

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT

ENGINEERING DIVISION

APPLICATION PROCESSING AND CALCULATIONS

PAGES 10	PAGE 1
APPL. NO. see below	DATE 1/08/13
PRCSD BY REL	CHCKD BY

APPLICANT'S NAME: NORTHROP GRUMMAN SPACE AND MISSION SYSTEMS CORP.

FACILITY PERMIT ID# 800408

CONTACT PERSON: ANTONIO S. LIU

MAILING ADDRESS: ONE SPACE PARK
BUILDING E2/4050B
REDONDO BEACH, CA 90278

EQUIPMENT ADDRESS: 3301 Aviation Blvd.
MANHATTAN BEACH, CA 90266

PERMIT TO OPERATE

Title V Permit Revision

Application No. 509407

Equipment Description:

PROCESS 2: EXTERNAL COMBUSTION					
Equipment	Device ID	Connected To	Source Type/ Monitoring Unit	Emissions	Equipment Specific Conditions
BOILER, NATURAL GAS, AJAX, MODEL WGFD-5000, 5.5 MMBTU/HR WITH WATERTUBE Reference A/N 460766 BURNER, NATURAL GAS, ALZETA, LOW NOX, MODEL CSB11-250-20, 5.5 MMBTU/HR	D321		NOX: PROCESS UNIT	CO: 100 PPMV NATURAL GAS(4)[RULE 1303(a)(1)-BACT, 5-10-96;RULE 1303(a)(1)-BACT , 12-6-2002]; CO: 400 PPMV NATURAL GAS(5)[RULE 1146 11-17-2000];CO:2000PPMV(5A)[RULE 407, 4-2-1982]; NOX: 9PPMV NATURAL GAS(3)[RULE 2012,5-6-2005] NOX: 9PPMV NATURAL GAS(4)[RULE 2005, 6-03-2011] PM: 0.1 GRAINS/SCF (5)[RULE 409, 8-7-1981]	D28.1, D332.3, K40.1

RECOMMENDATION

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT

ENGINEERING DIVISION

APPLICATION PROCESSING AND CALCULATIONS

PAGES 10	PAGE 2
APPL. NO. see below	DATE 1/08/13
PRCSD BY REL	CHCKD BY

A Permit to Operate is recommended for application numbers 460766 subject to the following conditions:

D28.1 THE OPERATOR SHALL CONDUCT SOURCE TEST(S) IN ACCORDANCE WITH THE FOLLOWING SPECIFICATIONS:

The test shall be conducted within the first 12 months after the issuance of this permit and once every 5-year period.

The test shall be conducted to demonstrate compliance with the source testing requirements of Rule 2012 for a Process Unit opting to comply with a NOx concentration limit.

D332.1 The operator shall determine compliance with the CO emission(s) limit by conducting a source test at least every five years using a portable analyzer and AQMD-approved test method or, if not available, a non-AQMD approved test method. The test shall be conducted when the equipment is operating under normal conditions to demonstrate compliance with the concentration limit(s). The operator shall comply with all general testing, reporting, and recordkeeping requirements in Section E and K of this permit.

K40.1 The operator shall provide to the District a source test report in accordance with the following specifications:

Source tests results shall be submitted to the District no later than 60 days after the source test was conducted.

Background

Northrop Grumman Space & Mission Systems is engaged in the development and manufacture of advanced semiconductors including fabrication and assembly of electronic components and hardware for integration into satellite and space vehicle. The Company also conducts research and development relating to chemical lasers, rocket engine thrusters and energy related programs for commercial and non-commercial applications. The 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. This application pertains to the Boiler, D321, currently in operation at building R6, Manhattan Beach Title V facility under ID# 800408. The boiler has a previous permit, No. F60457, A/N 412386. Northrop

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT

ENGINEERING DIVISION

APPLICATION PROCESSING AND CALCULATIONS

PAGES 10	PAGE 3
APPL. NO. see below	DATE 1/08/13
PRCSD BY REL	CHCKD BY

Grumman Space & Mission Systems is requesting a permit modification to the boiler permit due to the change in the heat input rating of the low-Nox burner. The original low-Nox as described on the permit is 4.8mmbtu/hr. It was replaced with a similar brand burner with a higher heat input rating of 5.5 mmbtu/hr.

The boiler is being used to heat and adjust the humidity of the air in the building for the purpose of providing comfort to personnel working in the building and also for controlling the temperature & humidity of clean rooms.

Compliance Update:

Notice to Comply, N/C E18838 was recently issued on 12/19/2012 to have Northrop submit an application for a portable IC engine. There are no other Notices of Violation or Complaints issued against this facility as of 1/08/2012 for the preceding two years.

Emissions Calculations

- Application no. 460766
- @ 100 ppmv CO = 79.75 lb CO/mmcuft
- @20 ppmv NOx = 25.92 lb NOx/mmcuft
- @ 9 ppmv NOx = 11.66 lb NOx/mmcuft

The emission increase will be the delta between the original and new burner ratings for the following contaminants. NOx will be dependent on the ppmv and rating and will be calculated accordingly.

Rating:

Delta Rating (New-Previous) = (5.5 – 4.8) = 0.7mmbtu/hr

Operating schedule: 24 hrs/day, 7 days/week 50 weeks/year.

Delta 0.7mmbtu/hr =

gas usage mmcft/hr	Emission Factor lbs/mmcft	Hourly Emissions lbs/hr	Daily Emissions lbs/day	Annual Emissions lbs/yr	30 day average lbs/day
ROG 0.00067	7.0	0.005	0.112	40.77	0.0
SOX	0.83	0.0006	0.013	4.84	0.0
CO	79.75	0.053	1.28	464.46	1.28
PM	7.5	0.005	0.12	43.90	0.0

NOx emissions:

4.8 mmbtu/hr @ 20ppmv					delta 30 day
0.00457 lbs NOx/mmcuft					average
NOX	25.92	0.1185	2.843	1035.14	lbs/day

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT

ENGINEERING DIVISION

APPLICATION PROCESSING AND CALCULATIONS

PAGES 10	PAGE 5
APPL. NO. see below	DATE 1/08/13
PRCSD BY REL	CHCKD BY

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 combustion of natural gas. 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 1×10^{-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_x</u>	<u>PM₁₀</u>	<u>SO₂</u>	<u>CO</u>	<u>Pb</u>
Emission increase	0	-1.0	0	0	+1	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 proper operation and maintenance compliance with this rule is expected.

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

Rule 407: With proper operation and maintenance compliance with the 2000 PPMV CO limit is expected.

Rule 409: With proper operation and maintenance compliance with the 0.1 gr/scf PM limit is expected.

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT

ENGINEERING DIVISION

APPLICATION PROCESSING AND CALCULATIONS

PAGES	PAGE
10	6
APPL. NO.	DATE
see below	1/08/13
PRCSD BY	CHCKD BY
REL	

Rule 1146 This facility is a NOX RECLAIM facility and is subject to the NOX emission requirements of Reg 30. This boiler is still subject to the CO limits set forth by this rule. This boiler is a watertube boiler and it complies with the CO limits of 100ppm. Source test indicate that the CO emission was 49.7ppmv @ 3% oxygen. Compliance is expected

RULE 1303(a)(1): The equipment is equipped with a burner that will meet the BACT emission limits. BACT for CO from watertube boiler is defined as the use of a low-NOx burner emitting no more than 100 ppmv CO. The boiler will be operated with an ultra low-NOx natural-gas fired burner. The burner is designed to operate at 9 ppm of NOx or less and 100 ppm of CO or less. Source test has demonstrated compliance with these emission limits.

RULE 1303(b)(1): Modeling for CO or PM is not required since the hourly emissions are less than the allowable limits.

Modeling Analysis	CO (lb/hr)	PM10 (lb/hr)
Hourly Emissions	0.418	0.0393
Allowable Limit	17.1	1.9

RULE 1303(b)(2): The proposed project will not result in an emission increase of criteria pollutants in excess of 0.49 lbs/day other than CO emissions of 1.26 lbs/day. The increase in CO emissions will not have to offset since the facility will not exceed 29 tons per year and is exempt pursuant to 1304(d)(B). Offsets are not required.

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

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT

ENGINEERING DIVISION

APPLICATION PROCESSING AND CALCULATIONS

PAGES 10	PAGE 7
APPL. NO. see below	DATE 1/08/13
PRCSD BY REL	CHCKD BY

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.

40CFR60 Subpart Dc: Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units:

The requirements of this subpart are not applicable to the proposed unit since it is rated at less than 10 mmbtu/hr.

40CFR63 Subpart DDDDD: National Emission Standards for Hazardous Air Pollutants: Industrial, Commercial, and Institutional Boilers and Process Heaters:

Watertube boilers rated at less than 10 mmbtu/hr are classified as small units. However, since the facility is not a major HAP source, the requirements of this regulation are not applicable to the proposed boiler.

40CFR63 SUBPART JJJJJJ: National Emission Standards for Hazardous air pollutants for industrial, commercial and institutional boiler area sources.

Boilers fired exclusively on natural gas are exempt from the requirements of this subpart per 63-1195(e).

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 (1.0×10^{-6}) at any receptor location, if the permit unit is constructed without T-BACT;

(B) an increased MICR greater than ten in one million (1.0×10^{-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.

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT

ENGINEERING DIVISION

APPLICATION PROCESSING AND CALCULATIONS

PAGES	PAGE
10	8
APPL. NO.	DATE
see below	1/08/13
PRCSD BY	CHCKD BY
REL	

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.

Toxic emissions from external combustion subject to Reg 14 Based on the Risk assessment performed using the Risk Assessment Module. The net increase for this modification has passed Tier 1 screening with the following results.

Cancer/Chronic	Acute
7.68E-02	3.23E-03.
Passed	Passed

REG XX Northrop Grumman is a NOx cycle 1 RECLAIM facility. The proposed boiler will be classified as a NOx process unit. The water tube boiler is equipped with a low nox burner. They will comply with the BACT requirements of 9 ppmv NOx and CO concentrations of 100 ppmv.

RULE 2005: Northrop Grumman is a NOx RECLAIM facility. The proposed project will result in a reduction in NOx emissions. Compliance is expected.

RULE 2005(c)(1)(A): The boiler will be operated with an ultra low-NOx natural-gas fired burner. The burner is designed to operate at 9 ppm of NOx or less and 100 ppm of CO or less. The boiler is expected to operate in compliance with BACT through the use of the ultra low-NOx burner. Source testing has demonstrated that this boiler meets these emissions limits. BACT for this boiler is defined as use of a low-NOx burner emitting no more than 9 ppm. Testing shows a 6.6 ppmv @ 3% oxygen. Compliance is expected.

RULE 2005(c)(1)(B): Modeling is not required since the estimated hourly NOx emissions of 0.06 lb/hr does not exceed the allowable limit of 0.31 lb/hr. The proposed project will not result in a significant increase in the air quality concentration for NOx.

RULE 2005(c)(2): This modification will cause a NOx reduction. Offsets are not necessary.

RULE 2005(g)(1): Statewide compliance certification is not required since the proposed project will not result in an increase of 1 pound

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT

ENGINEERING DIVISION

APPLICATION PROCESSING AND CALCULATIONS

PAGES 10	PAGE 9
APPL. NO. see below	DATE 1/08/13
PRCSD BY REL	CHCKD BY

or more of NO_x emissions and therefore does not qualify as a major modification at major polluting facility.

RULES 2005(g)(2) & 2005(g)(3): 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 2005(g)(4): A modeling analysis for plume visibility is not required since the net emission increase from the proposed project does not exceed 40 ton/yr of NO_x.

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:

Air Contaminant	Daily Maximum (lbs/day)
HAP	30
VOC	30
NO _x *	40
PM10	30
SO _x *	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

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT

ENGINEERING DIVISION

APPLICATION PROCESSING AND CALCULATIONS

PAGES 10	PAGE 10
APPL. NO. see below	DATE 1/08/13
PRCSD BY REL	CHCKD BY

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 4th permit revision to the Title V renewal permit issued to this facility on September 7, 2011. The following table summarizes the cumulative emission increases resulting from all permit revisions since the Title V renewal permit was issued:

Revision	HAP	VOC	NO_x*	PM₁₀	SO_x	CO
Previous Permit Revision Total Cumulative to date. Title V permit renewed Sept.7, 2011	0	0	0	0	0	0
4 th Permit Revision; Application 460766 modification to increase boiler burner from 4.8 to 5.5 mmbtu/hr	0	0	0	0	0	1.0
Cumulative Total	0	0	0	0	0	1.0
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.

Conclusion:

This equipment will operate in compliance with all District Rule and Regulations. Permits to Operate is recommended for application number 460766 subject to preceding conditions.