	ounce
PM	particulate matter
$PM_{2.5}$	particulate matter with diameter less than 2.5 micrometers
PM_{10}	particulate matter with diameter less than 10 micrometers
PSD	Prevention of Significant Deterioration
R&D	research and development
RLUOB	Radiological Laboratory/Utility/Office Building
SO_x	sulfur oxides
SO_2	sulfur dioxide
TA	Technical Area
TSP	total suspended particulates
µm	micrometer
VOC	volatile organic compound
yr	year

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EMISSIONS INVENTORY REPORT SUMMARY FOR LOS ALAMOS NATIONAL LABORATORY FOR CALENDAR YEAR 2016

by

Environmental Stewardship Group

ABSTRACT

Los Alamos National Laboratory (LANL) is subject to annual emissions reporting requirements for regulated air pollutants under Title 20 of the New Mexico Administrative Code, Chapter 2, Part 73 (20.2.73 NMAC), Notice of Intent and Emissions Inventory Requirements. The applicability of the requirements is based on LANL's potential to emit 100 tons per year of suspended particulate matter, nitrogen oxides, carbon monoxide, sulfur oxides, or volatile organic compounds. Additionally, on April 30, 2004, LANL was issued a Title V Operating Permit from the New Mexico Environment Department/Air Quality Bureau, under 20.2.70 NMAC and the permit was revised on February 3, 2017. This Title V Operating Permit (Permit No. P100-R2M1) includes emission limits and operating limits for all regulated sources of air pollution at LANL. The Title V Operating Permit also requires semi-annual emissions reporting for all sources included in the permit. This report summarizes both the annual emissions inventory reporting and the semi-annual emissions reporting for LANL for calendar year 2016. LANL's 2016 emissions are well below the emission limits in the Title V Operating Permit.

1.0 INTRODUCTION

1.1 Regulatory Basis

Los Alamos National Laboratory (LANL or the Laboratory) has reported on air pollutants generated from its operations since the 1970s when Air Quality Control Regulation 703, Registration of Air Contaminant Sources, was promulgated. According to the regulation, the Laboratory was required to register air pollutant sources that emitted more than 2,000 lbs per year of any air contaminant. This regulatory requirement later evolved into Title 20 of the New Mexico Administrative Code, Chapter 2, Part 73 (20.2.73 NMAC), Notice of Intent and Emissions Inventory Requirements. The objective of the reporting requirement is to provide emissions data to the New Mexico Environment Department (NMED)/Air Quality Bureau (AQB) so its staff can determine whether LANL meets state and federal air pollutant standards.

Annual emissions inventory reporting requirements under 20.2.73 NMAC apply to any stationary source that

- has been issued a construction permit under 20.2.72 NMAC;
- has been required to file a Notice of Intent under 20.2.73.200 NMAC; or
- emits in excess of
  - 1 ton per year of lead or

- 10 tons per year of
  - total suspended particulates (TSP),
  - particulate matter (PM) with diameter less than 10 micrometers (PM_{10}),
  - PM with diameter less than 2.5 micrometers ($PM_{2.5}$),
  - sulfur dioxide (SO_2),
  - nitrogen oxides (NO_x),
  - carbon monoxide (CO), or
  - volatile organic compounds (VOCs).

The annual emissions inventory must be submitted to NMED/AQB by April 1 of each year. The NMED/AQB enters the data into the Aerometric Information Retrieval System (AIRS). This nationwide system, administered by the United States Environmental Protection Agency (EPA), is used to help ensure that ambient air quality standards are maintained and to track the state's air pollutant emissions. AIRS is a large air pollution database that contains information, requirements, and data on air pollution and air quality in the United States and various World Health Organization member countries. The program is operated by the EPA and state/local air pollution control agencies. The AIRS database tracks each state's progress towards achieving and maintaining National Ambient Air Quality Standards for criteria pollutants. The database is also used as a tool to help improve each state's air quality programs by enabling program members to access and compare past data and view data from other states.

Additionally, on April 30, 2004, LANL was issued a Title V Operating Permit from the NMED/AQB, under 20.2.70 NMAC. The NMED/ABQ issued a revised permit (P100-R2M1; NMED 2017) on February 3, 2017 (NMED 2017a). A condition of the Title V Operating Permit is that LANL must submit semi-annual emissions reports to NMED documenting that emissions from all permitted sources are below permitted emission levels. Section A109.B of the permit states:

> "A Semi-Annual Report of actual emissions from all permitted sources unless otherwise specified in this permit is due within 90 days following the end of every 6-month reporting period as defined at Condition A109.A. Emission estimates of criteria pollutants NO_x, CO, SO_2, VOC, TSP, PM_{10}, and $PM_{2.5}$ shall not include fugitive emissions. Emissions estimates of HAPs shall include fugitive emissions. Emission estimates shall not include Insignificant or Trivial Activities, except that facility-wide emissions from all natural gas combustion sources shall be estimated. The reports shall include a comparison of actual emissions that occurred during the reporting period with the facility-wide allowable emission limits at Table106.B."

In 2004, the Laboratory began submitting the semi-annual emissions reports as well as the annual emissions inventory. There are a few differences in which sources are included in the two emissions reports. These differences are explained in the following sections.

1.2 Contents of Annual Emissions Inventory Submittal

NMED requested that LANL submit annual emissions inventory data for 2016 via online reporting tool, AEIR, for entry into AIRS. The information required for submittal includes the following:

- facility name, organization name, and agency ID;
- facility contact information;
- signed certification statement by a responsible facility official; and
- specific information for each emission unit such as fuel type, materials processed, materials consumed, fuel heating value, percent sulfur of fuel, percent ash of fuel, percent carbon content, and details of operating schedule.

This annual emissions inventory submittal includes air pollutant data for PM, PM_{10}, $PM_{2.5}$, CO, NO_x, sulfur oxides (SO_x), VOCs, beryllium, and hazardous air pollutants (HAPs).

1.3 Contents of the Semi-annual Title V Operating Permit Emissions Reports

The semi-annual Title V Operating Permit emissions reports include actual estimated emissions for the reporting period for each emission source or source category included in the Title V Operating Permit. For each source category, the actual emissions are compared with emission limits listed in the permit. The emissions are calculated using operating data from logbooks and records maintained on site. All emission calculations are consistent with calculation methods used for the annual emissions inventory.

The semi-annual emissions reports include a few source categories not included in the annual emissions inventory. For the first Title V permit, the Laboratory requested emission limits in their Title V Operating Permit for two source categories that are considered insignificant sources for the annual emissions inventory. These source categories are 1) small boilers and heaters and 2) stationary standby generators. LANL requested emission limits for these source categories to obtain federally enforceable limits that would keep the Laboratory under the major source threshold for Prevention of Significant Deterioration (PSD) applicability (20.2.74 NMAC). LANL's actual emissions from these insignificant sources have historically been very low; however, without federally enforceable limits on their operation, the potential to emit from these sources was quite high. To demonstrate that LANL is below the PSD applicability and is in compliance with the emission limits placed on these emission sources for the original Title V Operating Permit, LANL included these emissions in the semi-annual emissions reports. NMED removed the stationary standby generators from the P100-R2 permit.

2.0 REPORTED EMISSION SOURCES

Table 2.0-1 shows the emission sources included in the Laboratory's 2016 annual emissions inventory (LANL 2016a) and the 2016 semi-annual emissions reports (LANL 2016b and 2016c). The source categories and the methodology used to calculate emissions are described in the following sections.

The following subsections describe emission sources included in the 2016 emissions inventory and semi-annual emissions reports and emission calculation methodology for each source type. A summary table of actual reported emissions by source is included in Section 2.12. Attachment A includes worksheets showing detailed emission calculations for individual emissions sources. A copy of the 2016 emissions

inventory as submitted to NMED is presented in Attachment B. The 2016 semi-annual emissions reports are included as Attachment C.

Table 2.0-1. Sources Included in LANL's 2016 Annual Emissions Inventory and Semi-annual Emissions Reports

Included in Annual Emissions Inventory	Included in Semi-annual Emissions Reports	Comment
Power Plant (TA-3)	Power Plant (TA-3)	n/a[a]
Boilers greater than 5 MMBTU/hr[b] (14 units)	All small and large boilers and heaters (approximately 175 units)	Small boilers less than 5 MMBTU/hr are exempt from annual emissions inventory requirements (see Section 3.1).
Asphalt Plant	Asphalt Plant	n/a
Degreasers	Degreasers	n/a
Data Disintegrator	Data Disintegrator	n/a
Permitted Beryllium Sources	Permitted Beryllium Sources	n/a
Facility-wide Chemical Use	Facility-wide Chemical Use	The semi-annual emissions reports also include separate emission data for the CMRR-RLUOB building.
Process Generators and Stationary Standby Generators	Process Generators	n/a
TA-3 Turbine	TA-3 Turbine	n/a

[a] n/a = not applicable.

[b] one million British thermals units per hour.

2.1 Power Plant

The Laboratory operates a power plant at Technical Area (TA) 3. The power plant produces steam for heating and electricity for much of the Laboratory when sufficient power from outside sources is not available. The heat produced from the power plant is used for comfort heat and hot water and to support facility processes. The power plant has three boilers that are fueled primarily with natural gas with No. 2 fuel oil as a backup. The Laboratory operated a second power plant at TA-21 that was shut down in 2007.

For the 2016 emissions inventory, NMED requested that emissions from natural gas and No. 2 fuel oil be reported separately for the boilers located at each of the power plants. The TA-3 power plant was originally included in LANL's emissions inventory as a single unit. When a modification to the plant was made in 2001, the TA-3 power plant was separated into three separate units for emissions reporting purposes. Because each of the three boilers has the capability of burning either natural gas or No. 2 fuel oil, the TA-3 power plant is now reported as six units (EQPT-24, EQPT-25, and EQPT-26 for the natural gas and EQPT-137, EQPT-138, and EQPT-141 for the No. 2 fuel oil).

Actual estimated emissions are calculated on the basis of metered fuel consumption and emission factors. The primary source of emission factors is AP-42, the EPA's Compilation of Air Pollutant Emission Factors (EPA 1998). However, emission factors from stack tests conducted at the TA-3 power plant when burning natural gas were also used, as appropriate.

The TA-3 power plant has historically been the largest source of NO_x emissions at the Laboratory. In 2002, a voluntary project to install pollution control equipment on the three boilers at the TA-3 power plant was completed. The three boilers were fitted with flue gas recirculation (FGR) equipment to reduce NO_x emissions. Stack testing for NO_x and CO was conducted before FGR equipment was installed and again after it was operational. Based on these stack test results, FGR reduced NO_x emissions by approximately 64%. Figure 2.1-1 shows a picture of the TA-3 power plant building and stacks.

Figure 2.1-1. TA-3 power plant

2.2 Small Boilers and Heaters

The Laboratory operates approximately 175 small boilers and heaters, used primarily for seasonal comfort heat. Most of the boilers are exempt from permitting requirements because of their small size and use as comfort boilers and are not included in the annual emissions inventory. The exemption analysis applied to boilers is discussed in Section 3.1 of this report.

The boilers that are not exempt and reported in the 2016 annual emissions inventory include:

- two boilers at TA-53 (EQPT-11 and EQPT-12),
- two boilers at TA-55 (EQPT-29 and EQPT-30),
- five boilers at the Chemistry and Metallurgy Research Replacement (CMRR) Facility (EQPT-90, EQPT-104, EQPT-105, EQPT-106, and EQPT-107), and
- two boilers at TA-16 (EQPT-53 and EQPT-134).

All of the reported boilers burn natural gas. Operating logs of actual fuel used for the TA-55 and the CMRR boilers were used to quantify emissions from these units. Fuel use for all other boilers was estimated based on the total amount of natural gas used by the Laboratory minus the amount supplied to metered sources. The amount of natural gas left after subtracting out metered sources was apportioned to the various boilers based on their size. Since virtually all of the small boilers are seasonal boilers used for building heating, it was assumed they would all operate approximately the same amount of time over the course of the year. Some emission factors were available from stack tests (TA-55), some were provided by the boiler manufacturer (Sellers Engineering Company), and the rest were taken from AP-42

(EPA 1998). Copies of spreadsheets showing fuel use and emission factors for each boiler are included in Attachment A.

For the semi-annual emissions reports, emissions from small boilers are included as a source category. These boilers include TA-16-1484-BS-1, TA-16-1484-BS-2, TA-53-365-BHW-1, TA-53-365-BHW-2, TA-55-6-BHW-1, TA-55-6-BHW-2, CMRR-BWH-1, CMRR-BWH-2, CMRR-BWH-3, and CMRR-BWH-4. Additionally, emissions from each of the CMRR boilers are included as separate source categories. To estimate emissions, all unmetered fuel use was multiplied by AP-42 emission factors for small boilers burning natural gas (EPA 1998). Total emissions of each pollutant from all boilers and heaters in this source category were then summed and reported on the semi-annual emissions reports.

2.3 Asphalt Plant

The TA-60 asphalt plant (EQPT-116) began operations in July 2005. This unit replaced the TA-3 asphalt plant, which was dismantled and removed in September 2003. Information on the amount of asphalt produced and the duration of daily operation at the TA-60 asphalt plant was provided as part of a monthly site support contractor data deliverable. The total asphalt produced in 2016 was 699 tons.

The emissions from the asphalt plant include criteria pollutants, NO_x, and CO. None of the emissions were significant in regard to the overall Laboratory emissions. The largest pollutant emitted from the asphalt plant was CO at 0.15 tons per year.

2.4 Data Disintegrator

The data disintegrator is included in the 2016 emissions inventory as EQPT-89. Operation of this source started in August 2004. Emissions are calculated using the methodology described in the original permit application dated June 23, 2003. Emissions of PM, PM_{10}, and $PM_{2.5}$ are calculated based on the number of boxes shredded, the amount of dust estimated to enter the exhaust (provided by the manufacturer), and the control efficiency of the cyclone and baghouse (also provided by the manufacturer). The permit application included $PM_{2.5}$ emission estimates. Therefore, an emission methodology had to be developed for the emission inventory reporting. No specific PM size distribution data were available. However, the manufacturer reported that dust into the exhaust would be in the size range of 5 to 20 µm. Based on visual observation and engineering judgment, a particle size distribution in the exhaust was estimated as follows:

- $PM_{2.5}$ 15%
- PM_{10} 90%
- TSP 100%

The number of boxes of material shredded is provided in a monthly data deliverable from the site support contractor. The total number of boxes shredded at the data disintegrator in 2016 was 7,673.

2.5 Degreasers

The halogenated solvent cleaning machine at TA-55 has a capacity of 18 liters and is registered with NMED/AQB as required under the National Emissions Standards for Hazardous Air Pollutants, 40 Code of Federal Regulations (CFR) 63 Subpart T, Halogenated Solvent Cleaning. The solvent used in the machine, trichloroethylene (Chemical Abstracts Service [CAS] No. 79-01-6), is a VOC and a HAP. This

emission unit is included in the annual emissions inventory as EQPT-21. LANL uses a mass balance approach to estimate emissions. Logbooks are kept on the amount of solvent added and removed from the machine. Additionally, solvent levels in the machine are logged monthly. LANL has two additional halogenated solvent cleaning machines registered with NMED. These units were not operational in 2016. The emissions from the TA-55 degreaser for this reporting period are 18.97 lbs or 0.01 tons per year. This source category is reported in both the annual emissions inventory and the semi-annual emissions reports.

2.6 Permitted Beryllium-Machining Operations

The Laboratory operates five permitted beryllium-machining operations that are subject to 40 CFR 61, Subpart C, and National Emission Standards for Beryllium. Emissions reported for the Beryllium Test Facility (ACT-3) are from actual stack emissions measurements. Emissions for the Target Fabrication Facility (ACT-2) are from initial compliance stack testing and are reported as permitted emission levels. In addition, emissions from the Plutonium Facility (ACT-6) are reported at permitted emission levels. Foundry operations within the Plutonium Facility did not occur during this reporting period. The Sigma Facility (ACT-41) includes emissions from electroplating, chemical milling, and metallographic operations. Total emissions from all permitted beryllium operations are included in the semi-annual emissions reports.

2.7 Generators

LANL has 11 permitted internal combustion engines including: four generators located at TA-33, three generators located at CMRR Radiological Laboratory/Utility/Office Building (RLUOB), three generators located at TA-55, and one generator located at TA-48. The original TA-33 generator was installed in May 2006 and replaced in December 2014 by a Cummins Portable Diesel Generator. The new generator (EQPT-146) operated for 16.3 hours in 2016. Permit No. 2195-P was issued in August 2007 for three more units at TA-33 (EQPT-119, EQPT-120, EQPT-135); the three units operated for a total of 7.9 hours in 2016.

LANL has three permitted generators (EQPT-128, EQPT-153, EQPT-154) located at the RLUOB facility, which began operating in 2012. The generators were added to the newest Title V Operating Permit and included in both the semi-annual emissions report and emissions inventory report. The three generators operated for a total of 72.3 hours in 2016.

The other four permitted generators at LANL are located at TA-55 (EQPT-143, EQPT-155, EQPT-156) and TA-48 (EQPT-147). The TA-55 generators operated for a total of 14.9 hours in 2016 and the TA-48 generator did not operate.

The Laboratory maintains approximately 37 stationary standby generators that are considered exempt sources under the Construction Permit regulations (20.2.72.202.b NMAC). These sources are included in LANL's annual emissions inventory report, but not in the semi-annual emissions report. All stationary standby generators at LANL are tested on a routine schedule to ensure they are operational and will function properly if needed. All units are equipped with hour meters to document how many hours they are used. The Laboratory maintains records on a semi-annual basis to document hour meter readings. The number of hours each generator is used in a reporting period is multiplied by AP-42 emission factors for diesel-fired internal combustion engines or natural-gas-fired internal combustion engines (EPA 1996).

Emissions are then summed for each pollutant and reported on the semi-annual emissions reports for this source category.

2.8 Combustion Turbine

LANL has one combustion turbine located at the TA-3 power plant (EQPT-112). A revised construction permit was issued by NMED July 2004 to add the TA-3 combustion turbine as a new permitted source. This unit started operations in September 2007. Emission calculations are based on the initial stack compliance tests performed in 2007, AP-42 Tables 3.1-2a and 3.1-3, and information provided by the manufacturer. In 2016, this combustion turbine operated for 274.4 hours.

2.9 Emissions from Chemical Use Activities

A significant amount of the Laboratory's work is devoted to research and development (R&D) activities. Varying operating parameters, as well as amounts and types of chemicals, are used in these activities. R&D activities occur at virtually all technical areas within the Laboratory, typically in small quantities in laboratory settings. Figure 2.9-1 shows a typical laboratory at LANL where chemicals are used.

Figure 2.9-1. Example of a laboratory fume hood at LANL

For the purposes of annual emissions inventory reporting, one equipment number has been assigned for all R&D chemical use (ACT-7). Facility-wide chemical use emissions are reported on both the annual emissions inventory and the semi-annual emissions reports. The methods used to quantify emissions of VOC and HAPs from R&D activities are discussed below.

2.9.1 VOC Emissions

The Laboratory tracks chemical purchases through a facility-wide chemical tracking system called ChemDB. A download from the ChemDB inventory system was created that included all chemical containers added to LANL's inventory between January 1, 2016, and December 31, 2016. This dataset included 47,425 separate line items of chemicals purchased.

The dataset was reviewed electronically to identify all VOCs purchased and received at LANL in 2016. With the exception of specific listed chemicals, VOCs are any compounds of carbon that participate in atmospheric photochemical reactions. VOCs include commonly used chemicals such as ethanol, methanol, trichloroethylene, and isopropanol. The general assumption used in estimating VOC emissions from chemical use is

Purchasing = Use = Emissions

From the dataset of chemicals purchased in 2016, certain categories of chemicals were separated and eliminated from the analysis. The classifications assigned and corresponding reasons (noted in parentheses) for exclusion of chemicals from inventory records are noted below.

- Solid materials (not a significant source of air emissions based on their low vapor pressure)
- Non-VOC materials as defined by 40 CFR 51.100 (specific chemicals in 40 CFR 51.100 are listed as having negligible photochemical reactivity and are exempt from the definition of VOC)
- Paints (paints were evaluated separately—see Section 3.5)
- Inorganic chemicals (inorganics are not compounds of carbon)
- Oils (not a significant source of air emissions based on low vapor pressure and primarily used for maintenance)
- Fuels used for combustion purposes (emissions from fuel combustion are reported for each combustion unit)

The following categories of chemicals were eliminated based on guidance from NMED (NMED 2001).

- Container sizes of 1 lb or less
- Chemicals with vapor pressures less than 10 mmHg
- Chemicals used to calibrate equipment
- Maintenance chemicals
- Use of office equipment and products
- Chemicals used for boiler water treatment operations
- Chemicals used for oxygen scavenging (deaeration) of water
- Chemicals used in bench-scale chemical analysis[1]

After the elimination of chemicals and categories of chemicals listed above, the remaining chemical inventory records were matched with a list of known VOCs by CAS number. For mixtures (chemicals without CAS numbers), material safety data sheets (MSDSs) were reviewed to determine if any VOCs were present and, if so, to determine the associated percent volatile. As a conservative estimate, VOCs identified in ChemDB records were assumed to be 100% emitted to air. Estimated emissions of VOCs from chemical use in 2016 totaled 12.67 tons.

[1] This exemption was applied only to biological research solutions. Otherwise, this exemption was not applied (see Table 3.3-1).

2.9.2 HAP Emissions

Section 112(b) of the 1990 Clean Air Act Amendments listed 188 unique HAPs identified for potential regulation by the EPA. In 1995, caprolactam was delisted as a HAP, and methyl ethyl ketone was delisted in 2005. Of the remaining 187 listed HAPs, 17 are classes of compounds (e.g., nickel compounds). Use of the 187 listed chemicals in activities at the Laboratory was evaluated and quantified for the annual emissions inventory submittal to NMED.

The ChemDB inventory system 2016 dataset was analyzed to identify HAPs. The identification process was similar to that used for VOCs. Pure chemicals (i.e., chemicals with CAS numbers), classes of compounds, and mixtures were evaluated to determine if the chemicals themselves were HAPs or if they contained HAP constituents. For mixtures, MSDSs were reviewed to determine if any HAPs were present and, if so, to determine the associated HAP percentages. Listed below are certain chemical types or categories that were identified and removed from this analysis (refer to Section 2.9.1 and Table 3.3-1 for explanations on removal of these chemicals).

- Paints
- Oils
- Maintenance chemicals
- Chemicals used to calibrate equipment
- Container sizes of 1 lb or less
- Chemicals used in bench-scale chemical analysis
- Use of office equipment and products
- Chemicals used for boiler water treatment operations
- Chemicals used for oxygen scavenging (deaeration) of water

Total HAP emissions were estimated by summing 1) pure HAP chemicals, 2) classes of compounds that are HAPs, and 3) the HAP constituents from mixtures. The resulting total amount of HAPs from chemical use reported for 2016 was 6.44 tons.

The HAP emissions reported generally reflect quantities procured in the calendar year. In a few cases, procurement values and operational processes were further evaluated so that actual air emissions could be reported instead of procurement quantities. Additional analyses for certain metals and acids were performed and are described below.

2.9.3 HAP Metals

Purchases of beryllium, chromium, lead, manganese, mercury, and nickel compounds were evaluated to determine usage and potential air emissions. Several of the purchases were identified as laboratory calibration standards containing only parts per million quantities of the metals. These were exempt from emissions inventory requirements because of their use as standards for calibrating laboratory equipment. Other purchasers of relatively large quantities of metal compounds that were contacted confirmed that the material was still in use or in storage and had not resulted in air emissions.

2.10 Emissions Summary by Source

Table 2.10-1 provides a summary of LANL's 2016 actual emissions, as submitted for the annual emissions inventory. The table presents emissions by pollutant and by source, with a facility total at the bottom of the table. Attachment A provides detailed information on how emissions were calculated for each emission unit.

Table 2.10-1. Summary of LANL 2016 Reported Emissions for Annual Emissions Inventory

	NO_X (tons/yr)	SO_x (tons/yr)	PM_{10} (tons/yr)	$PM_{2.5}$ (tons/yr)	CO (tons/yr)	VOC (tons/yr)	HAPs (tons/yr)
TA-3 Power Plant Boilers	10.40	0.1	1.4	1.4	7.2	1.0	0.3
TA-55-6 Boilers	1.523	0.007	0.157	0.157	0.421	0.066	0.021
TA-53 Boilers	0.925	0.006	0.070	0.070	0.777	0.51	0.017
TA-16 Boilers	0.306	0.005	0.063	0.063	0.306	0.045	0.016
RLUOB Boilers	0.04	0.001	0.007	0.007	0.051	0.035	0.003
Asphalt Plant	0.004	0.002	0.003	n/a	0.152	0.003	0.003
Data Disintegrator	n/a	n/a	0.29	n/a	n/a	n/a	n/a
Degreaser	n/a	n/a	n/a	n/a	n/a	0.01	0.01
R&D Chemical Use	n/a	n/a	n/a	n/a	n/a	12.67	6.44
TA-33 Generators	0.189	0.006	0.007	n/a	0.031	0.014	5.5E-05
RLUOB Generators	1.214	0.032	0.059	n/a	1.505	0.172	3.16E-04
TA-55 Generators	0.22	0.01	0.01	n/a	0.03	0.01	5.54E-05
TA-48 Generator	0	0	0	n/a	0	0	0
Stationary Standby Generators	3.18	0.14	0.16	n/a	0.74	0.16	0.001
TA-3 Turbine	1.62	0.11	0.22	0.22	0.34	0.07	0.04
TOTAL	**19.62**	**0.42**	**2.45**	**1.91**	**11.55**	**14.77**	**6.58**

* n/a = not applicable.

Table 2.10-2 provides a summary of 2016 emissions as reported on the semi-annual emissions reports required by the Title V Operating Permit. Attachment A provides detailed information on how emissions were calculated for each emission source category.

Table 2.10-2. Summary of LANL 2016 Semi-annual Emissions as Reported Under Title V Operating Permit Requirements

	NO_X (tons/yr)	SO_x (tons/yr)	PM_{10} (tons/yr)	$PM_{2.5}$ (tons/yr)	CO (tons/yr)	VOC (tons/yr)	HAPs (tons/yr)
TA-3 Power Plant Boilers	10.40	0.1	1.4	1.4	7.2	1.0	0.3
Small Boilers	18.8	0.1	1.5	n/a*	15.0	1.1	0.4
RLUOB Boilers	0.04	0.001	0.007	0.007	0.051	0.035	0.003
Asphalt Plant	0.004	0.002	0.003	n/a	0.152	0.003	0.003
Data Disintegrator	n/a	n/a	0.29	n/a	n/a	n/a	n/a
Degreaser	n/a	n/a	n/a	n/a	n/a	0.01	0.01

	NO_X (tons/yr)	SO_x (tons/yr)	PM_{10} (tons/yr)	$PM_{2.5}$ (tons/yr)	CO (tons/yr)	VOC (tons/yr)	HAPs (tons/yr)
R&D Chemical Use	n/a	n/a	n/a	n/a	n/a	12.67	6.44
TA-33 Generators	0.189	0.006	0.007	n/a	0.031	0.014	5.5E-05
RLUOB Generators	1.214	0.032	0.059	n/a	1.505	0.172	3.16E-04
TA-55 Generators	0.22	0.01	0.01	n/a	0.03	0.01	5.54E-05
TA-48 Generator	0	0	0	n/a	0	0	0
TA-3 Turbine	1.62	0.11	0.22	0.22	0.34	0.07	0.04
TOTAL	**32.49**	**0.36**	**3.50**	**1.63**	**24.31**	**15.08**	**7.20**

* n/a = not applicable.

3.0 REPORTING EXEMPTIONS

Specific activities that are determined to be insignificant under NMED's Operating Permit program (20.2.70 NMAC) are exempt from reporting under the emissions inventory requirements (20.2.73.300 NMAC). NMED has designated exempt sources, activities, or thresholds in the following lists:

- List of Insignificant Activities, March 25, 2005 (NMED 2005)
- List of Trivial Activities, January 10, 1996 (NMED 1996).

Laboratory sources and activities that qualify as insignificant or trivial as specified in these lists are not included in the annual emissions inventory. The following subsections of this report provide information and examples of the Laboratory's exempt activities as well as analyses performed to determine exempt status.

3.1 Boilers

The Laboratory's boiler inventory was evaluated against the List of Insignificant Activities (NMED 2005). Specifically, boilers were exempted from emissions inventory reporting requirements if they met one of the following requirements:

- Fuel-burning equipment that uses gaseous fuel has a design rate less than or equal to 5 MMBTU/hr, and is used solely for heating buildings for personal comfort or for producing hot water for personal use, or
- Any emissions unit . . . that has the potential to emit no more than 1 ton/yr of any regulated pollutant . . . .

Any boiler that was not used exclusively for comfort heating or hot water was evaluated for the 1 ton per year exemption. For purposes of determining exemptions, boiler design ratings were used to estimate potential to emit. Any boiler not qualifying for one of these two exemptions is included in the annual emissions inventory with its own unique equipment number.

For the semi-annual emissions reports, emissions from all boilers and heaters were summed and reported for the entire source category.

3.2 Generators

The Laboratory maintains an inventory of approximately 73 portable generators. Portable generators are used at the Laboratory for temporary operations requiring remote power or to provide emergency backup power during power outages at various sites. The portable generators are fueled by gasoline and/or diesel fuel.

In addition to portable generators, the Laboratory maintains and operates approximately 45 stationary standby generators. Stationary generators are used on standby (emergency) status to provide power to critical systems at the Laboratory during power outages. The stationary generators are fueled by natural gas, propane, gasoline, or diesel.

The insignificant activity exemptions applicable to the Laboratory's generators are for:

- Portable engines and portable turbines that have a design capacity . . . less than or equal to a
  - 200-horsepower engine if fueled by diesel or natural gas and a
  - 500-horsepower engine if fueled by gasoline.
- Emergency generators that on a temporary basis replace equipment used in normal operation, and which either have an allowable emission rate or potential to emit for each pollutant that is equal to or less than the equipment replaced, or which do not operate for a period exceeding 500 hours per calendar year.

On the basis of size, portable generators used for temporary power at remote locations are exempt from emissions inventory reporting requirements. Further, LANL's small portable generators are considered trivial activities and are not included in the Title V Operating Permit or semi-annual emissions reports. All stationary generators are designated as standby equipment under the Operating Permit Program and are used solely to provide emergency backup power for less than 500 hours per year. Therefore, they are considered insignificant sources and are also exempt from annual emissions inventory reporting requirements. However, the stationary standby generators were voluntarily included as a source category in the Title V Operating Permit and are included in the semi-annual emissions reports.

3.3 VOC Emissions

A number of insignificant and trivial activities were applicable for exempting materials from the VOC chemical use total in the emissions inventory. The basis of the exemptions and corresponding insignificant or trivial activities are explained in Table 3.3-1.

Fuels such as propane, kerosene, and acetylene were analyzed separately and are not listed in Table 3.3-1. When fuels are burned in an open flame, almost all of the fuels are consumed and VOC emissions are minimal. Emissions from fuel combustion are accounted for by using emission factors for each fuel-burning unit.

Table 3.3-1. Exemptions Applied for Chemical Use Activities

Basis of Exemption	Activity Type	Activity
Container sizes of 1 lb or less	Trivial	Paint or nonpaint materials dispensed from prepackaged aerosol cans of 16-oz. capacity or less.
Chemicals with vapor pressures less than 10 mmHg	Insignificant	Any emissions unit, operation, or activity that handles or stores a liquid with vapor pressure less than 10 mmHg or in quantities less than 500 gal.
Calibration chemicals	Trivial	Routine calibration and maintenance of laboratory equipment or other analytical instruments, including gases used as part of those processes.
Maintenance chemicals and oils	Trivial	Activities that occur strictly for maintenance of grounds or buildings, including lawn care; pest control; grinding; cutting; welding; painting; woodworking; sweeping; general repairs; janitorial activities; plumbing; re-tarring roofs; installing insulation; steam-cleaning and water-washing activities; and paving of roads, parking lots, and other areas. Activities for maintenance and repair of equipment, pollution-control equipment, or motor vehicles either inside or outside of a building.
Use of office equipment and products	Trivial	Use of office equipment and products, not including printers or businesses primarily involved in photographic reproduction.
Chemicals used for boiler water treatment	Trivial	Boiler water treatment operations, not including cooling towers.
Chemicals used for oxygen scavenging	Trivial	Oxygen scavenging (deaeration of water).
Chemicals used in bench-scale chemical analysis	Trivial	Bench-scale laboratory equipment used for physical or chemical analysis but not lab fume hoods or vents. Note: This exemption was applied only to biological research solutions. Otherwise, this exemption was not applied.

3.4 HAP Emissions

The HAP chemical use exemption analysis, similar to the VOC chemical use exemption analysis, resulted in application of several of the same exemptions from NMED/AQB List of Insignificant Activities (NMED 2005) and List of Trivial Activities (NMED 1996) (refer to Table 3.3-1).

3.5 Paints

An analysis of VOC and HAP emissions resulting from painting activities at the Laboratory was performed to determine if certain exemptions apply. Paint information for 2016 was gathered from the ChemDB chemical inventory system. These records were evaluated for applicability of exemptions for trivial and insignificant activities.

The following exemptions from NMED/AQB Operating Permit Program List of Trivial Activities (NMED 1996) were used in the paint analysis:

- Activities that occur strictly for maintenance of grounds or buildings, including the following: lawn care; pest control; grinding; cutting; welding; painting; woodworking; sweeping; general repairs; janitorial activities; plumbing; re-tarring roofs; installing insulation; steam-cleaning and water-washing activities; and paving of roads, parking lots, and other areas.

- Activities for maintenance and repair of equipment, pollution control equipment, or motor vehicles either inside or outside of a building.
- Paint or nonpaint materials dispensed from prepackaged aerosol cans of 16 oz. or less capacity. The amount of paint that did not qualify for a Trivial Activity totaled to 3,002 lbs (1.5 tons), which is less than the 2-ton emission limit for insignificant activities.
- Surface coating of equipment, including spray painting and roll coating, for sources with facility-wide total cleanup solvent and coating actual emissions of less than 2 tons per year.

4.0 EMISSIONS SUMMARY

4.1 2016 Emissions Summary

Table 4.1-1 presents facility-wide estimated actual emissions of criteria pollutants for 2016 as reported in the annual emissions inventory and the semi-annual emissions reports. In addition, the Title V Operating Permit emissions limits are included. Table 4.1-2 presents estimated actual emissions for HAPs from chemical use. Emission unit information and detailed emissions calculations are included in Attachment A. The 2016 emissions inventory report as submitted to NMED is presented in Attachment B. Attachment C includes semi-annual emissions reports for 2016.

Table 4.1-1. LANL Facility-Wide Criteria Pollutant Emissions for 2016

Pollutant	Estimated actual Emissions for Annual Emissions Reporting (tons/yr)	Estimated actual Emissions for Semi-annual Title V Operating Permit Reporting (tons/yr)	Title V Operating Permit Facility-Wide Emission Limits (tons/yr)
NO_x	19.62	32.49	245
SO_x	0.42	0.36	150
CO	11.55	24.31	225
PM	2.45	3.50	120
PM_{10}	2.45	3.50	120
$PM_{2.5}$	1.91	1.63	120
VOC	14.77	15.08	200

Table 4.1-2. LANL HAP Emissions from Top Five Chemicals Used in 2016

Pollutant	Chemical Use HAP Emissions (tons/yr)
Hydrochloric Acid	1.21
Glycol Ethers	1.12
Ethylene Glycol	1.08
Methanol	0.71
Toluene	0.49
All other HAPs from Chemical Use	1.83
Total HAPs	**6.44**

HAP emissions from combustion sources are included in the emissions reports; however, they are negligible and do not contribute significantly to facility-wide HAP emissions.

Figure 4.1-1 shows criteria air pollutant emissions by source for 2016, excluding the very small emissions sources such as the data disintegrator, asphalt plant, degreasers, and carpenter shop. As the figure shows, the TA-3 power plant and the sum of emissions from small boilers and were the largest sources of CO and NO_x emissions in 2016. R&D chemical use was the largest source of VOC emissions.

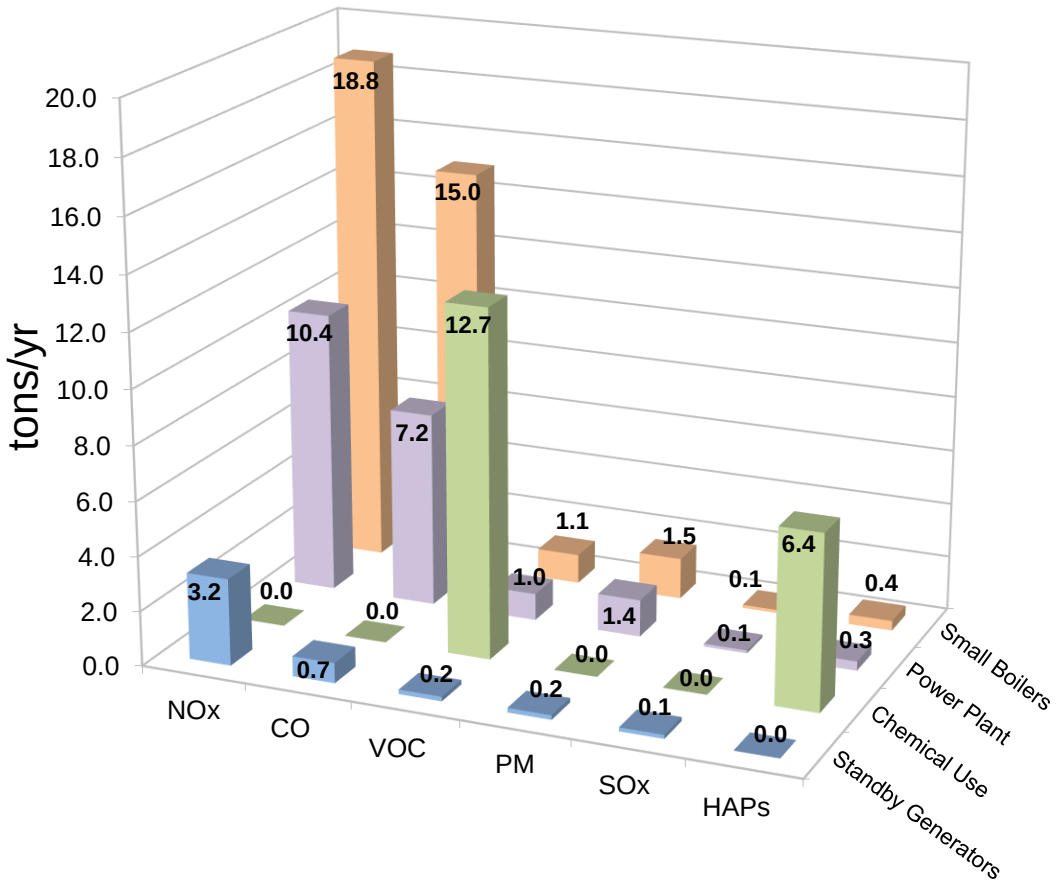

Figure 4.1-1. Emissions of criteria pollutants by source in 2016

Emission Trends and Title V Permit Limits

A comparison of historical emissions to the facility-wide emission limits in the Title V Operating Permit is provided in this section. It should be noted that the facility-wide emission limits in the Operating Permit include emissions from some sources that are not included in the annual emissions inventory, most notably small (insignificant) boilers and emergency standby generators. However, historical data are only available for emission sources that were included in the annual emissions inventory submittals.

Figure 4.1-2 provides a comparison of the past 10 years' facility-wide emissions for criteria air pollutants as reported to NMED in the annual emissions inventory submittal. The facility-wide emission limits included in LANL's Title V Operating Permit are also shown on the graph.

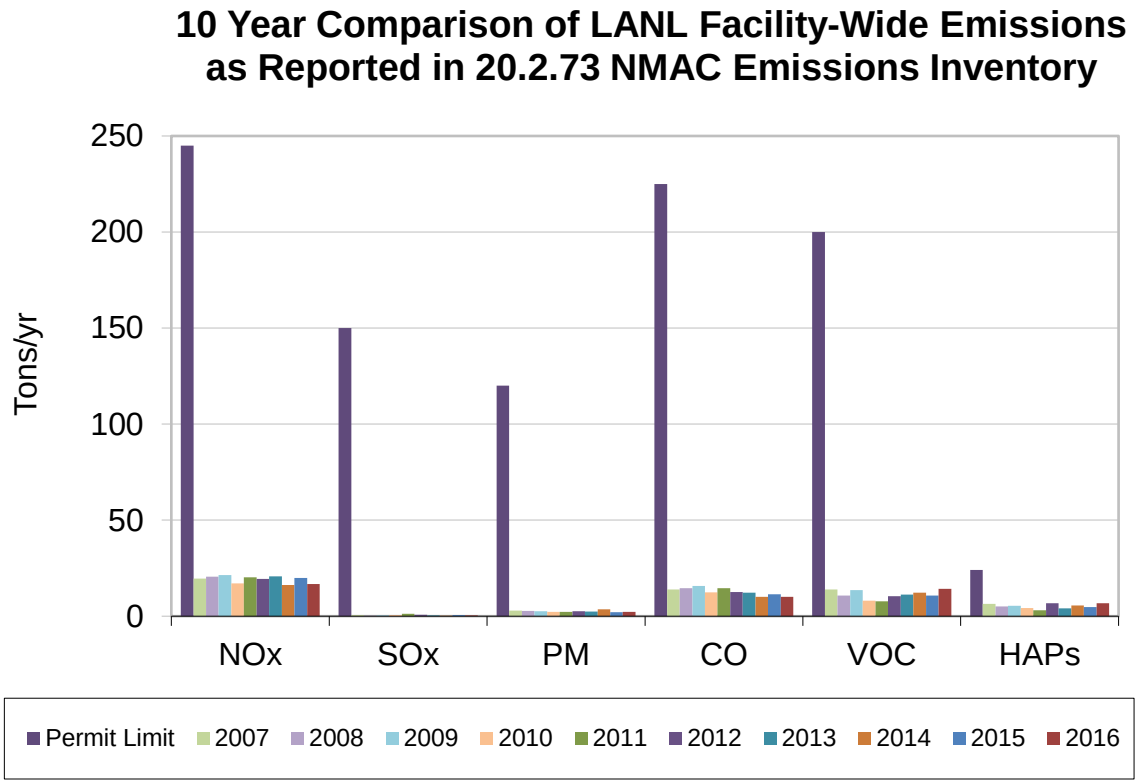

Figure 4.1-2. Comparison of facility-wide annual reported emissions from 2007 to 2016

Figure 4.1-3 presents VOC and HAP emissions from chemical use activities for the last 10 years. The continued fluctuation in both VOC and HAP emissions is due to both variations in actual chemical purchases and improvements the Laboratory has made to the chemical tracking system.

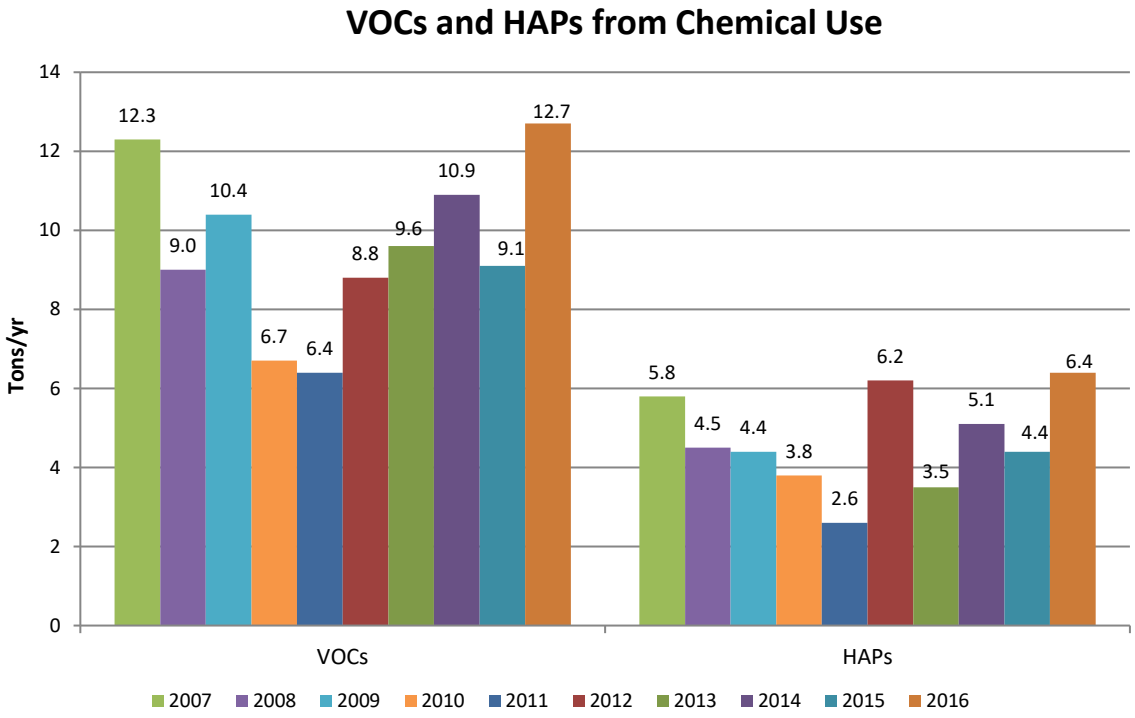

Figure 4.1-3. VOC and HAP emissions from chemical use from 2007 to 2016

REFERENCES

EPA (U.S. Environmental Protection Agency), 1998. "Compilation of Air Pollutant Emission Factors," AP-42, Fifth Edition, Section 1.4–Natural Gas Combustion, July 1998, and Section 1.3–Fuel Oil Combustion, http://www.epa.gov/ttn/chief/ap42/ (September 1998).

EPA (U.S. Environmental Protection Agency), 1996. "Compilation of Air Pollutant Emission Factors," AP-42, Fifth Edition, Section 3.3–Gasoline and Diesel Industrial Engines, and Section 3.4–Large Stationary Diesel and All Stationary Dual-Fuel Engines, http://www.epa.gov/ttn/chief/ap42/ (October 1996).

LANL (Los Alamos National Laboratory), 2016a. "2016 Emissions Inventory Report Submittal to the New Mexico Environment Department," Los Alamos National Laboratory document LA-UR-17-22005 (March 2016).

LANL (Los Alamos National Laboratory), 2016b. "Semi-Annual Emissions Report, July–December 2016," submitted to the New Mexico Environment Department, Los Alamos National Laboratory document LA-UR-17-21996 (March 2017).

LANL (Los Alamos National Laboratory), 2016c. "Semi-Annual Emissions Report, January–June 2016," submitted to the New Mexico Environment Department, Los Alamos National Laboratory document LA-UR-16-26522 (September 2016).

NMED (New Mexico Environment Department, Air Quality Bureau, Operating Permit Program), 2005. "List of Insignificant Activities under Title V Operating Permits," http://www.nmenv.state.nm.us/aqb/forms/InsignificantListTitleV.pdf (March 2005).

NMED (New Mexico Environment Department, Air Quality Bureau), 2001. Letter from Mary Uhl, NMED/AQB to LANL, dated January 30, 2001.

NMED (New Mexico Environment Department, Air Quality Bureau, Operating Permit Program), 1996. "List of Trivial Activities under Title V Operating Permits," http://www.nmenv.state.nm.us/aqb/forms/TrivialListTitleV.pdf (January 1996).

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ATTACHMENT A:

Emission Calculation Worksheets for Individual Emission Units

2016 Emission Inventory | AI856 LANL - Asphalt Batch Plant Emissions Calculations

Year	2016
Type	Asphalt Drum/Burner
NMED ID	EQPT-116
Title V Designation	TA-60-BDM
Description	Asphalt Plant Dryer

Annual Asphalt Production 699.0 ton/year

Equation for Calculations

Annual Emissions (ton/year) = Emission Factor (lb/ton) X Annual Asphalt Production (ton/year) / 2000 (lb/ton)

Pollutant	Emission Factor (lb/ton)	Annual Emissions (ton/year)	Calculation Basis
NOx	0.012	0.0042	(b)
CO	0.434	0.1517	(b)
PM	0.007	0.0026	(b)
PM-10	0.006	0.0021	(c)
PM-2.5	0.006	0.0021	(c)
SOx	0.0046	0.0016	(a)
VOC	0.0082	0.0029	(a)
Hazardous Air Pollutants	**Emission Factor (lb/ton)**	**Annual Emissions (ton/year)**	**Calculation Basis**
EthylBenzene	0.0022	0.0008	(d)
Formaldehyde	0.00074	0.0003	(d)
Xylene	0.0027	0.0009	(d)

Reference

(a) AP-42, Sec. 11.1, *Hot Mix Asphalt Plants*, Table 11.1-5 & 11.1-6, Updated 4/2004

(b) Calculated using stack test results performed on May 18, 2009 by TRC Air Mesurements.

(c) PM-10 emission factor is calculated as 64% of the PM emission factor (from stack test), using the same ratio of PM to PM-10 as provided in AP-42 Table 11.1-1. No data provided for PM-2.5, assume same as PM-10.

(d) AP-42, Table 11.1-9, *Hot Mix Asphalt Plants,* Updated 4/2004

2016 Emission Inventory | AI856 LANL - Beryllium Emissions Calculations

Year	2016
Type	Beryllium Work
NMED ID	ACT-2
Title V Designation	TA-35-213
Description	Be Target Fabrication Facility - Machining TA-35-213
Emission Calculation Description -	Emissions for the Target Fabrication Facility are from initial compliance testing of that source and calculated based on a conservative assumption of 8 hour work days. Log books were checked to verify that work days were much less than 8 hours.

Year	2016
Type	Beryllium Work
NMED ID	ACT-3
Title V Designation	TA-3-141
Description	Be Test Facility - Machining TA-3-141
Emission Calculation Description -	Emission values shown for the Beryllium Test Facility are from actual stack emission measurements which are submitted to NMED quarterly.

Year	2016
Type	Beryllium Work
NMED ID	ACT-6
Title V Designation	TA-55-PF-4
Description	Plutonium Facility Beryllium machining, weld cutting/dressing and metallography
Emission Calculation Description -	Emissions for the Plutonium Facility are calculated based on permitted throughputs. Log books were checked to verify that throughputs were much less than permitted values. The Plutonium Facility foundry operations did not operate during 2016.

2016 Emission Inventory | AI856 LANL - Beryllium Emissions Calculations

Year	2016
Type	Beryllium Work
NMED ID	ACT-41
Title V Designation	TA-3-66
Description	Sigma Facility - electroplating,metallography, and chemical milling
Emission Calculation Description -	Emission Factors for the Sigma Facility are based on currently permitted similar processes (see Sections 4 and 6 of Sep 1997 application for permit 634-M2, and permit 1081-M1-R3).

2016 Emission Inventory | AI856 LANL - Boilers Emissions Calculations

Year	2016
Type	Boilers except those at the power plant
NMED ID	multiple (see emission table below)
Title V Designation	EQPT 11, EQPT 12, EQPT 29, EQPT 30, EQPT 53, EQPT 90, EQPT 104, EQPT 105, EQPT 134
Description	Boilers located at various locations not including the power plant

Emission Factors (lb/MMscf)

Emission Factors (lb/MMscf)				
Emission Sources / Pollutant	Small Uncontrolled Boilers[1]	TA-16 Low NOx Boilers[4]	TA-55-6 Boilers[3]	RLUOB Boilers
NOx	100	37.08	138	29.9
SOx	0.6	0.6	0.6	0.6
PM[2]	7.6	7.6	14.2	4.9
PM-10[2]	7.6	7.6	14.2	4.9
PM-2.5[2]	7.6	7.6	14.2	4.9
CO	84	37.08	38.2	38.1
VOC	5.5	5.5	5.98	25.8
Formaldehyde[5]	0.075	0.075	0.075	0.075
Hexane[5]	1.8	1.8	1.8	1.8

References for Emission Factors
(1) AP-42, 7/98, Section 1.4, Natural Gas Combustion, Small Boilers.
(2) Emission factors for natural gas of PM-10 and PM-2.5 are roughly equal to those of PM, Natural Gas Combustion, Table 1.4-2.
(3) AP-42, 7/98, Section 1.4, Natural Gas Combustion, Small Boilers for SOx. Stack test on 3/00 for NOx. Otherwise, Emission factors from Sellers Engineering Co.
(4) AP-42, 7/98, Section 1.4, Natural Gas Combustion, Small Boilers; Emission factors for NOx and CO from Sellers Engineering Co (low-NOx boilers).
(5) All HAP emission factors from AP-42 7/98, Section 1.4, Natural Gas Combustion, Tables 1.4-3, 1.4-4.

2016 Natural Gas Use

Permit Designation	TA-16-1484 BS-1	TA-16-1484 BS-2	TA-53-365 BHW-1	TA-53-365 BHW-2	TA-55-6 BHW-1	TA-55-6 BHW-2	B-1 CMRR	B-2 CMRR	B-3 CMRR
NG Use (MMscf/yr)	8.259	8.259	9.253	9.253	5.585	16.480	0.900	0.900	0.900

2016 Emission Inventory | AI856 LANL - Boilers Emissions Calculations

Year 2016
Type Boilers except those at the power plant

Equation for Emissions Calculation

Annual Emissions (ton/year) = Emission Factor (lb/MMscf) X Annual natural gas consumption (MMscf/year) / 2000 (lb/ton)

2016 Boiler Emissions for Annual EI Reporting (tons/year)

NMED Unit ID	134	53	11	12	29	30	90	104	105
Pollutant	TA-16-1484-BS-1	TA-16-1484-BS-2	TA-53-365-BHW-1	TA-53-365-BHW-2	TA-55-6-BHW-1	TA-55-6-BHW-2	RLUOB-BHW-1	RLUOB-BHW-2	RLUOB-BHW-3
NOx	0.153	0.153	0.463	0.463	0.385	1.137	0.013	0.013	0.013
SOx	0.0025	0.0025	0.0028	0.0028	0.0017	0.0049	0.0003	0.0003	0.0003
PM	0.031	0.031	0.035	0.035	0.040	0.117	0.002	0.002	0.002
PM-10	0.031	0.031	0.035	0.035	0.040	0.117	0.002	0.002	0.002
PM-2.5	0.031	0.031	0.035	0.035	0.040	0.117	0.002	0.002	0.002
CO	0.153	0.153	0.389	0.389	0.107	0.315	0.017	0.017	0.017
VOC	0.023	0.023	0.025	0.025	0.017	0.049	0.012	0.012	0.012
Formaldehyde	0.000	0.000	0.000	0.000	0.000	0.001	0.000	0.000	0.000
Hexane	0.007	0.007	0.008	0.008	0.005	0.015	0.001	0.001	0.001

2016 Emission Inventory | AI856 LANL - Degreaser

Year	2016
Type	Parts Washer
NMED ID	EQPT-21
Title V Designation	TA-55-DG-1
Description	Degreaser - Ultrasonic Cold batch TA-55-4

Solvent Trichloroethylene

Degreaser Emissions January-June 2016 (lbs)	
Jan-16	0.00
Feb-16	0.00
Mar-16	9.49
Apr-16	0.00
May-16	0.00
Jun-16	0.00
Total lbs:	**9.49**
Total tons:	**0.004745**

Degreaser Emissions July-December 2016 (lbs)	
Jul-16	0.00
Aug-16	0.00
Sep-16	3.16
Oct-16	0.00
Nov-16	3.16
Dec-16	3.16
Total lbs:	**9.48**
Total tons:	**0.00474**

Total lbs 2016:	**18.97**
Total tons 2016:	**0.009485**

2016 Emission Inventory | AI856 LANL - Internal Combustion Engine

Year	2016
Type	Internal Combustion Engine
NMED ID	EQPT-119, EQPT-120, EQPT-128, EQPT-135, EQPT-143, EQPT-146, EQPT-147, EQPT-153, EQPT-154, EQPT-155, EQPT-156
Title V Designation	Four TA-33-Generators; Three RLUOB Generators; Three TA-55 Generators; One TA-48 Generator
Description	Multiple genertors located at TA-33; 3 generators located at TA-55 CMRR; 3 generators TA-55, and 1 at TA-48

EMISSION FACTORS (EF)	NOx lb/kw-hr	CO lb/kw-hr	SOx lb/kw-hr	PM lb/kw-hr	PM_{10} lb/kw-hr	VOC lb/kw-hr	EF References
TA-33-G-1P	2.01E-02	2.01E-03	5.36E-04	6.17E-04	6.17E-04	1.48E-03	(a)
TA-33-G-2	4.17E-02	1.21E-02	2.87E-03	2.87E-03	2.87E-03	3.31E-03	(b)
TA-33-G-3	4.17E-02	1.21E-02	2.87E-03	2.87E-03	2.87E-03	3.31E-03	(b)
TA-33-G-4	4.17E-02	2.51E-02	2.87E-03	2.87E-03	2.87E-03	3.31E-03	(b)
RLUOB-GEN-1	2.03E-02	2.51E-02	5.29E-04	1.19E-03	9.92E-04	2.87E-03	(c)
RLUOB-GEN-2	2.03E-02	2.51E-02	5.29E-04	1.19E-03	9.92E-04	2.87E-03	(c)
RLUOB-GEN-3	2.03E-02	2.51E-02	5.29E-04	1.19E-03	9.92E-04	2.87E-03	(c)
TA-48-GEN-1	8.82E-03	7.72E-03	6.61E-06	4.41E-04	3.00E-03	8.82E-03	(d)
TA-55-GEN-1	4.20E-02	9.00E-03	3.00E-03	3.00E-03	3.00E-03	3.00E-03	(e)
TA-55-GEN-2	4.20E-02	9.00E-03	3.00E-03	3.00E-03	3.00E-03	3.00E-03	(e)
TA-55-GEN-3	3.20E-02	7.00E-03	5.40E-04	1.00E-03	1.00E-03	1.00E-03	(e)

References:

447 kw is the size limit for determining large vs. small diesel fired generator. This information was taken from the operating permit application.
(a) TA-33-G-1P NOx, CO, PM, VOC emission rates are from manufacturer's data; the values were given in gm/HP-hr; The following conversion factors were used to obtain lb/kW-hr; 453.6 g/lb and 1.341 hp-hr/kWh to convert emission factor units to lb/kWh; total HC was used as VOC; actual VOC would be much lower; SO2 from Table 3.4-1 AP-42 based on 0.05% S in fuel
(b) TA-33 G2, G3, G4 CO emission rate are from EPA Tier 1 nonroad standards; all others from AP-42, Section 3.3 (see TV permit renewal app calcs from 2013)
(c) RLUOB-GEN-1, GEN-2, GEN-3 emission rates for NOx, CO, PM and VOC from applicable Tier 1 standards (see TV renewal app 2013); Emission factors for SOx and PM10 from AP-42
(d) TA-48 NOx, CO, VOC and PM factors from Tier 3 engine standards (see TV renewal app); EF for SOx, PM10 and HAPs from AP-42.
(e) Emission factors for generators at TA-55 are from AP-42. Emission factors for small diesel fired engines were taken from AP-42 (fifth edition) Tables 3.3-1 and 3.3-2. Large generators emission factors were taken from AP-42 (fifth edition) Tables 3.4-1, 3.4-2, 3.4-3, and 3.4-4.

2016 Emission Inventory | AI856 LANL - Internal Combustion Engine

Year 2016
Type Internal Combustion Engine

Equation for Calculations
Emission Rate in tons/year = EF (lb/kW-hour) X Equip. Rating (kW-hr) X Number of hours (hour/year)/2000 (lb/ton)

Permit ID	NMED ID	kW rating	No of hours per year	NOx ton/yr	CO ton/yr	SOx ton/yr	PM ton/yr	PM_{10} ton/yr	VOC ton/yr
TA-33-G-1P	EQPT-146	1000	16.3	0.164	0.016	0.004	0.005	0.005	0.012
TA-33-G-2	EQPT-119	20	1.4	0.001	0.000	0.000	0.000	0.000	0.000
TA-33-G-3	EQPT-120	20	1.5	0.001	0.000	0.000	0.000	0.000	0.000
TA-33-G-4	EQPT-135	225	5.0	0.023	0.014	0.002	0.002	0.002	0.002
RLUOB-Gen-1	EQPT-128	1656.1	22.0	0.369	0.458	0.010	0.022	0.018	0.052
RLUOB-Gen-2	EQPT-153	1656.1	27.0	0.453	0.562	0.012	0.027	0.022	0.064
RLUOB-Gen-3	EQPT-154	1656.1	23.3	0.391	0.485	0.010	0.023	0.019	0.055
TA-48-Gen-1	EQPT-147	186	0.0	0.000	0.000	0.000	0.000	0.000	0.000
TA-55-Gen-1	EQPT-156	40.2	1.0	0.001	0.000	0.000	0.000	0.000	0.000
TA-55-Gen-2	EQPT-155	40.2	1.3	0.001	0.000	0.000	0.000	0.000	0.000
TA-55-Gen-3	EQPT-143	900	12.6	0.181	0.040	0.003	0.006	0.006	0.006
Total Emission (ton/year)				**1.586**	**1.536**	**0.038**	**0.078**	**0.066**	**0.186**

2016 Emission Inventory | AI856 LANL - Data Disintegrator

Year	2016
Type	Shredder
NMED ID	89
Title V Designation	TA-52-11
Description	Data Disintegrator/Industrial Shredder

	Data Entry		Data Entry
Month	Boxes[c] Shredded	**Month**	Boxes[c] Shredded
January	185	**July**	110
February	138	**August**	89
March	137	**September**	206
April	105	**October**	145
May	108	**November**	97
June	123	**December**	43
6 mo. Total:	796	**6 mo. Total:**	690

Annual Boxes:	7,673

Emission Calculations

	Percent Material in Exhaust[b]	**% in Exhaust[e]**	**Control[d] Efficiency** (Cyclone)	**Control[d] Efficiency** (Baghouse)
PM 2.5	15%	15%	0%	95.0%
PM 10	15%	90%	75%	95.0%
TSP	15%	100%	75%	95.0%

Weight[a]	
45	Pounds

	Amount Processed (pounds)	PM-2.5 Emissions (pounds)	PM-2.5 Emissions (tons)	PM-10 Emissions (pounds)	PM-10 Emissions (tons)	TSP Emissions (pounds)	TSP Emissions (tons)
CY Annual Total	345,285	388.4	0.19	582.7	0.29	647.4	0.32
January - June	35,820	40.3	0.02	60.4	0.03	67.2	0.03
July - December	31,050	34.9	0.02	52.4	0.03	58.2	0.03
July - Dec 2016			0.02		0.04		0.04
Mid Year- Annual Rolling Total			0.04		0.07		0.07

Reference					
(a). Estimated maximum box weight is 45 pounds. Information provided by shredding operations. Full box weight of tightly packed paper.	**(b).** Emission Factor (percentage of material shredded that will enter into the exhaust) obtained from the manufacturer of the air handling system, AGET Manufacturing Co. 15% is also listed in the construction permit application.	**(c).** Information provided by the shredding operations personnel.	**(d).** Information on control equipment efficiencies was provided by the manufacturer (SEM) of the Data Disintegrator. Those values not given were extrapolated using manufacturer data. Efficiencies of 75% for the Cyclone and 95% for the bag house are listed in the construction permit application. (see cyclone efficiency tab for	**(e).** Manufacturer provided info that the dust into the exhaust would be in the size range of 5-20 um. Conservative assumption that 15% is PM2.5, and 90% is PM10.	**(f).** Emissions calculated by summing the emissions from January-June of current year plus July-December of previous year.

Maximum Annual emission rat **9.9 tpy or 2.3 lb/hr of Total Suspended Particulate (TSP) per year.**
9.9 tpy or 2.3 lb/hr of Particulate Matter <10µm (PM-10) per year.

2016 Emission Inventory | AI856 LANL - Power Plant Boilers

Year	2016
Type	Boilers - Power Plant
NMED ID	EQPT-24; EQPT-25; EQPT-26 (pph, Natural Gas); EQPT-137, EQPT-138, EQPT-141 (pph; No. 2 fuel oil)
Designation	TA-3-22-1; TA3-22-2; TA-3-22-3
Description	Power Plant Boiler (pph, Natural Gas) Power Plant Boiler (pph, No. 2 fuel oil)

Pollutant	Emission Factor (EF)	
	Natural[a] Gas (lb/MMscf)	Fuel Oil[f] lbs/ 1000 gal
NOx[c]	58	8.64
SOx[g]	0.6	7.4
PM[d]	7.6	3.3
PM-10[d]	7.6	2.3
PM-2.5[d]	7.6	1.55
CO[e]	40	5.0
VOC	5.5	0.2
Formaldehyde	0.075	0.048
Hexane	1.8	-

Reference
(a) AP-42, 7/98, Section. 1.4, *Natural Gas Combustion*, Tables 1.4-1, 1.4-2
(b) Fuel usage obtained from utilities on a monthly basis
(c) Average of source tests conducted on all 3 boilers September 2002 burning natural gas after FGR installed. Assumed FGR resulted in similar Nox reduction for oil.
(d) All PM from natural gas is assumed <1μ, so PM-10, PM-2.5 and total PM have equal EFs, AP-42, Natural Gas Combustion, Table 1.4-2. The PM emission factor for fuel oil is the sum of filterable and condensable PM.
(e) AP-42, 1/95, Section. 1.4, Natural Gas Combustion, Table 1.4-2. Consistent with previous stack tests.
(f) AP-42, 9/98, Section. 1.3, *Fuel Oil Combustion*, Table 1.3-1 with Errata, Table 1.3-3, and Table 1.3-6.
(g) Boilers>100 MMBtu/hr: SOx Emission Factor (SO_2 {142S} + SO_3 {5.7S}) = 147.7 * S (from AP-42, Table 1.3-1 w/Errata) (S = weight % sulfur in oil)(Sulfur content per analysis on oil in tanks in August 01', no new oil delivered in 02'/03')

Permit Designation	Boiler TA-3-22-1		Boiler TA-3-22-2		Boiler TA-3-22-3	
Boiler ID	EQPT-24	EQPT-141	EQPT-25	EQPT-137	EQPT-26	EQPT-138
Type of fuel	Natural Gas	#2 Fuel oil	Natural Gas	#2 Fuel oil	Natural Gas	#2 Fuel oil
Units	mscf	gallons	mscf	gallons	mscf	gallons
Annual Use	29,205	0	266,337	0	62,121	0

Equation for Emissions Calculations

Annual Emissions for NG Use (ton/year) = NG Use (MSCF/year) / 1 MMscf/1000 Mscf X EF (lb/MMscf) X 1 (ton)/2000 (lb)

Pollutant	Boiler TA-3-22-1		Boiler TA-3-22-2		Boiler TA-3-22-3	
	EQPT-24	EQPT-141	EQPT-25	EQPT-137	EQPT-26	EQPT-138
	Annual Emissions (NG) (tons)	Annual Emissions Fuel Oil (tons)	Annual Emissions (NG) (tons)	Annual Emissions Fuel Oil (tons)	Annual Emissions (NG) (tons)	Annual Emissions Fuel Oil (tons)
NOx[(c)]	0.847	0.000	7.724	0.000	1.802	0.000
SOx[(g)]	0.009	0.000	0.080	0.000	0.019	0.000
PM[(d)]	0.111	0.000	1.012	0.000	0.236	0.000
PM-10[(d)]	0.111	0.000	1.012	0.000	0.236	0.000
PM-2.5[(d)]	0.111	0.000	1.012	0.000	0.236	0.000
CO[(e)]	0.584	0.000	5.327	0.000	1.242	0.000
VOC	0.080	0.000	0.732	0.000	0.171	0.000
Formaldehyde	0.001	0.000	0.010	0.000	0.002	0.000
Hexane	0.026	0.000	0.240	0.000	0.056	0.000

2016 Emission Inventory | AI856 LANL - Power Plant Combustion Turbine

Year	2016
Type	Turbine
NMED ID	EQPT-112
Title V Designation	TA-3-22-CT-1
Description	Combustion Turbine
Annual Gas Use	64.0 MMscf

Equation for Emission Calculation = Annual Gas Use (MMscf) X EF (lb/MMscf) X 1 ton/2000 lb

Pollutant Criteria	Emission Factors (lb/MMscf)	Annual Emissions (Tons) TA-3-2422 Combustion Turbine	Calculation Basis
NOx	50.5	1.615	a
SOx	3.5	0.112	b
PM	6.8	0.217	c
PM_{10}	6.8	0.217	c
$PM_{2.5}$	6.8	0.217	c
CO	10.5	0.336	a
VOC	2.2	0.070	d
Acetaldehyde	4.12E-02	0.001	e, f, g
Copper	7.11E-02	0.002	f, h
Ethylbenzene	3.30E-02	0.001	e, f, g
Formaldehyde	7.31E-01	0.023	e, f, g
Manganese	8.24E-02	0.003	f, h
Nickel	1.18E-01	0.004	f, h
Propylene Oxide	2.99E-02	0.001	e, f, g
Toluene	1.34E-01	0.004	e, f, g
Xylenes (isomers)	6.59E-02	0.002	e, f, g

References:
(a) Values are from the initial compliance test (TRC - October 22, 2007). Test shows average NOx as 11.29 lbs/hr and CO as 2.35 lbs/hr. These were divided by the gas flow rate of 0.223620 MMscf/hr to get 50.48 lb/MMscf (rounded to 50.5) for NOx and 10.5 lb/MMscf for CO. The SCFH value (fuel flow rate) from the compliance test report (223620 SCFH or 223.6 MSCFH)
(b) The SOx emission factor was taken from AP-42 Table 3.1-2a. The default value is used when percent sulfur is unknown (0.0034 lb/mmbtu). This is equivilant to converting the 2 grains per 100 scf to percent. The 0.0034 lb/mmbtu was converted to lb/mmscf by multiplying by 1030 btu/scf (the heat value of natural gas), to provide 3.5 lb/mmscf.
(c) PM was calculated by taking the AP-42, Table 3.1-2a, EF of 6.6E-3 lb/MMBtu and multiplying it by 1030 BTU/scf to get 6.8 lb/MMscf. PM10 was calculated the same as PM, as most PM from natural gas combustion is less than 1 micrometer.
(d) The VOC emission factor was taken from AP-42 Table 3.1-2a. The factor, 2.1 E-03 lb/mmbtu, was converted to lb/mmscf by multiplying by 1030 giving 2.2 lbs/mmscf.
(e) These chemicals are HAPs
(f) These chemicals are EPCRA 313 listed chemicals.
(g) Emission factor from AP-42, table 3.1-3 (lb/mmbtu). This was multiplied by 1030 Btu/scf to provide the lb./mmscf factor.
(h) Emission factors from EPA FIRE database (SCC: 20300202 & 20200201). These values were also converted from lb/mmbtu to lb/mmscf. Retrieved 4-14-08.

ATTACHMENT B:

2016 Annual Emissions Inventory Submittal to NMED

Los Alamos
NATIONAL LABORATORY
EST. 1943

memorandum

Environmental Protection & Compliance Division
Los Alamos National Laboratory

To/MS: 2016 Emissions Inventory File
Thru/MS: Steve Story, EPC-CP, MS J978
From/MS: Walt Whetham, EPC-CP, MS J978
Phone: 505-665-8885
Symbol: EPC-DO: 17-130
Date: MAR 2 2 2017

Subject: 2016 Emissions Inventory Electronic Submittal

Los Alamos National Laboratory (LANL) submitted their 2016 Emissions Inventory Report to New Mexico Environmental Department (NMED) via online reporting tool, AEIR. This report is required by Title 20, Chapter 2, Part 73 of the New Mexico Administrative Code (20.2.73 NMAC), Notice of Intent and Emissions Inventory Requirements. The report was submitted on March 27, 2017, and meets New Mexico Environmental Department's deadline of April 1st.

Should you have any questions or comments regarding the information provided in this report, please contact Steve Story at (505) 665-2169 or story@lanl.gov .

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EPC-CP Emissions Inventory File, J978

Enclosure 1

2016 Emissions Inventory Report

EPC-DO-17-130

LA-UR-17-22005

Electronic Submittal

Date: MAR 2 2 2017

Facility Annual Emissions - Subject Item Submittal Review

Tuesday, March 21, 2017

Agency ID: 856
Facility Name: Los Alamos National Laboratory
Organization Name: U.S. Department of Energy National Nuclear Security Administration
Submittal Status: 2016 Submittal (In Process)

Subject Item ID: EQPT-116
Designation: TA-60-BDM
Description: Asphalt Plant Dryer - Natural Gas
Type: Asphalt Drum/Burner
SCC: Industrial Processes, Mineral Products, Asphalt Concrete, Drum Mix Plant: Rotary Drum Dryer / Mixer, Natural Gas - Fired
GHG Reporting: Reports GHG to EPA

Supplemental Parameters

	Amount	Unit of Measure
Fuel Type:	Natural Gas	
Input Materials Processed:	Asphalt (INPUT)	
Materials Consumed:	1.47	MM SCF
Fuel Heating Value:	1020.0	MM BTU/MM SCF
Percent Sulfur of Fuel:	0.001	percent
Percent Ash of Fuel:	0.0	percent

Operating Detail

	Value
Operating Time in Hours per Day:	8
Operating Time in Days per Week:	5
Operating Time in Weeks per Year:	26
Operating Time in Hours per Year:	1040
Percent of Operation During Winter:	10
Percent of Operation During Spring:	30
Percent of Operation During Summer:	30
Percent of Operation During Fall:	30

Actual Pollutants

Pollutant	Amount	Unit of Measure	Calculation Method
Carbon Monoxide:	0.152	tons/y	EPA emission factors (e.g., AP-42)
Ethylbenzene:	0.001	tons/y	EPA emission factors (e.g., AP-42)
Lead:	0.0	tons/y	EPA emission factors (e.g., AP-42)
Nitrogen Dioxide:	0.004	tons/y	EPA emission factors (e.g., AP-42)
Particulate Matter (10 microns or less):	0.002	tons/y	Manufacturer Specification
Particulate Matter (2.5 microns or less):	0.002	tons/y	Manufacturer Specification
Particulate Matter (total suspended):	0.003	tons/y	Manufacturer Specification
Sulfur Dioxide:	0.002	tons/y	EPA emission factors (e.g., AP-42)

Volatile Organic Compounds (VOC): 0.003 tons/y EPA emission factors (e.g., AP-42)

Subject Item Comments

Print Close

Facility Annual Emissions - Subject Item Submittal Review

Tuesday, March 21, 2017

Agency ID: 856
Facility Name: Los Alamos National Laboratory
Organization Name: U.S. Department of Energy National Nuclear Security Administration
Submittal Status: 2016 Submittal (In Process)

Subject Item ID: ACT -2
Designation: TA-35-213
Description: Beryllium Activity-Be Target Fabrication Facility - Machining TA-35-213
Type: Beryllium Work
SCC: Industrial Processes, Fabricated Metal Products, Machining Operations, Specify Material**
GHG Reporting: Reports GHG to EPA

Supplemental Parameters

Input Materials Processed: Metal (INPUT)

Operating Detail

	Value
Operating Time in Hours per Day:	5
Operating Time in Days per Week:	7
Operating Time in Weeks per Year:	52
Operating Time in Hours per Year:	1820
Percent of Operation During Winter:	25
Percent of Operation During Spring:	25
Percent of Operation During Summer:	25
Percent of Operation During Fall:	25

Actual Pollutants

Pollutant	Amount	Unit of Measure	Calculation Method
Beryllium:	0.0	tons/y	Estimate
Particulate Matter (total suspended):	0.0	tons/y	Estimate

Subject Item Comments

Print Close

Facility Annual Emissions - Subject Item Submittal Review

Tuesday, March 21, 2017

Agency ID: 856
Facility Name: Los Alamos National Laboratory
Organization Name: U.S. Department of Energy National Nuclear Security Administration
Submittal Status: 2016 Submittal (In Process)

Subject Item ID: ACT -3
Designation: TA-3-141
Description: Beryllium Activity-Be Test Facility - Machining TA-3-141
Type: Beryllium Work
SCC: Industrial Processes, Fabricated Metal Products, Machining Operations, Specify Material**
GHG Reporting: Reports GHG to EPA

Supplemental Parameters

Input Materials Processed: Metal (INPUT)

Operating Detail

	Value
Operating Time in Hours per Day:	24
Operating Time in Days per Week:	7
Operating Time in Weeks per Year:	52
Operating Time in Hours per Year:	8760
Percent of Operation During Winter:	25
Percent of Operation During Spring:	25
Percent of Operation During Summer:	25
Percent of Operation During Fall:	25

Actual Pollutants

Pollutant	Amount	Unit of Measure	Calculation Method
Beryllium:	0.0	tons/y	Field measurement
Particulate Matter (total suspended):	0.0	tons/y	Field measurement

Subject Item Comments

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Facility Annual Emissions - Subject Item Submittal Review

Tuesday, March 21, 2017

Agency ID: 856
Facility Name: Los Alamos National Laboratory
Organization Name: U.S. Department of Energy National Nuclear Security Administration
Submittal Status: 2016 Submittal (In Process)

Subject Item ID: ACT -6
Designation: TA-55-PF4 (a)
Description: Beryllium Activity-Plutonium Facility Beryllium machining, weld cutting / dressing and metallography
Type: Beryllium Work
SCC: Industrial Processes, Fabricated Metal Products, Machining Operations, Specify Material**
GHG Reporting: Reports GHG to EPA

Supplemental Parameters

Input Materials Processed: Metal (INPUT)

Operating Detail

	Value
Operating Time in Hours per Day:	5
Operating Time in Days per Week:	7
Operating Time in Weeks per Year:	52
Operating Time in Hours per Year:	1820
Percent of Operation During Winter:	25
Percent of Operation During Spring:	25
Percent of Operation During Summer:	25
Percent of Operation During Fall:	25

Actual Pollutants

Pollutant	Amount	Unit of Measure	Calculation Method
Beryllium:	0.0	tons/y	Estimate

Subject Item Comments

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Facility Annual Emissions - Subject Item Submittal Review

Tuesday, March 21, 2017

Agency ID: 856
Facility Name: Los Alamos National Laboratory
Organization Name: U.S. Department of Energy National Nuclear Security Administration
Submittal Status: 2016 Submittal (In Process)

Subject Item ID: ACT -41
Designation: TA-3-66
Description: Beryllium Activity-Sigma Facility-electroplating/metallography
Type: Beryllium Work
SCC: Industrial Processes, Fabricated Metal Products, Abrasive Cleaning of Metal Parts, Polishing
GHG Reporting: Reports GHG to EPA

Supplemental Parameters

Input Materials Processed: Metal (INPUT)

Operating Detail

	Value
Operating Time in Hours per Day:	8
Operating Time in Days per Week:	7
Operating Time in Weeks per Year:	52
Operating Time in Hours per Year:	8760
Percent of Operation During Winter:	25
Percent of Operation During Spring:	25
Percent of Operation During Summer:	25
Percent of Operation During Fall:	25

Actual Pollutants

Pollutant	Amount	Unit of Measure	Calculation Method
Beryllium:	0.0	tons/y	Estimate

Subject Item Comments

Print Close

Facility Annual Emissions - Subject Item Submittal Review

Tuesday, March 21, 2017

Agency ID: 856
Facility Name: Los Alamos National Laboratory
Organization Name: U.S. Department of Energy National Nuclear Security Administration
Submittal Status: 2016 Submittal (In Process)

Subject Item ID: EQPT-11
Designation: TA-53-365-BHW-1
Description: Boiler TA-53-365-BHW-1
Type: Boiler
SCC: External Combustion Boilers, Electric Generation, Natural Gas, Boilers < 100 Million Btu/hr except Tangential
GHG Reporting: Reports GHG to EPA

Supplemental Parameters

	Amount	Unit of Measure
Fuel Type:	Natural Gas	
Input Materials Processed:	Natural Gas (INPUT)	
Materials Consumed:	9.253	MM SCF
Fuel Heating Value:	1021.0	MM BTU/MM SCF
Percent Sulfur of Fuel:	0.001	percent
Percent Ash of Fuel:	0.0	percent
Percent Carbon Content:	65.0	percent

Operating Detail

	Value
Operating Time in Hours per Day:	15
Operating Time in Days per Week:	7
Operating Time in Weeks per Year:	33
Operating Time in Hours per Year:	3465
Percent of Operation During Winter:	40
Percent of Operation During Spring:	20
Percent of Operation During Summer:	0
Percent of Operation During Fall:	40

Actual Pollutants

Pollutant	Amount	Unit of Measure	Calculation Method
Carbon Monoxide:	0.389	tons/y	EPA emission factors (e.g., AP-42)
Formaldehyde:	0.0	tons/y	EPA emission factors (e.g., AP-42)
Hexane:	0.008	tons/y	EPA emission factors (e.g., AP-42)
Nitrogen Dioxide:	0.463	tons/y	EPA emission factors (e.g., AP-42)
Particulate Matter (10 microns or less):	0.035	tons/y	EPA emission factors (e.g., AP-42)
Particulate Matter (2.5 microns or less):	0.035	tons/y	EPA emission factors (e.g., AP-42)
Particulate Matter (total suspended):	0.035	tons/y	EPA emission factors (e.g., AP-42)
Sulfur Dioxide:	0.003	tons/y	EPA emission factors (e.g., AP-42)
Volatile Organic Compounds (VOC):	0.025	tons/y	EPA emission factors (e.g., AP-42)

Facility Annual Emissions - Subject Item Submittal Review

Tuesday, March 21, 2017

Agency ID: 856
Facility Name: Los Alamos National Laboratory
Organization Name: U.S. Department of Energy National Nuclear Security Administration
Submittal Status: 2016 Submittal (In Process)

Subject Item ID: EQPT-12
Designation: TA-53-365-BHW-2
Description: Boiler TA-53-365-BHW-2
Type: Boiler
SCC: External Combustion Boilers, Electric Generation, Natural Gas, Boilers < 100 Million Btu/hr except Tangential
GHG Reporting: Reports GHG to EPA

Supplemental Parameters

	Amount	Unit of Measure
Fuel Type:	Natural Gas	
Input Materials Processed:	Natural Gas (INPUT)	
Materials Consumed:	9.253	MM SCF
Fuel Heating Value:	1021.0	MM BTU/MM SCF
Percent Sulfur of Fuel:	0.001	percent
Percent Ash of Fuel:	0.0	percent
Percent Carbon Content:	65.0	percent

Operating Detail

	Value
Operating Time in Hours per Day:	15
Operating Time in Days per Week:	7
Operating Time in Weeks per Year:	33
Operating Time in Hours per Year:	3465
Percent of Operation During Winter:	40
Percent of Operation During Spring:	20
Percent of Operation During Summer:	0
Percent of Operation During Fall:	40

Actual Pollutants

Pollutant	Amount	Unit of Measure	Calculation Method
Carbon Monoxide:	0.389	tons/y	EPA emission factors (e.g., AP-42)
Formaldehyde:	0.0	tons/y	EPA emission factors (e.g., AP-42)
Hexane:	0.008	tons/y	EPA emission factors (e.g., AP-42)
Nitrogen Dioxide:	0.463	tons/y	EPA emission factors (e.g., AP-42)
Particulate Matter (10 microns or less):	0.035	tons/y	EPA emission factors (e.g., AP-42)
Particulate Matter (2.5 microns or less):	0.035	tons/y	EPA emission factors (e.g., AP-42)
Particulate Matter (total suspended):	0.035	tons/y	EPA emission factors (e.g., AP-42)
Sulfur Dioxide:	0.003	tons/y	EPA emission factors (e.g., AP-42)
Volatile Organic Compounds (VOC):	0.025	tons/y	EPA emission factors (e.g., AP-42)

Facility Annual Emissions - Subject Item Submittal Review

Tuesday, March 21, 2017

Agency ID: 856
Facility Name: Los Alamos National Laboratory
Organization Name: U.S. Department of Energy National Nuclear Security Administration
Submittal Status: 2016 Submittal (In Process)

Subject Item ID: EQPT-24
Designation: TA-3-22-1 (gas)
Description: Power Plant Boiler (pph, Natural Gas)
Type: Boiler
SCC: External Combustion Boilers, Electric Generation, Natural Gas, Boilers > 100 Million Btu/hr except Tangential
GHG Reporting: Reports GHG to EPA

Supplemental Parameters

	Amount	Unit of Measure
Fuel Type:	Natural Gas	
Input Materials Processed:	Natural Gas (INPUT)	
Materials Consumed:	29.205	MM SCF
Fuel Heating Value:	1021.0	MM BTU/MM SCF
Percent Sulfur of Fuel:	0.001	percent
Percent Ash of Fuel:	0.0	percent
Percent Carbon Content:	65.0	percent

Operating Detail

	Value
Operating Time in Hours per Day:	24
Operating Time in Days per Week:	7
Operating Time in Weeks per Year:	52
Operating Time in Hours per Year:	8760
Percent of Operation During Winter:	25
Percent of Operation During Spring:	25
Percent of Operation During Summer:	25
Percent of Operation During Fall:	25

Actual Pollutants

Pollutant	Amount	Unit of Measure	Calculation Method
Carbon Monoxide:	0.584	tons/y	EPA emission factors (e.g., AP-42)
Formaldehyde:	0.001	tons/y	EPA emission factors (e.g., AP-42)
Hexane:	0.026	tons/y	EPA emission factors (e.g., AP-42)
Nitrogen Dioxide:	0.847	tons/y	EPA emission factors (e.g., AP-42)
Particulate Matter (10 microns or less):	0.111	tons/y	EPA emission factors (e.g., AP-42)
Particulate Matter (2.5 microns or less):	0.111	tons/y	EPA emission factors (e.g., AP-42)
Particulate Matter (total suspended):	0.111	tons/y	EPA emission factors (e.g., AP-42)
Sulfur Dioxide:	0.009	tons/y	EPA emission factors (e.g., AP-42)

Toluene; (Methyl benzene):	0.0	tons/y	EPA emission factors (e.g., AP-42)
Volatile Organic Compounds (VOC):	0.08	tons/y	EPA emission factors (e.g., AP-42)

Subject Item Comments

Print Close

Facility Annual Emissions - Subject Item Submittal Review

Tuesday, March 21, 2017

Agency ID: 856
Facility Name: Los Alamos National Laboratory
Organization Name: U.S. Department of Energy National Nuclear Security Administration
Submittal Status: 2016 Submittal (In Process)

Subject Item ID: EQPT-25
Designation: TA-3-22-2 (gas)
Description: Power Plant Boiler (pph, Natural Gas)
Type: Boiler
SCC: External Combustion Boilers, Electric Generation, Natural Gas, Boilers > 100 Million Btu/hr except Tangential
GHG Reporting: Reports GHG to EPA

Supplemental Parameters

	Amount	Unit of Measure
Fuel Type:	Natural Gas	
Input Materials Processed:	Natural Gas (INPUT)	
Materials Consumed:	266.337	MM SCF
Fuel Heating Value:	1021.0	MM BTU/MM SCF
Percent Sulfur of Fuel:	0.001	percent
Percent Ash of Fuel:	0.0	percent
Percent Carbon Content:	65.0	percent

Operating Detail

	Value
Operating Time in Hours per Day:	24
Operating Time in Days per Week:	7
Operating Time in Weeks per Year:	52
Operating Time in Hours per Year:	8760
Percent of Operation During Winter:	25
Percent of Operation During Spring:	25
Percent of Operation During Summer:	25
Percent of Operation During Fall:	25

Actual Pollutants

Pollutant	Amount	Unit of Measure	Calculation Method
Carbon Monoxide:	5.327	tons/y	EPA emission factors (e.g., AP-42)
Formaldehyde:	0.01	tons/y	EPA emission factors (e.g., AP-42)
Hexane:	0.24	tons/y	EPA emission factors (e.g., AP-42)
Nitrogen Dioxide:	7.724	tons/y	EPA emission factors (e.g., AP-42)
Particulate Matter (10 microns or less):	1.012	tons/y	EPA emission factors (e.g., AP-42)
Particulate Matter (2.5 microns or less):	1.012	tons/y	EPA emission factors (e.g., AP-42)
Particulate Matter (total suspended):	1.012	tons/y	EPA emission factors (e.g., AP-42)
Sulfur Dioxide:	0.08	tons/y	EPA emission factors (e.g., AP-42)

Volatile Organic Compounds (VOC): 0.732 tons/y EPA emission factors (e.g., AP-42)

Subject Item Comments

Print Close

Facility Annual Emissions - Subject Item Submittal Review

Tuesday, March 21, 2017

Agency ID: 856
Facility Name: Los Alamos National Laboratory
Organization Name: U.S. Department of Energy National Nuclear Security Administration
Submittal Status: 2016 Submittal (In Process)

Subject Item ID: EQPT-26
Designation: TA-3-22-3 (gas)
Description: Power Plant Boiler (pph, Natural Gas)
Type: Boiler
SCC: External Combustion Boilers, Electric Generation, Natural Gas, Boilers > 100 Million Btu/hr except Tangential
GHG Reporting: Reports GHG to EPA

Supplemental Parameters

	Amount	Unit of Measure
Fuel Type:	Natural Gas	
Input Materials Processed:	Natural Gas (INPUT)	
Materials Consumed:	62.121	MM SCF
Fuel Heating Value:	1021.0	MM BTU/MM SCF
Percent Sulfur of Fuel:	0.001	percent
Percent Ash of Fuel:	0.0	percent
Percent Carbon Content:	65.0	percent

Operating Detail

	Value
Operating Time in Hours per Day:	24
Operating Time in Days per Week:	7
Operating Time in Weeks per Year:	52
Operating Time in Hours per Year:	8760
Percent of Operation During Winter:	25
Percent of Operation During Spring:	25
Percent of Operation During Summer:	25
Percent of Operation During Fall:	25

Actual Pollutants

Pollutant	Amount	Unit of Measure	Calculation Method
Carbon Monoxide:	1.242	tons/y	EPA emission factors (e.g., AP-42)
Formaldehyde:	0.002	tons/y	EPA emission factors (e.g., AP-42)
Hexane:	0.056	tons/y	EPA emission factors (e.g., AP-42)
Nitrogen Dioxide:	1.802	tons/y	EPA emission factors (e.g., AP-42)
Particulate Matter (10 microns or less):	0.236	tons/y	EPA emission factors (e.g., AP-42)
Particulate Matter (2.5 microns or less):	0.236	tons/y	EPA emission factors (e.g., AP-42)
Particulate Matter (total suspended):	0.236	tons/y	EPA emission factors (e.g., AP-42)
Sulfur Dioxide:	0.019	tons/y	EPA emission factors (e.g., AP-42)

Volatile Organic Compounds (VOC): 0.171 tons/y EPA emission factors (e.g., AP-42)

Subject Item Comments

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Agency ID: 856
Facility Name: Los Alamos National Laboratory
Organization Name: U.S. Department of Energy National Nuclear Security Administration
Submittal Status: 2016 Submittal (In Process)

Subject Item ID: EQPT-29
Designation: TA-55-6-BHW-1
Description: Sellers Boiler TA-55-6-BHW-1
Type: Boiler
SCC: External Combustion Boilers, Electric Generation, Natural Gas, Boilers < 100 Million Btu/hr except Tangential
GHG Reporting: Reports GHG to EPA

Supplemental Parameters

	Amount	Unit of Measure
Fuel Type:	Natural Gas	
Input Materials Processed:	Natural Gas (INPUT)	
Materials Consumed:	5.585	MM SCF
Fuel Heating Value:	1021.0	MM BTU/MM SCF
Percent Sulfur of Fuel:	0.001	percent

Operating Detail

	Value
Operating Time in Hours per Day:	15
Operating Time in Days per Week:	7
Operating Time in Weeks per Year:	33
Operating Time in Hours per Year:	3465
Percent of Operation During Winter:	25
Percent of Operation During Spring:	25
Percent of Operation During Summer:	25
Percent of Operation During Fall:	25

Actual Pollutants

Pollutant	Amount	Unit of Measure	Calculation Method
Carbon Monoxide:	0.107	tons/y	EPA emission factors (e.g., AP-42)
Formaldehyde:	0.0	tons/y	EPA emission factors (e.g., AP-42)
Hexane:	0.005	tons/y	EPA emission factors (e.g., AP-42)
Nitrogen Dioxide:	0.385	tons/y	Actual stack test
Particulate Matter (10 microns or less):	0.04	tons/y	Manufacturer Specification
Particulate Matter (2.5 microns or less):	0.04	tons/y	Manufacturer Specification
Particulate Matter (total suspended):	0.04	tons/y	Manufacturer Specification
Sulfur Dioxide:	0.002	tons/y	EPA emission factors (e.g., AP-42)
Volatile Organic Compounds (VOC):	0.017	tons/y	Manufacturer Specification

Subject Item Comments

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Agency ID: 856
Facility Name: Los Alamos National Laboratory
Organization Name: U.S. Department of Energy National Nuclear Security Administration
Submittal Status: 2016 Submittal (In Process)

Subject Item ID: EQPT-30
Designation: TA-55-6-BHW-2
Description: Sellers Boiler TA-55-6-BHW-2
Type: Boiler
SCC: External Combustion Boilers, Electric Generation, Natural Gas, Boilers < 100 Million Btu/hr except Tangential
GHG Reporting: Reports GHG to EPA

Supplemental Parameters

	Amount	Unit of Measure
Fuel Type:	Natural Gas	
Input Materials Processed:	Natural Gas (INPUT)	
Materials Consumed:	16.48	MM SCF
Fuel Heating Value:	1021.0	MM BTU/MM SCF
Percent Sulfur of Fuel:	0.001	percent
Percent Carbon Content:	65.0	percent

Operating Detail

	Value
Operating Time in Hours per Day:	15
Operating Time in Days per Week:	7
Operating Time in Weeks per Year:	33
Operating Time in Hours per Year:	3465
Percent of Operation During Winter:	40
Percent of Operation During Spring:	10
Percent of Operation During Summer:	10
Percent of Operation During Fall:	40

Actual Pollutants

Pollutant	Amount	Unit of Measure	Calculation Method
Carbon Monoxide:	0.315	tons/y	EPA emission factors (e.g., AP-42)
Formaldehyde:	0.001	tons/y	EPA emission factors (e.g., AP-42)
Hexane:	0.015	tons/y	EPA emission factors (e.g., AP-42)
Lead:	0.0	tons/y	EPA emission factors (e.g., AP-42)
Nitrogen Dioxide:	1.137	tons/y	Actual stack test
Particulate Matter (10 microns or less):	0.117	tons/y	Manufacturer Specification
Particulate Matter (2.5 microns or less):	0.117	tons/y	Manufacturer Specification
Particulate Matter (total suspended):	0.117	tons/y	Manufacturer Specification
Sulfur Dioxide:	0.005	tons/y	EPA emission factors (e.g., AP-42)
Volatile Organic Compounds (VOC):	0.049	tons/y	Manufacturer Specification

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Agency ID: 856
Facility Name: Los Alamos National Laboratory
Organization Name: U.S. Department of Energy National Nuclear Security Administration
Submittal Status: 2016 Submittal (In Process)

Subject Item ID: EQPT-53
Designation: TA-16-1484-BS-2
Description: Low NOx Boiler TA-16-1484-BS-2
Type: Boiler
SCC: External Combustion Boilers, Commercial/Institutional, Natural Gas, < 10 Million Btu/hr
GHG Reporting: Reports GHG to EPA

Supplemental Parameters

	Amount	Unit of Measure
Fuel Type:	Natural Gas	
Input Materials Processed:	Natural Gas (INPUT)	
Materials Consumed:	8.258	MM SCF
Fuel Heating Value:	1021.0	MM BTU/MM SCF
Percent Ash of Fuel:	0.0	percent

Operating Detail

	Value
Operating Time in Hours per Day:	24
Operating Time in Days per Week:	7
Operating Time in Weeks per Year:	52
Operating Time in Hours per Year:	8760
Percent of Operation During Winter:	25
Percent of Operation During Spring:	25
Percent of Operation During Summer:	25
Percent of Operation During Fall:	25

Actual Pollutants

Pollutant	Amount	Unit of Measure	Calculation Method
Carbon Monoxide:	0.153	tons/y	Design calculation
Hexane:	0.007	tons/y	Design calculation
Lead:	0.0	tons/y	Design calculation
Nitrogen Dioxide:	0.153	tons/y	Design calculation
Particulate Matter (10 microns or less):	0.031	tons/y	Design calculation
Particulate Matter (2.5 microns or less):	0.031	tons/y	Design calculation
Particulate Matter (total suspended):	0.031	tons/y	Design calculation
Sulfur Dioxide:	0.002	tons/y	Design calculation
Volatile Organic Compounds (VOC):	0.023	tons/y	Design calculation

Subject Item Comments

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Agency ID: 856
Facility Name: Los Alamos National Laboratory
Organization Name: U.S. Department of Energy National Nuclear Security Administration
Submittal Status: 2016 Submittal (In Process)

Subject Item ID: EQPT-90
Designation: RLUOB-BHW-1 (gas)
Description: Boiler-CMRR-BHW-1
Type: Boiler
SCC: External Combustion Boilers, Commercial/Institutional, Natural Gas, < 10 Million Btu/hr
GHG Reporting: Reports GHG to EPA

Supplemental Parameters

	Amount	Unit of Measure
Fuel Type:	Natural Gas	
Input Materials Processed:	Natural Gas (INPUT)	
Materials Consumed:	0.9	MM SCF
Fuel Heating Value:	1021.0	MM BTU/MM SCF
Percent Sulfur of Fuel:	0.001	percent
Percent Ash of Fuel:	0.0	percent
Percent Carbon Content:	65.0	percent

Operating Detail

	Value
Operating Time in Hours per Day:	24
Operating Time in Days per Week:	7
Operating Time in Weeks per Year:	52
Operating Time in Hours per Year:	8760
Percent of Operation During Winter:	25
Percent of Operation During Spring:	25
Percent of Operation During Summer:	25
Percent of Operation During Fall:	25

Actual Pollutants

Pollutant	Amount	Unit of Measure	Calculation Method
Carbon Monoxide:	0.017	tons/y	EPA emission factors (e.g., AP-42)
Hexane:	0.001	tons/y	EPA emission factors (e.g., AP-42)
Nitrogen Dioxide:	0.013	tons/y	EPA emission factors (e.g., AP-42)
Particulate Matter (10 microns or less):	0.002	tons/y	EPA emission factors (e.g., AP-42)
Particulate Matter (2.5 microns or less):	0.002	tons/y	EPA emission factors (e.g., AP-42)
Particulate Matter (total suspended):	0.002	tons/y	EPA emission factors (e.g., AP-42)
Sulfur Dioxide:	0.0	tons/y	EPA emission factors (e.g., AP-42)
Volatile Organic Compounds (VOC):	0.012	tons/y	EPA emission factors (e.g., AP-42)

Subject Item Comments

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Tuesday, March 21, 2017

Agency ID: 856
Facility Name: Los Alamos National Laboratory
Organization Name: U.S. Department of Energy National Nuclear Security Administration
Submittal Status: 2016 Submittal (In Process)

Subject Item ID: EQPT-104
Designation: RLUOB-BHW-2 (gas)
Description: Boiler-CMRR-BHW-2
Type: Boiler
SCC: External Combustion Boilers, Commercial/Institutional, Natural Gas, < 10 Million Btu/hr
GHG Reporting: Reports GHG to EPA

Supplemental Parameters

	Amount	Unit of Measure
Fuel Type:	Natural Gas	
Input Materials Processed:	Natural Gas (INPUT)	
Materials Consumed:	0.9	MM SCF
Fuel Heating Value:	1021.0	MM BTU/MM SCF
Percent Sulfur of Fuel:	0.001	percent
Percent Ash of Fuel:	0.0	percent
Percent Carbon Content:	65.0	percent

Operating Detail

	Value
Operating Time in Hours per Day:	24
Operating Time in Days per Week:	7
Operating Time in Weeks per Year:	52
Operating Time in Hours per Year:	8760
Percent of Operation During Winter:	25
Percent of Operation During Spring:	25
Percent of Operation During Summer:	25
Percent of Operation During Fall:	25

Actual Pollutants

Pollutant	Amount	Unit of Measure	Calculation Method
Carbon Monoxide:	0.017	tons/y	EPA emission factors (e.g., AP-42)
Hexane:	0.001	tons/y	EPA emission factors (e.g., AP-42)
Nitrogen Dioxide:	0.013	tons/y	EPA emission factors (e.g., AP-42)
Particulate Matter (10 microns or less):	0.002	tons/y	EPA emission factors (e.g., AP-42)
Particulate Matter (2.5 microns or less):	0.002	tons/y	EPA emission factors (e.g., AP-42)
Particulate Matter (total suspended):	0.002	tons/y	EPA emission factors (e.g., AP-42)
Sulfur Dioxide:	0.0	tons/y	EPA emission factors (e.g., AP-42)
Volatile Organic Compounds (VOC):	0.012	tons/y	EPA emission factors (e.g., AP-42)

Subject Item Comments

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Tuesday, March 21, 2017

Agency ID: 856
Facility Name: Los Alamos National Laboratory
Organization Name: U.S. Department of Energy National Nuclear Security Administration
Submittal Status: 2016 Submittal (In Process)

Subject Item ID: EQPT-105
Designation: RLUOB-BHW-3 (gas)
Description: Boiler-CMRR-BHW-3
Type: Boiler
SCC: External Combustion Boilers, Commercial/Institutional, Natural Gas, < 10 Million Btu/hr
GHG Reporting: Reports GHG to EPA

Supplemental Parameters

	Amount	Unit of Measure
Fuel Type:	Natural Gas	
Input Materials Processed:	Natural Gas (INPUT)	
Materials Consumed:	0.9	MM SCF
Fuel Heating Value:	1021.0	MM BTU/MM SCF
Percent Sulfur of Fuel:	0.001	percent
Percent Ash of Fuel:	0.0	percent
Percent Carbon Content:	65.0	percent

Operating Detail

	Value
Operating Time in Hours per Day:	24
Operating Time in Days per Week:	7
Operating Time in Weeks per Year:	52
Operating Time in Hours per Year:	8760
Percent of Operation During Winter:	25
Percent of Operation During Spring:	25
Percent of Operation During Summer:	25
Percent of Operation During Fall:	25

Actual Pollutants

Pollutant	Amount	Unit of Measure	Calculation Method
Carbon Monoxide:	0.017	tons/y	EPA emission factors (e.g., AP-42)
Hexane:	0.001	tons/y	EPA emission factors (e.g., AP-42)
Nitrogen Dioxide:	0.013	tons/y	EPA emission factors (e.g., AP-42)
Particulate Matter (10 microns or less):	0.002	tons/y	EPA emission factors (e.g., AP-42)
Particulate Matter (2.5 microns or less):	0.002	tons/y	EPA emission factors (e.g., AP-42)
Particulate Matter (total suspended):	0.002	tons/y	EPA emission factors (e.g., AP-42)
Sulfur Dioxide:	0.0	tons/y	EPA emission factors (e.g., AP-42)
Volatile Organic Compounds (VOC):	0.012	tons/y	EPA emission factors (e.g., AP-42)

Subject Item Comments

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Tuesday, March 21, 2017

Agency ID: 856
Facility Name: Los Alamos National Laboratory
Organization Name: U.S. Department of Energy National Nuclear Security Administration
Submittal Status: 2016 Submittal (In Process)

Subject Item ID: EQPT-106
Designation: RLUOB-BHW-4 (gas)
Description: Boiler-CMRR-BHW-4
Type: Boiler
SCC: External Combustion Boilers, Commercial/Institutional, Natural Gas, < 10 Million Btu/hr
GHG Reporting: Reports GHG to EPA

Supplemental Parameters

	Amount	Unit of Measure
Fuel Type:	Natural Gas	
Input Materials Processed:	Natural Gas (INPUT)	
Materials Consumed:	0.0	MM SCF
Fuel Heating Value:	0.0	MM BTU/MM SCF
Percent Sulfur of Fuel:	0.0	percent
Percent Ash of Fuel:	0.0	percent
Percent Carbon Content:	0.0	percent

Operating Detail

	Value
Operating Time in Hours per Day:	0
Operating Time in Days per Week:	0
Operating Time in Weeks per Year:	0
Operating Time in Hours per Year:	0
Percent of Operation During Winter:	0
Percent of Operation During Spring:	0
Percent of Operation During Summer:	0
Percent of Operation During Fall:	0

Actual Pollutants

Pollutant	Amount	Unit of Measure	Calculation Method
Carbon Monoxide:	0.0	tons/y	EPA emission factors (e.g., AP-42)
Nitrogen Dioxide:	0.0	tons/y	EPA emission factors (e.g., AP-42)
Particulate Matter (10 microns or less):	0.0	tons/y	EPA emission factors (e.g., AP-42)
Particulate Matter (2.5 microns or less):	0.0	tons/y	EPA emission factors (e.g., AP-42)
Particulate Matter (total suspended):	0.0	tons/y	EPA emission factors (e.g., AP-42)
Sulfur Dioxide:	0.0	tons/y	EPA emission factors (e.g., AP-42)
Volatile Organic Compounds (VOC):	0.0	tons/y	EPA emission factors (e.g., AP-42)

Subject Item Comments

This unit has not been built.

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Tuesday, March 21, 2017

Agency ID: 856
Facility Name: Los Alamos National Laboratory
Organization Name: U.S. Department of Energy National Nuclear Security Administration
Submittal Status: 2016 Submittal (In Process)

Subject Item ID: EQPT-107
Designation: B-5
Description: Boiler-CMRR
Type: Boiler
SCC: External Combustion Boilers, Commercial/Institutional, Natural Gas, < 10 Million Btu/hr
GHG Reporting: Reports GHG to EPA

Supplemental Parameters

	Amount	Unit of Measure
Fuel Type:	Natural Gas	
Input Materials Processed:	Natural Gas (INPUT)	
Materials Consumed:	0.0	MM SCF
Fuel Heating Value:	0.0	MM BTU/MM SCF
Percent Sulfur of Fuel:	0.0	percent
Percent Ash of Fuel:	0.0	percent
Percent Carbon Content:	0.0	percent

Operating Detail

	Value
Operating Time in Hours per Day:	0
Operating Time in Days per Week:	0
Operating Time in Weeks per Year:	0
Operating Time in Hours per Year:	0
Percent of Operation During Winter:	0
Percent of Operation During Spring:	0
Percent of Operation During Summer:	0
Percent of Operation During Fall:	0

Actual Pollutants

Pollutant	Amount	Unit of Measure	Calculation Method
Carbon Monoxide:	0.0	tons/y	EPA emission factors (e.g., AP-42)
Nitrogen Dioxide:	0.0	tons/y	EPA emission factors (e.g., AP-42)
Particulate Matter (10 microns or less):	0.0	tons/y	EPA emission factors (e.g., AP-42)
Particulate Matter (total suspended):	0.0	tons/y	EPA emission factors (e.g., AP-42)
Sulfur Dioxide:	0.0	tons/y	EPA emission factors (e.g., AP-42)
Volatile Organic Compounds (VOC):	0.0	tons/y	EPA emission factors (e.g., AP-42)

Subject Item Comments

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Agency ID: 856
Facility Name: Los Alamos National Laboratory
Organization Name: U.S. Department of Energy National Nuclear Security Administration
Submittal Status: 2016 Submittal (In Process)

Subject Item ID: EQPT-134
Designation: TA-16-1484-BS-1
Description: Low NOx Boiler TA-16-1484-BS-1
Type: Boiler
SCC: External Combustion Boilers, Commercial/Institutional, Natural Gas, < 10 Million Btu/hr
GHG Reporting: Reports GHG to EPA

Supplemental Parameters

	Amount	Unit of Measure
Fuel Type:	Natural Gas	
Input Materials Processed:	Natural Gas (INPUT)	
Materials Consumed:	8.258	MM SCF
Fuel Heating Value:	1021.0	MM BTU/MM SCF
Percent Sulfur of Fuel:	0.001	percent
Percent Ash of Fuel:	0.0	percent
Percent Carbon Content:	65.0	percent

Operating Detail

	Value
Operating Time in Hours per Day:	24
Operating Time in Days per Week:	7
Operating Time in Weeks per Year:	52
Operating Time in Hours per Year:	8760
Percent of Operation During Winter:	25
Percent of Operation During Spring:	25
Percent of Operation During Summer:	25
Percent of Operation During Fall:	25

Actual Pollutants

Pollutant	Amount	Unit of Measure	Calculation Method
Carbon Monoxide:	0.153	tons/y	Design calculation
Hexane:	0.007	tons/y	Design calculation
Lead:	0.0	tons/y	Design calculation
Nitrogen Dioxide:	0.153	tons/y	Design calculation
Particulate Matter (10 microns or less):	0.031	tons/y	Design calculation
Particulate Matter (2.5 microns or less):	0.031	tons/y	Design calculation
Particulate Matter (total suspended):	0.031	tons/y	Design calculation
Sulfur Dioxide:	0.002	tons/y	Design calculation
Volatile Organic Compounds (VOC):	0.023	tons/y	Design calculation

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Agency ID: 856
Facility Name: Los Alamos National Laboratory
Organization Name: U.S. Department of Energy National Nuclear Security Administration
Submittal Status: 2016 Submittal (In Process)

Subject Item ID: EQPT-137
Designation: TA-3-22-2
Description: Power Plant Boiler (pph, No. 2 fuel oil)
Type: Boiler
SCC: External Combustion Boilers, Electric Generation, Distillate Oil, Grades 1 and 2 Oil
GHG Reporting: Reports GHG to EPA

Supplemental Parameters

	Amount	Unit of Measure
Fuel Type:	Diesel	
Materials Consumed:	0.0	gal
Fuel Heating Value:	138.0	MM BTU/M gal
Percent Sulfur of Fuel:	0.05	percent

Operating Detail

	Value
Operating Time in Hours per Day:	0
Operating Time in Days per Week:	0
Operating Time in Weeks per Year:	0
Operating Time in Hours per Year:	0
Percent of Operation During Winter:	0
Percent of Operation During Spring:	0
Percent of Operation During Summer:	0
Percent of Operation During Fall:	0

Actual Pollutants

Pollutant	Amount	Unit of Measure	Calculation Method
Carbon Monoxide:	0.0	tons/y	EPA emission factors (e.g., AP-42)
Formaldehyde:	0.0	tons/y	EPA emission factors (e.g., AP-42)
Hexane:	0.0	tons/y	EPA emission factors (e.g., AP-42)
Nitrogen Dioxide:	0.0	tons/y	EPA emission factors (e.g., AP-42)
Particulate Matter (10 microns or less):	0.0	tons/y	EPA emission factors (e.g., AP-42)
Particulate Matter (2.5 microns or less):	0.0	tons/y	EPA emission factors (e.g., AP-42)
Particulate Matter (total suspended):	0.0	tons/y	EPA emission factors (e.g., AP-42)
Sulfur Dioxide:	0.0	tons/y	EPA emission factors (e.g., AP-42)
Volatile Organic Compounds (VOC):	0.0	tons/y	EPA emission factors (e.g., AP-42)

Subject Item Comments

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Agency ID: 856
Facility Name: Los Alamos National Laboratory
Organization Name: U.S. Department of Energy National Nuclear Security Administration
Submittal Status: 2016 Submittal (In Process)

Subject Item ID: EQPT-138
Designation: TA-3-22-3
Description: Power Plant Boiler (pph, No. 2 fuel oil)
Type: Boiler
SCC: External Combustion Boilers, Electric Generation, Distillate Oil, Grades 1 and 2 Oil
GHG Reporting: Reports GHG to EPA

Supplemental Parameters

	Amount	Unit of Measure
Fuel Type:	Diesel	
Materials Consumed:	0.0	gal
Fuel Heating Value:	138.0	MM BTU/M gal
Percent Sulfur of Fuel:	0.05	percent

Operating Detail

	Value
Operating Time in Hours per Day:	0
Operating Time in Days per Week:	0
Operating Time in Weeks per Year:	0
Operating Time in Hours per Year:	0
Percent of Operation During Winter:	0
Percent of Operation During Spring:	0
Percent of Operation During Summer:	0
Percent of Operation During Fall:	0

Actual Pollutants

Pollutant	Amount	Unit of Measure	Calculation Method
Carbon Monoxide:	0.0	tons/y	EPA emission factors (e.g., AP-42)
Formaldehyde:	0.0	tons/y	EPA emission factors (e.g., AP-42)
Hexane:	0.0	tons/y	EPA emission factors (e.g., AP-42)
Nitrogen Dioxide:	0.0	tons/y	EPA emission factors (e.g., AP-42)
Particulate Matter (10 microns or less):	0.0	tons/y	EPA emission factors (e.g., AP-42)
Particulate Matter (2.5 microns or less):	0.0	tons/y	EPA emission factors (e.g., AP-42)
Particulate Matter (total suspended):	0.0	tons/y	EPA emission factors (e.g., AP-42)
Sulfur Dioxide:	0.0	tons/y	EPA emission factors (e.g., AP-42)
Volatile Organic Compounds (VOC):	0.0	tons/y	EPA emission factors (e.g., AP-42)

Subject Item Comments

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Agency ID: 856
Facility Name: Los Alamos National Laboratory
Organization Name: U.S. Department of Energy National Nuclear Security Administration
Submittal Status: 2016 Submittal (In Process)

Subject Item ID: EQPT-141
Designation: TA-3-22-1
Description: Power Plant Boiler (pph, No. 2 fuel oil)
Type: Boiler
SCC: External Combustion Boilers, Electric Generation, Natural Gas, Boilers > 100 Million Btu/hr except Tangential
GHG Reporting: Reports GHG to EPA

Supplemental Parameters

	Amount	Unit of Measure
Fuel Type:	Diesel	
Materials Consumed:	0.0	gal
Fuel Heating Value:	138.0	MM BTU/M gal

Operating Detail

	Value
Operating Time in Hours per Day:	0
Operating Time in Days per Week:	0
Operating Time in Weeks per Year:	0
Operating Time in Hours per Year:	0
Percent of Operation During Winter:	0
Percent of Operation During Spring:	0
Percent of Operation During Summer:	0
Percent of Operation During Fall:	0

Actual Pollutants

Pollutant	Amount	Unit of Measure	Calculation Method
Carbon Monoxide:	0.0	tons/y	EPA emission factors (e.g., AP-42)
Nitrogen Dioxide:	0.0	tons/y	EPA emission factors (e.g., AP-42)
Particulate Matter (10 microns or less):	0.0	tons/y	EPA emission factors (e.g., AP-42)
Particulate Matter (2.5 microns or less):	0.0	tons/y	EPA emission factors (e.g., AP-42)
Particulate Matter (total suspended):	0.0	tons/y	EPA emission factors (e.g., AP-42)
Sulfur Dioxide:	0.0	tons/y	EPA emission factors (e.g., AP-42)
Volatile Organic Compounds (VOC):	0.0	tons/y	EPA emission factors (e.g., AP-42)

Subject Item Comments

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Agency ID: 856
Facility Name: Los Alamos National Laboratory
Organization Name: U.S. Department of Energy National Nuclear Security Administration
Submittal Status: 2016 Submittal (In Process)

Subject Item ID: EQPT-144
Designation: Boiler combined emissions
Description: TA-16-1484-Bs-1,2; TA -53-365-BHW-1,2; TA-55-6-BHW-1,2; RLUOB-BHW-1,2,3,4
Type: Boiler
SCC: External Combustion Boilers, Electric Generation, Natural Gas, Boilers > 100 Million Btu/hr except Tangential
GHG Reporting: Reports GHG to EPA

Supplemental Parameters

	Amount	Unit of Measure
Fuel Type:	Natural Gas	
Input Materials Processed:	Natural Gas (INPUT)	
Materials Consumed:	0.0	MM SCF
Fuel Heating Value:	0.0	MM BTU/MM SCF
Percent Sulfur of Fuel:	0.0	percent
Percent Ash of Fuel:	0.0	percent
Percent Carbon Content:	0.0	percent

Operating Detail

	Value
Operating Time in Hours per Day:	0
Operating Time in Days per Week:	0
Operating Time in Weeks per Year:	0
Operating Time in Hours per Year:	0
Percent of Operation During Winter:	0
Percent of Operation During Spring:	0
Percent of Operation During Summer:	0
Percent of Operation During Fall:	0

Actual Pollutants

Pollutant	Amount	Unit of Measure	Calculation Method
Carbon Monoxide:	0.0	tons/y	EPA emission factors (e.g., AP-42)
Nitrogen Dioxide:	0.0	tons/y	EPA emission factors (e.g., AP-42)
Particulate Matter (10 microns or less):	0.0	tons/y	EPA emission factors (e.g., AP-42)
Particulate Matter (2.5 microns or less):	0.0	tons/y	EPA emission factors (e.g., AP-42)
Particulate Matter (total suspended):	0.0	tons/y	EPA emission factors (e.g., AP-42)
Sulfur Dioxide:	0.0	tons/y	EPA emission factors (e.g., AP-42)
Volatile Organic Compounds (VOC):	0.0	tons/y	EPA emission factors (e.g., AP-42)

Subject Item Comments

This Facility ID represents the total from the two TA-16 boilers, the two TA-53 boilers, the two TA-55 boilers, and the four RLUOB boilers. However, theses emissions are already captured in other facility IDs. In order to avoid counting the emissions twice, NMED has asked us to enter zeros for this Facility ID.

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Facility Annual Emissions - Subject Item Submittal Review

Tuesday, March 21, 2017

Agency ID: 856
Facility Name: Los Alamos National Laboratory
Organization Name: U.S. Department of Energy National Nuclear Security Administration
Submittal Status: 2016 Submittal (In Process)

Subject Item ID: EQPT-149
Designation: RLUOB-BHW-1 (oil)
Description: Boiler-CMRR-BHW-1
Type: Boiler
SCC: External Combustion Boilers, Commercial/Institutional, Natural Gas, < 10 Million Btu/hr
GHG Reporting: Reports GHG to EPA

Supplemental Parameters

	Amount	Unit of Measure
Fuel Type:	Diesel	
Materials Consumed:	0.0	gal
Fuel Heating Value:	138.0	MM BTU/M gal

Operating Detail

	Value
Operating Time in Hours per Day:	0
Operating Time in Days per Week:	0
Operating Time in Weeks per Year:	0
Operating Time in Hours per Year:	0
Percent of Operation During Winter:	0
Percent of Operation During Spring:	0
Percent of Operation During Summer:	0
Percent of Operation During Fall:	0

Actual Pollutants

Pollutant	Amount	Unit of Measure	Calculation Method
Carbon Monoxide:	0.0	tons/y	EPA emission factors (e.g., AP-42)
Nitrogen Dioxide:	0.0	tons/y	EPA emission factors (e.g., AP-42)
Particulate Matter (10 microns or less):	0.0	tons/y	EPA emission factors (e.g., AP-42)
Particulate Matter (2.5 microns or less):	0.0	tons/y	EPA emission factors (e.g., AP-42)
Particulate Matter (total suspended):	0.0	tons/y	EPA emission factors (e.g., AP-42)
Sulfur Dioxide:	0.0	tons/y	EPA emission factors (e.g., AP-42)

Subject Item Comments

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Facility Annual Emissions - Subject Item Submittal Review

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Agency ID: 856
Facility Name: Los Alamos National Laboratory
Organization Name: U.S. Department of Energy National Nuclear Security Administration
Submittal Status: 2016 Submittal (In Process)

Subject Item ID: EQPT-150
Designation: RLUOB-BHW-2 (oil)
Description: Boiler-CMRR-BHW-2
Type: Boiler
SCC: External Combustion Boilers, Commercial/Institutional, Natural Gas, < 10 Million Btu/hr
GHG Reporting: Reports GHG to EPA

Supplemental Parameters

	Amount	Unit of Measure
Fuel Type:	Diesel	
Materials Consumed:	0.0	gal
Fuel Heating Value:	138.0	MM BTU/M gal

Operating Detail

	Value
Operating Time in Hours per Day:	0
Operating Time in Days per Week:	0
Operating Time in Weeks per Year:	0
Operating Time in Hours per Year:	0
Percent of Operation During Winter:	0
Percent of Operation During Spring:	0
Percent of Operation During Summer:	0
Percent of Operation During Fall:	0

Actual Pollutants

Pollutant	Amount	Unit of Measure	Calculation Method
Carbon Monoxide:	0.0	tons/y	EPA emission factors (e.g., AP-42)
Nitrogen Dioxide:	0.0	tons/y	EPA emission factors (e.g., AP-42)
Particulate Matter (10 microns or less):	0.0	tons/y	EPA emission factors (e.g., AP-42)
Particulate Matter (2.5 microns or less):	0.0	tons/y	EPA emission factors (e.g., AP-42)
Particulate Matter (total suspended):	0.0	tons/y	EPA emission factors (e.g., AP-42)
Sulfur Dioxide:	0.0	tons/y	EPA emission factors (e.g., AP-42)
Volatile Organic Compounds (VOC):	0.0	tons/y	EPA emission factors (e.g., AP-42)

Subject Item Comments

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Facility Annual Emissions - Subject Item Submittal Review

Tuesday, March 21, 2017

Agency ID: 856
Facility Name: Los Alamos National Laboratory
Organization Name: U.S. Department of Energy National Nuclear Security Administration
Submittal Status: 2016 Submittal (In Process)

Subject Item ID: EQPT-151
Designation: RLUOB-BHW-3 (oil)
Description: Boiler-CMRR-BHW-3
Type: Boiler
SCC: External Combustion Boilers, Commercial/Institutional, Natural Gas, < 10 Million Btu/hr
GHG Reporting: Reports GHG to EPA

Supplemental Parameters

	Amount	Unit of Measure
Fuel Type:	Diesel	
Materials Consumed:	0.0	gal
Fuel Heating Value:	138.0	MM BTU/M gal

Operating Detail

	Value
Operating Time in Hours per Day:	0
Operating Time in Days per Week:	0
Operating Time in Weeks per Year:	0
Operating Time in Hours per Year:	0
Percent of Operation During Winter:	0
Percent of Operation During Spring:	0
Percent of Operation During Summer:	0
Percent of Operation During Fall:	0

Actual Pollutants

Pollutant	Amount	Unit of Measure	Calculation Method
Carbon Monoxide:	0.0	tons/y	EPA emission factors (e.g., AP-42)
Nitrogen Dioxide:	0.0	tons/y	EPA emission factors (e.g., AP-42)
Particulate Matter (10 microns or less):	0.0	tons/y	EPA emission factors (e.g., AP-42)
Particulate Matter (2.5 microns or less):	0.0	tons/y	EPA emission factors (e.g., AP-42)
Particulate Matter (total suspended):	0.0	tons/y	EPA emission factors (e.g., AP-42)
Sulfur Dioxide:	0.0	tons/y	EPA emission factors (e.g., AP-42)
Volatile Organic Compounds (VOC):	0.0	tons/y	EPA emission factors (e.g., AP-42)

Subject Item Comments

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Facility Annual Emissions - Subject Item Submittal Review

Tuesday, March 21, 2017

Agency ID: 856
Facility Name: Los Alamos National Laboratory
Organization Name: U.S. Department of Energy National Nuclear Security Administration
Submittal Status: 2016 Submittal (In Process)

Subject Item ID: EQPT-152
Designation: RLUOB-BHW-4 (oil)
Description: Boiler-CMRR-BHW-4
Type: Boiler
SCC: External Combustion Boilers, Commercial/Institutional, Natural Gas, < 10 Million Btu/hr
GHG Reporting: Reports GHG to EPA

Supplemental Parameters

	Amount	Unit of Measure
Fuel Type:	Diesel	
Materials Consumed:	0.0	gal
Fuel Heating Value:	0.0	MM BTU/M gal

Operating Detail

	Value
Operating Time in Hours per Day:	0
Operating Time in Days per Week:	0
Operating Time in Weeks per Year:	0
Operating Time in Hours per Year:	0
Percent of Operation During Winter:	0
Percent of Operation During Spring:	0
Percent of Operation During Summer:	0
Percent of Operation During Fall:	0

Actual Pollutants

Pollutant	Amount	Unit of Measure	Calculation Method
Carbon Monoxide:	0.0	tons/y	EPA emission factors (e.g., AP-42)
Nitrogen Dioxide:	0.0	tons/y	EPA emission factors (e.g., AP-42)
Particulate Matter (10 microns or less):	0.0	tons/y	EPA emission factors (e.g., AP-42)
Particulate Matter (2.5 microns or less):	0.0	tons/y	EPA emission factors (e.g., AP-42)
Particulate Matter (total suspended):	0.0	tons/y	EPA emission factors (e.g., AP-42)
Sulfur Dioxide:	0.0	tons/y	EPA emission factors (e.g., AP-42)
Volatile Organic Compounds (VOC):	0.0	tons/y	EPA emission factors (e.g., AP-42)

Subject Item Comments

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Tuesday, March 21, 2017

Agency ID: 856
Facility Name: Los Alamos National Laboratory
Organization Name: U.S. Department of Energy National Nuclear Security Administration
Submittal Status: 2016 Submittal (In Process)

Subject Item ID: RPNT-34
Designation: Facilitywide Open Burning
Description: Fugitives - Open Burning
Type: Fugitives
SCC: Industrial Processes, Oil and Gas Production, Fugitive Emissions, Fugitive Emissions
GHG Reporting: Reports GHG to EPA

Supplemental Parameters

Operating Detail

	Value
Operating Time in Hours per Day:	0
Operating Time in Days per Week:	0
Operating Time in Weeks per Year:	0
Operating Time in Hours per Year:	0
Percent of Operation During Winter:	0
Percent of Operation During Spring:	0
Percent of Operation During Summer:	0
Percent of Operation During Fall:	0

Actual Pollutants

Pollutant	Amount	Unit of Measure	Calculation Method
Individual HAP:	0.0	tons/y	Engineer Calculation
Total HAP:	0.0	tons/y	Engineer Calculation

Subject Item Comments

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Tuesday, March 21, 2017

Agency ID: 856
Facility Name: Los Alamos National Laboratory
Organization Name: U.S. Department of Energy National Nuclear Security Administration
Submittal Status: 2016 Submittal (In Process)

Subject Item ID: EQPT-96
Designation: Standby-Generators
Description: Diesel Generators
Type: Internal combustion engine
SCC: Internal Combustion Engines, Industrial, Natural Gas, Reciprocating
GHG Reporting: Reports GHG to EPA

Supplemental Parameters

	Amount	Unit of Measure
Fuel Type:	Diesel	
Fuel Heating Value:	138.0	MM BTU/M gal

Operating Detail

	Value
Operating Time in Hours per Day:	24
Operating Time in Days per Week:	7
Operating Time in Weeks per Year:	52
Operating Time in Hours per Year:	8760
Percent of Operation During Winter:	25
Percent of Operation During Spring:	25
Percent of Operation During Summer:	25
Percent of Operation During Fall:	25

Actual Pollutants

Pollutant	Amount	Unit of Measure	Calculation Method
Carbon Monoxide:	0.74	tons/y	EPA emission factors (e.g., AP-42)
Nitrogen Dioxide:	3.2	tons/y	EPA emission factors (e.g., AP-42)
Particulate Matter (10 microns or less):	0.16	tons/y	EPA emission factors (e.g., AP-42)
Particulate Matter (total suspended):	0.16	tons/y	EPA emission factors (e.g., AP-42)
Sulfur Dioxide:	0.14	tons/y	EPA emission factors (e.g., AP-42)
Volatile Organic Compounds (VOC):	0.16	tons/y	EPA emission factors (e.g., AP-42)

Subject Item Comments

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Tuesday, March 21, 2017

Agency ID: 856
Facility Name: Los Alamos National Laboratory
Organization Name: U.S. Department of Energy National Nuclear Security Administration
Submittal Status: 2016 Submittal (In Process)

Subject Item ID: EQPT-119
Designation: TA-33-G-2
Description: Kohler Diesel Generator TA-33, TA-36, TA-39
Type: Internal combustion engine
SCC: Internal Combustion Engines, Electric Generation, Distillate Oil (Diesel), Reciprocating
GHG Reporting: Reports GHG to EPA

Supplemental Parameters

	Amount	Unit of Measure
Fuel Type:	Diesel	
Input Materials Processed:	Diesel (INPUT)	
Materials Consumed:	2.38	gal
Fuel Heating Value:	138.0	MM BTU/M gal
Percent Sulfur of Fuel:	0.001	percent
Percent Ash of Fuel:	0.01	percent
Percent Carbon Content:	83.0	percent

Operating Detail

	Value
Operating Time in Hours per Day:	2
Operating Time in Days per Week:	1
Operating Time in Weeks per Year:	1
Operating Time in Hours per Year:	2
Percent of Operation During Winter:	50
Percent of Operation During Spring:	0
Percent of Operation During Summer:	0
Percent of Operation During Fall:	50

Actual Pollutants

Pollutant	Amount	Unit of Measure	Calculation Method
Carbon Monoxide:	0.0	tons/y	Design calculation
Nitrogen Dioxide:	0.001	tons/y	Design calculation
Particulate Matter (10 microns or less):	0.0	tons/y	EPA emission factors (e.g., AP-42)
Particulate Matter (total suspended):	0.0	tons/y	EPA emission factors (e.g., AP-42)
Sulfur Dioxide:	0.0	tons/y	EPA emission factors (e.g., AP-42)
Volatile Organic Compounds (VOC):	0.0	tons/y	EPA emission factors (e.g., AP-42)

Subject Item Comments

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Tuesday, March 21, 2017

Agency ID: 856
Facility Name: Los Alamos National Laboratory
Organization Name: U.S. Department of Energy National Nuclear Security Administration
Submittal Status: 2016 Submittal (In Process)

Subject Item ID: EQPT-120
Designation: TA-33-G-3
Description: Kohler Diesel Generator TA-33, TA-36, TA-39
Type: Internal combustion engine
SCC: Internal Combustion Engines, Industrial, Natural Gas, Reciprocating
GHG Reporting: Reports GHG to EPA

Supplemental Parameters

	Amount	Unit of Measure
Fuel Type:	Diesel	
Input Materials Processed:	Diesel (INPUT)	
Materials Consumed:	2.55	gal
Fuel Heating Value:	138.0	MM BTU/M gal
Percent Sulfur of Fuel:	0.001	percent
Percent Ash of Fuel:	0.01	percent
Percent Carbon Content:	83.0	percent

Operating Detail

	Value
Operating Time in Hours per Day:	1
Operating Time in Days per Week:	1
Operating Time in Weeks per Year:	2
Operating Time in Hours per Year:	2
Percent of Operation During Winter:	0
Percent of Operation During Spring:	50
Percent of Operation During Summer:	0
Percent of Operation During Fall:	50

Actual Pollutants

Pollutant	Amount	Unit of Measure	Calculation Method
Carbon Monoxide:	0.0	tons/y	Design calculation
Nitrogen Dioxide:	0.001	tons/y	Design calculation
Particulate Matter (10 microns or less):	0.0	tons/y	EPA emission factors (e.g., AP-42)
Particulate Matter (total suspended):	0.0	tons/y	EPA emission factors (e.g., AP-42)
Sulfur Dioxide:	0.0	tons/y	EPA emission factors (e.g., AP-42)
Volatile Organic Compounds (VOC):	0.0	tons/y	EPA emission factors (e.g., AP-42)

Subject Item Comments

Facility Annual Emissions - Subject Item Submittal Review

Tuesday, March 21, 2017

Agency ID: 856
Facility Name: Los Alamos National Laboratory
Organization Name: U.S. Department of Energy National Nuclear Security Administration
Submittal Status: 2016 Submittal (In Process)

Subject Item ID: EQPT-128
Designation: RLUOB-GEN 1
Description: Cummins Diesel Powered Generator and Engine - CMRR
Type: Internal combustion engine
SCC: Internal Combustion Engines, Industrial, Distillate Oil (Diesel), Reciprocating: Cogeneration
GHG Reporting: Reports GHG to EPA

Supplemental Parameters

	Amount	Unit of Measure
Fuel Type:	Diesel	
Materials Consumed:	2279.2	gal
Fuel Heating Value:	138.0	MM BTU/M gal

Operating Detail

	Value
Operating Time in Hours per Day:	24
Operating Time in Days per Week:	7
Operating Time in Weeks per Year:	52
Operating Time in Hours per Year:	8760
Percent of Operation During Winter:	25
Percent of Operation During Spring:	25
Percent of Operation During Summer:	25
Percent of Operation During Fall:	25

Actual Pollutants

Pollutant	Amount	Unit of Measure	Calculation Method
Carbon Monoxide:	0.458	tons/y	EPA emission factors (e.g., AP-42)
Nitrogen Dioxide:	0.369	tons/y	EPA emission factors (e.g., AP-42)
Particulate Matter (10 microns or less):	0.018	tons/y	EPA emission factors (e.g., AP-42)
Particulate Matter (total suspended):	0.022	tons/y	EPA emission factors (e.g., AP-42)
Sulfur Dioxide:	0.01	tons/y	EPA emission factors (e.g., AP-42)
Volatile Organic Compounds (VOC):	0.052	tons/y	EPA emission factors (e.g., AP-42)

Subject Item Comments

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Facility Annual Emissions - Subject Item Submittal Review

Tuesday, March 21, 2017

Agency ID: 856
Facility Name: Los Alamos National Laboratory
Organization Name: U.S. Department of Energy National Nuclear Security Administration
Submittal Status: 2016 Submittal (In Process)

Subject Item ID: EQPT-135
Designation: TA-33-G-4
Description: Caterpillar Diesel Generator TA-33, TA-36, TA-39
Type: Internal combustion engine
SCC: Internal Combustion Engines, Industrial, Natural Gas, 4-cycle Rich Burn
GHG Reporting: Reports GHG to EPA

Supplemental Parameters

	Amount	Unit of Measure
Fuel Type:	Diesel	
Input Materials Processed:	Diesel (INPUT)	
Materials Consumed:	79.0	gal
Fuel Heating Value:	138.0	MM BTU/M gal
Percent Sulfur of Fuel:	0.001	percent
Percent Ash of Fuel:	0.01	percent
Percent Carbon Content:	83.0	percent

Operating Detail

	Value
Operating Time in Hours per Day:	24
Operating Time in Days per Week:	7
Operating Time in Weeks per Year:	52
Operating Time in Hours per Year:	8760
Percent of Operation During Winter:	25
Percent of Operation During Spring:	25
Percent of Operation During Summer:	25
Percent of Operation During Fall:	25

Actual Pollutants

Pollutant	Amount	Unit of Measure	Calculation Method
Carbon Monoxide:	0.014	tons/y	Design calculation
Nitrogen Dioxide:	0.023	tons/y	Design calculation
Particulate Matter (10 microns or less):	0.002	tons/y	EPA emission factors (e.g., AP-42)
Particulate Matter (total suspended):	0.002	tons/y	EPA emission factors (e.g., AP-42)
Sulfur Dioxide:	0.002	tons/y	EPA emission factors (e.g., AP-42)
Volatile Organic Compounds (VOC):	0.002	tons/y	EPA emission factors (e.g., AP-42)

Subject Item Comments

Facility Annual Emissions - Subject Item Submittal Review

Tuesday, March 21, 2017

Agency ID: 856
Facility Name: Los Alamos National Laboratory
Organization Name: U.S. Department of Energy National Nuclear Security Administration
Submittal Status: 2016 Submittal (In Process)

Subject Item ID: EQPT-143
Designation: TA-55-GEN-3
Description: CI-RICE Stationary Generator - Caterpillar 1335 hp
Type: Internal combustion engine
SCC: Internal Combustion Engines, Industrial, Natural Gas, Reciprocating
GHG Reporting: Reports GHG to EPA

Supplemental Parameters

Operating Detail

	Value
Operating Time in Hours per Day:	8
Operating Time in Days per Week:	5
Operating Time in Weeks per Year:	20
Operating Time in Hours per Year:	20
Percent of Operation During Winter:	25
Percent of Operation During Spring:	25
Percent of Operation During Summer:	25
Percent of Operation During Fall:	25

Actual Pollutants

Pollutant	Amount	Unit of Measure	Calculation Method
Carbon Monoxide:	0.048	tons/y	EPA emission factors (e.g., AP-42)
Nitrogen Dioxide:	0.219	tons/y	EPA emission factors (e.g., AP-42)
Particulate Matter (10 microns or less):	0.007	tons/y	EPA emission factors (e.g., AP-42)
Particulate Matter (total suspended):	0.007	tons/y	EPA emission factors (e.g., AP-42)
Sulfur Dioxide:	0.004	tons/y	EPA emission factors (e.g., AP-42)
Volatile Organic Compounds (VOC):	0.008	tons/y	EPA emission factors (e.g., AP-42)

Subject Item Comments

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Facility Annual Emissions - Subject Item Submittal Review

Tuesday, March 21, 2017

Agency ID: 856
Facility Name: Los Alamos National Laboratory
Organization Name: U.S. Department of Energy National Nuclear Security Administration
Submittal Status: 2016 Submittal (In Process)

Subject Item ID: EQPT-146
Designation: TA-33-G-1P
Description: Cummins Portable Diesel Generator
Type: Internal combustion engine
SCC: Internal Combustion Engines, Electric Generation, Distillate Oil (Diesel), Reciprocating
GHG Reporting: Reports GHG to EPA

Supplemental Parameters

Operating Detail

	Value
Operating Time in Hours per Day:	2
Operating Time in Days per Week:	2
Operating Time in Weeks per Year:	8
Operating Time in Hours per Year:	16
Percent of Operation During Winter:	25
Percent of Operation During Spring:	25
Percent of Operation During Summer:	25
Percent of Operation During Fall:	25

Actual Pollutants

Pollutant	Amount	Unit of Measure	Calculation Method
Carbon Monoxide:	0.016	tons/y	EPA emission factors (e.g., AP-42)
Nitrogen Dioxide:	0.164	tons/y	EPA emission factors (e.g., AP-42)
Particulate Matter (10 microns or less):	0.005	tons/y	EPA emission factors (e.g., AP-42)
Particulate Matter (total suspended):	0.005	tons/y	EPA emission factors (e.g., AP-42)
Sulfur Dioxide:	0.004	tons/y	EPA emission factors (e.g., AP-42)
Volatile Organic Compounds (VOC):	0.012	tons/y	EPA emission factors (e.g., AP-42)

Subject Item Comments

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Facility Annual Emissions - Subject Item Submittal Review

Tuesday, March 21, 2017

Agency ID: 856
Facility Name: Los Alamos National Laboratory
Organization Name: U.S. Department of Energy National Nuclear Security Administration
Submittal Status: 2016 Submittal (In Process)

Subject Item ID: EQPT-147
Designation: TA-48-GEN-1
Description: Cummins Diesel Powered Generator and Engine
Type: Internal combustion engine
SCC: Internal Combustion Engines, Industrial, Natural Gas, Reciprocating
GHG Reporting: Reports GHG to EPA

Supplemental Parameters

	Amount	Unit of Measure
Fuel Type:	Diesel	
Materials Consumed:	0.0	gal
Fuel Heating Value:	138.0	MM BTU/M gal

Operating Detail

	Value
Operating Time in Hours per Day:	0
Operating Time in Days per Week:	0
Operating Time in Weeks per Year:	0
Operating Time in Hours per Year:	0
Percent of Operation During Winter:	0
Percent of Operation During Spring:	0
Percent of Operation During Summer:	0
Percent of Operation During Fall:	0

Actual Pollutants

Pollutant	Amount	Unit of Measure	Calculation Method

Subject Item Comments

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Facility Annual Emissions - Subject Item Submittal Review

Tuesday, March 21, 2017

Agency ID: 856
Facility Name: Los Alamos National Laboratory
Organization Name: U.S. Department of Energy National Nuclear Security Administration
Submittal Status: 2016 Submittal (In Process)

Subject Item ID: EQPT-153
Designation: RLUOB-GEN 2
Description: Cummins Diesel Powered Generator and Engine - CMRR
Type: Internal combustion engine
SCC: Internal Combustion Engines, Industrial, Distillate Oil (Diesel), Reciprocating: Cogeneration
GHG Reporting: Reports GHG to EPA

Supplemental Parameters

	Amount	Unit of Measure
Fuel Type:	Diesel	
Materials Consumed:	2797.2	gal
Fuel Heating Value:	138.0	MM BTU/M gal

Operating Detail

	Value
Operating Time in Hours per Day:	24
Operating Time in Days per Week:	7
Operating Time in Weeks per Year:	52
Operating Time in Hours per Year:	8760
Percent of Operation During Winter:	25
Percent of Operation During Spring:	25
Percent of Operation During Summer:	25
Percent of Operation During Fall:	25

Actual Pollutants

Pollutant	Amount	Unit of Measure	Calculation Method
Carbon Monoxide:	0.562	tons/y	EPA emission factors (e.g., AP-42)
Nitrogen Dioxide:	0.453	tons/y	EPA emission factors (e.g., AP-42)
Particulate Matter (10 microns or less):	0.022	tons/y	EPA emission factors (e.g., AP-42)
Particulate Matter (total suspended):	0.027	tons/y	EPA emission factors (e.g., AP-42)
Sulfur Dioxide:	0.012	tons/y	EPA emission factors (e.g., AP-42)
Volatile Organic Compounds (VOC):	0.064	tons/y	EPA emission factors (e.g., AP-42)

Subject Item Comments

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Facility Annual Emissions - Subject Item Submittal Review

Tuesday, March 21, 2017

Agency ID: 856
Facility Name: Los Alamos National Laboratory
Organization Name: U.S. Department of Energy National Nuclear Security Administration
Submittal Status: 2016 Submittal (In Process)

Subject Item ID: EQPT-154
Designation: RLUOB-GEN 3
Description: Cummins Diesel Powered Generator and Engine - CMRR
Type: Internal combustion engine
SCC: Internal Combustion Engines, Industrial, Distillate Oil (Diesel), Reciprocating: Cogeneration
GHG Reporting: Reports GHG to EPA

Supplemental Parameters

	Amount	Unit of Measure
Fuel Type:	Diesel	
Materials Consumed:	2413.88	gal
Fuel Heating Value:	138.0	MM BTU/M gal

Operating Detail

	Value
Operating Time in Hours per Day:	24
Operating Time in Days per Week:	7
Operating Time in Weeks per Year:	52
Operating Time in Hours per Year:	8760
Percent of Operation During Winter:	25
Percent of Operation During Spring:	25
Percent of Operation During Summer:	25
Percent of Operation During Fall:	25

Actual Pollutants

Pollutant	Amount	Unit of Measure	Calculation Method
Carbon Monoxide:	0.485	tons/y	EPA emission factors (e.g., AP-42)
Nitrogen Dioxide:	0.391	tons/y	EPA emission factors (e.g., AP-42)
Particulate Matter (10 microns or less):	0.019	tons/y	EPA emission factors (e.g., AP-42)
Particulate Matter (total suspended):	0.023	tons/y	EPA emission factors (e.g., AP-42)
Sulfur Dioxide:	0.01	tons/y	EPA emission factors (e.g., AP-42)
Volatile Organic Compounds (VOC):	0.055	tons/y	EPA emission factors (e.g., AP-42)

Subject Item Comments

Print Close

Facility Annual Emissions - Subject Item Submittal Review

Tuesday, March 21, 2017

Agency ID: 856
Facility Name: Los Alamos National Laboratory
Organization Name: U.S. Department of Energy National Nuclear Security Administration
Submittal Status: 2016 Submittal (In Process)

Subject Item ID: EQPT-155
Designation: TA-55-GEN-2
Description: CI-RICE Stationary Generator - Whisper Watt 40.2 hp
Type: Internal combustion engine
SCC: Internal Combustion Engines, Industrial, Natural Gas, Reciprocating
GHG Reporting: Reports GHG to EPA

Supplemental Parameters

Operating Detail

	Value
Operating Time in Hours per Day:	1
Operating Time in Days per Week:	1
Operating Time in Weeks per Year:	1
Operating Time in Hours per Year:	1
Percent of Operation During Winter:	0
Percent of Operation During Spring:	100
Percent of Operation During Summer:	0
Percent of Operation During Fall:	0

Actual Pollutants

Pollutant	Amount	Unit of Measure	Calculation Method
Carbon Monoxide:	0.0	tons/y	EPA emission factors (e.g., AP-42)
Nitrogen Dioxide:	0.001	tons/y	EPA emission factors (e.g., AP-42)
Particulate Matter (10 microns or less):	0.0	tons/y	EPA emission factors (e.g., AP-42)
Particulate Matter (total suspended):	0.0	tons/y	EPA emission factors (e.g., AP-42)
Sulfur Dioxide:	0.0	tons/y	EPA emission factors (e.g., AP-42)
Volatile Organic Compounds (VOC):	0.0	tons/y	EPA emission factors (e.g., AP-42)

Subject Item Comments

Print Close

Facility Annual Emissions - Subject Item Submittal Review

Tuesday, March 21, 2017

Agency ID: 856
Facility Name: Los Alamos National Laboratory
Organization Name: U.S. Department of Energy National Nuclear Security Administration
Submittal Status: 2016 Submittal (In Process)

Subject Item ID: EQPT-156
Designation: TA-55-GEN-1
Description: CI-RICE Stationary Generator - Whisper Watt 40.2 hp
Type: Internal combustion engine
SCC: Internal Combustion Engines, Industrial, Natural Gas, Reciprocating
GHG Reporting: Reports GHG to EPA

Supplemental Parameters

Operating Detail

	Value
Operating Time in Hours per Day:	1
Operating Time in Days per Week:	1
Operating Time in Weeks per Year:	1
Operating Time in Hours per Year:	1
Percent of Operation During Winter:	0
Percent of Operation During Spring:	100
Percent of Operation During Summer:	0
Percent of Operation During Fall:	0

Actual Pollutants

Pollutant	Amount	Unit of Measure	Calculation Method
Carbon Monoxide:	0.0	tons/y	EPA emission factors (e.g., AP-42)
Nitrogen Dioxide:	0.0	tons/y	EPA emission factors (e.g., AP-42)
Particulate Matter (10 microns or less):	0.0	tons/y	EPA emission factors (e.g., AP-42)
Particulate Matter (total suspended):	0.0	tons/y	EPA emission factors (e.g., AP-42)
Sulfur Dioxide:	0.0	tons/y	EPA emission factors (e.g., AP-42)
Volatile Organic Compounds (VOC):	0.0	tons/y	EPA emission factors (e.g., AP-42)

Subject Item Comments

Print Close

Facility Annual Emissions - Subject Item Submittal Review

Tuesday, March 21, 2017

Agency ID: 856
Facility Name: Los Alamos National Laboratory
Organization Name: U.S. Department of Energy National Nuclear Security Administration
Submittal Status: 2016 Submittal (In Process)

Subject Item ID: EQPT-21
Designation: TA-55-DG-1
Description: Degreaser - Ultrasonic Cold Batch TA-55-4
Type: Parts Washer
SCC: Petroleum and Solvent Evaporation, Organic Solvent Evaporation, Degreasing, Trichloroethylene: General Degreasing Units
GHG Reporting: Reports GHG to EPA

Supplemental Parameters

Input Materials Processed: Solvent (INPUT)

Operating Detail

	Value
Operating Time in Hours per Day:	4
Operating Time in Days per Week:	1
Operating Time in Weeks per Year:	52
Operating Time in Hours per Year:	208
Percent of Operation During Winter:	25
Percent of Operation During Spring:	25
Percent of Operation During Summer:	25
Percent of Operation During Fall:	25

Actual Pollutants

Pollutant	Amount	Unit of Measure	Calculation Method
TCE; (Trichloroethylene); (Trichloroethene):	0.01	tons/y	Material balance

Subject Item Comments

Print Close

Facility Annual Emissions - Subject Item Submittal Review

Tuesday, March 21, 2017

Agency ID: 856
Facility Name: Los Alamos National Laboratory
Organization Name: U.S. Department of Energy National Nuclear Security Administration
Submittal Status: 2016 Submittal (In Process)

Subject Item ID: ACT -7
Designation: LANL-FW-CHEM
Description: R & D Activities - Labwide (031)
Type: Research/Testing
SCC: Industrial Processes, Photographic Equipment/Health Care/Laboratories, Laboratories, Bench Scale Reagents: Research
GHG Reporting: Reports GHG to EPA

Supplemental Parameters

Operating Detail

	Value
Operating Time in Hours per Day:	24
Operating Time in Days per Week:	7
Operating Time in Weeks per Year:	52
Operating Time in Hours per Year:	8760
Percent of Operation During Winter:	25
Percent of Operation During Spring:	25
Percent of Operation During Summer:	25
Percent of Operation During Fall:	25

Actual Pollutants

Pollutant	Amount	Unit of Measure	Calculation Method
Acetaldehyde; (Ethyl aldehyde):	0.002	tons/y	Material balance
Acetonitrile; (Methyl cyanide):	0.188	tons/y	Material balance
Acetophenone:	0.0	tons/y	Material balance
Acrylamide:	0.0	tons/y	Material balance
Acrylic acid:	0.0	tons/y	Material balance
Acrylonitrile:	0.0	tons/y	Material balance
Ammonia:	0.0	tons/y	Material balance
Aniline:	0.004	tons/y	Material balance
Antimony:	0.0	tons/y	Material balance
Antimony compounds:	0.0	tons/y	Material balance
Arsenic Compounds:	0.0	tons/y	Material balance
Benzene:	0.072	tons/y	Material balance
Benzyl Chloride:	0.0	tons/y	Material balance
Beryllium Compounds:	0.0	tons/y	Material balance
Biphenyl:	0.0	tons/y	Material balance
Bromoform; (Tribromomethane):	0.0	tons/y	Material balance
Butadiene(1,3-):	0.0	tons/y	Material balance
Cadmium:	0.0	tons/y	Material balance
Cadmium compounds:	0.074	tons/y	Material balance
Carbon Disulfide:	0.002	tons/y	Material balance

Carbon tetrachloride; (Tetrachoromethane):	0.0	tons/y	Material balance
Carbonyl sulfide:	0.0	tons/y	Material balance
Catechol (Pyrocatechol):	0.0	tons/y	Material balance
Chlorine:	0.007	tons/y	Material balance
Chloroacetic Acid:	0.0	tons/y	Material balance
Chlorobenzene(Phenyl Chloride):	0.0	tons/y	Material balance
Chloroform; (Trichloromethane):	0.11	tons/y	Material balance
Chromium:	0.0	tons/y	Material balance
Chromium VI compounds:	0.004	tons/y	Material balance
Cobalt Compounds:	0.044	tons/y	Material balance
Cresol(m-); (Methylphenol, 3-):	0.0	tons/y	Material balance
Cumene:	0.0	tons/y	Material balance
Cyanide compounds:	0.003	tons/y	Material balance
Dibutylphthalate; (Di-n-butyl phthalate):	0.001	tons/y	Material balance
Dichloroethane (1,2-); (EDC); (Ethylene dichloride):	0.011	tons/y	Material balance
Dichlorofluoromethane:	0.47	tons/y	Material balance
Diethanolamine:	0.001	tons/y	Material balance
Dimethyl Sulfate:	0.0	tons/y	Material balance
Dimethyl formamide:	0.114	tons/y	Material balance
Dimethylhydrazine(1,1-):	0.001	tons/y	Material balance
Dioxane(1,4-) (1,4-Diethyleneoxide):	0.008	tons/y	Material balance
Epichlorohydrin; (1-Chloro-2,3-epoxypropane):	0.0	tons/y	Material balance
Epoxybutane(1,2-) (1,2-Butylene oxide):	0.0	tons/y	Material balance
Ethyl Acrylate:	0.0	tons/y	Material balance
Ethyl chloride; (Chloroethane):	0.0	tons/y	Material balance
Ethylbenzene:	0.0	tons/y	Material balance
Ethylene Glycol:	1.084	tons/y	Material balance
Ethylene dibromide; (EDB); (1.2-Dibromoethane):	0.0	tons/y	Material balance
Formaldehyde:	0.002	tons/y	Material balance
Glycol Ethers:	1.121	tons/y	Material balance
Hexachlorocyclopentadiene:	0.0	tons/y	Material balance
Hexamethylphosphoramide:	0.0	tons/y	Material balance
Hexane:	0.249	tons/y	Material balance
Hydrazine:	0.001	tons/y	Material balance
Hydrochloric acid (HCl):	1.215	tons/y	Material balance
Hydrofluoric Acid; (Hydrogen fluoride):	0.168	tons/y	Material balance
Hydroquinone:	0.054	tons/y	Material balance
Iodomethane (Methyl iodide):	0.001	tons/y	Material balance
Lead Compounds:	0.002	tons/y	Material balance
Maleic anhydride:	0.0	tons/y	Material balance
Manganese:	0.0	tons/y	Material balance
Manganese compounds:	0.003	tons/y	Material balance
Mercury compounds:	0.002	tons/y	Material balance
Methanol; (Methyl alcohol):	0.705	tons/y	Material balance
Methyl Ethyl Ketone; (MEK); (2-Butanone):	0.0	tons/y	Material balance
Methyl Methacrylate:	0.001	tons/y	Material balance
Methyl bromide; (Bromomethane):	0.0	tons/y	Material balance
Methyl chloride; (Chloromethane):	0.01	tons/y	Material balance
Methyl isobutyl ketone; (Hexone); (4-Methyl-2-pentanone):	0.0	tons/y	Material balance

Methyl tert butyl ether:	0.016	tons/y	Material balance
Methylene chloride; (Dichloromethane):	0.0	tons/y	Material balance
Methylenebiphenyl isocyanate; (MDI); (Diphenylmethane diisocyanate):	0.068	tons/y	Material balance
Naphthalene:	0.0	tons/y	Material balance
Nickel:	0.0	tons/y	Material balance
Nickel compounds:	0.003	tons/y	Material balance
Nitrobenzene; (nitro-Benzene):	0.0	tons/y	Material balance
Nitrophenol(4-); (p-Nitrophenol):	0.0	tons/y	Material balance
PCE; (Perchloroethylene); (Tetrachloroethylene); (Tetrachloroethene):	0.01	tons/y	Material balance
Phenol:	0.0	tons/y	Material balance
Phenylenediamine(p-); (Phenylenediamine):	0.0	tons/y	Material balance
Phosphine:	0.0	tons/y	Material balance
Phosphorus:	0.0	tons/y	Material balance
Phthalic anhydride:	0.0	tons/y	Material balance
Polycylic Organic Matter:	0.004	tons/y	Material balance
Propylene Dichloride (1,2-Dichloropropane):	0.004	tons/y	Material balance
Propylene oxide:	0.0	tons/y	Material balance
Selenium:	0.0	tons/y	Material balance
Selenium compounds:	0.0	tons/y	Material balance
Styrene:	0.001	tons/y	Material balance
TCE; (Trichloroethylene); (Trichloroethene):	0.009	tons/y	Material balance
Tetrachloroethane(1,1,2,2-):	0.0	tons/y	Material balance
Titanium tetrachloride:	0.0	tons/y	Material balance
Toluene diisocyanate(2,4-):	0.0	tons/y	Material balance
Toluene; (Methyl benzene):	0.492	tons/y	Material balance
Total HAP:	0.0	tons/y	Material balance
Trichloroethane(1,1,1-) (Methyl Chloroform):	0.0	tons/y	Material balance
Trichloroethane(1,1,2-):	0.0	tons/y	Material balance
Triethylamine:	0.005	tons/y	Material balance
Trimethylpentane(2,2,4-):	0.001	tons/y	Material balance
Urethane; (Ethyl carbamate):	0.0	tons/y	Material balance
Vinyl acetate; (Vinyl acetate monomer):	0.0	tons/y	Material balance
Volatile Organic Compounds (VOC):	0.0	tons/y	Material balance
Xylene(m-); (1,3-Dimethylbenzene); (meta-Xylene):	0.001	tons/y	Material balance
Xylene(o-); (1,2-Dimethylbenzene); (ortho-Xylene):	0.002	tons/y	Material balance
Xylene(p-); (1,4-Dimethylbenzene); (para-Xylene):	0.0	tons/y	Material balance
Xylenes (total); (Xylol):	0.089	tons/y	Material balance
bis(2-ethylhexyl) phthalate; (Di-2-ethylhexyl phthalate); (DEHP):	0.0	tons/y	Material balance

Subject Item Comments

Print Close

Facility Annual Emissions - Subject Item Submittal Review

Tuesday, March 21, 2017

Agency ID: 856
Facility Name: Los Alamos National Laboratory
Organization Name: U.S. Department of Energy National Nuclear Security Administration
Submittal Status: 2016 Submittal (In Process)

Subject Item ID: ACT -42
Designation: RLUOB-CHEM
Description: Chemical Usage, Bldg. TA-55-400 (lab portion of RLUOB Bldg.)
Type: Research/Testing
SCC: Industrial Processes, Photographic Equipment/Health Care/Laboratories, Laboratories, Bench Scale Reagents: Research
GHG Reporting: Reports GHG to EPA

Supplemental Parameters

Operating Detail

	Value
Operating Time in Hours per Day:	24
Operating Time in Days per Week:	7
Operating Time in Weeks per Year:	52
Operating Time in Hours per Year:	8760
Percent of Operation During Winter:	25
Percent of Operation During Spring:	25
Percent of Operation During Summer:	25
Percent of Operation During Fall:	25

Actual Pollutants

Pollutant	Amount	Unit of Measure	Calculation Method
Total HAP:	0.003	tons/y	Material balance
Volatile Organic Compounds (VOC):	0.0	tons/y	Material balance

Subject Item Comments

Print Close

Facility Annual Emissions - Subject Item Submittal Review

Tuesday, March 21, 2017

Agency ID: 856
Facility Name: Los Alamos National Laboratory
Organization Name: U.S. Department of Energy National Nuclear Security Administration
Submittal Status: 2016 Submittal (In Process)

Subject Item ID: EQPT-89
Designation: TA-52-11
Description: Data Disintegrator/industrial Shredder
Type: Shredder
SCC: Industrial Processes, Pulp and Paper and Wood Products, Miscellaneous Paper Products, Other Not Classified
GHG Reporting: Reports GHG to EPA

Supplemental Parameters

Input Materials Processed: Paper (INPUT)

Operating Detail

	Value
Operating Time in Hours per Day:	7
Operating Time in Days per Week:	5
Operating Time in Weeks per Year:	52
Operating Time in Hours per Year:	1820
Percent of Operation During Winter:	25
Percent of Operation During Spring:	25
Percent of Operation During Summer:	25
Percent of Operation During Fall:	25

Actual Pollutants

Pollutant	Amount	Unit of Measure	Calculation Method
Particulate Matter (10 microns or less):	0.29	tons/y	Manufacturer Specification
Particulate Matter (2.5 microns or less):	0.19	tons/y	Manufacturer Specification
Particulate Matter (total suspended):	0.32	tons/y	Manufacturer Specification

Subject Item Comments

Print Close

Facility Annual Emissions - Subject Item Submittal Review

Tuesday, March 21, 2017

Agency ID: 856
Facility Name: Los Alamos National Laboratory
Organization Name: U.S. Department of Energy National Nuclear Security Administration
Submittal Status: 2016 Submittal (In Process)

Subject Item ID: EQPT-112
Designation: TA-3-22-CT-1
Description: Combustion Turbine
Type: Turbine
SCC: Internal Combustion Engines, Electric Generation, Natural Gas, Turbine
GHG Reporting: Reports GHG to EPA

Supplemental Parameters

	Amount	Unit of Measure
Fuel Type:	Natural Gas	
Input Materials Processed:	Natural Gas (INPUT)	
Materials Consumed:	63.97	MM SCF
Fuel Heating Value:	1020.0	MM BTU/MM SCF
Percent Sulfur of Fuel:	0.001	percent
Percent Ash of Fuel:	0.0	percent
Percent Carbon Content:	65.0	percent

Operating Detail

	Value
Operating Time in Hours per Day:	7
Operating Time in Days per Week:	4
Operating Time in Weeks per Year:	12
Operating Time in Hours per Year:	500
Percent of Operation During Winter:	25
Percent of Operation During Spring:	25
Percent of Operation During Summer:	25
Percent of Operation During Fall:	25

Actual Pollutants

Pollutant	Amount	Unit of Measure	Calculation Method
Acetaldehyde; (Ethyl aldehyde):	0.001	tons/y	EPA emission factors (e.g., AP-42)
Carbon Monoxide:	0.336	tons/y	EPA emission factors (e.g., AP-42)
Copper:	0.002	tons/y	EPA emission factors (e.g., AP-42)
Ethylbenzene:	0.001	tons/y	EPA emission factors (e.g., AP-42)
Formaldehyde:	0.023	tons/y	EPA emission factors (e.g., AP-42)
Lead:	0.0	tons/y	EPA emission factors (e.g., AP-42)
Manganese:	0.003	tons/y	EPA emission factors (e.g., AP-42)
Nickel:	0.004	tons/y	EPA emission factors (e.g., AP-42)
Nitrogen Dioxide:	1.615	tons/y	EPA emission factors (e.g., AP-42)

Particulate Matter (10 microns or less):	0.218	tons/y	EPA emission factors (e.g., AP-42)
Particulate Matter (2.5 microns or less):	0.218	tons/y	EPA emission factors (e.g., AP-42)
Particulate Matter (total suspended):	0.218	tons/y	EPA emission factors (e.g., AP-42)
Propylene oxide:	0.001	tons/y	EPA emission factors (e.g., AP-42)
Sulfur Dioxide:	0.112	tons/y	EPA emission factors (e.g., AP-42)
Toluene; (Methyl benzene):	0.004	tons/y	EPA emission factors (e.g., AP-42)
Volatile Organic Compounds (VOC):	0.07	tons/y	EPA emission factors (e.g., AP-42)
Xylenes (total); (Xylol):	0.002	tons/y	EPA emission factors (e.g., AP-42)

Subject Item Comments

Print Close

ATTACHMENT C:

2016 Semi-annual Emissions Reports

Submitted Under Title V Operating Permit Requirements

Los Alamos
NATIONAL LABORATORY
EST. 1943

Environment Safety & Health
PO Box 1663, MS K491
Los Alamos, New Mexico 87545
(505)667-4218/Fax (505) 665-3811

Date: SEP 2 1 2016
Symbol: ADESH-16-119
LA-UR: 16-26522
Locates Action No.: N/A

Mr. Ralph Grubel
Compliance & Enforcement Section Chief
New Mexico Environment Department
Air Quality Bureau
525 Camino de los Marquez, Suite 1
Santa Fe, New Mexico 87505-1816

Dear Mr. Grubel:

Subject: Title V Semi-Annual Emissions Report for Permit P100-R2, January 1, 2016 – June 30, 2016 AI No. 856 – Los Alamos National Laboratory (LANL)

Enclosed is Los Alamos National Laboratory's (LANL) Semi-Annual Emissions report for Permit P100-R2 for the period January 1, 2016 through June 30, 2016. This report is required by permit condition A109.B and is submitted within 90 days from the end of the reporting period as required by that condition.

The semi-annual emissions report includes actual emissions from permitted sources included in LANL's Operating Permit. In this report, the actual emissions are listed along with the emission limits for ease in comparing and verifying compliance. No annual emission limits were exceeded during this reporting period.

Please contact Steven L. Story at (505) 665-2169 or story@lanl.gov of the Environmental Compliance Programs (EPC-CP) if you have questions.

Sincerely,

Michael T. Brandt, DrPH, CIH
Associate Director
Environment, Safety & Health

MTB:SLS:WW/lm

Enclosure: 1. Title V Semi-Annual Emissions Report for Permit P100-R2, Jan 1, 2016 – Jun 30, 2016

Cy: Hai Shen, EM-SG, (E-File)
Richard Kacich, DIR, (E-File)
Karen E. Armijo, NA-LA, (E-File)
Adrienne Nash, NA-LA, E-File)
Kirsten Laskey, EM-LA, (E-File)
Annette E. Russell, EM-LA, (E-file)
Craig S. Leasure, PADOPS, (E-File)
William R. Mairson, PADOPS, (E-File)
Michael T. Brandt, ADESH, (E-File)
Raeanna Sharp-Geiger, ADESH, (E-File)
Steve L. Story, EPC-CP, (E-File)
Walter Whetham, EPC-CP, (E-File)
Timothy A. Dolan, LC-ESH, (E-File)
Saundra Martinez, ADEM-PO, (E-File)
Ellena I. Martinez, EPC-CP, (E-File)
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emla.docs@em.doe.gov, (E-File)
adesh@lanl.gov, (E-File)
Epc-correspondence@lanl.gov, (E-File)
EPC-CP Title V Emissions Report File, J978

Title V Semi-Annual Emission Report for Permit P100-R2

January 1, 2016 – June 30, 2016

Identifying Information

Source Name: Los Alamos National Laboratory County: Los Alamos

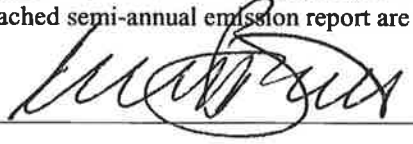
Source Address:
City: Los Alamos State: NM Zip Code: 87545

Responsible Official: Michael T. Brandt Ph No. (505) 667-4218 Fax No. (505) 665-3811
Technical Contact: Steven L. Story Ph No. (505) 665-2169 Fax No. (505) 665-8858
Principal Company Product or Business: National Security and Nuclear Weapons Research Primary SIC Code: 8733

Permit No. P100-R2, Jan 1, 2016 – June 30, 2016 {IDEA/Tempo ID No. 856} Permit Issued Date: Feb. 27, 2015

Certification of Truth, Accuracy, and Completeness

I, Michael T. Brandt certify that, based on information and belief formed after reasonable inquiry, the statements and information in the attached semi-annual emission report are true, accurate, and complete.

Signature  Date: 9/21/16

Title: Associate Director Environmental, Safety, and Health

ENCLOSURE 1

Title V Semi-Annual Emissions Report
for Permit P100-R2
January 1, 2016 – June 30, 2016

ADESH-16-119

LA-UR-16-26522

Date: SEP 2 1 2016

Title V Semi-Annual Emissions Report
Permit P100-R2, January 1, 2016 - June 30, 2016

Emission Reporting Requirements

A109 Facility: Reporting Schedules

A. A Semi-Annual Report of monitoring activities is due within 45 days following the end of every 6-month reporting period. The six month reporting periods start on January 1st and July 1st of each year.

B. A Semi-Annual Report of actual emissions from all permitted sources unless otherwise specified in this permit is due within 90 days following the end of every 6-month reporting period as defined at Condition A109.A. Emission estimates of criteria pollutants NOx, CO, SO2, VOC, TSP, PM10, and PM2.5 shall not include fugitive emissions. Emission estimates of HAPs shall include fugitive emissions. Emission estimates shall not include Insignificant or Trivial Activities, except that facility-wide emissions from all natural gas combustion sources shall be estimated. The reports shall include a comparison of actual emissions that occurred during the reporting period with the facility-wide allowable emission limits at Table 106.B.

Specific Emissions Reports:

A600 Asphalt Production

A602 Emission Limits - Asphalt Production

Unit No.	Nox tpy	SO_2 tpy	PM tpy	CO tpy	VOC tpy
TA-60-BDM	50.0	50.0	50.0	30.0	50.0

Reporting Requirement

A607 F The permittee shall submit reports described in Section A109 and in accordance with B110.

A109 B A Semi-Annual Report of actual emissions from all permitted sources unless otherwise specified in this permit is due within 90 days following the end of every 6-month reporting period as defined at Condition A109.A. Emission estimates of criteria pollutants NOx, CO, SO2, VOC, TSP, PM10, and PM2.5 shall not include fugitive emissions. Emission estimates of HAPs shall include fugitive emissions. Emission estimates shall not include Insignificant or Trivial Activities, except that facility-wide emissions from all natural gas combustion sources shall be estimated. The reports shall include a comparison of actual emissions that occurred during the reporting period with the facility-wide allowable emission limits at Table 106.B.

Has this reporting requirement been met during this reporting period with a separate reporting submittal? Answer Yes or No below.

☐ **Yes** **Date report submitted:** **Tracking Number:**

☒ **No** **Provide comments and identify any supporting documentation as an attachment.**

Comments:

Asphalt Plant TA-60-BDM	January - June Emissions (tons)	July - December Emissions (tons)	Annual Emissions (tons)	Permit Limits (Condition A602.A) (tons per year)
NOx	0.002			50.0
SO_2	0.001			50.0
PM	0.001			50.0
CO	0.074			30.0
VOC	0.001			50.0
HAPs	0.001			No Source Permit Limit

A700 Beryllium Activities

A702 Emission Limits - Beryllium Activities

Source	Beryllium Particulate Matter	Aluminum Particulate Matter
Sigma Facility TA-3-66	10 gm/24 hr	N/A
Beryllium Technology Facility TA-3-141	3.5 gm/yr	N/A
Target Fabrication Facility TA-35-213	0.36 gm/yr	N/A
Plutonium Facility TA-55-PF-4 Machining Operation	2.99 gm/yr	2.99 gm/yr
Plutonium Facility TA-55-PF-4 Foundry Operation	$8.73X10^{-04}$ gm/yr	$8.73X10^{-04}$ gm/yr

Reporting Requirement

A707 D The permittee shall submit reports described in Section A109 and in accordance with B110.

A109 B A Semi-Annual Report of actual emissions from all permitted sources unless otherwise specified in this permit is due within 90 days following the end of every 6-month reporting period as defined at Condition A109.A. Emission estimates of criteria pollutants NOx, CO, SO2, VOC, TSP, PM10, and PM2.5 shall not include fugitive emissions. Emission estimates of HAPs shall include fugitive emissions. Emission estimates shall not include Insignificant or Trivial Activities, except that facility-wide emissions from all natural gas combustion sources shall be estimated. The reports shall include a comparison of actual emissions that occurred during the reporting period with the facility-wide allowable emission limits at Table 106.B.

Has this reporting requirement been met during this reporting period with a separate reporting submittal? Answer Yes or No below.

☒ **Yes** **Date report submitted: April 18, 2016** **Tracking Number: SBR20160006**
July 21, 2016 **SBR20160007**

☐ **No** **Provide comments and identify any supporting documentation as an attachment.**

Comments: Continued on the next page

A700 Beryllium Activities - continued

Comments:

Source	Pollutant	January - June Emissions	July - December Emissions	Annual Emissions	Permit Limits (Condition A702 A)
Sigma Facility TA-3-66[1]	Beryllium (grams)	0			10 gm/24 hr
Beryllium Test Facility TA-3-141[2]	Beryllium (grams)	< 0.0033			3.5 gm/yr
Target Fabrication Facility TA-35-213[3]	Beryllium (grams)	< 0.00944			0.36 gm/yr
Plutonium Facility TA-55-PF4 Machining Operation[4]	Beryllium (grams)	< 1.495			2.99 gm/yr
	Aluminum (grams)	< 1.495			2.99 gm/yr
Plutonium Facility TA-55-PF4 Foundry Operation[5]	Beryllium (grams)	0			8.73×10^{-4} gm/yr
	Aluminum (grams)	0			8.73×10^{-4} gm/yr
Beryllium Total[5] (tons) =		**< 1.66E-06**			
Aluminum Total (tons) =		**< 1.65E-06**			

Notes: (1) Emissions from the Sigma Facility are from electroplating, chemical milling, and metallographic operations. The Sigma Facility did not operate during the first six months of 2016. (2) Emission values shown for the Beryllium Test Facility are from actual stack emission measurements which are submitted to NMED quarterly. (3) Emissions for the Target Fabrication Facility are from initial compliance testing of that source and calculated based on a conservative assumption of 8 hour work days. Log books were checked to verify that work days were much less than 8 hours. (4) Emissions for the Plutonium Facility are calculated based on permitted throughputs. Log books were checked to verify that throughputs were much less than permitted values. (5) The Plutonium Facility foundry operations did not operate during the first six months of 2016.

A800 External Combustion

A802 Emission Limits - External Combustion

Unit No.	NOx tpy	CO tpy	VOC tpy	SO_2 tpy	TSP tpy	PM_{10} tpy
All Boilers	80.0	80.0	50.0	50.0	50.0	50.0

Unit No.	NOx tpy	CO tpy	SO_2 tpy	TSP tpy	PM_{10} tpy	$PM_{2.5}$ tpy
RLUOB-BHW-1 (gas)	2.9	4.8	0.3	0.4	0.4	0.4
RLUOB-BHW-2 (gas)	2.9	4.8	0.3	0.4	0.4	0.4
RLUOB-BHW-3 (gas)	2.9	4.8	0.3	0.4	0.4	0.4
RLUOB-BHW-4 (gas)	2.9	4.8	0.3	0.4	0.4	0.4
RLUOB Boilers (oil)	2.9	0.9	10.4	0.5	0.3	0.3
RLUOB Boilers Total	14.5	20.1	11.6	2.1	1.9	1.9

Reporting Requirement

A807 B The permittee shall submit reports described in Section A109 and in accordance with B110.

A109 B A Semi-Annual Report of actual emissions from all permitted sources unless otherwise specified in this permit is due within 90 days following the end of every 6-month reporting period as defined at Condition A109.A. Emission estimates of criteria pollutants NOx, CO, SO2, VOC, TSP, PM10, and PM2.5 shall not include fugitive emissions. Emission estimates of HAPs shall include fugitive emissions. Emission estimates shall not include Insignificant or Trivial Activities, except that facility-wide emissions from all natural gas combustion sources shall be estimated. The reports shall include a comparison of actual emissions that occurred during the reporting period with the facility-wide allowable emission limits at Table 106.B.

Has this reporting requirement been met during this reporting period with a separate reporting submittal? Answer Yes or No below.

☐ **Yes** **Date report submitted:** **Tracking Number:**

☒ **No** **Provide comments and identify any supporting documentation as an attachment.**

Comments:

Boilers	January - June Emissions (tons)	July - December Emissions (tons)	Annual Emissions (tons)	Permit Limits (Condition A802 A) (tons per year)
NOx	11.47			80
SO_2	0.07			50
TSP	0.92			50
PM-10	0.92			50
CO	9.22			80
VOCs	0.66			50
HAPs	0.22			No Source Limit

Note: The emissions shown in this table includes all exempt, non-exempt, metered, and non-metered boilers at LANL except for the TA-3-22 Power Plant boilers. The Power Plant boilers can be found under Section A1300 of this report.

Continued on the next page

A800 External Combustion - continued

RLUOB-BHW-1 (Gas)	January - June Emissions (tons)	July - December Emissions (tons)	Annual Emissions (tons)	Permit Limits (Condition A802 B) (tons per year)
NOx	0.007			2.9
SO_2	0.000			0.3
TSP	0.001			0.4
PM-10	0.001			0.4
PM-2.5	0.001			0.4
CO	0.009			4.8
VOCs	0.006			No Source Limit
HAPs	4.46E-04			No Source Limit

RLUOB-BHW-2 (Gas)	January - June Emissions (tons)	July - December Emissions (tons)	Annual Emissions (tons)	Permit Limits (Condition A802 B) (tons per year)
NOx	0.007			2.9
SO_2	0.000			0.3
TSP	0.001			0.4
PM-10	0.001			0.4
PM-2.5	0.001			0.4
CO	0.009			4.8
VOCs	0.006			No Source Limit
HAPs	4.46E-04			No Source Limit

RLUOB-BHW-3 (Gas)	January - June Emissions (tons)	July - December Emissions (tons)	Annual Emissions (tons)	Permit Limits (Condition A802 B) (tons per year)
NOx	0.007			2.9
SO_2	0.000			0.3
TSP	0.001			0.4
PM-10	0.001			0.4
PM-2.5	0.001			0.4
CO	0.009			4.8
VOCs	0.006			No Source Limit
HAPs	4.46E-04			No Source Limit

RLUOB-BHW-4 (Gas)	January - June Emissions (tons)	July - December Emissions (tons)	Annual Emissions (tons)	Permit Limits (Condition A802 B) (tons per year)
NOx	0.000			2.9
SO_2	0.000			0.3
TSP	0.000			0.4
PM-10	0.000			0.4
PM-2.5	0.000			0.4
CO	0.000			4.8
VOCs	0.000			No Source Limit
HAPs	0.000			No Source Limit

Note: The RLUOB-BHW-4 boiler has not been installed.

Continued on the next page.

A800 External Combustion - continued

RLUOB Boilers Totals (Oil)	January - June Emissions (tons)	July - December Emissions (tons)	Annual Emissions (tons)	Permit Limits (Condition A802 B) (tons per year)
NOx	0.000			2.9
SO_2	0.000			10.4
TSP	0.000			0.5
PM-10	0.000			0.3
PM-2.5	0.000			0.3
CO	0.000			0.9
VOCs	0.000			No Source Limit
HAPs	0.000			No Source Limit

Note: The RLUOB boilers did not operate on fuel oil during the first 6 months of 2016.

RLUOB Boilers Totals (Gas and Oil)	January - June Emissions (tons)			Permit Limits (Condition A802 B) (tons per year)
NOx	0.021			14.5
SO_2	0.000			11.6
TSP	0.004			2.1
PM-10	0.004			1.9
PM-2.5	0.004			1.9
CO	0.027			20.1
VOCs	0.018			No Source Limit
HAPs	1.34E-03			No Source Limit

A900 Chemical Usage

A902 Emission Limits - Chemical Usage

Unit No.	VOC/HAPs tpy
LANL-FW-CHEM	-- [1]
CMRR-CHEM	3.75 [1]

1 The VOC emissions from this source category are included in the facility-wide allowable emissions limit established in Table 106.B: 200 tpy VOC, 8.0 tpy per individual HAP, and 24.0 tpy of combined total HAPs. Any VHAPs that are also defined as a VOC shall be included in the VOC total.

Reporting Requirement

A907 A The permittee shall submit reports described in Section A109 and in accordance with B110. With respect to individual HAPs, reports shall include any HAP emitted in quantity greater than 0.5 tons per year.

A109 B A Semi-Annual Report of actual emissions from all permitted sources unless otherwise specified in this permit is due within 90 days following the end of every 6-month reporting period as defined at Condition A109.A. Emission estimates of criteria pollutants NOx, CO, SO2, VOC, TSP, PM10, and PM2.5 shall not include fugitive emissions. Emission estimates of HAPs shall include fugitive emissions. Emission estimates shall not include Insignificant or Trivial Activities, except that facility-wide emissions from all natural gas combustion sources shall be estimated. The reports shall include a comparison of actual emissions that occurred during the reporting period with the facility-wide allowable emission limits at Table 106.B.

Has this reporting requirement been met during this reporting period with a separate reporting submittal? Answer Yes or No below.

☐ **Yes** **Date report submitted:** **Tracking Number:**

☒ **No** **Provide comments and identify any supporting documentation as an attachment.**

Comments:

Chemical Usage LANL-FW-CHEM		January - June Emissions (tons)	July - December Emissions (tons)	Annual Emissions (tons)	Permit Limits (Condition A902.B)
VOCs		5.73			Source limits refer to facility-wide limits.
HAPs		3.22			
Individual HAPs greater than 0.5 tons	Ethylene Glycol	0.92			
	Glycol Ethers	0.76			
	Hydrochloric Acid	0.71			
	Methanol	0.55			

Chemical Usage CMRR-CHEM	January - June Emissions (tons)	July - December Emissions (tons)	Annual Emissions (tons)	Permit Limits (Condition A902.B)
HAPs	0.0026			3.75
VOCs	0.0000			3.75
TAPs	0.0034			No Source Limit

A1000 Degreasers

A1002 Emission Limits - Degreasers

Unit No.	VOC/HAPs tpy
TA-55-DG-1	-- [1]

1 The VOC emissions from this source category are included in the facility-wide allowable emissions limit established in Table 106.B: 200 tpy VOC, 8.0 tpy per individual HAP, and 24.0 tpy of combined total HAPs. Any VHAPs that are also defined as a VOC shall be included in the VOC total.

Reporting Requirement

A1007 A The permittee shall submit reports described in Section A109 and in accordance with B110.

A109 B A Semi-Annual Report of actual emissions from all permitted sources unless otherwise specified in this permit is due within 90 days following the end of every 6-month reporting period as defined at Condition A109.A. Emission estimates of criteria pollutants NOx, CO, SO2, VOC, TSP, PM10, and PM2.5 shall not include fugitive emissions. Emission estimates of HAPs shall include fugitive emissions. Emission estimates shall not include Insignificant or Trivial Activities, except that facility-wide emissions from all natural gas combustion sources shall be estimated. The reports shall include a comparison of actual emissions that occurred during the reporting period with the facility-wide allowable emission limits at Table 106.B.

Has this reporting requirement been met during this reporting period with a separate reporting submittal? Answer Yes or No below.

☐ **Yes** **Date report submitted:** **Tracking Number:**

☒ **No** **Provide comments and identify any supporting documentation as an attachment.**

Comments:

Degreaser TA-55-DG-1	January - June Emissions (tons)	July - December Emissions (tons)	Annual Emissions (tons)	Permit Limits (Condition A1002 A) (tons per year)
VOCs	0.005			Source limits refer to facility-wide limits.
HAPs	0.005			

A1100 Internal Combustion

A1102 Emission Limits - Internal Combustion

Unit No.	NOx tpy	CO tpy	VOC tpy	SO_2 tpy	TSP tpy	PM_{10} tpy
TA-33-G-1P	18.1	15.2	0.3	2.5	0.6	0.6
TA-33-G-2	0.21	0.1	-- [1]	--	--	--
TA-33-G-3	0.21	0.1	-- [1]	--	--	--
TA-33-G-4	2.33	1.4	0.2	0.16	--	--

1 The VOC emissions from this source category are included in the facility-wide allowable emissions limit established in condition 106.B: 200 tpy VOC, 8.0 tpy per individual HAP, and 24.0 tpy of combined total HAPs.

Reporting Requirement

A1107 A The permittee shall comply with all applicable reporting requirements of 40 CFR 60, Subpart A as required in 60.4218 and in accordance with Section B110.

A109 B A Semi-Annual Report of actual emissions from all permitted sources unless otherwise specified in this permit is due within 90 days following the end of every 6-month reporting period as defined at Condition A109.A. Emission estimates of criteria pollutants NOx, CO, SO2, VOC, TSP, PM10, and PM2.5 shall not include fugitive emissions. Emission estimates of HAPs shall include fugitive emissions. Emission estimates shall not include Insignificant or Trivial Activities, except that facility-wide emissions from all natural gas combustion sources shall be estimated. The reports shall include a comparison of actual emissions that occurred during the reporting period with the facility-wide allowable emission limits at Table 106.B.

Has this reporting requirement been met during this reporting period with a separate reporting submittal? Answer Yes or No below.

☐ **Yes** **Date report submitted:** **Tracking Number:**

☒ **No** **Provide comments and identify any supporting documentation as an attachment.**

Comments:

Generator TA-33-G-1P	January - June Emissions (tons)	July - December Emissions (tons)	Annual Emissions (tons)	Permit Limits (Condition A1102 A) (tons per year)
NOx	0.118			18.1
SO_2	0.003			2.5
TSP	0.004			0.6
PM_{10}	0.004			0.6
CO	0.012			15.2
VOC	0.009			0.3
HAPs	3.40E-05			No Source Limit

Generator TA-33-G-2	January - June Emissions (tons)	July - December Emissions (tons)	Annual Emissions (tons)	Permit Limits (Condition A1102 A) (tons per year)
NOx	0.000			0.21
SO_2	0.000			Not Required
TSP	0.000			Not Required
PM_{10}	0.000			Not Required
CO	0.000			0.1
VOC	0.000			Not Required
HAPs	0.00E+00			No Source Limit

Note: The TA-33-G-2 generator did not operate during the first six months of 2016.

Continued on the next page.

A1100 Internal Combustion- continued

Generator TA-33-G-3	January - June Emissions (tons)	July - December Emissions (tons)	Annual Emissions (tons)	Permit Limits (Condition A1102 A) (tons per year)
NOx	0.000			0.21
SO_2	0.000			Not Required
TSP	0.000			Not Required
PM_{10}	0.000			Not Required
CO	0.000			0.1
VOC	0.000			Not Required
HAPs	2.70E-08			No Source Limit

Note: The TA-33-G-3 generator only operated for 0.2 hours during the first six months of 2016.

Generator TA-33-G-4	January - June Emissions (tons)	July - December Emissions (tons)	Annual Emissions (tons)	Permit Limits (Condition A1102 A) (tons per year)
NOx	0.005			2.33
SO_2	0.000			0.16
TSP	0.000			Not Required
PM_{10}	0.000			Not Required
CO	0.003			1.4
VOC	0.000			0.2
HAPs	1.52E-06			No Source Limit

Note: The TA-33-G-4 generator only operated for 1.0 hours during the first six months of 2016.

Generator RLUOB-GEN-1	January - June Emissions (tons)	July - December Emissions (tons)	Annual Emissions (tons)	Permit Limits
NOx	0.170			No Source Specific Emission Limits for the CMRR Generators
SO_2	0.004			
TSP	0.010			
PM_{10}	0.008			
CO	0.210			
VOC	0.024			
HAPs	4.41E-05			

Generator RLUOB-GEN-2	January - June Emissions (tons)	July - December Emissions (tons)	Annual Emissions (tons)	Permit Limits
NOx	0.203			No Source Specific Emission Limits for the CMRR Generators
SO_2	0.005			
TSP	0.012			
PM_{10}	0.010			
CO	0.252			
VOC	0.029			
HAPs	5.28E-05			

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A1100 Internal Combustion- continued

Generator RLUOB-GEN-3	January - June Emissions (tons)	July - December Emissions (tons)	Annual Emissions (tons)	Permit Limits
NOx	0.185			No Source Specific Emission Limits for the CMRR Generators
SO_2	0.005			
TSP	0.011			
PM_{10}	0.009			
CO	0.229			
VOC	0.026			
HAPs	4.80E-05			

Generator TA-48-GEN-1	January - June Emissions (tons)	July - December Emissions (tons)	Annual Emissions (tons)	Permit Limits
NOx	0.000			No Source Specific Emission Limits for the CMRR Generators
SO_2	0.000			
TSP	0.000			
PM_{10}	0.000			
CO	0.000			
VOC	0.000			
HAPs	0.000			

Note: The TA-48-GEN-1 generator did not operate during the first six months of 2016.

Generator TA-55-GEN-1	January - June Emissions (tons)	July - December Emissions (tons)	Annual Emissions (tons)	Permit Limits
NOx	0.001			No Source Specific Emission Limits for the CMRR Generators
SO_2	0.000			
TSP	0.000			
PM_{10}	0.000			
CO	0.000			
VOC	0.000			
HAPs	2.03E-07			

Note: The TA-55-GEN-1 generator only operated for 1.0 hours during the first six months of 2016.

Generator TA-55-GEN-2	January - June Emissions (tons)	July - December Emissions (tons)	Annual Emissions (tons)	Permit Limits
NOx	0.001			No Source Specific Emission Limits for the CMRR Generators
SO_2	0.000			
TSP	0.000			
PM_{10}	0.000			
CO	0.000			
VOC	0.000			
HAPs	2.64E-07			

Note: The TA-55-GEN-2 generator only operated for 1.3 hours during the first six months of 2016.

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A1100 Internal Combustion- continued

Generator TA-55-GEN-3	January - June Emissions (tons)	July - December Emissions (tons)	Annual Emissions (tons)	Permit Limits
NOx	0.104			No Source Specific Emission Limits for the CMRR Generators
SO_2	0.002			
TSP	0.003			
PM_{10}	0.003			
CO	0.023			
VOC	0.005			
HAPs	1.89E-05			

A1200 Data Disintegrator

A1202 Emission Limits - Data Disintegrator

Unit No.	TSP tpy	PM10 tpy
TA-52-11	9.9	9.9

Reporting Requirement

A1207 A The permittee shall submit reports described in Section A109 and in accordance with B110.

A109 B A Semi-Annual Report of actual emissions from all permitted sources unless otherwise specified in this permit is due within 90 days following the end of every 6-month reporting period as defined at Condition A109.A. Emission estimates of criteria pollutants NOx, CO, SO2, VOC, TSP, PM10, and PM2.5 shall not include fugitive emissions. Emission estimates of HAPs shall include fugitive emissions. Emission estimates shall not include Insignificant or Trivial Activities, except that facility-wide emissions from all natural gas combustion sources shall be estimated. The reports shall include a comparison of actual emissions that occurred during the reporting period with the facility-wide allowable emission limits at Table 106.B.

Has this reporting requirement been met during this reporting period with a separate reporting submittal? Answer Yes or No below.

☐ **Yes** **Date report submitted:** **Tracking Number:**

☒ **No** **Provide comments and identify any supporting documentation as an attachment.**

Comments:

Data Disintegrator TA-52-11	January - June Emissions (tons)	July - December Emissions (tons)	Annual Emissions (tons)	Permit Limits (Condition A1202 A) (tons per year)
TSP	0.11			9.9
PM10	0.10			9.9

A1300 TA-3 Power Plant

A1302 Emission Limits - TA-3 Power Plant

All TA-3 Power Plant Boilers Combined (TA-33-1, TA-33-2, TA-33-3)						
NOx tpy	CO tpy	VOC tpy	SOx tpy	TSP tpy	PM_{10} tpy	PM2.5 tpy
31.5	21.5	2.8	4.9	4.7	4.4	4.2

TA-3 Power Plant Turbine (TA-3-22-CT-1)						
NOx tpy	CO tpy	VOC tpy	SOx tpy	TSP tpy	PM_{10} tpy	PM2.5 tpy
59.4	72.3	1.5	4.2	4.8	4.8	4.8

Reporting Requirement

A1307 A The permittee shall submit reports described in Section A109 and in accordance with B110.

A109 B A Semi-Annual Report of actual emissions from all permitted sources unless otherwise specified in this permit is due within 90 days following the end of every 6-month reporting period as defined at Condition A109.A. Emission estimates of criteria pollutants NOx, CO, SO2, VOC, TSP, PM10, and PM2.5 shall not include fugitive emissions. Emission estimates of HAPs shall include fugitive emissions. Emission estimates shall not include Insignificant or Trivial Activities, except that facility-wide emissions from all natural gas combustion sources shall be estimated. The reports shall include a comparison of actual emissions that occurred during the reporting period with the facility-wide allowable emission limits at Table 106.B.

Has this reporting requirement been met during this reporting period with a separate reporting submittal? Answer Yes or No below.

☐ **Yes** **Date report submitted:** **Tracking Number:**

☒ **No** **Provide comments and identify any supporting documentation as an attachment.**

Comments:

Boilers TA-3-22-1, TA-3-22-2, TA-3-22-3	January - June Emissions (tons)	July - December Emissions (tons)	Annual Emissions (tons)	Permit Limit (Condition A1302 A) (tons per year)
NOx	5.83			31.5
SO_2	0.06			4.9
TSP	0.76			4.7
PM_{10}	0.76			4.4
$PM_{2.5}$	0.76			4.2
CO	4.02			21.5
VOC	0.55			2.8
HAPs	0.19			No Source Limit

Combustion Turbine TA-3-22 CT-1	January - June Emissions (tons)	July - December Emissions (tons)	Annual Emissions (tons)	Permit Limit (Condition A1302 A) (tons per year)
NOx	1.44			59.4
SOx	0.10			4.2
TSP	0.19			4.8
PM_{10}	0.19			4.8
$PM_{2.5}$	0.19			4.8
CO	0.30			72.3
VOC	0.06			1.5
HAPs	3.92E-02			No Source Limit

A1400 Open Burning

A1402 Emission Limits - Open Burning

Unit No.	Individual HAP[1] (tpy)	Total HAPs[1] (tpy)
Facility-Wide Open Burning	8.0	24.0

1 Individual and Total HAPs emitted by Open Burning are included in facility-wide HAP emission limits at Table 106.B.

Reporting Requirement

A1407 A The permittee shall submit reports described in Section A109 and in accordance with B110.

A109 B A Semi-Annual Report of actual emissions from all permitted sources unless otherwise specified in this permit is due within 90 days following the end of every 6-month reporting period as defined at Condition A109.A. Emission estimates of criteria pollutants NOx, CO, SO2, VOC, TSP, PM10, and PM2.5 shall not include fugitive emissions. Emission estimates of HAPs shall include fugitive emissions. Emission estimates shall not include Insignificant or Trivial Activities, except that facility-wide emissions from all natural gas combustion sources shall be estimated. The reports shall include a comparison of actual emissions that occurred during the reporting period with the facility-wide allowable emission limits at Table 106.B.

Has this reporting requirement been met during this reporting period with a separate reporting submittal? Answer Yes or No below.

☐ **Yes** **Date report submitted:** **Tracking Number:**

☒ **No** **Provide comments and identify any supporting documentation as an attachment.**

Comments:
No open burning activities took place during the first six months of 2016.

A102 Facility Wide Emission Limits

Table 102.A: Total Potential Criteria Pollutant Emissions from Entire Facility

Pollutant	Emissions (tons per year)
Nitrogen Oxides (NOx)	245.0
Carbon Monoxide (CO)	225.0
Volatile Organic Carbons (VOC)	200.0
Sulfur Dioxide (SO_2)	150.0
Total Particulate Matter (TSP)	120.0
Particulate Mater less than 10 microns (PM_{10})	120.0
Particulate Mater less than 2.5 microns ($PM_{2.5}$)	120.0

Table 102.B: Total Potential HAPs that exceed 1.0 tons per year

Pollutant	Emissions (tons per year)
Individual HAP	8.0
Total HAPs	24.0

Reporting Requirement

A109 B A Semi-Annual Report of actual emissions from all permitted sources unless otherwise specified in this permit is due within 90 days following the end of every 6-month reporting period as defined at Condition A109.A. Emission estimates of criteria pollutants NOx, CO, SO2, VOC, TSP, PM10, and PM2.5 shall not include fugitive emissions. Emission estimates of HAPs shall include fugitive emissions. Emission estimates shall not include Insignificant or Trivial Activities, except that facility-wide emissions from all natural gas combustion sources shall be estimated. The reports shall include a comparison of actual emissions that occurred during the reporting period with the facility-wide allowable emission limits at Table 106.B.

Has this reporting requirement been met during this reporting period with a separate reporting submittal? Answer Yes or No below.

☐ **Yes** **Date report submitted:** **Tracking Number:**

☒ **No** **Provide comments and identify any supporting documentation as an attachment.**

Comments:

Pollutant	January - June Emissions (tons)	July - December Emissions (tons)	2015 Annual Emissions (tons)	Facility Wide Permit Limits (Condition A102) (tons per year)
Nitrogen Oxides	19.5			245
Carbon Monoxide	14.3			225
Volatile Organic Carbons	7.1			200
Sulfur Dioxide	0.3			150
Total Particulate Matter	2.0			120
Particulate Matter less than 10 microns	2.0			120
Particulate Matter less than 2.5 microns	1.0			120
Hazardous Air Pollutants	3.7			24

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Environment Safety & Health
PO Box 1663, MS K491
Los Alamos, New Mexico 87545
(505)667-4218/Fax (505) 665-3811

Date: SEP 2 1 2016
Symbol: ADESH-16-119
LA-UR: 16-26522
Locates Action No.: N/A

Mr. Ralph Grubel
Compliance & Enforcement Section Chief
New Mexico Environment Department
Air Quality Bureau
525 Camino de los Marquez, Suite 1
Santa Fe, New Mexico 87505-1816

Dear Mr. Grubel:

Subject: Title V Semi-Annual Emissions Report for Permit P100-R2, January 1, 2016 – June 30, 2016 AI No. 856 – Los Alamos National Laboratory (LANL)

Enclosed is Los Alamos National Laboratory's (LANL) Semi-Annual Emissions report for Permit P100-R2 for the period January 1, 2016 through June 30, 2016. This report is required by permit condition A109.B and is submitted within 90 days from the end of the reporting period as required by that condition.

The semi-annual emissions report includes actual emissions from permitted sources included in LANL's Operating Permit. In this report, the actual emissions are listed along with the emission limits for ease in comparing and verifying compliance. No annual emission limits were exceeded during this reporting period.

Please contact Steven L. Story at (505) 665-2169 or story@lanl.gov of the Environmental Compliance Programs (EPC-CP) if you have questions.

Sincerely,

Michael T. Brandt, DrPH, CIH
Associate Director
Environment, Safety & Health

New Mexico Environment Department
Air Quality Bureau
Compliance and Enforcement Section
1301 Siler Road Building B
Santa Fe, NM 87507
Phone (505) 476-4300 Fax (505) 476-4375

Version 07.03.08

NMED USE ONLY	
DTS	
TEMPO	

REPORTING SUBMITTAL FORM

NMED USE ONLY	
Staff	
Admin	

PLEASE NOTE: ® - Indicates required field

SECTION I - GENERAL COMPANY AND FACILITY INFORMATION

A. ® Company Name: U.S. Department of Energy			D. ® Facility Name: Los Alamos National Laboratory		
B.1 ® Company Address: P.O. Box 1663 MS J978			E.1 ® Facility Address: Same as Company		
B.2 ® City: Los Alamos	B.3 ® State: NM	B.4 ® Zip: 87545	E.2 ® City:	E.3 ® State:	E.4 ® Zip:
C.1 ® Company Environmental Contact: Tony Grieggs	C.2 ® Title: CP Group Leader		F.1 ® Facility Contact: Steve Story	F.2 ® Title: Air Compliance Team Leader	
C.3 ® Phone Number: 505-665-0451	C.4 ® Fax Number: 505-665-8858		F.3 ® Phone Number: 505-665-2169	F.4 ® Fax Number: 505-665-8858	
C.5 ® Email Address: grieggst@lanl.gov			F.5 ® Email Address: story@lanl.gov		
G. Responsible Official: (Title V only): Michael T. Brandt	H. Title: Associate Director ES&H		I. Phone Number: 505-667-4218	J. Fax Number: 505-665-3811	

K. ® AI Number:	L. Title V Permit Number:	M. Title V Permit Issue Date:	N. NSR Permit Number:	O. NSR Permit Issue Date:
856	P100-R2	2/27/2015	2195	Various

P. Reporting Period:	OR	Q. Proposed Test Date:	OR	R. Actual Test Date:
From: 7/1/2016 To: 12/31/2016				

SECTION II – TYPE OF SUBMITTAL (check one that applies)

A. ☐	Title V Annual Compliance Certification	Permit Condition(s):	Description:	
B. ☐	Title V Semi-annual Monitoring Report	Permit Condition(s):	Description:	
C. ☐	NSPS Requirement (40CFR60)	Regulation:	Section(s):	Description:
D. ☐	MACT Requirement (40CFR63)	Regulation:	Section(s):	Description:
E. ☐	NMAC Requirement (20.2.xx) or NESHAP Requirement (40CFR61)	Regulation:	Section(s):	Description:
F. ☒	Permit or Notice of Intent (NOI) Requirement	Permit No.☒: or NOI No.☐: P100-R2	Condition(s): A109 B	Description: Title V Semi-Annual Emissions Report 7/1/2016-12/31/2016 ADESH17028 LAUR1721996
G. ☐	Requirement of an Enforcement Action	NOV No. ☐: or SFO No. ☐: or CD No. ☐: or Other ☐:	Section(s):	Description:

SECTION III – PERIODIC EMISSIONS TEST NOTIFICATIONS, TEST PROTOCOLS AND TEST REPORTS (if applicable)

T. ☐	A. Test Report ☐ CMT:____	B. Test Protocol ☐	C. Notification ☐ CMT:____					Description: (Emission Units to be Tested)
	D. Initial Compliance Test (EPA Methods) ☐	E. Periodic Test (EPA Methods) ☐	F. RATA Test ☐	G. Opacity Test ☐	H. Portable Analyzer (Periodic Test) ☐			

SECTION IV - CERTIFICATION

After reasonable inquiry, I Michael T. Brandt (name of reporting official) certify that the information in this submittal is true, accurate and complete.

® Signature of Reporting Official:	® Title:	® Date	® Responsible Official for Title V?
Michael T. Brandt	Associate Director ES&H	3/24/17	☒ Yes ☐ No

Reviewed By: Date Reviewed:

Los Alamos
NATIONAL LABORATORY
EST 1943

Environmental Safety & Health
Los Alamos National Laboratory
PO Box 1663, K491
Los Alamos, New Mexico 87545
(505) 667-4218

EM-LA

Environmental Management
Los Alamos Field Office, A316
3747 West Jemez Road
Los Alamos, New Mexico, 87544
(505) 667-5105/ Fax (505) 667-5948

Symbol: ADESH-17: 028
Date: MAR 2 2 2017
LA-UR: 17- 21996
Locates Action No.: *N/A*

Mr. Ralph Grubel
Compliance & Enforcement Section Chief
New Mexico Environment Department
Air Quality Bureau
525 Camino de los Marquez, Suite 1
Santa Fe, New Mexico 87505-1816

Subject: Title V Semi-Annual Emissions Report for Permit P100-R2, July 1, 2016 – December 31, 2016 AI No. 856 – Los Alamos National Laboratory (LANL)

Dear Mr. Grubel:

Please find Los Alamos National Laboratory's (LANL) Semi-Annual Emissions report for Permit P100-R2 for the period July 1, 2016 through December 31, 2016. This report is required by permit condition A109.B and is submitted within 90 days from the end of the reporting period as required by that condition.

The semi-annual emissions report includes actual emissions from permitted sources included in LANL's Operating Permit. In this report, the actual emissions are listed along with the emission limits for ease in comparing and verifying compliance. No annual emission limits were exceeded during this reporting period.

Please contact Steven L. Story at (505) 665-2169 or story@lanl.gov of the Environmental Compliance Programs group (EPC-CP) if you have questions.

Sincerely,

Michael T. Brandt, DrPH, CIH
Associate Director
MTB/SLS/WW:tav

Title V Semi-Annual Emission Report for Permit P100-R2

July 1, 2016 – December 31, 2016

Identifying Information

Source Name: Los Alamos National Laboratory County: Los Alamos

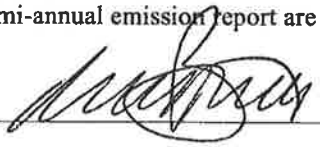
Source Address:
City: Los Alamos State: NM Zip Code: 87545

Responsible Official: Michael T. Brandt Ph No. (505) 667-4218 Fax No. (505) 665-3811
Technical Contact: Steven L. Story Ph No. (505) 665-2169 Fax No. (505) 665-8858
Principal Company Product or Business: National Security and Nuclear Weapons Research Primary SIC Code: 8733

Permit No. P100-R2, July 1, 2016 – Dec. 31, 2016 {IDEA/Tempo ID No. 856} Permit Issued Date: Feb. 27, 2015

Certification of Truth, Accuracy, and Completeness

I, Michael T. Brandt certify that, based on information and belief formed after reasonable inquiry, the statements and information in the attached semi-annual emission report are true, accurate, and complete.

Signature  Date: 3/22/17

Title: Associate Director Environmental, Safety, and Health

ENCLOSURE 1

Title V Semi-Annual Emissions Report
for Permit P100-R2
July 1, 2016 – December 31, 2016

ADESH-17: 028

LA-UR-17-21996

Date: MAR 2 2 2017

Title V Semi-Annual Emissions Report
Permit P100-R2, July 1, 2016 - December 31, 2016

Emission Reporting Requirements

A109 Facility: Reporting Schedules

A. A Semi-Annual Report of monitoring activities is due within 45 days following the end of every 6-month reporting period. The six month reporting periods start on January 1st and July 1st of each year.

B. A Semi-Annual Report of actual emissions from all permitted sources unless otherwise specified in this permit is due within 90 days following the end of every 6-month reporting period as defined at Condition A109.A. Emission estimates of criteria pollutants NOx, CO, SO2, VOC, TSP, PM10, and PM2.5 shall not include fugitive emissions. Emission estimates of HAPs shall include fugitive emissions. Emission estimates shall not include Insignificant or Trivial Activities, except that facility-wide emissions from all natural gas combustion sources and the Soil Vapor Extraction equipment at Material Disposal Area L shall be estimated. The reports shall include a comparison of actual emissions that occurred during the reporting period with the facility-wide allowable emission limits at Table 106.B.

Specific Emissions Reports:

A600 Asphalt Production

A602 Emission Limits - Asphalt Production

Unit No.	Nox tpy	SO_2 tpy	PM tpy	CO tpy	VOC tpy
TA-60-BDM	50.0	50.0	50.0	30.0	50.0

Reporting Requirement

A607 F The permittee shall submit reports described in Section A109 and in accordance with B110.

A109 B A Semi-Annual Report of actual emissions from all permitted sources unless otherwise specified in this permit is due within 90 days following the end of every 6-month reporting period as defined at Condition A109.A. Emission estimates of criteria pollutants NOx, CO, SO2, VOC, TSP, PM10, and PM2.5 shall not include fugitive emissions. Emission estimates of HAPs shall include fugitive emissions. Emission estimates shall not include Insignificant or Trivial Activities, except that facility-wide emissions from all natural gas combustion sources and the Soil Vapor Extraction equipment at Material Disposal Area L shall be estimated. The reports shall include a comparison of actual emissions that occurred during the reporting period with the facility-wide allowable emission limits at Table 106.B.

Has this reporting requirement been met during this reporting period with a separate reporting submittal? Answer Yes or No below.

☐ **Yes** **Date report submitted:** **Tracking Number:**

☒ **No** **Provide comments and identify any supporting documentation as an attachment.**

Comments:

Asphalt Plant TA-60-BDM	January - June Emissions (tons)	July - December Emissions (tons)	Annual Emissions (tons)	Permit Limits (Condition A602 A) (tons per year)
NOx	0.0021	0.0022	0.004	50.0
SO_2	0.0008	0.0008	0.002	50.0
PM	0.0013	0.0013	0.003	50.0
CO	0.0740	0.0777	0.152	30.0
VOC	0.0014	0.0015	0.003	50.0
HAPs	0.0013	0.0014	0.003	No Source Permit Limit

A700 Beryllium Activities

A702 Emission Limits - Beryllium Activities

Source	Beryllium Particulate Matter	Aluminum Particulate Matter
Sigma Facility TA-3-66	10 gm/24 hr	N/A
Beryllium Technology Facility TA-3-141	3.5 gm/yr	N/A
Target Fabrication Facility TA-35-213	0.36 gm/yr	N/A
Plutonium Facility TA-55-PF-4 Machining Operation	2.99 gm/yr	2.99 gm/yr
Plutonium Facility TA-55-PF-4 Foundry Operation	$8.73X10^{-04}$ gm/yr	$8.73X10^{-04}$ gm/yr

Reporting Requirement

A707 D The permittee shall submit reports described in Section A109 and in accordance with B110.

A109 B A Semi-Annual Report of actual emissions from all permitted sources unless otherwise specified in this permit is due within 90 days following the end of every 6-month reporting period as defined at Condition A109.A. Emission estimates of criteria pollutants NOx, CO, SO2, VOC, TSP, PM10, and PM2.5 shall not include fugitive emissions. Emission estimates of HAPs shall include fugitive emissions. Emission estimates shall not include Insignificant or Trivial Activities, except that facility-wide emissions from all natural gas combustion sources and the Soil Vapor Extraction equipment at Material Disposal Area L shall be estimated. The reports shall include a comparison of actual emissions that occurred during the reporting period with the facility-wide allowable emission limits at Table 106.B.

Has this reporting requirement been met during this reporting period with a separate reporting submittal? Answer Yes or No below.

☐ **Yes** **Date report submitted:** **Tracking Number:**

☒ **No** **Provide comments and identify any supporting documentation as an attachment.**

Comments: Continued on the next page

A700 Beryllium Activities - continued

Comments:

Source	Pollutant	January - June Emissions	July - December Emissions	Annual Emissions	Permit Limits (Condition A702 A)
Sigma Facility TA-3-66[1]	Beryllium (grams)	0.00E+00	0.00E+00	0.00E+00	10 gm/24 hr
Beryllium Technology Facility TA-3-141[2]	Beryllium (grams)	< 0.0032	0.0487	0.0519	3.5 gm/yr
Target Fabrication Facility TA-35-213[3]	Beryllium (grams)	< 0.00944	< 0.009	< 0.018	0.36 gm/yr
Plutonium Facility TA-55-PF4 Machining Operation[4]	Beryllium (grams)	< 1.495	< 1.41	< 2.91	2.99 gm/yr
	Aluminum (grams)	< 1.495	< 1.41	< 2.91	2.99 gm/yr
Plutonium Facility TA-55-PF4 Foundry Operation[5]	Beryllium (grams)	0	0	0.00	8.73×10^{-4} gm/yr
	Aluminum (grams)	0	0	0.00	8.73×10^{-4} gm/yr
Beryllium Total[5] (tons) =		**< 1.66E-06**	**< 1.57E-06**	**< 3.23E-06**	
Aluminum Total (tons) =		**< 1.65E-06**	**< 1.55E-06**	**< 3.30E-06**	

Notes: (1) Emissions from the Sigma Facility are from electroplating, chemical milling, and metallographic operations. (2) Emission values shown for the Beryllium Technology Facility are from actual stack emission measurements which are submitted to NMED quarterly. (3) Emissions for the Target Fabrication Facility are from initial compliance testing of that source and calculated based on a conservative assumption of 8 hour work days. Log books were checked to verify that work days were much less than 8 hours. (4) Emissions for the Plutonium Facility are calculated based on permitted throughputs. Log books were checked to verify that throughputs were much less than permitted values. (5) The Plutonium Facility foundry operations did not operate during 2016.

A800 External Combustion

A802 Emission Limits - External Combustion

Unit No.	NOx tpy	CO tpy	VOC tpy	SO_2 tpy	TSP tpy	PM_{10} tpy
All Boilers	80.0	80.0	50.0	50.0	50.0	50.0

Unit No.	NOx tpy	CO tpy	SO_2 tpy	TSP tpy	PM_{10} tpy	$PM_{2.5}$ tpy
RLUOB-BHW-1 (gas)	2.9	4.8	0.3	0.4	0.4	0.4
RLUOB-BHW-2 (gas)	2.9	4.8	0.3	0.4	0.4	0.4
RLUOB-BHW-3 (gas)	2.9	4.8	0.3	0.4	0.4	0.4
RLUOB-BHW-4 (gas)	2.9	4.8	0.3	0.4	0.4	0.4
RLUOB Boilers (oil)	2.9	0.9	10.4	0.5	0.3	0.3
RLUOB Boilers Total	14.5	20.1	11.6	2.1	1.9	1.9

Reporting Requirement

A807 B The permittee shall submit reports described in Section A109 and in accordance with B110.

A109 B A Semi-Annual Report of actual emissions from all permitted sources unless otherwise specified in this permit is due within 90 days following the end of every 6-month reporting period as defined at Condition A109.A. Emission estimates of criteria pollutants NOx, CO, SO2, VOC, TSP, PM10, and PM2.5 shall not include fugitive emissions. Emission estimates of HAPs shall include fugitive emissions. Emission estimates shall not include Insignificant or Trivial Activities, except that facility-wide emissions from all natural gas combustion sources and the Soil Vapor Extraction equipment at Material Disposal Area L shall be estimated. The reports shall include a comparison of actual emissions that occurred during the reporting period with the facility-wide allowable emission limits at Table 106.B.

Has this reporting requirement been met during this reporting period with a separate reporting submittal? Answer Yes or No below.

☐ **Yes** **Date report submitted:** **Tracking Number:**

☒ **No** **Provide comments and identify any supporting documentation as an attachment.**

Comments:

Boilers	January - June Emissions (tons)	July - December Emissions (tons)	Annual Emissions (tons)	Permit Limits (Condition A802 A) (tons per year)
NOx	11.47	7.31	18.8	80
SO_2	0.07	0.04	0.1	50
TSP	0.92	0.59	1.5	50
PM-10	0.92	0.59	1.5	50
CO	9.22	5.78	15.0	80
VOCs	0.66	0.42	1.1	50
HAPs	0.22	0.14	0.4	No Source Limit

Note: The emissions shown in this table includes all exempt, non-exempt, metered, and non-metered boilers at LANL except for the TA-3-22 Power Plant boilers. The Power Plant boilers can be found under Section A1300 of this report.

Continued on the next page

A800 External Combustion - continued

RLUOB-BHW-1 (Gas)	January - June Emissions (tons)	July - December Emissions (tons)	Annual Emissions (tons)	Permit Limits (Condition A802 B) (tons per year)
NOx	0.0070	0.0064	0.013	2.9
SO_2	0.0001	0.0001	0.0003	0.3
TSP	0.0012	0.0011	0.002	0.4
PM-10	0.0012	0.0011	0.002	0.4
PM-2.5	0.0012	0.0011	0.002	0.4
CO	0.0090	0.0082	0.017	4.8
VOCs	0.0061	0.0055	0.012	No Source Limit
HAPs	4.46E-04	4.04E-04	8.50E-04	No Source Limit

RLUOB-BHW-2 (Gas)	January - June Emissions (tons)	July - December Emissions (tons)	Annual Emissions (tons)	Permit Limits (Condition A802 B) (tons per year)
NOx	0.0070	0.0064	0.013	2.9
SO_2	0.0001	0.0001	0.0003	0.3
TSP	0.0012	0.0011	0.002	0.4
PM-10	0.0012	0.0011	0.002	0.4
PM-2.5	0.0012	0.0011	0.002	0.4
CO	0.0090	0.0082	0.017	4.8
VOCs	0.0061	0.0055	0.012	No Source Limit
HAPs	4.46E-04	4.04E-04	8.50E-04	No Source Limit

RLUOB-BHW-3 (Gas)	January - June Emissions (tons)	July - December Emissions (tons)	Annual Emissions (tons)	Permit Limits (Condition A802 B) (tons per year)
NOx	0.0070	0.0064	0.013	2.9
SO_2	0.0001	0.0001	0.0003	0.3
TSP	0.0012	0.0011	0.002	0.4
PM-10	0.0012	0.0011	0.002	0.4
PM-2.5	0.0012	0.0011	0.002	0.4
CO	0.0090	0.0082	0.017	4.8
VOCs	0.0061	0.0055	0.012	No Source Limit
HAPs	4.46E-04	4.04E-04	8.50E-04	No Source Limit

RLUOB-BHW-4 (Gas)	January - June Emissions (tons)	July - December Emissions (tons)	Annual Emissions (tons)	Permit Limits (Condition A802 B) (tons per year)
NOx	0.000	0.000	0.000	2.9
SO_2	0.000	0.000	0.000	0.3
TSP	0.000	0.000	0.000	0.4
PM-10	0.000	0.000	0.000	0.4
PM-2.5	0.000	0.000	0.000	0.4
CO	0.000	0.000	0.000	4.8
VOCs	0.000	0.000	0.000	No Source Limit
HAPs	0.000	0.000	0.000	No Source Limit

Note: The RLUOB-BHW-4 boiler has not been installed.

Continued on the next page.

A800 External Combustion - continued

RLUOB Boilers Totals (Oil)	January - June Emissions (tons)	July - December Emissions (tons)	Annual Emissions (tons)	Permit Limits (Condition A802 B) (tons per year)
NOx	0.000	0.000	0.000	2.9
SO_2	0.000	0.000	0.000	10.4
TSP	0.000	0.000	0.000	0.5
PM-10	0.000	0.000	0.000	0.3
PM-2.5	0.000	0.000	0.000	0.3
CO	0.000	0.000	0.000	0.9
VOCs	0.000	0.000	0.000	No Source Limit
HAPs	0.000	0.000	0.000	No Source Limit

Note: The RLUOB boilers did not operate on fuel oil during 2016.

RLUOB Boilers Totals (Gas and Oil)	January - June Emissions (tons)	July - December Emissions (tons)	Annual Emissions (tons)	Permit Limits (Condition A802 B) (tons per year)
NOx	0.0211	0.0192	0.040	14.5
SO_2	0.0004	0.0004	0.001	11.6
TSP	0.0035	0.0032	0.007	2.1
PM-10	0.0035	0.0032	0.007	1.9
PM-2.5	0.0035	0.0032	0.007	1.9
CO	0.0270	0.0245	0.051	20.1
VOCs	0.0182	0.0165	0.035	No Source Limit
HAPs	1.34E-03	1.21E-03	2.55E-03	No Source Limit

A900 Chemical Usage

A902 Emission Limits - Chemical Usage

Unit No.	VOC/HAPs tpy
LANL-FW-CHEM	-- [1]
CMRR-CHEM	3.75 [1]

1 The VOC emissions from this source category are included in the facility-wide allowable emissions limit established in Table 106.B: 200 tpy VOC, 8.0 tpy per individual HAP, and 24.0 tpy of combined total HAPs. Any VHAPs that are also defined as a VOC shall be included in the VOC total.

Reporting Requirement

A907 A The permittee shall submit reports described in Section A109 and in accordance with B110. With respect to individual HAPs, reports shall include any HAP emitted in quantity greater than 0.5 tons per year.

A109 B A Semi-Annual Report of actual emissions from all permitted sources unless otherwise specified in this permit is due within 90 days following the end of every 6-month reporting period as defined at Condition A109.A. Emission estimates of criteria pollutants NOx, CO, SO2, VOC, TSP, PM10, and PM2.5 shall not include fugitive emissions. Emission estimates of HAPs shall include fugitive emissions. Emission estimates shall not include Insignificant or Trivial Activities, except that facility-wide emissions from all natural gas combustion sources and the Soil Vapor Extraction equipment at Material Disposal Area L shall be estimated. The reports shall include a comparison of actual emissions that occurred during the reporting period with the facility-wide allowable emission limits at Table 106.B.

Has this reporting requirement been met during this reporting period with a separate reporting submittal? Answer Yes or No below.

☐ **Yes** **Date report submitted:** **Tracking Number:**

☒ **No** **Provide comments and identify any supporting documentation as an attachment.**

Comments:

Chemical Usage LANL-FW-CHEM		January - June Emissions (tons)	July - December Emissions (tons)	Annual Emissions (tons)	Permit Limits (Condition A902 B)
VOCs		5.73	6.94	12.67	Source limits refer to facility-wide limits.
HAPs		3.94	2.50	6.44	
Individual HAPs greater than 0.5 tons	Hydrochloric Acid	0.71	0.50	1.21	
	Glycol Ethers	0.76	0.36	1.12	
	Ethylene Glycol	0.92	0.17	1.09	
	Methanol	0.55	0.16	0.71	

Chemical Usage CMRR-CHEM	January - June Emissions (tons)	July - December Emissions (tons)	Annual Emissions (tons)	Permit Limits (Condition A902 B)
HAPs	0.0026	0.0000	0.0026	3.75
VOCs	0.0000	0.0000	0.0000	3.75
TAPs	0.0034	0.0000	0.0034	No Source Limit

A1000 Degreasers

A1002 Emission Limits - Degreasers

Unit No.	VOC/HAPs tpy
TA-55-DG-1	-- [1]

1 The VOC emissions from this source category are included in the facility-wide allowable emissions limit established in Table 106.B: 200 tpy VOC, 8.0 tpy per individual HAP, and 24.0 tpy of combined total HAPs. Any VHAPs that are also defined as a VOC shall be included in the VOC total.

Reporting Requirement

A1007 A The permittee shall submit reports described in Section A109 and in accordance with B110.

A109 B A Semi-Annual Report of actual emissions from all permitted sources unless otherwise specified in this permit is due within 90 days following the end of every 6-month reporting period as defined at Condition A109.A. Emission estimates of criteria pollutants NOx, CO, SO2, VOC, TSP, PM10, and PM2.5 shall not include fugitive emissions. Emission estimates of HAPs shall include fugitive emissions. Emission estimates shall not include Insignificant or Trivial Activities, except that facility-wide emissions from all natural gas combustion sources and the Soil Vapor Extraction equipment at Material Disposal Area L shall be estimated. The reports shall include a comparison of actual emissions that occurred during the reporting period with the facility-wide allowable emission limits at Table 106.B.

Has this reporting requirement been met during this reporting period with a separate reporting submittal? Answer Yes or No below.

☐ **Yes** **Date report submitted:** **Tracking Number:**

☒ **No** **Provide comments and identify any supporting documentation as an attachment.**

Comments:

Degreaser TA-55-DG-1	January - June Emissions (tons)	July - December Emissions (tons)	Annual Emissions (tons)	Permit Limits (Condition A1002 A) (tons per year)
VOCs	0.005	0.005	0.01	Source limits refer to facility-wide limits.
HAPs	0.005	0.005	0.01	

A1100 Internal Combustion

A1102 Emission Limits - Internal Combustion

Unit No.	NOx tpy	CO tpy	VOC tpy	SO_2 tpy	TSP tpy	PM_{10} tpy
TA-33-G-1P	18.1	15.2	0.3	2.5	0.6	0.6
TA-33-G-2	0.21	0.1	-- [1]	--	--	--
TA-33-G-3	0.21	0.1	-- [1]	--	--	--
TA-33-G-4	2.33	1.4	0.2	0.16	--	--

1 The VOC emissions from this source category are included in the facility-wide allowable emissions limit established in condition 106.B: 200 tpy VOC, 8.0 tpy per individual HAP, and 24.0 tpy of combined total HAPs.

Reporting Requirement

A1107 A The permittee shall comply with all applicable reporting requirements of 40 CFR 60, Subpart A as required in 60.4218 and in accordance with Section B110.

A109 B A Semi-Annual Report of actual emissions from all permitted sources unless otherwise specified in this permit is due within 90 days following the end of every 6-month reporting period as defined at Condition A109.A. Emission estimates of criteria pollutants NOx, CO, SO2, VOC, TSP, PM10, and PM2.5 shall not include fugitive emissions. Emission estimates of HAPs shall include fugitive emissions. Emission estimates shall not include Insignificant or Trivial Activities, except that facility-wide emissions from all natural gas combustion sources and the Soil Vapor Extraction equipment at Material Disposal Area L shall be estimated. The reports shall include a comparison of actual emissions that occurred during the reporting period with the facility-wide allowable emission limits at Table 106.B.

Has this reporting requirement been met during this reporting period with a separate reporting submittal? Answer Yes or No below.

☐ **Yes** **Date report submitted:** **Tracking Number:**

☒ **No** **Provide comments and identify any supporting documentation as an attachment.**

Comments:

Generator TA-33-G-1P	January - June Emissions (tons)	July - December Emissions (tons)	Annual Emissions (tons)	Permit Limits (Condition A1102 A) (tons per year)
NOx	0.1177	0.0463	0.164	18.1
SO_2	0.0031	0.0012	0.004	2.5
TSP	0.0036	0.0014	0.005	0.6
PM_{10}	0.0036	0.0014	0.005	0.6
CO	0.0118	0.0046	0.016	15.2
VOC	0.0086	0.0034	0.012	0.3
HAPs	3.40E-05	1.34E-05	4.74E-05	No Source Limit

Generator TA-33-G-2	January - June Emissions (tons)	July - December Emissions (tons)	Annual Emissions (tons)	Permit Limits (Condition A1102 A) (tons per year)
NOx	0.0000	0.0006	0.001	0.21
SO_2	0.0000	0.0000	0.000	Not Required
TSP	0.0000	0.0000	0.000	Not Required
PM_{10}	0.0000	0.0000	0.000	Not Required
CO	0.0000	0.0002	0.0002	0.1
VOC	0.0000	0.0000	0.000	Not Required
HAPs	0.00E+00	1.89E-07	1.89E-07	No Source Limit

Note: The TA-33-G-2 generator only operated for 1.4 hours during 2016.

Continued on the next page.

A1100 Internal Combustion- continued

Generator TA-33-G-3	January - June Emissions (tons)	July - December Emissions (tons)	Annual Emissions (tons)	Permit Limits (Condition A1102 A) (tons per year)
NOx	0.0001	0.0005	0.001	0.21
SO_2	0.0000	0.0000	0.000	Not Required
TSP	0.0000	0.0000	0.000	Not Required
PM_{10}	0.0000	0.0000	0.000	Not Required
CO	0.0000	0.0002	0.0002	0.1
VOC	0.0000	0.0000	0.000	Not Required
HAPs	2.70E-08	1.76E-07	2.03E-07	No Source Limit

Note: The TA-33-G-3 generator only operated for a 1.5 hours during 2016.

Generator TA-33-G-4	January - June Emissions (tons)	July - December Emissions (tons)	Annual Emissions (tons)	Permit Limits (Condition A1102 A) (tons per year)
NOx	0.0047	0.0188	0.023	2.33
SO_2	0.0003	0.0013	0.002	0.16
TSP	0.0003	0.0013	0.002	Not Required
PM_{10}	0.0003	0.0013	0.002	Not Required
CO	0.0028	0.0113	0.014	1.4
VOC	0.0004	0.0015	0.002	0.2
HAPs	1.52E-06	6.08E-06	7.60E-06	No Source Limit

Generator RLUOB-GEN-1	January - June Emissions (tons)	July - December Emissions (tons)	Annual Emissions (tons)	Permit Limits
NOx	0.170	0.200	0.37	No Source Specific Emission Limits for the CMRR Generators
SO_2	0.004	0.005	0.01	
TSP	0.010	0.012	0.02	
PM_{10}	0.008	0.010	0.02	
CO	0.210	0.248	0.46	
VOC	0.024	0.028	0.05	
HAPs	4.41E-05	5.19E-05	9.60E-05	

Generator RLUOB-GEN-2	January - June Emissions (tons)	July - December Emissions (tons)	Annual Emissions (tons)	Permit Limits
NOx	0.203	0.250	0.45	No Source Specific Emission Limits for the CMRR Generators
SO_2	0.005	0.007	0.01	
TSP	0.012	0.015	0.03	
PM_{10}	0.010	0.012	0.02	
CO	0.252	0.310	0.56	
VOC	0.029	0.035	0.06	
HAPs	5.28E-05	6.50E-05	1.18E-04	

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A1100 Internal Combustion- continued

Generator RLUOB-GEN-3	January - June Emissions (tons)	July - December Emissions (tons)	Annual Emissions (tons)	Permit Limits
NOx	0.185	0.207	0.39	No Source Specific Emission Limits for the CMRR Generators
SO_2	0.005	0.005	0.01	
TSP	0.011	0.012	0.02	
PM_{10}	0.009	0.010	0.02	
CO	0.229	0.256	0.48	
VOC	0.026	0.029	0.06	
HAPs	4.80E-05	5.37E-05	1.02E-04	

Generator TA-48-GEN-1	January - June Emissions (tons)	July - December Emissions (tons)	Annual Emissions (tons)	Permit Limits
NOx	0.000	0.000	0.000	No Source Specific Emission Limits for the CMRR Generators
SO_2	0.000	0.000	0.000	
TSP	0.000	0.000	0.000	
PM_{10}	0.000	0.000	0.000	
CO	0.000	0.000	0.000	
VOC	0.000	0.000	0.000	
HAPs	0.00E+00	0.00E+00	0.00E+00	

Note: The TA-48-GEN-1 generator did not operate during 2016.

Generator TA-55-GEN-1	January - June Emissions (tons)	July - December Emissions (tons)	Annual Emissions (tons)	Permit Limits
NOx	0.0006	0.0000	0.0006	No Source Specific Emission Limits for the CMRR Generators
SO_2	0.0000	0.0000	0.000	
TSP	0.0000	0.0000	0.000	
PM_{10}	0.0000	0.0000	0.000	
CO	0.0001	0.0000	0.0001	
VOC	0.0001	0.0000	0.0001	
HAPs	2.03E-07	0.00E+00	2.03E-07	

Note: The TA-55-GEN-1 generator only operated for 1.0 hours during 2016.

Generator TA-55-GEN-2	January - June Emissions (tons)	July - December Emissions (tons)	Annual Emissions (tons)	Permit Limits
NOx	0.0008	0.0000	0.0008	No Source Specific Emission Limits for the CMRR Generators
SO_2	0.0001	0.0000	0.0001	
TSP	0.0001	0.0000	0.0001	
PM_{10}	0.0001	0.0000	0.0001	
CO	0.0002	0.0000	0.0002	
VOC	0.0001	0.0000	0.0001	
HAPs	2.64E-07	0.00E+00	2.64E-07	

Note: The TA-55-GEN-1 generator only operated for 1.3 hours during 2016.

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A1100 Internal Combustion- continued

Generator TA-55-GEN-3	January - June Emissions (tons)	July - December Emissions (tons)	Annual Emissions (tons)	Permit Limits
NOx	0.1037	0.1153	0.219	No Source Specific Emission Limits for the CMRR Generators
SO_2	0.0017	0.0019	0.004	
TSP	0.0032	0.0036	0.007	
PM_{10}	0.0032	0.0036	0.007	
CO	0.0227	0.0252	0.048	
VOC	0.0048	0.0036	0.008	
HAPs	1.89E-05	1.41E-05	3.30E-05	

A1200 Data Disintegrator

A1202 Emission Limits - Data Disintegrator

Unit No.	TSP tpy	PM10 tpy
TA-52-11	9.9	9.9

Reporting Requirement

A1207 A The permittee shall submit reports described in Section A109 and in accordance with B110.

A109 B A Semi-Annual Report of actual emissions from all permitted sources unless otherwise specified in this permit is due within 90 days following the end of every 6-month reporting period as defined at Condition A109.A. Emission estimates of criteria pollutants NOx, CO, SO2, VOC, TSP, PM10, and PM2.5 shall not include fugitive emissions. Emission estimates of HAPs shall include fugitive emissions. Emission estimates shall not include Insignificant or Trivial Activities, except that facility-wide emissions from all natural gas combustion sources and the Soil Vapor Extraction equipment at Material Disposal Area L shall be estimated. The reports shall include a comparison of actual emissions that occurred during the reporting period with the facility-wide allowable emission limits at Table 106.B.

Has this reporting requirement been met during this reporting period with a separate reporting submittal? Answer Yes or No below.

☐ **Yes** **Date report submitted:** **Tracking Number:**

☒ **No** **Provide comments and identify any supporting documentation as an attachment.**

Comments:

Data Disintegrator TA-52-11	January - June Emissions (tons)	July - December Emissions (tons)	Annual Emissions (tons)	Permit Limits (Condition A1202 A) (tons per year)
TSP	0.11	0.21	0.32	9.9
PM10	0.10	0.19	0.29	9.9

A1300 TA-3 Power Plant

A1302 Emission Limits - TA-3 Power Plant

All TA-3 Power Plant Boilers Combined (TA-33-1, TA-33-2, TA-33-3)						
NOx tpy	CO tpy	VOC tpy	SOx tpy	TSP tpy	PM_{10} tpy	PM2.5 tpy
31.5	21.5	2.8	4.9	4.7	4.4	4.2

TA-3 Power Plant Turbine (TA-3-22-CT-1)						
NOx tpy	CO tpy	VOC tpy	SOx tpy	TSP tpy	PM_{10} tpy	PM2.5 tpy
59.4	72.3	1.5	4.2	4.8	4.8	4.8

Reporting Requirement

A1307 A The permittee shall submit reports described in Section A109 and in accordance with B110.

A109 B A Semi-Annual Report of actual emissions from all permitted sources unless otherwise specified in this permit is due within 90 days following the end of every 6-month reporting period as defined at Condition A109.A. Emission estimates of criteria pollutants NOx, CO, SO2, VOC, TSP, PM10, and PM2.5 shall not include fugitive emissions. Emission estimates of HAPs shall include fugitive emissions. Emission estimates shall not include Insignificant or Trivial Activities, except that facility-wide emissions from all natural gas combustion sources and the Soil Vapor Extraction equipment at Material Disposal Area L shall be estimated. The reports shall include a comparison of actual emissions that occurred during the reporting period with the facility-wide allowable emission limits at Table 106.B.

Has this reporting requirement been met during this reporting period with a separate reporting submittal? Answer Yes or No below.

☐ **Yes** **Date report submitted:** **Tracking Number:**

☒ **No** **Provide comments and identify any supporting documentation as an attachment.**

Comments:

Boilers TA-3-22-1, TA-3-22-2, TA-3-22-3	January - June Emissions (tons)	July - December Emissions (tons)	Annual Emissions (tons)	Permit Limit (Condition A1302 A) (tons per year)
NOx	5.83	4.54	10.4	31.5
SO_2	0.06	0.05	0.1	4.9
TSP	0.76	0.59	1.4	4.7
PM_{10}	0.76	0.59	1.4	4.4
$PM_{2.5}$	0.76	0.59	1.4	4.2
CO	4.02	3.13	7.2	21.5
VOC	0.55	0.43	1.0	2.8
HAPs	0.19	0.15	0.3	No Source Limit

Combustion Turbine TA-3-22 CT-1	January - June Emissions (tons)	July - December Emissions (tons)	Annual Emissions (tons)	Permit Limit (Condition A1302 A) (tons per year)
NOx	1.438	0.177	1.62	59.4
SOx	0.100	0.012	0.11	4.2
TSP	0.194	0.024	0.22	4.8
PM_{10}	0.194	0.024	0.22	4.8
$PM_{2.5}$	0.194	0.024	0.22	4.8
CO	0.299	0.037	0.34	72.3
VOC	0.063	0.008	0.07	1.5
HAPs	0.039	0.005	0.04	No Source Limit

A1400 Open Burning

A1402 Emission Limits - Open Burning

Unit No.	Individual HAP[1] (tpy)	Total HAPs[1] (tpy)
Facility-Wide Open Burning	8.0	24.0

1 Individual and Total HAPs emitted by Open Burning are included in facility-wide HAP emission limits at Table 106.B.

Reporting Requirement

A1407 A The permittee shall submit reports described in Section A109 and in accordance with B110.

A109 B A Semi-Annual Report of actual emissions from all permitted sources unless otherwise specified in this permit is due within 90 days following the end of every 6-month reporting period as defined at Condition A109.A. Emission estimates of criteria pollutants NOx, CO, SO2, VOC, TSP, PM10, and PM2.5 shall not include fugitive emissions. Emission estimates of HAPs shall include fugitive emissions. Emission estimates shall not include Insignificant or Trivial Activities, except that facility-wide emissions from all natural gas combustion sources and the Soil Vapor Extraction equipment at Material Disposal Area L shall be estimated. The reports shall include a comparison of actual emissions that occurred during the reporting period with the facility-wide allowable emission limits at Table 106.B.

Has this reporting requirement been met during this reporting period with a separate reporting submittal? Answer Yes or No below.

☐ **Yes** **Date report submitted:** **Tracking Number:**

☒ **No** **Provide comments and identify any supporting documentation as an attachment.**

Comments:
No open burning activities took place during 2016.

A102 Facility Wide Emission Limits

Table 102.A: Total Potential Criteria Pollutant Emissions from Entire Facility

Pollutant	Emissions (tons per year)
Nitrogen Oxides (NOx)	245.0
Carbon Monoxide (CO)	225.0
Volatile Organic Carbons (VOC)	200.0
Sulfur Dioxide (SO_2)	150.0
Total Particulate Matter (TSP)	120.0
Particulate Mater less than 10 microns (PM_{10})	120.0
Particulate Mater less than 2.5 microns ($PM_{2.5}$)	120.0

Table 102.B: Total Potential HAPs that exceed 1.0 tons per year

Pollutant	Emissions (tons per year)
Individual HAP	8.0
Total HAPs	24.0

Reporting Requirement

A109 B A Semi-Annual Report of actual emissions from all permitted sources unless otherwise specified in this permit is due within 90 days following the end of every 6-month reporting period as defined at Condition A109.A. Emission estimates of criteria pollutants NOx, CO, SO2, VOC, TSP, PM10, and PM2.5 shall not include fugitive emissions. Emission estimates of HAPs shall include fugitive emissions. Emission estimates shall not include Insignificant or Trivial Activities, except that facility-wide emissions from all natural gas combustion sources shall be estimated. The reports shall include a comparison of actual emissions that occurred during the reporting period with the facility-wide allowable emission limits at Table 106.B.

Has this reporting requirement been met during this reporting period with a separate reporting submittal? Answer Yes or No below.

☐ **Yes** **Date report submitted:** **Tracking Number:**

☒ **No** **Provide comments and identify any supporting documentation as an attachment.**

Comments:

Pollutant	January - June Emissions (tons)	July - December Emissions (tons)	2016 Annual Emissions (tons)	Facility Wide Permit Limits (Condition A102) (tons per year)
Nitrogen Oxides	19.53	12.87	32.4	245
Carbon Monoxide	14.34	9.88	24.2	225
Volatile Organic Carbons	7.10	7.91	15.0	200
Sulfur Dioxide	0.25	0.13	0.4	150
Total Particulate Matter	2.03	1.47	3.5	120
Particulate Matter less than 10 microns	2.01	1.44	3.5	120
Particulate Matter less than 2.5 microns	0.96	0.62	1.6	120
Hazardous Air Pollutants	4.39	2.80	7.2	24