PCC Structurals, Inc.

October 30, 2020

BY EMAIL

Kenzie Billings (Kenzie.BILLINGS@state.or.us)
Air Toxics Project Manager
Oregon Department of Environmental Quality
700 NE Multnomah Street, Suite 600
Portland, OR 97232

Re: Response to Cleaner Air Oregon Emissions Inventory Information Request

Dear Kenzie:

PCC Structurals (PCC) received your letter dated March 17, 2020 requesting that we respond to various comments and questions on the emissions inventory submitted January 2, 2020. Partial responses were provided on June 15 and August 28. PCC committed to getting you the remainder via submittal due October 30, 2020. By letter dated August 4, 2020, you provided PCC with a supplemental information request with a due date of September 3, 2020, with which PCC complied. We trust that the materials provided with this letter will be of assistance as you review our emissions inventory and continue to familiarize yourself with our processes.

The materials included with this letter are the following:

Emissions Calculations in Excel Format

We have enclosed with this letter an Excel version of the revised Potential To Emit (PTE) emissions inventory originally submitted as a PDF on September 3rd, 2020. Please note that the emissions inventory includes trade secrets that we seek to have protected as confidential business information (CBI) consistent with Oregon Revised Statute (ORS) §192.345(2) and OAR 340-214-0130(3). The Excel file is an unredacted version that includes all information and, as required by OAR 340-214-0130, each page containing confidential business information is prominently marked as "Confidential Business Information--Do Not Release to Public." PCC understands that DEQ has requested the emission calculations in Excel format to assist with your internal review of the emissions inventory. **The Excel version of the emissions inventory should not be released to the public**.

As previously discussed, updated versions of the 2018 emissions inventory will be submitted to DEQ after the PTE emissions inventory receives final approval.

Specific Comments

You had supplied lists of specific comments and questions as part of the March 17, 2020 that relate to the emissions calculations. Included with this letter are tables of the responses to the specific comments and questions, in the same order as originally submitted by DEQ. Many of the specific comments and questions were addressed as part of the June 15 and August 28 responses, as noted in the specific comment response tables. DEQ produced two versions of the specific comment documents: one unredacted version containing information identified as CBI, and one version with the items identified as CBI redacted. The redacted version was posted publicly. Similarly, we are providing both an unredacted CBI version and redacted version of the response tables. **Only the redacted version can be released publicly**.

Supplemental data tables are also included with this letter to support the specific comment response tables. These include a summary of heat treat furnace information, which was requested as part of the 2018 specific comments, and a summary of the baghouse dust collection data. PCC is requesting that the heat treat manufacturer data be considered CBI, and as such both a CBI version and a redacted version of the heat treat table are being submitted. **Only the redacted version can be released publicly**. PCC is not requesting that the baghouse dust collection table be managed as CBI.

Confidential Business Information

The Excel spreadsheet and the redacted versions of the responses are entitled to trade secret status because the information therein: (1) cannot be patented, (2) is known only to a limited number of individuals within PCC who make every effort to ensure this information is not available to or obtained by competitors, (3) provides economic value to PCC by being maintained as confidential, and (4) is maintained as confidential by PCC and thereby provides PCC with a business advantage over its competitors. In support of these factors we note that PCC has never shared the CBI with anyone outside of a select group of "need to know" employees and contractors and for many products we are prohibited by our customer from revealing certain aspects of production. Our competitors are always keenly interested in knowing details about our operations. The redacted portions of the attached submittals contain information we take great pains to keep confidential. If such information was released to the public, competitors could utilize that information to their advantage to steer sales away from PCC and/or to avoid incurring expenses. This information derives independent economic value from not being generally known to the public or to other persons who can obtain economic value from its disclosure or use--the very definition of a trade secret.

We note that the data being redacted are outside the scope of "emissions data." PCC recognizes that the total emissions from the facility are emissions data and would be subject to public scrutiny. However, the redacted information does not include total emissions data and so should be exempt from disclosure.

If the Department determines that any portion of the submittal for which we are requesting trade secret protection is not immune from a Public Records Act request, we request that you return the attached materials, in their entirety, to us so that we can find a different means of providing the information you need without endangering our business or causing PCC to be in breach of the representations it has made to its customers, including the U.S. Military.

This response represents the remainder of information you requested, with the exception of applying revisions to and submitting the 2018 emissions inventory, which as stated previously will be provided after the PTE inventory has received final approval.

Please let me know if you have any questions after reviewing this letter. Do not be surprised if I am slow getting back to you as COVID continues to present communications challenges.

Very truly yours,

Sherry Uchytil

cc: Bryan McCampbell
Tom Wood (Stoel Rives)
Brian Eagle (MFA)

List of Enclosures:

Potential to Emit Emissions Inventory (Excel format) (CBI)

List of Attachments:

Specific Comment Response Tables – Redacted (20 pgs)
Specific Comment Response Tables – CBI (20 pgs)
Heat Treat Furnace Descriptions – Redacted (1 pg)
Heat Treat Furnace Descriptions – CBI (1 pg)
2018 LPC Baghouse Dust Collection (1 pg)

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Table	Note/Ref	CBI	Relevant Process	Comment	PCC Response
D1	1	N	LPC Alloy Data	Footnote states "See emissions inventory", but unredacted emissions inventory references "Information provided by client based on CBI - alloy composition data." Please provide original documents including composition data for DEQ review.	We are not able to send any materials that identify our specific alloy contents due to confidentiality concerns. However, those materials are maintained on site and can be reviewed in person by DEQ staff during regular business hours.
D1	2	N	LPC Alloy Data	Alloy Aluminum content is up to 16.1% aluminum, but aluminum reported with corresponding CAS is 0.48%. Please explain discrepancy. Provide product alloy composition data for DEQ review.	This was an error in the spreadsheet and the reported aluminum has been updated to reflect the aluminum content.
[redacted]					
D2	none	N	Baghouse Data	Submit all analytical data used to generate Table D2 for DEQ review.	Response was submitted to DEQ on June 15, 2020.
D3	a	N	Master Throughput and Production Rates	Provide production data to verify the total mass of metal poured, both on an annual and daily basis.	2018 annual production was provided to DEQ in the 2018 annual report on August 28, 2020. Short-term throughput is based on the assumption that the facility operates all year with minimal downtime.
D3	b	N	Master Throughput and Production Rates	Provide production data from LPC-T and LPC-S to verify the total mass of metal poured, both on an annual and daily basis.	2018 annual production was provided to DEQ in the 2018 annual report on August 28, 2020. Short-term throughput is based on the assumption that the facility operates all year with minimal downtime.
D3	c	N	Master Throughput and Production Rates	Provide production data from air and vacuum casting ingots used at LPC-S.	2018 annual production was provided to DEQ in the 2018 annual report on August 28, 2020.
D3	d	N	Master Throughput and Production Rates	Provide annual production data and verification of annual days of operation to verify maximum daily parameter (lb/day).	2018 annual production was provided to DEQ in the 2018 annual report on August 28, 2020. Short-term throughput is based on the assumption that the facility operates all year with minimal downtime.
D3	e	N	Master Throughput and Production Rates	Provide production data for *air casting, steel parts and ingots* and *air casting, steel ingots* to verify annual total metal poured for air casting.	2018 annual production was provided to DEQ in the 2018 annual report on August 28, 2020.
D3	f	N	Master Throughput and Production Rates	Provide production data for *air casting parts* and *gating and air casting ingots* . Provide data supporting percent derivation for portion of metal pours that are routed to a baghouse. Provide baghouse performance data to verify emission factors used.	2018 annual production was provided to DEQ in the 2018 annual report on August 28, 2020. Please refer to the updated emissions inventory submitted September 3, 2020 for air casting calculations. Baghouse filter specifications were submitted to DEQ on June 15, 2020.
D3	g	N	Master Throughput and Production Rates	Provide production data to verify the total mass of metal poured for *vacuum casting, steel* ; *vacuum casting, steel parts* ; and *vacuum casting, steel ingots* .	2018 annual production was provided to DEQ in the 2018 annual report on August 28, 2020.
D3	h	N	Master Throughput and Production Rates	Provide production data to verify the annual total mass of metal poured for vacuum casting. Provide data substantiating percentages assigned for parts cast to each furnace (MC1, VF3 & 4, VMM1, VMM2).	2018 annual production was provided to DEQ in the 2018 annual report on August 28, 2020. The parts/gating ratio data were submitted to DEQ on August 28, 2020.
D3	i	N	Master Throughput and Production Rates	Provide production data to verify metal poured for vacuum casting parts, MC1 melting.	2018 annual production was provided to DEQ in the 2018 annual report on August 28, 2020.
D3	i	N	Master Throughput and Production Rates	Provide data supporting percent derivation for cooling emissions directed to baghouse.	Please refer to the updated emission inventory submitted September 3, 2020 for updated calculations. Percentage of emissions routed to the baghouse is based on operator observation and engineering judgement based on the exhaust configuration.
D3	j	N	Master Throughput and Production Rates	Provide supporting calculations for each applicable "annual parameter (lb/yr)" and provide substantiation to verify annual days of operation.	2018 annual production was provided to DEQ in the 2018 annual report on August 28, 2020.
D3	k	N	Master Throughput and Production Rates	It is unclear if this footnote should be applied to this table as it is not referenced. If it does not apply, then please remove it.	This note is not referenced and has been removed.
D3	l	N	Master Throughput and Production Rates	Provide data supporting reported amount of dust collected from baghouses in 2018.	Dust collected from baghouses are tracked on a monthly basis. Short-term collection is based on annual collection divided by annual days of operation. A summary of dust collection records are included in the October 30, 2020 response. Dust collection records are maintained on site and can be reviewed in person by DEQ staff during regular business hours.
D3	m	N	Master Throughput and Production Rates	It is unclear if this footnote should be applied to this table as it is not referenced. If it does not apply, then please remove it.	This note is not referenced and has been removed.
D3	n	N	Master Throughput and Production Rates	Provide production data to verify the total metal poured for parts.	2018 annual production was provided to DEQ in the 2018 annual report on August 28, 2020. The parts/gating ratio data were submitted to DEQ on August 28, 2020.
D3	n	N	Master Throughput and Production Rates	This may be verified through submittal of the process flow diagram and detailed site diagram. Explain why no thermal oxidation applies to this wax component usage.	This reference is not used and has been removed.
D3	o	N	Master Throughput and Production Rates	Provide production data to verify the amount of metal used for casting, parts, and gating. Provide data supporting percent derivation for metal poured for gating.	2018 annual production was provided to DEQ in the 2018 annual report on August 28, 2020. The parts/gating ratio data were submitted to DEQ on August 28, 2020.
D3	p	N	Master Throughput and Production Rates	Provide production data to verify the amount of air cast superalloy heat treated. Provide data supporting derivation of percentage of air casting heat treat furnace.	2018 annual production was provided to DEQ in the 2018 annual report on August 28, 2020. Short-term throughput is based on annual production divided by annual days of operation. The percentage of air casting at the heat treat furnaces is based on the number of heat treat furnaces available. 75% of the heat treat furnaces are vacuum/electric and 25% are natural gas.
D3	q	N	Master Throughput and Production Rates	Provide production data to verify total vacuum cast superalloy heat treated. Provide data supporting derivation of percentage of vacuum casting heat treat furnace.	PTE annual production is based on the facility projections from historical production activities. The percentage of vacuum casting at the heat treat furnaces is based on the number of heat treat furnaces available. 75% of the heat treat furnaces are vacuum/electric and 25% are natural gas.
D3	r	N	Master Throughput and Production Rates	Provide production data to verify total metal poured for titanium castings. Provide data supporting derivation of (1) percentage of metal removed as gating and (2) percentage of titanium parts heat treated as steel.	2018 annual production was provided to DEQ in the 2018 annual report on August 28, 2020. Short-term throughput is based on the assumption that the facility operates all year with minimal downtime. The percentage of air casting at the heat treat furnaces is based on the number of heat treat furnaces available. 75% of the heat treat furnaces are vacuum/electric and 25% are natural gas.
D3	s	N	Master Throughput and Production Rates	Provide production data to verify total metal poured for Ti facility casting. Provide data supporting derivation of (1) percentage of metal poured for gating and (2) percentage of titanium parts heat treated at Ti facility.	2018 annual production was provided to DEQ in the 2018 annual report on August 28, 2020. The parts/gating ratio data were submitted to DEQ on August 28, 2020.
D3	t	N	Master Throughput and Production Rates	Provide production data to verify total welding wire usage and daily usages at LPC-S, LPC-T, LSBSI, LSBSII, LMA, and TBS.	We are not able to send this information due to confidentiality concerns. However, those materials are maintained on site and can be reviewed in person by DEQ staff during regular business hours.
D3	t	N	Master Throughput and Production Rates	Provide data supporting derivation of percentage of welding wire wasted.	Welding rod loss determination spreadsheet contains Confidential Business Information. The data are maintained on site and can be reviewed in person by DEQ staff during regular business hours.
D3	u	N	Master Throughput and Production Rates	Provide manufacturer and/or performance data to verify combined baghouse+HEPA filter control efficiency reported (99.99997%).	Response was submitted to DEQ on June 15, 2020.
D3	3	N	Master Throughput and Production Rates	Provide typical production activity data for DEQ review.	2018 annual production was provided to DEQ in the 2018 annual report on August 28, 2020.
D3	4	N	Master Throughput and Production Rates	Provide all production data referenced with this footnote for DEQ review.	2018 annual production was provided to DEQ in the 2018 annual report on August 28, 2020.

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Table	Note/Ref	CBI	Relevant Process	Comment	PCC Response
D3	5	N	Master Throughput and Production Rates	Provide 2018 baghouse collection data for DEQ review.	Dust collected from baghouses are tracked on a monthly basis. Short-term collection is based on annual collection divided by annual days of operation. A summary of dust collection records are included in the October 30, 2020 response. Dust collection records are maintained on site and can be reviewed in person by DEQ staff
D3	6	N	Master Throughput and Production Rates	Provide information supporting engineering judgment made in reference (6) asserting that each baghouse (0585 and 1807) receives an equal amount of dust.	Dust collection records are combined for these two baghouses. All dust is tracked and all emissions are accounted for. The 50% split is based on engineering judgement and exhaust configuration.
D3	6	N	Master Throughput and Production Rates	Provide all supporting calculations, methodologies, etc. used to make engineering judgment.	Dust collection records for baghouse 0585 and baghouse 1807 are combined. All dust is tracked and all emissions are accounted for. The 50% split is based on engineering judgement and exhaust configuration.
D3	7	N	Master Throughput and Production Rates	Submit the facility-provided information for DEQ review.	Dust collected from baghouses are tracked on a monthly basis. A summary of 2018 dust collection records are included in the October 30, 2020 response.
D3	8	N	Master Throughput and Production Rates	Provide production data to verify total metal poured for parts and gating, LPC-S.	2018 annual production was provided to DEQ in the 2018 annual report on August 28, 2020.
D3	9	N	Master Throughput and Production Rates	Provide production data to verify total metal poured for parts and gating, LPC-T.	2018 annual production was provided to DEQ in the 2018 annual report on August 28, 2020.
D3	10	N	Master Throughput and Production Rates	Provide supporting information (e.g., product specifications or other materials) to verify the wax to metal density ratio presented in this footnote.	The density ratio is not used in any emission calculations and will be removed if any future iterations of the emissions inventory are required.
D3	11	N	Master Throughput and Production Rates	Provide original production data to verify Latex, with Thermal Oxidation, production/throughput amount.	The density ratio is not used in any emission calculations and will be removed if any future iterations of the emissions inventory are required.
D3	12	N	Master Throughput and Production Rates	Provide monthly usage data to verify paint throughput reported.	2018 annual production was provided to DEQ in the 2018 annual report on August 28, 2020.
D3	13	N	Master Throughput and Production Rates	Provide data to substantiate the hours of operation and downtime hours reported.	2018 annual production was provided to DEQ in the 2018 annual report on August 28, 2020.
D3	14	N	Master Throughput and Production Rates	Provide air casting production data to (1) substantiate the assumption that air casting occurs up to three days per week and (2) verify annual hours and days of operation reported.	2018 annual production was provided to DEQ in the 2018 annual report on August 28, 2020. Short-term throughput is based on the assumption that the facility operates all year with minimal downtime.
D3	15	N	Master Throughput and Production Rates	Provide manufacturer and/or performance data to verify baghouse and HEPA filter control efficiencies reported.	Response was submitted to DEQ on June 15, 2020.
D3	16	N	Master Throughput and Production Rates	Provide supporting calculations, manufacturer data, and/or performance data used to develop engineering estimate of thermal oxidizer destruction efficiency.	Response was submitted to DEQ on June 15, 2020.
D3	17	N	Master Throughput and Production Rates	Provide data (i.e., vacuum pump manufacturer data, engineering calculations, etc.) substantiating assumption that 50% of emissions are processed by dry vacuum pumps on the vacuum furnace. State which baghouse vacuum pumps are routed to.	The furnace uses two types of vacuum pumps. The dry pumps vent to a baghouse, the other pumps vent to atmosphere. Emissions are assumed to be split evenly among the two pump types.
D3	18	N	Master Throughput and Production Rates	Provide manufacturer data for the eight LPC heat treat furnaces for DEQ review	A summary of LPC heat treat information is included in the October 30, 2020 response.
D3	19	N	Master Throughput and Production Rates	Provide information supporting assumed percentages of metal poured for steel and titanium gating.	Response was submitted to DEQ on June 15, 2020.
D3	20	N	Master Throughput and Production Rates	Provide production information to verify percentages presented for titanium parts heat treated at PCC's various facilities.	2018 annual production was provided to DEQ in the 2018 annual report on August 28, 2020.
D3	21	N	Master Throughput and Production Rates	Provide data substantiating assumption that 75% of welding emissions are controlled by baghouses 5365 and 6418. Provide data substantiating the statement that that the building of interest is an "effective enclosure" with "minimal venting aside from the baghouses."	The building contains minimal venting aside from venting to the baghouses. 75% of welding emissions routed to the baghouses is based on observation of process, and the most likely airflow is through baghouses.
1	c	N	Steel - Input Process Rates and Parameters	It is unclear if this footnote should be applied to this table as it is not referenced. If it does not apply, then please remove it.	This note is not referenced and has been removed.
1	2	N	Investing	Provide information supporting the reported number of annual oxidizer downtime hours.	2018 annual production was provided to DEQ in the 2018 annual report on August 28, 2020.
1	3	N	Investing	Provide information supporting the reported number of operational hours.	2018 annual production was provided to DEQ in the 2018 annual report on August 28, 2020.
1	4	N	Burnout Ovens	Provide data to verify daily and annual amounts of metal poured for parts and gating production.	2018 annual production was provided to DEQ in the 2018 annual report on August 28, 2020. Short-term throughput is based on the assumption that the facility operates all year with minimal downtime.
2	1	N	Steel - Air Casting - Parts	Provide engineering testing results.	Response was submitted to DEQ on June 15, 2020.
[redacted]					
2	1	N	Steel - Air Casting - Parts	Provide engineering estimate calculations and engineering testing results for DEQ review.	Response was submitted to DEQ on June 15, 2020.
2	2	N	Steel - Air Casting - Parts	Provide data (i.e., manufacturer data, literature, performance data, etc.) supporting engineering judgment that 60% of emissions from Air Casting are captured and sent to Baghouse 9256.	Please refer to the updated emission inventory submitted September 3, 2020 for air casting calculations. Percentage of emissions routed to the baghouse is based on operator observation and engineering judgement based on the exhaust configuration.
3	1	N	Steel - Air Casting - Ingots	Provide engineering testing results.	Response was submitted to DEQ on June 15, 2020.
[redacted]					

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3	2	N	Steel - Air Casting - Ingots	Provide data (i.e., manufacturer data, literature, performance data, etc.) supporting engineering judgment that 60% of emissions from Air Casting are captured and sent to Baghouse 9256.	Please refer to the updated emission inventory submitted September 3, 2020 for air casting calculations. Percentage of emissions routed to the baghouse is based on operator observation and engineering judgement based on the exhaust configuration.
[redacted]					
4	1	N	Steel - Vaccum Casting - Parts, VF3 & VF4	Provide supporting data (i.e., manufacturer data, performance data, etc.) for control efficiencies used in these calculations.	The vacuum casting particulate emission rate is presented as a conservative estimate. The only casting emission factors publicly available are those representative of open casting processes, not vacuum casting. Emissions from the vacuum furnaces are passed through the vacuum pumps, which are evacuating the vacuum chamber prior to casting, and maintaining a low vacuum during the casting process. As a result, emissions are expected to be minimal (minimal venting). The electric induction furnace melting, pouring and casting, and casting cooling PM emission factors from AP-42 Chapter 12.13 Table 12.13-2 were used. 95% control was applied to the melting PM emission factor due to minimal venting in the vacuum chamber. There is no venting in the vacuum chamber during the pouring process, so 100% control was applied to the pouring and casting PM10 emission factor. The mold configuration allows for minimal venting, so a 95% control was applied to the cooling PM10 emission factor, with an additional 99% control because the part is immediately covered upon removal from the furnace. The particulate emissions are conservatively assumed to be 100% metals emissions, which are speciated based on conservative alloy content data.
4	1	N	Steel - Vaccum Casting - Parts, VF3 & VF4	Provide supporting calculations for adjustment of AP-42 emission factor for electric induction furnace to reflect the vacuum casting process.	The vacuum casting particulate emission rate is presented as a conservative estimate. The only casting emission factors publicly available are those representative of open casting processes, not vacuum casting. Emissions from the vacuum furnaces are passed through the vacuum pumps, which are evacuating the vacuum chamber prior to casting, and maintaining a low vacuum during the casting process. As a result, emissions are expected to be minimal (minimal venting). The electric induction furnace melting, pouring and casting, and casting cooling PM emission factors from AP-42 Chapter 12.13 Table 12.13-2 were used. 95% control was applied to the melting PM emission factor due to minimal venting in the vacuum chamber. There is no venting in the vacuum chamber during the pouring process, so 100% control was applied to the pouring and casting PM10 emission factor. The mold configuration allows for minimal venting, so a 95% control was applied to the cooling PM10 emission factor, with an additional 99% control because the part is immediately covered upon removal from the furnace. The particulate emissions are conservatively assumed to be 100% metals emissions, which are speciated based on conservative alloy content data.
[redacted]					

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5	1	N	Steel - Vacuum Casting - Parts MC1	Provide supporting data (i.e., manufacturer data, performance data, etc.) for control efficiencies used in these calculations.	The vacuum casting particulate emission rate is presented as a conservative estimate. The only casting emission factors publicly available are those representative of open casting processes, not vacuum casting. Emissions from the vacuum furnaces are passed through the vacuum pumps, which are evacuating the vacuum chamber prior to casting, and maintaining a low vacuum during the casting process. As a result, emissions are expected to be minimal (minimal venting). The electric induction furnace melting, pouring and casting, and casting cooling PM emission factors from AP-42 Chapter 12.13 Table 12.13-2 were used. 95% control was applied to the melting PM emission factor due to minimal venting in the vacuum chamber. There is no venting in the vacuum chamber during the pouring process, so 100% control was applied to the pouring and casting PM10 emission factor. The mold configuration allows for minimal venting, so a 95% control was applied to the cooling PM10 emission factor, with an additional 99% control because the part is immediately covered upon removal from the furnace. The particulate emissions are conservatively assumed to be 100% metals emissions, which are speciated based on conservative alloy content data.
5	1	N	Steel - Vacuum Casting - Parts MC1	Provide supporting calculations for adjustment of AP-42 emission factor for electric induction furnace to reflect the vacuum casting process.	The vacuum casting particulate emission rate is presented as a conservative estimate. The only casting emission factors publicly available are those representative of open casting processes, not vacuum casting. Emissions from the vacuum furnaces are passed through the vacuum pumps, which are evacuating the vacuum chamber prior to casting, and maintaining a low vacuum during the casting process. As a result, emissions are expected to be minimal (minimal venting). The electric induction furnace melting, pouring and casting, and casting cooling PM emission factors from AP-42 Chapter 12.13 Table 12.13-2 were used. 95% control was applied to the melting PM emission factor due to minimal venting in the vacuum chamber. There is no venting in the vacuum chamber during the pouring process, so 100% control was applied to the pouring and casting PM10 emission factor. The mold configuration allows for minimal venting, so a 95% control was applied to the cooling PM10 emission factor, with an additional 99% control because the part is immediately covered upon removal from the furnace. The particulate emissions are conservatively assumed to be 100% metals emissions, which are speciated based on conservative alloy content data.
[redacted]					
6	1	N	Steel - Vacuum Casting - Ingots VMM1	Provide supporting data (i.e., manufacturer data, performance data, etc.) for control efficiencies used in these calculations.	The vacuum casting particulate emission rate is presented as a conservative estimate. The only casting emission factors publicly available are those representative of open casting processes, not vacuum casting. Emissions from the vacuum furnaces are passed through the vacuum pumps, which are evacuating the vacuum chamber prior to casting, and maintaining a low vacuum during the casting process. As a result, emissions are expected to be minimal (minimal venting). The electric induction furnace melting, pouring and casting, and casting cooling PM emission factors from AP-42 Chapter 12.13 Table 12.13-2 were used. 95% control was applied to the melting PM emission factor due to minimal venting in the vacuum chamber. There is no venting in the vacuum chamber during the pouring or cooling processes, so 100% control was applied to the pouring and casting PM10 emission factor and the cooling PM10 emission factor. The particulate emissions are conservatively assumed to be 100% metals emissions, which are speciated based on conservative alloy content data.
6	1	N	Steel - Vacuum Casting - Ingots VMM1	Provide supporting calculations for adjustment of AP-42 emission factor for electric induction furnace to reflect the vacuum casting process.	The vacuum casting particulate emission rate is presented as a conservative estimate. The only casting emission factors publicly available are those representative of open casting processes, not vacuum casting. Emissions from the vacuum furnaces are passed through the vacuum pumps, which are evacuating the vacuum chamber prior to casting, and maintaining a low vacuum during the casting process. As a result, emissions are expected to be minimal (minimal venting). The electric induction furnace melting, pouring and casting, and casting cooling PM emission factors from AP-42 Chapter 12.13 Table 12.13-2 were used. 95% control was applied to the melting PM emission factor due to minimal venting in the vacuum chamber. There is no venting in the vacuum chamber during the pouring or cooling processes, so 100% control was applied to the pouring and casting PM10 emission factor and the cooling PM10 emission factor. The particulate emissions are conservatively assumed to be 100% metals emissions, which are speciated based on conservative alloy content data.
[redacted]					

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[redacted]					
8	2	N	Steel - Hot Top	Provide information supporting engineering estimate for DEQ review.	Hot Top process is "molten metal insulation" for the casting. The purpose of the hot top is to melt and create an insulative layer on openings in the mold after casting. Some smoke is generated in the process, and it is conservatively estimated that this smoke represents 1% of the total mass of hot top used.
[redacted]					
8	1	N	Steel - Hot Top	Provide product SDS for DEQ review.	Response was submitted to DEQ on August 28, 2020.

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[redacted]					
10	2	N	Steel - Investing Baghouse 3804	Provide 2018 baghouse dust analysis reports for DEQ review.	Response was submitted to DEQ on June 15, 2020.
[redacted]					
10	1	N	Steel - Investing Baghouse 3804	Provide supporting data (i.e., manufacturer data, performance data, etc.) for control efficiency reported for this baghouse.	Response was submitted to DEQ on June 15, 2020.
11	2	N	Steel - Investing	Provide applicable production data to verify maximum daily and annual hydrochloric acid usage rates.	2018 annual production was provided to DEQ in the 2018 annual report on August 28, 2020. Short-term throughput is based on the assumption that the facility operates all year with minimal downtime.
[redacted]					
11	1	N	Steel - Investing	Provide supporting calculations/technical information for this emission factor for DEQ review.	HCl is used to modulate the pH of the slurry to ensure the slurry has the correct consistency for shell building. The acid is not a volatile constituent (such as an alcohol), and is not intended to flash off, but reacts after it is added into the slurry. Therefore, emissions were conservatively assumed to be 5% of usage.
[redacted]					
11	3	N	Steel - Investing	Provide product SDS for DEQ review.	Response was submitted to DEQ on August 28, 2020.
[redacted]					
12	1	N	Steel - Burnout Ovens - No Thermal Oxidation - Wax Components	Provide burnout oven emissions testing report for DEQ review.	Response was submitted to DEQ on June 15, 2020.
[redacted]					
13	2	N	Steel - Burnout Ovens - Thermal Oxidation - Non Wax Components	Provide production data.	2018 annual production was provided to DEQ in the 2018 annual report on August 28, 2020.
13	1	N	Steel - Burnout Ovens - Thermal Oxidation - Non Wax Components	Provide data and calculations to support engineering estimate referenced.	Emission factors are based on historic bench scale testing. Testing reports were submitted to DEQ on June 15, 2020.
14	1	N	Steel - Burnout Ovens - Thermal Oxidation - Latex	Provide information supporting engineering estimate for DEQ review.	Emission factors are based on historic bench scale testing. Testing reports were submitted to DEQ on June 15, 2020.
[redacted]					
15	1	N	Steel - Acid Etch Line	Provide SDS or relevant information to confirm percent weight in solution reported for TACs used in acid etch line.	Response was submitted to DEQ on August 28, 2020.
16	2	N	Steel - Baghouse 0585	Provide 2018 baghouse dust analysis reports for DEQ review.	Response was submitted to DEQ on June 15, 2020.
16	1	N	Steel - Baghouse 0585	Provide supporting data (i.e., manufacturer data, performance data, etc.) for removal efficiencies used in these calculations.	Response was submitted to DEQ on June 15, 2020.
17	2	N	Steel - Baghouse 1659	Provide 2018 baghouse dust analysis reports for DEQ review.	Response was submitted to DEQ on June 15, 2020.

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Table	Note/Ref	CBI	Relevant Process	Comment	PCC Response
17	1	N	Steel - Baghouse 1659	Provide supporting data (i.e., manufacturer data, performance data, etc.) for removal efficiencies used in these calculations.	Response was submitted to DEQ on June 15, 2020.
18	2	N	Steel - Baghouse 1807	Provide 2018 baghouse dust analysis reports for DEQ review.	Response was submitted to DEQ on June 15, 2020.
18	1	N	Steel - Baghouse 1807	Provide supporting data (i.e., manufacturer data, performance data, etc.) for removal efficiencies used in these calculations.	Response was submitted to DEQ on June 15, 2020.
19	2	N	Steel - Baghouse 2214	Provide 2018 baghouse dust analysis reports for DEQ review.	Response was submitted to DEQ on June 15, 2020.
20	2	N	Steel - Baghouse 5549	Provide 2018 baghouse dust analysis reports for DEQ review.	Response was submitted to DEQ on June 15, 2020.
20	1	N	Steel - Baghouse 5549	Provide supporting data (i.e., manufacturer data, performance data, etc.) for removal efficiencies used in these calculations.	Response was submitted to DEQ on June 15, 2020.
21	2	N	Steel - Baghouse 6417	Provide 2018 baghouse dust analysis reports for DEQ review.	Response was submitted to DEQ on June 15, 2020.
21	1	N	Steel - Baghouse 6417	Provide supporting data (i.e., manufacturer data, performance data, etc.) for removal efficiencies used in these calculations.	Response was submitted to DEQ on June 15, 2020.
22	2	N	Steel - Baghouses 6532 - HEPA	Provide 2018 baghouse dust analysis reports for DEQ review.	Response was submitted to DEQ on June 15, 2020.
22	1	N	Steel - Baghouses 6532 - HEPA	Provide supporting data (i.e., manufacturer data, performance data, etc.) for removal efficiencies used in these calculations.	Response was submitted to DEQ on June 15, 2020.
23	2	N	Steel - Baghouses 6671	Provide 2018 baghouse dust analysis reports for DEQ review.	Response was submitted to DEQ on June 15, 2020.
23	1	N	Steel - Baghouses 6671	Provide supporting data (i.e., manufacturer data, performance data, etc.) for removal efficiencies used in these calculations.	Response was submitted to DEQ on June 15, 2020.
24	2	N	Steel - Baghouse 8687	Provide 2018 baghouse dust analysis reports for DEQ review.	Response was submitted to DEQ on June 15, 2020.
24	1	N	Steel - Baghouse 8687	Provide supporting data (i.e., manufacturer data, performance data, etc.) for removal efficiencies used in these calculations.	Response was submitted to DEQ on June 15, 2020.
25	2	N	Steel - Baghouse 8901 - HEPA	Provide 2018 baghouse dust analysis reports for DEQ review.	Response was submitted to DEQ on June 15, 2020.
25	1	N	Steel - Baghouse 8901 - HEPA	Provide supporting data (i.e., manufacturer data, performance data, etc.) for removal efficiencies used in these calculations.	Response was submitted to DEQ on June 15, 2020.
26	2	N	Steel - Baghouse 9115	Listed products generally account for ~81% of dust components. Provide 2018 baghouse dust analysis reports for DEQ review.	Response was submitted to DEQ on June 15, 2020.
26	1	N	Steel - Baghouse 9115	Provide supporting data (i.e., manufacturer data, performance data, etc.) for removal efficiencies used in these calculations.	Response was submitted to DEQ on June 15, 2020.
27	2	N	Steel Baghouse 9196 - HEPA	Listed products generally account for < 2% of dust components. Provide 2018 baghouse dust analysis reports for DEQ review.	Response was submitted to DEQ on June 15, 2020.
27	a	N	Steel Baghouse 9196 - HEPA	Provide supporting data (i.e., manufacturer data, performance data, etc.) for removal efficiencies used in these calculations.	Response was submitted to DEQ on June 15, 2020.
28	2	N	Steel - Baghouse 9203 - HEPA	Provide 2018 baghouse dust analysis reports for DEQ review.	Response was submitted to DEQ on June 15, 2020.
28	b	N	Steel - Baghouse 9203 - HEPA	Provide documentation supporting the maximum daily amount of dust collected from this baghouse.	Dust collected from baghouses are tracked on a monthly basis. Short-term collection is based on annual collection divided by annual days of operation. A summary of dust collection records are included in the October 30, 2020 response. Dust collection records are maintained on site and can be reviewed in person by DEQ staff during regular business hours.
28	c	N	Steel - Baghouse 9203 - HEPA	Provide documentation supporting the annual amount of dust collected from this baghouse.	Dust collected from baghouses are tracked on a monthly basis. Short-term collection is based on annual collection divided by annual days of operation. A summary of dust collection records are included in the October 30, 2020 response. Dust collection records are maintained on site and can be reviewed in person by DEQ staff during regular business hours.
28	a	N	Steel - Baghouse 9203 - HEPA	Provide documentation for the 99.99997 % control efficiency for the baghouse w/HEPA.	Response was submitted to DEQ on June 15, 2020.
29	2	N	Steel - Baghouse 9255 - HEPA	Provide 2018 baghouse dust analysis reports for DEQ review.	Response was submitted to DEQ on June 15, 2020.
29	b	N	Steel - Baghouse 9255 - HEPA	Provide documentation supporting the maximum daily amount of dust collected from this baghouse.	Dust collected from baghouses are tracked on a monthly basis. Short-term collection is based on annual collection divided by annual days of operation. A summary of dust collection records are included in the October 30, 2020 response. Dust collection records are maintained on site and can be reviewed in person by DEQ staff during regular business hours.
29	c	N	Steel - Baghouse 9255 - HEPA	Provide documentation supporting the annual amount of dust collected from this baghouse.	Dust collected from baghouses are tracked on a monthly basis. Short-term collection is based on annual collection divided by annual days of operation. A summary of dust collection records are included in the October 30, 2020 response. Dust collection records are maintained on site and can be reviewed in person by DEQ staff during regular business hours.
29	a	N	Steel - Baghouse 9255 - HEPA	Provide documentation for the 99.99997 % control efficiency for the baghouse w/HEPA.	Response was submitted to DEQ on June 15, 2020.
30	2	N	Steel - Baghouse 9256 - HEPA	Provide 2018 baghouse dust analysis reports for DEQ review.	Response was submitted to DEQ on June 15, 2020.
30	b	N	Steel - Baghouse 9256 - HEPA	Provide documentation supporting the maximum daily amount of dust collected from this baghouse.	Dust collected from baghouses are tracked on a monthly basis. Short-term collection is based on annual collection divided by annual days of operation. A summary of dust collection records are included in the October 30, 2020 response. Dust collection records are maintained on site and can be reviewed in person by DEQ staff during regular business hours.
30	c	N	Steel - Baghouse 9256 - HEPA	Provide documentation supporting the annual amount of dust collected from this baghouse.	Dust collected from baghouses are tracked on a monthly basis. Short-term collection is based on annual collection divided by annual days of operation. A summary of dust collection records are included in the October 30, 2020 response. Dust collection records are maintained on site and can be reviewed in person by DEQ staff during regular business hours.
30	a	N	Steel - Baghouse 9256 - HEPA	Provide documentation for the 99.99997 % control efficiency for the baghouse w/HEPA.	Response was submitted to DEQ on June 15, 2020.
31	2	N	Steel - Fugitives	Provide justification for the assumption that fugitive emissions are equivalent to 1% of the controlled emissions from the baghouse.	The estimated emissions represent commingled emissions within the building envelope. Emissions are estimated for the TEU's in the emissions inventory, so estimating 1% of emissions from TEUs with baghouses as being commingled emissions within the building is a conservative estimate.
32	3	N	Steel - Heat Treat - Air Cast Parts - Vacuum Furnace	Provide alloy composition data for DEQ review.	We are not able to send any materials that identify our specific alloy contents due to confidentiality concerns. However, those materials are maintained on site and can be reviewed in person by DEQ staff during regular business hours.
32	4	N	Steel - Heat Treat - Air Cast Parts - Vacuum Furnace	Provide alloy composition data for DEQ review.	We are not able to send any materials that identify our specific alloy contents due to confidentiality concerns. However, those materials are maintained on site and can be reviewed in person by DEQ staff during regular business hours.
32	1	N	Steel - Heat Treat - Air Cast Parts - Vacuum Furnace	Provide data and calculations to substantiate engineering estimate referenced.	Response was submitted to DEQ on August 28, 2020.
[redacted]					
33	1	N	Steel - Heat Treat - Air Cast Parts - Natural Gas Furnace	Provide data and calculations to substantiate engineering estimate referenced.	Response was submitted to DEQ on August 28, 2020.
[redacted]					

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Table	Note/Ref	CBI	Relevant Process	Comment	PCC Response
34	1	N	Steel - Heat Treat - Vacuum Cast Parts - Vacuum Furnace	Provide data and calculations to substantiate engineering estimate referenced.	Response was submitted to DEQ on August 28, 2020.
[redacted]					
35	1	N	Steel - Heat Treat - Vacuum Cast Parts - Natural Gas Furnace	Provide data and calculations to substantiate engineering estimate referenced.	Response was submitted to DEQ on August 28, 2020.
[redacted]					
36	1	N	Steel - Heat Treat - Titanium Vacuum Cast	Provide data and calculations to substantite engineering estimate referenced.	Response was submitted to DEQ on August 28, 2020.
[redacted]					
37	1	N	Steel - Welding	Provide product SDS for DEQ review.	Response was submitted to DEQ on August 28, 2020.
37	8	N	Steel - Welding	Provide product SDS for DEQ review.	Response was submitted to DEQ on August 28, 2020.
37	9	N	Steel - Welding	Provide product SDS for DEQ review.	Response was submitted to DEQ on August 28, 2020.
37	5	N	Steel - Welding	The technical document referenced was most recently updated in 1998. Please consider more recent confirmation test results to quantify welding emissions.	This document contains the most comprehensive publicly available method for calculating welding emissions for rods that are not listed in AP-42.
38	1	N	Steel - Wax Fugitives	Provide product SDS for DEQ review.	Response was submitted to DEQ on August 28, 2020.
39	1	N	Steel - Alloy Service Center Paint	Provide product SDS for DEQ review.	Response was submitted to DEQ on August 28, 2020.
41	2	N	Ti - Input Process Rates and Parameters	Please clarify what this footnote means. If it references supporting information not provided in the original submittal, please provide that for DEQ review.	This note has been removed.
41	3	N	Ti - Input Process Rates and Parameters	Provide production data for DEQ review.	2018 annual production was provided to DEQ in the 2018 annual report on August 28, 2020.
[redacted]					
42	1	N	Ti - Vacuum Casting	Provide basis for control efficiency assumptions applied to AP-42 emission factors.	The vacuum casting particulate emission rate is presented as a conservative estimate. The only casting emission factors publicly available are those representative of open casting processes, not vacuum casting. Emissions from the vacuum furnaces are passed through the vacuum pumps, which are evacuating the vacuum chamber prior to casting, and maintaining a low vacuum during the casting process. As a result, emissions are expected to be minimal (minimal venting). The electric induction furnace melting, pouring and casting, and casting cooling PM emission factors from AP-42 Chapter 12.13 Table 12.13-2 were used. 95% control was applied to the melting PM emission factor due to minimal venting in the vacuum chamber. There is no venting in the vacuum chamber during the pouring or cooling processes, so 100% control was applied to the pouring and casting PM10 emission factor and the cooling PM10 emission factor. The particulate emissions are conservatively assumed to be 100% metals emissions, which are speciated based on conservative alloy content data.
43	1	N	Ti - Autoclave and Wax Reclaim	Provide supporting calculations/technical information for this emission factor for DEQ review.	Autoclave supporting information was submitted to DEQ on June 15, 2020.
44	2	N	Ti - Investing Baghouse 3007- HEPA	Provide 2018 baghouse dust analysis reports for DEQ review.	Response was submitted to DEQ on June 15, 2020.
45	2	N	Ti - Investing Baghouse 3342 - HEPA	Provide 2018 baghouse dust analysis reports for DEQ review.	Response was submitted to DEQ on June 15, 2020.
46	2	N	Ti - TI Investing - RCO	Provide supporting calculations/technical information to substantiate this assumption.	HCl is used to modulate the pH of the slurry to ensure the slurry has the correct consistency for shell building. The acid is not a volatile constituent (such as an alcohol), and is not intended to flash off, but reacts after it is added into the slurry. Therefore, emissions were conservatively assumed to be 5% of usage.
46	3	N	Ti - TI Investing - RCO	Provide SDS for DEQ review.	Response was submitted to DEQ on August 28, 2020.
47	1	N	Ti - Burnout Ovens - No Thermal Oxidation - Wax Components	Provide burnout oven emission testing results for DEQ review.	Response was submitted to DEQ on June 15, 2020.
48	1	N	Ti - Burnout Ovens - with Thermal Oxidation - Non Wax Components	Provide supporting calculations/technical information for this emission factor for DEQ review.	Emission factors are based on historic bench scale testing. Testing reports were submitted to DEQ on June 15, 2020.
49	3	N	Ti - Acid Etch Line	Provide supporting calculations/technical information for this emission factor for DEQ review.	Emissions from acid etch tanks were estimated using a pool evaporation calculation.
50	2	N	Ti - Baghouse 3006	Provide 2018 baghouse dust analysis reports for DEQ review.	Response was submitted to DEQ on June 15, 2020.
51	2	N	Ti - Baghouse 3747	Provide 2018 baghouse dust analysis reports for DEQ review.	Response was submitted to DEQ on June 15, 2020.
52	2	N	Ti - Baghouse 3930	Provide 2018 baghouse dust analysis reports for DEQ review.	Response was submitted to DEQ on June 15, 2020.
53	2	N	Ti - Baghouse 7094	Provide 2018 baghouse dust analysis reports for DEQ review.	Response was submitted to DEQ on June 15, 2020.
54	2	N	Ti - Baghouse 8150	Provide 2018 baghouse dust analysis reports for DEQ review.	Response was submitted to DEQ on June 15, 2020.
55	2	N	TI - Fugitive	Provide justification for the assumption that fugitive emissions are equivalent to 1% of the controlled emissions from the baghouse.	The estimated emissions represent commingled emissions within the building envelope. Emissions are estimated for the TEU's in the emissions inventory, so estimating 1% of emissions from TEUs with baghouses as being commingled emissions within the building is a conservative estimate.

Table	Note/Ref	CBI	Relevant Process	Comment	PCC Response
56	1	N	Ti - Vacuum Heat Treat	Provide supporting documentation and calculation methods for engineering estimate.	Response was submitted to DEQ on August 28, 2020.
57	1	N	Ti - Welding	Provide product SDS for DEQ review.	Response was submitted to DEQ on August 28, 2020.
57	3-5	N	Ti-Welding	The technical document referenced was most recently updated in 1998. Please consider more recent confirmation test results to quantify welding emissions.	This document contains the most comprehensive publicly available method for calculating welding emissions for rods that are not listed in AP-42.
58	1	N	Ti-Grinding	Provide supporting calculations substantiating the engineering estimate to determine water curtain removal efficiency.	Response was submitted to DEQ on June 15, 2020.
59	4	N	Ti-Wax Fugitives	Provide production data for DEQ review.	2018 annual production was provided to DEQ in the 2018 annual report on August 28, 2020.
59	3	N	Ti-Wax Fugitives	The density of water is referenced at 32 F. Please provide documentation to verify the temperature at which the Ti-Wax process occurs.	32 F was used as a conservative assumption. The density of water at 32 F is higher than at ambient temperature which results in higher emission estimates.
59	1	N	Ti-Wax Fugitives	Provide product SDS for DEQ review.	Response was submitted to DEQ on August 28, 2020.
59	2	N	Ti-Wax Fugitives	Provide product SDS for DEQ review.	Response was submitted to DEQ on August 28, 2020.
60	2	N	Ti-Alpha Case Removal	Clarify why these operations based on 24/8760 hours when other operations are based on expected operations levels.	The tank is full on a continuous basis and is assumed to generate emissions on a 24/8760 basis.
60	1	N	Ti-Alpha Case Removal	Please provide the previous testing data used to determine the emission factors.	Response was submitted to DEQ on June 15, 2020.
62	1	N	Satellite - Input Process Rate - Baghouse with HEPA	Provide supporting calculations for reported control efficiency.	Response was submitted to DEQ on June 15, 2020.
62	1	N	Input Process Rate - Baghouse no HEPA	Provide supporting data (i.e., manufacturer data, performance data, etc.) for control efficiency reported for baghouse.	Response was submitted to DEQ on June 15, 2020.
63	2	N	MAP - Baghouse 0802	Provide 2018 baghouse dust analysis reports for DEQ review.	Response was submitted to DEQ on June 15, 2020.
63	1	N	MAP - Baghouse 0802	Provide documentation supporting the annual amount of dust collected from this baghouse.	Dust collected from baghouses are tracked on a monthly basis. Short-term collection is based on annual collection divided by annual days of operation. A summary of dust collection records are included in the October 30, 2020 response. Dust collection records are maintained on site and can be reviewed in person by DEQ staff during regular business hours.
64	2	N	MAP - Baghouse 0803	Provide 2018 baghouse dust analysis reports for DEQ review.	Response was submitted to DEQ on June 15, 2020.
64	1	N	MAP - Baghouse 0803	Provide documentation supporting the annual amount of dust collected from this baghouse.	Dust collected from baghouses are tracked on a monthly basis. Short-term collection is based on annual collection divided by annual days of operation. A summary of dust collection records are included in the October 30, 2020 response. Dust collection records are maintained on site and can be reviewed in person by DEQ staff during regular business hours.
65	2	N	MAP - Baghouse 9031	Provide 2018 baghouse dust analysis reports for DEQ review.	Response was submitted to DEQ on June 15, 2020.
65	1	N	MAP - Baghouse 9031	Provide documentation supporting the annual amount of dust collected from this baghouse.	Dust collected from baghouses are tracked on a monthly basis. Short-term collection is based on annual collection divided by annual days of operation. A summary of dust collection records are included in the October 30, 2020 response. Dust collection records are maintained on site and can be reviewed in person by DEQ staff during regular business hours.
66	2	N	MAP - Fugitive	Provide justification for the assumption that fugitive emissions are equivalent to 1% of the controlled emissions from the baghouse.	The estimated emissions represent commingled emissions within the building envelope. Emissions are estimated for the TEU's in the emissions inventory, so estimating 1% of emissions from TEUs with baghouses as being commingled emissions within the building is a conservative estimate.
66	2	N	MAP - Fugitive	Provide justification for the assumption that fugitive emissions are equivalent to 1% of the controlled emissions from the baghouse.	The estimated emissions represent commingled emissions within the building envelope. Emissions are estimated for the TEU's in the emissions inventory, so estimating 1% of emissions from TEUs with baghouses as being commingled emissions within the building is a conservative estimate.
67	2	N	LSBS I - Baghouse 5062	Provide 2018 baghouse dust analysis reports for DEQ review.	Response was submitted to DEQ on June 15, 2020.
67	1	N	LSBS I - Baghouse 5062	Provide documentation supporting the annual amount of dust collected from this baghouse.	Dust collected from baghouses are tracked on a monthly basis. Short-term collection is based on annual collection divided by annual days of operation. A summary of dust collection records are included in the October 30, 2020 response. Dust collection records are maintained on site and can be reviewed in person by DEQ staff during regular business hours.
68	2	N	LSBS I - Baghouse 6265	Provide 2018 baghouse dust analysis reports for DEQ review.	Response was submitted to DEQ on June 15, 2020.
68	1	N	LSBS I - Baghouse 6265	Provide documentation supporting the annual amount of dust collected from this baghouse.	Dust collected from baghouses are tracked on a monthly basis. Short-term collection is based on annual collection divided by annual days of operation. A summary of dust collection records are included in the October 30, 2020 response. Dust collection records are maintained on site and can be reviewed in person by DEQ staff during regular business hours.
69	2	N	LSBS I - Fugitive	Provide justification for the assumption that fugitive emissions are equivalent to 1% of the controlled emissions from the baghouse.	The estimated emissions represent commingled emissions within the building envelope. Emissions are estimated for the TEU's in the emissions inventory, so estimating 1% of emissions from TEUs with baghouses as being commingled emissions within the building is a conservative estimate.
69	2	N	LSBS I - Fugitive	Provide justification for the assumption that fugitive emissions are equivalent to 1% of the controlled emissions from the baghouse.	The estimated emissions represent commingled emissions within the building envelope. Emissions are estimated for the TEU's in the emissions inventory, so estimating 1% of emissions from TEUs with baghouses as being commingled emissions within the building is a conservative estimate.
70	9	N	LSBS I - Welding	This footnote states that the maximum daily emissions are based on the maximum daily alloy content of all products, but all are listed as zero. Provide supporting calculations and revise table to reflect actual maximum daily emissions.	This note is not referenced and has been removed.
70	9	N	LSBS I - Welding	The technical document referenced was most recently updated in 1998. Please consider more recent confirmation test results to quantify welding emissions.	This document contains the most comprehensive publicly available method for calculating welding emissions for rods that are not listed in AP-42.
70	2	N	LSBS I - Welding	Provide data supporting derivation of percentage of welding wire wasted.	Welding rod loss determination spreadsheet contains Confidential Business Information. The data are maintained on site and can be reviewed in person by DEQ staff during regular business hours.
70	7	N	LSBS I - Welding	Provide data supporting derivation of percentage of welding wire wasted.	Welding rod loss determination spreadsheet contains Confidential Business Information. The data are maintained on site and can be reviewed in person by DEQ staff during regular business hours.
70	8	N	LSBS I - Welding	Provide product SDS for DEQ review.	Response was submitted to DEQ on August 28, 2020.
70	3-4	N	LSBS I - Welding	The technical document referenced was most recently updated in 1998. Please consider more recent confirmation test results to quantify welding emissions.	This document contains the most comprehensive publicly available method for calculating welding emissions for rods that are not listed in AP-42.
70	6	N	LSBS I - Welding	The technical document referenced was most recently updated in 1998. Please consider more recent confirmation test results to quantify welding emissions.	This document contains the most comprehensive publicly available method for calculating welding emissions for rods that are not listed in AP-42.
70	1	N	LSBS I - Welding	Provide alloy composition data for DEQ review.	We are not able to send any materials that identify our specific alloy contents due to confidentiality concerns. However, those materials are maintained on site and can be reviewed in person by DEQ staff during regular business hours.
71	2	N	LSBS II - Baghouse 5365	Provide 2018 baghouse dust analysis reports for DEQ review.	Response was submitted to DEQ on June 15, 2020.
71	a	N	LSBS II - Baghouse 5365	Provide manufacturer or performance data supporting reported control efficiency.	Response was submitted to DEQ on June 15, 2020.

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Table	Note/Ref	CBI	Relevant Process	Comment	PCC Response
71	1	N	LSBS II - Baghouse 5365	Provide documentation supporting the annual amount of dust collected from this baghouse.	Dust collected from baghouses are tracked on a monthly basis. Short-term collection is based on annual collection divided by annual days of operation. A summary of dust collection records are included in the October 30, 2020 response. Dust collection records are maintained on site and can be reviewed in person by DEQ staff during regular business hours.
72	2	N	LSBS II - Baghouse 5457	Provide 2018 baghouse dust analysis reports for DEQ review.	Response was submitted to DEQ on June 15, 2020.
72	a	N	LSBS II - Baghouse 5457	Provide manufacturer or performance data supporting reported control efficiency.	Response was submitted to DEQ on June 15, 2020.
72	1	N	LSBS II - Baghouse 5457	Provide documentation supporting the annual amount of dust collected from this baghouse.	Dust collected from baghouses are tracked on a monthly basis. Short-term collection is based on annual collection divided by annual days of operation. A summary of dust collection records are included in the October 30, 2020 response. Dust collection records are maintained on site and can be reviewed in person by DEQ staff during regular business hours.
73	2	N	LSBS II - Baghouse 6418	Provide 2018 baghouse dust analysis reports for DEQ review.	Response was submitted to DEQ on June 15, 2020.
73	a	N	LSBS II - Baghouse 6418	Provide manufacturer or performance data supporting reported control efficiency.	Response was submitted to DEQ on June 15, 2020.
73	1	N	LSBS II - Baghouse 6418	Provide documentation supporting the annual amount of dust collected from this baghouse.	Dust collected from baghouses are tracked on a monthly basis. Short-term collection is based on annual collection divided by annual days of operation. A summary of dust collection records are included in the October 30, 2020 response. Dust collection records are maintained on site and can be reviewed in person by DEQ staff during regular business hours.
74	2	N	LSBS II - Fugitive Emissions	Provide justification for the assumption that fugitive emissions are equivalent to 1% of the controlled emissions from the baghouse.	The estimated emissions represent commingled emissions within the building envelope. Emissions are estimated for the TEU's in the emissions inventory, so estimating 1% of emissions from TEUs with baghouses as being commingled emissions within the building is a conservative estimate.
75	1	N	LSBS II - Welding	Provide data supporting derivation of percentage of welding wire wasted.	Welding rod loss determination spreadsheet contains Confidential Business Information. The data are maintained on site and can be reviewed in person by DEQ staff during regular business hours.
75	8	N	LSBS II - Welding	Provide product SDS for DEQ review.	Response was submitted to DEQ on August 28, 2020.
75	5	N	LSBS II - Welding	The technical document referenced was most recently updated in 1998. Please consider more recent confirmation test results to quantify welding emissions.	This document contains the most comprehensive publicly available method for calculating welding emissions for rods that are not listed in AP-42.
75	4	N	LSBS II - Welding	Provide welding wire SDS for DEQ review.	Response was submitted to DEQ on August 28, 2020.
75	6	N	LSBS II - Welding	Provide data substantiating assumption that 75% of welding emissions are controlled by baghouses 5365 and 6418. Provide data substantiating the statement that that the building of interest is an "effective enclosure" with "minimal venting aside from the baghouses."	The building contains minimal venting aside from venting to the baghouses. 75% of welding emissions routed to the baghouses is based on observation of process, and the most likely airflow is through baghouses.
76	2	N	LMA - Baghouse 7095	Provide 2018 baghouse dust analysis reports for DEQ review.	Response was submitted to DEQ on June 15, 2020.
76	a	N	LMA - Baghouse 7095	Provide manufacturer or performance data supporting reported control efficiency.	Response was submitted to DEQ on June 15, 2020.
77	2	N	LMA - Baghouse 7096	Provide 2018 baghouse dust analysis reports for DEQ review.	Response was submitted to DEQ on June 15, 2020.
77	a	N	LMA - Baghouse 7096	Provide manufacturer or performance data supporting reported control efficiency.	Response was submitted to DEQ on June 15, 2020.
78	2	N	LMA - Fugitive	Provide justification for the assumption that fugitive emissions are equivalent to 1% of the controlled emissions from the baghouse.	The estimated emissions represent commingled emissions within the building envelope. Emissions are estimated for the TEU's in the emissions inventory, so estimating 1% of emissions from TEUs with baghouses as being commingled emissions within the building is a conservative estimate.
79	1	N	LMA - Grinding	Provide data and calculations substantiating engineering estimate referenced.	Response was submitted to DEQ on June 15, 2020.
[redacted]					
80	5	N	LMA - Welding	The technical document referenced was most recently updated in 1998. Please consider more recent confirmation test results to quantify welding emissions.	This document contains the most comprehensive publicly available method for calculating welding emissions for rods that are not listed in AP-42.
80	1	N	LMA - Welding	Provide welding wire SDS for DEQ review.	Response was submitted to DEQ on August 28, 2020.
81	3	N	LMA - Acid Etch Line	Provide ventilation system design documents to verify flow rate, bath dimensions, bath temperature, etc.	Response was submitted to DEQ on August 28, 2020.
82	1	N	TBS - Welding	Provide welding wire SDS for DEQ review.	Response was submitted to DEQ on August 28, 2020.
82	3	N	Welding	The technical document referenced was most recently updated in 1998. Please consider more recent confirmation test results to quantify welding emissions.	This document contains the most comprehensive publicly available method for calculating welding emissions for rods that are not listed in AP-42.

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Table	Note/Ref	CBI	Relevant Process	Comment	PCC Response
D1	1	N	LPC Alloy Data	Footnote states "See emissions inventory", but unredacted emissions inventory references "Information provided by client based on CBI - alloy composition data." Please provide original documents including composition data for DEQ review.	We are not able to send any materials that identify our specific alloy contents due to confidentiality concerns. However, those materials are maintained on site and can be reviewed in person by DEQ staff during regular business hours.
D1	2	N	LPC Alloy Data	Provide product alloy composition data for DEQ review.	We are not able to send any materials that identify our specific alloy contents due to confidentiality concerns. However, those materials are maintained on site and can be reviewed in person by DEQ staff during regular business hours.
D1	3	N	LPC Alloy Data	Provide technical justification for assumptions cited here.	Vacuum processes will result in minimal oxidation of elemental metals due to the lack of oxygen in the process. Oxidation is considered an impurity to the final product, and the facility works to mitigate oxidation as much as possible. The percentage of elemental metals oxidized in vacuum processes is assumed to be 3%.
[redacted]					
D2	none	N	Baghouse Data	Submit all analytical data used to generate Table D2 for DEQ review.	Response was submitted to DEQ on June 15, 2020.
D3	a	N	Master Throughput and Production Rates	Provide production data to verify the total mass of metal poured, both on an annual and daily basis.	PTE annual production is based on the currently permitted facility production limits. Short-term throughput is based on the assumption that the facility operates all year with minimal downtime.
D3	b	N	Master Throughput and Production Rates	Provide production data from LPC-T and LPC-S to verify the total mass of metal poured, both on an annual and daily PTE basis.	PTE annual production is based on the currently permitted facility production limits. Short-term throughput is based on the assumption that the facility operates all year with minimal downtime.
D3	c	N	Master Throughput and Production Rates	Provide production data from air and vacuum casting ingots used at LPC-S on an annual and daily PTE basis.	PTE annual production is based on the currently permitted facility production limits. Short-term throughput is based on the assumption that the facility operates all year with minimal downtime.
D3	d	N	Master Throughput and Production Rates	Provide annual production data and verification of annual days of operation to verify maximum daily parameter (lb/day).	PTE annual production is based on the facility projections from historical production activities. Short-term throughput is based on the assumption that the facility operates all year with minimal downtime.
D3	e	N	Master Throughput and Production Rates	Provide production data for *air casting, steel parts and ingots* and *air casting, steel ingots* to verify annual total metal poured for air casting.	Please refer to the updated emissions inventory submitted September 3, 2020 for air casting calculations.
D3	f	N	Master Throughput and Production Rates	Provide production data for *air casting parts* and *gating and air casting ingots* . Provide data supporting percent derivation for portion of metal pours that are routed to a baghouse. Provide baghouse performance data to verify emission factors used.	PTE annual production is based on the facility projections from historical production activities. Please refer to the updated emissions inventory submitted September 3, 2020 for air casting calculations. Baghouse filter specifications were submitted to DEQ on June 15, 2020.
D3	g	N	Master Throughput and Production Rates	Provide production data to verify the total mass of metal poured for *vacuum casting, steel* ; *vacuum casting, steel parts* ; and *vacuum casting, steel ingots* .	Please refer to the updated emissions inventory submitted September 3, 2020 for air casting calculations.
D3	h	N	Master Throughput and Production Rates	Provide production data to verify the annual total mass of metal poured for vacuum casting. Provide data substantiating percentages assigned for parts cast to each furnace (MC1, VF3 & 4, VMM1, VMM2).	PTE annual production is based on the currently permitted facility production limits.
D3	i	N	Master Throughput and Production Rates	Provide production data to verify metal poured for vacuum casting parts, MC1 melting.	Please refer to the updated emissions inventory submitted September 3, 2020 for MC1 calculations.
D3	j	N	Master Throughput and Production Rates	Provide annual parameter supporting data to verify maximum daily parameter calculation.	PTE annual production is based on the facility projections from historical production activities.
D3	k	N	Master Throughput and Production Rates	Provide supporting data to verify calculation of annual parameter, PTE for metal poured for parts and gating.	PTE annual production is based on the currently permitted facility production limits.
D3	l	N	Master Throughput and Production Rates	Provide supporting data to verify total dust collected and percentage of dust routed to baghouses 0585 and 1807.	Dust collected from baghouses are tracked on a monthly basis. Dust collection records for baghouse 0585 and baghouse 1807 are combined. All dust is tracked and all emissions are accounted for. The 50% split is based on engineering judgement and exhaust configuration. A summary of dust collection records for 2018 is being submitted as part of this response.
D3	m	N	Master Throughput and Production Rates	Provide supporting data to verify calculation of annual parameter, PTE for metal poured for ingots at LPC-S.	PTE annual production is based on the currently permitted facility production limits.
D3	n	N	Master Throughput and Production Rates	Provide production data to verify total metal poured for parts and gating, LPC-T PTE and LPC-T 2018.	PTE annual production is based on the currently permitted facility production limits.
D3	o	N	Master Throughput and Production Rates	Provide production data to verify the total metal poured for parts. Explain derivation of *wax component no thermal oxidation* calculation.	PTE annual production is based on the currently permitted facility production limits. The wax component, no thermal oxidation is not used in emission calculations and will be removed if any further iterations of the emissions inventory are required.
D3	p	N	Master Throughput and Production Rates	Provide production data to verify the amount of metal used for casting, parts and gating. Provide data supporting percent derivation for metal poured for gating.	2018 annual production was provided to DEQ in the 2018 annual report on August 28, 2020. PTE annual production is based on the currently permitted facility production limits. The gating/casting ratio data were provided to DEQ on August 28, 2020.
D3	q	N	Master Throughput and Production Rates	Provide production data to verify the amount of air cast superalloy heat treated. Provide data supporting derivation of percentage of air casting heat treat furnace.	PTE annual production is based on the currently permitted facility production limits. The percentage of air casting at the heat treat furnaces is based on the number of heat treat furnaces available. 75% of the heat treat furnaces are vacuum/electric and 25% are natural gas.
D3	r	N	Master Throughput and Production Rates	Provide production data to verify total vacuum cast superalloy heat treated. Provide data supporting derivation of percentage of vacuum casting heat treat furnace.	PTE annual production is based on the facility projections from historical production activities. The percentage of vacuum casting at the heat treat furnaces is based on the number of heat treat furnaces available. 75% of the heat treat furnaces are vacuum/electric and 25% are natural gas.
D3	s	N	Master Throughput and Production Rates	Provide production data to verify total metal poured for titanium castings. Provide data supporting derivation of (1) percentage of metal removed as gating and (2) percentage of titanium parts heat treated as steel.	PTE annual production is based on the currently permitted facility production limits. The gating/casting ratio data were provided to DEQ on August 28, 2020.
D3	t	N	Master Throughput and Production Rates	Provide production data to verify total metal poured for Ti facility casting. Provide data supporting derivation of (1) percentage of metal poured for gating and (2) percentage of titanium parts heat treated at Ti facility.	PTE annual production is based on the currently permitted facility production limits. The gating/casting ratio data were provided to DEQ on August 28, 2020.
D3	u	N	Master Throughput and Production Rates	Provide supporting data to verify total welding wire without waste.	We are not able to send any materials that identify our specific alloy contents due to confidentiality concerns. However, welding rod loss tables are maintained on site and can be reviewed in person by DEQ staff during regular business hours.
D3	v	N	Master Throughput and Production Rates	Provide production data to verify annual parameter, PTE for metal poured for parts and gating, LPC-T PTE and LPC-T 2018.	PTE annual production is based on the currently permitted facility production limits.
D3	w	N	Master Throughput and Production Rates	Provide manufacturer or performance data supporting reported control efficiency.	Response was submitted to DEQ on June 15, 2020.
D3	3	N	Master Throughput and Production Rates	Provide typical production activity data for DEQ review.	PTE annual production is based on the currently permitted facility production limits.
D3	4	N	Master Throughput and Production Rates	Provide all production data referenced with this footnote for DEQ review.	PTE annual production is based on the currently permitted facility production limits.
D3	5	N	Master Throughput and Production Rates	Provide waste manifests or other supporting data for amount of material collected from baghouse in 2018.	Dust collected from baghouses are tracked on a monthly basis. A summary of dust collection records for 2018 is being submitted as part of this response.

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D3	6	N	Master Throughput and Production Rates	Provide supporting calculations for estimated baghouse split.	Dust collection records for baghouse 0585 and baghouse 1807 are combined. All dust is tracked and all emissions are accounted for. The 50% split is based on engineering judgement and exhaust configuration.
D3	7	N	Master Throughput and Production Rates	Provide all production data referenced with this footnote for DEQ review.	Dust collected from baghouses are tracked on a monthly basis. PTE annual value is based on facility projections.
D3	8	N	Master Throughput and Production Rates	Provide production data to verify total metal poured for parts and gating, LPC-S.	PTE annual production is based on the currently permitted facility production limits.
D3	9	N	Master Throughput and Production Rates	Provide justification for assumption cited here.	PCC will install an additional autoclave to meet PTE projections, so the total throughput is split between two autoclaves. This assumes no increase in total autoclave throughput.
D3	10	N	Master Throughput and Production Rates	Provide production data to verify total metal poured for parts and gating, LPC-T.	PTE annual production is based on the currently permitted facility production limits.
D3	11	N	Master Throughput and Production Rates	Provide supporting calculations for density ratio cited here.	The density ratio is not used in any emission calculations and will be removed if any future iterations of the emissions inventory are required.
D3	12	N	Master Throughput and Production Rates	If this note does not correspond to any calculations in this table, remove it.	This reference does not correspond to any calculations and was deleted.
D3	13	N	Master Throughput and Production Rates	Provide monthly usage data to verify paint throughput reported.	PTE annual production is based on the currently permitted facility production limits.
D3	14	N	Master Throughput and Production Rates	Provide 2018 natural gas usage to verify apportionment for individual facility locations.	PTE annual production is based on the currently permitted facility production limits and is apportioned to individual facility locations based on 2018 usage.
D3	15	N	Master Throughput and Production Rates	Provide data to substantiate the hours of operation and downtime hours reported.	2018 annual production was provided to DEQ in the 2018 annual report on August 28, 2020. PTE annual production is based on the currently permitted facility production limits. This reference is not used in emission calculations and will be removed if any further iterations of the emissions inventory are required.
D3	18	N	Master Throughput and Production Rates	Provide air casting production data to (1) substantiate the assumption that air casting occurs up to three days per week and (2) verify annual hours and days of operation reported.	2018 annual production was provided to DEQ in the 2018 annual report on August 28, 2020. Short-term throughput based on the assumption that air casting takes place a maximum of 3 days per week based on typical activity levels during 2018.
D3	19	N	Master Throughput and Production Rates	Provide manufacturer or performance data for DEQ review.	Response was submitted to DEQ on June 15, 2020.
D3	20	N	Master Throughput and Production Rates	Provide supporting calculations for engineering estimate.	Response was submitted to DEQ on June 15, 2020.
D3	21	N	Master Throughput and Production Rates	Provide supporting calculations or performance data for assumed percentage of emissions sent to dry vac pump and baghouse with HEPA control.	The furnace uses two types of vacuum pumps. The dry pumps vent to a baghouse, the other pumps vent to atmosphere. Emissions are assumed to be split evenly among the two pump types.
D3	22	N	Master Throughput and Production Rates	Provide supporting data to verify split of natural gas between air and vacuum cast parts.	2018 annual production was provided to DEQ in the 2018 annual report on August 28, 2020. PTE annual production is based on the facility projections from historical production activities.
D3	23	N	Master Throughput and Production Rates	Provide supporting information for DEQ review.	Response was submitted to DEQ on August 28, 2020.
D3	24	N	Master Throughput and Production Rates	Provide production information to verify percentages presented for titanium parts heat treated at PCC's various facilities.	2018 annual production was provided to DEQ in the 2018 annual report on August 28, 2020. PTE annual production is based on the currently permitted facility production limits and is apportioned to individual facility locations based on 2018 usage.
D3	N/A	N	Master Throughput and Production Rates	Provide additional explanation of this process. Provide additional justification for assumption that toxics are not emitted from this baghouse.	Baghouse 6419 - Decontamination sandblast cyclone and cutting station does not process product. Only conventional steel is processed.
1	c	N	Steel - Input Process Rates and Parameters	If this note does not correspond to any calculations in this table, remove it.	This note does not correspond to any calculations and was deleted.
1	N/A	N	Steel - Input Process Rates and Parameters	Provide substantiation for excluding oxidizer downtime hours for calculated PTE.	Downtime hours were used to calculate uncontrolled emissions. The maximum of controlled or uncontrolled emissions were used for the maximum daily emission estimate. The annual emissions estimate is the sum of controlled and uncontrolled emissions.
1	3	N	Steel - Input Process Rates and Parameters	Provide production data for DEQ review.	The maximum daily downtime hours are listed as 24 hours per day as a conservative estimate. The maximum daily operational hours are listed as 24 hours per day. Annual PTE downtime hours are based on 2018 operation. 2018 was provided to DEQ in the 2018 annual report on August 28, 2020.
2	1	N	Steel - Air Casting - Parts	Provide engineering testing results.	Response was submitted to DEQ on June 15, 2020.
[redacted]					
2	1	N	Steel - Air Casting - Parts	Provide engineering estimate calculations for DEQ review.	Response was submitted to DEQ on June 15, 2020.
2	2	N	Steel - Air Casting - Parts	Provide data (i.e., manufacturer data, literature, performance data, etc.) supporting engineering judgment that 60% of emissions from Air Casting are captured and sent to Baghouse 9256.	Please refer to the updated emission inventory submitted September 3, 2020 for air casting calculations. Percentage of emissions routed to the baghouse is based on operator observation and engineering judgement based on the exhaust configuration.
3	1	N	Steel - Air Casting - Ingots	Provide engineering testing results.	Response was submitted to DEQ on June 15, 2020.
3	2	N	Steel - Air Casting - Ingots	Provide data (i.e., manufacturer data, literature, performance data, etc.) supporting engineering judgment that 60% of emissions from Air Casting are captured and sent to Baghouse 9256.	Please refer to the updated emission inventory submitted September 3, 2020 for air casting calculations. Percentage of emissions routed to the baghouse is based on operator observation and engineering judgement based on the exhaust configuration.
[redacted]					

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[redacted]					
4	1	N	Steel - Vaccum Casting - Parts, VF3 & VF4	Provide supporting data (i.e., manufacturer data, performance data, etc.) for control efficiencies used in these calculations.	The vacuum casting particulate emission rate is presented as a conservative estimate. The only casting emission factors publicly available are those representative of open casting processes, not vacuum casting. Emissions from the vacuum furnaces are passed through the vacuum pumps, which are evacuating the vacuum chamber prior to casting, and maintaining a low vacuum during the casting process. As a result, emissions are expected to be minimal (minimal venting). The electric induction furnace melting, pouring and casting, and casting cooling PM emission factors from AP-42 Chapter 12.13 Table 12.13-2 were used. 95% control was applied to the melting PM emission factor due to minimal venting in the vacuum chamber. There is no venting in the vacuum chamber during the pouring process, so 100% control was applied to the pouring and casting PM10 emission factor. The mold configuration allows for minimal venting, so a 95% control was applied to the cooling PM10 emission factor, with an additional 99% control because the part is immediately covered upon removal from the furnace. The particulate emissions are conservatively assumed to be 100% metals emissions, which are speciated based on conservative alloy content data.
4	1	N	Steel - Vaccum Casting - Parts, VF3 & VF4	Provide supporting calculations for adjustment of AP-42 emission factor for electric induction furnace to reflect the vacuum casting process.	The vacuum casting particulate emission rate is presented as a conservative estimate. The only casting emission factors publicly available are those representative of open casting processes, not vacuum casting. Emissions from the vacuum furnaces are passed through the vacuum pumps, which are evacuating the vacuum chamber prior to casting, and maintaining a low vacuum during the casting process. As a result, emissions are expected to be minimal (minimal venting). The electric induction furnace melting, pouring and casting, and casting cooling PM emission factors from AP-42 Chapter 12.13 Table 12.13-2 were used as a starting point. 95% control was applied to the melting PM emission factor due to minimal venting in the vacuum chamber. There is no venting in the vacuum chamber during the pouring process, so 100% control was applied to the pouring and casting PM10 emission factor. The mold configuration allows for minimal venting, so a 95% control was applied to the cooling PM10 emission factor, with an additional 99% control because the part is immediately covered upon removal from the furnace. The particulate emissions are conservatively assumed to be 100% metals emissions, which are speciated based on conservative alloy content data.
[redacted]					
5	3	N	Steel - Vacuum Casting - Parts MC1	Provide alloy composition data for DEQ review.	We are not able to send any materials that identify our specific alloy contents due to confidentiality concerns. However, those materials are maintained on site and can be reviewed in person by DEQ staff during regular business hours.
5	4	N	Steel - Vacuum Casting - Parts MC1	Provide alloy composition data for DEQ review.	We are not able to send any materials that identify our specific alloy contents due to confidentiality concerns. However, those materials are maintained on site and can be reviewed in person by DEQ staff during regular business hours.
[redacted]					
5	1	N	Steel - Vacuum Casting - Parts MC1	Provide supporting data (i.e., manufacturer data, performance data, etc.) for control efficiencies used in these calculations.	The vacuum casting particulate emission rate is presented as a conservative estimate. The only casting emission factors publicly available are those representative of open casting processes, not vacuum casting. Emissions from the vacuum furnaces are passed through the vacuum pumps, which are evacuating the vacuum chamber prior to casting, and maintaining a low vacuum during the casting process. As a result, emissions are expected to be minimal (minimal venting). The electric induction furnace melting, pouring and casting, and casting cooling PM emission factors from AP-42 Chapter 12.13 Table 12.13-2 were used. 95% control was applied to the melting PM emission factor due to minimal venting in the vacuum chamber. There is no venting in the vacuum chamber during the pouring process, so 100% control was applied to the pouring and casting PM10 emission factor. The mold configuration allows for minimal venting, so a 95% control was applied to the cooling PM10 emission factor, with an additional 99% control because the part is immediately covered upon removal from the furnace. The particulate emissions are conservatively assumed to be 100% metals emissions, which are speciated based on conservative alloy content data.

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5	1	N	Steel - Vacuum Casting - Parts MC1	Provide supporting calculations for adjustment of AP-42 emission factor for electric induction furnace to reflect the vacuum casting process.	The vacuum casting particulate emission rate is presented as a conservative estimate. The only casting emission factors publicly available are those representative of open casting processes, not vacuum casting. Emissions from the vacuum furnaces are passed through the vacuum pumps, which are evacuating the vacuum chamber prior to casting, and maintaining a low vacuum during the casting process. As a result, emissions are expected to be minimal (minimal venting). The electric induction furnace melting, pouring and casting, and casting cooling PM emission factors from AP-42 Chapter 12.13 Table 12.13-2 were used as a starting point. 95% control was applied to the melting PM emission factor due to minimal venting in the vacuum chamber. There is no venting in the vacuum chamber during the pouring process, so 100% control was applied to the pouring and casting PM10 emission factor. The mold configuration allows for minimal venting, so a 95% control was applied to the cooling PM10 emission factor, with an additional 99% control because the part is immediately covered upon removal from the furnace. The particulate emissions are conservatively assumed to be 100% metals emissions, which are speciated based on conservative alloy content data.
[redacted]					
6	1	N	Steel - Vacuum Casting - Ingots VMM1	Provide supporting data (i.e., manufacturer data, performance data, etc.) for control efficiencies used in these calculations.	The vacuum casting particulate emission rate is presented as a conservative estimate. The only casting emission factors publicly available are those representative of open casting processes, not vacuum casting. Emissions from the vacuum furnaces are passed through the vacuum pumps, which are evacuating the vacuum chamber prior to casting, and maintaining a low vacuum during the casting process. As a result, emissions are expected to be minimal (minimal venting). The electric induction furnace melting, pouring and casting, and casting cooling PM emission factors from AP-42 Chapter 12.13 Table 12.13-2 were used. 95% control was applied to the melting PM emission factor due to minimal venting in the vacuum chamber. There is no venting in the vacuum chamber during the pouring or cooling processes, so 100% control was applied to the pouring and casting PM10 emission factor and the cooling PM10 emission factor. The particulate emissions are conservatively assumed to be 100% metals emissions, which are speciated based on conservative alloy content data.
6	1	N	Steel - Vacuum Casting - Ingots VMM1	Provide supporting calculations for adjustment of AP-42 emission factor for electric induction furnace to reflect the vacuum casting process.	The vacuum casting particulate emission rate is presented as a conservative estimate. The only casting emission factors publicly available are those representative of open casting processes, not vacuum casting. Emissions from the vacuum furnaces are passed through the vacuum pumps, which are evacuating the vacuum chamber prior to casting, and maintaining a low vacuum during the casting process. As a result, emissions are expected to be minimal (minimal venting). The electric induction furnace melting, pouring and casting, and casting cooling PM emission factors from Chapter 12.13 Table 12.13-2 were used as a starting point. 95% control was applied to the melting PM emission factor due to minimal venting in the vacuum chamber. There is no venting in the vacuum chamber during the pouring or cooling processes, so 100% control was applied to the pouring and casting PM10 emission factor and the cooling PM10 emission factor. The particulate emissions are conservatively assumed to be 100% metals emissions, which are speciated based on conservative alloy content data.
[redacted]					

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[redacted]					
7	1	N	Steel - Vacuum Casting - Ingots VMM2	Provide supporting calculations for adjustment of AP-42 emission factor for electric induction furnace to reflect the vacuum casting process.	The vacuum casting particulate emission rate is presented as a conservative estimate. The only casting emission factors publicly available are those representative of open casting processes, not vacuum casting. Emissions from the vacuum furnaces are passed through the vacuum pumps, which are evacuating the vacuum chamber prior to casting, and maintaining a low vacuum during the casting process. As a result, emissions are expected to be minimal (minimal venting). The electric induction furnace melting, pouring and casting, and casting cooling PM emission factors from AP-42 Chapter 12.13 Table 12.13-2 were used as a starting point. 95% control was applied to the melting PM emission factor due to minimal venting in the vacuum chamber. There is no venting in the vacuum chamber during the pouring or cooling processes, so 100% control was applied to the pouring and casting PM10 emission factor and the cooling PM10 emission factor. The particulate emissions are conservatively assumed to be 100% metals emissions, which are speciated based on conservative alloy content data.
[redacted]					
7	1	N	Steel - Vacuum Casting - Ingots VMM2	Provide supporting data (i.e., manufacturer data, performance data, etc.) for control efficiencies used in these calculations.	The vacuum casting particulate emission rate is presented as a conservative estimate. The only casting emission factors publicly available are those representative of open casting processes, not vacuum casting. Emissions from the vacuum furnaces are passed through the vacuum pumps, which are evacuating the vacuum chamber prior to casting, and maintaining a low vacuum during the casting process. As a result, emissions are expected to be minimal (minimal venting). The electric induction furnace melting, pouring and casting, and casting cooling PM emission factors from AP-42 Chapter 12.13 Table 12.13-2 were used. 95% control was applied to the melting PM emission factor due to minimal venting in the vacuum chamber. There is no venting in the vacuum chamber during the pouring or cooling processes, so 100% control was applied to the pouring and casting PM10 emission factor and the cooling PM10 emission factor. The particulate emissions are conservatively assumed to be 100% metals emissions, which are speciated based on conservative alloy content data.
8	2	N	Steel - Hot Top	Provide information supporting engineering estimate for DEQ review.	Hot Top is the "molten metal insulation" applied after casting. The purpose of the hot top is to melt and create an insulative layer on openings in the mold after casting by way of a thermite reaction. Some smoke is generated by the instantaneous reaction, and it is conservatively estimated that this smoke represents 1% of the total mass of hot top used.
[redacted]					
8	1	N	Steel - Hot Top	Provide product SDS for DEQ review.	Response was submitted to DEQ on August 28, 2020.
[redacted]					
9	N/A	N	Steel - Autoclave and Wax Reclaim	Provide supporting data (i.e., engineering testing, etc.) demonstrating the TACs listed are representative of all TAC emissions from autoclave and wax reclaim activities.	Response was submitted to DEQ on June 15, 2020.
[redacted]					
10	2	N	Steel - Investing Baghouse 3804	Provide 2018 baghouse dust analysis reports for DEQ review.	Response was submitted to DEQ on June 15, 2020.
10	d	N	Steel - Investing Baghouse 3804	Provide supporting data to verify % of PM emitted.	Response was submitted to DEQ on June 15, 2020.

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10	e	N	Steel - Investing Baghouse 3804	Provide supporting data to verify % of PM emitted.	Response was submitted to DEQ on June 15, 2020.
10	b	N	Steel - Investing Baghouse 3804	Provide dust collection data for DEQ review.	Dust collected from baghouses are tracked on a monthly basis. Short-term collection is based on the assumption that the facility operates all year with minimal downtime.
10	c	N	Steel - Investing Baghouse 3804	Provide dust collection data for DEQ review.	Dust collected from baghouses are tracked on a monthly basis. PTE annual value is based on facility projections.
10	1	N	Steel - Investing Baghouse 3804	Provide supporting data (i.e., manufacturer data, performance data, etc.) for control efficiency reported for this baghouse.	Response was submitted to DEQ on June 15, 2020.
11	2	N	Steel - Investing	Provide applicable production data to verify maximum daily and annual hydrochloric acid usage rates.	PTE annual production is based on the currently permitted facility production limits. Short-term throughput is based on the assumption that the facility operates all year with minimal downtime.
11	1	N	Steel - Investing	Provide supporting calculations/technical information for this emission factor for DEQ review.	HCl is used to modulate the pH of the slurry to ensure the slurry has the correct consistency for shell building. The acid is not a volatile constituent (such as an alcohol), and is not intended to flash off, but reacts after it is added into the slurry. Therefore, emissions were conservatively assumed to be 5% of usage.
11	3	N	Steel - Investing	Provide product SDS for DEQ review.	Response was submitted to DEQ on August 28, 2020.
12	1	N	Steel - Burnout Ovens - No Thermal Oxidation - Wax Components	Provide burnout oven emissions testing report for DEQ review.	Response was submitted to DEQ on June 15, 2020.
13	2	N	Steel - Burnout Ovens - Thermal Oxidation - Non Wax Components	Provide production data.	PTE annual production is based on the currently permitted facility production limits.
13	1	N	Steel - Burnout Ovens - Thermal Oxidation - Non Wax Components	Provide data and calculations to support engineering estimate referenced.	Response was submitted to DEQ on June 15, 2020.
14	1	N	Steel - Burnout Ovens - Thermal Oxidation - Latex	Provide information supporting engineering estimate for DEQ review.	Response was submitted to DEQ on June 15, 2020.
15	1	N	Steel - Acid Etch Line	Provide SDS or relevant information to confirm percent weight in solution reported for TACs used in acid etch line.	Response was submitted to DEQ on August 28, 2020.
16	2	N	Steel - Baghouse 0585	Listed products generally account for ~9.5% of dust components. Provide all baghouse dust analysis reports for DEQ review.	Response was submitted to DEQ on June 15, 2020.
16	1	N	Steel - Baghouse 0585	Provide supporting data (i.e., manufacturer data, performance data, etc.) for removal efficiencies used in these calculations.	Response was submitted to DEQ on June 15, 2020.
17	2	N	Steel - Baghouse 1659	Provide referenced baghouse dust analysis reports for DEQ review.	Response was submitted to DEQ on June 15, 2020.
18	2	N	Steel - Baghouse 1807	Provide referenced baghouse dust analysis reports for DEQ review.	Response was submitted to DEQ on June 15, 2020.
19	2	N	Steel - Baghouse 2214	Provide referenced baghouse dust analysis reports for DEQ review.	Response was submitted to DEQ on June 15, 2020.
20	2	N	Steel - Baghouse 5549	Provide referenced baghouse dust analysis reports for DEQ review.	Response was submitted to DEQ on June 15, 2020.
21	2	N	Steel - Baghouse 6417	Provide referenced baghouse dust analysis reports for DEQ review.	Response was submitted to DEQ on June 15, 2020.
22	2	N	Steel - Baghouses 6532 - HEPA	Provide referenced baghouse dust analysis reports for DEQ review.	Response was submitted to DEQ on June 15, 2020.
23	2	N	Steel - Baghouses 6671	Provide referenced baghouse dust analysis reports for DEQ review.	Response was submitted to DEQ on June 15, 2020.
24	2	N	Steel - Baghouse 8687	Provide referenced baghouse dust analysis reports for DEQ review.	Response was submitted to DEQ on June 15, 2020.
25	2	N	Steel - Baghouse 8901 - HEPA	Provide referenced baghouse dust analysis reports for DEQ review.	Response was submitted to DEQ on June 15, 2020.
26	2	N	Steel - Baghouse 9115	Provide referenced baghouse dust analysis reports for DEQ review.	Response was submitted to DEQ on June 15, 2020.
27	a	N	Steel Baghouse 9196 - HEPA	Provide supporting data (i.e., manufacturer data, performance data, etc.) for removal efficiencies used in these calculations.	Response was submitted to DEQ on June 15, 2020.
27	2	N	Steel Baghouse 9196 - HEPA	Provide referenced baghouse dust analysis reports for DEQ review.	Response was submitted to DEQ on June 15, 2020.
28	2	N	Steel - Baghouse 9203 - HEPA	Provide referenced baghouse dust analysis reports for DEQ review.	Response was submitted to DEQ on June 15, 2020.

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28	b	N	Steel - Baghouse 9203 - HEPA	Provide documentation supporting the maximum daily amount of dust collected from this baghouse.	Dust collected from baghouses are tracked on a monthly basis. Short-term collection is based on the assumption that the facility operates all year with minimal downtime.
28	c	N	Steel - Baghouse 9203 - HEPA	Provide documentation supporting the annual amount of dust collected from this baghouse.	Dust collected from baghouses are tracked on a monthly basis. PTE annual value is based on facility projections.
28	a	N	Steel - Baghouse 9203 - HEPA	Provide documentation for the control efficiency reported for the baghouse w/HEPA.	Response was submitted to DEQ on June 15, 2020.
29	2	N	Steel - Baghouse 9255 - HEPA	Provide referenced baghouse dust analysis reports for DEQ review.	Response was submitted to DEQ on June 15, 2020.
29	b	N	Steel - Baghouse 9255 - HEPA	Provide documentation supporting the maximum daily amount of dust collected from this baghouse.	Dust collected from baghouses are tracked on a monthly basis. Short-term collection is based on the assumption that the facility operates all year with minimal downtime.
29	c	N	Steel - Baghouse 9255 - HEPA	Provide documentation supporting the annual amount of dust collected from this baghouse.	Dust collected from baghouses are tracked on a monthly basis. PTE annual value is based on facility projections.
29	a	N	Steel - Baghouse 9255 - HEPA	Provide documentation for the control efficiency reported for the baghouse w/HEPA.	Response was submitted to DEQ on June 15, 2020.
30	2	N	Steel - Baghouse 9256 - HEPA	Provide referenced baghouse dust analysis reports for DEQ review.	Response was submitted to DEQ on June 15, 2020.
30	b	N	Steel - Baghouse 9256 - HEPA	Provide documentation supporting the maximum daily amount of dust collected from this baghouse.	Please refer to the updated emissions inventory submitted September 3, 2020. Dust collected from baghouses are tracked on a monthly basis. Short-term collection is based on the assumption that the facility operates all year with minimal downtime.
30	c	N	Steel - Baghouse 9256 - HEPA	Provide documentation supporting the annual amount of dust collected from this baghouse.	Please refer to the updated emissions inventory submitted September 3, 2020. Dust collected from baghouses are tracked on a monthly basis. PTE annual value is based on facility projections.
30	a	N	Steel - Baghouse 9256 - HEPA	Provide documentation for the control efficiency reported for the baghouse w/HEPA.	Response was submitted to DEQ on June 15, 2020.
31	2	N	Steel - Baghouse 9670 - HEPA	Demonstrate that the processes routed to each of these baghouses are substantially similar.	Please refer to the updated emissions inventory submitted September 3, 2020.
31	b	N	Steel - Baghouse 9670 - HEPA	Provide documentation supporting the maximum daily amount of dust collected from this baghouse.	Please refer to the updated emissions inventory submitted September 3, 2020. Dust collected from baghouses are tracked on a monthly basis. Short-term collection is based on the assumption that the facility operates all year with minimal downtime.
31	c	N	Steel - Baghouse 9670 - HEPA	Provide documentation supporting the annual amount of dust collected from this baghouse.	Please refer to the updated emissions inventory submitted September 3, 2020. Dust collected from baghouses are tracked on a monthly basis. PTE annual value is based on facility projections.
31	a	N	Steel - Baghouse 9670 - HEPA	Provide documentation for the control efficiency reported for the baghouse w/HEPA.	Response was submitted to DEQ on June 15, 2020.
32	2	N	Steel - Fugitives	Provide justification for the assumption that fugitive emissions are equivalent to 1% of the controlled emissions from the baghouse.	The estimated emissions represent commingled emissions within the building envelope. Emissions are estimated for the TEU's in the emissions inventory, so estimating 1% of emissions from TEUs with baghouses as being commingled emissions within the building is a conservative estimate.
33	1	N	Steel - Heat Treat - Air Cast Parts - Vacuum Furnace	Provide data and calculations to substantiate engineering estimate referenced.	Response was submitted to DEQ on August 28, 2020.
34	1	N	Steel - Heat Treat - Air Cast Parts - Natural Gas Furnace	Provide data and calculations to substantiate engineering estimate referenced.	Response was submitted to DEQ on August 28, 2020.
35	1	N	Steel - Heat Treat - Vacuum Cast Parts - Vacuum Furnace	Provide data and calculations to substantiate engineering estimate referenced.	Response was submitted to DEQ on August 28, 2020.
36	1	N	Steel - Heat Treat - Vacuum Cast Parts - Natural Gas Furnace	Provide data and calculations to substantiate engineering estimate referenced.	Response was submitted to DEQ on August 28, 2020.
37	1	N	Steel - Heat Treat - Titanium Vacuum Cast	Provide data and calculations to substantite engineering estimate referenced.	Response was submitted to DEQ on August 28, 2020.
38	1	N	Steel - Welding	Provide product SDS for DEQ review.	Response was submitted to DEQ on August 28, 2020.
38	5	N	Steel - Welding	The technical document referenced was most recently updated in 1998. Please consider more recent confirmation test results to quantify welding emissions.	This document contains the most comprehensive publicly available method for calculating welding emissions for rods that are not listed in AP-42.
39	1	N	Steel - Wax Fugitives	Provide product SDS for DEQ review.	Response was submitted to DEQ on August 28, 2020.
40	1	N	Steel - Alloy Service Center Ink	Provide product SDS for DEQ review.	Response was submitted to DEQ on August 28, 2020.
40	N/A	N	Steel - Alloy Service Center Ink	Please clarify why ink is referenced in PTE calculations and paint is referenced in 2018 calculations.	There was a change in marking method. Paint was used in 2018, and ink will be used going forward.

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Table	Note/Ref	CBI	Relevant Process	Comment	PCC Response
42	3	N	Ti - Input Process Rates and Parameters	Please clarify what this footnote means. If it references supporting information not provided in the original submittal, please provide that for DEQ review.	Autoclave emissions are based on metal poured for parts, since metal displaces what was in the mold.
42	4	N	Ti - Input Process Rates and Parameters	Provide production data for DEQ review.	PTE annual production is based on the currently permitted facility production limits.
43	1	N	Ti - Vacuum Casting VF1 and VF2	Provide basis for control efficiency assumptions applied to AP-42 emission factors.	The vacuum casting particulate emission rate is presented as a conservative estimate. The only casting emission factors publicly available are those representative of open casting processes, not vacuum casting. Emissions from the vacuum furnaces are passed through the vacuum pumps, which are evacuating the vacuum chamber prior to casting, and maintaining a low vacuum during the casting process. As a result, emissions are expected to be minimal (minimal venting). The electric induction furnace melting, pouring and casting, and casting cooling PM emission factors from AP-42 Chapter 12.13 Table 12.13-2 were used. 95% control was applied to the melting PM emission factor due to minimal venting in the vacuum chamber. There is no venting in the vacuum chamber during the pouring or cooling processes, so 100% control was applied to the pouring and casting PM10 emission factor and the cooling PM10 emission factor. The particulate emissions are conservatively assumed to be 100% metals emissions, which are speciated based on conservative alloy content data.
[redacted]					
44	1	N	Ti - Vacuum Casting	Provide basis for control efficiency assumptions applied to AP-42 emission factors.	The vacuum casting particulate emission rate is presented as a conservative estimate. The only casting emission factors publicly available are those representative of open casting processes, not vacuum casting. Emissions from the vacuum furnaces are passed through the vacuum pumps, which are evacuating the vacuum chamber prior to casting, and maintaining a low vacuum during the casting process. As a result, emissions are expected to be minimal (minimal venting). The electric induction furnace melting, pouring and casting, and casting cooling PM emission factors from AP-42 Chapter 12.13 Table 12.13-2 were used. 95% control was applied to the melting PM emission factor due to minimal venting in the vacuum chamber. There is no venting in the vacuum chamber during the pouring or cooling processes, so 100% control was applied to the pouring and casting PM10 emission factor and the cooling PM10 emission factor. The particulate emissions are conservatively assumed to be 100% metals emissions, which are speciated based on conservative alloy content data.
45	1	N	Ti - Autoclave and Wax Reclaim	Provide supporting calculations/technical information for this emission factor for DEQ review.	Response was submitted to DEQ on June 15, 2020.
46	2	N	Ti - Investing Baghouse 3007- HEPA	Provide referenced baghouse dust analysis reports for DEQ review.	Response was submitted to DEQ on June 15, 2020.
47	2	N	Ti - Investing Baghouse 3342 - HEPA	Provide referenced baghouse dust analysis reports for DEQ review.	Response was submitted to DEQ on June 15, 2020.
48	2	N	Ti - TI Investing - RCO	Provide supporting calculations/technical information for DEQ review.	HCl is used to modulate the pH of the slurry to ensure the slurry has the correct consistency for shell building. The acid is not a volatile constituent (such as an alcohol), and is not intended to flash off, but reacts after it is added into the slurry. Therefore, emissions were conservatively assumed to be 5% of usage.
48	3	N	Ti - TI Investing - RCO	Provide SDS for DEQ review.	Response was submitted to DEQ on August 28, 2020.
49	1	N	Ti - Burnout Ovens - No Thermal Oxidation - Wax Components	Provide burnout oven emission testing results for DEQ review.	Response was submitted to DEQ on June 15, 2020.
50	1	N	Ti - Burnout Ovens - with Thermal Oxidation - Non Wax Components	Provide supporting calculations/technical information for this emission factor for DEQ review.	Response was submitted to DEQ on June 15, 2020.
51	3	N	Ti - Acid Etch Line	Provide supporting calculations/technical information for this emission factor for DEQ review.	Emissions from acid etch tanks were estimated using a pool evaporation calculation.
52	2	N	Ti - Baghouse 3006	Provide referenced baghouse dust analysis reports for DEQ review.	Response was submitted to DEQ on June 15, 2020.
53	2	N	Ti - Baghouse 3747 - ULPA	Provide referenced baghouse dust analysis reports for DEQ review.	Response was submitted to DEQ on June 15, 2020.
53	a	N	Ti - Baghouse 3747 - ULPA	Provide supporting data (i.e., manufacturer data, performance data, etc.) for removal efficiencies used in these calculations.	Response was submitted to DEQ on June 15, 2020.
54	2	N	Ti - Baghouse 3930 - ULPA	Provide referenced baghouse dust analysis reports for DEQ review.	Response was submitted to DEQ on June 15, 2020.
54	a	N	Ti - Baghouse 3930 - ULPA	Provide supporting data (i.e., manufacturer data, performance data, etc.) for removal efficiencies used in these calculations.	Response was submitted to DEQ on June 15, 2020.
55	2	N	Ti - Baghouse 6419	This table appears to be missing from the submittal. Please add it to the revised submission and provide supporting materials consistent with other information requests listed here.	Baghouse 6419 - Decontamination sandblast cyclone and cutting station does not process product. Only conventional steel is processed.
56	2	N	Ti - Baghouse 7094	Provide referenced baghouse dust analysis reports for DEQ review.	Response was submitted to DEQ on June 15, 2020.
56	a	N	Ti - Baghouse 7094	Provide supporting data (i.e., manufacturer data, performance data, etc.) for removal efficiencies used in these calculations.	Response was submitted to DEQ on June 15, 2020.
57	2	N	Ti - Baghouse 8150	Provide referenced baghouse dust analysis reports for DEQ review.	Response was submitted to DEQ on June 15, 2020.
57	a	N	Ti - Baghouse 8150	Provide supporting data (i.e., manufacturer data, performance data, etc.) for removal efficiencies used in these calculations.	Response was submitted to DEQ on June 15, 2020.
58	2	N	TI - Fugitive	Provide justification for the assumption that fugitive emissions are equivalent to 1% of the controlled emissions from the baghouse.	The estimated emissions represent commingled emissions within the building envelope. Emissions are estimated for the TEU's in the emissions inventory, so estimating 1% of emissions from TEUs with baghouses as being commingled emissions within the building is a conservative estimate.
[redacted]					
59	1	N	Ti - Vacuum Heat Treat	Provide supporting documentation and calculation methods for engineering estimate.	Response was submitted to DEQ on August 28, 2020.
60	1	N	Ti - Welding	Provide product SDS for DEQ review.	Response was submitted to DEQ on August 28, 2020.

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Table	Note/Ref	CBI	Relevant Process	Comment	PCC Response
60	3-5	N	Ti-Welding	The technical document referenced was most recently updated in 1998. Please consider more recent confirmation test results to quantify welding emissions.	This document contains the most comprehensive publicly available method for calculating welding emissions for rods that are not listed in AP-42.
61	1	N	Ti-Grinding	Provide supporting calculations substantiating the engineering estimate to determine water curtain removal efficiency.	Response was submitted to DEQ on June 15, 2020.
62	4	N	Ti-Wax Fugitives	Provide production data for DEQ review.	PTE annual production is based on the currently permitted facility production limits.
62	3	N	Ti-Wax Fugitives	The density of water is referenced at 32 F. Please provide documentation to verify the temperature at which the Ti-Wax process occurs.	32 F was used as a conservative assumption. The density of water at 32 F is higher than at ambient temperature which results in higher emission estimates.
62	1	N	Ti-Wax Fugitives	Provide product SDS for DEQ review.	Response was submitted to DEQ on August 28, 2020.
62	2	N	Ti-Wax Fugitives	Provide product SDS for DEQ review.	Response was submitted to DEQ on August 28, 2020.
63	2	N	Ti-Alpha Case Removal	Clarify why these operations based on 24/8760 hours when other operations are based on expected operations levels.	The tank is full on a continuous basis and is assumed to generate emissions on a 24/8760 basis.
63	1	N	Ti-Alpha Case Removal	Please provide the previous testing data used to determine the emission factors.	Response was submitted to DEQ on June 15, 2020.
65	1	N	Satellite - Input Process Rates and Parameters	Provide explanation for exclusion of LMA natural gas usage from PTE calculations.	LPC facility wide natural gas combustion TAC emission estimates are included in Table 86 of the emissions inventory submitted on September 3, 2020. Natural gas was apportioned to individual facility locations based on 2018 usage.
65	2	N	Satellite - Input Process Rates and Parameters	Provide supporting data (i.e., manufacturer data, performance data, etc.) for control efficiencies reported.	Response was submitted to DEQ on June 15, 2020.
66	2	N	MAP - Baghouse 0802	Provide referenced baghouse dust analysis reports for DEQ review.	Response was submitted to DEQ on June 15, 2020.
66	1	N	MAP - Baghouse 0802	Provide documentation supporting the annual amount of dust collected from this baghouse.	Dust collected from baghouses are tracked on a monthly basis. PTE annual value is based on facility projections. Short-term collection is based on the assumption that the facility operates all year with minimal downtime.
67	2	N	MAP - Baghouse 0803	Provide referenced baghouse dust analysis reports for DEQ review.	Response was submitted to DEQ on June 15, 2020.
67	1	N	MAP - Baghouse 0803	Provide documentation supporting the annual amount of dust collected from this baghouse.	Dust collected from baghouses are tracked on a monthly basis. PTE annual value is based on facility projections. Short-term collection is based on the assumption that the facility operates all year with minimal downtime.
68	2	N	MAP - Baghouse 9031	Provide referenced baghouse dust analysis reports for DEQ review.	Response was submitted to DEQ on June 15, 2020.
68	1	N	MAP - Baghouse 9031	Provide documentation supporting the annual amount of dust collected from this baghouse.	Dust collected from baghouses are tracked on a monthly basis. PTE annual value is based on facility projections. Short-term collection is based on the assumption that the facility operates all year with minimal downtime.
69	2	N	MAP - Fugitive	Provide justification for the assumption that fugitive emissions are equivalent to 1% of the controlled emissions from the baghouse.	The estimated emissions represent commingled emissions within the building envelope. Emissions are estimated for the TEU's in the emissions inventory, so estimating 1% of emissions from TEUs with baghouses as being commingled emissions within the building is a conservative estimate.
69	N/A	N	MAP - Fugitive	Provide supporting emissions estimate calculations and analyses for DEQ review.	The estimated emissions represent commingled emissions within the building envelope. Emissions are estimated for the TEU's in the emissions inventory, so estimating 1% of emissions from TEUs with baghouses as being commingled emissions within the building is a conservative estimate.
70	2	N	LSBS I - Baghouse 5062 - ULPA	Provide referenced baghouse dust analysis reports for DEQ review.	Response was submitted to DEQ on June 15, 2020.
70	1	N	LSBS I - Baghouse 5062 - ULPA	Provide documentation supporting the annual amount of dust collected from this baghouse.	Dust collected from baghouses are tracked on a monthly basis. PTE annual value is based on facility projections. Short-term collection is based on the assumption that the facility operates all year with minimal downtime.
70	a	N	LSBS I - Baghouse 5062 - ULPA	Provide supporting data (i.e., manufacturer data, performance data, etc.) for control efficiency reported.	Response was submitted to DEQ on June 15, 2020.
71	2	N	LSBS I - Baghouse 6565 - ULPA	Provide referenced baghouse dust analysis reports for DEQ review.	Response was submitted to DEQ on June 15, 2020.
71	1	N	LSBS I - Baghouse 6565 - ULPA	Provide documentation supporting the annual amount of dust collected from this baghouse.	Dust collected from baghouses are tracked on a monthly basis. PTE annual value is based on facility projections. Short-term collection is based on the assumption that the facility operates all year with minimal downtime.
71	a	N	LSBS I - Baghouse 6565 - ULPA	Provide supporting data (i.e., manufacturer data, performance data, etc.) for control efficiency reported.	Response was submitted to DEQ on June 15, 2020.
72	2	N	LSBS I - Fugitive	Provide justification for the assumption that fugitive emissions are equivalent to 1% of the controlled emissions from the baghouse.	The estimated emissions represent commingled emissions within the building envelope. Emissions are estimated for the TEU's in the emissions inventory, so estimating 1% of emissions from TEUs with baghouses as being commingled emissions within the building is a conservative estimate.
73	3	N	LSBS I - Welding	The technical document referenced was most recently updated in 1998. Please consider more recent confirmation test results to quantify welding emissions.	This document contains the most comprehensive publicly available method for calculating welding emissions for rods that are not listed in AP-42.
73	4	N	LSBS I - Welding	The technical document referenced was most recently updated in 1998. Please consider more recent confirmation test results to quantify welding emissions.	This document contains the most comprehensive publicly available method for calculating welding emissions for rods that are not listed in AP-42.
73	5	N	LSBS I - Welding	The technical document referenced was most recently updated in 1998. Please consider more recent confirmation test results to quantify welding emissions.	This document contains the most comprehensive publicly available method for calculating welding emissions for rods that are not listed in AP-42.
73	1	N	LSBS I - Welding	Provide welding wire SDSs for DEQ review.	Response was submitted to DEQ on August 28, 2020.
74	2	N	LSBS II - Baghouse 5365 - HEPA	Provide referenced baghouse dust analysis reports for DEQ review.	Response was submitted to DEQ on June 15, 2020.
74	a	N	LSBS II - Baghouse 5365 - HEPA	Provide manufacturer or performance data supporting reported control efficiency.	Response was submitted to DEQ on June 15, 2020.
74	1	N	LSBS II - Baghouse 5365	Provide documentation supporting the annual amount of dust collected from this baghouse.	Dust collected from baghouses are tracked on a monthly basis. PTE annual value is based on facility projections. Short-term collection is based on the assumption that the facility operates all year with minimal downtime.
75	2	N	LSBS II - Baghouse 5457	Provide referenced baghouse dust analysis reports for DEQ review.	Response was submitted to DEQ on June 15, 2020.
75	a	N	LSBS II - Baghouse 5457	Provide manufacturer or performance data supporting reported control efficiency.	Response was submitted to DEQ on June 15, 2020.
75	1	N	LSBS II - Baghouse 5457	Provide documentation supporting the annual amount of dust collected from this baghouse.	Dust collected from baghouses are tracked on a monthly basis. PTE annual value is based on facility projections. Short-term collection is based on the assumption that the facility operates all year with minimal downtime.
76	2	N	LSBS II - Baghouse 6418	Provide referenced baghouse dust analysis reports for DEQ review.	Response was submitted to DEQ on June 15, 2020.
76	a	N	LSBS II - Baghouse 6418	Provide manufacturer or performance data supporting reported control efficiency.	Response was submitted to DEQ on June 15, 2020.
76	1	N	LSBS II - Baghouse 6418	Provide documentation supporting the annual amount of dust collected from this baghouse.	Dust collected from baghouses are tracked on a monthly basis. PTE annual value is based on facility projections. Short-term collection is based on the assumption that the facility operates all year with minimal downtime.
77	2	N	LSBS II - Fugitive Emissions	Provide justification for the assumption that fugitive emissions are equivalent to 1% of the controlled emissions from the baghouse.	The estimated emissions represent commingled emissions within the building envelope. Emissions are estimated for the TEU's in the emissions inventory, so estimating 1% of emissions from TEUs with baghouses as being commingled emissions within the building is a conservative estimate.
77	1	N	LSBS II - Fugitive Emissions	Confirm that values are the sum of LSBS II baghouse estimated emissions, not LSBS I. Revise this note to reflect LSBS II emissions.	The language in the reference was revised to reflect LSBS II emissions.

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PTE TAC Emission Estimates
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Table	Note/Ref	CBI	Relevant Process	Comment	PCC Response
78	1	N	LSBS II - Welding	Provide data supporting derivation of percentage of welding wire wasted.	Welding rod loss determination spreadsheet contains Confidential Business Information. The data are maintained on site and can be reviewed in person by DEQ staff during regular business hours.
78	8	N	LSBS II - Welding	Provide product SDS for DEQ review.	Response was submitted to DEQ on August 28, 2020.
78	5	N	LSBS II - Welding	The technical document referenced was most recently updated in 1998. Please consider more recent confirmation test results to quantify welding emissions.	This document contains the most comprehensive publicly available method for calculating welding emissions for rods that are not listed in AP-42.
78	4	N	LSBS II - Welding	Provide welding wire SDS for DEQ review.	Response was submitted to DEQ on August 28, 2020.
78	6	N	LSBS II - Welding	Provide data substantiating assumption that 75% of welding emissions are controlled by baghouses 5365 and 6418. Provide data substantiating the statement that that the building of interest is an "effective enclosure" with "minimal venting aside from the baghouses."	The building contains minimal venting aside from venting to the baghouses. 75% of welding emissions routed to the baghouses is based on observation of process, and the most likely airflow is through baghouses.
79	2	N	LMA - Baghouse 7095	Provide referenced baghouse dust analysis reports for DEQ review.	Response was submitted to DEQ on June 15, 2020.
79	a	N	LMA - Baghouse 7095	Provide manufacturer or performance data supporting reported control efficiency.	Response was submitted to DEQ on June 15, 2020.
80	2	N	LMA - Baghouse 7096	Provide referenced baghouse dust analysis reports for DEQ review.	Response was submitted to DEQ on June 15, 2020.
80	a	N	LMA - Baghouse 7096	Provide manufacturer or performance data supporting reported control efficiency.	Response was submitted to DEQ on June 15, 2020.
81	2	N	LMA - Fugitive	Provide justification for the assumption that fugitive emissions are equivalent to 1% of the controlled emissions from the baghouse.	The estimated emissions represent commingled emissions within the building envelope. Emissions are estimated for the TEU's in the emissions inventory, so estimating 1% of emissions from TEUs with baghouses as being commingled emissions within the building is a conservative estimate.
83	1	N	LMA - Grinding	Provide data and calculations substantiating reported removal efficiency.	Response was submitted to DEQ on June 15, 2020.
[redacted]					
82	1	N	LMA - Heat Treat	Provide data and calculations substantiating engineering estimate referenced.	Response was submitted to DEQ on August 28, 2020.
[redacted]					
84	5	N	LMA - Welding	The technical document referenced was most recently updated in 1998. Please consider more recent confirmation test results to quantify welding emissions.	This document contains the most comprehensive publicly available method for calculating welding emissions for rods that are not listed in AP-42.
84	1	N	LMA - Welding	Provide welding wire SDS for DEQ review.	Response was submitted to DEQ on August 28, 2020.
85	3	N	LMA - Acid Etch Line	Provide ventilation system design documents to verify flow rate, bath dimensions, bath temperature, etc.	Response was submitted to DEQ on August 28, 2020.
86	1	N	TBS - Welding	Provide welding wire SDS for DEQ review.	Response was submitted to DEQ on August 28, 2020.
86	3	N	TBS - Welding	The technical document referenced was most recently updated in 1998. Please consider more recent confirmation test results to quantify welding emissions.	This document contains the most comprehensive publicly available method for calculating welding emissions for rods that are not listed in AP-42.

Table HT-1
Heat Treat Furnaces
PCC Structurals - Large Parts Campus

LPC Heat Treat Furnaces		
PCC ID	**Type [1]**	**Manufacturer**
LPCS		
9	Vacuum	[redacted]
11	Vacuum	
12	Vacuum	
37	Vacuum	
19	Natural Gas	
23	Natural Gas	
LPCT		
17	Vacuum	
27	Vacuum	
47	Vacuum	
57	Vacuum	
LMA		
67	Vacuum	

References:

(1) All vacuum furnaces at LPC are electrically heated.

BH-1
2018 LPC Baghouse Dust Collection
PCC Structurals - Large Parts Campus

LPC Equipment Number	2018 Dust Collected (lb/month) [1]												Total	
	Jan	Feb	Mar	Apr	May	June	Jul	Aug	Sep	Oct	Nov	Dec	(lb)	(tons)
LPC-S														
Baghouse 0585 & Baghouse 1807 [2]	10,700	3,400	5,200	8,560	11,740	5,880	2,120	7,880	5,780	8,160	5,480	3,020	77,920	39.0
Baghouse 1659	2,390	3,152	--	2,204	2,099	2,035	1,837	1,957	1,779	1,740	1,580	2,000	22,773	11.4
Baghouse 2214	--	390	--	--	--	--	--	--	--	--	--	--	390	0.20
Baghouse 3804	982	--	--	1,189	1,316	1,090	1,129	--	--	--	--	921	6,627	3.31
Baghouse 5549 [3]	--	--	--	--	--	--	--	--	--	--	--	--	0	0
Baghouse 6417 [4]	--	--	--	--	--	--	--	--	--	--	--	--	0	0
Baghouse 6532	853	910	2,082	606	1,143	1,854	--	2,016	2,009	1,498	--	1,116	14,087	7.04
Baghouse 6671	--	--	--	--	--	--	--	--	550	--	--	--	550	0.28
Baghouse 8687	16,632	19,609	26,314	26,273	29,535	21,746	23,722	33,931	30,842	30,829	35,965	29,506	324,904	162
Baghouse 8901	2,058	1,925	2,743	1,963	2,224	2,163	1,171	2,271	2,321	2,674	1,806	1,111	24,430	12.2
Baghouse 9115	--	--	--	1,056	--	775	--	1,019	--	--	1,224	--	4,074	2.04
Baghouse 9196	--	--	--	--	--	--	--	--	--	4,116	--	2,510	6,626	3.31
Baghouse 9203	441	856	300	1,098	760	712	705	645	751	1,061	1,061	1,200	9,590	4.80
Baghouse 9255	--	--	--	--	468	--	--	0	1,200	1,005	1,005	900	4,578	2.29
Baghouse 9256	--	--	--	67	--	--	--	--	--	--	--	156	223	0.11
LPC-T														
Baghouse 3006	1,904	2,300	1,852	3,199	3,112	4,401	1,082	3,286	972	2,469	1,006	2,169	27,752	13.9
Baghouse 3007	1,420	520	508	964	848	392	516	514	1,256	1,360	--	515	8,813	4.41
Baghouse 3342	965	--	478	1,010	--	--	562	--	--	--	--	--	3,015	1.51
Baghouse 3747	--	--	--	1,776	--	--	1,060	--	--	--	--	--	2,836	1.42
Baghouse 3930	142	171	--	1,119	188	184	563	463	142	199	229	--	3,400	1.70
Baghouse 7094	1,475	--	--	2,040	--	--	--	1,304	--	--	--	2,210	7,029	3.51
Baghouse 8150	122	--	--	--	--	--	--	--	--	--	--	--	122	0.061
MAP														
Baghouse 0802	1,729	1,784	1,685	2,221	2,448	2,947	1,420	1,690	1,805	3,181	2,820	2,535	26,265	13.1
Baghouse 0803	587	482	628	418	403	828	295	410	693	1,057	343	847	6,991	3.50
Baghouse 9301	692	788	645	674	269	700	464	1,063	504	1,449	1,449	1,122	9,819	4.91
LSBSI														
Baghouse 5062	1,705	2,557	2,557	852	1,705	852	852	--	2,557	852	--	852	15,341	7.67
Baghouse 6265	852	--	--	852	--	--	--	--	--	852	--	--	2,557	1.28
LSBSII														
Baghouse 5365	11,080	4,262	7,671	5,114	5,114	5,114	3,409	5,966	852	5,114	--	3,409	57,104	28.6
Baghouse 5457	6,596	480	7,696	6,596	4,398	4,398	5,497	3,298	5,497	5,497	3,298	5,497	58,748	29.4
Baghouse 6418	1,704	--	1,705	--	--	--	--	852	--	--	--	--	4,261	2.13
LMA														
Baghouse 7095	1,976	3,226	1,340	2,670	2,638	4,334	8,952	4,584	--	--	8,214	9,840	47,774	23.9
Baghouse 7096 [3]	--	--	--	--	--	--	--	--	--	--	--	--	0	0

References:

(1) Information provided by PCC Structurals, Inc. facility based on 2018 dust collection records.

(2) Dust collection records are combined for Baghouse 0585 and Baghouse 1807.

(3) The value for baghouse dust collected used for emission calculations was based on January - October 2019 dust collection and extrapolated for a full year of operation due to minimal dust generation in 2018.

(4) The value for baghouse dust collected used for emission calculations was based on a 2.5 year average due to minimal dust generation.