

**SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT**

ENGINEERING DIVISION

**APPLICATION PROCESSING AND CALCULATIONS**

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**APPLICANT'S NAME:** Northrop Grumman Space and Mission Systems Corporation

**FACILITY PERMIT ID#** 800409

**CONTACT PERSON:** ANTONIO S. LU

**MAILING ADDRESS:** ONE SPACE PARK DRIVE,  
BLDG CS1/1800  
REDONDO BEACH, CA 90278

**EQUIPMENT ADDRESS:** ONE SPACE PARK DRIVE,  
BLDG M3/1153  
REDONDO BEACH, CA 90278

**Title V Permit Revision:**  
Application No. 481868

**PERMIT TO CONSTRUCT  
Section H**

**Equipment Description:**

<b>PROCESS 1: FABRICATED METALS SYSTEM #3: NICKEL PLATING</b>					
Equipment	Device ID	Connected To	Source Type/ Monitoring Unit	Emissions	Equipment Specific Conditions
PROCESS TANK, NO. 12, COVERED, UNHEATED, ETCH, NITRIC ACID, HYDROFLUORIC ACID, WIDTH: 14IN; LENGTH: 32IN; DEPTH: 23.5 IN  Reference A/N <del>468914</del> 481865	D281	C162			A433.3, E448.1
PROCESS TANK, NO. 14, UNHEATED, ACID CLEAN, NITRIC, WIDTH: 20IN; LENGTH: 32IN; DEPTH: 23.5IN  Reference A/N <del>468914</del> 481865	D282				A433.3, E448.1
PROCESS TANK, NO. 16, UNHEATED, ALKALINE ETCH, SODIUM HYDROXIDE, ZINC OXIDE, WIDTH: 20IN; LENGTH: 32IN; DEPTH: 23.5IN  Reference A/N <del>468914</del> 481865	D283				A433.3, E448.1

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<p>PROCESS TANK, NO. 19, COVERED, HEATED, ELECTROLESS NICKEL, ACETIC ACID, TETRASODIUM SALT, SODIUM HYPOPHOSPHITE, AMMONIA, LEAD ACETATE, NICKEL SULFATE, SULFURIC ACID, WIDTH: 24IN; LENGTH: 36IN; DEPTH: 28IN; 12-KW</p> <p>Reference A/N <del>468914</del> 481865</p>	D284	C162			A433.3, C6.12 E448.1
<p>PROCESS TANK, NO. 20, COVERED, HEATED, ELECTROLESS NICKEL, ACETIC ACID, TETRASODIUM SALT, SODIUM HYPOPHOSPHITE, AMMONIA, LEAD ACETATE, NICKEL SULFATE, SULFURIC ACID, WIDTH: 18IN; LENGTH: 35IN; DEPTH: 18IN; 12-KW</p> <p>Reference A/N <del>468914</del> 481865</p>	D285	C162			A433.3, C6.12, E448.1
<p>PROCESS TANK, NO. 23, COVERED, UNHEATED, STRIPPING, NITRIC ACID, WIDTH: 14IN; LENGTH: 32IN; DEPTH: 23.5IN;</p> <p>Reference A/N <del>468914</del> 481865</p>	D286	<b>CONNECT</b> C162			A433.3, E448.1
<p>PROCESS TANK, NO. 25, COVERED, UNHEATED, SOLDER STRIP, AMMONIUM BIFLUORIDE, HYDROGEN PEROXIDE, WIDTH: 14IN; LENGTH: 32IN; DEPTH: 23.5IN;</p> <p>Reference A/N <del>468914</del> 481865</p>	D287	C162			A433.3, E448.1
<p>PROCESS TANK, NO. 26, COVERED, UNHEATED, SOLDER STRIP, AMMONIUM BIFLUORIDE, HYDROGEN PEROXIDE, WIDTH: 14IN; LENGTH: 32IN; DEPTH: 23.5IN;</p> <p>Reference A/N <del>468914</del> 481865</p>	D288	C162			A433.3, E448.1
<p>PROCESS TANK, NO. 27, HEATED, ALKALINE CLEAN, SODIUM HYDROXIDE, SODIUM METASILICATE, SODIUM CARBONATE, WITH A 20V, 150 AMP RECTIFIER, WIDTH: 20IN; LENGTH: 32IN; DEPTH: 23.5IN: 4-KW</p> <p>Reference A/N <del>468914</del> 481865</p>	D289				A433.3, C6.6, E448.1

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PROCESS TANK, NO. 29, UNHEATED, ACID CLEAN, HYDROCHLORIC ACID, WIDTH: 14IN; LENGTH: 32IN; DEPTH: 23.5IN;  Reference A/N <del>468044</del> 481865	D290	C162			A433.3, E448.1
PROCESS TANK, NO. 31, UNHEATED, NICKEL STRIKE, NICKEL CHLORIDE, HYDROCHLORIC ACID, WITH A 20V, 150AMP RECTIFIER, WIDTH: 20IN; LENGTH: 32IN; DEPTH: 23.5IN;  Reference A/N <del>468044</del> 481865	D291	C162			A433.3, E448.1
PROCESS TANK, NO. 33, HEATED, NICKEL PLATE, NICKEL SULFAMATE, NICKEL BROMIDE, BORIC ACID, WITH A 15V, 25AMP RECTIFIER, WIDTH: 32IN; LENGTH: 32IN; DEPTH:23.5IN; 4-KW  Reference A/N <del>468044</del> 481865	D292	C162			A433.3, C6.14, E448.1
PROCESS TANK, NO. 35, UNHEATED, ALKALINE ETCH, AMMONNIUM PERSULFATE, SODIUM BISULFATE, WIDTH: 14IN; LENGTH: 32IN; DEPTH: 23.5IN;  Reference A/N <del>468044</del> 481865	D293				A433.3, E448.1

**Conditions:**

Not to use Toxic air contaminants unless listed in description

A433.3 THE OPERATOR SHALL NOT USE IN THIS EQUIPMENT ANY TOXIC AIR CONTAMINANTS (TAC) IDENTIFIED IN SCAQMD RULE 1401, AS AMENDED MARCH 4, 2005, EXCEPT AS IDENTIFIED BELOW UP TO THE FOLLOWING CONTENT LIMIT. MATERIAL SAFETY DATA SHEETS (MSDS) SHALL BE USED TO COMPLY WITH THIS CONDITION.

POLLUTANT	TANK NO.	MAX CONTENT (WT%)
Sodium Hydroxide	16,27	<b>30.0</b>
Nickel Compounds	31,33	<b>46.0</b>
Nitric Acid	14,23	<b>45</b>
Nitric Acid	12	<b>53</b>
Hydrogen Fluoride	12	<b>13</b>
Ammonia	19,20	<b>1.0</b>
Lead Compound	19,20	<b>3.0</b>
Sulfuric Acid	19,20	<b>20</b>
Hydrochloric Acid	31	<b>15</b>
Hydrochloric Acid	29	<b>19</b>

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C6.6 THE OPERATOR SHALL USE THIS EQUIPMENT IN SUCH A MANNER THAT THE TEMPERATURE BEING MONITORED, AS INDICATED BELOW, DOES NOT EXCEED 170 DEGREE FAHRENHEIT.

The operator shall install and maintain a(n) temperature gauge to accurately indicate the temperature of the process tank.

C6.12 THE OPERATOR SHALL USE THIS EQUIPMENT IN SUCH A MANNER THAT THE TEMPERATURE BEING MONITORED, AS INDICATED BELOW, DOES NOT EXCEED 200 DEGREE FAHRENHEIT.

The operator shall install and maintain a(n) temperature gauge to accurately indicate the temperature of the process tank.

C6.14 THE OPERATOR SHALL USE THIS EQUIPMENT IN SUCH A MANNER THAT THE TEMPERATURE BEING MONITORED, AS INDICATED BELOW, DOES NOT EXCEED 150 DEGREE FAHRENHEIT.

The operator shall install and maintain a(n) temperature gauge to accurately indicate the temperature of the process tank.

E448.1 THE OPERATOR SHALL COMPLY WITH THE FOLLOWING REQUIREMENTS

Rule 1426 recordkeeping

[RULE 1426, 5-2-2003]

**Equipment Description:**

<b>PROCESS 1: FABRICATED METALS</b>					
<b>SYSTEM #4: PRECIOUS METAL PLATING</b>					
Equipment	Device ID	Connected To	Source Type/ Monitoring Unit	Emissions	Equipment Specific Conditions
PROCESS TANK, NO. 38, HEATED, GOLD PLATE, POTASSIUM CYANOAUATE, THALLIUM COMPOUND, OROTEMP SOLUTION, WITH A	D294	C62			A433.4, C6.13, E448.1

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15V, 25 AMP RECTIFIER, WIDTH: 20IN; LENGTH: 32IN; DEPTH: 23.5IN; 2-KW  Reference A/N <del>470066</del> 481867					
PROCESS TANK, NO. 39, HEATED, GOLD PLATE, POTASSIUM CYANOaurate, THALLIUM COMPOUND, OROTEMP SOLUTION, WITH A 15V, 25 AMP RECTIFIER, WIDTH: 20IN; LENGTH: 32IN; DEPTH: 23.5IN; 3-KW  Reference A/N <del>470066</del> 481867	D295	C162			A433.4, C6.13, E448.1
PROCESS TANK, NO. 41, UNHEATED, CAUSTIC RINSE, SODIUM HYDROXIDE, WIDTH: 14IN; LENGTH: 32IN; DEPTH: 23.5IN  Reference A/N <del>470066</del> 481867	D327				A433.4
PROCESS TANK, NO. 42, HEATED, GOLD PLATE, <u>POTASSIUM AUROCYANIDE,</u> <u>COBALT COMPLEX, NICKEL</u> <u>COMPLEX, POTASSIUM</u> <u>CITRATE, CITRIC ACID,</u> <u>MONOPOTASSIUM</u> <u>PHOSPHATE SODIUM</u> <u>SULFITE, SULFITE GOLD,</u> <u>SODIUM ARSENITE, ALKALINE</u> <u>SALTS, WITH A 15V, 25 50 AMP</u> RECTIFIER, WIDTH: 20IN; LENGTH: 32IN; DEPTH: 23.5IN; 4-KW  Reference A/N <del>470066</del> 481867	D296	C162			A433.4, C6.10, E448.1
PROCESS TANK, NO. 43, HEATED, GOLD PLATE, <u>POTASSIUM AUROCYANIDE,</u> <u>COBALT COMPLEX,</u> <u>POTASSIUM CITRATE, CITRIC</u> <u>ACID, MONOPOTASSIUM</u> <u>PHOSPHATE SODIUM</u> <u>SULFITE, SULFITE GOLD,</u> <u>SODIUM ARSENITE, ALKALINE</u> <u>SALTS, WITH A 15V, 25 50 AMP</u> RECTIFIER, WIDTH: 20IN; LENGTH: 32IN; DEPTH: 23.5IN; 4-KW  Reference A/N <del>470066</del> 481867	D297	C162			A433.4, C6.10, E448.1
PROCESS TANK, NO. 45, HEATED, GOLD PLATE, POTASSIUM CITRATE, CITRIC ACID, MONOPOTASSIUM PHOSPHATE, POTASSIUM	D298	C162			A433.4, C6.10, E448.1

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CYANOAUATE, WITH A 20V, 100 AMP RECTIFIER, WIDTH: 20IN; LENGTH: 32IN; DEPTH: 23.5IN; 4-KW  Reference A/N <del>470066</del> 481867					
PROCESS TANK, NO. 73, HEATED, GOLD PLATE, POTASSIUM GOLD CYANIDE, AMMONIUM HYDROXIDE, WITH A 10V, 25 AMP RECTIFIER, WIDTH: 14IN; LENGTH: 32IN; DEPTH: 35.5IN; 2-KW  Reference A/N <del>470066</del> 481867	D316	C162			A433.4, C6.1, E448.1
PROCESS TANK, NO. 47, UNHEATED, TIN PLATE, TIN FLUOBORATE, LEAD FLUOBORATE, BORIC ACID, FLUOBORIC ACID, PEPTON, WITH A 15V, <del>25</del> 50 AMP RECTIFIER, WIDTH: 32IN; LENGTH: 32IN; DEPTH: 23.5IN:  Reference A/N <del>470066</del> 481867	D299	C162			A433.4, E448.1
PROCESS TANK, NO. 48, UNHEATED, TIN PLATE, TIN FLUOBORATE, LEAD FLUOBORATE, BORIC ACID, FLUOBORIC ACID, PEPTON, WITH A 15V, <del>25</del> 50 AMP RECTIFIER, WIDTH: 32IN; LENGTH: 32IN; DEPTH: 23.5IN:  Reference A/N <del>470066</del> 481867	D300	C162			A433.4, E448.1
PROCESS TANK, NO. 59, UNHEATED, SILVER PLATE, POTASSIUM SILVER CYANIDE, POTASSIUM CYANIDE, POTASSIUM CARBONATE, POTASSIUM HYDROXIDE, WITH A 20V, 100 AMP RECTIFIER, WIDTH: 21IN; LENGTH: 30IN; DEPTH: <del>24</del> 30IN:  Reference A/N <del>470066</del> 481867	D306	C162			A433.4, E448.1
PROCESS TANK, NO. 60, UNHEATED, SILVER STRIKE, POTASSIUM SILVER CYANIDE, POTASSIUM CYANIDE, POTASSIUM CARBONATE, WITH A 20V, 100 AMP RECTIFIER, WIDTH: 21IN; LENGTH: 30IN; DEPTH: <del>24</del> 30IN:  Reference A/N <del>470066</del> 481867	D307	C162			A433.4, E448.1
PROCESS TANK, NO. 61, UNHEATED, SILVER PLATE, POTASSIUM SILVER CYANIDE, POTASSIUM CYANIDE,	D308	C162			A433.4, E448.1

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POTASSIUM CARBONATE, WITH A 15V, 50 AMP RECTIFIER, WIDTH: 20IN; LENGTH: 32IN; DEPTH: 23.5IN: Reference A/N <del>470066</del> 481867					
PROCESS TANK, NO. 62, UNHEATED, SILVER PLATE, POTASSIUM SILVER CYANIDE, POTASSIUM CYANIDE, POTASSIUM ANTIMONY TRATRATE, WITH A 15V, 50 AMP RECTIFIER, WIDTH: 26IN; LENGTH: 32IN; DEPTH: 23.5IN: Reference A/N <del>470066</del> 481867	D309	C162			A433.4, E448.1

**Conditions:**

Not to use Toxic air contaminants unless listed in description

A433.4 THE OPERATOR SHALL NOT USE IN THIS EQUIPMENT ANY TOXIC AIR CONTAMINANTS (TAC) IDENTIFIED IN SCAQMD RULE 1401, AS AMENDED MARCH 4, 2005, EXCEPT AS IDENTIFIED BELOW UP TO THE FOLLOWING CONTENT LIMIT. MATERIAL SAFETY DATA SHEETS (MSDS) SHALL BE USED TO COMPLY WITH THIS CONDITION.

POLLUTANT	Tank NO.	MAX CONTENT (WT%)
Lead Compounds	47,48	<b>3.0</b>
Sodium Hydroxide	41	<b>30</b>
Nickel Compounds	42	<b>0.11</b>

C6.1 THE OPERATOR SHALL USE THIS EQUIPMENT IN SUCH A MANNER THAT THE TEMPERATURE BEING MONITORED, AS INDICATED BELOW, DOES NOT EXCEED 185 DEGREE FAHRENHEIT.

The operator shall install and maintain a(n) temperature gauge to accurately indicate the temperature of the process tank.

C6.10 THE OPERATOR SHALL USE THIS EQUIPMENT IN SUCH A MANNER THAT THE TEMPERATURE BEING MONITORED, AS INDICATED BELOW, DOES NOT EXCEED 145 DEGREE FAHRENHEIT.

The operator shall install and maintain a(n) temperature gauge to accurately indicate the temperature of the process tank.

C6.13 THE OPERATOR SHALL USE THIS EQUIPMENT IN SUCH A MANNER THAT THE TEMPERATURE BEING MONITORED,

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AS INDICATED BELOW, DOES NOT EXCEED 160 DEGREE FAHRENHEIT.

The operator shall install and maintain a(n) temperature gauge to accurately indicate the temperature of the process tank.

E448.1 THE OPERATOR SHALL COMPLY WITH THE FOLLOWING REQUIREMENTS

Rule 1426 recordkeeping

[RULE 1426, 5-2-2003]

<b>PROCESS 1: FABRICATED METALS SYSTEM #5: AIR POLLUTION CONTROL SYSTEM</b>					
Equipment	Device ID	Connected To	Source Type/ Monitoring Unit	Emissions	Equipment Specific Conditions
SCRUBBER, PACKED BED, M3, WIDTH: 9FT; HEIGHT: 8FT; LENGTH:16FT  Reference A/N <del>468942</del> 481866	C162	D276-D326 ADD D286			C8.3, C8.4, D182.2, E158.1

**Conditions:**

C8.3 The operator shall use this equipment in such a manner that the pH being monitored, as indicated below, is not less than 7.0 of the pH scale.

To comply with this condition, the operator shall install and maintain a(n) pH meter to accurately indicate the pH of the scrubbing solution.

The operator shall record the parameter being monitored once every 24 hours.

C8.4 The operator shall use this equipment in such a manner that the flow rate being monitored, as indicated below, is not less than 280 gpm.

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To comply with this condition, the operator shall install and maintain a(n) flow meter to accurately indicate the flow rate of the scrubbing solution supplied to the spray nozzles.

The operator shall record the parameter being monitored once every 24 hours.

D182.2 THE OPERATOR SHALL TEST THIS EQUIPMENT IN ACCORDANCE WITH THE FOLLOWING SPECIFICATIONS:

The test shall be conducted no later than 180 days after the initial start-up of this equipment unless otherwise approved in writing by the District.

The test shall be conducted in accordance with the standard source test protocol to determine the control efficiency of the scrubber.

A written notice of the source test shall be submitted to the District (addressed to South Coast Air Quality Management District, P.O. Box 4941, Diamond Bar, CA 91765) at least 14 days prior to the source testing date so that an observer from the District may be present.

Emissions data shall be expressed in terms of pounds per hour particulate.

The exhaust flow rate shall be expressed in terms of actual standard cubic feet per minute.

The test shall be conducted to determine the particulate control efficiency of the scrubber.

The test shall be conducted and the operating parameters recorded during the test.

A testing laboratory certified by the California Air Resources Board in the required test methods for criteria pollutants to be measured, and in compliance with District Rule 304 (no conflict of interest) shall conduct the test.

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Sampling facilities shall comply with the District guidelines for construction of sampling and testing facilities, pursuant to Rule 217.

Two complete copies of the source test reports shall be submitted to the District (addressed to South Coast Air Quality Management District, P.O. Box 4941, Diamond Bar, CA 91765) within 45 days after the source testing date. The source test report shall include, but is not limited to, all testing data required by this condition.

- E158.1 The operator shall maintain a continuous overflow of water from the scrubber sump to prevent build up of contamination.

**Background**

Northrop Grumman Space and Missions Systems is engaged in the development and manufacture of advanced semiconductors including fabrication and assembly of electronic components and hard wares for integration into satellite and space vehicle. The company also performs research and development relating to chemical lasers, rocket engine thrusters and energy related programs for commercial and non-commercial applications. These operations are currently performed at three major sites within the South Coast Air Basin and they are: Capistrano Test Site(CTS), Redondo Beach and Manhattan Beach.

Northrop Grumman Redondo Beach Title V facility (facility ID# 800409) is required by the City of Redondo Beach to upgrade the metal plating shop room located in Building M3, room 1153, to meet California Fire and Building Codes. The upgrading of the metal plating room to the fire and building codes standards also creates an opportunity for the company to consolidate and streamline the metal plating shop currently in operation to improve efficiency, reduce chemical usage and hazardous waste generation. In the consolidated and streamlined plating shop, there will be fewer process tanks and less shop space utilization.

A Permit to Construct for this nickel plating line under application number 468911 was issued on 8/15/07. The nickel plating line has 13 process tanks (D281-D293) to perform acid cleaning to nickel plating. Tank no. 23 (D286) is currently vented to general exhaust. Due to health and safety concerns, this tank is proposed to be connected to scrubber

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C162. There is no proposal to change the operating, chemistry or rating of D286, therefore this will represent an emission decrease. The additional air volume required to vent this tank will be 778 cfm. Application number 481866 has been submitted to make the modifications to scrubber C162's exhaust.

The Precious Metal Plating Line under Process 1, System 4 was issued a permit to construct, a/n 470066, on 8/15/07. The precious metal plating line has 13 process tanks consisting of gold plating, silver plating, tin/lead plating and an alkaline rinse tank. Northrop proposes to change the chemistry in the tanks under D296 & D297. In addition, there are minor corrections to be made to the permit descriptions of some of the process tanks. These changes include the following:

	Tank No.	Device No.	Permit Description	Correction
1	47	D299	25 amp	50 amp
2	48	D300	25 amp	50 amp
3	59	D306	Height 2ft	Height: 2ft 6in
4	60	D307	Height: 2ft	Height: 2ft 6in

This is a RECLAIM Cycle 2 and title V facility. The proposed project is considered as a "de minimis significant permit revision" to this facility title V permit.

The District records indicate that during the last five years Northrop Grumman was issued one Notice of Violation (NOV). This notice was issued on 6/18/2004 for failure to keep adequate records for the NOx emissions from Rule 219 equipment. The facility complied with these requirements by 8/04/2004. This issue has been resolved and Northrop is now in full compliance. There are no other Notices of Violation, Notices to Comply or Complaints issued against this facility as of 6/17/08.

**Emissions Calculations:**Nickel Plating Line Application No. 481865

Emissions from Open Process Tank Spread Sheet

@ 70% scrubber efficiency.

Evaporative Emissions: PM10

Previous application 468911

R1 = 0.022 lbs/hr

Modification application 481865

R1 = 0.022 lbs/hr

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$$R2 = 0.013 \text{ lbs/hr}$$

$$R2 = 0.010 \text{ lbs/hr}$$

A reduction in emissions of 0.003 lbs/hr will occur with the venting of D286 to scrubber C162.

Plating Emissions:

$$R1 = 0.001 \text{ lbs/hr}$$

$$R2 = 0.000 \text{ lbs/hr}$$

Air Sparging Emissions:

No Tanks in the Nickel Plating Line are air sparged.

Daily:

$$R1 = 0.022 \text{ lb/hr} + 0.001 \text{ lbs/hr}$$

$$= 0.023 \text{ lbs/hr}$$

$$= 0.023 \text{ lbs/hr}(24 \text{ hrs/day}) = 0.552 \text{ lbs/day}$$

$$R2 = (0.552 \text{ lbs/hr})(1 - 0.7)$$

$$= \mathbf{0.166 \text{ lbs/day}}$$

Precious Metal Plating Line Application No. 481867

Emissions from Open Process Tank Spread Sheet

@ 70% scrubber efficiency.

Evaporative Emissions: PM10

Previous application 470066

$$R1 = 0.000 \text{ lbs/hr}$$

$$R2 = 0.000 \text{ lbs/hr}$$

Modification application 481867

$$R1 = 0.00026 \text{ lbs/hr}$$

$$R2 = 0.0001 \text{ lbs/hr}$$

There are no chemicals used that have any substantial vapor pressure.

Plating Emissions:

The plating efficiency for precious metals is 100 percent so the emissions are negligible. However, there will be a slight emission increase due to the new chemicals added to tank No's 42 and 43.

$$R1 = 0.000265 \text{ lbs/hr}$$

$$R2 = 0.0001 \text{ lbs/hr}$$

Air Sparging Emissions:

No Tanks in the Precious Metals Plating Line are air sparged.

Daily:

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R1 = 0.0064 lbs/day

R2 = 0.002 lbs/day

Nickel emissions = 0.0000044 lbs/day

**NOx Emissions**

The venting of tank D286 to the scrubber will not impact the NOx emissions from tank D286. The NOx emissions from tank No's 12, 14, and 23 in the Nickel Plating line due to the use of nitric acid in the tanks was estimated at 0.1 lb/day (See previous PC report for calculations of the NOx emissions from this line).

Assume PM10 emissions by chemical reaction is equivalent to NOx emissions.

Nickel Plating:

0.10 lbs PM10/day

Summary of combined Daily PM10 Emissions:

Nickel Plating	0.166 lbs/day +0.10 lbs/day	= <b>0.266 lbs/day</b>
Precious Metal Plate		= <b>0.002 lbs/day</b>
Total Daily		= <b>0.268 lbs PM10/day</b>

Total NOx:

Total NOx = 0.1 lbs/day

**Risk Assessment:**

Toxic Emissions

Nickel Plating Line Application no. 481865

The venting of tank 23, (D286) to the scrubber C162 will result in an emission decrease and will not trigger Rule 1401 requirements.

Precious Metal Plating Line Application no. 481867

Emissions from Open Process Tank Spread Sheet

@ 70% scrubber efficiency.

Attachment A: Emissions due to Evaporation

There are no compounds that have a vapor pressure. Emission are negligible

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**Emissions due to Plating**

There will be an increase of 0.0000044 lb/day of nickel emissions due to the introduction of nickel compounds to tank 42.

**Emissions due to Air Sparging**

There are no tanks that are air sparged

There is an increase in nickel emissions due to the modification of the Precious Metal Plating line. The expected emission of this TAC is below the Tier 1 Screening Emission Levels (see attached Tier 1 Screening Risk Assessment) of Rule 1401 and a Tier 2 Analysis is not required.

**Scrubber Evaluation:**

Tank No.	CFM	Tank No.	CFM	Tank No.	CFM
4	867	38	667	61	667
6	1011	39	667	62	867
8	1156	42	667	64	1500
10	867	43	667	65	1500
12	544	45	667	73	467
19	600	47	1067	76	467
20	450	48	1067	77	467
25	467	51	1067	79	467
26	467	52	1422	80	467
28	778	56	667	86	1361
31	1111	59	656	88	1556
33	1778	60	656	Total	29819

The original ventilation requirements under the initial permit application was 29,819 cfm. The addition of tank 23(D286) will require an additional 778 cfm for a new total ventilation requirement of 30,596 cfm. The Scrubber has a design capacity of 34,000cfm. The ventilation requirements will not exceed the design capacity (for complete scrubber evaluation see previous PC evaluation).

**Evaluation & Rule Review**

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Rule 212 (c)(1):This section requires a public notice for all new or modified permit units that emit air contaminants located within 1,000 feet from the outer boundary of a school.

No public notice is required since no school is located within 1,000 ft from the above site.

Rule 212 (c)(2):This section requires a public notice for all new or modified facilities that have on-site emission increases exceeding any of the daily maximums as specified by Rule 212(g).

The proposed project will result in a small emission increase for the entire facility. A Rule 212(c )(2) notice will not be triggered since the emission increase is below the daily maximum specified in Rule 212(g).

Rule 212(c)(3):This section requires a public notice for all new or modified permit unit with increases in emissions of toxic air contaminants listed in Table I of Rule 1401 resulting in MICR greater than 1E-6 per permit unit or greater than 10E-6 per facility.

The proposed project will result in an emission increase of toxic emissions from the precious metal plating line. However, as discussed in additional detail in the evaluation, the toxic emissions from this equipment will not result in an increase in MICR of more than  $1 \times 10^{-6}$  nor a hazard index greater than 1.0. Public notice is not required under this section of the rule.

Rule 212(g):This section requires a public notice for all new or modified sources that result in emission increases exceeding any of the daily maximums as specified by Rule 212(g).

The emission increase due to the modification is negligible and the following summarizes the emission increase:

	Maximum Daily Emissions					
	<u>ROG</u>	<u>NO<sub>x</sub></u>	<u>PM<sub>10</sub></u>	<u>SO<sub>2</sub></u>	<u>CO</u>	<u>Pb</u>
Emission increase	0	0	0	0	0	0

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MAX Limit (lb/day)	<b>30</b>	<b>40</b>	<b>30</b>	<b>60</b>	<b>220</b>	<b>3</b>
Compliance Status	Yes	Yes	Yes	Yes	Yes	Yes

No public notice is required since the emission increase is below the thresholds.

Rule 401: With proper operation and maintenance compliance with this rule is expected.

Rule 402: With proper operation and maintenance compliance with this rule is expected.

RULE 1303(a)(1): The plating line is currently vented to a scrubber which will satisfy the BACT requirements.

RULE 1303(b)(1): Modeling for PM10 is not required since the hourly emission increase is less than the allowable limits.

<b>Modeling Analysis</b>	<b>PM10 (lb/hr)</b>
Hourly Emissions	0.0001
Allowable Limit	1.9

RULE 1303(b)(2): The proposed modification to the precious metal plating line will result in negligible PM10 emission increase. This project will not trigger the offset requirements of this Rule.

RULE 1303(b)(4): The facility is expected to be in full compliance with all applicable rules and regulations of the District.

RULES 1303(b)(5)(A) & 1303(b)(5)(D): The proposed project does not qualify as a major modification at a major polluting facility. Further, the proposed project is exempt from CEQA according to the responses Northrop Grumman provided on Form 400-CEQA for this project. Their responses in "Review of Impacts Which May Trigger CEQA" on Form 400-CEQA were all marked "No".

RULE 1303(b)(5)(B): The Increase in emissions associated with the proposed modification to the plating line does not qualify as a major modification at an existing major polluting facility.

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RULE 1303(b)(5)(C): A modeling analysis for plume visibility is not required since the net emission increase from the proposed project does not exceed 15 ton/yr of PM10 or 40 ton/yr of NOx.

Rule 1401: Toxics: Rule 1401 contains the following requirements:

- 1) *(d)(1) MICR and Cancer Burden* - The cumulative increase in MICR which is the sum of the calculated MICR values for all toxic air contaminants emitted from the new, relocated or modified permit unit will not result in any of the following:
  - (A) an increased MICR greater than one in one million ( $1.0 \times 10^{-6}$ ) at any receptor location, if the permit unit is constructed without T-BACT;
  - (B) an increased MICR greater than ten in one million ( $1.0 \times 10^{-5}$ ) at any receptor location, if the permit unit is constructed with T-BACT;
  - (C) a cancer burden greater than 0.5.
- 2) *(d)(2) Chronic Hazard Index* - The cumulative increase in total chronic HI for any target organ system due to total emissions from the new, relocated or modified permit unit will not exceed 1.0 at any receptor location.
- 3) *(d)(3) Acute Hazard Index* - The cumulative increase in total acute HI for any target organ system due to total emissions from the new, relocated or modified permit unit will not exceed 1.0 at any receptor location.

The proposed project of exhausting tank 23(D286) to the scrubber C162 will actually result in an emission decrease. The change in chemicals to the gold plating tanks 42(D296) and tank 43(D297) will cause an increase in nickel emissions from the precious metal plating line. However, the nickel emission is below Tier 1 Screening Emission Levels of Rule 1401. Compliance with this rule is expected

Rule 1426 Data Collection

The owner or operator of a metal plating facility subject to this rule shall begin collecting data required under subparagraphs (c)(1) and (c)(2) within 60 days after May 2, 2003. This facility is in compliance with c(1), c(2) & c(3).

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REG. XX: This modification has no impact on NO<sub>x</sub> emissions.  
Compliance with this Regulation is expected.

**REGULATION XXX:**

This facility is in the RECLAIM program. The proposed project is considered as a “de minimis significant permit revision” for non-RECLAIM pollutants or hazardous air pollutants (HAPs), and a “minor permit revision” for RECLAIM pollutants to the RECLAIM/Title V permit for this facility.

Non-RECLAIM Pollutants or HAPs

Rule 3000(b)(6) defines a “de minimis significant permit revision” as any Title V permit revision where the cumulative emission increases of non-RECLAIM pollutants or HAPs from these permit revisions during the term of the permit are not greater than any of the following emission threshold levels:

<b>Air Contaminant</b>	<b>Daily Maximum (lbs/day)</b>
HAP	30
VOC	30
NO <sub>x</sub> *	40
PM10	30
SO <sub>x</sub> *	60
CO	220

\* Not applicable if this is a RECLAIM pollutant

To determine if a project is considered as a “de minimis significant permit revision” for non-RECLAIM pollutants or HAPs, emission increases for non-RECLAIM pollutants or HAPs resulting from all permit revisions that are made after the issuance of the Title V renewal permit shall be accumulated and compared to the above threshold levels. This proposed project is the 9<sup>th</sup> permit revision to the Title V renewal permit issued to this facility on May 9, 2005. The following table summarizes the cumulative emission increases resulting from all permit revisions since the Title V renewal permit was issued:

<b>Revision</b>	<b>HAP</b>	<b>VOC</b>	<b>NO<sub>x</sub>*</b>	<b>PM10</b>	<b>SO<sub>x</sub></b>	<b>CO</b>
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Previous Permit Revision Total Cumulative to date. Title V permit renewed May 9, 2005	0	0	2.0*	1.0	0	1.0
9 <sup>th</sup> Permit Revision; venting D286 to scrubber C162 and a change in chemicals used in D296 & D297.	0	0	0	0.0	0	0
Cumulative Total	0	0	2*	1	0	1
Maximum Daily	30	30	40*	30	60	220

\* RECLAIM pollutant, not subject to emission accumulation requirements

Since the cumulative emission increases resulting from all permit revisions are not greater than any of the emission threshold levels, this proposed project is considered as a “de minimis significant permit revision” for non-RECLAIM pollutants or HAPs.

RECLAIM Pollutants

Rule 3000(b)(12)(A)(v) defines a “minor permit revision” as any Title V permit revision that does not result in an emission increase of RECLAIM pollutants over the facility starting Allocation plus nontradeable Allocations, or higher Allocation amount which has previously undergone a significant permit revision process.

Since NO<sub>x</sub> is a RECLAIM pollutant for this facility, a separate analysis shall be made to determine if the proposed permit revision is considered a “minor permit revision” for RECLAIM pollutants. The proposed project is not expected to result in NO<sub>x</sub> emission increase. As a result, this proposed project is considered as a “minor permit revision” for RECLAIM pollutants.

RECOMMENDATION

The proposed project is expected to comply with all applicable District Rules and Regulations. Since the proposed project is considered as a “de minimis significant permit revision” for non-RECLAIM pollutants and a “minor permit revision”, for RECLAIM pollutant, it is exempt from the public participation requirements under Rule 3006 (b). A proposed permit incorporating this permit revision will be submitted to EPA for a 45-day review pursuant to Rule 3003(j). If EPA does not raise any

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objections within the review period, a revised Title V permit will be issued to this facility.

**Conclusion:**

This equipment will operate in compliance with all District Rule and Regulations. A Permit to Construct is recommended for application number 481865, 481866, & 481867 subject to preceding conditions.