INL/EXT-21-61564

Idaho National Laboratory Annual Report for Permit to Construct P-2015.0023 for Calendar Year 2020

March 2021

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operated by Battelle Energy Alliance

Idaho National Laboratory

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Revision 0

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March 2021

Idaho National Laboratory
Idaho Falls, Idaho 83415

http://www.inl.gov

Prepared for the
U.S. Department of Energy
Office of Nuclear Energy
Under DOE Idaho Operations Office
Contract DE-AC07-05ID14517

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ABSTRACT

The U.S. Department of Energy (DOE) Idaho National Laboratory (INL) Site operates facilities with potential emissions criteria and hazardous air pollutants.

This report documents the calendar year 2020 criteria and hazardous air pollutants emissions and has been prepared to comply with permit to construct (PTC) P-2015.0023, Condition 2.9 and Idaho Administrative Procedures Act (IDAPA) 58.01.01.178, Standard Contents of Permits Establishing a Facility Emissions Cap (FEC). IDAPA 58.01.01.178.04 requires that all permits establishing a FEC shall include sufficient reporting to assure compliance with the permit establishing the FEC.

Total hazardous air pollutant (HAP) emissions for the year were 0.59 tons in aggregate and the maximum individual HAP was hydrochloric acid at 0.35 tons. Criteria pollutant emissions were 1.23 tons for sulfur dioxide, 40.96 tons for oxides of nitrogen, 11.7 tons of carbon monoxide, 3.01 tons of total particulate matter and 1.98 tons of volatile organic compounds (VOC).

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FIGURES

TABLES

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ACRONYMS

ATRC	Advanced Test Reactor Complex
AMWTP	Advanced Mixed Waste Treatment Project
BEA	Battelle Energy Alliance
CFA	Central Facilities Area
CO	carbon monoxide
DOE	Department of Energy
ICE	internal combustion engines
IDAPA	Idaho Administrative Procedures Act
INL	Idaho National Laboratory
INTEC	Idaho Nuclear Technology and Engineering Center (formerly ICPP)
HAP	hazardous air pollutant
MFC	Materials and Fuels Complex
NO_2	nitrogen dioxide
NRF	Naval Reactors Facility
PM	particulate matter
$PM_{2.5}$	particulate matter with an aerodynamic diameter less than or equal to a nominal 2.5 micrometers
PM_{10}	particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers
PTC	permit to construct
RWMC	Radioactive Waste Management Complex
SMC	Specific Manufacturing Capability
SO_2	sulfur dioxide
TAN	Test Area North
T/yr	tons per consecutive 12 calendar month period
VOC	volatile organic compounds

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1. INTRODUCTION

The U.S. Department of Energy (DOE) Idaho National Laboratory (INL) Site operates facilities with potential emissions of criteria air pollutants (CAP) and hazardous air pollutants (HAP). This report has been prepared to comply with permit to construct (PTC) P-2015.0023, Condition 2.9 and Idaho Administrative Procedures Act (IDAPA) 58.01.01.178.04, Recordkeeping.

This report documents the CAP and HAP emissions from the INL emission sources regulated by PTC P-2015.0023. In addition to annual emissions the report includes record summaries of the data used for determining the 12-month total facility-wide CAP and HAP emissions, and the 12-month rolling emissions totals. A table of emissions units with changes that occurred during the calendar year is also included.

2. INL OVERVIEW

INL is a science-based, applied engineering national laboratory dedicated to supporting DOE's missions in nuclear and energy research, science, and national defense. Battelle Energy Alliance, LLC, (BEA) is the maintenance and operations contractor and operates INL under contract with DOE. BEA conducts research, development, demonstration, and deployment activities. In addition to these research facilities, BEA manufactures armor under a contract with the Department of Defense. In addition to the primary mission of INL, environmental cleanup and remediation is also performed at INL by Fluor Idaho, LLC. The Naval Reactors Facility (NRF) is operated for the U.S. Naval Nuclear Propulsion Program by the Fluor Marine Propulsion, LLC. NRF prepares and packages spent naval nuclear fuel for dry storage and eventual transport to a permanent repository.

There are currently 7 major facility areas at the INL Site (Figure 1) that are potential sources of pollutant emissions that are included in this report. They are:

- Advanced Test Reactor Complex (ATRC)
- Central Facilities Area (CFA)
- Idaho Nuclear Technology and Engineering Center (INTEC)
- Materials and Fuels Complex (MFC)
- Naval Reactors Facility (NRF)
- Radioactive Waste Management Complex (RWMC) and the neighboring Advanced Mixed Waste Treatment Project (AMWTP)
- Test Area North (TAN) that includes the Specific Manufacturing Capability (SMC) facility.

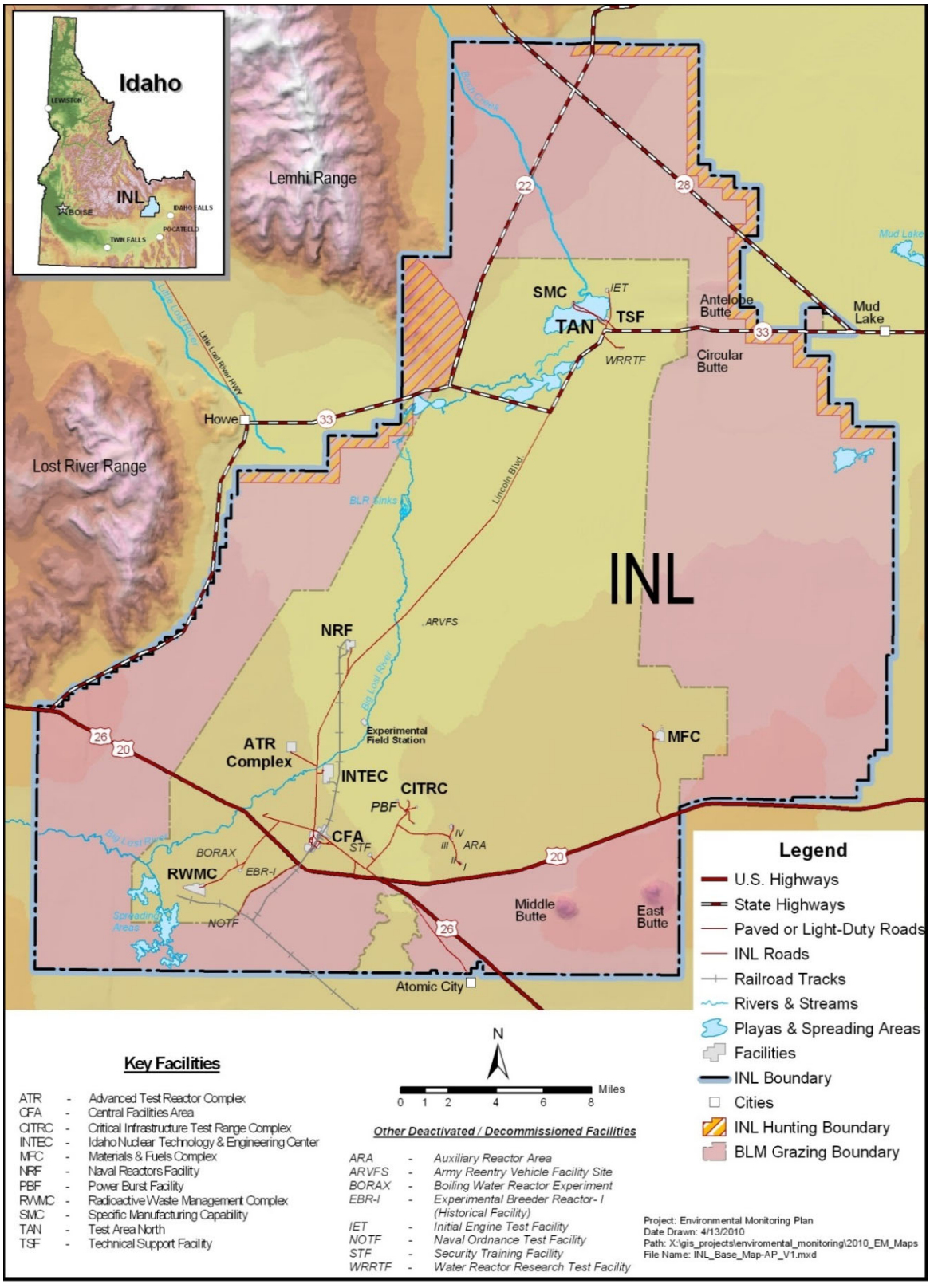

Figure 1 - Idaho National Laboratory Site Facilities

3. 2020 Criteria and Hazardous Air Pollutant Emissions

Facility-wide emissions from the US DOE–INL facility are listed in Table 1.

Table 1 - CY-2020 Criteria and Hazardous Air Pollution Emissions

$PM_{10}/PM_{2.5}$	SO_2	NOx	CO	VOC	Individual HAP		Aggregate HAP
T/yr	T/yr	T/yr	T/yr	T/yr	T/yr	HAP	T/yr
3.01	1.23	40.96	11.7	1.98	0.35	Hydrochloric Acid	0.59

4. Monthly and 12 Month Rolling Emissions Totals

Appendix A contains the monthly and 12-month rolling emissions totals generated under the criteria pollutant emissions calculation and HAP emissions calculation for the reporting period.

5. Data Records

Records of data used for determining emissions are contained in Appendix B and are summaries of records maintained at the individual facilities.

6. Methods, Equations and Emission Factors

No new emission methods, equations, emissions factors, or sources for emissions factors were used to determine the 12-month total facility-wide criteria pollutant and HAP emissions for the calendar year.

7. Emission Unit Changes

The following emission unit changes occurred in calendar year 2020.

SMC installed engine GEN-HP-960 to provide emergency power for the High-Performance Computing Center at SMC. See Table 2 below. All changes have been documented in the list of stationary sources that is required to be maintained by Permit Condition 2.4.

Table 2 - ICE Source Changes

Facility	Engine ID	Action	Installation Date	Removal Date	Purpose
SMC	GEN-HP-960	Installed	2019[a]	NA	New emergency engine.
MFC	ANL-798-008	Removed	1981	2019[b]	
MFC	ANL-768-028	Removed	1981	2019[c]	

[a] Engine was installed in 2019, but the first operation was not until January of 2020. This engine was not reported in the 2019 Annual Report.

[b] Engine was removed in November of 2019 but was not formally removed from tracking requirements until 2020. The removal of this source was not reported int the 2019 Annual Report.

[c] Engine is not able to be physically removed due to building constraints, however the engine is not in use. It has been removed from formal tracking requirements. The removal of this source has not been reported in previous annual reports.

Appendix C contains lists of stationary sources with changes annotated. These changes took place after the initial permit application and are maintained to comply with Permit Condition 2.4.

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Appendix A

Emissions

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Table A-1; 2020 Monthly Emissions

Hazardous Air Pollutants (Tons)	Jan-20	Feb-20	Mar-20	Apr-20	May-20	Jun-20	Jul-20	Aug-20	Sep-20	Oct-20	Nov-20	Dec-20
1,1,1-Trichloroethane	4.79E-04	4.79E-04	4.75E-04	4.69E-04	4.63E-04	4.61E-04	4.60E-04	4.59E-04	4.59E-04	4.66E-04	4.75E-04	4.81E-04
1,1,2,2-Tetrachloroethane	1.45E-05	1.44E-05	1.45E-05	1.44E-05	1.45E-05	1.44E-05	1.45E-05	1.46E-05	1.45E-05	1.44E-05	1.45E-05	1.44E-05
1,1,2-Trichloroethane	2.00E-05	2.00E-05	2.00E-05	2.00E-05	2.00E-05	2.00E-05	2.00E-05	2.01E-05	2.00E-05	2.00E-05	2.00E-05	2.00E-05
1,1-Dichloroethane	2.44E-05	2.44E-05	2.44E-05	2.44E-05	2.44E-05	2.44E-05	2.44E-05	2.44E-05	2.44E-05	2.44E-05	2.44E-05	2.44E-05
1,1-Dichloroethylene	1.84E-05	1.84E-05	1.84E-05	1.84E-05	1.84E-05	1.84E-05	1.84E-05	1.84E-05	1.84E-05	1.84E-05	1.84E-05	1.84E-05
1,2,4-Trichlorobenzene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dibromo-3-chloropropane	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloroethane	4.86E-05	4.86E-05	4.86E-05	4.86E-05	4.86E-05	4.86E-05	4.86E-05	4.86E-05	4.86E-05	4.86E-05	4.86E-05	4.86E-05
1,2-Dichloropropane	2.37E-05	2.37E-05	2.37E-05	2.37E-05	2.37E-05	2.37E-05	2.37E-05	2.38E-05	2.37E-05	2.37E-05	2.37E-05	2.37E-05
1,2-Diphenylhydrazine	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,3-Butadiene	1.76E-05	1.70E-05	1.75E-05	1.59E-05	2.04E-05	1.99E-05	1.93E-05	3.22E-05	2.13E-05	1.91E-05	1.83E-05	1.72E-05
1,3-Dichloropropene	2.23E-08	1.49E-08	3.84E-08	1.41E-08	2.30E-08	1.22E-08	2.28E-08	9.37E-08	3.12E-08	8.07E-09	2.01E-08	1.40E-08
1,4-Dichlorobenzene	2.65E-05	2.65E-05	2.65E-05	2.65E-05	2.65E-05	2.65E-05	2.65E-05	2.65E-05	2.65E-05	2.65E-05	2.65E-05	2.65E-05
1,4 Dioxane	2.09E-06	2.09E-06	2.09E-06	2.09E-06	2.09E-06	2.09E-06	2.09E-06	2.09E-06	2.09E-06	2.09E-06	2.09E-06	2.09E-06
2,2,4-Trimethyl pentane	2.37E-05	2.37E-05	2.37E-05	2.37E-05	2.37E-05	2.37E-05	2.37E-05	2.37E-05	2.37E-05	2.37E-05	2.37E-05	2.37E-05
2,4,5-Trichlorophenol	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,6-Trichlorophenol	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrophenol	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrotoluene	6.93E-05	6.93E-05	6.93E-05	6.93E-05	6.93E-05	6.93E-05	6.93E-05	6.93E-05	6.93E-05	6.93E-05	6.93E-05	6.93E-05
4-Nitrophenol	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acetaldehyde	3.33E-04	3.24E-04	3.15E-04	3.04E-04	4.29E-04	4.01E-04	4.05E-04	5.60E-04	3.94E-04	3.73E-04	3.44E-04	3.29E-04
Acetophenone	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acrolein	2.02E-04	1.99E-04	2.02E-04	1.96E-04	2.22E-04	2.11E-04	2.18E-04	2.42E-04	2.10E-04	2.04E-04	2.02E-04	1.99E-04
Acrylonitrile	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Aniline	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Antimony	1.57E-09	1.57E-09	1.57E-09	1.57E-09	1.57E-09	1.57E-09	1.57E-09	1.57E-09	1.57E-09	1.57E-09	1.57E-09	1.57E-09
Arsenic	1.08E-04	1.08E-04	9.92E-05	8.53E-05	7.13E-05	6.57E-05	6.47E-05	6.05E-05	6.26E-05	7.79E-05	9.82E-05	1.12E-04
Benzene	6.28E-04	5.77E-04	5.30E-04	5.23E-04	2.00E-03	1.19E-03	1.88E-03	8.35E-04	5.96E-04	6.94E-04	5.56E-04	5.58E-04
Benzidine	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Beryllium	1.06E-04	1.06E-04	9.96E-05	8.92E-05	7.86E-05	7.45E-05	7.37E-05	7.05E-05	7.21E-05	8.36E-05	9.89E-05	1.09E-04
bis(2-Chloroethyl)ether	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Ethylhexyl)phthalate	1.41E-08	1.41E-08	1.41E-08	1.41E-08	1.41E-08	1.41E-08	1.41E-08	1.41E-08	1.41E-08	1.41E-08	1.41E-08	1.41E-08
Bromoform	5.70E-08	5.70E-08	5.70E-08	5.70E-08	5.70E-08	5.70E-08	5.70E-08	5.70E-08	5.70E-08	5.70E-08	5.70E-08	5.70E-08
Bromomethane	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cadmium	4.39E-04	4.39E-04	4.33E-04	4.22E-04	4.12E-04	4.07E-04	4.07E-04	4.03E-04	4.05E-04	4.17E-04	4.32E-04	4.42E-04
Carbon disulfide	3.80E-05	3.80E-05	3.80E-05	3.80E-05	3.80E-05	3.80E-05	3.80E-05	3.80E-05	3.80E-05	3.80E-05	3.80E-05	3.80E-05
Carbon Tetrachloride	1.46E-03	1.46E-03	1.46E-03	1.46E-03	1.46E-03	1.46E-03	1.46E-03	1.46E-03	1.46E-03	1.46E-03	1.46E-03	1.46E-03

Table A-1 (cont.)

Hazardous Air Pollutants (Tons)	Jan-20	Feb-20	Mar-20	Apr-20	May-20	Jun-20	Jul-20	Aug-20	Sep-20	Oct-20	Nov-20	Dec-20
Carbonyl sulfide	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chlorobenzene	6.97E-05	6.97E-05	6.97E-05	6.97E-05	6.97E-05	6.97E-05	6.97E-05	6.98E-05	6.97E-05	6.97E-05	6.97E-05	6.97E-05
Chloroethane (ethyl chloride)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloroform	1.33E-04	1.33E-04	1.33E-04	1.33E-04	1.33E-04	1.33E-04	1.33E-04	1.33E-04	1.33E-04	1.33E-04	1.33E-04	1.33E-04
Chloromethane	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium	5.37E-05	5.33E-05	4.69E-05	3.64E-05	2.59E-05	2.18E-05	2.10E-05	1.78E-05	1.94E-05	3.09E-05	4.62E-05	5.62E-05
Cobalt	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cresols (m, p & o)	6.17E-05	6.17E-05	6.17E-05	6.17E-05	6.17E-05	6.17E-05	6.17E-05	6.17E-05	6.17E-05	6.17E-05	6.17E-05	6.17E-05
Cyanide	1.06E-04	1.06E-04	1.06E-04	1.06E-04	1.06E-04	1.06E-04	1.06E-04	1.06E-04	1.06E-04	1.06E-04	1.06E-04	1.06E-04
Dibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dimethyl phthalate	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Ethyl Benzene	9.25E-05	9.03E-05	8.31E-05	4.68E-05	4.52E-05	9.56E-05	4.44E-05	5.86E-05	2.25E-03	4.59E-05	5.14E-05	4.99E-05
Ethylene Dibromide	3.74E-08	2.50E-08	6.44E-08	2.37E-08	3.85E-08	2.05E-08	3.83E-08	1.57E-07	5.22E-08	1.35E-08	3.38E-08	2.35E-08
Formaldehyde	4.93E-03	4.88E-03	4.13E-03	2.84E-03	1.89E-03	1.32E-03	1.27E-03	1.16E-03	1.01E-03	2.30E-03	4.05E-03	5.20E-03
Hexachlorobenzene	1.84E-07	1.84E-07	1.84E-07	1.84E-07	1.84E-07	1.84E-07	1.84E-07	1.84E-07	1.84E-07	1.84E-07	1.84E-07	1.84E-07
Hexachlorobutadiene	7.00E-07	7.00E-07	7.00E-07	7.00E-07	7.00E-07	7.00E-07	7.00E-07	7.00E-07	7.00E-07	7.00E-07	7.00E-07	7.00E-07
Hexachlorocyclopentadiene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachloroethane	2.79E-05	2.79E-05	2.79E-05	2.79E-05	2.79E-05	2.79E-05	2.79E-05	2.79E-05	2.79E-05	2.79E-05	2.79E-05	2.79E-05
Hexane	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hydrochloric Acid	6.20E-02	5.05E-02	4.80E-02	3.90E-02	3.90E-02	4.35E-02	3.40E-02	3.40E-02	NA	NA	NA	NA
Isophorone	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lead	1.82E-03	1.82E-03	1.80E-03	1.77E-03	1.73E-03	1.72E-03	1.72E-03	1.71E-03	1.72E-03	1.75E-03	1.80E-03	1.83E-03
Manganese	7.47E-05	7.38E-05	6.11E-05	4.01E-05	1.91E-05	1.08E-05	9.29E-06	2.90E-06	6.09E-06	2.90E-05	5.96E-05	7.96E-05
Mercury	7.72E-05	7.67E-05	7.04E-05	5.99E-05	4.94E-05	4.52E-05	4.45E-05	4.13E-05	4.29E-05	5.43E-05	6.96E-05	7.96E-05
Methanol	1.73E-04	1.71E-04	1.77E-04	1.71E-04	1.73E-04	1.71E-04	1.73E-04	1.90E-04	1.75E-04	1.70E-04	1.72E-04	1.71E-04
Methyl isobutyl ketone	4.38E-06	4.38E-06	4.38E-06	4.38E-06	4.38E-06	4.38E-06	4.38E-06	4.38E-06	4.38E-06	4.38E-06	4.38E-06	4.38E-06
Methylene chloride	2.26E-04	2.26E-04	2.26E-04	2.26E-04	2.26E-04	2.26E-04	2.26E-04	2.26E-04	2.26E-04	2.26E-04	2.26E-04	2.26E-04
Naphthalene	1.44E-04	1.35E-04	1.04E-04	7.58E-05	2.87E-04	1.41E-04	2.56E-04	5.51E-05	3.41E-05	8.33E-05	1.04E-04	1.32E-04
Nickel	3.69E-04	3.69E-04	3.63E-04	3.52E-04	3.42E-04	3.37E-04	3.37E-04	3.33E-04	3.35E-04	3.47E-04	3.62E-04	3.72E-04
Nitrobenzene	7.68E-05	7.68E-05	7.68E-05	7.68E-05	7.68E-05	7.68E-05	7.68E-05	7.68E-05	7.68E-05	7.68E-05	7.68E-05	7.68E-05
N-Nitrosodimethylamine	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Polychlorinated biphenyls	3.13E-03	3.13E-03	3.13E-03	3.13E-03	3.13E-03	3.13E-03	3.13E-03	3.13E-03	3.13E-03	3.13E-03	3.13E-03	3.13E-03
Pentachloronitrobenzene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pentachlorophenol	3.80E-04	3.80E-04	3.80E-04	3.80E-04	3.80E-04	3.80E-04	3.80E-04	3.80E-04	3.80E-04	3.80E-04	3.80E-04	3.80E-04
Phenol	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phosphorus	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
POM/PAH	4.15E-04	3.98E-04	3.35E-04	2.52E-04	5.63E-04	3.09E-04	4.92E-04	1.61E-04	1.27E-04	2.47E-04	3.33E-04	4.15E-04
Selenium	2.55E-04	2.53E-04	2.21E-04	1.69E-04	1.16E-04	9.55E-05	9.17E-05	7.57E-05	8.37E-05	1.41E-04	2.17E-04	2.67E-04
Styrene	2.09E-08	1.40E-08	3.60E-08	1.32E-08	2.15E-08	1.14E-08	2.14E-08	8.78E-08	2.92E-08	7.54E-09	1.88E-08	1.31E-08
Tetrachloroethylene	5.88E-05	5.88E-05	5.88E-05	5.88E-05	5.88E-05	5.88E-05	5.88E-05	5.88E-05	5.88E-05	5.88E-05	5.88E-05	5.88E-05
Toluene	4.58E-03	4.54E-03	4.43E-03	4.27E-03	4.65E-03	4.32E-03	4.53E-03	4.13E-03	4.05E-03	4.26E-03	4.45E-03	4.58E-03

Table A-1 (cont.)

Trichloroethylene	1.08E-04	1.08E-04	1.08E-04	1.08E-04	1.08E-04	1.08E-04	1.08E-04	1.08E-04	1.08E-04	1.08E-04	1.08E-04	1.08E-04
Vinyl Chloride	2.94E-07	2.89E-07	3.03E-07	2.89E-07	2.94E-07	2.88E-07	2.94E-07	3.34E-07	2.99E-07	2.86E-07	2.92E-07	2.89E-07
Xylene	9.60E-04	9.37E-04	7.83E-04	6.64E-04	1.04E-03	8.96E-04	1.00E-03	8.03E-04	7.34E-04	7.11E-04	7.07E-04	6.78E-04
Total	8.44E-02	7.27E-02	6.89E-02	5.80E-02	5.98E-02	6.20E-02	5.37E-02	5.16E-02	1.90E-02	1.87E-02	2.08E-02	2.23E-02
Maximum Single HAP Emission	6.20E-02	5.05E-02	4.80E-02	3.90E-02	3.90E-02	4.35E-02	3.40E-02	3.40E-02	4.05E-03	4.26E-03	4.45E-03	5.20E-03
Maximum Single HAP Emitted	Hydrochloric Acid	Hydrochloric Acid	Hydrochloric Acid	Hydrochloric Acid	Hydrochloric Acid	Hydrochloric Acid	Hydrochloric Acid	Hydrochloric Acid	Toluene	Toluene	Toluene	Formaldehyde
Criteria Air Pollutants	**Jan-20**	**Feb-20**	**Mar-20**	**Apr-20**	**May-20**	**Jun-20**	**Jul-20**	**Aug-20**	**Sep-20**	**Oct-20**	**Nov-20**	**Dec-20**
SO2	0.20	0.09	0.08	0.07	0.10	0.09	0.08	0.14	0.09	0.09	0.09	0.10
NOx	3.74	2.98	2.40	1.89	7.52	3.97	6.74	2.40	1.41	2.37	2.52	3.03
CO	1.21	0.86	0.70	0.58	2.05	1.10	1.84	0.66	0.42	0.68	0.73	0.87
PM-10/2.5 & Condensable	0.43	0.35	0.29	0.20	0.27	0.16	0.21	0.15	0.09	0.19	0.29	0.37
VOCs, as VOCs	0.24	0.13	0.11	0.09	0.28	0.19	0.26	0.19	0.12	0.13	0.11	0.11

Note 1: NA indicates no emissions for Calendar Year 2020.

Table A-2; 12 Month Rolling Emissions

Hazardous Air Pollutant (Tons)	Jan-20	Feb-20	Mar-20	Apr-20	May-20	Jun-20	Jul-20	Aug-20	Sep-20	Oct-20	Nov-20	Dec-20
1,1,1-Trichloroethane	5.63E-03	5.63E-03	5.63E-03	5.63E-03	5.63E-03	5.63E-03	5.63E-03	5.63E-03	5.63E-03	5.62E-03	5.62E-03	5.63E-03
1,1,2,2-Tetrachloroethane	1.74E-04	1.74E-04	1.74E-04	1.74E-04	1.74E-04	1.74E-04	1.74E-04	1.74E-04	1.74E-04	1.74E-04	1.74E-04	1.74E-04
1,1,2-Trichloroethane	2.40E-04	2.40E-04	2.40E-04	2.40E-04	2.40E-04	2.40E-04	2.40E-04	2.40E-04	2.40E-04	2.40E-04	2.40E-04	2.40E-04
1,1-Dichloroethane	2.93E-04	2.93E-04	2.93E-04	2.93E-04	2.93E-04	2.93E-04	2.93E-04	2.93E-04	2.93E-04	2.93E-04	2.93E-04	2.93E-04
1,1-Dichloroethylene	2.21E-04	2.21E-04	2.21E-04	2.21E-04	2.21E-04	2.21E-04	2.21E-04	2.21E-04	2.21E-04	2.21E-04	2.21E-04	2.21E-04
1,2,4-Trichlorobenzene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dibromo-3-chloropropane	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloroethane	5.83E-04	5.83E-04	5.83E-04	5.83E-04	5.83E-04	5.83E-04	5.83E-04	5.83E-04	5.83E-04	5.83E-04	5.83E-04	5.83E-04
1,2-Dichloropropane	2.85E-04	2.85E-04	2.85E-04	2.85E-04	2.85E-04	2.85E-04	2.85E-04	2.85E-04	2.85E-04	2.85E-04	2.85E-04	2.85E-04
1,2-Diphenylhydrazine	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,3-Butadiene	2.38E-04	2.37E-04	2.36E-04	2.26E-04	2.28E-04	2.27E-04	2.25E-04	2.37E-04	2.39E-04	2.34E-04	2.35E-04	2.36E-04
1,3-Dichloropropene	3.85E-07	3.74E-07	3.66E-07	3.49E-07	3.33E-07	3.20E-07	3.21E-07	3.97E-07	4.06E-07	3.03E-07	3.13E-07	3.15E-07
1,4-Dichlorobenzene	3.18E-04	3.18E-04	3.18E-04	3.18E-04	3.18E-04	3.18E-04	3.18E-04	3.18E-04	3.18E-04	3.18E-04	3.18E-04	3.18E-04
1,4 Dioxane	2.51E-05	2.51E-05	2.51E-05	2.51E-05	2.51E-05	2.51E-05	2.51E-05	2.51E-05	2.51E-05	2.51E-05	2.51E-05	2.51E-05
2,2,4-Trimethyl pentane	2.84E-04	2.84E-04	2.84E-04	2.84E-04	2.84E-04	2.84E-04	2.84E-04	2.84E-04	2.84E-04	2.84E-04	2.84E-04	2.84E-04
2,4,5-Trichlorophenol	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,6-Trichlorophenol	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrophenol	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrotoluene	8.32E-04	8.32E-04	8.32E-04	8.32E-04	8.32E-04	8.32E-04	8.32E-04	8.32E-04	8.32E-04	8.32E-04	8.32E-04	8.32E-04
4-Nitrophenol	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acetaldehyde	4.44E-03	4.41E-03	4.40E-03	4.22E-03	4.32E-03	4.30E-03	4.29E-03	4.46E-03	4.51E-03	4.48E-03	4.50E-03	4.51E-03
Acetophenone	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acrolein	2.50E-03	2.49E-03	2.49E-03	2.47E-03	2.48E-03	2.48E-03	2.48E-03	2.52E-03	2.52E-03	2.50E-03	2.51E-03	2.51E-03
Acrylonitrile	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Aniline	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Antimony	1.88E-08	1.88E-08	1.88E-08	1.88E-08	1.88E-08	1.88E-08	1.88E-08	1.88E-08	1.88E-08	1.88E-08	1.88E-08	1.88E-08
Arsenic	1.03E-03	1.03E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.02E-03	1.01E-03	1.01E-03	1.01E-03
Benzene	8.68E-03	8.36E-03	8.17E-03	7.94E-03	9.41E-03	9.16E-03	1.03E-02	1.04E-02	1.05E-02	1.06E-02	1.05E-02	1.06E-02
Benzidine	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Beryllium	1.07E-03	1.07E-03	1.07E-03	1.07E-03	1.06E-03	1.06E-03	1.07E-03	1.07E-03	1.06E-03	1.06E-03	1.06E-03	1.06E-03
bis(2-Chloroethyl)ether	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Ethylhexyl)phthalate	1.69E-07	1.69E-07	1.69E-07	1.69E-07	1.69E-07	1.69E-07	1.69E-07	1.69E-07	1.69E-07	1.69E-07	1.69E-07	1.69E-07
Bromoform	6.84E-07	6.84E-07	6.84E-07	6.84E-07	6.84E-07	6.84E-07	6.84E-07	6.84E-07	6.84E-07	6.84E-07	6.84E-07	6.84E-07
Bromomethane	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cadmium	5.07E-03	5.07E-03	5.06E-03	5.06E-03	5.06E-03	5.06E-03	5.06E-03	5.06E-03	5.06E-03	5.05E-03	5.05E-03	5.06E-03

Table A-2 (cont.)

Hazardous Air Pollutant (Tons)	Jan-20	Feb-20	Mar-20	Apr-20	May-20	Jun-20	Jul-20	Aug-20	Sep-20	Oct-20	Nov-20	Dec-20
Carbon disulfide	4.56E-04	4.56E-04	4.56E-04	4.56E-04	4.56E-04	4.56E-04	4.56E-04	4.56E-04	4.56E-04	4.56E-04	4.56E-04	4.56E-04
Carbon Tetrachloride	1.75E-02	1.75E-02	1.75E-02	1.75E-02	1.75E-02	1.75E-02	1.75E-02	1.75E-02	1.75E-02	1.75E-02	1.75E-02	1.75E-02
Carbonyl sulfide	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chlorobenzene	8.37E-04	8.37E-04	8.37E-04	8.37E-04	8.37E-04	8.37E-04	8.37E-04	8.37E-04	8.37E-04	8.37E-04	8.37E-04	8.37E-04
Chloroethane	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloroform	1.60E-03	1.60E-03	1.60E-03	1.60E-03	1.60E-03	1.60E-03	1.60E-03	1.60E-03	1.60E-03	1.60E-03	1.60E-03	1.60E-03
Chloromethane	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium	4.39E-04	4.39E-04	4.35E-04	4.34E-04	4.31E-04	4.32E-04	4.34E-04	4.34E-04	4.32E-04	4.24E-04	4.25E-04	4.30E-04
Cobalt	1.13E-05	1.13E-05	1.13E-05	1.13E-05	1.13E-05	1.13E-05	1.13E-05	1.13E-05	NA	NA	NA	NA
Cresols (m, p & o)	7.40E-04	7.40E-04	7.40E-04	7.40E-04	7.40E-04	7.40E-04	7.40E-04	7.40E-04	7.40E-04	7.40E-04	7.40E-04	7.40E-04
Cyanide	1.28E-03	1.28E-03	1.28E-03	1.28E-03	1.28E-03	1.28E-03	1.28E-03	1.28E-03	1.28E-03	1.28E-03	1.28E-03	1.28E-03
Dibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dimethyl phthalate	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Ethyl Benzene	2.42E-03	2.33E-03	2.36E-03	2.22E-03	2.16E-03	2.17E-03	2.15E-03	2.16E-03	4.14E-03	4.07E-03	3.33E-03	2.95E-03
Ethylene Dibromide	6.46E-07	6.27E-07	6.15E-07	5.86E-07	5.59E-07	5.37E-07	5.38E-07	6.65E-07	6.82E-07	5.08E-07	5.25E-07	5.28E-07
Formaldehyde	3.59E-02	3.58E-02	3.54E-02	3.50E-02	3.49E-02	3.49E-02	3.52E-02	3.55E-02	3.54E-02	3.43E-02	3.44E-02	3.50E-02
Hexachlorobenzene	2.21E-06	2.21E-06	2.21E-06	2.21E-06	2.21E-06	2.21E-06	2.21E-06	2.21E-06	2.21E-06	2.21E-06	2.21E-06	2.21E-06
Hexachlorobutadiene	8.40E-06	8.40E-06	8.40E-06	8.40E-06	8.40E-06	8.40E-06	8.40E-06	8.40E-06	8.40E-06	8.40E-06	8.40E-06	8.40E-06
Hexachlorocyclopentadiene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachloroethane	3.35E-04	3.35E-04	3.35E-04	3.35E-04	3.35E-04	3.35E-04	3.35E-04	3.35E-04	3.35E-04	3.35E-04	3.35E-04	3.35E-04
Hexane	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hydrochloric Acid	5.41E-01	5.43E-01	5.48E-01	5.42E-01	5.38E-01	5.46E-01	5.41E-01	5.39E-01	5.04E-01	4.47E-01	4.04E-01	3.50E-01
Isophorone	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lead	2.12E-02	2.12E-02	2.12E-02	2.12E-02	2.12E-02	2.12E-02	2.12E-02	2.12E-02	2.12E-02	2.12E-02	2.12E-02	2.12E-02
Manganese	4.84E-04	4.84E-04	4.78E-04	4.75E-04	4.70E-04	4.71E-04	4.75E-04	4.75E-04	4.71E-04	4.56E-04	4.57E-04	4.66E-04
Mercury	7.20E-04	7.20E-04	7.17E-04	7.15E-04	7.13E-04	7.14E-04	7.15E-04	7.15E-04	7.14E-04	7.06E-04	7.07E-04	7.11E-04
Methanol	2.10E-03	2.10E-03	2.10E-03	2.10E-03	2.09E-03	2.09E-03	2.09E-03	2.11E-03	2.11E-03	2.08E-03	2.09E-03	2.09E-03
Methyl isobutyl ketone	7.98E-04	7.98E-04	7.98E-04	7.98E-04	7.61E-04	7.23E-04	7.23E-04	7.23E-04	6.83E-04	6.83E-04	6.83E-04	5.26E-05
Methylene chloride	2.72E-03	2.72E-03	2.72E-03	2.72E-03	2.71E-03	2.71E-03	2.71E-03	2.72E-03	2.72E-03	2.71E-03	2.71E-03	2.71E-03
Naphthalene	1.35E-03	1.28E-03	1.24E-03	1.19E-03	1.43E-03	1.39E-03	1.58E-03	1.59E-03	1.58E-03	1.56E-03	1.53E-03	1.55E-03
Nickel	4.23E-03	4.23E-03	4.22E-03	4.22E-03	4.22E-03	4.22E-03	4.22E-03	4.22E-03	4.22E-03	4.21E-03	4.21E-03	4.22E-03
Nitrobenzene	9.21E-04	9.21E-04	9.21E-04	9.21E-04	9.21E-04	9.21E-04	9.21E-04	9.21E-04	9.21E-04	9.21E-04	9.21E-04	9.21E-04
N-Nitrosodimethylamine	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Polychlorinated biphenyls	3.76E-02	3.76E-02	3.76E-02	3.76E-02	3.76E-02	3.76E-02	3.76E-02	3.76E-02	3.76E-02	3.76E-02	3.76E-02	3.76E-02
Pentachloronitrobenzene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pentachlorophenol	4.55E-03	4.55E-03	4.55E-03	4.55E-03	4.55E-03	4.55E-03	4.55E-03	4.55E-03	4.55E-03	4.55E-03	4.55E-03	4.55E-03
Phenol	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table A-2 (cont.)

Phosphorus	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
POM/PAH	3.61E-03	3.52E-03	3.45E-03	3.39E-03	3.76E-03	3.71E-03	4.03E-03	4.06E-03	4.06E-03	4.01E-03	4.00E-03	4.05E-03
Selenium	2.03E-03	2.03E-03	2.01E-03	2.01E-03	1.99E-03	2.00E-03	2.01E-03	2.01E-03	2.00E-03	1.96E-03	1.96E-03	1.98E-03
Styrene	3.61E-07	3.50E-07	3.43E-07	3.27E-07	3.12E-07	3.00E-07	3.01E-07	3.72E-07	3.81E-07	2.84E-07	2.93E-07	2.95E-07
Tetrachloroethylene	7.06E-04	7.06E-04	7.06E-04	7.06E-04	7.06E-04	7.06E-04	7.06E-04	7.06E-04	7.06E-04	7.06E-04	7.06E-04	7.06E-04
Toluene	5.42E-02	5.40E-02	5.39E-02	5.37E-02	5.42E-02	5.41E-02	5.46E-02	5.46E-02	5.42E-02	5.42E-02	5.29E-02	5.28E-02
Trichloroethylene	1.29E-03	1.29E-03	1.29E-03	1.29E-03	1.29E-03	1.29E-03	1.29E-03	1.29E-03	1.29E-03	1.29E-03	1.29E-03	1.29E-03
Vinyl Chloride	3.59E-06	3.58E-06	3.58E-06	3.57E-06	3.56E-06	3.55E-06	3.55E-06	3.60E-06	3.60E-06	3.54E-06	3.55E-06	3.55E-06
Xylene	1.85E-02	1.78E-02	1.79E-02	1.69E-02	1.70E-02	1.69E-02	1.70E-02	1.71E-02	1.62E-02	1.60E-02	1.11E-02	9.91E-03
Total	0.79	0.79	0.80	0.79	0.79	0.79	0.79	0.79	0.76	0.70	0.65	0.59
Maximum Single HAP Emission	0.54	0.54	0.55	0.54	0.54	0.55	0.54	0.54	0.50	0.45	0.40	0.35
Maximum Single HAP Emitted	Hydrochloric Acid	Hydrochloric Acid	Hydrochloric Acid	Hydrochloric Acid	Hydrochloric Acid	Hydrochloric Acid	Hydrochloric Acid	Hydrochloric Acid	Hydrochloric Acid	Hydrochloric Acid	Hydrochloric Acid	Hydrochloric Acid
Criteria Air Pollutant	**Jan-20**	**Feb-20**	**Mar-20**	**Apr-20**	**May-20**	**Jun-20**	**Jul-20**	**Aug-20**	**Sep-20**	**Oct-20**	**Nov-20**	**Dec-20**
SO2	2.31	2.21	2.10	1.94	1.86	1.76	1.65	1.61	1.52	1.41	1.32	1.23
NOx	41.27	39.46	37.98	36.31	39.86	38.36	42.55	42.76	42.46	41.82	41.10	40.96
CO	12.84	12.24	11.70	11.16	12.46	11.92	12.91	12.80	12.57	12.22	11.89	11.70
PM-10/2.5 & Condensable	3.70	3.60	3.48	3.33	3.38	3.29	3.32	3.31	3.24	3.11	3.04	3.01
VOCs	3.02	2.87	2.74	2.54	2.61	2.47	2.47	2.43	2.33	2.22	2.09	1.98

Note 1: NA indicates no emissions for Calendar Year 2020.

Appendix B

Data Records

INTENTIONALLY BLANK

Table B-1; 2020 ICE Operations Summary

Facility	Engine ID	Annual Duration (hr)	Annual Fuel Consumption (gal)	Annual Fuel Consumption (ft^3)
Engines ≤ 600 hp				
AMWTP	BGEN-232-001	5.7	96	
AMWTP	BGEN-RCE-001	0	0	
ATR	609-M-87	34	445	
ATR	619-10	7.1	185	
ATR	633-M-1	12.3	198	
ATR	680-M-1	7.1	79	
ATR	688-M-1	18	360	
ATR	688-M-2	11.1	222	
CFA	TAN-687	48.8	159	
CFA	CFA-609-001	12.4	103	
CFA	CFA-1603-001	71	710	
CFA	CFA-1603-002	83.9	839	
CFA	PER-638-004	43.7	437	
CFA	TAN-665-002	58.8	570	
CFA	X_TAN-610-002	0	0	
CFA	B8-601	18.1	52	
CFA	B27-601	19.1	55	
CFA	CFA-668-001	50	820	
CFA	ARA-632	6.9	51	
CFA	TAN-601	52.9	182	
CFA	CFA-609-002	37.1	160	
CFA	B27-607/609	92.1	1,372	
INTEC	MOT-YDA-202	6	27	
INTEC	P-UTI-608	24	422	
INTEC	P-UTI-673	64.7	1,239	
INTEC	P-UTI-672	48.4	927	
INTEC	COM-UTI-616	47	1,119	
RWMC	FW-ENG-4301	26.9	195	
RWMC	S-GEN-RE501	11.4	93	
RWMC	FW-ENG-3901	57	752	
RWMC	S-GEN-301	187.7	3,868	
RWMC	BA-CMP-T1101	45.3	66	
RWMC	S-GEN-T1401	0	0	
RWMC	S-GEN-1	3.53	67	
RWMC	HV-GEN-RE301	6.4	52	
RWMC	S-GEN-RE401	9.3	76	
RWMC	S-GEN-RE701	10.2	84	
RWMC	S-GEN-RE801	12.8	105	
RWMC	S-GEN-RE901	8.9	138	

Table B-1 (cont.)

Facility	Engine ID	Annual Duration (hr)	Annual Fuel Consumption (gal)	(ft^3)
MFC	X_ANL- 798--008	0	0	
MFC	ANL-720-018	104.9	294	
MFC	ANL-725	40.8	114	
MFC	ANL-754-003	0.2	1	
MFC	ANL-704-015	16.6	66	
MFC	ANL-785-016	3	15	
MFC	ANL-701-009	64	602	
MFC	ANL-774-001	15.5	140	
MFC	ANL-720-017	2	18	
MFC	X_ANL-768-028	0	0	
MFC	ANL-1728	44.9	467	
MFC	ANL-752A-001	49.9	998	
MFC	ANL-756	4	91	
MFC	ANL-792A-002	28	588	
MFC	ANL-707-002	28.5	599	
MFC	ANL-709-008	8	192	
MFC	ANL-709-016	8	192	
MFC	ANL-785-017	3.6	101	
MFC	ANL-787	2.6	30	
MFC	ANL-1740	73.9	887	
MFC	ANL-1729	5.2	71	
MFC	ANL-765	0.1	0	
MFC	ANL-765A	18.1	20	
MFC	ANL-733	191.7	767	
MFC	ANL-1743	0	0	
MFC	ANL-1750	0	0	
SMC	231	14.8	231	
		Total:	22,806.6	
Liquefied Natural Gas				
CFA	CFA-1611	8.3		15,023
			Total:	15,023
Propane				
AMWTP	S1-GEN-1001	7.4	81.4	
CFA	GE-B28601	16.2	136.1	
		Total:	217.5	
Engines > 600 hp				
AMWTP	WMF-734	7.5	295.5	
AMWTP	BGEN-812-001	9	243.9	
AMWTP	BGEN-812-002	3.2	141.4	
ATR	670-M-42*	NA*	0	

Table B-1 (cont.)

Facility	Engine ID	Annual Duration (hr)	Annual Fuel Consumption (gal)	Annual Fuel Consumption (ft^3)
ATR	670-M-43*	NA*	59207.9	
ATR	674-M-6*	NA*	3511.6	
ATR	786-M-1	27	3,323.7	
INTEC	GEN-WCS-002	23	2,742.3	
INTEC	GEN-WCS-004	21	2,503.8	
INTEC	GEN-WCS-006	22	2,623.1	
MFC	ANL-768-003	3.6	115.2	
NRF	NRF-686-016	17.6	1,226.7	
NRF	NRF-686-017	17.8	1,240.7	
NRF	NRF-686-018	15.3	1,066.4	
NRF	NRF-686-019	18.2	1,268.5	
SMC	GEN-HP-960	91.5	1,830.0	
SMC	TAN 679-012	34.1	763.8	
		Total:	82,104.6	

* Fuel is calculated from fuel storage tank measurements.

X_### - Engine previously removed

Table B-2; 2020 INL Boiler Summary

		Facility				
		CFA	FI		NRF	SMC
	Fuel Type	Distillate (gallons)	Distillate (gallons)	Propane (gallons)	Distillate (gallons)	Distillate (gallons)
Month	January	3,495.0	82,182.0	20,270.0	66,687.0	30,366.0
	February	3,513.0	82,532.0	19,620.0	63,902.0	30,456.0
	March	2,972.0	68,583.0	9,294.0	53,307.0	24,451.0
	April	1,441.0	50,511.0	10,608.0	26,830.0	19,336.0
	May	0.0	31,707.0	7,553.0	0.0	15,064.0
	June	0.0	26,277.0	3,984.0	0.0	220.0
	July	0.0	22,708.0	1,967.0	0.0	0.0
	August	0.0	7,085.0	1,308.0	0.0	0.0
	September	32.0	14,673.0	3,211.0	179.0	0.0
	October	1,264.0	33,878.0	6,605.0	26,893.0	8,909.0
	November	2,769.0	64,022.0	11,707.0	53,563.0	25,262.0
	December	3,235.0	90,804.0	17,160.0	66,949.0	33,518.0
	Total	18,721.0	574,962.0	113,287.0	358,310.0	187,582.0

Table B-3; Mobile Equipment Operation Hours

TSA-RE Monthly Mobile Equipment Hours of Operation														
Equip #	**Description**	**Fuel**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**
Q-020-008	Genie Manlift (Model Z45/25 DC)	Diesel	1.20	0.10	0.50	0.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Q-120-002-A	Gehl Dynalift	Diesel	0.00	0.07	0.00	0.00	0.33	2.00	3.00	0.00	2.11	2.89	3.20	3.00
Q-120-002-B	Gehl Dynalift	Diesel	0.80	0.15	0.00	0.00	0.05	0.00	0.00	0.00	0.00	0.00	0.20	0.00
Q-046-003	Gehl Dynalift	Diesel	0.00	2.13	0.07	0.15	0.00	1.25	1.00	0.00	0.55	0.05	0.10	1.80
Q-120-010	John Deer 27ZTS Mini Excavator	Diesel	0.00	0.00	0.05	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Q-042-002-B	Hyster Forklift (Model H50XM)	Propane	0.00	0.80	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Q-042-002-C	Hyster Forklift (Model H50XM)	Propane	8.70	2.00	2.50	2.50	1.50	2.70	8.10	7.30	15.70	5.10	0.00	0.00
Q-042-002-D	Hyster Forklift (Model H50XM)	Propane	6.80	3.70	4.10	4.10	2.00	3.40	0.00	0.20	0.00	0.00	0.00	0.00
Q-042-003-B	Hyster Forklift (Model H80XM)	Propane	0.10	0.00	0.25	0.25	0.00	0.00	0.00	0.00	0.00	4.90	14.10	6.90
Q-180-102	Caterpillar GP-45K Forklift	Propane	1.80	1.80	0.10	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

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Appendix C

Updated Equipment List

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Table C-1; Idaho National Laboratory Engine Information

Facility	Engine ID	Type[a]	New/ Existing	NSPS	Model Year	Installation Date	Max HP	Tier Cert	Ignition Type	Fuel Type[b]	Fuel Rate (gal/hr)[c]	Removed from Service	Included in Application	In Service at Issuance
AMWTP	S1-GEN 1001	ESG	E	NA	2001	2002	225	NA	SI	Propane	11	NA	Yes	Yes
AMWTP	BGEN-232-001	ESG	E	NA	2001	2002	380	NA	CI	Distillate	16.8	NA	Yes	Yes
AMWTP[f]	BGEN-RCE-001	AC	N	Subpart IIII	2008	2014	115	3	CI	Distillate	4.9	NA	No	Yes
AMWTP	BGEN-812-001	ESG	E	NA	2001	2002	755	NA	CI	Distillate	27.1	NA	Yes	Yes
AMWTP	BGEN-812-002	ESG	E	NA	2002	2002	900	NA	CI	Distillate	44.2	NA	Yes	Yes
AMWTP	WMF-734	ESG	E	NA	1987	2001	745	NA	CI	Distillate	39.4	NA	Yes	Yes
ATR Complex	609-M-87	EAC	E	NA	1988	1998	250	N/A	CI	Distillate	13.1	NA	Yes	Yes
ATR Complex	619-10	EFW	E	NA	-	1996	558	N/A	CI	Distillate	26	NA	Yes	Yes
ATR Complex	633-M-1	EFW	N	Subpart IIII	2009	2012	315	3	CI	Distillate	~16.1[d]	NA	Yes	Yes
ATR Complex	670-M-42	ESG	E	NA	1963	1967	2118	N/A	CI	Distillate	44 [e]	NA	Yes	Yes
ATR Complex	670-M-43	ESG	E	NA	1963	1967	2118	N/A	CI	Distillate	44 [e]	NA	Yes	Yes
ATR Complex	674-M-6	ESG	E	NA	1984	1985	2132	N/A	CI	Distillate	44 [e]	NA	Yes	Yes
ATR Complex	680-M-1	ESG	E	NA	1991	1991	250	N/A	CI	Distillate	11.1	NA	Yes	Yes
ATR Complex	688-M-1	EFW	E	NA	1999	2000	368	N/A	CI	Distillate	20	NA	Yes	Yes
ATR Complex	688-M-2	EFW	E	NA	1999	2000	368	N/A	CI	Distillate	20	NA	Yes	Yes
ATR Complex	786-M-1	ESG	E	NA	2001	2005	2593	1	CI	Distillate	123.1	NA	Yes	Yes
CFA	CFA-609-001	ESG	E	NA	1982	1987	166	NA	CI	Distillate	~8.33	NA	Yes	Yes
CFA	CFA-668-001	ESG	N	Subpart IIII	2010	2010	345	3	CI	Distillate	16.4	NA	Yes	Yes
CFA	CFA-1603-001	EFW	E	NA	1994	1994	196	NA	CI	Distillate	~10	NA	Yes	Yes
CFA	CFA-1603-002	EFW	E	NA	1994	1994	196	NA	CI	Distillate	~10	NA	Yes	Yes
CFA	CFA-1611	ESG	E	NA	1995	1996	220	NA	SI	LNG	1810 ft^3/hr	NA	Yes	Yes
CFA	PER-638-004	EFW	E	NA	1994	1994	196	NA	CI	Distillate	~10	NA	Yes	Yes
CFA	GE-B28-601	ESG	E	NA	1995	1996	61	NA	SI	Propane	8.42	NA	Yes	Yes
~~CFA[g]~~	~~TAN-601~~	~~ESG~~	~~E~~	NA	~~2006~~	~~2007~~	~~55~~	~~1~~	~~SI~~	~~Propane~~	~~6.11~~	2017	Yes	Yes
~~CFA~~	~~TAN-610-002~~	~~EFW~~	~~E~~	NA	~~1978~~	~~1980~~	~~310~~	~~NA~~	~~CI~~	~~Distillate~~	~~14~~	2019	Yes	Yes
~~CFA~~	~~TAN-665-002~~	~~EFW~~	~~E~~	NA	~~1979~~	~~1981~~	~~310~~	~~NA~~	~~CI~~	~~Distillate~~	~~14~~	2019	Yes	Yes
CFA	TAN-687	ESG	E	NA	1988	1990	66	NA	CI	Distillate	~3.26	NA	Yes	Yes

Table C-1 (cont.)

Facility	Engine ID	Type[a]	New/ Existing	NSPS	Model Year	Installation Date	Max HP	Tier Cert	Ignition Type	Fuel Type[b]	Fuel Rate (gal/hr)[c]	Removed from Service	Included in Application	In Service at Issuance
~~CFA~~	~~B8-601~~	~~ESG~~	~~E~~	NA	~~1984~~	~~1984~~	~~61~~	~~NA~~	~~CI~~	~~Distillate~~	~~3.12~~	2016	Yes	Yes
CFA	B8-601	ESG	N	Subpart IIII	2015	2016	69	3	CI	Distillate	2.88	NA	No	Yes
CFA	B27-601	ESG	N	Subpart IIII	2015	2016	69	3	CI	Distillate	2.88	NA	No	Yes
CFA	ARA-632	ESG	N	Subpart IIII	2015	2016	217	3	CI	Distillate	7.40	NA	No	Yes
CFA	CFA-609-002	ESG	N	Subpart IIII	2012	2016	99	3	CI	Distillate	4.30	NA	No	Yes
CFA	TAN-601	ESG	N	Subpart IIII	2015	2017	69	3	CI	Distillate	3.44	NA	No	Yes
CFA	B27-607/609	ESG	N	Subpart IIII	2017	2018	320	4F	CI	Distillate	14.90	NA	No	No
CFA	TAN-665-002	EFW	E	Subpart IIII	2018	2019	183	3	CI	Distillate	9.70	NA	No	No
INTEC	P-UTI-673	EFW	E	NA	1991	1991	370	NA	CI	Distillate	19.15	NA	Yes	Yes
INTEC	P-UTI-608	ESP	E	NA	1983	1984	340	NA	CI	Distillate	17.59	NA	Yes	Yes
INTEC	P-UTI-672	EFW	E	NA	1991	1991	370	NA	CI	Distillate	19.15	NA	Yes	Yes
INTEC	COM-UTI-616	EAC	E	NA	1997	1997	460	NA	CI	Distillate	23.8	NA	Yes	Yes
INTEC	GEN-WCS-002	ESG	E	NA	2000	2000	2304	1	CI	Distillate	119.23	NA	Yes	Yes
INTEC	GEN-WCS-004	ESG	E	NA	2000	2000	2304	1	CI	Distillate	119.23	NA	Yes	Yes
INTEC	GEN-WCS-006	ESG	E	NA	2000	2000	2304	1	CI	Distillate	119.23	NA	Yes	Yes
INTEC	MOT-YDA-202	ESP	E	NA	1988	1989	87	NA	CI	Distillate	4.5	NA	Yes	Yes
RWMC	FW-ENG-3901	EFW	E	NA	1980	1980	255	NA	CI	Distillate	13.2	NA	Yes	Yes
RWMC	FW-ENG-4301	EFW	N	Subpart IIII	2007	2007	140	3	CI	Distillate	7.24	NA	Yes	Yes
RWMC	S-GEN-301	ESG	N	Subpart IIII	2011	2011	398	3	CI	Distillate	20.61	NA	Yes	Yes
RWMC	S-GEN-1	ESG	E	NA	2002	2002	398	NA	CI	Distillate	19	NA	Yes	Yes
RWMC	S-GEN-RE501	ESG	N	Subpart IIII	2010	2010 – CERCLA 2012 –non-CERCLA	157	3	CI	Distillate	8.12	NA	Yes	Yes
RWMC	BA-CMP-T1101	EAC	N	Subpart IIII	2007	2008 – CERCLA 2012 –non-CERCLA	28	2	CI	Distillate	1.45	NA	Yes	Yes
RWMC	S-GEN-T1401	ESG	N	Subpart JJJJ	2010	2010	15	2	SI	Propane	NA	NA	Yes	Yes
RWMC	HV-GEN-RE301	ESG	N	Subpart IIII	2007	2007	364	3	CI	Distillate	8.2	NA	No	Yes
RWMC	S-GEN-RE401	ESG	N	Subpart IIII	2008	2008	364	3	CI	Distillate	8.2	NA	No	Yes

Table C-1 (cont.)

Facility	Engine ID	Type[a]	New/ Existing	NSPS	Model Year	Installation Date	Max HP	Tier Cert	Ignition Type	Fuel Type[b]	Fuel Rate (gal/hr)[c]	Removed from Service	Included in Application	In Service at Issuance
RWMC	S-GEN-RE701	ESG	N	Subpart IIII	2011	2011	364	3	CI	Distillate	8.2	NA	No	Yes
RWMC	S-GEN-RE801	ESG	N	Subpart IIII	2010	2010	364	3	CI	Distillate	8.2	NA	No	Yes
RWMC	S-GEN-RE901	ESG	N	Subpart IIII	2017	2017	234	3	CI	Distillate	15.5	NA	No	Yes
MFC	ANL-701-009	ESG	E	NA	1997	1997	143	NA	CI	Distillate	9.4	NA	Yes	Yes
MFC	ANL-704-015	ESG	E	NA	1986	1986	86	NA	CI	Distillate	4	NA	Yes	Yes
MFC	ANL-707-002	EFW	E	NA	1990	1990	460	NA	CI	Distillate	21	NA	Yes	Yes
MFC	ANL-709-008	ESG	E	NA	1993	1993	475	NA	CI	Distillate	24	NA	Yes	Yes
MFC	ANL-709-016	ESG	E	NA	1993	1993	475	NA	CI	Distillate	24	NA	Yes	Yes
MFC	ANL-720-17	ESG	E	NA	1981	1981	173	NA	CI	Distillate	~9.0	NA	Yes	Yes
MFC	ANL-720-18	ESG	E	NA	1980	1980	46	NA	CI	Distillate	~2.8	NA	Yes	Yes
MFC	ANL-725	ESG	E	NA	1998	1998	46	NA	CI	Distillate	2.8	NA	Yes	Yes
MFC	ANL-752A-001	ESG	E	NA	1989	1990	390	NA	CI	Distillate	~20	NA	Yes	Yes
MFC	ANL-754-003	EFW	E	NA	1960	~1960	77	NA	CI	Distillate	~4.0	NA	Yes	Yes
MFC	ANL-756	ESG	E	NA	2005	2006	450	NA	CI	Distillate	22.7	NA	Yes	Yes
MFC	ANL-768-003	ESG	E	NA	1950	~1950	741	NA	CI	Distillate	~32	NA	Yes	Yes
~~MFC~~	~~ANL-768-028~~	~~ESG~~	~~E~~	NA	~~1981~~	~~1981~~	~~173~~	~~NA~~	~~CI~~	~~Distillate~~	~~~9.0~~	2019	Yes	Yes
MFC	ANL- 774-001	ESG	E	NA	1973	1973	166	NA	CI	Distillate	~9.0	NA	Yes	Yes
MFC	ANL-785-016	ESG	E	NA	1975	1975	110	NA	CI	Distillate	5	NA	Yes	Yes
MFC	ANL-785-017	ESG	E	NA	1950	~1950	525	NA	CI	Distillate	~28	NA	Yes	Yes
MFC	ANL-787	ESG	E	NA	2008	2013	286	3	CI	Distillate	10.6	NA	Yes	Yes
MFC	ANL-792A-002	ESG	E	NA	2003	2004	450	NA	CI	Distillate	21	NA	Yes	Yes
~~MFC~~	~~ANL-798-008~~	~~ESG~~	~~E~~	NA	~~1981~~	~~1981~~	~~27~~	~~NA~~	~~CI~~	~~Distillate~~	~~1.7~~	2019	Yes	Yes
MFC	ANL-1728	ESG	N	Subpart IIII	2011	2013	230	2	CI	Distillate	10.4	NA	Yes	Yes
MFC	ANL-1740	EFW	N	Subpart IIII	2015	2015	237	3	CI	Distillate	12	NA	No	Yes
MFC	ANL-1729	ESG	N	Subpart IIII	2016	2017	235	3	CI	Distillate	13.6	NA	No	Yes
MFC	ANL-765	ESG	N	Subpart IIII	2011	2019	18.1	4	CI	Distillate	1.08	NA	No	No
MFC	ANL-765A	ESG	N	Subpart IIII	2011	2019	18.1	4	CI	Distillate	1.08	NA	No	No
MFC	ANL-733	EAC	N	Subpart IIII	2018	2019	65.1	4	CI	Distillate	4	NA	No	No

Table C-1 (cont.)

Facility	Engine ID	Type[a]	New/ Existing	NSPS	Model Year	Installation Date	Max HP	Tier Cert	Ignition Type	Fuel Type[b]	Fuel Rate (gal/hr)[c]	Removed from Service	Included in Application	In Service at Issuance
NRF	NRF-686-016	ESG	E	NA	1990	1991	1,443	NA	CI	Distillate	69.7	NA	Yes	Yes
NRF	NRF-686-017	ESG	E	NA	1990	1991	1,443	NA	CI	Distillate	69.7	NA	Yes	Yes
NRF	NRF-686-018	ESG	E	NA	1990	1991	1,443	NA	CI	Distillate	69.7	NA	Yes	Yes
NRF	NRF-686-019	ESG	E	NA	1990	1991	1,443	NA	CI	Distillate	69.7	NA	Yes	Yes
SMC	GEN-HP-960	ESG	N	Subpart IIII	2018	2019	1514	2	CI	Distillate	62.6	NA	No	No
SMC	TAN 675-010	ESG	E	NA	1984	1984	598	NA	CI	Distillate	31.2	NA	Yes	Yes
SMC	TAN 679-012	ESG	E	NA	1985	1986	890	NA	CI	Distillate	44.8	NA	Yes	Yes

Notes:

a. ESG = Emergency Standby Generator, EFW = Emergency Fire Water Pump, EAC = Emergency Air Compressor, ESP = Emergency Standby Pump, AC = Air Compressor, G = Generator, FW = Fire Water Pump.

b. Distillate = #1 or #2 Distillate Fuel Oil with 15 ppm maximum sulfur content, LNG = Liquefied Natural Gas

c. Maximum hourly fuel consumption rate

d. ~ signifies that the data was estimated.

e. The fuel rate listed is the actual average fuel rate for the Advanced Test Reactor Complex (ATR) ESG units 670-M-42, 670-M-43, and 674-M-6. These units do not have loads connected to them that are capable of using the maximum design fuel rates (106 gph, 106 gph, and 108.1 gph respectively).

f. Green highlighted entries indicate engines added after permit issuance.

g. Red highlighted entries with strike-through text entries indicate engines removed from service.

Table C-2; Idaho National Laboratory Boiler Information

Facility	Use of Boiler (%)		Boiler ID	Rated Capacity (MMBtu/hr)	Installation Date	Control Device	Fuel Type	Full Load Consumption Rate (gal/hr)	Actual Consumption Rate (gal/hr)	NSPS Applicability	Date Removed from Service	Included in Application	In Service at Issuance
	Space Heat	Process											
AMWTP	100	0	WMF-676-004A	12.55	6/7/2002	O_2 Trim	Propane	138.7	80.0	Dc	NA	Yes	Yes
AMWTP	100	0	WMF-676-005B	12.55	6/7/2002	O_2 Trim	Propane	138.7	80.0	Dc	NA	Yes	Yes
AMWTP	100	0	WMF-676-006C	12.55	6/7/2002	O_2 Trim	Propane	138.7	80.0	Dc	NA	Yes	Yes
AMWTP	100	0	WMF-676-007	0.5	1/29/2018	None	Propane	15.5	NA	NA	NA	No	No
CFA	100	0	CFA 608-001	1.5	1985	O_2 Trim	#2 Diesel	10.7	0.75	NA	NA	Yes	Yes
CFA	100	0	CFA 609-005	2.1	1987	O_2 Trim	#2 Diesel	15.0	5.8	NA	NA	Yes	Yes
INTEC	48	52	CPP-606-061	36.4	2000	O_2 Trim	#2 Diesel	216	32.3	Dc	NA	Yes	Yes
INTEC	48	52	CPP-606-062	36.4	2000	O_2 Trim	#2 Diesel	216	32.3	Dc	NA	Yes	Yes
INTEC	48	52	CPP-606-063	36.4	2000	O_2 Trim	#2 Diesel	216	32.3	Dc	NA	Yes	Yes
INTEC	48	52	CPP-606-064	36.4	2000	O_2 Trim	#2 Diesel	216	32.3	Dc	NA	Yes	Yes
~~NRF~~[b]	~~100~~	~~0~~	~~NRF-620-014 Boiler No.1~~	~~52.4~~	~~1961~~	~~O_2 Trim~~	~~#2 Diesel~~	~~470~~	~~107~~	~~NA~~	2018	Yes	Yes
NRF	100	0	Boiler No. 4	29.3	2016	O_2 Trim	#2 Diesel	209	209	Dc	NA	Yes	Yes
~~NRF~~	~~100~~	~~0~~	~~NRF-620-012 Boiler No.3~~	~~52.4~~	~~1961~~	~~O_2 Trim~~	~~#2 Diesel~~	~~470~~	~~97.2~~	~~NA~~	2018	Yes	Yes
NRF[a]	100	0	Boiler No. 5	29.3	2017	O_2 Trim	#2 Diesel	209	209	Dc	NA	No	No
SMC	90	10	TAN 679-067a	25	1987	O_2 Trim	#2 Diesel	167.5	35.4	NA	NA	Yes	Yes
SMC	90	10	TAN 679-068	25	1987	O_2 Trim	#2 Diesel	167.5	41.4	NA	NA	Yes	Yes

Notes: a. Green highlighted entries indicate boilers added after permit issuance.

b. Red highlighted entries with strike-through text entries indicate boilers removed from service.