



# South Coast Air Quality Management District

21865 Copley Drive, Diamond Bar, CA 91765-4178  
(909) 396-2000 • www.aqmd.gov

March 10, 2010

Mr. Gerardo C. Rios  
Chief, Permit Office  
US EPA Region IX Air 3  
75 Hawthorne Street  
San Francisco, CA 94105-3901

Dear Mr. Rios:

Subject: International Rectifier Hexfet America (I.D. 48522) Title V Permit Revision

International Rectifier Hexfet America has proposed to revise their Title V permit by adding:

- One storage tank.
- A stored chemical to one storage tank.
- Stored chemicals to and increasing throughputs for four storage tanks.

and by modifying:

- Two photolithographic systems, one integrated circuit manufacturing system, one chemical and solvent cleaning system, two wet scrubbers, and two oxidizers.

The subject company is an integrated circuits manufacturing facility (SIC 3674) located at 41915 Business Park Drive, Temecula, CA 92590. The proposed permit revision is considered as a "de minimis significant permit revision" to their Title V permit. Enclosed for your review are the permit evaluation and the proposed permit. With your receipt of the proposed Title V permit revision today, we will note that the EPA 45-day review period begins on March 10, 2010.

If you have any questions or need additional information regarding the proposed permit revision, please contact Mr. Kien Huynh at (909) 396-2635.

Sincerely,

A handwritten signature in black ink, appearing to read "Brian L. Yeh", is written over a large, light-colored diagonal line that extends from the bottom left towards the top right of the signature area.

Brian L. Yeh  
Senior Manager  
Chemical/Mechanical Operations

BLY:kh

Enclosures

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT	Page	1 of 3
<i>ENGINEERING &amp; COMPLIANCE</i>	A/N	498042
APPLICATION PROCESSING AND CALCULATIONS	Processed By	KH
	Checked By	
	Date	10/28/09

**Applicant's Name:** International Rectifier  
**Mailing Address:** 41915 Business Park Dr.  
Temecula, CA 92590

**Equipment Location:** Same

**Equipment Descriptions:**

**APPLICATION NO. 498042:** Control: 503216 P/O no P/C

STORAGE TANK T-525, MIXED ACIDS, 1' - 6"W. x 2' - 0"L. x 1' - 6"H., 30 GALLON CAPACITY, WITH ONE 0.33-HP PUMP.

**HISTORY:**

Application(s) received on: 4/22/09  
Equipment installed/modified: Yes  
Violations recorded:

1 Notice of Violation has been issued in the last two years. The notice, P53318, was issued on 10/21/08 for five permits units that had exceeded the permitted throughput limits and three permit units that had been modified without a permit. The company had filed applications to correct the violations and revised permits were issued on 3/24/09.

RECLAIM Title V  
No Yes

**Facility type:**

Application 498042 was filed for permits to operate equipment installed without a permit to construct. At first, the applicant stated that there was no venting during normal operation. However, he later restated that the tank was vented by Scrubbers 1 & 2 (Existing permit: G4077).

**PROCESS DESCRIPTION**

Tank 525 is used for catching water contaminated with mixed acids coming from the duct flushing operation. The operation is conducted as often as once a month to wash off waste acids entrained in the scrubber exhaust ducts. The contaminated water from the flushing operation is routed to the tank from which it is pumped to wastewater treatment plant. The tank vents to Wet Scrubbers 1 & 2.

**CALCULATIONS**

The emissions from the tank are calculated using the TANK program. The vapor pressures are calculated by adding individual vapor pressures of components in the mixture.

All calculations are in the attachment to this evaluation. Below is a summary of calculated emissions.

	PM	PM10	HCl	HNO <sub>3</sub>	H <sub>2</sub> SO <sub>4</sub>	HF	H <sub>3</sub> PO <sub>4</sub>	HF <sub>4</sub>	I <sub>2</sub>
lb/hr									
Uncontr.	0.00006	0.00005	4.89E-11	4.71E-09	6.89E-09	7.49E-08	1.38E-07	2.88E-05	3.62E-06
Contr.	0.000003	0.000003	2.44E-12	2.35E-10	3.44E-10	3.75E-09	6.88E-09	1.44E-06	1.81E-07
lb/day									
Uncontr.	0.00133	0.00128	1.17E-09	1.13E-07	1.65E-07	1.80E-06	3.30E-06	6.91E-04	8.70E-05
Contr.	0.000066	0.000064	5.87E-11	5.65E-09	8.27E-09	8.99E-08	1.65E-07	3.45E-05	4.35E-06
lb/yr (Contr.)	0.02	0.02	2.14E-08	0.000002	0.000003	0.00003	0.00006	0.0126	0.002

	VOC			
	Total	CH <sub>3</sub> COOH	Ethylene glycol	NH <sub>3</sub>
lb/hr				
Uncontr.	4.78E-07	8.44E-08	3.93E-07	0.00013
Contr.	3.98E-07	4.22E-09	3.93E-07	0.00013
lb/day				
Uncontr.	0.000011	2.02E-06	9.44E-06	0.003
Contr.	0.000010	1.01E-07	9.44E-06	0.003
lb/yr (Contr.)	0.003	0.00004	0.003	1.15

### RULE EVALUATION

#### Rule 212:

##### (c) (1): Emissions near a school

The equipment is not located within 1000 feet from the outer boundary of a school. (The nearest school, Mountain View Christian School, is 3168 feet from the facility). The equipment is not subject to the public notice requirements of subdivision (c).

Note: The listed River Springs Charter School, located at 43466 Business Park Dr., CA 92590, listed 0.1 mile (as shown on the map, more than 0.3 mile actually) away from the facility, is an administration building, and there is no class held at the location.

##### (c) (2): On-site emission increases exceeding the daily maximums

The emission increases do not exceed any of the daily maximums specified in subdivision (g) of this rule. The equipment is not subject to the public notice requirements of subdivision (c).

##### (c) (3): Emissions of toxic air contaminants

The emission increases are less than the screening levels: MICR is less than 1 in a million and HIs are less than 1. The equipment is not subject to the public notice requirements of subdivision (c).

##### (g) Emission increases exceeding the daily maximums

The emission increases do not exceed any of the daily maximums specified in subdivision (g) of this rule. The equipment is not subject to the public notice requirements specified in subdivision (g).

#### Rule 401 - Visible Emissions:

Based on experience with this type of equipment, compliance with this rule is expected.

#### Rule 402 - Nuisances:

Nuisance problems due to the equipment operation are unlikely.

#### Regulation XIII:

##### BACT:

The PM10 emission increase is less than 0.0003 lb/day and VOC emission increase is less than 0.00002 lb/day. BACT analysis is not required.

##### Offsets:

##### PM10:

The PM10 emission increase is 0.0003 lb/day. No external offsets are required.

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<i>ENGINEERING &amp; COMPLIANCE</i>	A/N	498042
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VOC:

The facility has a VOC facility limit of 1,830 pounds in one calendar month. This limit is not expected to be exceeded with the new installation, modification and change of conditions. Reported VOC emissions from January 2007 to December 2008 show that VOC emissions from this facility were less than 1,460 lbs/month. Reported VOC emissions for 10 months of 2009 show that VOC from this facility were less than 540 lbs/month. The reason for the decrease was from the removal of several VOC emitting tools. With the new tools which are in the process of being installed, VOC emissions will be increased. The expected VOC emissions from the facility after the new tools are installed, however, will be below the 1,830 lbs/month limit.

The facility VOC potential to emit is 61 lb/day (=1,830 lb/month/30 days/month). However, the company has removed some permit units in the last few years. Since the permits associated with those permit units have been inactivated, the associated VOC emissions have been removed. The facility VOC NSR account currently shows only 12 lb/day. The account will be fixed to show the correct PTE of 61 lb/day.

Modeling:

Currently, there is no modeling requirement for VOC. PM10 emission is less than the amounts in Table A-1 of Rule 1303. No further analysis is required. Complies.

Rule 1401:

Rule 1401 Chemicals

HCl, HNO<sub>3</sub>, H<sub>2</sub>SO<sub>4</sub>, HF, H<sub>3</sub>PO<sub>4</sub>, Ethylene glycol, Chromic acid, NaOH, NH<sub>3</sub>, Copper and copper compounds

MICR is less than 1 in a million and HIs are less than 1. Complies.

DISCUSSIONS

Based on information submitted with the applications and the above evaluation, it is determined that the equipment operates in compliance with all the applicable rules and regulations of the District.

RECOMMENDATIONS:

Issue Permit to Operate subject to the permit conditions as stated in Section D.



Control efficiency:

Acids (Including acetic acid)	95%
PM	90%
VOC & NH3	0%

Operating Schedule:

hrs/day	24 hrs/day
days/wk	7 days/wk
weeks/yr	52 wks/yr

PM10 in PM

96%

Acid contents in PM:

HCl	0.0001%
HNO <sub>3</sub>	0.01%
H <sub>2</sub> SO <sub>4</sub>	0.01%
HF	0.14%
H <sub>3</sub> PO <sub>4</sub>	0.25%
CH <sub>3</sub> COOH	0.15%
HF <sub>4</sub>	51.98%
I <sub>2</sub>	6.5%

Exhaust flow rate:

60,000 acfm

Calculations:

Emissions:

Total emission (working + breathing), lb/month

$(0.16 + 0.15) \text{ lb/month} = 0.31 \text{ lb/month}$

PM/Acids

lb/day

Uncontrolled

$0.31 \text{ lb/month} / 31 \text{ days/month} * 0.4577 = 0.00458 \text{ lb/day}$

Controlled

$0.00458 \text{ lb/day} * (1 - 0.95) = 0.00023 \text{ lb/day}$

lb/hr

Uncontrolled

$0.00458 \text{ lb/day} / 24 \text{ hrs/day} = 0.0001907 \text{ lb/hr}$

Controlled

$0.00023 \text{ lb/day} / 24 \text{ hrs/day} = 0.0000095 \text{ lb/hr}$

lb/yr

$0.00023 \text{ lb/day} * 7 \text{ days/wk} * 52 \text{ wks/yr} = 0.083 \text{ lb/yr}$

PM10

lb/day

Uncontrolled

$0.00458 \text{ lb/day} * 0.96 = 0.0044 \text{ lb/day}$

Controlled

$0.00023 \text{ lb/day} * 0.96 = 0.00022 \text{ lb/day}$

lb/hr

Uncontrolled

$0.0001907 \text{ lb/day} * 0.96 = 0.000183 \text{ lb/hr}$

Controlled

$0.0000095 \text{ lb/day} * 0.96 = 0.000009 \text{ lb/hr}$

lb/yr

$0.083 \text{ lb/yr} * 0.96 = 0.08 \text{ lb/yr}$

HCl

lb/day

Uncontrolled

$0.00458 \text{ lb/day} * 0.00000 = 0.00000000 \text{ lb/day}$

Controlled

$0.00023 \text{ lb/day} * 0.00000 = 0.000000002 \text{ lb/day}$

lb/hr		
Uncontrolled	0.0001907 lb/day*0.00000	= 0.0000000002 lb/hr
Controlled	0.0000095 lb/day*0.00000	= 0.0000000001 lb/hr
lb/yr	0.083 lb/yr*0.00000	= 0.0000001 lb/yr
HNO3		
lb/day		
Uncontrolled	0.00458 lb/day*0.0001	= 0.000000 lb/day
Controlled	0.00023 lb/day*0.0001	= 0.00000002 lb/day
lb/hr		
Uncontrolled	0.0001907 lb/day*0.0001	= 0.00000002 lb/hr
Controlled	0.0000095 lb/day*0.0001	= 0.00000001 lb/hr
lb/yr	0.083 lb/yr*0.0001	= 0.00001 lb/yr
H2SO4		
lb/day		
Uncontrolled	0.00458 lb/day*0.0001	= 0.000001 lb/day
Controlled	0.00023 lb/day*0.0001	= 0.00000003 lb/day
lb/hr		
Uncontrolled	0.0001907 lb/day*0.0001	= 0.00000002 lb/hr
Controlled	0.0000095 lb/day*0.0001	= 0.00000001 lb/hr
lb/yr	0.083 lb/yr*0.0001	= 0.00001 lb/yr
HF		
lb/day		
Uncontrolled	0.00458 lb/day*0.0014	= 0.00001 lb/day
Controlled	0.00023 lb/day*0.0014	= 0.000000 lb/day
lb/hr		
Uncontrolled	0.0001907 lb/day*0.0014	= 0.0000003 lb/hr
Controlled	0.0000095 lb/day*0.0014	= 0.00000001 lb/hr
lb/yr	0.083 lb/yr*0.0014	= 0.0001 lb/yr
H3PO4		
lb/day		
Uncontrolled	0.00458 lb/day*0.0025	= 0.00001 lb/day
Controlled	0.00023 lb/day*0.0025	= 0.000001 lb/day
lb/hr		
Uncontrolled	0.0001907 lb/day*0.0025	= 0.000000 lb/hr
Controlled	0.0000095 lb/day*0.0025	= 0.00000002 lb/hr
lb/yr	0.083 lb/yr*0.0025	= 0.0002 lb/yr
CH3COOH		
lb/day		
Uncontrolled	0.00458 lb/day*0.00	= 0.00001 lb/day
Controlled	0.00023 lb/day*0.00	= 0.00000 lb/day
lb/hr		
Uncontrolled	0.0001907 lb/day*0.00	= 0.000000 lb/hr
Controlled	0.0000095 lb/day*0.00	= 0.00000001 lb/hr
lb/yr	0.083 lb/yr*0.00	= 0.000 lb/yr

HBF4		
lb/day		
Uncontrolled	$0.00458 \text{ lb/day} * 0.5198 =$	0.00238 lb/day
Controlled	$0.00023 \text{ lb/day} * 0.5198 =$	0.00012 lb/day
lb/hr		
Uncontrolled	$0.0001907 \text{ lb/day} * 0.5198 =$	0.000099 lb/hr
Controlled	$0.0000095 \text{ lb/day} * 0.5198 =$	0.0000050 lb/hr
lb/yr		
	$0.083 \text{ lb/yr} * 0.5198 =$	0.043 lb/yr
I2		
lb/day		
Uncontrolled	$0.00458 \text{ lb/day} * 0.0655 =$	0.000 lb/day
Controlled	$0.00023 \text{ lb/day} * 0.0655 =$	0.00001 lb/day
lb/hr		
Uncontrolled	$0.0001907 \text{ lb/day} * 0.0655 =$	0.00001 lb/hr
Controlled	$0.0000095 \text{ lb/day} * 0.0655 =$	0.000001 lb/hr
lb/yr		
	$0.083 \text{ lb/yr} * 0.0655 =$	0.01 lb/yr
Ethylene glycol (1,2-Ethanediol)		
lb/day		
Uncontrolled	$0.31 \text{ lb/month} / 31 \text{ days/month} * 0.0033 =$	0.00003 lb/day
Controlled	$0.00003 \text{ lb/day} * (1-0) =$	0.00003 lb/day
lb/hr		
Uncontrolled	$0.00003 \text{ lb/day} / 24 \text{ hrs/day} =$	0.000001 lb/hr
Controlled	$0.00003 \text{ lb/day} / 24 \text{ hrs/day} =$	0.000001 lb/hr
lb/yr		
	$0.00003 \text{ lb/day} * 7 \text{ days/wk} * 52 \text{ wks/yr} =$	0.01 lb/yr
Cr <sup>+6</sup>		
lb/day		
Uncontrolled	$0.31 \text{ lb/month} / 31 \text{ days/month} * 0.000001 * 51.94 \text{ lb/lbmole} / 99.94 \text{ lb/lbmole} =$	4.59E-09 lb/day
Controlled	$0.000000005 \text{ lb/day} * (1-0.9) =$	2.30E-10 lb/day
lb/hr		
Uncontrolled	$0.000000005 \text{ lb/day} / 24 \text{ hrs/day} =$	1.91E-10 lb/hr
Controlled	$0.0000000002 \text{ lb/day} / 24 \text{ hrs/day} =$	9.57E-12 lb/hr
lb/yr		
	$0.0000000002 \text{ lb/day} * 7 \text{ days/wk} * 52 \text{ wks/yr} =$	8.36E-08 lb/yr
NH3		
lb/day		
Uncontrolled	$0.31 \text{ lb/month} / 31 \text{ days/month} * 0.3169 =$	0.003 lb/day
Controlled	$0.003 \text{ lb/day} * (1-0) =$	0.003 lb/day
lb/hr		
Uncontrolled	$0.003 \text{ lb/day} / 24 \text{ hrs/day} =$	0.00013 lb/hr
Controlled	$0.003 \text{ lb/day} / 24 \text{ hrs/day} =$	0.00013 lb/hr
lb/yr		
	$0.003 \text{ lb/day} * 7 \text{ days/wk} * 52 \text{ wks/yr} =$	1.15 lb/yr
NH <sub>3</sub> concentration, ppm (in exhaust)		
	$0.00013 \text{ lb/hr} / 60 \text{ min/hr} / 60000 \text{ cfm} * 10^6 =$	0.00004 ppm

**Note:** This ammonia concentration is at the exhaust of the wet scrubber. At ground level, the concentration is much lower. Even at the wet scrubber exhaust, the ammonia concentration is well below the ACGIH (American Conference of Governmental Industrial Hygienist) threshold level of 25 ppm.

PM10 emission increase due to the reactions of NH<sub>3</sub> with H<sub>2</sub>SO<sub>4</sub>, HCl, HNO<sub>3</sub>, and H<sub>3</sub>PO<sub>4</sub> in the exhaust to form salts (NH<sub>4</sub>SO<sub>4</sub>, NH<sub>4</sub>Cl, NH<sub>4</sub>NO<sub>3</sub>, NH<sub>4</sub>PO<sub>4</sub>), sources of PM10: Assume 100% conversion. Since acids are limited agents, amounts of salts will depend on the available acids.

PM10 emission increase due to the conversion from H<sub>2</sub>SO<sub>4</sub> to (NH<sub>4</sub>)<sub>2</sub>SO<sub>4</sub>:

$$0.000000028 \text{ lb/day} * (132.13/98.07-1) = 9.89\text{E-}09 \text{ lb/day}$$

PM10 emission increase due to the conversion from HCl to NH<sub>4</sub>Cl:

$$0.0000000002 \text{ lb/day} * (53.49/36.46-1) = 9.44\text{E-}11 \text{ lb/day}$$

Conversion from HNO<sub>3</sub> to NH<sub>4</sub>NO<sub>3</sub> will cause a PM10 emission increase of

$$0.00000002 \text{ lb/day} * (80.04/63.01-1) = 5.26\text{E-}09 \text{ lb/day}$$

PM10 emission increase due to the conversion from H<sub>3</sub>PO<sub>4</sub> to (NH<sub>4</sub>)<sub>3</sub>PO<sub>4</sub>:

$$0.00000006 \text{ lb/day} * (149.09/98.00-1) = 2.97\text{E-}07 \text{ lb/day}$$

Total increase

$$3.12\text{E-}07 \text{ lb/day}$$

Since the impacts from the formation of salts are negligible, we will ignore the emission increase due to the reaction of NH<sub>3</sub> and acids.

	PM	PM10	HCl	HNO <sub>3</sub>	H <sub>2</sub> SO <sub>4</sub>	HF	H <sub>3</sub> PO <sub>4</sub>	HBF <sub>4</sub>
lb/hr								
Uncontr.	0.00019	0.00018	1.68E-10	1.62E-08	2.37E-08	2.58E-07	4.74E-07	9.91E-05
Contr.	0.000010	0.000009	8.42E-12	8.11E-10	1.19E-09	1.29E-08	2.37E-08	4.96E-06
lb/day								
Uncontr.	0.005	0.004	4.04E-09	3.89E-07	5.69E-07	6.20E-06	1.14E-05	2.38E-03
Contr.	0.000	0.00022	2.02E-10	1.95E-08	2.85E-08	3.10E-07	5.69E-07	1.19E-04
lb/yr (Contr.)	0.08	0.08	7.36E-08	0.00001	0.00001	0.0001	0.0002	0.043

	VOC			PM		
	Total	CH <sub>3</sub> COOH	Ethylene glycol	I <sub>2</sub>	Cr <sup>+6</sup>	NH <sub>3</sub>
lb/hr						
Uncontr.	1.65E-06	2.91E-07	1.36E-06	1.25E-05	1.91E-10	0.00013
Contr.	1.37E-06	1.45E-08	1.36E-06	6.24E-07	9.57E-12	0.00013
lb/day						
Uncontr.	3.95E-05	6.97E-06	3.25E-05	3.00E-04	4.59E-09	0.003
Contr.	3.29E-05	3.49E-07	3.25E-05	1.50E-05	2.30E-10	0.003
lb/yr (Contr.)	0.01	0.00013	0.01	0.005	8.36E-08	1.15

Monthly throughput limit: 30 gals\*360 times/yr/12 months/yr = 900 gals/month

Rule 1401:

For Rule 1401 evaluation, we will use the amounts of all acids and NH<sub>3</sub> as if there were no reactions between acids and NH<sub>3</sub> (Conservative).

**TANKS 4.0.9d**  
**Emissions Report - Summary Format**  
**Tank Identification and Physical Characteristics**

**Identification**

User Identification: T-525  
City:  
State:  
Company:  
Type of Tank: Horizontal Tank  
Description:

**Tank Dimensions**

Shell Length (ft): 5.00  
Diameter (ft): 3.00  
Volume (gallons): 30.00  
Turnovers: 360.00  
Net Throughput(gal/yr): 10,800.00  
Is Tank Heated (y/n): N  
Is Tank Underground (y/n): N

**Paint Characteristics**

Shell Color/Shade: White/White  
Shell Condition: Good

**Breather Vent Settings**

Vacuum Settings (psig): -0.03  
Pressure Settings (psig): 0.03

Meteorological Data used in Emissions Calculations: Long Beach, California (Avg Atmospheric Pressure = 14.7 psia)

**TANKS 4.0.9d**  
**Emissions Report - Summary Format**  
**Liquid Contents of Storage Tank**

**T-525 - Horizontal Tank**

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F)			Liquid Bulk Temp (deg F)	Vapor Pressure (psia)			Vapor Mol. Weight	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
		Avg.	Min.	Max.		Avg.	Min.	Max.					
Mixed Acids	Jul	71.26	65.04	77.47	64.33	0.7800	0.7800	0.7800	38.0200			0.00	

**TANKS 4.0.9d**  
**Emissions Report - Summary Format**  
**Individual Tank Emission Totals**

**Emissions Report for: July**

**T-525 - Horizontal Tank**

Components	Losses(lbs)		
	Working Loss	Breathing Loss	Total Emissions
Mixed Acids	0.16	0.15	0.30



### Mixture Vapor Pressure

Waste Acids

T-525

Previous: None  
 Operating temperature  
 pH

70 F  
 6.5

A/N: 498042

Compounds	Solution	VP	Molecular	moles	Weight	Weight %		Remarks
	wt%	mmHg	Weight	fraction	Contribution	W/ NH3 and Water	W/o Water, NH3 and glycol	
Columns	(1)	(2)	(3)	(4)	(5)	(6)	(7)	
HCl	0.18%	0.00003	36.46	0.0000	0.00003	0.00%	0.0001%	(4) = (2)/40.15
HNO3	0.15%	0.0016	63.01	0.00	0.00	0.01%	0.01%	(5) = (4)*(3)
H2SO4	0.20%	0.0015	98.07	0.0000	0.00	0.01%	0.01%	(6) = (5)/38.02
HF	0.13%	0.08	20.01	0.00	0.04	0.10%	0.14%	(7) = (6)/(100%-22.21%)
H3PO4	0.17%	0.03	98.00	0.0007	0.07	0.19%	0.25%	
CH3COOH	0.11%	0.03	60.05	0.00	0.04	0.12%	0.15%	
NH4F	0.12%	-	37.04	-	-	-	-	
BF4	0.10%	7.00	87.81	0.174	15.31	40.27%	51.98%	Solid
NH4OH	0.10%	13.81	35.05	0.34	12.05	31.69%	-	
NaOH	0.17%		40.00	-	-	-	-	
H2O2	0.12%	-	34.01	-	-	-	-	
Copper Sulfate	0.0001%	-	249.68	-	-	-	-	
Chromic acid	0.0001%	-	155.82	-	-	-	-	
KOH	0.06%	-	56.11	-	-	-	-	
Cupric Nitrate	0.0001%	-	241.60	-	-	-	-	Solid
Iodine Solution	0.05%	0.305	253.81	0.01	1.93	5.07%	6.55%	VP & MW of I <sub>2</sub>
Choline Hydroxide	0.06%	-	121.18	-	-	-	-	



Curve fitting gives the following equation:

$$VP = a + bW + cW^2 + dW^3$$

Where:

$$a = 0.254494$$

$$b = 0.125566$$

$$c = -0.00272$$

$$d = 0.000376$$

$$W = 0.1 \% \quad (\text{Given})$$

$$VP = 0.27 \text{ psia} \quad (\text{Calculated using Eq. 1})$$

$$= 13.81 \text{ mm Hg}$$

Eq. 1

Note: This vapor pressure is conservative since the tank mixture is on the acidic side.

**ATTACHMENT  
Storage Tank  
T-525  
Rectangular**

Control: 503216 A/N 498042

Previous: None

Dimensions:	ft	inches	gals
W	1	6	34
L	2	0	
H	1	6	

Convert to  
Horizontal

Tank diameter (Used for calculations)	D	1.7 ft
Tank length	L	2.00 ft

Tank diameter = Diameter of a circle whose area is equal to the surface cross section area.

Working volume	30 gals
Desired throughput:	10,800 gals/yr
Turnovers per year	360
Month selected for emission calculations:	July
Number of days in July:	31
Total pressure:	0.78 psia

Molecular weights:

Vapors	38.02
Cr <sup>+6</sup>	51.94
CrO <sub>3</sub>	99.94
H <sub>2</sub> SO <sub>4</sub>	98.07
(NH <sub>4</sub> ) <sub>2</sub> SO <sub>4</sub>	132.13
HCl	36.46
NH <sub>4</sub> Cl	53.49
HNO <sub>3</sub>	63.01
NH <sub>4</sub> NO <sub>3</sub>	80.04
H <sub>3</sub> PO <sub>4</sub>	98.00
(NH <sub>4</sub> ) <sub>3</sub> PO <sub>4</sub>	149.09

Maximum emissions

Working	0.16 lb/month
Breathing	0.15 lb/month
<u>Note:</u> Emission data are from TANK 4.0.9d Emissions Report	0.31

Weight% of acid in vapors: 45.77%

Weight% of ethylene glycol in vapors: 0.33%

Weight % of NH<sub>3</sub> in vapors: 31.69%

Weight % of chromic acid in vapors (= Weight % in tank) 0.0001%

Note: CrO<sub>3</sub>, solid, is dissolved in water. Its loss is due to dragout which is really small. The worst case will be that the weight concentration of CrO<sub>3</sub> in the vapors equals to that in the tank.

Control efficiency:

Acids (Including acetic acid)	95%
PM	90%
VOC & NH3	0%

Operating Schedule:

hrs/day	24 hrs/day
days/wk	7 days/wk
weeks/yr	52 wks/yr

PM10 in PM

96%

Acid contents in PM:

HCl	0.0001%
HNO <sub>3</sub>	0.01%
H <sub>2</sub> SO <sub>4</sub>	0.01%
HF	0.14%
H <sub>3</sub> PO <sub>4</sub>	0.25%
CH <sub>3</sub> COOH	0.15%
HBF <sub>4</sub>	51.98%
I <sub>2</sub>	6.5%

Exhaust flow rate:

60,000 acfm

Calculations:

Emissions:

Total emission (working + breathing), lb/month

$$(0.16 + 0.15) \text{ lb/month} = 0.31 \text{ lb/month}$$

PM/Acids

lb/day

Uncontrolled

$$0.31 \text{ lb/month} / 31 \text{ days/month} * 0.4577 = 0.00458 \text{ lb/day}$$

Controlled

$$0.00458 \text{ lb/day} * (1 - 0.95) = 0.00023 \text{ lb/day}$$

lb/hr

Uncontrolled

$$0.00458 \text{ lb/day} / 24 \text{ hrs/day} = 0.0001907 \text{ lb/hr}$$

Controlled

$$0.00023 \text{ lb/day} / 24 \text{ hrs/day} = 0.0000095 \text{ lb/hr}$$

lb/yr

$$0.00023 \text{ lb/day} * 7 \text{ days/wk} * 52 \text{ wks/yr} = 0.083 \text{ lb/yr}$$

PM10

lb/day

Uncontrolled

$$0.00458 \text{ lb/day} * 0.96 = 0.0044 \text{ lb/day}$$

Controlled

$$0.00023 \text{ lb/day} * 0.96 = 0.00022 \text{ lb/day}$$

lb/hr

Uncontrolled

$$0.0001907 \text{ lb/day} * 0.96 = 0.000183 \text{ lb/hr}$$

Controlled

$$0.0000095 \text{ lb/day} * 0.96 = 0.000009 \text{ lb/hr}$$

lb/yr

$$0.083 \text{ lb/yr} * 0.96 = 0.08 \text{ lb/yr}$$

HCl

lb/day

Uncontrolled

$$0.00458 \text{ lb/day} * 0.00000 = 0.00000000 \text{ lb/day}$$

Controlled

$$0.00023 \text{ lb/day} * 0.00000 = 0.000000002 \text{ lb/day}$$

lb/hr		
Uncontrolled	0.0001907 lb/day*0.00000 =	0.0000000002 lb/hr
Controlled	0.0000095 lb/day*0.00000 =	0.0000000001 lb/hr
lb/yr	0.083 lb/yr*0.00000 =	0.0000001 lb/yr
HNO3		
lb/day		
Uncontrolled	0.00458 lb/day*0.0001 =	0.000000 lb/day
Controlled	0.00023 lb/day*0.0001 =	0.00000002 lb/day
lb/hr		
Uncontrolled	0.0001907 lb/day*0.0001 =	0.00000002 lb/hr
Controlled	0.0000095 lb/day*0.0001 =	0.00000001 lb/hr
lb/yr	0.083 lb/yr*0.0001 =	0.00001 lb/yr
H2SO4		
lb/day		
Uncontrolled	0.00458 lb/day*0.0001 =	0.000001 lb/day
Controlled	0.00023 lb/day*0.0001 =	0.00000003 lb/day
lb/hr		
Uncontrolled	0.0001907 lb/day*0.0001 =	0.00000002 lb/hr
Controlled	0.0000095 lb/day*0.0001 =	0.00000001 lb/hr
lb/yr	0.083 lb/yr*0.0001 =	0.00001 lb/yr
HF		
lb/day		
Uncontrolled	0.00458 lb/day*0.0014 =	0.00001 lb/day
Controlled	0.00023 lb/day*0.0014 =	0.000000 lb/day
lb/hr		
Uncontrolled	0.0001907 lb/day*0.0014 =	0.0000003 lb/hr
Controlled	0.0000095 lb/day*0.0014 =	0.00000001 lb/hr
lb/yr	0.083 lb/yr*0.0014 =	0.0001 lb/yr
H3PO4		
lb/day		
Uncontrolled	0.00458 lb/day*0.0025 =	0.00001 lb/day
Controlled	0.00023 lb/day*0.0025 =	0.000001 lb/day
lb/hr		
Uncontrolled	0.0001907 lb/day*0.0025 =	0.000000 lb/hr
Controlled	0.0000095 lb/day*0.0025 =	0.00000002 lb/hr
lb/yr	0.083 lb/yr*0.0025 =	0.0002 lb/yr
CH3COOH		
lb/day		
Uncontrolled	0.00458 lb/day*0.00 =	0.00001 lb/day
Controlled	0.00023 lb/day*0.00 =	0.00000 lb/day
lb/hr		
Uncontrolled	0.0001907 lb/day*0.00 =	0.000000 lb/hr
Controlled	0.0000095 lb/day*0.00 =	0.00000001 lb/hr
lb/yr	0.083 lb/yr*0.00 =	0.000 lb/yr

HBF4		
lb/day		
Uncontrolled	$0.00458 \text{ lb/day} * 0.5198 =$	0.00238 lb/day
Controlled	$0.00023 \text{ lb/day} * 0.5198 =$	0.00012 lb/day
lb/hr		
Uncontrolled	$0.0001907 \text{ lb/day} * 0.5198 =$	0.000099 lb/hr
Controlled	$0.0000095 \text{ lb/day} * 0.5198 =$	0.0000050 lb/hr
lb/yr	$0.083 \text{ lb/yr} * 0.5198 =$	0.043 lb/yr
I2		
lb/day		
Uncontrolled	$0.00458 \text{ lb/day} * 0.0655 =$	0.000 lb/day
Controlled	$0.00023 \text{ lb/day} * 0.0655 =$	0.00001 lb/day
lb/hr		
Uncontrolled	$0.0001907 \text{ lb/day} * 0.0655 =$	0.00001 lb/hr
Controlled	$0.0000095 \text{ lb/day} * 0.0655 =$	0.000001 lb/hr
lb/yr	$0.083 \text{ lb/yr} * 0.0655 =$	0.01 lb/yr
Ethylene glycol (1,2-Ethanediol)		
lb/day		
Uncontrolled	$0.31 \text{ lb/month} / 31 \text{ days/month} * 0.0033 =$	0.00003 lb/day
Controlled	$0.00003 \text{ lb/day} * (1-0) =$	0.00003 lb/day
lb/hr		
Uncontrolled	$0.00003 \text{ lb/day} / 24 \text{ hrs/day} =$	0.000001 lb/hr
Controlled	$0.00003 \text{ lb/day} / 24 \text{ hrs/day} =$	0.000001 lb/hr
lb/yr	$0.00003 \text{ lb/day} * 7 \text{ days/wk} * 52 \text{ wks/yr} =$	0.01 lb/yr
Cr <sup>+6</sup>		
lb/day		
Uncontrolled	$0.31 \text{ lb/month} / 31 \text{ days/month} * 0.000001 * 51.94 \text{ lb/lbmole} / 99.94 \text{ lb/lbmole} =$	4.59E-09 lb/day
Controlled	$0.000000005 \text{ lb/day} * (1-0.9) =$	2.30E-10 lb/day
lb/hr		
Uncontrolled	$0.000000005 \text{ lb/day} / 24 \text{ hrs/day} =$	1.91E-10 lb/hr
Controlled	$0.0000000002 \text{ lb/day} / 24 \text{ hrs/day} =$	9.57E-12 lb/hr
lb/yr	$0.0000000002 \text{ lb/day} * 7 \text{ days/wk} * 52 \text{ wks/yr} =$	8.36E-08 lb/yr
NH3		
lb/day		
Uncontrolled	$0.31 \text{ lb/month} / 31 \text{ days/month} * 0.3169 =$	0.003 lb/day
Controlled	$0.003 \text{ lb/day} * (1-0) =$	0.003 lb/day
lb/hr		
Uncontrolled	$0.003 \text{ lb/day} / 24 \text{ hrs/day} =$	0.00013 lb/hr
Controlled	$0.003 \text{ lb/day} / 24 \text{ hrs/day} =$	0.00013 lb/hr
lb/yr	$0.003 \text{ lb/day} * 7 \text{ days/wk} * 52 \text{ wks/yr} =$	1.15 lb/yr
NH <sub>3</sub> concentration, ppm (in exhaust)		
	$0.00013 \text{ lb/hr} / 60 \text{ min/hr} / 60000 \text{ cfm} * 10^6 =$	0.00004 ppm

**Note:** This ammonia concentration is at the exhaust of the wet scrubber. At ground level, the concentration is much lower. Even at the wet scrubber exhaust, the ammonia concentration is well below the ACGIH (American Conference of Governmental Industrial Hygienist) threshold level of 25 ppm.

PM10 emission increase due to the reactions of NH<sub>3</sub> with H<sub>2</sub>SO<sub>4</sub>, HCl, HNO<sub>3</sub>, and H<sub>3</sub>PO<sub>4</sub> in the exhaust to form salts (NH<sub>4</sub>SO<sub>4</sub>, NH<sub>4</sub>Cl, NH<sub>4</sub>NO<sub>3</sub>, NH<sub>4</sub>PO<sub>4</sub>), sources of PM10: Assume 100% conversion. Since acids are limited agents, amounts of salts will depend on the available acids.

PM10 emission increase due to the conversion from H<sub>2</sub>SO<sub>4</sub> to (NH<sub>4</sub>)<sub>2</sub>SO<sub>4</sub>:

$$0.000000028 \text{ lb/day} * (132.13/98.07-1) = 9.89\text{E-}09 \text{ lb/day}$$

PM10 emission increase due to the conversion from HCl to NH<sub>4</sub>Cl:

$$0.0000000002 \text{ lb/day} * (53.49/36.46-1) = 9.44\text{E-}11 \text{ lb/day}$$

Conversion from HNO<sub>3</sub> to NH<sub>4</sub>NO<sub>3</sub> will cause a PM10 emission increase of

$$0.000000002 \text{ lb/day} * (80.04/63.01-1) = 5.26\text{E-}09 \text{ lb/day}$$

PM10 emission increase due to the conversion from H<sub>3</sub>PO<sub>4</sub> to (NH<sub>4</sub>)<sub>3</sub>PO<sub>4</sub>:

$$0.00000006 \text{ lb/day} * (149.09/98.00-1) = 2.97\text{E-}07 \text{ lb/day}$$

Total increase

$$3.12\text{E-}07 \text{ lb/day}$$

Since the impacts from the formation of salts are negligible, we will ignore the emission increase due to the reaction of NH<sub>3</sub> and acids.

	PM	PM10	HCl	HNO <sub>3</sub>	H <sub>2</sub> SO <sub>4</sub>	HF	H <sub>3</sub> PO <sub>4</sub>	HBF <sub>4</sub>
lb/hr								
Uncontr.	0.00019	0.00018	1.68E-10	1.62E-08	2.37E-08	2.58E-07	4.74E-07	9.91E-05
Contr.	0.000010	0.000009	8.42E-12	8.11E-10	1.19E-09	1.29E-08	2.37E-08	4.96E-06
lb/day								
Uncontr.	0.005	0.004	4.04E-09	3.89E-07	5.69E-07	6.20E-06	1.14E-05	2.38E-03
Contr.	0.000	0.00022	2.02E-10	1.95E-08	2.85E-08	3.10E-07	5.69E-07	1.19E-04
lb/yr (Contr.)	0.08	0.08	7.36E-08	0.00001	0.00001	0.0001	0.0002	0.043

	VOC			PM		
	Total	CH <sub>3</sub> COOH	Ethylene glycol	I <sub>2</sub>	Cr <sup>+6</sup>	NH <sub>3</sub>
lb/hr						
Uncontr.	1.65E-06	2.91E-07	1.36E-06	1.25E-05	1.91E-10	0.00013
Contr.	1.37E-06	1.45E-08	1.36E-06	6.24E-07	9.57E-12	0.00013
lb/day						
Uncontr.	3.95E-05	6.97E-06	3.25E-05	3.00E-04	4.59E-09	0.003
Contr.	3.29E-05	3.49E-07	3.25E-05	1.50E-05	2.30E-10	0.003
lb/yr (Contr.)	0.01	0.00013	0.01	0.005	8.36E-08	1.15

900 gals/month

$$30 \text{ gals} * 360 \text{ times/yr} / 12 \text{ months/yr} =$$

Monthly throughput limit:  
Rule 1401:

For Rule 1401 evaluation, we will use the amounts of all acids and NH<sub>3</sub> as if there were no reactions between acids and NH<sub>3</sub> (Conservative).



**TIER 1 SCREENING RISK ASSESSMENT REPORT**

Receptor Distance (actual)	25
Receptor Distance (for X/Q LOOKUP)	25

Tier 1 Results	
Cancer/Chronic ASI	Acute ASI
9.50E-07	8.27E-05
PASSED	PASSED

**APPLICATION SCREENING INDEX CALCULATION**

Compound	Average Annual Emission Rate	Max Hourly Emission Rate (lbs/hr)	Cancer / Chronic Pollutant Screening Level (lbs/yr)	Acute Pollutant Screening Level (lbs/hr)	Cancer / Chronic Pollutant Screening Index	Acute Pollutant Screening Index (PSI)
Hydrogen chloride (hydrochloric acid)	1.26E-10	8.42E-12	2.98E+02	1.05E+00	4.24E-13	8.02E-12
Nitric acid	1.22E-08	8.11E-10		4.30E-02		1.89E-08
Sulfuric acid (and oleum)	1.78E-08	1.19E-09	3.31E+01	6.00E-02	5.38E-10	1.98E-08
Hydrogen fluoride (hydrofluoric acid)	1.94E-07	1.29E-08		1.20E-01		1.08E-07
Phosphoric acid	3.56E-07	2.37E-08	2.31E+02		1.54E-09	
Ethylene glycol monomethyl ether acetate	2.03E-05	1.36E-06	2.98E+03		6.83E-09	
Chromium, hexavalent	1.44E-10	9.57E-12	2.24E-04		6.41E-07	
Ammonia	1.98E-03	1.32E-04	6.61E+03	1.60E+00	3.00E-07	8.25E-05
<b>TOTAL (APPLICATION SCREENING INDEX)</b>					<b>9.50E-07</b>	<b>8.27E-05</b>

## SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT

## ENGINEERING &amp; COMPLIANCE

## APPLICATION PROCESSING AND CALCULATIONS

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Processed By	KH
Checked By	
Date	11/7/09

Applicant's Name: International Rectifier  
Mailing Address: 41915 Business Park Dr.  
 Temecula, CA 92590

Equipment Location: Same

Equipment Descriptions:

APPLICATION NO. 503213: Mod P/C

ALTERATION TO PHOTOLITHOGRAPHIC SYSTEM PERMIT TO OPERATE G4076 (A/N 498036) BY:  
 THE ADDITION OF:

- ONE PHOTOLITHOGRAPHIC TRACK, TEL MARK 7

APPLICATION NO. 503214: Mod P/C

ALTERATION TO AIR POLLUTION CONTROL SYSTEM PERMIT TO OPERATE G1981 (A/N 492807) BY:

THE VENTING ADDITION OF :

- TWO PHOTORESIST MACHINES.
- ONE WASTE SOLVENT STORAGE TANK
- ONE NEW PHOTOTRACK

THE VENTING REMOVAL OF:

- NINE EXISTING PHOTOTRACKS.

THE ADDITION OF

- ONE 40 HP BLOWER.

THE REMOVAL OF

- ONE 15 HP BLOWER.

APPLICATION NO. 503215: Mod P/C

ALTERATION TO WET CHEMICAL/SOLVENT CLEANING SYSTEM PERMIT TO OPERATE G4075 (A/N 498035) BY:

THE ADDITION OF:

- ONE ACID WET BENCH, SPEC , 3' - 0"W. x 8' - 0"L. x 6' - 4"H.
- ONE SOLVENT BENCH, SPEC , 3' - 0"W. x 7' - 0"L. x 6' - 5"H.

THE REMOVAL OF:

- ONE ACID WET BENCH, SEMIFAB , 3' - 0"W. x 8' - 0"L. x 5' - 8"H.
- ONE SOLVENT BENCH, SEMIFAB , 2' - 10"W. x 5' - 11"L. x 5' - 8"H.

APPLICATION NO. 503216: Mod P/C

ALTERATION TO AIR POLLUTION CONTROL SYSTEM PERMIT TO OPERATE G1980 (A/N 492806) BY:

THE VENTING ADDITION OF :

- ONE ACID ETCHER

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- ONE ION IMPLANTER
- ONE MIXED ACIDS STORAGE TANK

APPLICATION NO. 503217: C/C  
 STORAGE TANK T-517, WASTE ACIDS, 4' - 0"DIA. x 5' - 7"L., 500 GALLON CAPACITY.

APPLICATION NO. 503218: Control: 503216 Mod P/C

ALTERATION TO INTEGRATED CIRCUIT FABRICATION SYSTEM PERMIT TO OPERATE G1977 (A/N 492802) BY:

THE ADDITION OF:

- ONE ION IMPLANTER, ULVAC MODEL IW-630.

AND THE INCREASE OF:

- NH3 THROUGHPUT FROM FROM 2 POUNDS PER MONTH TO 140 POUNDS PER MONTH

APPLICATION NO. 503219: C/C

STORAGE TANK T-928, WASTE SOLVENTS, 7' - 8"DIA. x 14' - 6.5"L., 4,500 GALLON CAPACITY.

APPLICATION NO. 503220: P/C

WAFER ETCHING AND STRIPPING LINE NO. 3, AKRION GAMA SERIES, CONSISTING OF:

1. TANK NO. 3, ETCHING/MILLING, HYDROGEN FLUORIDE/AMMONIUM FLUORIDE, 0' - 9.5"W. x 1' - 4.5"L. x 0' - 11.5"H., WITH ONE 3-KW HEATER.
2. TANK NO. 4, STRIPPING, SULFURIC ACID/HYDROGEN PEROXIDE, 0' - 9.5"W. x 1' - 4.5"L. x 0' - 11.5"H., WITH ONE 8-KW HEATER.
3. TANK NO. 6, RINSING/DRYING, DEIONIZED WATER WITH ISOPROPYL ALCOHOL, 0' - 9.5"W. x 1' - 4.5"L. x 0' - 11.5"H., WITH ONE 3-KW HEATER.
4. ASSOCIATED RINSE TANKS.

APPLICATION NO. 503221: Mod P/C

ALTERATION TO AIR POLLUTION CONTROL SYSTEM PERMIT TO OPERATE G4078 (A/N 498038) BY:

THE VENTING ADDITION OF :

- ONE PLASMA ETCHER

APPLICATION NO. 503222: Mod P/C

ALTERATION TO AIR POLLUTION CONTROL SYSTEM PERMIT TO OPERATE G1983 (A/N 492810) BY:

THE VENTING ADDITION OF :

- ONE PHOTOTRACK.

<b>SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT</b>  <b>ENGINEERING &amp; COMPLIANCE</b>  <b>APPLICATION PROCESSING AND CALCULATIONS</b>	Page 3 of 11 A/N 503213 et al Processed By KH Checked By Date 11/7/09
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APPLICATION NO. 503223:

C/C

STORAGE TANK T-502, RECTANGULAR, 4' - 3"W. x 7' - 8"L. x 2' - 0"H., 375 GALLON CAPACITY.

APPLICATION NO. 503224:

C/C

STORAGE TANK T-503, RECTANGULAR, 4' - 2"W. x 6' - 5"L. x 2' - 0"H., 375 GALLON CAPACITY.

APPLICATION NO. 503225:

C/C

STORAGE TANK T-14, WASTE ACIDS, 10' - 0"DIA. x 11' - 6"L., 5,728 GALLON CAPACITY, WITH TWO 10 HP TRANSFER PUMPS.

APPLICATION NO. 504815:

Mod P/C

ALTERATION TO INTEGRATED CIRCUIT FABRICATION SYSTEM PERMIT TO OPERATE G5154 (A/N 502690) BY:

THE ADDITION OF:

- ONE LAM PLASMA ETCHER

HISTORY:

	Dates	A/Ns
Application(s) received on:	10/29/09	503213-25
	12/22/09	504815

Violations recorded:

1 Notice of Violation has been issued since 1/1/08. The notice, P53318, was issued on 10/21/08 for six permits units that had exceeded the permitted throughput limits and three permit units that had been modified without a permit. The company had filed applications to correct the violations and revised permits were issued on 3/24/09.

Facility type:

RECLAIM	Title V
No	Yes

Applications	Reasons for filing
503220	Permit to Construct new equipment (P/C).
503217, 19, 23, 24, 25	Proposed change of permit conditions (C/C).
503213-6, 18, 21, 22, 504815	Proposed modification (Mod P/C).

Below is a brief explanation. Please see application submittal for more details.

## SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT

## ENGINEERING &amp; COMPLIANCE

## APPLICATION PROCESSING AND CALCULATIONS

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 Checked By  
 Date 11/7/09

A/Ns.	Descriptions	Previous		Processing Types	Remarks
		A/Ns.	Permits		
503213	Photolithographic System	498036	G4076	Mod P/C	Add a tool
503214	Mcgill Oxidizer	492807	G1981	Mod P/C	Add/remove venting points, correct blower rating
503215	Wet Chemical/Solvent Cleaning System	498035	G4075	Mod P/C	Add/remove tools
503216	Scrubbers 1 & 2	498037	G4077	Mod P/C	Add venting points
503217	Storage Tank	491985	G4084	C/C	Add stored chemicals, increase throughput
503218	IC Manufacturing	498034	G4074	Mod P/C	Add tools, increase NH <sub>3</sub> throughput from 2 lbs/month to 140 lbs/month
503219	Storage Tank	460708	G1987	C/C	Add IPA, a stored chemical
503220	Wafer Etching And Stripping Line 3	None	None	P/C	New equipment. Will be cancelled per applicant's request
503221	Scrubbers 101 & 102	502691	G5155	Mod P/C	Add venting points
503222	Zink Oxidizer	498039	G4079	Mod P/C	Add venting points
503223	Storage Tank	460713	G1991	C/C	Add ammonia, a stored chemical, increase
503224	Storage Tank	460714	G1992	C/C	Add ammonia, a stored chemical, increase
503225	Storage Tank	498761	G4082	C/C	Add stored chemicals, increase
504815	IC Manufacturing	502690	G5154	Mod P/C	Add a tool.

*ENGINEERING & COMPLIANCE*

## APPLICATION PROCESSING AND CALCULATIONS

Storage tanks throughput increases:

A/Ns	Tanks	Proposed Throughput Increases, gals/month	
		From	To
503217	T-517	19,923	400,000
503223	T-502	670,000	870,000
503224	T-503	670,000	870,000
503225	T-14	2,010,000	2,410,000

Venting points for McGill oxidizer A/N 503214:

(1) Adding 2 photoresist machines: When the photoresist equipment was modified under A/N 498036, an application for the associated control equipment was not asked to be filed. The two machines were added to the equipment. The venting points are now added to reflect the correct venting.

(2) Adding one solvent storage tank: The tank with Permit F54712 (A/N 381811) has been connected to carbon adsorber Permit G1986 (A/N 459172). A control efficiency of 95% was used in the engineering evaluation for A/N 381811. The applicant wants to connect the tank to the oxidizer which has a control efficiency of 95%. Since there is no change in the emissions, according to Team D's policy, an application to modify basic equipment with Permit F54712 is not necessary.

(3) Adding 1 new phototrack: This venting point is the new addition to the photolithographic system under the current A/N 503213.

(4) Removing 9 existing phototracks: See (1). The phototracks were removed from service.

PROCESS DESCRIPTION

The equipment is for semiconductor device manufacturing. Oxidizers or carbon adsorbers are used for VOC control and wet scrubbers are used for PM control. In addition, resin adsorbers are used to control arsine emissions from ion implanters that use arsine.

CALCULATIONSStorage tanks:

TANK 4.0.9d is used to calculate emissions from storage tanks. The vapor pressures are calculated by adding all individual vapor pressure of each component in the mixture.

Emissions from wet chemicals are calculated using Preferred and Alternate Methods for Estimating Air Emissions from Semiconductor Manufacturing, Volume II: Chapter 6 (Prepared by Eastern Research Group, Inc. for Point Sources Committee of the Emission Inventory Improvement Program and EPA's Emission Factor and Inventory Group).

Emissions from IC manufacturing are based on material balances.

Except for A/N 504815 for which emissions are as specified below, all calculations are in attachments to this evaluation. Below is a summary of calculated emissions.

A/N 503213 Photolithographic System

	VOC	
	Uncont.	Controlled
lb/hr	5.61	0.28
lb/day	134.65	6.73
lb/yr		2450.61

Mod P/C

## ENGINEERING &amp; COMPLIANCE

A/N

503213 et al

Processed By

KH

Checked By

Date

11/7/09

## APPLICATION PROCESSING AND CALCULATIONS

A/N 503214 McGill Oxidizer

Mod P/C

The emissions as shown in NSR Application Emission Report for A/N 492807 (previous to A/N 503214 - McGill oxidizer) are zeros. The combined fuel limit for McGill and John Zink oxidizers remains unchanged (100% load of one of the two oxidizers with the same heat input rating). Since emissions for John Zink oxidizer operated at full load are recorded under A/N 503222 (John Zink oxidizer), emissions from McGill oxidizer (A/N 503214) should again be recorded as zeros.

	ROG	NOx	SOx	CO	PM10
lb/hr	0	0	0	0	0
lb/day	0	0	0	0	0
lb/yr	0	0	0	0	0

A/N 503215 Wet/Solvent

Mod P/C

	PM10		VOC	
	Uncont.	Controlled	Uncont.	Controlled
lb/hr	6.41	0.08	0.23	0.002
lb/day	153.84	1.92	5.58	0.06
lb/yr		698.88		20.30

A/N 503217 T-517

C/C

	PM10	
	Uncont.	Controlled
lb/hr	1.96E-04	9.79E-06
lb/day	0.0047	2.35E-04
lb/yr		0.09

A/N 503218 IC Manufacturing

Mod P/C

	PM10	
	Uncont.	Controlled
lb/hr	0.31	0.02
lb/day	7.56	0.38
lb/yr		138.75

A/N 503219 T-928

C/C

	VOC	
	Uncont.	Controlled
lb/hr	0.02	0.02
lb/day	0.58	0.58
lb/yr		212.41

With the facility VOC bubble, lb/day will be set to zero.

A/N 503222 Zink Oxidizer

Mod P/C

	ROG	NOx	SOx	CO	PM10
lb/hr	0.03	0.24	0	0.09	0.01
lb/day	0.72	5.76	0	2.16	0.24
lb/yr	109.00	1,036.00	12.00	411.00	87.36

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT

ENGINEERING & COMPLIANCE

APPLICATION PROCESSING AND CALCULATIONS

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A/N 503223 T-502 PM10 C/C

	Uncont.	Controlled
lb/hr	0.03	1.27E-03
lb/day	0.61	0.03
lb/yr		11.10

A/N 503224 T-503 PM10 C/C

	Uncont.	Controlled
lb/hr	0.03	0.001
lb/day	0.61	0.03
lb/yr		11.08

A/N 503225 T-14 PM10 VOC C/C

	PM10		VOC	
	Uncont.	Controlled	Uncont.	Controlled
lb/hr	0.15	0.0077	0.17	0.01
lb/day	3.72	0.19	4.13	0.21
lb/yr		67.64		75.14

A/N 504815 IC Mod P/C

Emissions from this permit unit are calculated using material balances and control efficiencies. Since there is no change in the chemical usage and control equipment, there will be no emission increase due the modification. No calculations are necessary and emissions as calculated in A/N 502690 (Previous to A/N 504815) will be used.

The following information is excerpted from A/N 502690:

AEIS:

Operating schedule: 24 hrs/day  
 7 days/wk  
 52 wks/yr

PM10:

Uncontrolled 0.75 lb/hr  
 Controlled 0.04 lb/hr

NSR:

Operating schedule: 24 hrs/day  
 7 days/wk  
 52 wks/yr

PM10

lb/hr  
 Uncontrolled 0.75 lb/hr  
 Controlled 0.04 lb/hr  
 lb/day  
 Uncontrolled 18 lb/day  
 Controlled 0.89 lb/day  
 lb/yr Controlled 349.44 lb/yr

## ENGINEERING &amp; COMPLIANCE

## APPLICATION PROCESSING AND CALCULATIONS

Table 1

## Project PM10 Emission Increase

Applications		PM10 Emissions, lb/day			Permit Types	Remarks
Current	Previous	Current	Previous	Increases		
503213	498036	-	-	-	Mod P/C	VOC source
503214	492807	-	-	-	Mod P/C	
503215	498035	1.92	1.92	-	Mod P/C	
503217	491985	0.000235	0.000005	0.000229	C/C	See Note 2 below
503218	498034	0.38	0.29	0.09	Mod P/C	
503219	460708	-	-	-	C/C	VOC source
503222	498039	0.24	0.24	-	Mod P/C	
503223	460713	0.031	0.024	0.007	C/C	See Note 2 below
503224	460714	0.030	0.024	0.007	C/C	See Note 2 below
503225	498761	0.19	0.10	0.088	C/C	See Note 1 & Note 2 below
504815	502690	0.89	0.89	-	Mod P/C	
Total project impact				0.19		

Note 1: PM10 emissions form A/N 498761 has been corrected with the revised HBF4 vapor pressure 7 mm Hg (instead of 0.00055 mm Hg)

Note 2: Since there is an emission increase due to the change of condition, Application Type will be changed from C/C to Mod P/C.

Table 2

## Project ROG Emission Increase

Applications		ROG Emissions, lb/day			Permit Types	Remarks
Current	Previous	Current	Previous	Increases		
503213	498036	6.7	6.73	-	Mod P/C	
503214	492807	-	-	-	Mod P/C	
503215	498035	0.06	0.06	-	Mod P/C	
503217	491985	-	-	-	C/C	PM source
503218	498034	-	-	-	Mod P/C	PM source
503219	460708	0.58	0.14	0.45	C/C	See Note 3 below
503222	498039	0.72	0.72	-	Mod P/C	
503223	460713	-	-	-	C/C	PM source
503224	460714	-	-	-	C/C	PM source
503225	498761	0.21	0.21	-	C/C	
504815	502690	-	-	-	Mod P/C	PM source
Total project impact				0.45		

Note 3: Since there is an emission increase due to the change of condition, Application Type will be changed from C/C to Mod P/C.

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**RULE EVALUATION**

**Rule 212:**

**(c) (1): Emissions near a school**

The equipment is not located within 1000 feet from the outer boundary of a school. (The nearest school, Mountain View Christian School, is 3168 feet from the facility). The equipment is not subject to the public notice requirements of subdivision (c).

River Springs Charter School, located at 43466 Business Park Dr., CA 92590, is listed 0.1 mile from the facility. However, a check on the maps shows that the distance is actually more than 0.3 mile. Also, further investigation reveals that River Springs Charter School, located at 43466 Business Park Dr., CA 92590 is only an administration building, and there is no class held at the location.

**(c) (2): On-site emission increases exceeding the daily maximums**

The emission increases do not exceed any of the daily maximums specified in subdivision (g) of this rule. The equipment is not subject to the public notice requirements of subdivision (c).

**(c) (3): Emissions of toxic air contaminants**

Results of Tier 1 analysis show that MICR is less 1 in a million and HIs are less than 1. The equipment is not subject to the public notice requirements of subdivision (c).

**(g) Emission increases exceeding the daily maximums**

The emission increases do not exceed any of the daily maximums specified in subdivision (g) of this rule. The equipment is not subject to the public notice requirements specified in subdivision (g).

**Rule 401 - Visible Emissions:**

Based on experience with this type of equipment, compliance with this rule is expected.

**Rule 402 - Nuisances:**

Nuisance problems due to the equipment operation are unlikely.

**Rules 407/409:**

The oxidizers are fired with natural gas. Compliance is expected.

**Rule 1164 - Semiconductor Manufacturing:**

VOC emissions from solvent benches and photoresist operations are controlled by over 90%. Complies. Isopropyl alcohol is used in Rinsing Tank No. 6 of the wafer etching and stripping lines 1 and 2. A small amount of alcohol is added to the tank (0.11 g/L) to reduce the surface tension of water to prevent it from adhering to the wafer surface. The operation is not a solvent cleaning, and therefore, is not subject to the requirements of Rule 1164.

**Regulation XIII:**

**BACT:**

Scrubbers for PM control and afterburners for VOC control are BACT for the equipment.

**Modeling:**

Currently, no modeling is required for VOC. The PM10 emissions are lower than the limit in Table A-1 of Rule 1303. No further evaluation is necessary.

**Offsets:**

**CO:**

CO is in attainment. See Rule 1703 evaluation.

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VOC:

The facility has a VOC facility limit of 1,830 pounds in one calendar month. This limit is not expected to be exceeded with the new installation, modification and change of conditions. Reported VOC emissions from January 2007 to December 2008 08 show that VOC emissions from this facility were less than 1,460 lbs/month. Reported VOC emissions for 10 months of 2009 show that VOC from this facility were less than 540 lbs/month. The reason for the decrease was from the removal of several VOC emitting tools. With the new tools which are in the process of being installed, VOC emissions will be increased. The expected VOC emissions from the facility after the new tools are installed, however, will be below the 1,830 lbs/month limit.

The facility VOC potential to emit is 61 lb/day (=1,830 lb/month/30 days/month). However, the company has removed some permit units in the last few years. Since the permits associated with those permit units have been inactivated, the associated VOC emissions have been removed. The facility VOC NSR account currently shows only 12 lb/day. The account will be fixed to show the correct PTE of 61 lb/day.

NOx/SOx

There is no emission increase from the project. No external offsets are required.

PM10

The emission increase is less than 0.5 lb/day. No offsets are required.

Rule 1401:

APPLICATION NO. 503213: Photoresist  
MICR is less than 1 in a million and HIs are less than 1. Complies.

APPLICATION NO. 503214: McGill Oxidizer  
There are no emission increases of toxic air contaminants due to the modification.

APPLICATION NO. 503215: Wet/Solvent  
There are no emission increases of toxic air contaminants due to the modification.

APPLICATION NO. 503217: T-517  
HNO3, HCl, H2SO4, H3PO4, NaOH, Chromic acid, Copper and copper compounds, Ethylene

MICR is less than 1 in a million and HIs are less than 1. Complies.

APPLICATION NO. 503218: IC Manufacturing  
MICR is less than 1 in a million and HIs are less than 1. Complies.

APPLICATION NO. 503219: T-928  
MICR is less than 1 in a million and HIs are less than 1. Complies.

APPLICATION NO. 503222: Zink Oxidizer  
There are no emission increases of toxic air contaminants due to the modification.

APPLICATION NO. 503223: T-502  
MICR is less than 1 in a million and HIs are less than 1. Complies.

APPLICATION NO. 503224: T-503  
MICR is less than 1 in a million and HIs are less than 1. Complies.

APPLICATION NO. 503225: T-14  
HNO3, H3PO4, HF, NaOH, Chromic acid, Copper and copper compounds, ethylene glycol, H2SO4, NH3, HCl

MICR is less than 1 in a million and HIs are less than 1. Complies.

Rule 1401 Chemicals

Cresol

IPA, Xylene

AsH3, PH3, NH3, Cl2

Cresol, isopropyl alcohol

HCl, HNO3, H3PO4, H2SO4, NH3, HF

HCl, HNO3, H3PO4, H2SO4, NH3, HF

<b>SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT</b>  <i>ENGINEERING &amp; COMPLIANCE</i>  <b>APPLICATION PROCESSING AND CALCULATIONS</b>	Page            11 of 11 A/N             503213 et al Processed By    KH Checked By Date             11/7/09
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**APPLICATION NO. 504815:**            IC Manufacturing                            AsH3, PH3, Cl2

There are no emission increases of toxic air contaminants due to the modification.

**Rule 1703 - PSD Analysis:**

There is no CO emission increase due the modification, all requirements of Regulation XVII - Prevention of Significant Deterioration - are not applicable.

**DISCUSSIONS**

Based on information submitted with the applications and the above evaluation, it is determined/expected that the equipment operates/will operate in compliance with all the applicable rules and regulations of the District.

**RECOMMENDATIONS:**

**APPLICATION NO. 503220:**

Cancel (Per applicant's request).

**OTHER APPLICATIONS:**

Issue permits subject to the permit conditions as stated in Section D.

**Calculations**  
**Photolithographic System**

Previous: G4076 498036  
Control: 503222

A/N: 503213

This facility has a VOC cap of 1,800 lbs in any one calendar month. VOC emissions are calculated using the amount of solvent used (excluding salvage solvent) and VOC control efficiencies. For emission calculation purpose, controlled VOC emissions from the previous applications are used to calculate the emission rates.

Given:

Information from A/N 498036 (Previous to 503213).

Total resist used, lbs/day 158  
Volatile percent 85%  
VOC control efficiency (Minimum of all control equipment control efficiencies) 95%

Operating schedule:

hrs/day 24 hrs/day  
days/wk 7 days/wk  
wks/yr 52 wks/yr

Note: Reported VOC emissions will be calculated based on the control efficiency of the oxidizer the equipment vents to during the reporting period (95% for McGill oxidizer and 98.7% for John Zink oxidizer).

Computations:

VOC:

lb/day  
Uncontrolled  $158 \text{ lb/day} * 0.85 = 134.65 \text{ lb/day}$   
Controlled  $134.65 \text{ lb/day} * (1 - 0.95) = 6.73 \text{ lb/day}$   
lb/hr  
Uncontrolled  $134.65 \text{ lb/day} / 24 \text{ hrs/day} = 5.61 \text{ lb/hr}$   
Controlled  $6.73 \text{ lb/day} / 24 \text{ hrs/day} = 0.28 \text{ lb/hr}$   
lb/yr  $6.73 \text{ lb/day} * 7 \text{ days/wk} * 52 \text{ wks/yr} = 2450.6 \text{ lb/yr}$

	VOC	
	Uncontr.	Controlled
lb/hr	5.61	0.28
lb/day	135	6.7
lb/yr	-	2,450.61

**Cresol Emissions**

A/N 503213

Operating schedule  
 hrs/day  
 days/wk  
 wks/yr

24 hrs/day  
 7 days/wk  
 52 wks/yr

	Emissions, lbs				
	Cresol Content	Resist		Cresol	
		Max. Monthly	Annual	Annual	hourly
Positive photoreist 815	1%	17.746	212.952	2.12952	0.000244
Positive photoreist 700-1.2	1%	2.7	32.4	0.324	3.71E-05
Positive photoreist 3615	0.2%	1.306	15.672	0.031344	3.59E-06
Total					0.000284







**TIER 1 SCREENING RISK ASSESSMENT**

Receptor Distance (actual)	50
Receptor Distance (for X/Q lookup)	50

Tier 1 Results	
ASI	Acute ASI
4.78E-05	
passed	passed

APPLICATION SCREENING INDEX CALCULATION							
Code	Compound	Annual Emission Rate (lbs/yr)	Max Hourly Emission Rate (lbs/hr)	Cancer / Chronic Pollutant Screening Level (lbs/yr)	Acute Pollutant Screening Level (lbs/hr)	Pollutant Screening Index (PSI)	Acute Pollutant Screening Index (PSI)
c30	Cresol mixtures	2.48E+00	2.84E-04	5.20E+04	N/A	4.78E-05	N/A

**TOTAL (APPLICATION SCREENING INDEX)**

**4.78E-05**

**ATTACHMENT**  
**Wet Chemical/Solvent Cleaning System**

A/N 503215

Previous: G4075 498035

A new wet bench will replace an existing bench. The new wet bench is a little taller than the replaced wet bench. Also, another existing wet bench will be removed (No replacement). The operation before and after modification remains the same. PM10 emissions after the modification are expected to be lower than as before modification. We will use PM10 emissions as recorded before modification as PM10 emissions after modification.

Because this facility has a VOC cap of 1,800 lbs in any one calendar month, we will use VOC emissions for the previous A/N 498035 for emission recording purpose.

Below are excerpts from A/N 498035 folder:

Emissions:

		VOC	PM/PM10
lb/hr	Uncontr.	0.23	6.41
	Contr.	0.002	0.08
lb/day	Uncontr.	6	154
	Contr.	0	1.92
lb/yr		20.30	698.88

**Rule 1401:**

Because chemical usage is expected to be less than before modification, there will be no emission increases of toxic air contaminants due to the modification. No Rule 1401 analysis is necessary.

**ATTACHMENT  
Waste Acids  
T-517  
Vertical**

Control:	503221	A/N 503217
Previous:	G4084	
<u>Given:</u>		
Tank dimensions:	ft      in	
DIA.	4      0 OK	525 gallons      4.00 ft
L	5      7	5.58 ft
Annual throughput:		4,800,000 gallons
Month selected for emission calculations:		July
Number of days in the selected month:		31
Total vapor pressure:		0.37 psia
Molecular weight		
Vapors		18.16
Cr <sup>+6</sup>		51.94
CrO <sub>3</sub>		99.94
Maximum month emission*		
Working		10.85 lb/month
Breathing		0.04 lb/month
<u>Note:</u> *From TANK 4.0.9d Emissions Report		
Control efficiency:		
Acid PM		95%
PM		90%
Operating Schedule:		
hrs/day		24 hrs/day
days/wk		7 days/wk
weeks/yr		52 wks/yr
PM10 in Total PM:		96%
Weight% of all acids in vapors:		1.39%
HF in PM		33.42%
H <sub>2</sub> SO <sub>4</sub> in PM		3.07%
HNO <sub>3</sub> in PM		2.10%
HCl in PM		0.02%
H <sub>3</sub> PO <sub>4</sub>		61.39%
Weight % of chromic acid in vapors (= Weight % in tank)		0.0002%
<u>Note:</u> CrO <sub>3</sub> , solid, is dissolved in water. Its loss is due to dragout which is really small. The worst case will be that the weight concentration of CrO <sub>3</sub> in the vapors equals to that in the tank.		
<u>Calculations</u>		
Working volume:		470 gallons
Turnovers per year		10,213
<u>Emissions:</u>		

**ATTACHMENT**  
**Waste Acids**  
**T-517**

Total emission (working + breathing), lb/month	(10.85 + 0.04) lb/month =	10.89 lb/month
PM/Acids		
lb/day		
Uncontrolled	10.89 lb/month/31 days/month*0.0139 =	0.0049 lb/day
Controlled	0.0049 lb/day*(1-0.95) =	0.00024 lb/day
lb/hr		
Uncontrolled	0.0049 lb/day/24 hrs/day =	0.000204 lb/hr
Controlled	0.00024 lb/day/24 hrs/day =	0.0000102 lb/hr
lb/yr	0.00024 lb/day*7 days/wk*52 wks/yr =	0.089 lb/yr
PM10		
lb/day		
Uncontrolled	0.0049 lb/day*0.96 =	0.0047 lb/day
Controlled	0.00024 lb/day*0.96 =	0.00023 lb/day
lb/hr		
Uncontrolled	0.000204 lb/day*0.96 =	0.000196 lb/hr
Controlled	0.0000102 lb/day*0.96 =	0.0000098 lb/hr
lb/yr	0.00023 lb/day*7 days/wk*52 wks/yr =	0.085 lb/yr
HF:		
lb/day		
Uncontrolled	0.0049 lb/day*0.3342 =	0.0016 lb/day
Controlled	0.00024 lb/day*0.3342 =	0.00008 lb/day
lb/hr		
Uncontrolled	0.000204 lb/hr*0.3342 =	0.000068 lb/hr
Controlled	0.0000102 lb/hr*0.3342 =	0.0000034 lb/hr
lb/yr	0.0891 lb/yr*0.3342 =	0.030 lb/yr
H <sub>2</sub> SO <sub>4</sub> :		
lb/day		
Uncontrolled	0.0049 lb/day*0.0307 =	0.00015 lb/day
Controlled	0.00024 lb/day*0.0307 =	0.00008 lb/day
lb/hr		
Uncontrolled	0.000204 lb/hr*0.0307 =	0.0000063 lb/hr
Controlled	0.0000102 lb/hr*0.0307 =	0.00000031 lb/hr
lb/yr	0.0891 lb/yr*0.0307 =	0.0027 lb/yr
HNO <sub>3</sub> :		
lb/day		
Uncontrolled	0.0049 lb/day*0.0210 =	0.00010 lb/day
Controlled	0.00024 lb/day*0.0210 =	0.0000051 lb/day
lb/hr		
Uncontrolled	0.00020 lb/hr*0.0210 =	0.0000043 lb/hr
Controlled	0.0000102 lb/hr*0.0210 =	0.00000021 lb/hr
lb/yr	0.0891 lb/yr*0.0210 =	0.0019 lb/yr

**ATTACHMENT  
Waste Acids  
T-517**

HCl:

lb/day

Uncontrolled

$$0.0049 \text{ lb/day} * 0.0002 = 0.0000011 \text{ lb/day}$$

Controlled

$$0.00024 \text{ lb/day} * 0.0002 = 0.00000053 \text{ lb/day}$$

lb/hr

Uncontrolled

$$0.000204 \text{ lb/hr} * 0.0002 = 0.00000044 \text{ lb/hr}$$

Controlled

$$0.0000102 \text{ lb/hr} * 0.0002 = 0.00000022 \text{ lb/hr}$$

lb/yr

$$0.0891 \text{ lb/yr} * 0.0002 = 0.000019 \text{ lb/yr}$$

H<sub>3</sub>PO<sub>4</sub>:

lb/day

Uncontrolled

$$0.0049 \text{ lb/day} * 0.6139 = 0.0030 \text{ lb/day}$$

Controlled

$$0.00024 \text{ lb/day} * 0.6139 = 0.00015 \text{ lb/day}$$

lb/hr

Uncontrolled

$$0.000204 \text{ lb/hr} * 0.6139 = 0.00013 \text{ lb/hr}$$

Controlled

$$0.0000102 \text{ lb/hr} * 0.6139 = 0.0000063 \text{ lb/hr}$$

lb/yr

$$0.0891 \text{ lb/yr} * 0.6139 = 0.05 \text{ lb/yr}$$

Cr<sup>+6</sup>

lb/day

Uncontrolled

$$10.89 \text{ lb/month} / 31 \text{ days/month} * 0.000002 * 52 \text{ lb/lbmole} / 100 \text{ lb/lbmole} = 3.7\text{E-}07 \text{ lb/day}$$

Controlled

$$0.00000037 \text{ lb/day} * (1-0.9) = 3.68\text{E-}08 \text{ lb/day}$$

lb/hr

Uncontrolled

$$0.00000037 \text{ lb/day} / 24 \text{ hrs/day} = 1.53\text{E-}08 \text{ lb/hr}$$

Controlled

$$0.000000037 \text{ lb/day} / 24 \text{ hrs/day} = 1.53\text{E-}09 \text{ lb/hr}$$

lb/yr

$$0.000000037 \text{ lb/day} * 7 \text{ days/wk} * 52 \text{ wks/yr} = 1.34\text{E-}05 \text{ lb/yr}$$

	PM	PM10	HF	H <sub>2</sub> SO <sub>4</sub>	HNO <sub>3</sub>	HCl	H <sub>3</sub> PO <sub>4</sub>	Cr <sup>+6</sup>
lb/hr								
Uncontr.	0.000204	0.000196	0.000068	0.0000063	0.0000043	0.00000044	0.003	1.53E-08
Contr.	0.0000102	0.0000098	0.0000034	0.0000031	0.0000021	0.000000022	0.0002	1.53E-09
lb/day								
Uncontr.	0.005	0.0047	0.0016	0.00015	0.00010	0.0000011	0.0001	3.68E-07
Contr.	0.00024	0.00023	0.00008	0.00008	0.0000051	0.00000053	0.000006	3.68E-08
lb/yr (Contr.)		0.085	0.030	0.0027	0.0019	0.000019	0.05	1.34E-05

Note:

Throughput limit:

$$4800000 \text{ gals/yr} / 12 \text{ months/yr} = 400,000 \text{ gals/month}$$

**TANKS 4.0.9d**  
**Emissions Report - Summary Format**  
**Tank Identification and Physical Characteristics**

**Identification**

User Identification: T-517  
City:  
State:  
Company:  
Type of Tank: Vertical Fixed Roof Tank  
Description:

**Tank Dimensions**

Shell Height (ft): 5.58  
Diameter (ft): 4.00  
Liquid Height (ft) : 5.00  
Avg. Liquid Height (ft): 4.00  
Volume (gallons): 470.02  
Turnovers: 10,212.41  
Net Throughput(gal/yr): 4,800,000.00  
Is Tank Heated (y/n): N

**Paint Characteristics**

Shell Color/Shade: White/White  
Shell Condition: Good  
Roof Color/Shade: White/White  
Roof Condition: Good

**Roof Characteristics**

Type: Dome  
Height (ft) 0.00  
Radius (ft) (Dome Roof) 0.00

**Breather Vent Settings**

Vacuum Settings (psig): -0.03  
Pressure Settings (psig) 0.03

Meteorological Data used in Emissions Calculations: Long Beach, California (Avg Atmospheric Pressure = 14.7 psia)

**TANKS 4.0.9d**  
**Emissions Report - Summary Format**  
**Liquid Contents of Storage Tank**

**T-517 - Vertical Fixed Roof Tank**

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F)			Liquid Bulk Temp (deg F)	Vapor Pressure (psia)			Vapor Mol. Weight	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
		Avg.	Min.	Max.		Avg.	Min.	Max.					
Waste Water	Jul	71.26	65.04	77.47	64.33	0.3700	0.3700	0.3700	18.1600			0.00	

**TANKS 4.0.9d**  
**Emissions Report - Summary Format**  
**Individual Tank Emission Totals**

**Emissions Report for: July**

**T-517 - Vertical Fixed Roof Tank**

Components	Losses (lb)		Total Emissions
	Working Loss	Breathing Loss	
Waste Water	10.85	0.04	10.89

**Mixture Vapor Pressure  
Waste Acids  
T-517**

Previous: Permit G4084

A/N: 503217

	Conc.	Waste, gals/ month	Chemical %wt	Components, %wt														
				HF	NH4F	H2SO4	H2O2	Water	HNO3	H3PO4	Ammonia	Cr+6	Copper	Ethylene glycol	HCl	NaOH	CH3COOH	
BOE (11% HF, 36% NH4F)		300	0.08953	0.0098	0.0322		0.0475											
H2SO4		420	0.192371			0.192												
H2O2	63%	500	0.138025				0.0870	0.0511										
Rinse water		400,000	99.47746					99.48										
H2SO4		4	0.001832			0.002												
HNO3 Class 10	70%	2.6	0.000933					0.0003	0.00065									
HNO3	70%	8	0.002824					0.0008	0.00198									
H <sub>3</sub> PO <sub>4</sub>		160	0.062835							0.0628								
NH <sub>4</sub> OH		120	0.026859								0.02686							
Chromic acid		0.3	0.000201									0.0002						
Copper		0.3	0.00017										0.00017					
Ethylene glycol		6	0.001641											0.00164				
NaOH		1	0.00038														4E-04	
HCl	38%	8	0.003263					0.002								0.0012		
H2O2	63%	2	0.000552				3E-04	0.0002										
Acetic acid		2	0.000522															0.0006
BOE (11% HF, 36% NH4F)		2	0.000597	7E-05	0.0002													
		401,536	100.00	0.01	0.03	0.19	0.13	99.53	0.003	0.063	0.027	0.000	0.000	0.002	0.001	0.00038	0.00055	
		%		0.01%	0.03%	0.19%	0.13%	99.53%	0.003%	0.06%	0.03%	0.0002%	0.0002%	0.002%	0.001%	0.0004%	0.0006%	

### Mixture Vapor Pressure

#### Waste Acids

T-517

Previous: Permit G4084

A/N: 503217

Operating temperature

70 F

pH

2.5

Compounds	Solution wt%	VP mmHg	Molecular Weight	moles fraction	Weight Contribution	Weight %		
						W/ Water	W/o Water	
Columns	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(4) = (2)/18.93
HF	0.01%	0.08	20.01	0.0042	0.08	0.47%	33.42%	(5) = (4)*(3)
NH4F	0.03%	-	37.04	-	-	-	-	(6) = (5)/18.16
H2SO4	0.19%	0.0015	98.07	0.0001	0.01	0.04%	3.07%	(7) = (6)/(100%-98.61%)
H2O2	0.13%	-	34.01	-	-	-	-	
HNO3	0.003%	0.0016	63.01	0.0001	0.01	0.03%	2.10%	
H3PO4	0.063%	0.0300	98.00	0.00	0.16	0.01	61.39%	
NH4OH	0.027%	-	17.03	-	-	-	-	
Chromic acid	0.0002%	-	155.82	-	-	-	-	
Copper	0.0002%	-	63.55	-	-	-	-	
Ethylene glycol	0.002%	-	62.07	-	-	-	-	
HCl	0.001%	0.00003	36.46	0.000002	0.0001	0.0003%	0.02%	
NaOH	0.00038%	-	40.00	-	-	-	-	
H2O	99.53%	18.8	18.02	0.9940	17.91	98.61%	-	
	100%	18.93			18.16	100.00%	100%	
	psia	0.37			W/o water	1.39%		

Desired throughput 400,000 gals/month

4,800,000 gals/yr

Assumption: Effects of interactions between acids are minimum.

Vapor pressure of each component in aqueous solution (as if it is the only component in water) is used.

For water, vapor pressure of pure water is used.

For HF, the vapor pressure is vapor pressure of 5% HF solution

For H<sub>2</sub>SO<sub>4</sub>, total vapor pressure of 95% H<sub>2</sub>SO<sub>4</sub> at 35 C (95 F) is used.

For H<sub>3</sub>PO<sub>4</sub>, vapor pressure of 10% H<sub>3</sub>PO<sub>4</sub> at 20 C (68 F) is used.

At 2.5 pH, it is expected that all NH<sub>4</sub>OH and NaOH are completely neutralized.



**TIER 1 SCREENING RISK ASSESSMENT REPORT**

Receptor Distance (actual)	25
Receptor Distance (for X/Q LOOKUP)	25

Tier 1 Results	
Cancer/Chronic ASI	Acute ASI
1.13E-04	3.86E-05
PASSED	PASSED

**APPLICATION SCREENING INDEX CALCULATION**

Compound	Average Annual Emission Rate	Max Hourly Emission Rate (lbs/hr)	Cancer / Chronic Pollutant Screening Level (lbs/yr)	Acute Pollutant Screening Level (lbs/hr)	Cancer / Chronic Pollutant Screening Index	Acute Pollutant Screening Index (PSI)
Hydrogen fluoride (hydrofluoric acid)	5.11E-05	3.41E-06		1.20E-01		2.84E-05
Sulfuric acid (and oleum)	4.70E-06	3.13E-07	3.31E+01	6.00E-02	1.42E-07	5.22E-06
Nitric acid	3.21E-06	2.14E-07		4.30E-02		4.98E-06
Hydrogen chloride (hydrochloric acid)	3.33E-08	2.22E-09	2.98E+02	1.05E+00	1.12E-10	2.12E-09
Phosphoric acid	2.25E-03	1.50E-04	2.31E+02		9.73E-06	
Chromic trioxide (as chromic acid mist)	2.30E-08	1.53E-09	2.24E-04		1.03E-04	

**TOTAL (APPLICATION SCREENING INDEX)**

**1.13E-04 3.86E-05**

**ATTACHMENT A**

*Integrated Circuit*

Previous: 498034 G4074  
Control: 503216

A/N: 503218

Breakdown Information (From 2006 IPCC  
Guidelines for National Greenhouse Gas  
Inventories)

Given:

	MW	Process	Through Vector	lb/month	Used Ui	Transformed		Reacted to Form Acids
						To	Amount	
AsH <sub>3</sub>	77.95							
PH <sub>3</sub>	34.00	Diffusion	100%	3				
SiH <sub>4</sub>	32.12	Poly		20				
SiH <sub>4</sub>	32.12	LTO	100%	12				
SiH <sub>2</sub> Cl <sub>2</sub>	101.01			10				
BF <sub>3</sub>	67.81			2				
BCl <sub>3</sub>	117.169			4				
C <sub>2</sub> F <sub>6</sub>	138.01	Etch		30	0.6	CF4	0.4	0.2
CHF <sub>3</sub>	70.0141	Etch		8	0.6	CF4	0.07	0.53
CF <sub>4</sub>	88.00	Etch		10	0.3			0.3
Cl <sub>2</sub>	70.906			40				
SF <sub>6</sub>	146.05	Etch		20	0.8			0.8
HBr	80.9119			22				
SiCl <sub>4</sub>	169.90							
NH <sub>3</sub>	17.03			140				
N <sub>2</sub> O								
NF <sub>3</sub>	71.0019	Etch		12	0.8			0.8
Metex L5B		-						
POCl <sub>3</sub>	153.33	Diffusion		8				
Isopropanol		-						
Acetone		-						
CH <sub>2</sub> Cl <sub>2</sub>	133.40	(TCA)		45				
CHCl <sub>3</sub>	119.38							

C<sub>8</sub>H<sub>20</sub>SiO<sub>4</sub> (TEOS) 208.33 Diffusion 3100

Molecular weight (MW)

	AsH3	PH3	SiH4	BF3	CF4	POCl3	H3PO4	SiO2	H3BO3
MW	77.95	34.00	32.12	67.81	88.00	153.3322	98	60.08	61.83

	HCl	H <sub>2</sub> SO <sub>4</sub>	BCl3	C2F6	SF6	HBr	NH3	HF	CHCl3
MW	36.46	98.07	303.33	138.01	146.05	80.9119	17.03	20.01	119.3779

Operating schedule:

hrs/day	24 hrs/day
days/wk	7 days/wk
wks/yr	52 wks/yr

**ATTACHMENT A**  
*Integrated Circuit*

**Main scrubber control efficiencies**

(Information from HEE Environmental Engineering)

HCl	95%
HF	95%
H <sub>2</sub> SO <sub>4</sub>	95%
H <sub>3</sub> PO <sub>4</sub>	95%
HBr	95%
H <sub>3</sub> BO <sub>3</sub>	95%
SiO <sub>2</sub>	90%
Scrubber NH <sub>3</sub> control efficiency (Assumed)	0%
Diffusion furnaces integrated filters control efficiency:	
SiO <sub>2</sub>	98%
P <sub>2</sub> O <sub>5</sub>	0%
PM10 in PM	96%
Exhaust flow rate:	60,000 cfm
H <sub>2</sub> SO <sub>4</sub>	98.07
(NH <sub>4</sub> ) <sub>2</sub> SO <sub>4</sub>	132.13
HCl	36.46
NH <sub>4</sub> Cl	53.49
H <sub>3</sub> PO <sub>4</sub>	98.00
(NH <sub>4</sub> ) <sub>3</sub> PO <sub>4</sub>	149.09

Note: Arsine emissions will be calculated separately.

Computations: Except where indicated, all chemicals are used up in the process.

NH<sub>3</sub> emissions:

NH<sub>3</sub> emissions:

lb/day

Uncontrolled	140 lb/month/30 days/month =	4.67 lb/day
Controlled	4.67 lb/day*(1-0) =	4.67 lb/day

lb/hr

Uncontrolled	4.67 lb/day/24 hrs/day =	0.19 lb/hr
Controlled	4.67 lb/day/24 hrs/day =	0.19 lb/hr

lb/yr

4.67 lb/day\*7 days/wk\*52 wks/yr = 1,698.67 lb/yr

NH<sub>3</sub> concentration, ppm (in exhaust)

0.19 lb/hr/60 min/hr/60000 cfm\*10<sup>6</sup> = 0.05 ppm

Note: This ammonia concentration is at the exhaust of the wet scrubber. At ground level, the concentration is much lower. Even at the wet scrubber exhaust, the ammonia concentration is well below the ACGIH (American Conference of Governmental Industrial Hygienist) threshold level of 25 ppm.

NH<sub>3</sub> Summary:

	NH <sub>3</sub>	
	Uncontrolled	Controlled
lb/hr	0.19	0.19
lb/day	4.67	4.67
lb/yr	-	1,698.67

**ATTACHMENT A**  
*Integrated Circuit*

Emissions from other chemicals:

*Emissions, lb/hr:*

H3PO4 from PH3	The ratio 1/1 means 1 mole of H3PO4 is created per mole of PH3		
PM			
Uncontrolled	With diffusion furnaces integrated filters control efficiency being counted		
	3 lb/month/30 days/month/24 hrs/day*(1/1)*98.00 lb/lbmole/34.00 lb/lbmole*(1-0) =	0.01 lb/hr	
Controlled		0.01 lb/hr*(1-0.95) =	0.0006 lb/hr
PM10			
Uncontrolled		0.01 lb/hr*0.96 =	0.0115 lb/hr
Controlled		0.0006 lb/hr*0.96 =	0.00058 lb/hr
SiO2 from SiH4 Poly			
PM			
Uncontrolled	With diffusion furnaces integrated filters control efficiency being counted		
	20 lb/month/30 days/month/24 hrs/day*(1/1)*60.08 lb/lbmole/32.12 lb/lbmole*(1-0.98) =	0.001 lb/hr	
Controlled		0.001 lb/hr*(1-0.9) =	0.0001 lb/hr
PM10			
Uncontrolled		0.001 lb/hr*0.96 =	0.001 lb/hr
Controlled		0.0001 lb/hr*0.96 =	0.0001 lb/hr
SiO2 from SiH4 LTO			
Uncontrolled	With diffusion furnaces integrated filters control efficiency being counted		
	12 lb/month/30 days/month/24 hrs/day*(1/1)*60.08 lb/lbmole/32.12 lb/lbmole*(1-0.98) =	0.001 lb/hr	
Controlled		0.001 lb/hr*(1-0.9) =	0.0001 lb/hr
PM10			
Uncontrolled		0.001 lb/hr*0.96 =	0.001 lb/hr
Controlled		0.0001 lb/hr*0.96 =	0.0001 lb/hr
SiO2 from SiH2Cl2			
PM			
Uncontrolled	With diffusion furnaces integrated filters control efficiency being counted		
	10 lb/month/30 days/month/24 hrs/day*(1/1)*60.08 lb/lbmole/101.01 lb/lbmole*(1-0.98) =	0.00017	
Controlled		0.00017 lb/hr*(1-0.9) =	0.00002
PM10			
Uncontrolled		0.00017 lb/hr*0.96 =	0.0002
Controlled		0.00002 lb/hr*0.96 =	0.00002
HCl from SiH2Cl2			
PM			
Uncontrolled	10 lb/month/30 days/month/24 hrs/day*(2/1)*36.46 lb/lbmole/101.01 lb/lbmole =	0.01	
Controlled		0.01 lb/hr*(1-0.95) =	0.0005
PM10			
Uncontrolled		0.01 lb/hr*0.96 =	0.01
Controlled		0.001 lb/hr*0.96 =	0.0005
H3BO3 from BF3			
PM			
Uncontrolled	2 lb/month/30 days/month/24 hrs/day*(1/1)*61.83 lb/lbmole/67.81 lb/lbmole =	0.003 lb/hr	
Controlled		0.0025 lb/hr*(1-0.95) =	0.0001 lb/hr
PM10			
Uncontrolled		0.0025 lb/hr*0.96 =	0.002 lb/hr
Controlled		0.0001 lb/hr*0.96 =	0.0001 lb/hr

**ATTACHMENT A**  
*Integrated Circuit*

HF from BF3			
PM			
Uncontrolled	2 lb/month/30 days/month/24 hrs/day*(3/1)*20.01 lb/lbmole/67.81 lb/lbmole =		0.002 lb/hr
Controlled		0.0025 lb/hr*(1-0.95) =	0.00012 lb/hr
PM10			
Uncontrolled		0.0025 lb/hr*0.96 =	0.002 lb/hr
Controlled		0.00012 lb/hr*0.96 =	0.00012 lb/hr
H3BO3 from BC13			
PM			
Uncontrolled	4 lb/month/30 days/month/24 hrs/day*(3/1)*61.83 lb/lbmole/117.17 lb/lbmole =		0.003 lb/hr
Controlled		0.003 lb/hr*(1-0.95) =	0.0001 lb/hr
PM10			
Uncontrolled		0.003 lb/hr*0.96 =	0.003 lb/hr
Controlled		0.003 lb/hr*0.96 =	0.0001 lb/hr
HCl from BC13			
PM			
Uncontrolled	4 lb/month/30 days/month/24 hrs/day*(3/1)*36.46 lb/lbmole/117.17 lb/lbmole =		0.0052 lb/hr
Controlled		0.0052 lb/hr*(1-0.95) =	0.0003 lb/hr
PM10			
Uncontrolled		0.0052 lb/hr*0.96 =	0.005 lb/hr
Controlled		0.005 lb/hr*0.96 =	0.0002 lb/hr
HF from C2F6			
PM			
Uncontrolled	30 lb/month/30 days/month/24 hrs/day*(6/1)*20.01 lb/lbmole/138.01 lb/lbmole*0.2 =		0.0072
Controlled		0.0072 lb/hr*(1-0.95) =	0.0004
PM10			
Uncontrolled		0.0072 lb/hr*0.96 =	0.007
Controlled		0.007 lb/hr*0.96 =	0.0003
HF from CHF3			
PM			
Uncontrolled	8 lb/month/30 days/month/24 hrs/day*(3/1)*20.01 lb/lbmole/70.01 lb/lbmole*0.53 =		0.005 lb/hr
Controlled		0.005 lb/hr*(1-0.95) =	0.00025 lb/hr
PM10			
Uncontrolled		0.005 lb/hr*0.96 =	0.005 lb/hr
Controlled		0.0003 lb/hr*0.96 =	0.00024 lb/hr
HF from CF4			
PM			
Uncontrolled	10 lb/month/30 days/month/24 hrs/day*(4/1)*20.01 lb/lbmole/88.00 lb/lbmole*0.3 =		0.004 lb/hr
Controlled		0.004 lb/hr*(1-0.95) =	0.0002 lb/hr
PM10			
Uncontrolled		0.004 lb/hr*0.96 =	0.004 lb/hr
Controlled		0.0002 lb/hr*0.96 =	0.00018 lb/hr
HCl from Cl2			
PM			
Uncontrolled	40 lb/month/30 days/month/24 hrs/day*(2/1)*36.46 lb/lbmole/70.91 lb/lbmole =		0.06 lb/hr
Controlled		0.06 lb/hr*(1-0.95) =	0.003 lb/hr

**ATTACHMENT A**  
*Integrated Circuit*

PM10			
Uncontrolled		$0.06 \text{ lb/hr} * 0.96 =$	0.055 lb/hr
Controlled		$0.003 \text{ lb/hr} * 0.96 =$	0.0027 lb/hr
HF from SF6			
PM			
Uncontrolled	$20 \text{ lb/month} / 30 \text{ days/month} / 24 \text{ hrs/day} * (6/1) * 20.01 \text{ lb/lbmole} / 146.05 \text{ lb/lbmole} * 0.8 =$		0.018 lb/hr
Controlled		$0.018 \text{ lb/hr} * (1-0.95) =$	0.0009 lb/hr
PM10			
Uncontrolled		$0.018 \text{ lb/hr} * 0.96 =$	0.018 lb/hr
Controlled		$0.0009 \text{ lb/hr} * 0.96 =$	0.0009 lb/hr
H2SO4 from SF6			
PM			
Uncontrolled	$20 \text{ lb/month} / 30 \text{ days/month} / 24 \text{ hrs/day} * (1/1) * 98.07 \text{ lb/lbmole} / 146.05 \text{ lb/lbmole} * 0.8 =$		0.015 lb/hr
Controlled		$0.0149 \text{ lb/hr} * (1-0.95) =$	0.00075 lb/hr
PM10			
Uncontrolled		$0.0149 \text{ lb/hr} * 0.96 =$	0.014 lb/hr
Controlled		$0.000746 \text{ lb/hr} * 0.96 =$	0.0007 lb/hr
HBr from HBr			
PM			
Uncontrolled	$22 \text{ lb/month} / 30 \text{ days/month} / 24 \text{ hrs/day} * (1/1) * 80.91 \text{ lb/lbmole} / 80.91 \text{ lb/lbmole} =$		0.031 lb/hr
Controlled		$0.031 \text{ lb/hr} * (1-0.95) =$	0.0015 lb/hr
PM10			
Uncontrolled		$0.031 \text{ lb/hr} * 0.96 =$	0.029 lb/hr
Controlled		$0.0015 \text{ lb/hr} * 0.96 =$	0.0015 lb/hr
HF from NF3			
PM			
Uncontrolled	$12 \text{ lb/month} / 30 \text{ days/month} / 24 \text{ hrs/day} * (3/1) * 20.01 \text{ lb/lbmole} / 71.00 \text{ lb/lbmole} * 0.8 =$		0.0113 lb/hr
Controlled		$0.0113 \text{ lb/hr} * (1-0.95) =$	0.0006 lb/hr
PM10			
Uncontrolled		$0.0113 \text{ lb/hr} * 0.96 =$	0.011 lb/hr
Controlled		$0.0006 \text{ lb/hr} * 0.96 =$	0.0005 lb/hr
H3PO4 from POCl3			
PM			
Uncontrolled	$1/1 \text{ means } 1 \text{ mole of } H_3PO_4 \text{ is produced per mole of } POCl_3$ $8 \text{ lb/month} / 30 \text{ days/month} / 24 \text{ hrs/day} * (1/1) * 98.00 \text{ lb/lbmole} / 153.33 \text{ lb/lbmole} =$		0.007 lb/hr
Controlled		$0.007 \text{ lb/hr} * (1-0.95) =$	0.00036 lb/hr
PM10			
Uncontrolled		$0.007 \text{ lb/hr} * 0.96 =$	0.007 lb/hr
Controlled		$0.00036 \text{ lb/hr} * 0.96 =$	0.0003409 lb/hr
HCl from POCl3			
PM			
Uncontrolled	$8 \text{ lb/month} / 30 \text{ days/month} / 24 \text{ hrs/day} * (3/1) * 36.46 \text{ lb/lbmole} / 153.33 \text{ lb/lbmole} =$		0.008 lb/hr
Controlled		$0.008 \text{ lb/hr} * (1-0.95) =$	0.00040 lb/hr
PM10			
Uncontrolled		$0.008 \text{ lb/hr} * 0.96 =$	0.008 lb/hr
Controlled		$0.00040 \text{ lb/hr} * 0.96 =$	0.00038 lb/hr

**ATTACHMENT A**  
*Integrated Circuit*

HCl from CH<sub>3</sub>CCl<sub>3</sub>

PM

Uncontrolled 45 lb/month/30 days/month/24 hrs/day\*(3/1)\*36.46 lb/lbmole/133.40 lb/lbmole = 0.051 lb/hr  
Controlled 0.051 lb/hr\*(1-0.95) = 0.00256 lb/hr

PM10

Uncontrolled 0.051 lb/hr\*0.96 = 0.049 lb/hr  
Controlled 0.00256 lb/hr\*0.96 = 0.00246 lb/hr

SiO<sub>2</sub> from C<sub>8</sub>H<sub>20</sub>SiO<sub>4</sub>

PM

Uncontrolled 3100 lb/month/30 days/month/24 hrs/day\*(1/1)\*60.08 lb/lbmole/208.33 lb/lbmole\*(1-0.98) = 0.0248 lb/hr  
Controlled 0.0248 lb/hr\*(1-0.95) = 0.00124 lb/hr

PM10

Uncontrolled 0.0248 lb/hr\*0.96 = 0.0238 lb/hr  
Controlled 0.00124 lb/hr\*0.96 = 0.00119 lb/hr

	Emission	From	PM		PM10	
			Uncontr.	Contr.	Uncontr.	Contr.
lb/hr	H <sub>3</sub> PO <sub>4</sub>	PH <sub>3</sub>	0.012	0.0006	0.012	0.00058
	SiO <sub>2</sub>	SiH <sub>4</sub> Poly	0.001	0.0001	0.001	0.00010
	SiO <sub>2</sub>	SiH <sub>4</sub> LTO	0.001	0.0001	0.001	0.00006
	SiO <sub>2</sub>	SiH <sub>2</sub> Cl <sub>2</sub>	0.0002	0.00002	0.0002	0.000016
	HCl	SiH <sub>2</sub> Cl <sub>2</sub>	0.01	0.00050	0.0096	0.00048
	H <sub>3</sub> BO <sub>3</sub>	BF <sub>3</sub>	0.003	0.0001	0.002	1.22E-04
	HF	BF <sub>3</sub>	0.002	0.0001	0.002	1.18E-04
	H <sub>3</sub> BO <sub>3</sub>	BCl <sub>3</sub>	0.003	0.000	0.003	0.0001
	HCl	BCl <sub>3</sub>	0.005	0.0003	0.005	0.0002
	HF	C <sub>2</sub> F <sub>6</sub>	0.007	0.000	0.01	0.000
	HF	CHF <sub>3</sub>	0.005	0.0003	0.005	2.42E-04
	HF	CF <sub>4</sub>	0.004	0.0002	0.004	1.82E-04
	HCl	Cl <sub>2</sub>	0.057	0.003	0.055	0.0027
	HF	SF <sub>6</sub>	0.01827	0.0009	1.75E-02	0.0009
	H <sub>2</sub> SO <sub>4</sub>	SF <sub>6</sub>	0.015	0.0007	1.43E-02	0.0007
	HBr	HBr	0.03	0.002	0.03	0.0015
	HF	NF <sub>3</sub>	0.01	0.001	0.01	0.0005
	H <sub>3</sub> PO <sub>4</sub>	POCl <sub>3</sub>	0.007	0.0004	0.007	0.0003
	HCl	POCl <sub>3</sub>	0.008	0.0004	0.008	0.00038
	HCl	CH <sub>3</sub> CCl <sub>3</sub>	0.05	0.0026	0.05	0.0025
HCl	CHCl <sub>3</sub>	-	-	-	-	
SiO <sub>2</sub>	C <sub>8</sub> H <sub>20</sub> OSiO <sub>4</sub>	0.02	0.0012	0.02	0.0012	
	<b>Total</b>	<b>0.25</b>	<b>0.01</b>	<b>0.24</b>	<b>0.01</b>	
lb/day				5.79	0.29	
lb/yr					106.22	

**ATTACHMENT A**

*Integrated Circuit*

PM10 emission increase due to the reactions of NH<sub>3</sub> with H<sub>2</sub>SO<sub>4</sub>, HCl, and H<sub>3</sub>PO<sub>4</sub> in the exhaust to form salts (NH<sub>4</sub>SO<sub>4</sub>, NH<sub>4</sub>Cl, NH<sub>4</sub>PO<sub>4</sub>), sources of PM10: Assume 100% conversion. Since acids are limited agents, amounts of salts will depend on the available acids.

Conversion from H<sub>2</sub>SO<sub>4</sub> to (NH<sub>4</sub>)<sub>2</sub>SO<sub>4</sub> will cause the following emission increases:

PM:	Uncontr.	0.0149 lb/hr*(132.13/98.07-1) =	0.01 lb/hr
	Contr.	0.0007 lb/hr*(132.13/98.07-1) =	0.0003 lb/hr

PM10	Uncontr.	0.0143 lb/hr*(132.13/98.07-1) =	0.005 lb/hr
	Contr.	0.0007 lb/hr*(132.13/98.07-1) =	0.0002 lb/hr

Conversion from HCl to NH<sub>4</sub>Cl will cause the following emission increases:

PM:	Uncontr.	(0.01+0.005+0.057+0.008+0.051+0) lb/hr*(53.49/36.46-1) =	0.06 lb/hr
	Contr.	(0.001+0.0003+0.0029+0.0004+0.0026+0) lb/hr*(53.49/36.46-1) =	0.003 lb/hr

PM10	Uncontr.	(0.01+0.005+0.055+0.008+0.049+0) lb/hr*(53.49/36.46-1) =	0.06 lb/hr
	Contr.	(0.00+0.0002+0.0027+0.0004+0.0025+0) lb/hr*(53.49/36.46-1) =	0.003 lb/hr

Conversion from H<sub>3</sub>PO<sub>4</sub> to (NH<sub>4</sub>)<sub>3</sub>PO<sub>4</sub> will cause the following emission increases:

PM:	Uncontr.	(0.012+0.007) lb/hr*(149.09/98.00-1) =	0.01 lb/hr
	Contr.	(0.001+0.0004) lb/hr*(149.09/98.00-1) =	0.0005 lb/hr

PM10	Uncontr.	(0.012+0.007) lb/hr*(149.09/98.00-1) =	0.01 lb/hr
	Contr.	(0.001+0.0003) lb/hr*(149.09/98.00-1) =	0.0005 lb/hr

Subtotal increases due to NH<sub>3</sub> & acids reactions

PM:	Uncontr.	(0.005+0.061+0.010) lb/hr =	0.08 lb/hr
	Contr.	(0.0003+0.003+0.0005) lb/hr =	0.004 lb/hr

PM10	Uncontr.	(0.005+0.059+0.010) lb/hr =	0.07 lb/hr
	Contr.	(0.0002+0.003+0.0005) lb/hr =	0.004 lb/hr

Total emission increases (Including salts formed from NH<sub>3</sub> & acids reactions)

PM:	Uncontr.	lb/hr	0.33 lb/hr
	Contr.	lb/hr	0.02 lb/hr

PM10	Uncontr.	lb/hr	0.31 lb/hr
		lb/day	0.31 lb/hr*24 hrs/day = 7.56 lb/day
	Contr.	lb/hr	0.02 lb/hr
		lb/day	0.02 lb/hr*24 hrs/day = 0.38 lb/day
		lb/yr	0.38 lb/day*7 days/wk*52 wks/yr = 138.75 lb/yr

**ATTACHMENT A**  
*Integrated Circuit*

**Rule 1401 chemicals**

For Rule 1401 analysis, we will assume there are no reactions between NH<sub>3</sub> and acids (Conservative).

(lb/hr from the table above)

NH <sub>3</sub>	lb/hr		0.19 lb/hr
	lb/yr		1,698.67 lb/yr
H <sub>3</sub> PO <sub>4</sub>	lb/hr	0.0006+0.0004 =	0.001 lb/hr
	lb/yr	0.001 lb/hr*24 hrs/day*7 days/wk*52 wks/yr =	8.35 lb/yr
HCl	lb/hr	0.0005+0.0003+0.003+0.0004+0.0026+0.0000 =	0.007 lb/hr
	lb/yr	0.007 lb/hr*24 hrs/day*7 days/wk*52 wks/yr =	57.45 lb/yr
HF	lb/hr	0.00012+0.00036+0.00025+0.00019+0.0009+0.001 =	0.0024 lb/hr
	lb/yr	0.0024 lb/hr*24 hrs/day*7 days/wk*52 wks/yr =	21.00 lb/yr
H <sub>2</sub> SO <sub>4</sub>	lb/hr		0.00075 lb/hr
	lb/yr	0.0007 lb/hr*24 hrs/day*7 days/wk*52 wks/yr =	6.52 lb/yr

**NSR & AEIS Inputs:**

	PM	PM10
lb/hr		
Uncontr.	0.33	0.31
Contr.	0.02	0.02
lb/day		
Uncontr.		8
Contr.		0.38
lb/yr (Contr.)		138.75

**Permit limits:**

PH <sub>3</sub>		3 lb/month
SiH <sub>4</sub>	20+12 =	32 lb/month
SiH <sub>2</sub> Cl <sub>2</sub>		10 lb/month
BF <sub>3</sub>		2 lb/month
BCl <sub>3</sub>		4 lb/month
C <sub>2</sub> F <sub>6</sub>		30 lb/month
CHF <sub>3</sub>		8 lb/month
CF <sub>4</sub>		10 lb/month
Cl <sub>2</sub>		40 lb/month
SF <sub>6</sub>		20 lb/month
HBr		22 lb/month
NH <sub>3</sub>		140 lb/month
NF <sub>3</sub>		12 lb/month
POCl <sub>3</sub>		8 lb/month
CH <sub>3</sub> CCl <sub>3</sub>		45 lb/month
C <sub>8</sub> H <sub>2</sub> OSiO <sub>4</sub>		3,100 lb/month

**Arsine Emissions  
2 Ion Implanters Using Arsine**

A/N 503218

Given:

0.0256 L/min

- |   |              |
|---|--------------|
| 1 Arsine flow rate to implanter   | 0.0256 L/min |
| 2 Operating schedule:   |              |
| a Hours/day   | 24           |
| b Days/week   | 7            |
| c Weeks/year  | 52           |
| 3 Sensor analyzing time (collecting sample & analyzing)<br>(6 times: 3 at breakthrough at main canister and 3 at breakthrough at standby canister, 60 sec each)   | 360 sec      |
| 4 Time period between the time sensor detects break through at outlet of main canister and the time that effluent from implanter is completely switched to standby canister (Interlocks for automatic switching are required) - 3 times at 30 seconds each. | 90 sec       |
| 5 Time period between the time sensor detects break through at outlet of standby canister and the time that arsine flow to implanter is shut down (Interlocks for automatic shutdown are required) - 3 times at 30 seconds each.                            | 90 sec       |
| 6 Scrubber replacements each year   | <del>3</del> |
| 7 Number of scrubbers in the permit unit  | 2            |

Molecular weights:

- |  |                                |
|--|--------------------------------|
| Arsine                                       | 77.95 lb/lbmole                |
| Arsenic                                      | 74.92 lb/lbmole                |
| Ionization efficiency                        | 90%                            |
| Arsenic in arsine                            | 96%                            |
| Implant efficiency                           | 45%                            |
| Control efficiency:                          | 99%                            |
| Ideal gas molar volume @ 60 F & 1 atmosphere | 379.49 ft <sup>3</sup> /lbmole |
| Conversion from liters to ft <sup>3</sup> :  | 0.035 ft <sup>3</sup> /L       |
| Arsine usage cushion factor                  | 1                              |

Note: Cushion factor is based on permit engineer's judgments and used to give the applicant a cushion to the permit limit(s) to insure compliance.

Computations:

For 1 resin can:

(a) During normal operation:

- Arsine usage:  
 $0.0256 \text{ L/min} \times 0.035 \text{ cf/L} \times 60 \text{ min/hr} \times 24 \text{ hrs/day} \times 7 \text{ days/wk} \times 52 \text{ wks/yr} \times 379.49 \text{ cf/lbmole} \times 77.95 \text{ lb/lbmole} = 97.3 \text{ lb/yr}$
- Arsenic emissions:
- |              |  |                |
|--------------|--|----------------|
| Uncontrolled | $97.25 \text{ lb/yr} \times 0.96 \text{ arsenic in 1 arsine} \times ((1-0.9)+0.9 \times (1-0.45)) =$ | 55.62 lb/yr    |
|              | $55.62 \text{ lb/yr} / 52 \text{ wks/yr} / 7 \text{ days/wk} / 24 \text{ hrs/day} =$                 | 0.00637 lb/hr  |
| Controlled   | $55.62 \text{ lb/yr} \times (1-0.99) =$  | 0.556 lb/yr    |
|              | $0.00637 \text{ lb/hr} \times (1-0.99) =$  | 6.37E-05 lb/hr |

(b) During other periods:

- (Switching from main canister to standby canister and shutdown)  
Amount of time when arsine is not controlled:  $(360 \text{ sec} + 90 \text{ sec} + 90 \text{ sec}) \times 3 \text{ times/yr} = 1620 \text{ sec/yr}$
- Arsine used:  
 $0.0256 \text{ L/min} / 60 \text{ sec/min} \times 1620 \text{ sec/yr} \times 0.035 \text{ cf/L} / 379.49 \text{ cf/lbmole} \times 77.95 \text{ lb/lbmole} = 0.00501 \text{ lb/yr}$
- Arsenic emissions:  
 $0.00501 \text{ lb/yr} \times 0.96 \text{ lb arsenic/lb arsine} \times ((1-0.9)+0.9 \times (1-0.45)) = 0.00287 \text{ lb/yr}$

(c) Total arsenic emissions:  $0.556 \text{ lb/yr} + 0.00287 \text{ lb/yr} = 0.559 \text{ lb/yr}$   
 $0.559 \text{ lb/yr} / 52 \text{ wks/yr} / 7 \text{ days/wk} / 24 \text{ hrs/day} = 6.400\text{E-}05 \text{ lb/hr}$

Arsine usage  $0.0256 \text{ L/min} * 60 \text{ min/hr} * 24 \text{ hrs/day} * 7 \text{ days/wk} * 52 \text{ wks/yr} = 13,407.14 \text{ L/yr}$   
 $13407.14 \text{ L/yr} * 0.035 \text{ cf/L} / 379.49 \text{ cf/lbmole} * 77.95 \text{ lb/lbmole} = 97.25 \text{ lb/yr}$

Overall control efficiency:  $1 - 0.559 / 55.62 = 98.995\%$

For a maximum of 2 cans:

Total arsenic emissions:  $0.559 \text{ lb/yr-can} * 2 \text{ cans} = 1.118 \text{ lb/yr}$   
 $1.118 \text{ lb/yr} / 52 \text{ wks/yr} / 7 \text{ days/wk} / 24 \text{ hrs/day} = 1.28\text{E-}04 \text{ lb/hr}$

Results of risk analysis:

	Residential	Commercial
MICR	9.93E-07	1.73E-07

Arsine flow rate limit (per can) 0.0256 L/min

NSR input:  $\text{lb/hr} * 10^6$

Uncontrolled arsenic emission  $0.00637 \text{ lb/hr/can} * 2 \text{ cans} * 10^6 = 12,733$   
Controlled arsenic emission  $0.000128 \text{ lb/hr} * 10^6 = 128$



**Table A**

Modeling emissions rate	1.000000	gr/sec
Modeling emissions rate	7.93	lb/hr
Modeling emissions rate	34.73	tons/yr
Max hr/dy	24	hr/day
Day per week	7	dy/wk
Week per year	52	wk/yr

**MODELING RESULTS -MAX ONE HOUR**

Distance residence	1000.00	meter
Max. 1-hour Conc. Residence	46.360000	ug/m3
Annualized Conc. Residence	3.708800	ug/m3
Distance Commerical	50.00	meter
Max. 1-hour Conc. Commerical	43.140000	ug/m3
Annualized Conc. Commerical	3.451200	ug/m3

**Annualized X/Q**

X/Q Residential	0.106785591	(ug/m <sup>3</sup> )/(tons/yr)
X/Q Commercial	0.099368645	(ug/m <sup>3</sup> )/(tons/yr)

**Max. X/Q**

X/Q Residential	5.846511111	(ug/m <sup>3</sup> )/(lbs/hr)
X/Q Commercial	5.440433333	(ug/m <sup>3</sup> )/(lbs/hr)

**Table B (These values are needed to calculate cancer burden)**

Distance	Interpolation								
	Residential			Industrial			X/Q for one-in-a-million		
	near	actual	far	near	actual	far	near	actual	far
Stack Height (ft):	50			Row: 3					
Distance	25.00	1000.00	100.00	900.00	50.00	1100.00	25.00	23.59	100.00
X/Q - 1 hr conc ug/m3	1.11	46.36	60.22	48.36	43.14	38.73	1.11		60.22
X/Q Annualized (ug/m <sup>3</sup> )/(tons/yr)	0.00	0.11	0.14	0.11	0.10	0.09	0.00		0.14

**CONVERSION CALCULATOR FOR SCREEN MODELING INPUT (British to Metric Units)**

**SCREEN INPUT DATA - BRITISH UNITS**

Actual exhausted rate	100.00	acfm
Temperature	900.00	degree F
Stack diameter	12.00	in
Stack height	20.00	ft
Modeling emissions rate	0.04	lb/hr

**SCREEN INPUT DATA - METRIC UNITS**

Temperature	755.222	degrees K
Stack diameter	0.305	meter
Stack area	0.073	square meter
Stack height	6.096	meter
Stack velocity	0.647	m/s
Modeling emissions rate	0.00504	gr/s

# TIER 3 SCREENING RISK ASSESSMENT REPORT

A/N: 503218  
 Fac: 48522

Application deemed complete date: 10/29/09

## 2. Tier 2 Data

MET Factor	1.00
4 hr	0.85
6 or 7 hrs	0.71

### Dispersion Factors tables

3	For Chronic X/Q
6	For Acute X/Q

### Dilution Factors (ug/m3)/(tons/yr)

Receptor	X/Q	X/Qmax
Residential	0.106785591	5.846511111
Commercial	0.099368645	5.440433333

### Adjustment and Intake Factors

	A Fann	DBR	EVF
Residential	1	302	0.96
Worker	1	149	0.38





A/N: 503218

Application deemed complete date: 10/29/09

**TIER 3 RESULTS**

**5a. MICR**

$MICR = CP (mg/(kg \cdot day))^{-1} * Q (ton/yr) * (X/Q) * AFann * MET * DBR * EVF * 1.E-6 * MP$

Compound	Residential	Commercial
Ammonia		
Arsenic and arsenic compounds (inorganic)	9.93E-07	1.73E-07
Phosphoric acid		
Hydrogen chloride (hydrochloric acid)		
Hydrogen fluoride (hydrofluoric acid)		
Sulfuric acid (and oleum)		
<b>Total</b>	<b>9.93E-07</b>	<b>1.73E-07</b>
	<b>PASS</b>	<b>PASS</b>

No Cancer Burden, MICR < 1.0E-6

<b>5b. Cancer Burden</b>	<b>no</b>
X/Q for one-in-a-million:	
Distance (meter)	
Area (km <sup>2</sup> ):	
Population:	
Cancer Burden:	

**6. Hazard Index**

HIA = [Q(lb/hr) \* (X/Q)max] \* AF / Acute REL

HIC = [Q(ton/yr) \* (X/Q) \* MET \* MP] / Chronic REL

Target Organs	Acute	Chronic	Acute Pass/Fail	Chronic Pass/Fail
Alimentary system (liver) - AL			Pass	Pass
Bones and teeth - BN			Pass	Pass
Cardiovascular system - CV		3.79E-03	Pass	Pass
Developmental - DEV	3.54E-03	3.79E-03	Pass	Pass
Endocrine system - END			Pass	Pass
Eye	4.32E-04		Pass	Pass
Hematopoietic system - HEM			Pass	Pass
Immune system - IMM			Pass	Pass
Kidney - KID			Pass	Pass
Nervous system - NS		3.79E-03	Pass	Pass
Reproductive system - REP	3.54E-03		Pass	Pass
Respiratory system - RES	4.68E-04	1.21E-03	Pass	Pass
Skin			Pass	Pass

A/N: 503218

Application deemed complete date: 10/29/09

6a. Hazard Index Acute

$$HIA = [Q(\text{lb/hr}) * (X/Q)_{\text{max}}] * AF / \text{Acute REL}$$

Compound	HIA - Residential									
	AL	CV	DEV	EYE	HEM	IMM	NS	REP	RESP	SKIN
Ammonia				3.55E-04					3.55E-04	
Arsenic and arsenic compounds (inorganic)			3.54E-03					3.54E-03		
Phosphoric acid										
Hydrogen chloride (hydrochloric acid)				1.83E-05					1.83E-05	
Hydrogen fluoride (hydrofluoric acid)				5.86E-05					5.86E-05	
Sulfuric acid (and oleum)									3.64E-05	
<b>Total</b>			3.54E-03	4.32E-04				3.54E-03	4.68E-04	

Compound	HIA - Commercial									
	AL	CV	DEV	EYE	HEM	IMM	NS	REP	RESP	SKIN
Ammonia				3.31E-04					3.31E-04	
Arsenic and arsenic compounds (inorganic)			3.30E-03					3.30E-03		
Phosphoric acid										
Hydrogen chloride (hydrochloric acid)				1.70E-05					1.70E-05	
Hydrogen fluoride (hydrofluoric acid)				5.45E-05					5.45E-05	
Sulfuric acid (and oleum)									3.38E-05	
<b>Total</b>			3.30E-03	4.02E-04				3.30E-03	4.36E-04	

6b. Hazard Index Chronic

$$HIC = [Q(\text{ton/yr}) * (X/Q) * MET * MP] / \text{Chronic REL}$$

Compound	HIC - Residential												
	AL	BN	CV	DEV	END	EYE	HEM	IMM	KID	NS	REP	RESP	SKIN
Ammonia												4.53E-04	
Arsenic and arsenic compounds (inorganic)			3.79E-03	3.79E-03						3.79E-03			
Phosphoric acid												6.37E-05	
Hydrogen chloride (hydrochloric acid)												3.41E-04	
Hydrogen fluoride (hydrofluoric acid)													
Sulfuric acid (and oleum)												3.48E-04	
<b>Total</b>			3.79E-03	3.79E-03						3.79E-03		1.21E-03	

6b. Hazard Index Chronic (cont.)

A/N: 503218

Application deemed complete date:

10/29/09

Compound	HIC - Commercial												
	AL	BN	CV	DEV	END	EYE	HEM	IMM	KID	NS	REP	RESP	SKIN
Ammonia												4.22E-04	
Arsenic and arsenic compounds (inorganic)			3.44E-03	3.44E-03						3.44E-03			
Phosphoric acid												5.93E-05	
Hydrogen chloride (hydrochloric acid)												3.17E-04	
Hydrogen fluoride (hydrofluoric acid)													
Sulfuric acid (and oleum)												3.24E-04	
<b>Total</b>			3.44E-03	3.44E-03						3.44E-03		1.12E-03	

\*\*\* SCREEN3 MODEL RUN \*\*\*  
\*\*\* VERSION DATED 96043 \*\*\*

Scrubbers 1 & 2

SIMPLE TERRAIN INPUTS:

SOURCE TYPE = POINT  
EMISSION RATE (G/S) = 1.00000  
STACK HEIGHT (M) = 15.2400  
STK INSIDE DIAM (M) = 1.8300  
STK EXIT VELOCITY (M/S) = 10.7660  
STK GAS EXIT TEMP (K) = 297.0000  
AMBIENT AIR TEMP (K) = 293.0000  
RECEPTOR HEIGHT (M) = .0000  
URBAN/RURAL OPTION = URBAN  
BUILDING HEIGHT (M) = .0000  
MIN HORIZ BLDG DIM (M) = .0000  
MAX HORIZ BLDG DIM (M) = .0000

THE REGULATORY (DEFAULT) MIXING HEIGHT OPTION WAS SELECTED.  
THE REGULATORY (DEFAULT) ANEMOMETER HEIGHT OF 10.0 METERS WAS ENTERED.

STACK EXIT VELOCITY WAS CALCULATED FROM  
VOLUME FLOW RATE = 60000.000 (ACFM)

BUOY. FLUX = 1.190 M\*\*4/S\*\*3; MOM. FLUX = 95.732 M\*\*4/S\*\*2.

\*\*\* FULL METEOROLOGY \*\*\*

\*\*\*\*\*  
\*\*\* SCREEN AUTOMATED DISTANCES \*\*\*  
\*\*\*\*\*

\*\*\* TERRAIN HEIGHT OF 0. M ABOVE STACK BASE USED FOR FOLLOWING DISTANCES \*\*\*

DIST (M)	CONC (UG/M**3)	STAB	U10M (M/S)	USTK (M/S)	MIX HT (M)	PLUME HT (M)	SIGMA Y (M)	SIGMA Z (M)	DWASH
25.	1.110	3	10.0	10.9	3200.0	18.80	5.55	5.08	NO
100.	60.22	3	4.0	4.4	1280.0	28.82	21.92	20.37	NO
200.	55.52	4	2.5	2.8	800.0	36.52	31.39	27.87	NO
300.	67.71	6	1.0	1.1	10000.0	40.30	31.99	21.18	NO
400.	79.46	6	1.0	1.1	10000.0	40.30	41.48	26.29	NO
500.	76.76	6	1.0	1.1	10000.0	40.30	50.72	31.07	NO
600.	69.51	6	1.0	1.1	10000.0	40.30	59.70	35.55	NO
700.	61.68	6	1.0	1.1	10000.0	40.30	68.43	39.76	NO
800.	54.53	6	1.0	1.1	10000.0	40.30	76.93	43.74	NO
900.	48.36	6	1.0	1.1	10000.0	40.30	85.19	47.51	NO
1000.	43.14	6	1.0	1.1	10000.0	40.30	93.24	51.10	NO
1100.	38.73	6	1.0	1.1	10000.0	40.30	101.09	54.53	NO
1200.	35.00	6	1.0	1.1	10000.0	40.30	108.74	57.82	NO
1300.	31.82	6	1.0	1.1	10000.0	40.30	116.21	60.97	NO
1400.	29.10	6	1.0	1.1	10000.0	40.30	123.51	64.01	NO
1500.	26.76	6	1.0	1.1	10000.0	40.30	130.64	66.95	NO
1600.	24.72	6	1.0	1.1	10000.0	40.30	137.62	69.79	NO
1700.	22.94	6	1.0	1.1	10000.0	40.30	144.45	72.54	NO
1800.	21.38	6	1.0	1.1	10000.0	40.30	151.14	75.20	NO
1900.	19.99	6	1.0	1.1	10000.0	40.30	157.70	77.80	NO
2000.	18.76	6	1.0	1.1	10000.0	40.30	164.13	80.32	NO
2100.	17.66	6	1.0	1.1	10000.0	40.30	170.45	82.78	NO

2200.	16.67	6	1.0	1.1	10000.0	40.30	176.64	85.18	NO
2300.	15.78	6	1.0	1.1	10000.0	40.30	182.73	87.52	NO
2400.	14.97	6	1.0	1.1	10000.0	40.30	188.71	89.81	NO
2500.	14.23	6	1.0	1.1	10000.0	40.30	194.59	92.05	NO
2600.	13.56	6	1.0	1.1	10000.0	40.30	200.37	94.24	NO
2700.	12.94	6	1.0	1.1	10000.0	40.30	206.06	96.39	NO
2800.	12.38	6	1.0	1.1	10000.0	40.30	211.66	98.49	NO
2900.	11.85	6	1.0	1.1	10000.0	40.30	217.17	100.56	NO
3000.	11.37	6	1.0	1.1	10000.0	40.30	222.60	102.59	NO
3500.	9.426	6	1.0	1.1	10000.0	40.30	248.62	112.23	NO
4000.	8.025	6	1.0	1.1	10000.0	40.30	272.97	121.16	NO
4500.	6.974	6	1.0	1.1	10000.0	40.30	295.91	129.51	NO
5000.	6.158	6	1.0	1.1	10000.0	40.30	317.62	137.39	NO
5500.	5.507	6	1.0	1.1	10000.0	40.30	338.28	144.85	NO
6000.	4.978	6	1.0	1.1	10000.0	40.30	358.01	151.96	NO
6500.	4.539	6	1.0	1.1	10000.0	40.30	376.91	158.76	NO
7000.	4.170	6	1.0	1.1	10000.0	40.30	395.07	165.29	NO
7500.	3.855	6	1.0	1.1	10000.0	40.30	412.56	171.58	NO
8000.	3.583	6	1.0	1.1	10000.0	40.30	429.46	177.65	NO
8500.	3.347	6	1.0	1.1	10000.0	40.30	445.80	183.52	NO
9000.	3.139	6	1.0	1.1	10000.0	40.30	461.65	189.22	NO
9500.	2.956	6	1.0	1.1	10000.0	40.30	477.03	194.75	NO
10000.	2.792	6	1.0	1.1	10000.0	40.30	491.99	200.13	NO
15000.	1.792	6	1.0	1.1	10000.0	40.30	623.68	247.64	NO
20000.	1.318	6	1.0	1.1	10000.0	40.30	733.37	287.46	NO
25000.	1.041	6	1.0	1.1	10000.0	40.30	829.19	322.41	NO
30000.	.8603	6	1.0	1.1	10000.0	40.30	915.28	353.93	NO
40000.	.7228	4	1.0	1.1	320.0	68.44	1552.30	1553.23	NO
50000.	.6427	4	1.0	1.1	320.0	68.44	1745.81	1750.07	NO

MAXIMUM 1-HR CONCENTRATION AT OR BEYOND 25. M:  
 418. 79.65 6 1.0 1.1 10000.0 40.30 43.25 27.23 NO

DWASH= MEANS NO CALC MADE (CONC = 0.0)  
 DWASH=NO MEANS NO BUILDING DOWNWASH USED  
 DWASH=HS MEANS HUBER-SNYDER DOWNWASH USED  
 DWASH=SS MEANS SCHULMAN-SCIRE DOWNWASH USED  
 DWASH=NA MEANS DOWNWASH NOT APPLICABLE, X<3\*LB

\*\*\*\*\*  
 \*\*\* SCREEN DISCRETE DISTANCES \*\*\*  
 \*\*\*\*\*

\*\*\* TERRAIN HEIGHT OF 0. M ABOVE STACK BASE USED FOR FOLLOWING DISTANCES \*\*\*

DIST (M)	CONC (UG/M**3)	STAB	U10M (M/S)	USTK (M/S)	MIX HT (M)	PLUME HT (M)	SIGMA Y (M)	SIGMA Z (M)	DWASH
50.	46.36	3	10.0	10.9	3200.0	18.80	10.95	10.07	NO
1000.	43.14	6	1.0	1.1	10000.0	40.30	93.24	51.10	NO

DWASH= MEANS NO CALC MADE (CONC = 0.0)  
 DWASH=NO MEANS NO BUILDING DOWNWASH USED  
 DWASH=HS MEANS HUBER-SNYDER DOWNWASH USED  
 DWASH=SS MEANS SCHULMAN-SCIRE DOWNWASH USED  
 DWASH=NA MEANS DOWNWASH NOT APPLICABLE, X<3\*LB

\*\*\*\*\*  
 \*\*\* SUMMARY OF SCREEN MODEL RESULTS \*\*\*  
 \*\*\*\*\*

\*\*\*\*\*  
\*\* REMEMBER TO INCLUDE BACKGROUND CONCENTRATIONS \*\*  
\*\*\*\*\*

CALCULATION	MAX CONC	DIST TO	TERRAIN
-----	-----	-----	-----
PROCEDURE	(UG/M**3)	MAX (M)	HT (M)
SIMPLE TERRAIN	79.65	418.	0.



**Storage Tank  
Waste Solvents  
T-928**

**Horizontal**

Previous: Permit G1987 460708 A/N: 503219

Given:

Tank dimensions: ft in gals  
 DIA. 7 8 5,022 OK  
 L 14 6.5

Tank diameter 7.7 ft  
 Tank length 14.5 ft  
 Turnovers per year 9.4  
 Working volume 5,000 gals  
 Month selected for emission calculations: July  
 Number of days in the selected month: 31  
 Molecular weight (Anisole) 156.14  
 Total vapor pressure 0.64 psia  
 Maximum emissions\*\*  
 Working 9.29 lb/month  
 Breathing 8.80 lb/month  
 Note: \*\*From TANK 4.0.9d Emissions Report 18.09  
 Weight% of VOC in vapor: (worst case) 100%  
 Control efficiency: 0%

Operating Schedule:

hrs/day 24 hrs/day  
 days/wk 7 days/wk  
 weeks/yr 52 wks/yr

Exhaust flow rate 60,000 cfm  
 Ideal gas molar volume @ 60 F 379.49 ft<sup>3</sup>/lbmole

Calculations:

Annual throughput: 46,830 gals  
 Emissions:  
 Total emission, lb/month (working + breathing) (9.29+8.8) lb/month = 18.09 lb/month  
 VOC  
 lb/day  
 Uncontrolled 18.09 lb/month\*1/31 days/month = 0.58 lb/day  
 Controlled 0.58 lb/day\*(1-0) = 0.58 lb/day  
 lb/hr  
 Uncontrolled 0.58 lb/day/24 hrs/day = 0.02 lb/hr  
 Controlled 0.58 lb/day/24 = 0.02 lb/hr  
 lb/yr 0.58 lb/day\*7 days/wk\*52 wks/year = 212.41 lb/yr

	VOC	
	Uncontr.	Controlled
lb/hr	0.02	0.02
lb/day	0.58	0.58
lb/yr	-	212.41

Since the facility has a VOC bubble (1830 lbs/month), input to NSR account will be VOC = 0 lb/day.

Monthly throughput limit: 5000 gals/fill\*9.37 fills/yr/12 months/yr = 3,900 gals/month

**TANKS 4.0.9d**  
**Emissions Report - Summary Format**  
**Tank Identification and Physical Characteristics**

**Identification**

User Identification: T-928  
City:  
State:  
Company:  
Type of Tank: Horizontal Tank  
Description:

**Tank Dimensions**

Shell Length (ft): 14.50  
Diameter (ft): 7.70  
Volume (gallons): 5,000.00  
Turnovers: 9.37  
Net Throughput(gal/yr): 46,830.00  
Is Tank Heated (y/n): N  
Is Tank Underground (y/n): N

**Paint Characteristics**

Shell Color/Shade: White/White  
Shell Condition: Good

**Breather Vent Settings**

Vacuum Settings (psig): -0.03  
Pressure Settings (psig): 0.03

Meteorological Data used in Emissions Calculations: Long Beach, California (Avg Atmospheric Pressure = 14.7 psia)

**TANKS 4.0.9d**  
**Emissions Report - Summary Format**  
**Liquid Contents of Storage Tank**

**T-928 - Horizontal Tank**

Mixture/Component	Month	Daily Liquid Surf Temperature (deg F)			Liquid Bulk Temp (deg F)	Vapor Pressure (psia)			Vapor Mol. Weight	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
		Avg.	Min.	Max.		Avg.	Min.	Max.					
Tank 928 Chemicals	Jul	71.26	66.04	77.47	64.33	0.6400	0.6400	0.6400	156.1400			0.00	

**TANKS 4.0.9d**  
**Emissions Report - Summary Format**  
**Individual Tank Emission Totals**

**Emissions Report for: July**

**T-928 - Horizontal Tank**

Components	Losses(lbs)		Total Emissions
	Working Loss	Breathing Loss	
Tank 928 Chemicals	9.29	8.80	18.09

**Tank T-928 Contents**

A/N

503219

	Volume %	Highest vapor pressure	
		mmHg	psia
Isopropyl alcohol	13.82%	33	0.64
Positive EBR	42%	3.7	0.07
System 815	12%	9.7	0.19
SPR 3615 + 700-1.2 + AZ 3330F +Positive photoresist 818L	2.08%	9.7	0.19
EKC 830	13.66%	7.5	0.15
EKC 270	16.19%		
	100%	33	0.64

Note: Since we do not have enough data to calculate the composite vapor pressure, we will use the maximum, 0.64 psia.

We will use molecular weight of anisole, 156.14, for emission calculations.

**Cresol & IPA Emissions  
T-928**

A/N 503219

Cresol:

Operating schedule

hrs/day

days/wk

wks/yr

24 hrs/day

7 days/wk

52 wks/yr

	Emissions, lbs				
	Cresol Content	Resist		Cresol	
		Max. Monthly	Annual	Annual	hourly
Positive photoreist 815	1%	17.746	212.952	2.12952	0.00024376
Positive photoreist 700-1.2	1%	2.7	32.4	0.324	3.7088E-05
Positive photoreist 3615	0.2%	1.306	15.672	0.031344	3.5879E-06
<b>Total</b>					<b>0.00028444</b>

IPA:

We will use to the facility total IPA emissions for the risk analysis for this tank.

Maximum month IPA emissions

628.8 lb/month

Hourly emissions

628.8 lb/month/30 days/month/24 hrs/day =

0.873 lb/hr



# TIER 1 SCREENING RISK ASSESSMENT REPORT

Receptor Distance (actual)	50
Receptor Distance (for X/Q LOOKUP)	50

Tier 1 Results	
Cancer/Chronic ASI	Acute ASI
1.26E-02	2.73E-01
PASSED	PASSED

## APPLICATION SCREENING INDEX CALCULATION

Compound	Average Annual Emission Rate	Max Hourly Emission Rate (lbs/hr)	Cancer / Chronic Pollutant Screening Level (lbs/yr)	Acute Pollutant Screening Level (lbs/hr)	Cancer / Chronic Pollutant Screening Index	Acute Pollutant Screening Index (PSI)
Cresol mixtures	2.48E+00	2.84E-04	5.20E+04		4.78E-05	
Isopropyl alcohol	7.63E+03	8.73E-01	6.07E+05	3.20E+00	1.26E-02	2.73E-01
<b>TOTAL (APPLICATION SCREENING INDEX)</b>					<b>1.26E-02</b>	<b>2.73E-01</b>

**ATTACHMENT  
Oxidizer**

A/N 503222

Previous: G4079 498039

Because there is no change to the oxidizer and the emissions for the previous application were calculated at the oxidizer full load, its emissions are the same.

Below are excerpts from NSR Application Emission Report for A/N 498039:

Emissions:

	ROG	NOx	SOx	CO	PM10
lb/hr	0.03	0.24	0	0.09	0.01
lb/day	0.72	5.76	0	2.16	0.24
lb/yr	109	1036	12	411	87.36

**Mixture Vapor Pressure  
T-502 & T-503**

Operating temperature  
pH

70 F  
2.2

Compounds	Amount, lb	Solution wt%	Molecular Weight	VP* mmHg	moles fraction	Weight Contribution	Wt%	
							w/ water	w/o water
Columns	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
HF	5	5.00%	20.01	14.00	0.43	8.53	45.2%	100%
Water	95	95%	18.02	18.82	0.57	10.33	54.8%	-
	100	100%		32.82	1.00	18.86	100%	100%
			psia	0.63		w/o water	45.2%	

Desired throughput  
**OK**

	T-502	T-503
	870,000	870,000 gals/month
	10,440,000	10,440,000 gals/yr
	11/23/09	

\*For HF, the vapor pressure is vapor pressure of 48% HF solution  
 The tank contains HCl, HNO<sub>3</sub>, H<sub>3</sub>PO<sub>4</sub>, HF, H<sub>2</sub>SO<sub>4</sub> and acetic acid. For vapor pressure calculations, we use HF, since it has higher vapor pressure than others.  
 The tank also contains a small amount of ammonia which is believed to be neutralized completely at the tank pH 2.2.

**ATTACHMENT  
Waste Acids  
T-502  
Rectangular**

Previous: G1991 460713 A/N: 503223

Given:

Dimensions:	ft	inches	gals
W	4	3	487
L	7	8	
H	2	0	

Convert to  
Horizontal

Tank diameter (Used for calculations)*	D	3.3 ft
Tank length (Used for calculations)	L	7.67 ft

\*Diameter of a circle whose area is equal to the surface cross section area.

Working volume	487 gals
Desired throughput:	10,440,000 gals/yr
Turnovers per year	21,437
Molecular weight	18.86
Month selected for emission calculations:	July
Number of days in July:	31
Total vapor pressure	0.635 psia
Maximum emissions**	
Working	41.69 lb/month
Breathing	0.11 lb/month
Note: **From TANK 4.0.9d Emissions Report	41.8
Weight% of acid in vapor:	45.24%
Control efficiency:	95%
Operating Schedule:	
hrs/day	24 hrs/day
days/wk	7 days/wk
weeks/yr	52 wks/yr
PM10 in PM	100%

Calculations:

Emissions:

Total emission (working + breathing), lb/month	(41.69 + 0.11) lb/month =	41.80 lb/month
PM/PM10/Acids		
lb/day		
Uncontrolled	41.8 lb/month/31 days/month*0.4524 =	0.61 lb/day
Controlled	0.61 lb/day*(1-0.95) =	0.03 lb/day
lb/hr		
Uncontrolled	0.61 lb/day/24 hrs/day =	0.025 lb/hr
Controlled	0.03 lb/day/24 hrs/day =	0.001 lb/hr
lb/yr	0.03 lb/day*7 days/wk*52 wks/yr =	11.10 lb/yr

	PM/PM10/Acids/ VOC
lb/hr	
Uncontr.	0.03
Contr.	0.001
lb/day	
Uncontr.	0.61
Contr.	0.03
lb/yr (Contr.)	11.10

Note: Since the emissions are very low, we will record PM = VOC (Acetic acid) = total acid emissions.

Rule 1401:

TACs in the tank are HCl, HNO<sub>3</sub>, H<sub>3</sub>PO<sub>4</sub>, H<sub>2</sub>SO<sub>4</sub>, and HF. For Rule 1401 analysis, we will use each chemical emission equals the total emission.

Monthly throughput limit:

$$487 \text{ gals} * 21437 \text{ times/yr} / 12 \text{ months/yr} = 870,000 \text{ gals/month}$$

**TANKS 4.0.9d**  
**Emissions Report - Summary Format**  
**Tank Identification and Physical Characteristics**

**Identification**

User Identification: T-502 1 4 10  
City:  
State:  
Company:  
Type of Tank: Horizontal Tank  
Description:

**Tank Dimensions**

Shell Length (ft): 7.67  
Diameter (ft): 3.30  
Volume (gallons): 487.00  
Turnovers: 21,437.37  
Net Throughput(gal/yr): 10,440,000.00  
Is Tank Heated (y/n): N  
Is Tank Underground (y/n): N

**Paint Characteristics**

Shell Color/Shade: White/White  
Shell Condition: Good

**Breather Vent Settings**

Vacuum Settings (psig): -0.03  
Pressure Settings (psig): 0.03

Meteorological Data used in Emissions Calculations: Long Beach, California (Avg Atmospheric Pressure = 14.7 psia)

**TANKS 4.0.9d**  
**Emissions Report - Summary Format**  
**Liquid Contents of Storage Tank**

**T-502 1 4 10 - Horizontal Tank**

Mixture/Component	Month	Daily Liquid Surf Temperature (deg F)			Liquid Bulk Temp (deg F)	Vapor Pressure (psia)			Vapor Mol Weight	Liquid Mass Fract.	Vapor Mass Fract.	Mol Weight	Basis for Vapor Pressure Calculations
		Avg	Min	Max		Avg	Min	Max					
Waste Acids	Jul	71.28	65.04	77.47	64.33	0.6350	0.6350	0.6350	18.6600				0.00

**TANKS 4.0.9d**  
**Emissions Report - Summary Format**  
**Individual Tank Emission Totals**

**Emissions Report for: July**

**T-502 1 4 10 - Horizontal Tank**

Components	Losses(lbs)		Total Emissions
	Working Loss	Breathing Loss	
Waste Acids	41.69	0.11	41.80



**TIER 1 SCREENING RISK ASSESSMENT REPORT**

Receptor Distance (actual)	50
Receptor Distance (for X/Q LOOKUP)	50

Tier 1 Results	
Cancer/Chronic ASI	Acute ASI
1.61E-01	3.13E-02
PASSED	PASSED

**APPLICATION SCREENING INDEX CALCULATION**

Compound	Average Annual Emission Rate	Max Hourly Emission Rate (lbs/hr)	Cancer / Chronic Pollutant Screening Level (lbs/yr)	Acute Pollutant Screening Level (lbs/hr)	Cancer / Chronic Pollutant Screening Index	Acute Pollutant Screening Index (PSI)
Hydrogen chloride (hydrochloric acid)	1.11E+01	1.27E-03	7.80E+02	2.10E+00	1.42E-02	6.06E-04
Nitric acid	1.11E+01	1.27E-03		8.59E-02		1.48E-02
Phosphoric acid	1.11E+01	1.27E-03	6.07E+02		1.83E-02	
Sulfuric acid (and oleum)	1.11E+01	1.27E-03	8.67E+01	1.20E-01	1.28E-01	1.06E-02
Hydrogen fluoride (hydrofluoric acid)	1.11E+01	1.27E-03		2.40E-01		5.30E-03

**TOTAL (APPLICATION SCREENING INDEX)**

**1.61E-01 3.13E-02**



**ATTACHMENT  
Waste Acids  
T-503  
Rectangular**

Previous: G1992 460714 A/N: 503224

Given:

Dimensions:	ft	inches	gals
W	4	0	384
L	6	5	
H	2	0	

Convert to  
Horizontal

Tank diameter (Used for calculations)*	D	3.2 ft
Tank length (Used for calculations)	L	6.42 ft

\*Diameter of a circle whose area is equal to the surface cross section area.

Working volume	384 gals
Desired throughput:	10,440,000 gals/yr
Turnovers per year	27,188
Molecular weight	18.86
Month selected for emission calculations:	July
Number of days in July:	31
Total vapor pressure	0.635 psia
Maximum emissions**	

Working	41.62 lb/month
Breathing	0.09 lb/month

Note: \*\*From TANK 4.0.9d Emissions Report 41.71

Weight% of acid in vapor:	45.24%
Control efficiency:	95%

Operating Schedule:	
hrs/day	24 hrs/day
days/wk	7 days/wk
weeks/yr	52 wks/yr
PM10 in PM	100%

Calculations:

Emissions:

Total emission (working + breathing), lb/month (41.62 + 0.09) lb/month = 41.71 lb/month

PM/PM10/Acids

lb/day

Uncontrolled 41.71 lb/month/31 days/month\*0.4524 = 0.61 lb/day

Controlled 0.61 lb/day\*(1-0.95) = 0.03 lb/day

lb/hr

Uncontrolled 0.61 lb/day/24 hrs/day = 0.025 lb/hr

Controlled 0.03 lb/day/24 hrs/day = 0.001 lb/hr

lb/yr

0.03 lb/day\*7 days/wk\*52 wks/yr = 11.08 lb/yr

	PM/PM10/Acids/ VOC
lb/hr	
Uncontr.	0.03
Contr.	0.001
lb/day	
Uncontr.	0.61
Contr.	0.03
lb/yr (Contr.)	11.08

Note: Since the emissions are very low, we will record PM = VOC (Acetic acid) = total acid emissions.

Rule 1401:

TACs in the tank are HCl, HNO<sub>3</sub>, H<sub>3</sub>PO<sub>4</sub>, H<sub>2</sub>SO<sub>4</sub>, and HF. For Rule 1401 analysis, we will use each chemical emission equals the total emission.

Monthly throughput limit:

$$384 \text{ gals} * 27188 \text{ times/yr} / 12 \text{ months/yr} = 870,000 \text{ gals/month}$$

**TANKS 4.0.9d**  
**Emissions Report - Summary Format**  
**Tank Identification and Physical Characteristics**

**Identification**

User Identification: T-503 1 4 10  
City:  
State:  
Company:  
Type of Tank: Horizontal Tank  
Description:

**Tank Dimensions**

Shell Length (ft): 6.42  
Diameter (ft): 3.20  
Volume (gallons): 384.00  
Turnovers: 27,187.50  
Net Throughput(gal/yr): 10,440,000.00  
Is Tank Heated (y/n): N  
Is Tank Underground (y/n): N

**Paint Characteristics**

Shell Color/Shade: White/White  
Shell Condition: Good

**Breather Vent Settings**

Vacuum Settings (psig): -0.03  
Pressure Settings (psig): 0.03

Meteorological Data used in Emissions Calculations: Long Beach, California (Avg Atmospheric Pressure = 14.7 psia)

**TANKS 4.0.9d**  
**Emissions Report - Summary Format**  
**Liquid Contents of Storage Tank**

**T-503 1 4 10 - Horizontal Tank**

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F)			Liquid Bulk Temp (deg F)	Vapor Pressure (psia)			Vapor Mol. Weight	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
		Avg.	Min.	Max.		Avg.	Min.	Max.					
Waste Acids	Jul	71.28	85.04	77.47	84.33	0.6350	0.6350	0.6350	16.8600			0.00	

**TANKS 4.0.9d**  
**Emissions Report - Summary Format**  
**Individual Tank Emission Totals**

**Emissions Report for: July**

**T-503 1 4 10 - Horizontal Tank**

Components	Losses(lbs)		
	Working Loss	Breathing Loss	Total Emissions
Waste Acids	41.62	0.09	41.71



**TIER 1 SCREENING RISK ASSESSMENT REPORT**

Receptor Distance (actual)	50
Receptor Distance (for X/Q LOOKUP)	50

Tier 1 Results	
<b>Cancer/Chronic ASI</b>	<b>Acute ASI</b>
1.60E-01	3.12E-02
PASSED	PASSED

**APPLICATION SCREENING INDEX CALCULATION**

Compound	Average Annual Emission Rate	Max Hourly Emission Rate (lbs/hr)	Cancer / Chronic Pollutant Screening Level (lbs/yr)	Acute Pollutant Screening Level (lbs/hr)	Cancer / Chronic Pollutant Screening Index	Acute Pollutant Screening Index (PSI)
Hydrogen chloride (hydrochloric acid)	1.11E+01	1.27E-03	7.80E+02	2.10E+00	1.42E-02	6.04E-04
Nitric acid	1.11E+01	1.27E-03		8.59E-02		1.48E-02
Phosphoric acid	1.11E+01	1.27E-03	6.07E+02		1.83E-02	
Sulfuric acid (and oleum)	1.11E+01	1.27E-03	8.67E+01	1.20E-01	1.28E-01	1.06E-02
Hydrogen fluoride (hydrofluoric acid)	1.11E+01	1.27E-03		2.40E-01		5.29E-03
<b>TOTAL (APPLICATION SCREENING INDEX)</b>					<b>1.60E-01</b>	<b>3.12E-02</b>

**ATTACHMENT  
Waste Acids  
Storage Tank  
T-14  
Horizontal**

Previous: G4082 A/N 503225  
Control: 503216

Given:

Tank dimensions:	ft	in	
DIA.	10	0	6,757 gallons
L	11	6	
Annual throughput:			28,920,000 gallons
Molecular weights			
Vapors			43.84
Cr <sup>+6</sup>			51.94
CrO <sub>3</sub>			99.94
Month selected for emission calculations:			July
Number of days in the selected month:			31
Total vapor pressure:			0.71 psia
Maximum month emission*			
Working			310.20 lb/month
Breathing			3.49 lb/month

Note: \*From TANK 4.0.9d Emissions Report

Control efficiency:	
Acid PM	95%
Acetic acid	95%
PM	90%

Operating Schedule:	
hrs/day	24 hrs/day
days/wk	7 days/wk
weeks/yr	52 wks/yr

PM10 in Total PM:	96%
Weight% of all acids in vapor: (PM+VOC)	79.06%
Weight% of all acids, except acetic acid, in (PM)	38.26%
Weight% of acetic:	40.80%
Weight % of chromic acid in vapors (= Weight % in tank)	0.00004%

Note: CrO<sub>3</sub>, solid, is dissolved in water. Its loss is due to dragout which is really small. The worst case will be that the weight concentration of CrO<sub>3</sub> in the vapors equals to that in the tank.

Calculations

Tank volume:	6,750 gallons
Turnovers per year	4,284

Emissions:

Total emission (working + breathing), lb/month (310.2 + 3.49) lb/month = 313.69 lb/month  
PM

**ATTACHMENT  
Waste Acids  
Storage Tank  
T-14**

lb/day		
Uncontrolled	$313.69 \text{ lb/month}/31 \text{ days/month} * 0.3826 =$	3.87 lb/day
Controlled	$3.87 \text{ lb/day} * (1-0.95) =$	0.194 lb/day
lb/hr		
Uncontrolled	$3.87 \text{ lb/day}/24 \text{ hrs/day} =$	0.161 lb/hr
Controlled	$0.194 \text{ lb/day}/24 \text{ hrs/day} =$	0.0081 lb/hr
lb/yr		
	$0.194 \text{ lb/day} * 7 \text{ days/wk} * 52 \text{ wks/yr} =$	70.46 lb/yr

**ATTACHMENT  
Waste Acids  
Storage Tank  
T-14**

PM10			
lb/day			
Uncontrolled		$3.87 \text{ lb/day} * 0.96 =$	3.72 lb/day
Controlled		$0.194 \text{ lb/day} * 0.96 =$	0.186 lb/day
lb/hr			
Uncontrolled		$0.161 \text{ lb/day} * 0.96 =$	0.155 lb/hr
Controlled		$0.0081 \text{ lb/day} * 0.96 =$	0.0077 lb/hr
lb/yr		$0.186 \text{ lb/day} * 7 \text{ days/wk} * 52 \text{ wks/yr} =$	67.64 lb/yr
<u>H<sub>3</sub>PO<sub>4</sub></u>	0.47% of PM		
lb/day			
Uncontrolled		$3.87 \text{ lb/day} * 0.0047 =$	0.018 lb/day
Controlled		$0.194 \text{ lb/day} * 0.0047 =$	0.0009 lb/day
lb/hr			
Uncontrolled		$0.161 \text{ lb/day} * 0.0047 =$	0.0008 lb/hr
Controlled		$0.0081 \text{ lb/day} * 0.0047 =$	3.83E-05 lb/hr
lb/yr		$70.46 \text{ lb/day} * 0.0047 =$	0.334422 lb/yr
<u>HNO<sub>3</sub></u>	0.02% of PM		
lb/day			
Uncontrolled		$3.87 \text{ lb/day} * 0.0002 =$	0.000632 lb/day
Controlled		$0.19 \text{ lb/day} * 0.0002 =$	3.16E-05 lb/day
lb/hr			
Uncontrolled		$0.161 \text{ lb/day} * 0.0002 =$	2.63E-05 lb/hr
Controlled		$0.0081 \text{ lb/day} * 0.0002 =$	1.32E-06 lb/hr
lb/yr		$70.46 \text{ lb/day} * 0.0002 =$	0.011502 lb/yr
<u>HBF<sub>4</sub></u>	99.24% of PM		
lb/day			
Uncontrolled		$3.87 \text{ lb/day} * 0.9924 =$	3.8420 lb/day
Controlled		$0.194 \text{ lb/day} * 0.9924 =$	0.19210 lb/day
lb/hr			
Uncontrolled		$0.161 \text{ lb/day} * 0.9924 =$	0.16008 lb/hr
Controlled		$0.0081 \text{ lb/day} * 0.9924 =$	0.008004 lb/hr
lb/yr		$70.46 \text{ lb/day} * 0.9924 =$	69.924 lb/yr
<u>HF</u>	0.26% of PM		
lb/day			
Uncontrolled		$3.87 \text{ lb/day} * 0.0026 =$	0.010 lb/day
Controlled		$0.194 \text{ lb/day} * 0.0026 =$	0.0005 lb/day
lb/hr			
Uncontrolled		$0.161 \text{ lb/day} * 0.0026 =$	0.000417 lb/hr
Controlled		$0.0081 \text{ lb/day} * 0.0026 =$	2.08E-05 lb/hr

**ATTACHMENT**

**Waste Acids**

**Storage Tank**

**T-14**

			70.46 lb/day*0.0026 =	0.182065 lb/yr
<u>H<sub>2</sub>SO<sub>4</sub></u>	0.01% of PM			
lb/yr				
lb/day				
Uncontrolled			3.87 lb/day*0.0001 =	0.000351 lb/day
Controlled			0.194 lb/day*0.0001 =	1.75E-05 lb/day
lb/hr				
Uncontrolled			0.161 lb/day*0.0001 =	1.46E-05 lb/hr
Controlled			0.0081 lb/day*0.0001 =	7.31E-07 lb/hr
lb/yr			70.458 lb/day*0.0001 =	0.01 lb/yr
<u>HCl</u>	0.00% of PM			
lb/day				
Uncontrolled			3.87 lb/day*0.0000 =	6.81E-06 lb/day
Controlled			0.194 lb/day*0.0000 =	0.00000 lb/day
lb/hr				
Uncontrolled			0.161 lb/day*0.0000 =	0.0000003 lb/hr
Controlled			0.0081 lb/day*0.0000 =	0.00000001 lb/hr
lb/yr			70.458 lb/day*0.0000 =	0.0001 lb/yr
<u>CH<sub>3</sub>COOH</u>	40.80% of all emissions			
lb/day	40.80%			
Uncontrolled		313.69 lb/month/31 days/month*0.4080 =		4.13 lb/day
Controlled		4.13 lb/day*(1-0.95) =		0.21 lb/day
lb/hr				
Uncontrolled		4.13 lb/day/24 hrs/day =		0.17 lb/hr
Controlled		0.21 lb/day/24 hrs/day =		0.01 lb/hr
lb/yr		0.21 lb/day*7 days/wk*52 wks/yr =		75.14 lb/yr
<u>Cr<sup>+6</sup></u>				
lb/day				
Uncontrolled		313.69 lb/month/31 days/month*0.0000004*52 lb/lbmole/100 lb/lbmole =		2.1E-06 lb/day
Controlled		0.000002 lb/day*(1-0.9) =		2.14E-07 lb/day
lb/hr				
Uncontrolled		0.000002 lb/day/24 hrs/day =		8.92E-08 lb/hr
Controlled		0.0000002 lb/day/24 hrs/day =		8.92E-09 lb/hr
lb/yr		0.0000002 lb/day*7 days/wk*52 wks/yr =		7.79E-05 lb/yr

**ATTACHMENT  
Waste Acids  
Storage Tank  
T-14**

	PM	PM10	H <sub>3</sub> PO <sub>4</sub>	HNO <sub>3</sub>	HF	H <sub>2</sub> SO <sub>4</sub>	HCl	
<b>lb/hr</b>								
Uncontr.	0.161	0.155	0.00077	0.00003	1.60E-01	4.17E-04	1.46E-05	2.84E-07
Contr.	0.0081	0.0077	0.000038	0.000001	8.00E-03	2.08E-05	7.31E-07	3.40E-07
<b>lb/day</b>								
Uncontr.	3.87	3.72	0.018	0.001	3.84	0.01	3.51E-04	6.81E-06
Contr.	0.19	0.19	0.00092	0.00003	0.19	5.00E-04	1.75E-05	3.40E-07
<b>lb/yr (Contr.)</b>		67.64	0.33	0.01	69.92	0.18	6.38E-03	1.24E-04

	VOC	
	CH <sub>3</sub> COOH	Cr <sup>+6</sup>
<b>lb/hr</b>		
Uncontr.	0.17	8.92E-08
Contr.	0.01	8.92E-09
<b>lb/day</b>		
Uncontr.	4.13	2.14E-06
Contr.	0.21	2.14E-07
<b>lb/yr (Contr.)</b>	75.14	7.79E-05

Throughput limit:

28,920,000 gals/yr/12 months/yr = 2,410,000 gals/month



**TANKS 4.0.9d**  
**Emissions Report - Summary Format**  
**Tank Identification and Physical Characteristics**

**Identification**

User Identification: T-14 1-4-10  
City:  
State:  
Company:  
Type of Tank: Horizontal Tank  
Description:

**Tank Dimensions**

Shell Length (ft): 11.50  
Diameter (ft): 10.00  
Volume (gallons): 6,757.00  
Turnovers: 4,280.01  
Net Throughput(gal/yr): 28,920,000.00  
Is Tank Heated (y/n): N  
Is Tank Underground (y/n): N

**Paint Characteristics**

Shell Color/Shade: White/White  
Shell Condition: Good

**Breather Vent Settings**

Vacuum Settings (psig): -0.03  
Pressure Settings (psig): 0.03

Meteorological Data used in Emissions Calculations: Long Beach, California (Avg Atmospheric Pressure = 14.7 psia)

**TANKS 4.0.9d**  
**Emissions Report - Summary Format**  
**Liquid Contents of Storage Tank**

**T-14 1-4-10 - Horizontal Tank**

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Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F)			Liquid Bulk Temp (deg F)	Vapor Pressure (psia)			Vapor Mol. Weight	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
		Avg.	Min.	Max.		Avg.	Min.	Max.					
Waste Acids	Jul	71.28	65.04	77.47	64.33	0.7100	0.7100	0.7100	43.8400			0.00	

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**TANKS 4.0.9d**  
**Emissions Report - Summary Format**  
**Individual Tank Emission Totals**

**Emissions Report for: July**

**T-14 1-4-10 - Horizontal Tank**

Components	Losses(lbs)		Total Emissions
	Working Loss	Breathing Loss	
Waste Acids	310.20	3.49	313.68

**Mixture Vapor Pressure  
Waste Acids  
T-14**

Operating temperature

70 F

pH

1.2

Compounds	Amount, lb	Solution wt%	Molecular Weight	VP mmHg	moles fraction	Weight Contribution	wt%		
							w/ water	w/o water	
Columns	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
H <sub>3</sub> PO <sub>4</sub>	221,514	0.1%	98.00	0.03	0.000812	0.08	0.2%	0.2%	0.47%
Acetic acid	5,771	0.003%	60.05	11.00	0.297856	17.89	40.80%	52%	-
HNO <sub>3</sub>	235,180	0.1%	63.01	0.0016	0.000043	0.003	0.01%	0.0001	0.02%
HF	119,066	0.1%	20.01	0.08	0.002166	0.04	0.1%	0.1%	0.26%
H <sub>2</sub> O <sub>2</sub> *	362,490	0.18%	34.01	-	-	-	-	-	-
H <sub>2</sub> SO <sub>4</sub>	158,843	0.1%	98.07	0.00057	0.000015	0.002	0.00%	0.00%	0.01%
NH <sub>4</sub> OH	16,823	0.01%	35.05	-	-	-	-	-	-
NH <sub>4</sub> F (Solid salt)	13,972	0.007%	37.04	-	-	-	-	-	-
HCl	102,495	0.05%	36.46	0.00003	0.000001	0.00003	0.0001%	0.0001%	0.0002%
NaOH**	3,252,486	1.63%	40.00	-	-	-	-	-	-
NH <sub>4</sub> OH (2 <sup>nd</sup> )	3,244	0.00%	17.03	-	-	-	-	-	-
Chromic acid	81	0.00004%	155.82	-	-	-	-	-	-
Ethylene glycol	660	0.0003%	62.07	-	-	-	-	-	-
Copper	69	0.00003%	63.55	-	-	-	-	-	-
H <sub>2</sub> O	194,774,442	98%	18.02	18.8	0.509561	9.18	20.9%	-	-
Total	199,269,637	100%		36.93	1.00	43.84	100%	100%	100%
				psia 0.71			W/o water 79.06%	W/o acetic	38.26%

Desired throughput            2,410,000 gals/month  
    28,920,000 gals/yr

## Notes:

\*Small amount, vapor pressure is negligible.

Assumption: Effects of interactions between acids are minimum.

Vapor pressure of each component in aqueous solution (as if it is the only component in water) is used.

For water, vapor pressure of pure water is used.

For H<sub>2</sub>SO<sub>4</sub>, total vapor pressure of 95% H<sub>2</sub>SO<sub>4</sub> solution at 35 C (95 F) is used.

For HBF<sub>4</sub>, vapor pressure at 50% HBF<sub>4</sub> is used.

Copper emissions that are due to dragout are minimal and will not be calculated.

Ethylene glycol concentration is very low, their vapor pressures are also low. Therefore, its emissions are negligible and will not be calculated.

At 1.2 pH, it is expected that all NH<sub>3</sub> (NH<sub>4</sub>OH) and NaOH are completely neutralized.

**Throughput  
Waste Acids  
T-14**

A/N: 503225

1. SPEC Etch

Usage		3798 gals/yr	
Sp. Gr.		1.58	
Ingredients	mm Hg		lbs/yr
H <sub>3</sub> PO <sub>4</sub>	0.03	75%	37,490
Acetic acid	11	5%	2,499
HNO <sub>3</sub>		5%	2,499
HBF <sub>4</sub>	7	5%	2,499
H <sub>2</sub> O		10%	4,999

2. 85% H<sub>3</sub>PO<sub>4</sub>

Usage		18,303 gals/yr	
Sp. Gr.		1.42	
Ingredients	mm Hg		lbs/yr
H <sub>3</sub> PO <sub>4</sub>	0.03	85%	184,024
H <sub>2</sub> O		15%	32,475

3. 70% HNO<sub>3</sub>

		22,190 gals/yr	
Sp. Gr.		1.42	
Ingredients	mm Hg		lbs/yr
HNO <sub>3</sub>	55	70%	183,734
H <sub>2</sub> O		30%	78,743

4. M. A. E.

Usage		5 gals/yr	
Sp. Gr.		1.42	
Ingredients	mm Hg		lbs/yr
HF	14.00	10%	6
HNO <sub>3</sub>	55	70%	41
H <sub>2</sub> O		20%	12

5. H<sub>2</sub>O<sub>2</sub> 30%

Usage		100,137 gals/yr	
Sp. Gr.		1.11	
Ingredients	mm Hg*		lbs/yr
H <sub>2</sub> O <sub>2</sub>	23.30	37%	341,998
H <sub>2</sub> O		63%	583,899

\*Combined

6. HF 49%

Usage		16,843 gals/yr	
Sp. Gr.		1.2	
Ingredients	mm Hg		lbs/yr
HF	15.05	49%	82,498
H <sub>2</sub> O		51%	85,865

7. FS Etch

Usage		11,183 gals/yr	
Sp. Gr.		1.75	
Ingredients	mm Hg		lbs/yr
H <sub>2</sub> SO <sub>4</sub>	0.00055	50%	81,510
HNO <sub>3</sub>	55	30%	48,906
HF	14.00	20%	32,604
H <sub>2</sub> O		0%	0

8. NH<sub>4</sub>OH

Usage		7,480 gals/yr	
Sp. Gr.		0.9	
Ingredients	mm Hg		lbs/yr
NH <sub>4</sub> OH		30%	16,823
H <sub>2</sub> O		70%	39,254

9. NH<sub>4</sub>F

Usage		275 gals/yr	
Sp. Gr.		1.11	
Ingredients	mm Hg		lbs/yr
NH <sub>4</sub> F	0.5	40%	1,017
H <sub>2</sub> O		60%	1,526

10. Acetic acid

Usage		3,740 gals/yr	
Sp. Gr.		1.05	
Ingredients	mm Hg		lbs/yr
Acetic acid	11	10%	3,271
H <sub>2</sub> O		90%	29,441

11. HCl 38%

Usage		27,210 gals/yr	
Sp. Gr.		1.19	
Ingredients	mm Hg		lbs/yr
HCl	30	38%	102,495
H <sub>2</sub> O		62%	167,229

12. NaOH 50%

Usage		510,398 gals/yr	
Sp. Gr.		1.53	
Ingredients	mm Hg		lbs/yr
NaOH		50%	3,252,486
H <sub>2</sub> O		50%	3,252,486

Additional from T-517

13. BOE

Usage		3,600 gals/yr	
Sp. Gr.		1.2	
Ingredients	mm Hg		lbs/yr
HF		11%	3,958

	NH <sub>4</sub> F		36%	12,955	
	H <sub>2</sub> O		53%	19,072	
14.	H <sub>2</sub> SO <sub>4</sub>				
	Usage		5,040 gals/yr		
	Sp. Gr.		1.842		
	Ingredients	mm Hg		lbs/yr	
	H <sub>2</sub> SO <sub>4</sub>		100%	77,333	
15.	H <sub>2</sub> O <sub>2</sub> 30%				
	Usage			6,000 gals/yr	
	Sp. Gr.			1.11	
	Ingredients	mm Hg*		lbs/yr	
	H <sub>2</sub> O <sub>2</sub>		23.30	37%	20,492
	H <sub>2</sub> O			63%	34,986
	*Combined				
16.	Rinse water				
	Usage		4,800,000 gals/yr		
	Sp. Gr.		1		
	Ingredients	mm Hg		lbs/yr	
	H <sub>2</sub> O		100%	39,984,000	
17.	Ammonia (NH <sub>4</sub> OH)				
	Usage		1,440 gals/yr		
	Sp. Gr.		0.90		
	Ingredients	mm Hg		lbs/yr	
	NH <sub>4</sub> OH		30%	3,244	
	H <sub>2</sub> O		70%	7,570	
18.	Hexavalent chromium	Solid		lb/yr	
	Usage			81	
	Ingredients				
	CrO <sub>3</sub>		100%	81	
19.	Copper	Solid		lb/yr	
	Usage			69	
	Ingredients				
	Cu		100%	69	
20.	Ethylene glycol				
	Usage		72 gals/yr		
	Sp. Gr.		1.10		
	Ingredients	mm Hg		lbs/yr	
	Ethylene glycol		100%	660	
21.	NaOH	Solid		lb/yr	
	Usage			153	
	Ingredients				
	Cu		100%	153	
22.	Additional H <sub>2</sub> O				
	Usage		18,061,571 gals/yr		
	Sp. Gr.		1		
				lbs/yr	
	H <sub>2</sub> O		100%	150,452,886	

Summary:

Mass:

	mm Hg	lb/yr
H <sub>3</sub> PO <sub>4</sub>	0.03 Component	221,514
Acetic acid	11 Component	5,771
HNO <sub>3</sub>	55 Component	235,180
HF	7 Component	2,499
HF	14.00 Component	119,066
H <sub>2</sub> O <sub>2</sub>	25.00 Component	362,490
H <sub>2</sub> SO <sub>4</sub>	0.0015 Component	158,843
NH <sub>4</sub> OH	561 Component	16,823
NH <sub>4</sub> F	0.5 Component	13,972
HCl	30 Component	102,495
NaOH	Component	3,252,486
Ammonia		3,244
Chromic acid		81
Ethylene glycol		660
Copper		69
H <sub>2</sub> O (Including additional water)		194,774,442 OK
		<u>199,269,637</u>

		<u>gals/yr</u>
1. SPEC Etch	Solution	3,798
2. 85% H3PO4	Solution	18,303
3. 70% HNO3	Solution	22,190
4. M. A. E.	Solution	5
5. H2O2 30%	Solution	100,137
6. HF 49%	Solution	16,843
7. FS Etch	Solution	11,183
8. NH4OH	Solution	7,480
9. NH4F	Solution	275
10. Acetic acid	Solution	3,740
11. HCl 38%	Solution	27,210
12. NaOH	Solution	510,398
13. BOE	Solution	3,600
14. H2SO4	Solution	5,040
15. H2O2 30%	Solution	6,000
16. Rinse water		4,800,000
17. NH <sub>4</sub> OH (2 <sup>nd</sup> )	Solution	1,440
18. Ethylene glycol		<u>72</u>
Subtotal		5,537,714
17. Additional H2O		<u>18,061,571</u>
Grand total		29,136,999 OK
		Gals/yr
H <sub>2</sub> O (Including additional water)		23,382,286
Volume of solutions (including rinse water)		5,537,714
Total volume		28,920,000
Target volume		28,920,000 OK

Basic  
Specific density  
Volume of water  
Weight per cent of water  
Weight per cent of H<sub>2</sub>O<sub>2</sub>

H<sub>2</sub>O<sub>2</sub>  
30%

A/N 503225  
1 gal  
1.11  
0.7 gal  
63%  
37%



# TIER 1 SCREENING RISK ASSESSMENT REPORT

Receptor Distance (actual)	50
Receptor Distance (for X/Q LOOKUP)	50

Tier 1 Results	
Cancer/Chronic ASI	Acute ASI
1.33E-01	1.08E-04
PASSED	PASSED

## APPLICATION SCREENING INDEX CALCULATION

Compound	Average Annual Emission Rate	Max Hourly Emission Rate (lbs/hr)	Cancer / Chronic Pollutant Screening Level (lbs/yr)	Acute Pollutant Screening Level (lbs/hr)	Cancer / Chronic Pollutant Screening Index	Acute Pollutant Screening Index (PSI)
Phosphoric acid	3.34E-01	3.83E-05	6.07E+02		5.51E-04	
Nitric acid	1.15E-02	1.32E-06		8.59E-02		1.53E-05
Hydrogen fluoride (hydrofluoric acid)	1.82E-01	2.08E-05		2.40E-01		8.69E-05
Sulfuric acid (and oleum)	6.38E-03	7.31E-07	8.67E+01	1.20E-01	7.36E-05	6.09E-06
Hydrogen chloride (hydrochloric acid)	2.97E-03	3.40E-07	7.80E+02	2.10E+00	3.81E-06	1.62E-07
Chromic trioxide (as chromic acid mist)	7.79E-05	8.92E-09	5.87E-04		1.33E-01	
<b>TOTAL (APPLICATION SCREENING INDEX)</b>					<b>1.33E-01</b>	<b>1.08E-04</b>

**Modeling Data  
Scrubbers 101 & 102**

A/N 503221

Exhaust flow rate:

acfm

48,600

scfm

Stack diameter, in

58 in

Stack height, ft

50 ft

Temperature, F

75 F

Catalytic

Yes	No*
	x

Rain cap?

\*Or with a swing rain cap fully open when operated.

Data for modeling:

Actual volume flow rate (acfm)

48,600 acfm

Stack diameter, m

1.47 m

Stack height, m

15.24 m

Temperature, K

297 K

## **FACILITY PERMIT TO OPERATE INTERNATIONAL RECTIFIER HEXFET AMERICA**

### **Facility Equipment and Requirements (Section D)**

This section consists of a table listing all permitted equipment at the facility, facility wide requirements, all individual Permits to Construct and Permits to Operate issued to various equipment at the facility, and Rule 219-exempt equipment subject to source-specific requirements. Each permit and Rule 219-exempt equipment will list operating conditions including periodic monitoring requirements, and applicable emission limits and requirements that the equipment is subject to. Also included is the rule origin and authority of each emission limit and permit condition.

## FACILITY PERMIT TO OPERATE INTERNATIONAL RECTIFIER HEXFET AMERICA

### PERMITTED EQUIPMENT LIST

THE FOLLOWING IS A LIST OF ALL PERMITS TO CONSTRUCT AND PERMITS TO OPERATE AT THIS FACILITY:

Application number	Permit to Operate number	Equipment description
134696	M56103	STORAGE TANK MISC INORGANIC ACID
134697	M56104	STORAGE TANK MISC MATERIALS
134698	M56105	STORAGE TANK MISC INORGANIC ACID
134699	M56106	STORAGE TANK MISC INORGANIC ACID
134701	M56108	I C E (>500 HP) EM ELEC GEN DIESEL
134709	M56109	STORAGE TANK MISC MATERIALS
134710	M56110	STORAGE TANK MISC INORGANIC ACID
262744	D89083	ACTIVATED CARBON ADSORBER OTHER
293299	D84484	STORAGE TANK MISC ORGANIC ACID
302031	D90395	STORAGE TANK OTHER W/CTL HYDROGEN FLUORI
302032	F52982	SEMICONDUCTOR, SOLVENT CLEANING (<5 PCS)
381811	F54712	STORAGE TANK ORGANIC CHEMICALS MISC
381813	F54714	TANK, SURFACE PREPARATION - OTHER ACIDS
383504	F54708	TANK, SURFACE PREPARATION - OTHER ACIDS
410529	F58209	I C E (50-500 HP) EM FIRE FGHT - DIESEL
432426	F91809	STORAGE TANK MISC INORGANIC ACID
441482	F93346	BOILER (5-20 MMBTU/HR) NAT GAS ONLY C/G
442573	F93347	BOILER (5-20 MMBTU/HR) NAT GAS ONLY C/G
459172	G1986	ACTIVATED CARBON ADSORBER DRUM VENT M.S.
460709	G1988	STORAGE TANK MISC INORGANIC ACID
460711	G1989	STORAGE TANK MISC INORGANIC ACID
460712	G1990	STORAGE TANK MISC INORGANIC ACID
460715	G1993	STORAGE TANK MISC MATERIALS
460728	G1994	STORAGE TANK MISC INORGANIC ACID
460729	G1995	STORAGE TANK MISC INORGANIC ACID
460730	G1996	STORAGE TANK MISC INORGANIC ACID
460732	G1997	STORAGE TANK MISC INORGANIC ACID
460733	G1998	STORAGE TANK MISC INORGANIC ACID
460735	G2000	STORAGE TANK MISC INORGANIC ACID
460744	G2001	STORAGE TANK MISC INORGANIC ACID
460747	G2002	SEMICONDUCTOR, PHOTORESIST (>=5 PIECES)
492804	G1978	WET CHEMICAL AND SOLVENT CLEANING

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491984	G4083	STORAGE TANK MISC INORGANIC ACID
498032	G4072	WAFER ETCHING AND STRIPPING LINE
498033	G4073	WAFER ETCHING AND STRIPPING LINE
498040	G4080	STORAGE TANK MISC INORGANIC ACID
498041	G4081	STORAGE TANK MISC INORGANIC ACID
498042		STORAGE TANK MISC INORGANIC ACID
503213		SEMICONDUCTOR, PHOTORESIST (>=5 PIECES)
503214		AFTERBURNER, DIRECT FLAME
503215		WET CHEMICAL AND SOLVENT CLEANING
503216		SCRUBBER CHEMICAL M.S.
503217		SCRUBBER CHEMICAL M.S.
503218		SEMICONDUCTOR, INTEGRATED CIRCUIT>=5 PC
503219		STORAGE TANK ORGANIC CHEMICALS MISC
503221		SCRUBBER
503222		AFTERBURNER, DIRECT FLAME
503223		STORAGE TANK MISC INORGANIC ACID
503224		STORAGE TANK MISC INORGANIC ACID
503225		STORAGE TANK MISC INORGANIC ACID
504815		SEMICONDUCTOR, INTEGRATED CIRCUIT>=5 PC

**NOTE:** EQUIPMENT LISTED ABOVE THAT HAVE NO CORRESPONDING PERMITS TO OPERATE NUMBER ARE ISSUED PERMITS TO CONSTRUCT. THE ISSUANCE OR DENIAL OF THEIR PERMITS TO OPERATE IS SUBJECT TO ENGINEERING FINAL REVIEW. ANY OTHER APPLICATIONS THAT ARE STILL BEING PROCESSED AND HAVE NOT BEEN ISSUED PERMITS TO CONSTRUCT OR PERMITS TO OPERATE WILL NOT BE FOUND IN THIS TITLE V PERMIT.

## **FACILITY PERMIT TO OPERATE INTERNATIONAL RECTIFIER HEXFET AMERICA**

### **FACILITY WIDE CONDITION(S)**

**Condition(s):**

1. EXCEPT FOR OPEN ABRASIVE BLASTING OPERATIONS, THE OPERATOR SHALL NOT DISCHARGE INTO THE ATMOSPHERE FROM ANY SINGLE SOURCE OF EMISSIONS WHATSOEVER ANY AIR CONTAMINANT FOR A PERIOD OR PERIODS AGGREGATING MORE THAN THREE MINUTES IN ANY ONE HOUR WHICH IS:
  - A. AS DARK OR DARKER IN SHADE AS THAT DESIGNATED NO. 1 ON THE RINGELMANN CHART, AS PUBLISHED BY THE UNITED STATES BUREAU OF MINES; OR
  - B. OF SUCH OPACITY AS TO OBSCURE AN OBSERVER'S VIEW TO A DEGREE EQUAL TO OR GREATER THAN DOES SMOKE DESCRIBED IN SUBPARAGRAPH (A) OF THIS CONDITION. [RULE 401]
2. THE TOTAL QUANTITY OF VOLATILE ORGANIC COMPOUND (VOC) EMISSIONS FROM THIS FACILITY SHALL NOT EXCEED 1830 POUNDS IN ANY CALENDAR MONTH. TO ENSURE COMPLIANCE WITH THE EMISSION LIMIT OF THIS CONDITION, THE OPERATOR SHALL:
  - A. IN ADDITION TO THE RECORDKEEPING REQUIREMENTS IN RULE 109, KEEP ADEQUATE RECORDS FOR ALL EQUIPMENT AND OPERATIONS AT THIS FACILITY TO VERIFY THE DAILY VOC EMISSIONS IN POUNDS AND THE VOC CONTENT OF EACH MATERIAL AS APPLIED (INCLUDING WATER AND EXEMPT COMPOUNDS).
  - B. WITHIN 14 CALENDAR DAYS AFTER THE END OF EACH MONTH, TOTAL AND RECORD VOC EMISSIONS FOR THE MONTH FROM ALL EQUIPMENT AND OPERATIONS THAT ARE REQUIRED TO HAVE WRITTEN PERMITS OR ARE EXEMPT FROM WRITTEN PERMITS PURSUANT TO RULE 219. THE RECORD SHALL INCLUDE ANY PROCEDURES USED TO ACCOUNT FOR CONTROL DEVICE EFFICIENCIES AND/OR WASTE DISPOSAL. IT SHALL BE SIGNED AND CERTIFIED FOR ACCURACY BY THE HIGHEST RANKING INDIVIDUAL RESPONSIBLE FOR COMPLIANCE WITH DISTRICT RULES.
  - C. MAINTAIN A SINGLE LIST WHICH INCLUDES ONLY THE NAME AND ADDRESS OF EACH PERSON FROM WHOM THE FACILITY ACQUIRED VOC-CONTAINING MATERIALS REGULATED BY THE DISTRICT THAT WERE USED OR STORED AT THE FACILITY DURING THE PRECEDING 12 MONTHS.
  - D. RETAIN ALL PURCHASE INVOICES FOR ALL VOC-CONTAINING MATERIAL USED OR STORED AT THE FACILITY, AND ALL WASTE MANIFESTS FOR ALL WASTE VOC-CONTAINING MATERIAL REMOVED FROM THE FACILITY. [RULE 1303 (b) (2)-OFFSETS]
3. ALL RECORDS REQUIRED BY THIS PERMIT SHALL BE PREPARED IN A FORMAT WHICH IS ACCEPTABLE TO THE DISTRICT, SHALL BE RETAINED AT THE FACILITY FOR AT LEAST FIVE YEARS, AND SHALL BE MADE AVAILABLE TO ANY DISTRICT REPRESENTATIVE UPON REQUEST. [RULE 1303 (b) (2)-OFFSETS]

## FACILITY PERMIT TO OPERATE INTERNATIONAL RECTIFIER HEXFET AMERICA

### PERMIT TO OPERATE

Permit No. M56103  
A/N 134696

**Equipment Description:**

STORAGE TANK T-175, HYDROGEN FLUORIDE, 4' -6" DIA. x 7' -3" H. 500 GALLON CAPACITY.

**Conditions:**

1. OPERATION OF THIS EQUIPMENT SHALL BE CONDUCTED IN COMPLIANCE WITH ALL DATA AND SPECIFICATIONS SUBMITTED WITH THE APPLICATION UNDER WHICH THIS PERMIT IS ISSUED UNLESS OTHERWISE NOTED BELOW.  
[RULE 204]
2. THIS EQUIPMENT SHALL BE PROPERLY MAINTAINED AND KEPT IN GOOD OPERATING CONDITION AT ALL TIMES.  
[RULE 204]
3. THIS EQUIPMENT SHALL NOT BE OPERATED UNLESS IT IS VENTED ONLY TO AIR POLLUTION CONTROL EQUIPMENT WHICH IS IN FULL USE AND WHICH HAS BEEN ISSUED A PERMIT TO OPERATE BY THE EXECUTIVE OFFICER.  
[RULE 1303 (a) (1)-BACT]

## **FACILITY PERMIT TO OPERATE INTERNATIONAL RECTIFIER HEXFET AMERICA**

### **PERMIT TO OPERATE**

**Permit No. M56104  
A/N 134697**

**Equipment Description:**

STORAGE TANK T-185, BUFFERED OXIDE ETCH, 4' -6" DIA. x 7' -3" H. 500 GALLON CAPACITY.

**Conditions:**

1. OPERATION OF THIS EQUIPMENT SHALL BE CONDUCTED IN COMPLIANCE WITH ALL DATA AND SPECIFICATIONS SUBMITTED WITH THE APPLICATION UNDER WHICH THIS PERMIT IS ISSUED UNLESS OTHERWISE NOTED BELOW.  
[RULE 204]
2. THIS EQUIPMENT SHALL BE PROPERLY MAINTAINED AND KEPT IN GOOD OPERATING CONDITION AT ALL TIMES.  
[RULE 204]
3. THIS EQUIPMENT SHALL NOT BE OPERATED UNLESS IT IS VENTED ONLY TO AIR POLLUTION CONTROL EQUIPMENT WHICH IS IN FULL USE AND WHICH HAS BEEN ISSUED A PERMIT TO OPERATE BY THE EXECUTIVE OFFICER.  
[RULE 1303 (a) (1)-BACT]

**FACILITY PERMIT TO OPERATE  
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**PERMIT TO OPERATE**

**Permit No. M56105  
A/N 134698**

**Equipment Description:**

STORAGE TANK T-12, WASTE ACID, 10' -0" DIA. x 11' -6" L., 5728 GALLON CAPACITY, WITH TWO TRANSFER PUMPS EACH 10 H.P.

**Conditions:**

1. OPERATION OF THIS EQUIPMENT SHALL BE CONDUCTED IN COMPLIANCE WITH ALL DATA AND SPECIFICATIONS SUBMITTED WITH THE APPLICATION UNDER WHICH THIS PERMIT IS ISSUED UNLESS OTHERWISE NOTED BELOW.  
[RULE 204]
2. THIS EQUIPMENT SHALL BE PROPERLY MAINTAINED AND KEPT IN GOOD OPERATING CONDITION AT ALL TIMES.  
[RULE 204]
3. THIS EQUIPMENT SHALL NOT BE OPERATED UNLESS IT IS VENTED ONLY TO AIR POLLUTION CONTROL EQUIPMENT WHICH IS IN FULL USE AND WHICH HAS BEEN ISSUED A PERMIT TO OPERATE BY THE EXECUTIVE OFFICER.  
[RULE 1303 (a) (1)-BACT]

## **FACILITY PERMIT TO OPERATE INTERNATIONAL RECTIFIER HEXFET AMERICA**

### **PERMIT TO OPERATE**

**Permit No. M56106  
A/N 134699**

**Equipment Description:**

STORAGE TANK T-13, WASTE ACID, 10' -0" DIA. x 11'-6" L., 5728 GALLON CAPACITY, WITH TWO TRANSFER PUMPS, EACH 10 H.P.

**Conditions:**

1. OPERATION OF THIS EQUIPMENT SHALL BE CONDUCTED IN COMPLIANCE WITH ALL DATA AND SPECIFICATIONS SUBMITTED WITH THE APPLICATION UNDER WHICH THIS PERMIT IS ISSUED UNLESS OTHERWISE NOTED BELOW.  
[RULE 204]
2. THIS EQUIPMENT SHALL BE PROPERLY MAINTAINED AND KEPT IN GOOD OPERATING CONDITION AT ALL TIMES.  
[RULE 204]
3. THIS EQUIPMENT SHALL NOT BE OPERATED UNLESS IT IS VENTED ONLY TO AIR POLLUTION CONTROL EQUIPMENT WHICH IS IN FULL USE AND WHICH HAS BEEN ISSUED A PERMIT TO OPERATE BY THE EXECUTIVE OFFICER.  
[RULE 1303 (a) (1)-BACT]

## FACILITY PERMIT TO OPERATE INTERNATIONAL RECTIFIER HEXFET AMERICA

### PERMIT TO OPERATE

Permit No. M56108  
A/N 134701

#### Equipment Description:

INTERNAL COMBUSTION ENGINE, DIESEL FIRED, MITSUBISHI, MODEL S12N-PTA-2, 1450 H.P. DRIVING A 1000 K.W. EMERGENCY ELECTRIC GENERATOR.

#### Conditions:

1. OPERATION OF THIS EQUIPMENT SHALL BE CONDUCTED IN COMPLIANCE WITH ALL DATA AND SPECIFICATIONS SUBMITTED WITH THE APPLICATION UNDER WHICH THIS PERMIT IS ISSUED UNLESS OTHERWISE NOTED BELOW.  
[RULE 204]
2. THIS EQUIPMENT SHALL BE PROPERLY MAINTAINED AND KEPT IN GOOD OPERATING CONDITION AT ALL TIMES.  
[RULE 204]
3. DIESEL FUEL SUPPLIED TO THIS ENGINE SHALL HAVE A SULFUR CONTENT OF LESS THAN 0.05% BY WEIGHT.  
[RULE 431.2]
4. AN OPERATIONAL NON-RESETTABLE TOTALIZING TIME METER SHALL BE MAINTAINED TO INDICATE THE ENGINE ELAPSED OPERATING TIME.  
[RULE 1304 (a) (4)]
5. THE OPERATING TIME OF THIS ENGINE SHALL NOT EXCEED 199 HOURS IN ANY ONE YEAR.  
[RULE 1304 (a) (4)]
6. AN ENGINE OPERATING LOG LISTING THE DATE OF OPERATION, THE ELAPSED TIME, IN HOURS, AND THE REASON FOR OPERATION SHALL BE KEPT AND MAINTAINED ON FILE FOR AT LEAST THE LAST FIVE YEARS AND MADE AVAILABLE TO DISTRICT PERSONNEL UPON REQUEST.  
[RULE 3004 (a) (4)]

#### Emissions And Requirements:

7. THIS EQUIPMENT IS SUBJECT TO THE APPLICABLE REQUIREMENTS OF THE FOLLOWING RULES AND REGULATIONS:  
PM: RULE 404, SEE APPENDIX B FOR EMISSION LIMITS

## **FACILITY PERMIT TO OPERATE INTERNATIONAL RECTIFIER HEXFET AMERICA**

### **PERMIT TO OPERATE**

**Permit No. M56109  
A/N 134709**

**Equipment Description:**

MIX TANK 181, BUFFERED OXIDE ETCH, 4' - 6" DIA. X 6' - 11" H. 500 GALLON CAPACITY, WITH A 1/2 H.P. MIXER.

**Conditions:**

1. OPERATION OF THIS EQUIPMENT SHALL BE CONDUCTED IN COMPLIANCE WITH ALL DATA AND SPECIFICATIONS SUBMITTED WITH THE APPLICATION UNDER WHICH THIS PERMIT IS ISSUED UNLESS OTHERWISE NOTED BELOW.  
[RULE 204]
2. THIS EQUIPMENT SHALL BE PROPERLY MAINTAINED AND KEPT IN GOOD OPERATING CONDITION AT ALL TIMES.  
[RULE 204]
3. THIS EQUIPMENT SHALL NOT BE OPERATED UNLESS IT IS VENTED ONLY TO AIR POLLUTION CONTROL EQUIPMENT WHICH IS IN FULL USE AND WHICH HAS BEEN ISSUED A PERMIT TO OPERATE BY THE EXECUTIVE OFFICER.  
[RULE 1303 (a) (1)-BACT]

**FACILITY PERMIT TO OPERATE  
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**PERMIT TO OPERATE**

**Permit No. M56110  
A/N 134710**

**Equipment Description:**

MIX TANK 171, HYDROGEN FLUORIDE, 4' -6" DIA. X 6'-10" H. 500 GALLON CAPACITY WITH A 1/2 H.P. MIXER.

**Conditions:**

1. OPERATION OF THIS EQUIPMENT SHALL BE CONDUCTED IN COMPLIANCE WITH ALL DATA AND SPECIFICATIONS SUBMITTED WITH THE APPLICATION UNDER WHICH THIS PERMIT IS ISSUED UNLESS OTHERWISE NOTED BELOW.  
[RULE 204]
2. THIS EQUIPMENT SHALL BE PROPERLY MAINTAINED AND KEPT IN GOOD OPERATING CONDITION AT ALL TIMES.  
[RULE 204]
3. THIS EQUIPMENT SHALL NOT BE OPERATED UNLESS IT IS VENTED ONLY TO AIR POLLUTION CONTROL EQUIPMENT WHICH IS IN FULL USE AND WHICH HAS BEEN ISSUED A PERMIT TO OPERATE BY THE EXECUTIVE OFFICER.  
[RULE 1303 (a) (1)-BACT]

## FACILITY PERMIT TO OPERATE INTERNATIONAL RECTIFIER HEXFET AMERICA

### PERMIT TO OPERATE

Permit No. D89083  
A/N 262744

#### Equipment Description:

AIR POLLUTION CONTROL SYSTEM CONSISTING OF:

1. CARBON ADSORBER, CAMERON-YAKIMA, MODEL TSU 2000, CANISTER TYPE, WITH TWO PARALLEL CANISTERS, EACH WITH 2000 LBS. OF CARBON AND A 4' - 9" BED DEPTH.
2. EXHAUST SYSTEM WITH A 15 HP FAN VENTING TWO WET BENCHES.

#### Conditions:

1. OPERATION OF THIS EQUIPMENT SHALL BE CONDUCTED IN ACCORDANCE WITH ALL DATA AND SPECIFICATIONS SUBMITTED WITH THE APPLICATION UNDER WHICH THIS PERMIT IS ISSUED UNLESS OTHERWISE NOTED BELOW.  
[RULE 204]
2. THIS EQUIPMENT SHALL BE PROPERLY MAINTAINED AND KEPT IN GOOD OPERATING CONDITION AT ALL TIMES.  
[RULE 204]
3. A GUAGE SHALL BE INSTALLED AND MAINTAINED TO INDICATE, IN INCHES OF WATER COLUMN, THE STATIC PRESSURE DIFFERENTIAL ACROSS EACH CARBON BED. WHEN IN OPERATION, THIS PRESSURE DIFFERENTIAL SHALL NOT EXCEED 18 INCHES OF WATER.  
[RULE 1303 (b) (2)-OFFSETS]
4. THIS EQUIPMENT SHALL BE OPERATED WITH ONLY ONE CARBON CANISTER IN SERVICE AT ANY ONE TIME.  
[RULE 204]
5. THE HYDROCARBON (VOC) CONCENTRATION IN THE EXHAUST GAS FROM THE CARBON ADSORBER SHALL BE TESTED, BY A GAS DETECTION TUBE MEASUREMENT (DRAGER OR EQUIVALENT) OR OTHER METHOD WITH PRIOR DISTRICT APPROVAL, DAILY FOR THE FIRST 15 DAYS SINCE CARBON REPLACEMENT AND EVERY TWELVE HOURS OF OPERATION THEREAFTER. IF THE RESULTS OF THIS TEST SHOW A VOC CONCENTRATION EXCEEDING 10.0 PPMV (SUBJECT TO REVISION), THE EXHAUST FLOW SHALL BE SHIFTED TO A FRESH CARBON CANISTER IMMEDIATELY.  
[RULE 3004 (a) (4)]
6. THIS EQUIPMENT SHALL OPERATE WITH AN OVERALL VOC CONTROL EFFICIENCY (COLLECTION AND DESTRUCTION) EXCEEDING 95.0% BY WEIGHT.  
[RULE 1303 (b) (2)-OFFSETS]
7. RECORDS OF DATES OF CARBON REPLACEMENT, AND DAILY HYDROCARBON MEASUREMENTS SHALL BE MAINTAINED AND RETAINED ON FILE FOR FIVE YEARS. THESE RECORDS SHALL BE MADE AVAILABLE TO DISTRICT PERSONNEL UPON REQUEST.  
[RULE 3004 (a) (4)]

## **FACILITY PERMIT TO OPERATE INTERNATIONAL RECTIFIER HEXFET AMERICA**

### **PERMIT TO OPERATE**

**Permit No. D84484  
A/N 293299**

**Equipment Description:**

STORAGE TANK T-145, PAD ETCH ACID, 3'-0"DIA. x 6'-5"H., 300 GALLON CAPACITY.

**Conditions:**

1. OPERATION OF THIS EQUIPMENT SHALL BE CONDUCTED IN ACCORDANCE WITH ALL DATA AND SPECIFICATIONS SUBMITTED WITH THE APPLICATION UNDER WHICH THIS PERMIT IS ISSUED UNLESS OTHERWISE NOTED BELOW.  
[RULE 204]
2. THIS EQUIPMENT SHALL BE PROPERLY MAINTAINED AND KEPT IN GOOD OPERATING CONDITION AT ALL TIMES.  
[RULE 204]
3. THIS TANK SHALL NOT BE USED FOR STORING ORGANIC LIQUID HAVING AN ORGANIC COMPOSITE VAPOR PRESSURE OF 25 mm Hg (0.5 psia) OR GREATER UNDER ACTUAL STORAGE CONDITIONS.  
[RULE 1303 (b) (2)-OFFSETS]
4. THROUGHPUT TO THIS TANK SHALL NOT EXCEED 300 GALLONS PER DAY. THROUGHPUT RECORDS SHALL BE MAINTAINED AND RETAINED ON FILE FOR A FIVE YEAR PERIOD, AND SHALL BE MADE AVAILABLE TO DISTRICT PERSONNEL UPON REQUEST.  
[RULE 3004 (a) (4)]
5. THIS TANK SHALL NOT BE USED TO STORE ANY COMPOUND CONTAINING A CARCINOGENIC SUBSTANCE AS SPECIFIED IN TABLE I OF RULE 1401.  
[RULE 1401]

## **FACILITY PERMIT TO OPERATE INTERNATIONAL RECTIFIER HEXFET AMERICA**

### **PERMIT TO OPERATE**

**Permit No. D90395  
A/N 302031**

**Equipment Description:**

STORAGE TANK, HYDROFLUORIC ACID, 5000 GALLON CAPACITY, 7'-0"DIA. X 20'-6"L.

**Conditions:**

1. OPERATION OF THIS EQUIPMENT SHALL BE CONDUCTED IN ACCORDANCE WITH ALL DATA AND SPECIFICATIONS SUBMITTED WITH THE APPLICATION UNDER WHICH THIS PERMIT IS ISSUED UNLESS OTHERWISE NOTED BELOW.  
[RULE 204]
2. THIS EQUIPMENT SHALL BE PROPERLY MAINTAINED AND KEPT IN GOOD OPERATING CONDITION AT ALL TIMES.  
[RULE 204]
3. THIS TANK SHALL NOT BE USED FOR STORING HYDROFLUORIC ACID HAVING A CONCENTRATION EXCEEDING 50 PERCENT, BY WEIGHT.  
[RULE 1303 (b) (2)-OFFSETS]
4. THIS EQUIPMENT SHALL NOT STORE LIQUID UNLESS IT IS VENTED ONLY TO AIR POLLUTION CONTROL EQUIPMENT WHICH IS IN FULL USE AND WHICH HAS BEEN ISSUED AN OPERATING PERMIT OR A PERMIT TO CONSTRUCT BY THE DISTRICT.  
[RULE 1303 (b) (2)-OFFSETS]

**FACILITY PERMIT TO OPERATE  
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**PERMIT TO OPERATE**

**Permit No. F52982  
A/N 302032**

**Equipment Description:**

SOLVENT BENCH, SEMIFAB, MODEL WPS600, 3'-0"W. X 8'-0"L. X 5'- 7"H., 1.8 KVA.

**Conditions:**

1. OPERATION OF THIS EQUIPMENT SHALL BE CONDUCTED IN ACCORDANCE WITH ALL DATA AND SPECIFICATIONS SUBMITTED WITH THE APPLICATION UNDER WHICH THIS PERMIT IS ISSUED UNLESS OTHERWISE NOTED BELOW.  
[RULE 204]
2. THIS EQUIPMENT SHALL BE PROPERLY MAINTAINED AND KEPT IN GOOD OPERATING CONDITION AT ALL TIMES.  
[RULE 204]
3. THIS EQUIPMENT SHALL NOT BE OPERATED UNLESS IT IS VENTED ONLY TO AIR POLLUTION CONTROL EQUIPMENT WHICH IS IN FULL USE AND WHICH HAS BEEN ISSUED AN OPERATING PERMIT BY THE EXECUTIVE OFFICER.  
[RULE 1303 (b) (2)-OFFSETS]
4. THE TOTAL AMOUNT OF VOLATILE ORGANIC COMPOUND (VOC) EMISSION FROM THIS FACILITY SHALL NOT EXCEED 1,830 POUNDS IN ANY ONE CALENDAR MONTH. THE AMOUNT OF VOC EMISSION FROM THIS EQUIPMENT SHALL BE THE TOTAL AMOUNT OF SOLVENT USED IN THIS EQUIPMENT, EXCLUDING SALVAGE SOLVENT, DISCOUNTED BY THE NON-VOLATILE PORTION OF THE SOLVENT, AND THEN DISCOUNTED BY 98.7% (THE CONTROL EFFICIENCY OF THE CONTROL SYSTEM VENTING THIS EQUIPMENT).  
[RULE 1303 (b) (2)-OFFSETS]
5. RECORDS SHALL BE KEPT TO DEMONSTRATE COMPLIANCE WITH CONDITION NO. 4. THE RECORDS SHALL BE MAINTAINED ON FILE FOR AT LEAST THE LAST FIVE YEARS AND MADE AVAILABLE TO DISTRICT PERSONNEL UPON REQUEST.  
[RULE 3004 (a) (4)]

## **FACILITY PERMIT TO OPERATE INTERNATIONAL RECTIFIER HEXFET AMERICA**

### **PERMIT TO OPERATE**

**Permit No. F54712  
A/N 381811**

**Equipment Description:**

STORAGE TANK, WASTE SOLVENT, 8'-0" W. X 15'-6" L. X 7'-0" H., 5000 GALLON CAPACITY.

**Conditions:**

1. OPERATION OF THIS EQUIPMENT SHALL BE CONDUCTED IN ACCORDANCE WITH ALL DATA AND SPECIFICATIONS SUBMITTED WITH THE APPLICATION UNDER WHICH THIS PERMIT IS ISSUED UNLESS OTHERWISE NOTED BELOW.  
[RULE 204]
2. THIS EQUIPMENT SHALL BE PROPERLY MAINTAINED AND KEPT IN GOOD OPERATING CONDITION AT ALL TIMES.  
[RULE 204]
3. THIS EQUIPMENT SHALL NOT BE OPERATED UNLESS IT IS VENTED ONLY TO AIR POLLUTION CONTROL EQUIPMENT WHICH IS IN FULL OPERATION AND HAS BEEN ISSUED AN OPERATING PERMIT BY THE EXECUTIVE OFFICER.  
[RULE 1303 (b) (2)-OFFSETS]
4. THE MAXIMUM AMOUNT OF WASTE SOLVENT TRANSFERED THROUGH THIS TANK SHALL NOT EXCEED 5000 GALLONS IN ANY ONE CALENDAR MONTH.  
[RULE 1303 (b) (2)-OFFSETS]
5. THE OPERATOR SHALL MAINTAIN RECORDS TO DEMONSTRATE COMPLIANCE WITH CONDITION NO. 4. THE RECORDS SHALL BE KEPT FOR THE MOST RECENT FIVE YEAR PERIOD AND MADE AVAILABLE TO AQMD PERSONNEL UPON REQUEST.  
[RULE 3004 (a) (4)]

**FACILITY PERMIT TO OPERATE  
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**PERMIT TO OPERATE**

**Permit No. F54714  
A/N 381813**

**Equipment Description:**

MIX TANK T-161, MIXED ACID ETCH, 4'-6" DIA. X 5'-6" H., 500 GALLON CAPACITY, WITH A 1/2-HP MIXER.

**Conditions:**

1. OPERATION OF THIS EQUIPMENT SHALL BE CONDUCTED IN ACCORDANCE WITH ALL DATA AND SPECIFICATIONS SUBMITTED WITH THE APPLICATION UNDER WHICH THIS PERMIT IS ISSUED UNLESS OTHERWISE NOTED BELOW.  
[RULE 204]
2. THIS EQUIPMENT SHALL BE PROPERLY MAINTAINED AND KEPT IN GOOD OPERATING CONDITION AT ALL TIMES.  
[RULE 204]
3. THIS EQUIPMENT SHALL NOT BE OPERATED UNLESS IT IS VENTED ONLY TO AIR POLLUTION CONTROL EQUIPMENT WHICH IS IN FULL OPERATION AND HAS BEEN ISSUED AN OPERATING PERMIT BY THE EXECUTIVE OFFICER.  
[RULE 1303 (b) (2)-OFFSETS]
4. THE MAXIMUM AMOUNT OF MATERIAL TRANSFERED THROUGH THIS TANK SHALL NOT EXCEED 917 GALLONS IN ANY ONE CALENDAR MONTH.  
[RULE 1303 (b) (2)-OFFSETS]
5. THE OPERATOR SHALL MAINTAIN RECORDS TO DEMONSTRATE COMPLIANCE WITH CONDITION NO. 4. THE RECORDS SHALL BE KEPT FOR THE MOST RECENT FIVE YEAR PERIOD AND MADE AVAILABLE TO AQMD PERSONNEL UPON REQUEST.  
[RULE 3004 (a) (4)]

## **FACILITY PERMIT TO OPERATE INTERNATIONAL RECTIFIER HEXFET AMERICA**

### **PERMIT TO OPERATE**

**Permit No. F54708  
A/N 383504**

**Equipment Description:**

HOLD TANK T-165, MIXED ACID ETCH, 4'-6" DIA. X 5'-6" H., 500 GALLON CAPACITY.

**Conditions:**

1. OPERATION OF THIS EQUIPMENT SHALL BE CONDUCTED IN ACCORDANCE WITH ALL DATA AND SPECIFICATIONS SUBMITTED WITH THE APPLICATION UNDER WHICH THIS PERMIT IS ISSUED UNLESS OTHERWISE NOTED BELOW.  
[RULE 204]
2. THIS EQUIPMENT SHALL BE PROPERLY MAINTAINED AND KEPT IN GOOD OPERATING CONDITION AT ALL TIMES.  
[RULE 204]
3. THIS EQUIPMENT SHALL NOT BE OPERATED UNLESS IT IS VENTED ONLY TO AIR POLLUTION CONTROL EQUIPMENT WHICH IS IN FULL OPERATION AND HAS BEEN ISSUED AN OPERATING PERMIT BY THE EXECUTIVE OFFICER.  
[RULE 1303 (b) (2)-OFFSETS]
4. THE MAXIMUM AMOUNT OF MATERIAL TRANSFERED THROUGH THIS TANK SHALL NOT EXCEED 917 GALLONS IN ANY ONE CALENDAR MONTH.  
[RULE 1303 (b) (2)-OFFSETS]
5. THE OPERATOR SHALL MAINTAIN RECORDS TO DEMONSTRATE COMPLIANCE WITH CONDITION NO. 4. THE RECORDS SHALL BE KEPT FOR THE MOST RECENT FIVE YEAR PERIOD AND MADE AVAILABLE TO AQMD PERSONNEL UPON REQUEST.  
[RULE 3004 (a) (4)]

## FACILITY PERMIT TO OPERATE INTERNATIONAL RECTIFIER HEXFET AMERICA

### PERMIT TO OPERATE

Permit No. F58209  
A/N 410529

#### Equipment Description:

INTERNAL COMBUSTION ENGINE, CLARK MODEL JW6H-UF30 (JOHN DEERE JDFD-06WA)  
TURBOCHARGED/AFTERCOOLED, 6 CYLINDERS, 265 HP, DIESEL-FUELED, WITH A 300 GALLON DIESEL  
FUEL TANK, DRIVING AN EMERGENCY FIRE PUMP.

#### Conditions:

1. OPERATION OF THIS EQUIPMENT SHALL BE CONDUCTED IN ACCORDANCE WITH ALL DATA AND SPECIFICATIONS SUBMITTED WITH THE APPLICATION UNDER WHICH THIS PERMIT IS ISSUED UNLESS OTHERWISE NOTED BELOW.  
[RULE 204]
2. THIS EQUIPMENT SHALL BE PROPERLY MAINTAINED AND KEPT IN GOOD OPERATING CONDITION AT ALL TIMES.  
[RULE 204]
3. THIS EQUIPMENT SHALL OPERATE IN COMPLIANCE WITH RULE 431.2.  
[RULE 431.2]
4. THE FUEL INJECTION TIMING OF THIS ENGINE SHALL BE SET AND MAINTAINED AT 9 DEGREES RETARDED RELATIVE TO STANDARD TIMING.  
[RULE 1303 (a) (1)-BACT]
5. THE OPERATING TIME OF THIS ENGINE SHALL NOT EXCEED 199 HOURS IN ANY ONE CALENDAR YEAR.  
[RULE 1304 (a) (4)]
6. AN OPERATIONAL NON-RESETTABLE TOTALIZING TIME METER SHALL BE MAINTAINED TO INDICATE THE ENGINE ELAPSED OPERATING TIME.  
[RULE 1304 (a) (4)]
7. THIS ENGINE SHALL BE OPERATED ONLY DURING EMERGENCIES OR FOR MAINTENANCE AND TESTING PURPOSES.  
[RULE 1304 (a) (4)]
8. AN ENGINE OPERATING LOG LISTING THE DATE OF OPERATION, THE ELAPSED TIME IN HOURS, AND THE REASON FOR OPERATION SHALL BE KEPT AND MAINTAINED ON FILE FOR AT LEAST THE LAST FIVE YEARS AND MADE AVAILABLE TO DISTRICT PERSONNEL UPON REQUEST.  
[RULE 3004 (a) (4)]

## FACILITY PERMIT TO OPERATE INTERNATIONAL RECTIFIER HEXFET AMERICA

### PERMIT TO OPERATE

Permit No. F91809  
A/N 432426

#### Equipment Description:

##### WASTE ACID NEUTRALIZATION LINE CONSISTING OF:

1. TANK NO. T-16, ACID NEUTRALIZATION, 10' - 0"DIA. x 11' - 6"H., 5,728 GALLON CAPACITY, WITH ONE 3-HP MIXER.
2. TANK NO. T-17, ACID NEUTRALIZATION/EQUALIZATION, 10' - 0"DIA. x 11' - 6"H., 5,728 GALLON CAPACITY, WITH ONE 3-HP MIXER.
3. TANK NO. T-301, ACID NEUTRALIZATION, 7' - 0"DIA. x 9' - 0"H., 2,600 GALLON CAPACITY, WITH ONE 3-HP MIXER.
4. TANK NO. T-302, ACID NEUTRALIZATION, 7' - 0"DIA. x 9' - 0"H., 2,600 GALLON CAPACITY, WITH ONE 3-HP MIXER.
5. TANK NO. T-303, ACID NEUTRALIZATION/STORAGE, 6' - 6"DIA. x 9' - 0"H., 2,200 GALLON CAPACITY, WITH TWO 10-HP TRANSFER PUMPS, ONE A STANDBY.

#### Conditions:

1. OPERATION OF THIS EQUIPMENT SHALL BE CONDUCTED IN ACCORDANCE WITH ALL DATA AND SPECIFICATIONS SUBMITTED WITH THE APPLICATION UNDER WHICH THIS PERMIT IS ISSUED UNLESS OTHERWISE NOTED BELOW.  
[RULE 204]
2. THIS EQUIPMENT SHALL BE PROPERLY MAINTAINED AND KEPT IN GOOD OPERATING CONDITION AT ALL TIMES.  
[RULE 204]
3. THIS EQUIPMENT SHALL NOT BE OPERATED UNLESS IT IS VENTED ONLY TO AIR POLLUTION EQUIPMENT WHICH IS IN FULL USE AND WHICH HAS BEEN ISSUED A PERMIT TO CONSTRUCT/OPERATE BY THE EXECUTIVE OFFICER.  
[RULE 1303 (b) (2)-OFFSETS]
4. A NON-RESETTABLE FLOW METER SHALL BE INSTALLED TO INDICATE THE AMOUNT OF WASTE WATER, IN GALLONS, PUMPED OUT OF THIS EQUIPMENT.  
[RULE 1303 (b) (2)-OFFSETS]
5. THE AMOUNT OF WASTE WATER PUMPED OUT OF THIS EQUIPMENT SHALL NOT EXCEED 4,000,000 GALLONS IN ANY ONE CALENDAR MONTH.  
[RULE 1303 (b) (2)-OFFSETS]

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6. RECORDS SHALL BE MAINTAINED TO DEMONSTRATE COMPLIANCE WITH CONDITION NO. 5. THE RECORDS SHALL BE KEPT FOR AT LEAST THE LAST FIVE YEARS AND MADE AVAILABLE TO DISTRICT PERSONNEL UPON REQUEST.

[RULE 3004 (a) (4)]

## FACILITY PERMIT TO OPERATE INTERNATIONAL RECTIFIER HEXFET AMERICA

### PERMIT TO OPERATE

**Permit No. F93346  
A/N 441482**

**Equipment Description:**

BOILER NO. 2, STONE-JOHNSTON, FIRE TUBE TYPE, MODEL PFTA 300 4LG 30W, 13,230,000 BTU PER HOUR, NATURAL GAS- FIRED, WITH ONE INDUSTRIAL COMBUSTION, MODEL NTD126NGX-09S-5P, BURNER.

**Conditions:**

1. OPERATION OF THIS EQUIPMENT SHALL BE CONDUCTED IN COMPLIANCE WITH ALL DATA AND SPECIFICATIONS SUBMITTED WITH THE APPLICATION UNDER WHICH THIS PERMIT IS ISSUED UNLESS OTHERWISE NOTED BELOW.

[RULE 204]

2. THIS EQUIPMENT SHALL BE PROPERLY MAINTAINED AND KEPT IN GOOD OPERATING CONDITION AT ALL TIMES

[RULE 204]

3. THE NOX AND CO CONCENTRATIONS, IN PARTS PER MILLION BY VOLUME (PPMV), ON A DRY BASIS CORRECTED TO 3% OXYGEN, SHALL NOT EXCEED THE FOLLOWING:

<u>POLLUTANTS</u>	<u>PPMV</u>
NOX	12
CO	50

[RULE 1303 (a) (1)-BACT]

4. THE BOILER SHALL BE EQUIPPED WITH A CONTROL SYSTEM TO AUTOMATICALLY REGULATE COMBUSTION AIR AND FUEL AS THE BOILER LOAD VARIES. THIS AUTOMATIC CONTROL SYSTEM SHALL BE ADJUSTED AND TUNED AT LEAST ONCE EVERY SIX MONTHS ACCORDING TO THE MANUFACTURER'S SPECIFICATIONS TO MAINTAIN ITS ABILITY TO REPEAT THE SAME PERFORMANCE AT THE SAME FIRING RANGE. NOX, O2, AND CO SHALL BE MEASURED AND RECORDED ALONG WITH THE TUNE-UP PROCEDURES.

[RULE 1303 (a) (1)-BACT]

5. RECORDS SHALL BE MAINTAINED TO DEMONSTRATE COMPLIANCE WITH CONDITION NOS. 3 AND 4. THE RECORDS SHALL BE KEPT FOR AT LEAST FIVE YEARS AND MADE AVAILABLE TO DISTRICT PERSONNEL UPON REQUEST.

[RULE 3004 (a) (4)]

**Periodic Monitoring:**

6. THE OPERATOR SHALL DETERMINE COMPLIANCE WITH THE CO EMISSION LIMIT(S) EITHER BY:  
(a) CONDUCTING A SOURCE TEST AT LEAST ONCE EVERY FIVE YEARS USING AQMD METHOD 100.1 OR 10.1; OR (b) CONDUCTING A TEST AT LEAST ANNUALLY USING A PORTABLE

## FACILITY PERMIT TO OPERATE INTERNATIONAL RECTIFIER HEXFET AMERICA

ANALYZER AND AQMD-APPROVED TEST METHOD. THE TEST SHALL BE CONDUCTED WHEN THE EQUIPMENT IS OPERATING UNDER NORMAL CONDITIONS TO DEMONSTRATE COMPLIANCE WITH RULE 1146 CONCENTRATION LIMIT. THE OPERATOR SHALL COMPLY WITH ALL GENERAL TESTING, REPORTING, AND RECORDKEEPING REQUIREMENTS IN SECTIONS E AND K OF THIS PERMIT.

[RULE 3004 (a) (4)]

7. THE OPERATOR SHALL DETERMINE COMPLIANCE WITH THE NOX EMISSION LIMIT(S) EITHER BY: (a) CONDUCTING A SOURCE TEST AT LEAST ONCE EVERY FIVE YEARS USING AQMD METHOD 100.1 OR 7.1; OR (b) CONDUCTING A TEST AT LEAST ANNUALLY USING A PORTABLE ANALYZER AND AQMD-APPROVED TEST METHOD. THE TEST SHALL BE CONDUCTED WHEN THE EQUIPMENT IS OPERATING UNDER NORMAL CONDITIONS TO DEMONSTRATE COMPLIANCE WITH RULE 1146 CONCENTRATION LIMIT. THE OPERATOR SHALL COMPLY WITH ALL GENERAL TESTING, REPORTING, AND RECORDKEEPING REQUIREMENTS IN SECTIONS E AND K OF THIS PERMIT.

[RULE 3004 (a) (4)]

### **Emissions And Requirements:**

8. THIS EQUIPMENT IS SUBJECT TO THE APPLICABLE REQUIREMENTS OF THE FOLLOWING RULES AND REGULATIONS:

PM: 0.1 GR/SCF, RULE 409  
CO: 2000 PPMV, RULE 407  
CO: 400 PPMV, RULE 1146  
NOX: 30 PPMV, RULE 1146

## FACILITY PERMIT TO OPERATE INTERNATIONAL RECTIFIER HEXFET AMERICA

### PERMIT TO OPERATE

Permit No. F93347  
A/N 442573

#### Equipment Description:

BOILER NO. 1, STONE-JOHNSTON, FIRE TUBE TYPE, MODEL PFTA 300 4LG 30W, 13,230,000 BTU PER HOUR, NATURAL GAS- FIRED, WITH ONE INDUSTRIAL COMBUSTION, MODEL NTD126NGX-09S-5P, BURNER.

#### Conditions:

1. OPERATION OF THIS EQUIPMENT SHALL BE CONDUCTED IN COMPLIANCE WITH ALL DATA AND SPECIFICATIONS SUBMITTED WITH THE APPLICATION UNDER WHICH THIS PERMIT IS ISSUED UNLESS OTHERWISE NOTED BELOW.

[RULE 204]

2. THIS EQUIPMENT SHALL BE PROPERLY MAINTAINED AND KEPT IN GOOD OPERATING CONDITION AT ALL TIMES

[RULE 204]

3. THE NOX AND CO CONCENTRATIONS, IN PARTS PER MILLION BY VOLUME (PPMV), ON A DRY BASIS CORRECTED TO 3% OXYGEN, SHALL NOT EXCEED THE FOLLOWING:

<u>POLLUTANTS</u>	<u>PPMV</u>
NOX	12
CO	50

[RULE 1303 (a) (1)-BACT]

4. THE BOILER SHALL BE EQUIPPED WITH A CONTROL SYSTEM TO AUTOMATICALLY REGULATE COMBUSTION AIR AND FUEL AS THE BOILER LOAD VARIES. THIS AUTOMATIC CONTROL SYSTEM SHALL BE ADJUSTED AND TUNED AT LEAST ONCE EVERY SIX MONTHS ACCORDING TO THE MANUFACTURER'S SPECIFICATIONS TO MAINTAIN ITS ABILITY TO REPEAT THE SAME PERFORMANCE AT THE SAME FIRING RANGE. NOX, O<sub>2</sub>, AND CO SHALL BE MEASURED AND RECORDED ALONG WITH THE TUNE-UP PROCEDURES.

[RULE 1303 (a) (1)-BACT]

5. RECORDS SHALL BE MAINTAINED TO DEMONSTRATE COMPLIANCE WITH CONDITION NOS. 3 AND 4. THE RECORDS SHALL BE KEPT FOR AT LEAST FIVE YEARS AND MADE AVAILABLE TO DISTRICT PERSONNEL UPON REQUEST.

[RULE 3004 (a) (4)]

#### Periodic Monitoring:

6. THE OPERATOR SHALL DETERMINE COMPLIANCE WITH THE CO EMISSION LIMIT(S) EITHER BY:  
(a) CONDUCTING A SOURCE TEST AT LEAST ONCE EVERY FIVE YEARS USING AQMD METHOD 100.1 OR 10.1; OR (b) CONDUCTING A TEST AT LEAST ANNUALLY USING A PORTABLE

## FACILITY PERMIT TO OPERATE INTERNATIONAL RECTIFIER HEXFET AMERICA

ANALYZER AND AQMD-APPROVED TEST METHOD. THE TEST SHALL BE CONDUCTED WHEN THE EQUIPMENT IS OPERATING UNDER NORMAL CONDITIONS TO DEMONSTRATE COMPLIANCE WITH RULE 1146 CONCENTRATION LIMIT. THE OPERATOR SHALL COMPLY WITH ALL GENERAL TESTING, REPORTING, AND RECORDKEEPING REQUIREMENTS IN SECTIONS E AND K OF THIS PERMIT.

[RULE 3004 (a) (4)]

7. THE OPERATOR SHALL DETERMINE COMPLIANCE WITH THE NOX EMISSION LIMIT(S) EITHER BY: (a) CONDUCTING A SOURCE TEST AT LEAST ONCE EVERY FIVE YEARS USING AQMD METHOD 100.1 OR 7.1; OR (b) CONDUCTING A TEST AT LEAST ANNUALLY USING A PORTABLE ANALYZER AND AQMD-APPROVED TEST METHOD. THE TEST SHALL BE CONDUCTED WHEN THE EQUIPMENT IS OPERATING UNDER NORMAL CONDITIONS TO DEMONSTRATE COMPLIANCE WITH RULE 1146 CONCENTRATION LIMIT. THE OPERATOR SHALL COMPLY WITH ALL GENERAL TESTING, REPORTING, AND RECORDKEEPING REQUIREMENTS IN SECTIONS E AND K OF THIS PERMIT.

[RULE 3004 (a) (4)]

### **Emissions And Requirements:**

8. THIS EQUIPMENT IS SUBJECT TO THE APPLICABLE REQUIREMENTS OF THE FOLLOWING RULES AND REGULATIONS:
- PM: 0.1 GR/SCF, RULE 409  
CO: 2000 PPMV, RULE 407  
CO: 400 PPMV, RULE 1146  
NOX: 30 PPMV, RULE 1146

## FACILITY PERMIT TO OPERATE INTERNATIONAL RECTIFIER HEXFET AMERICA

### PERMIT TO OPERATE

Permit No. G1986  
A/N 459172

#### Equipment Description:

##### AIR POLLUTION CONTROL SYSTEM CONSISTING OF:

1. ADSORBER, CAMERON-YAKIMA MODEL RADIAL 1600, CANISTER TYPE, CONSISTING OF THREE PARALLEL TRAINS (ONE STANDBY), EACH TRAIN WITH THREE CANISTERS IN SERIES, EACH CANISTER WITH 1,430 POUNDS OF ACTIVATED CARBON.
2. EXHAUST SYSTEM WITH ONE 50-HP BLOWER VENTING TWENTY-TWO PHOTOLITHOGRAPHIC TRACKS, TWO SOLVENT BENCHES, AND ONE WASTE SOLVENT STORAGE TANK.

#### Conditions:

1. OPERATION OF THIS EQUIPMENT SHALL BE CONDUCTED IN ACCORDANCE WITH ALL DATA AND SPECIFICATIONS SUBMITTED WITH THE APPLICATION UNDER WHICH THIS PERMIT IS ISSUED UNLESS OTHERWISE NOTED BELOW.  
[RULE 204]
2. THIS EQUIPMENT SHALL BE PROPERLY MAINTAINED AND KEPT IN GOOD OPERATING CONDITION AT ALL TIMES.  
[RULE 204]
3. VOC CONCENTRATIONS AT THE OUTLETS OF THE SECONDARY ADSORBERS SHALL BE MEASURED, BY A DISTRICT APPROVED ANALYZER, AND RECORDED AT LEAST ONCE IN ANY OPERATING DAY.  
[1303 (a) (1)-BACT, RULE 1303 (b) (2)-OFFSETS, RULE 3004 (a) (4)]
4. WHENEVER THE VOC CONCENTRATION AT THE OUTLET OF THE SECONDARY ADSORBER OF THE OPERATING TRAIN IS GREATER THAN 10 PPMV AS METHANE, THAT TRAIN SHALL BE SHUT DOWN IMMEDIATELY AND ADSORBENT IN ALL THREE ADSORBERS IN THAT TRAIN SHALL BE REPLACED WITH FRESH ADSORBENT BEFORE IT IS PLACED INTO SERVICE AGAIN.  
[1303 (a) (1)-BACT, RULE 1303 (b) (2)-OFFSETS]
5. RECORDS SHALL BE KEPT TO PROVE COMPLIANCE WITH CONDITION NOS. 3 AND 4. THE RECORDS SHALL BE MAINTAINED ON FILE FOR AT LEAST THE LAST FIVE YEARS AND MADE AVAILABLE TO DISTRICT PERSONNEL UPON REQUEST.  
[RULE 1303 (a) (1)-BACT, RULE 1303 (b) (2)-OFFSETS]

**FACILITY PERMIT TO OPERATE  
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**PERMIT TO OPERATE**

**Permit No. G1988  
A/N 460709**

**Equipment Description:**

STORAGE TANK T-408, SCALE INHIBITOR, 2' - 0"DIA. x 2' - 6"H., 50 GALLON CAPACITY.

**Conditions:**

1. OPERATION OF THIS EQUIPMENT SHALL BE CONDUCTED IN ACCORDANCE WITH ALL DATA AND SPECIFICATIONS SUBMITTED WITH THE APPLICATION UNDER WHICH THIS PERMIT IS ISSUED UNLESS OTHERWISE NOTED BELOW.  
[RULE 204]
2. THIS EQUIPMENT SHALL BE PROPERLY MAINTAINED AND KEPT IN GOOD OPERATING CONDITION AT ALL TIMES.  
[RULE 204]
3. THE MAXIMUM AMOUNT OF MATERIAL TRANSFERED THROUGH THIS TANK SHALL NOT EXCEED 150 GALLONS IN ANY ONE CALENDAR MONTH.  
[RULE 1303 (b) (2)-OFFSETS]
4. MATERIALS CONTAINING ANY TOXIC AIR CONTAMINANTS SPECIFIED IN RULE 1401 AMENDED MAY 2, 2005, EXCEPT HYDROGEN CHLORIDE, SULFURIC ACID AND PHOSPHORIC ACID SHALL NOT BE STORED IN THIS EQUIPMENT.  
[RULE 1401]
5. THE OPERATOR SHALL MAINTAIN RECORDS TO DEMONSTRATE COMPLIANCE WITH CONDITION NOS. 3 AND 4. THE RECORDS SHALL BE KEPT FOR THE MOST RECENT FIVE YEAR PERIOD AND MADE AVAILABLE TO AQMD PERSONNEL UPON REQUEST.  
[RULE 3004 (a) (4)]

**FACILITY PERMIT TO OPERATE  
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**PERMIT TO OPERATE**

**Permit No. G1989  
A/N 460711**

**Equipment Description:**

STORAGE TANK T-511, WASTE ACIDS, 1' - 8"W. x 3' - 0.5"L. x 1' - 8"H., 50 GALLON CAPACITY.

**Conditions:**

1. OPERATION OF THIS EQUIPMENT SHALL BE CONDUCTED IN ACCORDANCE WITH ALL DATA AND SPECIFICATIONS SUBMITTED WITH THE APPLICATION UNDER WHICH THIS PERMIT IS ISSUED UNLESS OTHERWISE NOTED BELOW.  
[RULE 204]
2. THIS EQUIPMENT SHALL BE PROPERLY MAINTAINED AND KEPT IN GOOD OPERATING CONDITION AT ALL TIMES.  
[RULE 204]
3. THE MAXIMUM AMOUNT OF WASTE ACIDS TRANSFERED THROUGH THIS TANK SHALL NOT EXCEED 45,000 GALLONS IN ANY ONE CALENDAR MONTH.  
[RULE 1303 (b) (2)-OFFSETS]
4. MATERIALS CONTAINING ANY TOXIC AIR CONTAMINANTS SPECIFIED IN RULE 1401 AMENDED MAY 2, 2005, EXCEPT HYDROGEN CHLORIDE, NITRIC ACID, PHOPHORIC ACID, SULFURIC ACID AND HYDROGEN FLUORIDE, SHALL NOT BE STORED IN THIS EQUIPMENT.  
[RULE 1401]
5. THE OPERATOR SHALL MAINTAIN RECORDS TO DEMONSTRATE COMPLIANCE WITH CONDITION NOS. 3 AND 4. THE RECORDS SHALL BE KEPT FOR THE MOST RECENT FIVE YEAR PERIOD AND MADE AVAILABLE TO AQMD PERSONNEL UPON REQUEST.  
[RULE 3004 (a) (4)]

## FACILITY PERMIT TO OPERATE INTERNATIONAL RECTIFIER HEXFET AMERICA

### PERMIT TO OPERATE

Permit No. G1990  
A/N 460712

**Equipment Description:**

STORAGE TANK T-501, WASTE SULFURIC ACID, 4' - 3"W. x 7' - 8"L. x 2' - 0"H., 375 GALLON CAPACITY.

**Conditions:**

1. OPERATION OF THIS EQUIPMENT SHALL BE CONDUCTED IN ACCORDANCE WITH ALL DATA AND SPECIFICATIONS SUBMITTED WITH THE APPLICATION UNDER WHICH THIS PERMIT IS ISSUED UNLESS OTHERWISE NOTED BELOW.  
[RULE 204]
2. THIS EQUIPMENT SHALL BE PROPERLY MAINTAINED AND KEPT IN GOOD OPERATING CONDITION AT ALL TIMES.  
[RULE 204]
3. THIS EQUIPMENT SHALL NOT BE OPERATED UNLESS IT IS VENTED ONLY TO AIR POLLUTION CONTROL EQUIPMENT WHICH IS IN FULL OPERATION AND HAS BEEN ISSUED AN OPERATING PERMIT BY THE EXECUTIVE OFFICER.  
[RULE 1303 (b) (2)-OFFSETS]
4. THE MAXIMUM AMOUNT OF WASTE SULFURIC ACID TRANSFERED THROUGH THIS TANK SHALL NOT EXCEED 670,000 GALLONS IN ANY ONE CALENDAR MONTH.  
[RULE 1303 (b) (2)-OFFSETS]
5. THE OPERATOR SHALL MAINTAIN RECORDS TO DEMONSTRATE COMPLIANCE WITH CONDITION NO. 4. THE RECORDS SHALL BE KEPT FOR THE MOST RECENT FIVE YEAR PERIOD AND MADE AVAILABLE TO AQMD PERSONNEL UPON REQUEST.  
[RULE 3004 (a) (4)]

## **FACILITY PERMIT TO OPERATE INTERNATIONAL RECTIFIER HEXFET AMERICA**

### **PERMIT TO OPERATE**

**Permit No. G1993  
A/N 460715**

**Equipment Description:**

STORAGE TANK T-504, WASTE AMMONIUM HYDROXIDE, 4' - 2"W. x 7' - 4.5"L. x 1' - 10"H., 375 GALLON CAPACITY.

**Conditions:**

1. OPERATION OF THIS EQUIPMENT SHALL BE CONDUCTED IN ACCORDANCE WITH ALL DATA AND SPECIFICATIONS SUBMITTED WITH THE APPLICATION UNDER WHICH THIS PERMIT IS ISSUED UNLESS OTHERWISE NOTED BELOW.  
[RULE 204]
2. THIS EQUIPMENT SHALL BE PROPERLY MAINTAINED AND KEPT IN GOOD OPERATING CONDITION AT ALL TIMES.  
[RULE 204]
3. THIS EQUIPMENT SHALL NOT BE OPERATED UNLESS IT IS VENTED ONLY TO AIR POLLUTION CONTROL EQUIPMENT WHICH IS IN FULL OPERATION AND HAS BEEN ISSUED AN OPERATING PERMIT BY THE EXECUTIVE OFFICER.  
[RULE 1303 (b) (2)-OFFSETS]
4. THE MAXIMUM AMOUNT OF WASTE AMMONIUM HYDROXIDE TRANSFERED THROUGH THIS TANK SHALL NOT EXCEED 120,450 GALLONS IN ANY ONE CALENDAR MONTH.  
[RULE 1303 (b) (2)-OFFSETS]
5. THE OPERATOR SHALL MAINTAIN RECORDS TO DEMONSTRATE COMPLIANCE WITH CONDITION NO. 4. THE RECORDS SHALL BE KEPT FOR THE MOST RECENT FIVE YEAR PERIOD AND MADE AVAILABLE TO AQMD PERSONNEL UPON REQUEST.  
[RULE 3004 (a) (4)]

## **FACILITY PERMIT TO OPERATE INTERNATIONAL RECTIFIER HEXFET AMERICA**

### **PERMIT TO OPERATE**

**Permit No. G1994  
A/N 460728**

**Equipment Description:**

STORAGE TANK T-141, ALUMINUM ETCH, 7' - 0"DIA. x 20' - 6"L., 5,000 GALLON CAPACITY.

**Conditions:**

1. OPERATION OF THIS EQUIPMENT SHALL BE CONDUCTED IN ACCORDANCE WITH ALL DATA AND SPECIFICATIONS SUBMITTED WITH THE APPLICATION UNDER WHICH THIS PERMIT IS ISSUED UNLESS OTHERWISE NOTED BELOW.  
[RULE 204]
2. THIS EQUIPMENT SHALL BE PROPERLY MAINTAINED AND KEPT IN GOOD OPERATING CONDITION AT ALL TIMES.  
[RULE 204]
3. THIS EQUIPMENT SHALL NOT BE OPERATED UNLESS IT IS VENTED ONLY TO AIR POLLUTION CONTROL EQUIPMENT WHICH IS IN FULL OPERATION AND HAS BEEN ISSUED AN OPERATING PERMIT BY THE EXECUTIVE OFFICER.
4. THE MAXIMUM AMOUNT OF MATERIAL TRANSFERED THROUGH THIS TANK SHALL NOT EXCEED 8,648 GALLONS IN ANY ONE CALENDAR MONTH.  
[RULE 1303 (b) (2)-OFFSETS]
5. MATERIALS CONTAINING ANY TOXIC AIR CONTAMINANTS SPECIFIED IN RULE 1401 AMENDED MAY 2, 2005, EXCEPT NITRIC ACID AND PHOSPHORIC ACID, SHALL NOT BE STORED IN THIS EQUIPMENT.  
[RULE 1401]
6. THE OPERATOR SHALL MAINTAIN RECORDS TO DEMONSTRATE COMPLIANCE WITH CONDITION NOS. 4 AND 5. THE RECORDS SHALL BE KEPT FOR THE MOST RECENT FIVE YEAR PERIOD AND MADE AVAILABLE TO AQMD PERSONNEL UPON REQUEST.  
[RULE 3004 (a) (4)]

## **FACILITY PERMIT TO OPERATE INTERNATIONAL RECTIFIER HEXFET AMERICA**

### **PERMIT TO OPERATE**

**Permit No. G1995  
A/N 460729**

#### **Equipment Description:**

MIXING TANK T-151, POLY ETCH, 4' - 6"DIA. x 5' - 6"H., 500 GALLON CAPACITY, WITH ONE 0.43 HP MIXER.

#### **Conditions:**

1. OPERATION OF THIS EQUIPMENT SHALL BE CONDUCTED IN ACCORDANCE WITH ALL DATA AND SPECIFICATIONS SUBMITTED WITH THE APPLICATION UNDER WHICH THIS PERMIT IS ISSUED UNLESS OTHERWISE NOTED BELOW.  
[RULE 204]
2. THIS EQUIPMENT SHALL BE PROPERLY MAINTAINED AND KEPT IN GOOD OPERATING CONDITION AT ALL TIMES.  
[RULE 204]
3. THIS EQUIPMENT SHALL NOT BE OPERATED UNLESS IT IS VENTED ONLY TO AIR POLLUTION CONTROL EQUIPMENT WHICH IS IN FULL OPERATION AND HAS BEEN ISSUED AN OPERATING PERMIT BY THE EXECUTIVE OFFICER.  
[RULE 1303 (b) (2)-OFFSETS]
4. THE MAXIMUM AMOUNT OF MATERIAL TRANSFERED THROUGH THIS TANK SHALL NOT EXCEED 11,348 GALLONS IN ANY ONE CALENDAR MONTH.  
[RULE 1303 (b) (2)-OFFSETS]
5. MATERIALS CONTAINING ANY TOXIC AIR CONTAMINANTS SPECIFIED IN RULE 1401 AMENDED MAY 2, 2005, EXCEPT NITRIC ACID, SHALL NOT BE STORED IN THIS EQUIPMENT.  
[RULE 1401]
6. THE OPERATOR SHALL MAINTAIN RECORDS TO DEMONSTRATE COMPLIANCE WITH CONDITION NOS. 4 AND 5. THE RECORDS SHALL BE KEPT FOR THE MOST RECENT FIVE YEAR PERIOD AND MADE AVAILABLE TO AQMD PERSONNEL UPON REQUEST.  
[RULE 3004 (a) (4)]

## FACILITY PERMIT TO OPERATE INTERNATIONAL RECTIFIER HEXFET AMERICA

### PERMIT TO OPERATE

Permit No. G1996  
A/N 460730

**Equipment Description:**

HOLDING TANK T-155, POLY ETCH, 4' - 6"DIA. x 5' - 6"H., 500 GALLON CAPACITY.

**Conditions:**

1. OPERATION OF THIS EQUIPMENT SHALL BE CONDUCTED IN ACCORDANCE WITH ALL DATA AND SPECIFICATIONS SUBMITTED WITH THE APPLICATION UNDER WHICH THIS PERMIT IS ISSUED UNLESS OTHERWISE NOTED BELOW.  
[RULE 204]
2. THIS EQUIPMENT SHALL BE PROPERLY MAINTAINED AND KEPT IN GOOD OPERATING CONDITION AT ALL TIMES.  
[RULE 204]
3. THIS EQUIPMENT SHALL NOT BE OPERATED UNLESS IT IS VENTED ONLY TO AIR POLLUTION CONTROL EQUIPMENT WHICH IS IN FULL OPERATION AND HAS BEEN ISSUED AN OPERATING PERMIT BY THE EXECUTIVE OFFICER.  
[RULE 1303 (b) (2)-OFFSETS]
4. THE MAXIMUM AMOUNT OF MATERIAL TRANSFERED THROUGH THIS TANK SHALL NOT EXCEED 11,348 GALLONS IN ANY ONE CALENDAR MONTH.  
[RULE 1303 (b) (2)-OFFSETS]
5. MATERIALS CONTAINING ANY TOXIC AIR CONTAMINANTS SPECIFIED IN RULE 1401 AMENDED MAY 2, 2005, EXCEPT NITRIC ACID, SHALL NOT BE STORED IN THIS EQUIPMENT.  
[RULE 1401]
6. THE OPERATOR SHALL MAINTAIN RECORDS TO DEMONSTRATE COMPLIANCE WITH CONDITION NOS. 4 AND 5. THE RECORDS SHALL BE KEPT FOR THE MOST RECENT FIVE YEAR PERIOD AND MADE AVAILABLE TO AQMD PERSONNEL UPON REQUEST.  
[RULE 3004 (a) (4)]

## FACILITY PERMIT TO OPERATE INTERNATIONAL RECTIFIER HEXFET AMERICA

### PERMIT TO OPERATE

Permit No. G1997  
A/N 460732

#### Equipment Description:

MIXING TANK T-191, ALUMINUM ETCH, 4' - 6"DIA. x 5' - 6"H., 500 GALLON CAPACITY, WITH ONE 0.43 HP MIXER.

#### Conditions:

1. OPERATION OF THIS EQUIPMENT SHALL BE CONDUCTED IN ACCORDANCE WITH ALL DATA AND SPECIFICATIONS SUBMITTED WITH THE APPLICATION UNDER WHICH THIS PERMIT IS ISSUED UNLESS OTHERWISE NOTED BELOW.  
[RULE 204]
2. THIS EQUIPMENT SHALL BE PROPERLY MAINTAINED AND KEPT IN GOOD OPERATING CONDITION AT ALL TIMES.  
[RULE 204]
3. THIS EQUIPMENT SHALL NOT BE OPERATED UNLESS IT IS VENTED ONLY TO AIR POLLUTION CONTROL EQUIPMENT WHICH IS IN FULL OPERATION AND HAS BEEN ISSUED AN OPERATING PERMIT BY THE EXECUTIVE OFFICER.  
[RULE 1303 (b) (2)-OFFSETS]
4. THE MAXIMUM AMOUNT OF MATERIAL TRANSFERED THROUGH THIS TANK SHALL NOT EXCEED 6,244 GALLONS IN ANY ONE CALENDAR MONTH.  
[RULE 1303 (b) (2)-OFFSETS]
5. MATERIALS CONTAINING ANY TOXIC AIR CONTAMINANTS SPECIFIED IN RULE 1401 AMENDED MAY 2, 2005, EXCEPT NITRIC ACID AND PHOSPHORIC ACID, SHALL NOT BE STORED IN THIS EQUIPMENT.  
[RULE 1401]
6. THE OPERATOR SHALL MAINTAIN RECORDS TO DEMONSTRATE COMPLIANCE WITH CONDITION NOS. 4 AND 5. THE RECORDS SHALL BE KEPT FOR THE MOST RECENT FIVE YEAR PERIOD AND MADE AVAILABLE TO AQMD PERSONNEL UPON REQUEST.  
[RULE 3004 (a) (4)]

## FACILITY PERMIT TO OPERATE INTERNATIONAL RECTIFIER HEXFET AMERICA

### PERMIT TO OPERATE

Permit No. G1998  
A/N 460733

**Equipment Description:**

HOLDING TANK T-195, ALUMINUM ETCH, 4' - 6"DIA. x 5' - 6"H., 500 GALLON CAPACITY.

**Conditions:**

1. OPERATION OF THIS EQUIPMENT SHALL BE CONDUCTED IN ACCORDANCE WITH ALL DATA AND SPECIFICATIONS SUBMITTED WITH THE APPLICATION UNDER WHICH THIS PERMIT IS ISSUED UNLESS OTHERWISE NOTED BELOW.  
[RULE 204]
2. THIS EQUIPMENT SHALL BE PROPERLY MAINTAINED AND KEPT IN GOOD OPERATING CONDITION AT ALL TIMES.  
[RULE 204]
3. THIS EQUIPMENT SHALL NOT BE OPERATED UNLESS IT IS VENTED ONLY TO AIR POLLUTION CONTROL EQUIPMENT WHICH IS IN FULL OPERATION AND HAS BEEN ISSUED AN OPERATING PERMIT BY THE EXECUTIVE OFFICER.  
[RULE 1303 (b) (2)-OFFSETS]
4. THE MAXIMUM AMOUNT OF MATERIAL TRANSFERED THROUGH THIS TANK SHALL NOT EXCEED 6,244 GALLONS IN ANY ONE CALENDAR MONTH.  
[RULE 1303 (b) (2)-OFFSETS]
5. MATERIALS CONTAINING ANY TOXIC AIR CONTAMINANTS SPECIFIED IN RULE 1401 AMENDED MAY 2, 2005, EXCEPT NITRIC ACID, AMMONIA AND PHOSPHORIC ACID SHALL NOT BE STORED IN THIS EQUIPMENT.  
[RULE 1401]
6. THE OPERATOR SHALL MAINTAIN RECORDS TO DEMONSTRATE COMPLIANCE WITH CONDITION NOS. 4 AND 5. THE RECORDS SHALL BE KEPT FOR THE MOST RECENT FIVE YEAR PERIOD AND MADE AVAILABLE TO AQMD PERSONNEL UPON REQUEST.  
[RULE 3004 (a) (4)]

## **FACILITY PERMIT TO OPERATE INTERNATIONAL RECTIFIER HEXFET AMERICA**

### **PERMIT TO OPERATE**

**Permit No. G2000  
A/N 460735**

**Equipment Description:**

HOLDING TANK T-405, WASTE SULFURIC ACID, 2' - 6"DIA. x 4' - 0"H., 140 GALLON CAPACITY.

**Conditions:**

1. OPERATION OF THIS EQUIPMENT SHALL BE CONDUCTED IN ACCORDANCE WITH ALL DATA AND SPECIFICATIONS SUBMITTED WITH THE APPLICATION UNDER WHICH THIS PERMIT IS ISSUED UNLESS OTHERWISE NOTED BELOW.  
[RULE 204]
2. THIS EQUIPMENT SHALL BE PROPERLY MAINTAINED AND KEPT IN GOOD OPERATING CONDITION AT ALL TIMES.  
[RULE 204]
3. THIS EQUIPMENT SHALL NOT RECEIVE MORE THAN 126,900 GALLONS OF WASTE SULFURIC ACID IN ANY ONE CALENDAR MONTH.  
[RULE 1303 (b) (2)-OFFSETS]
4. RECORDS SHALL BE MAINTAINED TO DEMONSTRATE COMPLIANCE WITH CONDITION NO. 3. THE RECORDS SHALL BE KEPT FOR AT LEAST THE LAST FIVE YEARS AND MADE AVAILABLE TO DISTRICT PERSONNEL UPON REQUEST.  
[RULE 3004 (a) (4)]

**FACILITY PERMIT TO OPERATE  
INTERNATIONAL RECTIFIER HEXFET AMERICA**

**PERMIT TO OPERATE**

**Permit No. G2001  
A/N 460744**

**Equipment Description:**

HOLDING TANK T-406, WASTE SULFURIC ACID, 2' - 7"DIA. x 2' - 9"H., 100 GALLON CAPACITY.

**Conditions:**

1. OPERATION OF THIS EQUIPMENT SHALL BE CONDUCTED IN ACCORDANCE WITH ALL DATA AND SPECIFICATIONS SUBMITTED WITH THE APPLICATION UNDER WHICH THIS PERMIT IS ISSUED UNLESS OTHERWISE NOTED BELOW.  
[RULE 204]
2. THIS EQUIPMENT SHALL BE PROPERLY MAINTAINED AND KEPT IN GOOD OPERATING CONDITION AT ALL TIMES.  
[RULE 204]
3. THIS EQUIPMENT SHALL NOT RECEIVE MORE THAN 93,132 GALLONS OF WASTE SULFURIC ACID IN ANY ONE CALENDAR MONTH.  
[RULE 1303 (b) (2)-OFFSETS]
4. RECORDS SHALL BE MAINTAINED TO DEMONSTRATE COMPLIANCE WITH CONDITION NO. 3. THE RECORDS SHALL BE KEPT FOR AT LEAST THE LAST FIVE YEARS AND MADE AVAILABLE TO DISTRICT PERSONNEL UPON REQUEST.  
[RULE 3004 (a) (4)]

## **FACILITY PERMIT TO OPERATE INTERNATIONAL RECTIFIER HEXFET AMERICA**

### **PERMIT TO OPERATE**

**Permit No. G2002  
A/N 460747**

#### **Equipment Description:**

##### **PHOTOLITHOGRAPHIC SYSTEM CONSISTING OF:**

1. PHOTOLITHOGRAPHIC TRACK, SVG, MODEL 86 SERIES, 4' - 2"W. x 6' - 4"L. x 3' - 4"H., 21.6 KVA.
2. TWENTY-ONE PHOTOLITHOGRAPHIC TRACKS, SVG, MODEL 88 SERIES, 4' - 2"W. x 9' - 0"L. x 3' - 4"H., 21.6 KVA.

#### **Conditions:**

1. OPERATION OF THIS EQUIPMENT SHALL BE CONDUCTED IN ACCORDANCE WITH ALL DATA AND SPECIFICATIONS SUBMITTED WITH THE APPLICATION UNDER WHICH THIS PERMIT IS ISSUED UNLESS OTHERWISE NOTED BELOW.  
[RULE 204]
2. THIS EQUIPMENT SHALL BE PROPERLY MAINTAINED AND KEPT IN GOOD OPERATING CONDITION AT ALL TIMES.  
[RULE 204]
3. THIS EQUIPMENT SHALL NOT BE OPERATED UNLESS IT IS VENTED ONLY TO AIR POLLUTION CONTROL EQUIPMENT WHICH IS IN FULL USE AND WHICH HAS BEEN ISSUED A PERMIT TO OPERATE BY THE EXECUTIVE OFFICER.  
[RULE 1164]
4. VOC EMISSIONS FROM THIS EQUIPMENT SHALL BE CALCULATED AND RECORDED. THE VOC EMISSIONS SHALL BE THE TOTAL AMOUNT OF PHOTORESIST USED IN THIS EQUIPMENT, EXCLUDING SALVAGE PHOTORESIST, DISCOUNTED BY THE NON-VOLATILE PORTION OF THE PHOTORESIST, AND THEN DISCOUNTED BY 98.7% (THE CONTROL EFFICIENCY OF THE CONTROL SYSTEM VENTING THIS EQUIPMENT).  
[RULE 1303 (b) (2)-OFFSETS]
5. RECORDS SHALL BE KEPT TO DEMONSTRATE COMPLIANCE WITH CONDITION NO. 4. THE RECORDS SHALL BE MAINTAINED ON FILE FOR AT LEAST THE LAST FIVE YEARS AND MADE AVAILABLE TO DISTRICT PERSONNEL UPON REQUEST.  
[RULE 3004 (a) (4)]

**FACILITY PERMIT TO OPERATE  
INTERNATIONAL RECTIFIER HEXFET AMERICA**

**PERMIT TO CONSTRUCT/OPERATE**

**Permit No. G1978  
A/N 492804**

**Equipment Description:**

**WET CHEMICAL PROCESSING AND SOLVENT CLEANING SYSTEM CONSISTING OF:**

1. THIRTEEN ACID ETCH/CLEAN MACHINES, FSI, MODEL MERCURY, EACH 3' - 4"W. x 2' - 5"L. x 5' - 7"H., 4.4 KVA ELECTRICALLY POWERED.
2. TWO ACID ETCHERS, SEZ, MODEL SP203, EACH 3' - 4"W. x 2' - 5"L. x 5' - 7"H., EACH 4.4 KVA ELECTRICALLY POWERED.
3. TWO QUARTZ CLEANING MACHINES, POLY FLOW, EACH 2' - 8"W. x 10' - 11"L. x 4' - 6"H., EACH 1.75 KVA ELECTRICALLY POWERED.
4. ACID WET BENCH, ULTRAFAB, 3' - 0"W. x 8' - 0"L. x 5' - 6"H., 1.8 KVA ELECTRICALLY POWERED.
5. SOURCE CLEANING BENCH, SPEC, MODEL SPH-30SST, 2' - 6"W. x 6' - 0"L. x 6' - 6"H., 1.8 KVA ELECTRICALLY POWERED.
6. MAINTENANCE BENCH, SPEC, MODEL HAC968020W, 2' - 6"W. x 3' - 0"L. x 6' - 4"H., 1.8 KVA ELECTRICALLY POWERED.

**Conditions:**

1. OPERATION OF THIS EQUIPMENT SHALL BE CONDUCTED IN ACCORDANCE WITH ALL DATA AND SPECIFICATIONS SUBMITTED WITH THE APPLICATION UNDER WHICH THIS PERMIT IS ISSUED UNLESS OTHERWISE NOTED BELOW.  
[RULE 204]
2. THIS EQUIPMENT SHALL BE PROPERLY MAINTAINED AND KEPT IN GOOD OPERATING CONDITION AT ALL TIMES.  
[RULE 204]
3. THIS EQUIPMENT SHALL NOT BE OPERATED UNLESS IT IS VENTED ONLY TO AIR POLLUTION CONTROL EQUIPMENT WHICH IS IN FULL USE AND WHICH HAS BEEN ISSUED AN OPERATING PERMIT BY THE EXECUTIVE OFFICER.  
[RULE 1303 (b) (2)-OFFSETS]
4. VOC EMISSIONS FROM THIS EQUIPMENT SHALL BE CALCULATED AND RECORDED. THE VOC EMISSIONS SHALL BE THE TOTAL AMOUNT OF SOLVENT USED IN THIS EQUIPMENT, EXCLUDING SALVAGE SOLVENT, AND IF VENTING TO A VOC CONTROL SYSTEM, DISCOUNTED BY 98.7% (THE CONTROL EFFICIENCY OF THE VOC CONTROL SYSTEM VENTING THIS EQUIPMENT).  
[RULE 1303 (b) (2)-OFFSETS]

**FACILITY PERMIT TO OPERATE  
INTERNATIONAL RECTIFIER HEXFET AMERICA**

5. RECORDS SHALL BE KEPT TO DEMONSTRATE COMPLIANCE WITH CONDITION NO. 4. THE RECORDS SHALL BE MAINTAINED ON FILE FOR AT LEAST THE LAST FIVE YEARS AND MADE AVAILABLE TO DISTRICT PERSONNEL UPON REQUEST.

[RULE 3004 (a) (4)]

## FACILITY PERMIT TO OPERATE INTERNATIONAL RECTIFIER HEXFET AMERICA

### PERMIT TO OPERATE

Permit No. G4083  
A/N 491984

#### Equipment Description:

STORAGE TANK T-506, WASTE WATER, 4' - 0"W. x 7' - 3"L. x 1' - 11"H., 375 GALLON CAPACITY.

#### Conditions:

1. OPERATION OF THIS EQUIPMENT SHALL BE CONDUCTED IN ACCORDANCE WITH ALL DATA AND SPECIFICATIONS SUBMITTED WITH THE APPLICATION UNDER WHICH THIS PERMIT IS ISSUED UNLESS OTHERWISE NOTED BELOW.  
[RULE 204]
2. THIS EQUIPMENT SHALL BE PROPERLY MAINTAINED AND KEPT IN GOOD OPERATING CONDITION AT ALL TIMES.  
[RULE 204]
3. THIS EQUIPMENT SHALL NOT BE OPERATED UNLESS IT IS VENTED ONLY TO AIR POLLUTION CONTROL EQUIPMENT WHICH IS IN FULL USE AND WHICH HAS BEEN ISSUED A PERMIT TO OPERATE BY THE EXECUTIVE OFFICER.  
[RULE 1303 (a) (1)-BACT]
4. THIS EQUIPMENT SHALL NOT RECEIVE MORE THAN 1,839,600 GALLONS OF WASTE WATER IN ANY ONE CALENDAR MONTH.  
[RULE 1303 (b) (2)-OFFSETS]
5. MATERIALS USED IN THIS EQUIPMENT SHALL NOT CONTAIN ANY TOXIC AIR CONTAMINANTS IDENTIFIED IN RULE 1401, TABLE I, WITH AN EFFECTIVE DATE OF MARCH 7, 2008 OR EARLIER, EXCEPT FOR AMMONIA (CAS # 7664-41-7), SULFURIC ACID (CAS # 7664-93-9), HYDROCHLORIC ACID (CAS # 7647-01-0), NITRIC ACID (CAS # 7697-37-2), PHOSPHORIC ACID (CAS # 7664-38-2), AND HYDROFLUORIC ACID (CAS # 7664-39-3).  
[RULE 1401]
6. RECORDS SHALL BE MAINTAINED TO DEMONSTRATE COMPLIANCE WITH CONDITION NO. 4. THE RECORDS SHALL BE KEPT FOR AT LEAST THE LAST FIVE YEARS AND MADE AVAILABLE TO DISTRICT PERSONNEL UPON REQUEST.  
[RULE 3004 (a) (4)]

**FACILITY PERMIT TO OPERATE  
INTERNATIONAL RECTIFIER HEXFET AMERICA**

**PERMIT TO CONSTRUCT/OPERATE**

**Permit No. G4072  
A/N 498032**

**Equipment Description:**

WAFER ETCHING AND STRIPPING LINE NO. 2, AKRION GAMA SERIES, CONSISTING OF:

1. TANK NO. 1, ETCHING/MILLING, AMMONIUM HYDROXIDE/HYDROGEN PEROXIDE, 0' - 10.82"W. x 1' - 4.38"L. x 0' - 7.15"H., WITH ONE 400-W MEGASONIC CLEANER, AND ONE 3-KW HEATER.
2. TANK NO. 3, HYDROGEN FLUORIDE, 0' - 11.38"W. x 1' - 4.38"L. x 0' - 11.2"H. (INSIDE DIMENSIONS), WITH ONE 8-KW HEATER.
3. TANK NO. 4, STRIPPING, HYDROGEN CHLORIDE, 0' - 9.5"W. x 1' - 4.37"L. x 0' - 11.13"H., UNHEATED.
4. TANK NO. 5, RINSING/DRYING, DEIONIZED WATER WITH ISOPROPYL ALCOHOL, 0' - 10"W. x 1' - 5"L. x 0' - 10"H., UNHEATED.
5. ASSOCIATED RINSE TANKS.

**Conditions:**

1. OPERATION OF THIS EQUIPMENT SHALL BE CONDUCTED IN ACCORDANCE WITH ALL DATA AND SPECIFICATIONS SUBMITTED WITH THE APPLICATION UNDER WHICH THIS PERMIT IS ISSUED UNLESS OTHERWISE NOTED BELOW.  
[RULE 204]
2. THIS EQUIPMENT SHALL BE PROPERLY MAINTAINED AND KEPT IN GOOD OPERATING CONDITION AT ALL TIMES.  
[RULE 204]
3. THIS EQUIPMENT SHALL NOT BE OPERATED UNLESS TANKS 1, 3, 4, AND 5 ARE VENTED ONLY TO AIR POLLUTION CONTROL EQUIPMENT WHICH IS IN FULL USE AND WHICH HAS BEEN ISSUED AN OPERATING PERMIT.  
[RULE 1303 (a) (1)-BACT]
4. THE TOTAL AMOUNT OF ISOPROPYL ALCOHOL USED IN THIS EQUIPMENT SHALL NOT EXCEED 10 GALLONS IN ANY ONE CALENDAR MONTH.  
[RULE 1303 (b) (2)-OFFSETS]
5. VOC EMISSIONS FROM THIS EQUIPMENT SHALL BE CALCULATED AND RECORDED. THE VOC EMISSIONS SHALL BE THE TOTAL AMOUNT OF ISOPROPYL ALCOHOL USED IN THIS EQUIPMENT DISCOUNTED BY 98.7%.  
[RULE 1303 (b) (2)-OFFSETS]

**FACILITY PERMIT TO OPERATE  
INTERNATIONAL RECTIFIER HEXFET AMERICA**

6. RECORDS SHALL BE MAINTAINED TO DEMONSTRATE COMPLIANCE WITH CONDITIONS 4 AND 5. THE RECORDS SHALL BE KEPT ON FILE FOR AT LEAST THE LAST FIVE YEARS AND MADE AVAILABLE TO DISTRICT PERSONNEL UPON REQUEST.  
[RULE 1303 (b) (2)-OFFSETS, RULE 1401]

## **FACILITY PERMIT TO OPERATE INTERNATIONAL RECTIFIER HEXFET AMERICA**

### **PERMIT TO OPERATE**

**Permit No. G4073  
A/N 498033**

#### **Equipment Description:**

WAFER ETCHING AND STRIPPING LINE NO. 1, AKRION GAMA SERIES, CONSISTING OF:

1. TANK NO. 1, ETCHING/MILLING, HYDROGEN FLUORIDE/AMMONIUM FLUORIDE, 0' - 9.5"W. x 1' - 4.5"L. x 0' - 11.5"H., WITH ONE 3-KW HEATER.
2. TANK NO. 4, STRIPPING, SULFURIC ACID/HYDROGEN PEROXIDE, 0' - 9.5"W. x 1' - 4.5"L. x 0' - 11.5"H., WITH ONE 8-KW HEATER.
3. TANK NO. 6, RINSING/DRYING, DEIONIZED WATER WITH ISOPROPYL ALCOHOL, 0' - 9.5"W. x 1' - 4.5"L. x 0' - 11.5"H., WITH ONE 3-KW HEATER.
4. ASSOCIATED RINSE TANKS.

#### **Conditions:**

1. OPERATION OF THIS EQUIPMENT SHALL BE CONDUCTED IN ACCORDANCE WITH ALL DATA AND SPECIFICATIONS SUBMITTED WITH THE APPLICATION UNDER WHICH THIS PERMIT IS ISSUED UNLESS OTHERWISE NOTED BELOW.  
[RULE 204]
2. THIS EQUIPMENT SHALL BE PROPERLY MAINTAINED AND KEPT IN GOOD OPERATING CONDITION AT ALL TIMES.  
[RULE 204]
3. THIS EQUIPMENT SHALL NOT BE OPERATED UNLESS TANKS 1 AND 4 ARE VENTED ONLY TO AIR POLLUTION CONTROL EQUIPMENT WHICH IS IN FULL USE AND WHICH HAS BEEN ISSUED AN OPERATING PERMIT.  
[RULE 1303 (a) (1)-BACT]
4. THE TOTAL AMOUNT OF ISOPROPYL ALCOHOL USED IN THIS EQUIPMENT SHALL NOT EXCEED 10 GALLONS IN ANY ONE CALENDAR MONTH.  
[RULE 1303 (b) (2)-OFFSETS]
5. VOC EMISSIONS FROM THIS EQUIPMENT SHALL BE CALCULATED AND RECORDED. THE VOC EMISSIONS SHALL BE THE TOTAL AMOUNT OF ISOPROPYL ALCOHOL USED IN THIS EQUIPMENT.  
[RULE 1303 (b) (2)-OFFSETS]
6. RECORDS SHALL BE MAINTAINED TO DEMONSTRATE COMPLIANCE WITH CONDITIONS 4 AND 5. THE RECORDS SHALL BE KEPT ON FILE FOR AT LEAST THE LAST FIVE YEARS AND MADE AVAILABLE TO DISTRICT PERSONNEL UPON REQUEST.  
[RULE 1303 (b) (2)-OFFSETS, RULE 1401]

**FACILITY PERMIT TO OPERATE  
INTERNATIONAL RECTIFIER HEXFET AMERICA**

**PERMIT TO CONSTRUCT/OPERATE**

**Permit No. G4080  
A/N 498040**

**Equipment Description:**

STORAGE TANK T-121, PRE-MIX PAE, 7' - 0"DIA. x 6' - 10"L., 2,000 GALLON CAPACITY.

**Conditions:**

1. OPERATION OF THIS EQUIPMENT SHALL BE CONDUCTED IN ACCORDANCE WITH ALL DATA AND SPECIFICATIONS SUBMITTED WITH THE APPLICATION UNDER WHICH THIS PERMIT IS ISSUED UNLESS OTHERWISE NOTED BELOW.  
[RULE 204]
2. THIS EQUIPMENT SHALL BE PROPERLY MAINTAINED AND KEPT IN GOOD OPERATING CONDITION AT ALL TIMES.  
[RULE 204]
3. THIS EQUIPMENT SHALL NOT BE OPERATED UNLESS IT IS VENTED ONLY TO AIR POLLUTION CONTROL EQUIPMENT WHICH IS IN FULL USE AND WHICH HAS BEEN ISSUED A PERMIT TO OPERATE BY THE EXECUTIVE OFFICER.  
[RULE 1303 (a) (1)-BACT]
4. THIS EQUIPMENT SHALL NOT RECEIVE MORE THAN 1,000 GALLONS OF MIXED ACIDS IN ANY ONE CALENDAR MONTH.  
[RULE 1303 (b) (2)-OFFSETS]
5. MATERIALS USED IN THIS EQUIPMENT SHALL NOT CONTAIN ANY TOXIC AIR CONTAMINANTS IDENTIFIED IN RULE 1401, TABLE I, WITH AN EFFECTIVE DATE OF MARCH 7, 2008 OR EARLIER, EXCEPT FOR NITRIC ACID (CAS # 7697-37-2) AND PHOSPHORIC ACID (CAS # 7664-38-2).  
[RULE 1401]
6. RECORDS SHALL BE MAINTAINED TO DEMONSTRATE COMPLIANCE WITH CONDITION NO. 3. THE RECORDS SHALL BE KEPT FOR AT LEAST THE LAST FIVE YEARS AND MADE AVAILABLE TO DISTRICT PERSONNEL UPON REQUEST.  
[RULE 3004 (a) (4)]

## FACILITY PERMIT TO OPERATE INTERNATIONAL RECTIFIER HEXFET AMERICA

### PERMIT TO OPERATE

Permit No. G4081  
A/N 498041

**Equipment Description:**

STORAGE TANK T-411, SCALE INHIBITOR, 1' - 3"DIA. x 1' - 10"H., 20 GALLON CAPACITY.

**Conditions:**

1. OPERATION OF THIS EQUIPMENT SHALL BE CONDUCTED IN ACCORDANCE WITH ALL DATA AND SPECIFICATIONS SUBMITTED WITH THE APPLICATION UNDER WHICH THIS PERMIT IS ISSUED UNLESS OTHERWISE NOTED BELOW.  
[RULE 204]
2. THIS EQUIPMENT SHALL BE PROPERLY MAINTAINED AND KEPT IN GOOD OPERATING CONDITION AT ALL TIMES.  
[RULE 204]
3. THIS EQUIPMENT SHALL NOT RECEIVE MORE THAN 50 GALLONS OF SCALE INHIBITOR IN ANY ONE CALENDAR MONTH.  
[RULE 1303 (b) (2)-OFFSETS]
4. MATERIALS USED IN THIS EQUIPMENT SHALL NOT CONTAIN ANY TOXIC AIR CONTAMINANTS IDENTIFIED IN RULE 1401, TABLE I, WITH AN EFFECTIVE DATE OF MARCH 7, 2008 OR EARLIER, EXCEPT FOR HYDROCHLORIC ACID (CAS # 7647-01-0), PHOSPHORIC ACID (CAS # 7664-38-2), AND SULFURIC ACID (CAS # 7664-93-9).  
[RULE 1401]
5. RECORDS SHALL BE MAINTAINED TO DEMONSTRATE COMPLIANCE WITH CONDITION NO. 3. THE RECORDS SHALL BE KEPT FOR AT LEAST THE LAST FIVE YEARS AND MADE AVAILABLE TO DISTRICT PERSONNEL UPON REQUEST.  
[RULE 3004 (a) (4)]

## FACILITY PERMIT TO OPERATE INTERNATIONAL RECTIFIER HEXFET AMERICA

### PERMIT TO OPERATE

Permit No.  
A/N 498042

#### Equipment Description:

STORAGE TANK T-525, MIXED ACIDS, 1' - 6"W. x 2' - 0"L. x 1' - 6"H., 30 GALLON CAPACITY, WITH ONE 0.33-HP PUMP.

#### Conditions:

1. OPERATION OF THIS EQUIPMENT SHALL BE CONDUCTED IN ACCORDANCE WITH ALL DATA AND SPECIFICATIONS SUBMITTED WITH THE APPLICATION UNDER WHICH THIS PERMIT IS ISSUED UNLESS OTHERWISE NOTED BELOW.  
[RULE 204]
2. THIS EQUIPMENT SHALL BE PROPERLY MAINTAINED AND KEPT IN GOOD OPERATING CONDITION AT ALL TIMES.  
[RULE 204]
3. THIS EQUIPMENT SHALL NOT BE OPERATED UNLESS IT IS VENTED ONLY TO AIR POLLUTION CONTROL EQUIPMENT WHICH IS IN FULL USE AND WHICH HAS BEEN ISSUED A PERMIT TO OPERATE BY THE EXECUTIVE OFFICER.  
[RULE 1303 (a) (1)-BACT]
4. THE MAXIMUM AMOUNT OF WASTE ACIDS TRANSFERED THROUGH THIS TANK SHALL NOT EXCEED 900 GALLONS IN ANY ONE CALENDAR MONTH.  
[RULE 1303 (b) (2)-OFFSETS]
5. MATERIALS CONTAINING ANY TOXIC AIR CONTAMINANTS SPECIFIED IN RULE 1401 AMENDED MAY 2, 2005, EXCEPT HYDROCHLORIC ACID (CAS # 7647-01-0), NITRIC ACID (CAS # 7697-37-2), SULFURIC ACID (CAS # 7664-93-9), HYDROFLUORIC ACID (CAS # 7664-39-3), PHOSPHORIC ACID (CAS # 7664-38-2), SODIUM HYDROXIDE (CAS # 1310732), COPPER AND COPPER COMPOUNDS (CAS # 7440508), CHROMIC TRIOXIDE [AS CHROMIC ACID] (CAS # 1333-82-0), AMMONIA (CAS # 7664-41-7), AND ETHYLENE GLYCOL (CAS # 107-21-1) SHALL NOT BE STORED IN THIS EQUIPMENT.  
[RULE 1401]
6. RECORDS SHALL BE MAINTAINED TO DEMONSTRATE COMPLIANCE WITH CONDITION NOS. 4 AND 5. THE RECORDS SHALL BE KEPT FOR AT LEAST THE LAST FIVE YEARS AND MADE AVAILABLE TO DISTRICT PERSONNEL UPON REQUEST.  
[RULE 3004 (a) (4)]

## FACILITY PERMIT TO OPERATE INTERNATIONAL RECTIFIER HEXFET AMERICA

### PERMIT TO CONSTRUCT/OPERATE

**Permit No.  
A/N 503213**

**Equipment Description:**

**PHOTOLITHOGRAPHIC SYSTEM CONSISTING OF:**

1. TWO PHOTOLITHOGRAPHIC TRACKS, SVG, MODEL 86 SERIES, EACH 4' - 2"W. x 9' - 0"L. x 3' - 4"H., AND EACH 12.5 KVA.
2. TWO PHOTOLITHOGRAPHIC TRACKS, DNS, MODEL 80B, EACH 4' - 8"W. x 13' - 2"L. x 5' - 9"H., AND EACH 40.1 KVA.
3. PHOTORESIST MACHINE, STRIPPING, RHETECH, MODEL CLASS 1, 3' - 6"W. x 6' - 6"L. x 5' - 3"H., 12.5 KVA.
4. PHOTORESIST MACHINE, STRIPPING, RHETECH, MODEL SST-260, 2' - 8"W. x 7' - 0"L. x 5' - 0"H., 18 KVA ELECTRICALLY POWERED.
5. PHOTOLITHOGRAPHIC TRACK, TEL MARK 7, 4' - 6"W. x 14' - 0"L. x 6' - 8"H., 25.6 KVA ELECTRICALLY POWERED.

**Conditions:**

1. OPERATION OF THIS EQUIPMENT SHALL BE CONDUCTED IN ACCORDANCE WITH ALL DATA AND SPECIFICATIONS SUBMITTED WITH THE APPLICATION UNDER WHICH THIS PERMIT IS ISSUED UNLESS OTHERWISE NOTED BELOW.  
[RULE 204]
2. THIS EQUIPMENT SHALL BE PROPERLY MAINTAINED AND KEPT IN GOOD OPERATING CONDITION AT ALL TIMES.  
[RULE 204]
3. THIS EQUIPMENT SHALL NOT BE OPERATED UNLESS FIVE PHOTOLITHOGRAPHIC TRACKS AND TWO PHOTORESIST MACHINES ARE VENTED ONLY TO AIR POLLUTION CONTROL EQUIPMENT WHICH IS IN FULL USE AND WHICH HAS BEEN ISSUED A PERMIT TO OPERATE BY THE EXECUTIVE OFFICER.  
[RULE 1164]
4. VOC EMISSIONS FROM THIS EQUIPMENT SHALL BE CALCULATED AND RECORDED. THE VOC EMISSIONS SHALL BE THE TOTAL AMOUNT OF SOLVENT AND PHOTORESIST USED IN THIS EQUIPMENT, EXCLUDING SALVAGE SOLVENT AND PHOTORESIST, DISCOUNTED BY THE NON-VOLATILE PORTION OF THE PHOTORESIST, AND THEN DISCOUNTED BY 95% IF THE EQUIPMENT VENTS TO MCGILL OXIDIZER, OR 98.7% IF THE EQUIPMENT VENTS TO JOHN ZINK OXIDIZER.  
[RULE 1303 (b) (2)-OFFSETS]

**FACILITY PERMIT TO OPERATE  
INTERNATIONAL RECTIFIER HEXFET AMERICA**

5. RECORDS SHALL BE KEPT TO DEMONSTRATE COMPLIANCE WITH CONDITION NO. 4. THE RECORDS SHALL BE MAINTAINED ON FILE FOR AT LEAST THE LAST FIVE YEARS AND MADE AVAILABLE TO DISTRICT PERSONNEL UPON REQUEST.

[RULE 3004 (a) (4)]

## FACILITY PERMIT TO OPERATE INTERNATIONAL RECTIFIER HEXFET AMERICA

### PERMIT TO CONSTRUCT/OPERATE

Permit No.  
A/N 503214

#### Equipment Description:

##### AIR POLLUTION CONTROL SYSTEM CONSISTING OF:

1. WASTE GAS BLOWER.
2. THERMAL OXIDIZER, MCGILL, MODEL V-100, HORIZONTAL CYLINDRICAL TYPE, WASTE GAS/NATURAL GAS DIRECT FIRED, 5' - 0"DIA. x 10' - 0"L. (COMBUSTION CHAMBER), 5,000,000 BTU PER HOUR.
3. PREHEAT EXCHANGER, E-101, ECLIPSE, PLATE TYPE.
4. EXHAUST SYSTEM WITH ONE 40-HP BLOWER VENTING SIX PHOTOTRACKS, TWO PHOTORESIST MACHINES, ONE WASTE SOLVENT STORAGE TANK, AND ONE SOLVENT BENCH.

#### Conditions:

1. OPERATION OF THIS EQUIPMENT SHALL BE CONDUCTED IN COMPLIANCE WITH ALL DATA AND SPECIFICATIONS SUBMITTED WITH THE APPLICATION UNDER WHICH THIS PERMIT IS ISSUED UNLESS OTHERWISE NOTED BELOW.  
[RULE 204]
2. THIS EQUIPMENT SHALL BE PROPERLY MAINTAINED AND KEPT IN GOOD OPERATING CONDITION AT ALL TIMES.  
[RULE 204]
3. A TEMPERATURE INDICATOR SHALL BE INSTALLED TO MEASURE THE COMBUSTION CHAMBER TEMPERATURE.  
[RULE 1303 (a) (1)-BACT]
4. A TEMPERATURE OF NOT LESS THAN 1400°F SHALL BE MAINTAINED IN THE COMBUSTION CHAMBER WHEN THE EQUIPMENT IT SERVES IS IN OPERATION EXCLUDING A STARTUP PERIOD NOT TO EXCEED 30 MINUTES.  
[RULE 1303 (a) (1)-BACT]
5. THE OVERALL VOC CONTROL EFFICIENCY (COLLECTION AND DESTRUCTION) OF THIS EQUIPMENT SHALL NOT BE LESS THAN 95.0%.  
[RULE 1303 (b) (2)-OFFSETS, RULE 1164]
6. A NON-RESETTABLE FUEL FLOWMETER, INDICATING CUBIC FEET, SHALL BE INSTALLED IN THE NATURAL GAS SUPPLY LINE TO THIS EQUIPMENT.  
[RULE 1303 (b) (2)-OFFSETS; RULE 1401]
7. THE TOTAL QUANTITY OF NATURAL GAS CONSUMED IN THIS OXIDIZER AND JOHN ZINK OXIDIZER SHALL NOT EXCEED 3,428,570 STANDARD CUBIC FEET IN ANY ONE CALENDAR MONTH.  
[RULE 1303 (b) (2)-OFFSETS; RULE 1401]

## FACILITY PERMIT TO OPERATE INTERNATIONAL RECTIFIER HEXFET AMERICA

8. THIS AIR POLLUTION CONTROL (APC) SYSTEM SHALL NOT BE USED TO VENT ANY EQUIPMENT THAT IS USING HALOGENATED HYDROCARBONS.

[RULE 401]

9. RECORDS SHALL BE MAINTAINED TO DEMONSTRATE COMPLIANCE WITH CONDITION NOS. 4, 5, 7, AND 8. THE RECORDS SHALL BE KEPT FOR AT LEAST FIVE YEARS AND MADE AVAILABLE TO DISTRICT PERSONNEL UPON REQUEST.

[RULE 3004 (a) (4)]

### Periodic Monitoring:

10. THE OPERATOR SHALL INSTALL AND MAINTAIN A DEVICE TO CONTINUOUSLY RECORD THE TEMPERATURE OF THE COMBUSTION CHAMBER.

[RULE 3004 (a) (4)]

### Emissions And Requirements:

11. THIS EQUIPMENT IS SUBJECT TO THE APPLICABLE REQUIREMENTS OF THE FOLLOWING RULES AND REGULATIONS:

CO: 2000 PPMV, RULE 407

PM: 0.1 GR/SCF, RULE 409

PM: RULE 404, SEE APPENDIX B FOR EMISSION LIMITS

## FACILITY PERMIT TO OPERATE INTERNATIONAL RECTIFIER HEXFET AMERICA

### PERMIT TO CONSTRUCT/OPERATE

Permit No.  
A/N 503215

#### Equipment Description:

#### WET CHEMICAL/SOLVENT CLEANING SYSTEM CONSISTING OF:

1. ACID WET BENCH, SPEC, 3' - 0"W. x 8' - 0"L. x 6' - 4"H., 1.7 KVA ELECTRICALLY POWERED.
2. SOLVENT BENCH, SPEC, 3' - 0"W. x 7' - 0"L. x 6' - 5"H., 1.7 KVA ELECTRICALLY POWERED.
3. ACID WET BENCH, LUNAIRE, FH-96PP, SERIAL NO. L-1561, 2' - 9"W. x 5' - 0"L. x 6' - 0"H., 0.3 KW.
4. TWO WET PROCESS STATIONS, SPEC, MODEL SBXAT5-80, EACH 9' - 0"W. x 5' - 0"L. x 6' - 8"H., EACH WITH ONE 6-KW HEATER AND ONE 3-KW HEATER.
5. WET PROCESS STATION, SPEC, MODEL SBXAT5-80, 9' - 0"W. x 5' - 0"L. x 6' - 8"H. WITH TWO 3-KW HEATERS.
6. TWO ACID ETCH/CLEAN MACHINES, FSI, MODEL MERCURY, EACH 3' - 4"W. x 2' - 5"L. x 5' - 7"H., 4.4 KVA ELECTRICALLY POWERED.
7. WET PROCESS STATION, SPEC, MODEL SBXAT5-80, 9' - 0"W. x 5' - 0"L. x 6' - 8"H., WITH TWO 3-KW HEATERS.
8. WET NITRIDE ETCH BENCH, SUBMICRON SYSTEMS, 0' - 10.5"W. x 1' - 5"L. x 1' - 0"H.

#### Conditions:

1. OPERATION OF THIS EQUIPMENT SHALL BE CONDUCTED IN ACCORDANCE WITH ALL DATA AND SPECIFICATIONS SUBMITTED WITH THE APPLICATION UNDER WHICH THIS PERMIT IS ISSUED UNLESS OTHERWISE NOTED BELOW.  
[RULE 204]
2. THIS EQUIPMENT SHALL BE PROPERLY MAINTAINED AND KEPT IN GOOD OPERATING CONDITION AT ALL TIMES.  
[RULE 204]
3. THIS EQUIPMENT SHALL NOT BE OPERATED UNLESS TWO ACID ETCH/CLEAN MACHINES, TWO ACID WET BENCHES, ONE SOLVENT BENCH, FOUR WET PROCESS STATIONS, AND ONE WET NITRIDE ETCH BENCH ARE VENTED ONLY TO AIR POLLUTION CONTROL EQUIPMENT WHICH IS IN FULL USE AND WHICH HAS BEEN ISSUED AN OPERATING PERMIT BY THE EXECUTIVE OFFICER.  
[RULE 1303 (b) (2)-OFFSETS]
4. VOC EMISSIONS FROM THIS EQUIPMENT SHALL BE CALCULATED AND RECORDED. THE VOC EMISSION SHALL BE THE TOTAL AMOUNT OF SOLVENT USED IN THIS EQUIPMENT,

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EXCLUDING SALVAGE SOLVENT, DISCOUNTED BY 95% IF THE EQUIPMENT VENTS TO MCGILL OXIDIZER, OR 98.7% IF THE EQUIPMENT VENTS TO JOHN ZINK OXIDIZER.

[RULE 1303 (b) (2)-OFFSETS]

5. RECORDS SHALL BE KEPT TO DEMONSTRATE COMPLIANCE WITH CONDITION NO. 4. THE RECORDS SHALL BE MAINTAINED ON FILE FOR AT LEAST THE LAST FIVE YEARS AND MADE AVAILABLE TO DISTRICT PERSONNEL UPON REQUEST.

[RULE 1303 (b) (2)-OFFSETS]

## FACILITY PERMIT TO OPERATE INTERNATIONAL RECTIFIER HEXFET AMERICA

### PERMIT TO CONSTRUCT/OPERATE

**Permit No.**  
**A/N 503216**

**Equipment Description:**

**AIR POLLUTION CONTROL SYSTEM CONSISTING OF:**

1. THREE BURN BOXES, METRON, MODEL GUARDIAN GS8, EACH 1' - 9"W. x 6' - 4"L. x 4' - 10.2"H. WITH ONE HYDROGEN-FIRED BURNER, 17,496 BTU PER HOUR.
2. DRY SCRUBBER, NOVAPURE, MODEL 400 SERIES, 2' - 0"W. x 4' - 0"L. x 5' - 10"H., DUAL CANISTER CONFIGURATION TYPE (ONE STANDBY), EACH CANISTER WITH A MINIMUM OF 37 GALLONS OF RESIN, VENTING ONE ION IMPLANTER.
3. DRY SCRUBBER, NOVAPURE, MODEL 300 SERIES, 2' - 0"W. x 2' - 0"L. x 5' - 6"H., WITH 32 GALLONS OF RESIN, AND A BY-PASS CANISTER WITH A MINIMUM OF 0.3 GALLON OF RESIN, VENTING ONE ION IMPLANTER.
4. SCRUBBER NO. 1, HARRINGTON, MODEL ECH 99-4TP, HORIZONTAL PACKED TYPE, 4' - 5"W. x 9' - 0"L. x 9' - 0"H., WITH 9 FEET OF NO. 2 JAEGER TRI-PACKS PACKING, A MIST ELIMINATOR, AND TWO 10-HP RECIRCULATION PUMPS.
5. SCRUBBER NO. 2, HARRINGTON, MODEL ECH 99-4TP, HORIZONTAL PACKED TYPE, 4' - 5"W. x 9' - 0"L. x 9' - 0"H., WITH 9 FEET OF NO. 2 JAEGER TRI-PACKS PACKING, A MIST ELIMINATOR, AND TWO 10-HP RECIRCULATION PUMPS.
6. EXHAUST SYSTEM WITH THREE 50-HP BLOWERS AND ONE 50-HP BACK-UP BLOWER VENTING FOUR ION IMPLANTERS, THREE DIFFUSION FURNACES, EIGHT GAS CABINETS, THREE PLASMA ETCHERS, TWO ACID ETCHERS, EIGHT ACID WET BENCHES, THIRTY-NINE CHEMICALS STORAGE TANKS, ONE LAM ALLIANCE ETCHER, THREE P5000 ETCHERS, ONE APPLIED MATERIALS CENTURA PLASMA ETCHER, ONE PECVD MACHINE AND ONE RTA UNIT.

**Conditions:**

1. OPERATION OF THIS EQUIPMENT SHALL BE CONDUCTED IN ACCORDANCE WITH ALL DATA AND SPECIFICATIONS SUBMITTED WITH THE APPLICATION UNDER WHICH THIS PERMIT IS ISSUED UNLESS OTHERWISE NOTED BELOW.  
[RULE 204]
2. THIS EQUIPMENT SHALL BE PROPERLY MAINTAINED AND KEPT IN GOOD OPERATING CONDITION AT ALL TIMES.  
[RULE 204]
3. A FLOW METER, INDICATING GALLONS PER MINUTE (GPM), SHALL BE INSTALLED AND MAINTAINED IN THE SCRUBBING SOLUTION RECIRCULATION LINE TO SCRUBBER NO. 1.  
[RULE 1303 (b) (2)-OFFSETS]
4. NOT LESS THAN 150 GPM OF SCRUBBING SOLUTION SHALL BE SUPPLIED TO SCRUBBER NO. 1 NOZZLES WHENEVER THE SCRUBBER IS IN OPERATION.  
[RULE 1303 (b) (2)-OFFSETS]

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5. A FLOW METER, INDICATING GPM, SHALL BE INSTALLED AND MAINTAINED IN THE SCRUBBING SOLUTION RECIRCULATION LINE TO SCRUBBER NO. 2.  
[RULE 1303 (b) (2)-OFFSETS]
6. NOT LESS THAN 150 GPM OF SCRUBBING SOLUTION SHALL BE SUPPLIED TO SCRUBBER NO. 2 NOZZLES WHENEVER THE SCRUBBER IS IN OPERATION.  
[RULE 1303 (b) (2)-OFFSETS]
7. THE SCRUBBING SOLUTION TO THE SCRUBBER NOZZLES SHALL BE MAINTAINED AT pH 8 OR HIGHER.  
[RULE 1303 (b) (2)-OFFSETS]
8. ARSINE CONCENTRATIONS AT THE OUTLETS OF THE MAIN CANISTERS, STANDBY CANISTERS, AND BY-PASS CANISTERS OF THE NOVAPURE DRY SCRUBBERS SHALL BE MONITORED CONTINUOUSLY FOR BREAKTHROUGH WITH A DISTRICT APPROVED ANALYZER.  
[RULE 1401]
9. WHEN A BREAKTHROUGH OCCURS AT THE OUTLET OF A MAIN CANISTER, THE ARSINE EFFLUENT FLOW TO THAT CANISTER WILL BE AUTOMATICALLY SWITCHED TO A STANDBY CANISTER OR A BY-PASS CANISTER, AND THE SPENT MAIN CANISTER SHALL BE REPLACED WITH A FRESH CANISTER.  
[RULE 1401]
10. WHEN A BREAKTHROUGH OCCURS AT THE OUTLET OF A STANDBY CANISTER OR A BY-PASS CANISTER, THE ARSINE FLOW TO THE ION IMPLANTER IT VENTS WILL BE AUTOMATICALLY SHUT DOWN AND THE SPENT CANISTER SHALL BE REPLACED WITH A FRESH CANISTER.  
[RULE 1401]
11. RECORDS SHALL BE MAINTAINED TO DEMONSTRATE COMPLIANCE WITH CONDITIONS 4, 6, 7, 8, 9, AND 10. THE RECORDS SHALL BE KEPT FOR AT LEAST THE LAST FIVE YEARS AND MADE AVAILABLE TO DISTRICT PERSONNEL UPON REQUEST.  
[RULE 3004 (a) (4)]

### **Periodic Monitoring:**

12. THE OPERATOR SHALL DETERMINE AND RECORD THE pH OF THE SCRUBBING SOLUTION ONCE EVERY DAY.  
[RULE 3004 (a) (4)]
13. THE OPERATOR SHALL DETERMINE AND RECORD THE FLOW RATE OF THE SCRUBBING SOLUTION ONCE EVERY DAY.  
[RULE 3004 (a) (4)]

### **Emissions And Requirements:**

14. THIS EQUIPMENT IS SUBJECT TO THE APPLICABLE REQUIREMENTS OF THE FOLLOWING RULES AND REGULATIONS:  
PM: RULE 404, SEE APPENDIX B FOR EMISSION LIMITS

## FACILITY PERMIT TO OPERATE INTERNATIONAL RECTIFIER HEXFET AMERICA

### PERMIT TO OPERATE

**Permit No.**  
**A/N 503217**

**Equipment Description:**

STORAGE TANK T-517, WASTE ACIDS, 4' - 0"DIA. x 5' - 7"L., 500 GALLON CAPACITY.

**Conditions:**

1. OPERATION OF THIS EQUIPMENT SHALL BE CONDUCTED IN ACCORDANCE WITH ALL DATA AND SPECIFICATIONS SUBMITTED WITH THE APPLICATION UNDER WHICH THIS PERMIT IS ISSUED UNLESS OTHERWISE NOTED BELOW.  
[RULE 204]
2. THIS EQUIPMENT SHALL BE PROPERLY MAINTAINED AND KEPT IN GOOD OPERATING CONDITION AT ALL TIMES.  
[RULE 204]
3. THIS EQUIPMENT SHALL NOT BE OPERATED UNLESS IT IS VENTED ONLY TO AIR POLLUTION CONTROL EQUIPMENT WHICH IS IN FULL USE AND WHICH HAS BEEN ISSUED A PERMIT TO OPERATE BY THE EXECUTIVE OFFICER.  
[RULE 1303 (a) (1)-BACT]
4. THIS EQUIPMENT SHALL NOT RECEIVE MORE THAN 400,000 GALLONS OF WASTE ACIDS IN ANY ONE CALENDAR MONTH.  
[RULE 1303 (b) (2)-OFFSETS]
5. MATERIALS USED IN THIS EQUIPMENT SHALL NOT CONTAIN ANY TOXIC AIR CONTAMINANTS IDENTIFIED IN RULE 1401, TABLE I, WITH AN EFFECTIVE DATE OF MARCH 7, 2008 OR EARLIER, EXCEPT FOR NITRIC ACID (CAS # 7697-37-2), HYDROCHLORIC ACID (CAS # 7647-01-0), SULFURIC ACID (CAS # 7664-93-9), PHOSPHORIC ACID (CAS # 7664-38-2), SODIUM HYDROXIDE (CAS # 1310732), CHROMIC TRIOXIDE [AS CHROMIC ACID] (CAS # 1333-82-0), COPPER AND COPPER COMPOUNDS (CAS # 7440508), ETHYLENE GLYCOL (CAS # 107-21-1), AMMONIA (CAS # 7664-41-7), AND HYDROFLUORIC ACID (CAS # 7664-39-3).  
[RULE 1401]
6. RECORDS SHALL BE MAINTAINED TO DEMONSTRATE COMPLIANCE WITH CONDITION NOS. 4 AND 5. THE RECORDS SHALL BE KEPT FOR AT LEAST THE LAST FIVE YEARS AND MADE AVAILABLE TO DISTRICT PERSONNEL UPON REQUEST.  
[RULE 3004 (a) (4)]

## FACILITY PERMIT TO OPERATE INTERNATIONAL RECTIFIER HEXFET AMERICA

### PERMIT TO CONSTRUCT/OPERATE

Permit No.  
A/N 503218

#### Equipment Description:

#### INTEGRATED CIRCUIT FABRICATION SYSTEM CONSISTING OF:

1. ATMOSPHERIC DIFFUSION FURNACE, BTU/BRUCE, MODEL BDF-4, 5' - 3"W. x 19' - 8"L. x 8' - 8"H., EACH 12 KVA.
2. HORIZONTAL DIFFUSION FURNACE, BTI, MODEL BDF41, 5' - 4"W. x 23' - 1"L. x 9' - 2"H., 168 KVA, WITH ONE ATMOSPHERIC TUBE, TWO NITRIDE TUBES, AND ONE LTO TUBE, EACH NITRIDE AND LTO TUBE WITH ONE FILTER TRAP, MASS-VAC, MODEL 355080, CONSISTING OF SIX STAINLESS STEEL GAUZE FILTERS AND SIX POLYPRO 2 MICRON FILTERS, AND ONE VACUUM PUMP.
3. ATMOSPHERIC HORIZONTAL DIFFUSION FURNACE, BTI, MODEL BDF41, 5' - 4"W. x 23' - 1"L. x 9' - 2"H., 168 KVA.
4. TWO ION IMPLANTERS, APPLIED MATERIALS, MODEL 9500, 17' - 0"W. x 11' - 8"L. x 7' - 11"H., EACH 65 KVA ELECTRICALLY POWERED, EACH WITH ONE 4 HP VACUUM PUMP AND ONE 2 HP VACUUM PUMP.
5. TWO ION IMPLANTERS, ULVAC, MODEL IW-630, 8' - 9"W. x 21' - 4"L. x 9' - 2"H. WITH ONE 4 HP VACUUM PUMP.
6. THREE PLASMA ETCHERS, APPLIED MATERIALS, MODEL P5000, 6' - 6"W. x 6' - 4"L. x 7' - 8"H., EACH 64.7 KVA ELECTRICALLY POWERED, EACH WITH FOUR 2.5 HP VACUUM PUMPS.
7. PLASMA ETCHER, LAM, MODEL 9400 ALLIANCE, 11' - 0"W. x 7' - 10"L. x 6' - 9"H., 143.9 KVA ELECTRICALLY POWERED, WITH ONE 4 HP VACUUM PUMP AND TWO 2 HP VACUUM PUMPS.
8. PLASMA ETCHER, GASONICS, MODEL AE2001, 2' - 8"W. x 3' - 1"L. x 4' - 7"H., 9 KVA ELECTRICALLY POWERED, WITH ONE 5-HP VACUUM PUMP.
9. PLASMA ETCHER, APPLIED MATERIALS, MODEL CENTURA, 7' - 5"W. x 3' - 1"L. x 4' - 7"H., EACH 144 KVA ELECTRICALLY POWERED, WITH FOUR 2.5-HP VACUUM PUMPS.
10. ETCHER, NOVELLUS, MODEL PEP3510A, 4' - 0"W. x 5' - 3"L. x 7' - 11"H., 54 KVA ELECTRICALLY POWERED WITH TWO 5 HP VACUUM PUMPS.
11. PLASMA ETCHER, GASONICS, MODEL L3510, 2' - 6"W. x 3' - 2"L. x 4' - 10"H., 14 KVA ELECTRICALLY POWERED, WITH ONE 5-HP VACUUM PUMP.
12. PECVD MACHINE, APPLIED MATERIALS, MODEL P5000 (DXZ OPTIMA), 6' - 4"W. x 6' - 6"L. x 7' - 8"H., 64.7 KVA ELECTRICALLY POWERED, WITH ONE FILTER TRAP, MASS-VAC, MODEL 355050, CONSISTING OF FIVE STAINLESS STEEL GAUZE FILTERS AND FIVE POLYPRO 2 MICRON FILTERS, FOUR 2.5-HP VACUUM PUMPS.

#### Conditions:

## FACILITY PERMIT TO OPERATE INTERNATIONAL RECTIFIER HEXFET AMERICA

1. OPERATION OF THIS EQUIPMENT SHALL BE CONDUCTED IN ACCORDANCE WITH ALL DATA AND SPECIFICATIONS SUBMITTED WITH THE APPLICATION UNDER WHICH THIS PERMIT IS ISSUED UNLESS OTHERWISE NOTED BELOW.

[RULE 204]

2. THIS EQUIPMENT SHALL BE PROPERLY MAINTAINED AND KEPT IN GOOD OPERATING CONDITION AT ALL TIMES.

[RULE 204]

3. THIS EQUIPMENT SHALL NOT BE OPERATED UNLESS THREE DIFFUSION FURNACES, EIGHT PLASMA ETCHERS, ONE PECVD MACHINE, AND FOUR ION IMPLANTERS ARE VENTED ONLY TO AIR POLLUTION CONTROL EQUIPMENT WHICH IS IN FULL USE AND WHICH HAS BEEN ISSUED AN OPERATING PERMIT BY THE EXECUTIVE OFFICER:

[RULE 1303 (b) (2)-OFFSETS]

4. ARSINE SHALL ONLY BE USED IN TWO ION IMPLANTERS VENTED BY NOVAPURE DRY SCRUBBERS.

[RULE 1401]

5. THE FLOW RATE OF ARSINE TO EACH OF THE TWO ION IMPLANTERS SHALL NOT EXCEED 0.0256 LITER PER MINUTE.

[RULE 1401]

6. THE AMOUNTS OF MATERIALS USED IN THIS EQUIPMENT SHALL NOT EXCEED THE FOLLOWING IN ANY ONE CALENDAR MONTH:

<u>MATERIALS</u>	<u>LIMITS, LBS</u>
PH <sub>3</sub>	3
SiH <sub>4</sub>	32
SiH <sub>2</sub> Cl <sub>2</sub>	10
BF <sub>3</sub>	2
CHF <sub>3</sub>	8
CF <sub>4</sub>	10
Cl <sub>2</sub>	40
SF <sub>6</sub>	20
HBr	22
POCl <sub>3</sub>	8
CH <sub>3</sub> CCl <sub>3</sub>	45
NF <sub>3</sub>	12
BCl <sub>3</sub>	4
C <sub>2</sub> F <sub>6</sub>	30
TEOS	3,100
NH <sub>3</sub>	140

[RULE 1303 (b) (2)-OFFSETS]

7. RECORDS SHALL BE KEPT TO DEMONSTRATE COMPLIANCE WITH CONDITION NOS. 5 AND 6. THE RECORDS SHALL BE MAINTAINED ON FILE FOR AT LEAST THE LAST FIVE YEARS AND MADE AVAILABLE TO DISTRICT PERSONNEL UPON REQUEST.

[RULE 1401]

## FACILITY PERMIT TO OPERATE INTERNATIONAL RECTIFIER HEXFET AMERICA

### PERMIT TO OPERATE

Permit No.  
A/N 503219

**Equipment Description:**

STORAGE TANK T-928, WASTE SOLVENTS, 7' - 8"DIA. x 14' - 6.5"L., 4,500 GALLON CAPACITY.

**Conditions:**

1. OPERATION OF THIS EQUIPMENT SHALL BE CONDUCTED IN ACCORDANCE WITH ALL DATA AND SPECIFICATIONS SUBMITTED WITH THE APPLICATION UNDER WHICH THIS PERMIT IS ISSUED UNLESS OTHERWISE NOTED BELOW.  
[RULE 204]
2. THIS EQUIPMENT SHALL BE PROPERLY MAINTAINED AND KEPT IN GOOD OPERATING CONDITION AT ALL TIMES.  
[RULE 204]
3. THE MAXIMUM AMOUNT OF WASTE SOLVENT TRANSFERED THROUGH THIS TANK SHALL NOT EXCEED 3,900 GALLONS IN ANY ONE CALENDAR MONTH.  
[RULE 1303 (b) (2)-OFFSETS]
4. MATERIALS CONTAINING ANY TOXIC AIR CONTAMINANTS SPECIFIED IN RULE 1401 AMENDED MAY 2, 2005, EXCEPT CRESOL AND ISOPROPYL ALCOHOL (CAS # 67-63-0). SHALL NOT BE STORED IN THIS EQUIPMENT.  
[RULE 1401]
5. THE OPERATOR SHALL MAINTAIN RECORDS TO DEMONSTRATE COMPLIANCE WITH CONDITION NOS. 3 AND 4. THE RECORDS SHALL BE KEPT FOR THE MOST RECENT FIVE YEAR PERIOD AND MADE AVAILABLE TO AQMD PERSONNEL UPON REQUEST.  
[RULE 3004 (a) (4)]

## FACILITY PERMIT TO OPERATE INTERNATIONAL RECTIFIER HEXFET AMERICA

### PERMIT TO CONSTRUCT/OPERATE

Permit No.  
A/N 503221

#### Equipment Description:

##### AIR POLLUTION CONTROL SYSTEM CONSISTING OF:

1. FIVE BURN BOXES, METRON, MODEL GUARDIAN GS8, EACH 1' - 9"W. x 6' - 4"L. x 4' - 10.2"H. WITH ONE HYDROGEN-FIRED BURNER, 17,496 BTU PER HOUR.
2. FIVE DRY SCRUBBERS, EACH NOVAPURE, MODEL 300 SERIES, 2' - 0"W. x 2' - 0"L. x 5' - 6"H., EACH WITH A MAIN CANISTER WITH A MINIMUM OF 32 GALLONS OF RESIN, A BY-PASS CANISTER WITH A MINIMUM OF 0.3 GALLON OF RESIN, EACH VENTING ONE ION IMPLANTER.
3. SCRUBBER, METRON, MODEL VECTOR 6000, 2' - 3"W. x 3' - 0.3"D. x 7' - 1"H. VENTING ONE PECVD FURNACE.
4. SCRUBBER NO. 101, HARRINGTON, MODEL ECH-1L-12-5, HORIZONTAL PACKED BED TYPE, 12' - 6"W. x 21' - 7"L. x 15' - 5"H., WITH A 12' - 0"W. x 11' - 0"H. x 5' - 0"D. BED OF 3 1/2" LANPAC PLASTIC PACKING, A 1 FOOT DEEP SINE-WAVE PLATE TYPE DEMISTER SECTION, TWO 15-HP RECIRCULATION PUMPS, AND ONE 100-HP BLOWER.
5. SCRUBBER NO. 102, HARRINGTON (STANDBY TO SCRUBBER NO. 101), MODEL ECH-1L-12-5, HORIZONTAL PACKED BED TYPE, 12' - 6"W. x 21' - 7"L. x 15' - 5"H., WITH A 12' - 0"W. x 11' - 0"H. x 5' - 0"D. BED OF 3 1/2" LANPAC PLASTIC PACKING, TWO 15-HP RECIRCULATION PUMPS, AND ONE 100-HP BLOWER.
6. EXHAUST SYSTEM VENTING ELEVEN DIFFUSION FURNACES, FOUR PECVD MACHINES, THIRTY-EIGHT GAS CABINET PURGE LINES, FIVE ION IMPLANTERS, THIRTY-EIGHT PLASMA ETCHERS, EIGHTEEN ETCHERS, TWO WAFER GRINDERS, FOUR WASTE ACID STORAGE TANKS, ONE WASTE AMMONIUM HYDROXIDE STORAGE TANK, ONE WASTE WATER STORAGE TANK, TWO WAFER ETCHING AND STRIPPING LINES, ONE MAINTENANCE BENCH, THREE ACID WET BENCHES, TWO QUARTZ CLEANING MACHINES, TWO ACID STORAGE CABINETS, ONE DRAG SOLDER MACHINE AND ONE REFLOW OVEN.

#### Conditions:

1. OPERATION OF THIS EQUIPMENT SHALL BE CONDUCTED IN ACCORDANCE WITH ALL DATA AND SPECIFICATIONS SUBMITTED WITH THE APPLICATION UNDER WHICH THIS PERMIT IS ISSUED UNLESS OTHERWISE NOTED BELOW.  
[RULE 204]
2. THIS EQUIPMENT SHALL BE PROPERLY MAINTAINED AND KEPT IN GOOD OPERATING CONDITION AT ALL TIMES.  
[RULE 204]
3. A FLOW METER, INDICATING GALLONS PER MINUTE (GPM), SHALL BE MAINTAINED IN THE SCRUBBING SOLUTION RECIRCULATION LINE TO SCRUBBER NO. 101.  
[RULE 1303 (b) (2)-OFFSETS]

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4. A FLOW METER, INDICATING GALLONS PER MINUTE (GPM), SHALL BE MAINTAINED IN THE SCRUBBING SOLUTION RECIRCULATION LINE TO SCRUBBER NO. 102.  
[RULE 1303 (b) (2)-OFFSETS]
5. NOT LESS THAN 462 GPM OF SCRUBBING SOLUTION SHALL BE SUPPLIED TO THE SCRUBBER NOZZLES SERVING SCRUBBER NO. 101 WHENEVER SCRUBBER NO. 101 IS IN OPERATION.  
[RULE 1303 (b) (2)-OFFSETS]
6. NOT LESS THAN 462 GPM OF SCRUBBING SOLUTION SHALL BE SUPPLIED TO THE SCRUBBER NOZZLES SERVING SCRUBBER NO. 102 WHENEVER SCRUBBER NO. 102 IS IN OPERATION.  
[RULE 1303 (b) (2)-OFFSETS]
7. SCRUBBING SOLUTION TO THE SCRUBBER NOZZLES SHALL BE MAINTAINED AT pH 8 OR HIGHER.  
[RULE 1303 (b) (2)-OFFSETS]
8. ARSINE CONCENTRATIONS AT THE OUTLETS OF THE MAIN CANISTERS AND BY-PASS CANISTERS OF THE NOVAPURE DRY SCRUBBERS SHALL BE MONITORED CONTINUOUSLY FOR BREAKTHROUGH WITH A DISTRICT APPROVED ANALYZER.  
[RULE 1401]
9. WHEN A BREAKTHROUGH OCCURS AT THE OUTLET OF A MAIN CANISTER, THE ARSINE EFFLUENT FLOW TO THAT CANISTER WILL BE AUTOMATICALLY SWITCHED TO THE BY-PASS CANISTER AND THE SPENT MAIN CANISTER SHALL BE REPLACED WITH A FRESH CANISTER.  
[RULE 1401]
10. WHEN A BREAKTHROUGH OCCURS AT THE OUTLET OF A BY-PASS CANISTER, THE ARSINE FLOW TO THE ION IMPLANTER IT VENTS WILL BE AUTOMATICALLY SHUT DOWN AND THE SPENT CANISTER SHALL BE REPLACED WITH A FRESH CANISTER.  
[RULE 1401]
11. RECORDS SHALL BE MAINTAINED TO DEMONSTRATE COMPLIANCE WITH CONDITIONS 5, 6, 7, 8, 9, AND 10. THE RECORDS SHALL BE KEPT FOR AT LEAST THE LAST FIVE YEARS AND MADE AVAILABLE TO DISTRICT PERSONNEL UPON REQUEST.  
[RULE 3004 (a) (4)]

### **Periodic Monitoring:**

12. THE OPERATOR SHALL DETERMINE AND RECORD THE FLOW RATE OF THE SCRUBBING SOLUTION ONCE EVERY DAY.  
[RULE 3004 (a) (4)]
13. THE OPERATOR SHALL DETERMINE AND RECORD THE pH OF THE SCRUBBING SOLUTION ONCE EVERY DAY.  
[RULE 3004 (a) (4)]

## **FACILITY PERMIT TO OPERATE INTERNATIONAL RECTIFIER HEXFET AMERICA**

### **Emissions And Requirements:**

14. THIS EQUIPMENT IS SUBJECT TO THE APPLICABLE REQUIREMENTS OF THE FOLLOWING RULES AND REGULATIONS:

PM: RULE 404, SEE APPENDIX B FOR EMISSION LIMITS

## FACILITY PERMIT TO OPERATE INTERNATIONAL RECTIFIER HEXFET AMERICA

### PERMIT TO CONSTRUCT/OPERATE

Permit No.  
A/N 503222

#### Equipment Description:

##### AIR POLLUTION CONTROL SYSTEM CONSISTING OF:

1. THERMAL OXIDIZER, JOHN ZINK, HORIZONTAL TYPE, 5,000,000 BTU PER HOUR, NATURAL GAS-FIRED, WITH AN ECONOMIZER.
2. EXHAUST SYSTEM WITH TWO 25-HP BLOWERS (ONE STANDBY) VENTING TWENTY-SEVEN PHOTOTRACKS, WAFER ETCHING AND STRIPPING LINE NO. 2, TWO PHOTORESIST STRIPPING MACHINES, AND FOUR SOLVENT BENCHES.

#### Conditions:

1. OPERATION OF THIS EQUIPMENT SHALL BE CONDUCTED IN ACCORDANCE WITH ALL DATA AND SPECIFICATIONS SUBMITTED WITH THE APPLICATION UNDER WHICH THIS PERMIT IS ISSUED UNLESS OTHERWISE NOTED BELOW.  
[RULE 204]
2. THIS EQUIPMENT SHALL BE PROPERLY MAINTAINED AND KEPT IN GOOD OPERATING CONDITION AT ALL TIMES.  
[RULE 204]
3. TEMPERATURE MEASUREMENT AND RECORDING DEVICE WITH AN ACCURACY OF  $\pm 20$  DEGREES FAHRENHEIT SHALL BE INSTALLED AND MAINTAINED AT THE OUTLET OF THE COMBUSTION CHAMBER.  
[RULE 3004 (a) (4)]
4. WHENEVER THE OXIDIZER IS IN OPERATION, THE TEMPERATURE AT THE OUTLET OF THE COMBUSTION CHAMBER (AS SHOWN ON THE INSTRUMENT DESCRIBED UNDER CONDITION NO. 3) SHALL NOT BE LESS THAN 1400 DEGREES FAHRENHEIT.  
[RULE 1303 (b) (2)-OFFSETS]
5. THE OVERALL VOC CONTROL EFFICIENCY (COLLECTION AND DESTRUCTION) OF THIS EQUIPMENT SHALL NOT BE LESS THAN 98.7%.  
[RULE 1303 (b) (2)-OFFSETS]
6. THIS AIR POLLUTION CONTROL (APC) SYSTEM SHALL NOT BE USED TO VENT ANY EQUIPMENT THAT IS USING HALOGENATED HYDROCARBONS.  
[RULE 401]
7. A NON-RESETTABLE FUEL FLOWMETER, INDICATING CUBIC FEET, SHALL BE INSTALLED IN THE NATURAL GAS SUPPLY LINE TO THIS EQUIPMENT.  
[RULE 1303 (b) (2)-OFFSETS; RULE 1401]
8. THE TOTAL QUANTITY OF NATURAL GAS CONSUMED IN THIS OXIDIZER AND MCGILL OXIDIZER SHALL NOT EXCEED 3,428,570 STANDARD CUBIC FEET IN ANY ONE CALENDAR MONTH.  
[RULE 1303 (b) (2)-OFFSETS; RULE 1401]

## **FACILITY PERMIT TO OPERATE INTERNATIONAL RECTIFIER HEXFET AMERICA**

9. RECORDS SHALL BE MAINTAINED TO DEMONSTRATE COMPLIANCE WITH CONDITION NOS. 4, 5, 6 AND 8. THE RECORDS SHALL BE KEPT FOR AT LEAST FIVE YEARS AND MADE AVAILABLE TO DISTRICT PERSONNEL UPON REQUEST.  
[RULE 3004 (a) (4)]

### **Emissions And Requirements:**

10. THIS EQUIPMENT IS SUBJECT TO THE APPLICABLE REQUIREMENTS OF THE FOLLOWING RULES AND REGULATIONS:  
CO: 2000 PPMV, RULE 407  
PM: 0.1 GR/SCF, RULE 409  
PM: RULE 404, SEE APPENDIX B FOR EMISSION LIMITS

## FACILITY PERMIT TO OPERATE INTERNATIONAL RECTIFIER HEXFET AMERICA

### PERMIT TO OPERATE

Permit No.  
A/N 503223

**Equipment Description:**

STORAGE TANK T-502, WASTE ACIDS, 4' - 3"W. x 7' - 8"L. x 2' - 0"H., 375 GALLON CAPACITY.

**Conditions:**

1. OPERATION OF THIS EQUIPMENT SHALL BE CONDUCTED IN ACCORDANCE WITH ALL DATA AND SPECIFICATIONS SUBMITTED WITH THE APPLICATION UNDER WHICH THIS PERMIT IS ISSUED UNLESS OTHERWISE NOTED BELOW.  
[RULE 204]
2. THIS EQUIPMENT SHALL BE PROPERLY MAINTAINED AND KEPT IN GOOD OPERATING CONDITION AT ALL TIMES.  
[RULE 204]
3. THIS EQUIPMENT SHALL NOT BE OPERATED UNLESS IT IS VENTED ONLY TO AIR POLLUTION CONTROL EQUIPMENT WHICH IS IN FULL OPERATION AND HAS BEEN ISSUED AN OPERATING PERMIT BY THE EXECUTIVE OFFICER.  
[RULE 1303 (b) (2)-OFFSETS]
4. THE MAXIMUM AMOUNT OF WASTE ACIDS TRANSFERED THROUGH THIS TANK SHALL NOT EXCEED 870,000 GALLONS IN ANY ONE CALENDAR MONTH.  
[RULE 1303 (b) (2)-OFFSETS]
5. MATERIALS CONTAINING ANY TOXIC AIR CONTAMINANTS SPECIFIED IN RULE 1401 AMENDED MAY 2, 2005, EXCEPT HYDROGEN CHLORIDE, NITRIC ACID, PHOPHORIC ACID, SULFURIC ACID, AMMONIA (CAS # 7664-41-7), AND HYDROGEN FLUORIDE, SHALL NOT BE STORED IN THIS EQUIPMENT.  
[RULE 1401]
6. THE OPERATOR SHALL MAINTAIN RECORDS TO DEMONSTRATE COMPLIANCE WITH CONDITION NOS. 4 AND 5. THE RECORDS SHALL BE KEPT FOR THE MOST RECENT FIVE YEAR PERIOD AND MADE AVAILABLE TO AQMD PERSONNEL UPON REQUEST.  
[RULE 3004 (a) (4)]

## **FACILITY PERMIT TO OPERATE INTERNATIONAL RECTIFIER HEXFET AMERICA**

### **PERMIT TO OPERATE**

**Permit No.  
A/N 503224**

**Equipment Description:**

STORAGE TANK T-503, WASTE ACIDS, 4' - 0"W. x 6' - 5"L. x 2' - 0"H., 375 GALLON CAPACITY.

**Conditions:**

1. OPERATION OF THIS EQUIPMENT SHALL BE CONDUCTED IN ACCORDANCE WITH ALL DATA AND SPECIFICATIONS SUBMITTED WITH THE APPLICATION UNDER WHICH THIS PERMIT IS ISSUED UNLESS OTHERWISE NOTED BELOW.  
[RULE 204]
2. THIS EQUIPMENT SHALL BE PROPERLY MAINTAINED AND KEPT IN GOOD OPERATING CONDITION AT ALL TIMES.  
[RULE 204]
3. THIS EQUIPMENT SHALL NOT BE OPERATED UNLESS IT IS VENTED ONLY TO AIR POLLUTION CONTROL EQUIPMENT WHICH IS IN FULL OPERATION AND HAS BEEN ISSUED AN OPERATING PERMIT BY THE EXECUTIVE OFFICER.  
[RULE 1303 (b) (2)-OFFSETS]
4. THE MAXIMUM AMOUNT OF WASTE ACIDS TRANSFERED THROUGH THIS TANK SHALL NOT EXCEED 870,000 GALLONS IN ANY ONE CALENDAR MONTH.  
[RULE 1303 (b) (2)-OFFSETS]
5. MATERIALS CONTAINING ANY TOXIC AIR CONTAMINANTS SPECIFIED IN RULE 1401 AMENDED MAY 2, 2005, EXCEPT HYDROGEN CHLORIDE, NITRIC ACID, PHOPHORIC ACID, SULFURIC ACID, AMMONIA (CAS # 7664-41-7), AND HYDROGEN FLUORIDE, SHALL NOT BE STORED IN THIS EQUIPMENT.  
[RULE 1401]
6. THE OPERATOR SHALL MAINTAIN RECORDS TO DEMONSTRATE COMPLIANCE WITH CONDITION NOS. 4 AND 5. THE RECORDS SHALL BE KEPT FOR THE MOST RECENT FIVE YEAR PERIOD AND MADE AVAILABLE TO AQMD PERSONNEL UPON REQUEST.  
[RULE 3004 (a) (4)]

## FACILITY PERMIT TO OPERATE INTERNATIONAL RECTIFIER HEXFET AMERICA

### PERMIT TO OPERATE

Permit No.  
A/N 503225

#### Equipment Description:

STORAGE TANK T-14, WASTE ACIDS, 10' - 0"DIA. x 11' - 6"L., 5,728 GALLON CAPACITY, WITH TWO 10 HP TRANSFER PUMPS.

#### Conditions:

1. OPERATION OF THIS EQUIPMENT SHALL BE CONDUCTED IN COMPLIANCE WITH ALL DATA AND SPECIFICATIONS SUBMITTED WITH THE APPLICATION UNDER WHICH THIS PERMIT IS ISSUED UNLESS OTHERWISE NOTED BELOW.  
[RULE 204]
2. THIS EQUIPMENT SHALL BE PROPERLY MAINTAINED AND KEPT IN GOOD OPERATING CONDITION AT ALL TIMES.  
[RULE 204]
3. THE MAXIMUM AMOUNT OF WASTE ACIDS TRANSFERED THROUGH THIS TANK SHALL NOT EXCEED 2,410,000 GALLONS IN ANY ONE CALENDAR MONTH.  
[RULE 1303 (b) (2)-OFFSETS]
4. THIS EQUIPMENT SHALL NOT BE OPERATED UNLESS IT IS VENTED ONLY TO AIR POLLUTION CONTROL EQUIPMENT WHICH IS IN FULL USE AND WHICH HAS BEEN ISSUED A PERMIT TO OPERATE BY THE EXECUTIVE OFFICER.  
[RULE 1303 (a) (1)-BACT]
5. MATERIALS USED IN THIS EQUIPMENT SHALL NOT CONTAIN ANY TOXIC AIR CONTAMINANTS IDENTIFIED IN RULE 1401, TABLE I, WITH AN EFFECTIVE DATE OF MARCH 7, 2008 OR EARLIER, EXCEPT FOR NITRIC ACID (CAS # 7697-37-2), PHOSPHORIC ACID (CAS # 7664-38-2), HYDROFLUORIC ACID (CAS # 7664-39-3), SODIUM HYDROXIDE (CAS # 1310732), CHROMIC TRIOXIDE [AS CHROMIC ACID] (CAS # 1333-82-0), COPPER AND COPPER COMPOUNDS (CAS # 7440508), ETHYLENE GLYCOL (CAS # 107-21-1), SULFURIC ACID (CAS # 7664-93-9), AMMONIA (CAS # 7664-41-7), AND HYDROCHLORIC ACID (CAS # 7647-01-0).  
[RULE 1401]
6. THE OPERATOR SHALL MAINTAIN RECORDS TO DEMONSTRATE COMPLIANCE WITH CONDITION NOS. 3 AND 5. THE RECORDS SHALL BE KEPT FOR THE MOST RECENT FIVE YEAR PERIOD AND MADE AVAILABLE TO AQMD PERSONNEL UPON REQUEST.  
[RULE 3004 (a) (4)]

## FACILITY PERMIT TO OPERATE INTERNATIONAL RECTIFIER HEXFET AMERICA

### PERMIT TO CONSTRUCT/OPERATE

Permit No.  
A/N 504815

#### Equipment Description:

##### INTEGRATED CIRCUIT FABRICATION SYSTEM CONSISTING OF:

1. EIGHT ATMOSPHERIC DIFFUSION FURNACES, BTI, MODEL BDF41, 5' - 4"W. x 23' - 1"L. x 9' - 2"H., EACH 168 KVA ELECTRICALLY POWERED, EACH WITH ONE VACUUM PUMP.
2. LPCVD DIFFUSION FURNACE, BTI, MODEL BDF41, 5' - 4"W. x 23' - 1"L. x 9' - 2"H., 168 KVA ELECTRICALLY POWERED , WITH FOUR LTO TUBES, EACH TUBE WITH ONE FILTER TRAP, MASS-VAC, MODEL 355080-S, CONSISTING OF SIX STAINLESS STEEL GAUZE FILTERS AND SIX POLYPRO 2 MICRON FILTERS, AND FOUR VACUUM PUMPS.
3. DIFFUSION FURNACE, BTI, MODEL BDF41, 5' - 4"W. x 23' - 1"L. x 9' - 2"H., 168 KVA ELECTRICALLY POWERED, WITH TWO ATMOSPHERIC TUBES, ONE LPCVD LTO TUBE, AND ONE LPCVD TEOS TUBE, EACH LTO AND TEOS TUBE WITH ONE FILTER TRAP, MASS-VAC, MODEL 355080-S, CONSISTING OF SIX STAINLESS STEEL GAUZE FILTERS AND SIX POLYPRO 2 MICRON FILTERS, AND FOUR VACUUM PUMPS.
4. LPCVD DIFFUSION FURNACE, BTI, MODEL BDF41, 5' - 4"W. x 23' - 1"L. x 9' - 2"H., 168 KVA ELECTRICALLY POWERED , WITH FOUR POLY TUBES, EACH TUBE WITH ONE FILTER TRAP, MASS-VAC, MODEL 355050, CONSISTING OF STAINLESS STEEL GAUZE FILTERS AND FIVE POLYPRO 2 MICRON FILTERS, AND FOUR VACUUM PUMPS.
5. FOUR PECVD MACHINES, NOVELLUS, MODEL CONEPT ONE, 3' - 2"W. x 5' - 8"L. x 6' - 8"H., 18.72 KVA ELECTRICALLY POWERED , EACH WITH ONE FILTER TRAP, MASS-VAC, MODEL 355050, CONSISTING OF STAINLESS STEEL GAUZE FILTERS AND POLYPRO 2 MICRON FILTERS, AND EACH WITH ONE 2.5 HP VACUUM PUMP AND ONE 5 HP VACUUM PUMP.
6. SIXTEEN PLASMA ETCHERS, TEGAL, MODEL T/903E, 3' - 8"W. x 3' - 6"D. x 2' - 2"H., EACH 6.24 KVA, EACH WITH ONE VACUUM PUMP.
7. TWENTY-TWO PLASMA ETCHERS, LAM, MODEL 490, 3' - 8"W. x 3' - 6"D. x 2' - 2"H., EACH 45 KVA, EACH WITH TWO 2 HP VACUUM PUMPS.
8. FIVE ION IMPLANTERS, APPLIED MATERIALS, MODEL 9500, 17' - 0"W. x 11' - 8"L. x 7' - 11"H., EACH 65 KVA, ONE 4 HP VACUUM PUMP, AND ONE 2 HP VACUUM PUMP.
9. TWO ASHERS, GASONICS, MODEL A1000, 2' - 8"W. x 2' - 8"L. x 2' - 4"H., EACH 9 KVA ELECTRICALLY POWERED, AND EACH WITH ONE 5 HP VACUUM PUMP.
10. ETCHER, GASONICS, MODEL AE2001, 2' - 8"W. x 3' - 1"L. x 4' - 7"H., 9 KVA ELECTRICALLY POWERED, WITH ONE 5 HP VACUUM PUMP.

#### Conditions:

1. OPERATION OF THIS EQUIPMENT SHALL BE CONDUCTED IN ACCORDANCE WITH ALL DATA AND SPECIFICATIONS SUBMITTED WITH THE APPLICATION UNDER WHICH THIS PERMIT IS ISSUED UNLESS OTHERWISE NOTED BELOW.

[RULE 204]

## FACILITY PERMIT TO OPERATE INTERNATIONAL RECTIFIER HEXFET AMERICA

2. THIS EQUIPMENT SHALL BE PROPERLY MAINTAINED AND KEPT IN GOOD OPERATING CONDITION AT ALL TIMES.

[RULE 204]

3. THIS EQUIPMENT SHALL NOT BE OPERATED UNLESS ELEVEN DIFFUSION FURNACES, THIRTY-EIGHT PLASMA ETCHERS, FOUR PECVD MACHINES, FIVE ION IMPLANTERS, AND ONE ETCHER ARE VENTED ONLY TO AIR POLLUTION CONTROL EQUIPMENT WHICH IS IN FULL USE AND WHICH HAS BEEN ISSUED AN OPERATING PERMIT BY THE EXECUTIVE OFFICER.

[RULE 1303 (b) (2)-OFFSETS]

4. THE FLOW RATE OF ARSINE TO EACH ION IMPLANTER SHALL NOT EXCEED 0.01 LITER PER MINUTE.

[RULE 1401]

5. THE AMOUNTS OF MATERIALS USED IN THIS EQUIPMENT SHALL NOT EXCEED THE FOLLOWING IN ANY ONE CALENDAR MONTH:

<u>MATERIALS</u>	<u>LIMITS, LBS</u>
PH <sub>3</sub>	3
SiH <sub>4</sub>	120.5
BF <sub>3</sub>	2
C <sub>2</sub> F <sub>6</sub>	340
CHF <sub>3</sub>	99
Cl <sub>2</sub>	155
SF <sub>6</sub>	160
POCl <sub>3</sub>	13
C <sub>8</sub> H <sub>20</sub> SiO <sub>4</sub>	40
NF <sub>3</sub>	26
CH <sub>3</sub> CCl <sub>3</sub>	70

[RULE 1303 (b) (2)-OFFSETS]

6. RECORDS SHALL BE KEPT TO DEMONSTRATE COMPLIANCE WITH CONDITION NOS. 4 AND 5. THE RECORDS SHALL BE MAINTAINED ON FILE FOR AT LEAST THE LAST FIVE YEARS AND MADE AVAILABLE TO DISTRICT PERSONNEL UPON REQUEST.

[RULE 1401]

## **FACILITY PERMIT TO OPERATE INTERNATIONAL RECTIFIER HEXFET AMERICA**

### **RULE 219 EQUIPMENT**

**Equipment Description:**

RULE 219 EXEMPT EQUIPMENT, COATING EQUIPMENT, PORTABLE, ARCHITECTURAL COATINGS.

**Periodic Monitoring:**

1. THE OPERATOR SHALL KEEP RECORDS, IN A MANNER APPROVED BY THE DISTRICT, FOR THE FOLLOWING PARAMETER(S) OR ITEM(S):

FOR ARCHITECTURAL APPLICATIONS WHERE NO THINNERS, REDUCERS, OR OTHER VOC CONTAINING MATERIALS ARE ADDED, MAINTAIN SEMI-ANNUAL RECORDS OF ALL COATINGS CONSISTING OF (a) COATING TYPE, (b) VOC CONTENT AS SUPPLIED IN GRAMS PER LITER (g/L) OF MATERIALS FOR LOW-SOLIDS COATINGS, (c) VOC CONTENT AS SUPPLIED IN g/L OF COATING, LESS WATER AND EXEMPT SOLVENT, FOR OTHER COATING.

FOR OTHER ARCHITECTURAL APPLICATIONS WHERE THINNERS, REDUCERS, OR OTHER VOC CONTAINING MATERIALS ARE ADDED, MAINTAIN DAILY RECORDS FOR EACH COATING CONSISTING OF (a) COATING TYPE, (b) VOC CONTENT AS APPLIED IN GRAMS PER LITER (g/L) OF MATERIALS USED FOR LOW-SOLIDS COATINGS, (c) VOC CONTENT AS APPLIED IN g/L OF COATING, LESS WATER AND EXEMPT SOLVENT, FOR OTHER COATING.

[RULE 3004 (a) (4)]

**Emissions And Requirements:**

2. THIS EQUIPMENT IS SUBJECT TO THE APPLICABLE REQUIREMENTS OF THE FOLLOWING RULES AND REGULATION:

VOC: RULE 1113, SEE APPENDIX B FOR EMISSION LIMITS

VOC: RULE 1171, SEE APPENDIX B FOR EMISSION LIMITS

## **FACILITY PERMIT TO OPERATE INTERNATIONAL RECTIFIER HEXFET AMERICA**

### **RULE 219 EQUIPMENT**

**Equipment Description:**

RULE 219 EXEMPT EQUIPMENT, HAND WIPING OPERATIONS.

**Emissions And Requirements:**

1. THIS EQUIPMENT IS SUBJECT TO THE APPLICABLE REQUIREMENTS OF THE FOLLOWING RULES AND REGULATION:

VOC: RULE 1171, SEE APPENDIX B FOR EMISSION LIMITS