Bay Area Air Quality Management District

939 Ellis Street
San Francisco, CA 94109
(415) 771-6000

Permit Evaluation
and
Statement of Basis
for
Minor Revision to the

MAJOR FACILITY REVIEW PERMIT

for

Tesla Motors, Inc.
Facility #A1438

Facility Address:
45500 Fremont Boulevard
Fremont, CA 94538

Mailing Address:
45500 Fremont Boulevard
Fremont, CA 94538

February 2015

Application Engineer: Simrun Dhoot
Site Engineer: Madhav Patil

Applications: 24333, 24584, 25144, 25443, and 26912

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Title V Statement of Basis

A. Background

This facility is subject to the Operating Permit requirements of Title V of the federal Clean Air Act, Part 70 of Volume 40 of the Code of Federal Regulations (CFR), and BAAQMD Regulation 2, Rule 6, Major Facility Review because it is a major facility as defined by BAAQMD Regulation 2-6-212. It is a major facility because it has the "potential to emit," as defined by BAAQMD Regulation 2-6-218, of more than 100 tons per year of a regulated air pollutant, precursor organic compounds.

Major Facility Operating permits (Title V permits) must meet specifications contained in 40 CFR Part 70 as contained in BAAQMD Regulation 2, Rule 6. The permits must contain all applicable requirements (as defined in BAAQMD Regulation 2-6-202), monitoring requirements, recordkeeping requirements, and reporting requirements. The permit holders must submit reports of all monitoring at least every six months and compliance certifications at least every year.

In the Bay Area, state and District requirements are also applicable requirements and are included in the permit. These requirements can be federally enforceable or non-federally enforceable. All applicable requirements are contained in Sections I through VI of the permit.

Each facility in the Bay Area is assigned a facility identifier that consists of a letter and a 4-digit number. This identifier is also considered to be the identifier for the permit. The identifier for this facility is A1438.

This facility, once belonging to New United Motor Manufacturing, Inc. (NUMMI), received its initial Title V permit under Application 16480 on December 18, 2002. A Significant Revision was made on December 13, 2004 to incorporate Applications 6914, 7048, 7119, 7151, 8370, 8419, and 8493. A Minor Revision to the original permit was made on October 24, 2007 under Application 12215 to modify permit condition numbers 9158, 9163, and 9164. The permit was renewed on June 3, 2010 under Application 16248. The initial permit was administratively amended on October 28, 2010 under Application 22696 to transfer ownership from NUMMI to Tesla Motors, Inc. (Tesla). Finally, the permit was administratively amended under Application 23195 on November 30, 2011 to delete 20 sources from Tables II, IV, and VII of the permit and to modify permit conditions applicable to the deleted sources. Section X of the permit, Revision History, has a list of these revisions in chronological order.

Applications 25144, 24584, 24333, 25443, and 26912 are for minor revisions involving casting operations to the existing Title V permit. The proposed revisions include new equipment and permit condition changes that were evaluated by the District pursuant to New Source Review (NSR) Applications 24332, 24583, 25143, 25442, and 25969. Table 1 below identifies these applications and their final actions.

Table 1. Summary of NSR Applications

NSR Application	Description	Title V Revision	New Sources	Outcome
24332	New casting and pre-treatment equipment	Minor	12	**Waived A/C, Issued P/O 9/10/12** • S3702 and S3712 **Exempt Sources 9/10/12** • S3703, S3704, S3705, S3706, S3707, S3708, S3709, S3710, S 3711, S3714
24583	Limit S1056 to 10% of heat capacity in each consecutive 12-month period; replace existing burner on S1057 with low NO_x	Minor	0	**Waived A/C, Issued P/O and Permit Condition Updated 11/05/12** • S1056 and S1057 • Condition #9174

Table 1. Summary of NSR Applications

NSR Application	Description	Title V Revision	New Sources	Outcome
	burner to derate S1057 from 25MMBtu/hr to 19.95 MMBtu/hr			
25143	High pressure die cast operation and update existing permit condition to include S3715	Minor	1	**Exempt Source 6/4/13** • S3715 **Permit Condition Updated 6/4/13** • Condition #25346
25442	Change to existing permit condition to increase daily and annual production limit for S3702, change PM10 emission factor applicable to S3702, conduct yearly source test on S3702, and exempt S3712 from District permits	Minor	1	**Permit Condition Updated 7/3/13** • Condition #25346 **Exempt Source 7/3/13** • S3712
25969	Replace S3702 with a new melt furnace; replace S3703 (exempt source) with a new holding furnace; and permit a new holding furnace to accommodate increased production	Minor	3	**Waived A/C, Issued P/O 3/26/14** • S3724 **Exempt Sources 3/26/14** • S3725 and S3726 **Removed from Service 3/26/14** • S3702, S3703

B. NSR Permit Evaluation

Application No. 24332

Tesla applied for an Authority to Construct/Permit to Operate for a number of new casting and pre-treatment equipment. The process and new equipment is described below.

- Clean aluminum ingots are liquefied in *S3702, Melt Furnace*.
- Molten material is transferred from furnace to bull ladle.
- Metallurgy is checked and alloys of strontium and magnesium may be added to mixture to achieve desired material quality.
- Ladle transfers molten aluminum to *S3703, Fill Dosing Furnace*.
- S3703 is used to complete fusing of appropriate materials into final melt that is used for die cast operations.
- Once melted and taken to proper temperature, material is transferred to *S3704, High Pressure Die Cast*, to form the desired part. Molten metal is poured into die cast chamber and a hydraulically operated plunger seals the chamber and forces the metal into the locked die at high pressures.
- Casted parts are cooled using *S3705, Quench Tank*.
- Casted parts are transferred from quench tank to *S3706 and S3707, Solution Ovens*, for further processing. Parts are cooled with air blast and transferred to *S3708-S3710, Age Ovens*.
- Age ovens are used to temper casted parts.
- Parts are reviewed by quality control to ensure they meet production specifications.
- Parts are then sent to the *Computer Numerical Control (CNC) machining unit, S3711*. CNC uses computerized programming with laser technology to remove defects from finished casting. Using a mixture of Calcium Acetate, Foam Ban 1123 and Ultak 206, potential metallic chips are removed from finished cast.

- The casting is transferred from S3711 to *S3712, Pre-treatment Casting Operations*. The pre-treatment process is a multi-stage batch process and consists of a series of dip operations to clean and prepare the surface before actually applying any chemical film such as ecoat, primer, topcoat, etc.
- S3714, Boiler, is fired exclusively with natural gas and is used to supply hot water to S3712.

Application No. 24583
Permit Condition # 9174 was updated to ensure that S1056 uses less than 10% of its annual maximum heat capacity in order to comply with the low fuel usage limit exemption of Section 9-7-112.2. S1057 was altered to ensure compliance with the new limits in BAAQMD Regulation 9, Rule 7, Nitrogen Oxides and Carbon Monoxide from Industrial, Institutional, and Commercial Boilers, Steam Generators, and Process Heaters. The boiler was derated from 25 MMBtu/hr to 19.95 MMBtu/hr allowing it to be subject to a more current NOx limit. There was no increase in emissions associated with this application.

Application No. 25143
S3715 was exempt from permitting per District Regulation 2-1-122.5 because the source is a die casting machine. Permit Condition No. 25346 was modified to include S3715.

Application 25442
Permit Condition No. 25346 was modified to increase the daily production for S3702 from 8 tons per day to 20 tons per day, increase the annual production limit from 1,920 tons to 5,000 tons, change the PM10 emission factor applicable to S3702 from 4.3 lbs/ton of aluminum processed to 0.10 lbs/ton of aluminum processed, add a year source test condition for S3702, and exempt S3712 from permitting. There is no increase in emissions of all criteria pollutants as a result of these changes. Arsenic, cadmium, and nickel exceeded chronic trigger levels. Therefore, a risk assessment was completed in which the District concluded the risk levels were acceptable. S3702 is exempt from 40 CFR Part 63, Subpart RRR because Tesla's casting operations do not meet the definition of a secondary aluminum production facility.

Application 25969
Tesla replaced S3703 (exempt) with S3725, a new electric furnace, and added S3726, a second electric furnace, to accommodate an increase in production. S3725 and S3726 are exempt per Regulation 2-1-103 because both furnaces are powered electrically. Tesla also applied for an Authority to Construct to replace S3702 with S3724. Arsenic, chromium, cadmium, and nickel exceeded chronic trigger levels. Therefore, a risk assessment was completed in which the District concluded the risk levels were acceptable. PM10 emissions are 3.6 lbs/day. Therefore, BACT was not triggered. S3724 is exempt from 40 CFR 63, Subpart RRR because Tesla's casting operations do not meet the definition of a secondary aluminum production facility.

The above are minor revisions because they do not meet the definition of significant permit revision in BAAQMD Regulation 2-6-226, shown below:

2-6-226 **Significant Permit Revision:** Any revision to a federally enforceable condition contained in a major facility review permit that can be defined as follows:

226.1 The incorporation of a change considered a major modification under 40 CFR Parts 51 (NSR) or 52 (PSD);

226.2 The incorporation of a change considered a modification under 40 CFR Parts 60 (NSPS), 61 (NESHAPS), or Section 112 of the Clean Air Act (HAP);

226.3 Any significant change or relaxation of any applicable monitoring, reporting or recordkeeping condition;

226.4 The establishment of or change to a permit term or condition allowing a facility to avoid an applicable requirement, including:

4.1 a federally enforceable emission limit assumed in order to avoid classification as a modification under any provision of Title I of the federal Clean Air Act, or

4.2 an alternative hazardous air pollutant emission limit pursuant to Section 112(i)(5) of the Clean Air Act;

226.5 The establishment of or change to a case-by-case determination of any emission limit or other standard;
226.6 The establishment of or change to a facility-specific determination for ambient impacts, visibility analysis, or increment analysis on portable sources; or
226.7 The incorporation of any requirement promulgated by the U. S. EPA under the authority of the Clean Air Act provided that three or more years remain on the permit term.

The changes to the boilers and the installation of the new metal melting furnace are not major modifications pursuant to Sections 2-6-226.1 and 2-6-226.2. There is no significant change or relaxation to monitoring, recordkeeping, or reporting. No condition to avoid a federally-enforceable applicable requirement was established. S1057 was de-rated to avoid a lower NOx limit, but that limit is not in the SIP and is not federally-enforceable. No case-by-case determination of an emission limit was made. The revisions do not involve a facility-specific determination for ambient impacts, visibility analysis, or increment analysis. The revisions were not made to incorporate any new EPA requirement.

C. Permit Content

The legal and factual basis for the permit follows. The permit sections are described in the order presented in the permit. All proposed changes to the permit are shown in strikeout/underline format.

I. Standard Conditions

This section contains administrative requirements and conditions that apply to all facilities. If the Title IV (Acid Rain) requirements for certain fossil-fuel fired electrical generating facilities or the accidental release (40 CFR 68) programs apply, this section of the permit will contain a standard condition pertaining to these programs. Many of these conditions derive from 40 CFR 70.6, Permit Content, which dictates certain standard conditions that must be placed in the permit. The language that the District has developed for many of these requirements has been adopted into the BAAQMD Manual of Procedures, Volume II, Part 3, Section 4, and therefore must appear in the permit.

The standard conditions also contain references to BAAQMD Regulation 1 and Regulation 2. These are the District's General Provisions and Permitting rules.

Changes in this action
There are no changes to this section in this action.

II. Equipment

This section of the permit lists all permitted or significant sources. Each source is identified by an S and a number (e.g., S24).

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
1056	Truck ASH, Boiler #1	Custom Made	N/A	25 MMBtu/hr
1057	Truck ASH, Boiler #2	Custom Made	N/A	~~25 MMBtu/hr~~ 19.95 MMBtu/hr
3724	Reverberatory Melt Furnace	StrikoMelter	MH-IIT	4.1 MMBtu/hr

S702 does not appear in the table above because it was removed from service and replaced with S3724 in Application 25969.

There are no new abatement devices.

III. Generally Applicable Requirements

This section of the permit lists requirements that generally apply to all sources at a facility including insignificant sources and portable equipment that may not require a District permit. If a generally applicable requirement applies specifically to a source that is permitted or significant, the standard will also appear in Section IV and the monitoring for that requirement will appear in Sections IV and VII of the permit. Parts of this section apply to all facilities (e.g., particulate, architectural coating, odorous substance, and sandblasting standards). In addition, standards that apply to insignificant or unpermitted sources at a facility (e.g., refrigeration units that use more than 50 pounds of an ozone-depleting compound), are placed in this section.

Unpermitted sources are exempt from normal District permits pursuant to an exemption in BAAQMD Regulation 2, Rule 1. They may, however, be specifically described in a Title V permit if they are considered a significant source pursuant to the definition in BAAQMD Rule 2-6-239.

Changes in this action
There are no changes to this section in this action.

IV. Source-Specific Applicable Requirements

This section of the permit lists the applicable requirements that apply to permitted or significant sources. These applicable requirements are contained in tables that pertain to one or more sources that have the same requirements. The order of the requirements is:

- District Rules
- SIP Rules (if any) are listed following the corresponding District rules. SIP rules are District rules that have been approved by EPA for inclusion in the California State Implementation Plan. SIP rules are "federally enforceable" and a "Y" (yes) indication will appear in the "Federally Enforceable" column. If the SIP rule is the current District rule, separate citation of the SIP rules is not necessary and the "Federally Enforceable" column will have a "Y" for "yes." If the SIP rule is not the current District rule, the SIP rule or the necessary portion of the SIP rule is cited separately after the District rule. The SIP portion will be federally enforceable; the non-SIP version will not be federally enforceable, unless EPA has approved it through another program.
- Other District requirements, such as the Manual of Procedures, as appropriate.
- Federal requirements (other than SIP provisions).
- BAAQMD permit conditions. The text of BAAQMD permit conditions is found in Section VI of the permit.
- Federal permits conditions. The text of the Federal permit conditions, if any, is found in Section VI of the permit.

Section IV of the permit contains citations to all of the applicable requirements. The text of the requirements is found in the regulations, which are readily available on the District's or EPA's websites, or in the permit conditions, which are found in Section VI of the permit. All monitoring requirements are cited in Section IV. Section VII is a cross-reference between the limits and the monitoring requirements. A discussion of monitoring is included in Section C.VII of this permit evaluation/statement of basis.

Complex Applicability Determinations
S3724 is exempt from 40 CFR Part 63, Subpart RRR (National Emission Standards for Hazardous Air Pollutants for Secondary Aluminum Production). Tesla's casting operations do not meet the definition of a secondary aluminum production facility because the facility only melts clean charge and does not operate sweat furnaces, thermal chip dryers, or scrap dryers/delaquering kilns/decoating kilns.

S1056 and S1057 are not subject to Regulation 6-1-311 and SIP Regulation 6-311 because they are fuel-fired indirect heat exchangers.

S1057 and S3724 are subject to Regulation 9, Rule 7, Nitrogen Oxides and Carbon Monoxide from Industrial, Institutional and commercial Boilers, Steam Generators and Process Heaters because they have a heat input rating of more than 2 MMBTU/hour.

S3724 is not subject to SIP Regulation 9-7 because it has a rated heat input of less than 10 MMBtu/hr.

Table IV - AJ
Source-specific Applicable Requirements
S1056 TRUCK ASH, BOILER #1
S1057 TRUCK ASH, BOILER #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 Limitations	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 (7/30/08)**		
9-7-112.2	Limited Exemption, Low Fuel Usage (applies only to S1056)	N	
9-7-301	Interim Emission Limits	N	
9-7-301.1	Interim Emission Limits-NOx	N	
9-7-301.4	Interim Emission Limits-CO	N	
9-7-307	Final Emission Limits	N~~Y~~	~~1/1/2012~~
9-7-307.~~5~~	Final Emission Limits – NOx and CO (applies only to S1057)	~~Y~~N	~~1/1/2012~~
~~9-7-308~~	~~Compliance Schedule~~	~~Y~~	~~1/1/2012~~

Table IV - AJ
Source-specific Applicable Requirements
S1056 TRUCK ASH, BOILER #1
S1057 TRUCK ASH, BOILER #2

Applicable Requirement	Regulation Title or Description of Requirement	Federally Enforceable (Y/N)	Future Effective Date
9-7-307.5	Final Emission Limits – NOx and CO (applies only to S1056)		
9-7-311	Insulation Requirements	N~~Y~~	~~1/1/2010~~
9-7-311.2	Surface Exempt from Insulation Requirements	N~~Y~~	
9-7-311.3	Minimum Insulation Requirement	N~~Y~~	~~1/1/2010~~
9-7-311.5	Exhaust Stack Insulation Exemption	N~~Y~~	~~1/1/2010~~
9-7-312	Stack Gas Temperature Limits	N~~Y~~	~~1/1/2011~~
~~9-7-313~~	~~Tune-Up Requirements~~	~~Y~~	
~~9-7-313.2~~	~~Periodic Annual Inspection and Tune-Up Requirements~~	~~Y~~	
~~9-7-407~~	~~Identification~~	~~Y~~	
9-7-503	Records	N	
9-7-503.3	Testing hours	N	
9-7-503.4	Source test records	N	
9-7-504	Low Fuel Usage – Monitoring and Records (applies only to S1056)	N	
9-7-506	Periodic Testing	N~~Y~~	
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	
SIP Regulation 9, Rule 7	**Nitrogen Oxides and Carbon Monoxide from Industrial, Institutional, and Commercial Boilers, Steam Generators, and Process Heaters (09/15/93)**		
9-7-301	Emission Limits- Gaseous Fuel	Y	
9-7-301.1	Emission Limits-NOx	Y	
9-7-301.2	Emission Limits-CO	Y	
9-7-403	Initial Demonstration of Compliance	Y	
9-7-503	Records	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 Condition # 9156			
Part 1	Offset Baseline (basis: Regulation 2-2-302)	Y	
Part 7	Source Obligation, Relaxation of Enforceable Conditions (basis: Regulation 2-2-412)	Y	
Part 8	Natural Gas Usage Limits (basis: Cumulative Increase)	Y	
Part 9	Definition of Year and Month (basis: Cumulative Increase)	Y	
BAAQMD Condition #9174			

Table IV - AJ
Source-specific Applicable Requirements
S1056 TRUCK ASH, BOILER #1
S1057 TRUCK ASH, BOILER #2

Applicable Requirement	Regulation Title or Description of Requirement	Federally Enforceable (Y/N)	Future Effective Date
Part 1	Fuel Limitations (basis: Cumulative Increase)	Y	
Part 2	NOx Limit (basis: ~~BACT, Cumulative Increase~~ Regulation 9-7-307.5)	~~Y~~N	
Part 3	~~Proper Maintenance (basis: Cumulative Increase)~~NOx Limit (basis: Regulation 9-7-307.3)	N~~Y~~	
Part 4	~~Records (BACT, Cumulative Increase)~~ CO Limit (basis: Cumulative Increase; Regulation 9-7-307.3)	Y	
Part 5	Fuel, NOx, and CO Limits (basis 9-7-112.2)	~~Y~~N	
Part ~~5~~6	Source Test Requirement (basis: Regulation 2-6-409.2, 9-7-506)	Y	
Part 7	Compliance Determination (basis: Regulation 9-7-112.2)	~~Y~~N	
Part 8	Records (basis: Cumulative Increase; Regulation 9 Rule 7)	Y	
Part 9	Records (basis: Regulation 9, Rule 7)	N	

Table IV –BG
Source-specific Applicable Requirements
S3724 – REVERBERATORY MELT FURNACE

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	
SIP Regulation 6	**Particulate Matter and Visible Emissions (9/04/98)**		
6-301	Ringelmann No. 1 Limitation	Y	
6-305	Visible Particles	Y	
6-310	Particulate Weight Limitation	Y	
6-311	General Operations	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 Limitations	Y	

Table IV –BG
Source-specific Applicable Requirements
S3724 – REVERBERATORY MELT FURNACE

Applicable Requirement	Regulation Title or Description of Requirement	Federally Enforceable (Y/N)	Future Effective Date
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	
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	
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 Condition #25346			
Part 1	Throughput Limit (basis: Cumulative Increase, BACT, Toxics)	Y	
Part 2	Cadmium and Arsenic Content (basis: Regulation 11-15-(c)(2))	N	
Part 3	Clean Charge (basis: BACT, Toxics, 40 CFR Subpart RRR, Section 63.1503)	Y	
Part 4	Fuel Type (basis: Cumulative Increase, Toxics)	Y	
Part 5	Emissions Factors (basis: Cumulative Increase)	Y	
Part 6	Source Test (basis: Cumulative Increase)	Y	
Part 7	Bath Chemistry (basis: Toxics; Regulation 2 Rule 5)	N	
Part 8a.i	Record Keeping and Monitoring (basis: Toxics)	N	
Part 8a.ii	Record Keeping and Monitoring (basis: Cumulative Increase, BACT)	Y	
Part 8b	Record Keeping and Monitoring (basis: Toxics)	N	
Part 8c	Record Keeping and Monitoring (basis: Cumulative Increase, Regulation 2-6-501)	Y	

V. Schedule of Compliance

A schedule of compliance is required in all Title V permits pursuant to BAAQMD Regulation 2-6-409.10 which provides that a major facility review permit shall contain the following information and provisions:

"409.10 A schedule of compliance containing the following elements:

10.1 A statement that the facility shall continue to comply with all applicable requirements with which it is currently in compliance;

10.2 A statement that the facility shall meet all applicable requirements on a timely basis as requirements become effective during the permit term; and

10.3 If the facility is out of compliance with an applicable requirement at the time of issuance, revision, or reopening, the schedule of compliance shall contain a plan by which the facility will achieve compliance. The plan shall contain deadlines for each item in the plan. The schedule of compliance shall also contain a requirement for submission of progress reports by the facility at least every six months. The progress reports shall contain the dates by which each item in the plan was achieved and an explanation of why any dates in the schedule of compliance were not or will not be met, and any preventive or corrective measures adopted."

Since the District has not determined that the facility is out of compliance with an applicable requirement, the schedule of compliance for this permit contains only sections 2-6-409.10.1 and 2-6-409.10.2.

Changes in this action

There are no changes to this section in this action.

VI. Permit Conditions

The regulatory basis is listed following each condition. The regulatory basis may be a rule or regulation. The District is also using the following terms for regulatory basis:

- BACT: This term is used for a condition imposed by the Air Pollution Control Officer (APCO) to ensure compliance with the Best Available Control Technology in Regulation 2-2-301.
- Cumulative Increase: This term is used for a condition imposed by the APCO which limits a source's operation to the operation described in the permit application pursuant to BAAQMD Regulation 2-1-403.
- Offsets: This term is used for a condition imposed by the APCO to ensure compliance with the use of offsets for the permitting of a source or with the banking of emissions from a source pursuant to Regulation 2, Rules 2 and 4.
- PSD: This term is used for a condition imposed by the APCO to ensure compliance with a Prevention of Significant Deterioration permit issued pursuant to Regulation 2, Rule 2.
- TRMP: This term is used for a condition imposed by the APCO to ensure compliance with limits that arise from the District's Toxic Risk Management Policy.

All changes to existing permit conditions are clearly shown in "strike-out/underline" format in the proposed permit. When the permit is issued, all 'strike-out" language will be deleted and all "underline" language will be retained, subject to consideration of comments received.

Any condition that is preceded by an asterisk is not federally-enforceable.

Additional monitoring has been added, where appropriate, to assure compliance with the applicable requirements.

Changes in this action

Under Condition #9174:

- In Parts 2 and 3, BACT and Cumulative Increase were removed because they do not apply. Therefore, the condition is not federally enforceable.

- In Part 7, Cumulative Increase was removed because it does not apply. Therefore the condition is not federally enforceable.
- Part 8 was divided into two parts, creating Part 9. Part 8 lists the recordkeeping conditions which are federally enforceable. Part 9 lists the recordkeeping condition which is not federally enforceable.

Under Condition #25346:

- In Part 2, BACT and Cumulative Increase do not apply. Therefore, the condition is not federally enforceable.

Condition # 9156

For S1001, TRUCK ED BATH
S1002, TRUCK ED OVEN
S1003, TRUCK ED DRY SAND BOOTH
S1004, TRUCK METAL REPAIR BOOTH
S1005, TRUCK PVC UNDERCOAT AREA
S1006, TRUCK ANTI CHIP BOOTH
S1007, TRUCK SEALER OVEN
S1008, TRUCK PRIME BOOTH
S1009, TRUCK PRIME OVEN
S1010, TRUCK OFF-LINE REPAIR
S1011, TRUCK DRY SAND BOOTH
S1012, TRUCK TOUCH UP BOOTH
S1014, TRUCK TOPCOAT BOOTH I
S1015, TRUCK TOPCOAT OVEN
S1017, TRUCK TOUCH UP BOOTH
S1018, TRUCK BLACKOUT BOOTH
S1019, TRUCK CAVITY WAX BOOTH
S1020, OFF-LINE ASSEMBLY PAINT HOSPITAL
S1053, TRUCK WAX DRY OFF BOOTH (ELECTRIC)
S1056 TRUCK ASH, BOILER #1
S1057 TRUCK ASH, BOILER #2:

Conditions Common to All Sources for the Truck Vehicle Line (Excluding Storage Tanks, Cold Cleaners, Air Supply Houses, Door Air Heaters, Boilers, and Standby Generators):

1. The permitted emission levels for the truck line were fully offset in Application 3611. (basis: Regulation 2-2-302)

2. The owner/operator shall not substitute any materials for those specified in the Health Risk Assessment (HRA), without prior notification and approval of the District, if such substitution would result in:
   a) an increase in the quantity of permitted air toxic compounds emitted,
   b) the addition of air toxic compounds which were not listed in the HRA, or
   c) an increase in the permitted VOC content or air toxic compound content for each coating category contained in the HRA.
   (basis: Toxics)

4. Monthly compliance reports showing coating and clean-up usage and calculated emissions shall be submitted to the District. (basis: Cumulative Increase)

5. The VOC emissions from non-combustion operations for the truck vehicle line shall not exceed 779.17 tons per year. (basis: Cumulative Increase)

*6. Total emissions of the following compounds from non-combustion operations on the second vehicle line shall not exceed the following:

Carcinogen	lbs/year
Benzene	157.0
1,4 Dioxane	141.0
Formaldehyde	3342
Methylene Chloride	684.8
Perchloroethylene	1341.9
Vinyl chloride	2.8

The owner/operator shall demonstrate annual compliance with these limits. (basis: Toxics)

7. In accordance with Section 2-2-412, Source Obligation, Relaxation of Enforceable Conditions: If any requirement of Regulation 2-2 would be triggered by an existing source solely because of a relaxation of any limitation on the emission of a pollutant, the requirements of Regulation 2-2 shall apply to the source in the same way as to a new or modified source or stationary source otherwise subject to this Rule. (basis: Regulation 2-2-412)

8. The combined total natural gas usage for all truck line combustion sources shall not exceed 8.6 million therms per year. Monthly records of natural gas usage shall be maintained for 5 years from date of entry and shall be made available to District personnel upon request. (basis: Cumulative Increase)

9. For determining compliance with emissions and/or usage limits, a year is any consecutive twelve month period; a month is a calendar month. (basis: Cumulative Increase)

Condition # 9174

For S1056, TRUCK ASH BOILER # 1, AND
S1057, TRUCK ASH BOILER # 2:

1. The owner/operator shall ensure that sources S1056 and S1057 be fired exclusively with ~~Only~~ natural gas, propane, ~~LPG~~liquefied petroleum gas (LPG), or butane. ~~shall be used as a fuel at this source for this source.~~ (basis: Cumulative Increase)

2. *The owner/operator of S1056 shall ensure that ~~Emissions~~emissions of ~~oxides of~~ nitrogen oxides (NOx) ~~shall~~ do not exceed ~~30~~9 ppmv, dry, at 3 percent oxygen~~,~~. ~~dry basis, averaged over any one hour period.~~ (basis: ~~BACT, Cumulative Increase,~~ Regulation 9-7-307.5)

3. *The owner/operator of S1057 shall ensure that emissions of nitrogen oxides (NOx) do not exceed 15 ppmv, dry, at 3 percent oxygen. (Basis: ~~BACT, Cumulative Increase,~~ Regulation 9-7-307.3)~~This boiler shall be operated and maintained according to the manufacturer's specifications. (basis: Cumulative Increase)~~

4. The owner/operator of sources S1056 and S1057 shall ensure that emissions of carbon monoxide (CO) do not exceed 400 ppmv, dry, at 3 percent oxygen. (Basis: Cumulative Increase, Regulations 9-7-112.2, 9-7-307)~~All source test records and preventative maintenance records shall be kept and made available for District Inspection for a period of five years following the date of entry. (basis: Cumulative Increase)~~

5. *The owner/operator of S1056 shall not exceed the following limits in the event the limited exemption of Section 9-7-112.2 is invoked:
   a. Annual fuel usage of 219,000 therms in each consecutive 12-month period.
   b. NOx exhaust concentration of 30 ppmv, dry, at 3 percent oxygen.
   c. CO exhaust concentration of 400 ppmv, dry, at 3 percent oxygen.

(basis: Regulation 9-7-112.2)

6. In order to demonstrate compliance with parts 2, 3, and 4 of this permit condition, the owner/operator shall ensure that sources S1056 and S1057 be source tested once per calendar year for NOx and CO, unless a different schedule is approved. Testing shall be performed in accordance with Sections 9-7-601 and 602. The owner/operator shall obtain approval of all testing procedures from the manager of the District's source test section prior to conducting any tests and shall notify the manager of the District's source test section of the scheduled test date at least seven days prior to conducting the test. Within 60 days of completion of the test, a comprehensive report of the test results shall be submitted to the Manager of the District's Source Test Section. (basis: Regulations 2-6-409.2, 9-7-506)

7. *Parts 2 and 6 of Permit Condition 9174 will not apply to S1056 if the owner/operator can demonstrate to the satisfaction of the APCO that the source complies with the provisions of District Regulation 9-7-112.2 as amended May 4, 2011. (basis: ~~Cumulative Increase~~Regulation 9-7-112.2)

8. In order to demonstrate compliance with parts 5, 6, and 7 of this permit condition, the owner/operator shall maintain the following records, including but not necessarily limited to the following information:
   a. Annual fuel usage at S1056.
   b. Annual source test records.
   c. All records shall be retained on site for five years, from the date of entry and made available for inspection by the District staff upon request. These recordkeeping requirements shall not replace the recordkeeping requirements contained in any applicable District regulation. (basis: Cumulative Increase, Recordkeeping)

9. *In order to demonstrate compliance with parts 5, 6, and 7 of this permit condition, the owner/operator shall maintain the following records:
   a. Documentation verifying the requirements of Sections 9-7-309 and 504 are satisfied. (basis: Regulation 9, Rule 7)

~~To demonstrate compliance with Part 2, S1056 and S1057 shall be source tested once per calendar year for NOx and CO, unless a different schedule is approved. A minimum of two weeks notification shall be given to the District's Source Test Manager, prior to the owner/operator initiating any source test for these boilers. Source testing shall be performed to determine the NOx and CO emissions of the sources, in accordance with the District's Manual of Procedures. Stack sampling ports and platform(s) shall be provided for these sources exhaust stacks. Records of the source test results shall be kept. All records shall be kept and made available for District inspection for a period of five years following the date of entry (basis: Regulation 2-6-409.2)~~

Condition #25346
For S3724, Reverberatory Melt Furnace,

This condition was amended in Application #25143, Application #25442, and finally in Application #25969.

1. The owner/operator shall not exceed the following material throughput limits at S-3724:
   a. 1.5 tons per hour
   b. 36 tons during any day
   c. 12600 tons during any year
   [Basis: Cumulative Increase, BACT, Toxics]

2. The owner/operator of S3724 shall ensure that aluminum ingots melted at Reverberatory Melt Furnace have a cadmium content of no more than 0.004 percent, chromium 0.03 percent, manganese 0.55 percent,

and an arsenic content of no more than 0.002 percent. [Basis: BACT, Cumulative Increase, Regulation 11, Rule 15 (c) (2)]

3. The owner/operator of S3724 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, Toxics, 40 CFR Subpart RRR, Section 63.1503]

4. The owner/operator shall ensure that sources S3724, S3706-S3710, and S3714 be fired exclusively with natural gas, liquefied petroleum gas (LPG), or any combination thereof. [Basis: Cumulative Increase, Toxics]

5. The owner/operator shall use following emission factors to calculate PM_{10}, POC, NOx, SOx, and CO emissions from S3724 and S3704:
   a. PM10: 0.1 lbs of PM10/ton of aluminum processed
   b. POC: 0.14 lbs of PM10/ton of aluminum processed
   c. NOx: 0.01 lbs of PM10/ton of aluminum processed
   d. SOx: 0.02 lbs of PM10/ton of aluminum processed
   e. CO: 0.152 lbs of PM10/ton of aluminum processed
   [Basis: Cumulative Increase]

6. In order to demonstrate compliance with Part 5a of this permit condition, the owner/operator shall conduct a District approved source test on S3724 once per calendar year in accordance with the District's Manual of Procedures. The owner/operator shall notify the Manager of the District's Source Test Section at least seven (7) days prior to the test, to provide the District staff the option of observing the testing. Within 45 days of test completion, a comprehensive report of the test results shall be submitted to the Manager of the District's Source Test Section for review and disposition. [Basis: Cumulative Increase]

7. The owner/operator of S3712 shall not change bath Chemistry, temperature, pressure or other operating parameters in such a manner as to generate emissions exceeding toxic air contaminants trigger levels listed in Table 2-5-1 of the District Regulation 2-5 without notifying District and having health risk screening analysis completed.
   a. Bath temperature shall not exceed 170°F
   [Basis: Toxics, Regulation 2, Rule 5]

8. RECORD KEEPING AND REPORTING
   a. To demonstrate compliance with parts 1 through 3 of this permit condition, the owner/operator shall maintain the following records, including but not necessarily limited to the following information:
      i. For each batch delivered to the owner/operator, Certificates of Analysis for all aluminum ingots used showing the arsenic cadmium, chromium, manganese, copper, lead, nickel, and hexavalent chromium 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);
      ii. Daily, monthly, and annual throughput of aluminum ingots processed at S3724;
      [Basis: Cumulative Increase, BACT, Toxics]

b. To demonstrate compliance with part 7 of this permit condition, the owner/operator shall maintain the following records, including but not necessarily limited to the following information:
   i. Daily, monthly, and annual temperature records.
   ii. Logs of the quantity of all chemicals, excluding water, added to the treatment baths.
   iii. Material Safety Data Sheets for all chemicals, excluding water, added to the treatment baths. [Basis: Toxics]

c. All records shall be retained on site for five years, from the date of entry and made available for inspection by the District staff upon request. These recordkeeping requirements shall not replace the recordkeeping requirements contained in any applicable District regulation. [Basis: Cumulative Increase, Recordkeeping]

VII. Applicable Limits and Compliance Monitoring Requirements

This section of the permit is a summary of numerical limits and related monitoring requirements for each source. The summary includes a citation for each monitoring requirement, frequency of monitoring, and type of monitoring. The applicable requirements for monitoring are completely contained in Sections IV, Source-Specific Applicable Requirements, and VI, Permit Conditions, of the permit.

The District has reviewed all monitoring and has determined the existing monitoring is adequate.

The tables below contain only the limits for which there is no monitoring or inadequate monitoring in the applicable requirements. The District has examined the monitoring for other limits and has determined that monitoring is adequate to provide a reasonable assurance of compliance. Calculations for potential to emit will be provided in the discussion when no monitoring is proposed due to the size of a source.

NOX Sources

S# & Description	Emission Limit Citation	Federally Enforceable Emission Limit	Monitoring
S1056, Boiler, S1057, Boiler	SIP 9-7-301.1	30 ppmv @ 3% O2, dry for gaseous fuels	Annual source test
S1056, Boiler	BAAQMD Regulation 9-7-112.2	30 ppmv @ 3% O2, dry	Records
S3724, Reverberatory Melt Furnace	BAAQMD Regulation 9-7-307.1	30 ppmv @ 3% O2, dry for gaseous fuels	Annual use of portable analyzer
S1057, Boiler	BAAQMD Regulation 9-7-307.3	15 ppmv @ 3% O2, dry for gaseous fuels	Annual source test
S1056, Boiler	BAAQMD Regulation 9-7-307.5	9 ppmv @ 3% O2, dry for gaseous fuels	Annual source test

NOx Discussion:

BAAQMD Regulation 9, Rule 7, Nitrogen Oxides and Carbon Monoxide from Industrial, Institutional, and Commercial Boilers, Steam Generators, and Process Heaters

S1056 is subject to a 9 ppmv limit when burning natural gas exclusively. S1057 is subject to a 15 ppmv limit when burning natural gas exclusively. S3724 is subject to a 30 ppmv limit when burning natural gas exclusively.

S3724 will be tested annually by the use of a portable analyzer. S3724 is expected to comply. Following are the results of a recent source test conducted on S1057 that demonstrates a reasonable margin of compliance:

Source	Date	Fuel	Concentration of NOx
S1057	4/11/2012	Natural Gas	7 ppmv @ 3% O2

CO Sources

S# & Description	Emission Limit Citation	Federally Enforceable Emission Limit	Monitoring
S1056, Boiler, S1057, Boiler	SIP 9-7-301.2	400 ppmv @ 3% O2, dry for gaseous fuels	Annual source test
S1056, Boiler	BAAQMD Regulation 9-7-112.2	400 ppmv @ 3% O2, dry	Records
S3724, Reverberatory Melt Furnace	BAAQMD Regulation 9-7-307.1	400 ppmv @ 3% O2, dry for gaseous fuels	Annual use of portable analyzer
S1057, Boiler	BAAQMD Regulation 9-7-307.3	400 ppmv @ 3% O2, dry for gaseous fuels	Annual source test
S1056, Boiler	BAAQMD Regulation 9-7-307.5	400 ppmv @ 3% O2, dry for gaseous fuels	Annual source test

CO Discussion:

BAAQMD Regulation 9, Rule 7, Nitrogen Oxides and Carbon Monoxide from Industrial, Institutional, and Commercial Boilers, Steam Generators, and Process Heaters
S1056, S1057, and S3724 are subject to a 400 ppmv limit when burning natural gas exclusively.

S3724 will be tested annually by the use of a portable analyzer. S3724 is expected to comply. Following are the results of a recent source test conducted on S1057 that demonstrates a reasonable margin of compliance:

Source	Date	Fuel	Concentration of CO
S1057	4/11/2012	Natural Gas	<2.8 ppmv @ 3% O2

SO_2 Sources

S# & Description	Emission Limit Citation	Federally Enforceable Emission Limit	Monitoring
S1057, Boiler, S3724, Reverberatory Melt Furnace	BAAQMD 9-1-301	Ground level concentrations of SO2 shall not exceed: 0.5 ppm for 3 consecutive minutes AND 0.25 ppm averaged over 60 consecutive minutes AND 0.05 ppm averaged over 24 hours	None
S1057, Boiler, S3724, Reverberatory Melt Furnace	BAAQMD 9-1-302	Maximum exhaust stream concentration: 300 ppm	None

SO2 Discussion:

BAAQMD Regulation 9-1-301 (Ground-Level SO2 Concentration Limitations)

Area monitoring to demonstrate compliance with ground level SO2 concentration requirements of Regulation 9-1-301 is at the discretion of the APCO (per 9-1-501). This facility does not have equipment that emits large amounts of SO2 and therefore is not required by the APCO to have ground level monitoring for SO2.

All facility combustion sources are subject to the SO_2 emission limitations in District Regulation 9, Rule 1 (ground-level concentration and emission point concentration). In EPA's June 24, 1999 agreement with CAPCOA and ARB, "Periodic Monitoring Recommendations for Generally Applicable Requirements in SIP", EPA has agreed that natural-gas-fired combustion sources do not need additional monitoring to verify compliance with Regulation 9, Rule 1, since violations of the regulation are unlikely.

BAAQMD Regulation 9-1-302 (300 ppm maximum, from any vapor stream)

S1056, S1057, and S3724 burn natural gas exclusively and are not expected to exceed the 9-1-302 standard. S3724 melts clean aluminum ingots which do not contain sulfur; therefore, the melting process will not be an additional source of SO2.

PM Sources

S# & Description	Emission Limit Citation	Federally Enforceable Emission Limit	Monitoring
S1057, Boiler, S3724, Reverberatory Melt Furnace	BAAQMD Regulation 6-1-301; SIP 6-301	Ringelmann No. 1	None for S1057; Annual Source Testing for S3724
S1057, Boiler, S3724, Reverberatory Melt Furnace	BAAQMD Regulation 6-1-310; SIP 6-310	0.15 gr/dscf	None for S1057; Annual Source Testing for S3724
S3724, Reverberatory Furnace	BAAQMD Regulation 6-1-311; SIP 6-311	$4.10P^{0.67}$ lb/hr, where P is process weight, ton/hr	None

PM Discussion:

BAAQMD Regulation 6-1-301 (Ringelmann No. 1 Limitation)

Regulation 6-1-301 limits visible emissions to no darker than 1.0 on the Ringelmann Chart (except for periods or aggregate periods less than 3 minutes in any hour). Visible emissions are normally not associated with combustion of gaseous fuels such as natural gas. S1056, S1057, and S3724 burn natural gas exclusively; therefore, per the EPA's June 24, 1999 agreement with CAPCOA and ARB titled "Summary of Periodic Monitoring Recommendations for Generally Applicable Requirements in SIP", no monitoring is required to assure compliance with Regulation 6-1-301 for these sources.

BAAQMD Regulation 6-1-310 (Particulate Weight Limitation)

Regulation 6-1-310 limits filterable particulate (FP) emissions from any source to 0.15 grains per dry standard cubic foot (gr/dscf) of exhaust volume. Section 310.3 limits filterable particulate emissions from "heat transfer operations" to a grain-loading standard of 0.15 gr/dscf @ 6% O_2. Exceedance of this standard is not normally associated with the combustion of gaseous fuels such as natural gas. S1056, S1057, and S3724 burn natural gas

exclusively; therefore, per the EPA's July 2001 agreement with CAPCOA and ARB entitled "CAPCOA/CARB/EPA Region IX Recommended Periodic Monitoring for Generally Applicable Grain Loading Standards in the SIP: Combustion Sources: Summary of Periodic Monitoring Recommendations for Generally Applicable Requirements in SIP", no monitoring is required to assure compliance with Regulation 6-1-310 for S1056, S1057, and S3724.

BAAQMD Regulation 6-1-311 (General Operations)

Regulation 6-1-311 applies to fuel-fired direct heat exchangers. A person shall not discharge into the atmosphere from any general operation particulate matter from any emission point, at a rate in excess of that specified in Table 1 of the regulation. S3724 is expected to comply with this regulation and no monitoring is required.

Following are the results of a recent source test conducted on S3724 that demonstrates a reasonable margin of compliance:

Source	Date	Fuel	Total Particulate
S3724	6/10/2014	Natural Gas	0.00046 gr/dscf

Table VII – AJ
Applicable Limits and Compliance Monitoring Requirements
S1056 – Truck ASH, Boiler #1
S1057 – TRUCK ASH, BOILER #2

Type of Limit	Citation of Limit	FE Y/N	Future Effective Date	Limit	Monitoring Requirement Citation	Monitoring Frequency (P/C/N)	Monitoring Type
Fuel Usage	BAAQMD Condition # 9156, Part 8	Y		Truck Vehicle Line* Natural Gas Usage ≤ 8,600,000 therms/yr	BAAQMD Condition # 9156, Part 8	P/M	Records
NOx	BAAQMD 9-7-112.2	N		30 ppmv @3%O2, dry, 1-hr average (applies to S1056 only)	BAAQMD Condition #9174, Part 5	P/A	Annual source test
~~NOx~~	BAAQMD 9-7-30~~1.1~~7.3	N		~~30~~ 15 ppmv @3%O2, dry, 1-hr average (applies to S1057 only)	BAAQMD Condition # 9174, Part ~~5~~3	P/A	Annual source test
	BAAQMD 9-7-307.5	N		9 ppmv @3%O2, dry, 1-hr average (applies to S1056 only)	BAAQMD Condition #9174, Part 2	P/A	Annual source test
	SIP Regulation 9-7-301.1	Y		30 ppmv @3%O2, dry, 1-hr average	BAAQMD Condition # 9174, Part ~~3~~5	P/A	Annual source test

Table VII – AJ
Applicable Limits and Compliance Monitoring Requirements
S1056 – Truck ASH, Boiler #1
S1057 – TRUCK ASH, BOILER #2

Type of Limit	Citation of Limit	FE Y/N	Future Effective Date	Limit	Monitoring Requirement Citation	Monitoring Frequency (P/C/N)	Monitoring Type
	~~BAAQMD Condition # 9174 Part 2~~	~~Y~~		~~30 ppmv @ 3%O2, dry, 1-hr average~~	~~BAAQMD Condition # 9174 Part 5~~	~~P/A~~	~~Source Test~~
CO	BAAQMD 9-7-112.2	N		400 ppmv @3%O2, dry, 1-hr average (applies to S1056 only)	BAAQMD Condition #9174, Part 5	P/A	Annual source test
~~CO~~	BAAQMD 9-7-301~~.4~~.7.3	N		400 ppmv @3%O2, dry, 1-hr average (applies to S1057 only)	BAAQMD Condition # 9174, Part ~~4~~5	P/A	Source Test
	BAAQMD 9-7-307.5	N		400 ppmv @3%O2, dry, 1-hr average (applies to S1056 only)	BAAQMD Condition #9174, Part 4	P/A	Source Test
	SIP Regulation 9-7-301.2	Y		400 ppmv @3%O2, dry, 1-hr average		P/A	Source Test
Opacity	BAAQMD 6-1-301	N		Ringelmann 1 for < 3 minutes in any hour		N	
Opacity	SIP 6-301	Y		Ringelmann 1 for < 3 minutes in any hour	None	N	None
FP	BAAQMD 6-1-310	N		0.15 gr/dscf		N	
FP	SIP 6-310	Y	~~k~~	0.15 gr/dscf	None	N	None
~~FP~~	~~BAAQMD 6-1-311~~	~~N~~		~~4.10P0.67 lb/hr, where P is process weight, ton/hr~~		~~N~~	
~~FP~~	~~SIP 6-311~~	~~Y~~		~~4.10P0.67 lb/hr, where P is process weight, ton/hr~~	~~None~~	~~N~~	~~None~~
SO2	BAAQMD 9-1-301	Y		GLC[1] of 0.5 ppm for 3 min or 0.25 ppm for 60 min or 0.05 ppm for 24 hours		N	
	BAAQMD 9-1-302	Y		SO2 shall not exceed 300 ppm (dry)		N	

1 Ground Level Concentration

Truck Vehicle Line* sources include all of the following:

S1001, Truck Ed Bath
S1002, Truck Ed Oven
S1003, Truck Ed Dry Sand Booth
S1004, Truck Metal Repair Booth
S1005, Truck PVC Undercoat Area
S1006, Truck Anti Chip Booth
S1007, Truck Sealer Oven
S1008, Truck Prime Booth
S1009, Truck PrimeOven
S1010, Truck Off-Line Repair
S1011, Truck Dry Sand Booth
S1012, Truck Touch Up Booth
S1014, Truck Topcoat Booth I
S1015, Truck Topcoat Oven
S1017, Truck Touch Up Booth
S1018, Truck Blackout Booth
S1019, Truck Cavity Wax Booth
S1020, Off-Line Assembly Paint Hospitals
S1056, Truck ASH, Boiler #1
S1057, Truck ASH, Boiler #2

Table VII – BC
Applicable Limits and Compliance Monitoring Requirements
S3724 – Reverberatory Melt Furnace

Type of Limit	Citation of Limit	FE Y/N	Future Effective Date	Limit	Monitoring Requirement Citation	Monitoring Frequency (P/C/N)	Monitoring Type
NOx	BAAQMD 9-7-307.1	N		30 ppmv @3%O2, dry, 1-hr average		P/A	Annual use of portable analyzer
CO	BAAQMD 9-7-301.1	N		400 ppmv @3%O2, dry, 1-hr average		P/A	Annual use of portable analyzer
SO2	BAAQMD 9-1-301	Y		GLC [1]of 0.5 ppm for 3 min or 0.25 ppm for 60 min or 0.05 ppm for 24 hours		N	
SO2	BAAQMD 9-1-302	Y		SO2 shall not exceed 300 ppm (dry)		N	
Opacity	BAAQMD 6-1-301	N		Ringelmann 1 for < 3 minutes in any hour	**None**	N	Annual source test
Opacity	SIP 6-301	Y		Ringelmann 1 for < 3 minutes in any hour	None	N	Annual source test
FP	BAAQMD 6-1-310	N		0.15 gr/dscf		N	Annual source test
FP	SIP 6-310	Y		0.15 gr/dscf	None	N	Annual 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 3-111	Y		$4.10P^{0.67}$ lb/hr, where P is process weight, ton/hr	None	N	None

1 Ground Level Concentration

Discussion of Other Limits:
The permit contains other limits, such as HAP limits, hours of operation, and heat input. There is adequate monitoring for these limits in the standards or permit conditions.

VIII. Test Methods
This section of the permit lists test methods that are associated with standards in District or other rules. It is included only for reference. In most cases, the test methods in the rules are source test methods that can be used to determine compliance but are not required on an ongoing basis. They are not "applicable requirements" as defined by Regulation 2-6-202.

If a rule or permit condition requires ongoing testing, the requirement will also appear in Section IV of the permit.

IX. Permit Shield

The District rules allow two types of permit shields. The permit shield types are defined as follows: (1) A provision in a major facility review permit explaining that specific federally enforceable regulations and standards do not apply to a source or group of sources, or (2) A provision in a major facility review permit explaining that specific federally enforceable applicable requirements for monitoring, recordkeeping and/or reporting are subsumed because other applicable requirements for monitoring, recordkeeping, and reporting in the permit will assure compliance with all emission limits.

The second type of permit shield is allowed by EPA's White Paper 2 for Improved Implementation of the Part 70 Operating Permits Program. The District uses the second type of permit shield for all streamlining of monitoring, recordkeeping, and reporting requirements in Title V permits. The District's program does not allow other types of streamlining in Title V permits.

This facility has no permit shields. Therefore, this permit has no streamlining.

X. Glossary

This section contains terms that may be unfamiliar to the general public or EPA.

D. Alternate Operating Scenarios

No alternate operating scenario has been requested for this facility.

E. Compliance Status

Tesla certifies compliance on an annual basis by January 31st of each year. There is no change in compliance.

F. Differences between the Application and the Proposed Permit

Following are the differences in the equipment list between the time that the current Title V permit was administratively amended on November 30, 2011 and the permit proposal date:

Changes to permit:

Devices permitted since current permit was amended on November 30, 2011:

S #	Description	Capacity
1056	Truck ASH, Boiler #1	25 MMBtu/hr
1057	Truck ASH, Boiler #2	~~25 MMBtu/hr~~19.95 MMBtu/hr
3724	Reverberatory Melt Furnace	4.1 MMBtu/hr

APPENDIX A

GLOSSARY

ACT
Federal Clean Air Act

APCO
Air Pollution Control Officer

ARB
Air Resources Board

BAAQMD
Bay Area Air Quality Management District

BACT
Best Available Control Technology

Basis
The underlying authority which allows the District to impose requirements.

CAA
The federal Clean Air Act

CAAQS
California Ambient Air Quality Standards

CAPCOA
California Air Pollution Control Officers Association

CEM
Continuous Emission Monitor

CEQA
California Environmental Quality Act

CFR
The Code of Federal Regulations. 40 CFR contains the implementing regulations for federal environmental statutes such as the Clean Air Act. Parts 50-99 of 40 CFR contain the requirements for air pollution programs.

CO
Carbon Monoxide

Cumulative Increase
The sum of permitted emissions from each new or modified source since a specified date pursuant to BAAQMD Rule 2-1-403, Permit Conditions (as amended by the District Board on 7/17/91) and SIP Rule 2-1-403, Permit Conditions (as approved by EPA on 6/23/95). Cumulative increase is used to determine whether threshold-based requirements are triggered.

District
The Bay Area Air Quality Management District

dscf

Dry Standard Cubic Feet

EPA
The federal Environmental Protection Agency.

Excluded
Not subject to any District regulations.

FDOC
Final Determination of Compliance (FDOC), prepared pursuant to District Regulation 2, Rule 3, Power Plants.

Federally Enforceable, FE
All limitations and conditions which are enforceable by the Administrator of the EPA including those requirements developed pursuant to 40 CFR Part 51, subpart I (NSR), Part 52.21 (PSD), Part 60 (NSPS), Part 61 (NESHAPs), Part 63 (MACT), and Part 72 (Permits Regulation, Acid Rain), including limitations and conditions contained in operating permits issued under an EPA-approved program that has been incorporated into the SIP.

FP
Filterable Particulate as measured by BAAQMD Method ST-15, Particulate.

HAP
Hazardous Air Pollutant. Any pollutant listed pursuant to Section 112(b) of the Act. Also refers to the program mandated by Title I, Section 112, of the Act and implemented by 40 CFR Part 63.

HRSG
Heat Recovery Steam Generator

Major Facility
A facility with potential emissions of: (1) at least 100 tons per year of regulated air pollutants, (2) at least 10 tons per year of any single hazardous air pollutant, and/or (3) at least 25 tons per year of any combination of hazardous air pollutants, or such lesser quantity of hazardous air pollutants as determined by the EPA administrator.

MFR
Major Facility Review. The District's term for the federal operating permit program mandated by Title V of the Federal Clean Air Act and implemented by District Regulation 2, Rule 6.

MOP
The District's Manual of Procedures.

NAAQS
National Ambient Air Quality Standards

NESHAPS
National Emission Standards for Hazardous Air Pollutants. See in 40 CFR Parts 61 and 63.

NMHC
Non-methane Hydrocarbons (Same as NMOC)

NMOC
Non-methane Organic Compounds (Same as NMHC)

NOx
Oxides of nitrogen.

NSPS
Standards of Performance for New Stationary Sources. Federal standards for emissions from new stationary sources. Mandated by Title I, Section 111 of the Federal Clean Air Act, and implemented by 40 CFR Part 60 and District Regulation 10.

NSR
New Source Review. A federal program for pre-construction review and permitting of new and modified sources of pollutants for which criteria have been established in accordance with Section 108 of the Federal Clean Air Act. Mandated by Title I of the Federal Clean Air Act and implemented by 40 CFR Parts 51 and 52 and District Regulation 2, Rule 2. (Note: There are additional NSR requirements mandated by the California Clean Air Act.)

Offset Requirement
A New Source Review requirement to provide federally enforceable emission offsets for the emissions from a new or modified source. Applies to emissions of POC, NOx, PM10, and SO2.

Phase II Acid Rain Facility
A facility that generates electricity for sale through fossil-fuel combustion and is not exempted by 40 CFR 72 from Titles IV and V of the Clean Air Act.

POC
Precursor Organic Compounds

PM
Particulate Matter

PM10
Particulate matter with aerodynamic equivalent diameter of less than or equal to 10 microns

PSD
Prevention of Significant Deterioration. A federal program for permitting new and modified sources of those air pollutants for which the District is classified "attainment" of the National Air Ambient Quality Standards. Mandated by Title I of the Act and implemented by both 40 CFR Part 52 and District Regulation 2, Rule 2.

PUC
Public Utilities Commission (California)

SIP
State Implementation Plan. State and District programs and regulations approved by EPA and developed in order to attain the National Air Ambient Quality Standards. Mandated by Title I of the Act.

SO2
Sulfur dioxide

THC
Total Hydrocarbons (NMHC + Methane)

Title V
Title V of the federal Clean Air Act. Requires a federally enforceable operating permit program for major and certain other facilities.

TOC
Total Organic Compounds (NMOC + Methane, Same as THC)

TPH
Total Petroleum Hydrocarbons

TRMP
Toxic Risk Management Plan

TSP
Total Suspended Particulate

VOC
Volatile Organic Compounds

Units of Measure:

bhp	=	brake-horsepower
btu	=	British Thermal Unit
cfm	=	cubic feet per minute
g	=	grams
gal	=	gallon
gpm	=	gallons per minute
hp	=	horsepower
hr	=	hour
lb	=	pound
in	=	inches
max	=	maximum
m^2	=	square meter
min	=	minute
mm	=	million
MMbtu	=	million btu
MMcf	=	million cubic feet
ppmv	=	parts per million, by volume
ppmw	=	parts per million, by weight
psia	=	pounds per square inch, absolute
psig	=	pounds per square inch, gauge
scfm	=	standard cubic feet per minute
yr	=	year

APPENXIX B

PERMIT APPLICATION ENGINEERING EVALUATIONS

ENGINEERING EVALUATION
TESLA MOTORS, INC.; PLANT 20459
APPLICATION NO. 24332

1.0 BACKGROUND

Tesla Motors, Inc. (Tesla) submitted this application for an Authority to Construct/Permit to Operate the following new casting and pre-treatment equipment at their Fremont facility:

S3702 Reverberatory Melt Furnace, Maximum Operating Rate: 30,000 lbs per hour of Aluminum, Schaefer Furnace, Maximum natural gas firing rate: 1.4 MMBtu/hour
S3703 Fill Dosing Furnace, Westomat Furnace System, powered by electricity (Exempt per Regulation 2-1-103)
S3704 High Pressure Die Cast, WL1200SL ProDos, Maximum Operating Rate: 30,000 lbs per hour of Aluminum (Exempt per Regulation 2-1-122.5)
S3705 Quench Tank, Custom Built, (Exempt per Regulation 2-1-103)
S3706 Solution Oven 1, Can-Eng Furnaces International Ltd., Maximum Operating Rate: 15,000 lbs per hour of Aluminum, Natural gas fired, Max. Firing rate: 1.6 MMBtu/hour (Exempt per Regulations 9-7-110.1 and 2-1-103)
S3707 Solution Oven 2, Can-Eng Furnaces International Ltd., Maximum Operating Rate: 15,000 lbs per hour of Aluminum, Natural gas fired, Max. Firing rate: 1.6 MMBtu/hour (Exempt per Regulations 9-7-110.1 and 2-1-103)
S3708 Age Oven 1, Wisconsin Oven Corp., Maximum Operating Rate: 12,000 lbs per hour of Aluminum, Natural gas fired, Max. Firing rate: 1.14 MMBtu/hour (Exempt per Regulations 9-7-110.1 and 2-1-103)
S3709 Age Oven 2, Wisconsin Oven Corp., Maximum Operating Rate: 12,000 lbs per hour of Aluminum, Natural gas fired, Max. Firing rate: 1.14 MMBtu/hour (Exempt per Regulations 9-7-110.1 and 2-1-103)
S3710 Age Oven 3, Wisconsin Oven Corp., Maximum Operating Rate: 12,000 lbs per hour of Aluminum, Natural gas fired, Max. Firing rate: 1.14 MMBtu/hour (Exempt per Regulations 9-7-110.1 and 2-1-103)
S3711 CNC Machining Operation: Machines Aluminum castings (Exempt per Regulation 2-1-103)
S3712 Pre-treatment Casting Operations: Dipping system for casted aluminum parts, Tank volume 3.2 thousand gallons, submerged fill
S3714 Boiler, Parker Boiler Company, Model 2304r(l), Natural gas fired, Max. Firing Rate: 1.87 MMBtu/hour (Exempt per Regulations 9-7-110.1 and 2-1-103)

Detailed Process Description

Please see Appendix A for Process Flow Diagram.

A. Casting Process Description
   a. Clean aluminum ingots as defined by Section (c) (2) of District Regulation 11, Rule 15 (Hazardous Pollutants – Airborne Toxic Control Measure for Emissions of Toxic Metals from Non-Ferrous Metal Melting) are liquefied in S3702, Melt Furnace.

i. Metal Pour 355 is blended into melt to enhance metallurgical properties critical to final casted part.

b. Molten material is transferred from furnace to bull ladle.
c. Metallurgy is checked and alloys of strontium and magnesium may be added to mixture to achieve desired material quality.
    i. Argon is used to remove undesired impurities, typically hydrogen, from the melt.
d. Ladle transfers molten aluminum to fill dosing furnace.
e. Fill dosing furnace is used to complete fusing of appropriate materials into final melt that is used for die cast operations.
f. Once melted and taken to proper temperature, material is transferred to S3704, High Pressure Die Cast, to form the desired part. Molten metal is poured into die cast chamber and a hydraulically operated plunger seals the chamber and forces the metal into the locked die at high pressures.

Notes on S3704, High Pressure Die Cast:

Chamber molds are coated with mold release coatings and pre-heated before the molten metal is injected into it.

Once the part is removed from the die cast, the equipment is automatically lubricated. The lubricants are die case specific. The lubricant serves to both cool the surface to the proper temperature for the next cycle and to create a film on the die surface which allows for part release.

g. Casted parts are cooled using Quench tank, S3705.
h. Casted parts are transferred from quench tank to Solution Furnaces, S3706 and S3707, for further processing. Parts are cooled with air blast and transferred to Age Ovens, S3708-S3710.
i. Age ovens are used to temper casted parts.
j. Parts are reviewed by quality control to ensure they meet production specifications.
k. Parts are then sent to S3711, Computer Numerical Control (CNC) machining unit. CNC uses computerized programming with laser technology to remove defects from finished casting. Using a mixture of Calcium Acetate, Foam Ban 1123 and Ultak 206, potential metallic chips are removed from finished cast.

Pre-treatment Basics: Casting is transferred from CNC machining unit to pre-treatment operations. The pre-treatment process is a multi-stage batch process and consists of a series of dip operations to clean and prepare the surface before actually applying any chemical film such as ecoat, primer, topcoat, etc.

The parts are water rinsed between chemical stages to minimize solution carry over from tank to tank and to avoid cross contamination of the entire line. The aluminum parts are secured onto a frame (rack) that will be immersed into the different baths described below.

B. Pre-Treatment Process Description

a. Stage 1 –Parts are cleaned via immersion in 5% caustic solution. Mild cleaning agents are used to remove debris, loose particles, release agents, oils, cutting fluids from the surface.
b. Stage 2 – Parts are rinsed using Reverse Osmosis (RO) water.
c. Stage 3- Parts are immersed in 5% acidic solution. Solution will deoxidize the parts. The solution will remove the natural and unstable aluminum oxide layer from the surface part and provide a clean, consistent and reactive aluminum surface for conversion coating.
d. Stage 4 – Parts are rinsed using RO water.
e. Stage 5 – Parts are immersed in 5% titanium-zirconium solution. The titanium and zirconium chemicals react with the aluminum surface to create a coating capable of reacting with organic compounds such as paints, primers or adhesives.
f. Stage 6 – Parts are rinsed using RO water.
g. Stage 7 – Finished parts are dried and transferred to body weld.

C. Exempt Sources

Tesla has proposed exemptions for sources S3703 through S3711.

S3703, Fill Dosing Furnace, is powered by electricity and hence, is exempt from permitting requirements pursuant to District Regulation 2-1-103 (Exemption, Source Not Subject to any District Rule).

S3704, High Pressure Die Cast, is exempt from permitting per District Regulation 2-1-122.5. Regulation 2-1-122.5 states:

2-1-122 Exemption, Casting and Molding Equipment: The following equipment is exempt from the requirements of Sections 2-1-301 and 302, provided that the source does not require permitting pursuant to Section 2-1-319.

122.5 Die casting machines.

S3704 is not subject to the requirements of Regulation 2, Rule 1, Section 301 and/or 302 because it is in compliance with Regulations 2-1-316 (New or Modified Sources of Toxic Air Contaminants) and 2-1-319 (Sources Expressly Subject to Permitting Requirements). Toxic emissions are below their respective assigned trigger levels and the emission rate of each regulated air pollutant is less than 5 tons per year. Please see Emissions Summary section below for detailed calculations.

S3705, Quench Tank, is a water tank and hence, is exempt from permitting requirements pursuant to District Regulation 2-1-103 (Exemption, Source Not Subject to any District Rule).

Sources S3706-S3707, Solution Ovens, and Sources S3708-S3710, Age Ovens, will be used to temper (heat) the casted parts only and will be fired exclusively with natural gas. Each oven will have a maximum heat input of less than 2 MMBtu /hour. Therefore, they will be exempt from

permitting per District Regulations 9-7-110.1 and 2-1-103 (Exemption, Source Not Subject to any District Rule). Regulation 9-7-110.1 states:

9-7-110 Exemptions: The requirements of this rule shall not apply to the following:
110.1 Boilers, steam generators and process heaters with a rated heat input of 2 million BTU/hour or less, if fired exclusively with natural gas, liquefied petroleum gas (LPG), or any combination thereof;

S3711, CNC Machining Operation, will not generate any criteria pollutants and toxic emissions and hence, will be exempt from permitting per District Regulation 2-1-103 (Exemption, Source Not Subject to any District Rule).

S3714, Boiler, will be used to supply hot water to S3712, Pre-treatment Casting Operations. It will be fired exclusively with natural gas and will have a maximum heat input of less than 2 MMBtu/hour. Therefore, it will be exempt from permitting per District Regulations 9-7-110.1 and 2-1-103 (Exemption, Source Not Subject to any District Rule). Regulation 9-7-110.1 states:

9-7-110 Exemptions: The requirements of this rule shall not apply to the following:
110.1 Boilers, steam generators and process heaters with a rated heat input of 2 million BTU/hour or less, if fired exclusively with natural gas, liquefied petroleum gas (LPG), or any combination thereof;

2.0 EMISSIONS SUMMARY

S3702 (Reverberatory Melt Furnace) emissions calculations

Assumptions:
- Emission factors for secondary aluminum casting and pouring operations from AP-42 and US EPA Factor Informational Retrieval (Fire) Database:
  - PM_{10}: 4.3 lbs/ton
- Aluminum ingot throughput rate of 0.5 tons/hour.
- Chemical composition of aluminum ingots as provided by Tesla.
- Operating hours of 3840 hours/year (i.e., 16 hours/day, 5 days/week and 48 weeks/year).

PM_{10} emissions:

(0.5 tons/hour) * (4.3 lbs/ton) * (3840 hours/yr) = **8,256 lbs/yr (4.128 tpy) or 34.4 lbs/day**

Using aluminum material specifications, the total toxic compound emissions from S3702 are calculated as follows:

Arsenic emissions:

(0.002%) * (8256 lbs of PM10/year) = 0.16 lbs/year

Cadmium emissions:

(0.004%) * (8256 lbs of PM10/year) = 0.33 lbs/year

Copper emissions:

(0.03%) * (8,256 lbs of PM10/year) = 2.48 lbs/year

Chromium emissions:

(0.03%) * (8,256 lbs of PM10/year) = 2.48 lbs/year

Lead emissions:

(0.01%) * (8,256 lbs of PM10/year) = 0.83 lbs/year

Manganese emissions:

(0.55%) * (8,256 lbs of PM10/year) = 45.41 lbs/year

Nickel emissions:

(0.03%) * (8,256 lbs of PM10/year) = 2.48 lbs/year

Hexavalent chromium emissions:

According to Rio Tinto Alcan (RTA), Tesla's supplier, their aluminum ingots do not contain any chromium. In absence of good data to prove this statement, it was decided to conservatively estimate hexavalent chromium emissions from melting of aluminum at S3702.

In an e-mail dated August 23, 2012 (included in Appendix B), RTA mentioned that it uses multiple ASTM methods for metal analysis. These methods are:

- ASTM E406: Standard Practice for Using Controlled Atmospheres in Spectrochemical Analysis
- ASTM E1251: Standard Test Method for Analysis of Aluminum and Aluminum Alloys by Spark Atomic Emission Spectrometry
- ASTM E716: Standard Practices for Sampling Aluminum and Aluminum Alloys for Spectrochemical Analysis

The limit of detection for the atomic spectral line 425.435nm is 1ppm (0.0001%).

Assumptions:

- Weight percent of hexavalent chromium is 50% of the detection limit (i.e., 0.00005%).
- PM_{10} emissions of 8,256 lbs/year from S3702 as calculated above.
- Operating hours of 3840 hours/year (i.e., 16 hours/day, 5 days/week and 48 weeks/year).

Hexavalent chromium emissions:

(0.00005%) * (8,256 lbs of PM10/year) = 0.004 lbs/year and 1.04E-06 lbs/hour

S3704 (High Pressure Die Cast) emissions calculations

Emissions at S3704 are quantified only to verify that the 5-ton/yr emission limit for exempt sources in District Regulation 2-1-319.1 is not exceeded.

Assumptions:

- Emission factors for secondary aluminum casting and pouring operations from AP-42 and US EPA Factor Informational Retrieval (Fire) Database:
  - POC: 0.14 lbs/ton aluminum processed
  - SOx: 0.02 lbs/ton aluminum processed
  - CO: 0.152 lbs/ton aluminum processed
  - NOx: 0.01 lbs/ton aluminum processed
- Aluminum ingot throughput rate of 0.5 tons/hour.
- Operating hours of 3840 hours/year (i.e., 16 hours/day, 5 days/week and 48 weeks/year).

POC emissions:

(0.5 tons/hour) * (0.14 lbs/ton) * (3840 hours/yr) = 268.80 lbs/yr (0.134 tpy)

NOx emissions:

(0.5 tons/hour) * (0.01 lbs/ton) * (3840 hours/yr) = 19.20 lbs/yr (0.010 tpy)

SO2 emissions:

(0.5 tons/hour) * (0.02 lbs/ton) * (3840 hours/yr) = 38.40 lbs/yr (0.020 tpy)

CO emissions:

(0.5 tons/hour) * (0.152 lbs/ton) * (3840 hours/yr) = 291.84 lbs/yr (0.146 tpy)

Note: S3704 does not generate PM10. Molten metal is conveyed into the unit for processing. Shavings, chips, dust or any non-molten solids are not used or generated by this operation.

Toxic compound emissions:

Anti-solder wax contains up to 5% sulfuric acid which is listed in Table 2-5-1 of the District Regulation 2, Rule 5.

Potential sulfuric acid emissions were estimated using SOx emission factor 0.02 lbs SOx/ton processed aluminum. This value was obtained from USEPA Factor Informational Retrieval (FIRE) database. Sulfuric acid is an anti-solder wax constituent; however the material will react with other chemicals introduced into the process.

Sulfuric acid emissions are calculated as follows:

(0.5 tons/hour) * (0.02 lbs/ton) * (3840 hours/yr) = 38.40 lbs/yr (0.020 tpy) and 0.01 lbs/day

As can be seen from the above calculations, sulfuric acid emissions are below their respective chronic (39 lbs/yr) and acute (0.26 lbs/hr) trigger levels.

S3712 (Pre-treatment Casting Operations) emissions calculations

A review of the MSDS for materials used in pre-treatment operations list three materials that are identified as Toxic Air Contaminants (TACs) in Table 2-5-1 of the District Regulation 2, Rule 5. Besides these TACs, there are no other criteria pollutant emissions from S3712.

TAC emissions calculations are based upon EPA formula for calculating emissions from a non-boiling liquid pool.

Step 1: Calculate weight percent of bath solutions

All baths are five percent solutions of treatment chemicals with 95 percent water.

Example – Inproclean 3800 bath
Total bath volume 3,208 gallons
5%/95% Inproclean 3800/water split yields

3,048 gallons water
160 gallons Inproclean

Inproclean data from Material Safety Data Sheet

Chemical	Weight %
Sodium Silicate	10
Sodium Hydroxide	5
Ethoxylated alcohol sodium carboxylate	5
Nonylphenoxy polyethoxy ethanol	5
Sodium xylenesulfonate	5
Water	70

Density of Inproclean is 9.l lbs/gal (ref – Inproclean 3800 MSDS)

(3048 gallons water)(8.34 lbs/gallon)	25,420 lbs (a)
(160 gallons Inproclean)(9.1 lbs/gallon)	1,456 lbs (b)
Sodium Silicate 10%	146 lbs
Sodium Hydroxide 5%	73 lbs
Ethoxylated alcohol sodium carboxylate 5%	73 lbs
Nonylphenoxy polyethoxy ethanol 5%	73 lbs
Sodium xylenesulfonate 5%	73 lbs
Water	1,018 lbs

Total weight of bath (a+b) 26,876 lbs

% water = ((25,420+1018)/26,876)*100% = 98.4%

% sodium silicate = (146/26,876)*100% = 0.5%

%sodium hydroxide = (73/26,876)*100% = 0.3%

Summary Data:

Inproclean 3800 (bath)	
Chemicals	Wt%
Water	98.4%
Sodium silicate	0.5%
Sodium Hydroxide	0.3%
Ethoxylated alcohol sodium carboxylate	0.3%
Nonylphenoxy polyethoxy ethanol	0.3%
sodium xylenesulfonate	0.3%
Total	100.0%

Chemcid 2224 (bath)	
Chemicals	Wt%
Water	99.4%
Nitric Acid	0.1%
Sulfuric Acid	0.1%
Ferric Sulfate	0.4%
Total	100%

Step 2: Calculate bath solution evaporative rate using EPA formula

Method developed by US EPA:

The following equations are for predicting the rate at which liquid evaporates from the surface of a pool of liquid which is at or near the ambient temperature. The equations were developed by the United States Environmental Protection Agency (U.S. EPA).

(1) $$E = \frac{(0.284)*(u)^{0.78}*(M)^{0.667}*(A)*(P)}{(R)(T)}$$

where:

E = evaporation rate, lb / minute
u = windspeed just above the pool liquid surface, m / second
M= molecular weight of the pool liquid
A = surface area of the pool liquid, ft^2
P = vapor pressure of the pool liquid at the pool temperature, mm Hg
T = pool liquid temperature, °K
R = the Universal Gas Law constant = 82.05 ($atm\text{-}cm^3$) / (gmol-°K)

The U.S. EPA also defined the pool depth as 0.033-ft (i.e., 1 cm) so that the surface area of the pool liquid could be calculated as:

(2) A = (cubic feet of pool liquid) / (0.033 ft)

All of the units in the above Equation (1) and Equation (2) are a mixture of metric usage and United States usage, which are the units developed by the U.S. EPA and so their units were retained here.

References:

"Technical Guidance For Hazards Analysis", U.S, EPA and U.S. FEMA, December 1987 [Equation (7), Section G-2, Appendix G. Available at www.epa.gov/ceppo/pubs/tech.pdf]

"Risk Management Program Guidance For Offsite Consequence Analysis", U.S. EPA publication EPA-550-B-99-009, April 1999. [Equation (D-1), Section D.2.3, Appendix D. Available at

Evaporation Rate Calculation for Inproclean Bath:

Maximum Tank Volume: 3,208 gallons.

Dimensions: Length 220 inches (18.3 ft) Width 60 inches (5 feet)

Bath jets will generate surface wind speed (u) of 10 mph or 4.5 m/sec

Pool surface area = Surface Area of Tank = (length) (width) ====> (18.3ft) (5ft) ====> **91.5 ft^2**

(**M**) Molecular Weight = **18** (assumed since a minimum of 98.4% of material is water will use it as molecular weight of the material).

(**P**) Vapor Pressure = **49** mm Hg @ 100 °F and **149** mmHg @ 140°F

(**T**) Liquid Pool Temperature = 100 °F (bath temperature) = **311**°K for 140°F **T= 333 °K**

Weight percent NaOH = 0.3% or 0.003 weight fraction

$E= \underline{(0.284)\ (4.5)^{0.78}\ (18)^{0.667}(91.5)\ (149)/\ [(82.05)\ (333)]}$

E = (0.284) (3.7) (6.9) (91.5) (149)/27,323 = 3.14 lbs/min water

E_{NaOH} = (0.003) (3.14 lb/min) = 0.009 lbs/min = 0.57 lbs NaOH/hr

At 100°F and u = 4.5 m/sec evaporation rate for Chemcid 2224 bath is 1.3 lb/min

Weight fraction for sulfuric acid and nitric acid is 0.1% each.

Evaporation rates of sulfuric and nitric acids are (0.001) (1.3 lb/min) (60 min/hr) = 0.08 lbs/hr each

2.1 Plant Cumulative Increase:

Pollutant	Existing (ton/yr)	New (ton/yr)	New Total (ton/yr)
PM_{10}	20.429	4.128	24.557

2.2 Toxics

TAC emissions from casting and pre-treatment operations are summarized below.

TAC	Hourly emissions (lbs/hr)	Acute TAC trigger level (lbs/hr)	Exceeds Acute TTL?	Annual emissions (lbs/yr)	Chronic TAC trigger level (lbs/yr)	Exceeds Chronic TTL?
Sulfuric Acid (S3704)	0.01	0.26	No	38.4	39	No
Arsenic (S3702)	0.00004	0.0004	No	0.165	0.0072	**Yes**
Cadmium (S3702)	0.0001	N/A	No	0.33	0.026	**Yes**
Copper (S3702)	0.0007	0.22	No	2.5	N/A	No
Hexavalent Chromium (S3702)	1.04E-06	N/A	N/A	0.004	0.00077	**Yes**
Lead (S3702)	0.0003	N/A	No	1	3.2	No
Manganese (S3702)	0.012	N/A	No	45	3.5	**Yes**
Nickel (S3702)	0.0007	0.013	No	2.5	0.43	**Yes**

TAC	Hourly emissions (lbs/hr)	Acute TAC trigger level (lbs/hr)	Exceeds Acute TTL?	Annual emissions (lbs/yr)	Chronic TAC trigger level (lbs/yr)	Exceeds Chronic TTL?
Sulfuric Acid (S3712)	0.08	0.26	No	153.6	39	**Yes**
Nitric Acid (S3712)	0.08	0.19	No	153.6	N/A	**N/A**
Sodium Hydroxide	0.57	0.018	**Yes**	1094.4	N/A	**N/A**

As can be seen from the above table, following TACs exceed their assigned trigger levels: Arsenic, Cadmium, Hexavalent chromium, Manganese, Nickel, Sulfuric acid, and Sodium hydroxide. Therefore, a Health Risk Screening Analysis (HRSA) is required.

Per August 28, 2012 memo from Ted Hull, Senior Air Quality Engineer (Toxics Section), the maximum cancer risk is 0.5 in a million, the chronic hazard index is 0.09, and the acute hazard index is 0.7. In accordance with Regulations 2-5-301 and 302, these are acceptable risks. The memo and HRSA report have been included in Appendix C.

The ISCST3 air dispersion computer model was used to estimate annual average and maximum 1-hour ambient air concentrations. Model runs were made with representative Tesla meteorological data. Elevated terrain was considered using input from the USGS Milpitas 10m digital elevation map. Model runs were made with Rural dispersion coefficients to best represent land use in the area.

2.3 Best Available Control Technology

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 POC, NPOC, NOx, CO, SO_2 or PM_{10}. Based on the emission calculations above, Tesla is subject to BACT for PM_{10} emissions of 34.4 lbs/day from S3702, Melt Furnace.

Achieved in Practice BACT Analysis

The District does not have any specific BACT requirements for this kind of source category. A review of the CARB and EPA BACT Clearing Houses indicates that BACT device for PM_{10} in casting operations is a baghouse. Non-aluminum casting operations reviewed were:

- Asama Coldwater Manufacturing
- Nucor Steel
- McWain Gray and Ductile Foundry

The production rates and capacities for the above companies are much greater than the proposed Tesla production; therefore, their BACT determinations cannot be used for S3702.

A review of the South Coast APCD website didn't identify any active PM generating activities comparable to Tesla's aluminum casting operations.

The information specific to aluminum casting operations in the EPA BACT clearing house listed good combustion practices and clean charge only for an Alcoa Steel facility.

San Joaquin Valley Air Pollution Control District's (SJVAPCD) BACT guideline for Metal Melting Crucible/Furnace lists clean charge as achieved in practice BACT. Baghouse is listed as a higher level of control (i.e., Technologically feasible and cost effective). Please refer to Appendix D for SJVAPCD's BACT guideline.

Hence, it can be concluded that the use of a baghouse for casting PM_{10} abatement has not been achieved in practice.

Technologically Feasible and Cost Effectiveness BACT Analysis

The cost-effectiveness threshold for PM_{10} is $5,300 of total annualized cost per ton of abated emissions, as specified in the BAAQMD BACT/TBACT Workbook. Annualized costs are determined using U.S. EPA's Con-Co$t spreadsheets. Please see Appendix E for Con-Co$t spreadsheets.

Notes on High efficiency cyclone BACT analysis:

EPA-452/F-03-005 Fact Sheet (included in Appendix F) specifies high efficiency cyclones can achieve PM_{10} abatement efficiency up to 95%. *The significant limitation of the fact sheet is the given maximum operating temperature of 1000 °F.*

The exhaust stream from S3702 is 1400°F. Various vendors Tesla has contacted indicate this is a significant design factor. Another alternative is to introduce dilution air into the exhaust stream to bring the temperature down to a more manageable level.

One proposal from Scientific Dust Collectors was to add dilution air to the waste stream to lower the temperature to 350°F. This would result in a flow rate of 5,661 cfm. Using the flow rate and temperature values, Con Co$t estimates an annual abatement cost of $22,093. Please refer to Appendix E for details on high efficiency cyclone Con-Co$t spreadsheet.

The vendor provided a cyclone efficiency chart showing this proposed cyclone would have a maximum removal efficiency of approximately 65%. Copies of the correspondence and the chart are included in Appendix F.

Assuming 95% removal efficiency, per EPA-452/F-03-005 and the cost per ton is: ($22,093/ (4.128 tpy*0.95) = $22,093/3.922 tons =$5,633/ton. This value exceeds the District's PM_{10} cost-effectiveness threshold of $5,300/ton.

However, the vendor maintains the maximum removal efficiency for the proposed cyclone is approximately 65%. Using the vendor values, the cost per abated ton is $8,234.

The calculated costs do not include either duct work or the dilution fan recommended by the vendor to achieve the desired flow rate and temperature profile.

(i) Cost-effectiveness calculations are as follows:

PM_{10} emissions

Reduction (tpy) = Emissions w/o Abatement device - Emissions with Abatement device
= 4.128 tpy – (4.128 tpy) (0.10)
= **3.715 tpy**

Note: Emission calculations above assume an overall PM_{10} capture and abatement efficiency of at least 90%.

Reduction (tpy) for high efficiency cyclone = 4.128 tpy – (4.128 tpy) (0.35)
= **2.683 tpy**

The following table shows the cost of abating PM_{10} emissions using EPA Con-Co$t spreadsheets.

Option	Equipment	Annualized Cost ($)	Cost per ton PM_{10} ($)	Abatement Cost Greater than $5,300/ton
1	2500 cfm Reverse Air baghouse	106,308	28,616	Yes
2	2500 cfm P-J Modular baghouse	84,094	22,636	Yes
3	2500 cfm P-J Common baghouse	79,529	21,408	Yes
4	2500 cfm Hi-Energy Venturi Scrubbers	94,811	25,521	Yes
5	2500 cfm Wet Impingement Scrubbers	55,890	15,044	Yes
6	5661 cfm High-Efficiency Cyclone	22,093	8,234	Yes

The costs of these abatement devices exceed PM_{10} cost-effectiveness threshold of $5,300/ton emissions reduced and therefore it is not cost effective to implement abatement for PM_{10} emissions at S3702. Therefore, BACT is determined to be use of clean charge.

Clean charge is defined in Section 63.1503of 40 CFR Part 63, Subpart RRR (National Emission Standards for Hazardous Air Pollutants for Secondary Aluminum Production) as follows:

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.

Tesla aluminum ingots also comply with District Regulation 11, Rule 15(c) (2), Metal or Alloy Purity Exemption. Specifically, Regulation 11-15(c) (2) states:

(2) Metal or Alloy Purity Exemption. Facilities or furnaces which do not melt scrap except clean aluminum scrap and which melt a metal or alloy (other than the metals listed in Table I) which is shown by the facility operator to have a content of no more than 0.004 percent of cadmium and no more than 0.002 percent of arsenic are exempt from subsections (b) (1), (b) (2), and (b) (3). A facility granted an exemption under subsection (c) (1) (B) may also be granted exemption for all metals that meet the purity limits in this subsection.

Permit conditions requiring Tesla to use clean charge only at their casting and pre-treatment operations will be imposed.

2.4 Offsets

Tesla is an existing major facility because it has the "potential to emit", as defined by the District Regulation 2-6-218, of more than 100 tons per year of precursor organic compounds. The proposed casting and pre-treatment sources will not result in a cumulative increase in POC emissions. The only increase is in PM10 emissions as shown in Section 2.1 above. PM_{10} emission offsets per Regulation 2-2-303 are not required because total facility-wide PM_{10} emissions are less than 100 tons per year.

3.0 STATEMENT OF COMPLIANCE

S3702 is subject to District Regulation 6, Rule 1 (Particulate Matter- General Requirements), and is expected to comply with Sections 301, 302, 310 and 311.

Section 6-1-310 limits particulate emissions to 343 mg/dscf (or 0.15 gr/dscf). Tesla will comply with this standard by limiting the process flow rate for S3702 to 0.5 tons/hour. The PM_{10} emission rate will be less than 343 mg/dscf. This value was calculated as follows:

Per EPA AP-42 PM_{10} emission factor is 4.3 lbs/ton processed aluminum as discussed above in Section 2.0. The exhaust flow rate of S3702 is 2500 cfm.

[(0.5 tons/hr) (4.3 lbs/ton) (454,000 mg/lb) (hr/60 min)]/ (2500 dscf/min) = 6.5 mg/dscf or 0.003 gr/dscf.

Section 6-1-311 limits the emission rate of general particulate operations by the following formula: E (lbs/hr) = $4.10 * P^{0.67}$, where P is the process weight rate in tons/hour. The maximum allowable rate for S3702, Melt Furnace, operating at a maximum rate of 0.5 tons/hour is 2.58 lbs/hour.

Estimated actual particulate matter emissions are 2.15 lbs/hr. The value was calculated as follows:

(0.5 tons/hour) (4.3 lbs/ton) = 2.15 lbs/hour

Hence, actual calculated particulate emissions (2.15 lbs/hour) are below allowable particulate emissions (2.58 lbs/hour).

S3702 is subject to and is 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 will be imposed on aluminum ingots that will be melted at S3702.

40 CFR Part 63, Subpart RRR

S3702 is exempt from 40 CFR Part 63, Subpart RRR (National Emission Standards for Hazardous Air Pollutants for Secondary Aluminum Production) because Tesla's casting operations do not meet the definition of a secondary aluminum production facility.

Relevant sections of the Subpart RRR are reproduced below to support exemption status of S3702:

> *Subpart RRR—National Emission Standards for Hazardous Air Pollutants for Secondary Aluminum Production*
>
> *Source: 65 FR 15710, Mar. 23, 2000, unless otherwise noted.*
>
> *General*
>
> *§ 63.1500 Applicability.*
>
> *(a) The requirements of this subpart apply to the owner or operator of each secondary aluminum production facility as defined in §63.1503.*

§ 63.1503 Definitions.

> *Secondary aluminum production facility* means any establishment using *clean charge, aluminum scrap,* or dross from aluminum production, as the raw material and performing one or more of the following processes: scrap shredding, scrap drying/delacquering/decoating, thermal chip drying, furnace operations (*i.e.*, melting, holding, sweating, refining, fluxing, or alloying), recovery of aluminum from dross, in-line fluxing, or dross cooling. A *secondary aluminum production facility* may be independent or part of a primary aluminum production facility. For purposes of this subpart, aluminum die casting facilities, aluminum foundries, and aluminum extrusion facilities are not considered to be secondary aluminum production facilities if the only materials they melt are *clean charge*, customer returns, or internal scrap, and if they do not operate sweat furnaces, thermal chip dryers, or scrap dryers/delacquering kilns/decoating kilns. The determination of whether a facility is a *secondary aluminum production facility* is only for purposes of this subpart and any regulatory requirements which are derived from the

applicability of this subpart, and is separate from any determination which may be made under other environmental laws and regulations, including whether the same facility is a "secondary metal production facility" as that term is used in 42 U.S.C. §7479(1) and 40 CFR 52.21(b)(1)(i)(A) ("prevention of significant deterioration of air quality").

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.

Scrap dryer/delacquering kiln/decoating kiln means a unit used primarily to remove various organic contaminants such as oil, paint, lacquer, ink, plastic, and/or rubber from *aluminum scrap* (including used beverage containers) prior to melting.

Sweat furnace means a furnace used exclusively to reclaim aluminum from scrap that contains substantial quantities of iron by using heat to separate the low-melting point aluminum from the scrap while the higher melting-point iron remains in solid form.

Thermal chip dryer means a device that uses heat to evaporate oil or oil/water mixtures from unpainted/uncoated aluminum chips. Pre-heating boxes or other dryers which are used solely to remove water from aluminum scrap are not considered to be thermal chip dryers for purposes of this subpart.

Tesla will use clean ingots free of any paints, coatings or lubricants. Therefore, the ingots will meet the 40 CFR § 63.1503 definition of clean charge.

Tesla will not operate any equipment that meets the definition of sweat furnace, thermal chip dryer or scrap dryers/delacquering kilns/decoating kilns, per 40 CFR §63.1503.

Regulation 2, Rule 6 (Major Facility Review) 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 a 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. This project meets the definition of a Minor Permit Revision in accordance with Section 2-6-215, as follows:

- The project is not a major modification of a stationary source pursuant to 40 Code of Federal Regulations (CFR) Parts 51 (NSR) or 52 (PSD);
- The project is not a modification as defined in the New Source Performance Standards (NSPS) (40 CFR Part 60), National Emission Standards for Hazardous Air Pollutants (NESHAP) (40 CFR Part 61), or Section 112 of the Clean Air Act;
- The project does not change or relax any applicable monitoring, reporting or recordkeeping condition in the MFR;
- The project does not avoid any applicable requirements;
- The project does not establish any case-by-case determinations;

- The project equipment is not a portable source; and
- The project does not modify any permit condition to incorporate new EPA requirements.

CALIFORNIA ENVIRONMENTAL QUALITY ACT (CEQA)

CEQA is a state law intended to inform government decision makers and the public of any potential adverse environmental effects of proposed discretionary projects.

Per Regulation 2-1-311, an application for a ministerial project is exempt from CEQA review. In accordance with Regulation 2-1-427, permit applications covered by specific procedures, fixed standards and objective measurements set forth in the BAAQMD's Permit Handbook and BACT/TBACT Workbook are classified as ministerial. BAAQMD regulations require ministerial projects to meet specific criteria for approval of the application. Regulation 2-1-311 requires the BAAQMD's approval to be based on criteria set forth in Regulation 2-1-428, as paraphrased below.

1. The proposed new or modified source will comply with all applicable BAAQMD, Federal, and State Rules and Regulations.
2. The emissions can be calculated using standardized emissions factors from published governmental sources, District source test results, engineering and scientific handbooks, and other similar published literature.
3. BACT for the new and proposed source can be determined based on the latest edition of the CARB's BACT/LAER Clearinghouse or on the BAAQMD's own compilations as set forth in the Permit Handbook and BACT/TBACT Workbook.
4. If the modification of the source involves the shutdown of an existing source, Reasonably Available Control Technology applicable to the source shut down can be determined from existing provisions of the BAAQMD's rules or as set forth in the Permit Handbook and BACT/TBACT Workbook.
5. Project risk will not exceed a cancer risk of 10 in one million; a chronic hazard index of 1.0; and an acute hazard index of 1.0.
6. If Toxic Best Available Control Technology (TBACT) is required, TBACT can be determined as set forth in the Permit Handbook and BACT/TBACT Workbook.

The proposed project meets the above listed criteria as shown below:

1. Sources S3702 and S3712 comply with all applicable BAAQMD, Federal, and State Rules and Regulations.
2. The emission estimates for the proposed project were calculated using AP-42 and US EPA Factor Informational Retrieval (Fire) Database.
3. S3702 triggers BACT for PM10 emissions. BACT for S3702 was determined based on the latest edition of the CARB's BACT/LAER Clearinghouse.
4. The proposed project does not involve the (permanent) shutdown of an existing source.
5. As mentioned in Section 2.2 of the evaluation, the maximum cancer risk is 0.5 in a million, the chronic hazard index is 0.09, and the acute hazard index is 0.7. Hence, the project complies with Reg. 2-1-428.5.
6. This application does not trigger TBACT.

As a result, this application is for a ministerial project.

Notwithstanding ministerial classification, Regulation 2-1-312 provides eleven types of categorically exempt permits. Category 11 (Rule 2-1-312.11) states:

Permit applications for a new or modified source or sources or for process changes which will satisfy the "No Net Increase" provisions of District Regulation 2, Rule 2, and for which there is no possibility that the project may have any significant environmental effect in connection with any environmental media or resources other than on air quality.

The project is not expected to result in significant impacts on non-air environmental media. The BAAQMD form "Appendix H" and supplemental project information provided by Tesla, demonstrates that the proposed casting and pre-treatment sources meet the criteria for exemption under 2-1-312.11. All items applicable to the project or its effects have been checked "No" except for item 25 "Change in dust, ash, smoke, fumes or odors in vicinity". Applicant complies with BACT requirements for PM_{10} for item 25. Also, actual calculated particulate emissions (2.15 lbs/hour) from S3702 are below particulate emissions allowed under District Regulation 6-1-311 (2.66 lbs/hour).

The natural gas combustion units proposed in this application are exempt per District Regulations 9-7-110.1 and 2-1-103 as each unit will be fired exclusively with natural gas and each will have a maximum heat input of less than 2 MMBtu/hr. Even if they were not exempt, the District Permit Handbook Chapter 2.1 "Boilers, Steam Generators and Process Heaters" would deem them to be ministerially exempt.

The facility is over 1,000 feet from the nearest school and is therefore not subject to the public notification requirements of Regulation 2-1-412.

PSD and NSPS do not apply.

4.0 PERMIT CONDITIONS

Casting and Pre-treatment Operations Condition #25346

For

- S3702 Reverberatory Melt Furnace, Maximum Operating Rate: 30,000 lbs per hour of Aluminum, Schaefer Furnace, Maximum natural gas firing rate: 1.4 MMBtu/hour
- S3703 Fill Dosing Furnace, Westomat Furnace System, powered by electricity (Exempt per Regulation 2-1-103)
- S3704 High Pressure Die Cast, WL1200SL ProDos, Maximum Operating Rate: 30,000 lbs per hour of Aluminum (Exempt per Regulation 2-1-122.5)
- S3705 Quench Tank, Custom Built, (Exempt per Regulation 2-1-103)
- S3706 Solution Oven 1, Can-Eng Furnaces International Ltd., Maximum Operating Rate: 15,000 lbs per hour of Aluminum, Natural gas fired, Max. Firing rate: 1.6 MMBtu/hour (Exempt per Regulations 9-7-110.1 and 2-1-103)

S3707 Solution Oven 2, Can-Eng Furnaces International Ltd., Maximum Operating Rate: 15,000 lbs per hour of Aluminum, Natural gas fired, Max. Firing rate: 1.6 MMBtu/hour (Exempt per Regulations 9-7-110.1 and 2-1-103)

S3708 Age Oven 1, Wisconsin Oven Corp., Maximum Operating Rate: 12,000 lbs per hour of Aluminum, Natural gas fired, Max. Firing rate: 1.14 MMBtu/hour (Exempt per Regulations 9-7-110.1 and 2-1-103)

S3709 Age Oven 2, Wisconsin Oven Corp., Maximum Operating Rate: 12,000 lbs per hour of Aluminum, Natural gas fired, Max. Firing rate: 1.14 MMBtu/hour (Exempt per Regulations 9-7-110.1 and 2-1-103)

S3710 Age Oven 3, Wisconsin Oven Corp., Maximum Operating Rate: 12,000 lbs per hour of Aluminum, Natural gas fired, Max. Firing rate: 1.14 MMBtu/hour (Exempt per Regulations 9-7-110.1 and 2-1-103)

S3711 CNC Machining Operation: Machines Aluminum castings (Exempt per Regulation 2-1-103)

S3712 Pre-treatment Casting Operations: Dipping system for casted aluminum parts, Tank volume 3.2 thousand gallons, submerged fill

S3714 Boiler, Parker Boiler Company, Model 2304r(l), Natural gas fired, Max. Firing Rate: 1.87 MMBtu/hour (Exempt per Regulations 9-7-110.1 and 2-1-103)

1. The owner/operator shall not exceed the following material throughput limits at S3702:
   a. 0.5 tons per hour
   b. 8 tons during any day
   c. 1,920 tons during any year
   [Basis: Cumulative Increase, BACT, Toxics]

2. The owner/operator shall ensure that S3702 and S3704 are not operated for more than 3,840 hours in any consecutive twelve-month period.
   [Basis: Toxics, Cumulative Increase]

3. The owner/operator of S3712 shall ensure that Pre-treatment Casting operations are not operated for more than 1,920 hours in any consecutive twelve-month period. [Basis: Toxics]

4. The owner/operator of S3702 shall ensure that aluminum ingots melted at Reverberatory Melt Furnace have a cadmium content of no more than 0.004 percent and an arsenic content of no more than 0.002 percent. [Basis: BACT, Cumulative Increase, Regulation 11, Rule 15 (c) (2)]

5. The owner/operator of S3702 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, Toxics, 40 CFR Subpart RRR, Section 63.1503]

6. The owner/operator shall ensure that sources S3702, S3706-S3710, and S3714 be fired exclusively with natural gas, liquefied petroleum gas (LPG), or any combination thereof. [Basis: Cumulative Increase, Toxics]

7. The owner/operator shall use following emission factors to calculate PM_{10}, POC, NOx, SOx, and CO emissions from S3702 and S3704:
    a. PM10: 4.3 lbs/ton aluminum processed
    b. POC: 0.14 lbs/ton aluminum processed
    c. NOx: 0.01 lbs/ton aluminum processed
    d. SOx: 0.02 lbs/ton aluminum processed
    e. CO: 0.152 lbs/ton aluminum processed

    [Basis: Cumulative Increase]

8. The owner/operator of S3712 shall equip dip tanks with a temperature monitoring and recording device to ensure chemical treatment bath temperatures with water content less than 98% by volume, do not exceed 170 degrees F. [Basis: Toxics]

9. The owner/operator of S3712 shall not change bath chemistry in such a manner as to generate emissions exceeding toxic air contaminants trigger levels listed in Table 2-5-1 of the District Regulation 2-5 without notifying District and having health risk screening analysis completed . [Toxics]

10. RECORD KEEPING AND REPORTING
    a. To demonstrate compliance with parts 1 through 4 of this permit condition, the owner/operator shall maintain the following records, including but not necessarily limited to the following information:
        i. For each batch delivered to the owner/operator, Certificates of Analysis for all aluminum ingots used showing the cadmium 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);
        ii. Hourly, daily, monthly, and annual throughput of aluminum ingots processed at S3702;
        iii. Daily, monthly, and annual hours of operation of S3702, S3704, and S3712.

        [Basis: Cumulative Increase, BACT, Toxics]

    b. To demonstrate compliance with parts 8 and 9 of this permit condition, the owner/operator shall maintain the following records, including but not necessarily limited to the following information:
        i. Daily, monthly, and annual temperature records.
        ii. Logs of the quantity of all chemicals, excluding water, added to the treatment baths.
        iii. Material Safety Data Sheets for all chemicals, excluding water, added to the treatment baths.

        [Basis: Toxics]

    c. All records shall be retained on site for five years, from the date of entry and made available for inspection by the District staff upon request. These recordkeeping

requirements shall not replace the recordkeeping requirements contained in any applicable District regulation. [Basis: Cumulative Increase, Recordkeeping]

5.0 RECOMMENDATION

Staff recommends the following:

a) Waive Authority to Construct and issue Tesla a Permit to Operate for the following new casting and pre-treatment sources:

S3702 Reverberatory Melt Furnace, Maximum Operating Rate: 30,000 lbs per hour of Aluminum, Schaefer Furnace, Maximum natural gas firing rate: 1.4 MMBtu/hour

S3712 Pre-treatment Casting Operations: Dipping system for casted aluminum parts, Tank volume 3.2 thousand gallons, submerged fill

b) Issue a letter of exemption to Tesla for the following new sources:

S3703 Fill Dosing Furnace, Westomat Furnace System, powered by electricity (Exempt per Regulation 2-1-103)
S3704 High Pressure Die Cast, WL1200SL ProDos, Maximum Operating Rate: 30,000 lbs per hour of Aluminum (Exempt per Regulation 2-1-122.5)
S3705 Quench Tank, Custom Built, (Exempt per Regulation 2-1-103)
S3706 Solution Oven 1, Can-Eng Furnaces International Ltd., Maximum Operating Rate: 15,000 lbs per hour of Aluminum, Natural gas fired, Max. Firing rate: 1.6 MMBtu/hour (Exempt per Regulations 9-7-110.1 and 2-1-103)
S3707 Solution Oven 2, Can-Eng Furnaces International Ltd., Maximum Operating Rate: 15,000 lbs per hour of Aluminum, Natural gas fired, Max. Firing rate: 1.6 MMBtu/hour (Exempt per Regulations 9-7-110.1 and 2-1-103)
S3708 Age Oven 1, Wisconsin Oven Corp., Maximum Operating Rate: 12,000 lbs per hour of Aluminum, Natural gas fired, Max. Firing rate: 1.14 MMBtu/hour (Exempt per Regulations 9-7-110.1 and 2-1-103)
S3709 Age Oven 2, Wisconsin Oven Corp., Maximum Operating Rate: 12,000 lbs per hour of Aluminum, Natural gas fired, Max. Firing rate: 1.14 MMBtu/hour (Exempt per Regulations 9-7-110.1 and 2-1-103)
S3710 Age Oven 3, Wisconsin Oven Corp., Maximum Operating Rate: 12,000 lbs per hour of Aluminum, Natural gas fired, Max. Firing rate: 1.14 MMBtu/hour (Exempt per Regulations 9-7-110.1 and 2-1-103)
S3711 CNC Machining Operation: Machines Aluminum castings (Exempt per Regulation 2-1-103)
S3714 Boiler, Parker Boiler Company, Model 2304r(l), Natural gas fired, Max. Firing Rate: 1.87 MMBtu/hour (Exempt per Regulations 9-7-110.1 and 2-1-103)

By: _____ _____

Sanjeev Kamboj Date
Senior Air Quality Engineer

ENGINEERING EVALUATION
TESLA MOTORS, INC.
PLANT 20459
APPLICATION 24583

1.0 BACKGROUND

Tesla Motors, Inc. (Tesla) submitted this application to obtain a Permit to Operate for alterations to the following equipment:

S1057 Truck Line Air Supply House Boiler #2, Natural Gas Fired, Maximum Firing Rate: 19.95 MMBtu/hour

The project is to replace the existing burner with a new low NOx burner that will ensure compliance with the new limits in BAAQMD Regulation 9, Rule 7, Nitrogen Oxides and Carbon Monoxide from Industrial, Institutional, and Commercial Boilers, Steam Generators, and Process Heaters. According to Tesla, the low NOx burner has already been installed on S1057 and that it was source tested on April 11, 2012. The old burner had a maximum firing rate of 25 MMBtu/hour with a NOx emission limit of 30 ppmv, dry, at 3% oxygen. The new burner has a 19.95 MMBtu/hour rating and will comply with the emission limits of Regulation 9-7-307 that was amended on May 4, 2011.

Effective January 1, 2012, S1057 is subject to the NOx and CO emission limits of 15 ppmv, dry and 400 ppmv, dry, at 3% oxygen, respectively. Besides S1057, Tesla has another boiler, S1056 (Truck Line Air Supply House Boiler #1, 25 MMBtu/hour) that they plan to use as a backup to S1057. S1056 will comply with the low fuel usage limited exemption of Section 9-7-112.2. In order to avail of this limited exemption, Tesla will have to meet the following conditions:

a. Ensure that S1056 uses less than 10% of its annual maximum heat capacity (i.e., 21,900 MMBtu or 219,000 therms of natural gas) in each consecutive 12-month period beginning January 1, 2012.
   The above usage limit was calculated based on S1056's annual maximum heat capacity for the entire year 25 MMBtu/hour x 8760 hours/year = 219,000 MMBtu/year; where 8,760 hours/year = 24 hours/day x 365 days/year.
b. Monitoring and recordkeeping requirements of Regulation 9-7-504 are met.
c. Ensure that S1056 does not exceed a NOx exhaust concentration of 30 ppmv, dry at 3% oxygen.
d. Ensure that S1056 does not exceed a CO exhaust concentration of 400 ppmv, dry at 3% oxygen.

Tesla has installed Power Flame Nova Plus NVC10-G-30 Low NOx burner. As mentioned earlier, a source test was conducted on S1057 after burner replacement on April 11, 2012 and a report was submitted to the District's Source Test Section on April 30, 2012. A copy of the source test report (OS-4298) showing compliance with emission limitations of Regulation 9-7-307 is included in Attachment A.

4.0 EMISSIONS SUMMARY

The new low NOx burner installed at S1057 meets the NOx and CO emission standards of Regulation 9-7. Pursuant to District Regulation 2-1-233.1, replacement of the existing burner with a lower emitting burner is considered an alteration. Since S1057 is not defined as a new or modified source pursuant to Regulation 2-1-234, it is not subject to the new source review of Regulation 2-2 and will not result in any cumulative increase in emissions. Therefore, emissions do not need to be calculated.

2.1 Plant Cumulative Increase:

The cumulative emission increase is ZERO for all the criteria pollutants because annual emissions for this plant are not increasing due to this application.

2.4 Toxics

New source review of Toxic Air Contaminants (BAAQMD Rule 2-5) requires the Best Available Control Technology for Toxics (TBACT) for sources that result in cancer risk greater than 1.0 in one million and/or chronic hazard index greater than 0.20. The replacement of an existing burner with a new low NOx burner at S1057 would not result in an increase in toxic emissions, thus the New Source Review of Toxic Air Contaminants does not apply.

2.5 Best Available Control Technology

Per Regulation 2-2-301, BACT shall be applied to a new or modified source which results in an emission from a new source or an increase in emissions from a modified source, and which has the potential to emit 10 pounds or more per highest day of emissions. The replacement of burner at S1057 does not constitute a modification of the Truck Line Air Supply House Boiler #2. Therefore, BACT is not triggered for this project.

2.4 Offsets

Since there is no increase in emissions at this plant as mentioned in Section 2.0 above, offsets are not required for this application.

5.0 STATEMENT OF COMPLIANCE

<u>Regulation 6, Rule 1:</u>
BAAQMD Regulation 6-1 specifies limits on PM emissions. The boilers, S1056 and S1057, will be fired exclusively on natural gas, liquefied petroleum gas (LPG), or any combination thereof. Natural gas combustion creates minimal particulate emissions. Therefore, boilers are expected to comply with all applicable requirements of this regulation.

Regulation 7 Odorous Substance:
The Regulation 7 establishes general limitations on odorous substances. There are no odorous substances involved with this project.

Regulation 9, Rule 1:
The boilers are subject to Regulation 9, Rule 1, Sulfur Dioxide. They are expected to comply with the limit of 300 ppmv in Regulation 9-1-302 during natural gas firing. Regulation 9-1-302 limits the SO_2 concentration at an exhaust point to 300 ppmv.

Regulation 9, Rule 7:
Sources S1056 and S1057 are subject to and are expected to comply with Regulation 9, Rule 7, Nitrogen Oxides and Carbon Monoxides from Industrial, Institutional, and Commercial Boilers, Steam Generators, and Process Heaters. Specifically, S1057 is subject to the NOx and CO limits of 15 ppmv, dry and 400 ppmv, dry, corrected to 3% oxygen, respectively. Tesla has submitted source test results (OS-4298) showing compliance with these limits (refer to Attachment A). Similarly, S1056 is subject to the NOx and CO limits of 9 ppmv, dry and 400 ppmv, dry, corrected to 3% oxygen, respectively. S1056 is expected to comply with NOx and CO limits of Section 9-7-112.2 when used as backup to S1057, by consuming less than 10% of its annual maximum heat capacity in each consecutive 12-month period.

Major Facility Review:

Tesla has a Major Facility Review permit as required by BAAQMD Regulation 2, Rule 2, since it is considered a major source of emissions. The changes proposed in this application will require changes to the existing Title V permit and Statement of Basis. These changes will be handled in Title V Minor Revision Application Number 24584.

CEQA:

The project is considered to be ministerial under the District's CEQA Regulation 2-1-311 and therefore is not subject to CEQA review. The engineering review for this project requires only the application of standard permit conditions and standard emissions factors as outlined in the District Permit Handbook Chapter 2.1.

Public Notice:

The facility is over 1,000 feet from the nearest school and is therefore not subject to the public notification requirements of Regulation 2-1-412.

PSD, NSPS, and NESHAPS do not apply to this project.

4.0 PERMIT CONDITIONS

Modifications to Permit Condition # 9174

COND# 9174 ----------

For S1056, TRUCK ASH BOILER # 1,25 MMBtu/hour AND
S1057, TRUCK ASH BOILER # 2, 19.95 MMBtu/hour:

1. The owner/operator shall ensure that sources S1056 and S1057 be fired exclusively with ~~Only~~ natural gas, propane, ~~LPG~~liquefied petroleum gas (LPG), or butane. ~~shall be used as a fuel at this source for this source.~~
(~~basis~~Basis: Cumulative Increase)

2. The owner/operator of S1056 shall ensure that ~~Emissions~~ emissions of ~~oxides of~~ nitrogen oxides (NOx) ~~shall~~ do not exceed ~~30~~ 9 ppmv, dry, at 3 percent oxygen.~~, dry basis, averaged over any one hour period.~~ (~~basis~~Basis: BACT, Cumulative Increase, Regulation 9-7-307.5)

3. The owner/operator of S1057 shall ensure that emissions of nitrogen oxides (NOx) do not exceed 15 ppmv, dry, at 3 percent oxygen. (Basis: BACT, Cumulative Increase, Regulation 9-7-307.3)

4. The owner/operator of sources S1056 and S1057 shall ensure that emissions of carbon monoxide (CO) do not exceed 400 ppmv, dry, at 3 percent oxygen. (Basis: Cumulative Increase, Regulation 9-7-307)

5. The owner/operator of S1056 shall not exceed the following limits in the event the limited exemption of Section 9-7-112.2 is invoked:
a. Annual fuel usage of 219,000 therms in each consecutive 12-month period.
b. NOx exhaust concentration of 30 ppmv, dry, at 3 percent oxygen.
c. CO exhaust concentration of 400 ppmv, dry, at 3 percent oxygen.
(Basis: Cumulative Increase)

~~3. This boiler shall be operated and maintained according to the manufacturer's specifications.
(basis: Cumulative Increase)~~

~~4. All source test records and preventative maintenance records shall be kept and made available for District Inspection for a period of five years following the date of entry. (basis: Cumulative Increase)~~

~~5~~6. In order ~~To~~ to demonstrate compliance with ~~Part~~ parts 2, 3, and 4 of this permit condition, the owner/operator shall ensure that sources S1056 and S1057
~~shall~~ be source tested once per calendar year for NOx and CO, unless a different schedule is approved. Testing shall be performed in accordance with Sections 9-7-601 and 602. The owner/operator shall obtain approval of all testing procedures from the manager of the District's source test section prior to conducting any tests and shall notify

the manager of the District's source test section of the scheduled test date at least seven days prior to conducting the test. Within 60 days of completion of the test, a comprehensive report of the test results shall be submitted to the Manager of the District's Source Test Section. ~~A minimum of two weeks notification shall be given to the District's Source Test Manager, prior to the owner/operator initiating any source test for these boilers. Source testing shall be performed to determine the NOx and CO emissions of the sources, in accordance with the District's Manual of Procedures. Stack sampling ports and platform(s) shall be provided for these sources exhaust stacks. Records of the source test results shall be kept. All records shall be kept and made available for District inspection for a period of five years following the date of entry.~~

(~~basis~~Basis: Regulation~~s~~ 2-6-409.2, 9-7-506)

7. Parts 2 and 6 of Permit Condition 9174 will not apply to S1056 if the owner/operator can demonstrate to the satisfaction of the APCO that the source complies with the provisions of District Regulation 9-7-112.2 as amended May 4, 2011 (Basis: Cumulative Increase)

8. In order to demonstrate compliance with parts 5, 6, and 7 of this permit condition, the owner/operator shall maintain the following records, including but not necessarily limited to the following information:

a. Annual fuel usage at S1056
b. Documentation verifying the requirements of Sections 9-7-309 and 504 are satisfied.
c. Annual source test records
d. All records shall be retained on site for five years, from the date of entry and made available for inspection by the District staff upon request. These recordkeeping requirements shall not replace the recordkeeping requirements contained in any applicable District regulation. (Basis: Cumulative Increase, Recordkeeping)

5.0 RECOMMENDATION

Staff recommends the following:

Waive Authority to Construct and issue Tesla a Permit to Operate for alterations to the following source:

S1057 Truck Line Air Supply House Boiler #2, Natural Gas Fired, Maximum Firing Rate: 19.95 MMBtu/hour

By: _____ _____
Sanjeev Kamboj Date
Senior Air Quality Engineer

ENGINEERING EVALUATION
TESLA MOTORS, INC.; PLANT 20459
APPLICATION 25143

BACKGROUND

Tesla Motors, Inc. (Tesla) has requested permit exemption for the following new source:

S3715 High Pressure Die Cast Unit No. 2, WL1200SL ProDos, Maximum Operating Rate: 30,000 lbs per hour of Aluminum (Exempt per Regulation 2-1-122.5)

Besides exemption letter, Tesla has requested to include S3715 in the existing permit condition #25346.

Detailed Process Description

Please see Appendix A for Process Flow Diagram.

C. Casting Process Description
   a. Clean aluminum ingots as defined by Section (c) (2) of District Regulation 11, Rule 15 (Hazardous Pollutants – Airborne Toxic Control Measure for Emissions of Toxic Metals from Non-Ferrous Metal Melting) are liquefied in S3702, Melt Furnace.
      i. Metal Pour 355 is blended into melt to enhance metallurgical properties critical to final casted part.
   b. Molten material is transferred from furnace to bull ladle.
   c. Metallurgy is checked and alloys of strontium and magnesium may be added to mixture to achieve desired material quality.
      i. Argon is used to remove undesired impurities, typically hydrogen, from the melt.
   d. Ladle transfers molten aluminum to fill dosing furnace.
   e. Fill dosing furnace is used to complete fusing of appropriate materials into final melt that is used for die cast operations.
   f. Once melted and taken to proper temperature, material is transferred to S3715, High Pressure Die Cast, to form the desired part. Molten metal is poured into die cast chamber and a hydraulically operated plunger seals the chamber and forces the metal into the locked die at high pressures.

   Notes on S3715, High Pressure Die Cast:

   Chamber molds are coated with mold release coatings and pre-heated before the molten metal is injected into it.

   Once the part is removed from the die cast, the equipment is automatically lubricated. The lubricants are die case specific. The lubricant serves to both cool the surface to the proper temperature for the next cycle and to create a film on the die surface which allows for part release.

g. Casted parts are cooled using Quench tank, S3705.
h. Casted parts are transferred from quench tank to Solution Furnaces, S3706 and S3707, for further processing. Parts are cooled with air blast and transferred to Age Ovens, S3708-S3710.
i. Age ovens are used to temper casted parts.
j. Parts are reviewed by quality control to ensure they meet production specifications.
k. Parts are then sent to S3711, Computer Numerical Control (CNC) machining unit. CNC uses computerized programming with laser technology to remove defects from finished casting. Using a mixture of Calcium Acetate, Foam Ban 1123 and Ultak 206, potential metallic chips are removed from finished cast.

S3715, High Pressure Die Cast Unit No. 2, is exempt from permitting per District Regulation 2-1-122.5. Regulation 2-1-122.5 states:

2-1-122 Exemption, Casting and Molding Equipment: The following equipment is exempt from the requirements of Sections 2-1-301 and 302, provided that the source does not require permitting pursuant to Section 2-1-319.

122.5 Die casting machines.

S3715 is not subject to the requirements of Regulation 2, Rule 1, Section 301 and/or 302 because it is in compliance with Regulations 2-1-316 (New or Modified Sources of Toxic Air Contaminants) and 2-1-319 (Sources Expressly Subject to Permitting Requirements). Toxic emissions are below their respective assigned trigger levels and the emission rate of each regulated air pollutant is less than 5 tons per year. Please see Emissions Summary section below for detailed calculations.

Since S3715 is an exempt source, it is not subject to any "New Source Review" requirements, including BACT, cumulative increase, offsets, toxic review (except to verify exempt status), public notification requirements triggered by proximity to a K-12 school, or CEQA.

EMISSIONS SUMMARY

Emissions at S3715 are quantified only to verify that the 5-ton/yr emission limit for exempt sources in District Regulation 2-1-319.1 is not exceeded.

Assumptions:

- Emission factors for secondary aluminum casting and pouring operations from AP-42 and US EPA Factor Informational Retrieval (Fire) Database:
  - POC: 0.14 lbs/ton aluminum processed
  - SOx: 0.02 lbs/ton aluminum processed
  - CO: 0.152 lbs/ton aluminum processed
  - NOx: 0.01 lbs/ton aluminum processed
- Aluminum ingot throughput rate of 0.5 tons/hour.
- Operating hours of 3840 hours/year (i.e., 16 hours/day, 5 days/week and 48 weeks/year).

POC emissions:

(0.5 tons/hour) * (0.14 lbs/ton) * (3840 hours/yr) = 268.80 lbs/yr (0.134 tpy)

NOx emissions:

(0.5 tons/hour) * (0.01 lbs/ton) * (3840 hours/yr) = 19.20 lbs/yr (0.010 tpy)

SO2 emissions:

(0.5 tons/hour) * (0.02 lbs/ton) * (3840 hours/yr) = 38.40 lbs/yr (0.020 tpy)

CO emissions:

(0.5 tons/hour) * (0.152 lbs/ton) * (3840 hours/yr) = 291.84 lbs/yr (0.146 tpy)

Note: S3715 does not generate PM10. Molten metal is conveyed into the unit for processing. Shavings, chips, dust or any non-molten solids are not used or generated by this operation.

Toxic compound emissions:

Anti-solder wax contains up to 5% sulfuric acid which is listed in Table 2-5-1 of the District Regulation 2, Rule 5.

Potential sulfuric acid emissions were estimated using SOx emission factor 0.02 lbs SOx/ton processed aluminum. This value was obtained from USEPA Factor Informational Retrieval (FIRE) database. Sulfuric acid is an anti-solder wax constituent; however the material will react with other chemicals introduced into the process.

Sulfuric acid emissions are calculated as follows:

(0.5 tons/hour) * (0.02 lbs/ton) * (3840 hours/yr) = 38.40 lbs/yr (0.020 tpy) and 0.01 lbs/hour

As can be seen from the above calculations, sulfuric acid emissions are below their respective chronic (39 lbs/yr) and acute (0.26 lbs/hr) trigger levels.

PERMIT CONDITIONS

Modifications to Permit Condition # 25346

```
COND#  25346   -------------------------------------

     For

     S3702 Reverberatory Melt Furnace, Maximum Operating Rate:
          30,000 lbs per hour of Aluminum, Schaefer Furnace,
          Maximum natural gas firing rate: 1.4 MMBtu/hour

     S3703 Fill Dosing Furnace, Westomat Furnace System, powered
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by electricity (Exempt per Regulation 2-1-103)

S3704 High Pressure Die Cast, WL1200SL ProDos, Maximum Operating Rate: 30,000 lbs per hour of Aluminum (Exempt per Regulation 2-1-122.5)

S3705 Quench Tank, Custom Built, (Exempt per Regulation 2-1-103)

S3706 Solution Oven 1, Can-Eng Furnaces International Ltd., Maximum Operating Rate: 15,000 lbs per hour of Aluminum, Natural gas fired, Max. Firing rate: 1.6 MMBtu/hour (Exempt per Regulations 9-7-110.1 and 2-1-103)

S3707 Solution Oven 2, Can-Eng Furnaces International Ltd., Maximum Operating Rate: 15,000 lbs per hour of Aluminum, Natural gas fired, Max. Firing rate: 1.6 MMBtu/hour (Exempt per Regulations 9-7-110.1 and 2-1-103)

S3708 Age Oven 1, Wisconsin Oven Corp., Maximum Operating Rate: 12,000 lbs per hour of Aluminum, Natural gas fired, Max. Firing rate: 1.14 MMBtu/hour (Exempt per Regulations 9-7-110.1 and 2-1-103)

S3709 Age Oven 2, Wisconsin Oven Corp., Maximum Operating Rate: 12,000 lbs per hour of Aluminum, Natural gas fired, Max. Firing rate: 1.14 MMBtu/hour (Exempt per Regulations 9-7-110.1 and 2-1-103)

S3710 Age Oven 3, Wisconsin Oven Corp., Maximum Operating Rate: 12,000 lbs per hour of Aluminum, Natural gas fired, Max. Firing rate: 1.14 MMBtu/hour (Exempt per Regulations 9-7-110.1 and 2-1-103)

S3711 CNC Machining Operation: Machines Aluminum castings (Exempt per Regulation 2-1-103)

S3712 Pre-treatment Casting Operations: Dipping system for casted aluminum parts, Tank volume 3.2 thousand gallons, submerged fill

S3714 Boiler, Parker Boiler Company, Model 2304r(l), Natural gas fired, Max. Firing Rate: 1.87 MMBtu/hour (Exempt per Regulations 9-7-110.1 and 2-1-103)

S3715 High Pressure Die Cast Unit No. 2, WL1200SL ProDos, Maximum Operating Rate: 30,000 lbs per hour of Aluminum (Exempt per Regulation 2-1-122.5)

1. The owner/operator shall not exceed the following material throughput limits at S3702:
   a. 0.5 tons per hour
   b. 8 tons during any day
   c. 1,920 tons during any year
[Basis: Cumulative Increase, BACT, Toxics]

2. The owner/operator shall ensure that S3702, ~~and~~ S3704 and 3715 are not operated for more than 3,840 hours in any consecutive twelve-month period. [Basis: Toxics, Cumulative Increase]

3. The owner/operator of S3712 shall ensure that Pre-treatment Casting operations are not operated for more than 1,920 hours in any consecutive twelve-month period. [Basis: Toxics]

4. The owner/operator of S3702 shall ensure that aluminum ingots melted at Reverberatory Melt Furnace have a cadmium content of no more than 0.004 percent and an arsenic content of no more than 0.002 percent.
[Basis: BACT, Cumulative Increase, Regulation 11, Rule 15 (c)(2)]

5. The owner/operator of S3702 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, Toxics, 40 CFR Subpart RRR, Section 63.1503]

6. The owner/operator shall ensure that sources S3702, S3706-S3710, and S3714 be fired exclusively with natural gas, liquefied petroleum gas (LPG), or any combination thereof. [Basis: Cumulative Increase, Toxics]

7. The owner/operator shall use following emission factors to calculate PM10, POC, NOx, SOx, and CO emissions from S3702, ~~and~~ S3704 and S3715:
   a. PM10: 4.3 lbs/ton aluminum processed
   b. POC: 0.14 lbs/ton aluminum processed
   c. NOx: 0.01 lbs/ton aluminum processed
   d. SOx: 0.02 lbs/ton aluminum processed
   e. CO: 0.152 lbs/ton aluminum processed
[Basis: Cumulative Increase]

8. The owner/operator of S3712 shall equip dip tanks with a temperature monitoring and recording device to ensure chemical treatment bath temperatures with water content less than 98% by volume, do not exceed 170 degrees F. [Basis: Toxics]

9. The owner/operator of S3712 shall not change bath chemistry in such a manner as to generate emissions exceeding toxic air contaminants trigger levels listed in Table 2-5-1 of the District Regulation 2-5 without notifying District and having health risk screening analysis completed . [Basis: Toxics]

10. RECORD KEEPING AND REPORTING

a. To demonstrate compliance with parts 1 through 4 of this permit condition, the owner/operator shall maintain the following records, including but not necessarily limited to the following information:

i. For each batch delivered to the owner/operator, Certificates of Analysis for all aluminum ingots used showing the cadmium 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);
ii. Hourly, daily, monthly, and annual throughput of aluminum ingots processed at S3702;
iii. Daily, monthly, and annual hours of operation of S3702, S3704, and S3712. [Basis: Cumulative Increase, BACT, Toxics]

b. To demonstrate compliance with parts 8 and 9 of this permit condition, the owner/operator shall maintain the following records, including but not necessarily limited to the following information:

i. Daily, monthly, and annual temperature records.
ii. Logs of the quantity of all chemicals, excluding water, added to the treatment baths.
iii. Material Safety Data Sheets for all chemicals, excluding water, added to the treatment baths.
[Basis: Toxics]

c. All records shall be retained on site for five years, from the date of entry and made available for inspection by the District staff upon request. These recordkeeping requirements shall not replace the recordkeeping requirements contained in any applicable District regulation. [Basis: Cumulative Increase, Recordkeeping]

RECOMMENDATION

Staff recommends the following:

1. Issue a letter of exemption to Tesla Motors, Inc. for the following new source:

S3715 High Pressure Die Cast Unit No. 2, WL1200SL ProDos, Maximum Operating Rate: 30,000 lbs per hour of Aluminum (Exempt per Regulation 2-1-122.5)

2. Approve changes to permit condition #25346 applicable to sources S3702, S3703, S3704, S3705, S3706, S3707, S3708, S3709, S3710, S3711, S3712, S3713 and S3715.

By: _____ _____

Sanjeev Kamboj Date
Senior Air Quality Engineer

ENGINEERING EVALUATION
TESLA MOTORS, INC.; PLANT 20459
APPLICATION 25442

1.0 BACKGROUND

Tesla Motors, Inc. (Tesla) submitted this application to request following changes to Permit Condition (PC) 25346 that applies to Casting and Pre-treatment Operations:

- **Increase daily production limit for S3702, Reverberatory Melt Furnace, from 8 tons per day to 20 tons per day.**
- **Increase annual production limit for S3702 from 1,920 tons per year to 5,000 tons per year.**
- **Change PM10 emission factor applicable to S3702 from 4.3 lbs/ton aluminum processed to 0.10 lbs/ton aluminum processed. This would reflect actual particulate emissions from S3702.**
- **Add condition that Tesla will source test S3702 once per calendar year to determine current particulate rate, and to use that rate to calculate actual emissions.**
- **Exempt S3712, Pre-treatment Casting Operations: Dipping System, from permitting per District Regulation 2-1-103.**

S3702 and S3712 were permitted under District Application 24332. At that time, actual emissions data was not available and potential emissions were calculated using AP-42 emission factors and theoretically available data. The AP-42 emission factors are based upon a research report that summarized casting technology and materials used throughout the country as late as 1989. In excess of twenty years of technological improvements involving equipment and materials has resulted in cleaner casting operations, as reflected by the data submitted by Tesla.

S3702, Reverberatory Melt Furnace

PC 25346 limits S3702 aluminum processing to 8 tons per day and 1,920 tons per year.

Tesla is requesting the District to change the limits to 20 tons per day and 5,000 tons per year. The basis for this request is the need for increased production from its casting operations to meet current and future demands.

To definitely determine actual S3702 particulate and toxic air contaminant (TAC) emissions, Tesla hired the source testing firm, Blue Sky Environmental, to measure particulate emissions generated by S3702. In addition to determining the actual emission rate, emission samples from the test were sent to the Curtis & Tompkins analytical laboratory in Berkeley, CA, for analysis of metallic TACs identified by the certificate of analysis included with every load of delivered aluminum.

The particulate test protocol used was California Air Resources Board (CARB) Method 5. The source test was conducted on March 29, 2013.

The analytical protocol used to determine quantity of toxic air contaminants was EPA 29-Trace Metals analysis.

Source test was reviewed and approved by the District Source Test section on May 30, 2013. Please refer to Appendix A for source test summary, trace metal analytical results and the aluminum loading log.

S3712, Pre-Treatment Casting Operations: Dipping System

Tesla is requesting that S3712 be exempted from permitting per District Regulation 2-1-103 which states:

2-1-103 Exemption, Source not Subject to any District Rule: Any source that is not already exempt from the requirements of Section 2-1-301 and 302 as set forth in Sections 2-1-105 to 2-1-128, is exempt from Section 2-1-301 and 302 if the source meets all of the following criteria:

103.1 The source is not in a source category subject to any of the provisions of Regulation 6(1), Regulation 8(2) excluding Rules 1 through 4, Regulations 9 through 12; and

103.2 The source is not subject to any of the provisions of Sections 2-1-316 through 319; and

103.3 Actual emissions of precursor organic compounds (POC), non-precursor organic compounds (NPOC), nitrogen oxides (NOx), sulfur dioxide (SO_2), PM_{10} and carbon monoxide (CO) from the source are each less than 10 pounds per highest day. A source also satisfies this criterion if actual emissions of each pollutant are greater than 10 lb/highest day, but total emissions are less than 150 pounds per year, per pollutant.

Note 1: Typically, any source may be subject to Regulation 6, Particulate Matter and Visible Emissions. For the purposes of this section, Regulation 6 applicability shall be limited to the following types of sources that emit PM_{10}: combustion source; material handling/processing; sand, gravel or rock processing; cement, concrete and asphaltic concrete production; tub grinder; or similar PM_{10}-emitting source, as deemed by the APCO.

Note 2: If an exemption in a Regulation 8 Rule indicates that the source is subject to Regulation 8, Rules 1 through 4, then the source must comply with all applicable provisions of Regulation 8, Rules 1 through 4, to qualify for this exemption.

103.4 The source is not an ozone generator (a piece of equipment designed to generate ozone) emitting 1 lb/day or more of ozone.

(Adopted 6/7/95; Amended 5/17/00; 12/21/04)

S3712 is not in a source category subject to any of the provisions of Regulation 6, Regulation 8 and Regulations 9 through 12. S3712 is not subject to any of the provisions of Sections 2-1-316 through 319 and actual emissions of criteria air pollutants from S3712 will not exceed 10 pounds per highest day. Also, S3713 is not an ozone generator.

Since S3712 is an exempt source, it is not subject to any "New Source Review" requirements, including BACT, cumulative increase, offsets, toxic review (except to verify exempt status), public notification requirements triggered by proximity to a K-12 school, or CEQA.

6.0 EMISSION CALCULATIONS

S3702, Reverberatory Melt Furnace

Basic assumption used in PM_{10} calculations is that all measured particulate generated during testing, were size PM_{10} or less.

March 29, 2013 source test results are as follows:

Run 1	Run 2	Run 3	Average
0.040 lbs/hour	0.041 lbs/hour	0.021 lbs/hour	0.034 lbs/hour
0.95 lbs/day	0.99 lbs/day	0.5 lbs/day	0.81 lbs/day

Total aluminum processed during shift – 5.1 tons (Reference –EPA Log included in Appendix A)

Total shift time – 9 hours

Total particulate emission = (maximum hourly run rate)(total shift hours)
= (0.041 lbs/hour)(9 hours)
= 0.37 lbs

Pounds particulate per ton aluminum processed = total lbs particulate produced/tons processed aluminum
= 0.37 lbs particulate/5.1 tons processed aluminum

= 0.10 lbs particulate/ton processed aluminum

Actual particulate emission rate is less than 2.5% of the emission factor rate used in District Application 24332, 0.10 lbs/ton processed aluminum versus 4.3 lbs/ton processed aluminum.

Using S3702 actual particulate emission rate, the maximum actual PM_{10} emissions from S3702 would be 500 lbs per year or 2 lbs/day. These emissions are much lower than 8,256 lbs/yr and 34.4 lbs/day calculated in Application #24332.

Total estimated actual emissions are calculated as follows:

(20 tons/day)(0.10 lbs PM10/ton) = 2 lbs/day
(5000 tons/year)(0.10 lbs PM10/ton) = 500 lbs/year

Hence, there is no increase in PM_{10} emissions related to this application.

District will include a permit condition to source test once per calendar year to calculate particulate emission rate, and to use that rate to determine actual particulate emissions from S3702.

<u>S3712, Pre-Treatment Casting Operations: Dipping System</u>

As stated in Background section, Tesla is requesting that S3712 be exempted from permitting per District Regulation 2-1-103.

To clarify actual criteria air pollutant emissions attributable to evaporative tank losses, Tesla took samples of the acidic and caustic baths during non-operating periods and sent to a certified lab for analysis. The baths maintained their normal operating temperatures during the periods of non-production, 2300 hours to 0500 hours.

Please refer to Appendix B for Lab data from McCampbell Analytical in Pittsburgh, CA and Concentration graphs. The graphs show criteria air pollutants bath concentration increasing over time, and upon reaching specific quality and reactivity metrics, are adjusted to achieve maximum material quality. The water was analyzed for sulfuric, hydrofluoric and nitric acid as well as the caustic sodium hydroxide, using EPA Method 300.1

The bath samples were analyzed for the presence of sulfuric acid, hydrofluoric acid, nitric acid and sodium hydroxide. The analysis shows negligible criteria air pollutant emissions attributed to evaporative loss.

The reduction in criteria air pollutant concentration is due to the addition of RO water to adjust bath concentrations to acceptable operating conditions. Conductivity readings and dissolved aluminum concentration are the major components for adjusting bath concentrations by adding dilution water and replenishment chemicals.

Tesla has also investigated replacement chemicals with similar components. The potential vendors have bench tested their materials using the same protocol, set temperature for 8 hour period, sampling and analyzing each sample. Their conclusions are the same as those the data shows for S3712 operations, negligible criteria air pollutant and toxic emissions are generated by evaporation.

The following tables summarize the data taken during the sampling periods.

Fluoride (HF)

Date	Sample	Time (hr)	mg/l	lb/gal
4/8/13	21	11:00 PM	220	1.83E-03
4/9/13	22	5:00 AM	220	1.83E-03
4/9/13	23	11:00 PM	230	1.92E-03
4/10/13	24	5:00 AM	220	1.83E-03
4/15/13	25	11:00 PM	220	1.83E-03
4/16/13	26	5:00 AM	220	1.83E-03
4/16/13	27	11:00 PM	230	1.92E-03
4/17/13	28	5:00 AM	200	1.67E-03
4/17/13	29	11:00 PM	210	1.75E-03
4/18/13	30	5:00 AM	210	1.75E-03

Nitrate (HNO_3)

Date	Sample	Time (hr)	mg/l	lb/gal
4/8/13	21	11:00 PM	64000	5.34E-01
4/9/13	22	5:00 AM	66000	5.50E-01
4/9/13	23	11:00 PM	66000	5.50E-01
4/10/13	24	5:00 AM	60000	5.00E-01
4/15/13	25	11:00 PM	64000	5.34E-01
4/16/13	26	5:00 AM	65000	5.42E-01
4/16/13	27	11:00 PM	67000	5.59E-01
4/17/13	28	5:00 AM	57000	4.75E-01
4/17/13	29	11:00 PM	61000	5.09E-01
4/18/13	30	5:00 AM	60000	5.00E-01

Sulfate (H_2SO4)

Date	Sample	Time (hr)	mg/l	lb/gal
4/8/13	21	11:00 PM	19000	1.58E-01
4/9/13	22	5:00 AM	20000	1.67E-01
4/9/13	23	11:00 PM	20000	1.67E-01
4/10/13	24	5:00 AM	18000	1.50E-01
4/15/13	25	11:00 PM	21000	1.75E-01
4/16/13	26	5:00 AM	22000	1.83E-01
4/16/13	27	11:00 PM	23000	1.92E-01
4/17/13	28	5:00 AM	19000	1.58E-01
4/17/13	29	11:00 PM	20000	1.67E-01
4/18/13	30	5:00 AM	21000	1.75E-01

Sodium Hydroxide

Date	sample	Time(hr)	mg/l	lb/gal
4/8/13	1	11:00 PM	5700	0.0475
4/9/13	2	5:00 AM	6950	0.0579
4/9/13	3	11:00 PM	5950	0.0496
4/10/13	4	5:00 AM	5100	0.0425
4/15/13	5	11:00 PM	4820	0.0402
4/16/13	6	5:00 AM	4930	0.0411
4/16/13	7	11:00 PM	4990	0.0416
4/17/13	8	5:00 AM	5200	0.0434
4/17/13	9	11:00 PM	5130	0.0428
4/18/13	10	5:00 AM	5130	0.0428

It can be concluded from above data that criteria air pollutant emissions are not increasing as a result of this application.

2.1 Plant Cumulative Increase:

The cumulative emission increase is ZERO for all the criteria air pollutants because annual emissions for this plant are not increasing due to this application.

2.6 Toxics

S3702, Reverberatory Melt Furnace

See Appendix C for toxic air contaminant emissions spreadsheet for S3702, Reverberatory Melt Furnace.

Arsenic, Cadmium and Nickel exceed chronic trigger levels. They do not exceed their respective acute trigger levels.

Based upon the source test data in Appendix A of this document, actual toxic air contaminant emissions do not exceed those estimated in the original permit application, 24332. The District completed a risk assessment for that application resulting in a maximum cancer risk of 0.5 in a million, chronic hazard index of 0.09 and an acute hazard index of 0.7. The District concluded, based upon Regulation 2-5-301 and 302 that those were acceptable risks.

Even with the proposed increase in production, total actual toxic air contaminant emissions will be lower than what was estimated in Application 24332. Total toxic emissions estimated for Application 24332 were 51.50 lbs/year. Estimated annual toxic emissions for this application are 2.43 lbs/year. Based upon those factors, a new risk assessment is not warranted for this application. Ted Hull, Senior Air Quality Engineer (Toxics Section) who performed HRSA for Application 24332, concurs with this decision.

S3712, Pre-Treatment Casting Operations: Dipping System

As stated in Emissions Calculations Section, the water was analyzed for the presence of sulfuric, acid, hydrofluoric acid, nitric acid as well as the caustic sodium hydroxide, using EPA Method 300.1. The analysis showed no toxic air contaminant emissions attributed to evaporative loss.

S3712 tanks are operated at atmospheric pressure with a maximum operating temperature of 140°F. The boiling temperatures of the TACs are well above that temperature.

Chemical	Boiling Point	Chemical	Boiling Point
Nitric Acid	181°F	Sodium Hydroxide	216°F
Sulfuric Acid	644°F	Hydrofluoric Acid	226°

During normal operations, parts used for automotive assembly carry residual waters containing TACs from the baths to rinse tanks. In addition to the carryover decreasing the volume of TAC in

the tanks, the reactivity of the acidic and caustic compounds with the casted parts results in aluminum bath salts and decreased compound concentrations.

Based upon distillation principles the lower boiling component of a solution, in this case water, will be released before higher boiling components the TACs into the atmosphere. If concentration of TAC remains same or increases as water evaporates from bath, then based on distillation principles, bath TACs did not enter the atmosphere.

2.7 Best Available Control Technology

BACT1 was not found to be cost effective for S3702 when it was originally permitted under Application #24332. BACT analysis is not required to be performed for this application as both criteria air pollutant and TAC emissions are coming down from those calculated in Application #24332.

2.4 Offsets

Offsets must be provided for any new or modified source at a facility that emits more than 10 tons/yr of POC or NOx. The District may provide offsets from the Small Facility Banking Account for a facility with emissions between 10 and 35 tons/yr of POC or NOx, provided that the facility has no available offsets. Since there is no increase in emissions at this plant as mentioned in Section 2.1 above, offsets are not required for this application.

7.0 STATEMENT OF COMPLIANCE

S3702 is subject to District Regulation 6, Rule 1 (Particulate Matter- General Requirements), and is expected to continue to comply with Sections 301, 302, 310 and 311.

S3702 will continue 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). Permit Condition #25346 limits cadmium content to no more than 0.004 percent and arsenic content to no more than 0.002 percent on aluminum ingots that are melted at S3702.

<u>40 CFR Part 63, Subpart RRR</u>

S3702 is exempt from 40 CFR Part 63, Subpart RRR (National Emission Standards for Hazardous Air Pollutants for Secondary Aluminum Production) because Tesla's casting operations do not meet the definition of a secondary aluminum production facility.

Relevant sections of the Subpart RRR are reproduced below to support exemption status of S3702:

Subpart RRR—National Emission Standards for Hazardous Air Pollutants for Secondary Aluminum Production

Source: 65 FR 15710, Mar. 23, 2000, unless otherwise noted.

General
§ 63.1500 Applicability.

(a) The requirements of this subpart apply to the owner or operator of each secondary aluminum production facility as defined in §63.1503.

§ 63.1503 Definitions.
Secondary aluminum production facility means any establishment using *clean charge, aluminum scrap,* or dross from aluminum production, as the raw material and performing one or more of the following processes: scrap shredding, scrap drying/delacquering/decoating, thermal chip drying, furnace operations (*i.e.*, melting, holding, sweating, refining, fluxing, or alloying), recovery of aluminum from dross, in-line fluxing, or dross cooling. A *secondary aluminum production facility* may be independent or part of a primary aluminum production facility. For purposes of this subpart, aluminum die casting facilities, aluminum foundries, and aluminum extrusion facilities are not considered to be secondary aluminum production facilities if the only materials they melt are *clean charge*, customer returns, or internal scrap, and if they do not operate sweat furnaces, thermal chip dryers, or scrap dryers/delacquering kilns/decoating kilns. The determination of whether a facility is a *secondary aluminum production facility* is only for purposes of this subpart and any regulatory requirements which are derived from the applicability of this subpart, and is separate from any determination which may be made under other environmental laws and regulations, including whether the same facility is a "secondary metal production facility" as that term is used in 42 U.S.C. §7479(1) and 40 CFR 52.21(b)(1)(i)(A) ("prevention of significant deterioration of air quality").

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.

Scrap dryer/delacquering kiln/decoating kiln means a unit used primarily to remove various organic contaminants such as oil, paint, lacquer, ink, plastic, and/or rubber from *aluminum scrap* (including used beverage containers) prior to melting.

Sweat furnace means a furnace used exclusively to reclaim aluminum from scrap that contains substantial quantities of iron by using heat to separate the low-melting point aluminum from the scrap while the higher melting-point iron remains in solid form.

Thermal chip dryer means a device that uses heat to evaporate oil or oil/water mixtures from unpainted/uncoated aluminum chips. Pre-heating boxes or other dryers which are used solely to remove water from aluminum scrap are not considered to be thermal chip dryers for purposes of this subpart.

Tesla will use clean ingots free of any paints, coatings or lubricants. Therefore, the ingots will meet the 40 CFR § 63.1503 definition of clean charge.

Tesla will not operate any equipment that meets the definition of sweat furnace, thermal chip dryer or scrap dryers/delacquering kilns/decoating kilns, per 40 CFR §63.1503.

Regulation 2, Rule 6 (Major Facility Review) 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 a 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. This project meets the definition of a Minor Permit Revision in accordance with Section 2-6-215, as follows:

- The project is not a major modification of a stationary source pursuant to 40 Code of Federal Regulations (CFR) Parts 51 (NSR) or 52 (PSD);
- The project is not a modification as defined in the New Source Performance Standards (NSPS) (40 CFR Part 60), National Emission Standards for Hazardous Air Pollutants (NESHAP) (40 CFR Part 61), or Section 112 of the Clean Air Act;
- The project does not change or relax any applicable monitoring, reporting or recordkeeping condition in the MFR;
- The project does not avoid any applicable requirements;
- The project does not establish any case-by-case determinations;
- The project equipment is not a portable source; and
- The project does not modify any permit condition to incorporate new EPA requirements.

CALIFORNIA ENVIRONMENTAL QUALITY ACT (CEQA)

CEQA is a state law intended to inform government decision makers and the public of any potential adverse environmental effects of proposed discretionary projects.

Per Regulation 2-1-311, an application for a ministerial project is exempt from CEQA review. In accordance with Regulation 2-1-427, permit applications covered by specific procedures, fixed standards and objective measurements set forth in the BAAQMD's Permit Handbook and BACT/TBACT Workbook are classified as ministerial. BAAQMD regulations require ministerial projects to meet specific criteria for approval of the application. Regulation 2-1-311 requires the BAAQMD's approval to be based on criteria set forth in Regulation 2-1-428, as paraphrased below.

1. The proposed new or modified source will comply with all applicable BAAQMD, Federal, and State Rules and Regulations.
2. The emissions can be calculated using standardized emissions factors from published governmental sources, District source test results, engineering and scientific handbooks, and other similar published literature.
3. BACT for the new and proposed source can be determined based on the latest edition of the CARB's BACT/LAER Clearinghouse or on the BAAQMD's own compilations as set forth in the Permit Handbook and BACT/TBACT Workbook.
4. If the modification of the source involves the shutdown of an existing source, Reasonably Available Control Technology applicable to the source shut down can be determined from existing provisions of the BAAQMD's rules or as set forth in the Permit Handbook and BACT/TBACT Workbook.

5. Project risk will not exceed a cancer risk of 10 in one million; a chronic hazard index of 1.0; and an acute hazard index of 1.0.
6. If Toxic Best Available Control Technology (TBACT) is required, TBACT can be determined as set forth in the Permit Handbook and BACT/TBACT Workbook.

The proposed project meets the above listed criteria as shown below:

1. Sources S3702 and S3712 comply with all applicable BAAQMD, Federal, and State Rules and Regulations.
2. The emission estimates for the proposed project were calculated using District approved source test methods.
3. S3702 does not trigger BACT as there is no increase in PM10 emissions related to this application.
4. The proposed project does not involve the (permanent) shutdown of an existing source.
5. As mentioned in Section 2.2 of the evaluation, the maximum cancer risk is 0.5 in a million, the chronic hazard index is 0.09, and the acute hazard index is 0.7. Hence, the project complies with Reg. 2-1-428.5.
6. This application does not trigger TBACT.

As a result, this application is for a ministerial project.

Notwithstanding ministerial classification, Regulation 2-1-312 provides eleven types of categorically exempt permits. Category 11 (Rule 2-1-312.11) states:

Permit applications for a new or modified source or sources or for process changes which will satisfy the "No Net Increase" provisions of District Regulation 2, Rule 2, and for which there is no possibility that the project may have any significant environmental effect in connection with any environmental media or resources other than on air quality.

The project is not expected to result in significant impacts on non-air environmental media. The BAAQMD form "Appendix H" and supplemental project information provided by Tesla, demonstrates that the proposed changes meet the criteria for exemption under 2-1-312.11. All items applicable to the project or its effects have been checked "No".

The facility is over 1,000 feet from the nearest school and is therefore not subject to the public notification requirements of Regulation 2-1-412.

PSD and NSPS do not apply.

4.0 PERMIT CONDITIONS

Modifications to Permit Condition Number 25346

```
COND#  25346   -------------------------------------

     For

     S3702 Reverberatory Melt Furnace, Maximum Operating Rate:
           30,000 lbs per hour of Aluminum, Schaefer Furnace,
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Maximum natural gas firing rate: 1.4 MMBtu/hour

S3703 Fill Dosing Furnace, Westomat Furnace System, powered by electricity (Exempt per Regulation 2-1-103)

S3704 High Pressure Die Cast, WL1200SL ProDos, Maximum Operating Rate: 30,000 lbs per hour of Aluminum (Exempt per Regulation 2-1-122.5)

S3705 Quench Tank, Custom Built, (Exempt per Regulation 2-1-103)

S3706 Solution Oven 1, Can-Eng Furnaces International Ltd., Maximum Operating Rate: 15,000 lbs per hour of Aluminum, Natural gas fired, Max. Firing rate: 1.6 MMBtu/hour (Exempt per Regulations 9-7-110.1 and 2-1-103)

S3707 Solution Oven 2, Can-Eng Furnaces International Ltd., Maximum Operating Rate: 15,000 lbs per hour of Aluminum, Natural gas fired, Max. Firing rate: 1.6 MMBtu/hour (Exempt per Regulations 9-7-110.1 and 2-1-103)

S3708 Age Oven 1, Wisconsin Oven Corp., Maximum Operating Rate: 12,000 lbs per hour of Aluminum, Natural gas fired, Max. Firing rate: 1.14 MMBtu/hour (Exempt per Regulations 9-7-110.1 and 2-1-103)

S3709 Age Oven 2, Wisconsin Oven Corp., Maximum Operating Rate: 12,000 lbs per hour of Aluminum, Natural gas fired, Max. Firing rate: 1.14 MMBtu/hour (Exempt per Regulations 9-7-110.1 and 2-1-103)

S3710 Age Oven 3, Wisconsin Oven Corp., Maximum Operating Rate: 12,000 lbs per hour of Aluminum, Natural gas fired, Max. Firing rate: 1.14 MMBtu/hour (Exempt per Regulations 9-7-110.1 and 2-1-103)

S3711 CNC Machining Operation: Machines Aluminum castings (Exempt per Regulation 2-1-103)

S3712 Pre-treatment Casting Operations: Dipping system for casted aluminum parts, Tank volume 3.2 thousand gallons, submerged fill (Exempt per Regulation 2-1-103)

S3714 Boiler, Parker Boiler Company, Model 2304r(l), Natural gas fired, Max. Firing Rate: 1.87 MMBtu/hour (Exempt per Regulations 9-7-110.1 and 2-1-103)

S3715 High Pressure Die Cast Unit No. 2, WL1200SL ProDos, Maximum Operating Rate: 30,000 lbs per hour of Aluminum (Exempt per Regulation 2-1-122.5)

1. The owner/operator shall not exceed the following material throughput limits at S3702:

~~a. 0.5 tons per hour~~
~~b~~a. ~~8~~ 20 tons during any day
~~c~~b. ~~1,920~~5,000 tons during any year
[Basis: Cumulative Increase, BACT, Toxics]

~~2. The owner/operator shall ensure that S3702, S3704 and S3715 are not operated for more than 3,840 hours in any consecutive twelve month period. [Basis: Toxics, Cumulative Increase]~~

~~3. The owner/operator of S3712 shall ensure that Pre-treatment Casting operations are not operated for more than 1,920 hours in any consecutive twelve month period. [Basis: Toxics]~~

~~4~~2. The owner/operator of S3702 shall ensure that aluminum ingots melted at Reverberatory Melt Furnace have a cadmium content of no more than 0.004 percent and an arsenic content of no more than 0.002 percent. [Basis: BACT, Cumulative Increase, Regulation 11, Rule 15 (c)(2)]

~~5~~3. The owner/operator of S3702 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, Toxics, 40 CFR Subpart RRR, Section 63.1503]

~~6~~4. The owner/operator shall ensure that sources S3702, S3706-S3710, and S3714 be fired exclusively with natural gas, liquefied petroleum gas (LPG), or any combination thereof. [Basis: Cumulative Increase, Toxics]

~~7~~5. The owner/operator shall use following emission factors to calculate PM10, POC, NOx, SOx, and CO emissions from S3702, S3704 and S3715:
a. PM10: ~~4.3~~0.10 lbs/ton aluminum processed
b. POC: 0.14 lbs/ton aluminum processed
c. NOx: 0.01 lbs/ton aluminum processed
d. SOx: 0.02 lbs/ton aluminum processed
e. CO: 0.152 lbs/ton aluminum processed
[Basis: Cumulative Increase]

6. In order to demonstrate compliance with Part 5a of this permit condition, the owner/operator shall conduct a District approved source test on S3702 once per calendar year in accordance with the District's Manual of Procedures. The owner/operator shall notify the Manager of the District's Source Test Section at least seven (7) days prior to the test, to provide the District staff the option of observing the testing. Within 45 days of test

completion, a comprehensive report of the test results shall be submitted to the Manager of the District's Source Test Section for review and disposition. [Basis: Cumulative Increase]

~~8. The owner/operator of S3712 shall equip dip tanks with a temperature monitoring and recording device to ensure chemical treatment bath temperatures with water content less than 98% by volume, do not exceed 170 degrees F. [Basis: Toxics]~~

~~9~~7. The owner/operator of S3712 shall not change bath Chemistry~~,~~ temperature, pressure or other operating parameters in such a manner as to generate emissions exceeding toxic air contaminants trigger levels listed in Table 2-5-1 of the District Regulation 2-5 without notifying District and having health risk screening analysis completed.

a. Bath temperature shall not exceed 170°F.

[Basis: Toxics]

~~10~~8. RECORD KEEPING AND REPORTING

a. To demonstrate compliance with parts 1 through ~~4~~ 3 of this permit condition, the owner/operator shall maintain the following records, including but not necessarily limited to the following information:

i. For each batch delivered to the owner/operator, Certificates of Analysis for all aluminum ingots used showing the cadmium 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);

ii. ~~Hourly, daily~~Daily, monthly, and annual throughput of aluminum ingots processed at S3702;

~~iii. Daily, monthly, and annual hours of operation of S3702, S3704, and S3712.~~ [Basis: Cumulative Increase, BACT, Toxics]

b. To demonstrate compliance with part~~s~~ ~~8~~ 7 ~~and 9~~ of this permit condition, the owner/operator shall maintain the following records, including but not necessarily limited to the following information:

i. Daily, monthly, and annual temperature records.
ii. Logs of the quantity of all chemicals, excluding water, added to the treatment baths.
iii. Material Safety Data Sheets for all chemicals, excluding water, added to the treatment baths.

[Basis: Toxics]

c. All records shall be retained on site for five years, from the date of entry and made available for inspection

by the District staff upon request. These recordkeeping requirements shall not replace the recordkeeping requirements contained in any applicable District regulation. [Basis: Cumulative Increase, Recordkeeping]

5.0 RECOMMENDATION

Staff recommends the following:

1) Approve following changes to permit condition 25346 applicable to S3702, Reverberatory Melt Furnace:

- Increase daily production limit for S3702, Reverberatory Melt Furnace, from 8 tons per day to 20 tons per day.
- Increase annual production limit for S3702 from 1,920 tons per year to 5,000 tons per year.
- Change PM10 emission factor applicable to S3702 from 4.3 lbs/ton aluminum processed to 0.10 lbs/ton aluminum processed. This would reflect actual particulate emissions from S3702.
- Add condition that Tesla will source test S3702 once per calendar year to determine current particulate rate, and to use that rate to calculate actual emissions.

2) Issue a letter of exemption to Tesla for the following source:

- S3712: Pre-treatment Casting Operations: Dipping system for casted aluminum parts, Tank volume 3.2 thousand gallons, submerged fill

By: _____ _____

Sanjeev Kamboj Date
Senior Air Quality Engineer

ENGINEERING EVALUATION
TESLA MOTORS, INC
PLANT #20459, APPLICATION #25969
45500 FREMONT BOULEVARD
FREMONT, CA 94538

BACKGROUND:

Tesla Motors, Inc. (Tesla) submitted this application for an Authority to Construct/Permit to Operate the following new Melter Furnaces in Die Casting department at their Fremont facility:

S3724: Furnace Make: Reverberatory StrikoMelter MH-IIT 2000/1500 Furnace; Maximum operating rate: 1.5 tons per hour of Aluminum; Maximum natural gas firing rate: 4.1 MMBtu/hour.

S3725: Holding Furnace: Make: Westofen Dynanrd Furnace; Model: IH-3000; Capacity: 3000 Kg; powered by electricity (Exempt per Regulation 2-1-103).

S3726: Holding Furnace: Make: Westofen Dynanrd Furnace; Model: IH-3000; Capacity: 3000 Kg; powered by electricity (Exempt per Regulation 2-1-103).

The current fill dosing furnace (S3703) is powered by electricity and hence, is exempt from permitting requirements pursuant to District Regulation 2-1-103 (Exemption, Source Not Subject to any District Rule). The facility is replacing existing S3703 furnace with the new electric furnace S3725 and adding the second electric furnace S3726 to accommodate the increasing production. As stated above both the furnaces are powered electrically, therefore S3725 and S3726 will be exempt per Regulation 2-1-103.

The existing furnace S3702 is not an efficient and has to be repaired frequently, which impacts the production. Therefore, Tesla wants to replace S3702 with a new furnace S3724.

<u>Detailed Process Description</u>

1) Casting Process Description
   a. Clean aluminum ingots as defined by Section (c) (2) of District Regulation 11, Rule 15 (Hazardous Pollutants – Airborne Toxic Control Measure for Emissions of Toxic Metals from Non-Ferrous Metal Melting) are liquefied in S3724, Melt Furnace.
      i. Metal Pour 355 is blended into melt to enhance metallurgical properties critical to final casted part. It can be done inside the furnace or in the transfer ladle. Tesla might use a different cleaning salt depending on the quality of the melt. Therefore, the facility gave MSDS

for Pyroflux and Coveral too. All of the salts (355, Pyroflux, and Coveral) are not toxic and are VOC free.

b. Molten material is transferred from furnace to bull ladle.
c. Metallurgy is checked and alloys of strontium and magnesium may be added to mixture to achieve desired material quality.
   i. Argon/Nitrogen is used to remove undesired impurities, typically hydrogen, from the melt.
d. Ladle transfers molten aluminum to fill dosing furnace.
e. Fill dosing furnace is used to complete fusing of appropriate materials into final melt that is used for die cast operations.
f. Once melted and taken to proper temperature, material is transferred to S3704, High Pressure Die Cast, to form the desired part. Molten metal is poured into die cast chamber and a hydraulically operated plunger seals the chamber and forces the metal into the locked die at high pressures.

EMISSIONS SUMMARY

S3724 (Reverberatory Melt Furnace) emissions calculations

District issued initial permit to S3702 on September 10, 2012, under the application #24332. During the first review District used 4.3 lbs of PM10/ton of processed aluminum as an emission factor (AP-42 Chapter 12 Metallurgical Industry). Tesla applied for condition change on July 3, 2013, under the application #25442 for S3702. During the condition change Tesla requested to change the emissions factor from 4.3 to 0.1 lbs of PM10/ton of processed aluminum using the following source test results.

Basic assumption used in PM_{10} calculations is that all measured particulate generated during testing, were size PM_{10} or less.

March 29, 2013 source test results are as follows:

Run 1	Run 2	Run 3	Average
0.040 lbs/hour	0.041 lbs/hour	0.021 lbs/hour	0.034 lbs/hour
0.95 lbs/day	0.99 lbs/day	0.5 lbs/day	0.81 lbs/day

Total aluminum processed during shift – 5.1 tons (Reference –EPA Log included in Appendix A)

Total shift time – 9 hours

Total particulate emission = (maximum hourly run rate)(total shift hours)
= (0.041 lbs/hour)(9 hours)
= 0.37 lbs

Pounds of particulate per ton of aluminum processed = total lbs of particulate produced/tons of processed aluminum
= 0.37 lbs of particulate/5.1 tons of processed aluminum

= 0.10 lbs of particulate/ton of processed aluminum

Actual particulate emission rate is less than 2.5% of the emission factor rate used in District Application 24332, 0.10 lbs of PM10/ton of processed aluminum versus 4.3 lbs of PM10/ton of processed aluminum.

District will include a permit condition to source test once per calendar year to calculate particulate emission rate, and to use that rate to determine actual particulate emissions from S3724.

Assumptions:

- Emission factors for secondary aluminum casting and pouring operations from the furnace.
  - PM_{10}: 0.1 lbs/ton (Furnace Source Test March 29, 2013)
- Aluminum ingot throughput rate of 1.5 tons/hour.
- Chemical composition of aluminum ingots as provided by Tesla.
- Operating hours of 8400 hours/year (i.e., 24 hours/day, 7 days/week and 50 weeks/year).

<u>PM_{10} emissions:</u>

(1.5 tons/hour) * (0.1 lb of PM10/ton) * (8400 hours/yr)
= 1,260 lbs of PM10/yr
= 3.6 lbs of PM10/day
= 0.15 lbs of PM10/hr
= 0.63 tpy of PM10

PM10 Emission increase = New PM10 emissions – Existing PM10 Emissions
= 0.63 tpy – 0.25 tpy
= 0.38 tpy Increase in PM10 emissions

<u>Hexavalent chromium emissions:</u>

According to Rio Tinto Alcan (RTA), Tesla's supplier, their aluminum ingots do not contain any chromium. In absence of good data to prove this statement, it was decided to conservatively estimate hexavalent chromium emissions from melting of aluminum at S3724.

RTA mentioned that it uses multiple ASTM methods for metal analysis. These methods are:

- ASTM E406: Standard Practice for Using Controlled Atmospheres in Spectrochemical Analysis
- ASTM E1251: Standard Test Method for Analysis of Aluminum and Aluminum Alloys by Spark Atomic Emission Spectrometry
- ASTM E716: Standard Practices for Sampling Aluminum and Aluminum Alloys for Spectrochemical Analysis

The limit of detection for the atomic spectral line 425.435nm is 1ppm (0.0001%).

Assumptions for calculation toxic emissions are as follows:

- Weight percent of hexavalent chromium is 50% of the detection limit (i.e., 0.0001 * 0.5 = 0.00005%).
- PM_{10} emissions of 1260 lbs/year from S3724 as calculated above.
- Operating hours of 8400 hours/year (i.e., 24 hours/day, 7 days/week and 50 weeks/year).

Using aluminum material specifications, the total toxic compound emissions from S3724 are shown below. The emissions are calculated using 0.10 lbs of particulate/ton of processed aluminum as an emission factor.

Total toxic compound emissions from S3724:

Toxic Compounds	**Compound Content**	**Max Potential Emissions**			
	%	**lbs/hr**	**lbs/day**	**lbs/yr**	**tons/year**
Arsenic	0.002	3.0E-06	7.2E-05	2.52E-02	1.26E-05
Cadmium	0.004	6.0E-06	1.44E-04	5.04E-02	2.52E-05
Copper	0.03	4.5E-05	1.08E-03	3.78E-01	1.89E-04
Chromium	0.03	4.5E-05	1.08E-03	3.78E-01	1.89E-04
Lead	0.01	1.5E-05	3.6E-04	1.26E-01	6.3E-05
Manganese	0.55	8.25E-04	1.98E-02	6.93E+00	3.465E-03
Nickel	0.03	4.5E-05	1.08E-03	3.78E-01	1.89E-04
Hexavalent chromium	0.00005	7.5E-08	1.8E-06	6.3E-04	3.15E-07

Note: PM10 Emissions = (1.5 tons/hour) * (0.1 lb of PM10/ton) * (8400 hours/yr) = 1,260 lbs of PM10/yr.
Toxic Compound Emission = (compound content in %)/100 * PM10 Emissions lbs/yr = lbs/yr
= ((lbs/yr/50 weeks/yr)/(7 days/week) = lbs/day
= lbs/day/24 hrs/day = lbs/hr.

Secondary Pollutant Emissions:

The furnace S3724 is fired using the natural gas. Therefore the secondary emissions from the natural gas are as follows:

Pollutant	Emission Factor	Max Potential Emissions			
	lbs/MMSCf	lbs/hr	lbs/day	lbs/year	tons/yr
NOx	100	4.02E-01	9.65E+00	3.38E+03	1.69E+00
CO	84	3.38E-01	8.10E+00	2.84E+03	1.42E+00
PM/PM10	7.6	3.05E-02	7.33E-01	2.57E+02	1.28E-01
SO2	0.6	2.41E-03	5.79E-02	2.03E+01	1.01E-02
VOC	5.5	2.21E-02	5.31E-01	1.86E+02	9.29E-02
CO2	120,000	4.82E+02	1.16E+04	4.05E+06	2.03E+03
Benzene	2.10E-03	8.44E-06	2.03E-04	7.09E-02	3.55E-05
Formaldehyde	7.50E-02	3.01E-04	7.24E-03	2.53E+00	1.27E-03
Toluene	3.40E-03	1.37E-05	3.28E-04	1.15E-01	5.74E-05

Toxic compound emissions:

The toxic emissions are compared with the acute and chronic trigger levels as shown below. The following emissions are calculated using 0.1 lbs of PM10/ ton of aluminum.

Chemical	Compound percentage	Emissions lbs/hr	Emissions lbs/yr	Acute Trigger Level lbs/hr	Chronic Trigger Level lbs/yr	Trigger Risk?
Arsenic	0.002	3.0E-06	2.52E-02	4.4E-04	7.2E-03	Y
Copper	0.03	4.5E-05	3.78E-01	2.2E-01	NA	N
Chromium	0.03	4.5E-05	3.78E-01	NA	7.7E-04	Y
Cadmium	0.004	6.0E-06	5.04E-02	NA	2.6E-02	Y
Lead	0.01	1.5E-05	1.26E-01	NA	3.2E+00	N
Nickel	0.03	4.5E-05	3.78E-01	1.3E-02	4.3E-01	N
Manganese	0.55	8.3E-04	6.93E+00	NA	3.5E+00	Y
Hexavalent chromium	0.00005	7.5E-08	6.30E-04	NA	7.7E-04	N

As can be seen from the above table, that Arsenic, Chromium, Cadmium and Manganese exceed their assigned trigger levels. Therefore, a Health Risk Screening Analysis (HRSA) is required.

The Health Risk Screen Analysis (HRSA) is done using the 4.3 lbs of PM10/ton of processed aluminum as an emission factor. Using the source test results

from Tesla the emission factor is calculated as 0.1 lbs of PM10/ton of processed aluminum. The HRSA was completed before the 0.1 emission factor was calculated. The HRSA results using 4.3 lbs of PM10/ton of processed aluminum are acceptable. Therefore, the results from 0.1 lbs of PM10/ton of processed aluminum will be acceptable as the toxic emissions are lower at 0.1 emission factor.

Per March 12, 2014 memo from Ted Hull, Senior Air Quality Engineer (Toxics Section), the maximum cancer risk is 1.2 in a million, the chronic hazard index is 0.2, and the acute hazard index is 0.4. In accordance with Regulations 2-5-301 and 302, these are acceptable risks. The memo and HRSA report have been included in this application.

The ISCST3 air dispersion computer model was used to estimate annual average and maximum 1-hour ambient air concentrations. Model runs were made with representative Tesla meteorological data. Elevated terrain was considered using input from the USGS Milpitas 10m digital elevation map. Model runs were made with rural dispersion coefficients to best represent land use in the area.

Plant Cumulative Increase:

Pollutant	**Existing (ton/yr)**	**New (ton/yr)**	**New Total (ton/yr)**
PM_{10}	24.557	0.38	24557.38

Best Available Control Technology

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 POC, NPOC, NOx, CO, SO_2 or PM_{10}. Based on the emission calculations above, S3724 a Melt Furnace is not subject to BACT for PM_{10} emissions of 3.6 lbs/day.

Offsets

The requirements for offsets for PM10 are based on emissions increases for any application and the potential to emit (PTE) of the facility in accordance with BAAQMD Regulation 2-2-303.

If the PTE is over 10 tons per year, and there is an increase at the facility, then offsets are required. If the PTE is less than 35 tons per year, then the offsets may be supplied from the District's Small Facilities Bank. If the PTE is over 35 tons per year, then the applicant must supply the offsets for the increase and must repay the Small Facilities Bank for any offsets that were provided in the past.

Tesla is an existing major facility because it has the "potential to emit", as defined by the District Regulation 2-6-218, of more than 100 tons per year of precursor organic compounds. The proposed sources will not result in a cumulative increase in POC emissions. The only increase is in PM10 emissions as shown above. PM_{10} emission offsets per Regulation 2-2-303 are not required because total facility-wide PM_{10} emissions are less than 100 tons per year.

STATEMENT OF COMPLIANCE

S3724 is subject to District Regulation 6, Rule 1 (Particulate Matter- General Requirements), and is expected to comply with Sections 301, 302, 310 and 311.

S3724 will continue 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). Permit Condition #25346 limits cadmium content to no more than 0.004 percent and arsenic content to no more than 0.002 percent on aluminum ingots that are melted at S3724

<u>40 CFR Part 63, Subpart RRR</u>

S3724 is exempt from 40 CFR Part 63, Subpart RRR (National Emission Standards for Hazardous Air Pollutants for Secondary Aluminum Production) because Tesla's casting operations do not meet the definition of a secondary aluminum production facility.

Relevant sections of the Subpart RRR are reproduced below to support exemption status of S3724:

Subpart RRR—National Emission Standards for Hazardous Air Pollutants for Secondary Aluminum Production

Source: 65 FR 15710, Mar. 23, 2000, unless otherwise noted.

General

§ 63.1500 Applicability.

(a) The requirements of this subpart apply to the owner or operator of each secondary aluminum production facility as defined in §63.1503.

§ 63.1503 Definitions.

Secondary aluminum production facility means any establishment using *clean charge, aluminum scrap,* or dross from aluminum production, as the raw material and performing one or more of the following processes: scrap shredding, scrap drying/delacquering/decoating, thermal chip drying, furnace operations (*i.e.,* melting, holding, sweating, refining, fluxing, or alloying), and recovery of aluminum from dross, in-line fluxing, or dross cooling. A *secondary aluminum production facility* may be independent or part of a primary aluminum production facility. For purposes of this subpart, aluminum die casting facilities, aluminum foundries, and aluminum extrusion facilities are not considered to be secondary aluminum production facilities if the only materials they melt are *clean charge*, customer returns, or internal scrap, and if they do not operate sweat furnaces, thermal chip dryers, or scrap dryers/delacquering kilns/decoating kilns. The determination of whether a facility is a *secondary aluminum production facility* is only for purposes of this subpart and any regulatory requirements which are derived from the applicability of this subpart, and is separate from any determination which may be made under other environmental laws and regulations, including whether the same facility is a "secondary metal production facility" as that term is used in 42 U.S.C. §7479(1) and 40 CFR 52.21(b)(1)(i)(A) ("prevention of significant deterioration of air quality").

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.

Scrap dryer/delacquering kiln/decoating kiln means a unit used primarily to remove various organic contaminants such as oil, paint, lacquer, ink, plastic, and/or rubber from *aluminum scrap* (including used beverage containers) prior to melting.

Sweat furnace means a furnace used exclusively to reclaim aluminum from scrap that contains substantial quantities of iron by using heat to separate the

low-melting point aluminum from the scrap while the higher melting-point iron remains in solid form.

Thermal chip dryer means a device that uses heat to evaporate oil or oil/water mixtures from unpainted/uncoated aluminum chips. Pre-heating boxes or other dryers which are used solely to remove water from aluminum scrap are not considered to be thermal chip dryers for purposes of this subpart.

Tesla will use clean ingots free of any paints, coatings or lubricants. Therefore, the ingots will meet the 40 CFR § 63.1503 definition of clean charge.

Tesla will not operate any equipment that meets the definition of sweat furnace, thermal chip dryer or scrap dryers/delacquering kilns/decoating kilns, per 40 CFR §63.1503.

Regulation 2, Rule 6 (Major Facility Review) 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 a 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. This project meets the definition of a Minor Permit Revision in accordance with Section 2-6-215, as follows:

- The project is not a major stationary source pursuant to 40 Code of Federal Regulations (CFR) Parts 51.165 (a)(iv)(A) (NSR) or 52.21 (b)(1)(i) (PSD);
- The project is not a modification as defined in the New Source Performance Standards (NSPS) (40 CFR Part 60), National Emission Standards for Hazardous Air Pollutants (NESHAP) (40 CFR Part 61), or Section 112 of the Clean Air Act;
- The project does not change or relax any applicable monitoring, reporting or recordkeeping condition in the MFR;
- The project does not avoid any applicable requirements;
- The project does not establish any case-by-case determinations;
- The project equipment is not a portable source; and
- The project does not modify any permit condition to incorporate new EPA requirements.

CALIFORNIA ENVIRONMENTAL QUALITY ACT (CEQA)

CEQA is a state law intended to inform government decision makers and the public of any potential adverse environmental effects of proposed discretionary projects.

Per Regulation 2-1-311, an application for a ministerial project is exempt from CEQA review. In accordance with Regulation 2-1-427, permit applications covered by specific procedures, fixed standards and objective measurements set forth in the BAAQMD's Permit Handbook and BACT/TBACT Workbook are classified as ministerial. BAAQMD regulations require ministerial projects to meet specific criteria for approval of the application. Regulation 2-1-311 requires the BAAQMD's approval to be based on criteria set forth in Regulation 2-1-428, as paraphrased below.

1. The proposed new or modified source will comply with all applicable BAAQMD, Federal, and State Rules and Regulations.
2. The emissions can be calculated using standardized emissions factors from published governmental sources, District source test results, engineering and scientific handbooks, and other similar published literature.
3. BACT for the new and proposed source can be determined based on the latest edition of the CARB's BACT/LAER Clearinghouse or on the BAAQMD's own compilations as set forth in the Permit Handbook and BACT/TBACT Workbook.
4. If the modification of the source involves the shutdown of an existing source, Reasonably Available Control Technology applicable to the source shut down can be determined from existing provisions of the BAAQMD's rules or as set forth in the Permit Handbook and BACT/TBACT Workbook.
5. Project risk will not exceed a cancer risk of 10 in one million; a chronic hazard index of 1.0; and an acute hazard index of 1.0.
6. If Toxic Best Available Control Technology (TBACT) is required, TBACT can be determined as set forth in the Permit Handbook and BACT/TBACT Workbook.

The proposed project meets the above listed criteria as shown below:

1. Source S3724 comply with all applicable BAAQMD, Federal, and State Rules and Regulations.
2. The emission estimates for the proposed project were calculated using District approved source test methods.
3. 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 POC, NPOC, NOx, CO, SO_2 or PM_{10}. Based on the emission calculations above, S3724 a Melt Furnace is not subject to BACT for PM_{10} emissions of 3.6 lbs/day.
4. The proposed project does involve the (permanent) shutdown of an existing source, but it is replaced with the similar source. Therefore, not considered as shutdown source.
5. As mentioned in toxic emission section of the evaluation, the maximum cancer risk is 1.5 in a million, the chronic hazard index is 0.2, and the acute hazard index is 0.4. Hence, the project complies with Reg. 2-1-428.5.
6. This application does not trigger TBACT.

As a result, this application is for a ministerial project.

Notwithstanding ministerial classification, Regulation 2-1-312 provides eleven types of categorically exempt permits. Category 11 (Rule 2-1-312.11) states:

Permit applications for a new or modified source or sources or for process changes which will satisfy the "No Net Increase" provisions of District Regulation 2, Rule 2, and for which there is no possibility that the project may have any significant environmental effect in connection with any environmental media or resources other than on air quality.

The project is not expected to result in significant impacts on non-air environmental media. The BAAQMD form and supplemental project information provided by Tesla, demonstrates that the proposed changes meet the criteria for exemption under 2-1-312.11. All items applicable to the project or its effects have been checked "No".

The facility is over 1,000 feet from the nearest school and is therefore not subject to the public notification requirements of Regulation 2-1-412.

PSD and NSPS do not apply.

4.0 PERMIT CONDITIONS

Casting and Pre-treatment Operations Condition #25346

For

S3724 Reverberatory Melt Furnace, Maximum Operating Rate: 1.5 tons per hour of Aluminum, Schaefer Furnace, Maximum natural gas firing rate: 4.01 MMBtu/hour

S-3725: Holding Furnace: Make: Westofen Dynanrd Furnace; Model: IH-3000; Capacity: 3000 Kg; powered by electricity (Exempt per Regulation 2-1-103).

S-3726: Holding Furnace: Make: Westofen Dynanrd Furnace; Model: IH-3000; Capacity: 3000 Kg; powered by electricity (Exempt per Regulation 2-1-103).

S3704: High Pressure Die Cast, WL1200SL ProDos, Maximum Operating Rate: 30,000 lbs per hour of Aluminum (Exempt per Regulation 2-1-122.5).

S3705: Quench Tank, Custom Built, (Exempt per Regulation 2-1-103).

S3706: Solution Oven 1, Can-Eng Furnaces International Ltd., Maximum Operating Rate: 15,000 lbs per hour of Aluminum, Natural gas fired, Max. Firing rate: 1.6 MMBtu/hour (Exempt per Regulations 9-7-110.1 and 2-1-103).

S3707: Solution Oven 2, Can-Eng Furnaces International Ltd., Maximum Operating Rate: 15,000 lbs per hour of Aluminum, Natural gas fired, Max. Firing rate: 1.6 MMBtu/hour (Exempt per Regulations 9-7-110.1 and 2-1-103).

S3708; Age Oven 1, Wisconsin Oven Corp., Maximum Operating Rate: 12,000 lbs per hour of Aluminum, Natural gas fired, Max. Firing rate: 1.14 MMBtu/hour (Exempt per Regulations 9-7-110.1 and 2-1-103).

S3709; Age Oven 2, Wisconsin Oven Corp., Maximum Operating Rate: 12,000 lbs per hour of Aluminum, Natural gas fired, Max. Firing rate: 1.14 MBtu/hour (Exempt per Regulations 9-7-110.1 and 2-1-103).

S3710: Age Oven 3, Wisconsin Oven Corp., Maximum Operating Rate: 12,000 lbs per hour of Aluminum, Natural gas fired, Max. Firing rate: 1.14 MMBtu/hour (Exempt per Regulations 9-7-110.1 and 2-1-103).

S3711: CNC Machining Operation: Machines Aluminum castings (Exempt per Regulation 2-1-103).

S3712: Pre-treatment Casting Operations: Dipping system for casted aluminum parts, Tank volume 3.2 thousand gallons, submerged fill (Exempt per Regulation 2-1-103).

S3714: Boiler, Parker Boiler Company, Model 2304r(l), Natural gas fired, Max. Firing Rate: 1.87 MMBtu/hour (Exempt per Regulations 9-7-110.1 and 2-1-103).

S3715: High Pressure Die Cast Unit No. 2, WL1200SL ProDos, Maximum Operating Rate: 30,000 lbs per hour of Aluminum (Exempt per Regulation 2-1-122.5).

1. The owner/operator shall not exceed the following material throughput limits at S-3724:
   a. 1.5 tons per hour
   b. 36 tons during any day
   c. 12600 tons during any year
   [Basis: Cumulative Increase, BACT, Toxics]

2. The owner/operator of S3724 shall ensure that aluminum ingots melted at Reverberatory Melt Furnace have a cadmium content of no more than 0.004 percent, chromium 0.03 percent, manganese 0.55 percent, and an arsenic content of no more than 0.002 percent. [Basis: BACT, Cumulative Increase, Regulation 11, Rule 15 (c) (2)]

3. The owner/operator of S3724 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, Toxics, 40 CFR Subpart RRR, Section 63.1503]

4. The owner/operator shall ensure that sources S3724, S3706-S3710, and S3714 be fired exclusively with natural gas, liquefied petroleum gas (LPG), or any combination thereof. [Basis: Cumulative Increase, Toxics]

5. The owner/operator shall use following emission factors to calculate PM_{10}, POC, NOx, SOx, and CO emissions from S3724 and S3704:
   a. PM10: 0.1 lbs of PM10/ton of aluminum processed
   b. POC: 0.14 lbs of PM10/ton of aluminum processed
   c. NOx: 0.01 lbs of PM10/ton of aluminum processed
   d. SOx: 0.02 lbs of PM10/ton of aluminum processed
   e. CO: 0.152 lbs of PM10/ton of aluminum processed
   [Basis: Cumulative Increase]

6. In order to demonstrate compliance with Part 5a of this permit condition, the owner/operator shall conduct a District approved source test on S3724 once per calendar year in accordance with the District's Manual of Procedures. The owner/operator shall notify the Manager of the District's Source Test Section at least seven (7) days prior to the test, to provide the District staff the option of observing the testing. Within 45 days of test completion, a comprehensive report of the test results shall be submitted to the Manager of the District's Source Test Section for review and disposition. [Basis: Cumulative Increase]

7. The owner/operator of S3712 shall not change bath Chemistry, temperature, pressure or other operating parameters in such a manner as to generate emissions exceeding toxic air contaminants trigger levels listed in Table 2-5-

1 of the District Regulation 2-5 without notifying District and having health risk screening analysis completed.

a. Bath temperature shall not exceed 170˚F
[Basis: Toxics, Regulation 2, Rule 5]

8. RECORD KEEPING AND REPORTING

a. To demonstrate compliance with parts 1 through 3 of this permit condition, the owner/operator shall maintain the following records, including but not necessarily limited to the following information:
   i. For each batch delivered to the owner/operator, Certificates of Analysis for all aluminum ingots used showing the arsenic cadmium, chromium, manganese, copper, lead, nickel, and hexavalent chromium 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);
   ii. Daily, monthly, and annual throughput of aluminum ingots processed at S3724;
   [Basis: Cumulative Increase, BACT, Toxics]

b. To demonstrate compliance with part 7 of this permit condition, the owner/operator shall maintain the following records, including but not necessarily limited to the following information:
   i. Daily, monthly, and annual temperature records.
   ii. Logs of the quantity of all chemicals, excluding water, added to the treatment baths.
   iii. Material Safety Data Sheets for all chemicals, excluding water, added to the treatment baths.
   [Basis: Toxics]

c. All records shall be retained on site for five years, from the date of entry and made available for inspection by the District staff upon request. These recordkeeping requirements shall not replace the recordkeeping requirements contained in any applicable District regulation. [Basis: Cumulative Increase, Recordkeeping]

5.0 RECOMMENDATION

Staff recommends the following:

a) Waive Authority to Construct and issue Tesla a Permit to Operate for the Following source:
S3724: Furnace Make: Reverberatory StrikoMelter MH-IIT 2000/1500 Furnace; Maximum operating rate: 1.5 tons per hour of Aluminum; Maximum natural gas firing rate: 4.1 MMBtu/hour.

b) Issue a letter of exemption to Tesla for the following new sources:

S3725: Holding Furnace: Make: Westofen Dynanrd Furnace; Model: IH-3000; Capacity: 3000 Kg; powered by electricity (Exempt per Regulation 2-1-103).

S3726: Holding Furnace: Make: Westofen Dynanrd Furnace; Model: IH-3000; Capacity: 3000 Kg; powered by electricity (Exempt per Regulation 2-1-103).

c) Remove the following sources from service:

S3703: Fill Dosing Furnace, Westomat Furnace System, powered by electricity (Exempt per Regulation 2-1-103)

S3702: Reverberatory Melt Furnace, Maximum Operating Rate: 30,000 lbs per hour of Aluminum, Schaefer Furnace, Maximum natural gas firing rate: 1.4 MMBtu/hour

By: _____ 03/26/2014
Madhav Patil Date
Air Quality Engineer