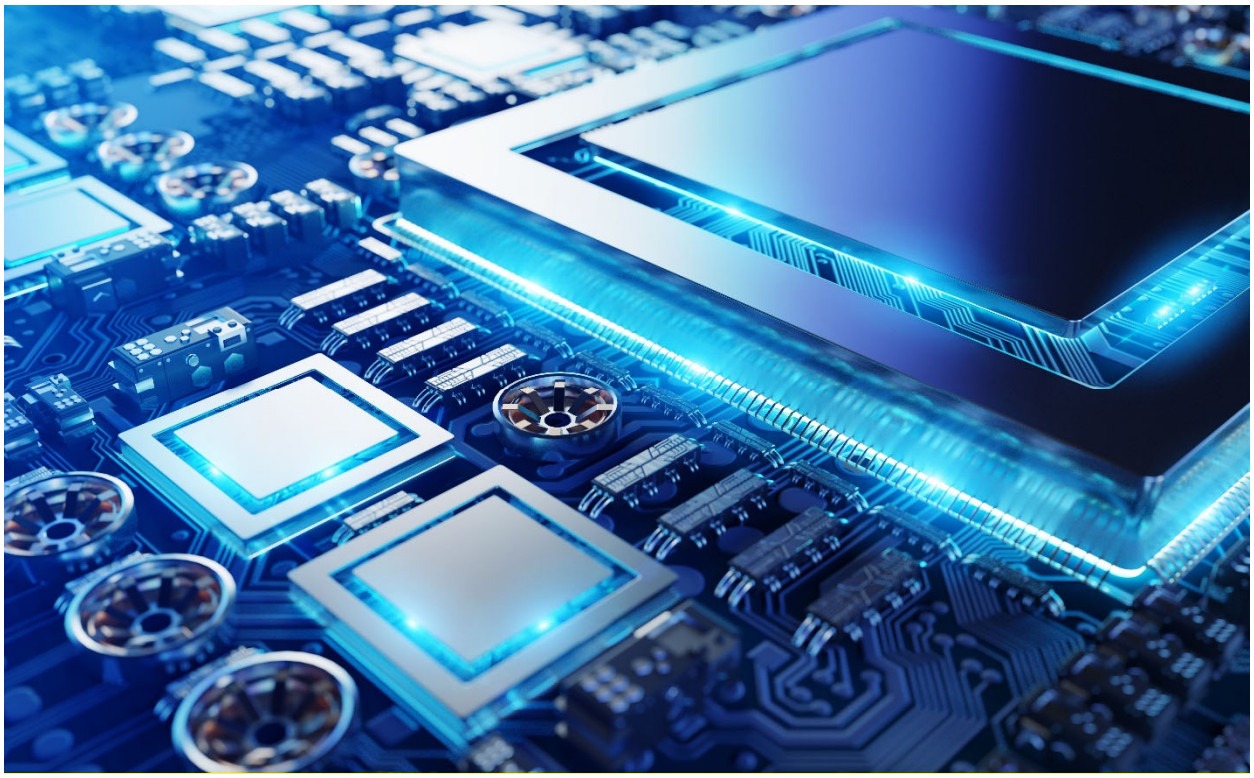

2023 H1 Semi-Annual Monitoring Report

MCAQD Title V Permit Number: P0009659
Facility ID: F000701
Date Submitted: July 27, 2023

Submitted To:
Maricopa County Air Quality Department
301 W. Jefferson St., Suite 410
Phoenix, AZ 85003

Submitted By:
Intel Corporation – Ocotillo Facility
4500 S. Dobson Road
Chandler, AZ 85248
1.480.554.8080
www.intel.com

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2023 H1 Semi-Annual Monitoring Report
Intel Ocotillo Facility
Chandler, Arizona

1. Introduction

Intel Corporation's (Intel) Ocotillo Facility (Facility ID F000701), located at 4500 South Dobson Road in Chandler, Arizona, operates under Title V Permit Number P0009659 (Permit) issued by Maricopa County Air Quality Department (MCAQD). Per Permit Conditions 3.h and 40.b., Semi-Annual Monitoring Reports are required to be submitted to within 30 days of the end of each reporting period. This Semi-Annual Monitoring Report is for the reporting period from January 1st, 2023 to June 30th, 2023 (H1 2023).

2. Rolling 12-Month Emissions

Intel calculates and maintains a record of the Ocotillo Facility's rolling 12-month emissions as required by the Permit. The rolling 12-month emissions totals for each month in this reporting period are provided below.

Table 1-1: 12 Month Rolling Totals for PAL Pollutants

PAL (tpy)	Pollutant	Units	Jan-23	Feb-23	Mar-23	Apr-23	May-23	Jun-23
198	NO_x	tons	110.42	104.35	99.34	100.36	101.53	103.31
175	VOC	tons	72.36	67.88	65.13	64.40	67.47	66.49
388	CO	tons	131.63	123.51	116.81	120.88	126.68	132.78
125	PM_{10}	tons	36.58	34.82	33.28	32.41	31.64	30.99
119	$PM_{2.5}$	tons	29.81	27.99	26.41	25.52	24.73	24.04
159	PM	tons	59.19	57.65	56.35	55.64	54.97	54.43
61	SO2	tons	2.82	2.64	2.40	2.21	2.02	1.86
24	Fluorides	tons	5.79	5.97	6.01	6.10	6.45	6.69

Table 1-2: 12 Month Rolling Totals for HAPs

PAL (tpy)	Pollutant	Units	Jan-23	Feb-23	Mar-23	Apr-23	May-23	Jun-23
9	HF	tons	2.65	2.47	2.31	2.20	2.10	2.01
22	HAPs	tons	6.28	6.04	5.82	5.88	6.00	6.15

Notes:
HF is the single largest HAP

3. Data Relied Upon for PAL Pollutant Emissions Calculations

The data relied upon to calculate the monthly and 12-month rolling PAL pollutant emissions during the reporting period are provided in Attachment A.

4. Modifications or Additions to Emissions Units, Monitoring Systems, and Calculation Procedures

4.1. Emission Unit Modifications or Additions

The following equipment modifications were made during this reporting period:

- The Fab 42 sodium bicarbonate silo (S. No 188) was permanently decommissioned on January 23, 2023.

The following equipment were added during this reporting period:

- The F42 RCTO #4 (S. No 50) became operational on January 26, 2023;
- The F32 OC30 emergency generator 1 (S. No. 129) became operational on March 29, 2023;
- The F32 OC30 packaged cooling towers (S. No. 177) became operational on April 4, 2023; and
- The F52 HFW lime silo (S. No. 186) became operational on May 30, 2023.

4.2. Monitoring System Updates

No monitoring system updates occurred during the reporting period.

4.3. Calculation Procedure Updates

No calculation procedure updates were made during the reporting period.

5. Deviation Reporting

Two deviations and one possible deviation from the Permit requirements occurred during the reporting period and are described below.

Table 5-1: Deviation Log

Deviation 1[1]	**Log Entry Date**	1/13/2023
	Identification Date	1/12/2023
	Permit & Condition	Permit P0009315 Condition 19.a.i
	Description	While performing the 5-year performance testing on F42 Boiler #1 on 1/12/2023, the unit did not meet its BACT compliance limit for NOx. Preliminary test data showed a 3-run average of 23.9 ppm versus a BACT limit of 12 ppm.
	Cause	On 12/20/2022, Intel replaced the boiler's fuel/gas ratio regulator in response to the unit's failure. Following the replacement, Intel's third-party vendor performed an informal tuning of the boiler, where the new regulator firing rate positions were matched to previously commissioned values, without performing exhaust gas validation.
	Corrective Actions	Following the failed performance test, Intel contacted a third-party vendor to come to site to perform corrective maintenance on the unit. The vendor completed re-tuning of the unit on the day of the failed performance test. The unit was then re-tested the following morning, on 1/13/2023. The results of the performance test demonstrated that the unit had returned to compliance with the NOx emission limit. Intel notified MCAQD by phone of the failed performance test on 1/12/23, and submitted and excess emissions/deviation report to MCAQD on 1/18/23.
	Preventative Measures	Intel EHS refreshed the mechanical module on Title V requirements fo mechanical systems. Boiler tuning procedures were revised to include air permit emission limits, the requirement to perform exhaust gas analysis, and comparison to the applicable limits. The components of a boiler that require a re-tuning following maintenance or repair were identified and discussion of boiler maintenance and repair activities was added as a standing agenda topic in Title V check in meetings with the mechanical module.

Notes:

[1] *This deviation was also initially included in the Semi-Annual Monitoring Report for the July 1, 2022 through December 31, 2022 reporting period since the deviation occurred prior to the H2 2022 report submittal on January 26, 2023. MCAQD subsequently issued OTC (ENF024629) on January 27, 2023 which indicated that MCAQD would not pursue any further action.*

Table 5-1: Deviation Log (continued)

Deviation 2	**Log Entry Date**	3/10/2023
	Identification Date	3/10/2023
	Permit & Condition	Permit P0009315 Condition 30.a
	Description	An unpaved parking lot and laydown area was temporarily removed from Intel's dust control plan before dust generating operations were completed. The area was removed from Intel's dust control plan based on the incorrect understanding that it was covered under a contractor's active Dust Control Permit.
	Cause	Intel removed an area from its Dust Control Plan based on a planning map that was provided by a contractor rather than the contractor's final approved Dust Control Permit.
	Corrective Actions	The area was watered then blocked off to prevent dust generating operations. The area was then also added back into the Intel Dust Control Plan on 3/27/2023.
	Preventative Measures	Intel has documented and implemented a best practice to update dust control maps and the Dust Control Plan based only on contractor's approved Dust Control Permits. Intel environmental refreshed all dust control coordinators on the land disturbance form process and expectations. Intel periodically reviews the site wide dust control map which shows all covered locations for Intel and contractors on a routine basis in the logistics meeting forum. Intel has added areas to its Dust Control Plan where dust generating operations occur and where Intel can implement control measures, regardless of if the area is covered under a contrator's Dust Control Permit.

Table 5-1: Deviation Log (continued)

Possible Deviation	**Log Entry Date**	6/5/2023
	Identification Date	6/5/2023
	Permit & Condition	Permit P0009659 Condition 7.a.i
	Description	Possible Deviation: On 5/25/23 electrical maintenance performed at Fab 42 UPS system caused Fab 42 RCTO unit #4 to fail due to a load shed event from a component failure internal to the UPS. In the hours that followed, RCTO units #3, #2, and #1 malfunctioned in a cascading manner, initiating bypass of the RCTOs which marked the start of the malfunctions that resulted in 3.47 tons of VOC emissions. These emissions did not cause Intel to exceed its Plantwide Applicability Limit (PAL) of 175 tons of VOC per 12-month rolling period.
	Cause	The root causes of the malfunctions are as follows: Root Cause #1: Intel voluntarily completed upgrade of RCTO #1, #2, #3, and #5 burners to ultra-low NOx burners with vendor design and support. The vendor's associated system design upgrades faulted under site operating conditions, resulting in various types of unit malfunctions. Root Cause #2: The system bypass damper seal shifted out of the tolerance envelope which caused the damper to bind within the ductwork due to an obstructed actuation path.
	Corrective Actions	The day the malfunctions began, Intel initiated an around the clock emergency response team which included Ocotillo site personnel, Intel technology development resources (both local and remote), equipment vendor technical and leadership staff (both domestic and international), and multiple contractors. Additional onsite resources from both the vendor and Intel were flown to the site to support the troubleshooting. The response team ran up to 5 recovery efforts in parallel, around the clock, for the duration of the malfunctions with the objective of returning the system to its normal operating conditions as quickly as possible, and in a safe manner. The response team worked to minimize emissions due to the malfunction by: -Conducting model-based problem solving to identify the root cause of the malfunctions and contributing factors; -Completing startup of RCTO unit #5 to minimize the time to return the system to normal operating conditions; -Repairing the failed system bypass damper; -As a result of the model-based problem solving implemented RCTO upgrades to address the malfunctions; -Developing and executing a non-standard start-up procedure for RCTO units with the vendor following troubleshooting and upgrades; and -Bringing RCTO units online to abate part of fab flows as equipment was recovered. Intel promptly logged the malfunctions in the site log as required by Permit condition 8.f and the approved O&M Plan. Additionally, Intel contacted MCAQD regarding the malfunctions by phone on 6/2/23 and subsequently submitted written notification on 6/8/23.
	Preventative Measures	Intel has refined the qualification plan for RCTO units post-burner upgrade, and has re-qualified each of the upgraded units. Intel performed functional acceptance testing to ensure proper functionality of system bypass damper following repair.

6. Monitoring System Shutdowns

One temporary monitoring system shutdown occurred during the reporting period. On July 6, 2023, after collecting the monthly natural gas usage data, Intel identified that a failure of the natural gas flow indicating transmitter on F22 RCTO #5 occurred on June 8, 2023. Troubleshooting determined that the natural gas flow indicating transmitter failed due to a loose fuse holder. The issue was corrected, and the flow indicating transmitter was returned to normal operation on July 12, 2023. To prevent recurrence, the alarm status associated with out-of-range flow indicating transmitter readings for this RCTO (and other RCTOs in the system) were upgraded to "critical" so that a monitoring system shutdown of this nature can be more quickly identified and corrected.

The F22 RCTO #5 unit continued to operate while the flow indicating transmitter was down. In accordance with the requirements of Section H of Appendix B of Permit P0009659, Intel verified that unit operations remained within the specification limits as outlined in the applicable Operations and Maintenance Plan. Intel also utilized the alternative method specified in that same section of Permit P0009659 to approximate natural gas usage based on the modulating gas valve actuator position for the purpose of calculating SO_2 emissions.

7. Responsible Official Certification

I certify, based on information and belief formed after reasonable inquiry, the statements and information in this document are true, accurate, and complete.

Matthew Ward	Vice President, Manufacturing, Supply Chain and Operations Factory Manager, Ocotillo Technology Fabrication
Printed Name	**Title**
Matthew J. Ward	7/27/2023
Signature	**Date**

Attachment A
Data Relied Upon for PAL Pollutant Emissions Calculations

Section A. Emergency Engines and Fire Pumps: NOx, CO, PM, PM_{10}, $PM_{2.5}$, VOC, and SO_2 Emissions

Table 3-1. NOx, CO, PM, PM_{10}, $PM_{2.5}$, VOC, SO_2 Emission Factors for Emergency Generator Engines and Fire Pump Engines

Unit	Permit ID	NOx (lb/hr)	CO (lb/hr)	$PM/PM_{10}/PM_{2.5}$ [1] (lb/hr)	VOC (lb/hr)	SO_2 (lb/hr)
F12 EGEN 1	F12-03-EGEN-1	58.70	7.64	0.43	0.28	0.03
F12 EGEN 2	F12-03-EGEN-2	58.70	7.64	0.43	0.28	0.03
F12 EGEN 3	F12-03-EGEN-3	58.70	7.64	0.43	0.28	0.03
F12 EGEN 4	F12-03-EGEN-4	58.70	7.64	0.43	0.28	0.03
F12 EGEN 5	F12-03-EGEN-5	58.58	7.82	0.43	0.23	0.03
F12/32S Link EGEN 1	F12-ASH1-EGEN604-1A-01	12.22	0.30	0.56	0.07	0.01
F12 Litho Chiller Pad EGEN 2	F12-03-LSCGEN-1	50.59	6.01	0.41	1.10	0.04
F12 Litho Chiller Pad EGEN 3	F12-03-LSCGEN-2	50.59	6.01	0.41	1.10	0.04
F12 Litho Chiller Pad EGEN 4	F12-03-LSCGEN-3	50.59	6.01	0.41	1.10	0.04
F32S CPS EGEN 1	F22-10-CPS-GEN-1	32.86	6.02	1.14	0.45	0.02
F32S CPS EGEN 2	F22-10-CPS-GEN-2	32.86	6.02	1.14	0.45	0.02
F32S CPS EGEN 3	F22-10-CPS-GEN-3	32.86	6.02	1.14	0.45	0.02
F32S CPS EGEN 4	F22-10-CPS-GEN-4	32.86	6.02	1.14	0.45	0.02
F32S EGEN 1	F22-10-EGEN-1	45.09	5.80	0.64	1.29	3.74
F32S EGEN 2	F22-10-EGEN-2	45.09	5.80	0.64	1.29	3.74
F32S EGEN 3	F22-10-EGEN-3	45.09	5.80	0.64	1.29	3.74
F32S EGEN 4	F22-10-EGEN-4	45.09	5.80	0.64	1.29	3.74
F32 Litho EGEN 1	F32-09-LCSGEN-1	34.89	1.91	0.17	0.69	0.04
F32 Litho EGEN 2	F32-09-LCSGEN-2	34.89	1.91	0.17	0.69	0.04
F32 Litho EGEN 3	F22-EC2-LCSGEN-3	34.85	4.02	0.37	0.67	0.04
F32 Litho EGEN 4	F22-EC2-LCSGEN-4	34.85	4.02	0.37	0.67	0.04
F32 EGEN 1	F32-13-EGEN-1	45.09	5.80	0.64	1.29	3.74
F32 EGEN 2	F32-13-EGEN-2	45.09	5.80	0.64	1.29	3.74
F32 EGEN 3	F32-13-EGEN-3	45.09	5.80	0.64	1.29	3.74
F32 EGEN 4	F32-13-EGEN-4	34.11	1.16	0.26	0.71	0.71
F32 OC30 EGEN 1	F22-30-GEN-1	1.51	0.18	0.03	0.02	0.08
F12 Fire Pump 1	F12-FPHS-GEN-01	8.53	1.84	0.61	0.68	0.56
F12 Fire Pump 2	F12-FPHS-GEN-02	8.53	1.84	0.61	0.68	0.56
F42 EGEN 1A	F42-17-EGEN-1A	46.41	1.54	0.73	1.05	0.81
F42 EGEN 1B	F42-17-EGEN-1B	46.41	1.54	0.73	1.05	0.81
F42 EGEN 2A	F42-17-EGEN-2A	46.41	1.54	0.73	1.05	0.81
F42 EGEN 2B	F42-17-EGEN-2B	46.41	1.54	0.73	1.05	0.81
F42 EGEN 3A	F42-GEN-3A	46.41	1.54	0.73	1.05	0.81
F42 EGEN 3B	F42-GEN-3B	46.41	1.54	0.73	1.05	0.81
F42 EGEN 1C	F42-GEN-1C	46.41	1.54	0.73	1.05	0.81
F42 EGEN 2C	F42-GEN-2C	46.41	1.54	0.73	1.05	0.81
F42 EGEN 3C	F42-GEN-3C	46.41	1.54	0.73	1.05	0.81
F42 EGEN 4A	F42-17-GEN-4A	46.41	1.54	0.73	1.05	0.81
F42 EGEN 4B	F42-17-GEN-4B	46.41	1.54	0.73	1.05	0.81
F42 EGEN 4C	F42-17-GEN-4C	46.41	1.54	0.73	1.05	0.81
F42 BRW EGEN	F42-BRW-GEN1	4.02	0.64	0.06	0.05	1.12
F42 IWW EGEN 1	OW1-XWTG1X23A	49.66	1.99	0.43	0.66	0.05
F12 CAP Water EGEN	F12-CAP-X72AGENOCCA	12.08	0.56	0.13	0.48	0.27

Notes:

1 - PM emissions ≤ 2.5µm in size; therefore, emission factors represent total PM, PM_{10}, and $PM_{2.5}$.

Section A. Emergency Engines and Fire Pumps: NOx, CO, PM, PM_{10}, $PM_{2.5}$, VOC, and SO_2 Emissions

Table 3-2. Hours of Operation for Emergency Generator Engines and Fire Pump Engines

Unit	Permit ID	Run Time (hrs)					
		Jan-23	Feb-23	Mar-23	Apr-23	May-23	Jun-23
F12 EGEN 1	F12-03-EGEN-1	0.0	0.6	1.1	0.6	0.2	0.7
F12 EGEN 2	F12-03-EGEN-2	0.0	0.7	1.1	0.6	0.1	1.3
F12 EGEN 3	F12-03-EGEN-3	0.0	0.6	1.2	0.6	0.2	1.2
F12 EGEN 4	F12-03-EGEN-4	0.0	0.6	1.2	0.6	0.2	0.0
F12 EGEN 5	F12-03-EGEN-5	0.0	1.0	1.0	0.0	0.2	1.8
F12/32S Link EGEN 1	F12-ASH1-EGEN604-1A-01	1.0	1.0	1.0	0.0	0.0	1.0
F12 Litho Chiller Pad EGEN 2	F12-03-LSCGEN-1	0.0	0.0	0.6	0.0	0.0	0.5
F12 Litho Chiller Pad EGEN 3	F12-03-LSCGEN-2	0.0	0.0	0.6	0.0	0.0	0.5
F12 Litho Chiller Pad EGEN 4	F12-03-LSCGEN-3	0.0	0.0	0.6	0.0	0.0	0.5
F32S CPS EGEN 1	F22-10-CPS-GEN-1	0.5	0.1	0.4	1.0	0.7	0.0
F32S CPS EGEN 2	F22-10-CPS-GEN-2	0.3	0.2	0.7	0.9	0.6	0.0
F32S CPS EGEN 3	F22-10-CPS-GEN-3	0.5	0.4	1.0	0.6	0.3	0.0
F32S CPS EGEN 4	F22-10-CPS-GEN-4	0.5	0.1	0.6	0.9	0.1	0.0
F32S EGEN 1	F22-10-EGEN-1	0.0	0.3	0.4	1.4	0.0	0.6
F32S EGEN 2	F22-10-EGEN-2	0.0	0.0	1.0	1.0	0.0	1.0
F32S EGEN 3	F22-10-EGEN-3	0.0	0.0	1.0	1.0	0.0	0.0
F32S EGEN 4	F22-10-EGEN-4	0.0	0.0	0.5	1.1	0.0	0.6
F32 Litho EGEN 1	F32-09-LCSGEN-1	1.0	0.6	0.6	0.9	0.0	0.7
F32 Litho EGEN 2	F32-09-LCSGEN-2	0.9	0.6	0.6	0.7	0.0	0.0
F32 Litho EGEN 3	F22-EC2-LCSGEN-3	1.0	0.2	0.7	0.8	0.0	0.0
F32 Litho EGEN 4	F22-EC2-LCSGEN-4	0.8	0.3	0.7	0.9	0.0	0.0
F32 EGEN 1	F32-13-EGEN-1	1.0	0.0	1.0	1.0	0.0	0.0
F32 EGEN 2	F32-13-EGEN-2	0.0	1.0	1.0	0.0	1.0	0.0
F32 EGEN 3	F32-13-EGEN-3	1.0	0.0	1.0	1.0	0.0	0.0
F32 EGEN 4	F32-13-EGEN-4	1.0	0.0	1.0	1.0	1.0	0.0
F32 OC30 EGEN 1	F22-30-GEN-1	4.1	0.4	1.3	0.0	0.0	0.0
F12 Fire Pump 1	F12-FPHS-GEN-01	1.9	2.8	2.5	1.0	0.9	2.1
F12 Fire Pump 2	F12-FPHS-GEN-02	2.5	9.1	1.9	3.8	1.8	3.6
F42 EGEN 1A	F42-17-EGEN-1A	0.0	0.0	0.0	0.0	0.0	0.5
F42 EGEN 1B	F42-17-EGEN-1B	0.0	0.0	0.0	0.0	0.0	0.6
F42 EGEN 2A	F42-17-EGEN-2A	0.0	0.0	0.0	0.0	0.0	0.0
F42 EGEN 2B	F42-17-EGEN-2B	0.0	0.0	0.0	0.0	0.0	0.1
F42 EGEN 3A	F42-GEN-3A	0.0	0.0	0.0	0.0	0.0	0.5
F42 EGEN 3B	F42-GEN-3B	0.0	0.0	0.0	0.0	0.0	0.1
F42 EGEN 1C	F42-GEN-1C	0.0	0.0	0.0	0.0	0.0	0.0
F42 EGEN 2C	F42-GEN-2C	0.0	0.0	0.0	0.0	0.0	0.2
F42 EGEN 3C	F42-GEN-3C	0.0	0.0	0.0	0.0	0.0	0.5
F42 EGEN 4A	F42-17-GEN-4A	0.0	0.0	0.0	0.0	0.0	0.0
F42 EGEN 4B	F42-17-GEN-4B	0.0	0.0	0.0	0.0	0.0	0.5
F42 EGEN 4C	F42-17-GEN-4C	0.0	0.0	0.0	0.0	0.0	0.5
F42 BRW EGEN	F42-BRW-GEN1	0.8	0.0	1.1	0.4	0.5	0.0
F42 IWW EGEN 1	OW1-XWTG1X23A	0.0	0.4	0.0	0.0	0.0	0.0
F12 CAP Water EGEN	F12-CAP-X72AGENOCCA	0.0	0.6	1.5	1.2	0.7	0.5

Section B. Boilers & Trimix: PM, PM10, PM2.5, SO2, and VOC Emissions

Table 3-3. PM, PM_{10}, $PM_{2.5}$, SO2, and VOC Emission Factors for Boilers & Trimix

Unit	Permit ID	$PM/PM_{10}/PM_{2.5}$ [1]	VOC	SO_2
		(lb/mmscf)	(lb/mmscf)	(lb/mmscf)
F12 Boiler 1	BLR-32-GD3-1	7.60	5.50	0.60
F12 Boiler 2	BLR-32-GD3-2	7.60	5.50	0.60
F12 Boiler 3	BLR-32-GD3-3	7.60	5.50	0.60
F12 Boiler 4	BLR-32-GD3-4	7.60	5.50	0.60
F32S Boiler 1	BLR-115-1-210	7.60	5.50	0.60
F32S Boiler 2	BLR-115-2-210	7.60	5.50	0.60
F32S Boiler 3	BLR-115-3-210	7.60	5.50	0.60
F32S Boiler 4	BLR-115-4-210	7.60	5.50	0.60
F32S Boiler 5	BLR-115-5-210	7.60	5.50	0.60
F32 Boiler 2	BLR-115-31-210	7.60	5.50	0.60
F42 Boiler 1	BLR-115-1-10	7.60	5.50	0.60
F42 Boiler 2	BLR-115-2-10	7.60	5.50	0.60
F42 Boiler 3	BLR-115-3-10	7.60	5.50	0.60
F42 Boiler 4	BLR-115-4-10	7.60	5.50	0.60
F32S/32 Trimix A	PWB2-OX293-0-70	7.60	5.50	0.60
F32S/32 Trimix B	PWB2B-OX293-0-70	7.60	5.50	0.60
F42 Trimix 1	F42-PB1A-OX293-0-70	7.60	5.50	0.60

Notes:

1 - PM emissions ≤ 2.5µm in size; therefore, emission factors represent total PM, PM_{10}, and $PM_{2.5}$.

Section B. Boilers & Trimix: PM, PM_{10}, $PM_{2.5}$, SO_2, and VOC Emissions

Table 3-4. Natural Gas Usage for Boilers & Trimix

Unit	Permit ID	Natural Gas Usage (MMscf)					
		Jan-23	Feb-23	Mar-23	Apr-23	May-23	Jun-23
F12 Boiler 1	BLR-32-GD3-1	8.2	11.9	14.3	15.7	9.5	0.0
F12 Boiler 2	BLR-32-GD3-2	11.3	16.8	9.6	3.9	15.0	19.5
F12 Boiler 3	BLR-32-GD3-3	15.9	16.4	18.7	15.4	7.1	6.6
F12 Boiler 4	BLR-32-GD3-4	19.2	6.1	6.3	3.2	0.3	2.6
F32S Boiler 1	BLR-115-1-210	8.3	10.3	9.0	7.8	7.1	5.9
F32S Boiler 2	BLR-115-2-210	11.6	1.7	0.0	0.0	0.0	0.0
F32S Boiler 3	BLR-115-3-210	0.0	7.1	9.6	8.6	8.2	7.1
F32S Boiler 4	BLR-115-4-210	2.6	2.4	1.1	1.9	0.7	0.6
F32S Boiler 5	BLR-115-5-210	16.1	15.6	14.9	4.6	0.0	0.0
F32 Boiler 2	BLR-115-31-210	0.0	0.0	0.0	0.0	0.0	0.0
F42 Boiler 1	BLR-115-1-10	0.7	0.1	0.0	0.2	0.0	0.0
F42 Boiler 2	BLR-115-2-10	0.0	0.0	0.0	0.0	0.0	0.0
F42 Boiler 3	BLR-115-3-10	4.2	4.4	4.3	0.1	0.0	0.0
F42 Boiler 4	BLR-115-4-10	0.0	0.0	0.0	1.6	1.7	1.7
F32S/32 Trimix A	PWB2-OX293-0-70	0.00	0.39	0.23	0.50	0.40	0.41
F32S/32 Trimix B	PWB2B-OX293-0-70	0.63	0.18	0.38	0.04	0.15	0.11
F42 Trimix 1	F42-PB1A-OX293-0-70	0.28	0.30	0.32	0.26	0.32	0.32

Notes:

On January 31, 2019, Intel notified MCAQD that F32 Boiler 2 had been removed from service. The natural gas line feeding this unit is disconnected and capped.

Section C. Boilers & Trimix: NOx and CO Emissions

Table 3-5. NOx and CO Emission Factors for Boilers & Trimix

Unit	Permit ID	NO_X (lb/hr)	CO (lb/hr)
F12 Boiler 1	BLR-32-GD3-1	0.41	0.00
F12 Boiler 2	BLR-32-GD3-2	0.58	0.00
F12 Boiler 3	BLR-32-GD3-3	0.18	0.04
F12 Boiler 4	BLR-32-GD3-4	0.38	0.03
F32S Boiler 1	BLR-115-1-210	0.14	0.01
F32S Boiler 2	BLR-115-2-210	0.20	0.01
F32S Boiler 3	BLR-115-3-210	0.10	0.01
F32S Boiler 4	BLR-115-4-210	0.11	0.01
F32S Boiler 5	BLR-115-5-210	0.17 (Jan.) 0.31 (Feb. - Jun.)	0.00 (Jan) 2.15E-06 (Feb. - Jun.)
F32 Boiler 2	BLR-115-31-210	0.10	0.04
F42 Boiler 1	BLR-115-1-10	0.18 (Jan.) 0.05 (Feb. - Jun.)	0.00
F42 Boiler 2	BLR-115-2-10	0.23	0.00
F42 Boiler 3	BLR-115-3-10	0.23	0.00
F42 Boiler 4	BLR-115-4-10	0.23	0.00
F32S/32 Trimix A	PWB2-OX293-0-70	0.14	0.27
F32S/32 Trimix B	PWB2B-OX293-0-70	0.13	0.005
F42 Trimix 1	F42-PB1A-OX293-0-70	0.096	0.014

Notes:

The Quality Assurance/Quality Control (QA/QC) data for the boiler emission factors are presented in the respective compliance test reports previously submitted to MCAQD. In an effort to keep this Semi-Annual Monitoring Report concise, that QA/QC data is not duplicated here.

Section C. Boilers & Trimix: NOx and CO Emissions

Table 3-6. Operating Hours for Boilers & Trimix

Unit	Permit ID	Run Time (hrs)					
		Jan-23	Feb-23	Mar-23	Apr-23	May-23	Jun-23
F12 Boiler 1	BLR-32-GD3-1	371	672	744	408	16	0
F12 Boiler 2	BLR-32-GD3-2	383	420	198	64	416	581
F12 Boiler 3	BLR-32-GD3-3	744	672	744	720	355	560
F12 Boiler 4	BLR-32-GD3-4	744	420	549	322	18	488
F32S Boiler 1	BLR-115-1-210	744	672	744	688	735	720
F32S Boiler 2	BLR-115-2-210	677	106	0	0	0	0
F32S Boiler 3	BLR-115-3-210	0	485	724	720	744	720
F32S Boiler 4	BLR-115-4-210	201	177	81	458	370	351
F32S Boiler 5	BLR-115-5-210	744	672	744	230	0	0
F32 Boiler 2	BLR-115-31-210	0	0	0	0	0	0
F42 Boiler 1	BLR-115-1-10	160	41	1	42	1	5
F42 Boiler 2	BLR-115-2-10	0	0	0	0	0	0
F42 Boiler 3	BLR-115-3-10	703	672	744	16	0	0
F42 Boiler 4	BLR-115-4-10	0	0	0	673	744	720
F32S/32 Trimix A	PWB2-OX293-0-70	744	672	744	720	744	720
F32S/32 Trimix B	PWB2B-OX293-0-70	744	672	744	720	744	720
F42 Trimix 1	F42-PB1A-OX293-0-70	744	672	744	720	744	720

Notes:

On January 31, 2019, Intel notified MCAQD that F32 Boiler 2 had been removed from service. The natural gas line feeding this unit is disconnected and capped.

Section D. General Fab Natural Gas Combustion Emissions: NOx, CO, PM, PM_{10}, $PM_{2.5}$, SO_2, and VOC Emissions

Table 3-7. NOx, CO, PM, PM_{10}, $PM_{2.5}$, VOC, and SO_2 Emission Factors for General Fab Natural Gas Combustion Units

Unit	NO_X (lb/mmscf)	CO (lb/mmscf)	$PM/PM_{10}/PM_{2.5}$ [1] (lb/mmscf)	VOC (lb/mmscf)	SO_2 (lb/mmscf)
General Fab Natural Gas Combustion	100	84	7.6	5.5	0.6

Notes:

1 - PM emissions ≤ 2.5µm in size; therefore, emission factors represent total PM, PM_{10}, and $PM_{2.5}$.

Section D. General Fab Natural Gas Combustion Emissions: NOx, CO, PM, PM_{10}, $PM_{2.5}$, SO_2, and VOC Emissions

Table 3-8. General Fab Natural Gas Usage

Unit	Natural Gas Usage (MMscf)					
	Jan-23	Feb-23	Mar-23	Apr-23	May-23	Jun-23
General Fab Natural Gas Combustion	19.95	16.07	16.78	17.86	17.00	12.07

Section E. Cooling Towers: PM, PM_{10}, $PM_{2.5}$ Emissions

Table 3-9. Cooling Tower Conductivity & Total Dissolved Solids (TDS) Concentrations

Unit	Permit ID	Jan-23	Feb-23	Mar-23	Apr-23	May-23	Jun-23
Conductivity (µS)							
MSB Cooling Tower Water	NA	3451	3020	2618	2778	2969	2966
F12 Cooling Tower Water	F12-CT-29-GG5-(001 to 010)	3820	3558	3404	3660	3996	4153
F32S Cooling Tower Water	F22-OCC2-CT-114-(1 to 7)-210	3177	3593	3428	3641	4006	4168
F32 Cooling Tower Water	F32-CT-114-(31 to 36)-210	3758	3574	3368	3633	3920	4127
F32 OC30 Packaged Cooling Tower Water	TBD	2786	2143	2051	2974	4017	3692
F42 Cooling Tower Water	F42-BC1A-CT114-(1 to 14)-10	3332	3557	3260	3592	3937	4098
TDS (ppm)							
MSB Cooling Tower Water	NA	2,312	2,023	1,754	1,861	1,989	1,987
F12 Cooling Tower Water	F12-CT-29-GG5-(001 to 010)	2,560	2,384	2,281	2,452	2,677	2,783
F32S Cooling Tower Water	F22-OCC2-CT-114-(1 to 7)-210	2,128	2,407	2,297	2,439	2,684	2,793
F32 Cooling Tower Water	F32-CT-114-(31 to 36)-210	2,518	2,394	2,257	2,434	2,626	2,765
F32 OC30 Packaged Cooling Tower Water	TBD	1,866	1,435	1,374	1,993	2,691	2,474
F42 Cooling Tower Water	F42-BC1A-CT114-(1 to 14)-10	2,233	2,383	2,184	2,406	2,638	2,746

Notes:

MSB cooling towers are categorized as insignificant activities but are included here for completeness and consistency with previous reporting.

Table 3-10. Cooling Tower Flow Rates

Unit	Permit ID	Flow Rate (gpm)					
		Jan-23	Feb-23	Mar-23	Apr-23	May-23	Jun-23
MSB	NA	2820	2820	2820	2820	2820	2820
FAB 12 CTs	F12-CT-29-GG5-(001 to 010)	58846	54290	58267	58431	57862	57883
FAB 32S CTs	F22-OCC2-CT-114-(1 to 7)-210	43960	46080	48960	45381	46080	46080
FAB 32 CTs	F32-CT-114-(31 to 36)-210	40420	33954	35304	30453	32279	29699
FAB 32 OC30 Packaged CTs	TBD	7970	7968	9610	11032	11677	10773
FAB 42 CTs	F42-BC1A-CT114-(1 to 14)-10	56000	55198	59638	66529	72840	80000

Notes:

MSB cooling towers are categorized as insignificant activities but are included here for completeness and consistency with previous reporting.

Section F. Cooling Towers: VOC Emissions

Table 3-11. VOC Chemical Usage in Cooling Towers

Unit	Permit ID	Cooling Tower Chemical Usage (lb)					
		Jan-23	Feb-23	Mar-23	Apr-23	May-23	Jun-23
Sitewide	Multiple	2.66	1.69	0.62	2.81	2.50	1.27

Section G. Storage Silos: PM, PM_{10}, and $PM_{2.5}$ Emissions

Table 3-12. PM, PM_{10}, and $PM_{2.5}$ Emission Factors for Silos

Unit	Permit ID	PM/PM10/PM2.5[1] (lb PM/ton of material)
F12 HFW Lime Silo	F12-TK266-1-40	0.0049
F32S HFW Lime Silo	OC9-TK266-1-40	0.0049
F32 HFW Lime Silo	PWB2-TK266-1-40	0.0049
F42 HFW Lime Silo	F42-PB1A-TK266-1-40	0.0049
F42 HFW Lime Silo	F42-PB1B-TK266-1-40	0.0049
F42 IWW Sodium Bicarbonate Silo	OW1-TK934-1-15	0.0049
F52 HFW Lime Silo	F42-PB1C-TK266-1-40	0.0049

Notes:

1 - PM emissions ≤ 2.5µm in size; therefore, emission factors represent total PM, PM_{10}, and $PM_{2.5}$.

Section G. Storage Silos: PM, PM_{10}, and $PM_{2.5}$ Emissions

Table 3-13. Storage Silo Loading Frequency

Unit	Permit ID	Number of Silo Loads					
		Jan-23	Feb-23	Mar-23	Apr-23	May-23	Jun-23
F12 HFW Lime Silo	F12-TK266-1-40	2	2	1	3	1	1
F32S HFW Lime Silo	OC9-TK266-1-40	3	1	2	2	1	3
F32 HFW Lime Silo	PWB2-TK266-1-40	1	2	2	2	5	3
F42 HFW Lime Silo	F42-PB1A-TK266-1-40	2	2	6	1	2	3
F42 HFW Lime Silo	F42-PB1B-TK266-1-40	4	2	5	2	2	5
F42 IWW Sodium Bicarbonate Silo	OW1-TK934-1-15	0	0	0	0	0	0
F52 HFW Lime Silo	F42-PB1C-TK266-1-40	0	0	0	0	0	1

Notes:

The F42 sodium bicarbonate silo was permanently decommissioned on 1/23/23 and the F52 HFW lime silo became operational on 5/30/23.

Section H. Monitoring System for Permitted VOC Abatement Control Devices (Natural Gas Combustions Emissions Only): SO_2 Emissions

Table 3-14. SO_2 Emission Factors for VOC Abatement Control Devices

Unit	Permit ID	SO_2 (lb/mmscf)
F12 RCTO 1	VOC-16-FK2-01	0.6
F12 RCTO 2	VOC-16-FK2-02	0.6
F12 RCTO 3	VOC-16-FM2-01	0.6
F12 RCTO 4	VOC-16-FM2-02	0.6
F12 LCE RCTO 1	OCF1C-VOC-138-1-20	0.6
F12 LCE RCTO 2	OCF1C-VOC-138-2-20	0.6
F12 LCE RCTO 3	OCF1C-VOC-138-3-00	0.6
F12 LCE RCTO 4	OCF1C-VOC-138-4-00	0.6
F32S RCTO 3	VOC-138-3-120	0.6
F32S RCTO 4	VOC-138-4-120	0.6
F32S RCTO 5	VOC-138-5-120	0.6
F32S RCTO 6	VOC-138-6-120	0.6
F32 RCTO 1	VOC-138-01-120	0.6
F32 RCTO 2	VOC-138-02-120	0.6
F32 RCTO 3	VOC-138-03-120	0.6
F32 RCTO 4	OCF3B-VOC138-1-20	0.6
F32 RCTO 5	OCF3B-VOC138-2-20	0.6
F32 RCTO 6	OCF3B-VOC138-3-20	0.6
F42 RCTO 1	FB1A-VOC138-1-00	0.6
F42 RCTO 2	FB1A-VOC138-2-00	0.6
F42 RCTO 3	FB1A-VOC138-3-00	0.6
F42 RCTO 4	OCFB1A-VOC-138-4-00	0.6
F42 RCTO 5	OCFB1A-VOC-138-5-00	0.6

Section H. Monitoring System for Permitted VOC Abatement Control Devices (Natural Gas Combustions Emissions Only): SO_2 Emissions

Table 3-15. Natural Gas Usage for VOC Abatement Control Devices

Unit	Permit ID	Natural Gas Usage (MMscf)					
		Jan-23	Feb-23	Mar-23	Apr-23	May-23	Jun-23
F12 RCTO 1	VOC-16-FK2-01	1.04	1.18	1.70	1.55	2.04	1.69
F12 RCTO 2	VOC-16-FK2-02	0.86	0.77	0.86	0.83	0.84	0.78
F12 RCTO 3	VOC-16-FM2-01	0.92	0.83	0.93	0.89	0.92	0.89
F12 RCTO 4	VOC-16-FM2-02	1.14	1.12	1.26	1.11	1.03	1.12
F12 LCE RCTO 1	OCF1C-VOC-138-1-20	1.67	1.48	1.65	1.57	1.60	1.52
F12 LCE RCTO 2	OCF1C-VOC-138-2-20	0.00	0.00	0.00	0.00	0.00	0.00
F12 LCE RCTO 3	OCF1C-VOC-138-3-00	1.51	1.20	1.59	1.36	1.25	1.14
F12 LCE RCTO 4	OCF1C-VOC-138-4-00	2.06	1.72	1.90	1.99	1.97	1.88
F32S RCTO 3	VOC-138-3-120	0.84	0.63	0.78	0.75	0.76	0.73
F32S RCTO 4	VOC-138-4-120	0.85	0.81	0.87	0.82	0.85	0.83
F32S RCTO 5	VOC-138-5-120	0.72	0.64	0.68	0.66	0.68	0.61
F32S RCTO 6	VOC-138-6-120	0.34	0.32	0.48	0.85	0.88	0.86
F32 RCTO 1	VOC-138-01-120	1.05	0.96	1.06	0.98	0.96	0.92
F32 RCTO 2	VOC-138-02-120	0.92	0.83	0.91	0.87	0.88	0.83
F32 RCTO 3	VOC-138-03-120	0.53	0.46	0.51	0.48	0.48	0.47
F32 RCTO 4	OCF3B-VOC138-1-20	0.66	0.56	0.66	0.60	0.62	0.58
F32 RCTO 5	OCF3B-VOC138-2-20	0.75	0.65	0.77	0.70	0.72	0.64
F32 RCTO 6	OCF3B-VOC138-3-20	1.32	1.21	0.56	1.27	1.29	1.23
F42 RCTO 1	FB1A-VOC138-1-00	0.46	1.40	1.40	1.34	1.02	1.53
F42 RCTO 2	FB1A-VOC138-2-00	2.30	0.85	1.20	1.57	1.05	1.69
F42 RCTO 3	FB1A-VOC138-3-00	2.40	2.05	0.77	0.00	0.29	1.32
F42 RCTO 4	OCFB1A-VOC-138-4-00	0.35	1.35	1.12	0.76	0.41	1.15
F42 RCTO 5	OCFB1A-VOC-138-5-00	1.07	1.03	0.91	0.32	0.21	1.48

Notes:

F42 RCTO #4 became operational on 1/26/23.

Section I. Monitoring System for Fab Emission Units (Process and Natural Gas Combustion Emissions Exhausted Through Ammonia Scrubbers): NOx Emissions

Table 3-16. Site-Wide EXAM NOx Performance Testing Results and Monthly Production Index (PI) [1,2,3]

Stack Type	NOx Testing Result (lb/hr)	Monthly Production Indexes					
		Jan-23	Feb-23	Mar-23	Apr-23	May-23	Jun-23
Ammonia Scrubbers	4.012 (Jan.) 3.808 (Feb. - Apr.) 2.078 (May - Jun.)	0.52	0.35	0.43	0.65	1.13	1.18

Notes:

1 - The Quality Assurance/Quality Control (QA/QC) data for the process emission factors that were determined via performance testing are presented in the respective compliance test reports previously submitted to MCAQD. In an effort to keep this Semi-Annual Monitoring Report concise, that QA/QC data is not duplicated here.

2 - Emission factors are based on performance testing conducted in 2022 and/or 2023.

3 - The fabs operated constantly over the reporting period.

Section J. Monitoring System for Fab Emission Units (Process and Natural Gas Combustion Emissions Exhausted Through VOC Abatement Units, Wet Acid Scrubbers and Ammonia Scrubbers): VOC Emissions

Table 3-17. Site-Wide VOC Performance Testing Results and Monthly Production Index (PI) [1,2,3]

Stack Type	VOC Testing Result (lb/hr)	Monthly Production Indexes					
		Jan-23	Feb-23	Mar-23	Apr-23	May-23	Jun-23
RCTO VOC Abatement Units	0.587 (Jan.) 0.700 (Feb. - Jun.)	0.54	0.42	0.51	0.77	0.86	0.90
Wet Acid Scrubbers	0.674 (Jan. - Mar.) 2.770 (Apr. - Jun.)	0.54	0.34	0.42	1.59	1.79	1.86
Ammonia Scrubbers	8.892 (Jan.) 9.151 (Feb. - Apr.) 5.922 (May - Jun.)	0.52	0.35	0.43	0.65	1.13	1.18

Notes:

1 - The Quality Assurance/Quality Control (QA/QC) data for the process emission factors that were determined via performance testing are presented in the respective compliance test reports previously submitted to MCAQD. In an effort to keep this Semi-Annual Monitoring Report concise, that QA/QC data is not duplicated here.

2 - Emission factors are based on performance testing conducted in 2022 and/or 2023.

3 - The fabs operated constantly over the reporting period.

Section K. Monitoring Systems for Fab Emission Units (Process Emissions Only Exhausted Through Wet Acid Scrubbers and Process and Natural Gas Combustion Emissions Exhausted Through VOC Abatement Units): CO, NOx, PM, PM_{10}, and $PM_{2.5}$ Emissions

Table 3-18. Site-Wide CO, NOx, PM, PM_{10}, and $PM_{2.5}$ Stack Testing Results and Monthly Production Index (PI) [1,2,3,4]

Stack Type	Testing Result (lb/hr)	Monthly Production Indexes					
		Jan-23	Feb-23	Mar-23	Apr-23	May-23	Jun-23
Wet Acid Scrubbers - CO	32.722 (Jan. - Mar.) 26.344 (Apr. - Jun.)	0.54	0.34	0.42	1.59	1.79	1.86
Wet Acid Scrubbers - NOx	18.478 (Jan - Mar.) 26.344 (Apr. - Jun.)	0.54	0.34	0.42	1.59	1.79	1.86
Wet Acid Scrubbers - PM, PM_{10}, $PM_{2.5}$	5.222 (Jan. - Mar.) 2.546 (Apr. - Jun.)	0.54	0.34	0.42	1.59	1.79	1.86
VOC Abatement Units - CO	3.818 (Jan.) 4.044 (Feb. - Jun.)	0.54	0.42	0.51	0.77	0.86	0.90
VOC Abatement Units - NOx	4.238 (Jan.) 3.798 (Feb. - Jun.)	0.54	0.42	0.51	0.77	0.86	0.90
VOC Abatement Units - PM, PM_{10}, $PM_{2.5}$	1.247 (Jan.) 0.935 (Feb. - Jun.)	0.54	0.42	0.51	0.77	0.86	0.90

Notes:

1 - The Quality Assurance/Quality Control (QA/QC) data for the process emission factors that were determined via performance testing are presented in the respective compliance test reports previously submitted to MCAQD. In an effort to keep this Semi-Annual Monitoring Report concise, that QA/QC data is not duplicated here.

2 - PM emissions ≤ 2.5µm in size; therefore, emission factors represent total PM, PM_{10}, and $PM_{2.5}$.

3 - Emission factors are based on performance testing conducted in 2022 and/or 2023.

4 - The fabs operated constantly over the reporting period.

Section L. Monitoring System for Fab Emissions Units (Process Emissions Only): SO_2 and Fluoride Emissions (Fluoride emissions do not include HF)

Table 3-19. Weighting Factors for SO_2 Process Emissions

Compound		Weighting Factor (%)					
		Jan-23	Feb-23	Mar-23	Apr-23	May-23	Jun-23
Chem 1	Tech A	2.7%	3.4%	2.3%	1.3%	1.1%	1.3%
Chem 2		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Chem 1	Tech C	97.3%	96.6%	97.7%	98.7%	98.9%	98.7%
Chem 2		100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Table 3-20. SO_2 Process Chemical Usage

Compound	Chemical Usage (lb)					
	Jan-23	Feb-23	Mar-23	Apr-23	May-23	Jun-23
Chem 1	2330	1835	2045	1760	2770	3265
Chem 2	168	251	335	419	335	419

Section L. Monitoring System for Fab Emissions Units (Process Emissions Only): SO_2 and Fluoride Emissions (Fluoride emissions do not include HF)

Table 3-21. Emission Factors for SO_2 Process Emissions

Compound	Tech A (lb/lb)	Tech C (lb/lb)
Chem 1	0	0.03
Chem 2	0	0.11

Table 3-22. Weighting Factors for Fluoride Process Emissions (excludes HF)

Compound		Weighting Factor (%)					
		Jan-23	Feb-23	Mar-23	Apr-23	May-23	Jun-23
Chem 1	Tech A	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Chem 2		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Chem 3		1.7%	2.1%	1.4%	0.8%	0.7%	0.8%
Chem 4		1.7%	2.1%	1.4%	0.8%	0.7%	0.8%
Chem 5		100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Chem 6		2.7%	3.4%	2.3%	1.3%	1.1%	1.3%
Chem 7		2.7%	3.4%	2.3%	1.3%	1.1%	1.3%
Chem 8		2.7%	3.4%	2.3%	1.3%	1.1%	1.3%
Chem 9		2.7%	3.4%	2.3%	1.3%	1.1%	1.3%
Chem 10		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Chem 11		1.9%	2.4%	1.6%	0.9%	0.7%	0.9%
Chem 12		1.9%	2.4%	1.6%	0.9%	0.7%	0.9%
Chem 13		1.9%	2.4%	1.6%	0.9%	0.7%	0.9%
Chem 14		2.9%	3.6%	2.4%	1.3%	1.1%	1.3%
Chem 15		2.9%	3.6%	2.4%	1.3%	1.1%	1.3%
Chem 16		4.9%	6.1%	4.1%	2.3%	1.9%	2.3%
Chem 17		4.9%	6.1%	4.1%	2.3%	1.9%	2.3%
Chem 18		2.4%	3.0%	2.0%	1.1%	0.9%	1.1%
Chem 19		2.4%	3.0%	2.0%	1.1%	0.9%	1.1%
Chem 20		2.4%	3.0%	2.0%	1.1%	0.9%	1.1%
Chem 21		1.3%	1.6%	1.1%	0.6%	0.5%	0.6%
Chem 22		1.3%	1.6%	1.1%	0.6%	0.5%	0.6%
Chem 23		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Chem 24		9.8%	12.1%	8.3%	4.7%	4.0%	4.7%
Chem 25		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Chem 26		9.8%	12.1%	8.3%	4.7%	4.0%	4.7%
Chem 27		0.0%	0.1%	0.0%	0.0%	0.0%	0.0%
Chem 28		0.0%	0.1%	0.0%	0.0%	0.0%	0.0%
Chem 29		3.5%	4.4%	2.9%	1.6%	1.4%	1.6%
Chem 30		3.5%	4.4%	2.9%	1.6%	1.4%	1.6%
Chem 31		3.5%	4.4%	2.9%	1.6%	1.4%	1.6%
Chem 32		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Chem 33		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Chem 34		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Chem 35		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Chem 36		12.1%	14.9%	10.4%	5.9%	5.0%	5.9%

Table 3-22. Weighting Factors for Fluoride Process Emissions (excludes HF) (continued)

Compound		Weighting Factor (%)					
		Jan-23	Feb-23	Mar-23	Apr-23	May-23	Jun-23
Chem 1	Tech C	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Chem 2		100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Chem 3		98.3%	97.9%	98.6%	99.2%	99.3%	99.2%
Chem 4		98.3%	97.9%	98.6%	99.2%	99.3%	99.2%
Chem 5		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Chem 6		97.3%	96.6%	97.7%	98.7%	98.9%	98.7%
Chem 7		97.3%	96.6%	97.7%	98.7%	98.9%	98.7%
Chem 8		97.3%	96.6%	97.7%	98.7%	98.9%	98.7%
Chem 9		97.3%	96.6%	97.7%	98.7%	98.9%	98.7%
Chem 10		100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Chem 11		98.1%	97.6%	98.4%	99.1%	99.3%	99.1%
Chem 12		98.1%	97.6%	98.4%	99.1%	99.3%	99.1%
Chem 13		98.1%	97.6%	98.4%	99.1%	99.3%	99.1%
Chem 14		97.1%	96.4%	97.6%	98.7%	98.9%	98.7%
Chem 15		97.1%	96.4%	97.6%	98.7%	98.9%	98.7%
Chem 16		95.1%	93.9%	95.9%	97.7%	98.1%	97.7%
Chem 17		95.1%	93.9%	95.9%	97.7%	98.1%	97.7%
Chem 18		97.6%	97.0%	98.0%	98.9%	99.1%	98.9%
Chem 19		97.6%	97.0%	98.0%	98.9%	99.1%	98.9%
Chem 20		97.6%	97.0%	98.0%	98.9%	99.1%	98.9%
Chem 21		98.7%	98.4%	98.9%	99.4%	99.5%	99.4%
Chem 22		98.7%	98.4%	98.9%	99.4%	99.5%	99.4%
Chem 23		100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Chem 24		90.2%	87.9%	91.7%	95.3%	96.0%	95.3%
Chem 25		100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Chem 26		90.2%	87.9%	91.7%	95.3%	96.0%	95.3%
Chem 27		100.0%	99.9%	100.0%	100.0%	100.0%	100.0%
Chem 28		100.0%	99.9%	100.0%	100.0%	100.0%	100.0%
Chem 29		96.5%	95.6%	97.1%	98.4%	98.6%	98.4%
Chem 30		96.5%	95.6%	97.1%	98.4%	98.6%	98.4%
Chem 31		96.5%	95.6%	97.1%	98.4%	98.6%	98.4%
Chem 32		100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Chem 33		100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Chem 34		100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Chem 35		100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Chem 36		87.9%	85.1%	89.6%	94.1%	95.0%	94.1%

Table 3-23. Fluoride Process Chemical Usage

Compound	Chemical Usage (lb)					
	Jan-23	Feb-23	Mar-23	Apr-23	May-23	Jun-23
Chem 1	200	360	360	160	600	440
Chem 2	0	0	0	0	0	0
Chem 3	544	539	942	539	539	1077
Chem 4	544	539	942	539	539	1077
Chem 5	0	0	0	0	0	0
Chem 6	2330	1835	2045	1760	2770	3265
Chem 7	2330	1835	2045	1760	2770	3265
Chem 8	2330	1835	2045	1760	2770	3265
Chem 9	2330	1835	2045	1760	2770	3265
Chem 10	132	198	395	263	198	263
Chem 11	375	325	350	225	450	500
Chem 12	375	325	350	225	450	500
Chem 13	375	325	350	225	450	500
Chem 14	200	300	0	250	250	300
Chem 15	200	300	0	250	250	300
Chem 16	48	48	72	48	72	84
Chem 17	48	48	72	48	72	84
Chem 18	1762	1520	1360	1440	1920	2240
Chem 19	1762	1520	1360	1440	1920	2240
Chem 20	1762	1520	1360	1440	1920	2240
Chem 21	4233	8466	5644	7760	9877	7055
Chem 22	4233	8466	5644	7760	9877	7055
Chem 23	1	0	3	1	0	1
Chem 24	0	0	0	0	0	0
Chem 25	690	1854	11	2	104958	24299
Chem 26	0	0	0	0	0	0
Chem 27	264	167	188	241	322	263
Chem 28	264	167	188	241	322	263
Chem 29	8800	8800	8800	8800	17600	26400
Chem 30	8800	8800	8800	8800	17600	26400
Chem 31	8800	8800	8800	8800	17600	26400
Chem 32	0	0	55	0	54	0
Chem 33	0	0	55	0	54	0
Chem 34	1950	2187	1690	1147	1690	2577
Chem 35	1950	2187	1690	1147	1690	2577
Chem 36	4409	0	0	8818	0	0

Table 3-24. Emission Factors for Fluoride Process Emissions

Compound	Tech A	Tech C
	(lb/lb)	(lb/lb)
Chem 1	-	1.19E-02
Chem 2	6.50E-09	9.49E-05
Chem 3	1.67E-01	7.67E-02
Chem 4	2.06E-02	6.51E-02
Chem 5	1.00E+00	1.00E+00
Chem 6	-	1.70E-03
Chem 7	-	4.32E-04
Chem 8	1.58E-02	9.29E-03
Chem 9	3.72E-01	4.09E-02
Chem 10	-	7.71E-05
Chem 11	-	0.00E+00
Chem 12	6.48E-02	8.22E-02
Chem 13	6.41E-02	1.46E-02
Chem 14	3.86E-05	1.72E-01
Chem 15	2.33E-02	3.01E-02
Chem 16	1.33E-02	7.09E-03
Chem 17	2.63E-01	4.08E-02
Chem 18	-	0.00E+00
Chem 19	5.95E-02	6.25E-02
Chem 20	4.12E-02	1.23E-02
Chem 21	3.41E-02	3.24E-01
Chem 22	5.46E-02	3.00E-02
Chem 23	-	8.41E-01
Chem 24	2.47E-01	2.47E-01
Chem 25	-	0.00E+00
Chem 26	1.62E-02	1.62E-02
Chem 27	-	1.77E+00
Chem 28	1.00E+00	3.94E-03
Chem 29	-	1.92E-04
Chem 30	1.27E-02	2.27E-02
Chem 31	5.45E-03	2.94E-03
Chem 32	-	6.73E-03
Chem 33	7.53E-01	4.20E-02
Chem 34	1.22E-03	2.97E-03
Chem 35	3.00E-05	1.86E-05
Chem 36	-	0.00E+00

Section M. Monitoring System for Fab Emission Units (Uncontrolled Evaporative Processes): VOC Emissions (from tanks)

Table 3-25. Tank Throughput

Unit	System	Tank Throughput (gallons)					
		Jan-23	Feb-23	Mar-23	Apr-23	May-23	Jun-23
F12-OCC1-TK-266-1-83	HF	1,339,200	1,209,600	1,339,200	1,296,000	1,339,200	1,296,000
F12-TK-266-1-00	HF	6,026,400	5,443,200	6,026,400	5,832,000	6,026,400	5,832,000
F12-TK-266-1-01	HF	6,919,200	6,249,600	6,919,200	6,696,000	6,919,200	6,696,000
F12-TK-266-1-15	HF	11,160,000	10,080,000	11,160,000	10,800,000	11,160,000	10,800,000
F12-TK-266-1-60	HF	6,026,400	5,443,200	6,026,400	5,832,000	6,026,400	5,832,000
F12-TK-266-1-75	HF	2,678,400	2,419,200	2,678,400	2,592,000	2,678,400	2,592,000
F12-TK-266-1-90	HF	6,026,400	5,443,200	6,026,400	5,832,000	6,026,400	5,832,000
F12-TK-266-2-00	HF	6,026,400	5,443,200	6,026,400	5,832,000	6,026,400	5,832,000
F12-TK-266-2-15	HF	11,160,000	10,080,000	11,160,000	10,800,000	11,160,000	10,800,000
F12-TK-266-2-60	HF	6,026,400	5,443,200	6,026,400	5,832,000	6,026,400	5,832,000
F12-TK-266-2-75	HF	2,678,400	2,419,200	2,678,400	2,592,000	2,678,400	2,592,000
F12-TK-76-GH1-1	GSW	7,262	7,176	8,540	7,929	8,219	9,548
F12-TK-76-GH1-2	GSW	7,262	7,176	8,540	7,929	8,219	9,548
F12-TK-76-GH4-1	GSW	7,262	7,176	8,540	7,929	8,219	9,548
F12-TK-76-GH4-2	GSW	7,262	7,176	8,540	7,929	8,219	9,548
F12-TK-76-GH6-1	CSW	22,323	19,363	21,949	18,128	22,545	25,560
F12-TK-79-GH10-1	CSW	22,323	19,363	21,949	18,128	22,545	25,560
F12-TK-79-GH10-2	CSW	22,323	19,363	21,949	18,128	22,545	25,560
F12-TK-79-GH10-3	CSW	22,323	19,363	21,949	18,128	22,545	25,560
F12-TK-79-GH1-1	SOG	-	522	-	123	206	-
F12-TK-79-GH1-2	SOG	-	522	-	123	206	-
F12-TK-79-GH4-1	SOG	-	522	-	123	206	-
F12-TK-79-GH4-2	SOG	-	522	-	123	206	-
F12-TK-79-GH7-1	CSW	22,323	19,363	21,949	18,128	22,545	25,560
F12-TK-79-GH7-2	CSW	22,323	19,363	21,949	18,128	22,545	25,560
F12-TK-80-GH1-1	HCl	-	-	-	-	-	-
F12-TK-80-GH1-2	HCl	-	637	-	-	-	644
F22-OCB2A-TK-269-1-00	GSW	7,262	7,176	8,540	7,929	8,219	9,548
F22-OCB2A-TK-269-1-30	GSW	7,262	7,176	8,540	7,929	8,219	9,548
F22-OCB2A-TK-270-1-00	CSW	22,323	19,363	21,949	18,128	22,545	25,560
F22-OCB2-TK-293-1-00	TMXW	563,553	462,656	367,267	468,336	562,018	601,344
F22-OCB2-TK-293-2-00	TMXW	563,553	462,656	367,267	468,336	562,018	601,344
F22-OCF2-TK-270-1-30	TMXW	22,323	19,363	21,949	18,128	22,545	25,560
F22-PWB2-TK-293-0-92	TMXW	289,294	241,505	211,768	245,475	302,213	311,904
F22-PWB2-TK-293-1-15	TMXW	277,402	222,095	195,787	227,884	273,420	291,816
F22-PWB2-TK-293-2-15	TMXW	277,402	222,095	195,787	227,884	273,420	291,816
F22-PWB2-TK-293-3-15	TMXW	277,402	222,095	195,787	227,884	273,420	291,816
F22-TK-251-1-200	HCl	163	392	332	353	664	149
F22-TK-296-1-05	BSSW	-	1,405	-	-	1,194	-
F22-TK-296-1-15	BSSW	-	1,405	-	-	1,194	-
F22-TK-296-2-05	BSSW	-	3,651	-	-	3,102	-
F32-OC11-TK-266-1-00	HF	6,696,000	6,048,000	6,696,000	6,480,000	6,696,000	6,480,000
F32-OC11-TK-266-2-00	HF	6,696,000	6,048,000	6,696,000	6,480,000	6,696,000	6,480,000
F32-OC11-TK-266-3-00	HF	6,696,000	6,048,000	6,696,000	6,480,000	6,696,000	6,480,000
F32-OC9-TK-266-1-15	HF	11,160,000	10,080,000	11,160,000	10,800,000	11,160,000	10,800,000
F32-OC9-TK-266-1-60	HF	4,464,000	4,032,000	4,464,000	4,320,000	4,464,000	4,320,000
F32-OC9-TK-266-1-75	HF	2,678,400	2,419,200	2,678,400	2,592,000	2,678,400	2,592,000

Table 3-25. Tank Throughput (continued)

Unit	System	Tank Throughput (gallons)					
		Jan-23	Feb-23	Mar-23	Apr-23	May-23	Jun-23
F32-OC9-TK-266-1-90	HF	4,464,000	4,032,000	4,464,000	4,320,000	4,464,000	4,320,000
F32-OC9-TK-266-2-15	HF	11,160,000	10,080,000	11,160,000	10,800,000	11,160,000	10,800,000
F32-OC9-TK-266-2-60	HF	4,464,000	4,032,000	4,464,000	4,320,000	4,464,000	4,320,000
F32-OC9-TK-266-2-75	HF	2,678,400	2,419,200	2,678,400	2,592,000	2,678,400	2,592,000
F32-OCB2B-TK-269-1-00	GSW	7,262	7,176	8,540	7,929	8,219	9,548
F32-OCB2B-TK-270-1-00	CSW	22,323	19,363	21,949	18,128	22,545	25,560
F32-OCB2B-TK-286-1-50	SOG	-	522	-	123	206	-
F32-PWB2B-TK-293-0-92	TMXW	289,294	241,505	211,768	245,475	302,213	311,904
F32-PWB2-TK-266-1-15	HF	11,160,000	10,080,000	11,160,000	10,800,000	11,160,000	10,800,000
F32-PWB2-TK-266-1-60	HF	4,464,000	4,032,000	4,464,000	4,320,000	4,464,000	4,320,000
F32-PWB2-TK-266-1-75	HF	2,678,400	2,419,200	2,678,400	2,592,000	2,678,400	2,592,000
F32-PWB2-TK-266-1-90	HF	4,464,000	4,032,000	4,464,000	4,320,000	4,464,000	4,320,000
F32-PWB2-TK-266-2-15	HF	11,160,000	10,080,000	11,160,000	10,800,000	11,160,000	10,800,000
F32-PWB2-TK-266-2-60	HF	4,464,000	4,032,000	4,464,000	4,320,000	4,464,000	4,320,000
F32-PWB2-TK-266-2-75	HF	2,678,400	2,419,200	2,678,400	2,592,000	2,678,400	2,592,000
F32-PWB2-TK-269-1-50	GSW	7,262	7,176	8,540	7,929	8,219	9,548
F32-PWB2-TK-269-2-50	GSW	7,262	7,176	8,540	7,929	8,219	9,548
F32-PWB2-TK-270-1-40	CSW	22,323	19,363	21,949	18,128	22,545	25,560
F32-PWB2-TK-270-2-40	CSW	22,323	19,363	21,949	18,128	22,545	25,560
F42-FB1A-TK-266-1-00	HF	5,580,000	5,040,000	5,580,000	5,400,000	5,580,000	5,400,000
F42-FB1A-TK-266-2-00	HF	5,580,000	5,040,000	5,580,000	5,400,000	5,580,000	5,400,000
F42-FB1A-TK-269-1-00	GSW	7,262	7,176	8,540	7,929	8,219	9,548
F42-FB1A-TK-269-1-30	GSW	7,262	7,176	8,540	7,929	8,219	9,548
F42-FB1A-TK-269-2-00	GSW	7,262	7,176	8,540	7,929	8,219	9,548
F42-FB1A-TK-270-1-00	CSW	22,323	19,363	21,949	18,128	22,545	25,560
F42-FB1A-TK-270-2-00	CSW	22,323	19,363	21,949	18,128	22,545	25,560
F42-FB1A-TK-86-1-50	SOG	-	522	-	123	206	-
F42-FB1B-TK-266-1-00	HF	5,580,000	5,040,000	5,580,000	5,400,000	5,580,000	5,400,000
F42-FB1B-TK-266-2-00	HF	5,580,000	5,040,000	5,580,000	5,400,000	5,580,000	5,400,000
F42-FB1C-TK-266-1-00	HF	5,580,000	5,040,000	5,580,000	5,400,000	5,580,000	5,400,000
F42-FB1C-TK-266-2-00	HF	5,580,000	5,040,000	5,580,000	5,400,000	5,580,000	5,400,000
F42-PB1A-TK-251-1-00	HCl	622	1,010	1,350	320	1,068	880
F42-PB1A-TK-266-1-15	HF	11,160,000	10,080,000	11,160,000	10,800,000	11,160,000	10,800,000
F42-PB1A-TK-266-1-60	HF	5,580,000	5,040,000	5,580,000	5,400,000	5,580,000	5,400,000
F42-PB1A-TK-266-1-75	HF	2,678,400	2,419,200	2,678,400	2,592,000	2,678,400	2,592,000
F42-PB1A-TK-266-1-83	HF	1,339,200	1,209,600	1,339,200	1,296,000	1,339,200	1,296,000
F42-PB1A-TK-266-1-90	HF	4,464,000	4,032,000	4,464,000	4,320,000	4,464,000	4,320,000
F42-PB1A-TK-266-2-15	HF	11,160,000	10,080,000	11,160,000	10,800,000	11,160,000	10,800,000
F42-PB1A-TK-266-2-60	HF	4,464,000	4,032,000	4,464,000	4,320,000	4,464,000	4,320,000
F42-PB1A-TK-266-2-75	HF	2,678,400	2,419,200	2,678,400	2,592,000	2,678,400	2,592,000
F42-PB1A-TK-293-0-92	TMXW	493,553	420,582	343,201	414,919	483,898	572,832
F42-PB1A-TK-293-1-00	TMXW	410,782	376,286	310,136	348,576	419,616	482,544
F42-PB1A-TK-293-1-15	TMXW	417,701	377,754	300,499	351,804	418,723	476,064
F42-PB1A-TK-293-2-00	TMXW	410,782	376,286	310,136	348,576	419,616	482,544
F42-PB1A-TK-293-2-15	TMXW	417,701	377,754	300,499	351,804	418,723	476,064
F42-PB1B-TK-266-1-15	HF	11,160,000	10,080,000	11,160,000	10,800,000	11,160,000	10,800,000
F42-PB1B-TK-266-1-60	HF	4,464,000	4,032,000	4,464,000	4,320,000	4,464,000	4,320,000
F42-PB1B-TK-266-1-75	HF	2,678,400	2,419,200	2,678,400	2,592,000	2,678,400	2,592,000
F42-PB1B-TK-266-1-83	HF	1,339,200	1,209,600	1,339,200	1,296,000	1,339,200	1,296,000
F42-PB1B-TK-266-1-90	HF	4,464,000	4,032,000	4,464,000	4,320,000	4,464,000	4,320,000

Table 3-25. Tank Throughput (continued)

Unit	System	Tank Throughput (gallons)					
		Jan-23	Feb-23	Mar-23	Apr-23	May-23	Jun-23
F42-PB1B-TK-266-2-15	HF	11,160,000	10,080,000	11,160,000	10,800,000	11,160,000	10,800,000
F42-PB1B-TK-266-2-60	HF	4,464,000	4,032,000	4,464,000	4,320,000	4,464,000	4,320,000
F42-PB1B-TK-266-2-75	HF	2,678,400	2,419,200	2,678,400	2,592,000	2,678,400	2,592,000
F42-PB1C-TK-266-1-15	HF	11,160,000	10,080,000	11,160,000	10,800,000	11,160,000	10,800,000
F42-PB1C-TK-266-1-60	HF	5,580,000	5,040,000	5,580,000	5,400,000	5,580,000	5,400,000
F42-PB1C-TK-266-1-75	HF	2,678,400	2,419,200	2,678,400	2,592,000	2,678,400	2,592,000
F42-PB1C-TK-266-1-90	HF	4,464,000	4,032,000	4,464,000	4,320,000	4,464,000	4,320,000
F42-PB1C-TK-266-2-15	HF	11,160,000	10,080,000	11,160,000	10,800,000	11,160,000	10,800,000
F42-PB1C-TK-266-2-60	HF	5,580,000	5,040,000	5,580,000	5,400,000	5,580,000	5,400,000
F42-PB1C-TK-266-2-75	HF	2,678,400	2,419,200	2,678,400	2,592,000	2,678,400	2,592,000
F42-WTR1-TK-932-1-01	HCl	37,943	32,885	35,518	33,404	41,030	39,061

Section N. Monitoring System for Fab Emission Units (Uncontrolled Evaporative Processes): VOC Emissions (from wipers, sinks, and bottles)

Table 3-26. Solvent Usage for Wipers, Sinks, and Bottles

Evaporative Process Emission Source	Solvent Usage (lb)					
	Jan-23	Feb-23	Mar-23	Apr-23	May-23	Jun-23
Bottles	110.87	31.07	134.25	79.74	5.54	187.67
Sinks	407.09	262.58	267.81	264.89	334.51	263.49
Wipers	1050.70	474.93	933.39	967.09	1383.96	743.66

Section P. Monitoring System for Fab Emission Units
(Uncontrolled Evaporative Processes): VOC Emissions from
Chemical Delivery Modules (CDM) units

Table 3-27. Emission Factors and Chemical Purchase Data for Chemical Delivery Modules

Chemical Delivery Module	Emission Factor (lb/lb)	Fab-Specific DRE[1] %	Chemical Purchase Data (lb)					
			Jan-23	Feb-23	Mar-23	Apr-23	May-23	Jun-23
Fab 12								
[redacted]		99.59%	12311	12311	6156	5603	0	0
			8774	5265	3510	3510	3510	1755
			0	0	0	0	0	0
			0	0	0	0	0	0
			0	0	0	0	0	0
			53130	59253	67229	62065	71304	72350
Fab 32S								
[redacted]		99.62%	16928	18467	18467	21098	18678	14943
			9652	7897	7897	8774	8774	7020
			0	0	0	0	0	0
			0	0	0	0	0	0
			0	0	0	0	0	0
			53130	59253	67229	62065	71304	72350
Fab 32								
[redacted]		99.57%	0	0	0	0	0	0
			9652	7897	7897	8774	8774	7020
			0	0	0	0	0	0
			0	0	0	0	0	0
			0	0	0	0	0	0
			53130	59253	67229	62065	71304	72350
Fab 42 [1]								
[redacted]		99.88%	43089	[redacted]				
			29833					
			355400					
			0					
			53130					
			0					

Notes:

DRE - destruction removal efficiency

1 - Per section P.vi of Appendix B to the Permit, VOC emissions from Fab 42 CDM modules beginning in February 2023 are accounted for in Section J calculations since the CDM units have been routed to VOC abatement units and performance testing of that VOC abatement system was subsequently performed and reported to MCAQD.

Section Q. Monitoring System for Fugitive Dust Emissions from Vehicular Traffic: PM, PM_{10}, and $PM_{2.5}$

Table 3-28. Emission Factors for Dust Generated by Vehicular Traffic

Road Type	$PM_{2.5}$ (lb/mile)	PM_{10} (lb/mile)	PM (lb/mile)
Industrial Unpaved Roads	0.046	0.456	1.625
Paved Roads (Parking Lots and Manufacturing Areas)	0.00005	0.00020	0.00099

Section Q. Monitoring System for Fugitive Dust Emissions from Vehicular Traffic: PM, PM_{10}, and $PM_{2.5}$

Table 3-29. Vehicular Traffic

Vehicular Traffic Area	Vehicle Miles Travelled					
	Jan-23	Feb-23	Mar-23	Apr-23	May-23	Jun-23
Industrial Unpaved Roads	2,279	2,059	2,279	2,206	2,279	2,206
Paved Roads in Parking Lot Areas	153,511	138,655	128,473	124,328	128,473	151,708
Paved Roads in Manufacturing Areas	90,502	82,097	93,070	48,595	57,700	33,610

Fab 42 Boiler #1 Excess NOx Emissions

Table 3-30. Fab 42 Boiler #1 Excess NOx Emissions Calculations [1]

	Dec-2022 [2]
F42 Boiler 1 Run Hours	43
Allowable NOx Emission Factor (lb/hr) [3]	0.062
Allowable NOx Emissions (lbs)	2.7
Tested NOx Emission Factor (lb/hr) [4]	0.12
F42 Boiler NOx Emissions (lbs)	5.2
Excess NOx Emissions (lbs)	2.5

Notes:

1 - Refer to the Fab 42 Boiler 1 Excess Emissions/Deviation Report submitted to MCAQD on 1/18/23 for details

2 - Operational hours from 12/19/22 - 1/31/22

3 - Allowable NOx emission factor, as determined from the permit limit and testing conditions on 1/13/23

4 - NOx emission factor as determined from the failed performance test on 1/12/23

Fab 42 VOC Abatement System Malfunction Emission Calculations

Table 3-31. Fab 42 VOC Abatement System Malfunction Emissions Calculations

System	Total Site RCTO VOC Emissions[1] Tons/month	RCTO VOC Emissions Per Fab[2] Tons/month	RCTO VOC Emissions Per Fab Lbs/hr	Malfunction Duration Minutes	Malfunction Duration Hrs	Abated Emissions Total Over Duration of Malfunction Lbs	Sitewide RCTO DRE[3] %	Uncontrolled Emissions During Malfunction Lbs	Uncontrolled Emissions During Malfunction tons
Fab 42 VOC Abatement System	0.134	0.0335	0.090	16178	269.6	24.28	99.65	6937.57	3.47

Notes

1 - Total site RCTO VOC emissions are based on the most recently calculated month of compliance emission totals; in this case, March 2023.

2 - Total Site RCTO VOC emissions divided by 4 fabs

3 - Based on most recent round of performance tests

Refer to the Fab 42 RCTO malfunction Notification Report submitted to MCAQD on 6/8/2023 for details.