

TECHNICAL SUPPORT DOCUMENT

TECHNICAL INFORMATION PRESENTED IN REVIEW OF AN
APPLICATION FOR A PART 70 OPERATING PERMIT MINOR REVISION

SUBMITTED BY

TITANIUM METALS CORPORATION

Part 70 Operating Permit Number: 19

SIC Code 3339: Primary Smelting and Refining of Nonferrous Metals, Except Copper and
Aluminum



Clark County
Department of Air Quality
Permitting Section

July 2012

EXECUTIVE SUMMARY

Titanium Metals Corporation (TIMET) is a combined titanium sponge and ingot facility located in the BMI Complex near Henderson, Nevada. The legal description of the source location is as follows: portions of T22S, R62E, Section 12 in Las Vegas Valley, County of Clark, Nevada. TIMET is situated in hydrographic area 212 (Las Vegas Valley). Las Vegas Valley is designated as nonattainment area for PM₁₀ and nonattainment area for 8-hour ozone (regulated through NO_x and VOC) and is PSD area for CO and SO₂.

TIMET emits particulate matter (PM₁₀), carbon monoxide (CO), oxides of nitrogen (NO_x), oxides of sulfur (SO_x), volatile organic compounds (VOCs), and hazardous air pollutants (HAP). TIMET is a major source for CO and a minor source for PM₁₀, NO_x, SO_x, VOC and HAP. The sponge plant (Chlorination, Magnesium Recovery, and Vacuum Distillation Process (VDP)) has a nameplate capacity of 32 million pounds per year of titanium sponge production. The melt shop utilizes the Vacuum Arc Remelt (VAR) process for the production of titanium ingots from sponge, scrap, master alloy and elemental additives. TIMET is capable of producing approximately 140 million pounds of titanium tetrachloride (TiCl₄), 32 million pounds of titanium sponge, and 30 million pounds of titanium ingots per year. The potential emissions for the source are shown in Table 1.

Table 1: Maximum Source PTE (tons per year)

Pollutant	PM ₁₀	PM _{2.5}	NO _x	CO	SO _x	VOC	HAP
PTE Totals	63.90	56.15	11.29	394.10	85.11	6.93	2.80
Major Source Thresholds	70	100	100	100	100	100	25/10¹

¹25 tons for combination of all HAPs (no single HAP exceeds 10 tons).

The Clark County Department of Air Quality (DAQ) has delegated authority to implement the requirements of the Part 70 operating permit program.

The renewed Part 70 Operating Permit (OP) was issued on December 23, 2011. This minor revision of the Part 70 OP is based on the revision application submitted on January 25, 2012 and supplemental information submitted on January 26, 2012.

This Technical Support Document (TSD) accompanies the proposed Part 70 Operating Permit for Titanium Metals Corporation.

TABLE OF CONTENTS

	Page
I. SOURCE INFORMATION	4
A. General.....	4
B. Permitting History	4
II. EMISSIONS INFORMATION	4
A. Source-wide Potential to Emit	4
B. Emission Units and PTE.....	5
CHLORINATION PROCESS	5
MAGNESIUM RECOVERY PROCESS	5
MISCELLANEOUS PROCESSES	6
III. ADMINISTRATIVE REQUIREMENTS.....	7

I. SOURCE INFORMATION

A. General

Permittee	Titanium Metals Corporation
Mailing Address	P.O. Box 2128, Henderson, NV 89009
Contact	Bruce Graff, Plant Manager
Phone Number	(702) 564-2544
Fax Number	(702) 564-2689
Source Location	181 North Water Street, Henderson, NV 89015
Hydrographic Area	Las Vegas Valley (212)
Township, Range, Section	T22S, R62E, Section 12
SIC Code	3339: Primary Smelting and Refining of Nonferrous Metals, Except Copper and Aluminum
NAICS Code	331419: Primary Smelting and Refining of Nonferrous Metals (except Copper and Aluminum)

B. Permitting History

The Titanium Metals Corporation (TIMET) is regulated by the Clark County Department of Air Quality (DAQ), and has a Title V permit. TIMET is a major source for CO. The initial Part 70 OP was issued on May 20, 2004 and the permit was renewed on December 23, 2011.

On January 25, 2012, TIMET submitted an application for the addition of an emergency generator (EU: M17), the replacement of eight cooling towers (EUs: G12 through G19) and for the addition of a Donaldson Torit 13,000 cfm cyclone connected to the already-constructed enclosure around EU: M04. These upgrades will be included in the minor revision of the Part 70 OP. The cooling towers will be replaced during the upcoming year. Since the project has no set completion date, both existing and new units will be listed in the Part 70 OP. Upon the completion of the replacement of the old cooling towers, the units will be removed from the permit upon TIMET's request. The proposed changes did not exceed any significance emission thresholds and a case by case control technology analysis was not required.

On January 26, 2012, TIMET requested series of minor changes to the Part 70 OP, based on comments to the Final Action Report (FAR). All the comments will be addressed during this minor revision of the operating permit.

II. EMISSIONS INFORMATION

A. Source-wide Potential to Emit

TIMET is a major source for CO and a minor source for PM₁₀, NO_x, SO_x, VOC, and HAP:

Table II-A-1: Source-wide PTE (tons per year)

Pollutant	PM ₁₀	PM _{2.5}	NO _x	CO	SO _x	VOC	HAP
PTE Totals	63.90	56.15	11.29	394.10	85.11	6.93	2.80
Major Source Thresholds	70	70	100	100	100	100	25¹

¹25 tons for combination of all HAPs (no single HAP exceeds 10 tons).

Table II-A-2: Source PTE by Process (tons per year)

Process	PM ₁₀	PM _{2.5}	NO _x	CO	SO _x	VOC	HAP	HCl	Cl ₂	COS	H ₂ SO ₄
Raw Materials Storage and Handling	1.74	1.60	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Chlorination	10.81	8.27	10.53	393.93	85.02	0.21	0.05	0.39	0.13	0.31	3.75
Purification	6.12	5.52	0.42	0.09	0.01	0.40	0.01	1.67	0.00	0.00	0.00
Vacuum Distillation	26.22	23.48	0.16	0.03	0.02	0.04	0.01	0.80	0.35	0.00	0.00
Magnesium Recovery	11.75	10.56	0.01	0.01	0.01	0.01	0.01	0.00	1.45	0	0
Blending	2.10	1.89	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Melt/Reclaim	4.08	3.68	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Miscellaneous	1.08	1.15	0.17	0.04	0.05	5.90	2.49	0.00	0.00	0.00	0.00
Wastewater Reclamation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.00
Groundwater Remediation	0.00	0.00	0.00	0.00	0.00	0.37	0.23	0.00	0.00	0.00	0.00
Total	63.90	56.15	11.29	394.10	85.11	6.93	2.80	2.86	1.96	0.31	3.76

B. Emission Units and PTE

MAGNESIUM RECOVERY PROCESS

The following tables: Table II-B-4, Table II-B-5, and Table II-B-6 list only the emission units that are affected by this permitting action.

Table II-B-4: List of Emission Units (EU) – Magnesium Recovery Process

EU	Description	Rating	Make	Model #	Serial #	SCC
G10	Diesel Generator for Emergency Scrubber - Engine	87 hp	Caterpillar	3054	4ZK02183	20200104
	Diesel Generator for Emergency Scrubber - Genset	50 kW	Generac	94A04770-S	2016244	
G12a	Cooling Tower #1	220 gpm	Delta CT Co.	DT-150	64808	38500100
G12b	Cooling Tower #2	220 gpm	Delta CT Co.	DT-150	64808	38500100
G12c	Cooling Tower #3	220 gpm	Delta CT Co.	DT-150	64808	38500100
G12d	Cooling Tower #4	220 gpm	Delta CT Co.	DT-150	64808	38500100
G12e	Cooling Tower #5	220 gpm	Delta CT Co.	DT-150	64808	38500100
G12f	Cooling Tower #6	220 gpm	Delta CT Co.	DT-150	64808	38500100
G12g	Cooling Tower #7	220 gpm	Delta CT Co.	DT-150	64808	38500100
G12h	Cooling Tower #8	220 gpm	Delta CT Co.	DT-150	64808	38500100
G12	Cooling Tower #1 (New)	220 gpm	Delta CT Co.	DT-150	TBD	38500100
G13	Cooling Tower #2 (New)	220 gpm	Delta CT Co.	DT-150	TBD	38500100
G14	Cooling Tower #3 (New)	220 gpm	Delta CT Co.	DT-150	TBD	38500100
G15	Cooling Tower #4 (New)	220 gpm	Delta CT Co.	DT-150	TBD	38500100
G16	Cooling Tower #5 (New)	220 gpm	Delta CT Co.	DT-150	TBD	38500100
G17	Cooling Tower #6 (New)	220 gpm	Delta CT Co.	DT-150	TBD	38500100
G18	Cooling Tower #7 (New)	220 gpm	Delta CT Co.	DT-150	TBD	38500100
G19	Cooling Tower #8 (New)	220 gpm	Delta CT Co.	DT-150	TBD	38500100

The source plans to replace eight existing cooling towers (EUs: G12a-h) that have drift eliminators with a manufacturer's maximum drift rate of 0.1 percent. The new cooling towers (EUs: G12 through G19) have a manufacturer's maximum drift rate of 0.001 percent. The cooling towers will

be replaced during the upcoming year. Since the project has no set completion date, both existing and new units are listed in the Tables II-B-4, -5, -6. Upon the completion of the replacement, the old cooling towers (EUs: G12a-h) will be removed from the permit upon TIMET's request.

Table II-B-5: PTE (tons per year) – Magnesium Recovery Process

EU	Rating	Conditions	PM ₁₀	PM _{2.5}	NO _x	CO	SO _x	VOC	HAP	Cl ₂	H ₂ SO ₄
G10	87 hp	500 hr/yr	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00
G12a	220 gpm	8,760 hr/yr	0.57	0.51	0.00	0.00	0.00	0.00	0.00	0.00	0.00
G12b	220 gpm	8,760 hr/yr	0.57	0.51	0.00	0.00	0.00	0.00	0.00	0.00	0.00
G12c	220 gpm	8,760 hr/yr	0.57	0.51	0.00	0.00	0.00	0.00	0.00	0.00	0.00
G12d	220 gpm	8,760 hr/yr	0.57	0.51	0.00	0.00	0.00	0.00	0.00	0.00	0.00
G12e	220 gpm	8,760 hr/yr	0.57	0.51	0.00	0.00	0.00	0.00	0.00	0.00	0.00
G12f	220 gpm	8,760 hr/yr	0.57	0.51	0.00	0.00	0.00	0.00	0.00	0.00	0.00
G12g	220 gpm	8,760 hr/yr	0.57	0.51	0.00	0.00	0.00	0.00	0.00	0.00	0.00
G12h	220 gpm	8,760 hr/yr	0.57	0.51	0.00	0.00	0.00	0.00	0.00	0.00	0.00
G12	220 gpm	8,760 hr/yr	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
G13	220 gpm	8,760 hr/yr	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
G14	220 gpm	8,760 hr/yr	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
G15	220 gpm	8,760 hr/yr	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
G16	220 gpm	8,760 hr/yr	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
G17	220 gpm	8,760 hr/yr	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
G18	220 gpm	8,760 hr/yr	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
G19	220 gpm	8,760 hr/yr	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total			11.75	10.56	0.01	0.01	0.01	0.01	0.01	1.45	0.01

Table II-B-6: PTE (pounds per hour) – Magnesium Recovery Process

EU	Rating	Conditions	PM ₁₀	PM _{2.5}	NO _x	CO	SO _x	VOC	HAP	Cl ₂	H ₂ SO ₄
G10	87 hp	1 hour	0.01	0.01	0.05	0.01	0.01	0.01	0.01	0.00	0.00
G12a	220 gpm	1 hour	0.13	0.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00
G12b	220 gpm	1 hour	0.13	0.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00
G12c	220 gpm	1 hour	0.13	0.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00
G12d	220 gpm	1 hour	0.13	0.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00
G12e	220 gpm	1 hour	0.13	0.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00
G12f	220 gpm	1 hour	0.13	0.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00
G12g	220 gpm	1 hour	0.13	0.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00
G12h	220 gpm	1 hour	0.13	0.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00
G12	220 gpm	1 hour	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
G13	220 gpm	1 hour	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
G14	220 gpm	1 hour	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
G15	220 gpm	1 hour	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
G16	220 gpm	1 hour	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
G17	220 gpm	1 hour	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
G18	220 gpm	1 hour	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
G19	220 gpm	1 hour	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total			2.71	2.48	0.05	0.01	0.01	0.01	0.01	0.33	0.01

MISCELLANEOUS PROCESSES

The following tables: Table II-B-7, Table II-B-8, and Table II-B-9 list only the emission units that are affected by this permitting action. TIMET added emergency generator (EU: M17) and the Donaldson Torit 13,000 cfm cyclone was connected to the already-constructed enclosure around Abrasive Blast Area (EU: M04). Additionally, PTE for the Alpha Ditch emergency generator was revised (EU: W04).

Table II-B-7: List of Emission Units (EU) – Miscellaneous Processes

EU	Description	Rating	Make	Model #	Serial #	SCC
M04	Outdoor Abrasive Blast Area	180 tons abrasive/yr				30200201
M17	Emergency Generator - Engine	51 hp	John Deere	A2400T-Gen	TBD	20200104
	Emergency Generator - Genset	15 kW	Generac	SD015	TBD	
W04	Alpha Ditch Emergency Generator - Engine	35 hp	John Deere	4024TF818	OG6024	20200104
	Alpha Ditch Emergency Generator - Genset	25 kW	Generac	9781650200	2098264	

Table II-B-8: PTE (tons per year) – Miscellaneous Processes

EU	Rating	Control	PM ₁₀	PM _{2.5}	NO _x	CO	SO _x	VOC	HAP
M04	180 tons abrasive/yr	45.0 %	0.69	0.79	0.00	0.00	0.00	0.00	0.00
M17	51 hp	0.0 %	0.01	0.01	0.09	0.03	0.03	0.03	0.01
W04	35 hp	0.0 %	0.01	0.01	0.08	0.01	0.02	0.01	0.01
Total			1.08	1.15	0.17	0.04	0.05	5.90	2.49

Table II-B-9: PTE (pounds per hour) – Miscellaneous Process

EU	Rating	Control	PM ₁₀	PM _{2.5}	NO _x	CO	SO _x	VOC	HAP
M04	180 tons abrasive/yr	45.0 %	0.16	0.18	0.00	0.00	0.00	0.00	0.00
M17	51 hp	0.0 %	0.02	0.02	0.35	0.13	0.10	0.13	0.01
W04	35 hp	0.0 %	0.08	0.08	1.09	0.23	0.07	0.09	0.01
Total			0.43	0.44	1.44	0.36	0.17	1.56	0.58

III. ADMINISTRATIVE REQUIREMENTS

AQR Section 12.5 requires that DAQ identify the original authority for each term or condition in the Part 70 OP. Such reference of origin or citation is denoted by *[italic text in brackets]* after each Part 70 OP condition.

DAQ proposes to issue the revision of Part 70 OP conditions on the following basis:

Legal:

On December 5, 2001 in Federal Register Volume 66, Number 234 FR30097 the EPA fully approved the Title V Operating Permit Program submitted for the purpose of complying with the Title V requirements of the 1990 Clean Air Act Amendments and implementing Part 70 of Title 40 Code of Federal Regulations.

Factual:

TIMET has supplied all the necessary information for DAQ to draft Part 70 OP conditions encompassing all applicable requirements and corresponding compliance.

Conclusion:

DAQ has determined that TIMET will continue to determine compliance through the use of CEMS, PEMS, performance testing, quarterly reporting, and daily recordkeeping, coupled with annual certifications of compliance. DAQ proceeds with the decision that a Part 70 OP should be issued as drafted to TIMET for a period not to exceed five (5) years.

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APPLICATION FOR A PART 70 OPERATING PERMIT

SUBMITTED BY

TITANIUM METALS CORPORATION

Part 70 Operating Permit Number: 19

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Clark County
Department of Air Quality and Environmental Management
Permitting Section

December 2011

EXECUTIVE SUMMARY

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TIMET emits particulate matter (PM₁₀), carbon monoxide (CO), oxides of nitrogen (NO_x), oxides of sulfur (SO_x), volatile organic compounds (VOCs), and hazardous air pollutants (HAP). TIMET is a major source for CO and a minor source for PM₁₀, NO_x, SO_x, VOC and HAP. The sponge plant (Chlorination, Magnesium Recovery, and Vacuum Distillation Process (VDP)) has a nameplate capacity of 32 million pounds per year of titanium sponge production. The melt shop utilizes the Vacuum Arc Remelt (VAR) process for the production of titanium ingots from sponge, scrap, master alloy and elemental additives. TIMET is capable of producing approximately 140 million pounds of titanium tetrachloride (TiCl₄), 32 million pounds of titanium sponge, and 30 million pounds of titanium ingots per year. The potential emissions for the source are shown in Table 1.

Table 1: Maximum Source PTE (tons per year)

Pollutant	PM ₁₀	PM _{2.5}	NO _x	CO	SO _x	VOC	HAP
PTE Totals	64.39	56.40	11.35	394.19	85.12	7.29	2.79
Major Source Thresholds	70	100	100	100	100	100	25/10¹

¹25 tons for combination of all HAPs (no single HAP exceeds 10 tons).

The Clark County Department of Air Quality and Environmental Management (DAQEM) has delegated authority to implement the requirements of the Part 70 operating permit program.

The Initial Part 70 OP was issued on May 20, 2004. Additionally, there were NSR Authority to Construct permits issued and changes implemented by the source. This Part 70 Operating Permit (OP) is issued based on the Title V renewal application submitted on November 19, 2008 and the subsequent revisions and supplemental information.

This Technical Support Document (TSD) accompanies the proposed Part 70 Operating Permit for Titanium Metals Corporation.

TABLE OF CONTENTS

	Page
I. SOURCE INFORMATION	4
A. General	4
B. Description of Process	4
C. Permitting History	6
D. Operating Scenario.....	7
E. Proposed Exemptions	16
II. EMISSIONS INFORMATION	16
A. Source-wide Potential to Emit	16
B. Emission Units and PTE	17
C. Testing	26
D. Continuous Emissions Monitoring	26
III. REGULATORY REVIEW.....	27
A. Local Regulatory Requirements.....	27
B. Federally Applicable Regulations.....	30
IV. COMPLIANCE	33
A. Compliance Certification	33
B. Compliance Summary.....	33
V. EMISSION REDUCTION CREDITS (OFFSETS).....	39
VI. ADMINISTRATIVE REQUIREMENTS.....	39

I. SOURCE INFORMATION

A. General

Permittee	Titanium Metals Corporation
Mailing Address	P.O. Box 2128, Henderson, NV 89009
Contact	Bruce Graff, Plant Manager
Phone Number	(702) 564-2544
Fax Number	(702) 564-2689
Source Location	181 North Water Street, Henderson, NV 89015
Hydrographic Area	Las Vegas Valley (212)
Township, Range, Section	T22S, R62E, Section 12
SIC Code	3339: Primary Smelting and Refining of Nonferrous Metals, Except Copper and Aluminum
NAICS Code	331419: Primary Smelting and Refining of Nonferrous Metals (except Copper and Aluminum)

B. Description of Process

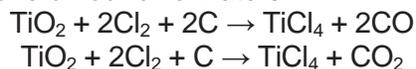
Titanium Metals Corporation (TIMET) facility is a major stationary source for CO, a synthetic minor source for PM₁₀, and a minor stationary source for NO_x, SO_x, VOC, and HAP. Processes at the facility are described below.

Storage of Raw Materials

Rutile ore is delivered to the TIMET facility by rail car and occasionally by truck. The rutile ore (about 97% TiO₂) is released to the underground conveyer belts located in concrete vaults from bottom dumping rail cars, and is subsequently delivered to chutes and silos located to the east of the J-2 warehouse. The southern and central interior portion of the J-2 warehouse is used to stockpile the ore. The ore is conveyed from silos to two transfer bins inside south end of Building J-2 where it is loaded into metal hoppers for transport to the Chlorination Plant. Incoming coke is transported by rail and stored in silos northwest of Building J-5. Coke is transported to the Chlorination Plant in metal hoppers.

Chlorination Process

Chlorination of the TiO₂ is achieved by passing Cl₂ through a mixture of rutile ore and excess of coke at approximately 1000°C through one of four chlorinators:



Titanium tetrachloride (TiCl₄) crude is collected in the off-gas from each chlorinator along with other volatile chlorides, and is liquefied by passing the gas through a series of condensers. Cyclones remove smaller un-reacted rutile and coke particles from the hot off-gas coming off of the top of each chlorinator before entry into the first condenser. This "chlorinator dust" is collected in a closed hopper and then transferred into roll-off bins kept under suction by a wet scrubber. Full roll-off bins are later transported to the on-site landfill for disposal.

In each of the four "chlorination trains" residual TiCl₄ in the off-gas from the final condenser is removed from the gas stream in a wash tower, where titanium dioxide (TiO₂) and hydrochloric acid (HCl) are generated from the reaction between water and TiCl₄. Residual acids and Cl₂ are scrubbed from the off-gas stream in a caustic scrubber tower. Off-gas from the four caustic scrubbers is directed to common manifold and particulates are removed by two venturi scrubbers. The PM₁₀-

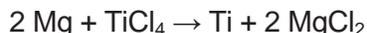
scrubbed off-gas is ducted to the carbon monoxide (CO) burner and sulfur dioxide (SO₂) scrubber that remove majority of the CO and SO_x before exhausting to the atmosphere. Operation of the SO₂ Scrubber meets BACT requirements for SO₂ emissions from CO Boiler.

Purification

The TiCl₄ from the chlorination process is transferred to crude feed tanks prior to purification. The crude TiCl₄ is first distilled (vaporized and condensed) to leave behind most of the impurities. Crude TiCl₄ is mixed with a proprietary chemical in a confidential process to remove trace impurities from the product stream. The mixture is then double-heated to remove first low boiling and then higher boiling chlorides through fractionation columns. The purified liquid TiCl₄ is condensed and stored in tanks with a helium cover gas to prevent any contact with the air. A recycle stream of liquid TiCl₄ containing approximately 25% solids is diverted to the continuous sludge dryer (CSD). The TiCl₄ is vaporized from the solids, condensed and recycled to crude feed tanks. The CSD solids are sluiced with effluent and sent to the Water Conservation Facility (WCF) for neutralization prior to discharge to the lined settling ponds. TiCl₄-laden vapors from purification tanks, columns, and CSDs are combined together and ducted to into a heat exchanger and an OPW-wetted packed column before venting the scrubber off-gas at the PVS Scrubber stack.

Vacuum Distillation Process (VDP)

Vacuum Distillation refers to the reduction of TiCl₄ into (Ti) sponge and distillation of MgCl₂:



In the VDP, a sealed reduction vessel is heated in an electric furnace and molten magnesium (Mg) metal, collected during the electrolytic reduction of magnesium chloride (MgCl₂) to Mg metal, is added by transfer with inert gas pressure from a closed insulated pot. TiCl₄ is subsequently injected into the closed vessel and reacts with the molten Mg to form Ti metal sponge and MgCl₂. Pressure is relieved periodically from the reactor to prevent excessive pressure build-up. The evacuated gases are discharged via a particulate knockout vessel to the emission control system. The VDP uses a closed system for tapping the molten MgCl₂. A transportable MgCl₂ vessel is coupled to the reduction vessel by piping. Valves are opened and the MgCl₂ is transferred to the transportable vessel by argon (Ar) gas pressurization. A fume shroud encloses the charge port and discharge piping at each reduction vessel. Particulate emissions resulting from the transfer of the MgCl₂ are collected via this shroud and are ducted to VDP scrubber located outside the VDP building. Suction in the ductwork is maintained by the VDP scrubber fan. Particulates are scrubbed from the gas stream by high-pressure 'reverse jets' and by packing and are later filtered or flushed from the system.

Magnesium Recovery Process

The magnesium chloride separation is achieved by introducing the molten MgCl₂ into brick-lined electrolytic cells containing electrolytic salts, and passing an electrical current through the contents. The Mg metal obtained from this process is continuously recycled to the VDP Process.

Melt Shop and Blending Processes

The Blending Operations combine titanium sponge into larger blends. The proportioned volumes of sponge required for a particular blend are sent through blenders and splitters, and then sent to the Melt Shop. After blending, the resultant "feed material" is combined with bulk purchased metal alloys, pressed into solid blocks, welded, and melted in consumable electrode vacuum arc furnaces.

Scrap Reclaim

Scrap titanium delivered from various areas of the plant is cleaned and welded together for melting. The scrap is processed through a shot blasting unit for cleaning, and welded into electrodes for melting.

Water Conservation Facility (WCF)

This process, commissioned in 2005, receives ‘spent caustic’ and continuous sludge dryer (CSD) slurry from the Chlorination process and ‘other process water’ from various facility areas.

C. Permitting History

The Titanium Metals Corporation (TIMET) is regulated by the Clark County Department of Air Quality and Environmental Management (DAQEM), and has a Title V permit. The TIMET facility is a major source for CO and PM₁₀. The initial Part 70 OP was issued on May 20, 2004. DAQEM received the Title V renewal application on November 19, 2008. On July 10, 2009, the source requested a revision of the existing NSR ATC/OP, to include addition of the 1 MMBtu/hr oil heater. On December 21, 2009, TIMET requested an increase the PM₁₀ and HCl emission limits for chlorine scrubber to be included in the renewed Part 70 OP. The NSR permits issued after the renewal application submission will be incorporated into this Part 70 OP.

Table I-C-1: Recent NSR Permits Issued to TIMET

Date Issued	Permit Number	Description
11/03/2009	ATC Modification 16	ATC for the addition of a groundwater remediation system.
06/22/2009	ATC Modification 14	ATC for the addition of one new sponge blending system with a cyclone dust collector. Four existing cyclone emission units (H01, H02, H04, and H05) are being removed.
05/08/2006	ATC/OP Modification 13	A minor modification to the existing ATC/OP for the addition of six reduction and seven distillation furnaces in the Vacuum Distillation Process (VDP) plant.
04/28/2005	ATC/OP Modification 12	A minor modification to the existing ATC/OP for the addition of a chlorine scrubber as part of the proposed wastewater neutralization plant project.
07/08/2004	ATC/OP Modification 11	This ATC/OP incorporates Modification 8, 9 and 11 into the existing ATC/OP (Modification 10). With this minor modification, TIMET adds a dust loading station for the chlorination dust, an electric sponge dryer in the VDP area, a salt melt scrubber in the magnesium recovery and a disturbed surface into the permit.
06/15/2004	ATC/OP Modification 10	Consolidated ATC/OP of all existing permits for the facility into a facility-wide ATC/OP.

On July 05, 2007, the source applied for the removal of four cyclones (EUs: H01 through H05) (ATC/OP, Modification 14). These cyclones serviced sponge inspection and sorting activities that were moved to a new building. The new building was equipped with a new cyclone with similar design capacity and same control efficiency. BACT analysis was not triggered for the replacement.

On November 19, 2008, concurrently with the Title V renewal, TIMET applied for an ATC, Modification 15, for the addition of the TiCl₄ tank farm wet scrubber. The scrubber addition will be included in the revised Part 70 OP.

On April 20, 2009, the source requested addition of an air stripping system in order to treat site groundwater. Consequently, DAQEM issued an ATC, Modification 16, on November 3, 2009.

On July 10, 2009, TIMET requested the addition of the new oil heater in the Purification Plant. No ATC was issued for this new unit. The new unit will be included in the revised Part 70 OP.

On December 21, 2009, TIMET requested an increase in PM₁₀ and HCl emissions from the TiCl₄ wet scrubber (EU: B06) to be included in the renewed Part 70 OP.

On June 3, 2010, DAQEM informed TIMET of its intention to re-open the Part 70 OP for cause. DAQEM determined that permit contained material mistakes and that there were inaccuracies in establishing emission limits and standards within the permit. The reopening would affect the following parts of the permit:

1. The PM₁₀ emission limit for CO Boiler/Burner (EU: B06a).
2. The HCl emission limit for CO Boiler/Burner (EU: B06a).
3. The CO emission limit for CO Boiler/Burner (EU: B06a).
4. The emission limit and performance testing requirements for Vacuum Distillation Process (VDP) Scrubber (EU: E01).
5. The upset/breakdown conditions for the chlorination process.

On September 29, 2010 TIMET met with DAQEM to discuss five issues underlying DAQEM's decision to re-open Part 70 OP. At the meeting, the attendees agreed that EUs: B06a and B06b emission limits for PM₁₀ and HCl were too low, that EPA Method 5 should be used to test EU: B06b and the low PM₁₀ emission rate for EU: E01 did not justify further PM₁₀ performance testing. DAQEM requested that TIMET propose new emission limits for PM₁₀ and HCl at EUs: B06a and B06b, for CO tons/year venting at EUs: B01 through B05, and for CO tons/year at EU: B06b stack. Based on TIMET's proposed revision, the following changes were implemented in the Part 70 OP through this renewal:

1. The revision of the PM₁₀ emission limit for CO Burner/Boiler (EU: B06a) with SO₂ Scrubber (EU: B06b).

Current CO Burner/Boiler PM₁₀ emission limit does not accurately reflect actual PM₁₀ emissions. The variable characteristics of the chlorinator fluidized bed and the complex chlorination off-gas system create fluctuations in the off-gas composition. Sampling during October 2008—April 2009 testing at the EU: B06b stack demonstrated that particulate emissions were created by the circulating 'spent caustic' liquor (NaOH) used in the scrubber to capture SO_x emissions. The operational variability during sampling runs ranged up to 2.63 lb/hr PM₁₀ and up to 1.24 lb/hr total PM.

The following methodology was adapted by DAQEM to establish the correct CO Burner/Boiler PM₁₀ emission limit (EUs: B06a and B06b). Each of the seven PM sampling results (EPA Method 5) obtained during October 2008—April 2009 testing at EU: B06b stack was adjusted to the 20,000 scfm, a practical maximum scrubber exhaust gas flow rate. A standard deviation ($\sigma = 0.22$ lb/hr) was calculated on the adjusted values. Three standard deviations (3σ) value of 0.66 lb/hr was added to the average emission rate of 1.20 lb/hr. Since the data set was limited, a 20% 'safety factor' was applied to account for operational variation and higher production rates. Therefore, the resulting PM₁₀ emission factor was increased to 2.24 lb/hr of PM₁₀ for EUs: B06a and B06b. Additionally, the revised permit requires only EPA Method 5 to be used for sampling of PM at EU: B06b stack.

Table I-C-2: PM Emission Limits for EUs: B06a and B06b

EU: B06b Sample Date	Testing Values		Theoretical Values	
	Method 5 PM lb/hr	Exhaust (scfm)	Method 5 PM lb/hr	Max. Exhaust (scfm)
Oct. 2008, run 1	0.81	12,657	1.28	20,000
Oct. 2008, run 2	0.64	11,891	1.08	20,000
Oct. 2008, run 3	0.51	11,406	0.89	20,000

EU: B06b	Testing Values		Theoretical Values	
Feb. 2009, run 1	0.91	16,347	1.11	20,000
Feb. 2009, run 2	1.24	15,514	1.60	20,000
Feb. 2009, run 3	0.86	14,933	1.17	20,000
April 2009, run 1	1.06	16,604	1.28	20,000
Population Standard Deviation (σ)	---	---	0.22	---
[Average + 3σ] + 20%	---	---	2.24	---

- The revision of the HCl emission limit for CO Burner/Boiler (EU: B06a) with SO₂ Scrubber (EU: B06b).

The current 0.03 lb/hr HCl limit was based on a 0.03 lb/hr average of three sample runs during 3-chlorinator operation in November 2003. The current HCl limit does not allow for 4 chlorinator operation at raw material feed rates higher than during the October 2008 testing. Sampling during November 2003, October 2008, and February 2009 performance tests at EU: B06b stack demonstrated operational variability causing HCl emission rates reach 0.042 lb/hr.

The following methodology was adapted by DAQEM to establish the correct CO Burner/Boiler HCl emission limit (EUs: B06a and B06b). Each of nine Method 26A HCl sampling results obtained during testing at EU: B06b stack was adjusted to the 20,000 scfm practical maximum scrubber exhaust gas flow rate. A standard deviation of ($\sigma = 0.008$ lb/hr) was calculated on the adjusted values. Three standard deviations (3σ) value of 0.025 lb/hr was added to the average emission rate of 0.051 lb/hr. Since the data set is limited, a 20% 'safety factor' was added to account for operational variation and higher production rates. Therefore, the resulting HCl emission factor was increased to 0.09 lb/hr HCl for EUs: B06a and B06b.

Table I-C-2: HCl Emission Limits for EUs: B06a and B06b

EU: B06b Sample Date	Testing Values		Theoretical Values	
	Method 26A lb/hr	Exhaust (scfm)	Method 26A lb/hr	Max. Exhaust (scfm)
Nov. 2003, run 1	0.028	10,473	0.053	20,000
Nov. 2003, run 2	0.026	10,510	0.049	20,000
Nov. 2003, run 3	0.023	10,517	0.044	20,000
Oct. 2008, run 1	0.042	14,426	0.058	20,000
Oct. 2008, run 2	0.039	15,071	0.052	20,000
Oct. 2008, run 3	0.040	12,592	0.064	20,000
Feb. 2009, run 1	0.037	14,426	0.051	20,000
Feb. 2009, run 2	0.027	15,040	0.036	20,000
Feb. 2009, run 3	0.036	14,878	0.048	20,000
Population Standard Deviation (σ)	---	---	0.008	---
[Average + 3σ] + 20%	---	---	0.090	---

- The revision of the CO emission limit for CO Burner/Boiler and SO₂ Scrubber Stack (EUs: B06a and B06b).

TIMET facility's CO emission limit of 1,637.6 tons/year does not accurately reflect potential CO emissions at the CO Burner/Boiler (EU: B06a). Actual coke consumption is variable due to TiCl₄ demand; rutile and chlorine feed rates; off-gas equipment condition; and individual chlorinator fluidized bed characteristics. Since CO forms only from coke consumed by the chlorinators, the permitted coke processing limit of 15,000 tons/year represents a maximum potential to generate CO in the off-gas and to emit CO at EU: B06a exhaust. The source applied statistical analysis using ten years of EU: B06a CEMS emission data. Each actual annual CO emission was adjusted to reflect maximum potential coke consumption and CO generation. A standard deviation (σ) 48.5 tons/year was calculated on the adjusted values. Three times the standard deviation (3σ) value of

145.5 tons/year was added to the highest emission rate of 181.7 tons/year plus a 20% 'safety factor' to reach 392.5 tons/year. Therefore, TIMET proposed 392.5 tons/year CO emission limit for EU: B06a. DAQEM understands that the proposed method of PTE estimation is very conservative. However, the proposed limit is more realistic than the original PTE estimation currently in effect (Dr. Haag's memo). Therefore, DAQEM agreed with the basis of TIMET reasoning and revised the Title V permit with the new CO emission limit of 392.5 tons/year.

Table I-C-3: Proposed Stack CO Emissions Based on Coke Consumption

Calendar Year	EU: B06b Stack CO Actual Emissions (CEMS)-tons/yr	Coke Consumed as % of Permitted Coke Processed	Theoretical Values EU: B06b Stack CO tons
2000	64.9	50.6%	125.5
2001	18.1	50.5%	35.8
2002	22.3	53.2%	41.9
2003	21.2	38.2%	55.5
2004	11.7	50.6%	23.1
2005	26.2	42.6%	61.5
2006	22.2	48.4%	45.9
2007	24.6	53.6%	46.0
2008	35.9	53.7%	66.8
2009	73.9	40.7%	181.7
Population Standard Deviation	---	---	48.5
[Highest+ 3σ] + 20%	---	---	392.5

By accepting the revised emission limit for EU: B06b stack, DAQEM confirms that the excess emissions released during any upset/breakdown situation at the chlorination process should not be counted towards the emission limits. Any such excess emissions resulting from an upset/breakdown must be addressed in accordance to AQR Section 25.

The emissions caused by CO venting at EUs: B01 through B05 has been reported in emission inventories for 2008 and 2009, and in 2008, 2009, and 2010 deviation reports using actual off-gas CO data obtained during the October 2008 performance test sampling between EU: B05 and EU: B06a during 4 chlorinator operation. TIMET utilized performance test data because it is the most accurate data available to estimate CO in the chlorinator off-gas. During October 2008 off-gas sampling at inlet to CO Burner/Boiler, coke consumption averaged 44,300 lbs/day among four chlorinators and was fully representative of coke consumption for 2008. Table I-C-4 summarizes quarterly reports data and tracks variations of coke consumption with the number of on-line chlorinators (4C, 3C, or 2C).

Table I-C-4: Quarterly Coke Consumption (lbs/day)

Year	1 st Quarter	2 nd Quarter	3 rd Quarter	4 th Quarter
2008	42,736 [4C]	45,329 [4C]	40,302 [4C]	40,343 [4C]
2009	43,211 [4C]	40,791 [4C to 3C]	27,940 [3C to 2C]	20,872 [2C]
2010	22,401 [2C]	25,709 [2C to 3C]	27,744 [3C]	----

On December 19, TIMET submitted the October 2008 performance test report. DAQEM accepted test results for CO, COS, SO₂, H₂SO₄, NO_x, and chlorine on January 20, 2009. TIMET asserted that:

- Coke is the only source of carbon and that CO in chlorinator off-gas is generated only by and is proportional to the coke feed rate into the chlorinators.

- Oct.2008 sampling for CO utilizing EPA Method 10 and was deemed to be acceptable.
- Appendix C of test report demonstrated steady-state operation of four chlorinators and CO Boiler (EU: B06a).
- Coke consumption and CO generation was representative of the 4 chlorinator operations for six consecutive quarters before and after the October 2009 performance test.

Six sampling runs in October 2008, each at least 60 minutes, ranged from 1,028 to 1,217 lb/hr CO in the chlorinator off-gas upstream of EU: B06a. The average among the six runs was 1,137 lbs/hr of CO and was fully representative of 4 chlorinator operation during 2008 and up to mid-2009. After that, TIMET gradually reduced production to a 2-chlorinator operation.

The source stated the changing demands for titanium and TiCl₄ will require operation of two, three, or four chlorinators on any given day. Pursuant to AQR 12.9(d) (2.b), TIMET proposed to estimate the CO in off-gas venting emissions using the following methodology:

CO lbs vented at each emission unit (EUs: B01 through B04):

$$(\text{off-gas venting hours} \times (1,137 \text{ lb/hr}/4)) = (\text{off-gas venting hours} \times 284.25 \text{ lb/hr}) = \text{CO lbs/hr [per Caustic Tower Vent]}$$

CO lbs vented at EU: B05:

$$(\text{off-gas venting hours} \times 1,137 \text{ lb/hr}/4 \times \text{Number of Chlorinators online}) = \text{CO lbs/hr}$$

During the malfunction of the SO₂ scrubber (EU; B06b) the chlorination off-gas can be vented after the CO boiler (EU: B06a) through the make-up damper. The emissions at the make-up damper with the CO boiler on-line were based on the average CO boiler emissions. The CO emissions were calculated from the annual CEMS data collected during 2010. The following methodology was adapted by DAQEM to establish the correct CO burner CO emissions (EU: B06a) at the make-up damper. Monthly CO CEMS results for 2010 were averaged. A standard deviation of ($\sigma = 2.75$ lb/hr) was calculated and three standard deviations (3σ) value of 8.25 lb/hr was added to the average emission rate of 4.00 lb/hr. Therefore, the resulting CO emission factor was increased to 12.25 lb/hr CO for EU: B06a at the make-up dumper (Table I-C-5).

Table I-C-5: Proposed Stack CO Emissions at the Make-up Damper

Month	EU: B06b Stack CO Actual Emissions (CEMS)- lbs	EU: B06b hours on-line	EU: B06b Stack CO (lbs/hr)
January	5,954	742.9	8.01
February	6,196	688.1	9.00
March	4,948	768.0	6.44
April	962	417.2	2.31
May	2,364	708.9	3.33
June	1,366	720.0	1.90
July	713	645.0	1.11
August	1,537	744.0	2.07
September	3,975	615.8	6.46
October	839	742.9	1.13
November	1,497	526.3	2.84
December	2,378	743.5	3.20
Average $\pm 3\sigma$	2,016 \pm 6,048	672.0 \pm 318.0	4.00 \pm 8.25

The summary of the upset/breakdown emissions is listed in Table I-C-6:

Table I-C-6: Upset/Breakdown Chlorination Process Uncontrolled Emissions (lbs/hr)

EU	Conditions	PM ₁₀	NO _x	CO	SO _x	VOC	HAP	Cl ₂	HCl	COS	H ₂ SO ₄
B01	1 hour	1.00	0.00	284.25	0.00	0.00	0.00	0.25	0.00	0.48	0.00
B02	1 hour	1.00	0.00	284.25	0.00	0.00	0.00	0.25	0.00	0.48	0.00
B03	1 hour	1.00	0.00	284.25	0.00	0.00	0.00	0.25	0.00	0.48	0.00
B04	1 hour	1.00	0.00	284.25	0.00	0.00	0.00	0.25	0.00	0.48	0.00
B05	1 hour	0.10	0.00	1,137	0.00	0.00	0.00	1.00	0.00	1.92	0.00
B06a	1 hour	0.10	2.04	12.25	37.42	0.00	0.00	0.03	0.03	0.07	0.09
B10	1 hour	0.05	1.14	0.45	37.42	0.00	0.00	0.03	0.03	0.07	0.86

¹ Remedial measures for any upset/breakdown situation shall be in accordance with AQR Section 25.

DAQEM accepted new CO emission limit for CO Boiler/SO₂ Scrubber (EUs: B06a and B06b). The operational scenario requires 100% of the chlorination off-gas to be vented through the CO Boiler/SO₂ Scrubber. During the scheduled maintenance of the CO Boiler the off-gas should be vented through the thermal oxidizer (EU: B10) and the sulfur dioxide emissions from the Chlorination Process shall be limited to 37.42 pounds per hour (This value is based on 48 equivalent reductions per day using 0.8 percent by weight low sulfur coke). The source explained it is not feasible to operate the thermal oxidizer (EU: B10) during most upset/breakdowns of the CO Burner/Boiler (EU: B06a). Consequently, the upset/breakdown emissions due to CO venting at EUs: B01 through B05 must be quantified and reported as excess emissions on case-by-case basis.

4. The revision of the PM₁₀ emission limit and performance testing requirements for VDP Scrubber (EU: E01).

The stack testing of VDP Scrubber (EU: E01) for PM (EPA Methods 5 and 201A) was conducted from September 2006 to April 2008. The average particulate emission rates ranged from 0.18 to 0.88 tons/year. The short term PM emission ranged from 0.04 to 0.20 lb/hr. DAQEM used October 2007 performance testing data (EPA Method 5) with the maximum scrubber flow rates (avg. 10,436 acfm) to establish a new PM₁₀ emission limit. A standard deviation (σ) 0.09 lbs/hr was calculated. Three times the standard deviation (3σ) value of 0.28 lbs/hr was added to the average emission rate of 0.20 lbs/hr plus a 20% 'safety factor' to result in 0.58 lbs/hr. Consequently, annual PTE was adjusted to 2.54 tons/year based on 8,760 hour/year of operation.

Table I-C-7: PM Testing Results on EU: E01 (lbs/day)¹

Run	PM total lbs/hr (EPA Method 5)	Flow Rate (acfm)
1	0.31	10,219
2	0.16	10,199
3	0.14	10,891
Average $\pm \sigma$	0.20 \pm 0.28	10,436
[Average + 3σ] + 20%	0.58	---

¹ Results from October 2007, EPA Method 5 (Total PM).

Additionally, DAQEM decided to eliminate the PM₁₀ testing requirement for EU: E01. DAQEM concluded that compliance with the PM₁₀ emission limit can be ensured by weekly recording of the critical monitoring parameters (upper and lower reverse jet flows, scrubbing liquor pH, scrubber inlet pressure, and fan inlet pressure) and maintaining those parameters within the specified limits.

5. The evaluation of upset/breakdown conditions for CO Burner/Boiler and SO₂ Scrubber Stack (EUs: B06a and B06b) and Thermal Oxidizer (EU: B10).

The source explained it is not feasible to operate the thermal oxidizer (TO) (EU: B10) during most upset/breakdowns of the CO Burner/Boiler (EU: B06a). Downtime of EU: B06a is considered

“scheduled” during semi-annual preventive maintenance or short-notice scheduled maintenance. It is “un-scheduled” when the unit unexpectedly goes off-line for short duration.

The start-up and operation of the TO apply in two situations: scheduled maintenance, or unexpected breakdowns when the problem takes many hours or days to troubleshoot and repair. The PLC-programmed TO gas train safety checks and refractory thermal expansion requires about 4 hours of pre-heating before the TO is able to burn chlorinator off-gas. As a result, unscheduled repairs that have anticipated duration less than 4 hours do not benefit from starting the TO. Each TO start-up and shut-down puts thermal stress on its refractory causing it to expand and contract which can cause refractory repairs.

TIMET has steadily improved preventive maintenance program on EU: B06a thereby significantly reducing the un-scheduled downtime from 2.3% in 2007 to 0.6 % in 2010 of total operating time. TIMET has operated the TO during scheduled maintenance on the CO Boiler (EU: B06a), except when the TO has unexpectedly malfunctioned.

Table I-C-8: Operation of TO During Periods of CO Burner/Boiler Downtime

Year	Semi-annual Maintenance (TO online)	Scheduled Maintenance (TO online)	Un-scheduled Downtime (TO online)	Scheduled Maintenance (no path to TO)	Un-scheduled Downtime (TO offline)	TO online % of total Downtime
2007	157 hrs (1.8%)	---	---	---	206 hrs (2.3%)	43%
2008	288 hrs (3.3%)	---	---	---	155 hrs (1.8%)	65%
2009	263 hrs (3.0%)	104 hrs (1.2%)	71 hrs (0.8%)	22 hrs (0.3%)	143 hrs (1.6%)	75%
2010 YTD	303 hrs	70 hrs (1.1%)	38 hrs (0.6%)	92 hrs (1.4%)	37 hrs (0.6%)	84%

About 70% of CO Burner/Boiler upset/breakdowns were under 1.5 hours duration and 89% were under 2.5 hours. Most breakdowns were promptly discovered and corrected. When the equipment upstream of Venturi Scrubber stack (EU: B05) fails, off-gas must vent at the Caustic Towers (EU: B01 through B04) since there is no off-gas path to the TO. The table below summarizes 123 un-scheduled CO Burner/Boiler (EU: B06a) upsets for 33 months since January 2008 when chlorinator off-gas had a path to vent at EU: B05.

Table I-C-9: January 2008 -September 2010 EU: B06a Upset/Breakdown Duration

Upset/Breakdown Duration	Venting at EU: B05
Under 0.5 hour	55
0.5—0.99 hour	30
1.0—1.49 hours	18
1.5—2.5 hours	7
2.5—4.0 hours	9
Over 4 hours	4

Pre-heating the TO would have been unproductive and wasteful of natural gas in all but 4 cases since the CO Boiler had returned to off-gas service before the TO was ready to accept off-gas. Operating the TO during periods of un-scheduled downtime greater than several hours in duration has been undertaken by TIMET without a specific permit condition. However, natural gas consumption curtailment periods or TO mechanical issues can result in periods of CO Burner and TO downtime that are unavoidable. No additional conditions pertaining to operation of EU: B10 during EU: B06a down-time are required.

DAQEM asked whether it was feasible to keep the TO pre-heated either by:

- a. Firing the TO burner with natural gas at a ‘low fire’ rate; or

- b. Continually routing hot CO Burner/Boiler exhaust through the TO firebox, in order to shorten the typical 4-hour TO ramp-up time to its normal 1,400°F operating temperature.

Currently, the available natural gas supply is nearly fully utilized at:

- EU: B06a CO Burner/Boiler to supplement the Btu value of the off-gas CO;
- EU: B09 Kewanee steam boiler at high-fire rate to support purification process;
- EU: C05 Hot Oil Heater to support EU: C02 Continuous Sludge Dryers.

Additional natural gas is not available to low-fire TO in addition to the above three uses. Sufficient natural gas volume needed to begin heating the TO become available when it is not being consumed by EU: B06a. This occurs only when the EU: B06 downtime is extended due to scheduled maintenance on EU: B06a or a prolonged equipment issue affecting EU: B06a. The decision to stop keeping the EU: B06a firebox hot for a return to burning off-gas has been made each time TIMET has heated-up and operated the TO. When EU: B06a goes off-line unexpectedly, its natural gas use increases somewhat to maintain its fire box temperature hot enough to promptly receive off-gas after the equipment issue is resolved—typically in 1 hour or less.

Continually routing CO Burner/Boiler exhaust through the TO firebox on its way to the SO₂ Scrubber (EU: B06b) inlet would present several problems:

- The firebox would need to be modified with a 30"-diameter hot gas inlet and outlet;
- Ducting and control valves with associated controls would be required;
- The TO firebox would become a hazardous confined space (CO-rich, oxygen-deficient) making safe firebox entry to perform preventive maintenance potentially dangerous;
- The TO manufacturer's liability insurance will not authorize such modification and their warranty and equipment support would cease.

Based on the above explanation by the source, DAQEM concludes that the operation of the thermal oxidizer during upset/breakdown situations that last less than four hours is not practically feasible.

In the supplemental application for Part 70 OP renewal from August 17, 2010 TIMET stated that EU: B19 denotes a rental package boiler. The unit is brought onsite twice a year during the semi-annual preventive maintenance on EUs: B06 and B09 to supply steam to the purification process. The current description assumes that the same Cleaver Brooks boiler is always utilized. To reflect the reality, TIMET requested that the unit description be updated to reflect that one of several boilers could operate at the facility during semi-annual preventive maintenance.

In October 2010, TIMET completed performance test for the PVS Scrubber (EU: C01). The PM₁₀ emission rate determined with EPA Method 5 during three 1-hour runs was above the 0.12 lb/hr limit. The moist effluent at the PVS Scrubber stack is problematic for Method 5 ambient-temperature sampling probe. In December 2010, the PVS Scrubber was re-tested with EPA Method 201A at 250°F using two-stage PM cyclone in order to separate PM₁₀ size particulates. Three 20hour runs demonstrated compliance with the 0.12 lb/hr PM₁₀ limit. Particulate loading in to the PVS Scrubber is dependent on the efficiency of two air-cooled heat exchangers. These exchangers were replaced and a PM₁₀ re-test using EPA Method 201A was completed on May 12, 2011 and demonstrated compliance with the 0.12 lb/hr PM₁₀ limit.

On January 28, 2011, TIMET proposed revision of the PM₁₀ emission limit for the PVS scrubber (EU: C01). The accepted methodology would be consistent with revised PM₁₀ limit for SO₂ Scrubber (EU: B06b) and VDP Scrubber (EU: E01). The following methodology was adapted by DAQEM to establish the correct PVS Scrubber PM₁₀ emission limit (EU: C01). Each of the six PM sampling results (EPA Method 5) obtained during October 2005 and 2010 testing at EU: C01 stack

was adjusted to the 300 scfm, a practical maximum scrubber exhaust gas flow rate. A standard deviation ($\sigma = 0.25$ lb/hr) was calculated on the adjusted values. Three standard deviations (3σ) value of 0.74 lb/hr was added to the average emission rate of 0.34 lb/hr. Since the data set was limited, a 20% 'safety factor' was applied to account for operational variation and higher production rates. Therefore, the resulting PM₁₀ emission factor was increased to 1.30 lb/hr of PM₁₀ for EU: C01. Additionally, the revised permit requires EPA Method 201A to be used for sampling of PM at EU: C01 stack.

Table I-C-10: PM Emission Limits for EU: C01

EU: C01 Sample Date	Testing Values		Theoretical Values	
	Method 5 PM lb/hr	Exhaust (scfm)	Method 5 PM lb/hr	Max. Exhaust (scfm)
Oct. 2005, run 1	0.02	104	0.06	300
Oct. 2005, run 2	0.06	104	0.17	300
Oct. 2005, run 3	0.05	103	0.15	300
Oct. 2010, run 1	0.28	175	0.48	300
Oct. 2010, run 2	0.39	172	0.68	300
Oct. 2010, run 3	0.29	173	0.50	300
Population Standard Deviation (σ)		---	0.25	---
[Average + 3σ] + 20%		---	1.30	---

On June 3, 2011, TIMET proposed corrections to uncontrolled chlorine emissions from CO boiler/SO₂ scrubber (EU: B06 a,b) and caustic towers (EUs: B01 through B04). Additionally, minor changes to clarify emission ratings and conditions for few emission units were implemented throughout the permit.

On June 21, 2011, TIMET proposed to change portable rental boiler (EU: B19) rating up to 14.7 MMBtu/hr with emission limits of 30 ppm NO_x and 5 ppm CO, The emission limits remain unchanged.

D. Operating Scenario

TIMET operates a primarily nonferrous metals refining facility located near Henderson, Nevada, in the BMI complex. The facility is located in the Las Vegas Valley, hydrographic area 212. TIMET consists of a combined titanium sponge and ingot plant and is capable of producing about 140 million pounds of titanium tetrachloride (TiCl₄), 32 million pounds of titanium sponge, and 30 million pounds of titanium ingots per year.

Storage and Handling of Raw Materials

Incoming raw materials are typically handled in two locations: through the transportation department in and around Building J-2 and at the coke storage silos, along a rail siding, located northwest of Building J-5. Raw materials received and distributed throughout the plant include: rutile ore, magnesium, alloys, and coke. After unloading of the rutile ore, the raw materials are transported and processed inside the warehouse buildings, which achieves 90 percent control of PM₁₀ emissions.

Chlorination Process

The Chlorination Process is used to convert rutile ore (TiO₂) into titanium tetrachloride (TiCl₄). This process occurs in Unit 8, a multilevel building which houses the Chlorination and Reclaim Processes. The principal raw materials used in the Chlorination Process include chlorine gas (Cl₂), coke, compressed air and rutile ore. Makeup Cl₂ is supplied to the facility via pipeline, with the bulk of the Cl₂ originating from the Magnesium Recovery Process. The coke and rutile ore are supplied to the chlorinators in open lugger boxes from plant storage areas.

Purification

The Purification Process occurs to the north of Unit 8. Incoming TiCl_4 from the Chlorination Process is transferred to crude feed tanks prior to purification. Emissions from the process are controlled by the PVS scrubber.

Vacuum Distillation Process (VDP)

The potential emissions from VDP operation are PM_{10} , chlorine, and HCl. Emissions from VDP are controlled by reverse jet impingement upstream of a packed bed scrubber and mist eliminator. The scrubbing system is considered BACT.

When the reduction cycle is completed, piping on the top of the vessel is connected to a condenser vessel. The condenser is cooled with water and a vacuum is applied to this vessel while the first vessel is heated. Heating of the first vessel causes Mg and MgCl_2 to vaporize. Un-reacted TiCl_4 is reduced to titanium sponge. The Mg and MgCl_2 vapors pass to the cooled vessel where they condense. This process separates the Mg and MgCl_2 impurities from the Ti sponge; the impurities remain in the first vessel. The condenser is then moved to a furnace where it is heated and charged with molten Mg to start the cycle again. The condenser is essentially converted to a reaction vessel. The condenser is not opened to avoid exposing the contents to air to ensure the titanium quality is not compromised. The VDP process requires that an excess of magnesium metal be added to the reduction vessel. This essentially eliminates un-reacted TiCl_4 in the completed reduction.

After completing production of a batch of Ti sponge, the reaction vessel is cooled, the bottom is cut off, and the Ti sponge is pushed out as a solid mass by a hydraulic ram. The bottom is then re-welded, the vessel is pressure tested, and used as a condenser for condensing Mg and MgCl_2 vapors to repeat the cycle.

In the VDP process, the molten MgCl_2 is transported in closed vessels, virtually eliminating any fugitive emissions and MgCl_2 spills. The VDP process uses electrically heated furnaces so no combustion products are emitted to the atmosphere. The MgCl_2 from Ti sponge production is cycled through the existing magnesium and chlorine recovery facility. This facility produces magnesium metal and chlorine gas by electrolyzing molten magnesium chloride for reuse in the titanium production process.

Magnesium Recovery Process

The Magnesium Recovery Process consists of six rows of electrolytic cells that separate the molten MgCl_2 from the VDP reduction process into metallic Mg and chlorine gas (Cl_2). Chlorine gas is removed under a vacuum from the cells by chlorine compressors located outside and along the western wall of Unit 9 building. The Cl_2 is filtered and compressed for recycling to the Chlorination Process. The molten magnesium that is recovered is transferred into heated, refractory-lined ladles and transported to VDP for transfer into reduction vessels. The emergency chlorine scrubber, located outside, removes 99% of the Cl_2 during emergency conditions or during cell header maintenance. An emergency diesel generator provides power to the scrubber only if the primary power is interrupted.

Melt Shop and Blending Processes

The Melt Shop and Blending Processes are conducted in Units 11, 12 and 13. All seven sponge-blending systems are equipped with cyclone dust collection systems to achieve 99% control efficiency, for PM_{10} . The PM_{10} emissions from melt, reclaim, various miscellaneous operations are controlled by the use of cyclones and baghouses.

Scrap Reclaim

Scrap Reclaim is located in the southwestern portion of Unit 8. The final product of scrap reclaim is either reused on-site or sold off-site.

Water Conservation Facility (WCF)

The acidic CSD slurry is neutralized with caustic liquids and excess water is removed with filter presses. The resultant 'filter cake' is disposed of in a class IV industrial landfill in Idaho. High-solids process water is pumped through a reverse osmosis (RO) system. The very high solids RO 'concentrate' is pumped to a holding pond on the facility property for evaporation. The clean RO effluent is pumped to the permitted discharge point and is regulated by the NPDES permit. The efficiency of the chlorine scrubber at WCF is certified by the manufacturer at 99.95%.

E. Proposed Exemptions

There are no exemptions.

II. EMISSIONS INFORMATION

A. Source-wide Potential to Emit

TIMET is a major source for CO and PM₁₀; and a minor source for NO_x, SO_x, VOC, and HAP:

Table II-A-1: Source-wide PTE (tons per year)

Pollutant	PM ₁₀	PM _{2.5}	NO _x	CO	SO _x	VOC	HAP
PTE Totals	64.39	56.40	11.35	394.19	85.12	7.29	2.79
Major Source Thresholds	70	70	100	100	100	100	25¹

¹25 tons for combination of all HAPs (no single HAP exceeds 10 tons).

Table II-A-2: Source PTE by Process (tons per year)

Process	PM ₁₀	PM _{2.5}	NO _x	CO	SO _x	VOC	HAP	HCl	Cl ₂	COS	H ₂ SO ₄
Raw Materials Storage and Handling	1.74	1.60	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Chlorination	10.81	8.27	10.53	393.92	85.06	0.21	0.05	0.13	0.39	0.31	3.75
Purification	6.12	5.52	0.42	0.09	0.01	0.78	0.01	1.67	0.00	0.00	0.00
Vacuum Distillation	26.22	23.48	0.16	0.03	0.02	0.04	0.01	0.80	0.35	0.00	0.00
Magnesium Recovery	11.67	10.48	0.05	0.01	0.01	0.01	0.01	0.00	1.45	0.01	0.00
Blending	2.10	1.89	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Melt/Reclaim	4.08	3.68	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Miscellaneous	1.65	1.48	0.19	0.14	0.02	5.88	2.48	1.52	0.00	0.00	0.34
Wastewater Reclamation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.00
Groundwater Remediation	0.00	0.00	0.00	0.00	0.00	0.37	0.23	0.00	0.00	0.00	0.00
Total	64.39	56.40	11.35	394.19	85.12	7.29	2.79	4.12	2.22	0.32	4.09

Table II-A-3: Source PTE by Process (pounds per hour)

Process	PM ₁₀	PM _{2.5}	NO _x	CO	SO _x	VOC	HAP	HCl	Cl ₂	COS	H ₂ SO ₄
Raw Materials Storage and Handling	0.42	0.39	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Chlorination	3.70	3.35	3.95	900.8	56.90	0.10	0.03	0.06	0.12	0.14	1.72
Purification	1.72	1.56	0.10	0.02	0.01	0.10	0.01	0.73	0.00	0.00	0.00
Vacuum Distillation	6.04	5.46	0.61	0.13	0.07	0.06	0.53	0.30	0.16	0.00	0.00
Magnesium Recovery	4.31	2.40	0.20	0.04	0.02	0.02	0.01	0.00	0.33	0.01	0.00
Blending	0.42	0.35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Melt/Reclaim	2.77	2.52	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Process	PM ₁₀	PM _{2.5}	NO _x	CO	SO _x	VOC	HAP	HCl	Cl ₂	COS	H ₂ SO ₄
Miscellaneous	0.54	0.49	1.09	0.23	0.07	1.43	0.57	0.00	0.00	0.00	0.00
Wastewater Reclamation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.00
Groundwater Remediation	0.00	0.00	0.00	0.00	0.00	0.08	0.05	0.00	0.00	0.00	0.00
Total	19.92	16.52	5.95	901.22	57.07	1.79	1.20	2.06	0.64	0.15	1.72

B. Emission Units and PTE

RAW MATERIAL STORAGE AND HANDLING

Table II-B-1: List of Emission Units (EU) – Raw Material Storage and Handling

EU	Description	Rating	Make	SCC
A01	Coke Rail Car Unloading	15,000 tons/yr	TIMET design	30601301
A02	Coke Storage Silo #1	5,000 tons/yr	TIMET design	30601301
A03	Coke Storage Silo #2	10,000 tons/yr	TIMET design	30601301
A04	Rutile Ore Rail Car Unloading	50,000 tons/yr	TIMET design	30303012
A05	Rutile Transfer into Silo #1	12,500 tons/yr	TIMET design	30303012
A06	Rutile Transfer into Silo #2	12,500 tons/yr	TIMET design	30303012
A07	Rutile Transfer into Silo #3	12,500 tons/yr	TIMET design	30303012
A08	Coke/Rutile Transfer into Silo #4	12,500 tons/yr	TIMET design	30303012
A09	Rutile Transfer Bins (2) Offloading	50,000 tons/yr	TIMET design	30303012

Table II-B-2: PTE (tons per year) – Raw Materials Storage and Handling

EU	Throughput	Control	Control Efficiency	PM ₁₀	PM _{2.5}
A01	15,000 tons/year	Enclosure	50%	0.23	0.21
A02	5,000 tons/year	No controls	0%	0.15	0.14
A03	10,000 tons/year	No controls	0%	0.30	0.27
A04	50,000 tons/year	Enclosure	50%	0.75	0.68
A05	12,500 tons/year	Inside Building	90%	0.04	0.04
A06	12,500 tons/year	Inside Building	90%	0.04	0.04
A07	12,500 tons/year	Inside Building	90%	0.04	0.04
A08	12,500 tons/year	Inside Building	90%	0.04	0.04
A09	50,000 tons/year	Enclosure	90%	0.15	0.14
Total				1.74	1.60

Table II-B-3: PTE (pounds per hour) – Raw Materials Storage and Handling¹

EU	Throughput	Control	Control Efficiency	PM ₁₀	PM _{2.5}
A01	15,000 tons	Enclosure	50%	0.10	0.09
A02	5,000 tons	No controls	0%	0.03	0.03
A03	10,000 tons	No controls	0%	0.07	0.07
A04	50,000 tons	Enclosure	50%	0.17	0.15
A05	12,500 tons	Inside Building	90%	0.01	0.01
A06	12,500 tons	Inside Building	90%	0.01	0.01
A07	12,500 tons	Inside Building	90%	0.01	0.01
A08	12,500 tons	Inside Building	90%	0.01	0.01
A09	50,000 tons	Enclosure	90%	0.01	0.01
Total				0.42	0.39

¹Hourly emissions are calculated from annual PTE divided by 8,760 hours/year.

CHLORINATION PROCESS

Table II-B-4: List of Emission Units (EU) – Chlorination Process

EU	Description	Rating	Make	Model #	Serial #	SCC
B01	Caustic Scrubbing Tower #1 Vent					30301201
B02	Caustic Scrubbing Tower #2 Vent					30301201
B03	Caustic Scrubbing Tower #3 Vent					30301201
B04	Caustic Scrubbing Tower #4 Vent					30301201
B05	Venturi Scrubber Exhaust Stack (2 scrubbers, 4 blowers)	2,970 cfm total	Ducon Oriclone	Type VO, Size 42		30301201
B06a	CO Burner/Boiler exhausting through SO ₂ Scrubber	18.5 MMBtu/hr	Clever Brooks	CB700350200	OL102330	10201402
B06b	SO ₂ Scrubber	N/A	MECS	Dynaware		30301201
B07	Chlorinator Dust Transfer from Dust Legs	600 tons dust/yr per chlorinator	Air Chem Systems	ACSC 2X2		30301201
B09	Natural Gas Steam Boiler	6.7 MMBtu/hr	Kewanee	A3S-200-G11	AN861008	30501612
B10	Thermal Oxidizer (alternative control device for CO boiler)	6.0 MMBtu/hr	North American	2942-22-33AW	GS-2953	10200601
B11	Chlorinator #81	12 red./day	TIMET design			10200601
B12	Chlorinator #82	12 red./day	TIMET design			30301201
B13	Chlorinator #83	12 red./day	TIMET design			30301201
B14	Chlorinator #84	12 red./day	TIMET design			30301201
B15	Chlorinator #85	12 red./day	TIMET design			30301201
B16	Chlorinator #86	12 red./day	TIMET design			30301201
B17	Chlorinator #87	12 red./day	TIMET design			30301201
B18	Chlorinator #88	12 red./day	TIMET design			30301201
B19	Natural Gas Boiler – Rental Unit	Up to 14.7 MMBtu/hr	Varies	Varies	Varies	30301201
B20	Chlorinator Dust Loading in Roll-off Bins controlled by Wet Scrubber	2,000 cfm	Air Chem Systems	ACSC 2X2		30301299
B21	Truck Hauling of Chlorinator Dust Roll-offs in/out of facility	0.5 mile paved				10200601

Table II-B-5: Insignificant Units and Activities – Chlorination Process

EU	Description	Rating	Make	Model #	Serial #	SCC
M02	Ammonia Refrigeration System	2,900 lbs NH ₃	Frick of York	RFX-101N	0407YFM NWHGA0 3 York - 154837	3031299

Table II-B-6: PTE (tons per year) – Chlorination Process

EU	Conditions	PM ₁₀	PM _{2.5}	NO _x	CO	SO _x	VOC	HAP	Cl ₂	HCl	COS	H ₂ SO ₄
B01	8,760 hr/yr	100% Emissions vented to EU: B05 except during upset/breakdown resulting in venting at one or more Caustic Towers										
B02	8,760 hr/yr											
B03	8,760 hr/yr											
B04	8,760 hr/yr											

EU	Conditions	PM ₁₀	PM _{2.5}	NO _x	CO	SO _x	VOC	HAP	Cl ₂	HCl	COS	H ₂ SO ₄
B05	8,760 hr/yr	100% Emissions vented to EUs: B06 a,b										
B06a,b	8,760 hr/yr	9.81	7.36	8.94	392.5	85.0	0.00	0.00	0.13	0.39	0.31	3.75
B07	8,760 hr/yr	0.64	0.58	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
B09	8,760 hr/yr	0.22	0.20	1.36	1.40	0.04	0.18	0.04	0.00	0.00	0.00	0.00
B10	8,760 hr/yr	100% Emissions included in EU: B06a,b										
B11	8,760 hr/yr	100% Emissions vented to Caustic Scrubbing Tower #1, Venturi Scrubbers, CO Boiler, and SO ₂ Scrubber										
B12	8,760 hr/yr											
B13	8,760 hr/yr	100% Emissions vented to Caustic Scrubbing Tower #2, Venturi Scrubbers, CO Boiler, and SO ₂ Scrubber										
B14	8,760 hr/yr											
B15	8,760 hr/yr	100% Emissions vented to Caustic Scrubbing Tower #3, Venturi Scrubbers, CO Boiler, and SO ₂ Scrubber										
B16	8,760 hr/yr											
B17	8,760 hr/yr	100% Emissions vented to Caustic Scrubbing Tower #4, Venturi Scrubbers, CO Boiler, and SO ₂ Scrubber										
B18	8,760 hr/yr											
B19	876 hr/yr	0.06	0.06	0.23	0.03	0.01	0.03	0.01	0.00	0.00	0.00	0.00
B20	8,760 hr/yr	0.07	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
B21	180 VMT/yr	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total		10.81	8.27	10.53	393.92	85.06	0.21	0.05	0.13	0.39	0.31	3.75

Table II-B-7: PTE (pounds per hour) – Chlorination Process

EU	Conditions	PM ₁₀	PM _{2.5}	NO _x	CO	SO _x	VOC	HAP	Cl ₂	HCl	COS	H ₂ SO ₄
B01	1 hour	100% Emissions vented to EU: B05 except during upset/breakdown resulting in venting at one or more Caustic Towers										
B02	1 hour											
B03	1 hour											
B04	1 hour											
B05	1 hour	100% Emissions vented to EU: B06 a,b										
B06a,b	1 hour	2.24	2.02	2.04	900.0	19.40	0.00	0.00	0.03	0.09	0.07	0.86
B07	1 hour	0.14	0.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
B09	1 hour	0.05	0.05	0.31	0.32	0.01	0.04	0.01	0.00	0.00	0.00	0.00
B10	1 hour	0.05	0.05	1.14	0.45	37.42	0.00	0.00	0.03	0.03	0.07	0.86
B11	1 hour	100% Emissions vented to Caustic Scrubbing Towers, Venturi Scrubbers, CO Boiler, and SO ₂ Scrubber										
B12	1 hour											
B13	1 hour											
B14	1 hour											
B15	1 hour											
B16	1 hour											
B17	1 hour											
B18	1 hour											
B19	1 hour	0.15	0.15	0.53	0.05	0.01	0.06	0.02	0.00	0.00	0.00	0.00
B20	1 hour	0.50	0.45	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
B21	7.57 lb/VMT	0.57	0.51	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total		3.70	3.35	3.95	900.8	56.90	0.10	0.03	0.06	0.12	0.14	1.72

PURIFICATION PROCESS

Table II-B-8: List of Emission Units (EU) – Purification Process

EU	Description	Rating	Make	Model #	Serial #	SCC
C01	Purification #2 PVS Scrubber	300 cfm				30301205
C02	Continuous Sludge Dryers (2)	N/A	Joy Mfg.	D-2420-6		30301205
C04	Hot Oil Expansion Tank Vent	4,160 ft ³ /yr				40301099

EU	Description	Rating	Make	Model #	Serial #	SCC
C05	Hot Oil Heater – alternate unit	1.0 MMBtu/hr	American Hydrotherm	Northern American		40301099
C06	Header Blowout Vent	Rupture Disc				30301205
C07	Fugitive (valves, flanges, seals)	0.13 lb/hr TiCl ₄				30301201
M15	Pure TiCl ₄ Storage Tanks (10) West	83,000,000 lb/yr				30183001

Table II-B-9: Insignificant Units and Activities – Purification Process

Description	Rating	Make	Model #	Serial #
Natural Gas Hot Oil Heater	0.9 MMBtu/hr	HOH-American Hydrotherm	PowerFlame NPM30-12-120	5077

Table II-B-10: PTE (tons per year) – Purification Process

EU	Rating	Conditions	PM ₁₀	PM _{2.5}	NO _x	CO	SO _x	VOC	HAP	HCl
C01	300 cfm	8,760 hr/yr	5.66	5.09	0.00	0.00	0.00	0.00	0.00	0.96
C02	N/A	8,760 hr/yr	0.14	0.13	0.00	0.00	0.00	0.00	0.00	0.26
C04	80 ft ³ /week	8,760 hr/yr	0.00	0.00	0.00	0.00	0.00	0.38	0.00	0.00
C05	1 MMBtu/hr	8,760 hr/yr	0.05	0.05	0.42	0.09	0.01	0.02	0.01	0.00
C06	Rupture Disc	8,760 hr/yr	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00
C07	0.13 lb/hr TiCl ₄	8,760 hr/yr	0.25	0.23	0.00	0.00	0.00	0.00	0.00	0.45
M15	83,000,000 lb/yr	8,760 hr/yr	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00
Total			6.12	5.52	0.42	0.09	0.01	0.40	0.01	1.67

Table II-B-11: PTE (pounds per hour) – Purification Process

EU	Rating	Conditions	PM ₁₀	PM _{2.5}	NO _x	CO	SO _x	VOC	HAP	HCl
C01	300 cfm	1 hour	1.30	1.17	0.00	0.00	0.00	0.00	0.00	0.22
C02	N/A	1 hour	0.03	0.03	0.00	0.00	0.00	0.00	0.00	0.06
C04	80 ft ³ /week	1 hour	0.11	0.10	0.00	0.00	0.00	0.09	0.00	0.00
C05	1 MMBtu/hr	1 hour	0.01	0.01	0.10	0.02	0.01	0.01	0.01	0.00
C06	Rupture Disc	1 hour	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00
C07	0.13 lb/hr TiCl ₄	1 hour	0.25	0.23	0.00	0.00	0.00	0.00	0.00	0.45
M15	83,000,000 lb/yr	1 hour	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00
Total			1.72	1.56	0.10	0.02	0.01	0.10	0.01	0.73

VACUUM DISTILLATION PROCESS (VDP)

Table II-B-12: List of Emission Units (EU) – Vacuum Distillation Process

EU	Description	Rating	Make	Model #	Serial #	SCC
E01	VDP Scrubber	20 furnaces	MECS	Dynaware		30301280
E02	General Arc Welding	10,000 lbs electrodes				30905000
E03	Emergency Generator - Engine	1,290 hp	Mitsubishi	S12N-PTA	10950	20200104
	Emergency Generator - Genset	825 kW	Marathon Electric	574RSL403BWW	YB3877293	
E04	Diesel Storage Tank	1,600 gallons	Mark Steel Corp.		TK1-DO	40301021
E05a	VDP Cooling Tower - East	4,800 gpm	Phoenix	2FT-20.2/24.7-50-P5		38500100
E05b	VDP Cooling Tower - West	7,000 gpm	Evapco	24-924B		38500100

EU	Description	Rating	Make	Model #	Serial #	SCC
E06	VDP Fugitives Emissions from 42 Furnaces	16,000 tons sponge/yr				30301220
E07	Electric Sponge Dryer Sponge Dryer Cyclone	3,800 cfm	Airecon	12-1	L-5817	30301299
M16	Pure TiCl ₄ Storage Tanks, J-1, J-5 Area - Wet Scrubber	100 acfm at 2.5 psig	Advanced Air Technologies	Orion	051091	30183001

Table II-B-13: PTE (tons per year) – Vacuum Distillation Process

EU	Rating	Conditions	PM ₁₀	PM _{2.5}	NO _x	CO	SO _x	VOC	HAP	HCl	Cl ₂
E01	20 furnaces	8,760 hr/yr	2.54	2.16	0.00	0.00	0.00	0.00	0.00	0.66	0.35
E02	10,000 lbs electrodes	10.3 lb/1,000 lb electrodes	0.05	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00
E03	1,290 hp	500 hr/yr	0.01	0.01	0.15	0.03	0.02	0.01	0.13	0.00	0.00
E04	16,000 gal.	4,000 gal/yr	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.00	0.00
E05a	4,800 gpm	8,760 hr/yr	0.12	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00
E05b	7,000 gpm	8,760 hr/yr	0.18	0.16	0.00	0.00	0.00	0.00	0.00	0.00	0.00
E06	42 stations	8,760 hr/yr	23.30	20.97	0.00	0.00	0.00	0.00	0.00	0.14	0.00
E07	3,800 acfm	3,120 hr/yr	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00
M16	83,000,000 lb/yr	8,760 hr/yr	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total			26.22	23.48	0.16	0.03	0.02	0.04	0.13	0.80	0.35

Table II-B-14: PTE (pounds per hour) – Vacuum Distillation Process

EU	Rating	Conditions	PM ₁₀	PM _{2.5}	NO _x	CO	SO _x	VOC	HAP	HCl	Cl ₂
E01	20 furnaces	1 hour	0.58	0.52	0.00	0.00	0.00	0.00	0.00	0.30	0.16
E02	10,000 lbs electrodes	1 hour	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
E03	1,150 hp	1 hour	0.04	0.04	0.61	0.13	0.07	0.05	0.53	0.00	0.00
E04	16,000 gallons	1 hour	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00
E05a	4,800 gpm	1 hour	0.03	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00
E05b	7,000 gpm	1 hour	0.04	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00
E06	42 stations	1 hour	5.33	4.80	0.00	0.00	0.00	0.00	0.00	0.01	0.00
E07	3,800 acfm	1 hour	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
M16	83,000,000 lb/yr	1 hour	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total			6.05	5.46	0.61	0.13	0.07	0.06	0.53	0.30	0.16

MAGNESIUM RECOVERY PROCESS

Table II-B-15: List of Emission Units (EU) – Magnesium Recovery Process

EU	Description	Rating	Make	Model #	Serial #	SCC
G01	Emergency Chlorine Scrubber	780 lbs Cl ₂ /upset	US Filter			30400600
G03	Magnesium Recovery Fugitives	36.64 lbs/day				30400600
G04a	Sulfuric Acid Tank West	7,500 gal				30187009
G04b	Sulfuric Acid Tank North	2,100 gal				30187009
G09a	Cooling Tower #1	750 gpm	Delta CT Co.	T-250i		38500100
G09b	Cooling Tower #2	750 gpm	Delta CT Co.	T-250i		38500100
G09c	Cooling Tower #3	750 gpm	Delta CT Co.	T-250i		38500100
G09d	Cooling Tower #4	750 gpm	Delta CT Co.	T-250i		38500100
G10	Diesel Generator for Emergency Scrubber - Engine	87 hp	Caterpillar	3054	4ZK02183	20200104
	Diesel Generator for Emergency Scrubber - Genset	50 kW	Generac	94A04770-S	2016244	
G12a	Cooling Tower #1	220 gpm	Delta CT Co.	DT-150		38500100
G12b	Cooling Tower #2	220 gpm	Delta CT Co.	DT-150		38500100

EU	Description	Rating	Make	Model #	Serial #	SCC
G12c	Cooling Tower #3	220 gpm	Delta CT Co.	DT-150		38500100
G12d	Cooling Tower #4	220 gpm	Delta CT Co.	DT-150		38500100
G12e	Cooling Tower #5	220 gpm	Delta CT Co.	DT-150		38500100
G12f	Cooling Tower #6	220 gpm	Delta CT Co.	DT-150		38500100
G12g	Cooling Tower #7	220 gpm	Delta CT Co.	DT-150		38500100
G12h	Cooling Tower #8	220 gpm	Delta CT Co.	DT-150		38500100

Table II-B-16: PTE (tons per year) – Magnesium Recovery Process

EU	Rating	Conditions	PM ₁₀	PM _{12.5}	NO _x	CO	SO _x	VOC	HAP	Cl ₂	H ₂ SO ₄
G01	780 lbs Cl ₂	1 event/day	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.45	0.00
G03 ¹	36.64 lbs/day	8,760 hr/yr	6.70	6.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00
G04a,b	9.600 gal	600,000 lb/yr	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
G09a	750 gpm	8,760 hr/yr	0.10	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00
G09b	750 gpm	8,760 hr/yr	0.10	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00
G09c	750 gpm	8,760 hr/yr	0.10	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00
G09d	750 gpm	8,760 hr/yr	0.10	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00
G10	87 hp	500 hr/yr	0.01	0.01	0.05	0.01	0.01	0.01	0.01	0.00	0.00
G12a	220 gpm	8,760 hr/yr	0.57	0.51	0.00	0.00	0.00	0.00	0.00	0.00	0.00
G12b	220 gpm	8,760 hr/yr	0.57	0.51	0.00	0.00	0.00	0.00	0.00	0.00	0.00
G12c	220 gpm	8,760 hr/yr	0.57	0.51	0.00	0.00	0.00	0.00	0.00	0.00	0.00
G12d	220 gpm	8,760 hr/yr	0.57	0.51	0.00	0.00	0.00	0.00	0.00	0.00	0.00
G12e	220 gpm	8,760 hr/yr	0.57	0.51	0.00	0.00	0.00	0.00	0.00	0.00	0.00
G12f	220 gpm	8,760 hr/yr	0.57	0.51	0.00	0.00	0.00	0.00	0.00	0.00	0.00
G12g	220 gpm	8,760 hr/yr	0.57	0.51	0.00	0.00	0.00	0.00	0.00	0.00	0.00
G12h	220 gpm	8,760 hr/yr	0.57	0.51	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total			11.67	10.48	0.05	0.01	0.01	0.01	0.01	1.45	0.01

¹28.80 lbs/day for MgCl₂ transfer; 7.70 lbs/day for other activities, and 0.14 lbs/cell anode change = 36.64 lbs/day

Table II-B-17: PTE (pounds per hour) – Magnesium Recovery Process

EU	Rating	Conditions	PM ₁₀	PM _{2.5}	NO _x	CO	SO _x	VOC	HAP	Cl ₂	H ₂ SO ₄
G01	780 lbs Cl ₂	1 hour	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.33	0.00
G03 ¹	36.64 lbs/day	1 hour	1.50	1.35	0.00	0.00	0.00	0.00	0.00	0.00	0.00
G04a,b	9.600 gal	1 hour	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
G09a	750 gpm	1 hour	0.02	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00
G09b	750 gpm	1 hour	0.02	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00
G09c	750 gpm	1 hour	0.02	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00
G09d	750 gpm	1 hour	0.02	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00
G10	87 hp	1 hour	0.01	0.01	0.20	0.04	0.02	0.02	0.01	0.00	0.00
G12a	220 gpm	1 hour	0.13	0.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00
G12b	220 gpm	1 hour	0.13	0.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00
G12c	220 gpm	1 hour	0.13	0.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00
G12d	220 gpm	1 hour	0.13	0.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00
G12e	220 gpm	1 hour	0.13	0.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00
G12f	220 gpm	1 hour	0.13	0.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00
G12g	220 gpm	1 hour	0.13	0.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00
G12h	220 gpm	1 hour	0.13	0.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total			2.63	2.40	0.20	0.04	0.02	0.02	0.01	0.33	0.01

¹ Hourly emissions are calculated from 36.64 lbs/day PTE divided by 24 hours.

BLENDING PROCESS

Table II-B-18: List of Emission Units (EU) – Blending Process

EU	Description	Rating	Make	Model #	Serial #	SCC
H01	Sponge Blending System #1 – South Wall Unit 12	15,000 lb/hr	Ducon	Type SDW, size 10		30301260
H02	Sponge Blending System #2 - South Wall Unit 12	15,000 lb/hr	Ducon	Type SDW, size 10		30301260
H03	Sponge Blending System #3 – South Wall Unit 12	15,000 lb/hr	Ducon	Type SDW, size 10		30301260
H04	Sponge Blending System #4 – South Wall Unit 12	15,000 lb/hr	Ducon	Type SDW, size 10		30301260
H05	Splitter System – North Wall Unit 12	15,000 lb/hr	Ducon	Type SDW, size 10		30301260
H06	Blending Sampler Dust Collector – North Wall Unit 12	15,000 lb/hr	Ducon	Type SDW, size 10		30301260
H07	Sponge Blending System #7 – East Wall Unit 12	15,000 lb/hr	Murphy Rogers	MRC 985-D	1541	30301260

Table II-B-19: PTE (tons per year) – Blending Process

EU	Rating	Control	PM ₁₀	PM _{2.5}	NO _x	CO	SO _x	VOC	HAP
H01	15,000 lb/hr	99.0 %	0.30	0.27	0.00	0.00	0.00	0.00	0.00
H02	15,000 lb/hr	99.0 %	0.30	0.27	0.00	0.00	0.00	0.00	0.00
H03	15,000 lb/hr	99.0 %	0.30	0.27	0.00	0.00	0.00	0.00	0.00
H04	15,000 lb/hr	99.0 %	0.30	0.27	0.00	0.00	0.00	0.00	0.00
H05	15,000 lb/hr	99.0 %	0.30	0.27	0.00	0.00	0.00	0.00	0.00
H06	15,000 lb/hr	99.0 %	0.30	0.27	0.00	0.00	0.00	0.00	0.00
H07	15,000 lb/hr	99.0 %	0.30	0.27	0.00	0.00	0.00	0.00	0.00
Total			2.10	1.89	0.00	0.00	0.00	0.00	0.00

Table II-B-20: PTE (pounds per hour) – Blending Process

EU	Rating	Control	PM ₁₀	PM _{2.5}	NO _x	CO	SO _x	VOC	HAP
H01	15,000 lb/hr	99.0 %	0.06	0.05	0.00	0.00	0.00	0.00	0.00
H02	15,000 lb/hr	99.0 %	0.06	0.05	0.00	0.00	0.00	0.00	0.00
H03	15,000 lb/hr	99.0 %	0.06	0.05	0.00	0.00	0.00	0.00	0.00
H04	15,000 lb/hr	99.0 %	0.06	0.05	0.00	0.00	0.00	0.00	0.00
H05	15,000 lb/hr	99.0 %	0.06	0.05	0.00	0.00	0.00	0.00	0.00
H06	15,000 lb/hr	99.0 %	0.06	0.05	0.00	0.00	0.00	0.00	0.00
H07	15,000 lb/hr	99.0 %	0.06	0.05	0.00	0.00	0.00	0.00	0.00
Total			0.42	0.35	0.00	0.00	0.00	0.00	0.00

MELT/RECLAIM PROCESS

Table II-B-21: List of Emission Units (EU) – Melt/Reclaim Process

EU	Description	Rating	Make	Model #	Serial #	SCC
I01	Blending Press & Weld – Press Cyclone (north)	10 lb/shift	Ducon			30301260
I02	Blending Press & Weld – Weld-Splitter Cyclone (south)	10 lb/shift	Ducon			30301260
J01	Primary Melt Vacuum Pump and SEV System/12 points	8 stations	Cumberland Vacuum	908-337		30301262
J02	Secondary Melt Vacuum Pump and SEV System/8 points	10 stations	Kiney Vacuum Division	MT800		30301262
K01	Ingots Preparation - Torch Cutting	4 ingots/hr	American Air Filter	Model C, size 1296	AT-60005	30904600

EU	Description	Rating	Make	Model #	Serial #	SCC
L02	Scrap & Reclaim - Crusher/Torch Cutting	14,000 lbs/hr	Wheelabrator Frye	A130289		30904600
L03	Scrap & Reclaim - Crusher/Torch Cutting	24 batches/day	Ducon			30900205

Table II-B-22: PTE (tons per year) – Melt/Reclaim Process

EU	Rating	Control	PM ₁₀	PM _{2.5}	NO _x	CO	SO _x	VOC	HAP
I01	10 lb/shift	99.0 %	0.88	0.79	0.00	0.00	0.00	0.00	0.00
I02	10 lb/shift	99.0 %	0.88	0.79	0.00	0.00	0.00	0.00	0.00
J01	8 stations	0.0 %	0.83	0.75	0.00	0.00	0.00	0.00	0.00
J02	10 stations	0.0 %	0.83	0.75	0.00	0.00	0.00	0.00	0.00
K01	4 ingots/hr	99.0 %	0.02	0.02	0.00	0.00	0.00	0.00	0.00
L02	14,000 lbs/hr	99.0 %	0.60	0.54	0.00	0.00	0.00	0.00	0.00
L03	24 batches/day	95.0 %	0.04	0.04	0.00	0.00	0.00	0.00	0.00
Total			4.08	3.68	0.00	0.00	0.00	0.00	0.00

Table II-B-23: PTE (pounds per hour) – Melt/Reclaim Process

EU	Rating	Control	PM ₁₀	PM _{2.5}	NO _x	CO	SO _x	VOC	HAP
I01	10 lb/shift	99.0 %	1.25	1.13	0.00	0.00	0.00	0.00	0.00
I02	10 lb/shift	99.0 %	1.25	1.13	0.00	0.00	0.00	0.00	0.00
J01	8 stations	0.0 %	0.04	0.04	0.00	0.00	0.00	0.00	0.00
J02	10 stations	0.0 %	0.04	0.04	0.00	0.00	0.00	0.00	0.00
K01	4 ingots/hr	99.0 %	0.04	0.04	0.00	0.00	0.00	0.00	0.00
L02	14,000 lbs/ hr	99.0 %	0.14	0.13	0.00	0.00	0.00	0.00	0.00
L03	24 batches/day	95.0 %	0.01	0.01	0.00	0.00	0.00	0.00	0.00
Total			2.77	2.52	0.00	0.00	0.00	0.00	0.00

MISCELLANEOUS PROCESSES

Table II-B-24: List of Emission Units (EU) – Miscellaneous Processes

EU	Description	Rating	Make	Model #	Serial #	SCC
M01	Unit 7 Wheelabrator Baghouse	30 tons abrasive/yr	US Filter	A14-2515, 2516		30900205
M03	Technical Laboratory Blasting Unit	15 hrs/week				30900201
M04	Outdoor Abrasive Blast Area	180 tons abrasive/yr				30200201
M07	Above Ground Gasoline Storage Tank, J-2	500 gallons				20200106
M08	Above Ground Diesel Storage Tank, J-2	500 gallons				40301021
M13	Paint Shop	1,750 gallons				40200700
M14	Cooling Tower (west of WCF)	4,500 gpm	BAC-Pritchard	4392-2		38500100
W04	Alpha Ditch Emergency Generator - Engine	35 hp	John Deere	4024TF818	OG6024	20200104
	Alpha Ditch Emergency Generator - Genset	25 kW	Generac	9781650200	2098264	

Table II-B-25: Insignificant Units and Activities – Miscellaneous Process

Description	Make	Model #	Serial #
Laboratory Fume Hoods, S-11 East and West (EU: M09)			
Laboratory Fume Hoods, K-52 East and South (EU: M10)			

Table II-B-26: PTE (tons per year) – Miscellaneous Processes

EU	Rating	Control	PM ₁₀	PM _{2.5}	NO _x	CO	SO _x	VOC	HAP
M01	30 tons abrasive/yr	99.0 %	0.21	0.19	0.00	0.00	0.00	0.00	0.00
M03	15 hrs/week	99.0 %	0.04	0.04	0.00	0.00	0.00	0.00	0.00
M04	180 tons abrasive/yr	0.0 %	1.26	1.13	0.00	0.00	0.00	0.00	0.00
M07	10,000 gal/yr	0.0 %	0.00	0.00	0.00	0.00	0.00	0.52	0.00
M08	50,000 gal/yr	0.0 %	0.00	0.00	0.00	0.00	0.00	0.08	0.00
M13	1,750 gal	0.0 %	0.00	0.00	0.00	0.00	0.00	5.26	2.47
M14	4,500 gpm	0.0 %	0.12	0.11	0.00	0.00	0.00	0.00	0.00
W04	35 hp	0,0 %	0.02	0.01	0.19	0.14	0.02	0.02	0.01
Total			1.65	1.48	0.19	0.14	0.02	5.88	2.48

Table II-B-27: PTE (pounds per hour) – Miscellaneous Process

EU	Rating	Control	PM ₁₀	PM _{2.5}	NO _x	CO	SO _x	VOC	HAP
M01	30 tons abrasive/yr	99.0 %	0.05	0.05	0.00	0.00	0.00	0.00	0.00
M03	15 hrs/week	99.0 %	0.09	0.08	0.00	0.00	0.00	0.00	0.00
M04	180 tons abrasive/yr	0.0 %	0.29	0.26	0.00	0.00	0.00	0.00	0.00
M07	10,000 gal/yr	0.0 %	0.00	0.00	0.00	0.00	0.00	0.12	0.00
M08	50,000 gal/yr	0.0 %	0.00	0.00	0.00	0.00	0.00	0.02	0.00
M13	1,750 gal	0.0 %	0.00	0.00	0.00	0.00	0.00	1.20	0.56
M14	4,500 gpm	0.0 %	0.03	0.03	0.00	0.00	0.00	0.00	0.00
W04	35 hp	0,0%	0.08	0.07	1.09	0.23	0.07	0.09	0.01
Total			0.54	0.49	1.09	0.23	0.07	1.43	0.57

WASTEWATER NEUTRALIZATION PLANT

Table II-B-28: List of Emission Units (EU) – Wastewater Conservation Facility (WCF)

EU	Description	Rating	Make	Model #	Serial #	SCC
W01	Wastewater Neutralization	130 gal/min				30382599
W02	WCF Chlorine Scrubber	1,000 ft ³ /min	Viron International	VCB-1112-BD-FRP-9-CW45-SHP-TEFC-PREM-460-3-60	12764	30382599
W03	Wastewater Clarification/Filtration	130 gal/min				30382599

Table II-B-29: PTE (tons per year) – Wastewater Conservation Facility (WCF)

EU	Rating	Control	PM ₁₀	PM _{2.5}	NO _x	CO	SO _x	VOC	HAP	Cl ₂
W01	130 gal/min	100.0 %	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
W02	1,000 ft ³ /min	99.95 %	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
W03	130 gal/min	100.0 %	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
Total			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03

Table II-B-30: PTE (pounds per hour) – Wastewater Conservation Facility (WCF)

EU	Rating	Control	PM ₁₀	PM _{2.5}	NO _x	CO	SO _x	VOC	HAP	Cl ₂
W01	130 gal/min	100.0 %	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
W02	1,000 ft ³ /min	99.95 %	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
W03	130 gal/min	100.0 %	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
Total			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03

GROUNDWATER REMEDIATION SYSTEM

Table II-B-31: List of Emission Units (EU) – Groundwater Remediation System

EU	Description	Rating	Make	Model #	Serial #	SCC
GW01	Groundwater remediation system, 8-tray air stripping unit	100 gpm, 850 cfm flow rate	QED	EZ-16.4SS		30382599

Table II-B-32: PTE (tons per year) – Groundwater Remediation System

EU	Rating	Conditions	PM ₁₀	PM _{2.5}	NO _x	CO	SO _x	VOC	HAP
GW01	100 gpm	8,760 hr/yr	0.00	0.00	0.00	0.00	0.00	0.37	0.23
Total			0.00	0.00	0.00	0.00	0.00	0.37	0.23

Table II-B-33: PTE (pounds per hour) – Groundwater Remediation System

EU	Rating	Conditions	PM ₁₀	PM _{2.5}	NO _x	CO	SO _x	VOC	HAP
GW01	100 gpm	1 hour	0.00	0.00	0.00	0.00	0.00	0.08	0.05
Total			0.00	0.00	0.00	0.00	0.00	0.08	0.05

C. Testing

The following emission units located at the source have the performance test requirements as specified in Table II-C-1:

Table II-C-1: Performance Testing Requirements (40 CFR 60, Appendix A)

EU	Description	Pollutant/Parameters	Method	Frequency
B06 a,b	CO Boiler & SO ₂ Scrubber (Scrubber Exhaust)	NO _x	EPA Method 7E	5 years
		HCl and Cl ₂	EPA Method 26A	
		H ₂ SO ₄	EPA Method 18	
		Stack Gas Parameters	EPA Methods 1, 2, 3, 4	
	CO Boiler & SO ₂ Scrubber (CEMS)	Flow rate, CO, SO ₂	EPA Method 10 and 6, CEMS, RATA	Annual
	CO Boiler	%S coke, reductions/day during semi-annual boiler maintenance	Recordkeeping	Semi-annual
Temperature (min. 1,400°F)		Recordkeeping	Every 4 hours	
Burner Efficiency Test, Inspections		Recordkeeping	Semi-annual	
B10	Thermal Oxidizer	NO _x	EPA Method 7E	5 years
		CO	EPA Method 10	
		SO ₂	EPA Method 6C	
		Cl ₂	EPA Method 26A	
		COS	EPA Method 15A	
Stack Gas Parameters		EPA Methods 1, 2, 3, 4		
B19	Rental Boiler	Burner Efficiency	Recordkeeping	Semi-annual
		Permit Emission Limits	Recordkeeping	
C01	PVS Scrubber	PM ₁₀	EPA Method 5 or 201A	5 years
		HCl	EPA Method 26A	
E01	VDP Scrubber	Operating Parameters	Recordkeeping	Continuous

D. Continuous Emissions Monitoring

To demonstrate continuous, direct compliance with the hourly and annual emission limitations for CO and SO₂ for the CO boiler (EU: B06) TIMET calibrates, maintains, and operates a Continuous

Emissions Monitoring System (CEMS) for CO and SO₂. Each system includes an automated data acquisition and handling system. Each CEMS monitors and records at least the following data:

- a. hourly averages of exhaust gas concentration for each of CO and SO₂;
- b. exhaust gas flow rate (by direct or indirect methods);
- c. hours of operation;
- d. hourly, daily and quarterly accumulated mass emissions of CO and SO₂; and
- e. hours of downtime of the CEMS.

Required periodic audit procedures and QA/QC procedures for CEMS shall conform to the provisions of 40 CFR 60. Relative Accuracy Test Audits (RATA) of the CO and SO₂ CEMS will be conducted at least annually.

III. REGULATORY REVIEW

A. Local Regulatory Requirements

DAQEM has determined that the following public law, statutes and associated regulations are applicable:

1. Nevada Revised Statutes (NRS), Chapter 445; Sections 401 through 601;
2. Portions of the AQR included in the State Implementation Plan (SIP) for Clark County, Nevada. SIP requirements are federally enforceable. All requirements from Authority to Construct permits and Section 16 Operating Permits issued by DAQEM are federally enforceable because these permits were issued pursuant to SIP-included sections of the AQR; and
3. Portions of the AQR not included in the SIP. These locally applicable requirements are locally enforceable only.

The Nevada Revised Statutes (NRS) and the Clean Air Act Amendments (CAAA) are public laws that establish the general authority for the Regulations mentioned.

The DAQEM Part 70 (Title V) Program received Final Approval on November 30, 2001 with publication of that approval appearing in the Federal Register December 5, 2001 Vol. 66, No. 234. AQR Section 19 - Part 70 OP [Amended 07/01/04] details the Clark County Part 70 Operating Permit Program. These regulations may be accessed on the Internet at: <http://www.accessclarkcounty.com/depts/daqem/aq/rules/pages/regs.aspx>

Local regulations contain sections that are federally enforceable and sections that are locally enforceable only. Locally enforceable only rules have not been approved by EPA for inclusion into the State Implementation Plan (SIP). Requirements and conditions that appear in the Part 70 OP which are related only to non-SIP rules are notated as locally enforceable only.

Table III-A-2: Clark County DAQEM – Air Quality and State Implementation Plan with Facility Compliance or Requirement

Applicable Section – Title	Applicable Subsection - Title	SIP	Affected Emission Unit
0. Definitions	applicable definitions	yes	entire source
2. Procedures for Adoption and Revision of Regulations for Inclusion in SIP	all subsections	yes	entire source
4. Control Officer	all subsections	yes	entire source

Applicable Section – Title	Applicable Subsection - Title	SIP	Affected Emission Unit
5. Interference with Control Officer	all subsections	yes	entire source
6. Injunctive Relief	all subsections	yes	entire source
8. Persons Liable for Penalties - Punishment: Defense	all subsections	yes	entire source
9. Civil Penalties	all subsections	yes	entire source
10. Compliance Schedule	when applicable; applicable subsections	yes	entire source
11. Ambient Air Quality Standards	applicable subsections	yes	entire source
12.4. Authority to Construct Application and Permits Requirements for Part 70 Sources	applicable subsections	yes	entire source
12.5. Part 70 Operating Permit Requirements	applicable subsections	yes	entire source
12.6. Confidentiality	all subsections	yes	entire source
12.7. Emission Reduction Credits	all subsections	yes	entire source
12.9. Annual Emission Inventory Requirement	all subsections	yes	entire source
12.10. Continuous Monitoring Requirements for Stationary Sources	applicable subsections	yes	entire source
12.12. Transfer of Permit	all subsections	yes	entire source
12.13. Posting of Permit	all subsections	yes	entire source
13.1.8 Emission Standards for Hazardous Air Pollutants	Subpart M – National Emission Standards for Asbestos	no	entire source
13.2.14 National Emission Standards for Hazardous Air Pollutants for Source Categories	Subpart Q: National Emission Standards for Hazardous Air Pollutants for Industrial Process Cooling Towers	no	cooling towers
13.2.85 National Emission Standards for Hazardous Air Pollutants for Source Categories	Subpart ZZZZ: National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines	no	diesel engines
13.2.109 National Emission Standards for Hazardous Air Pollutants for Source Categories	Subpart CCCCC: National Emission Standards for Hazardous Air Pollutants for Source Category: Gasoline Dispensing Facilities	no	gasoline dispensing
14.1.11 New Source Performance Standards	Subpart Dc: Standards of Performance for Small Industrial – Commercial – Institutional Steam Generating Units	no	boiler
14.1.90 New Source Performance Standards	Subpart IIII: Standards of Performance for Stationary Compression Ignition Internal Combustion Engines	no	diesel engines
18. Permit and Technical Service Fees	18.1 Operating Permit Fees 18.2 Annual Emission Unit Fees 18.4 New Source Review Application Review Fee 18.5 Part 70 Application Review Fee 18.6 Annual Part 70 Emission Fee 18.14 Billing Procedures	yes	entire source

Applicable Section – Title	Applicable Subsection - Title	SIP	Affected Emission Unit
25.1 Upset/Breakdown, Malfunctions	25.1 Requirements for the excess emissions caused by upset/breakdown and malfunctions	no	entire source
25.2 Upset/Breakdown, Malfunctions	25.2 Reporting and Consultation	yes	entire source
26. Emission of Visible Air Contaminants	26.1 Limit on opacity (\leq 20 percent for 6 minutes in a 60-minute period)	yes	entire source
28. Fuel Burning Equipment	Emission Limitations for PM	yes	entire source
29. Sulfur Contents of Fuel Oil	Sulfur content shall be equal to or less than 0.05 percent sulfur by weight	no	Diesel Engines
35. Diesel Engine Powered Electrical Generating Equipment	all subsections	yes	The Part 70 permit limits use of the emergency generator to testing, maintenance, and emergencies.
40. Prohibitions of Nuisance Conditions	40.1 Prohibitions	no	entire source
41. Fugitive Dust	41.1 Prohibitions	yes	entire source
43. Odors In the Ambient Air	43.1 Prohibitions	no	entire source
60. Evaporation and Leakage	all subsections	yes	entire source
70. Emergency Procedures	all subsections	yes	entire source
80. Circumvention	all subsections	yes	entire source
81. Provisions of Regulations Severable	all subsections	yes	entire source

AQR SECTION 11 - AMBIENT AIR QUALITY STANDARDS

Discussion: TIMET is a grandfathered major source in the Las Vegas Valley airshed region. The permitted units are comprised of equipment for raw material storage and handling, Chlorination Process, Purification Process, Vacuum Distillation Process, and Blending. Since minor source baseline dates for NO_x (October 21, 1988) and SO₂ (October 1, 1979) have been triggered, PSD increment analysis is required. According to Sections 12.2.15.6 and 12.2.16.6, the Control Officer is required to maintain a record of increment-consuming sources for all PSD areas in Clark County. DAQEM modeled the source using ISC3-Prime to track the increment consumption.

Titanium production at TIMET was 74 percent of the permitted limit in 1979 and 72 percent of the permitted limit in 1989. Based on the production rates, 74 percent of SO₂ potential to emit (PTE) and 72 percent of NO_x PTE were considered baseline emissions. Baseline emissions were modeled as negative emissions, and the current PTE was modeled as positive emissions. Stack data submitted by the applicant was used in the model. Five years (1985 to 1989) of meteorological data from the McCarran Station and Desert Rock Station were used in the model. USGS 7.5-minute DEM terrain data was obtained from the internet (webgis.com) was used in the model to calculate elevations. The following table presents the results of the modeling.

Table III-A-3: PSD Increment Consumption

Pollutant	Averaging Period	PSD Increment Consumption by the Source ($\mu\text{g}/\text{m}^3$)	Location of Maximum Impact	
			UTM X (m)	UTM Y (m)
SO ₂	3-hour	119.706 ¹	680420	3990247
SO ₂	24-hour	37.837 ¹	68043	3990149
SO ₂	Annual	6.379	675986	3995236
NO _x	Annual	0.0	0.0	0.0

¹Modeled 2nd High Concentration

Table III-A-3 shows the location of the maximum impact and the potential PSD increment consumed by the source at that location. The impacts are below the PSD increment limits.

B. Federally Applicable Regulations

1. Clean Air Act, as amended (CAAA), Authority: 42 U.S.C. § 7401, et seq.;
2. Title 40 of the Code of Federal Regulations (CFR); including Part 70 and others;

40 CFR PART 60-STANDARDS OF PERFORMANCE FOR NEW STATIONARY SOURCES

Subpart A - General Provisions

40 CFR 60.7 - Notification and record keeping.

Discussion: This regulation requires notification to DAQEM of modifications, opacity testing, records of malfunctions of process equipment and/or continuous monitoring device, and performance test data. These requirements are found in the Part 70 OP. DAQEM requires records to be maintained for five years, a more stringent requirement than the two (2) years required by 40 CFR 60.7.

40 CFR 60.8 - Performance tests.

Discussion: These requirements are found in the Part 70 OP. Notice of intent to test, the applicable test methods, acceptable test method operating conditions, and the requirement for three runs are outlined in this regulation. DAQEM requirements for initial performance testing are identical to 40 CFR 60.8. DAQEM also requires periodic performance testing on emission units based upon throughput or usage. More discussion is in this document under the compliance section.

40 CFR 60.11 - Compliance with standards and maintenance requirements.

Discussion: AQR 26 is more stringent than the federal opacity standards, setting a maximum of 20 percent obscuration except for six (6) minutes in any 60-minute period. TIMET shall operate in a manner consistent with this section of the regulation.

40 CFR 60.12 – Circumvention.

Discussion: This prohibition is addressed in the Part 70 OP. This is also AQR Section 80.1.

40 CFR 60.13 - Monitoring requirements.

Discussion: This section requires that CEMS meet Appendix B and Appendix F standards of operation, testing, and performance criteria. Part 70 OP contains the CEMS conditions and citations to Appendix B and F. In addition, the QA plan approved for the CEMS follows the requirements outlined including span time and recording time.

Subpart LL - Standards of Performance for Metallic Mineral Processing Plants

40 CFR 60.380 - Applicability and designation of affected facility.

Discussion: The provisions of this subpart are applicable to the following affected facilities in metallic mineral processing plants: Each crusher and screen in open-pit mines; each crusher, screen, bucket elevator, conveyor belt transfer point, thermal dryer, product packaging station, storage bin, enclosed storage area, truck loading station, truck unloading station, railcar loading station, and railcar unloading station at the mill or concentrator with the following exceptions. All facilities located in underground mines are exempted from the provisions of this subpart. At

uranium ore processing plants, all facilities subsequent to and including the beneficiation of uranium ore are exempted from the provisions of this subpart.

40 CFR 60.381 defines a metallic mineral processing plant as a combination of equipment that produces metallic mineral concentrates from ore. Metallic mineral processing commences with the mining of ore and includes all operations either up to and including the loading of wet or dry concentrates or solutions of metallic minerals for transfer to facilities at non-adjacent locations that will subsequently process metallic concentrates into purified metals (or other products), or up to and including all material transfer and storage operations that precede the operations that produce refined metals (or other products) from metallic mineral concentrates at facilities adjacent to the metallic mineral processing plant. The TIMET facility processes metallic concentrate into purified metal, therefore subpart LL does not apply.

Subpart Dc - Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units

40 CFR 60.40c – Applicability and delegation of authority.

Discussion: This subpart applies to each steam generating unit which construction, modification, or reconstruction is commenced after June 9, 1989 and that has a maximum design heat input capacity of 29 megawatts (MW) (100 million British thermal units per hour (MMBtu/hr)) or less, but greater than or equal to 2.9 MW (10 MMBtu/hr). Subpart Dc is applicable to TIMET rental boiler EU: B19.

40 CFR 60, Subpart IIII – Standards of Performance for Stationary Compression Ignition Internal Combustion Engines

40 CFR 60.4200 – Applicability Determination.

Discussion: The provisions of this subpart are applicable to manufacturers, owners, and operators of stationary compression ignition (CI) internal combustion engines (ICE) with a displacement less than 30 liters per cylinder where the model year is 2007 or later, for engines that are not fire pumps, and July 1, 2006 for ICE certified by National Fire Protection Association as fire pump engines. This subpart does apply to EU: W04.

40 CFR 63 – NATIONAL EMISSION STANDARDS FOR HAZARDOUS AIR POLLUTANTS FOR SOURCE CATEGORIES:

Subpart A - General Provisions

40 CFR 63.4 – Prohibited activities and circumvention.

Discussion: This prohibition is addressed in the Part 70 OP. This is also local rule AQR Section 80.1.

40 CFR 63, Subpart CCCCC - National Emission Standards for Hazardous Air Pollutants for Source Category: Gasoline Dispensing Facilities

40 CFR 63.11111 – Applicability and designation of affected facility.

Discussion: The provisions of this subpart are applicable to any GDO that is located at an area source. The affected source includes each gasoline cargo tank during the delivery of product to a GDO and also includes each storage tank. The GDO at the source has a monthly throughput of less than 10,000 gallons of gasoline, and therefore, must comply with the requirements in 40 CFR 63.11116.

40 CFR 63.11113 – Compliance Dates.

Discussion: Subpart CCCCCC became effective on January 10, 2008. All existing sources are required to comply with the standard by January 10, 2011.

40 CFR 63.11116 – Requirements for facilities with monthly throughput of less than 10,000 gallons of gasoline.

Discussion: The source is required to handle gasoline in a manner that would curb extended periods of vapor releases to the atmosphere. The measures to be taken are described in the Part 70 OP. The source is not required to submit notifications or reports, but must maintain records of gasoline throughput.

40 CFR 63, Subpart ZZZZ - National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines (RICE)

40 CFR 63.6585 – Applicability.

Discussion: The provisions of this subpart are applicable to any stationary RICE located at a major or area source of HAP emissions (EUs: E03 and G10).

40 CFR 63.6595 – Compliance Dates.

Discussion: Subpart ZZZZ becomes effective on May 3, 2013 for any stationary internal combustion engine (CI RICE).

40 CFR PART 64 - COMPLIANCE ASSURANCE MONITORING

40 CFR 64.2 – Applicability.

Discussion: Except for backup utility units that are exempt under paragraph 40 CFR 64.2(b)(2), the requirements of this part apply to a pollutant-specific emissions unit at a major source that is required to obtain a part 70 or 71 permit if the unit satisfies all of the following criteria:

- a. The unit is subject to an emission limitation or standard for the applicable regulated air pollutant (or a surrogate thereof), other than an emission limitation or standard that is exempt under 40 CFR 64.2(b)(1);
- b. The unit uses a control device to achieve compliance with any such emission limitation or standard; and
- c. The unit has potential pre-control device emissions of the applicable regulated air pollutant that are equal to or greater than 100 percent of the amount, in tons per year, required for a source to be classified as a major source. For purposes of this paragraph, “potential pre-control device emissions” shall have the same meaning as “potential to emit,” as defined in 40 CFR 64.1, except that emission reductions achieved by the applicable control device shall not be taken into account.

Based on these criteria CAM Rule applies to CO Boiler/SO₂ Scrubber (EU: B06) for two criteria pollutants CO and SO₂. According to 40 CFR 64.3(d), if a continuous emission monitoring system (CEMS), continuous opacity monitoring system (COMS) or predictive emission monitoring system (PEMS) is required pursuant to other authority under the Act or state or local law, the Permittee shall use such a system to satisfy the requirements of this part. The Permittee is required to calibrate, maintain, and operate a Continuous Emissions Monitoring System (CEMS) for CO and SO₂ on EU: B06, consequently, requirements of 40 CFR 64 are met.

IV. COMPLIANCE

A. Compliance Certification

19.3.3.9 Requirements for compliance certification:

- a. Regardless of the date of issuance of this Part 70 OP, the schedule for the submittal of reports to the Control Officer shall be as follows:

Table IV-A-1: Reporting Schedule

Required Report	Applicable Period	Due Date ¹
Semi-annual Report for 1st Six-Month Period	January, February, March, April, May, June	July 30 each year
Semi-annual Report for 2 nd Six-Month Period, Any additional annual records required.	July, August, September, October, November, December	January 30 each year
Annual Compliance Certification Report	Calendar Year	January 30 each year
Annual Emission Inventory Report	Calendar Year	March 31 each year
Excess Emission Notification	As Required	Within 24 hours of the Permittee learns of the event
Excess Emission Report	As Required	Within 72 hours of the notification
Deviation Report	As Required	Along with semi-annual reports
Performance Testing	As Required	Within 60 days from the end of the test.

¹ If the due date falls on a Saturday, Sunday or a Federal or Nevada holiday, then the submittal is due on the next regularly scheduled business day.

- b. A statement of methods used for determining compliance, including a description of monitoring, recordkeeping, and reporting requirements and test methods.
- c. A schedule for submission of compliance certifications during the permit term.
- d. A statement indicating the source's compliance status with any applicable enhanced monitoring and compliance certification requirements of the Act.

B. Compliance Summary

Table IV-B-1: Compliance Summary - AQR

Citation	Title	Applicability	Applicable Test Method	Compliance Status
AQR Section 0	Definitions.	Applicable – TIMET will comply with all applicable definitions.	TIMET will meet all applicable test methods should new definitions apply.	TIMET complies with applicable requirements.
AQR Section 4	Control Officer.	Applicable – The Control Officer or his representative may enter into TIMET property, with or without prior notice, at any reasonable time for purpose of establishing compliance.	TIMET will allow Control Officer to enter Station property as required.	TIMET complies with applicable requirements.
AQR Section 11	Ambient Air Quality Standards.	Applicable – TIMET is a source of air pollutants.	TIMET demonstrated compliance in the ATC permit application with air dispersion modeling.	TIMET complies with applicable requirements.

Citation	Title	Applicability	Applicable Test Method	Compliance Status
Through June 30, 2010: AQR Section 12.1 (Amended 10/07/04)	General application requirements for construction of new and modified sources of air pollution.	Applicable – TIMET applied for and the ATC permit was issued before commencing construction.	TIMET received the ATC permit to construct.	TIMET complies with applicable requirements.
Through June 30, 2010: AQR Section 12.2.5 (Amended 10/07/04)	Requirements for specific air pollutants: PM ₁₀ emission source located in the Serious Non-Attainment Area.	Applicable – TIMET has PM ₁₀ PTE < 70 tpy.	All new or modified emission units at the TIMET will meet LAER requirement.	TIMET complies with applicable requirements.
Through June 30, 2010: AQR Section 12.2.7 (Amended 10/07/04)	Requirements for specific air pollutants: CO sources located in the Serious Non-Attainment Area.	Applicable – TIMET has CO PTE > 100 tpy.	All new or modified emission units at the TIMET will meet LAER requirement.	TIMET complies with applicable requirements.
Through June 30, 2010: AQR Section 12.2.12 (Amended 10/07/04)	Requirements for specific air pollutants: VOC sources located in the VOC Management Area.	Applicable – TIMET is located in Hydrographic Area 212.	All new or modified emission units at the TIMET will meet BACT requirement.	TIMET complies with applicable requirements.
Through June 30, 2010: AQR Section 12.2.14 (Amended 10/07/04)	Requirements for specific air pollutants: NO _x sources located in the NO _x Management Area.	Applicable – TIMET has NO _x PTE < 50 tpy.	All new or modified emission units at the TIMET will meet BACT requirement.	TIMET complies with applicable requirements.
Through June 30, 2010: AQR Section 12.2.16 (Amended 10/07/04)	Requirements for specific air pollutants: SO ₂ sources located in the PSD area.	Applicable – TIMET has SO ₂ PTE > 40 TPY.	All new or modified emission units at the TIMET will meet BACT requirement.	TIMET complies with applicable requirements.
Through June 30, 2010: AQR Section 12.2.19 (Amended 10/07/04)	Requirements for specific air pollutants: TCS sources in Clark County	Applicable – TIMET have sulfuric acid, nitric acid and ammonia emissions > 1 tpy each and these are locally regulated TCS.	All new or modified emission units at the TIMET will meet BACT requirement.	TIMET complies with applicable requirements.
Through June 30, 2010: AQR Section 12.5 (Amended 10/07/04)	Air Quality Models	Applicable – Dispersion modeling will be performed as required for any future major modifications.	As applicable, future dispersion modeling will be performed in ATC permit modifications will be in accordance with provisions of 40 CFR Part 51, Appendix W.	TIMET complies with applicable requirements.

Citation	Title	Applicability	Applicable Test Method	Compliance Status
Through June 30, 2010: AQR Section 12.7 (Amended 10/07/04)	Continuous Emission Monitoring (CEM) Systems	Applicable – TIMET has CO PTE > 100 tpy. CO and SO ₂ CEMS installed and meets provisions of 40 CFR Part 60.	TIMET submitted all required protocols/test plans per ATC permit prior to CEMS certification. CEMS certification was approved by DAQEM.	TIMET complies with applicable requirements.
Beginning July 1, 2010: AQR Section 12.5	Part 70 Operating Permits	Applicable – TIMET is a major stationary source and under Part 70. Renewal applications are due between 6 and 18 months prior to expiration. Revision applications will be submitted within 12 months of commencing operation of the new emission unit.	TIMET submitted the initial Part 70 permit application within 12 months of startup. The renewal application was submitted within the appropriate timeframe.	TIMET complies with applicable requirements.
AQR Section 13.2.14 Subpart Q	National Emission Standards for Hazardous Air Pollutants for Industrial Process Cooling Towers	Applicable – The TIMET cooling towers are the affected units.	Applicable monitoring requirements.	TIMET complies with applicable requirements.
AQR Section 13.2.85 Subpart ZZZZ	NESHAP – Stationary Reciprocating Internal Combustion Engines	Applicable – The TIMET diesel engines are the affected units.	Applicable monitoring and recordkeeping requirements.	TIMET complies with applicable requirements.
AQR Section 13.2.109 Subpart CCCCCC	National Emission Standards for Hazardous Air Pollutants for Source Category: Gasoline Dispensing Facilities	Applicable – The TIMET gasoline dispensing are the affected operations.	Applicable monitoring and recordkeeping requirements.	TIMET complies with applicable requirements.
AQR Section 14.1.1 Subpart A	NSPS – General Provisions	Applicable – TIMET is an affected facility under the regulations. Sec. 14 is locally enforceable; however, the NSPS standards they reference are federally enforceable.	Applicable monitoring, recordkeeping and reporting requirements.	TIMET complies with applicable requirements.
AQR Section 14.1.11 Subpart Dc	Standards of Performance for Small Industrial – Commercial – Institutional Steam Generating Units	Applicable – TIMET boiler is affected unit under the regulations. Sec. 14 is locally enforceable; however, the NSPS standards they reference are federally enforceable.	Applicable monitoring, recordkeeping and reporting requirements.	TIMET complies with applicable requirements.
AQR Section 14.1.90 Subpart IIII	Standards of Performance for Stationary Compression Ignition Internal Combustion Engines	Applicable – TIMET diesel engine is an affected unit under the regulations. Sec. 14 is locally enforceable; however, the NSPS standards they reference are federally enforceable.	Applicable monitoring, recordkeeping and reporting requirements.	TIMET complies with applicable requirements.

Citation	Title	Applicability	Applicable Test Method	Compliance Status
AQR Section 17	Dust Control Permit for Construction Activities Including Surface Grading and Trenching	Applicable – TIMET will need to apply for dust control permit in event construction activity greater than ¼ acre (aggregate) or trench at least 100 ft in length (and aggregate acreage greater than ¼ acre).	TIMET applied for permits as needed during initial construction and conformed to required best management practices in dust control permit. TIMET will continue to do so in future as needed.	TIMET complies with applicable requirements.
AQR Section 18	Permit and Technical Service Fees	Applicable – TIMET will be required to pay all required/applicable permit and technical service fees.	TIMET is required to pay all required/applicable permit and technical service fees.	TIMET complies with applicable requirements.
Through June 30, 2010: AQR Section 19	40 CFR Part 70 Operating Permits	Applicable – TIMET is a major stationary source and under Part 70 the initial Title V permit application was submitted as required. Renewal applications are due between 6 and 18 months prior to expiration. Revision applications will be submitted within 12 months or commencing operation of any new emission unit. Section 19 is both federally and locally enforceable	TIMET reviewed the initial Part 70 permit dated May 20, 2004. This renewal application was submitted before December 20, 2009. Applications for new units will be submitted within 12 months of startup.	TIMET complies with applicable requirements.
AQR Section 25	Upset/Breakdown, Malfunctions	Applicable – Any upset, breakdown, emergency condition, or malfunction which causes emissions of regulated air pollutants in excess of any permit limits shall be reported to Control Officer. Section 25.1 is locally and federally enforceable.	Any upset, breakdown, emergency condition, or malfunction in which emissions exceed any permit limit shall be reported to the Control Officer within one (1) hour of onset of such event.	TIMET complies with applicable requirements.
AQR Section 26	Emissions of Visible Air Contaminants	Applicable – Opacity for the TIMET emission units must not exceed 20 percent for more than six (6) minutes in any 60-minute period.	Compliance determined by EPA Method 9.	TIMET complies with applicable requirements.
AQR Section 27	Particulate Matter from Process Weight Rate	Applicable – TIMET emission units are required to meet the maximum weight based on maximum design rate of equipment.	Compliance determined by meeting maximum particulate matter discharge rate based on process rate from AQR Table 27-1.	TIMET complies with applicable requirements.
AQR Section 28	Fuel Burning Equipment	Applicable – The PM emission rate for the boilers is well below those established based on Section 28 requirements.	Maximum allowable PM emission rate determined from equation in Section 28.	TIMET complies with applicable requirements.

Citation	Title	Applicability	Applicable Test Method	Compliance Status
AQR Section 29	Sulfur Content of Fuel Oil	Applicable – The diesel fuel that will be burned in the emergency generator engines at the TIMET will require low sulfur fuel with sulfur content less than 0.05 percent by weight. Section 29 is locally enforceable only.	Fuel sulfur content verification obtained from fuel oil supplier.	TIMET complies with applicable requirements.
AQR Section 40	Prohibition of Nuisance Conditions	Applicable – No person shall cause, suffer or allow the discharge from any source whatsoever such quantities of air contaminants or other material which cause a nuisance. Section 40 is locally enforceable only.	TIMET air contaminant emissions controlled by pollution control devices or good combustion in order not to cause a nuisance.	TIMET complies with applicable requirements.
AQR Section 41	Fugitive Dust	Applicable – TIMET shall take necessary actions to abate fugitive dust from becoming airborne.	TIMET utilizes appropriate best practices to not allow airborne fugitive dust.	TIMET complies with applicable requirements.
AQR Section 42	Open Burning	Applicable – In event TIMET burns combustible material in any open areas, such burning activity will have been approved by Control Officer in advance. Section 42 is a locally enforceable rule only.	TIMET will contact the DAQEM and obtain approval in advance for applicable burning activities as identified in the rule.	TIMET complies with applicable requirements.
AQR Section 43	Odors in the Ambient Air	Applicable – An odor occurrence is a violation if the Control Officer is able to detect the odor twice within a period of an hour, if the odor causes a nuisance, and if the detection of odors is separated by at least fifteen minutes. Section 43 is a locally enforceable rule only.	TIMET will not operate its facility in a manner which will cause odors. TIMET is a natural gas fired facility and is not expected to cause odors.	TIMET complies with applicable requirements.
AQR Section 70.4	Emergency Procedures	Applicable – TIMET submitted an emergency standby plan for reducing or eliminating air pollutant emissions in the Section 16 Operating Permit Application.	TIMET submitted an emergency standby plan and received the Section 16 Operating Permit.	TIMET complies with applicable requirements.

Table IV-B-2: Compliance Summary Table – Federal Regulations

Citation	Title	Applicability	Applicable Test Method	Compliance Status
40 CFR Part 52.21	Prevention of Significant Deterioration (PSD)	Applicable – TIMET PTE > 100 tpy and is listed as one of the 28 source categories.	BACT analysis, air quality analysis using modeling, and visibility and additional impact analysis performed for original ATC permits.	TIMET complies with applicable sections as required by PSD regulations.

Citation	Title	Applicability	Applicable Test Method	Compliance Status
40 CFR Part 52.1470	SIP Rules	Applicable – TIMET is classified as a Title V source, and SIP rules apply.	Applicable monitoring and record keeping of emissions data.	TIMET is in compliance with applicable state SIP requirements including monitoring and record keeping of emissions data.
40 CFR Part 60, Subpart A	Standards of Performance for New Stationary Sources (NSPS) – General Provisions	Applicable – TIMET is an affected facility under the regulations.	Applicable monitoring, recordkeeping and reporting requirements.	TIMET complies with applicable requirements.
40 CFR Part 60	Appendix A, Method 9 or equivalent, (Opacity)	Applicable – Emissions from stacks are subject to opacity standards.	Opacity determined by EPA Method 9.	TIMET complies with applicable requirements.
40 CFR Part 60	Standards of Performance for New Stationary Sources (NSPS) - Subpart Dc	Applicable – TIMET has boiler subject to 40 CFR 60, Subpart Dc.	Applicable recordkeeping and reporting requirements.	TIMET complies with applicable requirements.
40 CFR Part 60	Standards of Performance for New Stationary Sources (NSPS) - Subpart IIII	Applicable – TIMET has diesel engine subject to 40 CFR 60, Subpart IIII.	Applicable recordkeeping and reporting requirements.	TIMET complies with applicable requirements.
40 CFR Part 63	Emission Standards for Hazardous Air Pollutants – Subpart Q	Applicable – TIMET have cooling towers 40 CFR 63, Subpart Q applies.	Applicable recordkeeping and reporting requirements.	TIMET complies with applicable requirements.
40 CFR Part 63	Emission Standards for Hazardous Air Pollutants – Subpart CCCCCC	Applicable – TIMET has gasoline dispensing 40 CFR 63, Subpart CCCCCC applies.	Applicable recordkeeping and reporting requirements.	TIMET complies with applicable requirements.
40 CFR Part 63	Emission Standards for Hazardous Air Pollutants – Subpart ZZZZ	Applicable – TIMET has diesel engines, 40 CFR 63, Subpart ZZZZ applies.	Applicable recordkeeping and reporting requirements.	TIMET complies with applicable requirements.
40 CFR Part 64	Compliance Assurance Monitoring	Not Applicable – TIMET has CEMS to monitor CO and SO ₂ emissions. TIMET is exempt from CAM regulations based on 40 CFR 64.2(d).	TIMET continuously monitors CO and SO ₂ emissions with CEMS.	TIMET complies with applicable requirements.
40 CFR Part 68	Chemical Accident Prevention Provisions	Applicable – TIMET stores and handles sulfuric acid, chlorine, and hydrochloric acid.	Construction approval and a Risk Management Plan (RMP) were required for the Nevada Department of Environmental Protection for storage and use of NH ₃ . TIMET adheres to TIMET management programs.	TIMET complies with applicable requirements.

Citation	Title	Applicability	Applicable Test Method	Compliance Status
40 CFR Part 70	Federally Mandated Operating Permits	Applicable – TIMET is a major stationary source and under Part 70 the initial Title V permit application was submitted as required. Renewal applications are due between 6 and 18 months prior to expiration. Revision applications will be submitted within 12 months or commencing operation of any new emission unit.	TIMET reviewed the initial Part 70 permit dated February 29, 2000. The renewal application was submitted on June 18, 2003. Applications for new units will be submitted within 12 months of startup.	TIMET complies with applicable requirements.
40 CFR Part 82	Protection of Stratospheric Ozone	Applicable – TIMET is subject to stratospheric ozone regulations based on 40 CFR 82.4.	Applicable.	Applicable.

C. Permit Shield

A permit shield was not requested by the source.

V. EMISSION REDUCTION CREDITS (OFFSETS)

The source is subject to offset requirements in accordance with Section 59 of the Clark County Air Quality Regulations. Offset requirements and associated mitigation are pollutant-specific.

VI. ADMINISTRATIVE REQUIREMENTS

Section 19 requires that DAQEM identify the original authority for each term or condition in the Part 70 OP. Such reference of origin or citation is denoted by *[italic text in brackets]* after each Part 70 OP condition.

DAQEM proposes to issue the Part 70 OP conditions on the following basis:

Legal:

On December 5, 2001 in Federal Register Volume 66, Number 234 FR30097 the EPA fully approved the Title V Operating Permit Program submitted for the purpose of complying with the Title V requirements of the 1990 Clean Air Act Amendments and implementing Part 70 of Title 40 Code of Federal Regulations.

Factual:

TIMET has supplied all the necessary information for DAQEM to draft Part 70 OP conditions encompassing all applicable requirements and corresponding compliance.

Conclusion:

DAQEM has determined that TIMET will continue to determine compliance through the use of CEMS, PEMS, performance testing, quarterly reporting, and daily recordkeeping, coupled with annual certifications of compliance. DAQEM proceeds with the decision that a Part 70 OP should be issued as drafted to TIMET for a period not to exceed five (5) years.