DRAFT ENGINEERING EVALUATION (PUBLIC COPY)

Facility ID No. 20459
Tesla, Inc.
45500 Fremont Boulevard, CA 94538
Application Nos. 726496 and 751217

Background

Tesla, Inc. (Tesla) is applying for a modification for the following sources, and an Authority to Construct (A/C)/Permit to Operate (P/O) for the following abatement devices:

S-4045 **Aluminum Melting Furnace 1**
[redacted]
Maximum Operating Rate: [redacted] **Aluminum**
Abated by A-30200 Catalytic Filter

S-4046 **Aluminum Melting Furnace 2**
[redacted]
Maximum Operating Rate: [redacted] **Aluminum**
Abated by A-30201 Catalytic Filter

A-30200 **Catalytic Filter (Aluminum Melting Furnace 1)**
[redacted]
Maximum Flowrate: [redacted]

A-30201 **Catalytic Filter (Aluminum Melting Furnace 2)**
[redacted]
Maximum Flowrate: [redacted]

Tesla initially received an A/C for aluminum melting furnaces (S-4045 and S-4046) under Air District Application #30523 on October 13, 2020. On July 22, 2021, Tesla received an A/C under Air District Application #30914 to equip S-4045 and S-4046 with Hi-Temp ASHRAE filters (A-30193 and A-30194).

Tesla has further submitted Air District application #726496 to request an increase in metal toxic air contaminant (TAC) emission limits for S-4045 and S-4046. Tesla has also submitted Air District application #751217 to request for the installation of catalytic ceramic filter (CCF) systems A-30200 and A-30201 to control nitrogen oxide (NO_X) emissions from S-4045 and S-4046, respectively, and replace the function of the Hi-Temp ASHRAE filters. [redacted]. Tesla has also requested to remove the NO_x BACT avoidance limits of 9.0 pounds per day for S-4045 and S-4046.

This evaluation will discuss compliance of the proposed modifications with all applicable rules and regulations.

Emissions Calculations

Emissions from the aluminum melting furnaces occur from both natural gas combustion as well as from aluminum melting. Expected air pollutants from natural gas combustion are NO_X, carbon monoxide (CO), sulfur dioxide (SO_2), precursor organic compounds (POC), non-precursor organic compounds (NPOC), particulate matter with aerodynamic diameters less than 10 microns (PM_{10}) and less than 2.5 microns ($PM_{2.5}$), and TACs. Expected air pollutants from metal melting include PM_{10}, $PM_{2.5}$, and metal TACs.

The operating parameters for each melting furnace (S-4045 and S-4046) are listed in Table 1.

Table 1: Furnace Operating Assumptions Used in Emissions Estimates

Natural Gas Gross Heating Value	1,020	British thermal units/standard cubic foot
Number of Burners in Melting Section	[redacted]	Burners
Maximum Annual Operating Hours	8,760	Hours/year
Melting Section Rating per Burner	[redacted]	Million Btu/hour (MMBtu/hour)
Total Rating (Melting Section) per Furnace	[redacted]	MMBtu/hour
Number of Burners in Holding Bath Section	[redacted]	Burners
Holding Bath Section Rating per Burner	[redacted]	MMBtu/hour
Total Rating (Holding Bath Section) per Furnace	[redacted]	MMBtu/hour
Maximum Firing Hourly Rating Per Furnace	[redacted]	MMBtu/hour
Maximum Annual Firing Rate Per Furnace	[redacted]	MMBtu/12-months
Maximum Annual Firing Rate Combined (both Furnaces)	[redacted]	MMBtu/12-months
Maximum Hourly Aluminum Charge Rate per Furnace	[redacted]	pounds/hour ([redacted] tons/hour)
Maximum Annual Aluminum Charge Rate per Furnace	[redacted]	tons/12-months
Maximum Annual Hours of Bypass per Furnace	220	Hours/year

Emission factors for combustion of natural gas are provided in EPA AP-42 Chapter 1.4. Emission factors for metal melting furnace are provided in AP-42 (Fifth Edition, Volume I, Table: 12.8-2) Chapter 12.8 for Secondary Aluminum Operation.

Emissions factor for NO_x emissions were determined based on a Best Available Control Technology (BACT) analysis for these sources (see Appendix A) for abated emissions and vendor specifications for the furnaces sources for unabated emissions. Emissions for CO are based on vendor specifications for the melting furnaces. Emissions for particulate matter (PM) are taken from source tests performed. An unabated emission factor was determined based on the minimum required abatement efficiency of 97% for the existing furnace filter boxes A-30193 and A-30194, which will be replaced with A-30200 and A-30201 with equivalent filtration efficiency.

In addition, Tesla has provided that up to 220 hours of unabated emissions per year are expected from operation of the furnaces due to furnace charging. As a result, an unabated NO_x emission factor is taken from the provided vendor specifications. Maximum hourly and daily emissions will depend upon if the furnaces are operated normally or whether the abatement device is bypassed. For the purpose of determining the maximum potential to emit from these sources, maximum hourly emissions assume one full hour of bypass emissions.

Table 2 summarizes emission factors used to estimate criteria air pollutant emissions from the melting furnaces (S-4045 and S-4046).

Table 2: Criteria Air Pollutant Emission Factors for Melting Furnaces

Pollutant	Emission Factor		Emission Factor Data Source
	Value	Units	
VOC	5.5	lb/MMscf	EPA AP-42 Chapter 1.4, Table 1.4-2
PM_{10}[(1)]	7.6	lb/MMscf	EPA AP-42 Chapter 1.4, Table 1.4-2
PM_{10}[(2)]	[redacted]	lb/ton	Derived from Emission Compliance Tests (Unabated)
$PM_{2.5}$[(2)]	[redacted]	lb/ton	Derived from Emission Compliance Tests (Unabated)
SO_2	3.0	lb/MMscf	EPA AP-42 Chapter 1.4, adjusted for California natural gas[(3)]
NO_x	0.045	lb/MMBtu	Determined as BACT (Abated)
NO_x	[redacted]	lb/MMBtu	Vendor Specifications (Unabated)
CO	[redacted]	lb/MMBtu	Vendor Specifications

Notes:
1. Emissions are from combustion of natural gas alone.
2. Emissions are from combustion of natural gas and metal melting.
3. Section C of Gas Rule 21 states that maximum total sulfur content in California natural gas may be one grain per 100 scf.

Using the operating assumptions from Table 1 and the emission factors in Table 2, criteria air pollutant emissions from the melting furnaces (S-4045 and S-4046) were estimated and are shown in Table 3.

Table 3: Criteria Air Pollutant Emissions from Melting Furnaces

Pollutant	Per Furnace			Both Furnaces	
	lb/day	lb/year	ton/year	lb/year	ton/year
VOC	1.5	548	0.274	1,097	0.548
PM_{10}[(1)]	2.1	758	0.379	1,516	0.758
PM_{10}[(2)]	116.4	2,559	1.280	5,117	2.559
$PM_{2.5}$[(2)]	116.4	2,559	1.280	5,117	2.559
SO_2	0.2	60	0.030	120	0.060
NO_X	18.4	6,712	3.356	13,424	6.712
CO	16.4	6,001	3.000	12,002	6.001

Notes:
1. Emissions are from combustion of natural gas alone.
2. Emissions are from combustion of natural gas and metal melting.

As shown in Table 3, emissions of NO_X, CO, and PM are estimated to exceed 10 pounds per day. Emissions of NO_x trigger BACT and are required to meet what is technologically feasible and achieved-in-practice.

Additionally, so as not to trigger Best Available Control Technology (BACT) requirements per Section 2-2-301, maximum daily emissions of PM and CO will be limited by a permit condition to 9.0 pounds per day. Revised emission estimates for these three pollutants to comply with BACT or BACT avoidance are shown below. Daily emissions assume up to one hour per day of bypass, which is the maximum allowable to meet a PM_{10} BACT avoidance limit.

Table 4: Revised NO_X, CO, and PM_{10} Emissions Estimates from Melting Furnaces

Pollutant	Per Furnace			Both Furnaces	
	lb/day	lb/year	ton/year	lb/year	ton/year
PM_{10}	9.0	3,285	1.643	6,570	3.285
NOx	12.8	4,641	2.321	9,282	4.641
CO	9.0	3,285	1.643	6,570	3.285

Health Risk Assessment (HRA)

The TAC emissions from this project are summarized in **Tables 6, 7, and 8**. TAC emission factors for all pollutant are taken from the provided source tests for all sources. As with PM, unabated emission rates for metal TACs were determined using the required abatement efficiency of 97% for the existing furnace filter boxes. Emission factors for benzene, formaldehyde, and toluene are taken from AP-42, Chapter 1 for general natural gas combustion.

Due to the use of ammonia in catalytic reduction of NO_x emissions, a maximum ammonia slip of 10 ppmv @15% O_2 was assumed, in line with the Air District's Permit Handbook.

There are eight (8) related applications within the past five years – a list of related applications can be found in **Table 5**. Since the emissions from the project for arsenic, hexavalent chromium, and nickel exceed one or more toxic trigger levels outlined in Regulation 2, Rule 5, an HRA is required.

Table 5: Related Applications to Applications #726496 and #751217

Application Number	Application Summary
729824	South Paint Shop Oven Modifications
32005	Alteration to 3 Wet Oven TOs and E-Coat TO
31592	Oxy-Fuel Burner
31197	Tanks at General Assembly 4
30956	North Paint Shop Mix Tanks
30946	P2 Mod/Pack Line
30914	Melting Furnace Abatement System
30584	Module Line, Pack Line & Wipe Cleaning

Table 6: TAC Emissions from Each Melting Furnace and Each Bypass System

Pollutant	Each Furnace		Each Bypass System	
	Hourly (lb/hour)	**Annual** (lb/year)	**Hourly** (lb/hour)	**Annual** (lb/year)
Arsenic	5.01E-06	4.28E-02	1.67E-04	3.68E-02
Beryllium	9.42E-08	8.04E-04	3.14E-06	6.91E-04
Cadmium	1.13E-06	9.63E-03	3.76E-05	8.27E-03
Hexavalent Chromium	2.38E-06	2.03E-02	7.92E-05	1.74E-02
Cobalt	1.11E-04	9.45E-01	3.69E-03	8.11E-01
Copper	5.25E-04	4.49E+00	1.75E-02	3.85E+00
Lead	8.15E-06	6.96E-02	2.72E-04	5.98E-02
Manganese	4.21E-03	3.59E+01	1.40E-01	3.09E+01
Mercury	2.49E-06	2.12E-02	8.29E-05	1.82E-02
Nickel	2.09E-05	1.79E-01	6.97E-04	1.53E-01

Table 6: TAC Emissions from Each Melting Furnace and Each Bypass System

Pollutant	Each Furnace		Each Bypass System	
	Hourly (lb/hour)	**Annual** (lb/year)	**Hourly** (lb/hour)	**Annual** (lb/year)
Selenium	7.09E-06	6.06E-02	2.36E-04	5.20E-02
Silica	5.82E-02	4.97E+02	1.94E+00	4.27E+02
Vanadium	2.61E-06	2.23E-02	8.71E-05	1.92E-02
Benzene	2.39E-05	2.04E-01	2.39E-05	5.26E-03
Formaldehyde	8.54E-04	7.29E+00	8.54E-04	1.88E-01
Toluene	3.87E-05	3.30E-01	3.90E-05	8.59E-03
Ammonia	3.18E-01	2.79E+03	-	-

Table 7: Hourly TAC Emissions for Related Application Sources

Toxic Air Contaminant	TAC Emissions (lb/hr)							
	S-4052	**S-4054**	**S-4055**	**S-4056 through S-4062**	**S-4081**	**S-4039**	**A-30198**	**S-1002**
Benzene	--	--	--	--	--	2.02E-05	2.94E-05	2.13E-05
Formaldehyde	--	--	--	1.70E-05	--	7.21E-04	1.05E-03	7.60E-04
Toluene	--	7.20E-03	3.60E-01	--	--	3.27E-05	4.76E-05	3.45E-05
Isopropyl Alcohol	3.90E-01	--	--	4.90E-04	4.10E-03	2.63E+01	--	--
Ethylene Glycol Butyl Ether	--	--	--	1.28E-04	--	--	--	--
Methyl Ethyl Ketone	--	1.30E-02	--	--	--	--	--	--
Xylene	--	9.30E-03	--	--	--	--	--	--

Table 8: Annual TAC Emissions for Related Application Sources

Toxic Air Contaminant	TAC Emissions (lb/year)							
	S-4052	**S-4054**	**S-4055**	**S-4056 through S-4062**	**S-4081**	**S-4039**	**A-30198**	**S-1002**
Benzene	--	6.30E+01	3.20E+03	--	--	2.86E-01	4.17E-01	3.02E-01
Formaldehyde	--	--	--	--	--	1.77E-01	2.58E-01	1.86E-01
Toluene	--	--	--	1.48E-01	--	6.31E+00	9.20E+00	6.66E+00
Isopropyl Alcohol	3.42E+03	--	--	4.30E+00	3.60E+01	1.29E+04	--	--
Naphthalene	--	--	--	--	--	1.25E+02	--	--
Propylene Glycol Monomethyl Ether	--	--	--	--	--	1.21E+03	--	--
Ethylbenzene	--	--	--	3.30E-02	--	--	--	--
Ethylene Glycol Butyl Ether	--	--	--	--	--	--	--	--
Methyl Ethyl Ketone	--	--	--	--	--	--	--	--
Xylene	--	8.10E+01	--	--	--	--	--	--

HRA Results

Results from this HRA indicate that the maximum project cancer risk is estimated at 1.4 in a million, the maximum project chronic hazard index (HI) is estimated at 0.020, and the maximum project acute HI is estimated at 0.28. See HRA Report for details.

Table 9. Risk Screening Results

Maximally Exposed Receptor	Maximum Cancer Risk (chance in a million)	Maximum Chronic Hazard Index	Maximum Acute Hazard Index
Resident	1.4	0.020	N/A
Off-site worker	0.13	0.014	N/A
Student	0.14	0.014	N/A
Point of Max Impact	N/A	N/A	0.28

Project Risk Limits

Since the estimate project cancer risk does not exceed 10 in a million and neither the chronic nor acute HIs exceed 1.0, the proposed project complies with the District's Regulation 2-5-302 project risk requirements as defined in Regulation 2-1-243.

Best Available Control Technology for Toxics (TBACT)

In accordance with Regulation 2-5-301, TBACT is triggered for any new or modified source where the source cancer risk is a cancer risk greater than 1.0 in a million and/or a chronic hazard risk greater than 0.20. Sources S-4045 and S-4046 contribute a maximum cancer risk of 0.49 and 0.53 in a million, respectively, and the overall project has a maximum chronic hazard risk below 0.20. Therefore, TBACT is not required.

Best Available Control Technology (BACT)

In accordance with Regulation 2-2-301, BACT is triggered for any new or modified source with the potential to emit 10.0 pounds or more per highest day of POC, NPOC, NO_x, CO, SO_2, PM_{10}, or $PM_{2.5}$.

Tables 3 and 4 summarize the criteria air pollutant daily potentials to emit for S-4045 and S-4046. As seen in Table 3, emissions of NO_x, CO, and PM_{10} exceed 10 pounds or more per highest day. Tesla has requested BACT avoidance limits of 9.0 lb/day for CO and PM_{10}; therefore, BACT is only required for NO_x for these sources. A detailed review of Best Available Control Technologies for S-4045 and S-4046 can be found in **Appendix A**.

BACT for NO_x is determined to be 37 ppmv @3% O_2, or 0.045 lb NO_x/MMBtu. Tesla will be held to BACT for these sources via NO_x emission limits.

Offsets

Offsets must be provided for any new or modified source at a facility that will have the potential to emit more than 10 tons per year of NO_x or POC, as specified in Regulation 2-2-302; or more than 100 tons per year of $PM_{2.5}$, PM_{10}, or SO_2, as specified in Regulation 2-2-303.

Table 10. Potential to Emit and Offset Requirements

Pollutant	Existing Annual Emissions (tons/year)	Application Annual Emissions (tons/year)	Facility Annual Emissions (tons/year)	Offset Requirement (tons/year)	Offsets Required
NO_x	77.289	1.356	78.645	>10	Yes
POC	158.296	0.000	158.296	>10	No

CO	29.228	0.000	29.228	-	No
PM_{10}	29.228	2.471	31.699	≥100	No
$PM_{2.5}$	5.120	2.471	7.591	≥100	No
SO_2	0.837	0.000	0.837	≥100	No

As shown in Table 10, the proposed project will result in an increase of 1.356 ton/year for NO_x and 2.471 ton/year of PM_{10} and $PM_{2.5}$. Because Tesla's Potential to Emit for NO_x is greater than 10 tons per year, per Regulation 2-2-302, offsets are required for this application. Because Tesla's Potential to Emit for NO_x is greater than 35 tons per year, offsets for NO_x will be required at a ratio of 1:1.15:

NOx Offsets required: (1.356 x 1.15) = 1.560 tons per year

Because Tesla's Potential to Emit for PM_{10} and $PM_{2.5}$ are below 100 tons per year, and no other criteria pollutant has an increase in emissions from this project, offsets are not required for these pollutants.

Prevention of Significant Deterioration (PSD)

Per Regulation 2, Rule 2, a PSD project is defined as a project which occurs at a facility which has the potential to emit 100 tons or more per year of any regulated NSR Pollutant, which results in significant emissions of any PSD pollutant from the new or modified source(s), and which the net emission increase constitutes significant emissions of any PSD pollutant.

Emissions from the melting furnaces can be found in Tables 3 and 4. Emissions from these sources do not meet the level of significance provided in Regulation 2, Rule 2-2-227. Therefore, PSD requirements are not triggered.

Statement of Compliance

The owner/operator is expected to comply with all applicable requirements. Key requirements are listed below:

District Rules

Regulation 2, Rule 1 (General Requirements)

Per Regulation 2, Rule 2-1-234, a modification to a source is "any physical change, change in method of operation, change in throughput production, or similar change at an existing source" which would result in an increase in that source's Potential to Emit, or any increase in actual emissions baseline for increases which are classified as major modifications.

Tesla will be held to emission concentration limits, alongside daily and annual emission limits, for both NO_x and CO. However, due to the highly variable nature of the aluminum melting operation in both processing rate and oxygen concentration, verification of compliance via source testing is insufficient to determine if the sources would have an increase in Potential to Emit.

Therefore, sources S-4045 and S-4046 will be required to be monitored via a Continuous Emission Monitoring System (CEMS) and emissions will be required to be verified via a Data Acquisition and Handling System (DAHS). Tesla will be required to comply with all requirements, procedures, maintenance, and recordkeeping outlined under the Air District's Manual of Procedures (MOP), Volume V – Continuous Emission Monitoring Policy and Procedures.

Regulation 2, Rule 6 (Major Facility Review)

This regulation applies to major facilities, Phase II acid rain facilities, and any facility in a source category designated by the Administrator of the U.S. Environmental Protection Agency (EPA) in rulemaking as requiring a Title V permit.

Tesla is a major facility and currently holds a Major Facility Review (MFR) operating permit; also referred to as a Title V operating permit. The addition and replacement of two abatement devices will require a revision to the federally enforceable conditions of a major facility. Pursuant to Regulation 2-6-215, this project is a minor modification because the project is neither a significant revision as defined in Regulation 2-6-226 or an administrative permit amendment as defined in Regulation 2-6-201.

Tesla has submitted required MFR permit forms and documents for the minor revision pursuant to Regulation 2-6-406. Revision to the facility's Title V permit can be found in Appendix D.

Regulation 6, Rule 1 (Particulate Matter – General Requirements)
S-4045 and S-4046 are subject to District Regulation 6, Rule 1 (Particulate Matter- General Requirements), and are expected to comply with Sections 301, 302, 310 and 311. Tesla is expected to comply with the opacity and Ringelmann requirements of Regulation 6-1-301 and 302.

Section 6-1-310.1 limits total suspended particulate (TSP) emissions to 343 mg/dscf (or 0.15 gr/dscf). The facility will comply with this standard by meeting a volumetric concentration limit of 0.024 gr/dscf per furnace.

Section 6-1-311 limits the Total Suspended Particulates (TSP) weight limits. The potential to emit TSP for S-4045 and S-4046 is 4.85 lb/hour, and the maximum process rate of aluminum is [redacted] lb/hour.

Comparing with Regulation 6-1-311, Table 6-1-311.1 the TSP emission limit between [redacted] As shown above, the estimated TSP emission rate of 4.85 lb/hour will comply with Section 6-1-311 requirements.

Regulation 9, Rule 1 (Inorganic Gaseous Pollutant – Sulfur Dioxide)
Regulation 9, Rule 9-1-302 limits the SO_2 concentration at an exhaust point to 300 parts per million by volume (ppmv). S-4045 and S-4046 are expected to emit less than 300 ppm of SO_2 from the combustion of natural gas. Therefore, the sources are expected to comply with the requirements of 9-1-302.

Regulation 9, Rule 7 (Inorganic Gaseous Pollutant – Nitrogen Oxides and Carbon Monoxide from Industrial, Institutional, and Commercial Boilers, Steam Generators, and Process Heaters)
Regulation 9, Rule 9-7 limits emissions of NO_x and CO from boilers, generators, and process heaters. Because S-4045 and S-4046 are not commercial boilers, steam generators, or process heaters, Regulation 9, Rule 7 does not apply.

Regulation 11, Rule 15 (Airborne Toxic Control Measures for Emissions of Toxic Metals from Non-Ferrous Metal Melting)
S-4045 and S-4046 are subject to and expected to comply with the Metal or Alloy Purity exemption requirements of Section (c) (2) of Regulation 11, Rule 15 (Airborne Toxic Control Measure for Emissions of Toxic Metals from Non-Ferrous Metal Melting). A permit condition limiting cadmium content to no more than 0.004 percent and arsenic content to no more than 0.002 percent remains a requirement for these sources.

Regulation 12, Rule 13 (Miscellaneous Standards of Performance – Foundry and Forging Operations)
Regulation 12, Rule 13 applies to any facility that has an Air District-permitted furnace or oven at a foundry or forge that processes at least one ton of metal per rolling twelve-month period. The proposed project would meet the definition of "foundry operations" within Section 12-13-213, and more than one ton of metal per twelve-month period will be processed. As such, the melting furnaces are subject to Regulation 12, Rule 13.

Tesla has previously stated that S-4045 and S-4046 will not process aluminum with an arsenic content greater than 0.002 percent or a cadmium content greater than 0.004 percent. Therefore, S-4045 and S-4046 would qualify for exemption under Section 12-13-103.1, which exempt the operation to the standards (Sections 12-13-301 et seq.) and administrative requirements (Sections 12-13-401 et seq.) of Regulation 12, Rule 13. The sources are still subject to the recordkeeping requirements of Section 12-13-501. Tesla is expected to comply with these recordkeeping requirements.

New Source Performance Standards (NSPS)

40 CFR Part 60, Subpart S (Standards of Performance for Primary Aluminum Reduction Plants)

Per 40 CFR 60.190, this standard applies to pot-room groups and anode bake plants. Per 40 CFR 60.191, a pot-room is "a building unit which houses a group of electrolytic cells in which aluminum is produced" while an anode bake plant is "a facility which produces carbon anodes for use in a primary aluminum reduction plant." The proposed operation at Tesla does not meet the criteria for a primary aluminum reduction plant and thus is not subject to Subpart S.

National Emission Standards for Hazardous Air Pollutants (NESHAP)

40 CFR Part 63 Subpart LL - National Emission Standards for Hazardous Air Pollutants for Primary Aluminum Reduction Plants

Per 40 CFR 63.840 the requirements of this subpart apply to the owner or operator of each new or existing pitch storage tank, potline, paste production plant and anode bake furnace associated with primary aluminum production. The proposed operation at Tesla does not use anode bake furnace. Therefore, this operation is not subject to Subpart LL.

40 CFR Part 63, Subpart RRR (NESHAP for Secondary Aluminum Production)

Per the Applicability of 40 CFR Part 63, Subpart RRR, aluminum die casting facilities, aluminum foundries, and aluminum extrusion facilities are not considered to be a secondary aluminum production facility if only the material they melt are clean charge, customer returns, or internal scrap, and if they do not operate sweat furnace, thermal chip dryers, or thermal chip dryers, or scrap dryers, delacquering kilns/decoating kilns.

Tesla is using clean charge and will not operate any equipment that meets the definition of sweat furnace. Therefore, the requirements of 40 CFR 63, Subpart RRR do not apply.

California Environmental Quality Act (CEQA)

This project includes installation of emission control systems for two existing aluminum melting furnaces, which are used to melt aluminum ingots for vehicle production.

The 2023 California Environmental Quality Act (CEQA) Statue and Guidelines lists classes of projects in Section 15300, which have been determined not to have a significant effect on the environment and which shall, therefore, be exempt from the provisions of CEQA.

Section 15301 lists Class 1 projects that involve negligible or no expansion of use. This includes additions to existing structures, facilities, or mechanical equipment, provided that the addition will not result in an increase of more than 50 percent of the floor area of the structures before the addition, or 2,500 square feet, whichever is less, as listed in Section 15301(e)(1). Staff has reviewed the proposed facility's layout, existing structures, and project information has determined that the footprint of the crusher system will not exceed 50 percent, or 2,500 square feet, of the area of the existing operation.

Since the footprint of the sources in this application is expected not to exceed 50 percent of the floor area of the existing operation, or 2,500 square feet, this project is exempt from the provisions of CEQA and no further CEQA analysis is required.

Public Notice (Regulation 2-1-412)

The project is not located within an Overburdened Community, as defined in Regulation 2-1-243. However, this project is located within 1,000 feet of the following K-12 school:

Table 11: Schools Subject to Public Noticing

Name	Address
Lila Bringhurst Elementary School	45051 Wilson Road, Fremont, CA 94538

Because the project results in an increase in any TAC and is within 1,000 feet of a K-12 school, this project is subject to the public notification requirements of Regulation 2-1-412.

A public notice will be sent to all parents and guardians of students enrolled at the school listed above within ¼ mile of the source and all business and residents within 1000' of the proposed source. All public comments received will be summarized in the final evaluation report.

Permit Conditions

Condition #101060

For S-4045 and S-4046, Aluminum Melting Operation at Plant #20459

This condition, instated via Authority to Construct under Applications 726496 and 751217, supersedes condition #27327 upon operation of Selective Catalytic Reduction Systems A-30200 and A-30201 for abatement of Aluminum Melting Furnaces S-4045 and S-4046. Until operation of abatement devices A-30200 and A-30201 begins, the listed requirements in parts 3, 4, 5, 6, 13, 26, 27, 30, and 31 of this condition shall be superseded by the respective requirements in condition #27327.

S-4045 Aluminum Melting Furnace-1
Maximum Operating Rate: [redacted]
Make/Model: [redacted] Maximum Natural Gas Firing Rate: [redacted]
(Combined Unit - Melting Section: [redacted] and Holding Bath: [redacted])
Abatement Device A-30200 Selective Catalytic Reduction System

S-4046 Aluminum Melting Furnace-2
Maximum Operating Rate: [redacted]
Make/Model: [redacted] Maximum Natural Gas Firing Rate: [redacted]
(Combined Unit - Melting Section: [redacted] and Holding Bath: [redacted]
Abatement Device A-30201 Selective Catalytic Reduction System

1. The owner/operator shall not exceed the following material throughput limits at S-4045 and S-4046:
   a. [redacted] tons of aluminum per hour at each furnace.
   b. [redacted] tons of aluminum per day at each furnace.
   c. [redacted] tons of aluminum in a twelve-month period at each furnace.
   [Basis: Cumulative Increase, BACT, Toxics]

2. The owner/operator of S-4045 and S-4046 may use aluminum with different composition of compounds if the owner/operator can demonstrate that all of the following requirements are satisfied:
   a. Except for those pollutants listed under Parts 5 and 6 of this condition, the use of these materials does not increase toxic emissions above any risk screening trigger levels in Table 2-5-1 of Regulation 2-5.
   [Basis Cumulative Increase]

3. The owner/operator of S-4045 and S-4046 shall not emit more than following daily, annual, and concentration emission limits from either S-4045 or S-4046:

Concentration Limit (ppmv)

NOx	37 @ 3% O2	

Pollutant Daily Limit (pounds per calendar day)

NOx	12.8	
CO	9.0	(BACT Avoidance)
PM10	9.0	(BACT Avoidance)

Pollutant Annual Limit (pounds per year)

NOx	4,037
CO	3,285
PM10	3,285

[Basis: BACT, BACT Avoidance, Cumulative Increase]

4. The owner/operator of S-4045 and S-4046 shall not emit more than 0.040 pounds of PM10 (both filterable and condensable) per ton of aluminum melted from each source when abated by A-30200 and A-30201 and no more than 1.10 pounds of PM10 (both filterable and condensable) per ton of aluminum melted form each source when not abated by A-30200 or A-30201.
[Basis: Cumulative Increase]

5. The owner/operator of S-4045 and S-4046 shall not emit more than the following hourly emission rates from S-4045, S-4046, associated holding furnace(s), bypass system, and associated quench tank(s) combined:

Pollutant Hourly (pounds)

Arsenic	0.00000501
Copper	0.000111
Mercury	0.0000829
Nickel	0.000697
Vanadium	0.0000871

[Basis: Regulation 2, Rule 5]

6. The owner/operator of S-4045 and S-4046 shall not emit more than the following annual emission rates from S-4045, S-4046, associated holding furnace(s), bypass system, and associated quench tank(s) combined:

Pollutant Annual (pounds)

Arsenic	0.0995
Beryllium	0.00150
Cadmium	0.0179
Cobalt	3.51
Formaldehyde	7.48
Hexavalent Chromium	0.0377
Lead	0.129
Manganese	66.8
Mercury	0.0395
Nickel	0.332
Selenium	0.113
Silica	924

[Basis: Regulation 2, Rule 5]

7. To demonstrate compliance with Parts 3, 4, 5, and 6, the owner/operator of S-4045 and S-4046 shall use measurements from either Air District-certified continuous emissions monitors (if available) or Air District-approved source or laboratory tests in combination with records of activity

(material usage, production) of S-4045, S-4046, associated holding furnace(s), bypass system, and associated quench tank(s). The owner/operator shall use Air District- approved calculation methodologies and assumptions.
[Basis: BACT Avoidance, Regulation 2, Rule 5, Cumulative Increase]

8. To demonstrate compliance with Parts 5 and 6 when Air District-approved source test data is unavailable, the owner/operator shall use material composition of aluminum feed to S-4045 and S-4046 in conjunction with aluminum activity (tons) and an Air District-approved PM10 emission rate (lb/ton of aluminum feed) by assuming the same weight fraction within the aluminum feed is emitted as PM10. The owner/operator shall use the maximum weight percentage of a constituent if a range is provided within a compositional report. If a constituent is not specifically tested and reported within a compositional report, the owner/operator shall use the remaining balance (may be listed as "other" or "not specified").
[Basis: Regulation 2, Rule 5]

9. The owner/operator of S-4045 and S-4046 shall ensure that aluminum ingots melted at S-4045 and S-4046 have a cadmium content of no more than 0.004 percent, a nickel content of no more than 0.050 percent, and an arsenic content of no more than 0.002 percent.
[Basis: Cumulative Increase, Regulation 11, Rule 15(c)(2)]

10. The owner/operator of S-4045 and S-4046 shall only use aluminum alloys complying with the definition of clean charge. Clean charge means furnace charge materials, including molten aluminum; T-bar; sow; ingot; billet; pig; alloying elements; aluminum scrap known by the owner or operator to be entirely free of paints, coatings, and lubricants; uncoated/unpainted aluminum chips that have been thermally dried or treated by a centrifugal cleaner; aluminum scrap dried at 343 °C (650 °F) or higher; aluminum scrap delacquered/decoated at 482 °C (900 °F) or higher, and runaround scrap.
[Basis: BACT Avoidance, Toxics, 40 CFR Subpart RRR, Section 63.1503]

11. The owner/operator shall ensure that S-4045 and S-4046 be fired exclusively with natural gas.
[Basis: Cumulative Increase, Toxics]

12. The owner/operator shall not exceed the following natural gas throughput limits at S-4045 and S-4046:
    a. [redacted] MMBtu/hour/furnace ([redacted] standard cubic feet/hour/furnace)
    b. [redacted]6 MMBtu/day/furnace ([redacted] standard cubic feet/day/furnace)
    c. [redacted] MMBtu/year/furnace ([redacted] standard cubic feet/year/furnace)
    d. [redacted] MMBtu/year total for both furnaces ([redacted] standard cubic feet/year/combined)
[Basis: Cumulative Increase, Toxic]

13. The owner/operator shall abate S-4045 and S-4046 with properly maintained, properly operated, and properly installed PM filters (A-30200 and A-30201, respectively) with minimum 97% abatement efficiency for PM10, all metals, and silica at all times of operation, unless the owner/operator can demonstrate compliance with the emission limits of Parts 5 and 6.
[Basis: Cumulative Increase, Toxic]

14. In order to demonstrate compliance with Parts 3, 4, 5, and 6 of this permit condition, the owner/operator shall conduct an Air District approved source test in accordance with the Air District's Manual of Procedures at S-4045 and S-4046 for criteria air pollutants (NOx, CO, PM10), silica, and the full set of metals (arsenic, beryllium, cadmium, total chromium, hexavalent chromium, cobalt, copper, lead, manganese, mercury, nickel, selenium, vanadium, and zinc) within 60 days after installing PM filters (A-30200 and A-30201) and once per calendar year thereafter. The owner/operator shall conduct source tests required by this Permit Condition at the representative production rate at which the system is typically operated unless other conditions are required by the applicable test method. The owner/operator shall conduct an additional source test within 90 days of the production rate exceeding 20 percent of the production rate achieved during the initial source test. The owner/operator shall conduct additional source tests for every 20 percent increase in production rate until such time that a source test is conducted at the highest production rate that the system is capable of operating at, and at the highest emission rate that the system can emit during the highest production rate, upon which the source test frequency will revert to

once every year. The owner/operator shall provide the aluminum feed rate, aluminum feed composition, and natural gas consumption of S-4045 and S-4046 during each source test. The owner/operator shall close all the valves leading to bypass system during the source test at the main stack of the furnace. The owner/operator shall conduct an Air District approved source test in accordance with the Air District's Manual of Procedures at S-4045 and S-4046 within 60-days of a change in the material composition of aluminum feed to S-4045 or S-4046 that results in an increase in the content of one of the metals listed in Parts 5 or 6.
[Basis: BACT Avoidance, Cumulative Increase, Regulation 2, Rule 5]

15. Prior to conducting a source test required by Part 14, the owner/operator shall consult with the Air District's Source Test Section regarding the appropriate test approach and methodologies.
[Basis: BACT Avoidance, Cumulative Increase, Regulation 2, Rule 5]

16. The owner/operator shall notify the Manager of the Air District's Source Test Section at least seven (7) days prior to the test, to provide the Air District staff the option of observing the testing. Within 60 days of test completion, a comprehensive report of the test results shall be submitted to the Manager of the Air District's Source Test Section for review and disposition.
[Basis: Cumulative Increase, BACT, Regulation 2, Rule 5]

17. If aluminum is melted within any holding furnace associated with S-4045 and S-4046, the owner/operator shall estimate criteria air pollutant and toxic air contaminant emissions from the associated holding furnace(s) using Air District approved source test data, methodologies, calculations, and assumptions. These emissions estimates shall be used to determine compliance with Parts 5 and 6. In the absence of specific source test data, any associated holding furnaces are assumed to emit at the same pre-abatement rate basis (lb pollutant per ton aluminum melted) as S-4045 and S-4046.
[Basis: Regulation 2, Rule 5, Cumulative Increase]

18. If aluminum is melted within any holding furnace associated with S-4045 and S-4046, the owner/operator shall use Air District-approved emissions estimated per Part 17 to determine whether the holding furnace is required to be permitted per Regulation 2, Rule 1.
[Basis: Regulation 2-1-302, Regulation 2-1-403]

19. At a minimum of once every three months, the owner/operator of any quench tank(s) associated with S-4045 and S-4046 shall conduct a representative sample of the quench medium for those compounds listed in Parts 5 and 6. The owner/operator shall use sample results in conjunction with Air District-approved methodologies, assumptions, and calculations to demonstrate compliance with Parts 5 and 6.
[Basis: Regulation 2, Rule 5]

20. The owner/operator shall use emissions estimated per Part 19 to determine whether any quench tank associated with the operation of S-4045 and S-4046 is required to be permitted per Regulation 2, Rule 1.
[Basis: Regulation 2-1-302, Regulation 2-1-403]

21. To demonstrate compliance with parts 1 through 20 of this permit condition, the owner/operator shall maintain the following records, including but not necessarily limited to the following information:
    a. For each batch delivered to the owner/operator, Certificates of Analysis for all aluminum ingots used showing the cadmium, nickel, and arsenic contents in weight percent or ppm and the test method used for the analysis. The owner/operator shall ensure that metal contents listed on each Certificate of Analysis are determined per ASTM methods ASTM E406, ASTM E1251, and ASTM E716 (or other method determined by the BAAQMD to be equivalent to the above methods);
    b. Hourly, daily, monthly, and rolling twelve-month throughput of aluminum ingots processed at each of S-4045 and S-4046;
    c. The type of fuel used and the hourly, daily, and annual fuel usage at each of S-4045 and S-4046.
    d. Daily, monthly, and annual hours of operation of each S-4045 and S-4046.
    e. Calculations of hourly, daily, and rolling 12-month total emissions for S-4045, S-4046, associated holding furnace(s), and associated quench tank(s) per Parts 2 (if applicable), 7, 8, 9, 13 (if applicable), 17 and 19.

f. Hourly, daily, monthly, and rolling twelve-month amount of aluminum melted at any holding furnace associated with S-4045 and S-4046.
g. Any analyses done per Part 18 or Part 20.
[Basis: Regulation 2-5, BACT Avoidance, Cumulative Increase, Regulation 2-1-302, Regulation 2-1-403]

Condition for Bypass System:
Definition of Emergency: "emergency" shall mean a situation that poses an immediate risk to health, life, property, or the environment.

22. The owner/operator shall install an Air District-approved Continuous Parameter Monitoring System (CPMS) on each bypass damper to determine the start and duration of each abatement system bypass event. The daily and annual (Toxic and Combustion) emissions from each bypass shall be totaled and added to its respective furnace main filter stack emissions. The total combined annual emissions from S-4045 and S-4046 main filter stacks and emergency bypass stacks shall not exceed Parts 3, 4, 5, 6, & 7 emissions of this permit condition.
[Basis: Regulation 2-1-403, Cumulative Increase, Toxic]

23. Whenever there is a bypass event at either S-4045 or S-4046, the owner/operator shall estimate emissions of criteria air pollutants and toxic air contaminants (as defined in Regulation 2, Rule 5) associated with the bypass event using Air District-approved monitoring, source tests, methodologies, and assumptions.
[Basis: TBACT, Regulation 2, Rule 5; Regulation 2-1-403, Cumulative Increase]

24. The owner/operator shall total the hourly and annual criteria air pollutant and toxic air contaminant (as defined in Regulation 2, Rule 5) emissions from each bypass event with Air District-approved emissions estimates of normal operation of S-4045 and S-4046 for determining compliance with the emissions limits in Parts 3, 4, 5, and 6 of this permit condition.
[Basis: Regulation 2-1-403, Cumulative Increase, Regulation 2, Rule 5, TBACT]

25. The owner/operator shall notify the Air District APCO of each emergency bypass event at S-4045 and S-4046 while the sources are in operation, as soon as practical, with due regard for public and employee safety. Reporting should occur no later than the following working day.
[Basis: Regulation 2-1-403, Cumulative Increase, Regulation 2, Rule 5, TBACT]

26. The owner/operator shall ensure that all bypass valves are in the closed or off position during all times of operations except during emergency and/or abatement system
(A-A-30200, A-30201) maintenance events.
[Basis: Cumulative Increase, Regulation 2, Rule 5, TBACT]

27. The owner/operator shall use the bypass system only in case of emergency or abatement system (A-A-30200, A-30201) maintenance periods. Whenever the bypass system is used, the owner/operator shall submit a report to the Air District within 10 days after each event with the reasoning for the bypass and a demonstration of compliance with all applicable emissions limits. Such reporting shall include the event details, total time the event lasted, and toxic air contaminant (as defined in Regulation 2, Rule 5) and criteria pollutant emission estimates during the event.
[Basis: Regulation 2-1-403, Regulation 2, Rule 5, TBACT]

28. The owner/operator shall ensure that all bypass line valves, or dampers are in the closed position through monitoring of the valve or damper position at least once every 15 minutes. The owner/operator shall inspect the valve or damper monitoring system at least once every week to verify that the monitor will indicate valve position.
[Basis: Regulation 2-1-403, Regulation 2, Rule 5, TBACT]

29. To demonstrate compliance with Parts 22 through 28 of this permit condition, the owner/operator shall maintain the following records, including but not necessarily limited to the following information:
a. The date, duration, and reason for each bypass event.
b. The criteria air pollutant and toxic air contaminant emissions estimates for each bypass event.
c. The supporting calculations and documentation for each bypass event emissions estimates.

d. A demonstration of compliance with the emissions limits of Parts 3, 4, 5, and 6 of this permit condition after each bypass event.

All records shall be retained on-site for five years from the date of entry and shall be made available for inspection to Air District staff upon request. The records may be in the form of computer-generated data, which is available to the Air District personnel on short notice (rather than actual paper copies). These recordkeeping requirements shall not replace the recordkeeping requirements contained in any applicable Air District regulations.
[Basis: Record Keeping, Cumulative Increase, Toxic]

Condition for Selective Catalytic Reduction (SCR) Abatement System:

30. The owner/operator of S-4045 and S-4046 shall ensure that emissions are abated at all times by properly operating and properly maintaining SCR abatement systems A-30200 and A-30201, respectively.
[Basis: Cumulative Increase, BACT]

31. The owner/operator of A-30200 and A-30201 shall not exceed an ammonia (NH3) slip of 10 ppmv, dry @ 15% O2 from the SCR system. If deemed necessary to demonstrate compliance with Regulation 2, Rule 5, the Air District may require a source test to determine compliance with this emission limit.
[Basis: Cumulative Increase, Regulation 2-5, BACT]

Condition for Continuous Emissions Monitoring System (CEMS):

32. The owner/operator of S-4045 and S-4046 shall properly install, certify, operate, and maintain an Air-District approved CEMS to monitor NO_x and O_2 concentration and flue gas flowrate discharged from each of S-4045 and S-4046. Each CEMS shall comply with all federal and Air District monitoring requirements, including (but not limited to) the following:
    a. §40 CFR 60.13 – Monitoring Requirements
    b. §40 CFR 60, Appendix B – Performance Specifications
    c. §40 CFR 60, Appendix F – Quality Assurance Procedures
    d. Air District Regulation 1-522, CEM and Recordkeeping Procedures
    e. Air District Manual of Procedures, Volume V, CEM Policy and Procedures
    [Basis: Regulation 1-522, Regulation 2-1-403, BACT]

33. The owner/operator of S-4045 and S-4046 shall provide the CEMS Plans and Specifications as required under Part 32 to the Air District within 45 days of issuance of the Authority to Construct under Application 751217. Tesla shall submit to the Air District the Proof of Intent to Purchase, provide notification of the Completion of Installation, and provide notification of the Completion of Testing Requirements in accordance with the Air District Manual of Procedures, Volume V.
[Basis: Regulation 1-522, Regulation 1-522, Regulation 2-1-403, Manual of Procedures Volume V]

34. The owner/operator shall properly install and maintain a Data Acquisition System or Data Acquisition and Handling System (DAS/DAHS) that provides continuous monitoring data recording at all times. The DAS/DAHS shall record, calculate, store, and report emissions and operational data necessary to demonstrate compliance with the emission limits in Part 3 of this condition.
[Basis: Regulation 1-522, Regulation 2-1-403]

35. The owner/operator shall complete all required certification testing, performance evaluations, calibration error testing, and Relative Accuracy Test Audits (RATA), and shall submit certification results to the Air District Source Test division for approval prior to use of the CEMS for compliance demonstration purposes.
[Basis: Regulation 1-522, Regulation 2-1-403, Source Testing Requirement and Monitoring]

36. The owner/operator shall retain all CEMS and flowrate monitoring data, emission calculations, and any additional records required for the Air District to determine compliance with all applicable rules and regulations for at least five (5) years. All records shall be made available to the Air District upon request.
[Basis: Regulation 1-522, Recordkeeping, Regulation 2-1-403]

Condition for Piping & Instrumentation Diagrams (P&IDs):

37. Within 180 days completing the physical modifications under Application 751217, the owner/operator shall provide, to the Air District's Engineering and Compliance and Enforcement Divisions, Piping & Instrumentation Diagrams for the facility's melting furnaces and associated abatement devices, including S-4045, S-4046, A-30200, and A-30201. The diagrams shall be accurate to the devices as-built by the facility. [Basis: Regulation 2-1-403]

End of Conditions

Recommendation

The District has reviewed the material contained in the permit application for the proposed project and has made a preliminary determination that the project is expected to comply with all applicable requirements of District, state, and federal air quality-related regulations. The preliminary recommendation is to issue an Authority to Construct for the equipment listed below. However, the proposed source will be located within 1,000 feet of a K-12 school and results in an increase in TAC emissions, which triggers the public notification requirements of Regulation 2-1-412. After the comments are received from the public and reviewed, the District will make a final determination on the permit.

I recommend that the District initiate a public notice and consider any comments received prior to taking any final action on issuance of an Authority to Construct and/or a Permit to Operate for the following equipment:

S-4045 **Aluminum Melting Furnace 1**
[redacted]
Maximum Operating Rate: [redacted] **Aluminum**
Abated by A-30200 Catalytic Filter

S-4046 **Aluminum Melting Furnace 2**
[redacted]
Maximum Operating Rate: [redacted] **Aluminum**
Abated by A-30201 Catalytic Filter

A-30200 **Catalytic Filter (Aluminum Melting Furnace 1)**
[redacted]
Maximum Flowrate: 23,746 cfm

A-30201 **Catalytic Filter (Aluminum Melting Furnace 2)**
[redacted]
Maximum Flowrate: 23,746 cfm

Prepared By: Zachary Kowalewski, Senior Air Quality Engineer

AIR DISTRICT APPLICATION 751217
TESLA FREMONT FACILITY
(PLANT 20459)

APPENDIX A

BEST AVAILABLE CONTROL TECHNOLOGY (BACT) ANALYSIS

FOR

ALUMINUM MELTING FURNACES (S-4045 AND S-4046)

August 2026

Project History:

S-4045 Aluminum Melting Furnace-1
Maximum Operating Rate: [redacted] of Aluminum
Make/Model: [redacted]
Maximum Natural Gas Firing Rate: [redacted] MMBtu/hour
(Combined Unit - Melting Section: [redacted] and Holding Bath: [redacted])

S-4046 Aluminum Melting Furnace-2
Maximum Operating Rate: [redacted] of Aluminum
Make/Model: [redacted]
Maximum Natural Gas Firing Rate: [redacted] MMBtu/hour
(Combined Unit - Melting Section: [redacted] and Holding Bath: [redacted])

Tesla received Authorities to Construct for two identical aluminum melting furnaces under Application 30523 and Authorities to Construct for Hi-Temp ASHRAE particulate filters for each furnace under Application 30914. [redacted]

Block Diagram for One Set of Aluminum Melting Equipment:

[redacted]

Best Available Control Technology (BACT):

In accordance with Regulation 2, Rule 2, Section 301, BACT is triggered for any new or modified source with the potential to emit 10 pounds or more per highest day of precursor organic compounds (POC), non-precursor organic compounds (NPOC), oxides of nitrogen (NO_X), carbon monoxide (CO), sulfur dioxide (SO_2), particulate matter with aerodynamic diameters less than 10 microns (PM_{10}), or particulate matter with aerodynamic diameters less than 2.5 microns ($PM_{2.5}$). As shown in Table 1, within Applications 726496 and 751217, Tesla proposed 18.4 lb/day (52 ppmvd NO_X @ 3% O_2) of NO_x,16.4 lb/day (80 ppmvd CO @ 3% O_2) of CO, and 116.4 lb/day (1.10 lb/ton PM_{10}), respectively. The estimated emissions of NO_X, CO, and PM_{10} from S-4045 and S-4046 exceed 10 pounds per day.

Tesla has requested that emissions for CO and PM10 are capped at 9.0 pounds per day as a BACT avoidance limit, to be enforced via permit condition. Therefore, S-4045 and S-4046 require BACT for NO_x.

Table A-1: Combustion Emissions from One Furnace

Emission Factors (Data from Vendor/ AP-42/BAAQMD)		Emissions Factor Units (from source)	Normalized Emission Factor (lb/MMBTU)	Emission Factor Data Source	Heat Input Rating of a Melting Furnace (MMBTU/hour)	Per Furnace			
Pollutant	Emission Factor					lb/hour	lb/day	lb/year	tons/year
VOC	5.5	lb/MMCF	0.0054	AP-42	11.61	0.06	1.50	505	0.25
PM	7.6	lb/MMCF	0.0075	AP-42	11.61	0.09	2.08	697	0.35
PM	**1.1**	lb/ton	-	Source Test	11.61	4.85	**116.4**	2,559	1.28
SO2	0.6	lb/MMCF	0.0006	AP-42	11.61	0.01	0.16	55	0.03
NOx	**0.066**	lb/MMBTU (Vendor Data)	0.0660	Application (Vendor Specifications)	11.61	0.77	**18.39**	6175	3.09
CO	**0.059**	lb/MMBTU (Vendor Data)	0.0590	80 ppm @ 3% O_2	11.61	0.68	**16.44**	5520	2.76

As defined in Section 2-2-202, BACT is "an emission limitation, control device, or control technique applied at a source that is the most stringent of:

202.1 The most effective emission control device or technique that has been successfully utilized for the type of equipment comprising such a source; or

202.2 The most stringent emission limitation achieved by an emission control device or technique for the type of equipment comprising such a source; or

202.3 The most effective control device or technique or most stringent emission limitation that the APCO has determined to be technologically feasible for a source, taking into consideration cost effectiveness, any ancillary health and environmental impacts, and energy requirements; or

202.4 The most effective emission control limitation for the type of equipment comprising such a source that is contained in an approved implementation plan of any state, unless the applicant demonstrates to the satisfaction of the APCO that such limitation is not achievable."

Emission limitations and/or control devices or techniques that meet Section 2-2-202.3 are termed BACT 1 ("technologically feasible and cost effective") while those that meet Sections 2-2-202.1, 2-2-202.2, and 2-2-202.4 are termed BACT 2 ("achieved in practice").

As BACT 2 has been achieved in practice by similar sources and does not consider costs or technical feasibility, it comprises the minimum that a source must meet if the source is subject to BACT. As BACT 1 considers both costs and technical feasibility, it comprises the most stringent that a source must meet.

As BACT 2 constitutes the minimum that a source would have to meet if subject to BACT, an analysis of what has been achieved in practice is conducted first before determining what more stringent limitations may be technologically feasible and cost effective.

BACT 2 ("Achieved in Practice"):

For comparing to what has been achieved by "the type of equipment" comprising the source, it is important to identify and/or classify the type of equipment comprising S-4045 and S-4046. Both S-4045 and S-4046 are metal melting furnaces. There are several types of metal melting furnaces including: induction furnaces, crucible furnaces, cupola furnaces, electric arc furnaces, and reverberatory furnaces. Induction and electric arc furnaces use electrical current to melt metal while crucible and reverberatory furnaces use combustion fuel.

S-4045 and S-4046 use combustion of natural gas to provide the necessary heat to melt aluminum.

Within Application 30523, Tesla stated that S-4045 and S-4046 are similar to a Tesla "Reverb Furnace" permitted within the San Joaquin Valley Air Pollution Control District (SJVAPCD) that was limited to an outlet NO_X concentration of 53 ppmvd @ 3% O_2 (0.0643 lb/MMBtu) resulting from a SJVAPCD BACT determination.

Therefore, for determining what has been achieved by "the type of equipment" comprising the source, the Air District looked at aluminum metal melting furnaces that combust natural gas as the heating mechanism including reverberatory furnaces.

To understand what has been achieved in practice for controlling NO_X emissions from the metal melting furnaces, the Air District reviewed the following sources of information:

- Air District BACT Workbook
- BACT Determinations of other Air Districts (SCAQMD, SJVAPCD)
- Air District Regulations
- ARB Clearinghouse
- U.S. EPA RACT/LAER/BACT Clearinghouse
- Air permits from other agencies

Bay Area Air Quality Management District (BAAQMD) BACT Workbook:

The Air District's BACT Workbook does not have any determinations for NO_X emissions from aluminum melting furnaces.

Regulations:

A review of California regulations resulted in findings of the following regulations that govern NO_X emissions from aluminum melting furnaces. A number of regulations are applicable for any device which combusts gaseous fuel, which do not reflect expected emissions from aluminum melting furnaces due to thermal NO_x formation. As a result, only general source requirements and furnace-specific requirements are considered.

Table A-2: Air District Regulations Limiting NO_x Emissions from Aluminum Melting Furnaces

Agency	Regulation / Rule	Most Stringent NO_X Limit
Ventura County Air Pollution Control District	VCAPCD Rule 74.34 - NO_x Reductions From Miscellaneous Sources, Table 1 – NO_x Emission Limits	60 ppm (0.072 lb/MMBTU heat input) for Metal Heat Treating/Metal Melting Furnace
San Joaquin Valley Air Pollution Control District[1]	SJVAPCD BACT Guidelines – Secondary Aluminum Melting: Sweat Furnace, Holding Furnace and Reverb Furnace	53 ppmvd @3% O_2
Great Basin Unified Air Pollution Control District	GBUAPCD Rule 404-B – Prohibitions: Oxides of Nitrogen	125 ppm with natural gas/gaseous fuel

Findings from Clearinghouse/Other Agencies/Other Permits:

A search of the ARB and EPA clearinghouses as well as the BACT determinations and air permits from other agencies resulted in numerous findings for NO_X emissions from aluminum metal melting furnaces where natural gas is used. These findings are shown in Table A-3 below.

Table A-3: Achieved In Practice Determinations for NO_X Emissions from Aluminum Metal Melting Furnaces

Information Source	ID	Company	Process	Control Technology	Emission Limit/ Guarantee	Throughput	Permit Date
EPA RACT/BACT/LAER Clearinghouse	AL-0041	Reynolds Metals Co.	Furnace, Al Holding, 6 EA	Conventional Burners	11.00000 tons/year	11.70 tons/hour	
EPA RACT/BACT/LAER Clearinghouse	AL-0041	Reynolds Metals Co.	Furnace, Al Melting, 5 EA	Recuperative Burner System	203.7000 tons/year	11.70 tons/hour	
EPA RACT/BACT/LAER Clearinghouse	AL-0192	Honda Manufacturing of Alabama, LLC	Aluminum Melt Furnace	Low NO_X Burners; Natural Gas Only	0.1000 lb/MMBtu	3.30 tons/year	
EPA RACT/BACT/LAER Clearinghouse	AL-0306	Constellium	Melting/Sidewell Furnace 8	Low NO_X Burner	0.0400 lb/MMBtu	36.00 MMBtu/hour	
EPA RACT/BACT/LAER Clearinghouse	KY-0040.A	Martin Marietta of Kentucky	Furnace, Holding, 6	None	16.9000 lb/hour	3.75 tons/hour	
EPA RACT/BACT/LAER Clearinghouse	KY-0040.A	Martin Marietta of Kentucky	Reverb	None	3.1000 lb/hour	4.50 tons/hour	
EPA RACT/BACT/LAER Clearinghouse	KY-0103	Logan Aluminum, Inc.	Sidewell Melt Furnace	None	0.22 lb/ton	15 tons/hour	12/27/2020
EPA RACT/BACT/LAER Clearinghouse	KY-0116	Novelis Corporation - Guthrie	Sidewell Melting Furnace	None	0.44 lb/ton	125,530 tons/year	07/25/2022
EPA RACT/BACT/LAER Clearinghouse	KY-0116	Novelis Corporation - Guthrie	Front-Load Tilt Melting Furnace	None	0.57 lb/ton	131,400 tons/year	07/25/2022
EPA RACT/BACT/LAER Clearinghouse	PA-0245	Alcoa Engineered Products	Melters # 8 and # 9	Low NO_X Burners	102.0000 lb/MMCF	Unknown	
EPA RACT/BACT/LAER Clearinghouse	TX-0115	Gulf Coast Chemicals, Inc.	Furnace, Reverberatory, # 1	None	0.8800 lb/hour	1.50 tons/hour	
EPA RACT/BACT/LAER Clearinghouse	TX-0287	Alcoa Foil Products	Sidewell Melters	None	0.73000 lb/hour	Unknown	
SCAQMD	Application 379736	International Extrusion Corp	Aluminum Melting Furnace (Reverberatory)	Low-NO_X Burners	32 ppmvd @ 3% O_2 (0.04 lb/MMBtu)	12.8 MMBtu/hour [2 burners x 6.4 MMBtu/hour (natural gas)] ~ 5 tons/hour (aluminum)	04/15/2003
SCAQMD	Application 385864	Custom Alloy Sales	Aluminum Melting Furnace (Reverberatory)	Low-NO_X Burners	39 ppmvd @ 3% O_2	6 MMBtu/hour (natural gas)	11/14/2002
SCAQMD	Application 368982	Superior Industries International	Aluminum Melting Furnace (Reverberatory)	None Listed	43 ppmvd @ 3% O_2	12.6 MMBtu/hour (natural gas)	08/29/2002
SJVAPCD	BACT Guideline 1.5.12 (Achieved in Practice)	None Listed	Holding Furnaces	Low NO_X Burners	40 ppmvd @ 3% O_2	None Listed	
SJVAPCD	BACT Guideline 1.5.12 (Achieved in Practice)	None Listed	Reverb Furnaces (non-sweating)	Low NO_X Burners	53 ppmvd @ 3% O_2	None Listed	
SJVAPCD	BACT Guideline 1.5.13 (Achieved in Practice)	Aluminum Diecasting Furnace	Reverb Furnaces (non-sweating)	Low NO_X Burners	53 ppmvd @ 3% O_2 (0.0643 lb/MMBtu)	None Listed	
Arkansas Department of Environmental Quality (ADEQ)	Permit # 1159-AR-5	Pace Industries, Inc. – Malvern	SN-20 (Melt Furnace # 5)	None Listed	0.2 lb/hour	6.8 MMBtu/hour (natural gas)	
ADEQ	Permit # 1159-AR-6	Pace Industries, Inc. – Malvern	SN-22 (Melt Furnace # 3)	None Listed	0.2 lb/hour	9636 tons/year (aluminum) 9.1 MMBtu/hour (natural gas)	10/01/2007
ADEQ	Permit # 1159-AR-6	Pace Industries, Inc. – Malvern	SN-37 (Melt Furnace # 8)	None Listed	0.6 lb/hour	28,280 tons/year (aluminum) 20.0 MMBtu/hour (natural gas)	10/01/2007

Achieved in Practice Determination for NO_X Emissions

As shown in Table 2, there are multiple determinations where outlet NO_X emissions were either limited and/or vendor guaranteed below the applicant-proposed unabated NO_X limit of 52 ppmv @ 3% O_2. There are three determinations from the SCAQMD that are lower with the lowest achieved rate (as guaranteed by the burner vendor and verified through source testing) to be 32 ppmv @ 3% O_2, which corresponds to an emission rate of 0.0388 lb/MMBtu. Within Permit AR-1159-6, the Arkansas Department of Environmental Quality (ADEQ) limited NO_X emissions of a 9.1 MMBtu/hour natural gas-fired aluminum melting furnace and a 20 MMBtu/hour natural gas-fired aluminum melting furnace to 0.2 lb/hour and 0.6 lb/hour, respectively, which equates to an hourly average emission rate of 0.0220 lb/MMBtu and 0.030 lb/MMBtu, respectively, when fired at 100 percent capacity.

The SCAQMD BACT determination for Application 379736 limited NO_X emissions to an exhaust concentration of 37 ppmvd corrected to 3% O_2. The low NOx burner (Model 1630-LXX) vendor guaranteed an exhaust NOx emission concentration not to exceed 32 ppmvd @ 3% O_2, and a subsequent source test under 30 percent and 100 percent capacity measured NO_X concentrations below 37 ppmvd @ 3% O_2. The permitted equipment was a natural gas-fired reverberatory aluminum melting furnace that melted prime aluminum (from primary foundaries) and house scrap and operated at a 12.8 MMBtu/hour firing rate and 40 tons/day of aluminum throughput and is comparable to S-4045 and S-4046. Table A-4 provides a comparison of the different furnaces and shows that they are comparable.

Table A-4: Comparison of Aluminum Melting Furnaces

Source	**Control Technology**	**Fuel**	**Firing Rate** (MMBtu/hour)	**Maximum Aluminum Throughput**
Tesla	Low NO_X Burners	Natural Gas	11.61	~ 85 tons/day
SCAQMD Permit 379736	Low NO_X Burners	Natural Gas	12.8	120 tons/day
ADEQ Permit 1159-AR-6	None	Natural Gas	9.1	9,636 tons/year

The ADEQ Permit AR-1159-6 did not list an emission rate on a lb/MMBtu basis but rather limited the maximum hourly emission rate. Therfore, use of a low NO_X burner that meets both an hourly emission rate of 0.2 lb/hour and an exhaust concentration of 37 ppmvd @ 3% O_2 (0.0451 lb/MMBtu) is considered achieved in practice for NO_X.

Copies of both the SQAQMD BACT determination and the ADEQ Permit AR-1159-6 are included in Appendix B.

As there are multiple natural gas-fired aluminum melting furnaces that have achieved lower emission rates (verified through source testing), what has been proposed by Tesla would not be considered to be BACT for NO_X.

BACT 1 ("Technologically Feasible", "Cost Effective")

To determine whether there are technologically feasible and cost effective emission limitations that are more stringent than what has been achieved in practice for both NO_X and CO, the Air District used the following steps in its BACT 1 determination:

Step 1: Identify all available control technologies with practical potential for application to the specific emission unit for the regulated pollutant under evaluation;

Step 2: Eliminate technically infeasible control technologies;

Step 3: Rank the remaining control technologies by effectiveness and tabulate a control hierarchy;

Step 4: Evaluate the control technologies in order of effectiveness to determine environmental, economic, and energy impacts, and document the results; and

Step 5: Select BACT, which will be the most effective control option not rejected as inappropriate based on the economic, environmental, and/or energy impacts.

Step 6: Summary

NO_X Emissions Control:

Oxides of Nitrogen (NOx) are a byproduct of the combustion of an air-and-fuel mixture in a high-temperature environment. NOx is formed when the heat of combustion causes the nitrogen molecules in the combustion air to dissociate into individual nitrogen atoms, which then combine with oxygen atoms to form nitric oxide (NO) and nitrogen dioxide (NO_2). This reaction primarily forms NO and small amount of NO_2, but the NO eventually oxidizes and converts to NO_2 in the atmosphere. NO_2 is a reddish-brown gas with a detectable odor at very low concentrations. NO and NO_2 are generally referred to collectively as "NOx". NOx is a precursor to the formation of ground-level ozone, the principal ingredient in smog.

BACT 1 for NO_X (Technologically Feasible and Cost-Effective)

Post-Combustion NOx Controls

The Air District has identified the following post-combustion controls that can remove NOx from the emissions stream after it has been formed.

Selective Catalytic Reduction (SCR): Selective catalytic reduction injects ammonia into the exhaust stream, which reacts with the NOx and oxygen in the presence of a catalyst to form nitrogen and water. NOx conversion is sensitive to exhaust gas temperature, and performance can be limited by contaminants in the exhaust gas that may mask or poison the catalyst. A small amount of ammonia is consumed in the reaction and is emitted in the exhaust stream as what is commonly called "ammonia slip". The SCR catalyst requires replacement periodically. SCR is a widely used as post-combustion NOx control device.

Selective non-catalytic reduction (SNCR): Selective non-catalytic reduction involves injection of ammonia or urea with proprietary conditioners into the exhaust gas stream without a catalyst. SNCR technology requires gas temperatures in the range of 1400° to 2100° F and is most commonly used in boilers because boilers have the exhaust temperatures in that range. The exhaust from aluminum melting furnace at Tesla has 575° F temperature. Therefore, Selective non-catalytic reduction (SNCR) technology is not feasible for aluminum melting furnaces.

Cost Analysis:

The Air District requested a cost estimate from Anguil (SCR Vendor) for an SCR abatement device. The vendor based the size of SCR on the exhaust flow rate (15,545 acfm) and exhaust temperature (572°F) of the furnace. Because SCR requires at least 600°F temperature to function properly, the vendor included a heater to bring the temperature up from 572 to 600°F. The emissions from the secondary heater are calculated to be 2.35 lb/day of NO_X and 1.98 lb/day of CO; detailed calculations are presented in Appendix C.

The vendor can guarantee an abatement efficiency (emissions reduction) of 97% for NO_X. The SCR would reduce furnace NO_X emissions from 18.39 lb/day to 0.55 lb/day. The total NO_X emissions from the furnace and heater combined would be 2.9 lb/day (2.35 lb/day from heater + 0.55 lb/day from furnace) after abatement. This would result in a total emissions reduction of 2.82 tons of NO_X per year.

The current BACT guidelines have an annualized cost-effective threshold of $17,500 per ton of NO_X reduction. Therefore, if the annualized cost of the abatement system is less than $49,471 it would be considered cost effective. Given a minimum equipment cost of $550,000 it is clear that the annualized cost for the SCR system will be well above $49,471 and an SCR abatement system is not considered cost effective for this project.

Tesla Proposed BACT and Source Test Results

Tesla previously requested BACT avoidance limits for NO_x but was determined to be out of compliance with the BACT avoidance limit. In this application, Tesla proposes installation of a Selective Catalytic Reduction system for control of NO_x from S-4045 and S-4046. The SCR system does not have a guaranteed abatement efficiency; Tesla has requested that the abatement system meet a proposed BACT of 37 ppmv @ 3% O_2 (0.0451 lb/MMBtu).

Summary:

After reviewing what has been achieved in practice by similar sources, it has been determined that, for operation of S-4045 and S-4046, the sources would be required to meet a BACT emission limit which is more stringent than the BACT limits proposed by Tesla.

NOx BACT:

The above analysis shows that a comparably sized natural gas-fired aluminum melting furnace within the ADEQ is limited to a NO_X emission rate of 0.2 lb/hour and that a comparable-sized natural gas aluminum melting furnace within the SCAQMD is using low NOx burners to achieve an exhaust concentration of 37 ppmvd of NO_X @ 3% O_2 (0.0451 lb/MMBtu).

Therefore, use of a low NOx burner that complies with an emission rate of 0.2 lb NO_X/hour and an exhaust NO_X concentration of 37 ppmvd @ 3% O_2 (0.0451 lb/MMBtu) is considered BACT for NO_X control for S-4045 and S-4046. Tesla's proposed exhaust NOx concentration of 37 ppmvd @ 3% O_2 (0.0451 lb/MMBtu) would constitute BACT. Tesla will be required to meet the BACT concentration limit for NO_x via permit condition.

APPENDIX B

ADEQ Permit AR 1159-6 and BACT Determination

ADEQ

A R K A N S A S
Department of Environmental Quality

OCT 1 1 2007

Marshall Haines
Pace Industries- Precision Industries, Malvern
(Leggett and Platt Inc.)
P. O. Box 220
Malvern, Arkansas 72104

Re: Notice of Administrative Amendment
AFIN: 35-00316, Permit No.: 1825-AR-1

Dear Mr. Haines

The enclosed Amended Permit No. 1159-AR-6 has been completed in accordance with the provisions of Section §19.407 of Regulation 19, of the Arkansas Plan of Implementation for Air Pollution Control.

Emission source SN-07D, one of four Wheelabrators rated at 1000 cfm - 0.3gr/cf, has been removed from the permit. In addition the contact name on page 2 was changed, and the Department address was changed.

Please place the amended permit in your files.

Sincerely,

Mike Bates
Chief, Air Division

jgs

Enclosure

cc: Central Records
cc: Enforcement.

ADEQ
MINOR SOURCE
AIR PERMIT

Permit #: 1159-AR-6

IS ISSUED TO:

Pace Industries, Inc.
1002 East Section Line
Malvern, AR 72104
Hot Springs County
AFIN: 30-00085

THIS PERMIT IS THE AUTHORITY FOR PACE INDUSTRIES, INC. TO CONSTRUCT, MODIFY, OPERATE, AND/OR MAINTAIN THE EQUIPMENT AND/OR FACILITY IN THE MANNER AS SET FORTH IN THE DEPARTMENT'S MINOR SOURCE AIR PERMIT AND THE APPLICATION. THIS PERMIT IS ISSUED PURSUANT TO THE PROVISIONS OF THE ARKANSAS WATER AND AIR POLLUTION CONTROL ACT (ARK. CODE ANN. SEC. 8-4-101 *ET SEQ.*) AND THE REGULATIONS PROMULGATED THEREUNDER, AND IS SUBJECT TO ALL LIMITS AND CONDITIONS CONTAINED HEREIN.

Signed:

Mike Bates
Chief, Air Division

OCT 1 1 2007
Date Amended

SECTION I: FACILITY INFORMATION

PERMITTEE:	Pace Industries, Inc.
AFIN:	30-00085
PERMIT NUMBER:	1159-AR-6
FACILITY ADDRESS:	1002 East Section Line Malvern, AR 72104
COUNTY:	Hot Springs
CONTACT POSITION:	Marshall Haines
TELEPHONE NUMBER:	(501) 332-3611
REVIEWING ENGINEER:	James G. Siganos, P.E.
UTM North-South (X): UTM East-West (Y): Zone:	3802.5 518.5 15

Page Amended

SECTION II: INTRODUCTION

Summary

Pace Industries, Inc., L & P Aluminum Group-Precision Industries, Malvern, AR is a custom aluminum die cast operation (NAICS Code 333111) which manufactures thin wall aluminum die castings for a variety of customers in several industries. Emissions from the facility result from the various processes used to produce the parts including melting, casting, and various finishing processes. Emissions that are produced are particulate matter (PM and PM_{10}), volatile organic compounds (VOCs), nitrogen oxides (NO_x), carbon monoxide (CO),), sulfur oxides (SO_x), Hydrochloric acid (HCl) and Hydrofluoric acid (HFL).

This permit is being modified in order to update permitted emission rates utilizing AP-42 emission factors and utilizing stack test results obtained at a sister facility in Harrison, Arkansas.

Emissions from sources SN-07A, B, C, and D, SN-23A, SN-28, SN-29 and SN-30 are no longer being classified as insignificant activities. When examined individually it appears that these sources can be considered as insignificant. However, the total of all particulate emissions (7.9 tpy PM/PM10) from these activities are above the DeMinimis threshold limit, and are included in the modified permit as significant sources.

Parts painting and oven drying emissions are no longer applicable since the painting operation has been abandoned and thus eliminating the usage of the HAP, Xylene. The following emission sources have been removed from operation: SN-04, SN-05, SN-06, SN-08, SN-21 and SN-23B.

As a result of updated calculations the permitted emission rates will increase by 11.1 tpy for PM/PM_{10}, 1.3 tpy for SO_2, 2.3 tpy for CO, 4.9 tpy for NOx, 5.16 tpy for HCL, and 0.09 tpy for HF. However, current permitted production rates will remain unchanged.

In addition this permit modification includes a revised updated visible emission limits for all melt furnaces (SN-02, 03, 20, 22, & 37) from 5% to 20% opacity as measured by EPA Reference Method 9. Originally, the opacity limit assigned to the melt furnaces was 5% which is standard for natural gas burning equipment. The facility has commented that other emissions such as fluxing are involved that necessitate the 20% opacity limit. This increase in the opacity limit is in accordance with Regulation 19, §19.503(B)(2).

The facility is not subject to the regulation under §19.304 of Regulation 19 and §40 CFR 63.1500(c)(4), Subpart RRR - National Emission Standards for Secondary Aluminum Production. The Permittee shall only charge the melt furnaces with clean aluminum ingots and internally recycled clean aluminum scrap. Oily aluminum scrap shall not be used to charge the melt furnaces.

This Administrative Amendment is issued in order to remove wheelabrator SN-7D from the facility, and as a result of the permitted emission rates for PM/PM_{10} will decrease.

Process Description

Melting Furnaces
Aluminum ingots are melted in five (5) melting furnaces (SN-02, SN-03, SN-20, SN-22, and SN-37) and then sent to the die cast process. These furnaces are fired by natural gas.

Holding Furnaces
A furnace to hold the molten metal is located near the injection end of each die cast machine. Molten metal is transferred by ladle from the holding furnace to the injection chamber of the die cast machine injection chamber. The holding furnaces are heated by electricity and therefore produce insignificant emissions.

Die Cast Machines
In die casting, molten aluminum is forced into water cooled steel dies to form castings (SN-12). High pressures insure that the metal completely fills the empty space between the die halves. While the molten metal is held in the die, heat flows out of the metal and into the die, thus solidifying the metal casting. The castings are then trimmed by a hydraulic press. The scrap is recycled to the melt furnaces. The die is then opened, and the casting is removed by an operator. SN-12 is classified as insignificant since regulated emissions are not emitted from die lubricants.

Heat Treatment Oven
One natural gas fired heat treating oven is used to clean aluminum parts before they are sent to secondary finishing operations (SN-23A). The only emissions are products of combustion. Also four (4) electric heat treating ovens are used, but do not release regulated emissions.

Page Amended

Secondary Finishing

After the parts are removed from the die cast machines, they are sent to various secondary processes depending on the specific part. These secondary processes are described below.

Machining
The parts may be drilled, tapped, or machined according to customer specifications.

Sanding
Rough areas of the parts are sanded using belt or hand-held sanders. The aluminum dust created in this process is removed and collected in a baghouse (SN-26).

Wheelabrators - Parts Finishing Equipment
The aluminum parts may have a specific finish applied by the blasting effect of steel shot created by the Wheelabrators (SN-07A, 7B, & 7C). The aluminum particulate emissions produced by each Wheelabrator are each controlled by a dust collection cyclone rated at 99% efficiency.

Goff Spinblaster
Parts are finished by blasting with steel shot in one unit (SN-28). The aluminum particulate emissions produced by the Spinblaster are collected in a dust tube collector system rated at 90% efficiency. This unit was installed in 2006 and initially identified as an insignificant/exempt activity.

Washing
Some parts are cleaned and degreased in a tumbler barrel with water and detergent. A natural gas fired boiler (SN-10) heats the parts washer. Products of combustion are emitted from the burner.

Diesel Fuel Emergency Generator
This unit was installed in 2003, identified as insignificant/exempt, and used only for emergency purposes.

Regulations

This facility is subject to regulation under the *Arkansas Air Pollution Control Code* (Regulation 18) and the *Regulations of the Arkansas State Implementation Plan for Air Pollution Control* (Regulation 19).

The following table is a summary of the facility's total emissions. This table in itself is not an enforceable condition of the permit.

TOTAL ALLOWABLE EMISSIONS		
Pollutant	Emission Rates	
	lb/hr	tpy
PM	5.3	22.6
PM_{10}	5.3	22.6
SO_2	0.7	3.0
VOC	7.0	30.6
CO	1.2	5.0
NO_x	3.8	16.5
HAPs:		
*HCL	2.11	9.25
*HFL	<0.03	0.09

* Hazardous Air Pollutant emissions resulting from fluxing (cleaning) operation.

Page Amended

SECTION III: PERMIT HISTORY

Air permit # 1159-A was issued to this facility on 04/12/91.

Air permit # 1159-AR-1, issued on May 15 1995, was for the elimination of sources SN-03, SN-08, SN-09, and SN-11.

Air permit #1159-AR-2 was issued on February 23, 1996, and allowed for the installation of a new melt furnace and three electric die cast machines.

Air permit #1159-AR-3, issued on April 8, 1999, permitted the installation of a new aluminum melt furnace (SN-08), allowing an increase in the amount of aluminum ingots melted per year (this increase went primarily to the new SN-08 and SN-03, an existing melt furnace). Also the elimination of the zinc melt furnace (SN-25) and the introduction of new emission factors to calculate emissions from the melt furnaces were included. The AP-42 emission factors, used in the past, did not accurately represent emissions from an aluminum die casting facility.

Air Permit #1159-AR-4, issued on January 22, 2001, allowed for a DeMinimis modification to the facility. The permittee replaced Central Melt Furnace #8 (SN-37), and also relocated heat treatment oven (SN-23B). The Permitted VOC emission rate was increased by 4.2 tpy.

Air Permit #1159-AR-5, issued on March 3, 2006 allows a D*eMinimis* modification to the facility. It allows the permittee to replace Central Melt Furnace #6 (SN-3), with a smaller efficient melt furnace. The permitted VOC emission rate will be decreased by 7.6 tpy, and current permit production rates will remain unchanged. This modification also includes the installation of a water evaporator which uses a 1.5 MM Btu/hr natural gas burner, which is considered to be an insignificant activity.

SECTION IV: EMISSION UNIT INFORMATION

Specific Conditions

1. The permittee shall not exceed the emission rates set forth in the following table. The permittee will demonstrate compliance with this condition by operating equipment at or below maximum capacity. [§19.501 of the Regulations of the Arkansas Plan of Implementation for Air Pollution Control, effective May 28, 2006 (Regulation 19) and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311]

SN	Description	Pollutant	lb/hr	tpy
02	Melt Furnace #2 438 tpy melt rate Natural Gas (3.0 MM Btu/hr)	PM_{10} SO_2 VOC CO NO_x	0.1 0.1 0.1 0.1 0.1	*14.1 *2.9 *29.3 *5.0 *16.4
03	Melt Furnace #6 17,520 tpy melt rate Natural Gas (8.0 MM Btu/hr)	PM_{10} SO_2 VOC CO NO_x	0.3 0.1 0.6 0.2 0.4	
20	Melt Furnace #5 9,636 tpy melt rate Natural Gas (6.8 MM Btu/hr)	PM_{10} SO_2 VOC CO NO_x	0.2 0.1 0.4 0.1 0.2	
22	Melt Furnace #3 9636 tpy melt rate Natural Gas (9.1 MM Btu/hr)	PM_{10} SO_2 VOC CO NO_x	0.2 0.1 0.4 0.1 0.2	
37	Melt Furnace #8 28280 tpy melt rate Natural Gas (20.0 MM Btu/hr)	PM_{10} SO_2 VOC CO NO_x	0.5 0.1 1.0 0.2 0.6	

SN	Description	Pollutant	lb/hr	tpy
10	Parts Washer Natural Gas Burner (0.2 MM Btu/hr)	PM_{10} SO_2 VOC CO NO_x	0.1 0.1 0.1 0.1 0.1	0.1 0.1 0.1 0.1 0.1
23A	Heat Treatment Oven Natural Gas (0.5 MM Btu/hr)	PM_{10} SO_2 VOC CO NO_x	0.1 0.1 0.1 0.1 0.1	0.3 0.1 0.2 0.1 0.1
29	Parts Washer Natural Gas (0.96 MM Btu/hr)	PM_{10} SO_2 VOC CO NO_x	0.1 0.1 0.1 0.1 0.1	0.5 0.1 0.4 0.1 0.1
30	Wastewater Evaporator Natural Gas (1.5 MM Btu/hr)	PM_{10} SO_2 VOC CO NO_x	0.1 0.1 0.2 0.1 0.1	0.7 0.1 0.6 0.1 0.1
07A	Wheelabrator Finishing Equipment (Tumbler)	PM_{10}	0.3	1.2
07B	Wheelabrator Finishing Equipment (Tumbler)	PM_{10}	0.3	1.2
07C	Wheelabrator Finishing Equipment (Tumbler)	PM_{10}	0.3	1.2
07D	Wheelabrator Finishing Equipment (Tumbler). Removed from service.			
26	Sanding Operations	PM_{10}	0.6	2.7
28	Goff Spinblaster	PM_{10}	0.4	1.6
04 & 05	Paint Oven Burner & Paint Oven Hood – removed from service			
06	Electrostatic Paint Booth – removed from service			
08	Melt Furnace #7 – removed from service			
21	Melt Furnace #4 – removed from service			
23B	Heat Treatment Oven – removed from service			

* ----Emissions are bubbled as shown based upon the maximum total yearly melt rate for the facility of 188,778 tons per year of aluminum ingots, clean aluminum scrap, and flux.

Page Amended

2. The permittee shall not exceed the emission rates set forth in the following table. The permittee will demonstrate compliance with this condition by operating the equipment in the facility at or below maximum capacity. [§18.801 of the Arkansas Air Pollution Control Code, effective February 15, 1999 (Regulation 18) and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311]

SN	Description	Pollutant	Lb/hr	Tpy
02	Melt Furnace #2 438 tpy melt rate Natural Gas (3.0 MM Btu/hr)	PM HCL HFL	0.1 0.01 <0.01	**14.1 **9.25 **0.09
03	Melt Furnace #6 Natural Gas (8.0 MM Btu/hr)	PM HCL HFL	0.3 0.2 0.01	
20	Melt Furnace #5 9,636 tpy melt rate Natural Gas (6.8 MM Btu/hr)	PM HCL HFL	0.2 0.1 <0.01	
22	Melt Furnace #3 9636 tpy melt rate Natural Gas (9.1 MM Btu/hr)	PM HCL HFL	0.2 0.11 <0.01	
37	Melt Furnace #8 28280 tpy melt rate Natural Gas (20.0 MM Btu/hr)	PM HCL HFL	0.5 0.29 0.01	
10	Parts Washer Natural Gas Burner (0.2 MM Btu/hr)	PM	0.1	0.1
23A	Heat Treatment Oven Natural Gas (0.5 MM Btu/hr)	PM	0.1	0.3
29	Parts Washer Natural Gas (0.96 MM Btu/hr)	PM	0.1	0.5
30	Wastewater Evaporator Natural Gas (1.5 MM Btu/hr)	PM	0.2	0.7

SN	Description	Pollutant	Lb/hr	Tpy
07A	Wheelabrator Finishing Equipment (Tumbler)	PM	0.3	1.2
07B	Wheelabrator Finishing Equipment (Tumbler)	PM	0.3	1.2
07C	Wheelabrator Finishing Equipment (Tumbler)	PM	0.3	1.2
07D	Wheelabrator Finishing Equipment (Tumbler). Removed from service.			
26	Sanding Operations	PM	0.6	2.7
28	Goff Spinblaster	PM	0.4	1.6
04	Paint Oven Burner removed from service.			
05	Paint Oven Hood – removed from service			
06	Electrostatic Paint Booth – removed from service			
08	Melt Furnace #7 - removed from service			
21	Melt Furnace #4 – removed from service			
23B	Heat Treatment Oven – removed from service			

** ---Emissions are bubbled as shown based upon the maximum total yearly melt rate for the facility of 188,778 tons per year of aluminum ingots, clean aluminum scrap, and flux.

Page Amended

3. Visible emissions shall not exceed the limits specified in the following table as measured by EPA Reference Method 9. [A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311]

SN	Description	Limit	Regulatory Citation
02	Melt Furnace #2 Natural Gas (3.0 MM Btu/hr)	20%	§19.503 (B)(2)
03	Melt Furnace #6 17,520 tpy melt rate Natural Gas (20.0 MM Btu/hr)	20%	§19.503 (B)(2)
07A, 07B, & 07C	Three Wheelabrators Tumblers	20%	§18.501
10	Parts Washer Burner Natural Gas (0.5 MM Btu/hr)	5%	§18.501
20	Melt Furnace #5 9636 tpy melt rate Natural Gas (6.81 MM Btu/hr)	20%	§19.503 (B)(2)
22	Melt Furnace #3 9636 tpy melt rate Natural Gas (9.1 MM Btu/hr)	20%	§19.503 (B)(2)
23A	Heat Treatment Oven Natural Gas (0.5 MM Btu/hr)	5%	§18.501
26	Sanding Operations	20%	§18.501
28	Goff Spinblaster	20%	§18.501
29	Natural gas washer	5%	§18.501
30	Natural gas evaporator	5%	§18.501
37	Melt Furnace #8 26,280 tpy melt rate Natural Gas (20.0 MM Btu/hr)	20%	§19.503 (B)(2)
04, 05, 06, 08, 21 & 23B	Removed from service		

Page Amended

4. Pursuant to §18.801 of Regulation 18, and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, the permittee shall not cause or permit the emission of air contaminants, including odors or water vapor and including an air contaminant whose emission is not otherwise prohibited by Regulation #18, if the emission of the air contaminant constitutes air pollution within the meaning of A.C.A. §8-4-303.

5. Pursuant to §18.901 of Regulation 18, and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, the permittee shall not conduct operations in such a manner as to unnecessarily cause air contaminants and other pollutants to become airborne.

6. Pursuant to §19.705 of Regulation 19 and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, the permittee shall not exceed the limits set forth in the following table.

Description	Material	Maximum Usage
		Tons/year during any consecutive 12 month period
Total Melt Rate – Aluminum ingots, scrap, and flux	Aluminum Ingots and clean aluminum scrap, flux and silicon.	188,778

7. Pursuant to §19.705 of Regulation 19 and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, the permittee shall maintain monthly records which demonstrate compliance with Specific Conditions 6. Records must include a twelve month rolling total of material usage along with each individual month's data. Records shall be updated by the fifteenth day of the month following the month to which the records pertain. These records shall be kept on site, and shall be made available to Department personnel upon request.

8. Pursuant to §19.705 of Regulation 19 and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311, the permittee shall maintain records on the monthly amount of flux consumed on-site. A twelve-month rolling total shall also be kept. These records shall be kept on-site and made available to Department personnel upon request.

9. The permittee shall only charge the melt furnaces with clean aluminum ingots and internally recycled clean aluminum scrap. Oily aluminum scrap shall not be used to charge the melt furnaces. The permittee is not subject to the regulation under National Emission Standards for Secondary Aluminum Production. [§19.304 of Regulation 19, and 40 CFR 63.1500(c)(4)]

SECTION V: INSIGNIFICANT ACTIVITIES

The Department deems the following types of activities or emissions as insignificant on the basis of size, emission rate, production rate, or activity in accordance with Group A of the Insignificant Activities list found in Regulation 18 and 19 Appendix A. Insignificant activity emission determinations rely upon the information submitted by the permittee in an application dated **March 24, 2006, April 7, 2006, May 25, 2006 and June 7, 2006.**

Table 1 - Insignificant Activities

Description	Category
Diesel fueled emergency use generator	A-12
Holding furnace – electrically operated.	A-13
Die Cast Machine (SN-12)	A-13
Four (4) electrically operated heat treat ovens (SN-31)	A-13

SECTION VI: GENERAL CONDITIONS

1. Any terms or conditions included in this permit that specify and reference Arkansas Pollution Control & Ecology Commission Regulation 18 or the Arkansas Water and Air Pollution Control Act (A.C.A. '8-4-101 *et seq.*) as the sole origin of and authority for the terms or conditions are not required under the Clean Air Act or any of its applicable requirements, and are not federally enforceable under the Clean Air Act. Arkansas Pollution Control & Ecology Commission Regulation 18 was adopted pursuant to the Arkansas Water and Air Pollution Control Act (A.C.A. '8-4-101 *et seq.*). Any terms or conditions included in this permit that specify and reference Arkansas Pollution Control & Ecology Commission Regulation 18 or the Arkansas Water and Air Pollution Control Act (A.C.A. '8-4-101 *et seq.*) as the origin of and authority for the terms or conditions are enforceable under this Arkansas statute.

2. This permit does not relieve the owner or operator of the equipment and/or the facility from compliance with all applicable provisions of the Arkansas Water and Air Pollution Control Act and the regulations promulgated under the Act. [A.C.A. '8-4-203 as referenced by A.C.A. '8-4-304 and '8-4-311]

3. The permittee will notify the Department in writing within thirty (30) days after commencement of construction, completion of construction, first operation of equipment and/or facility, and first attainment of the equipment and/or facility target production rate. [§19.704 of the Regulations of the Arkansas Plan of Implementation for Air Pollution Control (Regulation 19) and/or A.C.A. §8-4-203 as referenced by A.C.A. §8-4-304 and §8-4-311]

4. Construction or modification must commence within eighteen (18) months from the date of permit issuance. ['19.410(B) of Regulation 19 and/or '18.309(B) of the Arkansas Air Pollution Control Code (Regulation 18) and A.C.A. '8-4-203 as referenced by A.C.A. '8-4-304 and '8-4-311]

5. The permittee must keep records for five years to enable the Department to determine compliance with the terms of this permit--such as hours of operation, throughput, upset conditions, and continuous monitoring data. The Department may use the records, at the discretion of the Department, to determine compliance with the conditions of the permit. ['19.705 of Regulation 19 and/or '18.1004 of Regulation 18 and A.C.A. '8-4-203 as referenced by A.C.A. '8-4-304 and '8-4-311]

6. A responsible official must certify any reports required by any condition contained in this permit and submit any reports to the Department at the address below. ['19.705 of Regulation 19 and/or '18.1004 of Regulation 18 and A.C.A. '8-4-203 as referenced by A.C.A. '8-4-304 and '8-4-311]

Arkansas Department of Environmental Quality
Air Division
ATTN: Compliance Inspector Supervisor
5301 Northshore Drive
North Little Rock, AR 72118-5317

7. The permittee will test any equipment scheduled for testing, unless stated in the Specific Conditions of this permit or by any federally regulated requirements, within the following time frames: (1) newly constructed or modified equipment within sixty (60) days of achieving the maximum production rate, but no later than 180 days after initial start-up of the permitted source or (2) existing equipment already operating according to the time frames set forth by the Department. The permittee must notify the Department of the scheduled date of compliance testing at least fifteen (15) days in advance of such test. The permittee must submit compliance test results to the Department within thirty (30) days after the completion of testing. ['19.702 of Regulation 19 and/or '18.1002 of Regulation 18 and A.C.A. '8-4-203 as referenced by A.C.A. '8-4-304 and '8-4-311]

8. The permittee will provide: [§19.702 of Regulation 19 and/or '18.1002 of Regulation 18 and A.C.A. '8-4-203 as referenced by A.C.A. '8-4-304 and '8-4-311]

   a. Sampling ports adequate for applicable test methods

   b. Safe sampling platforms

   c. Safe access to sampling platforms

   d. Utilities for sampling and testing equipment

9. The permittee will operate equipment, control apparatus and emission monitoring equipment within their design limitations. The permittee will maintain in good condition at all times equipment, control apparatus and emission monitoring equipment. ['19.303 of Regulation 19 and/or '18.1104 of Regulation 18 and A.C.A. '8-4-203 as referenced by A.C.A. '8-4-304 and '8-4-311]

10. If the permittee exceeds an emission limit established by this permit, the permittee will be deemed in violation of said permit and will be subject to enforcement action. The Department may forego enforcement action for emissions exceeding any limits established by this permit provided the following requirements are met: ['19.601 of Regulation 19 and/or '18.1101 of Regulation 18 and A.C.A. '8-4-203 as referenced by A.C.A. '8-4-304 and '8-4-311]

    a. The permittee demonstrates to the satisfaction of the Department that the emissions resulted from an equipment malfunction or upset and are not the result of negligence or improper maintenance, and the permittee took all reasonable measures to immediately minimize or eliminate the excess emissions.

    b. The permittee reports the occurrence or upset or breakdown of equipment (by telephone, facsimile, or overnight delivery) to the Department by the end of the next business day after the occurrence or the discovery of the occurrence.

    c. The permittee must submit to the Department, within five business days after the occurrence or the discovery of the occurrence, a full, written report of such occurrence, including a statement of all known causes and of the scheduling and nature of the actions to be taken to minimize or eliminate future occurrences, including, but not limited to, action to reduce the frequency of occurrence of such conditions, to minimize the amount by which said limits are exceeded, and to reduce the length of time for which said limits are exceeded. If the information is included in the initial report, the information need not be submitted again.

11. The permittee shall allow representatives of the Department upon the presentation of credentials: [A.C.A. '8-4-203 as referenced by A.C.A. '8-4-304 and '8-4-311]

    a. To enter upon the permittee's premises, or other premises under the control of the permittee, where an air pollutant source is located or in which any records are required to be kept under the terms and conditions of this permit;

    b. To have access to and copy any records required to be kept under the terms and conditions of this permit, or the Act;

    c. To inspect any monitoring equipment or monitoring method required in this permit;

    d. To sample any emission of pollutants; and

    e. To perform an operation and maintenance inspection of the permitted source.

12. The Department issued this permit in reliance upon the statements and presentations made in the permit application. The Department has no responsibility for the adequacy or proper

functioning of the equipment or control apparatus. [A.C.A. '8-4-203 as referenced by A.C.A. '8-4-304 and '8-4-311]

13. The Department may revoke or modify this permit when, in the judgment of the Department, such revocation or modification is necessary to comply with the applicable provisions of the Arkansas Water and Air Pollution Control Act and the regulations promulgated the Arkansas Water and Air Pollution Control Act. ['19.410(A) of Regulation 19 and/or '18.309(A) of Regulation 18 and A.C.A. '8-4-203 as referenced by A.C.A. '8-4-304 and '8-4-311]

14. This permit may be transferred. An applicant for a transfer must submit a written request for transfer of the permit on a form provided by the Department and submit the disclosure statement required by Arkansas Code Annotated '8-1-106 at least thirty (30) days in advance of the proposed transfer date. The permit will be automatically transferred to the new permittee unless the Department denies the request to transfer within thirty (30) days of the receipt of the disclosure statement. The Department may deny a transfer on the basis of the information revealed in the disclosure statement or other investigation or, deliberate falsification or omission of relevant information. ['19.407(B) of Regulation 19 and/or '18.307(B) of Regulation 18 and A.C.A. '8-4-203 as referenced by A.C.A. '8-4-304 and '8-4-311]

15. This permit shall be available for inspection on the premises where the control apparatus is located. [A.C.A. '8-4-203 as referenced by A.C.A. '8-4-304 and '8-4-311]

16. This permit authorizes only those pollutant emitting activities addressed herein. [A.C.A. '8-4-203 as referenced by '8-4-304 and '8-4-311]

17. This permit supersedes and voids all previously issued air permits for this facility. [Regulation 18 and 19 and A.C.A. '8-4-203 as referenced by '8-4-304 and '8-4-311]

18. The permittee must pay all permit fees in accordance with the procedures established in Regulation No. 9. [A.C.A §8-1-105(c)]

Section I: AQMD BACT Determinations

Application No.: 379736

Equipment Category – Aluminum Melting Furnace

1. GENERAL INFORMATION

DATE: 4/15/2003

A. MANUFACTURER: Thorpe Industrial Furnace

B. TYPE: Reverbatory

C. MODEL:

D. STYLE: Has recuperator (810F air temperature to burners)

E. APPLICABLE AQMD RULES: 2012

F. COST: $ (NA) SOURCE OF COST DATA:

G. OPERATING SCHEDULE: 24 HRS/DAY 5 DAYS/WK 50 WKS/YR

2. EQUIPMENT INFORMATION

APP. NO.: 379736

A. FUNCTION: RECLAIM device No. D2: melts prime aluminum (from primary foundaries) and house scrap.

B. MAXIMUM HEAT INPUT: 12.8 MMBtu/hr

C. MAXIMUM THROUGHPUT: 120 tpd (typical)

D. BURNER INFORMATION: NO.: 2 TYPE: Low-NOx

E. PRIMARY FUEL: Natural Gas

F. OTHER FUEL: None

G. OPERATING CONDITIONS: Batch operation. Batch size is approximately 40 tons. Typically, three batches per day.

3. COMPANY INFORMATION

APP. NO.: 379736

A. NAME: International Extrusion Corp.

B. SIC CODE: 3354

C. ADDRESS: 1000 Meridian Ave.
CITY: Alhambra STATE: CA ZIP: 91803

D. CONTACT PERSON: Bob Olivas

E. PHONE NO.: 626-576-2424

4. PERMIT INFORMATION

APP. NO.: 379736

A. AGENCY: SCAQMD

B. APPLICATION TYPE: modification

C. AGENCY CONTACT PERSON: Manny Quizon

D. PHONE NO.: 909-396-2639

E. PERMIT TO CONSTRUCT/OPERATE INFORMATION: P/C NO.: 379736 ISSUANCE DATE: 3/29/2001
☐ CHECK IF NO P/C P/O NO.: 379736 ISSUANCE DATE: 2/15/2002

F. START-UP DATE: 3/29/2001

5. EMISSION INFORMATION

APP. NO.: 379736

A. PERMIT

A1. PERMIT LIMIT: NOx not to exceed 37 ppmvd@3%O2 (RECLAIM Concentration Limit)

A2. BACT/LAER DETERMINATION: 37 ppmvd@3%O2 (low-NOx burner)

A3. BASIS OF THE BACT/LAER DETERMINATION: Achieved in Practice

5. EMISSION INFORMATION

APP. NO.: 379736

B. CONTROL TECHNOLOGY

B1. MANUFACTURER/SUPPLIER: Bloom Engineering Co.

B2. TYPE: Low-NOx Burner

B3. DESCRIPTION: Model 1630-LXX, 6.4 MMBtu/hr

B4. CONTROL EQUIPMENT PERMIT APPLICATION DATA: P/C NO.: ISSUANCE DATE:
P/O NO.: ISSUANCE DATE:

B5. WASTE AIR FLOW TO CONTROL EQUIPMENT: FLOW RATE:
ACTUAL CONTAMINANT LOADING: BLOWER HP:

B6. WARRANTY: NOx guaranteed not to exceed .04 lb/MMBtu (32 ppmvd@3%O2)

B7. PRIMARY POLLUTANTS: NOx, CO, VOC, PM

B8. SECONDARY POLLUTANTS:

B9. SPACE REQUIREMENT:

B10. LIMITATIONS: B11. UNUSED

B12. OPERATING HISTORY:

B13. UNUSED B14. UNUSED

C. CONTROL EQUIPMENT COSTS

C1. CAPITAL COST: ☐ CHECK IF INSTALLATION COST IS INCLUDED IN EQUIPMENT COST
EQUIPMENT: $ INSTALLATION: $ (NA) SOURCE OF COST DATA:

C2. ANNUAL OPERATING COST: $ (NA) SOURCE OF COST DATA:

D. DEMONSTRATION OF COMPLIANCE

D1. STAFF PERMFORMING FIELD EVALUATION:
ENGINEER'S NAME: INSPECTOR'S NAME: DATE:

D2. COMPLIANCE DEMONSTRATION:

D3. VARIANCE: NO. OF VARIANCES: None DATES:
CAUSES:

D4. VIOLATION: NO. OF VIOLATIONS: None DATES:
CAUSES:

D5. MAINTENANCE REQUIREMENTS: D6. UNUSED

D7. SOURCE TEST/PERFORMANCE DATA RESULTS AND ANALYSIS:
DATE OF SOURCE TEST: 9/52001 CAPTURE EFFICIENCY:
DESTRUCTION EFFICIENCY: OVERALL EFFICIENCY:
SOURCE TEST/PERFORMANCE DATA:

		Temperatures, F			ppmvd@3%O2	
Furnace	% Load	Roof	Exhaust	O2, % (dry)	NOx	CO
D2 (Melting)	30	1850	423	15.3	31.7	<1
	100	1900	439	13.0	31.0	<1

OPERATING CONDITIONS: Test durations were 30 minutes at each load.

TEST METHODS: AQMD Method 100.1. Test was approved by AQMD Monitoring & Source Test Engineering group.

6. COMMENTS

APP. NO.: 379736

This is a RECLAIM facility. The facility requested a permit modification to apply a RECLAIM concentration limit of 37 ppmvd (corrected to 3% O2) to this furnace. This low-NOx burner is considered achieved in practice. Although this burner is capable of meeting a NOx limit of 37 ppm in this furnace when operated on natural gas, NOx emissions may be different in other furnaces with other burner/furnace configurations, operating temperatures or other operating conditions. It is suggested the the NOx emission guarantee or 60 ppm, the BACT Part D guideline, be used as a starting point in permitting a new or modified furnace, i.e., in the Permit to Construct, and that the final NOx limit in the Permit to Operate be determined after source testing is completed. Source testing should include the highest-NOx operating mode

APPENDIX D

Secondary Heater Emission Calculations

Unabated Combustion Emissions from SCR Heater

Natural Gas Fuel:	1,020	MMBTU/MMCF
Total Rating Per Heater	**1**	**MMBTU/hr**

Property	**Magnitude**	**Units/Comments**
Number of Heaters	2.00	Number of furnaces
Hours of Operation - Combustion (burners)	8059	hours/year

Emissions from Combustion of Natural Gas (From Heaters):

Emission Factors (Data from AP-42)		**Emissions Factor Units (from source)**	**Normalized Emission Factor (lb/MMBTU)**	**Emission Factor Data Source**	**Heat Input Rating of a Heater (MMBTU/hr)**	**Per Heater**			
Pollutant	**Emission Factor**					**lbs/hour**	**lbs/day**	**lbs/year**	**tpy**
VOC	5.5	lb/MMCF	0.0054	AP-42	1	0.01	0.13	43	0.02
PM	7.6	lb/MMCF	0.0075	AP-42	1	0.01	0.18	60	0.03
SO2	0.6	lb/MMCF	0.0006	AP-42	1	0.00	0.01	5	0.00
NOx	100	lb/MMCF	0.098	AP-42	1	0.10	2.35	790	0.40
CO	84	lb/MMCF	0.082	AP-42	1	0.08	1.98	664	0.33
Benzene	2.10E-03	lb/MMCF	2.06E-06	EPA AP 42 Table 1.4-3	1	2.06E-06	4.94E-05	1.66E-02	8.30E-06
Formaldehyde	7.50E-02	lb/MMCF	7.35E-05	EPA AP 42 Table 1.4-3	1	7.35E-05	1.76E-03	5.93E-01	2.96E-04
Toluene	3.40E-03	lb/MMCF	3.33E-06	EPA AP 42 Table 1.4-3	1	3.33E-06	8.00E-05	2.69E-02	1.34E-05

APPENDIX D

Title V Permit Revisions

Bay Area Air Quality Management District

375 Beale Street, Suite 600
San Francisco, CA 94105-2001
(415) 749-5000

Draft Revisions For

MAJOR FACILITY REVIEW PERMIT

Issued To:

Tesla Motors Inc.
Facility # A1438/E0459

Facility Address:
45500 Fremont Boulevard
Fremont, CA 94538

Mailing Address:
45500 Fremont Boulevard
Fremont, CA 94538

Responsible Official	**Facility Contact**
Leonardo Guerrero	Hari Bharadwaj
Director of Vehicle Component and Remanufacturing Operations	Manager, Environmental Health & Safety
(510) 378-4650	(513) 379-6218

Type of Facility: Automotive Manufacturing
Primary SIC: 3711
Product: Automobiles

BAAQMD Permit Division Contact:
Kevin Creaven

I. STANDARD CONDITIONS

Changes to the Permit, Section I:

- Not Applicable/No Changes.

II. EQUIPMENT

Changes to the Permit, Section II:

- Addition of the following permitted sources to Table II A.

Table II A - Permitted Sources

Each of the following sources has been issued a permit to operate pursuant to the requirements of BAAQMD Regulation 2, Permits. The capacities in this table are the maximum allowable capacities for each source, pursuant to Standard Condition I.J and Regulation 2-1-301. All combustion sources except for engines burn natural gas only.

S #	Description*	Make or Type	Model	Capacity
4045	Aluminum Melting Furnace #1	[redacted]	[redacted]	[redacted] ton/year aluminum, [redacted] MMBtu/hr [Basis: Condition No. 101060 Part 1]
4046	Aluminum Melting Furnace #2	[redacted]	[redacted]	[redacted] ton/year aluminum, [redacted] MMBtu/hr [Basis: Condition No. 101060 Part 1]

- Addition of the following abatement devices to Table II B.

Table II B – Abatement Devices

A#	Description	Source(s) Controlled	Applicable Requirement	Operating Parameters	Limit or Efficiency
30200	Aluminum Melting Furnace Catalytic Filter #1	S4045	BAAQMD Condition # 101060 Part 30	Ammonia slip shall be < 10 ppmv, dry @15% O_2.	NOx Outlet Concentration ≤ 37 ppmv @3% O_2, PM10 Filter Efficiency > 99%.
30201	Aluminum Melting Furnace Catalytic Filter #2	S4046	BAAQMD Condition # 101060 Part 30	Ammonia slip shall be < 10 ppmv, dry @15% O_2.	NOx Outlet Concentration ≤ 37 ppmv @3% O_2, PM10 Filter Efficiency > 99%.

III. GENERALLY APPLICABLE REQUIREMENTS

Changes to the Permit, Section III:

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- Not Applicable/No Changes.

IV. SOURCE-SPECIFIC APPLICABLE REQUIREMENTS

Changes to the Permit, Section IV:

- Addition of Table IV – AQ and Table IV - AR.

Table IV-AQ
Source-specific Applicable Requirements
S4045 – ALUMINUM MELTING FURNACE #1
S4046 – ALUMINUM MELTING FURNACE #2
A30200 – ALUMINUM MELTING FURNACE CATALYTIC FILTER #1
A30201 – ALUMINUM MELTING FURNACE CATALYTIC FILTER #2

Applicable Requirement	Regulation Title or Description of Requirement	Federally Enforceable (Y/N)	Future Effective Date
BAAQMD Regulation 6, Rule 1	**Particulate Matter, General Requirements (12/5/07)**		
6-1-301	Ringelmann No. 1 Limitation	N	
6-1-305	Visible Particles	N	
6-1-310	Particulate Weight Limitation	N	
6-1-311	General Operations	N	
6-1-401	Appearance of Emissions	N	
SIP Regulation 6	**Particulate Matter and Visible Emissions (9/4/98)**		
6-301	Ringelmann No. 1 Limitation	Y	
6-305	Visible Particles	Y	
6-310	Particulate Weight Limitation	Y	
6-311	General Operations	Y	
6-401	Appearance of Emissions	Y	
BAAQMD Regulation 9, Rule 1	**Inorganic Gaseous Pollutants - Sulfur Dioxide (3/15/95)**		
9-1-301	Limitations on Ground Level Concentrations	Y	
9-1-302	General Emission Limitation	Y	
BAAQMD Regulation 9, Rule 7	**Inorganic Gaseous Pollutants - Nitrogen Oxides and Carbon Monoxide from Industrial, Institutional, and Commercial Boilers, Steam Generators, and Process Heaters (5/4/11)**		
9-7-307	Final Emission Limits	N	
9-7-307.1	Final Emission Limits – NOx and CO	N	
9-7-311	Insulation Requirements	N	
9-7-311.2	Surface Exempt from Insulation Requirements	N	
9-7-311.3	Minimum Insulation Requirement	N	
9-7-311.5	Exhaust Stack Insulation Exemption	N	

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Table IV-AQ
Source-specific Applicable Requirements
S4045 – ALUMINUM MELTING FURNACE #1
S4046 – ALUMINUM MELTING FURNACE #2
A30200 – ALUMINUM MELTING FURNACE CATALYTIC FILTER #1
A30201 – ALUMINUM MELTING FURNACE CATALYTIC FILTER #2

Applicable Requirement	Regulation Title or Description of Requirement	Federally Enforceable (Y/N)	Future Effective Date
9-7-403	Initial Demonstration of Compliance	N	
9-7-503	Records	N	
9-7-503.3	Testing hours	N	
9-7-503.4	Source test records	N	
9-7-506	Periodic Testing	N	
9-7-601	Determination of Nitrogen Oxides	N	
9-7-602	Determination of Carbon Monoxide and Stack-Gas Oxygen	N	
9-7-603	Compliance Determination	N	
9-7-606	Certification, Initial Demonstration of Compliance and Periodic Test Methods	N	
SIP Regulation 9, Rule 7	**Inorganic Gaseous Pollutants - Nitrogen Oxides and Carbon Monoxide from Industrial, Institutional, and Commercial Boilers, Steam Generators, and Process Heaters (9/15/93)**		
9-7-403	Initial Demonstration of Compliance	Y	
9-7-503	Records	Y	
9-7-503.3	Testing hours	Y	
9-7-503.4	Source test records	Y	
9-7-601	Determination of Nitrogen Oxides	Y	
9-7-602	Determination of Carbon Monoxide and Stack-Gas Oxygen	Y	
9-7-603	Compliance Determination	Y	
BAAQMD Regulation 11, Rule 15	**Hazardous Pollutants, Airborne Toxic Control Measure for Emissions of Toxic Metals from Non-Ferrous Metal Melting (4/6/94)**		
(C) (2)	Metal or Alloy Purity Exemption	N	
BAAQMD Regulation 12, Rule 13	**Miscellaneous Standards of Performance – Foundry and Forging Operations (5/1/13)**		
12-13-300	Requirement to Comply with an Emissions Minimization Plan	N	
BAAQMD Condition # 101020			
Part 1	Material Throughput Limit (Basis: Cumulative Increase)	Y	
Part 2	Alternate Composition Allowance (Basis: Cumulative Increase)	N	
Part 3	Criteria Pollutant Limits (Basis: BACT, Cumulative Increase)	Y	

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Table IV-AQ
Source-specific Applicable Requirements
S4045 – ALUMINUM MELTING FURNACE #1
S4046 – ALUMINUM MELTING FURNACE #2
A30200 – ALUMINUM MELTING FURNACE CATALYTIC FILTER #1
A30201 – ALUMINUM MELTING FURNACE CATALYTIC FILTER #2

Applicable Requirement	Regulation Title or Description of Requirement	Federally Enforceable (Y/N)	Future Effective Date
Part 4	PM10 Emission Limit (Basis: Cumulative Increase)	Y	
Part 5	Hourly Toxics Limitations (Basis: Toxics)	N	
Part 6	Annual Toxics Limitations (Basis: Toxics)	N	
Part 7	Continuous Emissions Monitoring (Basis: Cumulative Increase)	Y	
Part 8	Material Composition Calculation Methodology (Basis: Toxics)	N	
Part 9	Ingot Metal Content (Basis: Cumulative Increase)	Y	
Part 10	Clean Charge Requirement (Basis: Cumulative Increase)	Y	
Part 11	Natural Gas Requirement (Basis: Cumulative Increase)	Y	
Part 12	Natural Gas Limits (Basis: Cumulative Increase)	Y	
Part 13	PM Filtration Requirement (Basis: Cumulative Increase)	Y	
Part 14	Source Test Requirement (Basis: Cumulative Increase)	Y	
Part 15	Source Test Methodology Requirement (Basis: Cumulative Increase)	Y	
Part 16	Source Test Notification Requirement (Basis: BACT, Cumulative Increase)	Y	
Part 17	Holding Furnace Emission Calculation Requirement (Basis: Cumulative Increase)	Y	
Part 18	Holding Furnace Emission Calculation Methodology Requirement (Basis: Cumulative Increase)	Y	
Part 19	Quench Tank Sampling Requirement (Basis: Toxics)	N	
Part 20	Quench Tank Permitting Requirement (Basis: Permits)	N	
Part 21	Recordkeeping (Basis: Cumulative Increase)	Y	
Part 22	Bypass Damper Parametric Monitoring Requirement (Basis: Cumulative Increase)	Y	
Part 23	Bypass Emission Estimation Methodology Requirement (Basis: Cumulative Increase, BACT)	Y	
Part 24	Bypass Emission Estimation Requirement (Basis: Cumulative Increase, BACT)	Y	
Part 25	Bypass Notification Requirement (Basis: Cumulative Increase, BACT)	Y	
Part 26	Bypass Closure Requirement (Basis: Cumulative Increase, BACT)	Y	
Part 27	Bypass Condition and Reporting Requirement (Basis: Cumulative Increase, BACT)	Y	
Part 28	Source Test of A592 (Basis: BACT)	Y	
Part 29	Recordkeeping Requirement (Basis: Cumulative Increase)	Y	
Part 30	Abatement Requirement (Basis: Cumulative Increase, BACT)	Y	

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Table IV-AQ Source-specific Applicable Requirements S4045 – ALUMINUM MELTING FURNACE #1 S4046 – ALUMINUM MELTING FURNACE #2 A30200 – ALUMINUM MELTING FURNACE CATALYTIC FILTER #1 A30201 – ALUMINUM MELTING FURNACE CATALYTIC FILTER #2			
Applicable Requirement	**Regulation Title or Description of Requirement**	**Federally Enforceable (Y/N)**	**Future Effective Date**
Part 31	Ammonia Slip Limit (Basis: Cumulative Increase, BACT)	Y	
Part 32	Continuous Emissions Monitoring Requirement (Basis: BACT)	Y	
Part 33	CEMS Specifications Provision Requirement (Basis: Manual of Procedures)	N	
Part 34	Data Acquisition System Requirement (Basis: Air District Regulation)	N	
Part 35	Certification and Testing Requirement (Basis: Source Testing and Monitoring)	Y	
Part 36	Recordkeeping (Basis: Air District Regulation)	N	
Part 37	Processing & Instrumentation Diagram Requirement (Basis: Air District Regulation)	N	

V. SCHEDULE OF COMPLIANCE

Changes to the Permit, Section V:

- Not Applicable/No Changes.

VI. PERMIT CONDITIONS

Changes to the Permit, Section VI:

- Inclusion of Permit Condition 101060 as seen in Engineering Evaluation.

VII. APPLICABLE LIMITS AND COMPLIANCE MONITORING REQUIREMENTS

Changes to the Permit, Section VI:

- Inclusion of Table VII-AQ.

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Table VII – AQ
Applicable Limits and Compliance Monitoring Requirements
S4045 – ALUMINUM MELTING FURNACE #1
S4045 – ALUMINUM MELTING FURNACE #1
A30200 – ALUMINUM MELTING FURNACE CATALYTIC FILTER #1
A30201 – ALUMINUM MELTING FURNACE CATALYTIC FILTER #2

Type of Limit	Citation of Limit	FE Y/N	Future Effective Date	Limit	Monitoring Requirement Citation	Monitoring Frequency (P/C/N)	Monitoring Type
Opacity	SIP 6-301	Y		Ringelmann 1 for < 3 minutes in any hour	None	N	Source Test
FP	BAAQMD 6-1-310	N		0.15 gr/dscf		N	Source Test
FP	SIP 6-310	Y		0.15 gr/dscf	None	N	Source Test
FP	BAAQMD 6-1-311	N		$4.10P^{0.67}$ lb/hr, where P is process weight, ton/hr	None	N	None
FP	SIP 6-311	Y		$4.10P^{0.67}$ lb/hr, where P is process weight, ton/hr	None	N	None
NOx	BAAQMD Condition # 101060 Part 3	Y		S4045 and S4046, Concentration ≤ 37 ppmv @3% O_2, ≤ 12.8 lb/day, ≤ 4,037 lb/year per furnace	BAAQMD Condition # 101060 Part 32.	C	CEMS
CO	BAAQMD Condition # 101060 Part 3	Y		S4045 and S4046, ≤ 9.0 lb/day, ≤ 3,285 lb/year per furnace	BAAQMD Condition # 101060 Part 7.	P/A	Source Test
PM10	BAAQMD Condition # 101060 Part 3	Y		S4045 and S4046, ≤ 9.0 lb/day, ≤ 3,285 lb/year per furnace	BAAQMD Condition # 101060 Part 7.	P/A	Source Test
Fuel Usage	BAAQMD Condition # 101060 Part 12	Y		Natural Gas Usage ≤ 187,130 MMBtu/yr	BAAQMD Condition # 101060 Part 21	P/A	Records
Toxics	BAAQMD Condition # 101060 Part 9	Y		Aluminum Ingot Nickel ≤ 0.050% Cadmium ≤ 0.004% Arsenic ≤ 0.002%	BAAQMD Condition # 101060 Part 21	P	Records

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Type of Limit	Citation of Limit	FE Y/N	Future Effective Date	Limit	Monitoring Requirement Citation	Monitoring Frequency (P/C/N)	Monitoring Type
CO	BAAQMD Condition # 26027 Part C. 11.	Y		Emissions ≤ 6.46 TPY ≤ 1,615 lb/month	BAAQMD Condition #26027 Part A. 1.	P/A	Source Test

VIII. TEST METHODS

Changes to the Permit, Section VIII:

- Not Applicable/No Changes.

IX. PERMIT SHIELD

Changes to the Permit, Section IX:

- Not Applicable.

X. REVISION HISTORY

Changes to the Permit, Section X:

- The following changes will be made upon Title V Permit Renewal, pursuant to this NSR permit application:
  - Add Two Aluminum Melting Furnaces and associated Catalytic Filter abatement devices
  - Addition of NSR Permit Condition 101060, superseding NSR Permit Condition 27237

XI. GLOSSARY

Changes to the Permit, Section IX:

- Not Applicable.

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