

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT

ENGINEERING DIVISION

APPLICATION PROCESSING AND CALCULATIONS

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APPLICANT'S NAME: NORTHROP GRUMMAN SPACE & MISSIONS SYSTEMS

FACILITY PERMIT ID# 800408

CONTACT PERSON: RON FRAZER

MAILING ADDRESS: ONE SPACE PARK
BUILDING CS1/1800
REDONDO BEACH, CA 90278

EQUIPMENT ADDRESS: 3301 AVIATION BLVD.
MANHATTAN BEACH, CA 90266

Title V/RECLAIM Permit Revision:
Application No. 502940

**PERMIT TO CONSTRUCT
PROCESS MODIFICATION**

Equipment Description: (Previous Application 499349)

PROCESS 1: CONTROL EQUIPMENT					
Equipment	Device ID	Connected To	Source Type/ Monitoring Unit	Emissions	Equipment Specific Conditions
SCRUBBER, PACKED BED, HARRINGTON, MODEL NO. HPH 78-4, WIDTH: 8FT, DEPTH: 7FT; LENGTH 6FT 3IN, WITH A 4FT PACKING DEPTH, A 30-HP EXHAUST FAN AND THREE 2-HP RECIRCULATION PUMPS. Reference A/N 502641	C-6	E419, D420, E421, E422, E423, E424, D425, D427, D428, D429, D430, D431, D432, D433, D434, D435, D438, D439, D440, D441, D442, E479, D501, D502, D503, D505, E506, D573, D525, D595, D596, D597			C8.3, C8.9, D90.1, E158.1, E159.1, K67.3

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Conditions:

C8.3 THE OPERATOR SHALL USE THIS EQUIPMENT IN SUCH A MANNER THAT THE FLOW RATE BEING MONITORED, AS INDICATED BELOW, IS NOT LESS THAN 150 GPM.

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

C8.9 THE OPERATOR SHALL USE THIS EQUIPMENT IN SUCH A MANNER THAT THE pH BEING MONITORED, AS INDICATED BELOW, IS NOT LESS THAN 8 OF THE pH SCALE

To comply with this condition, the operator shall monitor and record the pH as specified in condition D90.1.

D90.1 THE OPERATOR SHALL PERIODICALLY MONITOR THE pH OF THE SCRUBBING SOLUTION ACCORDING TO THE FOLLOWING SPECIFICATIONS:

The operator shall use litmus paper or a portable pH analyzer to monitor the parameter.

The operator shall monitor once every day provided any equipment served by this control system is in operation.

E158.1 THE OPERATOR SHALL MAINTAIN A CONTINUOUS OVERFLOW OF WATER FROM THE SCRUBBER SUMP TO PREVENT THE BUILD UP OF CONTAMINATION.

E159.1 THE OPERATOR SHALL MAINTAIN INSPECTION PORTS WHICH, WHEN OPENED, ALLOW THE OBSERVATION OF THE SPRAY NOZZLES AND SCRUBBING SOLUTION BEING SPRAYED ON THE PACKING.

K67.3 THE OPERATOR SHALL KEEP RECORDS, IN A MANNER APPROVED BY THE DISTRICT, FOR THE FOLLOWING PARAMETERS OR ITEMS:

pH of scrubbing solution on a daily basis.

Flow rate of recirculating scrubbing solution on a daily basis.

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PERMIT TO OPERATE

Equipment Description: (Previous 474046)

PROCESS 9: BPL LAB SYSTEM #3 Wet Chemical Processing					
Equipment	Device ID	Connect d To	Source Type/ Monitoring Unit	Emissions	Equipment Specific Conditions
BENCH, ETCHING STATION, WITH FOUR SINKS, HEIGHT: 5FT 10IN; LENGTH: 6FT; WIDTH: 7FT 10IN Reference A/N 502643	D440	C6			B59.20
BENCH, POLISHING STATION, WITH FOUR SINKS, HEIGHT: 5FT 10IN; LENGTH: 8FT; WIDTH: 7FT 10IN Reference A/N 502643	D441	C6			59.20, C1.29
BENCH, WET PROCESS STATION, WITH TWO SINKS, HEIGHT: 5FT 10IN; LENGTH: 8FT; WIDTH: 7FT 10IN Reference A/N 502643	D442	C6			59.20
BENCH, PLATING STATIONS #1 & #2, WITH A 10 VOLT, 3 AMPERE RECTIFIER, HEIGHT: 5FT 10IN; LENGTH: 8FT; WIDTH: 7FT 10IN Reference A/N 502643	D439	C6			B59.64, E71.3

Conditions:

B59.20 The operator shall not use the following materials in this device:

Toxic air contaminants in table one of rule 1401 with a listing date of 3/4/05 or earlier except hydrochloric acid, hexavalent chrome, hydrofluoric acid, nickel sulfamate, nitric acid, ~~and~~ phosphoric acid, sulfuric acid and sodium hydroxide.

B59.64 The operator shall not use the following materials in this device:

Toxic air contaminants in table one of rule 1401 with a listing date of 3/4/05 or earlier except hydrochloric acid, ~~hexavalent chrome,~~ hydrofluoric acid, nickel sulfamate, nitric acid, phosphoric acid, sulfuric acid, copper and copper sulfate.

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C1.29 The operator shall limit the material processed to no more than 27 lbs in any one month

For the purpose of this condition, material process shall be defined as potassium dichromate added to batch.

E71.3 the operator shall not use this equipment for electrolytic chrome plating or stripping.

Background

Northrop filed two applications on September 24, 2009 for a change of condition to include additional chemicals used in the etch bench D440. Application 502641 has been submitted to consider the change in chemistry vented to scrubber C6. The change of condition for D440, application no. 502643, would alter condition no. B59.20 by including sulfuric acid and sodium hydroxide to the current chemical list of exceptions of toxic material subject to rule 1401 that is used in the etch bench. Currently D439 is allowed to use hexavalent chromium under condition B59.64. Though this condition is limited to rule 1401, it would cause the plating tank to be subject to all the provisions of rule 1469. To avoid this, hexavalent chrome has been struck from the list of 1401 toxic compound that can be used in this tank under condition B59.64. Condition no. E71.3 has been added to prevent the plating of chrome in tank D439 to avoid any confusion about rule 1469 compliance. After these changes, D439 will not be subject to rule 1469.

This is a RECLAIM Cycle 1 and Title V facility. The proposed project is considered as a “minor” permit revision to this facility Title V permit.

A review of District records indicate that the facility has had no citizen complaints filed or Notices to Comply issued during the last two years. However, on 5/5/10 the facility was issued a Notice of Violation for failure to conduct source tests for boilers D365 and D457. The operator has since conducted the source tests and is currently operating in compliance with the permit conditions and applicable rules.

Process Description:

Wet Chemical Process:

The wet chemical process consists of one wet process plating station (D439), one Au-Ti etching station (D440), one wet process polish station (D441), and one wet process station (D442). The wet process plating station is used to metal plate the wafers. The sinks in the etching bench are supplied with a lid that covers the open surface area while the sink is not in use. The wet process stations are used for the removal of oxides and the etching of Au-Ti from wafers during the wafer production process. The sinks are slightly heated to 25 degrees C in this process, they are not air agitated and the plating tank is rectified with a 3amp 10v rectifier. The dilution ratio is such that the vapor pressure from these acids would be negligible. The emission estimates submitted by the applicant are based on a 10% loss which would be acceptable. Since the acids are diluted, the vapor

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pressures would be low. Any PM emissions would be controlled by a scrubber which would satisfy any BACT requirements. C6 has a packing bed of 4ft deep with an estimated control efficiency of 90 percent.

Emissions Calculations:

A/N 502643 (Prev. 441114)

Total estimated emissions from the previous evaluation:

PM10

R1= 0.1026 lbs/day, 0.0128 lbs/hr

R2 = 0.0103 lbs/day, 0.00128 lbs/hr

Sulfuric acid and sodium hydroxide have no vapor pressure at the operating temperature of 25⁰C, D440 is not air sparged nor rectified, therefore the change in emissions by the introduction of these chemicals is negligible.

RISK Assessment:

The addition of sulfuric acid and sodium hydroxide will result in negligible emission increase and will not cause an increase in an acute hazard. The removal of hexavalent chrome from B59.64 would result in a potential reduction in risk. Compliance with rule 1401 is expected.

RULE EVALUATION

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 not result in an emission increase for the entire facility. A Rule 212(c) (2) notice will not be triggered.

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.

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The proposed project will not result in an emission increase of carcinogenic toxic emissions associated with the operation. Therefore 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).

There will be a negligible PM emission increase by the addition of sulfuric acid and sodium hydroxide. The following summarizes the emissions increases:

	Maximum Daily Emissions					
	<u>ROG</u>	<u>NO_x</u>	<u>PM₁₀</u>	<u>SO₂</u>	<u>CO</u>	<u>Pb</u>
Emission increase	0	0	0	0	0	0
MAX Limit (lb/day)	30	40	30	60	220	3
Compliance Status	Yes	Yes	Yes	Yes	Yes	Yes

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

Rule 401: With the proper maintenance and operation of this equipment, compliance with this rule is expected.

Rule 402: With proper maintenance and operation, this equipment is not expected to create a nuisance.

Rule 1303(a): The equipment is vented to a scrubber which will satisfy the BACT requirements for this type of operation. Compliance with BACT is achieved.

Rules 1303(b)(1) modeling:

The uncontrolled PM emissions from this operation of 0.0128 lbs/hr is well below the Appendix A Screening value of 0.41 lbs/hr. Compliance is expected.

Rule 1303(b)(2) Offsets:

This project will result in negligible PM₁₀ emission increase and as a result no offsets are required for this operation.

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

Rule 1401: The addition of sulfuric acid and sodium hydroxide will only result in negligible emission increase and will not result in an increase of acute HI in excess of 1.0. Compliance with this rule is expected.

RULE 2005: Northrop Grumman is a NO_x RECLAIM facility. The proposed project will not result in an increase in NO_x emissions. Compliance with rule is expected.

REGULATION XXX:

This facility is in the RECLAIM program. The proposed project is considered as a “minor permit revision” for RECLAIM pollutants, non-RECLAIM pollutants, and hazardous air pollutants (HAPs). Rule 3000(b)(12) specifies that a “minor permit revision” includes, but is not limited to any Title V permit revision that:

- Rule 3000(b)(12)(A)(v) – does not result in an emission increase of any RECLAIM pollutant over the facility’s starting Allocation plus the non-tradeable Allocation, or higher Allocation amount which has previously undergone a significant permit revision process.
- Rule 3000(b)(12)(A)(vi) – does not result in an increase in emissions of a pollutant subject to Regulation XIII – New Source Review (non-RECLAIM pollutants) or a hazardous air pollutant (HAP).

The proposed project is not expected to result in an emission increase of any RECLAIM pollutant or an increase in emissions of a pollutant subject to Regulation XIII – New Source Review (non-RECLAIM pollutants) or a hazardous air pollutant (HAP), and therefore is considered as a “minor permit revision” pursuant to Rule 3000(b)(12)(A)(v) and Rule 3000(b)(12)(A)(vi).

This proposed project is the 10th permit revision to the Title V renewal permit issued to this facility on July 9, 2006. The following table summarizes the permit revisions since the initial Title V permit was issued:

Revision	HAP	VOC	NO _x *	PM10	SO _x	CO
Previous Permit Revision Total Cumulative to date. Title V permit renewed July 9, 2006	0	0	1	5	0	1
10th Permit Revision;	0	0	0	0	0	0

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Addition of sulfuric acid and sodium hydroxide to D440, removal of hex chrome from B59.64, a/n 502643, Modification to scrubber C6, a/n 502641 to account for the change in chemistry						
Cumulative Total	0	0	1*	5	0	1
Maximum Daily	30	30	40*	30	60	220

RECOMMENDATION

The proposed project is expected to comply with all applicable District Rules and Regulations. Since the proposed project is considered as a “minor permit revision” for non-RECLAIM pollutants 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.