

**SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT**

ENGINEERING DIVISION

**APPLICATION PROCESSING AND CALCULATIONS**

PAGES	PAGE	
18	1	
APPL. NO.	DATE	
see below	10/13/07	
PRCSO BY	CHCKD BY	
REL		

**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. 474169

**PERMIT TO CONSTRUCT  
Section H**

**Equipment Description:**

<b>PROCESS 1: FABRICATED METALS SYSTEM #1: SURFACE PREPARATION</b>					
Equipment	Device ID	Connected To	Source Type/ Monitoring Unit	Emissions	Equipment Specific Conditions
PROCESS TANK, NO. 1, ALKALINE CLEANING, HEATED, WIDTH: 19IN; LENGTH: 48IN; DEPTH: 24IN; 9- KW  Reference A/N 474170	D276				A.433.1, C6.5, E193.1
PROCESS TANK, NO. 4, ALKALINE SOAK, HEATED, WIDTH: 26IN; LENGTH: 32IN; DEPTH: 95.5IN; 27-KW  Reference A/N 474170	D277	C162			A.433.1, C6.6 E193.1
PROCESS TANK, NO. 6, ALKALINE ETCH, SODIUM HYDROXIDE, HEATED, WIDTH: 26IN; LENGTH: 32IN 4IN; DEPTH: 95.5IN; 27-KW  Reference A/N 474170	D278	C162			A.433.1, C6.6, E193.1

**SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT**

ENGINEERING DIVISION

**APPLICATION PROCESSING AND CALCULATIONS**

PAGES	PAGE
18	2
APPL. NO.	DATE
see below	10/13/07
PRCSO BY	CHCKD BY
REL	

<p>PROCESS TANK, NO. 8, CONVERSION COATING, FERRIC SULFATE, SULFAMIC ACID, SODIUM NITRATE, SODIUM FLUOSILICATE. UNHEATED, AIR SPARGED, WIDTH: 26IN; LENGTH: 32IN; DEPTH: 95.5IN;</p> <p>Reference A/N 474170</p>	D279	C162			A.443.1, E193.1
<p>PROCESS TANK, NO. 10, CHEM FILM, CHROMIC ACID, BARIUM NITRATE, SODIUM SILICOFLUORIDE, FERRICYANIDE, UNHEATED, WIDTH: 26IN; LENGTH: 32IN; DEPTH: 95.5IN;</p> <p>Reference A/N 474170</p>	D280	C162			A.433.1, E193.1
<p>PROCESS TANK, NO. 76, COVERED, UNHEATED, ACID ETCH/MILL, TRISODIUM PHOSPHATE, SODIUM FLUORIDE, HYDROCHLORIC ACID, WIDTH: 14IN; LENGTH: 32IN; DEPTH: 35.5IN:</p> <p>Reference A/N 474170</p>	D317	C162			A.433.1, E193.1
<p>PROCESS TANK, NO. 77, COVERED, UNHEATED, ACID ETCH/MILL, NITRIC ACID, HYDROFLUORIC ACID, WIDTH: 14IN; LENGTH: 32IN; DEPTH: 35.5IN:</p> <p>Reference A/N 474170</p>	D318	C162			A.433.1, E193.1
<p>PROCESS TANK, NO. 79, COVERED, UNHEATED, ACID CLEAN, NITRIC ACID, HYDROFLUORIC ACID, WIDTH: 14IN; LENGTH: 32IN; DEPTH: 35.5IN:</p> <p>Reference A/N 474170</p>	D319	C162			<b>A.433.1,</b> E193.1
<p>PROCESS TANK, NO. 80, COVERED, UNHEATED, ACID CLEAN, NITRIC ACID, HYDROFLUORIC ACID, WIDTH: 14IN; LENGTH: 32IN; DEPTH: 35.5IN:</p> <p>Reference A/N 474170</p>	D320	C162			<b>A.433.1,</b> E193.1
<p>PROCESS TANK, NO. 82, UNHEATED, PASSIVATION, NITRIC ACID, WIDTH: 20IN; LENGTH: 32IN; DEPTH: 35.5IN:</p> <p>Reference A/N 474170</p>	D321				A.433.1, E193.1

**SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT**

ENGINEERING DIVISION

**APPLICATION PROCESSING AND CALCULATIONS**

PAGES	PAGE	
18	3	
APPL. NO.	DATE	
see below	10/13/07	
PRCSO BY	CHCKD BY	
REL		

PROCESS TANK, NO. 84, HEATED, PASSIVATION, SODIUM METASILICATE, SODIUM HYDROXIDE, SODIUM TRIPOLYPHOSPHATE, ROSEN SOAP, WIDTH: 20IN; LENGTH: 32IN; DEPTH: 35.5IN: 9-KW  Reference A/N 474170	D322				A.433.1, C6.6, E193.1
PROCESS TANK, NO. 85, COVERED, HEATED, ALKALINE CLEAN, DETERGENT, SODIUM HYDROXIDE, WIDTH: 14IN; LENGTH: 32IN; DEPTH: 23.5IN: 4-KW  Reference A/N 474170	D323				A.433.1, C6.7, E193.1
PROCESS TANK, NO. 86, HEATED, AIR SPARGED, CLEANING, ALKALINE DETERGENT, WIDTH: 56IN; LENGTH: 20IN; DEPTH: 47.5IN: 24-KW  Reference A/N 474170	D324	C162			A.433.1, C6.8, E193.1
PROCESS TANK, NO. 88, HEATED, ACID CLEAN, SULFURIC ACID, SODIUM DICHROMATE, WIDTH: 56IN; LENGTH: 20IN; DEPTH: 47.5IN: 18-KW  Reference A/N 474170	D325	C162			A.433.1, C6.6, E193.1
PROCESS TANK, NO. 89, HEATED, CONVERSION COATING, SODIUM HYDROXIDE, WIDTH: 12IN; LENGTH: 18IN; DEPTH: 18IN., 3-KW  Reference A/N 474170	D326				A.433.1, C6.9, E193.1
BENCH, HEATED, CHEMICAL ANALYSIS, TECHNISTIP AU/ENSTRIP AU-78, LENGTH: 25IN, WIDTH: 25IN, HEIGHT: XXIN, HEATED  Reference A/N 474170	D329	C162		<b>ADD</b>	A433.5, C6.13
BENCH, HEATED, ETCHING/STRIPPING, NITRIC ACID, SULFURIC ACID, SODIUM HYDROXIDE, LENGTH: 32IN, WIDTH: 32IN, HEIGHT: XXIN  Reference A/N 474170	D330	C162		<b>ADD</b>	A433.6, C6.12

ENGINEERING DIVISION

## APPLICATION PROCESSING AND CALCULATIONS

**Conditions:**

Not to use Toxic air contaminants unless listed in description

- A433.1 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	6,84, 85, 89	<b>30.0</b>
Chrome Compounds	10, 88	<b>1.0</b>
Nitric Acid	77, 82	<b>45</b>
Nitric Acid	79, 80	<b>2028</b>
Hydrogen Fluoride	77,79, 80	<b>11</b>
Sulfuric Acid	88	<b>20</b>
Hydrochloric Acid	76	<b>15</b>

- A433.5 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	Device No.	MAX CONTENT (WT%)
Lead Compounds	D329	<b>1.0</b>

- A433.6 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	Device No.	MAX CONTENT (WT%)
Sodium Hydroxide	D330	<b>10.0</b>
Nitric Acid	D330	<b>50.0</b>
Sulfuric Acid	D330	<b>50.0</b>

- C6.5 THE OPERATOR SHALL USE THIS EQUIPMENT IN SUCH A MANNER THAT THE TEMPERATURE BEING MONITORED,

**SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT**

ENGINEERING DIVISION

**APPLICATION PROCESSING AND CALCULATIONS**

PAGES	PAGE	
18	5	
APPL. NO.	DATE	
see below	10/13/07	
PRCSO BY	CHCKD BY	
REL		

AS INDICATED BELOW, DOES NOT EXCEED 175 DEGREE FAHRENHEIT.

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

- 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.

- C6.7 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.

- C6.8 THE OPERATOR SHALL USE THIS EQUIPMENT IN SUCH A MANNER THAT THE TEMPERATURE BEING MONITORED, AS INDICATED BELOW, DOES NOT EXCEED 140 DEGREE FAHRENHEIT.

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

- C6.9 THE OPERATOR SHALL USE THIS EQUIPMENT IN SUCH A MANNER THAT THE TEMPERATURE BEING MONITORED, AS INDICATED BELOW, DOES NOT EXCEED 230 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.

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

E193.1 THE OPERATOR SHALL RESTRICT THE OPERATION OF THIS EQUIPMENT AS FOLLOWS:

TANKS CONTAINING CHROME COMPOUNDS SHALL NOT BE AIR SPARGED OR RECTIFIED.

<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 474168	C162	D277-D281, D284-D285, D287-D288, D290-D292, D294-D300, D302-D303, D305-D311, D316-D320, D324-D325, <u>D329, D330</u> ADD			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.

**SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT**

ENGINEERING DIVISION

**APPLICATION PROCESSING AND CALCULATIONS**

PAGES	PAGE	
18	7	
APPL. NO.	DATE	
see below	10/13/07	
PRCSO BY	CHCKD BY	
REL		

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.

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.

**SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT**

ENGINEERING DIVISION

**APPLICATION PROCESSING AND CALCULATIONS**

PAGES	PAGE	
18	8	
APPL. NO.	DATE	
see below	10/13/07	
PRCSO BY	CHCKD BY	
REL		

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.

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.

On August 15, 2007, the District issued a permit to construct for the surface preparation line (prev. application number 470064) under Process 1, Fabricated Metals, System 1, Surface Preparation located at building M3/1153 at the Redondo Beach Facility ID# 800409. Northrop has indicated that two devices were not originally included in the initial filing. In addition, D319 (tk#79) and D320 (tk#80) actually need to use a nitric acid solution concentration of 28%. This equipment is currently limited to a 20% concentration.

**SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT**

ENGINEERING DIVISION

**APPLICATION PROCESSING AND CALCULATIONS**

PAGES	PAGE	
18	9	
APPL. NO.	DATE	
see below	10/13/07	
PRCSO BY	CHCKD BY	
REL		

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 10/16/07.

**Equipment Process Description:**

The new bench use for chemical analysis (D329) will be vented to scrubber C162 with an exhaust ventilation rate of 434cfm. The table top bench will be used for analyzing the chemical solution in the metal plating process tanks. In addition, plated parts that need rework to strip the gold will also be performed at this bench. The gold stripping operation is being conducted at this bench instead of the new etching bench because of a potential for hydrogen cyanide gas formation. To prevent the mixing of acid fumes from other operations and cyanide emissions in a common duct, this bench will be ducted separately to the scrubber. The stripping operation will be conducted on the average of once every two months using a 2000ml beaker heated to 160° F on a hot plate. The amount of stripping product, Technistrip AU or Enstrip AU-78 will be 2 oz. per gallon of solution.

The etching/stripping bench (D330) will be exhausted to scrubber C162 at a ventilation rate of 711 cfm. The table top bench will be used to etch or strip metal, mostly aluminum, parts using about 200 mls of 50% nitric acid or 50% sulfuric acid solution in a 500 ml beaker. The acid solution is heated to about 150° F. on a hot plate. The etching or stripping process for each batch may last from a few hours to several days depending on the metal parts. Similar operations using sodium hydroxide solution, 14oz per gallon, will also be conducted. The sodium hydroxide solution will be heated to a range of 180°F. - 200°F.

**Emissions Calculations:**

**SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT**

ENGINEERING DIVISION

**APPLICATION PROCESSING AND CALCULATIONS**

PAGES	PAGE	
18	10	
APPL. NO.	DATE	
see below	10/13/07	
PRCSO BY	CHCKD BY	
REL		

Surface Preparation Line Application no. 474170  
Emissions from Open Process Tank Spread Sheet  
@ 70% scrubber efficiency.  
Evaporative Emissions: PM10

Net emission increase

$$R1 = 0.004 \text{ lbs/hr}$$

$$R2 = 0.001 \text{ lbs/hr}$$

No Plating Emissions:

Daily:

$$\begin{aligned} R1 &= 0.009 \text{ lb/hr} + 0.0000872 \text{ lbs/hr} + \mathbf{(0.004 \text{ lbs/hr})} \\ &= (0.0131 \text{ lbs/hr})(24 \text{ hrs/day}) \\ &= 0.314 \text{ lbs/day} \end{aligned}$$

$$\begin{aligned} R2 &= (0.314 \text{ lbs/day})(1-0.7) = 0.0942 \text{ lbs/day} \\ &= \mathbf{0.0292 \text{ lbs/day net increase}} \end{aligned}$$

Emissions in bold are the emissions from the new benches. The particulate emissions from the chemical etch/mill were determined to be negligible as demonstrated from the emission calculation sheet for open process tanks in the appendix.

The amount of PM generated by the dissolving of metal can be estimated by the following equations:

$$\begin{aligned} \text{PM (aluminum)} &= 0.0167 \text{ lbs/lbs aluminum dissolved} \\ \text{PM due to dissolved metals in nitric acid} &= 0.12 \text{ lbs/lbs} \\ &\text{metal dissolved} \end{aligned}$$

Northrop may strip some of the parts processed. These parts tend to be very small electronic devices with a very small amount of metal, 5 grams to be dissolved. Estimated emissions are:

$$\begin{aligned} \text{PM} &= 0.0167 \text{ lbs/lbs Al}(0.011 \text{ lbs}) = 0.00018 \text{ lbs PM} \\ \text{PM} &= 0.12 \text{ lbs/lbs metal}(0.011 \text{ lbs}) = 0.0013 \text{ lbs PM} \end{aligned}$$

These emissions are negligible and do not add significantly to the overall emissions.

NOx Emissions

Etch Bench uses 100 mls HNO3 per batch.

SPGR 1.41, 11.75 lbs/gal, 50 – 70 %

**SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT**

ENGINEERING DIVISION

**APPLICATION PROCESSING AND CALCULATIONS**

PAGES	PAGE
18	11
APPL. NO.	DATE
see below	10/13/07
PRCSD BY	CHCKD BY
REL	

$100 \text{ mls/batch}(1.41 \text{ gm/ml}) = 141 \text{ gmHNO}_3/\text{batch}$   
 $(141 \text{ gm HNO}_3)/(464 \text{ gm/lb}) = 0.304 \text{ lbs HNO}_3$   
 $0.304 \text{ lbs HNO}_3(1 \text{ mole}/63.01 \text{ lbs}) = 0.0048 \text{ mole HNO}_3$   
 Assume 1 mole HNO3 produces 1 mole NO2  
 $0.0048 \text{ mole HNO}_3 = 0.0048 \text{ mole NO}_2$   
 $0.0048 \text{ mole NO}_2(46.01 \text{ lb/mole})$   
 $= 0.22 \text{ lbs NO}_2 \text{ per batch}^*$

\*This assuming that 100 percent of the nitric acid is converted to NOx which is unlikely.

Summary of combined Daily PM10 Emissions & NOx

Surface Prep.      0.0292 lbs/day

Total NOx:

Total NOx = 0.22 lbs/batch

**Risk Assessment:**

Toxic Emissions

Surface Preparation Line

Emissions from Open Process Tank Spread Sheet

@ 70% scrubber efficiency.

Attachment A: Emissions due to Evaporation

Nitric Acid	0.0292 lbs/day
	0.00122 lbs/hr

No plating or air sparging is occurring in these benches

The Enstrip and Technicstrip both contain a lead compound. There is no current applied to the beakers nor are they air sparged. Both stripping agents are powders (salts) and have no vapor pressure. The benches will be conditioned with a 1401 restriction except for lead compounds.

These values inputted into the Screening Risk Assessment spread sheet passed Tier 1 screening with the following values:

Cancer/Chronic	Acute
ASI	ASI
Na	5.3E-03
Pass	Pass

**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
29	778	56	667	86	1361
31	1111	59	656	88	1556
33	1778	60	656	Total	29819

With addition of the two benches, the total CFM required would be;  
 $434 \text{ CFM(Chem Bench)} + 711 \text{ CFM(Etch Bench)} = 1145 \text{ CFM}$   
 $1145 \text{ CFM} + 29,819 \text{ CFM} = 30,964 \text{ CFM total}$

The Scrubber has a design capacity of 34,000cfm. The ventilation requirements will not exceed the design capacity.

**Evaluation & Rule Review**

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 associated with the surface preparation 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	0.22	0.03	0	0	0
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.

**SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT**

PAGES	PAGE
18	14
APPL. NO.	DATE
see below	10/13/07
PRCSD BY	CHCKD BY
REL	

ENGINEERING DIVISION

**APPLICATION PROCESSING AND CALCULATIONS**

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

Rule 404:  $R2 = 0.022 \text{ lbs/hr}(\text{hr}/60\text{min})(7000\text{gr}/\text{lb}) = 2.57 \text{ gr}/\text{min}$ .  
 $2.57 \text{ gr}/\text{min}/34,000\text{cuft}/\text{min} = 0.000094\text{gr}/\text{cuft}$ .  
With proper operation and maintenance compliance with the 0.0508 gr/scf PM limit is expected.

REGULATION XIII: Though Northrop Grumman is a NOx RECLAIM facility, compliance with Reg. XIII is still required since the proposed project will result in an increase in PM10 emissions. The increase in these non-RECLAIM pollutants are as follows:

<b>PM10 (lb/day)</b>
0.03

RULE 1303(a)(1): BACT for surface preparation and plating tanks that don't exceed One in a million Cancer risk is a scrubber. This 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 emissions are less than the allowable limits.

<b>Modeling Analysis</b>	<b>PM10 (lb/hr)</b>
Hourly Emissions	0.001
Allowable Limit	0.41

RULE 1303(b)(2): The proposed project will result in a PM10 emission increase of 0.03 lbs/day. Rule 1304(d)2)(A) Exempts the facility from 1303(b)(2) offsets requirements since the facility PTE is less than 4 tons PM10.

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

**SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT**

ENGINEERING DIVISION

**APPLICATION PROCESSING AND CALCULATIONS**

PAGES	PAGE	
18	15	
APPL. NO.	DATE	
see below	10/13/07	
PRCSO BY	CHCKD BY	
REL		

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 of the plating line does not qualify as a major modification at an existing major polluting facility.

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 increased toxic emissions from the surface preparation operation subject to Reg 14 passed the respective Tier 1 screening. The Risk assessment was performed using the Risk Assessment Module and is attached in the appendix:

HIA values were less than 1.0 for target organs The values

are presented in the Risk Assessment in the appendix.

Compliance with this rule is expected

REG. XX: This modification has a negligible impact on NOx.  
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
NOx*	40
PM10	30
SOx*	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 6th permit revision to the Title V renewal permit issued to this facility on May 9, 2006. The following table summarizes

**SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT**

ENGINEERING DIVISION

**APPLICATION PROCESSING AND CALCULATIONS**

PAGES	PAGE	
18	17	
APPL. NO.	DATE	
see below	10/13/07	
PRCSO BY	CHCKD BY	
REL		

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>PM<sub>10</sub></b>	<b>SO<sub>x</sub></b>	<b>CO</b>
Previous Permit Revision Total Cumulative to date. Title V permit renewed July 9, 2006	0	0	0	0	0	0
5 <sup>th</sup> Permit Revision; addition of the plating line (device no. D276 – D326),	0	0	0	1.0	0	0
6 <sup>th</sup> Permit Revision, The addition of D329 & D330(application no. 474168& 474170) and the change in operating temperature of D319 &D320, vented to C162	0	0	0	0	0	0
Cumulative Total	0	0	0	1.0	0	0
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.

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

**SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT**

ENGINEERING DIVISION

**APPLICATION PROCESSING AND CALCULATIONS**

PAGES	PAGE	
18	18	
APPL. NO.	DATE	
see below	10/13/07	
PRCSO BY	CHCKD BY	
REL		

---

Conclusion:

This equipment will operate in compliance with all District Rule and Regulations. A Permit to Construct is recommended for application number 474168 & 474170 subject to preceding conditions.

**TIER 1 SCREENING RISK ASSESSMENT**

Receptor Distance (actual)	200
Receptor Distance (for X/Q lookup)	100

Tier 1 Results	
<b>Cancer/Chronic</b>	
ASI	Acute ASI
	5.30E-03
passed	passed

APPLICATION SCREENING INDEX CALCULATION							
Code	Compound	Average Annual Emission Rate (lbs/yr)	Max Hourly Emission Rate (lbs/hr)	Cancer / Chronic Pollutant Screening Level (lbs/yr)	Acute Pollutant Screening Level (lbs/hr)	Cancer / Chronic Pollutant Screening Index (PSI)	Acute Pollutant Screening Index (PSI)
n10	Nitric acid	1.02E+01	1.22E-03	N/A	2.30E-01	N/A	5.30E-03
<b>TOTAL (APPLICATION SCREENING INDEX)</b>							<b>5.30E-03</b>



