ANTELOPE VALLEY
AIR QUALITY MANAGEMENT DISTRICT

New Source Review/Federal Operating Permit Evaluation Document for

Change of Ownership of Site 1 Equipment

Addition of Spray Hangar B/474 and associated Control Equipment

Addition of Eight (8) Boilers to B474, Site 4

Addition of Eight (8) Boilers and one Emergency ICE to B260, Site 2

Addition of a Portable Spray Booth to B720, Site 7

Modification to Spray Booth S006767, Site 4

Relocation and Modification of GDF, Permit No. N011611, Site 3

Preliminary Determination - Statement of Basis
For Renewal of

FOP Number:102301816

For:

Northrop Grumman Aeronautics Systems Corporation

Facility:

Northrop Grumman Aeronautics System

Document Date: 11/05/2026
Submittal date to EPA/CARB for review: 11/05/2026
EPA/CARB 45-day Commenting Period ends: 12/21/2026
Public Notice Posted: 11/05/2026
Public Commenting Period ends: 12/07/2026
Permit Issue date on: On or about 12/22/2026

Permitting Engineer:
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A. FACILITY IDENTIFYING INFORMATION:

Owner/Company Name:	Northrop Grumman Aeronautics Systems Corporation
Owner Mailing Address:	Northrop Grumman Aeronautics Systems Corporation 3520 E Avenue M, M/S 4F Palmdale, CA 93550
Facility Name:	Northrop Grumman Aeronautics Systems Corporation - Palmdale
Facility Location:	3520 E Avenue M, Palmdale CA
Mailing Address:	Northrop Grumman Aeronautics Systems Corporation - Palmdale 3520 E Avenue M, M/S 4F Palmdale, CA 93550
AVAQMD Federal Operating Permit Number:	102301816
AVAQMD Company Number:	1023
AVAQMD Facility Number:	01816
Responsible Official:	Gina L. Woullard
Title:	Vice President Production Operations
Phone Number:	(661) 403-2592
Facility "Site" Contact:	George Jung
Phone Number:	(661) 266-5394
Nature of Business:	Aircraft Assembly, Maintenance and Modification
SIC Code: Assemblers	37228-06 – Aircraft Parts and
Facility Location:	UTM (Km): 425E/3830N

B. Introduction

1. Application and Setting

Background:

Federal Operating Permit (FOP) No. 102301816 is issued to Northrop Grumman Corporation, located at 3520 E. Avenue M, Palmdale, CA 93550. The facility is designed to assemble, maintain, and modify military aircraft. Facilities include the following; Abrasive Blasting equipment, HVLP Paint Spray Guns, Paint Spray Booths, Paint Spray Hangars, Portable Aircraft Ground Support Equipment, Emergency Internal Combustion Engines, Boilers, Gasoline Dispensing Facilities, Military Jet Fuel Truck Loading/Unloading Facility, Military Jet Fuel Hydrant Fueling/Defueling System, Military Jet Fuel Storage Truck Loading and Unloading Facility, Jet Fuel Storage Tanks and an LPG Pressurized Storage Tank.

The Antelope Valley Air Quality Management District (AVAQMD or District) received an application on July 16, 2026, for the renewal of the Northrop Grumman Title V permit, which expires on April 5, 2027. Included in that renewal application were applications for several changes and additions to the Northrop Grumman facility, as described in Section B below.

Northrop Grumman is classified as a Major Facility pursuant to District Rule 3001 – Title V Permit Definitions, as this facility has a Potential to Emit (PTE) equal to or greater than 25 tons per year or more of Oxides of Nitrogen (NOx), Volatile Organic Compounds (VOC) and Hazardous Air Pollutants (HAP). Facility wide emissions caps are in place for Particulate Matter less than 10 Microns in Size (PM10) and VOC. The purpose of this action is to renew the Title V permit for an additional five-year period and to incorporate the applicable new and modified equipment. This document serves as the District's preliminary Determination to renew the Title V permit.

Additionally, Northrop Grumman is classified as a Major Facility pursuant to District Rule 1301 – NSR Definitions because the facility's PTE exceeds the applicable threshold amounts for NOx and VOC. The facility is classified as a non-major source for all other criteria pollutants. This document also serves as the District's NSR Preliminary Decision for the application submitted by Northrop pursuant to District Rule 1302 – New Source Review Procedures, section (D)(1) and Rule 1314 - Federal Nonattainment New Source Review for Ozone Precursors.

2. Description of Project

The Antelope Valley Air Quality Management District (AVAQMD or District) received an application on July 16, 2026, for the renewal of the Title V permit, which expires on April 5, 2027. Included in that renewal application were applications for several changes and additions to the Northrop Grumman facility, as follows:

- Incorporation of AFP Site 1 including a boiler (B015148), spray booth (S009328), gasoline dispensing facility (N007166) and seven (7) emergency ICEs (E008905, E009102, E011613, E011963, E011964, E013204 and E013639)

- Installation of eight (8) new 6 mmBTU boilers B-1 through B-8, B260, Site 2. The units will provide hot water and heating for the new B260 hangar.
- Installation of a new 302 BHP emergency ICE to provide emergency power to the New B260 hangar.
- Relocation of the GDF, Permit No. N011611, to a new Site Support Building at Site 3 and replacement of the two (2) facility nozzles.
- Modification of the Small Parts Spray Booth Permit No. S006767 at B415, Site 4, upgrading the booth exhaust fan from a 5 HP to a 30 HP (+/-20%) with a 30" diameter 8-blade Vane axial or equivalent fan blade.
- Installation of eight (8) new 6 mmBTU boilers, B-1 through B-8 B474, Site 4. The units will provide hot water and heating for the B/474 paint hangar.
- Construction of a portable paint hangar at Building 720, Site 7

A copy of these application materials can be viewed in Appendix C. The District determined the application materials to be complete.

C. Title V Permit/FOP – Significant Permit Modification

1. Proposed Changes to FOP

The proposed changes to the FOP are indicated in the red-line version of the draft FOP dated x X, 2026. Additionally, a description and explanation of those changes are indicated below:

PART I: INTRODUCTORY INFORMATION

This section of the Federal Operating Permit contains general information about the Northrop Grumman facility, including facility identifying information (section A), a description of the facility (section B), and a description of the facility's equipment (section C).

Changes made to this section of the FOP:

- Section C – Added Site 1 consisting of:
  - Boiler (B015148)
  - Spray booth (S009328)
  - Gasoline dispensing facility (N007166)
  - Seven (7) emergency ICEs (E008905, E009102, E011613, E011963, E011964, E013204 and E013639)

- Section D – Added Site 2 equipment consisting of:
  - Eight (8) new 6 mmBTU boilers B-1 through B-8, B260, B015199 through B015206 .
  - 302 BHP emergency ICE to provide emergency power to the New B260 hangar, E015198.

- Section E – Modified Site 3 equipment as follows

- Added Gasoline Dispensing Facility, N015186, relocated from Site 4 to Site 3, removed N011611.
- Removed E006780 which was replaced by E014902, B333.

- Section F - Modified Site 4 equipment as follows:

  - Added S015190 and C015189 for Paint Hangar/HEPA Filters/Concentrator/RTO at B474.
  - Added Eight (8) new 6 mmBTU boilers B-1 through B-8, B474, B015191 through B015197 to provide heat and hot water to the new B474 paint hangar.
  - Removed E006783 which was replaced by E14903, Sewer Lift Station.

- Section G Added Site 7 equipment consisting of a new portable spray booth, S015188 to B/720.

PART II: FACILITYWIDE APPLICABLE REQUIREMENTS; EMISSIONS LIMITATIONS; MONITORING, RECORDKEEPING, REPORTING, AND TESTING REQUIREMENTS; COMPLIANCE CONDITIONS; COMPLIANCE PLANS

This section of the Federal Operating Permit contains requirements applicable to the entire facility and equipment (section A), facility-wide monitoring, recordkeeping, and reporting requirements (section B), and facility-wide compliance conditions (section C).

Changes made to this section of the FOP:

- No changes to this section.

PART III: EQUIPMENT SPECIFIC APPLICABLE REQUIREMENTS; EMISSIONS LIMITATIONS; MONITORING, RECORDKEEPING, REPORTING, AND TESTING REQUIREMENTS; COMPLIANCE CONDITIONS; COMPLIANCE PLANS

This section of the Federal Operating Permit contains equipment-specific applicable requirements including emission limitations, monitoring and recordkeeping, reporting and testing, and compliance plans.

Changes made to this section of the FOP:

- Added all new equipment and associated conditions
- All existing conditions renumbered and referenced

PART IV: STANDARD FEDERAL OPERATING PERMIT CONDITIONS

No changes were made to this section.

PART V: OPERATIONAL FLEXIBILITY

No changes were made to this section.

PART VI: CONVENTIONS, ABBREVIATIONS, DEFINITIONS

No changes were made to this section.

PART VII: DISTRICT SIP HISTORY AND CITATIONS

No changes were made to this section.

APPENDIX A

No changes were made to this section.

D. NSR Analysis

1. Determination of Emissions – Rule 1304

Table 1 - Potential to Emit (PTE) of New/Net Emission Increase of Modified Emission Units

Emissions Unit	Permit #	Control Type	Control Permit #	PM10 (tpy)	SO2 (tpy)	NOx (tpy)	CO (tpy)	VOC (tpy)
B260 ENGINE	E015198	3-WAY CATALYST	NA	0.0010	0.0001	0.0002	0.0038	0.00002
B260 BOILERS	B015199 THROUGH B015206	LOW NOX BURNERS	NA	1.5978	0.3484	1.7836	3.3235	0.3545
B474 BOILERS	B015191 THROUGH B015197	LOW NOX BURNERS	NA	1.5978	0.3484	1.7836	3.3235	0.3545
B474 SPRAY HANGAR	S015190	HEPA/CONCENTRATOR/RTO	C015189	0.0998	0.0078	0.4746	0.2063	1.3137
SITE 4 GASOLINE DISPENSING	N0116711	PHASE I/PHASE II	NA					0.3523
SITE 4 SMALL PARTS BOOTH	S006767	3-STAGE FILTERS	NA	0.0004				4.5005
SITE 7 PORTABLE SPRAY BOOTH	S015188	3-STAGE FILTERS	NA	0.0000				0.0823
Total PTE (tpy)				**3.2968**	**0.7047**	**4.042**	**6.8571**	**6.9578**

2. Determination of Requirements

a. BACT Evaluation

Best Available Control Technology (BACT) is required:

- for each new Permit Unit that has a Potential to Emit 25 pounds or more per day of any Nonattainment Air Pollutant or its Precursors; or,

- when located at a new or Modified Facility that emits, or has the Potential to Emit, twenty-five (25) tons per year or more of any Nonattainment Air Pollutant or its Precursors (District Rule 1303(A)(3)).

Pursuant to Rule 1303, "Any new or Modified Emission Unit(s) at a Facility shall utilize BACT, if the Facility has the Potential to Emit any Nonattainment Air Pollutant in an amount greater than or equal to any amount listed in subsection (B)(1)". The facility is Modified as defined in Rule 1301 due to the net emission increase associated with the addition of the new Emission Unit.

B260 Natural Gas-Fired Engine

San Joaquin Valley Unified Air Pollution Control District (SJVAPCD) BACT Guidelines was used to determine BACT for this class and category.

The 2018 SJVAPCD BACT determination for a stationary natural gas/propane (LPG) internal combustion engine with an engine rating less than 500 bhp is as follows:

Engine Rating/Size	NO_x	VOC	CO
< 500 BHP	0.44 g/bhp-hr	0.29 g/bhp-hr,	2.0 g/bhp-hr
* BACT for SOx and PM for all categories is the exclusive use of PUC-quality natural gas, commercial propane, butane, liquefied petroleum gas, or a combination of such gases.			

The use of this natural-fired engine equipped with a 3-way catalyst used for emergency operation with guaranteed emissions levels below current BACT meets the requirement for achieved-in-practice BACT.

B260 & B474 Boilers

The 2020 SCAQMD Part B – Major Source BACT determination (Application No. 615085) for a natural gas-fired boiler with a heat input rating of 8.4 mmBTU/hr follows:

VOC	NOx	SOx	CO	PM10
None	≤7 ppmv 15 minute dry corrected to 3% O2	Natural Gas	≤50 ppmv 15 minute dry corrected to 3% O2	Natural Gas

The use of these natural gas-fired boilers equipped with low NOx burners with guaranteed emissions levels at current BACT meets the requirement for achieved-in-practice BACT.

B474 Spray Hangar

Aerospace coating application equipment permitted in AVAQMD as well as in Bay Area AQMD, South Coast AQMD, and found in the CARB and EPA clearinghouses results in a determination of BACT for the proposed class and category of VOC control as a VOC control system with an overall efficiency of at least 81% (carbon)/90% (other technologies) and a HEPA PM control system with a control efficiency of 99.97%.

The use of HEPA filtration combined with a Concentrator and RTO meeting an overall 94% control efficiency meets the BACT requirement.

B720 Portable Spray Booth

The portable spray booth that will be installed inside the B720 paint hangar will be used for a nominal amount of painting. It is estimated that annual usage will total 10 gallons of primer, 20 gallons of topcoat with a total of 10 gallons of isopropyl alcohol and 10 gallons of acetone, an exempt solvent, used for cleaning. VOC emissions total less than 165 pounds per year or less than 0.5 pounds per day. BACT is not required for this nominal VOC usage.

b. *Rule 1303 Offsets Evaluation*

AVAQMD Rule 1303 – State New Source Review requires offsets for non-attainment pollutants and their precursors emitted by the addition of new equipment or modifications resulting in a net increase at existing major sources. The Northrop facility is an existing major source of VOC; however, the facility has a monthly VOC limit of 118,625 pounds in any 30-day period based on a 30-day rolling average that has been fully offset. This equipment will operate within the existing limit and there will, therefore, be no net increase in VOC emissions.

Offsets will be required for NOx at a rate of 1.3:1. A total of 10,509 pounds of NOx Emission Reduction Credits (ERCs) will be provided, calculated as follows.

Table 2 – NOx Emission Increase/ERCs required

Equipment	NOx Emission Increase
B474 Boilers (8)	3567.23
B474 Concentrator Desorption Heater	630.64
B474 Regenerative Thermal Oxidizer	318.50
B260 Boilers (8)	3567.23
Site 2 Engine	0
Total Emission Increase	8083.59
Total Offsets Required	10508.67

ERC Certificates AV0036 and AV0031 will be used to offset the net emission increase of NOx

Origin of ERC Certificate AV0036

The applicant proposed NOx credits held on certificate AV0036.

The NOx credits held on AV0036 were transferred from AV0035 from a previous Northrop Grumman permitting action. The credits on AV0035 were transferred from AV0029 from a previous Northrop Grumman permitting action. The NOx credits held on AV0029 were transferred from AV0017 from a previous Northrop Grumman permitting action. The NOx credits transferred from AV0017 originated in the South Coast AQMD before the AVAQMD was created and separated from South Coast AQMD in 1997. Northrop Grumman held NOx ERCs in the South Coast AQMD and requested to transfer this NOx ERCs into the newly formed AVAQMD.

South Coast AQMD denied the transfer of these NOx ERCs but did allow the transfer of VOC ERCs. At the advisement of South Coast AQMD, Northrop Grumman sold the NOx ERCs that they owned in the South Coast AQMD and purchased VOC ERCs that were eligible for transfer. The District has been unable to determine the origin of the VOC ERCs despite requesting the original banking evaluation from South Coast AQMD. Additionally, these VOC ERCs transferred into the newly formed AVAQMD were converted to NOx credits in 2001 at a ratio of 1.6 to 1. However, due to the denial by South Coast AQMD to transfer the NOx ERCs owned by Northrop Grumman, the resultant purchase of VOC ERCs which were eligible for transfer, and the inter-pollutant conversion of VOC credits to NOx credits at a 1.6 to 1 ratio, the value of the credits held on certificate AV0035 has been adjusted several times since the time of banking. Due to the transfer from South Coast AQMD because of the formation of the AVAQMD in 1997, and their provenance for purposes of surplus being unknown, the AVAQMD has deemed them to be surplus for this permitting action. Furthermore, since the source of the ERCs cannot be determined, a Reasonably Available Control Technology (RACT) ERC adjustment upon use is not possible. Therefore, ERCs will be applied at full value, without adjustment.

Origin of ERC - Certificate AV0031

Northrop Grumman purchased these ERCs from a source located in San Joaquin Valley APCD. The credits resulted from the shutdown of a 200 mmBTU container glass melting furnace which resulted in emissions of NOx. The furnace was owned and operated by Pilkington North American who produced wine bottles for the wine-making industry.

Though at the time of the 2014 shutdown historical actual emissions for the Pilkington glass furnace exceeded 2.9 pounds per ton of glass pulled, SJVAPCD District Rule 4354 early enhanced option requirement of 2.9 lb-N0x/ton (rolling 30-day average) resulted in the lowest emission rate for NOx during the baseline period. For that reason, the 2.9 lb/ton emission factor was used to RACT adjust or surplus adjust the quantity of NOx emissions available for banking.

These ERCs were assessed for inter-District transfer pursuant to California Health and Safety

Code 40709.6 and were issued as AVAQMD ERCs under certificate AV0031.

Pursuant to AVAQMD Rule 1305(C)(4), ERCs must be reevaluated to reflect Reasonably Available Control Technology (RACT) so as to be "surplus" at the time of use. The District thoroughly reviewed USEPA's RACT/BACT/LAER Clearinghouse and found only BACT determinations pertaining to glass furnaces. The following sources were used to determine current RACT for the class and category of container glass melting furnaces:

- Environmental Protection Agency (EPA) the RACT/BACT/LAER Clearinghouse,
- California Air Resources Board Website – Current District Rules for all California Air Districts.

Though there are more stringent Glass Melting Furnace rules on the books in some Districts, it was noted that these are Districts with an ozone nonattainment designation of Extreme. We do not consider these rules RACT for sources in AVAQMD.

Current RACT has therefore been determined to be Mojave Desert Air Quality Management District Rule 1165 – Glass Melting Furnaces as MDAQMD is, like AVAQMD, designated Severe ozone nonattainment status. Because a RACT limit of 4.0 lb/ton exceeds the 2.9 lb/ton emission factor used to issue ERCs, all ERCs are considered surplus and no adjustment of Certificate AV0031 is required.

Table 3 – Emission Reduction Credit Summary

Description	NOx Credits Pounds	Comment
Total NOx Required for Project	10,509	
ERC Balance Required	10,509	
ERC Cert AV0036	2,416	ERC Registry; See: Emission Reduction Credits - Antelope Valley Air Quality Management District
ERC CERT AV0031	29,800	ERC Registry; See: Emission Reduction Credits - Antelope Valley Air Quality Management District
Remaining Balance	**21,707**	= 29,800 – 8,093 Certs AV0031 and AV0036 will be retired. A new Cert for remaining balance is to be issued.

The surrender of AVAQMD ERC #AV0036 and a portion of AV0031 will provide the 10,509 pounds of NOx required to permit the new equipment. AVAQMD will issue an ERC Certificate for the remaining balance of 21,707 pounds per year of NOx.

c. *AVAQMD Rule 1314 - Federal Nonattainment New Source Review for Ozone Precursors*

Rule 1314 - Federal Nonattainment New Source Review for Ozone Precursors

This Rule defines the requirements and procedures for satisfying Federal New Source Review (NSR) requirements for Federal Major Stationary Sources emitting Ozone Precursors. It applies to all new or Modified Facilities that propose a Project that will result in a Federal Major Modification.

A Federal Major Modification is defined as physical or operational change at an existing Federal Major Stationary Source for NOx or VOC, which results, or may result, in a Significant Emissions Increase and a Significant Net Emissions Increase, or in a Non-De minimis Emissions Increase

Significance Test - VOC
Rule 1314 (E)(1) contains the calculation procedures to determine if a federally significant project triggering the BACT and offset provisions of this rule apply.

The project includes both new and replacement equipment so section (vi) Hybrid Test for Projects that Involve Multiple Types of Emission Unit(s) applies. In this case a Significant emissions increase of a Nonattainment Air Pollutant is projected to occur if the sum of the emissions increases for each Emission Unit(s), using the actual to project actual test for the replacement engine and the actual to potential test for the new oven results in a emissions in excess of 25 tons per year and/or if there is a non-de minimis increase in VOC emissions.

Actual emissions are equal to the average rate, in tons per year, at which the unit actually emitted the pollutant during a consecutive 24-month period which precedes the particular date and which is representative of normal source operation. The APCO has the discretion to allow the use of a different period upon a determination that it is more representative of normal source operation. Baseline years are as indicated in the tables below.

Projected actual emissions are defined as the maximum annual rate, in tons per year, at which an Existing Emission Unit(s) is projected to emit a Regulated Air Pollutant in any one of the 5 years (12-month period) following the date the unit resumes regular operation after the Project, (or in any one of the 10 years following that date, if the project involves increasing the Emission Unit(s) design capacity or its Potential to Emit of that Regulated Air Pollutant and full utilization of the unit would result in a Significant Emissions Increase or a Significant Net Emissions Increase at the Federal Major Stationary Source.)

The permit action, and with it the test that applies, are indicated in the Table 1. The project is not a significant increase for either NOx or VOC.

Non-De Minimis Test - VOC
Pursuant to Rule 1314(C)(8) if the project results in a non-de minimis emissions increase it is a

significant modification triggering Federal NSR. A non-de minimis emissions increase is an emissions increase from the proposed Project aggregated with all other Net Emissions Increases from the Facility that occurred during the last 5 consecutive calendar years, including the calendar year in which such increase occurred, equal to or greater than 25 tpy of NOx or VOC.

A new emission unit is any emission unit which is (or will be) newly constructed and which has existed for less than 2 years from the date such Emission Unit(s) first operated. This equipment requires the use of PTE when assessing emission increases.

An existing emission unit is any emission unit that does not meet the definition of a new emission unit. A replacement unit is an existing emission unit.

Again, the Hybrid Test for Projects that Involve Multiple Types of Emission Units applies. A non-de minimis emissions increase of a Nonattainment Air Pollutant is projected to occur if the sum of the emissions increases for each Emission Units, using the method actual to projected actual test for existing equipment and the actual to potential test for new equipment, as applicable, equals or exceeds 25 tpy for that Ozone Precursor.

The de minimis calculation for VOC is included in Table 4. That table demonstrates that the project, combined with all other projects completed in the last 5 years, do not exceed 25 tons per year.

Table 4. VOC De Minimis Calculation

NGC ID #	AVAQMD PTO #	Permit Limit lbs/year	PTE Tons/Year	Date Issued	Canceled Tons	Total
Tent & Vent 4	C014381	9,124	4.562	04/05/22		4.562
Tent & Vent 5	C014382	9,124	4.562	04/05/22	4.562	
Tent & Vent 6	C014383	9,124	4.562	04/05/22	4.562	
Tent & Vent 7	C014384	9,124	4.562	04/05/22	4.562	
Tent & Vent 8	C014385	9,124	4.562	04/05/22	4.562	
Tent & Vent SCTV-03	C015046	9,124	4.562	06/12/24		4.562
HVLP 1	P014377	9,124	4.562	04/05/22	4.562	
HVLP 2	P014378	9,124	4.562	04/05/22	4.562	
HVLP 3	P014379	9,124	4.562	04/05/22	4.562	
HVLP 4	P014380	9,124	4.562	04/05/22	4.562	
B/421 Phase III Hangar	S014890	2483.8	1.2419	05/01/24		1.242
B/421 Phase III Controls				05/01/24		0.072
B/421 Phase III Boiler 1	B014894	88	0.044	05/01/24		0.044
B/421 Phase III Boiler 2	B014895	88	0.044	05/01/24		0.044
B/421 Phase III Boiler 3	B014896	88	0.044	05/01/24		0.044
B/421 Phase III Boiler 4	B014897	88	0.044	05/01/24		0.044
B/421 Phase III Boiler 5	B014898	88	0.044	05/01/24		0.044
B/421 Phase III Boiler 6	B014899	88	0.044	05/01/24		0.044
B/421 Phase III Boiler 7	B014900	88	0.044	05/01/24		0.044
B/421 Phase III Boiler 8	B014901	88	0.044	05/01/24		0.044

B/421 Phase III ICE	E014893	.62	0.0003	05/01/24		0.0003
NGC ID #	**AVAQMD PTO #**	**Permit Limit lbs/year**	**PTE Tons/Year**	**Date Issued**	**Canceled Tons**	**Total**
B/333 ICE	E014902	1.82	0.0009	05/01/24		0.0009
Lift Station ICE	E014903	2.63	0.001	05/01/24		0.001
B/870 ICE	E015082	2.63	0.001	05/27/25		0.0001
Total					36.496	10.76
Project Emission Increase						6.96
Total with Project						17.72

Non-De Minimis Test - NOx

The Northrop Grumman facility does not have a prior offset facility PTE for NOx. All NOx increases have been fully offset at a ratio of 1.3:1 at the time of permit issuance. There has been no net increase in NOx emissions in the previous 5 years.

The de minimis test is met. Rule 1314 does not apply to this permit activity.

3. Determination of Additional Federal Requirements

a. Alternative Siting

Pursuant to the requirements in District Rule 1302 B(1)(b)(i)(b), an analysis of Alternative Siting is not required pursuant to Rule 1302 (B)(1)(b)(i)(a) as the proposed equipment is not a Federal Major Modification as defined in District Rule 1314(C)(5)(a).

b. Class I Area Visibility Protection

Pursuant to the requirements in District Rule 1302 B(1)(a)(v), an analysis of any anticipated impacts on visibility is not required as the proposed equipment does not qualify as an application for a new Major Facility, nor is it a Major Modification. The facility PTE for all attainment air pollutants is less than the 100/250 ton/year emissions thresholds. Emissions increase for attainment pollutants do not make the facility become subject and are not a major modification on their own however PSD applicability is not determined by AVAQMD because the USEPA has not delegated authority for the PSD Program to the District at this time.

3. Determination of Requirements for Toxic Air Contaminants

a. District Rule 1401:

The proposed permitting action triggers Rule 1401 – New Source Review for Toxic Air Contaminants pursuant to:

- 1401(B)(1): Northrop has applied to permit several new emission units
- 1401(B)(2): Many of the new emission unit have the potential to emit TAC/HAP

- 1401(B)(3): The facility is a major source for HAP and is subject to a NESHAP

Rule 1401 imposes limits on the allowable excess cancer, chronic hazard, and acute hazard risks from a facility. Northrop must demonstrate that emissions from the new operations in conjunction with those from its current operations do not result in:

- an excess cancer risk greater than one in one million, or
- an excess cancer risk greater than ten in one million if the facility has applied Toxics – Best Available Control Technology (T-BACT);
- a chronic hazard index greater than one;
- an acute hazard index greater than one.

Impact on Excess Cancer Risk

A health risk assessment was prepared with this renewal application, including all new and additional equipment.

A summary of the impact of the equipment associated with the permit action alone and in conjunction with all existing operations is presented below.

Type	Easting m	Northing m	Scenario	Sources	Excess Cancer Risk		% of Total
						per million	
MEIR	403394	3834342	30 Year, Residential RMP	New Sources	6.05E-07	0.61	10.1
				2025 CEIR Sources	5.42E-06	5.42	89.9
				All	6.02E-06	6.02	100.0
MEIW	403050	3834350	25 Year, Worker, OEHHA Derived	New Sources	4.12E-08	0.04	6.8
				2025 CEIR Sources	5.65E-07	0.57	93.2
				All	6.06E-07	0.61	100.0
PMI	402305	3834298	30 Year, Residential RMP	New Sources	1.29E-06	1.29	7.4
				2025 CEIR Sources	1.62E-05	16.25	92.6
				All	1.75E-05	17.54	100.0

Operation of new sources along with all other existing operations will result in an excess cancer risk of 6.02 in one million at the maximally exposed individual resident (MEIR). This estimate is based on the 30-year, RMP Derived exposure scenario. Emissions from the new sources result in an estimated excess cancer risk of 0.61 in one million at the MEIR or about 10.1% of the total. Risk from all sources is largely due to emissions of diesel engine particulate, hexavalent chromium, PCBTF, arsenic, and 7,12-dibenzo[a]anthracene.

Emissions from the new paint hangar will be controlled by HEPA filtration that reduces particulate emissions such as hexavalent chromium by 99.99%. The paint hangar will also be equipped with a rotary concentrator/regenerative thermal oxidizer that will reduce volatile pollutant emissions by 94%. The requirements of Rule 1401 are met.

Impact on Chronic Hazard Risk

Operations associated with the permit action will emit chemicals that are listed by HARP as chronic hazards.

The impact of these sources in conjunction with existing equipment has been determined with results summarized below:

Type	Easting m	Northing m	Sources	Max HI	% of Total
MEIR	403394	3834342	Existing Sources	1.7E-02	65.44
			New Sources	9.0E-03	34.56
			All	2.6E-02	100.00
MEIW	403050	383435	Existing Sources	1.1E-02	70.34
			New Sources	4.5E-03	29.66
			All	1.5E-02	100.00
PMI	400532	3833827	Existing Sources	1.3E-01	90.04
			New Sources	1.5E-02	9.96
			All	1.5E-01	100.00

The impact of the new program on chronic hazard is minimal and satisfies the requirements for chronic risk imposed by Rule 1401.

Impact on Acute Hazard Risk

Unlike excess cancer and chronic risk assessments, which consider long-term exposure, an acute hazard analysis evaluates short-term peak exposures at any location outside the facility's property line, using one-hour maximum emission rates. The results are compared to a threshold value of one.

Emissions from the permitted equipment contain HARP-listed acute hazard pollutants, alongside other facility operations that contribute to acute risks. These include routine and sporadic emissions, such as emergency IC engine testing, ground support equipment operations, and jet engine testing. For example, most IC engines are tested for less than an hour on a monthly basis.

The maximum acute hazard index at locations outside of the control of Northrop or Air Force Plant 42 personnel occurs to the north of the facility property line. The acute hazard index at this location is estimated at 0.28 which is below the level at which no adverse acute hazard health impacts are expected to occur.

Conclusions

The operation of the proposed equipment included in the permit action will meet the requirements of AVAQMD Rule 1401.

4. Rules and Regulations Applicable to the Proposed Project

District Rules:

Rules 201/203 – Permits to Construct/Permit to Operate. Any equipment which may cause the issuance of air contaminants must obtain authorization for such construction from the Air Pollution Control Officer. Northrop Grumman Corporation is in compliance with this rule as they have appropriately applied for a District permit for all new equipment and maintains District permits for all residing equipment per Part II, section A.1 and A.2 of their FOP.

Rule 204 – Permit Conditions. To assure compliance with all applicable regulations, the Air Pollution Control Officer (Executive Director) may impose written conditions on any permit. Northrop Grumman Corporation complies with all applicable regulations per Part II, section A.3 and A.4 of their FOP.

Rule 206 – Posting of Permit to Operate. Equipment shall not operate unless the entire permit is affixed upon the equipment or kept at a location for which it is issued and will be made available to the District upon request. Northrop Grumman Corporation complies with this regulation per Part II, section A.7 of their FOP.

Rule 207 – Altering or Falsifying of Permit. A person shall not willfully deface, alter, forge, or falsify any issued permit. Northrop Grumman Corporation complies with this regulation per Part II, section A.8 of their FOP.

Rule 209 – Transfer and Voiding of Permits. Northrop Grumman Corporation shall not transfer, whether by operation of law or otherwise, either from one location to another, from one piece of equipment to another, or from one person to another. When equipment which has been granted a permit is altered, changes location, or no longer will be operated, the permit shall become void. Northrop Grumman Corporation complies with this regulation per Part II, section A.10 of their FOP.

Rule 210 – Applications. Northrop Grumman Corporation provided all the required information to correctly address the renewal pursuant to this rule.

Rule 212 – Standards for Approving Permits. This rule establishes baseline criteria for approving permits by the District for certain projects. In accordance with these criteria, the proposed modifications and application does not cause issuance of air contaminants in violation of Sections 41700 or 41701 of the State Health and Safety code.

Rule 217 – Provisions for Sampling and Testing Facilities. This rule requires the applicant to provide and maintain requirements for sampling and testing. Northrop Grumman Corporation is in compliance with this rule per Part II, section A.13 of their FOP.

Rule 219 – Equipment not Requiring a Permit. This rule exempts certain equipment from District Permit. Northrop Grumman Corporation is in compliance with this rule per Part II, section A.14.

Rule 221 – Federal Operating Permit Requirement. Northrop Grumman Corporation is in compliance with this rule, as they currently hold and maintain a Federal Operating Permit.

Rule 301/312 – Permit Fees/Fees for Federal Operating Permits. Northrop Grumman Corporation's annual permit fees are due by the applicable amounts.

Rule 401 – Visible Emissions. This rule limits visible emissions opacity to less than 20 percent (or Ringlemann No. 1). In normal operating mode, visible emissions are not expected to exceed 20 percent opacity. Northrop Grumman Corporation has specific operating conditions that enforce compliance with this rule, specifically Part II, section A.19.

Rule 403 – Fugitive Dust. This rule prohibits fugitive dust beyond the property line of any emission source. Northrop Grumman Corporation has specific operating conditions to ensure compliance with this condition, specifically Part II, section A.22.

Rule 404 – Particulate Matter Concentration. Northrop Grumman Corporation shall not discharge into the atmosphere from this facility, particulate matter (PM) except liquid sulfur compounds, in excess of the concentration at standard conditions, shown in Rule 404, Table 404 (a). (a) Where the volume discharged is between figures listed in the table the exact concentration permitted to be discharged shall be determined by linear interpolation. (b) This condition shall not apply to emissions resulting from the combustion of liquid or gaseous fuels in steam generators or gas turbines. (c) For the purposes of this condition, emissions shall be averaged over one complete cycle of operation or one hour, whichever is the lesser time period. Northrop Grumman Corporation adheres to this rule per Part II, section A.23 of their FOP.

Rule 405 – Solid Particulate Matter, Weight. Northrop Grumman Corporation shall not discharge into the atmosphere from this facility, solid PM including lead and lead compounds in excess of the rate shown in Rule 405, Table 405(a): (a) Where the process weight per hour is between figures listed in the table, the exact weight of permitted discharge shall be determined by linear interpolation. (b) For the purposes of this condition, emissions shall be averaged over one complete cycle of operation or one hour, whichever is the lesser time period. Northrop Grumman Corporation adheres to this rule per Part II, section A.24 of their FOP.

Rule 407 – Liquid and Gaseous Air Contaminants. This rule limits sulfur compound and CO emissions from facilities. Northrop Grumman Corporation meets this requirement by complying with operating condition listed in Part II, section A.25 of their FOP.

Rule 408 – Circumvention. This rule prohibits hidden or secondary rule violations. The proposed renewal as described is not expected to violate Rule 408. Northrop Grumman Corporation meets this requirement by complying with operating condition listed in Part II, section A.26 of their FOP.

Rule 409 – Combustion Contaminants. This rule limits the emissions of combustion contaminants exceeding 0.23 gram per cubic meter (0.1 grain per cubic foot) of gas calculated to 12 percent of carbon dioxide (CO2) at standard conditions averaged over a minimum of 25 consecutive minutes. Northrop Grumman Corporation meets this requirement by complying with operating condition listed in Part II, section A.27 of their FOP.

Rule 430 – Breakdown Provisions. Any Breakdown which results in a violation to any rule or regulation as defined by Rule 430 shall be properly addressed pursuant to this rule. Northrop Grumman Corporation meets this requirement by complying with operating condition listed in Part II, section A.6 of their FOP.

Rule 431 – Sulfur Content of Fuels. Northrop Grumman Corporation is limited to use of the following quality fuels for fuel types specified elsewhere in this permit: PUC quality natural gas fuel - sulfur compounds shall not exceed 800 parts per million (ppm) calculated as hydrogen sulfide at standard conditions; diesel fuel - sulfur content shall not exceed 0.5 percent by weight. Compliance with Rule 431 fuel sulfur limits is assumed for PUC quality natural gas fuel and CARB certified diesel fuel. Records shall be kept on-site and available for review by District, state, or federal personnel at any time. The

sulfur content of non-CARB certified diesel fuel shall be determined by use of American Society for Testing and Materials (ASTM) method D 2622-82 or ASTM method D 2880-71, or equivalent. Northrop Grumman Corporation is required to adhere to this rule per Part II, section A.28.

Rule 442 – Usage of Solvents. This rule reduces VOC emissions from VOC containing materials or equipment that is not subject to any other rule in Regulation XI. Northrop Grumman Corporation meets this requirement by complying with operating condition listed in Part II, section A.30 of their FOP.

Rule 1000 – National Emission Standards for Hazardous Air Pollutants (NESHAP). Rule 1000 adopts all applicable provisions regarding standards of performance for new stationary sources as set forth in 40 CFR 61. Northrop Grumman Corporation complies with 40 CFR 61, Subpart M – NESHAP for Asbestos per conditions in Part II, section C.7, C.8, and C.9.

Rule 1113 – Architectural Coatings. This rule limits the quantity of VOC in Architectural Coatings. Northrop Grumman Corporation meets the requirements of this rule by complying with operating condition listed in Part II, section A.34 of their FOP.

Rule 1124 – Aerospace Assembly and Component Manufacturing Operations. This rule limits the emission of VOC from coatings associated with 12.26. Aerospace Assembly and Component Manufacturing. Northrop Grumman Corporation meets the requirements of this rule by complying with operating condition listed in Part II, section A.35 of their FOP.

Rule 1107 – Metal Parts and Products Coatings. This rule limits the emission of VOC from coatings associated with Metal Parts and Products. Northrop Grumman Corporation meets the requirements of this rule by complying with operating condition listed in Part II, section A.32 of their FOP.

Rule 1136 – Wood Products Coatings. This rule limits the emission of VOC from coatings associated with Wood Products. Northrop Grumman Corporation meets the requirements of this rule by complying with operating condition listed in Part II, section A.36 of their FOP.

Rule 1145 – Plastic, Rubber and Glass Coatings. This rule limits the emission of VOC from coatings associated with Plastic, Rubber and Glass Operations. Northrop Grumman Corporation meets the requirements of this rule by complying with operating condition listed in Part II, section A.37 of their FOP.

Rule 1168 – Adhesive Applications. This rule limits the emission of VOC from coatings associated with Adhesive Application Operations. Northrop Grumman Corporation meets the requirements of this rule by complying with operating condition listed in Part II, section A.41 of their FOP.

Rule 1171 – Organic Solvent Degreasing Operations. This rule limits the emission of VOCs from wipe cleaning and degreasing operations using organic solvents. Northrop Grumman Corporation meets this requirement by complying with operating condition listed in Part II, section A.42 of their FOP.

Rule 1110.2 – Internal Combustion Engines. The purpose of this rule is to establish limits for emissions associated with emergency, portable, standby, or stationary internal combustion engines. Northrop Grumman Corporation complies with this rule by operating conditions listed in Part III for each applicable IC engine.

Rule 1140 - The purpose of this rule is to establish limits for emissions associated with Abrasive Blasting operations. Northrop Grumman Corporation complies with this rule by operating conditions listed in Part III for each abrasive blasting unit.

Rule 1146 - Industrial, Institutional And Commercial Boilers, Steam Generators, And Process Heaters. The purpose of this rule is to establish limits for emissions associated with Industrial, Institutional and Commercial Boilers, Steam Generators, And Process Heaters. Northrop Grumman Corporation complies with this rule by operating conditions listed in Part III for each applicable boiler.

Regulation X – National Emission Standards for Hazardous Air Pollutants. Pursuant to Regulation X, Northrop Grumman Corporation is required to comply with all applicable ATCMs.

Regulation XXX – Federal Operating Permits. This regulation contains requirements for sources which must have a FOP. Northrop Grumman Corporation currently has a FOP and is expected to comply with all applicable rules and regulations.

Rule 3001 – Federal Operating Permit Definitions. Northrop Grumman Corporation is defined as a federal Major Facility pursuant to this rule.

Rule 3003 – Federal Operating Permits. This rule outlines the permit term, issuance, restrictions, content, operational flexibility, compliance certification, permit shield, and violations of Federal Operating Permits. Northrop Grumman Corporation complies with this rule per Part II, sections B and C, and Part IV and V of their FOP.

Rule 3005 – Modifications of Federal Operating Permits. This action to Northrop Grumman Corporation's FOP does not constitute a modification; therefore, this rule is not subject to this action.

Rule 3006 – Reopening, Reissuance and Termination of Federal Operating Permits. This action to Northrop Grumman Corporation's FOP does not constitute a Reopening, Reissuance or Termination of Federal Operating Permits; therefore, this rule is not subject to this action.

Rule 3007 – Notice and Comment. This rule outlines the noticing requirements for Notice and Comment. Northrop Grumman Corporation will properly notice their renewal pursuant to this rule.

Rule 3008 – Certification. Northrop Grumman Corporation included a Certification of Responsible Official as required with the submitted application for the Renewal.

Rule 3011 – Greenhouse Gas Provisions of Federal Operating Permits. Northrop Grumman Corporation is a Major GHG Facility pursuant to Rule 3011. Northrop Grumman Corporation is required to submit GHG data with any application per Part II, section A. 53.

Regulation XIII – New Source Review. This regulation sets forth requirements for the preconstruction review of all new or modified facilities. Regulation XIII requirements applicable to this application are addressed in Section B.

Rule 1401 – Control of Toxic Air Contaminants from Existing Sources. This rule controls the emission of toxic air contaminants from existing source. Northrop Grumman Corporation is in compliance with this rule.

Regulation XVII – Prevention of Significant Deterioration Please take notice that this regulation is not currently used within the AVAQMD because the USEPA has not delegated authority for the PSD Program to the AVAQMD at this time.

Federal Regulations

40 CFR 60, Subpart A – NSPS General Provisions. Northrop Grumman Corporation complies with this regulation per Part III section I.

40 CFR 61, Subpart M – NESHAP for Asbestos. Northrop Grumman Corporation complies with 40 CFR 61, Subpart M – NESHAP for Asbestos per conditions in Part II, section C.7, C.8, and C.9.

40 CFR 63, Subpart A – NESHAP General Provisions. Northrop Grumman Corporation complies with this regulation per Part II Section A Condition 46-51.

40 CFR 63, Subpart ZZZZ – NESHAP for Stationary Reciprocating Internal Combustion Engines. Northrop Grumman Corporation complies with this regulation per Part II Condition 49.

40 CFR 63 Subpart A and 40 CFR 63 Subpart GG - National Emission Standards for Hazardous Air Pollutants for Aerospace Manufacturing and Rework Facilities. Northrop Grumman complies with 40 CFR 63, Subpart GG per Part II Condition 46.

40 CFR 64 - Compliance Assurance Monitoring. The CAM rule aims to have owners and operators maintain their control devices at the levels that assure compliance. The rule allows owners and operators to design CAM plans on current requirements and operating practices, to select representative parameters upon which compliance can be assured, to establish indicator ranges - or procedures for setting the indicator ranges - for the parameters, to use performance testing and other information to verify the parameters and ranges, and to correct control device performance problems as expeditiously as practicable.

CAM applies to each Pollutant Specific Emissions Unit (PSEU) when it is located at a Major Facility that is required to obtain Title V, Part 70 or 71 permit, and it meets all the following criteria. "PSEU" means an emissions unit considered separately with respect to each regulated air pollutant.

The PSEU must:

a. Be subject to an emission limitation or standard [40 CFR 64; AND,
b. Use a control device to achieve compliance [40 CFR 64.2(a)(2)]; AND,
c. Have the potential pre-control emissions that exceed or are equivalent to the major source threshold. [40 CFR 64.2(a)(3)]

No equipment pre-control emissions exceed the major source threshold. CAM does not apply to this equipment.

40 CFR 82, Protection of Stratospheric Ozone. Northrop Grumman Corporation complies with this regulation per Part IV (20).

5. NSR Preliminary Decision – Conclusion

The District has reviewed the proposed applications for Northrop Grumman and conducted a succinct written analysis as required by District Rule 1302, section (D)(1)(b) and District Rule 1314. The District has determined that the proposed modifications and application are in compliance with all applicable rules and regulations as proposed and when operated in compliance with the terms of the permit conditions.

6. Title V/FOP Preliminary Determination – Conclusion

The District has reviewed the proposed Title V renewal for Northrop Grumman and conducted a succinct written analysis as required by District Rule 3003, section (B)(1)(a). The District has determined that the proposed permit renewal is in compliance with all applicable rules and regulations as proposed when operated in the terms of the permit conditions given herein, and the attached draft FOP.

The preliminary determination was submitted to USEPA, CARB, and the public for review and comment on 11/05/2026. The public notice for the preliminary determination was published on 11/05/2026, with the public comment ending 12/07/2026 pursuant to District Rule 3007. To view the public notice please refer to Appendix A of this document or visit the AVAQMD website at https://www.avaqmd.ca.gov/public-notices-advisories.

Comments received are included in Appendix B.

APPENDIX A
PUBLIC NOTICE

Noticing requirements pursuant to District Rule 1302:

- Published in a newspaper of general circulation – Antelope Valley Press on 11/05/2026
- Mailed and/or emailed to AVAQMD contact list of persons requesting notice of actions (see the contact list following the Public Notice in Appendix A) on 11/05/2026.
- Posted on the AVAQMD Website at the following link: http://avaqmd.ca.gov/permitting-public-notices on 11/05/2026.

NOTICE OF PRELIMINARY DETERMINATION

NOTICE IS HEREBY GIVEN THAT *Northrop Grumman Systems Corporation – Palmdale* - located at 3520 E Avenue M in Palmdale, CA 93550 has submitted applications for a Renewal/Modification and NSR modification to their Federal Operating Permit (Permit No. 102301816) pursuant to the provisions of Antelope Valley Air Quality Management District (AVAQMD) Regulations XIII and XXX.

The facility is designed to assemble, maintain, and modify military aircraft and is classified as a major source of NOx, VOCs, and HAPs. The proposed action results in an emissions increase and constitutes a minor modification of the Title V permit. All new permit units are subject to the requirements of New Source Review (NSR). The NOx emissions increase requires offsets in accordance with Rule 1303, which shall be met utilizing Emission Reduction Credits.

REQUEST FOR COMMENTS

Interested persons are invited to submit written comments and/or other documents regarding the terms and conditions of the proposed NSR modification of Northrop Grumman Systems Corporation's Federal Operating Permit. If submitting written comments, you may also request a public hearing regarding the proposed permit modification.

To be considered, comments, documents and requests for public hearing must be submitted no later than **5:00 P.M. on December 07, 2026**, to the AVAQMD, at the address listed below.

PETITION FOR REVIEW

Federal Operating Permits are also subject to review and approval by the U.S. Environmental Protection Agency (USEPA). If USEPA has not objected to the proposed permit and AVAQMD has not satisfactorily addressed a public comment, the public may petition USEPA, Region IX, Operating Permits Section at 75 Hawthorne Street, San Francisco, CA 94105 within 60 days after the end of the USEPA review period to request reconsideration of its decision not to object to the permit.

AVAILABILITY OF DOCUMENTS

The proposed Federal Operating Permit, along with the application and other supporting documentation, is available for review at the AVAQMD offices:

Antelope Valley Air Quality Management District
2551 West Avenue H
Lancaster, CA 93536

Additionally, these documents are available on the AVAQMD website at the following link: https://www.avaqmd.ca.gov/public-notices-advisories.

For additional questions regarding this action and/or corresponding documents, please contact Taylor Morais at (661) 723-8070, extension 24, or via email at tmorais@avaqmd.ca.gov.

Traducción en español esta disponible por solicitud. Por favor llame: (661) 723-8070

APPENDIX B

Comments Received/Correspondence

APPENDIX C
APPLICATION PACKAGE

LOCAL PERMIT APPLICATIONS & TITLE V RENEEWAL PACKAGE

Antelope Valley Air Quality Management District

TITLE V PERMIT RENEWAL APPLICATION
INSTRUCTIONS

Introduction:

Antelope Valley Air Pollution Control District (AVAQMD) Rule 3002 requires Title V permit holders to submit an application for renewal of the Title V permit no more than 18 months prior to the expiration date and no less than 6 months prior to the expiration date of the permit. A complete renewal application will consist of the following forms and documents, together with appropriate supplemental information, as described in these instructions:

1. A General Facility Information form and all required attachments.
2. An Application Certification form
    - The Application Certification Form is used to certify that the facility is currently operating and will continue to operate in compliance with all applicable requirements of the Title V permit and applicable rules and regulations.
    - If the facility is not operating in compliance with current requirements, the facility must submit a compliance plan using the Title V Non-Compliant Operations Report
    - The Application Certification form is also used to certify that the facility has reviewed the current Title V permit for errors.
    - If the facility finds any errors in the current Title V permit, or if there are any necessary additions or new requirements that have become applicable since the previous Title V permit was issued, a redlined copy of the permit must be attached to the permit renewal application, along with any necessary permit application/modification forms.
3. A Title V Non-Compliant Operations report, if applicable
4. A Title V List of Exempt Equipment, pursuant to Rule 219
5. A Title V Potential Emissions Report for criteria pollutants, HAPs, and greenhouse gases.
6. A Compliance Assurance Monitoring (CAM) Applicability Determination form, along with CAM Plans for all emission units at the facility for which CAM Plans are required.
7. A Permit Shield Request, if applicable.
8. An Alternative Operating Scenarios form, if applicable.

Antelope Valley Air Quality Management District

TITLE V PERMIT RENEWAL APPLICATION – GENERAL FACILITY INFORMATION

1. FACILITY ID: : O/O 1023 Eq. Loc. 01816 FACILITY SIC CODE: 3724 (SIC) 336411 (NAICS)

TITLE V PERMIT NUMBER: : 102301816 PERMIT EXPIRATION DATE: 04/05/2027

2. COMPANY NAME: Northrop Grumman Systems Corporation

3. COMPANY MAILING ADDRESS:

STREET/P.O. BOX: 3520 East Avenue M

CITY: Palmdale STATE: California 9-DIGIT ZIP CODE: 93550

4. FACILITY NAME: Northrop Grumman Systems Corporation Palmdale

5. FACILITY MAILING ADDRESS:

STREET/P.O. BOX: Same as above

CITY: _____ STATE: _____ 9-DIGIT ZIP CODE: _____

6. RESPONSIBLE OFFICIAL (AS DEFINED IN 40 CFR 70.2 AND AVAQMD RULE 3001)

NAME: Gina L. Woullard TITLE: Vice President Production Operations PHONE NUMBER (661) 403-2592

7. TITLE V PERMIT CONTACT PERSON

NAME: George Jung TITLE: Environmental Engineer IV PHONE NUMBER (661) 266-5394

8. TYPE OF ORGANIZATION:

■ CORPORATION ☐ SOLE OWNERSHIP ☐ GOVERNMENT ☐ PARTNERSHIP ☐ UTILITY

9. CAM (COMPLIANCE ASSURANCE MONITORING) PLANS

Are you required to submit a CAM plan for any emissions unit at this facility? ■ Yes ☐ No

If yes, submit a CAM plan for each emissions unit as an attachment to the application. See attached CAM plan instructions for more detail.

10. ALTERNATE OPERATING SCENARIOS

Does this application request alternative operating scenarios pursuant to Rule 3003(E)? ☐ Yes ◉ No

If yes, submit an Alternate Operating Scenarios form, as applicable.

11. RISK MANAGEMENT PLAN

Has this facility been required to prepare a federal Risk Management Plan pursuant to Section 112(r) of the federal Clean Air Act and 40 CFR Part 68? ☐ Yes ■ No

If yes, has the federal Risk Management Plan been submitted to the implementing agency? ☐ Yes ☐ No

If a federal Risk Management Plan is required but has not been submitted to the implementing agency, provide a detailed explanation as an attachment to the application.

12. STRATOSPHERIC OZONE

Does the facility conduct any activities that are regulated by the federal protection of stratospheric ozone requirements in 40 CFR Part 82? ■ Yes ☐ No

13. ACID RAIN

Is this facility subject to the acid rain requirement in 40 CFR Part 72 through 40 CFR Part 78? ☐ Yes ■ No

14. MAJOR SOURCE STATUS

Is this facility a major source of greenhouse gases, as defined in AVAQMD Rule 3011? ☐ Yes ■ No

Is this facility a major source of any of the following pollutants:

■ VOCs ☐ Particulate Matter ☐ Carbon Monoxide ■ Nitrogen Oxides ☐ Sulfur Dioxides

☐ Lead ■ HAP

15. PERMIT SHIELDS

Does the current Title V permit for this facility include any permit shields? ☐ Yes ■ No

If yes, is the basis for each permit shield still correct? ☐ Yes ☐ No

If the current Title V permit contains any permit shield for which the basis is no longer correct, provide a detailed explanation as an attachment to the application. If you are requesting an additional permit shield, complete the attached Permit Shield Request form.

16. CERTIFICATION BY RESPONSIBLE OFFICIAL

Based on information and belief formed after reasonable inquiry, information and statements in the submitted application package, including all accompanying reports, and required certifications are true accurate and complete. I declare, under penalty of perjury under the laws of the state of California, that the forgoing is correct and true:

Signature: _____ Date: _____

Antelope Valley Air Quality Management District

TITLE V PERMIT RENEWAL APPLICATION – GENERAL FACILITY INFORMATION
INSTRUCTIONS

The General Facility Information form requests general information identifying the stationary source. As indicated on the form and discussed in more detail below, an applicant is required to include supplemental information in addition to the form.

Line 1. Please enter

- The AVAQMD Facility ID number
- The Facility SIC code
- The Title V Permit to Operate number
- The Title V Permit expiration date

Line 2. Enter the name of the company that owns the business

Line 3. Enter the company mailing address

Line 4. Enter the name of the facility

Line 5. Enter the facility mailing address

Line 6. Enter the name and title of the responsible official. The name of the person identified on this line must meet the qualifications of a "Responsible Official", as defined in 40 CFR 70.2 and AVAQMD Rule 3001.

For a corporation, the responsible official shall be a president, secretary, treasurer, or vice president in charge of a principal business function, or any other person who performs similar policy or decision making functions for the corporation. The responsible official may be a duly authorized representative rather than any of the above if the representative is responsible for the overall operation of one or more manufacturing, production or operating facilities which are applying for or subject to a permit; and:

1. The facility employs more than 250 persons or has gross annual sales or expenditures exceeding $25 million in 1980 dollars; or

2. The delegation of the authority is approved in advance by the APCO.

For a partnership or sole proprietorship, the responsible official is a general partner or the sole proprietor, respectively.

For a municipality, state, federal, or other public agency, the responsible official shall be either the principal executive officer or a ranking elected official. The principle executive officer, in the case of a federal agency, may be the executive officer having responsibility for a geographical unit.

For an Acid Rain Facility, the responsible official is a designated representative as defined in 40 CFR 72.20.

Line 7. The name of the person identified on this line should be the appropriate contact for questions regarding the application.

Line 8. Indicate the organizational structure of the facility

Line 9. Complete a Compliance Assurance Monitoring Applicability Determination Form, and indicate whether you are required to submit a CAM plan for any emissions unit at the facility.

Line 10. Please complete the Alternate Operating Scenario form, if applicable. Ensure that descriptions that contain sufficient emission information for the District to develop reasonable permit conditions for each alternative operating scenario anticipated at the facility.

Line 11. Enter requested risk management plan information.

Line 12. Enter requested information regarding the stratospheric ozone requirements.

Line 13. Enter requested information regarding the acid rain requirements.

Line 14. Enter requested information regarding the major source status of the facility.

Line 15. Enter information indicating whether the current facility permit contains any Permit Shields. Indicate whether the basis for the permit shield is still correct. If you are requesting any additional permit shields, complete the attached Permit Shield Request form.

Line 16. The name of the person's signature provided on this line must meet the qualifications of a "Responsible Official", as defined in 40 CFR 70.2 and AVAQMD Rule 3001. This definition is described in detail under Line 6. Please also specify the title of the Responsible Official at your facility.

Antelope Valley Air Quality Management District

TITLE V PERMIT RENEWAL APPLICATION – APPLICATION CERTIFICATION

I. FACILITY INFORMATION

1. FACILITY NAME: Northrop Grumman Systems Corporation Palmdale
2. FACILITY ID: O/O 1023 Eq. Loc. 01816
3. TITLE V PERMIT #: 102301816

II. TITLE V PERMIT CERTIFICATION (Read each statement carefully and check one):

☑ The current Title V permit has been reviewed and it has been determined that equipment descriptions are correct, and all requirements are still applicable.

☐ The current Title V permit has been reviewed and errors have been found in equipment descriptions and/or permit requirements. A copy of the Title V permit is attached with redline changes. Permit application and/or modification forms are enclosed, as applicable.

III. COMPLIANCE CERTIFICATION (Read each statement carefully and check all for confirmation):

☑ Based on information and belief formed after reasonable inquiry, the equipment identified in this application will continue to comply with the applicable federal requirement(s), except for those requirements listed in the "Title V Non-Compliant Operations Report".

☐ Based on information and belief formed after reasonable inquiry, the equipment identified in this application will comply with applicable federal requirement(s) that will become effective during the permit term, on a timely basis, except for those requirements listed in the "Title V Non-Compliant Operations Report".

☐ Corrected information will be provided to the District when I become aware that incorrect or incomplete information has been submitted.

Based on information and belief formed after reasonable inquiry, information and statements in the submitted application package, including all accompanying reports, and required certifications are true accurate and complete. I declare, under penalty of perjury under the laws of the state of California, that the forgoing is correct and true.

Signature of Responsible Official

Date

Gina L. Woullard

Name of Responsible Official (please print)

V.P. Production Operations

Title of Responsible Official (please print)

Antelope Valley Air Quality Management District

TITLE V PERMIT RENEWAL - APPLICATION CERTIFICATION
INSTRUCTIONS

Complete a Title V Renewal - Application Certification Form by providing the following information:

I. Facility Information

Line 1. Enter the name of the facility.
Line 2. Enter the AVAQMD Facility ID number.
Line 3. Enter the current Title V permit number.

II. Title V Permit Certification

Review the current Title V permit to operate to determine whether equipment descriptions are correct, and whether all requirements are still applicable to the equipment. If any errors are found, provide a redlined copy of the permit to operate, along with any applicable permit modification forms.

III. Compliance Certification

A compliance certification is a certification by the Responsible Official that each of the listed statements are true, accurate, and complete. The Responsible Official must check off that the statements that are true, sign and date, and print his/her name and title.

For a corporation, the responsible official shall be a president, secretary, treasurer, or vice president in charge of a principal business function, or any other person who performs similar policy or decision-making functions for the corporation. The responsible official may be a duly authorized representative rather than any of the above if the representative is responsible for the overall operation of one or more manufacturing, production, or operating facilities applying for or subject to a permit; and

1. the facilities employ more than 250 persons or have gross annual sales or expenditures exceeding $25 million in 1980 dollars; or
2. the District has approved a petition from the original responsible person to delegate authority.

For a public agency the responsible official shall be either the principal executive officer or the ranking elected official. The principal executive officer, in the case of a federal agency, may be the executive officer having responsibility for a geographical unit.

For a partnership or sole proprietorship, the responsible official is a general partner or the proprietor, respectively

Antelope Valley Air Quality Management District

TITLE V PERMIT RENEWAL APPLICATION – NON-COMPLIANT OPERATIONS (DEVIATIONS) REPORT AND PART 70 COMPLIANCE SCHEDULE/PLAN AND QUALITY IMPROVEMENT PLAN - QIP

I. FACILITY INFORMATION

1. FACILITY NAME:	2. FACILITY ID	3. PERMIT NUMBER
Northrop Grumman Systems Corporation Palmdale	Excellence O/O 1023 Eq. Loc. 01816	102301816

II. NON-COMPLIANT OPERATIONS REPORT

4. Compliance status:

a. This facility has experienced non-compliant operations as described below but achieved compliance with the applicable requirements on _____

b. ☐ This facility continues to experience non-compliance with the applicable requirements as described below:

5. PERMIT # OF EQUIPMENT	6. APPLICABLE REQUIREMENT (Rule or Permit Condition Number)	7. FEDERALLY ENFORCEABLE REQUIREMENT?	8. DESCRIPTION OF NON-COMPLIANT OPERATIONS (Attach additional sheets as needed)
		☐ Yes ☐ No	
		☐ Yes ☐ No	
		☐ Yes ☐ No	

III. PART 70 COMPLIANCE SCHEDULE/PLAN AND QIP

9. DESCRIBE HOW COMPLIANCE WAS OR WILL BE ACHIEVED	10. COMPLIANCE SCHEDULE	
	DATE	REMEDIAL MEASURES AND MILESTONES

IV. PROGRESS REPORT SCHEDULE

11. CERTIFIED PROGRESS REPORTS WILL BE SUBMITTED ACCORDING TO THE FOLLOWING SCHEDULE: (CHECK a or b and complete c):

a ☐ Semi-annually b ☐ More frequently as specified c. Submittal dates: 1)_____ 2)_____ 3)_____ 4)_____

Antelope Valley Air Quality Management District

TITLE V PERMIT RENEWAL – NON COMPLIANT OPERATIONS REPORT
INSTRUCTIONS

Complete a Non-Compliant Operations Report by providing the following information:

I. Facility Information

1. Enter the name of the facility.
2. Enter the AVAQMD Facility ID number.
3. Enter the current Title V permit number.

II. Non Compliant Operations Report

4. Check either a or b to indicate the non-compliant status of the operations.
5. Enter the permit # of the non-compliant equipment
6. Enter the rule or permit condition number of the applicable requirement
7. Check the appropriate box to indicate whether it is a federally enforceable requirement
8. Provide a description of the non-compliant operations

III. Part 70 Compliance Schedule/Plan and QIP

9. Provide a description of how compliance was or will be achieved
10. Provide a compliance schedule, complete with dates and milestones for non-compliant operations.

IV. Progress Report Schedule

11. Indicate schedule and dates of submittal for certified progress reports.

Antelope Valley Air Quality Management District

TITLE V PERMIT RENEWAL APPLICATION – LIST OF EXEMPT EQUIPMENT

I. FACILITY INFORMATION

1. FACILITY NAME: Northrop Grumman Systems Corporation Palmdale
2. FACILITY ID: O/O 1023 Eq. Loc. 01816
3. TITLE V PERMIT #: 102301816

II. SUMMARY OF EQUIPMENT EXEMPT FROM PERMIT REQUIREMENTS (INCLUDING PORTABLE)

4. EXEMPT EQUIPMENT DESCRIPTION	5. VENTING TO CONTROL (PERMIT #)	6. CONTROL DEVICE DESCRIPTION	7. BASIS FOR EXEMPTION (e.g. Rule 219(D)(2)(b))
Mobile Equipment	N/A	N/A	Rule 219 (E) (1) (a) and (b)
Piston ICE < 50 bhp-hr	N/A	N/A	Rule 219 (E) (2) (a)
Boilers and combusion equipment	N/A	N/A	Rule 219 (E) (2) (b)
Portable ICE and TSE	N/A	N/A	Rule 219 (E) (2) (f)
Laboratory Testing Equipment	N/A	N/A	Rule 219 (E) (3) (f)
Vacuum devices	N/A	N/A	Rule 219 (E) (3) (g)
Vacuum cleaners	N/A	N/A	Rule 219 (E) (3) h)
Hoods, stacks, ventilators	N/A	N/A	Rule 219 (E) (3) (i)
Comfort A/C	N/A	N/A	Rule 219 (E) (4) (a)
Refrigeration Units	N/A	N/A	Rule 219 (E) (4) (b)
Water cooling towers	N/A	N/A	Rule 219 (E) (4) (c)
Steam cleaners	N/A	N/A	Rule 219 (E) (4) e)
Space heaters	N/A	N/A	Rule 219 (E) (4) (f)
Equipment used to hold compressed gas	N/A	N/A	Rule 219 (E) (4) (g)
Refrigeration recovery and recycling equipment	N/A	N/A	Rule 219 (E) (4) (i)
Passive carbon units	N/A	N/A	Rule 219 (E) (4) (a)
Inspection Equipment	N/A	N/A	Rule 219 (E) (5) (d)

Antelope Valley Air Quality Management District

TITLE V PERMIT RENEWAL APPLICATION – LIST OF EXEMPT EQUIPMENT
INSTRUCTIONS

Introduction

Use the List of Exempt Equipment form for all Title 5 permit renewal applications. This form is designed to summarize all of the equipment at a facility that is exempt per AVAQMD Rule 219 from AVAQMD permit requirements (e.g., IC Engines ≤ 50 BHP, Boilers < 2 MMBTU/hr, etc.). This equipment can be listed according to category. However, if there is a specific device that is vented to control equipment, then the equipment must be listed separately. Trivial activities listed on the next page do not have to be listed on this form.

I. Facility Information

1. Enter the name of the facility.
2. Enter the AVAQMD Facility ID number.
3. Enter the current Title V permit number.

II. Summary of Equipment Exempt from Permit Requirements

4. Enter a description of the exempt equipment. Categories can be used (e.g., small boilers (75,000 BTU/hr – 2,000,000 BTU/hr)).
5. If the exempt equipment is connected to a control device, enter the control device permit number.
6. If the exempt equipment is connected to a control device, enter a description of the control device.
7. Provide the basis for exemption by referencing the appropriate section of Rule 219.

Antelope Valley Air Quality Management District

TRIVIAL ACTIVITIES

- Combustion emissions from propulsion of mobile sources
- Air-conditioning units used for human comfort that do not have applicable requirements under Title VI of the Act.
- Ventilating units used for human comfort that do not exhaust air pollutant into the ambient air from any manufacturing/industrial or commercial process
- Non-commercial food preparation
- Consumer use of office equipment and products, not including printers or businesses primarily involved in photographic reproduction
- Janitorial services and consumer use of janitorial products
- Internal combustion engines used for landscaping purposes
- Laundry activities, except for dry-cleaning and steam boilers
- Bathroom/toilet vent emissions
- Emergency (backup) electrical generators at residential locations
- Tobacco smoking rooms and areas
- Blacksmith forges
- Plant maintenance and upkeep activities (e.g., grounds-keeping, general repairs, welding, plumbing, re-tarring roofs, installing insulation, and paving parking lots) provided these activities are not conducted as part of a manufacturing process, are not related to the source's primary business activity, and not otherwise triggering a permit modification. Asphalt batch plant owners/operators must still get a permit if otherwise required.
- Repair or maintenance shop activities not related to the source's primary business activity, not including emissions from surface coating or de-greasing (solvent metal cleaning) activities, and not otherwise triggering a permit modification.
- Portable electrical generators <50 HP that can be moved by hand from one location to another. Moved by hand means it can be moved without the assistance of any motorized or non-motorized vehicle, conveyance or device
- Hand-held equipment for buffing, polishing, cutting, drilling, sawing, grinding, turning or machining wood, metal, or plastic
- Brazing, soldering and welding equipment, and cutting torches related to manufacturing and construction activities that do not result in emission of HAP metals.
- Bench-scale laboratory equipment used for physical or chemical analysis, but not lab fume hoods or vents. Many lab fume hoods or vents might qualify for treatment as unpermitted equipment.
- Routine calibration and maintenance of laboratory equipment or other analytical instruments.
- Equipment used for quality control/assurance or inspection purposes, including sampling equipment used to withdraw materials for analysis
- Hydraulic and hydrostatic testing equipment
- Environmental chambers not using HAP gases
- Shock chambers
- Humidity chambers

- Solar simulators
- Fugitive emission related to movement of passenger vehicles, provided any required fugitive dust control plan or its equivalent is submitted
- Process water filtration systems and demineralizers
- Demineralized water tanks and demineralizer vents, air compressors and pneumatically operated equipment, including hand tools
- Batteries and battery charging stations, except at battery manufacturing plants
- Storage tanks, vessels and containers holding or storing liquid substances that will not emit any VOC or HAP
- Storage tanks, reservoirs, and pumping and handling equipment of any size containing soaps, vegetable oil, grease, animal fat, and nonvolatile aqueous salt solutions, provided appropriate lids and covers are utilized
- Equipment used to mix and package soaps, vegetable oil, grease, animal fat, and nonvolatile aqueous salt solutions, provided appropriate lids and covers are utilized.
- Drop hammers or hydraulic presses for forging or metalworking
- Equipment used exclusively to slaughter animals, but not including other equipment at slaughterhouses, such as rendering cookers, boilers, heating plants, incinerators, and electrical power generating equipment
- Vents from continuous emissions monitors and other analyzers
- Natural gas pressure regulator vents, excluding venting at oil and gas production facilities
- Hand-held applicator equipment for hot melt adhesives with no VOC in the adhesive formulation
- Equipment used for surface coating, painting, dipping or spraying operations, except those that will emit VOC or HAP
- CO2 lasers, used only on metals and other materials which do not emit HAP in the process
- Consumer use of paper trimmers/binders
- Electric or steam-heated drying ovens and autoclaves, but not the emissions from the articles or substance being processed in the ovens or autoclaves or the boilers delivering the steam
- Salt baths using nonvolatile salts that do not result in emissions of any regulated air pollutants
- Laser trimmers using dust collection to prevent fugitive emissions
- Boiler water treatment operations, not including cooling towers
- Oxygen scavenging (de-aeration) of water
- Ozone generators
- Fire suppression systems
- Emergency road flares
- Steam vents and safety relief valves
- Steam leaks
- Steam cleaning operations
- Steam sterilizers

Antelope Valley Air Quality Management District

TITLE V PERMIT RENEWAL APPLICATION – POTENTIAL EMISSIONS REPORT, CRITERIA POLLUTANTS & HAPs

I. FACILITY INFORMATION

1. FACILITY NAME: Northrop Grumman Systems Corporation Palmdale
2. FACILITY ID: O/O 1023 Eq. Loc. 01816
3. TITLE V PERMIT #: 102301816

II. POTENTIAL ANNUAL EMISSIONS

4. EMISSION UNIT (APPLICATION OR PERMIT #)	5. EQUIPMENT DESCRIPTION	6. POTENTIAL ANNUAL EMISSIONS							
		NOx (TPY)	VOC (TPY)	PM10 (TPY)	PM2.5 (TPY)	SOx (TPY)	CO (TPY)	Other: (TPY)	Other: (TPY)
see attached									

Antelope Valley Air Quality Management District

TITLE V PERMIT RENEWAL APPLICATION – POTENTIAL GREENHOUSE GAS EMISSIONS REPORT

I. FACILITY INFORMATION

1. FACILITY NAME:
2. FACILITY ID:
3. TITLE V PERMIT #:

II. POTENTIAL ANNUAL EMISSIONS

4. EMISSION UNIT (APPLICATION OR PERMIT #)	5. EQUIPMENT DESCRIPTION	6. POTENTIAL ANNUAL EMISSIONS							
		CO_2 (TPY)	N_2O (TPY)	CH_4 (TPY)	HFCs (TPY)	PFCs (TPY)	SF_6 (TPY)	Other: (TPY)	$CO_2(e)$ (TPY)
see attached									

Antelope Valley Air Quality Management District

TITLE V PERMIT RENEWAL – POTENTIAL EMISSIONS REPORT
Criteria Pollutants, HAPs, and Greenhouse Gases

INSTRUCTIONS

Describe potential emissions of all regulated air pollutants emitted from each emissions source permitted by the District. Potential to emit is the maximum capacity of an emissions unit to emit a pollutant under its physical and operational design. Any physical or operational limitation on the capacity of the source to emit a pollutant shall be treated as part of its design only if the limitation, or the effect it would have on emissions, is incorporated into the applicable permit as a federally enforceable permit condition, or is contained in an EPA approved State Implementation Plan (SIP). Any physical or operational limitation includes pollution control equipment, restrictions on hours of operation, and restrictions on the type or amount of material combusted, stored, or processed.

I. Facility Information

1. Enter the name of the facility.
2. Enter the AVAQMD Facility ID number.
3. Enter the current Title V permit number.

II. Potential Annual Emissions

4. List all new and existing emission units either by AVAQMD application or permit number. When the emission unit is new and has not yet been assigned an application number, leave this column blank.
5. Provide a brief equipment description of the emission unit.
6. Potential Annual Emissions: Report potential emissions of pollutants. Quantify emissions from permitted sources, in tons per year, for pollutants for which:
   1) A facility is a major source. Fugitive emissions need only be included with reported emissions for source categories listed in 40 CFR Part 70.2(2); or
   2) Emissions data are required to show the applicability of, or compliance with, a requirement. Fugitive emissions must be included in the reported emissions.

   When quantification is not required by one of the above two criteria, merely check the box in the column associated with all the pollutants emitted from a permitted source (e.g. for a boiler check the boxes in the columns for NOx, CO, SOx, VOC, and write in 'HAPS' in the column titled 'Other' and check that box, too).

Antelope Valley Air Quality Management District

TITLE V PERMIT RENEWAL APPLICATION – COMPLIANCE ASSURANCE MONITORING
INSTRUCTIONS FOR DETERMINING APPLICABILITY

Introduction

With the exception of emission units that are municipally-owned backup utility power units, as described by 40 CFR Part 64, Section 64.1(b)(2)[1], the CAM rule is applicable to each emission unit (existing and new construction) at a Title V facility that meets ALL of the following criteria[2]:

1. The emission unit is subject to an emission limitation or standard[3];
2. The emission unit uses a control device to achieve compliance with a federally enforceable emission limitation or standard; and,
3. The emission unit has a pre-control potential to emit (PTE) that exceeds or is equivalent to any of Title V major source thresholds shown in the following table:

Pollutant	PTE Emission Threshold[4] (tons per year)
VOC	25
NOx	25
1 HAP[5]	10
2+ HAPs	25
Any other air pollutant	100

[1] The facility must attach the documentation required by 40 CFR Part 64, Section 64.2(b)(2) to demonstrate that the backup utility power unit only operates during periods of peak demand or emergency situations; and has actual emissions, averaged over the last three calendar years of operation, less than 50% of the major source emission thresholds.

[2] Additional information about the CAM rule can be found on EPA's website at http://www.epa.gov/ttnemc01/cam.html

[3] Only emission limitations and standards from an "applicable requirement" for emission units with control devices are subject to the CAM rule. Only emission limitations and standards from an "applicable requirement" for emission units with control devices are subject to the CAM rule. Emission limitation or standard is defined in 40 CFR 64.1 and includes emission limitations, emission standards, capture efficiencies, destruction efficiencies, work practices, and process or control device parameters. Applicable requirement has the same meaning as in 40 CFR part 70 and, generally, includes federally enforceable requirements from AVAQMD and State rules that are approved into the California State Implementation Plan (SIP), New Source Performance Standards, National Emission Standards for Hazardous Air Pollutants, and New Source Review permits. Certain emission limits or standards may be exempt from the CAM rule under 40 CFR 64.2(b).

[4] The PTE emission threshold is based on AVAQMD Rule 3001 definition of a "Major Source Facility" (Amended 4/19/05). Please be advised that the threshold values are subject to change based on rule amendments.

[5] Hazardous Air Pollutant

Antelope Valley Air Quality Management District

TITLE V PERMIT RENEWAL APPLICATION – COMPLIANCE ASSURANCE MONITORING

APPLICABILITY DETERMINATION FORM

I. FACILITY INFORMATION

1. FACILITY NAME: Northrop Grumman Systems Corporation Palmdale
2. FACILITY ID: O/O 1023 Eq. Loc. 01816
3. TITLE V PERMIT #: 102301816

II. CAM STATUS SUMMARY FOR EMISSION UNITS

4. Based on the criteria in the instructions (check one and attach additional pages as necessary):

a. ■ There are no emission units with control devices at this Title V facility.

b. ☐ There are emission units with control devices at this Title V facility, and the CAM applicability is shown below for each unit. A CAM plan is attached for each affected emissions unit.

5. EMISSION UNIT (APPLICATION OR PERMIT #	6. EQUIPMENT DESCRIPTION	UNCONTROLLED EMISSIONS		9. UNCONTROLLED POTENTIAL EMISSIONS EXCEED THE MAJOR SOURCE THRESHOLD AND USE A CONTROL DEVICE?	10. EXEMPT FROM CAM BY 40 CFR 64.2(b)(1)? (ENTER YES OR NO. IF YES, STATE THE REASON FOR EXEMPTION)	11. IS A CAM PLAN REQUIRED?
		7. POLLUTANT TYPE	8. PTE (tons/year)			
S013440/C013441	SPRAY HANGAR/CARBON ADSORPTION SYSTEM	VOC	2.07	No		No
S014890/C014892	Spray Hangar/Concentrator/RTO	VOC	20.98	No		No
S01xxxx/C01xxxx	Spray Hangar/Concentrator/RTO	VOC	20.98	No		No

Antelope Valley Air Quality Management District

TITLE V PERMIT RENEWAL – CAM APPLICABILITY DETERMINATION FORM
INSTRUCTIONS

I. Facility Information

1. Enter the name of the facility.
2. Enter the AVAQMD Facility ID number.
3. Enter the current Title V permit number.

II. CAM Status Summary for Emission Units

4. Check box (a) or (b) to indicate whether there are emission units with control devices that are subject to the CAM rule. For more detailed information regarding CAM rule applicability, refer to 40 CFR Part 64, Section 64.1. Note that only one CAM plan is required for a control device that is common to more than one emissions unit, or if an emissions unit is controlled by more than one control device similar in design and operation. If the control devices are not similar in design and operation, one plan is required for each control device.
5. List all new and existing emission units either by AVAQMD application or permit number. When the emission unit is new and has not yet been assigned an application number, leave this column blank.
6. Provide a brief equipment description of the emission unit by indicating the equipment type, make, and model and serial numbers as appropriate.
7. List each pollutant that is subject to an emission limitation or standard, as defined in 40 CFR 64.1.
8. Provide the uncontrolled emissions potential to emit for the pollutant.
9. State whether the uncontrolled potential emissions exceed the major source threshold and use a control device (yes/no).
10. State whether each emission limitation or standard is exempt from CAM. If it is exempt, provide a reason.
11. State whether a CAM plan is required.

Antelope Valley Air Quality Management District

TITLE V PERMIT RENEWAL APPLICATION – PERMIT SHIELD REQUEST

I. FACILITY/APPLICATION INFORMATION

1. FACILITY NAME:
2. FACILITY ID:
3. TITLE V PERMIT #:
4. IDENTIFY EXISTING EQUIPMENT FOR WHICH A PERMIT SHIELD IS REQUESTED: PERMIT #: _____ EQUIPMENT DESCRIPTION: _____
5. ARE MULTIPLE PERMIT SHIELD APPLICATIONS FOR SIMILAR EQUIPMENT AS THE EQUIPMENT DESCRIBED ABOVE BEING SUBMITTED AT THE SAME TIME? ☐ Yes ☐ No If yes, provide the number of multiple units: _____

II. PERMIT SHIELD INFORMATION

6. REGULATORY REQUIREMENTS FOR WHICH A PERMIT SHIELD IS SOUGHT
7. REASON(S) FOR REQUESTING A PERMIT SHIELD:
8. ESTIMATED TIME THAT THE PERMIT SHIELD SHOULD LAST (CHECK ONE): a. ☐ For the life of the permit b. ☐ Other (Specify): _____

Antelope Valley Air Quality Management District

TITLE V PERMIT RENEWAL – PERMIT SHIELD REQUEST
INSTRUCTIONS

General Instructions

A Title V facility has the option to use this form to request that their Title V permit contain a permit shield. A Title V permit with a permit shield will identify rules that do not apply, and state that compliance with all conditions on the permit will be considered as compliance with all regulatory requirements in effect as of the date of the permit issuance. A requirement identified in the permit as non-applicable is not enforceable by EPA, AVAQMD, or citizens. However, if a requirement is erroneously omitted from the permit, a permit shield will not protect a facility from enforcement action.

I. Facility/Application Information

1. Enter the name of the facility.
2. Enter the AVAQMD Facility ID number.
3. Enter the current Title V permit number.
4. Enter the permit # and description of the equipment
5. Enter information if you are requesting permit shields for multiple pieces of similar equipment

II. Permit Shield Information

6. In the space provided, describe the regulatory requirement for which the facility is requesting a shield, and cite the rule reference and date of the rule version.
7. Explain the reason(s) for requesting a permit shield for each regulatory requirement.
8. Check the appropriate box to indicate the duration or length of time over which the permit shield should last.

Antelope Valley Air Quality Management District

TITLE V PERMIT RENEWAL APPLICATION – ALTERNATE OPERATING SCENARIOS

I. FACILITY/APPLICATION INFORMATION

1. FACILITY NAME:
2. FACILITY ID:
3. TITLE V PERMIT #:
4. THIS APPLICATION IS FOR: (check one) ☐ An alternative operating scenario ☐ Emissions trading under a facility emissions limit

II. DETAILED SUMMARY

5. PROVIDE A DETAILED SUMMARY OF PROPOSED ALTERNATE OPERATING SCENARIOS OR EMISSIONS TRADING, AS DISCUSSED IN THE INSTRUCTIONS.

Antelope Valley Air Quality Management District

TITLE V PERMIT RENEWAL – ALTERNATE OPERATING SCENARIOS
INSTRUCTIONS

Introduction

The provisions for operational flexibility for federally enforceable permit conditions are contained in Rule 3003(E). To qualify under the provisions, the operational change may not constitute a "modification" as defined under any provision of Title I of the Federal Clean Air Act, or exceed the emissions currently allowed under the permit. Any operational change that requires and authority to construct will still need to go through that process. Two types of operational flexibility will be allowed:

A. Alternate Operating Scenarios

The first type of operational flexibility is the use of alternative operating scenarios that are allowed for in the permit to operate. The owner/operator of the stationary source has the burden of identifying and applying for the scenarios in the application. The District must make a determination that the scenarios will not violate any applicable District, state, or federal requirement, and then allow for the scenarios in the issued permit.

B. Emissions Trading Under a Facility Emissions Limit

The second type of operational flexibility allows for changes in operation of a facility that were not anticipated in the permit to operate. A change under this provision must meet several qualifying conditions. The change must not result in any exceedance of any applicable emission limit, emission standard, or performance standard. Procedurally, the owner/operator must give the District at least a 30-day written notice before making the change. The owner/operator must also provide the District certain information about the change, and must not make the change if a written denial from the District is received during the 30-day notice period. The change must not be a modification as defined in Rule 3003(E) or in Title I of the CAA, and must not violate any applicable federal requirements.

Form Instructions

I. Facility/Application Information

1. Enter the name of the facility.
2. Enter the AVAQMD Facility ID number.
3. Enter the current Title V permit number.
4. Check a box to indicate whether the application is for an Alternate Operating Scenario, or Emissions Trading Under a Facility Emissions Limit (see definitions A and B, above)

II. Detailed Summary

5. In the space provided, provide a detailed summary of proposed Alternate Operating Scenarios or Emissions Trading, as discussed in A and B above.

16. CERTIFICATION BY RESPONSIBLE OFFICIAL

Based on information and belief formed after reasonable inquiry, information and statements in the submitted application package, including all accompanying reports, and required certifications are true accurate and complete. I declare, under penalty of perjury under the laws of the state of California, that the forgoing is correct and true:

Signature: Gregg Worrad Date: 7-14-26

Antelope Valley Air Quality Management District

TITLE V PERMIT RENEWAL APPLICATION – APPLICATION CERTIFICATION

I. FACILITY INFORMATION

1. FACILITY NAME: Northrop Grumman Systems Corporation Palmdale
2. FACILITY ID: O/O 1023 Eq. Loc. 01816
3. TITLE V PERMIT #: 102301816

II. TITLE V PERMIT CERTIFICATION (Read each statement carefully and check one):

☑ The current Title V permit has been reviewed and it has been determined that equipment descriptions are correct, and all requirements are still applicable.

☐ The current Title V permit has been reviewed and errors have been found in equipment descriptions and/or permit requirements. A copy of the Title V permit is attached with redline changes. Permit application and/or modification forms are enclosed, as applicable.

III. COMPLIANCE CERTIFICATION (Read each statement carefully and check all for confirmation):

☑ Based on information and belief formed after reasonable inquiry, the equipment identified in this application will continue to comply with the applicable federal requirement(s), except for those requirements listed in the "Title V Non-Compliant Operations Report".

☐ Based on information and belief formed after reasonable inquiry, the equipment identified in this application will comply with applicable federal requirement(s) that will become effective during the permit term, on a timely basis, except for those requirements listed in the "Title V Non-Compliant Operations Report".

☐ Corrected information will be provided to the District when I become aware that incorrect or incomplete information has been submitted.

Based on information and belief formed after reasonable inquiry, information and statements in the submitted application package, including all accompanying reports, and required certifications are true accurate and complete. I declare, under penalty of perjury under the laws of the state of California, that the forgoing is correct and true.

Gina L. Woullard

Signature of Responsible Official

7-14-26

Date

Gina L. Woullard

Name of Responsible Official (please print)

V.P. Production Operations

Title of Responsible Official (please print)

Oven used for plastics	**N/A**	**N/A**	**Rule 219 (E) (5) (e)**
Brazing and soldering equipment	**N/A**	**N/A**	**Rule 219 (E) (5) (f)**
Welding equipment	**N/A**	**N/A**	**Rule 219 (E) (5) (h)**
Glove box abrasive blasting	**N/A**	**N/A**	**Rule 219 (E) (6) (b)**
Machining equipment	**N/A**	**N/A**	**Rule 219 (E) (7) (a)**
Printing equipment	**N/A**	**N/A**	**Rule 219 (E) (8) (g)**
Food preparation equipment	**N/A**	**N/A**	**Rule 219 (E) (9) (e) and (g)**
Plastic and composite equipment	**N/A**	**N/A**	**Rule 219 (E) (10) (a), (c), (d), (i), and (k)**
Misc. processing equipment	**N/A**	**N/A**	**Rule 219 (E) (12) (h), (j), (k), (m) (o), (p), (s), (w), (y), (z), (aa), (dd), (gg), (hh), and (ll)**
Storage and transfer equipment	**N/A**	**N/A**	**Rule 219 (E) (13) (b), (c), (d), (g), and (h)**

PERMIT APPLICATION
SITE 2 B/260 BOILERS

JUNE 2026

Prepared for:
NORTHROP GRUMMAN CORPORATION
Palmdale, California

Prepared by:
VERDANT ENVIRONMENTAL
Palmdale, California

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Table 1 Emission factors for NOx, VOC, CO, and SOx
Table 2 Potential to Emit NOx, VOC, CO, and SOx
Table 3 Potential to Emit PM and CO2

FIGURES

Figure 1 Boiler Drawing

APPENDICES

Appendix A Site Plan
Appendix B Manufacturer's Data

1

PERMIT APPLICATION FORMS

Antelope Valley Air Quality Management District

2551 West Ave H, Lancaster, CA 93536
Phone: 661.723.8070
Email: www.avaqmd.ca.gov

Application for External Combustion Engine (boiler, etc.) Only

Please type or print. **Please refer to Rule 301 for Application Filing Fee.**

1. Permit to be Issued to (name of company to receive permit): Northrop Grumman Aeronautics System Corporation	**1a. Federal Tax ID #:** 95-1055798	
2. Mailing/Billing Address (for the above company name): 3520 East Ave M Palmdale, CA 93550	**2a. Billing Email Address:** george.jung@ngc.com	
3. Facility or Business Name on License (for equipment location): Northrop Grumman Aeronautics System Corporation		
4. Facility Address/Location of Equipment (if same as company, enter "Same"): Same	**4a. Facility UTM:** 425E/3830N	**4b. Facility Lat/Long:** 34.629N/118.084W
5. Contact Name/Title: George Jung	**5a. Email Address (if same as billing, enter "Same")** Same	**5b. Phone #:** (661) 266-5394

6. Application is hereby made for the Authority to Construct (ATC) and Permit to Operate (PTO) the following equipment:

6MMBtu/hr Natural Gas Fired Boiler #1

7. Application is for: ■ New Construction ☐ Modification* ☐ Change of Owner*

***For modification or change of owner:** Current permit #: _____ **Company No.:** _____ **Facility No.:** _____

8. Type of Organization (check one): ☐ Individual Owner ☐ Partnership ■ Corporation ☐ Utility ☐ Local Agency ☐ State Agency ☐ Federal Agency

9. Distances (feet and direction to closest): Fenceline >1650 Ft. N Residence >10500 E Business >3000 W School >13300 N

10. General Nature of Business: Aircraft Manufacturing	**11. Principal Product:** Aircraft

12. Facility Annual Throughput by Quarters (percent):

25 %	25 %	25 %	25 %
Jan-Mar	Apr-Jun	Jul-Sep	Oct-Dec

13. Expected Facility Operating Hours:

24	7	52	
Hrs/Day	Days/Wk	Wks/Yr	Total Hrs/Yr

14. Do you claim Confidentiality of Data? (If yes, state nature of data in an attachment.) ☐ Yes ☐ No

15. Machine Information:

Check One: ■ Boiler ☐ Dryer ☐ Furnace ☐ Heater ☐ Kiln ☐ Oven ☐ Other _____

(specify): Manufacturer: _____

Model #: Cleaver Brooks Clearfire Serial #: CFCE-700-6000-125HW

Maximum heat input rating (use Higher Heating Value): 6000 MMBtu/hr or kW

Burner Manufacturer: Cleaver-Brooks Burner Model #: Integral

# of Burners: 8 Burner max heat input rating: 6000 MMBtu/hr or kW

Percent excess air (or n/a): 30% Operating temps (C or F): Av. 140F Max. 170F

Specify Primary Fuel (attach fuel analysis for these fuels, specifying HHV and sulfur content):
■ Natural Gas ☐ LPG (Propane) ☐ CARB Diesel ☐ Coal* ☐ Petroleum Coke* ☐ Digester Gas*
☐ Landfill Gas* ☐ Refinery Gas* ☐ Other* (specify): _____

Max hourly primary fuel usage: 6000 Fuel units (ft^3, gal, etc.) ft^3

If secondary fuel is proposed, specify: N/A Max hourly usage: _____

Feedstock type and max process rate (specify units): _____

Antelope Valley Air Quality Management District

2551 West Ave H, Lancaster, CA 93536
Phone: 661.723.8070
Email :www.avaqmd.ca.gov

Application for External Combustion Engine (boiler, etc.) Only

Unit lat/long or UTM coordinates: 34.3825773N/118.051788W

Max annual hours: 8760 Exhaust stack height (feet): 14.5 Inside diameter (inches) 14

16. Emissions Controls:

Check all that apply:

☒Low NOx Burner ☐Oxygen Trim ☐Flue or Exhaust Gas Recirculation (FGR or EGR) ☐Oxidation Catalyst ☐Selective Catalytic Reduction (SCR) ☐Selective Non-Catalytic Reduction (SNCR) ☐Afterburner ☐ESP ☐Baghouse ☐Other (specify): _____

17. Max Emissions Rates (controlled):

Pollutant	Concentration (ppmvd or gr/dscf)	Mass (pounds/hr)
1. Oxides of Nitrogen (NOx)	7 PPM	0.0509
2. Oxides of Sulfur (SOx)	1 PPM	0.0101
3. Carbon Monoxide (CO	20 PPM	0.0948
4. Total Particulates (TSP or PM30)	N/A	
5. Coarse Respirable Particulates (PM2.5)	N/A	
6. Total Organics (TOG)	N/A	
7. Volatile Organic Compounds (VOC, ROG, or NMOG)	4 PPM	0.0101

18. Dryers Only:

Check one:

☐Centrifugal ☐Chip ☐Fluidized Bed ☐Rotary ☐Spray ☐Other (specify): _____

19. Furnace Only:

Check one:

☐Annealing ☐ Burnoff ☐ Calcining ☐ Crucible ☐ Cupola ☐ Diffusion ☐ Electric ☐Forge ☐Pot ☐Holding ☐ Heat Treating ☐Melting ☐ Reverbatory ☐ Rotary ☐ Sweating ☐ Oxide Growth

20. Oven Only:

Check one:

☐Bakery ☐Baking ☐Curing ☐Drying ☐Fluidized Bed ☐Stripping ☐Solder Reflow ☐Roasting, specify type: _____

Firing Method: ☐Direct ☐Indirect

Signature of Responsible Official:	Official Title: Environmental

Typed or Printed Name of Responsible Official:	Phone Number:	Date Signed:
George Jung	(661) 266-5394	06/25/26

For District Use Only

Application #:	Invoice #:	Permit #:	Company/Facility #:

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Application for External Combustion Engine (boiler, etc.) Only

Please type or print.

Please refer to Rule 301 for Application Filing Fee.

1. Permit to be Issued to (name of company to receive permit): Northrop Grumman Aeronautics System Corporation	**1a. Federal Tax ID #:** 95-1055798	
2. Mailing/Billing Address (for the above company name): 3520 East Ave M Palmdale, CA 93550	**2a. Billing Email Address:** george.jung@ngc.com	
3. Facility or Business Name on License (for equipment location): Northrop Grumman Aeronautics System Corporation		
4. Facility Address/Location of Equipment (if same as company, enter "Same"): Same	**4a. Facility UTM:** 425E/3830N	**4b. Facility Lat/Long:** 34.629N/118.084W
5. Contact Name/Title: George Jung	**5a. Email Address (if same as billing, enter "Same")** Same	**5b. Phone #:** (661) 266-5394

6. Application is hereby made for the Authority to Construct (ATC) and Permit to Operate (PTO) the following equipment:

6MMBtu/hr Natural Gas Fired Boiler #1

7. Application is for: ☒ New Construction ☐ Modification* ☐ Change of Owner*

***For modification or change of owner:** Current permit #: _____ **Company No.:** _____ **Facility No.:** _____

8. Type of Organization (check one): ☐ Individual Owner ☐ Partnership ☒ Corporation ☐ Utility ☐ Local Agency ☐ State Agency ☐ Federal Agency

9. Distances (feet and direction to closest): Fenceline >1650 Ft. N Residence >10500 E Business >3000 W School >13300 N

10. General Nature of Business: Aircraft Manufacturing	**11. Principal Product:** Aircraft

12. Facility Annual Throughput by Quarters (percent):

Jan-Mar	Apr-Jun	Jul-Sep	Oct-Dec
25 %	25 %	25 %	25 %

13. Expected Facility Operating Hours:

Hrs/Day	Days/Wk	Wks/Yr	Total Hrs/Yr
24	7	52	

14. Do you claim Confidentiality of Data? (If yes, state nature of data in an attachment.) ☐ Yes ☐ No

15. Machine Information:

Check One: ☒ Boiler ☐ Dryer ☐ Furnace ☐ Heater ☐ Kiln ☐ Oven ☐ Other _____

(specify): Manufacturer:

Model #: Cleaver Brooks Clearfire Serial #: CFCE-700-6000-125HW

Maximum heat input rating (use Higher Heating Value): 6000 MMBtu/hr or kW

Burner Manufacturer: Cleaver-Brooks Burner Model #: Integral

# of Burners: 8 Burner max heat input rating: 6000 MMBtu/hr or kW

Percent excess air (or n/a): 30% Operating temps (C or F): Av. 140F Max. 170F

Specify Primary Fuel (attach fuel analysis for these fuels, specifying HHV and sulfur content):
☒ Natural Gas ☐ LPG (Propane) ☐ CARB Diesel ☐ Coal* ☐ Petroleum Coke* ☐ Digester Gas*
☐ Landfill Gas* ☐ Refinery Gas* ☐ Other* (specify):

Max hourly primary fuel usage: 6000 Fuel units (ft^3, gal, etc.) ft^3

If secondary fuel is proposed, specify: N/A Max hourly usage:

Feedstock type and max process rate (specify units):

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Application for External Combustion Engine (boiler, etc.) Only

Unit lat/long or UTM coordinates: 34.3825773N/118.051788W

Max annual hours: 8760 Exhaust stack height (feet): 14.5 Inside diameter (inches) 14

16. Emissions Controls:

Check all that apply:

☒Low NOx Burner ☐Oxygen Trim ☐Flue or Exhaust Gas Recirculation (FGR or EGR) ☐Oxidation Catalyst ☐Selective Catalytic Reduction (SCR) ☐Selective Non-Catalytic Reduction (SNCR) ☐Afterburner ☐ESP ☐Baghouse

☐Other (specify): _____

17. Max Emissions Rates (controlled):

Pollutant	Concentration (ppmvd or gr/dscf)	Mass (pounds/hr)
1. Oxides of Nitrogen (NOx)	7 PPM	0.0509
2. Oxides of Sulfur (SOx)	1 PPM	0.0101
3. Carbon Monoxide (CO	20 PPM	0.0948
4. Total Particulates (TSP or PM30)	N/A	
5. Coarse Respirable Particulates (PM2.5)	N/A	
6. Total Organics (TOG)	N/A	
7. Volatile Organic Compounds (VOC, ROG, or NMOG)	4 PPM	0.0101

18. Dryers Only:

Check one:

☐Centrifugal ☐Chip ☐Fluidized Bed ☐Rotary ☐Spray ☐Other (specify): _____

19. Furnace Only:

Check one:

☐Annealing ☐ Burnoff ☐ Calcining ☐ Crucible ☐ Cupola ☐ Diffusion ☐ Electric ☐Forge ☐Pot ☐Holding ☐ Heat Treating ☐Melting ☐ Reverbatory ☐ Rotary ☐ Sweating ☐ Oxide Growth

20. Oven Only:

Check one:

☐Bakery ☐Baking ☐Curing ☐Drying ☐Fluidized Bed ☐Stripping ☐Solder Reflow ☐Roasting, specify type: _____

Firing Method: ☐Direct ☐Indirect

Signature of Responsible Official:		Official Title: Environmental
Typed or Printed Name of Responsible Official: George Jung	Phone Number: (661) 266-5394	Date Signed: 06/25/26

For District Use Only

Application #:	Invoice #:	Permit #:	Company/Facility #:

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2. Mailing/Billing Address (for the above company name): 3520 East Ave M Palmdale, CA 93550	**2a. Billing Email Address:** george.jung@ngc.com	
3. Facility or Business Name on License (for equipment location): Northrop Grumman Aeronautics System Corporation		
4. Facility Address/Location of Equipment (if same as company, enter "Same"): Same	**4a. Facility UTM:** 425E/3830N	**4b. Facility Lat/Long:** 34.629N/118.084W
5. Contact Name/Title: George Jung	**5a. Email Address (if same as billing, enter "Same")** Same	**5b. Phone #:** (661) 266-5394

6. Application is hereby made for the Authority to Construct (ATC) and Permit to Operate (PTO) the following equipment:

6MMBtu/hr Natural Gas Fired Boiler #1

7. Application is for: ☒ New Construction ☐ Modification* ☐ Change of Owner*

***For modification or change of owner:** Current permit #: _____ **Company No.:** _____ **Facility No.:** _____

8. Type of Organization (check one): ☐ Individual Owner ☐ Partnership ☒ Corporation ☐ Utility ☐ Local Agency ☐ State Agency ☐ Federal Agency

9. Distances (feet and direction to closest): Fenceline >1650 Ft. N Residence >10500 E Business >3000 W School >13300 N

10. General Nature of Business: Aircraft Manufacturing	**11. Principal Product:** Aircraft

12. Facility Annual Throughput by Quarters (percent):

Jan-Mar	Apr-Jun	Jul-Sep	Oct-Dec
25 %	25 %	25 %	25 %

13. Expected Facility Operating Hours:

Hrs/Day	Days/Wk	Wks/Yr	Total Hrs/Yr
24	7	52	

14. Do you claim Confidentiality of Data? (If yes, state nature of data in an attachment.) ☐ Yes ☐ No

15. Machine Information:

Check One: ☒ Boiler ☐ Dryer ☐ Furnace ☐ Heater ☐ Kiln ☐ Oven ☐ Other _____

(specify): Manufacturer:

Model #: Cleaver Brooks Clearfire Serial #: CFCE-700-6000-125HW

Maximum heat input rating (use Higher Heating Value): 6000 MMBtu/hr or kW

Burner Manufacturer: Cleaver-Brooks Burner Model #: Integral

# of Burners: 8 Burner max heat input rating: 6000 MMBtu/hr or kW

Percent excess air (or n/a): 30% Operating temps (C or F): Av. 140F Max. 170F

Specify Primary Fuel (attach fuel analysis for these fuels, specifying HHV and sulfur content):
☒ Natural Gas ☐ LPG (Propane) ☐ CARB Diesel ☐ Coal* ☐ Petroleum Coke* ☐ Digester Gas*
☐ Landfill Gas* ☐ Refinery Gas* ☐ Other* (specify):

Max hourly primary fuel usage: 6000 Fuel units (ft^3, gal, etc.) ft^3

If secondary fuel is proposed, specify: N/A Max hourly usage:

Feedstock type and max process rate (specify units):

Antelope Valley Air Quality Management District

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Application for External Combustion Engine (boiler, etc.) Only

Unit lat/long or UTM coordinates: 34.3825773N/118.051788W

Max annual hours: 8760 Exhaust stack height (feet): 14.5 Inside diameter (inches) 14

16. Emissions Controls:

Check all that apply:

☒Low NOx Burner ☐Oxygen Trim ☐Flue or Exhaust Gas Recirculation (FGR or EGR) ☐Oxidation Catalyst ☐Selective Catalytic Reduction (SCR) ☐Selective Non-Catalytic Reduction (SNCR) ☐Afterburner ☐ESP ☐Baghouse

☐Other (specify): _____

17. Max Emissions Rates (controlled):

Pollutant	Concentration (ppmvd or gr/dscf)	Mass (pounds/hr)
1. Oxides of Nitrogen (NOx)	7 PPM	0.0509
2. Oxides of Sulfur (SOx)	1 PPM	0.0101
3. Carbon Monoxide (CO	20 PPM	0.0948
4. Total Particulates (TSP or PM30)	N/A	
5. Coarse Respirable Particulates (PM2.5)	N/A	
6. Total Organics (TOG)	N/A	
7. Volatile Organic Compounds (VOC, ROG, or NMOG)	4 PPM	0.0101

18. Dryers Only:

Check one:

☐Centrifugal ☐Chip ☐Fluidized Bed ☐Rotary ☐Spray ☐Other (specify): _____

19. Furnace Only:

Check one:

☐Annealing ☐ Burnoff ☐ Calcining ☐ Crucible ☐ Cupola ☐ Diffusion ☐ Electric ☐Forge ☐Pot ☐Holding ☐ Heat Treating ☐Melting ☐ Reverbatory ☐ Rotary ☐ Sweating ☐ Oxide Growth

20. Oven Only:

Check one:

☐Bakery ☐Baking ☐Curing ☐Drying ☐Fluidized Bed ☐Stripping ☐Solder Reflow ☐Roasting, specify type: _____

Firing Method: ☐Direct ☐Indirect

Signature of Responsible Official:		Official Title: Environmental
Typed or Printed Name of Responsible Official: George Jung	Phone Number: (661) 266-5394	Date Signed: 06/25/26

For District Use Only

Application #:	Invoice #:	Permit #:	Company/Facility #:

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3. Facility or Business Name on License (for equipment location): Northrop Grumman Aeronautics System Corporation		
4. Facility Address/Location of Equipment (if same as company, enter "Same"): Same	**4a. Facility UTM:** 425E/3830N	**4b. Facility Lat/Long:** 34.629N/118.084W
5. Contact Name/Title: George Jung	**5a. Email Address (if same as billing, enter "Same")** Same	**5b. Phone #:** (661) 266-5394

6. Application is hereby made for the Authority to Construct (ATC) and Permit to Operate (PTO) the following equipment:

6MMBtu/hr Natural Gas Fired Boiler #1

7. Application is for: ☒ New Construction ☐ Modification* ☐ Change of Owner*

***For modification or change of owner:** Current permit #: _____ **Company No.:** _____ **Facility No.:** _____

8. Type of Organization (check one): ☐ Individual Owner ☐ Partnership ☒ Corporation ☐ Utility ☐ Local Agency ☐ State Agency ☐ Federal Agency

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12. Facility Annual Throughput by Quarters (percent):

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13. Expected Facility Operating Hours:

Hrs/Day	Days/Wk	Wks/Yr	Total Hrs/Yr
24	7	52	

14. Do you claim Confidentiality of Data? (If yes, state nature of data in an attachment.) ☐ Yes ☐ No

15. Machine Information:

Check One: ☒ Boiler ☐ Dryer ☐ Furnace ☐ Heater ☐ Kiln ☐ Oven ☐ Other _____

(specify): Manufacturer:

Model #: Cleaver Brooks Clearfire Serial #: CFCE-700-6000-125HW

Maximum heat input rating (use Higher Heating Value): 6000 MMBtu/hr or kW

Burner Manufacturer: Cleaver-Brooks Burner Model #: Integral

# of Burners: 8 Burner max heat input rating: 6000 MMBtu/hr or kW

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Feedstock type and max process rate (specify units):

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Unit lat/long or UTM coordinates: 34.3825773N/118.051788W

Max annual hours: 8760 Exhaust stack height (feet): 14.5 Inside diameter (inches) 14

16. Emissions Controls:

Check all that apply:

☒Low NOx Burner ☐Oxygen Trim ☐Flue or Exhaust Gas Recirculation (FGR or EGR) ☐Oxidation Catalyst ☐Selective Catalytic Reduction (SCR) ☐Selective Non-Catalytic Reduction (SNCR) ☐Afterburner ☐ESP ☐Baghouse

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17. Max Emissions Rates (controlled):

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Check one:

☐Bakery ☐Baking ☐Curing ☐Drying ☐Fluidized Bed ☐Stripping ☐Solder Reflow ☐Roasting, specify type: _____

Firing Method: ☐Direct ☐Indirect

Signature of Responsible Official:		Official Title: Environmental
Typed or Printed Name of Responsible Official: George Jung	Phone Number: (661) 266-5394	Date Signed: 06/25/26

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15. Machine Information:

Check One: ☒ Boiler ☐ Dryer ☐ Furnace ☐ Heater ☐ Kiln ☐ Oven ☐ Other _____

(specify): Manufacturer:

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☒ Natural Gas ☐ LPG (Propane) ☐ CARB Diesel ☐ Coal* ☐ Petroleum Coke* ☐ Digester Gas*
☐ Landfill Gas* ☐ Refinery Gas* ☐ Other* (specify):

Max hourly primary fuel usage: 6000 Fuel units (ft^3, gal, etc.) ft^3

If secondary fuel is proposed, specify: N/A Max hourly usage:

Feedstock type and max process rate (specify units):

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Phone: 661.723.8070
Email :www.avaqmd.ca.gov

Application for External Combustion Engine (boiler, etc.) Only

Unit lat/long or UTM coordinates: 34.3825773N/118.051788W

Max annual hours: 8760 Exhaust stack height (feet): 14.5 Inside diameter (inches) 14

16. Emissions Controls:

Check all that apply:

☒Low NOx Burner ☐Oxygen Trim ☐Flue or Exhaust Gas Recirculation (FGR or EGR) ☐Oxidation Catalyst ☐Selective Catalytic Reduction (SCR) ☐Selective Non-Catalytic Reduction (SNCR) ☐Afterburner ☐ESP ☐Baghouse

☐Other (specify): _____

17. Max Emissions Rates (controlled):

Pollutant	Concentration (ppmvd or gr/dscf)	Mass (pounds/hr)
1. Oxides of Nitrogen (NOx)	7 PPM	0.0509
2. Oxides of Sulfur (SOx)	1 PPM	0.0101
3. Carbon Monoxide (CO	20 PPM	0.0948
4. Total Particulates (TSP or PM30)	N/A	
5. Coarse Respirable Particulates (PM2.5)	N/A	
6. Total Organics (TOG)	N/A	
7. Volatile Organic Compounds (VOC, ROG, or NMOG)	4 PPM	0.0101

18. Dryers Only:

Check one:

☐Centrifugal ☐Chip ☐Fluidized Bed ☐Rotary ☐Spray ☐Other (specify): _____

19. Furnace Only:

Check one:

☐Annealing ☐ Burnoff ☐ Calcining ☐ Crucible ☐ Cupola ☐ Diffusion ☐ Electric ☐Forge ☐Pot ☐Holding ☐ Heat Treating ☐Melting ☐ Reverbatory ☐ Rotary ☐ Sweating ☐ Oxide Growth

20. Oven Only:

Check one:

☐Bakery ☐Baking ☐Curing ☐Drying ☐Fluidized Bed ☐Stripping ☐Solder Reflow ☐Roasting, specify type: _____

Firing Method: ☐Direct ☐Indirect

Signature of Responsible Official:		Official Title: Environmental
Typed or Printed Name of Responsible Official: George Jung	Phone Number: (661) 266-5394	Date Signed: 06/25/26

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6MMBtu/hr Natural Gas Fired Boiler #1

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12. Facility Annual Throughput by Quarters (percent):

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25 %	25 %	25 %	25 %

13. Expected Facility Operating Hours:

Hrs/Day	Days/Wk	Wks/Yr	Total Hrs/Yr
24	7	52	

14. Do you claim Confidentiality of Data? (If yes, state nature of data in an attachment.) ☐ Yes ☐ No

15. Machine Information:

Check One: ☒ Boiler ☐ Dryer ☐ Furnace ☐ Heater ☐ Kiln ☐ Oven ☐ Other _____

(specify): Manufacturer:

Model #: Cleaver Brooks Clearfire Serial #: CFCE-700-6000-125HW

Maximum heat input rating (use Higher Heating Value): 6000 MMBtu/hr or kW

Burner Manufacturer: Cleaver-Brooks Burner Model #: Integral

# of Burners: 8 Burner max heat input rating: 6000 MMBtu/hr or kW

Percent excess air (or n/a): 30% Operating temps (C or F): Av. 140F Max. 170F

Specify Primary Fuel (attach fuel analysis for these fuels, specifying HHV and sulfur content):
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Check all that apply:

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☐Other (specify): _____

17. Max Emissions Rates (controlled):

Pollutant	Concentration (ppmvd or gr/dscf)	Mass (pounds/hr)
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☐Bakery ☐Baking ☐Curing ☐Drying ☐Fluidized Bed ☐Stripping ☐Solder Reflow ☐Roasting, specify type: _____

Firing Method: ☐Direct ☐Indirect

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13. Expected Facility Operating Hours:

Hrs/Day	Days/Wk	Wks/Yr	Total Hrs/Yr
24	7	52	

14. Do you claim Confidentiality of Data? (If yes, state nature of data in an attachment.) ☐ Yes ☐ No

15. Machine Information:

Check One: ☒ Boiler ☐ Dryer ☐ Furnace ☐ Heater ☐ Kiln ☐ Oven ☐ Other _____

(specify): Manufacturer:

Model #: Cleaver Brooks Clearfire Serial #: CFCE-700-6000-125HW

Maximum heat input rating (use Higher Heating Value): 6000 MMBtu/hr or kW

Burner Manufacturer: Cleaver-Brooks Burner Model #: Integral

# of Burners: 8 Burner max heat input rating: 6000 MMBtu/hr or kW

Percent excess air (or n/a): 30% Operating temps (C or F): Av. 140F Max. 170F

Specify Primary Fuel (attach fuel analysis for these fuels, specifying HHV and sulfur content):
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Max annual hours: 8760 Exhaust stack height (feet): 14.5 Inside diameter (inches) 14

16. Emissions Controls:

Check all that apply:

☒Low NOx Burner ☐Oxygen Trim ☐Flue or Exhaust Gas Recirculation (FGR or EGR) ☐Oxidation Catalyst ☐Selective Catalytic Reduction (SCR) ☐Selective Non-Catalytic Reduction (SNCR) ☐Afterburner ☐ESP ☐Baghouse

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Pollutant	Concentration (ppmvd or gr/dscf)	Mass (pounds/hr)
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2

PROCESS DESCRIPTION

INTRODUCTION

The Northrop Grumman Corporation (Northrop), AVAQMD Facility ID No. 01816, plans to install eight (8) new 6 mmBtu boilers Site 2, B-1 through B-8. The units will provide hot water and heating for the B/260 hangar. A site plan is included as Appendix A.

EQUIPMENT DESCRIPTION

The proposed equipment are Cleaver Brooks Model CFCE-700-6000-125HW boilers, a packaged watertube hot water boiler equipped with a low NOx burners. The installation will consist of eight units rated at 6 mmBtu/hr each. The units will be fueled with natural gas at a rate of approximately 6000 ft^3/hr per unit. Manufacturer's information is included as Appendix B.

OPERATING SCHEDULE

The unit is a hot water boiler and will be operated to provide hot water and heat to the Building B/260 hangar.

3

EMISSION CALCULATIONS

CRITERIA POLLUTANT EMISSIONS

Proposed equipment potential to emit, as defined by District Rule 3001(W), is the maximum capacity of the emission unit to emit any regulated air pollutant under its physical and operational design. Criteria pollutant maximum potential to emit for each boiler based on emissions data provided by the boiler manufacturer and calculated based on 8760 hours per year of operation are included as Table 1. Maximum potential to emit criteria pollutants for all eight units is provided in Table 2. Maximum potential to emit PM and CO_2 based on AVAQMD emission factors and assuming 8760 hours per year of operation are included as Table 3.

HAP EMISSIONS

The HAPs emitted from the boilers are described in Rule 1401 Health Risk Assessment that accompanies this application. The HRA also includes emission calculations for those pollutants and tabulates total estimated HAP emissions.

4

RULE COMPLIANCE EVALUATION

Rule 401 – Visible Emissions

Rule 401 limits visible emissions opacity to less than 20 percent (or Ringelmann No. 1). During start up, visible emissions may exceed 20 percent opacity. However, emissions of this opacity are not expected to last three minutes or longer. In normal operating mode, visible emissions are not expected to exceed 20 percent opacity.

Rule 404 – Particulate Matter – Concentration

Rule 404 specifies standards of emissions for particulate matter concentrations. The use of a boiler fueled with natural gas achieves compliance with Rule 404.

Rule 405 – Solid Particulate Matter - Weight

Rule 405 limits particulate matter emissions from fuel combustion on a mass per unit combusted basis. The use of a boiler fueled with natural gas achieves compliance with Rule 404.

Rule 431.1– Sulfur Content in Fuels

Rule 431.1 limits the sulfur content in gaseous fuel. The provisions of the rule limit the selling or burning of gaseous fuels containing sulfur compounds in excess of 16 ppmv, calculated as H_2S.

Only pipeline quality natural gas will be used for fueling the boiler. The sole use of pipeline quality natural gas complies with Rule 431.1.

Rule 1146 - Emissions of Oxides of Nitrogen from Industrial, Institutional and Commercial Boilers, Steam Generators, and Process Heaters

Rule 1146 limits boilers equal to or greater than 5 million Btu per hour and greater than 90,000 therms per year of fuel use to 40 ppm (0.05 lb per10^6 Btu of heat input) NOx and

400 ppm CO. Emissions from the unit are guaranteed to meet the following emission rates:

- NOx – 7 ppm
- CO – 20 ppm

Compliance with the NOx and CO emission requirements will be determined according to procedures in District Source Test Method 100.1 - Instrumental Analyzer Procedures for Continuous Gaseous Emission Sampling (March 1989), or Method 7.1 - Determination of Nitrogen Oxide Emissions from Stationary Sources (March 1989) and Method 10.1 - Carbon Monoxide and Carbon Dioxide by Gas Chromatograph/Non-Dispersive Infrared Detector (GC/NDIR) - Oxygen by Gas Chromatograph-Thermal Conductivity (GC/TCD) (March 1989), or any other test method determined to be equivalent and approved before the test in writing by the Executive Officer of the District. Records of all source tests will be maintained for a period of five years and made available to District personnel upon request.

The rule further requires that the unit be tuned at least twice per year, at intervals from 4 to 8 months apart, in accordance with the procedure described in Attachment 1 of the rule or the unit manufacturer's specified tuning procedure. If the manufacturer's tuning procedure is used a copy of this procedure will be kept on site. If the unit does not operate throughout a continuous six-month period within a calendar year, only one tuneup is required for that calendar year.

Source testing and tuneups will be conducted as required. Compliance with Rule 1146 will be achieved.

Regulation XIII – New Source Review

<u>Rule 1303 – BACT</u>

Rule 1303 (A) mandates BACT for:

- Any new Permit Unit which emits, or has the Potential to Emit, 25 pounds per day or more of any Nonattainment Air Pollutant; or
- Any new or Modified Facility which emits, or has the Potential to Emit, 25 tons per year or more of any Nonattainment Air Pollutant

The 2020 SCAQMD BACT determination for a natural gas-fired boiler with a heat input rating of 8.4 mmBtu/hr follows:

VOC	NOx	SOx	CO	PM10
None	≤7 ppmv dry corrected to 3% O_2	Natural Gas	≤50 ppmv for watertube type, dry corrected to 3% O_2	Natural Gas

The use of low NOx burner and fueled with natural gas meets the requirement for BACT. Compliance with Rule 1303 (A) is achieved.

Rule 1303– Offsets

Offsets will be required for NOx at a rate of 1.3:1. NOx offsets totaling 3567 * 1.3 or 4637 pounds per year are required to permit the new boilers.

40 CFR 63 Subpart DDDDD - National Emission Standards for Hazardous Air Pollutants for Industrial, Commercial, and Institutional Boilers and Process Heaters

§63.7480 specifies that this subpart establishes national emission limitations and work practice standards for hazardous air pollutants (HAP) emitted from industrial, commercial, and institutional boilers and process heaters located at major sources of HAP.

40 CFR 63.7500 (a) (1) (e) requires that Boilers and process heaters in the units designed to burn gas 1 fuels subcategory with a heat input capacity greater than 5 million Btu per hour and less than 10 million Btu per hour must complete a tune-up every 2 years as specified in § 63.7540. Boilers and process heaters in the units designed to burn gas 1 fuels subcategory are not subject to the emission limits in Tables 1 and 2 or Tables 11 through 15 to this subpart, or the operating limits in Table 4 to this subpart.

Rule 1314 - AVAQMD Rule 1314 — Federal Nonattainment New Source Review for Ozone Precursors

This project is not a Federal Major Modification as demonstrated in the Title V application that accompanies this application. Rule 1314 does not apply.

AVAQMD Rule 1401 - New Source Review for Toxic Air Contaminants (TACs)

Rule 1401 establishes allowable risks for equipment requiring new permits pursuant to Rules 201 or 203. To demonstrate compliance with Rule 1401, risk assessment was prepared and submitted with this application.

5

FEE EVALUATION

Pursuant to Rule 301 (D) (1) any person who applies for the issuance of a new or modified permit and subject to the Provisions of Regulation XXX – Federal Operating Permits (Title V) shall be assessed a fee of $1089. This application filing fee is submitted with the application.

Total application fees included with this application are as follows:

8 boilers x $1089 = $8712

TABLES

Table 1: Emission factors for NOx, VOC, CO, and SOx for the new B/260 boilers

F-Factor Calculation			Emission Calculations (per boiler)				
Fuel Use	6000000	Btu/hr	NOx	SOx	CO	VOC	
F-Factor	8710	dscf/mmBtu	7	1	20	4	ppm at 3% O2
Flue Gas Flow	52260	dscf at 0%O2	0.42679	0.06097	1.2194	0.24388	dscf/hr
	60970	dscf at 3%O2	12.08534841	1.726478345	34.52956689	6.90591338	l/hr
	73164	dscf at 6%O2	11.26040995	1.608629993	32.17259987	6.43451997	l/hr at STP
	5222.260582	lb/hr	0.502382884	0.071768983	1.435379667	0.28707593	moles/hr
			46	64.06	30	16	g/mole
			0.05090223	0.010126698	0.094848877	0.01011721	lb/hr
			445.9035392	88.70987801	830.8761599	88.6267904	lb/yr
			0.008483705	0.001687783	0.015808146	0.0016862	lb/mmBtu

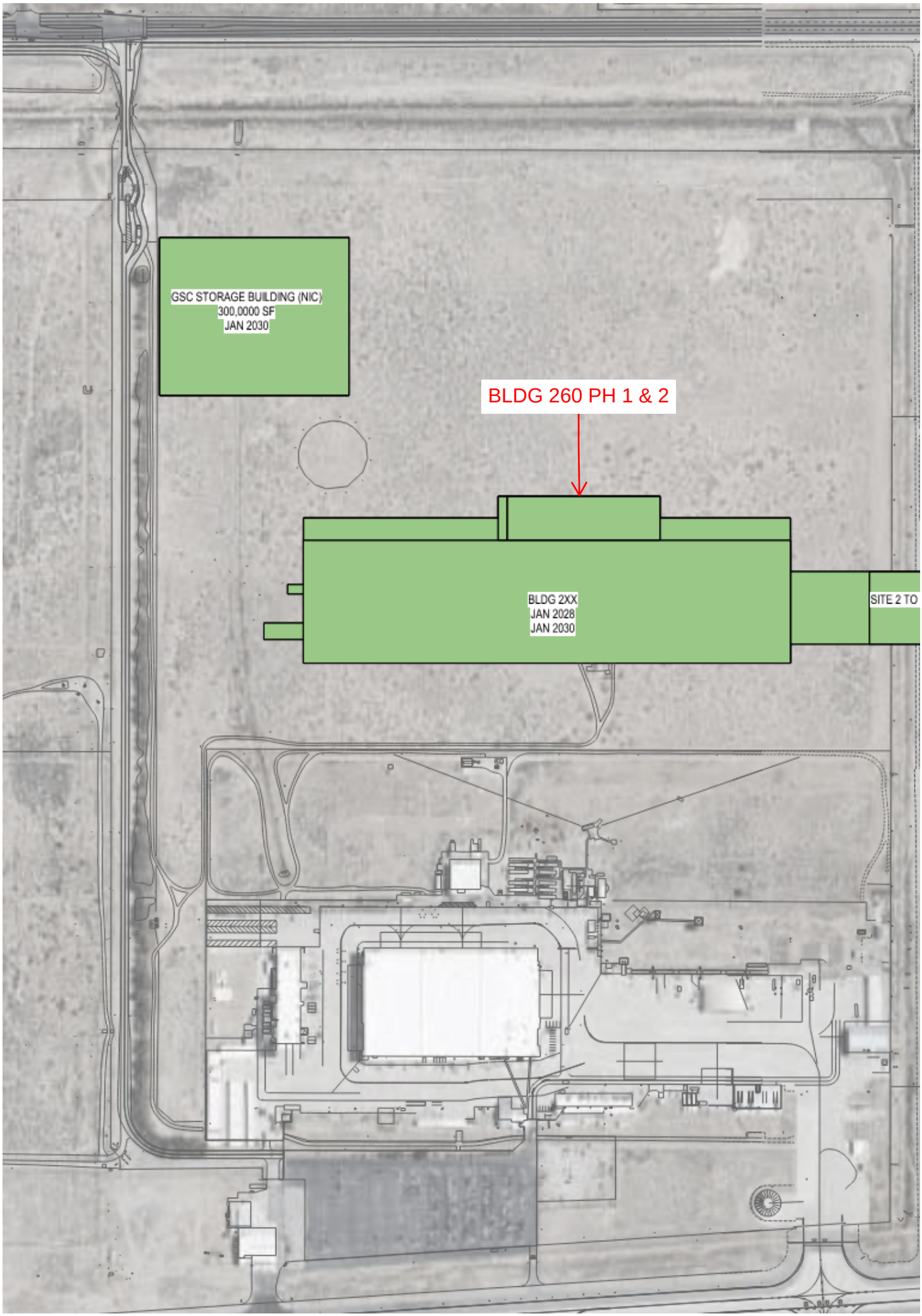
Table 2: Potential to Emit NOx, VOC, CO, and SOx for the new B/260 boilers

No of Boilers	Emissions (lbs/year			
	NOx	SOx	CO	VOC
8	3567.23	709.68	6647.01	709.01

Table 3: Potential to Emit PM and CO2 for the new B/260 boilers

HHV Heat Input (mmBtu/hr/unit)	No of Units	Max Fuel Use mmscf/hr	Max Operation hr/yr	Max Fuel Use mmscf/yr	Pollutant	Emission Factor lb/mmscf	Emissions		
							Max Hourly (lbs)	Max Annual (lbs)	Max Annual (MT)
6000	8	0.048	8760	420.48	PM	7.6	0.36	3195.65	
					CO2	120000	5760	50457600	22908

FIGURES


GSC STORAGE BUILDING (NIC)
300,0000 SF
JAN 2030
BLDG 260 PH 1 & 2
BLDG 2XX
JAN 2028
JAN 2030
SITE 2 TO

A

MANUFACTURERS DATA

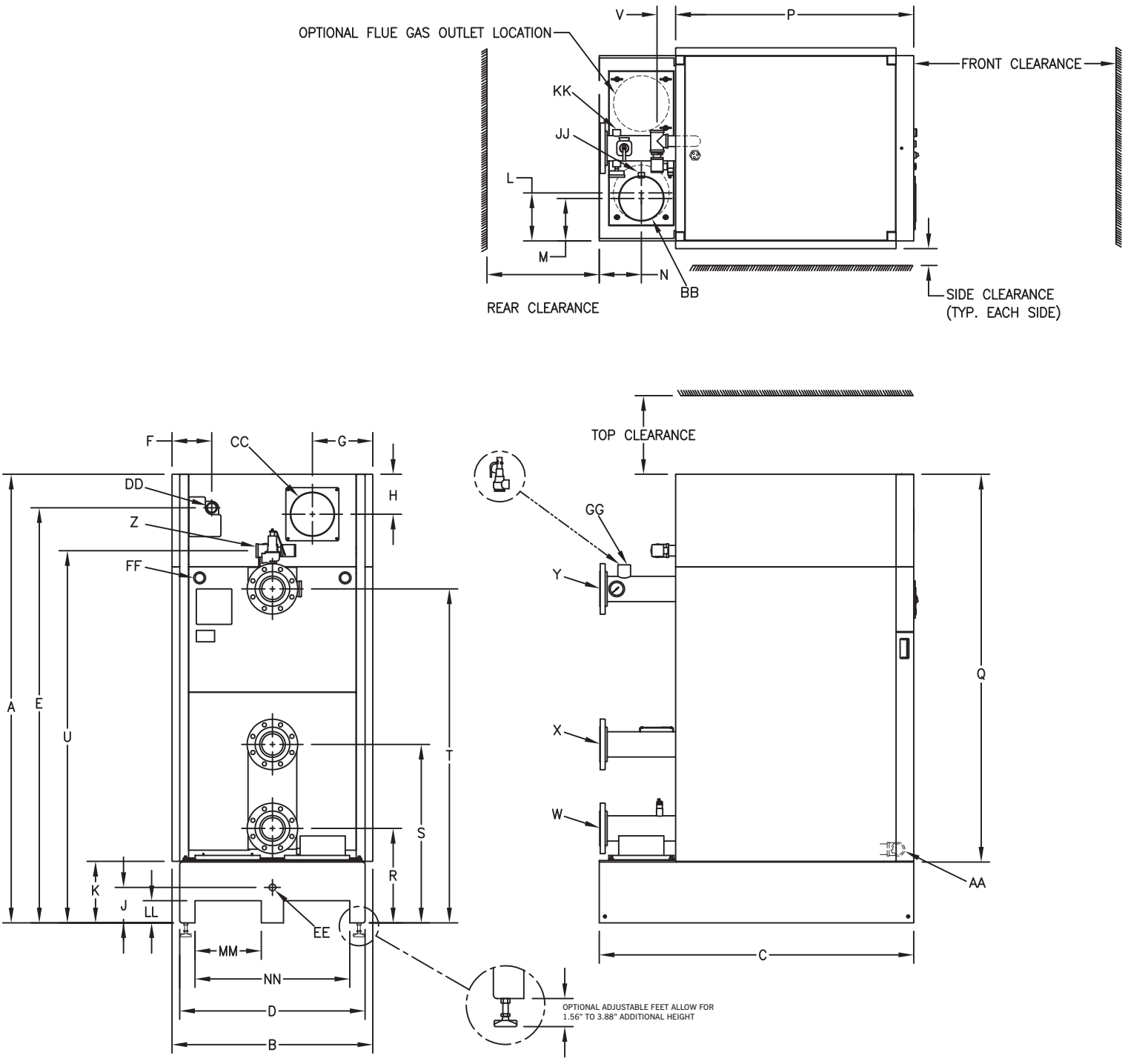
MODEL CFC-E BOILERS

500-6000 MBH



Dimensions and Ratings

Dimension Diagram CFC-E



Dimensions Model CFC-E

ITEM	DIMENSIONS (inches)	500	750	1000	1500	2000	2500	3000	3500	4000	5000	6000
A	Overall Height	78.0	78.0	78.0	79.9	79.9	95.2	95.2	91.2	91.2	93.6	93.6
B	Overall Width	34.9	34.9	34.9	35.8	35.8	35.7	35.7	48.4	48.4	58.7	58.7
C	Overall Depth	49.4	49.4	49.4	56	56	56	56	68.4	68.4	80.6	80.6
D	Width Less Casing	32.1	32.1	32.1	33.0	33.0	33.0	33.0	45.7	45.7	55.9	55.9
E	Gas Connection to Floor	70.3	70.3	70.3	73.9	73.8	85.3	85.3	77.7	77.7	79.5	79.5
F	Side of Casing to Gas Connection	3.7	3.7	3.7	7.1	7.1	3.8	3.8	4.9	4.9	4.6	4.6
G	Side of Casing to Air Inlet	10.8	10.8	10.8	10.8	10.8	11.0	11.0	11.0	11.0	12.0	12.0
H	Top of Casing to Air Inlet	7.7	7.7	7.7	7.1	7.4	9.9	9.9	9.0	9.0	9.9	9.9
J	Floor to Condensate Drain	6.3	6.3	6.3	6.3	6.3	6.3	6.3	5.7	5.7	5.7	5.7
K	Floor to Bottom of Casing	11.0	11.0	11.0	11.0	11.0	11.4	11.4	11.4	11.4	12.0	12.0
L	Side of Base to Flue Outlet (Centered)	7.4	7.4	7.4	8.5	8.5	7.8	7.8	8.8	8.8	10.0	10.0
M	Side of Base to Flue Outlet (Offset)	6.4	6.4	6.4	7.5	7.5	N/A	N/A	N/A	N/A	N/A	N/A
N	Rear of Base to Flue Outlet	6.5	6.5	6.5	7.5	7.5	7.5	7.5	8.8	8.8	9.8	9.8
P	Casing Depth	36.3	36.3	36.3	42.4	42.4	42.4	42.4	52.5	52.5	62.1	62.1
Q	Casing Height	67.0	67.0	67.0	68.9	68.9	83.8	83.8	79.8	79.8	81.6	81.6
R	Floor to Lower Return Connection	16.8	16.8	16.8	16.8	16.8	16.9	16.9	16.8	16.8	18.5	18.5
S	Floor to Upper Return Connection	31.8	31.8	31.8	31.8	31.8	31.9	31.9	32.6	32.6	32.3	32.3
T	Floor to Supply Connection	59.5	59.5	59.5	59.5	59.5	70.4	70.4	62.3	62.3	63.3	63.3
U	Floor to Air vent Connection	66.3	66.3	66.3	66.3	66.3	76.9	76.9	70.3	70.3	71.9	71.9
V	Air Vent Line Projection from Rear of Casing	3.2	3.2	3.2	3.3	3.3	3.3	3.3	3.2	3.2	2.8	2.8
CONNECTIONS												
W	Water Low Temp. Return, Class150 RF Flange	2-1/2"	2-1/2"	2-1/2"	4"	4"	4"	4"	5"	5"	6"	6"
X	Water High Temp. Return, Class150 RF Flange	2-1/2"	2-1/2"	2-1/2"	4"	4"	4"	4"	5"	5"	6"	6"
Y	Water Outlet, Class150 RF Flange	2-1/2"	2-1/2"	2-1/2"	4"	4"	4"	4"	5"	5"	6"	6"
Z	Air Vent, NPT	1-1/2"	1-1/2"	1-1/2"	1-1/2"	1-1/2"	1-1/2"	1-1/2"	1-1/2"	1-1/2"	1-1/2"	1-1/2"
AA	Vessel Drain, NPT	1-1/2"	1-1/2"	1-1/2"	1-1/2"	1-1/2"	1-1/2"	1-1/2"	1-1/2"	1-1/2"	1-1/2"	1-1/2"
BB	Flue Gas Outlet											
	(Standard) - Nominal	6"	6"	8"	8"	8"	10"	10"	12"	12"	14"	14"
	(Option) - Nominal	8"	8"	6"	10"	10"	NA	NA	NA	NA	16"	16"
CC	Combustion Air - Nominal	6"	6"	6"	8"	8"	10"	10"	12	12	14"	14"
DD	Gas, NPT	1"	1"	1"	1-1/2"	1-1/2"	1-1/2"	2"	2	2	2"	2"
EE	Condensate Drain, NPT	1"	1"	1"	1"	1"	1"	1"	1"	1"	1"	1"
FF	Electrical Opening, Left or Right	1.6"	1.6"	1.6"	1.6"	1.6"	1.6"	1.6"	1.6"	1.6"	1.6"	1.6"
GG	Safety Relief Valve Vessel Connection, NPT	1-1/4"	1-1/4"	1-1/4"	1-1/4"	1-1/4"	2"	2"	2"	2"	2"	2"
JJ	Flue Coupling, NPT	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"
KK	Water Outlet Coupling, NPT	1/2"	1/2"	1/2"	1/2"	1/2"	1/2"	1/2"	1/2"	1/2"	1/2"	1/2"
FORK POCKETS (inches)												
LL	Pocket Height	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
MM	Pocket Width	11.8	11.8	11.8	11.8	11.8	11.8	11.8	15.7	15.7	17.6	17.6
NN	Overall Pocket Width	27.6	27.6	27.6	27.6	27.6	27.6	27.6	35.4	35.4	39.4	39.4
WEIGHTS												
	Dry Weight (lb)	1298	1298	1396	1861	2041	2420	2475	3574	3761	4901	5278
	Shipping Weight (lb)	1413	1413	1511	1986	2166	2541	2596	3726	3913	5073	5450
	Operating Weight (lb)	2065	2065	2113	2778	2858	3470	3492	5227	5304	7502	7659
	Water Volume (gallon)	92	92	86	110	98	126	122	198	185	312	285

CLEARANCES (inches)

	500-4000	5000-6000
Top	14	18
Side	3	3
Rear	20	20
Front	36	36

Notes:

Boiler rear must be accessible for servicing.

Side clearance to wall or between boilers.

Side clearance typical each side.

Clearance dimensions are for servicing the boiler only. Refer to local and national electrical codes for proper minimum front panel service clearances.

Local code requirements, if more stringent, should take precedence.

Dimensions (metric) Model CFC-E

ITEM	DIMENSIONS (mm)	500	750	1000	1500	2000	2500	3000	3500	4000	5000	6000
A	Overall Height	1982	1982	1982	2028	2028	2418	2418	2316	2316	2378	2378
B	Overall Width	886	886	886	908	908	907	907	1230	1230	1490	1490
C	Overall Depth	1255	1255	1255	1422	1422	1422	1422	1738	1738	2048	2048
D	Width Less Casing	816	816	816	838	838	838	838	1160	1160	1420	1420
E	Gas Connection to Floor	1786	1786	1786	1877	1875	2167	2167	1974	1974	2019	2019
F	Side of Casing to Gas Connection	95	95	95	180	180	97	97	124	124	117	117
G	Side of Casing to Air Inlet	275	275	275	273	376	279	279	279	279	305	305
H	Top of Casing to Air Inlet	196	196	196	180	188	251	251	229	229	251	251
J	Floor to Condensate Drain	160	160	160	160	160	160	160	145	145	145	145
K	Floor to Bottom of Casing	279	279	279	279	279	290	290	290	290	305	305
L	Side of Base to Flue Outlet	189	189	189	217	217	198	198	224	224	254	254
M	Side of Base to Flue Outlet (Offset)	164	164	164	192	192	NA	NA	NA	NA	NA	NA
N	Rear of Base to Flue Outlet	165	165	165	190	190	191	191	224	224	249	249
P	Casing Depth	921	921	921	1077	1077	1077	1077	1334	1334	1577	1577
Q	Casing Height	1703	1703	1703	1749	1749	2129	2129	2027	2027	2073	2073
R	Floor to Lower Return Connection	428	428	428	428	428	429	429	427	427	470	470
S	Floor to Upper Return Connection	808	808	808	808	808	810	810	828	828	820	820
T	Floor to Supply Connection	1511	1511	1511	1511	1511	1788	1788	1582	1582	1608	1608
U	Floor to Air vent Connection	1683	1683	1683	1683	1683	1953	1953	1786	1786	1826	1826
V	Air Vent Line Projection From Rear of Casing	81	81	81	84	84	84	84	81	81	71	71

FORK POCKETS (mm)

LL	Pocket Height	102	102	102	102	102	102	102	102	102	102	102
MM	Pocket Width	300	300	300	300	300	300	300	399	399	447	447
NN	Overall Pocket Width	700	700	700	700	700	701	701	899	899	1001	1001

WEIGHTS

	Dry Weight (kg)	589	589	633	844	926	1098	1123	1621	1706	2223	2394
	Shipping Weight (kg)	641	641	686	901	983	983	983	1690	1775	2301	2472
	Operating Weight (kg)	939	939	969	1260	1280	1280	1280	2371	2406	3403	3474
	Water Volume (liter)	350	350	324	416	370	477	462	750	700	1180	1080

CLEARANCES (mm)

	500-4000	5000-6000
Top	356	457
Side	76	76
Rear	508	508
Front	914	914

Notes:

Boiler rear must be accessible for servicing.

Side clearance to wall or between boilers.

Side clearance typical each side.

Clearance dimensions are for servicing the boiler only. Refer to local and national electrical codes for proper minimum front panel service clearances.

Local code requirements, if more stringent, should take precedence.

Boiler Ratings *(Sea Level to 2000 Feet)*

		Boiler Size										
Description	**Units**	**500**	**750**	**1000**	**1500**	**2000**	**2500**	**3000**	**3500**	**4000**	**5000**	**6000**
Input Max.	Btu/hr	500,000	750,000	1,000,000	1,500,000	2,000,000	2,500,000	3,000,000	3,500,000	4,000,000	5,000,000	6,000,000
	kcal/hr	126,000	189,000	252,000	378,000	504,000	630,000	756,000	882,000	1,008,000	1,260,000	1,512,000
Natural Gas	ft^3/hr	500	750	1000	1500	2000	2500	3000	3500	4000	5000	6000
Propane	ft^3/hr	200	300	400	600	800	1000	1200	1400	1600	2000	2400
Natural Gas	m^3/hr	14	21	28	42	57	71	85	99	113	142	170
Propane	m^3/hr	5.7	8.5	11	17	23	28	34	40	45	57	68
Output at 120/80 F [49/27 C] 100% Firing	Btu/hr	470,000	705,000	940,000	1,410,000	1,880,000	2,350,000	2,820,000	3,290,000	3,760,000	4,700,000	5,640,000
	kcal/hr	118,440	177,660	236,880	355,320	473,760	592,200	710,640	829,080	947,520	1,184,400	1,421,280
	bhp	14	21	28	42	56	70	84	98	112	140	168
	kW	138	207	275	413	551	689	826	964	1102	1377	1653
Output at 180/ 140 F [82/60 C] 100% Firing	Btu/hr	440,000	660,000	880,000	1,320,000	1,760,000	2,200,000	2,640,000	3,080,000	3,520,000	4,400,000	5,280,000
	kcal/hr	110,880	166,320	221,760	332,640	443,520	554,400	665,280	776,160	887,040	1,108,800	1,330,560
	bhp	13	20	26	39	53	66	79	92	105	131	158
	kW	129	193	258	387	516	645	774	903	1032	1290	1547
MAWP	psi	125	125	125	125	125	125	125	125	125	125	125
	bar	8.6	8.6	8.6	8.6	8.6	8.6	8.6	8.6	8.6	8.6	8.6
MAWT	°F	210	210	210	210	210	210	210	210	210	210	210
	°C	99	99	99	99	99	99	99	99	99	99	99
Water Content	gallons	92	92	86	110	98	126	122	198	185	312	285
	liters	350	350	324	416	370	477	462	750	700	1180	1080
Weight w/o Water	pounds	1,298	1,298	1,396	1,861	2,041	2,420	2,475	3,574	3,761	4,901	5,278
	kg	589	589	633	844	926	1098	1123	1621	1706	2223	2394
Fireside Heating Surface	ft^2	193	193	252	388	489	546	593	889	1008	1262	1500
	m^2	18	18	23	36	45	51	55	83	94	117	139
Standby Heat Loss	Btu/hr	1000	1500	2000	3000	4000	5000	6000	7000	8000	10000	12000
	Watts	293	440	586	879	1172	1465	1758	2051	2344	2930	3516
ECM Blower Motor Size	Watts	335	335	335	1,700	1,700	1,200	2,400	2,400	2,400	8,000	8,000
Operating Voltage, Blower	Volts/ph/Hz	115/1/60	115/1/60	115/1/60	115/1/60	115/1/60	115/1/60	460/3/60	460/3/60	460/3/60	460/3/60	460/3/60
Control Circuit	Volts/ph/Hz	115/1/60	115/1/60	115/1/60	115/1/60	115/1/60	115/1/60	115/1/60	115/1/60	115/1/60	115/1/60	115/1/60
Max Current Draw, Blower	Amperes	4	4	4	13.5	13.5	13	4	4	4	12.7	12.7
Max Current Draw Control Circuit	Amperes	1.5	1.5	1.5	2	2	2	2	2	2	2	2
Max Over Current Protection	Amperes	20	20	20	20	20	20	20	20	20	20	20
Condensate Qty Firing Nat. Gas & operating @ 120/80 F.	gal/hr	3.5	5	7	10	13.5	17.6	20.6	24.0	27.0	34.0	40.5
Flue Gas Mass Flow @ 100% Firing	lb/hr	557	835	1,113	1,670	2,226	2,863	3,340	3,897	4,452	5,567	6,678
	kg/hr	252	379	505	758	1010	1299	1515	1768	2019	2525	3029

*CFC-E 4000: 8% derate with 9 ppm NOx. If full capacity is required, contact your local Cleaver-Brooks representative for additional information.

e-mail: info@cleaverbrooks.com
Web address: http://www.cleaverbrooks.com

PERMIT APPLICATION
B/415 SMALL PARTS SPRAY BOOTH
MODIFICATION
PERMIT NO. S006767

JUNE 2026

Prepared for:
NORTHROP GRUMMAN CORPORATION
Palmdale, California

•••

Prepared by:
Verdant Environmental
South Pasadena, California

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TABLES

Table 1 Historical Actual Emissions

1

PERMIT APPLICATION FORMS

Antelope Valley Air Quality Management District

2551 West Ave H, Lancaster, CA 93536
Phone (661) 723-8070
www.avaqmd.ca.gov

Application for Spray Booth and Paint Spray Gun Only

Please refer to Rule 301 for permit application fee

Owner Information

1. Permit to be Issued to (name of company to receive permit): Northrop Grumman Aeronautics System Corporation		**1a. Federal Tax ID #:** 95-1055798
2. Mailing/Billing Address (for the above company name): 3520 East Ave M Palmdale, CA 93550		**2a. APN #** USAF Plant 42
3. Facility or Business Name on License (for equipment location): Northrop Grumman Aeronautics System Corporation	**3a. Billing Email:** george.jung@ngc.com	
4. Facility Address/Location of Equipment (if same as company, enter "Same"): Same	**4a. Facility UTM:** 425E/3830N	**4b. Facility Lat/Long:** 34.629N/118.084W
5. Contact Name and Title: George Jung	**5a. E-mail Address (if same as billing, enter "Same"):** Same	**5b. Phone:** (661) 266-5394
6. General Nature of Business: Aerospace Manufacturing	**6a. NAICS Code:** 336411	**6b. SIC Code:** 3721

7. Type of Organization (check one):

☐ Individual Owner ☐ Partnership ☑ Corporation ☐ Utility ☐ Local Agency ☐ State Agency ☐ Federal Agency

8. Application is hereby made for the Authority to Construct (ATC) and Permit to Operate (PTO) for the following equipment:
Upgrade exhaust fan from a 5 HP to a 30 HP (+/-20%) with a 30" diameter 8-blade Vaneaxial or equivalent fan blade

9. Application is for: New Construction ☐ Modification ☑ Change of Owner ☐

***For modification or change of owner:** Current permit #: S006767 Company No.: 1023 Facility No.: 1816

10. Do you claim Confidentiality of Data? (If yes, state nature of data in an attachment.) ☐ Yes ☑ No

Operation Information

Facility Annual Operation by Quarters (percent):
Jan-Mar% 25 Apr-Jun% 25 Jul-Sep% 25 Oct-Dec% 25

13. Expected Equipment Operating Hours:
Hrs/Day: 24 Days/Wk: 7 Wks/Yr: 52 Total Hrs/Yr: 8760

Equipment Information

Manufacturer: TBD **Model #:** TBD **Serial #:** TBD

Booth Dimensions (specify units): W: 12 Ft L: 20 Ft H: 10 Ft

Open Spray ☐ Automotive Booth ☐ Bench Type Booth ☐ Floor Type Booth ☑ Other (please specify): _____

Exhaust fan (if present): One Fan Rating (hp): 30 HP (+/-20%) Fan Diameter(inches): 30" diameter 8-blade

Manometer across exhaust filters? ☑ Yes ☐ No Minimum Pressure Drop (in inches of water): .5

Filter Information

	Type and Material	Number	Width	Length	Thickness
Inlet					
Exhaust First Stage	ATI Two Ply Polyester NESHAP Approved				1 inch
Exhaust Second Stage	ATI Four Ply Polyester NESHAP Approved				1 inch
Exhaust Third Stage	ATI Three Polyester NESHAP Approved				Pocket Bag

Application Information

Article sprayed (check all that apply):	Aerospace ☑	Architectural ☐		Composite ☐
Metal ☐	Motor Vehicle ☐	Plastic ☐	Wood ☐	Other (specify)
Minimum size of articles sprayed (feet):	Width 1 Ft	Length 1 Ft	Height 1 Ft	
Method of Application (check all that apply):		Air Atomization ☐	Combined Air and Airless ☐	
Electrostatic ☐	Hand ☑	High Volume Low Pressure (HVLP) ☑	Pressure Atomization (airless) ☐	Other (specify):
Gun or Spray Cleaning Method:				
Enclosed Gun Cleaning System ☑		Manual Wipe ☐	Open Flush ☐	
Other (specify):				

Disposition

Air Dried ☑	**Oven Dried, Baked or Cured (Specify Below):** ☐	**Part of Booth** ☐	**Separate Enclosure** ☐
Oven (if present) is: ☐	**Gas fired** ☐	**Electric** ☐	**Max heat input (Btu/hr):**

Antelope Valley Air Quality Management District

2551 West Ave H, Lancaster, CA 93536
Phone 661.723.8070
www.avaqmd.ca.gov

Application for Spray Booth and Paint Spray Gun Only

Please refer to Rule 301 for permit application fee

Materials Information

Please include the MSDS for each coating and solvent to be used with the application submission

Type	VOC Content lb/gal or gm/liter	Vapor Pressure mmHg @ 20° C	Maximum Use gal/l per day	Maximum Use gal/l per year
Enamel	N/A			
Topcoat	420 gm/liter		<5	<1000
Primer	340 gm/liter		<5	<1000
Sealer	N/A			
Stain	N/A			
Added Thinner	N/A			
Clean-up Solvent		<45 mmHg	<5	<1000
Surface Preparation Solution		<45 mmHg	<5	<1000
Other	>800 gm/liter EREC		<5	<1000
Other				

Receptor Information

Distances (feet) and direction to the property line of the closest:

Residence	Business	School
>10500 E	>3000 W	>13300 N

Name of closest school (K-12): The Palmdale Aerospace Academy (TPAA)

Certification

Signature of Responsible Official	Official Title
	Environmental

Typed or Printed Name of Responsible Official	Phone:	Date Signed:
George Jung	(661) 266-5394	06/25/26

-For District Use Only-

Application No.:	Invoice No.:	Permit No.:	Company/ Facility No.:

Antelope Valley Air Quality Management District

2551 West Ave H, Lancaster, CA 93536
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www.avaqmd.ca.gov

Application for Spray Booth and Paint Spray Gun Only

Please refer to Rule 301 for permit application fee

Application Submittal Instructions

1) Submit completed application to engineering@avaqmd.ca.gov

2) Pay the corresponding application fee via check or credit card

Payment by check:

Make check payable to: Antelope Valley AQMD
Mail the check with a copy of this completed application to:
Antelope Valley AQMD 2551 West Ave H, Lancaster, CA 93536

Payment by credit card:

Pay online at our website: http://www.avaqmd.ca.gov
Click "Pay Fees"
Please note a surcharge applies for all credit card payments.

If payment is made online via credit card, please email the receipt to engineering@avaqmd.ca.gov.

Should you have any additional questions, please, do not hesitate to contact the permitting division at 661-723-8070, or via email at engineering@avaqmd.ca.gov

2

PROCESS DESCRIPTION

INTRODUCTION

The Northrop Grumman Corporation (Northrop), AVAQMD Facility ID No. 01816, is planning to install modify the B/415 small parts spray booth, S006767 at the APF42 location.

EQUIPMENT DESCRIPTION

The booth exhaust fan will be upgraded from a 5 HP to a 30 HP (+/-20%) with a 30" diameter 8-blade Vaneaxial or equivalent fan blade.

OPERATING SCHEDULE

The system can operate 24 hours per day, 7 days per week, 52 weeks per year.

3

EMISSION CALCULATIONS

Pursuant to Rule 1304 (b) (2), the emissions change for each new or Modified Emission Unit(s) is calculated by subtracting Historic Actual Emissions (HAE) from the Proposed Emissions (PE), where the HAE of a new Emissions Unit is zero.

Emissions Change (EC) = (PE) - (HAE)

Historical actual VOC emissions from the permitted booth are included as Table 1 and total just over 123 pounds per year or 0.34 pounds per day.

Pursuant to Rule 1304 (C)(2) SERs resulting from a Modified Facility, a Modification, or shutdown of existing Emission Unit(s) are calculated by subtracting Historic Actual Emissions (HAE) from the Proposed Emissions (PE), where the PE of a shutdown Emissions Unit is zero.

SER = (PE) - (HAE)

However, pursuant to Rule 1304 (C)(3), when the Facility or Emission Unit(s) have been previously Offset, as documented in a prior permitting action, the SERs resulting from the Modified Facility, Modification or shutdown of an existing Emission Unit(s), shall be calculated by subtracting Potential to Emit (PTE) from Proposed Emissions (PE).

SER = (PE) - (PTE)

In this case the proposed emissions and the potential to emit are based on the facility limit. There is no increase in emissions from this modification pursuant to Rule 1304.

Rule 1314, however, requires Actual-to-Projected-Actual Applicability Test for Projects that Involve Existing Emission Units. In this case project actual emissions will not exceed 9124 pounds per year. The net emission increase pursuant to Rule 1314 is 9000.9 pounds per year.

HAP EMISSIONS

The HAPs emitted from the B/415 spray booth are described in Rule 1401 Health Risk Assessment that accompanies this application. The HRA also includes emission calculations for those pollutants and tabulates total estimated HAP emissions.

4

RULE COMPLIANCE EVALUATION

GENERAL REQUIREMENTS

Rule 212 - Standards for Approving Permits

This equipment is not located within 1,000 feet from the outer boundary of a school. This permit application will not result in criteria pollutants in excess of the specified thresholds and emissions of toxics will not result in a MICR greater than one in one million. Notification pursuant to Rule 212 is not required.

Rule 401 - Visible Emissions

No visible emissions are expected.

Rule 402 - Nuisance

The facility will not cause or contribute to a nuisance condition.

Rule 1124 - Aerospace Assembly and Component Manufacturing Operations

Northrop will comply with all applicable provisions of Rule 1124.

Rule 1171

Compliance with Rule 1171 requirements will be maintained.

NEW SOURCE REQUIREMENTS

Regulation XIII – Criteria Pollutants

Maximum Annual Emissions

The addition of the paint spray hangar and carbon control systems will increase VOC emissions by less than one pound per day. The estimated PM emission increase totals less than 0.02 pounds per year from painting

BACT Evaluation

Best Available Control Technology (BACT) is required for each new or modified permit unit at any facility that emits, or has the potential to emit, 25 pounds per day or 25 tons

per year or more of any nonattainment pollutant or its precursors (District Rule 1303(A)(3)). Northrop has a maximum potential to emit in excess of 25 tons per year for VOC but this equipment, will emit less than 25 pounds per day. BACT is not required.

Offsets

New Source Review requires offsets for non-attainment pollutants and their precursors emitted by the addition of new equipment or modifications resulting in a net increase at existing major sources. The Northrop facility is an existing major source of VOC; however, the facility has a monthly VOC limit of 118,625 pounds in any 30-day period based on a 30-day rolling average that has been fully offset. This equipment will operate within the existing limit and there will, therefore, be no net increase in VOC emissions.

Rule 1314 - AVAQMD Rule 1314 — Federal Nonattainment New Source Review for Ozone Precursors

This project is not a Federal Major Modification as demonstrated in the Title V application that accompanies this application. Rule 1314 does not apply.

Rule 1401 – New Source Review of Toxic Air Contaminants

The HAPs emitted from the B/415 spray booth are described in Rule 1401 Health Risk Assessment that accompanies this application. The HRA also includes emission calculations for those pollutants and tabulates total estimated HAP emissions.

NESHAP REQUIREMENTS

40 CFR 63 Subpart GG – Aerospace NESHAP

Northrop will comply with all applicable provisions of 40 CFR 63 Subpart GG.

5

FEE EVALUATION

Pursuant to Rule 301 (D) (1) any person who applies for the issuance of a new or modified permit and subject to the Provisions of Regulation XXX – Federal Operating Permits (Title V) shall be assessed a fee of $1089. This application filing fee is submitted with the application.

Total application fees included with this application are as follows:

- Paint spray booth x $1089 = $1089

TABLES

Table 1: Historical Actual Emissions

Date	Booth	MSDS_ID	Material Name	Material Usage (gal)	Use Code	Use_Code_ App	App FE	VOCs in Material (g/l)	VOC Emissions (lbs)
2/1/2024	415-B Small Paint Booth; 06767	22314	PPG PRC 03BK108A COATING BASE/CATALYST 1:1 V BLACK	2.00	AVFLYCER	GB	1.00	570.00	9.51
3/5/2024	415-B Small Paint Booth; 06767	22314	PPG PRC 03BK108A COATING BASE/CATALYST 1:1 V BLACK	2.00	AVFLYCER	GB	1.00	570.00	9.51
3/5/2024	415-B Small Paint Booth; 06767	10219	PPG PR-2200 B-1 CONDUCTIVE SEALANT (MF)	0.02	AVFLYSEB	BA	1.00	69.00	0.01
3/19/2024	415-B Small Paint Booth; 06767	22314	PPG PRC 03BK108A COATING BASE/CATALYST 1:1 V BLACK	2.00	AVFLYCER	GB	1.00	570.00	9.51
5/3/2024	415-B Small Paint Booth; 06767	5624	WLS COATINGS 100-156/CA-115 FILLER BLACK BASE/CAT 4:1 V	0.13	AVFLYCER	BA	1.00	431.00	0.45
5/20/2024	415-B Small Paint Booth; 06767	1987	PPG 825X537/910-702/010X311 HI-TEMP 4:1:4 V F34096 DK GREEN	2.25	AVFLYCHT	BA	1.00	600.00	11.27
6/22/2024	415-B Small Paint Booth; 06767	1987	PPG 825X537/910-702/010X311 HI-TEMP 4:1:4 V F34096 DK GREEN	2.25	AVFLYCHT	BA	1.00	600.00	11.27
6/22/2024	415-B Small Paint Booth; 06767	1987	PPG 825X537/910-702/010X311 HI-TEMP 4:1:4 V F34096 DK GREEN	2.25	AVFLYCHT	BA	1.00	600.00	11.27
6/22/2024	415-B Small Paint Booth; 06767	1987	PPG 825X537/910-702/010X311 HI-TEMP 4:1:4 V F34096 DK GREEN	2.25	AVFLYCHT	BA	1.00	600.00	11.27
6/22/2024	415-B Small Paint Booth; 06767	1987	PPG 825X537/910-702/010X311 HI-TEMP 4:1:4 V F34096 DK GREEN	2.25	AVFLYCHT	BA	1.00	600.00	11.27
6/22/2024	415-B Small Paint Booth; 06767	1987	PPG 825X537/910-702/010X311 HI-TEMP 4:1:4 V F34096 DK GREEN	2.25	AVFLYCHT	BA	1.00	600.00	11.27
7/30/2024	415-B Small Paint Booth; 06767	9954	WLS COATINGS 752-84A/CA-137 BASE/CAT 3:1 V #36270 FLAT GRAY	0.25	AVFLYCER	GB	1.00	545.00	1.14
9/19/2024	415-B Small Paint Booth; 06767	22314	PPG PRC 03BK108A COATING BASE/CATALYST 1:1 V BLACK	2.00	AVFLYCER	BA	1.00	570.00	9.51
10/28/2024	415-B Small Paint Booth; 06767	2037	HENKEL BONDERITE C-SO 2382-BK AERO (TURCO 4460-BK) SOLVENT	5.00	AVFLYWSL	BA	1.00	810.00	33.80
11/19/2024	415-B Small Paint Booth; 06767	12930	S.C. JOHNSON WINDEX KITCHEN & GLASS CLEANER (DISCONTINUED)	0.25	AVZZZZZZ	BA	1.00	12.00	0.02
Total									141.08
1/25/2025	415-B Small Paint Booth; 06767	1987	PPG 825X537/910-702/010X311 HI-TEMP 4:1:4 V F34096 DK GREEN	2.25	AVFLYCHT	GB	1.00	600.00	11.27
2/6/2025	415-B Small Paint Booth; 06767	16955	CHOMERICS CHO-SHIELD 4993 A/B/C/D 100:18.33:1.36:20.91 W R4	1.00	AVFLYCER	GB	1.00	590.00	4.92
2/18/2025	415-B Small Paint Booth; 06767	1987	PPG 825X537/910-702/010X311 HI-TEMP 4:1:4 V F34096 DK GREEN	1.00	AVFLYCHT	GB	1.00	600.00	5.01
2/21/2025	415-B Small Paint Booth; 06767	5351	WLS COATINGS 783-11/CA-1 BASE/CATALYST 100:34 V LIGHT GRAY	0.25	AVFLYCER	BA	1.00	545.00	1.14
5/22/2025	415-B Small Paint Booth; 06767	22314	PPG PRC 03BK108A COATING BASE/CATALYST 1:1 V BLACK	1.00	AVFLYCER	GB	1.00	570.00	4.76
7/17/2025	415-B Small Paint Booth; 06767	8087	CLICK BOND CB359 EPOXY ADHESIVE PART A/B 2:1 V	0.01	AVFLYANS	BA	1.00	10.00	0.00
9/2/2025	415-B Small Paint Booth; 06767	302	SHELL CHEMICAL S1111 ISOPROPYL ALCOHOL IPA	5.00	AVFLYWSL	BA	1.00	785.00	32.76
9/15/2025	415-B Small Paint Booth; 06767	2037	HENKEL BONDERITE C-SO 2382-BK AERO (TURCO 4460-BK) SOLVENT	5.00	AVFLYWSL	BA	1.00	810.00	33.80
9/16/2025	415-B Small Paint Booth; 06767	5672	WLS COATINGS 783-2/CA-1 LUSTERLESS BLACK #37038 100:34 W	0.05	AV442442	BA	1.00	555.00	0.22
10/20/2025	415-B Small Paint Booth; 06767	1987	PPG 825X537/910-702/010X311 HI-TEMP 4:1:4 V F34096 DK GREEN	2.25	AVFLYCHT	BA	1.00	600.00	11.27
Total									105.13
2-year average									123.10
Permit Limit									9,124.00
Net Emission Increase									9,000.90

PERMIT APPLICATION
SITE 4 B/474 BOILERS

JUNE 2026

Prepared for:
NORTHROP GRUMMAN CORPORATION
Palmdale, California

Prepared by:
VERDANT ENVIRONMENTAL
Palmdale, California

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Table 2 Potential to Emit NOx, VOC, CO, and SOx
Table 3 Potential to Emit PM and CO2

FIGURES

Figure 1 Boiler Drawing

APPENDICES

Appendix A Manufacturer's Data

1

PERMIT APPLICATION FORMS

2

PROCESS DESCRIPTION

INTRODUCTION

The Northrop Grumman Corporation (Northrop), AVAQMD Facility ID No. 01816, plans to install eight (8) new 6 mmBtu boilers Site 4, B-1 through B-8. The units will provide hot water and heating for the B/474 paint hangar.

EQUIPMENT DESCRIPTION

The proposed equipment are Cleaver Brooks Model CFCE-700-6000-125HW boilers, a packaged watertube hot water boiler equipped with a low NOx burners. The installation will consist of eight units rated at 6 mmBtu/hr each. The units will be fueled with natural gas at a rate of approximately 6000 ft^3/hr per unit. Manufacturer's information is included as Appendix A.

OPERATING SCHEDULE

The unit is a hot water boiler and will be operated to provide hot water and heat to the B/474 paint hangar.

Antelope Valley Air Quality Management District

2551 West Ave H, Lancaster, CA 93536
Phone: 661.723.8070
Email: www.avaqmd.ca.gov

Application for External Combustion Engine (boiler, etc.) Only

Please type or print.

Please refer to Rule 301 for Application Filing Fee.

1. Permit to be Issued to (name of company to receive permit): Northrop Grumman Aeronautics System Corporation	**1a. Federal Tax ID #:** 95-1055798	
2. Mailing/Billing Address (for the above company name): 3520 East Ave M Palmdale, CA 93550	**2a. Billing Email Address:** george.jung@ngc.com	
3. Facility or Business Name on License (for equipment location): Northrop Grumman Aeronautics System Corporation		
4. Facility Address/Location of Equipment (if same as company, enter "Same"): Same	**4a. Facility UTM:** 425E/3830N	**4b. Facility Lat/Long:** 34.629N/118.084W
5. Contact Name/Title: George Jung	**5a. Email Address (if same as billing, enter "Same")** Same	**5b. Phone #:** (661) 266-5394

6. Application is hereby made for the Authority to Construct (ATC) and Permit to Operate (PTO) the following equipment:

6MMBtu/hr Natural Gas Fired Boiler #1

7. Application is for: ☒ New Construction ☐ Modification* ☐ Change of Owner*

***For modification or change of owner:** Current permit #: _____ **Company No.:** _____ **Facility No.:** _____

8. Type of Organization (check one): ☐ Individual Owner ☐ Partnership ☒ Corporation ☐ Utility ☐ Local Agency ☐ State Agency ☐ Federal Agency

9. Distances (feet and direction to closest): Fenceline >1650 Ft. N Residence >10500 E Business >3000 W School >13300 N

10. General Nature of Business: Aircraft Manufacturing	**11. Principal Product:** Aircraft

12. Facility Annual Throughput by Quarters (percent):

Jan-Mar	Apr-Jun	Jul-Sep	Oct-Dec
25 %	25 %	25 %	25 %

13. Expected Facility Operating Hours:

Hrs/Day	Days/Wk	Wks/Yr	Total Hrs/Yr
24	7	52	

14. Do you claim Confidentiality of Data? (If yes, state nature of data in an attachment.) ☐ Yes ☐ No

15. Machine Information:

Check One: ☒ Boiler ☐ Dryer ☐ Furnace ☐ Heater ☐ Kiln ☐ Oven ☐ Other _____

(specify): Manufacturer:

Model #: Cleaver Brooks Clearfire Serial #: CFCE-700-6000-125HW

Maximum heat input rating (use Higher Heating Value): 6000 MMBtu/hr or kW

Burner Manufacturer: Cleaver-Brooks Burner Model #: Integral

# of Burners: 8 Burner max heat input rating: 6000 MMBtu/hr or kW

Percent excess air (or n/a): 30% Operating temps (C or F): Av. 140F Max. 170F

Specify Primary Fuel (attach fuel analysis for these fuels, specifying HHV and sulfur content):
☒ Natural Gas ☐ LPG (Propane) ☐ CARB Diesel ☐ Coal* ☐ Petroleum Coke* ☐ Digester Gas*
☐ Landfill Gas* ☐ Refinery Gas* ☐ Other* (specify):

Max hourly primary fuel usage: 6000 Fuel units (ft^3, gal, etc.) ft^3

If secondary fuel is proposed, specify: N/A Max hourly usage:

Feedstock type and max process rate (specify units):

Antelope Valley Air Quality Management District

2551 West Ave H, Lancaster, CA 93536
Phone: 661.723.8070
Email :www.avaqmd.ca.gov

Application for External Combustion Engine (boiler, etc.) Only

Unit lat/long or UTM coordinates: 34.3825773N/118.051788W

Max annual hours: 8760 Exhaust stack height (feet): 14.5 Inside diameter (inches) 14

16. Emissions Controls:

Check all that apply:

☒Low NOx Burner ☐Oxygen Trim ☐Flue or Exhaust Gas Recirculation (FGR or EGR) ☐Oxidation Catalyst ☐Selective Catalytic Reduction (SCR) ☐Selective Non-Catalytic Reduction (SNCR) ☐Afterburner ☐ESP ☐Baghouse

☐Other (specify): _____

17. Max Emissions Rates (controlled):

Pollutant	Concentration (ppmvd or gr/dscf)	Mass (pounds/hr)
1. Oxides of Nitrogen (NOx)	7 PPM	0.0509
2. Oxides of Sulfur (SOx)	1 PPM	0.0101
3. Carbon Monoxide (CO	20 PPM	0.0948
4. Total Particulates (TSP or PM30)	N/A	
5. Coarse Respirable Particulates (PM2.5)	N/A	
6. Total Organics (TOG)	N/A	
7. Volatile Organic Compounds (VOC, ROG, or NMOG)	4 PPM	0.0101

18. Dryers Only:

Check one:

☐Centrifugal ☐Chip ☐Fluidized Bed ☐Rotary ☐Spray ☐Other (specify): _____

19. Furnace Only:

Check one:

☐Annealing ☐ Burnoff ☐ Calcining ☐ Crucible ☐ Cupola ☐ Diffusion ☐ Electric ☐Forge ☐Pot ☐Holding ☐ Heat Treating ☐Melting ☐ Reverbatory ☐ Rotary ☐ Sweating ☐ Oxide Growth

20. Oven Only:

Check one:

☐Bakery ☐Baking ☐Curing ☐Drying ☐Fluidized Bed ☐Stripping ☐Solder Reflow ☐Roasting, specify type: _____

Firing Method: ☐Direct ☐Indirect

Signature of Responsible Official:		Official Title: Environmental
Typed or Printed Name of Responsible Official: George Jung	Phone Number: (661) 266-5394	Date Signed: 06/25/26

For District Use Only

Application #:	Invoice #:	Permit #:	Company/Facility #:

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Antelope Valley AQMD 2551 West Ave H, Suite 102, Lancaster, CA 93536

Payment by credit card:

Pay online at our website: http://www.avaqmd.ca.gov
Click “Pay Fees”
Please note a surcharge applies for all credit card payments.

If payment is made online via credit card, please email the receipt to engineering@avaqmd.ca.gov.

Should you have any additional questions, please, do not hesitate to contact the permitting division at 661-723-8070, or via email at engineering@avaqmd.ca.gov

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2. Mailing/Billing Address (for the above company name): 3520 East Ave M Palmdale, CA 93550	**2a. Billing Email Address:** george.jung@ngc.com	
3. Facility or Business Name on License (for equipment location): Northrop Grumman Aeronautics System Corporation		
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5. Contact Name/Title: George Jung	**5a. Email Address (if same as billing, enter "Same")** Same	**5b. Phone #:** (661) 266-5394

6. Application is hereby made for the Authority to Construct (ATC) and Permit to Operate (PTO) the following equipment:

6MMBtu/hr Natural Gas Fired Boiler #1

7. Application is for: ☒ New Construction ☐ Modification* ☐ Change of Owner*

***For modification or change of owner:** Current permit #: _____ **Company No.:** _____ **Facility No.:** _____

8. Type of Organization (check one): ☐ Individual Owner ☐ Partnership ☒ Corporation ☐ Utility ☐ Local Agency ☐ State Agency ☐ Federal Agency

9. Distances (feet and direction to closest): Fenceline >1650 Ft. N Residence >10500 E Business >3000 W School >13300 N

10. General Nature of Business: Aircraft Manufacturing	**11. Principal Product:** Aircraft

12. Facility Annual Throughput by Quarters (percent):

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25 %	25 %	25 %	25 %

13. Expected Facility Operating Hours:

Hrs/Day	Days/Wk	Wks/Yr	Total Hrs/Yr
24	7	52	

14. Do you claim Confidentiality of Data? (If yes, state nature of data in an attachment.) ☐ Yes ☐ No

15. Machine Information:

Check One: ☒ Boiler ☐ Dryer ☐ Furnace ☐ Heater ☐ Kiln ☐ Oven ☐ Other _____

(specify): Manufacturer:

Model #: Cleaver Brooks Clearfire Serial #: CFCE-700-6000-125HW

Maximum heat input rating (use Higher Heating Value): 6000 MMBtu/hr or kW

Burner Manufacturer: Cleaver-Brooks Burner Model #: Integral

# of Burners: 8 Burner max heat input rating: 6000 MMBtu/hr or kW

Percent excess air (or n/a): 30% Operating temps (C or F): Av. 140F Max. 170F

Specify Primary Fuel (attach fuel analysis for these fuels, specifying HHV and sulfur content):
☒ Natural Gas ☐ LPG (Propane) ☐ CARB Diesel ☐ Coal* ☐ Petroleum Coke* ☐ Digester Gas*
☐ Landfill Gas* ☐ Refinery Gas* ☐ Other* (specify):

Max hourly primary fuel usage: 6000 Fuel units (ft^3, gal, etc.) ft^3

If secondary fuel is proposed, specify: N/A Max hourly usage:

Feedstock type and max process rate (specify units):

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Application for External Combustion Engine (boiler, etc.) Only

Unit lat/long or UTM coordinates: 34.3825773N/118.051788W

Max annual hours: 8760 Exhaust stack height (feet): 14.5 Inside diameter (inches) 14

16. Emissions Controls:

Check all that apply:

☒Low NOx Burner ☐Oxygen Trim ☐Flue or Exhaust Gas Recirculation (FGR or EGR) ☐Oxidation Catalyst ☐Selective Catalytic Reduction (SCR) ☐Selective Non-Catalytic Reduction (SNCR) ☐Afterburner ☐ESP ☐Baghouse

☐Other (specify): _____

17. Max Emissions Rates (controlled):

Pollutant	Concentration (ppmvd or gr/dscf)	Mass (pounds/hr)
1. Oxides of Nitrogen (NOx)	7 PPM	0.0509
2. Oxides of Sulfur (SOx)	1 PPM	0.0101
3. Carbon Monoxide (CO	20 PPM	0.0948
4. Total Particulates (TSP or PM30)	N/A	
5. Coarse Respirable Particulates (PM2.5)	N/A	
6. Total Organics (TOG)	N/A	
7. Volatile Organic Compounds (VOC, ROG, or NMOG)	4 PPM	0.0101

18. Dryers Only:

Check one:

☐Centrifugal ☐Chip ☐Fluidized Bed ☐Rotary ☐Spray ☐Other (specify): _____

19. Furnace Only:

Check one:

☐Annealing ☐ Burnoff ☐ Calcining ☐ Crucible ☐ Cupola ☐ Diffusion ☐ Electric ☐Forge ☐Pot ☐Holding ☐ Heat Treating ☐Melting ☐ Reverbatory ☐ Rotary ☐ Sweating ☐ Oxide Growth

20. Oven Only:

Check one:

☐Bakery ☐Baking ☐Curing ☐Drying ☐Fluidized Bed ☐Stripping ☐Solder Reflow ☐Roasting, specify type: _____

Firing Method: ☐Direct ☐Indirect

Signature of Responsible Official:		Official Title: Environmental
Typed or Printed Name of Responsible Official: George Jung	Phone Number: (661) 266-5394	Date Signed: 06/25/26

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Application for External Combustion Engine (Boiler, etc.) Only

Application Submittal Instructions

1) Submit completed application to engineering@avaqmd.ca.gov

2) Pay the corresponding application fee via check or credit card

Payment by check:

Make check payable to: Antelope Valley AQMD
Mail the check with a copy of this completed application to:
Antelope Valley AQMD 2551 West Ave H, Suite 102, Lancaster, CA 93536

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Antelope Valley Air Quality Management District

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Email: www.avaqmd.ca.gov

Application for External Combustion Engine (boiler, etc.) Only

Please type or print.

Please refer to Rule 301 for Application Filing Fee.

1. Permit to be Issued to (name of company to receive permit): Northrop Grumman Aeronautics System Corporation	**1a. Federal Tax ID #:** 95-1055798	
2. Mailing/Billing Address (for the above company name): 3520 East Ave M Palmdale, CA 93550	**2a. Billing Email Address:** george.jung@ngc.com	
3. Facility or Business Name on License (for equipment location): Northrop Grumman Aeronautics System Corporation		
4. Facility Address/Location of Equipment (if same as company, enter "Same"): Same	**4a. Facility UTM:** 425E/3830N	**4b. Facility Lat/Long:** 34.629N/118.084W
5. Contact Name/Title: George Jung	**5a. Email Address (if same as billing, enter "Same")** Same	**5b. Phone #:** (661) 266-5394

6. Application is hereby made for the Authority to Construct (ATC) and Permit to Operate (PTO) the following equipment:

6MMBtu/hr Natural Gas Fired Boiler #1

7. Application is for: ☒ New Construction ☐ Modification* ☐ Change of Owner*

***For modification or change of owner:** Current permit #: _____ **Company No.:** _____ **Facility No.:** _____

8. Type of Organization (check one): ☐ Individual Owner ☐ Partnership ☒ Corporation ☐ Utility ☐ Local Agency ☐ State Agency ☐ Federal Agency

9. Distances (feet and direction to closest): Fenceline >1650 Ft. N Residence >10500 E Business >3000 W School >13300 N

10. General Nature of Business: Aircraft Manufacturing	**11. Principal Product:** Aircraft

12. Facility Annual Throughput by Quarters (percent):

Jan-Mar	Apr-Jun	Jul-Sep	Oct-Dec
25 %	25 %	25 %	25 %

13. Expected Facility Operating Hours:

Hrs/Day	Days/Wk	Wks/Yr	Total Hrs/Yr
24	7	52	

14. Do you claim Confidentiality of Data? (If yes, state nature of data in an attachment.) ☐ Yes ☐ No

15. Machine Information:

Check One: ☒ Boiler ☐ Dryer ☐ Furnace ☐ Heater ☐ Kiln ☐ Oven ☐ Other _____

(specify): Manufacturer:

Model #: Cleaver Brooks Clearfire Serial #: CFCE-700-6000-125HW

Maximum heat input rating (use Higher Heating Value): 6000 MMBtu/hr or kW

Burner Manufacturer: Cleaver-Brooks Burner Model #: Integral

# of Burners: 8 Burner max heat input rating: 6000 MMBtu/hr or kW

Percent excess air (or n/a): 30% Operating temps (C or F): Av. 140F Max. 170F

Specify Primary Fuel (attach fuel analysis for these fuels, specifying HHV and sulfur content):
☒ Natural Gas ☐ LPG (Propane) ☐ CARB Diesel ☐ Coal* ☐ Petroleum Coke* ☐ Digester Gas*
☐ Landfill Gas* ☐ Refinery Gas* ☐ Other* (specify):

Max hourly primary fuel usage: 6000 Fuel units (ft^3, gal, etc.) ft^3

If secondary fuel is proposed, specify: N/A Max hourly usage:

Feedstock type and max process rate (specify units):

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Application for External Combustion Engine (boiler, etc.) Only

Unit lat/long or UTM coordinates: 34.3825773N/118.051788W

Max annual hours: 8760 Exhaust stack height (feet): 14.5 Inside diameter (inches) 14

16. Emissions Controls:

Check all that apply:

☒Low NOx Burner ☐Oxygen Trim ☐Flue or Exhaust Gas Recirculation (FGR or EGR) ☐Oxidation Catalyst ☐Selective Catalytic Reduction (SCR) ☐Selective Non-Catalytic Reduction (SNCR) ☐Afterburner ☐ESP ☐Baghouse

☐Other (specify): _____

17. Max Emissions Rates (controlled):

Pollutant	Concentration (ppmvd or gr/dscf)	Mass (pounds/hr)
1. Oxides of Nitrogen (NOx)	7 PPM	0.0509
2. Oxides of Sulfur (SOx)	1 PPM	0.0101
3. Carbon Monoxide (CO	20 PPM	0.0948
4. Total Particulates (TSP or PM30)	N/A	
5. Coarse Respirable Particulates (PM2.5)	N/A	
6. Total Organics (TOG)	N/A	
7. Volatile Organic Compounds (VOC, ROG, or NMOG)	4 PPM	0.0101

18. Dryers Only:

Check one:

☐Centrifugal ☐Chip ☐Fluidized Bed ☐Rotary ☐Spray ☐Other (specify): _____

19. Furnace Only:

Check one:

☐Annealing ☐ Burnoff ☐ Calcining ☐ Crucible ☐ Cupola ☐ Diffusion ☐ Electric ☐Forge ☐Pot ☐Holding ☐ Heat Treating ☐Melting ☐ Reverbatory ☐ Rotary ☐ Sweating ☐ Oxide Growth

20. Oven Only:

Check one:

☐Bakery ☐Baking ☐Curing ☐Drying ☐Fluidized Bed ☐Stripping ☐Solder Reflow ☐Roasting, specify type: _____

Firing Method: ☐Direct ☐Indirect

Signature of Responsible Official:		Official Title: Environmental
Typed or Printed Name of Responsible Official: George Jung	Phone Number: (661) 266-5394	Date Signed: 06/25/26

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Application #:	Invoice #:	Permit #:	Company/Facility #:

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6. Application is hereby made for the Authority to Construct (ATC) and Permit to Operate (PTO) the following equipment:

6MMBtu/hr Natural Gas Fired Boiler #1

7. Application is for: ☒ New Construction ☐ Modification* ☐ Change of Owner*

***For modification or change of owner:** Current permit #: _____ **Company No.:** _____ **Facility No.:** _____

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12. Facility Annual Throughput by Quarters (percent):

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25 %	25 %	25 %	25 %

13. Expected Facility Operating Hours:

Hrs/Day	Days/Wk	Wks/Yr	Total Hrs/Yr
24	7	52	

14. Do you claim Confidentiality of Data? (If yes, state nature of data in an attachment.) ☐ Yes ☐ No

15. Machine Information:

Check One: ☒ Boiler ☐ Dryer ☐ Furnace ☐ Heater ☐ Kiln ☐ Oven ☐ Other _____

(specify): Manufacturer:

Model #: Cleaver Brooks Clearfire Serial #: CFCE-700-6000-125HW

Maximum heat input rating (use Higher Heating Value): 6000 MMBtu/hr or kW

Burner Manufacturer: Cleaver-Brooks Burner Model #: Integral

# of Burners: 8 Burner max heat input rating: 6000 MMBtu/hr or kW

Percent excess air (or n/a): 30% Operating temps (C or F): Av. 140F Max. 170F

Specify Primary Fuel (attach fuel analysis for these fuels, specifying HHV and sulfur content):
☒ Natural Gas ☐ LPG (Propane) ☐ CARB Diesel ☐ Coal* ☐ Petroleum Coke* ☐ Digester Gas*
☐ Landfill Gas* ☐ Refinery Gas* ☐ Other* (specify):

Max hourly primary fuel usage: 6000 Fuel units (ft^3, gal, etc.) ft^3

If secondary fuel is proposed, specify: N/A Max hourly usage:

Feedstock type and max process rate (specify units):

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Application for External Combustion Engine (boiler, etc.) Only

Unit lat/long or UTM coordinates: 34.3825773N/118.051788W

Max annual hours: 8760 Exhaust stack height (feet): 14.5 Inside diameter (inches) 14

16. Emissions Controls:

Check all that apply:

☒Low NOx Burner ☐Oxygen Trim ☐Flue or Exhaust Gas Recirculation (FGR or EGR) ☐Oxidation Catalyst ☐Selective Catalytic Reduction (SCR) ☐Selective Non-Catalytic Reduction (SNCR) ☐Afterburner ☐ESP ☐Baghouse

☐Other (specify): _____

17. Max Emissions Rates (controlled):

Pollutant	Concentration (ppmvd or gr/dscf)	Mass (pounds/hr)
1. Oxides of Nitrogen (NOx)	7 PPM	0.0509
2. Oxides of Sulfur (SOx)	1 PPM	0.0101
3. Carbon Monoxide (CO	20 PPM	0.0948
4. Total Particulates (TSP or PM30)	N/A	
5. Coarse Respirable Particulates (PM2.5)	N/A	
6. Total Organics (TOG)	N/A	
7. Volatile Organic Compounds (VOC, ROG, or NMOG)	4 PPM	0.0101

18. Dryers Only:

Check one:

☐Centrifugal ☐Chip ☐Fluidized Bed ☐Rotary ☐Spray ☐Other (specify): _____

19. Furnace Only:

Check one:

☐Annealing ☐ Burnoff ☐ Calcining ☐ Crucible ☐ Cupola ☐ Diffusion ☐ Electric ☐Forge ☐Pot ☐Holding ☐ Heat Treating ☐Melting ☐ Reverbatory ☐ Rotary ☐ Sweating ☐ Oxide Growth

20. Oven Only:

Check one:

☐Bakery ☐Baking ☐Curing ☐Drying ☐Fluidized Bed ☐Stripping ☐Solder Reflow ☐Roasting, specify type: _____

Firing Method: ☐Direct ☐Indirect

Signature of Responsible Official:		Official Title: Environmental
Typed or Printed Name of Responsible Official: George Jung	Phone Number: (661) 266-5394	Date Signed: 06/25/26

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5. Contact Name/Title: George Jung	**5a. Email Address (if same as billing, enter "Same")** Same	**5b. Phone #:** (661) 266-5394

6. Application is hereby made for the Authority to Construct (ATC) and Permit to Operate (PTO) the following equipment:

6MMBtu/hr Natural Gas Fired Boiler #1

7. Application is for: ☒ New Construction ☐ Modification* ☐ Change of Owner*

***For modification or change of owner:** Current permit #: _____ **Company No.:** _____ **Facility No.:** _____

8. Type of Organization (check one): ☐ Individual Owner ☐ Partnership ☒ Corporation ☐ Utility ☐ Local Agency ☐ State Agency ☐ Federal Agency

9. Distances (feet and direction to closest): Fenceline >1650 Ft. N Residence >10500 E Business >3000 W School >13300 N

10. General Nature of Business: Aircraft Manufacturing	**11. Principal Product:** Aircraft

12. Facility Annual Throughput by Quarters (percent):

Jan-Mar	Apr-Jun	Jul-Sep	Oct-Dec
25 %	25 %	25 %	25 %

13. Expected Facility Operating Hours:

Hrs/Day	Days/Wk	Wks/Yr	Total Hrs/Yr
24	7	52	

14. Do you claim Confidentiality of Data? (If yes, state nature of data in an attachment.) ☐ Yes ☐ No

15. Machine Information:

Check One: ☒ Boiler ☐ Dryer ☐ Furnace ☐ Heater ☐ Kiln ☐ Oven ☐ Other _____

(specify): Manufacturer:

Model #: Cleaver Brooks Clearfire Serial #: CFCE-700-6000-125HW

Maximum heat input rating (use Higher Heating Value): 6000 MMBtu/hr or kW

Burner Manufacturer: Cleaver-Brooks Burner Model #: Integral

# of Burners: 8 Burner max heat input rating: 6000 MMBtu/hr or kW

Percent excess air (or n/a): 30% Operating temps (C or F): Av. 140F Max. 170F

Specify Primary Fuel (attach fuel analysis for these fuels, specifying HHV and sulfur content):
☒ Natural Gas ☐ LPG (Propane) ☐ CARB Diesel ☐ Coal* ☐ Petroleum Coke* ☐ Digester Gas*
☐ Landfill Gas* ☐ Refinery Gas* ☐ Other* (specify):

Max hourly primary fuel usage: 6000 Fuel units (ft^3, gal, etc.) ft^3

If secondary fuel is proposed, specify: N/A Max hourly usage:

Feedstock type and max process rate (specify units):

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Application for External Combustion Engine (boiler, etc.) Only

Unit lat/long or UTM coordinates: 34.3825773N/118.051788W

Max annual hours: 8760 Exhaust stack height (feet): 14.5 Inside diameter (inches) 14

16. Emissions Controls:

Check all that apply:

☒Low NOx Burner ☐Oxygen Trim ☐Flue or Exhaust Gas Recirculation (FGR or EGR) ☐Oxidation Catalyst ☐Selective Catalytic Reduction (SCR) ☐Selective Non-Catalytic Reduction (SNCR) ☐Afterburner ☐ESP ☐Baghouse

☐Other (specify): _____

17. Max Emissions Rates (controlled):

Pollutant	Concentration (ppmvd or gr/dscf)	Mass (pounds/hr)
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2. Oxides of Sulfur (SOx)	1 PPM	0.0101
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4. Total Particulates (TSP or PM30)	N/A	
5. Coarse Respirable Particulates (PM2.5)	N/A	
6. Total Organics (TOG)	N/A	
7. Volatile Organic Compounds (VOC, ROG, or NMOG)	4 PPM	0.0101

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Check one:

☐Centrifugal ☐Chip ☐Fluidized Bed ☐Rotary ☐Spray ☐Other (specify): _____

19. Furnace Only:

Check one:

☐Annealing ☐ Burnoff ☐ Calcining ☐ Crucible ☐ Cupola ☐ Diffusion ☐ Electric ☐Forge ☐Pot ☐Holding ☐ Heat Treating ☐Melting ☐ Reverbatory ☐ Rotary ☐ Sweating ☐ Oxide Growth

20. Oven Only:

Check one:

☐Bakery ☐Baking ☐Curing ☐Drying ☐Fluidized Bed ☐Stripping ☐Solder Reflow ☐Roasting, specify type: _____

Firing Method: ☐Direct ☐Indirect

Signature of Responsible Official:		Official Title: Environmental
Typed or Printed Name of Responsible Official: George Jung	Phone Number: (661) 266-5394	Date Signed: 06/25/26

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Firing Method: ☐Direct ☐Indirect

Signature of Responsible Official:		Official Title: Environmental
Typed or Printed Name of Responsible Official: George Jung	Phone Number: (661) 266-5394	Date Signed: 06/25/26

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3. Facility or Business Name on License (for equipment location): Northrop Grumman Aeronautics System Corporation		
4. Facility Address/Location of Equipment (if same as company, enter "Same"): Same	**4a. Facility UTM:** 425E/3830N	**4b. Facility Lat/Long:** 34.629N/118.084W
5. Contact Name/Title: George Jung	**5a. Email Address (if same as billing, enter "Same")** Same	**5b. Phone #:** (661) 266-5394

6. Application is hereby made for the Authority to Construct (ATC) and Permit to Operate (PTO) the following equipment:

6MMBtu/hr Natural Gas Fired Boiler #1

7. Application is for: ☒ New Construction ☐ Modification* ☐ Change of Owner*

***For modification or change of owner:** Current permit #: _____ **Company No.:** _____ **Facility No.:** _____

8. Type of Organization (check one): ☐ Individual Owner ☐ Partnership ☒ Corporation ☐ Utility ☐ Local Agency ☐ State Agency ☐ Federal Agency

9. Distances (feet and direction to closest): Fenceline >1650 Ft. N Residence >10500 E Business >3000 W School >13300 N

10. General Nature of Business: Aircraft Manufacturing	**11. Principal Product:** Aircraft

12. Facility Annual Throughput by Quarters (percent):

Jan-Mar	Apr-Jun	Jul-Sep	Oct-Dec
25 %	25 %	25 %	25 %

13. Expected Facility Operating Hours:

Hrs/Day	Days/Wk	Wks/Yr	Total Hrs/Yr
24	7	52	

14. Do you claim Confidentiality of Data? (If yes, state nature of data in an attachment.) ☐ Yes ☐ No

15. Machine Information:

Check One: ☒ Boiler ☐ Dryer ☐ Furnace ☐ Heater ☐ Kiln ☐ Oven ☐ Other _____

(specify): Manufacturer:

Model #: Cleaver Brooks Clearfire Serial #: CFCE-700-6000-125HW

Maximum heat input rating (use Higher Heating Value): 6000 MMBtu/hr or kW

Burner Manufacturer: Cleaver-Brooks Burner Model #: Integral

# of Burners: 8 Burner max heat input rating: 6000 MMBtu/hr or kW

Percent excess air (or n/a): 30% Operating temps (C or F): Av. 140F Max. 170F

Specify Primary Fuel (attach fuel analysis for these fuels, specifying HHV and sulfur content):
☒ Natural Gas ☐ LPG (Propane) ☐ CARB Diesel ☐ Coal* ☐ Petroleum Coke* ☐ Digester Gas*
☐ Landfill Gas* ☐ Refinery Gas* ☐ Other* (specify):

Max hourly primary fuel usage: 6000 Fuel units (ft^3, gal, etc.) ft^3

If secondary fuel is proposed, specify: N/A Max hourly usage:

Feedstock type and max process rate (specify units):

Antelope Valley Air Quality Management District

2551 West Ave H, Lancaster, CA 93536
Phone: 661.723.8070
Email :www.avaqmd.ca.gov

Application for External Combustion Engine (boiler, etc.) Only

Unit lat/long or UTM coordinates: 34.3825773N/118.051788W

Max annual hours: 8760 Exhaust stack height (feet): 14.5 Inside diameter (inches) 14

16. Emissions Controls:

Check all that apply:

☒Low NOx Burner ☐Oxygen Trim ☐Flue or Exhaust Gas Recirculation (FGR or EGR) ☐Oxidation Catalyst ☐Selective Catalytic Reduction (SCR) ☐Selective Non-Catalytic Reduction (SNCR) ☐Afterburner ☐ESP ☐Baghouse

☐Other (specify): _____

17. Max Emissions Rates (controlled):

Pollutant	Concentration (ppmvd or gr/dscf)	Mass (pounds/hr)
1. Oxides of Nitrogen (NOx)	7 PPM	0.0509
2. Oxides of Sulfur (SOx)	1 PPM	0.0101
3. Carbon Monoxide (CO	20 PPM	0.0948
4. Total Particulates (TSP or PM30)	N/A	
5. Coarse Respirable Particulates (PM2.5)	N/A	
6. Total Organics (TOG)	N/A	
7. Volatile Organic Compounds (VOC, ROG, or NMOG)	4 PPM	0.0101

18. Dryers Only:

Check one:

☐Centrifugal ☐Chip ☐Fluidized Bed ☐Rotary ☐Spray ☐Other (specify): _____

19. Furnace Only:

Check one:

☐Annealing ☐ Burnoff ☐ Calcining ☐ Crucible ☐ Cupola ☐ Diffusion ☐ Electric ☐Forge ☐Pot ☐Holding ☐ Heat Treating ☐Melting ☐ Reverbatory ☐ Rotary ☐ Sweating ☐ Oxide Growth

20. Oven Only:

Check one:

☐Bakery ☐Baking ☐Curing ☐Drying ☐Fluidized Bed ☐Stripping ☐Solder Reflow ☐Roasting, specify type: _____

Firing Method: ☐Direct ☐Indirect

Signature of Responsible Official:		Official Title: Environmental
Typed or Printed Name of Responsible Official: George Jung	Phone Number: (661) 266-5394	Date Signed: 06/25/26

For District Use Only

Application #:	Invoice #:	Permit #:	Company/Facility #:

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Antelope Valley AQMD 2551 West Ave H, Suite 102, Lancaster, CA 93536

Payment by credit card:

Pay online at our website: http://www.avaqmd.ca.gov
Click “Pay Fees”
Please note a surcharge applies for all credit card payments.

If payment is made online via credit card, please email the receipt to engineering@avaqmd.ca.gov.

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Please type or print.

Please refer to Rule 301 for Application Filing Fee.

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Typed or Printed Name of Responsible Official: George Jung	Phone Number: (661) 266-5394	Date Signed: 06/25/26

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3

EMISSION CALCULATIONS

CRITERIA POLLUTANT EMISSIONS

Proposed equipment potential to emit, as defined by District Rule 3001(W), is the maximum capacity of the emission unit to emit any regulated air pollutant under its physical and operational design. Criteria pollutant maximum potential to emit for each boiler based on emissions data provided by the boiler manufacturer and calculated based on 8760 hours per year of operation are included as Table 1. Maximum potential to emit criteria pollutants for all eight units is provided in Table 2. Maximum potential to emit PM and CO_2 based on AVAQMD emission factors and assuming 8760 hours per year of operation are included as Table 3.

HAP EMISSIONS

The HAPs emitted from the boilers are described in Rule 1401 Health Risk Assessment that accompanies this application. The HRA also includes emission calculations for those pollutants and tabulates total estimated HAP emissions.

4

RULE COMPLIANCE EVALUATION

Rule 401 – Visible Emissions

Rule 401 limits visible emissions opacity to less than 20 percent (or Ringelmann No. 1). During start up, visible emissions may exceed 20 percent opacity. However, emissions of this opacity are not expected to last three minutes or longer. In normal operating mode, visible emissions are not expected to exceed 20 percent opacity.

Rule 404 – Particulate Matter – Concentration

Rule 404 specifies standards of emissions for particulate matter concentrations. The use of a boiler fueled with natural gas achieves compliance with Rule 404.

Rule 405 – Solid Particulate Matter - Weight

Rule 405 limits particulate matter emissions from fuel combustion on a mass per unit combusted basis. The use of a boiler fueled with natural gas achieves compliance with Rule 404.

Rule 431.1– Sulfur Content in Fuels

Rule 431.1 limits the sulfur content in gaseous fuel. The provisions of the rule limit the selling or burning of gaseous fuels containing sulfur compounds in excess of 16 ppmv, calculated as H_2S.

Only pipeline quality natural gas will be used for fueling the boiler. The sole use of pipeline quality natural gas complies with Rule 431.1.

Rule 1146 - Emissions of Oxides of Nitrogen from Industrial, Institutional and Commercial Boilers, Steam Generators, and Process Heaters

Rule 1146 limits boilers equal to or greater than 5 million Btu per hour and greater than 90,000 therms per year of fuel use to 40 ppm (0.05 lb per10^6 Btu of heat input) NOx and

400 ppm CO. Emissions from the unit are guaranteed to meet the following emission rates:

- NOx – 7 ppm
- CO – 20 ppm

Compliance with the NOx and CO emission requirements will be determined according to procedures in District Source Test Method 100.1 - Instrumental Analyzer Procedures for Continuous Gaseous Emission Sampling (March 1989), or Method 7.1 - Determination of Nitrogen Oxide Emissions from Stationary Sources (March 1989) and Method 10.1 - Carbon Monoxide and Carbon Dioxide by Gas Chromatograph/Non-Dispersive Infrared Detector (GC/NDIR) - Oxygen by Gas Chromatograph-Thermal Conductivity (GC/TCD) (March 1989), or any other test method determined to be equivalent and approved before the test in writing by the Executive Officer of the District. Records of all source tests will be maintained for a period of five years and made available to District personnel upon request.

The rule further requires that the unit be tuned at least twice per year, at intervals from 4 to 8 months apart, in accordance with the procedure described in Attachment 1 of the rule or the unit manufacturer's specified tuning procedure. If the manufacturer's tuning procedure is used a copy of this procedure will be kept on site. If the unit does not operate throughout a continuous six-month period within a calendar year, only one tuneup is required for that calendar year.

Source testing and tuneups will be conducted as required. Compliance with Rule 1146 will be achieved.

Regulation XIII – New Source Review

<u>Rule 1303 – BACT</u>

Rule 1303 (A) mandates BACT for:

- Any new Permit Unit which emits, or has the Potential to Emit, 25 pounds per day or more of any Nonattainment Air Pollutant; or
- Any new or Modified Facility which emits, or has the Potential to Emit, 25 tons per year or more of any Nonattainment Air Pollutant

The 2020 SCAQMD BACT determination for a natural gas-fired boiler with a heat input rating of 8.4 mmBtu/hr follows:

VOC	NOx	SOx	CO	PM10
None	≤7 ppmv dry corrected to 3% O_2	Natural Gas	≤50 ppmv for watertube type, dry corrected to 3% O_2	Natural Gas

The use of low NOx burner and fueled with natural gas meets the requirement for BACT. Compliance with Rule 1303 (A) is achieved.

Rule 1303– Offsets

Offsets will be required for NOx at a rate of 1.3:1. NOx offsets totaling 3567 * 1.3 or 4637 pounds per year are required to permit the new boilers.

40 CFR 63 Subpart DDDDD - National Emission Standards for Hazardous Air Pollutants for Industrial, Commercial, and Institutional Boilers and Process Heaters

§63.7480 specifies that this subpart establishes national emission limitations and work practice standards for hazardous air pollutants (HAP) emitted from industrial, commercial, and institutional boilers and process heaters located at major sources of HAP.

40 CFR 63.7500 (a) (1) (e) requires that Boilers and process heaters in the units designed to burn gas 1 fuels subcategory with a heat input capacity greater than 5 million Btu per hour and less than 10 million Btu per hour must complete a tune-up every 2 years as specified in § 63.7540. Boilers and process heaters in the units designed to burn gas 1 fuels subcategory are not subject to the emission limits in Tables 1 and 2 or Tables 11 through 15 to this subpart, or the operating limits in Table 4 to this subpart.

Rule 1314 - AVAQMD Rule 1314 — Federal Nonattainment New Source Review for Ozone Precursors

This project is not a Federal Major Modification as demonstrated in the Title V application that accompanies this application. Rule 1314 does not apply.

AVAQMD Rule 1401 - New Source Review for Toxic Air Contaminants (TACs)

Rule 1401 establishes allowable risks for equipment requiring new permits pursuant to Rules 201 or 203. To demonstrate compliance with Rule 1401, risk assessment was prepared and submitted with this application.

5

FEE EVALUATION

Pursuant to Rule 301 (D) (1) any person who applies for the issuance of a new or modified permit and subject to the Provisions of Regulation XXX – Federal Operating Permits (Title V) shall be assessed a fee of $1089. This application filing fee is submitted with the application.

Total application fees included with this application are as follows:

8 boilers x $1089 = $8712

TABLES

Table 1: Emission factors for NOx, VOC, CO, and SOx for the new B/474 boilers

F-Factor Calculation			Emission Calculations (per boiler)				
Fuel Use	6000000	Btu/hr	NOx	SOx	CO	VOC	
F-Factor	8710	dscf/mmBtu	7	1	20	4	ppm at 3% O2
Flue Gas Flow	52260	dscf at 0%O2	0.42679	0.06097	1.2194	0.24388	dscf/hr
	60970	dscf at 3%O2	12.08534841	1.726478345	34.52956689	6.90591338	l/hr
	73164	dscf at 6%O2	11.26040995	1.608629993	32.17259987	6.43451997	l/hr at STP
	5222.260582	lb/hr	0.502382884	0.071768983	1.435379667	0.28707593	moles/hr
			46	64.06	30	16	g/mole
			0.05090223	0.010126698	0.094848877	0.01011721	lb/hr
			445.9035392	88.70987801	830.8761599	88.6267904	lb/yr
			0.008483705	0.001687783	0.015808146	0.0016862	lb/mmBtu

Table 2: Potential to Emit NOx, VOC, CO, and SOx for the new B/474 boilers

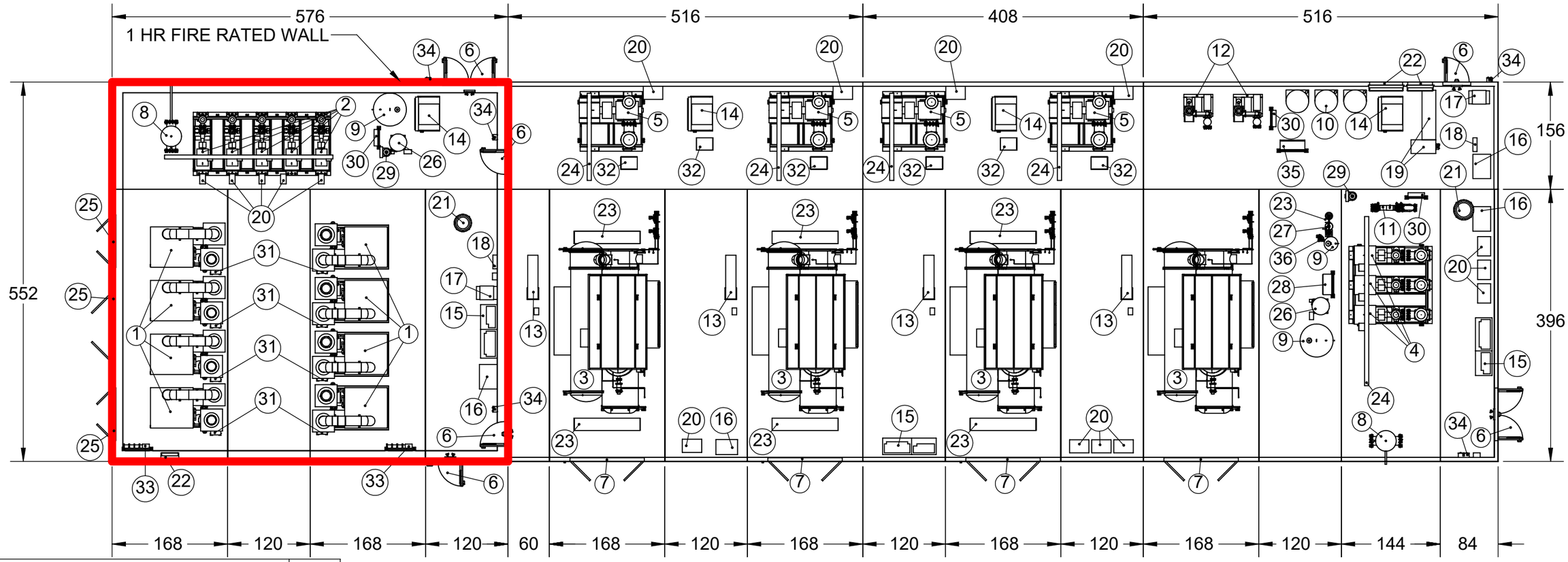
No of Boilers	Emissions (lbs/year			
	NOx	SOx	CO	VOC
8	3567.23	709.68	6647.01	709.01

Table 3: Potential to Emit PM and CO2 for the new B/474 boilers

HHV Heat Input (mmBtu/hr/unit)	No of Units	Max Fuel Use mmscf/hr	Max Operation hr/yr	Max Fuel Use mmscf/yr	Pollutant	Emission Factor lb/mmscf	Emissions		
							Max Hourly (lbs)	Max Annual (lbs)	Max Annual (MT)
6000	8	0.048	8760	420.48	PM	7.6	0.36	3195.65	
					CO2	120000	5760	50457600	22908

FIGURES

Docusign Envelope ID: 3FBFA1E0-CAD3-8335-8259-F2CEBE54DA95



ITEM NO.	DESCRIPTION	QTY
1	BOILERS - 6000 MBH	8
2	HW PUMPS	5
3	CHILLERS - 1350 TONS	4
4	CHW PUMPS	3
5	CNDR PUMPS	4
6	ACCESS DOORS	6
7	HINGED PANELS FOR TUBE PULL	4
8	AIR SEPARATORS	2
9	EXPANSION TANKS	2
10	SPACE FOR CHEMICAL TREATMENT	
11	BACKFLOW PREVENTER	1
12	BASIN SWEEPER SYSTEMS	2
13	REFRIG EVAC FANS	4
14	AC UNITS WITH HEAT	4
15	SWITCHBOARDS	3
16	HARMONIC FILTERS	4
17	TRANSFORMERS	2
18	LOAD CENTERS	2
19	CONTROL PANEL	2

20	VFD'S	16
21	EXHAUST FANS	2
22	VENTILATION LOUVER / DAMPER	3
23	DRAIN PANS	14
24	CRANE RAILS	
25	HINGED PANELS FOR BOILER MAINTENANCE	3
26	GLYCOL FILL SYSTEMS	2
27	EMERGENCY EYEWASH & SHOWER	1
28	TANKLESS HOT WATER HEATER	1
29	POT FEEDERS	2
30	COUPON RACKS	3
31	CONDENSATE KITS	8
32	CONTAINMENT PANS	9
33	GAS FLOW METER TOTALIZERS	8
34	REFRIGERANT LEAK DETECTION	
35	CHEMICAL CONTROLLER	1
36	MIXING VALVE	1

PROPRIETARY AND CONFIDENTIAL:
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JOB NAME: Northrop Grumman B474			
JOB #: 260001		DRAWING NO: 1434990-M6	
PHASE: Proposal		SHEET #: M6 of M7	REV: P01
DWG UNITS: INCHES	SCALE: NTS	DATE: (MM/DD/YY) 01/20/2026	LOCATION: CA

EPSILON INDUSTRIES

A

MANUFACTURERS DATA

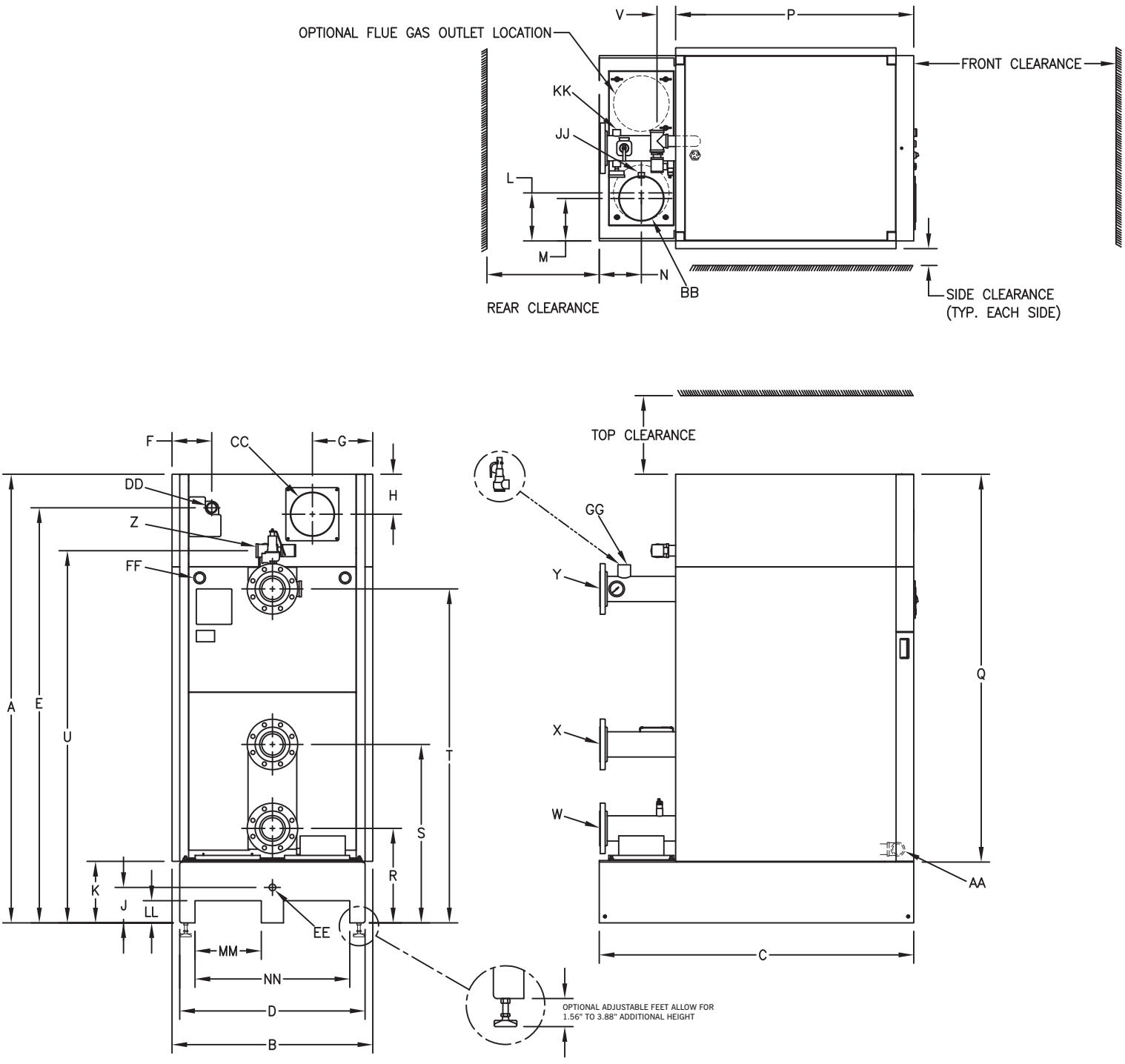
MODEL CFC-E BOILERS

500-6000 MBH



Dimensions and Ratings

Dimension Diagram CFC-E



Dimensions Model CFC-E

ITEM	DIMENSIONS (inches)	500	750	1000	1500	2000	2500	3000	3500	4000	5000	6000
A	Overall Height	78.0	78.0	78.0	79.9	79.9	95.2	95.2	91.2	91.2	93.6	93.6
B	Overall Width	34.9	34.9	34.9	35.8	35.8	35.7	35.7	48.4	48.4	58.7	58.7
C	Overall Depth	49.4	49.4	49.4	56	56	56	56	68.4	68.4	80.6	80.6
D	Width Less Casing	32.1	32.1	32.1	33.0	33.0	33.0	33.0	45.7	45.7	55.9	55.9
E	Gas Connection to Floor	70.3	70.3	70.3	73.9	73.8	85.3	85.3	77.7	77.7	79.5	79.5
F	Side of Casing to Gas Connection	3.7	3.7	3.7	7.1	7.1	3.8	3.8	4.9	4.9	4.6	4.6
G	Side of Casing to Air Inlet	10.8	10.8	10.8	10.8	10.8	11.0	11.0	11.0	11.0	12.0	12.0
H	Top of Casing to Air Inlet	7.7	7.7	7.7	7.1	7.4	9.9	9.9	9.0	9.0	9.9	9.9
J	Floor to Condensate Drain	6.3	6.3	6.3	6.3	6.3	6.3	6.3	5.7	5.7	5.7	5.7
K	Floor to Bottom of Casing	11.0	11.0	11.0	11.0	11.0	11.4	11.4	11.4	11.4	12.0	12.0
L	Side of Base to Flue Outlet (Centered)	7.4	7.4	7.4	8.5	8.5	7.8	7.8	8.8	8.8	10.0	10.0
M	Side of Base to Flue Outlet (Offset)	6.4	6.4	6.4	7.5	7.5	N/A	N/A	N/A	N/A	N/A	N/A
N	Rear of Base to Flue Outlet	6.5	6.5	6.5	7.5	7.5	7.5	7.5	8.8	8.8	9.8	9.8
P	Casing Depth	36.3	36.3	36.3	42.4	42.4	42.4	42.4	52.5	52.5	62.1	62.1
Q	Casing Height	67.0	67.0	67.0	68.9	68.9	83.8	83.8	79.8	79.8	81.6	81.6
R	Floor to Lower Return Connection	16.8	16.8	16.8	16.8	16.8	16.9	16.9	16.8	16.8	18.5	18.5
S	Floor to Upper Return Connection	31.8	31.8	31.8	31.8	31.8	31.9	31.9	32.6	32.6	32.3	32.3
T	Floor to Supply Connection	59.5	59.5	59.5	59.5	59.5	70.4	70.4	62.3	62.3	63.3	63.3
U	Floor to Air vent Connection	66.3	66.3	66.3	66.3	66.3	76.9	76.9	70.3	70.3	71.9	71.9
V	Air Vent Line Projection from Rear of Casing	3.2	3.2	3.2	3.3	3.3	3.3	3.3	3.2	3.2	2.8	2.8
CONNECTIONS												
W	Water Low Temp. Return, Class150 RF Flange	2-1/2"	2-1/2"	2-1/2"	4"	4"	4"	4"	5"	5"	6"	6"
X	Water High Temp. Return, Class150 RF Flange	2-1/2"	2-1/2"	2-1/2"	4"	4"	4"	4"	5"	5"	6"	6"
Y	Water Outlet, Class150 RF Flange	2-1/2"	2-1/2"	2-1/2"	4"	4"	4"	4"	5"	5"	6"	6"
Z	Air Vent, NPT	1-1/2"	1-1/2"	1-1/2"	1-1/2"	1-1/2"	1-1/2"	1-1/2"	1-1/2"	1-1/2"	1-1/2"	1-1/2"
AA	Vessel Drain, NPT	1-1/2"	1-1/2"	1-1/2"	1-1/2"	1-1/2"	1-1/2"	1-1/2"	1-1/2"	1-1/2"	1-1/2"	1-1/2"
BB	Flue Gas Outlet											
	(Standard) - Nominal	6"	6"	8"	8"	8"	10"	10"	12"	12"	14"	14"
	(Option) - Nominal	8"	8"	6"	10"	10"	NA	NA	NA	NA	16"	16"
CC	Combustion Air - Nominal	6"	6"	6"	8"	8"	10"	10"	12	12	14"	14"
DD	Gas, NPT	1"	1"	1"	1-1/2"	1-1/2"	1-1/2"	2"	2	2	2"	2"
EE	Condensate Drain, NPT	1"	1"	1"	1"	1"	1"	1"	1"	1"	1"	1"
FF	Electrical Opening, Left or Right	1.6"	1.6"	1.6"	1.6"	1.6"	1.6"	1.6"	1.6"	1.6"	1.6"	1.6"
GG	Safety Relief Valve Vessel Connection, NPT	1-1/4"	1-1/4"	1-1/4"	1-1/4"	1-1/4"	2"	2"	2"	2"	2"	2"
JJ	Flue Coupling, NPT	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"
KK	Water Outlet Coupling, NPT	1/2"	1/2"	1/2"	1/2"	1/2"	1/2"	1/2"	1/2"	1/2"	1/2"	1/2"
FORK POCKETS (inches)												
LL	Pocket Height	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
MM	Pocket Width	11.8	11.8	11.8	11.8	11.8	11.8	11.8	15.7	15.7	17.6	17.6
NN	Overall Pocket Width	27.6	27.6	27.6	27.6	27.6	27.6	27.6	35.4	35.4	39.4	39.4
WEIGHTS												
	Dry Weight (lb)	1298	1298	1396	1861	2041	2420	2475	3574	3761	4901	5278
	Shipping Weight (lb)	1413	1413	1511	1986	2166	2541	2596	3726	3913	5073	5450
	Operating Weight (lb)	2065	2065	2113	2778	2858	3470	3492	5227	5304	7502	7659
	Water Volume (gallon)	92	92	86	110	98	126	122	198	185	312	285

CLEARANCES (inches)

	500-4000	5000-6000
Top	14	18
Side	3	3
Rear	20	20
Front	36	36

Notes:

Boiler rear must be accessible for servicing.

Side clearance to wall or between boilers.

Side clearance typical each side.

Clearance dimensions are for servicing the boiler only. Refer to local and national electrical codes for proper minimum front panel service clearances.

Local code requirements, if more stringent, should take precedence.

Dimensions (metric) Model CFC-E

ITEM	DIMENSIONS (mm)	500	750	1000	1500	2000	2500	3000	3500	4000	5000	6000
A	Overall Height	1982	1982	1982	2028	2028	2418	2418	2316	2316	2378	2378
B	Overall Width	886	886	886	908	908	907	907	1230	1230	1490	1490
C	Overall Depth	1255	1255	1255	1422	1422	1422	1422	1738	1738	2048	2048
D	Width Less Casing	816	816	816	838	838	838	838	1160	1160	1420	1420
E	Gas Connection to Floor	1786	1786	1786	1877	1875	2167	2167	1974	1974	2019	2019
F	Side of Casing to Gas Connection	95	95	95	180	180	97	97	124	124	117	117
G	Side of Casing to Air Inlet	275	275	275	273	376	279	279	279	279	305	305
H	Top of Casing to Air Inlet	196	196	196	180	188	251	251	229	229	251	251
J	Floor to Condensate Drain	160	160	160	160	160	160	160	145	145	145	145
K	Floor to Bottom of Casing	279	279	279	279	279	290	290	290	290	305	305
L	Side of Base to Flue Outlet	189	189	189	217	217	198	198	224	224	254	254
M	Side of Base to Flue Outlet (Offset)	164	164	164	192	192	NA	NA	NA	NA	NA	NA
N	Rear of Base to Flue Outlet	165	165	165	190	190	191	191	224	224	249	249
P	Casing Depth	921	921	921	1077	1077	1077	1077	1334	1334	1577	1577
Q	Casing Height	1703	1703	1703	1749	1749	2129	2129	2027	2027	2073	2073
R	Floor to Lower Return Connection	428	428	428	428	428	429	429	427	427	470	470
S	Floor to Upper Return Connection	808	808	808	808	808	810	810	828	828	820	820
T	Floor to Supply Connection	1511	1511	1511	1511	1511	1788	1788	1582	1582	1608	1608
U	Floor to Air vent Connection	1683	1683	1683	1683	1683	1953	1953	1786	1786	1826	1826
V	Air Vent Line Projection From Rear of Casing	81	81	81	84	84	84	84	81	81	71	71

FORK POCKETS (mm)

LL	Pocket Height	102	102	102	102	102	102	102	102	102	102	102
MM	Pocket Width	300	300	300	300	300	300	300	399	399	447	447
NN	Overall Pocket Width	700	700	700	700	700	701	701	899	899	1001	1001

WEIGHTS

	Dry Weight (kg)	589	589	633	844	926	1098	1123	1621	1706	2223	2394
	Shipping Weight (kg)	641	641	686	901	983	983	983	1690	1775	2301	2472
	Operating Weight (kg)	939	939	969	1260	1280	1280	1280	2371	2406	3403	3474
	Water Volume (liter)	350	350	324	416	370	477	462	750	700	1180	1080

CLEARANCES (mm)

	500-4000	5000-6000
Top	356	457
Side	76	76
Rear	508	508
Front	914	914

Notes:

Boiler rear must be accessible for servicing.

Side clearance to wall or between boilers.

Side clearance typical each side.

Clearance dimensions are for servicing the boiler only. Refer to local and national electrical codes for proper minimum front panel service clearances.

Local code requirements, if more stringent, should take precedence.

Boiler Ratings *(Sea Level to 2000 Feet)*

		Boiler Size										
Description	**Units**	**500**	**750**	**1000**	**1500**	**2000**	**2500**	**3000**	**3500**	**4000**	**5000**	**6000**
Input Max.	Btu/hr	500,000	750,000	1,000,000	1,500,000	2,000,000	2,500,000	3,000,000	3,500,000	4,000,000	5,000,000	6,000,000
	kcal/hr	126,000	189,000	252,000	378,000	504,000	630,000	756,000	882,000	1,008,000	1,260,000	1,512,000
Natural Gas	ft^3/hr	500	750	1000	1500	2000	2500	3000	3500	4000	5000	6000
Propane	ft^3/hr	200	300	400	600	800	1000	1200	1400	1600	2000	2400
Natural Gas	m^3/hr	14	21	28	42	57	71	85	99	113	142	170
Propane	m^3/hr	5.7	8.5	11	17	23	28	34	40	45	57	68
Output at 120/80 F [49/27 C] 100% Firing	Btu/hr	470,000	705,000	940,000	1,410,000	1,880,000	2,350,000	2,820,000	3,290,000	3,760,000	4,700,000	5,640,000
	kcal/hr	118,440	177,660	236,880	355,320	473,760	592,200	710,640	829,080	947,520	1,184,400	1,421,280
	bhp	14	21	28	42	56	70	84	98	112	140	168
	kW	138	207	275	413	551	689	826	964	1102	1377	1653
Output at 180/ 140 F [82/60 C] 100% Firing	Btu/hr	440,000	660,000	880,000	1,320,000	1,760,000	2,200,000	2,640,000	3,080,000	3,520,000	4,400,000	5,280,000
	kcal/hr	110,880	166,320	221,760	332,640	443,520	554,400	665,280	776,160	887,040	1,108,800	1,330,560
	bhp	13	20	26	39	53	66	79	92	105	131	158
	kW	129	193	258	387	516	645	774	903	1032	1290	1547
MAWP	psi	125	125	125	125	125	125	125	125	125	125	125
	bar	8.6	8.6	8.6	8.6	8.6	8.6	8.6	8.6	8.6	8.6	8.6
MAWT	°F	210	210	210	210	210	210	210	210	210	210	210
	°C	99	99	99	99	99	99	99	99	99	99	99
Water Content	gallons	92	92	86	110	98	126	122	198	185	312	285
	liters	350	350	324	416	370	477	462	750	700	1180	1080
Weight w/o Water	pounds	1,298	1,298	1,396	1,861	2,041	2,420	2,475	3,574	3,761	4,901	5,278
	kg	589	589	633	844	926	1098	1123	1621	1706	2223	2394
Fireside Heating Surface	ft^2	193	193	252	388	489	546	593	889	1008	1262	1500
	m^2	18	18	23	36	45	51	55	83	94	117	139
Standby Heat Loss	Btu/hr	1000	1500	2000	3000	4000	5000	6000	7000	8000	10000	12000
	Watts	293	440	586	879	1172	1465	1758	2051	2344	2930	3516
ECM Blower Motor Size	Watts	335	335	335	1,700	1,700	1,200	2,400	2,400	2,400	8,000	8,000
Operating Voltage, Blower	Volts/ph/Hz	115/1/60	115/1/60	115/1/60	115/1/60	115/1/60	115/1/60	460/3/60	460/3/60	460/3/60	460/3/60	460/3/60
Control Circuit	Volts/ph/Hz	115/1/60	115/1/60	115/1/60	115/1/60	115/1/60	115/1/60	115/1/60	115/1/60	115/1/60	115/1/60	115/1/60
Max Current Draw, Blower	Amperes	4	4	4	13.5	13.5	13	4	4	4	12.7	12.7
Max Current Draw Control Circuit	Amperes	1.5	1.5	1.5	2	2	2	2	2	2	2	2
Max Over Current Protection	Amperes	20	20	20	20	20	20	20	20	20	20	20
Condensate Qty Firing Nat. Gas & operating @ 120/80 F.	gal/hr	3.5	5	7	10	13.5	17.6	20.6	24.0	27.0	34.0	40.5
Flue Gas Mass Flow @ 100% Firing	lb/hr	557	835	1,113	1,670	2,226	2,863	3,340	3,897	4,452	5,567	6,678
	kg/hr	252	379	505	758	1010	1299	1515	1768	2019	2525	3029

*CFC-E 4000: 8% derate with 9 ppm NOx. If full capacity is required, contact your local Cleaver-Brooks representative for additional information.

e-mail: info@cleaverbrooks.com
Web address: http://www.cleaverbrooks.com

PERMIT APPLICATION
RELOCATION OF GASOLINE FUELING FACILITY AND REPLACEMENT OF DISPENSING NOZZLES

JUNE 2026

Prepared for:
NORTHROP GRUMMAN CORPORATION
Palmdale, California

•••

Prepared by:
Verdant Environmental
South Pasadena, California

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TABLES

Table 1 Historical Actual Emissions
Table 2 Potential to Emit and Net Emission Increase

APPENDICES

Appendix A Site Support Building – New GDF Location

1

PERMIT APPLICATION FORMS

Antelope Valley Air Quality Management District
2551 West Ave H, Lancaster, CA 93536
661-723-8070
www.AVAQMD.ca.gov

GASOLINE DISPENSING APPLICATION FORM

Section 1: Facility/Owner Information **Please refer to Rule 301 for Application Filing Fee**

1. Company Name (Permit to be issued to): Northrop Grumman Aeronautics System Corporation - Palmdale		2. Federal Tax ID #: 95-1055798
3. Mailing/Billing Address (for above company name) *include city, state, and zip code*: 3520 E Avenue M, Palmdale, CA	3a. Billing Email: george.jung@ngc.com	
4. Facility or Business License Name (for equipment location): Northrop Grumman Aeronautics System Corporation - Palmdale		4a. APN # 0.0101
5. Facility Address - Location of Equipment (if same as for company, enter "Same"): 3520 E Avenue M, Palmdale, CA	5a. Facility UTM: 425E/3830N	5b. Facility Lat/Long: 34.629N/118.084W
6. Contact Name/ Title: George Jung	6a. Email Address (if same as billing, enter "same"): Same	6b. Phone: (661) 266-5394
7. General Nature of Business: Aerospace Manufacturing	7a. NAICS Code: 3721	7b. SIC Code: 3721

Type of Organization (Check one):

☐ Individual Owner ☐ Partnership ☑ Corporation ☐ Utility ☐ Local Agency ☐ State Agency ☐ Federal Agency

Section 2: Nature of Application

Business Type: ☐ Retail ☑ Non-Retail Date Business was acquired:

Application is for what type of permit: ☐ New Construction ☑ Modification ☐ Change of Owner

For modification or change of owner: Current Permit #: N011611 Company #: 1023 Facility #: 1816

If Modification, please describe: Relocation of existing above-ground tanks from Site 4 to Site 3 and install new dispensing equipment.

Section 3: Throughput Information

Please Indicate Maximum Anticipated Throughput

Existing Facility			New Facility		
☐ Gasoline all grades combined	☐ E85	☐ Other_____	☐ Gasoline all grades combine	☐ E85	☐ Other_____
☑ Use Existing permit Limit			_____Gallons per month		
☐ Requesting throughput limit increase.New limit: _____			_____Gallons per calendar quarter		
_____Gallons per month					
_____Gallons per calendar quarter					

FOR DISTRICT USE ONLY

Application Number:	Invoice Number:	Permit Number:	Company/Facility Number:

Section 4: Equipment Description

Storage Tanks									
Tank No.	Type		Capacity (gallons)	Tank Status		Fuel			
				New	Existing				
1	☐ Underground	☑ Aboveground	10,000	☐	☑	☑87 ☐89 ☐91 ☐E85	☐ Diesel	☐	
2	☐ Underground	☑ Aboveground	10,000	☐	☐	☐87 ☐89 ☐91 ☑E85	☑ Diesel	☐	
3	☐ Underground	☑ Aboveground	2,000	☑	☐	☑87 ☐89 ☐91 ☐E85	☐ Diesel	☑	
4	☐ Underground	☐ Aboveground		☐	☐	☐87 ☐89 ☐91 ☐E85	☐ Diesel	☐ 25	

Underground Tanks - Phase I Vapor Recovery System - Gasoline or E85 only							
Phase I Manufacturer and CARB Executive Order			Phase I Description Check the applicable Box(s)	P/V Valve			
				No. of Tank Vents	No. of P/V Valves	Make	Model
☐ VR-101 Phil-Tite	☐ VR-102 OPW	☐ VR-103 EBW	☑ Secondarily Contained ☐ Direct Bury ☐ Remote ☑ Vapor Riser ☐ Remote Additive Fill Offset ☐ _____ ☐ Double Fill	25	25		6000
☐ VR-104 CNI	☐ VR-105 Emco Wheaton	☐ VR-____					

Underground Tanks - Phase II Vapor Recovery System - Gasoline or E85 only						
Phase II Manufacturer and CARB Executive Order		No. of Nozzles		Processor Type	ISD	
		Existing	Additional or New		Make	Software version
☐ VR-201 Healy NO ISD	☐ VR-202 Healy with ISD	Triple-Product: _____	Triple-Product: _____	☑ Healy CAS ☑ Hirt VCS100 ☐ Veeder-Root Vapor Polisher ☑ VST Green Machine ☐ VST Membrane ☐ _____	☑ INCON ☐ Veeder-Root	_____
☐ VR-203 Balance NO ISD	☐ VR-204 Balance with ISD	Dual Product: _____	Dual Product: _____		☐ Exempt from ISD, the facility's annual actual gasoline throughput is less than 600,000 gallons	
☐ VR-205 VST with Hirt VCS 100 NO ISD	☐ VR-208 Emco Wheaton with Hirt VCS 100 NO ISD	Single Product (grade and no.): _____	Single Product (grade and no.): _____			
☑ VR-207 Emco Wheaton with Hirt VCS 100 NO ISD	☐ _____	Diesel: _____	Diesel: _____			
☐ VR-209 VST with FFS CAS NO ISD	☐ _____					
Exempt from Phase II ☐ E85 Dispensing Facility ☐ 100% ORVR Fleet Facility ☐ Dispensing into non-motor vehicle tanks						

Aboveground Tanks - Gasoline or E85 only					
No.	Information	Standing Loss Compliance	Phase I Manufacturer and CARB Executive Order	Phase II CARB Executive Order	No. of Nozzles
1	Make: Modern Welding Company Model: Fireguard, UL-2085 Serial No.: D-335224	**The Tank is existing and it complies with VR-301:** ☐ Painted with certified paint; or ☐ The Tank is listed in VR-301 as certified. **The Tank is new and it complies with VR-302:** ☐ The Tank is listed in VR-302 as certified.	☐ VR-401 OPW ☐ VR-402 Morrison Brothers ☐ _____	**CARB Executive Order**_____ **Exempt from Phase II** ☐ **E85 Dispensing Facility** ☐ **100% ORVR Fleet Facility** ☐ **Dispensing into non-motor vehicle tanks**	Triple-Product: _____ Dual Product: _____ Single Product (grade and no.): _____ Diesel: _____

2	Make: Modern Welding Company Model: Fireguard, UL-2085 Serial No.: D-835236	**The Tank is existing and it complies with VR-301:** ☐ Painted with certified paint; or ☐ The Tank is listed in VR-301 as certified. **The Tank is new and it complies with VR-302:** ☐ The Tank is listed in VR-302 as certified.	☐ VR-401 OPW ☐ VR-402 Morrison Brothers ☐ _____	**CARB Executive Order**_____ **Exempt from Phase II** ☐ **E85 Dispensing Facility** ☐ **100% ORVR Fleet Facility** ☐ **Dispensing into non-motor vehicle tanks**	_____
3	Make: Modern Welding Company Model: Fireguard, UL-2085 Serial No.: D-838229	**The Tank is existing and it complies with VR-301:** ☐ Painted with certified paint; or ☐ The Tank is listed in VR-301 as certified. **The Tank is new and it complies with VR-302:** ☐ The Tank is listed in VR-302 as certified.	☐ VR-401 OPW ☐ VR-402 Morrison Brothers ☐ _____	**CARB Executive Order**_____ **Exempt from Phase II** ☐ **E85 Dispensing Facility** ☐ **100% ORVR Fleet Facility** ☐ **Dispensing into non-motor vehicle tanks**	_____

Section 5: Contractor/Installer Information

Contractor Name:	Address:	Phone:	Email:
MJK Construction	4780 Cheyenne Way Chino, CA 91710	(661) 266-5394	Dan.miller@mjkconstruction.com

Technician/Installer Name	☑ ICC Certificate	☑ Phase I Certificate
Dan Miller	ICC#8107233	VR402 1002914

Section 6: Receptor Information

Distance (Feet) and direction to the property line of closest: >10500 E Residence >3000 W Business >13300 N School

Name of Closest School (K-12) Jack Northrop Elementary School

If the proposed facility operates within 1,000 feet of a school site and operation results in the emission of hazardous air pollutants, a public notice will be required at the expense of the applicant (CH&S §42301.6)

*Please note, District Staff may contact you for further information. Failure to provide additional information as requested in a timely manner may result in delays in the processing of this permit application.

Section 7: Certification

I hereby certify that all information contained herein is true and correct.

Name of Responsible Official	Official Title	Signature of Responsible Official	Date Signed
George Jung	Environmental		06/25/26

Phone:	Email:
(661) 266-5394	george.jung@ngc.com

Application Submittal Instructions:

1) Submit completed application to Engineering@avaqmd.ca.gov
2) Pay the corresponding application fee via check or credit card

Payment by check:
Make check payable to the Antelope Valley AQMD
Mail the check with a copy of this completed application to:
Antelope Valley AQMD
2551 West Ave H, Lancaster, CA 93536

Payment by credit card:
Pay online at our website: http://www.avaqmd.ca.gov/ Click "Pay Fees"
Please note a surcharge applies for all credit card payments.

3) If payment is made online via credit card, please email the receipt to Engineering@avaqmd.ca.gov
Should you have any additional questions, please, do not hesitate to contact the permitting division at 661-723-8070, or via email at Engineering@avaqmd.ca.gov

2

PROCESS DESCRIPTION

INTRODUCTION

The Northrop Grumman Corporation (Northrop), AVAQMD Facility ID No. 01816, is planning to relocate the gasoline dispensing facility, Permit No. N011611, to a location adjacent to a new Site Support Building at the APF42 location. A site plan showing the new location is included as Appendix A.

EQUIPMENT DESCRIPTION

The equipment, a 10,000 gallon aboveground tank with 2 nozzles, remains unchanged. The nozzles will be replaced with new nozzles and related compliant hardware.

OPERATING SCHEDULE

The system can operate 24 hours per day, 7 days per week, 52 weeks per year.

3

EMISSION CALCULATIONS

Pursuant to Rule 1304 (b) (2), the emissions change for each new or Modified Emission Unit(s) is calculated by subtracting Historic Actual Emissions (HAE) from the Proposed Emissions (PE), where the HAE of a new Emissions Unit is zero.

Emissions Change (EC) = (PE) - (HAE)

Historical actual VOC emissions from the permitted GDF are included as Table 1 and total just under 112 pounds per year or 0.31 pounds per day.

Proposed emissions for the relocated system are the equipment potential to emit, defined by District Rule 1301(III) as the maximum capacity of the emission unit to emit any regulated air pollutant under its physical and operational design. The permitted throughput for the GDF is 500,000 gallons per year. Proposed emissions are included in Table 2 and total 816.5 pounds per year. The Net Emission Increase from the modification of the GDF totals just under 705 pounds per year of VOC.

HAP EMISSIONS

The HAPs emitted from the GDF are described in Rule 1401 Health Risk Assessment that accompanies this application. The HRA also includes emission calculations for those pollutants and tabulates total estimated HAP emissions.

4

RULE COMPLIANCE EVALUATION

GENERAL REQUIREMENTS

Rule 212 - Standards for Approving Permits

This equipment is not located within 1,000 feet from the outer boundary of a school. This permit application will not result in criteria pollutants in excess of the specified thresholds and emissions of toxics will not result in a MICR greater than one in one million. Notification pursuant to Rule 212 is not required.

Rule 401 - Visible Emissions

No visible emissions are expected.

Rule 402 - Nuisance

The facility will not cause or contribute to a nuisance condition.

Rule 461 – Gasoline Transfer and Dispensing

Northrop Grumman will continue to comply with all requirements of Rule 461.

NEW SOURCE REQUIREMENTS

Regulation XIII – Criteria Pollutants

Maximum Annual Emissions

The maximum annual emissions from the GDF based on a permitted throughput of 500,000 gallons per year total 816.50 pounds per year.

BACT Evaluation

Best Available Control Technology (BACT) is required for each new or modified permit unit at any facility that emits, or has the potential to emit, 25 tons per year or more of any nonattainment pollutant or its precursors (District Rule 1303(A)(3)). Northrop has a maximum potential to emit in excess of 25 tons per year for VOC. BACT for a non-retail GDF with a throughput of 500,000 gallons per year is Phase I and Phase II vapor recovery. Compliance with the requirement for BACT will be achieved.

Offsets

New Source Review requires offsets for non-attainment pollutants and their precursors emitted by the addition of new equipment or modifications resulting in a net increase at existing major sources. The Northrop facility is an existing major source of VOC; however, the facility has a monthly VOC limit of 118,625 pounds in any 30-day period based on a 30-day rolling average that has been fully offset. This equipment will operate within the existing limit and there will, therefore, be no net increase in VOC emissions.

Rule 1314 - AVAQMD Rule 1314 — Federal Nonattainment New Source Review for Ozone Precursors

This project is not a Federal Major Modification as demonstrated in the Title V application that accompanies this application. Rule 1314 does not apply.

Rule 1401 – New Source Review of Toxic Air Contaminants

Rule 1401 establishes allowable risks for equipment requiring new permits pursuant to Rules 201 or 203. To demonstrate compliance with Rule 1401, risk assessment was prepared and submitted with this application.

5

FEE EVALUATION

Pursuant to Rule 301 (D) (1) any person who applies for the issuance of a new or modified permit and subject to the Provisions of Regulation XXX – Federal Operating Permits (Title V) shall be assessed a fee of $1089. This application filing fee is submitted with the application.

Total application fees included with this application are as follows:

- Gasoline dispensing facility x $1089 = $1089

TABLES

Table 1: Historical Actual Emissions

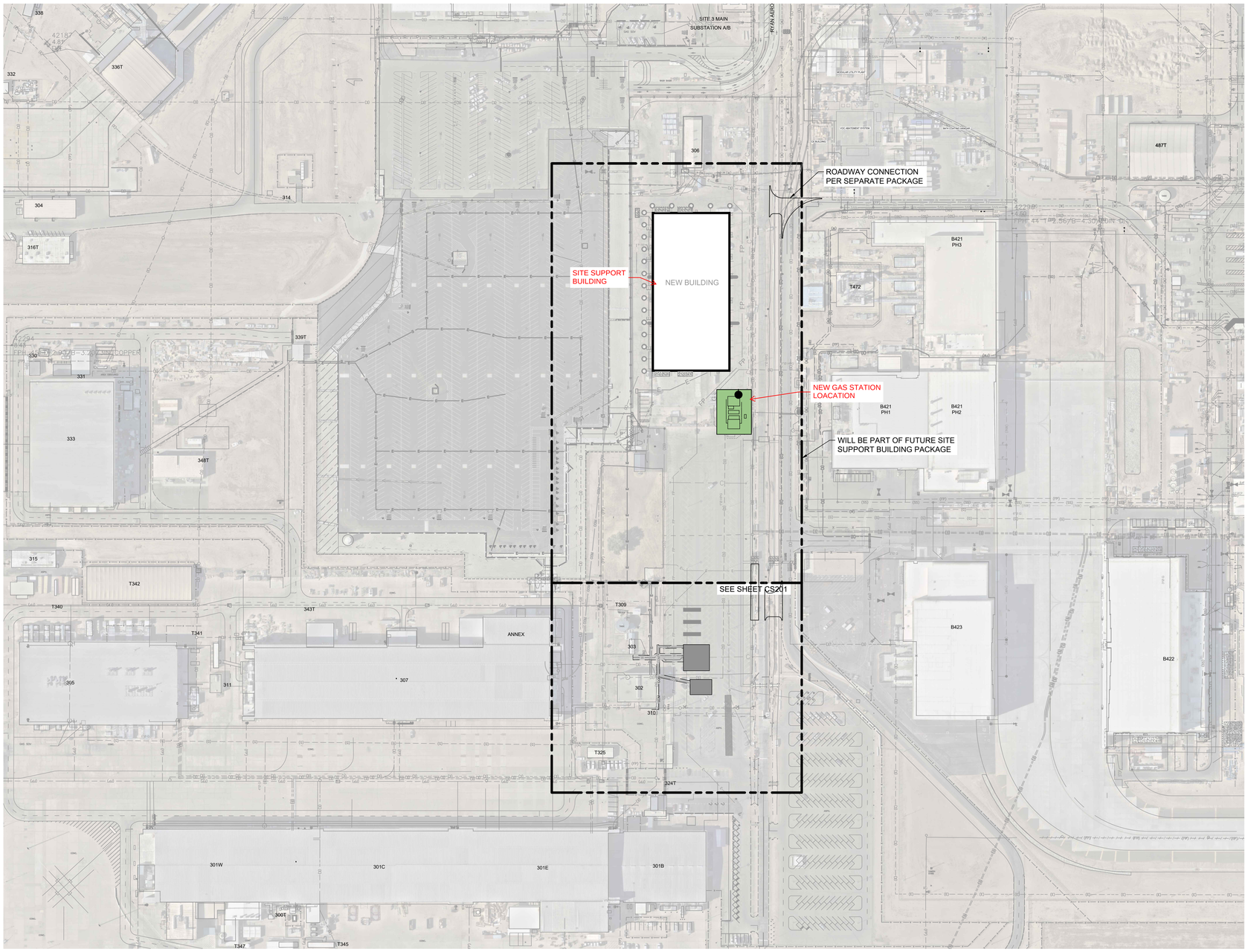
Begin Date	End Date	Process Name	Proc Rate 1000 gals	VOC_EF	VOC lb/yr
1/1/2024 00:00:00	1/1/2025 00:00:00	B460 Gasoline Disp-Spills	56.9350	0.420	23.913
1/1/2024 00:00:00	1/1/2025 00:00:00	B460 Gasoline Disp-Refueling	56.9350	0.740	42.132
1/1/2024 00:00:00	1/1/2025 00:00:00	AST T-1	56.9350	0.473	26.930
Total					92.975
1/1/2025 00:00:00	1/1/2026 00:00:00	B460 Gasoline Disp-Spills	80.0190	0.420	33.608
1/1/2025 00:00:00	1/1/2026 00:00:00	B460 Gasoline Disp-Refueling	80.0190	0.740	59.214
1/1/2025 00:00:00	1/1/2026 00:00:00	AST T-1	80.0190	0.473	37.849
Total					130.671
2-year Average					111.823

Table 2: Potential to Emit and Net Emission Increase

Process Name	Proc Rate 1000 gals	VOC_EF lb/1000 gals	VOC lb/yr
B460 Gasoline Disp-Spills	500	0.420	210.000
B460 Gasoline Disp-Refueling	500	0.740	370.000
AST T-1	500	0.473	236.500
Total			816.500
Net Emission Increase			704.677

APPENDIX A

SITE SUPPORT BUILDING – NEW GDF LOCATION



SITE LEGEND

- ASPHALT PAVEMENT
- TEMPORARY TRAILER LOCATIONS
- ☒ BACKFLOW PREVENTER

OVERALL SITE PLAN
DEMO PACKAGE

0 100' 200'
SCALE IN FEET

N

REVISIONS			
REV	DESCRIPTION	DATE	APPROVED
0	ISSUED FOR CONSTRUCTION	05/08/2026	PB

BURNS McDONNELL

145 S. STATE COLLEGE BLVD. SUITE 600 BREA, CA 92821
BMCD LICENSE NO. 1107087

APPROVED BY	NORTHROP GRUMMAN ENVIRONMENTAL HEALTH AND SAFETY	DATE
APPROVED BY	NORTHROP GRUMMAN FIRE DEPARTMENT	DATE
APPROVED BY	NORTHROP GRUMMAN SECURITY	DATE
APPROVED BY		DATE
APPROVED BY		DATE
APPROVED BY		DATE
APPROVED BY		DATE
	NORTHROP/GRUMMAN BUSINESS MANAGEMENT DEPT.	DATE
	NORTHROP/GRUMMAN FACILITIES ENGINEER MANAGER	DATE
PREPARED BY	ENGINEER	DATE
RECOMMENDED BY	NORTHROP/GRUMMAN FACILITY MANAGER - LESSEE	DATE
APPROVED BY	LESSOR SUPERVISING ENGINEER	DATE
APPROVED BY	LESSOR FIRE PROTECTION ENGINEER	DATE
APPROVED BY	LESSOR SAFETY SPECIALIST	DATE

NOTE: IF THIS SHEET IS LESS THAN 34"x44", THIS SHEET HAS BEEN REDUCED. REDUCE THE SCALE TO THE DRAWING ACCORDINGLY.

NORTHROP GRUMMAN

NORTHROP GRUMMAN CORP.
3520 EAST AVENUE "M"
PALMDALE, CALIFORNIA 93550

REGISTERED PROFESSIONAL ENGINEER
PARIS BOROVILOS
No. 26256
EXP. 09-30-2026
CIVIL
STATE OF CALIFORNIA

PLANT	42	BUILDING NO. -	AREA -

TITLE **SITE SUPPORT BUILDING - ENABLING PACKAGE**

OVERALL SITE PLAN - TRAILERS

SCALE AS INDICATED	SHEET 8 OF 10	DATE 05/08/2026	
DRAWN T. UDDIN	DESIGNED S. AMATYA	CHECKED P. BOROVILOS	
PROJECT NO. 194181	DRAWING NO. CS200		

UNCLASSIFIED

PERMIT APPLICATION
PORTABLE SPRAY BOOTH

JUNE 2026

Prepared for:
NORTHROP GRUMMAN CORPORATION
Palmdale, California

•••

Prepared by:
Verdant Environmental
South Pasadena, California

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- General Requirements 4
- New Source Requirements 4
- NESHAP Requirements 5

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Table 1 Materials to be used in portable spray booth and associated emissions
Table 3 Particulate emissions from the portable spray booth

APPENDICES

Appendix A Clayton Booth Photos

1

PERMIT APPLICATION FORMS

Antelope Valley Air Quality Management District

2551 West Ave H, Lancaster, CA 93536
Phone (661) 723-8070
www.avaqmd.ca.gov

Application for Spray Booth and Paint Spray Gun Only

Please refer to Rule 301 for permit application fee

Owner Information

1. Permit to be Issued to (name of company to receive permit): Northrop Grumman Aeronautics System Corporation		**1a. Federal Tax ID #:** 95-1055798
2. Mailing/Billing Address (for the above company name): 3520 East Ave M Palmdale, CA 93550		**2a. APN #** USAF Plant 42
3. Facility or Business Name on License (for equipment location): Northrop Grumman Aeronautics System Corporation	**3a. Billing Email:** george.jung@ngc.com	
4. Facility Address/Location of Equipment (if same as company, enter "Same"): Same	**4a. Facility UTM:** 425E/3830N	**4b. Facility Lat/Long:** 34.629N/118.084W
5. Contact Name and Title: George Jung	**5a. E-mail Address (if same as billing, enter "Same"):** Same	**5b. Phone:** (661) 266-5394
6. General Nature of Business: Aerospace Manufacturing	**6a. NAICS Code:** 336411	**6b. SIC Code:** 3721

7. Type of Organization (check one):

☐ Individual Owner ☐ Partnership ☑ Corporation ☐ Utility ☐ Local Agency ☐ State Agency ☐ Federal Agency

8. Application is hereby made for the Authority to Construct (ATC) and Permit to Operate (PTO) for the following equipment:
Upgrade exhaust fan from a 5 HP to a 30 HP (+/-20%) with a 30" diameter 8-blade Vaneaxial or equivalent fan blade

9. Application is for: New Construction ☐ Modification ☑ Change of Owner ☐

***For modification or change of owner:** Current permit #: S006767 Company No.: 1023 Facility No.: 1816

10. Do you claim Confidentiality of Data? (If yes, state nature of data in an attachment.) ☐ Yes ☑ No

Operation Information

Facility Annual Operation by Quarters (percent):
Jan-Mar% 25 Apr-Jun% 25 Jul-Sep% 25 Oct-Dec% 25

13. Expected Equipment Operating Hours:
Hrs/Day: 24 Days/Wk: 7 Wks/Yr: 52 Total Hrs/Yr: 8760

Equipment Information

Manufacturer: TBD **Model #:** TBD **Serial #:** TBD

Booth Dimensions (specify units): W: 12 Ft L: 20 Ft H: 10 Ft

Open Spray ☐ Automotive Booth ☐ Bench Type Booth ☐ Floor Type Booth ☑ Other (please specify): _____

Exhaust fan (if present): One Fan Rating (hp): 30 HP (+/-20%) Fan Diameter(inches): 30" diameter 8-blade

Manometer across exhaust filters? ☑ Yes ☐ No Minimum Pressure Drop (in inches of water): .5

Filter Information

	Type and Material	Number	Width	Length	Thickness
Inlet					
Exhaust First Stage	ATI Two Ply Polyester NESHAP Approved				1 inch
Exhaust Second Stage	ATI Four Ply Polyester NESHAP Approved				1 inch
Exhaust Third Stage	ATI Three Polyester NESHAP Approved				Pocket Bag

Application Information

Article sprayed (check all that apply):	Aerospace ☑	Architectural ☐		Composite ☐
Metal ☐	Motor Vehicle ☐	Plastic ☐	Wood ☐	Other (specify)
Minimum size of articles sprayed (feet):	Width 1 Ft	Length 1 Ft	Height 1 Ft	
Method of Application (check all that apply):		Air Atomization ☐	Combined Air and Airless ☐	
Electrostatic ☐	Hand ☑	High Volume Low Pressure (HVLP) ☑	Pressure Atomization (airless) ☐	Other (specify):
Gun or Spray Cleaning Method:				
Enclosed Gun Cleaning System ☑		Manual Wipe ☐	Open Flush ☐	
Other (specify):				

Disposition

Air Dried ☑	**Oven Dried, Baked or Cured (Specify Below):** ☐	**Part of Booth** ☐	**Separate Enclosure** ☐
Oven (if present) is: ☐	**Gas fired** ☐	**Electric** ☐	**Max heat input (Btu/hr):**

Antelope Valley Air Quality Management District

2551 West Ave H, Lancaster, CA 93536
Phone 661.723.8070
www.avaqmd.ca.gov

Application for Spray Booth and Paint Spray Gun Only

Please refer to Rule 301 for permit application fee

Materials Information

Please include the MSDS for each coating and solvent to be used with the application submission

Type	VOC Content lb/gal or gm/liter	Vapor Pressure mmHg @ 20° C	Maximum Use gal/l per day	Maximum Use gal/l per year
Enamel	N/A			
Topcoat	420 gm/liter		<5	<1000
Primer	340 gm/liter		<5	<1000
Sealer	N/A			
Stain	N/A			
Added Thinner	N/A			
Clean-up Solvent		<45 mmHg	<5	<1000
Surface Preparation Solution		<45 mmHg	<5	<1000
Other	>800 gm/liter EREC		<5	<1000
Other				

Receptor Information

Distances (feet) and direction to the property line of the closest:

Residence	Business	School
>10500 E	>3000 W	>13300 N

Name of closest school (K-12): The Palmdale Aerospace Academy (TPAA)

Certification

Signature of Responsible Official	Official Title
	Environmental

Typed or Printed Name of Responsible Official	Phone:	Date Signed:
George Jung	(661) 266-5394	06/25/26

-For District Use Only-

Application No.:	Invoice No.:	Permit No.:	Company/ Facility No.:

Antelope Valley Air Quality Management District

2551 West Ave H, Lancaster, CA 93536
Phone 661.723.8070
www.avaqmd.ca.gov

Application for Spray Booth and Paint Spray Gun Only

Please refer to Rule 301 for permit application fee

Application Submittal Instructions

1) Submit completed application to engineering@avaqmd.ca.gov

2) Pay the corresponding application fee via check or credit card

Payment by check:

Make check payable to: Antelope Valley AQMD
Mail the check with a copy of this completed application to:
Antelope Valley AQMD 2551 West Ave H, Lancaster, CA 93536

Payment by credit card:

Pay online at our website: http://www.avaqmd.ca.gov
Click "Pay Fees"
Please note a surcharge applies for all credit card payments.

If payment is made online via credit card, please email the receipt to engineering@avaqmd.ca.gov.

Should you have any additional questions, please, do not hesitate to contact the permitting division at 661-723-8070, or via email at engineering@avaqmd.ca.gov

2

PROCESS DESCRIPTION

INTRODUCTION

The Northrop Grumman Corporation (Northrop), AVAQMD Facility ID No. 01816, is planning to install a new portable spray booth at the APF42 location. Photos of the booth are included as Appendix X.

EQUIPMENT DESCRIPTION

The portable spray booth is a Clayton custom booth, 20' W x 23' L x 15' H. It will be equipped with two 3200 CFM exhaust fans, each 8.5" x 17" and rated at 1 HP. The booth will be equipped with ATI 3-stage NESHAP approved filters with a manometer measuring pressure drop across the filters.

OPERATING SCHEDULE

The system can operate 24 hours per day, 7 days per week, 52 weeks per year.

3

EMISSION CALCULATIONS

Pursuant to Rule 1304, the emissions change for a new facility or emissions unit is calculated, in pounds per day, from proposed emissions. Proposed emissions are based on facility throughput.

PROPOSED EMISSIONS

Proposed emissions for the new system are the equipment potential to emit, defined by District Rule 1301(FFF) as the maximum capacity of the emission unit to emit any regulated air pollutant under its physical and operational design. The types of materials Northrop plans to use and the VOCs are included as well as annual usage emissions are expressed in Table 1.

HAP EMISSIONS

The HAP content of the materials that will be sprayed in the portable spray booth are described in Rule 1401 Health Risk Assessment that accompanies this application. The HRA also includes emission calculations for those materials and tabulates total estimated HAP emissions.

4

RULE COMPLIANCE EVALUATION

GENERAL REQUIREMENTS

Rule 212 - Standards for Approving Permits

This equipment is not located within 1,000 feet from the outer boundary of a school. This permit application will not result in criteria pollutants in excess of the specified thresholds and emissions of toxics will not result in a MICR greater than one in one million. Notification pursuant to Rule 212 is not required.

Rule 401 - Visible Emissions

No visible emissions are expected.

Rule 402 - Nuisance

The facility will not cause or contribute to a nuisance condition.

Rule 1124 - Aerospace Assembly and Component Manufacturing Operations

Northrop will comply with all applicable provisions of Rule 1124.

Rule 1171

Compliance with Rule 1171 requirements will be maintained.

NEW SOURCE REQUIREMENTS

Regulation XIII – Criteria Pollutants

Maximum Annual Emissions

The addition of the paint spray hangar and carbon control systems will increase VOC emissions by less than one pound per day. The estimated PM emission increase totals less than 0.02 pounds per year from painting

BACT Evaluation

Best Available Control Technology (BACT) is required for each new or modified permit unit at any facility that emits, or has the potential to emit, 25 tons per year or more of

any nonattainment pollutant or its precursors (District Rule 1303(A)(3)). Northrop has a maximum potential to emit in excess of 25 tons per year for VOC. This equipment, will emit an average of less than 1 pound per day. BACT is not required.

Offsets

New Source Review requires offsets for non-attainment pollutants and their precursors emitted by the addition of new equipment or modifications resulting in a net increase at existing major sources. The Northrop facility is an existing major source of VOC; however, the facility has a monthly VOC limit of 118,625 pounds in any 30-day period based on a 30-day rolling average that has been fully offset. This equipment will operate within the existing limit and there will, therefore, be no net increase in VOC emissions.

Rule 1314 - AVAQMD Rule 1314 — Federal Nonattainment New Source Review for Ozone Precursors

This project is not a Federal Major Modification as demonstrated in the Title V application that accompanies this application. Rule 1314 does not apply.

Rule 1401 – New Source Review of Toxic Air Contaminants

Rule 1401 establishes allowable risks for equipment requiring new permits pursuant to Rules 201 or 203. To demonstrate compliance with Rule 1401, risk assessment was prepared and submitted with this application.

NESHAP REQUIREMENTS

40 CFR 63 Subpart GG – Aerospace NESHAP

Northrop will comply with all applicable provisions of 40 CFR 63 Subpart GG.

5

FEE EVALUATION

Pursuant to Rule 301 (D) (1) any person who applies for the issuance of a new or modified permit and subject to the Provisions of Regulation XXX – Federal Operating Permits (Title V) shall be assessed a fee of $1089. This application filing fee is submitted with the application.

Total application fees included with this application are as follows:

- Paint spray booth x $1089 = $1089

TABLES

Table 1: Materials to be used in portable spray booth and associated emissions

MATERIAL	VOC LBS/GAL	GAL/YR	VOC LBS/YR
Primer	2.916	10	29.16
Topcoat	3.5	20	70
IPA	6.55	10	65.5
Acetone	0	10	0
		TOTAL	**164.66**

Table 2: Particulate emissions from the portable spray booth

Gal/yr	Solids lb/gal	Solids lbs/yr	Transfer Efficiency	Fallout	Uncontrolled PM lbs/yr	Control Efficiency	PM Emissions lbs/yr
30	3	90	0.65	0.5	15.75	0.999	0.01575

APPENDIX A

BOOTH PHOTOS

Clayton Mobile Paint Booth

20’ W x
25’ L x
15’ H

Approximately 30 min setup time & 30 mins for tear-down

Booth does not have to be anchored while inside a hangar

Once inflated, paint booth stayed inflated for the duration of the work (1 week)



Initial blow-up, looking at the front of the booth, about to position paint booth over the wing

Clayton Mobile Paint Booth



Wing-tip through the tent

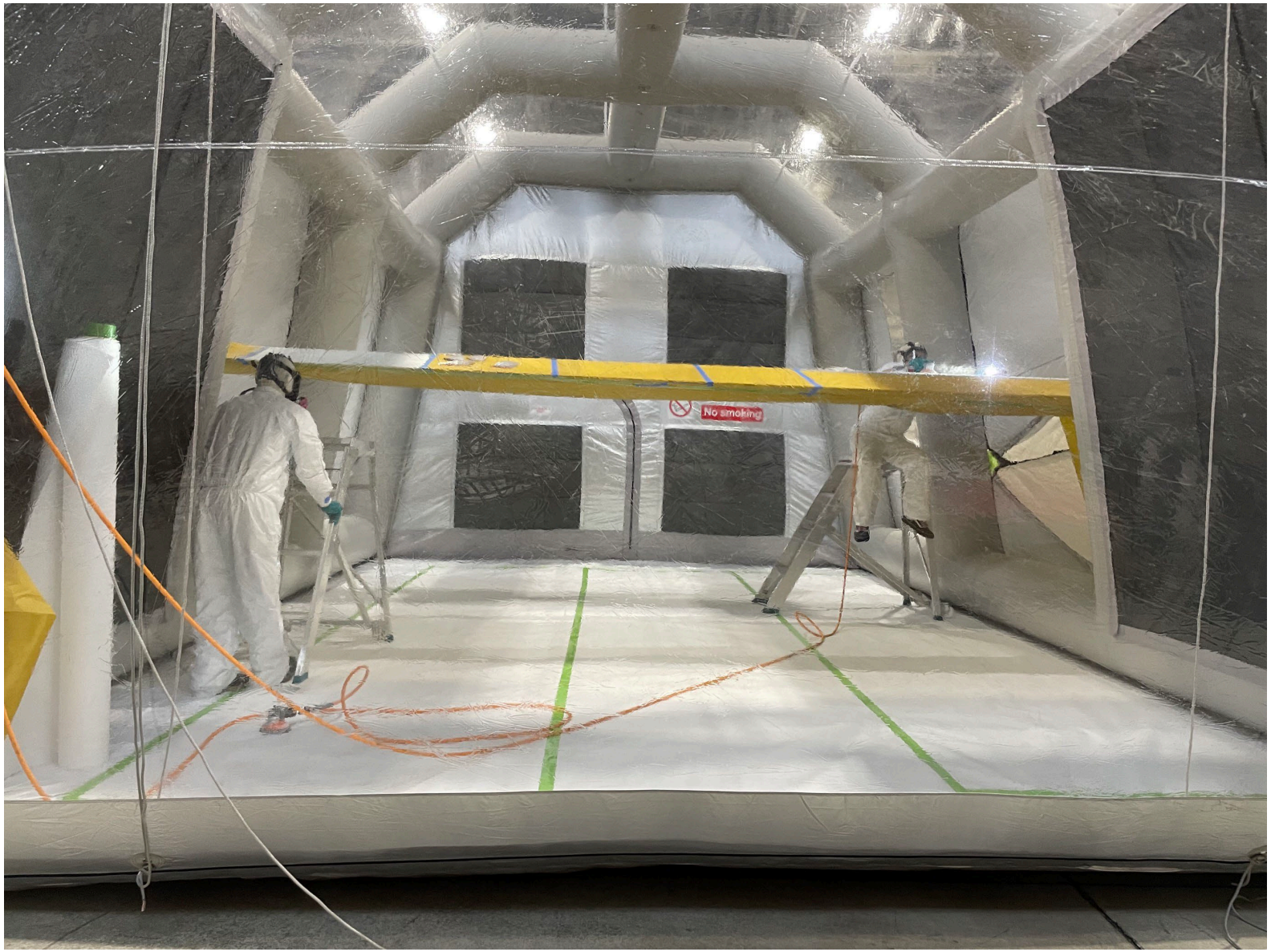
NORTHROP GRUMMAN

Clayton Mobile Paint Booth



Work area within the paint booth

Clayton Mobile Paint Booth



Work area within the paint booth during sanding

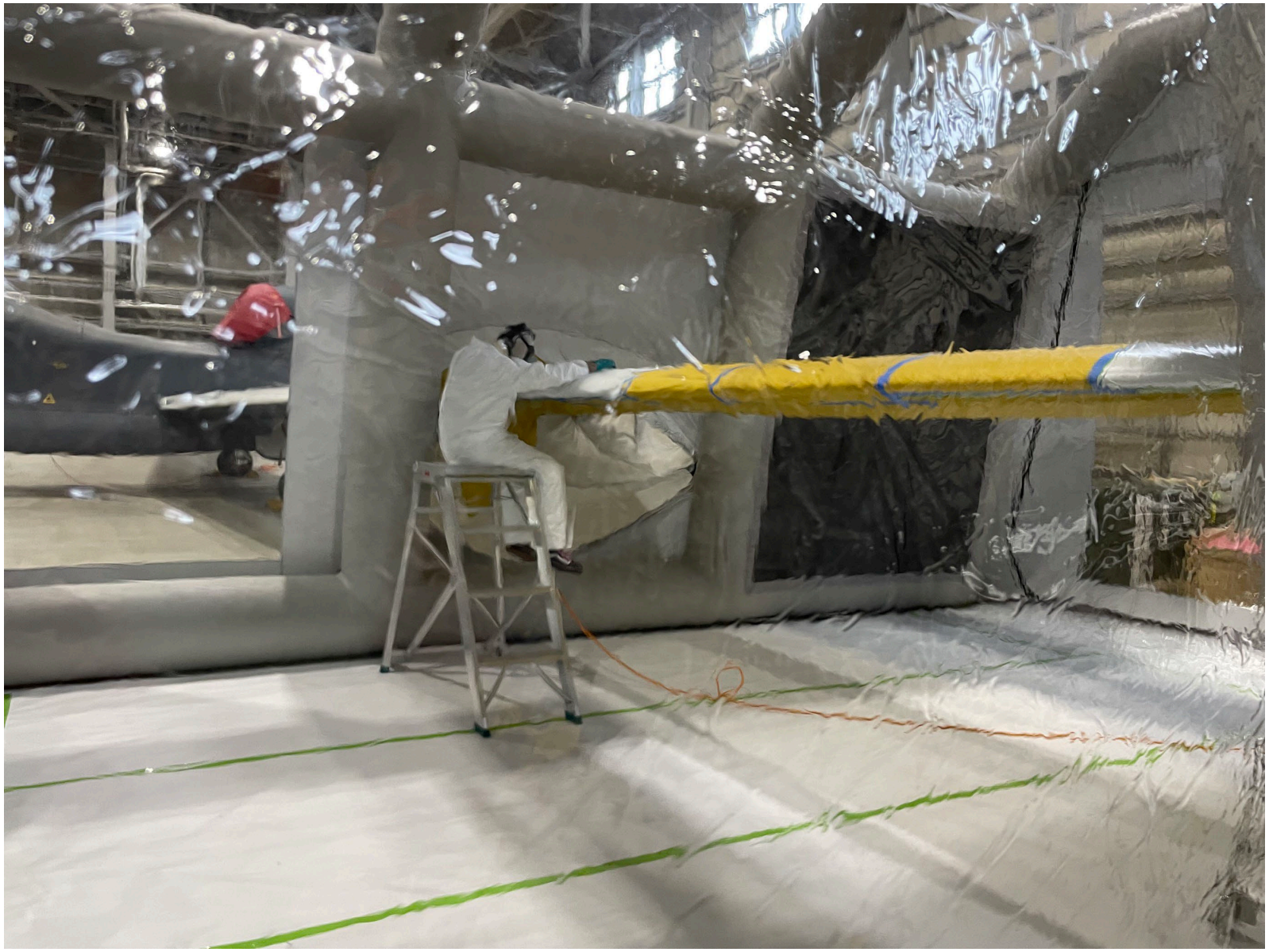
Clayton Mobile Paint Booth



Work area within the paint booth during sanding

NORTHROP GRUMMAN

Clayton Mobile Paint Booth



Work area within the paint booth

Clayton Mobile Paint Booth



Two blowers for ventilation - Once inflated, paint booth stayed inflated for the duration of the work (1 week)

PERMIT APPLICATION
SITE 2 B/260 EMERGENCY GENERATOR

JUNE 2026

Prepared for:
NORTHROP GRUMMAN CORPORATION
Palmdale, California

Prepared by:
VERDANT ENVIRONMENTAL
South Pasadena, California

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TABLES

Table 1 Potential to Emit NOx, CO and VOC
Table 2 Potential to Emit PM and SO2

APPENDICES

Appendix A Manufacturer's Data

1

PERMIT APPLICATION FORMS

Antelope Valley Air Quality Management District
2551 W Avenue H, Lancaster, CA 93536
Phone: 661-723-8070
www.AVAQMD.ca.gov

APPLICATION FOR INTERNAL COMBUSTION ENGINE (I.C.E.) ONLY

PLEASE TYPE OR PRINT

Please refer to Rule 301 for Application Filing Fee.

Section 1: Facility/Owner Information

1. Company Name (Permit to be issued to): Northrop Grumman Aeronautics System Corporation		2. Federal Tax ID #: 95-1055798
3. Mailing/Billing Address (for above company name): 3520 East Ave M Palmdale, CA 93550		3a. Billing Email Address: george.jung@ngc.com
4. Facility or Business License Name (for equipment location): 3520 East Ave M Palmdale, CA 93550		4b. APN #
5. Facility Address - Location of Equipment (if same as for company, enter "Same"): Same	5a. Facility UTM: 425E/3830N	5b. Facility Lat/Long: 34.629N/118.084W
6. Contact Name/Title: George Jung	6a. Email Address (if same as billing, enter "Same"): Same	6b. Phone: (661) 266-5394
7. General Nature of Business: Aircraft Manufacturing	7a. NAICS Code: 336411	7b. SIC Code: 3721

8. Type of Organization (check one):
☐ Individual Owner ☐ Partnership ☑ Corporation ☐ Utility ☐ Local Agency ☐ State Agency ☑ Federal Agency

Section 2: Nature of Application

Application is hereby made for Authority To Construct (ATC) and Permit To Operate (PTO) the following equipment:
B260 PH1 Emergency Backup Generator Natural Gas 302 BHP

Application is for:
☐ New Construction ☐ Modification ☐ Change of Owner

For modification or change of owner: Company No.: _____
Current Permit #: _____ **Facility No.:** _____

Do you claim Confidentiality of Data? ☐ No ☑ Yes (attach explanation; specify which information provided is confidential)

Section 3: Equipment Information

Engine Use: ☐ Prime ☐ Emergency ☐ Stand-by (used only when a permitted prime unit is down for maintenance or repair)
(*Check one*) ☐ Low-Use (≤200 hrs/yr)
☐ Stationary OR ☐ Portable

Engine Manufacturer: Rolls Royce	Engine Model: PSI 11.1L CAC	Engine Serial Number: TBD
Year of Manufacture: 2026	Date Installed: 1/1/2027	
Rating (BHP): 302	Speed (RPM): 1800	Number of Cylinders: 6

Fuel Type: ☐ CARB Diesel ☐ Natural Gas ☐ Propane/LPG ☐ Gasoline ☑ Digester Gas ☐ Landfill Gas
☐ Other (specify): _____

Alternate Fuel (if applicable) specify: 1023 (e.g. Propane backup for Natural Gas engine)

Engine Meter: ☑ Hour Meter ☑ Dedicated Fuel Meter ☐ None

Cycle Type: ☐ two cycle ☐ four cycle
Combustion Type: ☑ Rich Burn ☑ Lean Burn

Check all that apply: ☑ Naturally Aspirated ☑ Turbocharged ☐ Aftercooled ☑ Intercooled ☐ Injection Timing Retarded
☐ Air to Fuel Ratio Controller ☑ Smoke Puff Limiter ☐ Electronic Control Module ☐ Staged Combustion ☐ Direct Fuel Injection
☐ Pre-Combustion Chamber ☐ Piston Scavenging ☐ Other (specify): _____

Add-on Emission Control Technology: ☐ No ☐ Yes: Attach Manufacturer's specifications, CARB Certification or Source Test Data

If yes: Manufacturer: Model: 425E/3830N Serial #: george.jung@ngc.cor CARB EO#: 336411

Type: ☐ SCR ☐ Non-SCR ☐ Particulate Trap ☐ EGR ☐ Oxidation Catalyst ☑ Other (specify):	
Stack Data: Exhaust Stack Height from Ground: 9 feet	Exhaust Stack Diameter: 0.416 feet
Stack is: ☐ horizontal ☑ vertical ☐ open ☐ weather cap	
Exhaust Vent Data: Exhaust Temp: 1281 °F	Maximum Exhaust Rate: 1371 CFM

Section 4: Emissions Data

Emission Factor Basis: ☑ Manufacturer ☐ Source Test ☐ AVAQMD Default ☐ USEPA AP-42
☐ Other (please, specify): 7

USEPA Family Name: TPSIB11.1NGP-017 CARB Executive Order Number:

Emissions Data: If no add-on controls are installed, enter "same" in Post Control Max. Emissions column

Pollutant:	Pre-Control Max. Emissions: Units:	Post Control Max. Emissions: Units:
NOx	52	0.009
NMHC	8760	0.001
CO	TBD	0.227
PM10	TBD	
SOx	20 Ft	

Section 5: Powered Item

This ICE is used to power:
☐ Electrical Generator ☐ Compressor ☐ Pump ☐ Paint Spray Gun ☐ Conveyor or Drive ☐ Fire Pump
☐ Other (please, specify):

PERP Registration Number (if applicable):

Manufacturer: Model: 432 PSL Serial #: tbd Size/Rating: 268 BHP

Section 6: Operation Information

Fuel Consumption at Maximum Rated Load: 2115 ☐ gal/hour ☐ SCF/hour ☐ MMBtu/hr

Typical Load: % of Maximum Rated Load

Facility Annual Operation by Quarters (percent):
☐ Uniform OR ____% Jan-Mar 25 % Apr-Jun
____% Jul-Sep ____% Oct-Dec

Expected Operating Hours of IC Engine:
0 Hours/Day 0 Days/Week 0 Weeks/Year
40 Total Annual Hours

Section 7: Receptor Information

Distance (Feet) and direction to the property line of closest: Residence: >10500 E Business: >3000 W School: >13300 N

Name of Closest School (K-12): Jack Northrop Elementary School

If the proposed ICE operates within 1,000 feet of a school site and operation results in the emission of hazardous air pollutants, a public notice will be required at the expense of the applicant (CA H&S §42301.6)

***Please note, District Staff may contact you for further information. Failure to provide additional information as requested in a timely manner may result in delays in the processing of this permit application.**

Section 8: Certification

I hereby certify that all information contained herein is true and correct.

George Jung	Environmental		06/25/26
Name of Responsible Official	Official Title	Signature of Responsible Official	Date Signed

Telephone Number:	Email:
(661) 266-5394	Dan.miller@mjkconstruction.com

-For District Use only-

Application No.:	Invoice No.:	Permit No.:	Company/Facility No.:

ANTELOPE VALLEY AIR QUALITY MANAGEMENT DISTRICT
2551 West Ave H, Lancaster, CA 93536
Phone (661)723-8070
www.avaqmd.ca.gov

APPLICATION FOR INTERNAL COMBUSTION ENGINE (I.C.E.) ONLY

Application Submittal Instructions

1) Submit completed application to engineering@avaqmd.ca.gov

2) Pay the corresponding application fee via check or credit card

Payment by check:
Make check payable to: Antelope Valley AQMD
Mail the check with a copy of this completed application to:
Antelope Valley AQMD 2551 West Ave H, Lancaster, CA 93536

Payment by credit card:
Pay online at our website: http://www.avaqmd.ca.gov
Click "Pay Fees" under Quicklinks.
Please note a surcharge applies for all credit card payments.

If payment is made online via credit card, please email the receipt to engineering@avaqmd.ca.gov.

Should you have any additional questions, please, do not hesitate to contact the permitting division at 661-723-8070, or via email at engineering@avaqmd.ca.gov.

2

PROCESS DESCRIPTION

INTRODUCTION

Northrop Grumman Corporation (Northrop Grumman) is planning to install a new emergency generator at B/260, Site 2, AFP42. The equipment will be used as backup power for the new hangar. This location is part of the Northrop Grumman Facility ID No. 01816 and this equipment will be incorporated into the Northrop Grumman Title V permit.

EQUIPMENT DESCRIPTION

The unit is a 2026 Rolls Royce Power Solution International (PSI) Engine Model PSI-11.1L CASC, EPA Engine Family TPSIB11.1NGP-017. It is powered by a 302 BHP Rolls Royce engine Model GS100N6SPA**.** The unit is fueled with natural gas and equipped with a 3-way catalyst. It powers a 2168 BHP generator manufactured by Marathon, Model 432 PSL.

OPERATING SCHEDULE

The unit is an emergency engine and will be operated not more than 50 hours per year for maintenance and testing.

3

EMISSION CALCULATIONS

CRITERIA POLLUTANT EMISSIONS

Proposed equipment potential to emit, as defined by District Rule 3001(W), is the maximum capacity of the emission unit to emit any regulated air pollutant under its physical and operational design. Pursuant to AQMD policy, only maintenance and testing emissions are included in the proposed emission calculation for emergency generators. Emission factors for NO_x, CO and VOC are as provided by the manufacturer with emissions calculated in Table 1. SO_2 and PM emissions, calculated using AVAQMD default emissions factors for 4 stroke rich burn engines, are included in Table 2.

HAP EMISSIONS

The HAPs emitted from the ICE are described in Rule 1401 Health Risk Assessment that accompanies this application. The HRA also includes emission calculations for those pollutants and tabulates total estimated HAP emissions.

4

RULE COMPLIANCE EVALUATION

Rule 401 – Visible Emissions

Rule 401 limits visible emissions opacity to less than 20 percent (or Ringelmann No. 1). During start up, visible emissions may exceed 20 percent opacity. However, emissions of this opacity are not expected to last three minutes or longer. In normal operating mode, visible emissions are not expected to exceed 20 percent opacity.

Rule 404 – Particulate Matter – Concentration

Rule 404 specifies standards of emissions for particulate matter concentrations. The use of an engine fueled with natural gas achieves compliance with Rule 404.

Rule 405 – Solid Particulate Matter - Weight

Rule 405 limits particulate matter emissions from fuel combustion on a mass per unit combusted basis. The use of an engine fueled with natural gas achieves compliance with Rule 405.

Rule 1110.2 - Emissions from Stationary, Non-road & Portable Internal Combustion Engines

Engine units will be limited to use for emergency power, defined as when utility power is not available. A non-resettable operating hour meter will be installed and maintained on each engine unit to indicate elapsed engine operating time. Compliance with Rule 1110.2 will be achieved.

Regulation XIII – New Source Review

<u>Rule 1303 – BACT</u>

Rule 1303 (A) mandates BACT for:

- Any new Permit Unit which emits, or has the Potential to Emit, 25 pounds per day or more of any Nonattainment Air Pollutant; or

- Any new or Modified Facility which emits, or has the Potential to Emit, 25 tons per year or more of any Nonattainment Air Pollutant

As the Northrop Grumman facility has the potential to emit 25 tons per year or more of NOx, BACT is required. The use of a natural gas-fired engine equipped with a 3-way catalyst for emergency operation meets the requirement for BACT. Compliance with Rule 1303 (A) is achieved.

Rule 1303– Offsets

Offsets are not required as the total annual NOx emissions are less than 0.5 pounds per year.

40 CFR 60 Subpart JJJJ - Standards of Performance for Stationary Spark Ignition Internal Combustion Engines

40 CFR 60 Subpart JJJJ applies to this unit as follows: §60.4230 (a)(4)(iv) Owners and operators of stationary SI ICE that commence construction after June 12, 2006, where the stationary SI ICE are manufactured on or after January 1, 2009, for emergency engines with a maximum engine power greater than 19 KW (25 HP).

§60.4233 (e) Owners and operators of stationary SI ICE with a maximum engine power greater than or equal to 75 KW (100 HP) (except gasoline and rich burn engines that use LPG) must comply with the emission standards in Table 1 to this subpart for their stationary SI ICE.

Table 1 to Subpart JJJ of Part 60 requires the following emission rates for engines with a HP rating of >130:

Pollutant	Emission rate
NOx	2.0 g/HP-hr (160 ppmvd@15% O2)
CO	4.0 g/HP-hr (540 ppmvd@15% O2)
VOC	1.0 g/HP-hr (86 ppmvd@15% O2)

The unit Northrop Grumman is planning to install has the following emission rates:

Pollutant	Emission rate
NOx	0.009 g/HP-hr
CO	0.227 g/HP-hr
VOC	0.001 g/HP-hr

Compliance with the requirements of 40 CFR 60 Subpart JJJJ is achieved.

40 CFR 63 Subpart ZZZZ - National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines

Pursuant to § 63.6590 (c) for stationary RICE subject to regulations under 40 CFR Part 60, an affected source that is a new emergency spark-ignition stationary RICE with a site rating of less than or equal to 500 brake HP located at a major source of HAP emissions meets the requirements of this part by meeting the requirements of 40 CFR part 60 subpart JJJJ. No further requirements apply to the engine under this part.

AVAQMD Rule 1401 - New Source Review for Toxic Air Contaminants

Rule 1401 establishes allowable risks for equipment requiring new permits pursuant to Rules 201 or 203. To demonstrate compliance with Rule 1401, risk assessment was prepared and submitted with this application.

5

FEE EVALUATION

Pursuant to Rule 301 (D) (1) any person who applies for the issuance of a new or modified permit and subject to the Provisions of Regulation XXX – Federal Operating Permits (Title V) shall be assessed a fee of $1089. This application filing fee is submitted with the application.

Total application fees included with this application are as follows:

Emergency generator permit application x $1089 = $1089

TABLES

Table 1: Potential to Emit NOx, CO and VOC

Op_Hours	Max hp	Emission Rate (g/hp-hr)			PTE (lbs/year)		
		NOx	CO	VOC	NOx	CO	VOC
50	302	0.009	0.227	0.001	0.30	7.55	0.03

Emission rates from Power Solution International for PSI EPA Engine Family PSIB11.1NGP for Natural Gas fuel

Table 2: Potential to Emit PM and SO2

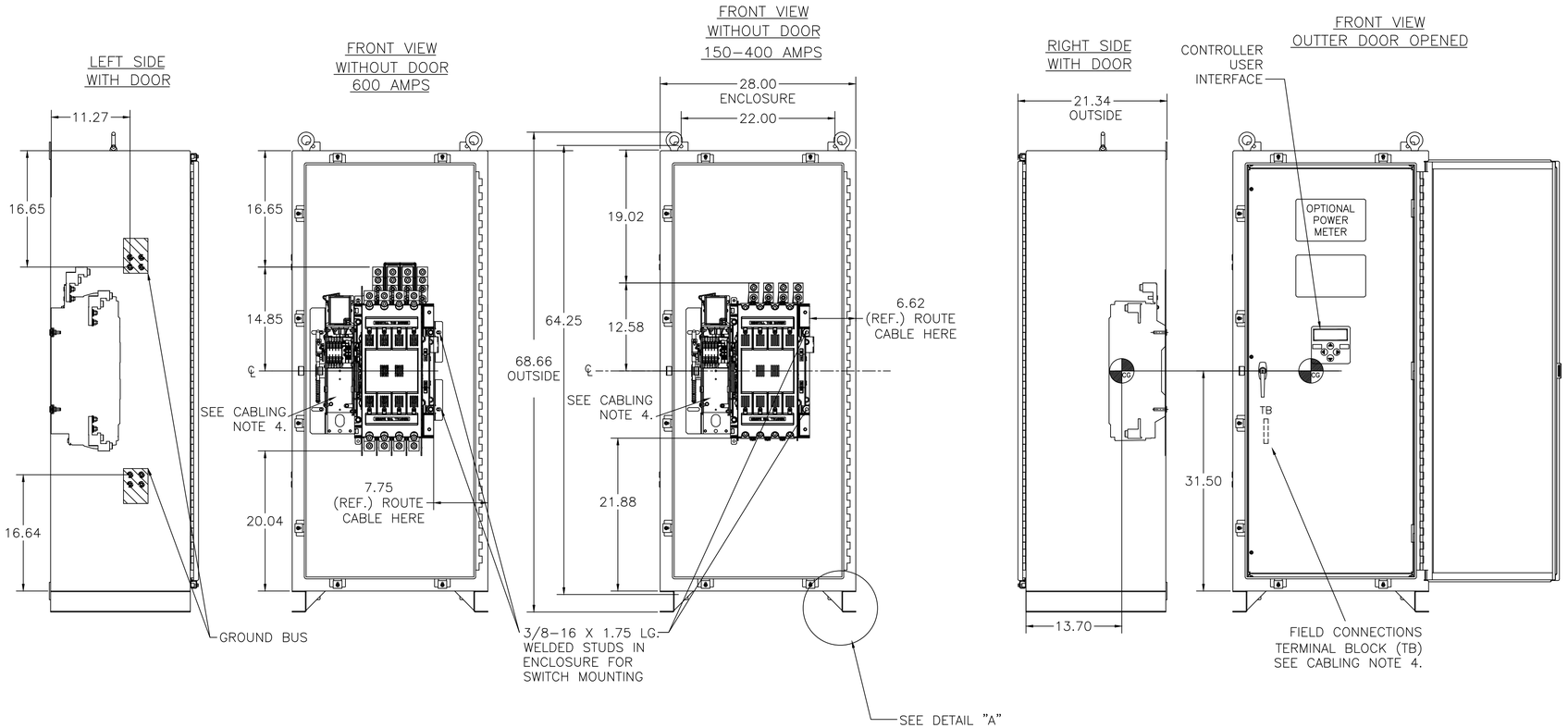
Max Fuel Use mmcf/hr	Max Operation hr/yr	Max Fuel Use mmcf	Pollutant	Emission Factor lb/mmcf	Emissions (pounds)	
					Max Hourly	Max Annual
0.0021	50	0.11	PM	19.40	0.04	2.05
			SO2	0.588	0.002	0.10

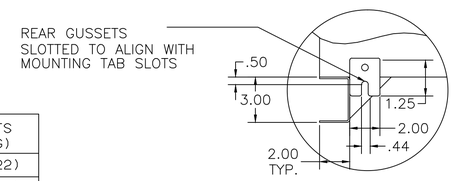
Max fuel use:
At 100% of power rating for natural gas ft3/hr = 2115

Appendix A

MANUFACTURERS DATA

OUTLINE FOR ASCO® 300 SERIES 150-600 AMPERE "J" FRAME (3ATS,3NTS,3ADTS,3NDTS) FRONT CONNECTED TRANSFER SWITCHES TYPE 3R/4/4X/12 SECURE ENCLOSURE

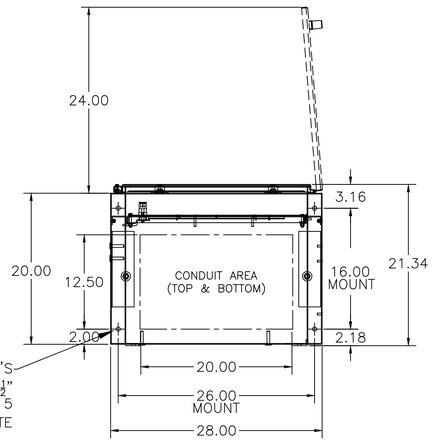




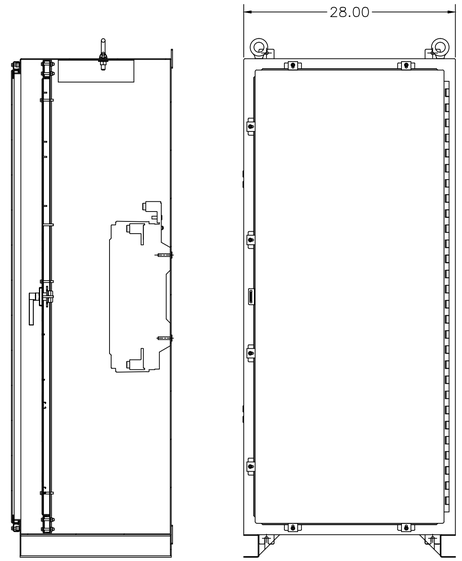
VIEW FROM THE BACK
SEE DETAIL "A"

ATS SWITCH RATING (AMPS)	POLES	WEIGHTS LB (KG)
260-400	2	490 (222)
260-400	3	496 (225)
260-400	4	502 (228)
600	2	495 (225)
600	3	502 (228)
600	4	509 (231)

DTS SWITCH RATING (AMPS)	POLES	WEIGHTS LB (KG)
150-400	2	506 (230)
150-400	3	512 (232)
150-400	4	518 (235)
600	2	511 (232)
600	3	518 (235)
600	4	525 (238)



BOTTOM VIEW



FRONT VIEW
WITH OUTTER DOOR

GENERAL NOTES

1. TYPE 3R/4/4X/12 ENCLOSURE. FREE STANDING. FLOOR OR WALL MOUNTABLE. 14 GAUGE CONSTRUCTION.
2. DOOR HINGED ON RIGHT SIDE. LOCKABLE HASP ON LEFT SIDE, DOOR CLAMPS LEFT, TOP, AND BOTTOM.
3. FINISH: TYPE 3R/4/12: ANSI 61 GRAY POLYESTER SEMI GLOSS ELECTROSTATIC POWDER.
   TYPE 4X (P): EXTERIOR CONSTRUCTED OF CODE GAUGE TYPE 304 STAINLESS STEEL.
   TYPE 4X (V): EXTERIOR CONSTRUCTED OF CODE GAUGE TYPE 316 STAINLESS STEEL.
   OTHER ANSI COLORS AVAILABLE CONSULT FACTORY UL RECOGNIZED.
4. RECOMMENDED CLEARANCES:
   FRONT: 24 INCHES
5. A 20% RATED GROUND BUS IS PROVIDED.
6. UNIT IS DESIGNED FOR COMBINATION TOP AND BOTTOM CABLE ENTRY. THE STANDARD SWITCH CONFIGURATION IS FOR TOP LUGS EMERGENCY AND LOAD AND BOTTOM LUGS NORMAL.
7. A FULL RATED NEUTRAL CONNECTION FOR EACH SOURCE AND THE LOAD IS OPTIONAL. WHEN PROVIDED IT IS IN ONE OF THE FOLLOWING FORMATS AS SPECIFIED BY THE CATALOG NO. NEUTRAL TYPE;
   A. SOLID (COPPER BUS) NEUTRAL
   B. SWITCHED NEUTRAL POLE
8. CENTER OF GRAVITY.
9. WHEN INSTALLING GROUND LUGS TO TYPE 4 ENCLOSURE, REMOVE HARDWARE FROM STUDS AND REMOVE MASKING PLATES TO EXPOSE UNPAINTED SURFACE.

CABLING NOTES

1. ALL SIZES SUPPLIED STANDARD WITH MECHANICAL (SCREW TYPE) LUGS. (SEE AMP SIZE BELOW)
   A. LUG MATERIAL: ALUMINUM ALLOY 6061-T6 WITH ELECTRO TIN PLATED FINISH.
   B. SCREW MATERIAL: ALUMINUM ALLOY 6262-T9 WITH ELECTRO TIN PLATED FINISH.
   C. UL LISTED, CSA CERTIFIED.
   D. LUG SCREW TIGHTENING TORQUE PER UL 486B: 19 FT-LBS.
   E. SUITABLE WIRE BENDING SPACE IS PROVIDED. (SEE AMP SIZE BELOW)
2. CONSULT FACTORY FOR OTHER TERMINATION REQUIREMENTS.
3. GROUND LUGS ARE PROVIDED STANDARD AS FOLLOWS. (SEE AMP SIZE BELOW)
4. CUSTOMER TERMINAL BLOCKS:
   THE TB WILL BE MOUNTED ON THE TRANSFER SWITCH FRAME AS INDICATED

NOTES 150-400 AMP SWITCHES

1. SUPPLIED WITH STANDARD MECHANICAL (SCREW TYPE) LUGS ON THE NORMAL, EMERGENCY & LOAD BUS STABS. ONE (1) LUG PER PHASE AND NEUTRAL EACH SUITABLE FOR CONNECTION OF TWO (2) 1/0 -250MCM CU/AL CABLES OR ONE (1) #4 -600MCM CU/AL CABLE.
   A. SUITABLE WIRE BENDING SPACE IS PROVIDED FOR UP TO ONE (1) 600MCM CABLE PER TERMINAL PER NEC.
2. GROUND LUGS ARE PROVIDED STANDARD AS FOLLOWS;
   SIX (6) 1/0 -250MCM CU/AL CABLES OR THREE (3) #4 -600MCM CU/AL CABLE CONNECTIONS.

NOTES 600 AMP SWITCHES

1. SUPPLIED WITH STANDARD MECHANICAL (SCREW TYPE) LUGS ON THE NORMAL, EMERGENCY & LOAD BUS STABS. ONE (1) LUG PER PHASE AND NEUTRAL EACH SUITABLE FOR CONNECTION OF TWO (2) #2 -600MCM CU/AL CABLES.
   A. SUITABLE WIRE BENDING SPACE IS PROVIDED FOR UP TO TWO (2) 600MCM CABLE PER TERMINAL PER NEC.
2. GROUND LUGS ARE PROVIDED STANDARD AS FOLLOWS;
   SIX (6) #2 -600MCM CU/AL CABLE CONNECTIONS.

REV. TO SHEET	ECN NO.	BY	APP.	DATE
—	271129	RCW	HSL	02/15/18
	NEW ISSUE			

PROJECT NAME:

COMPOSITE | OUTLINE

300 SERIES TS "J" SEISMIC
150-600 AMP 3R/4/4X/12 SECURED

THIRD ANGLE PROJECTION

	BY	DATE
DRAWN BY	RCW	02/15/18
CHECKED	HSL	02/15/18
PROJECT APPROVAL	BK	02/15/18
FINAL APPROVAL		

MANUFACTURING TOLERANCES TO BE IN ACCORDANCE WITH ASCO PROCEDURE MP-I-003. FOR PLASTIC PARTS SEE MP-I-055

ASSEM. REF. NO.

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COMPUTER GENERATED DRAWING

SCALE NONE | SIZE DS

DWG. NO. 1001393-024

DRAWING REV. — | ECN NO. 271129 | SHEET 1 OF 1

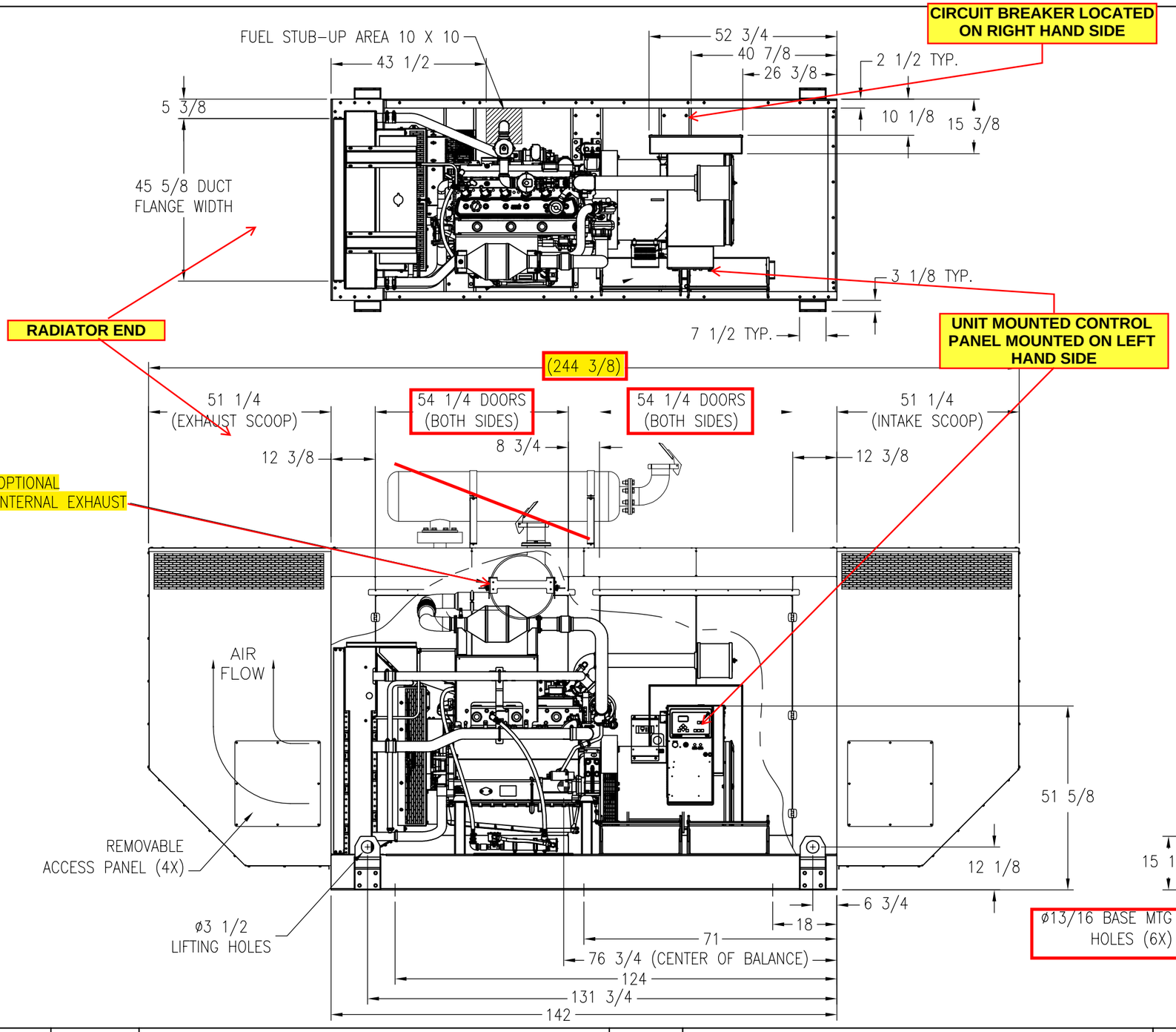
ASCO® ASCO POWER TECHNOLOGIES, L.P.
FLORHAM PARK, NEW JERSEY 07932 U.S.A.

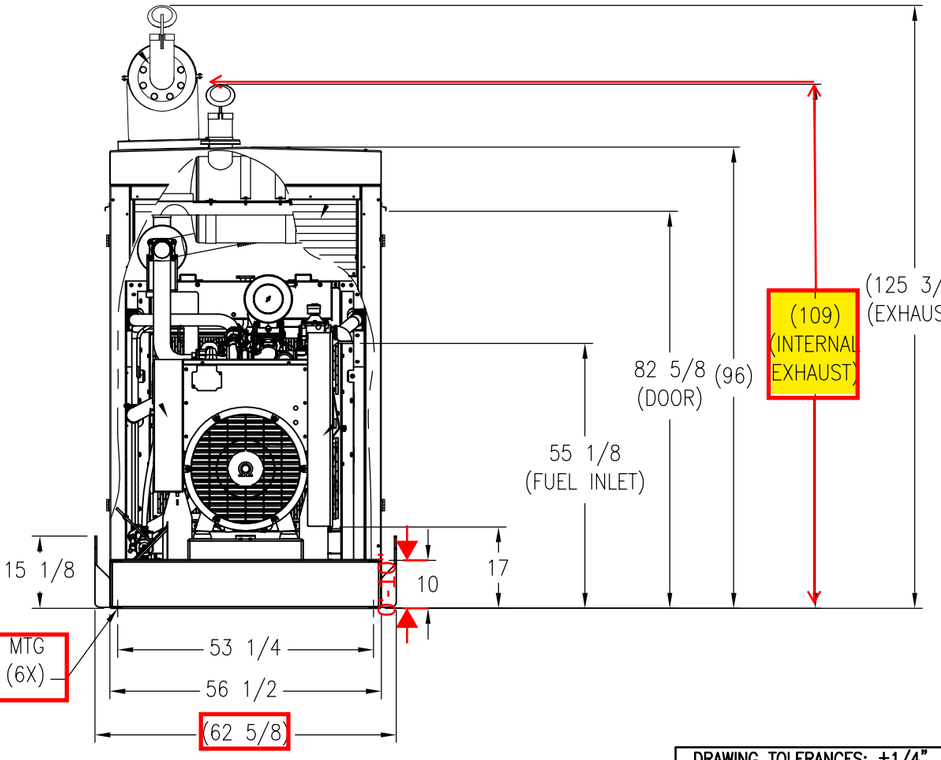
DWG. #: GS200N6SPA(11.1L)L3-MI

200kW NATURAL GAS - LEVEL 3 ENCLOSURE

TOTAL APPROXIMATE DIMENSION WITH INTERNAL SILENCER: 245"L x 63"W x 109"H

TOTAL APPROXIMATE WEIGHT: 9,900 LBS
(WEIGHT SUBJECT TO CHANGE AT TIME OF SHIPMENT)





DRAWING TOLERANCES: ±1/4"
EXCEPT BASE MTG. HOLES: ±1/8"

REVISION	DATE	REVISION DESCRIPTION	INITIALS
C	04-16-20	UPDATED TITLE BLOCK	
B	04-24-12	ADDED OPTIONAL INTERNAL EXHAUST	DXB
A	06-04-10	INITIAL RELEASE TO SALES AND ENGINEERING	JDC

A Rolls-Royce solution

THIS DRAWING IS PROPERTY OF MTU ONSITE ENERGY CORPORATION AND CANNOT BE USED EXCEPT IN CONNECTION WITH MTU ONSITE ENERGY CORPORATION POWER GENERATION PROJECTS. ANY THIRD PARTY MODIFICATION MAY VOID THIS DRAWING. MTU ONSITE ENERGY CORPORATION RESERVES ALL RIGHTS OF THIS DRAWING.

GEN-SET INFORMATION

ENGINE: DOOSAN 11.1L	ENCLOSURE: PH104103
GENERATOR: 432 PSL	BREAKER:
RADIATOR: W/ENGINE	TANK: NA
RADIATOR AMBIENT: NA	MUFFLER: 5 CRITICAL
DUCT FLANGE: PH104019	TRAILER: NA
CONTROL PANEL: DGC-2020	ISOLATORS: PADS
BASE: PH103999	

DIMENSIONAL LAYOUT

DRAWN TO SCALE ALL DIMENSIONS ARE IN INCHES	MODEL: GS200N6SPA
DATE: 06-04-10	DRAWN BY: JDC
DWG. #: GS200N6SPA(11.1L)L3-MI	

Gas Generator Set

mtu 6R0185 GS200

200 kWe/60 Hz/Standby/208 - 600V
Reference *mtu* 6R0185 GS200 (175 kWe) for Prime Rating Technical Data

System ratings

Voltage (L-L)	240V †	240V †	208V †	240V †	480V †	600V
Phase	1	1	3	3	3	3
PF	1	1	0.8	0.8	0.8	0.8
Hz	60	60	60	60	60	60
Natural Gas (NG)						
Amps	750	750	694	601	300	240
kW/kVA	180/180	180/180	200/250	200/250	200/250	200/250
Liquid Propane (LP)						
Amps	541	541	451	390	195	156
kW/kVA	130/130	130/130	130/162	130/162	130/162	130/162
NG and LP						
skVA@30% voltage dip	425	370	608	608	809	720
Generator model *	433CSL6216	432PSL6228	432CSL6210	432CSL6210	432CSL6210	432PSL6246
Temp rise	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C
Connection	12 LEAD DOUBLE DELTA	4 LEAD	12 LEAD WYE	12 LEAD DELTA	12 LEAD WYE	4 LEAD WYE

* Consult the factory for alternate configuration.
† UL 2200 offered

Certifications and standards

- Generator set is designed and manufactured in facilities certified to standards ISO 9001:2008 and ISO 14001:2004
- UL 2200 - optional (refer to *System ratings* for availability)
- CSA - optional
  - CSA C22.2 No. 100
  - CSA C22.2 No. 14
- Performance Assurance Certification (PAC)
  - Generator set tested to ISO 8528-5 for transient response
  - Verified product design, quality and performance integrity
  - All engine systems are prototype and factory tested
- Power rating
  - Accepts rated load in one step per NFPA 110

A Rolls-Royce solution

Standard features*

- Single source supplier
- Global product support
- Two (2) Year/3,000 Hour Basic Limited Warranty
- 11.1L turbo engine charge air cooling
  - 11.1 liter displacement
  - 4-cycle
- 3-way catalyst
- Optional fuel system: NG and LP vapor dual fuel
- Engine-generator resilient mounted
- Complete range of accessories
- Cooling system
  - Integral set-mounted
  - Engine-driven fan
- Generator
  - Brushless, rotating field generator
  - 2/3 pitch windings
  - 300% short circuit capability with optional Permanent Magnet Generator (PMG)
- Digital control panel(s)
  - UL recognized, CSA certified, NFPA 110
  - Complete system metering
  - LCD display

Standard equipment*

Engine

- Air cleaner
- Oil pump
- Oil drain extension and shut-off valve
- Full flow oil filter
- Jacket water pump
- Thermostats
- Blower fan and fan drive
- Radiator - unit mounted
- Electric starting motor - 24V
- Governor - electronic isochronous
- Base - formed steel
- SAE flywheel and bell housing
- Charging alternator - 24V
- Battery box and cables
- Flexible fuel connectors
- Flexible exhaust connection
- EPA certified engine

Generator

- NEMA MG1, IEEE, and ANSI standards compliance for temperature rise and motor starting
- Self-ventilated and drip-proof
- Superior voltage waveform
- Solid state, volts-per-hertz regulator
- ± 1% voltage regulation no load to full load
- Brushless alternator with brushless pilot exciter
- 4 pole, rotating field
- 130 °C standby temperature rise
- 1-bearing, sealed
- Flexible coupling
- Full amortisseur windings
- 125% rotor balancing
- 3-phase voltage sensing
- 100% of rated load - one step
- 5% maximum total harmonic distortion

Digital control panel(s)

- Digital metering
- Engine parameters
- Generator protection functions
- Engine protection
- SAE J1939 engine ECU communications
- Windows®-based software
- Multilingual capability
- Communications to remote annunciator
- Programmable input and output contacts
- UL recognized, CSA certified, CE approved
- Event recording
- IP 54 front panel rating with integrated gasket
- NFPA 110 compatible

* Represents standard product only. Consult the factory/***mtu*** Distributor for additional configurations.

Application data

Engine

Manufacturer	PSI
Model	11.1L CAC
Type	4-cycle
Arrangement	6-inline
Displacement: L (in³)	11.1 (673)
Bore: cm (in)	12.3 (4.84)
Stroke: cm (in)	15.5 (6.1)
Compression ratio	10.5:1
Rated rpm	1,800
Engine governor	Bosch
Maximum power (NG): kWm (bhp)	225 (302)
Maximum power (LP): kWm (bhp)	155 (208)
Steady state frequency band	± 0.5%
Air cleaner	dry

Liquid capacity

Total oil system: L (gal)	28.5 (8)
Engine jacket water capacity: L (gal)	25 (5.5)
System coolant capacity: L (gal)	149 (32.8)

Electrical

Electric volts DC	24
Cold cranking amps under -17.8 °C (0 °F)	1,050
Batteries: group size	4D
Batteries: quantity	2

Fuel inlet

Fuel supply connection size	2” NPT
Fuel supply pressure: mm H_20 (in. H_20)	178–279 (7–11)

Fuel consumption (NG-1000 BTU/ft³ / LP-2500 BTU/ft³)

	NG	LPG
At 100% of power rating: m³/hr (ft³/hr)	59.9 (2,115)	19.9 (704)
At 75% of power rating: m³/hr (ft³/hr)	46.7 (1,648)	17 (600)
At 50% of power rating: m³/hr (ft³/hr)	32.8 (1,157)	11.5 (404)

Cooling - radiator system

	NG and LPG
Ambient capacity of radiator: °C (°F)	50 (122)*
Maximum restriction of cooling air: intake and discharge side of radiator: kPa (in. H_20)	0.12 (0.5)
Water pump capacity: L/min (gpm)	310 (82)
Heat rejection to coolant: kW (BTUM)	194.6 (11,071)
Heat radiated to ambient: kW (BTUM)	40.4 (2,295)
Fan power: kW (hp)	10.4 (13.9)

* Installation of enclosures reduces the ambient capacity of the cooling system by 1 °C (1.8 °F). Gravity exhaust louvers reduce ambient capacity of the cooling system by an additional 3 °C (5.5 °F).

Air requirements

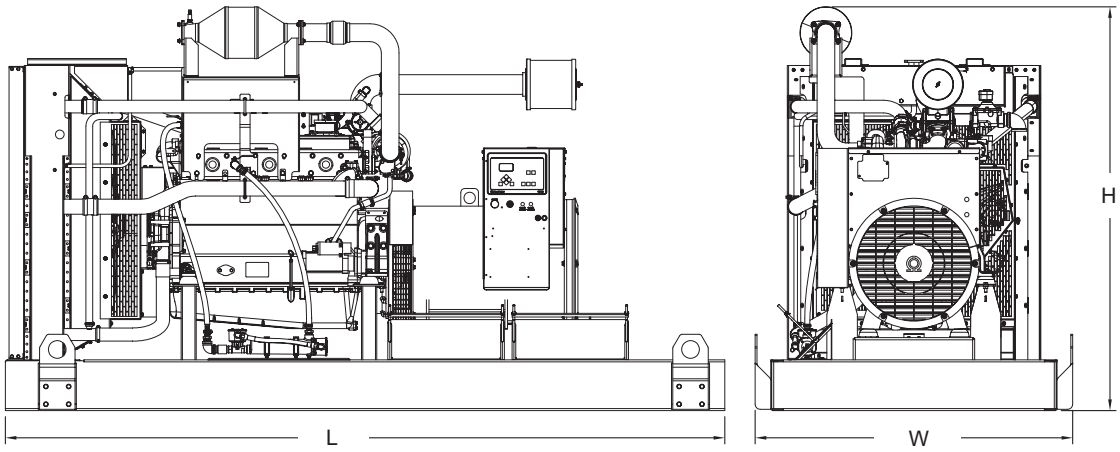
	NG and LPG
Aspirating: *m³/min (SCFM)	11.7 (400)
Air flow required for radiator cooled unit: **m³/min (SCFM)	631 (22,300)
Remote cooled applications; air flow required for dissipation of radiated generator set heat for a maximum of 25 °F rise: *m³/min (SCFM)	237 (8,365)

* Air density = 1.184 kg/m³ (0.0739 lbm/ft³)
** At 0.25 kPa (1 in. H_20) static pressure and 52 °C (125 °F) at radiator

Exhaust system

	NG and LPG
Gas temperature (stack): °C (°F)	694 (1,281)
Gas volume at stack temperature: m³/min (CFM)	38.8 (1,371)
Maximum allowable back pressure at outlet of engine, before piping: kPa (in. H_20)	2.5 (10.25)

Weights and dimensions



Drawing above for illustration purposes only, based on standard open power 480 volt generator set. Lengths may vary with other voltages. Do not use for installation design. See website for unit specific template drawings.

System	Dimensions (L x W x H)	Weight
Open Power Unit (OPU)	3,607 x 1,591 x 2,026 mm (142 x 62.6 x 79.8 in)	3,096 kg (6,258 lb)

Weights and dimensions are based on open power units and are estimates only. Consult the factory for accurate weights and dimensions for your specific generator set.

Sound data

Unit type	Standby full load (NG)	Standby full load (LP)
Level 0 (OPU): dB(A)	86.3	86.1

Sound data is provided at 7 m (23 ft). Generator set tested in accordance with ISO 8528-10 and with infinite exhaust.

Emissions data

Fuel type	THC + NO_x	CO
Natural gas	2.25	0.26
Liquid propane	0.08	0.25

— All units are in g/hp-hr and are EPA weighted cycle values. Emission levels of the engine may vary with ambient temperature, barometric pressure, humidity, fuel type and quality, installation parameters, measuring instrumentation, etc. The data was obtained in compliance with US EPA regulations.

Rating definitions and conditions

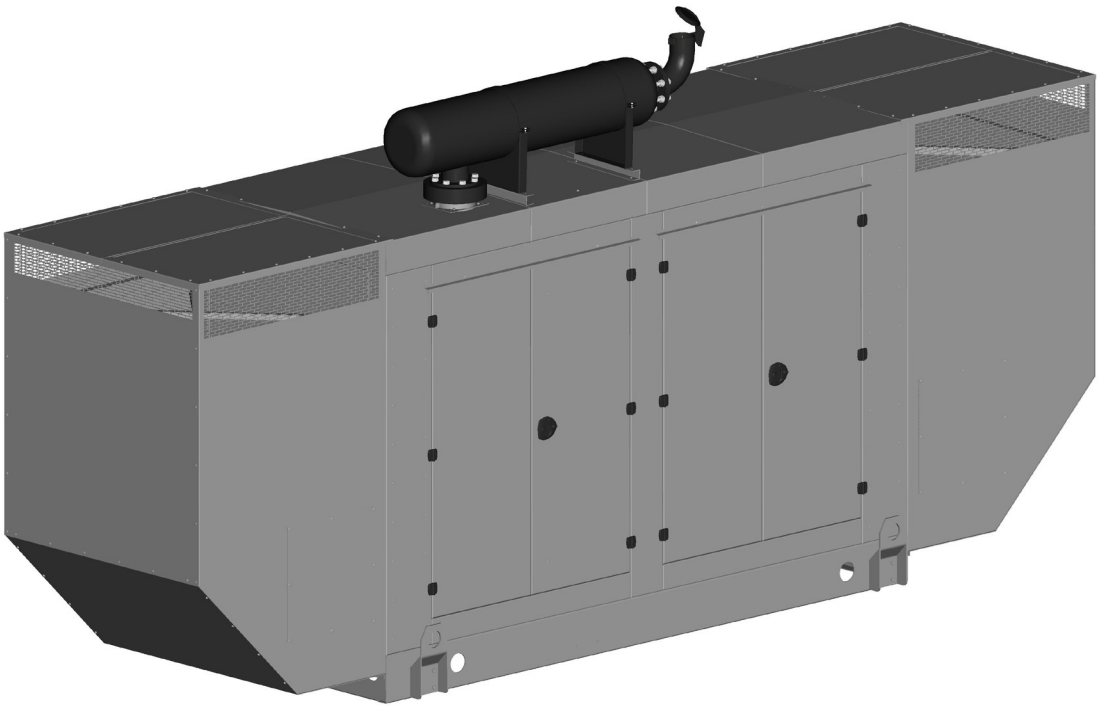
— Ambient capability factor at 984 ft (300 m). Consult your local ***mtu*** Distributor for other altitudes.
— Standby ratings apply to installations served by a reliable utility source. The standby rating is applicable to varying loads for the duration of a power outage. No overload capability for this rating. Ratings are in accordance with ISO 3046-1, BS 5514, and AS 2789. Average load factor: ≤ 85%.
— Nominal ratings at standard conditions: 25 °C and 300 meters (77 °F and 1,000 feet).
— Deration factor:
  - Consult your local ***mtu*** Distributor for altitude derations.
  - Consult your local ***mtu*** Distributor for temperature derations.

Subject to change. | 23470 | 2024-08

Collicutt Energy Service
Tony Miccolis
tony.miccolis@collicutt.com
Office: 562-944-4413
Cell: 310-245-0292

Enclosure and Sound Data Sheet - Gas, Infinite Exhaust

60 Hz: 200 kW Standby / 175 kW Prime



Level 3 Enclosure (pictured)*

Enclosure Level Identification	
Level 1	Weather-protective enclosure constructed of heavy gauge steel or aluminum with fixed stormproof panels designed for 130 mph wind load rating. Enclosure consists of a bolted construction with factory-mounted internal or external silencer. Hinged, lockable double-door access on both sides of the enclosure.
Level 2	Level 1 enclosure with UL 94 HF-1 compliant, 1.5" thick sound attenuated foam insulation installed inside enclosure walls.
Level 3	Level 2 enclosure with air intake and exhaust scoops with UL 94 HF-1 compliant, 1.5" thick sound attenuated foam.

CERTIFICATIONS AND STANDARDS

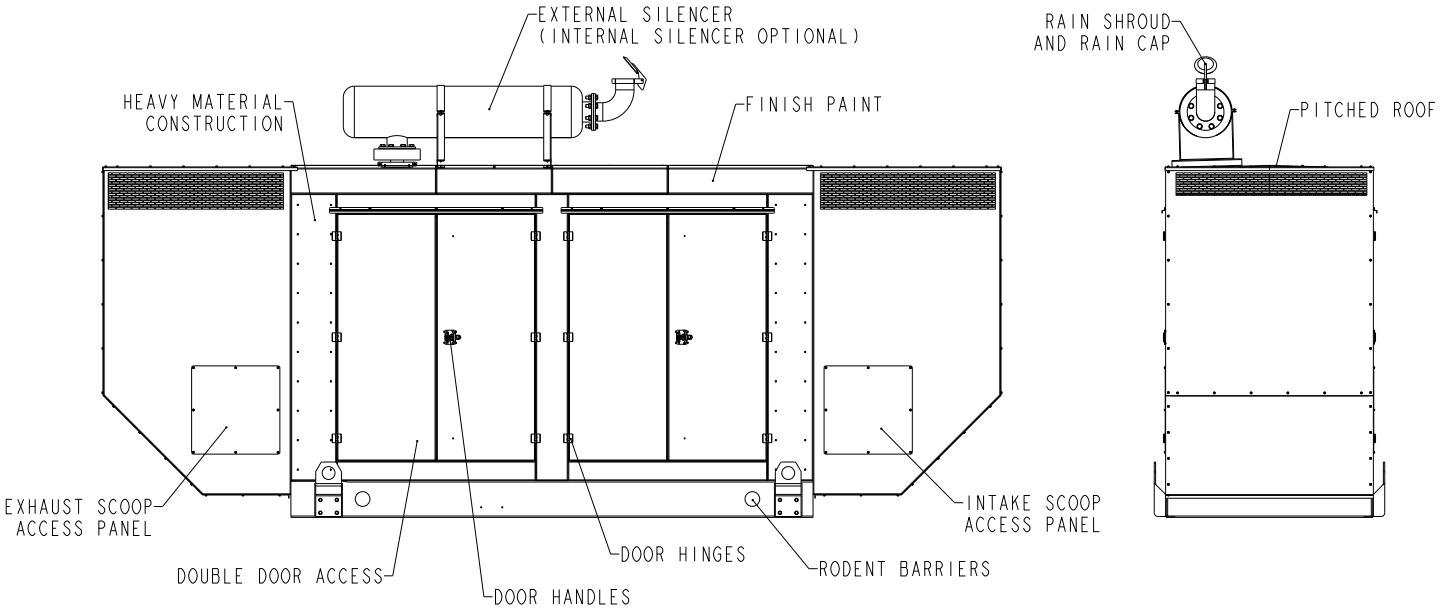
- UL 2200
- CSA C22.2 No. 100
- CSA C22.2 No. 14

A Rolls-Royce solution

Enclosure and Sound Data Sheet - Gas, Infinite Exhaust
60 Hz: 200 kW Standby / 175 kW Prime

STANDARD FEATURES FOR ALL LEVELS

- Heavy material construction
  - Steel enclosure: 1.9 mm (0.075 in) - 14 gauge or greater thickness
  - Aluminum enclosure: 2.3 mm (0.09 in) or greater thickness
- 130 mph wind rating
- Service access
  - Double door access gives ease of service to all components
- Pitched roof
- Rain shroud and rain cap
- Rodent barriers
- Scoop access panels and drain
- Hardware
  - Powder coated hinges with stainless steel pins
  - Key-lockable and pad-lockable powder coated door handles
- Powder coat finish paint: RAL 7001 Silver Grey standard
  - Custom colors available upon request
- External silencer (Industrial grade or better)
  - Wrapped exhaust pipes and catalyst
  - Stainless steel flexible exhaust connections (where applicable)



Level 3 Enlosure (pictured)*

OPTIONAL FEATURES

- Door restraints
- AC or DC light package
- Motorized / gravity louvers (where available)
- Internal silencer (critical grade)
  - Insulated or wrapped silencers, catalyst, and exhaust pipes
  - Stainless steel flexible exhaust connections (where applicable)
- For other custom options, please consult factory.

SOUND RATINGS dB(A) AT 7 METERS

Application	Model	Power Node	Level 1	Level 2	Level 3
Standby (Natural Gas)	***mtu*** 6R0185 GS200	200 kW	84.1	82.8	71.4
Standby (Liquid Propane)	***mtu*** 6R0185 GS200	130 kW	83.9	83.1	71.6
Prime (Natural Gas)	***mtu*** 6R0185 GS200	175 kW	84.7	82.8	71

NOTE:
- Aluminum enclosure sound levels are approximately 2 dB(A) higher than listed sound levels for steel enclosures
- For installation within 50 miles of the coast, aluminum enclosures are recommended to prevent accelerated corrosion
- Sound pressure levels subject to environment, instrumentation, measurement, installation, and generator set variability
- Generator set is tested on level ground without spring isolators installed
- Sound power levels per ISO 8528-10 and ANSI S1.13-2005
- Sound data measured with:
  - Full-rated load
  - Standard radiator package
  - Infinite exhaust connection

* Note: Visual appearance may differ between power nodes.

Subject to change. 2021-04

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
2026 MODEL YEAR
CERTIFICATE OF CONFORMITY
WITH THE CLEAN AIR ACT

OFFICE OF TRANSPORTATION AND AIR QUALITY
ANN ARBOR, MICHIGAN 48105

Certificate Issued To: **Power Solutions International, Inc.**
(U.S. Manufacturer or Importer)

Certificate Number: TPSIB11.1NGP-017

Effective Date: 06/13/2025

Expiration Date: 12/31/2026

Byron J. Bunker, Division Director
Compliance Division

Issue Date: 06/13/2025

Revision Date: N/A

Manufacturer: Power Solutions International, Inc.
Engine Family: TPSIB11.1NGP
Mobile/Stationary Certification Type: Mobile and Stationary
Fuel : LPG/Propane
Natural Gas (CNG/LNG)
Emission Standards :
Mobile Part 1048
NMHC + NOx (g/kW-hr) : 2.7
CO (g/kW-hr) : 4.4
HC + NOx (g/kW-hr) : 2.7
Stationary Part 1048
HC + NOx (g/kW-hr) : 2.7
NMHC + NOx (g/kW-hr) : 2.7
CO (g/kW-hr) : 4.4
Part 60 Subpart JJJ Table 1
VOC (g/Hp-hr) : 0.7
CO (g/Hp-hr) : 2.0
NOx (g/Hp-hr) : 1.0
Emergency Use Only : N

Pursuant to Section 213 of the Clean Air Act (42 U.S.C. section 7547) and 40 CFR Part 60, 40 CFR Part 1048, 1065, 1068, and 60 (stationary only and combined stationary and mobile) and subject to the terms and conditions prescribed in those provisions, this certificate of conformity is hereby issued with respect to the test engines which have been found to conform to applicable requirements and which represent the following nonroad engines, by engine family, more fully described in the documentation required by 40 CFR Part 60, 40 CFR Part 1048 and produced in the stated model year.

This certificate of conformity covers only those new nonroad spark-ignition engines which conform in all material respects to the design specifications that applied to those engines described in the documentation required by 40 CFR Part 60, 40 CFR Part 1048 and which are produced during the model year stated on this certificate of the said manufacturer, as defined in 40 CFR Part 60, 40 CFR Part 1048. This certificate of conformity does not cover nonroad engines imported prior to the effective date of the certificate.

It is a term of this certificate that the manufacturer shall consent to all inspections described in 40 CFR 1068.20 and authorized in a warrant or court order. Failure to comply with the requirements of such a warrant or court order may lead to revocation or suspension of this certificate for reasons specified in 40 CFR Part 60, 40 CFR Part 1048. It is also a term of this certificate that this certificate may be revoked or suspended or rendered void *ab initio* for other reasons specified in 40 CFR Part 60, 40 CFR Part 1048.

This certificate does not cover large nonroad engines sold, offered for sale, or introduced, or delivered for introduction, into commerce in the U.S. prior to the effective date of the certificate.

Power Solutions International, Inc.
201 Mittel Drive
Wood Dale, IL 60191
www.psiengines.com

0 Hour Non-Deteriorated Emissions Data for Permitting Customers
PSI EPA Engine Family XPSIB11.1NGP "X" denotes generic model year
PSI Engine Model Description PSI-NGE 11.1L Turbo Emrgency or Non-Emergency Stationary

	11L LPG	11L NG **
Displacement	11.1L	11.1L
2000 RPM	**g/KW-hr**	**g/HP-hr**
BSCO	0.33	0.227
BSCO2	898.68	423.14
BSCH4	0.01	0.02
BSTHC	0.09	NA
BSNMHC	NA	0.001
BSNOx	0.02	0.009
BSTHC+NOx	0.11	NA
BSNMHC+NOx	NA	NA
BSFC (kg/kw-hr)	0.300	0.208

** Updated test data from 2015 testing

Weighted compositie emissions from ISO 8178 D2 (LPG) & D1 (NG) test cycles
BSFC is the weighted composite fuel consumption over the emission test cycle
LPG Emission Data Units in g/KW-hr
NG Emission Data Units in g/HP-hr

SK36239A

PERMIT APPLICATION
B/474 PAINT HANGAR AND ASSOCIATED CONTROL DEVICE

JUNE 2026

Prepared for:
NORTHROP GRUMMAN CORPORATION
Palmdale, California

•••

Prepared by:
Verdant Environmental
South Pasadena, California

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APPENDICES

Appendix A General Arrangement Drawing

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PERMIT APPLICATION FORMS

Antelope Valley Air Quality Management District

2551 West Ave H, Lancaster, CA 93536
Phone (661) 723-8070
www.avaqmd.ca.gov

Application for Spray Booth and Paint Spray Gun Only

Please refer to Rule 301 for permit application fee

Owner Information

1. Permit to be Issued to (name of company to receive permit): Northrop Grumman Aeronautics System Corporation		**1a. Federal Tax ID #:** 95-1055798
2. Mailing/Billing Address (for the above company name): 3520 East Ave M Palmdale, CA 93550		**2a. APN #** USAF Plant 42
3. Facility or Business Name on License (for equipment location): Northrop Grumman Aeronautics System Corporation	**3a. Billing Email:** george.jung@ngc.com	
4. Facility Address/Location of Equipment (if same as company, enter "Same"): Same	**4a. Facility UTM:** 425E/3830N	**4b. Facility Lat/Long:** 34.629N/118.084W
5. Contact Name and Title: George Jung	**5a. E-mail Address (if same as billing, enter "Same"):** Same	**5b. Phone:** (661) 266-5394
6. General Nature of Business: Aerospace Manufacturing	**6a. NAICS Code:** 336411	**6b. SIC Code:** 3721

7. Type of Organization (check one):

☐ Individual Owner ☐ Partnership ☑ Corporation ☐ Utility ☐ Local Agency ☐ State Agency ☐ Federal Agency

8. Application is hereby made for the Authority to Construct (ATC) and Permit to Operate (PTO) for the following equipment:
Upgrade exhaust fan from a 5 HP to a 30 HP (+/-20%) with a 30" diameter 8-blade Vaneaxial or equivalent fan blade

9. Application is for: New Construction ☐ Modification ☑ Change of Owner ☐

***For modification or change of owner:** Current permit #: S006767 Company No.: 1023 Facility No.: 1816

10. Do you claim Confidentiality of Data? (If yes, state nature of data in an attachment.) ☐ Yes ☑ No

Operation Information

Facility Annual Operation by Quarters (percent):
Jan-Mar% 25 Apr-Jun% 25 Jul-Sep% 25 Oct-Dec% 25

13. Expected Equipment Operating Hours:
Hrs/Day: 24 Days/Wk: 7 Wks/Yr: 52 Total Hrs/Yr: 8760

Equipment Information

Manufacturer: TBD **Model #:** TBD **Serial #:** TBD

Booth Dimensions (specify units): W: 12 Ft L: 20 Ft H: 10 Ft

Open Spray ☐ Automotive Booth ☐ Bench Type Booth ☐ Floor Type Booth ☑ Other (please specify): _____

Exhaust fan (if present): One Fan Rating (hp): 30 HP (+/-20%) Fan Diameter(inches): 30" diameter 8-blade

Manometer across exhaust filters? ☑ Yes ☐ No Minimum Pressure Drop (in inches of water): .5

Filter Information

	Type and Material	Number	Width	Length	Thickness
Inlet					
Exhaust First Stage	ATI Two Ply Polyester NESHAP Approved				1 inch
Exhaust Second Stage	ATI Four Ply Polyester NESHAP Approved				1 inch
Exhaust Third Stage	ATI Three Polyester NESHAP Approved				Pocket Bag

Application Information

Article sprayed (check all that apply):	Aerospace ☑	Architectural ☐		Composite ☐
Metal ☐	Motor Vehicle ☐	Plastic ☐	Wood ☐	Other (specify)
Minimum size of articles sprayed (feet):	Width 1 Ft	Length 1 Ft	Height 1 Ft	
Method of Application (check all that apply):		Air Atomization ☐	Combined Air and Airless ☐	
Electrostatic ☐	Hand ☑	High Volume Low Pressure (HVLP) ☑	Pressure Atomization (airless) ☐	Other (specify):
Gun or Spray Cleaning Method:				
Enclosed Gun Cleaning System ☑		Manual Wipe ☐	Open Flush ☐	
Other (specify):				

Disposition

Air Dried ☑	**Oven Dried, Baked or Cured (Specify Below):** ☐	**Part of Booth** ☐	**Separate Enclosure** ☐
Oven (if present) is: ☐	**Gas fired** ☐	**Electric** ☐	**Max heat input (Btu/hr):**

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Materials Information

Please include the MSDS for each coating and solvent to be used with the application submission

Type	VOC Content lb/gal or gm/liter	Vapor Pressure mmHg @ 20° C	Maximum Use gal/l per day	Maximum Use gal/l per year
Enamel	N/A			
Topcoat	420 gm/liter		<5	<1000
Primer	340 gm/liter		<5	<1000
Sealer	N/A			
Stain	N/A			
Added Thinner	N/A			
Clean-up Solvent		<45 mmHg	<5	<1000
Surface Preparation Solution		<45 mmHg	<5	<1000
Other	>800 gm/liter EREC		<5	<1000
Other				

Receptor Information

Distances (feet) and direction to the property line of the closest:

Residence	Business	School
>10500 E	>3000 W	>13300 N

Name of closest school (K-12): The Palmdale Aerospace Academy (TPAA)

Certification

Signature of Responsible Official	Official Title
	Environmental

Typed or Printed Name of Responsible Official	Phone:	Date Signed:
George Jung	(661) 266-5394	06/25/26

-For District Use Only-

Application No.:	Invoice No.:	Permit No.:	Company/ Facility No.:

Antelope Valley Air Quality Management District

2551 West Ave H, Lancaster, CA 93536
Phone 661.723.8070
www.avaqmd.ca.gov

Application for Spray Booth and Paint Spray Gun Only

Please refer to Rule 301 for permit application fee

Application Submittal Instructions

1) Submit completed application to engineering@avaqmd.ca.gov

2) Pay the corresponding application fee via check or credit card

Payment by check:

Make check payable to: Antelope Valley AQMD
Mail the check with a copy of this completed application to:
Antelope Valley AQMD 2551 West Ave H, Lancaster, CA 93536

Payment by credit card:

Pay online at our website: http://www.avaqmd.ca.gov
Click "Pay Fees"
Please note a surcharge applies for all credit card payments.

If payment is made online via credit card, please email the receipt to engineering@avaqmd.ca.gov.

Should you have any additional questions, please, do not hesitate to contact the permitting division at 661-723-8070, or via email at engineering@avaqmd.ca.gov

Antelope Valley Air Quality Management District
2551 W Avenue H, Lancaster, CA 93536
Phone: 661-723-8070
Email: www.AVAQMD.ca.gov

APPLICATION FOR AIR POLLUTION CONTROL EQUIPMENT ONLY

PLEASE TYPE OR PRINT

Please refer to Rule 301 for Application Filing Fee.

Section 1: Facility/Owner Information

1. Company Name (Permit to be issued to): Northrop Grumman Aeronautics System Corporation			2. Federal Tax ID #: 95-1055798
3. Mailing/Billing Address (for above company name): 3520 East Ave M Palmdale, CA 93550		3a. Billing Email: george.jung@ngc.com	
4. Facility or Business License Name (for equipment location): 3520 East Ave M Palmdale, CA 93550			
5. Facility Address - Location of Equipment (if same as for company, enter "Same"): Same		5a. Facility UTM: 425E/3830N	5b. Facility Lat/Long: 34.629N/118.084W
6. Contact Name/Title: George Jung	6a. Email Address (if same as billing, enter "Same"): Same		6b. Phone: (661) 266-5394
7. General Nature of Business: Aircraft Manufacturing	7a. NAICS Code: 336411		7b. SIC Code: 3721

8. Type of Organization (check one):
☐ Individual Owner ☐ Partnership ☐ Corporation ☐ Utility ☐ Local Agency ☐ State Agency ☐ Federal Agency

Section 2: Nature of Application

Application is hereby made for Authority To Construct (ATC) and Permit To Operate (PTO) the following equipment:
B260 PH1 Emergency Backup Generator Natural Gas 302 BHP

Application is for:
☐ New Construction ☐ Modification ☐ Change of Owner

For modification or change of owner: Company No.: _____
Current Permit #: _____ **Facility No.:** _____

Do you claim Confidentiality of Data? ☑ No ☐ Yes (attach explanation; specify which information provided is confidential)

Section 3: Equipment Information

Complete Sections A-G as applicable.

A. Adsorption Units

Flow diagram of emissions source and control units: ☑ included	Manufacturer Specs/Guarantee: ☑ included	
Manufacturer: Seibu Giken	Model No.: VMU II-4250 V50-N	Serial No.: Fireguard, UL-2085
Adsorbent: ☐ Activated Charcoal: Type		☑ Other, specify: _____
Adsorbate(s): VOC's		
Number of beds: 2	Weight of adsorbent per bed:	
Dimensions of beds: thickness 500mm	Surface area:	
Inlet temperature: 75 F°	Pressure drop across unit: 3.9 in H_2O	

Regeneration: ☐ Replacement ☐ Steam ☑ Other, specify: _____

Regeneration Method: ☐ Shut down ☑ alternate use, specify: Continuous Heated Desorption Zone
☐ Other, specify: _____

Minimum control efficiency: 96 % ppmv mg/m^3

Describe method to monitor control efficiency and breakthrough:
Sample testing

B. Afterburner Units

Flow diagram of emissions source and control units: ☑ included	Manufacturer Specs/Guarantee: ☑ included	
Manufacturer: Oxidizers Inc	Model No.: Series II 11.9RTO95	Serial No.: D-835236
Combustion chamber dimensions: Length: in.	Cross sectional area: sq in.	
Fuel: ☑ natural gas ☐ propane ☐ CARB Diesel ☐ Other, specify: _____		
Number and rating of burners: One (1), 4.6 MMBtu/hr	Operating temperature of combustion chamber: 1,550 °F	
Inlet temperature: 116 °F	Pressure drop across units: 18.5 inches H_2O	Gas flow rate: 12,000 dscfm
Catalyst used: ☐, please describe:		
Heat exchanger used: ☑, please describe: Regenerative Thermal Oxidizer w/ Random Packed Ceramic Media		
Minimum control efficiency: 98 % ppmv mg/m^3		
Describe method to monitor control efficiency and breakthrough: Sample testing		

C. Condenser Units

Flow diagram of emissions source and control units: ☐ included	Manufacturer Specs/Guarantee: ☐ included			
Manufacturer:	Model No.:	Serial No.: D-838229		
Heat exchange area: ft^2				
Coolant rate: units type: ☐ Water ☐ Air ☐ CARB Diesel Other, specify: _____				
Coolant temp.: inlet °F outlet °F	Gas temp.: inlet °F outlet °F	Gas flow rate: dscfm		
Minimum control efficiency: % ppmv mg/m3				
Describe method to monitor control efficiency and breakthrough:				

D. Electrostatic Precipitator Units

Flow diagram of emissions source and control units: ☐ included	Manufacturer Specs/Guarantee: ☐ included	
Manufacturer:	Model No.:	Serial No.:
Collecting electrode area: ft^2	Gas flow rate: dscfm	
Describe method to monitor control efficiency and breakthrough:		

E. Filter Units

Flow diagram of emissions source and control units: ☐ included	Manufacturer Specs/Guarantee: ☐ included	
Manufacturer:	Model No.:	Serial No.:
Filtering material:	Filtering area:	
Number and dimension of filters:		
Cleaning Method: ☐ Shaker ☐ Reverse air ☐ Pulse air ☐ Pulse jet ☐ Other, specify: _____		
Gas flow rate: dscfm	Unit measured with a manometer gauge? ☐ Yes ☐ No	
Manufacturer's specified pressure differential range: inches H_2O		
Control efficiency: % ppmv mg/m^3		
Motor size: bhp Fan size: inches		
Describe method to monitor control efficiency and breakthrough:		

F. Scrubber Units

Flow diagram of emissions source and control units: ☑ included	Manufacturer Specs/Guarantee: ☑ included	
Manufacturer: Monroe Environmental	Model No.: MSSS-21000	Serial No.:

Type of scrubber: ☐ high energy, gas stream pressure drop: inches H_2O
☑ Packed: packing type Polypropylene packing size packing material height 12 ft
☑ Spray: number of nozzles 1, Cone Nozzle nozzle pressure PSIG
☐ Other, specify: _____

Flow type: ☐ concurrent ☑ countercurrent ☐ crossflow

Scrubber dimensions: length in direction of gas flow 300 in. cross sectional area 4,536 sq in.

Scrubbant: HCl, HF Scrubbant flow rate: 15,435 dscfm

Control efficiency: 99.5 % < 1 HCl, < 2 HF ppmv mg/m^3

Describe method to monitor control efficiency and breakthrough:
Sample testing

G. Other Types

Equipment description:

Flow diagram of emissions source and control units: ☐ included	Manufacturer Specs/Guarantee: ☐ included	
Manufacturer:	Model No.:	Serial No.:
Control efficiency: % ppmv mg/m^3		Gas flow rate: dscfm

Describe method to monitor control efficiency and breakthrough:

Section 4: Emissions Data

Emission Factor Basis: ☐ Manufacturer ☐ Source Test ☐ AVAQMD Default ☐ USEPA AP-42
Other (please specify): _____

Pollutant:	Pre-Control Max. Emissions:	Units	Post Control Max. Emissions:	Units
NOx				
NMHC				
CO				
PM10				
SOx				

***Please note, District Staff may contact you for further information. Failure to provide additional information as requested in a timely manner may result in delays in the processing of this permit application.**

Section 5: Certification

I hereby certify that all information contained herein is true and correct.

George Jung	Environmental		06/25/26
Name of Responsible Official	Official Title	Signature of Responsible Official	Date Signed

Telephone Number: (661) 266-5394	Email: Dan.miller@mjkconstruction.com

-For District Use only-

Application No.:	Invoice No.:	Permit No.:	Company/Facility No.:

ANTELOPE VALLEY AIR QUALITY MANAGEMENT DISTRICT
2551 West Ave H, Lancaster, CA 93536
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Payment by credit card:
Pay online at our website: http://www.avaqmd.ca.gov
Click "Pay Fees"
Please note a surcharge applies for all credit card payments.

If payment is made online via credit card, please email the receipt to engineering@avaqmd.ca.gov.

Should you have any additional questions, please, do not hesitate to contact the permitting division at 661-723-8070, or via email at engineering@avaqmd.ca.gov.

2

PROCESS DESCRIPTION

INTRODUCTION

The Northrop Grumman Corporation (Northrop), AVAQMD Facility ID No. 01816, is planning to install a new Paint Spray Hangar at B/474. Northrop is also planning to install a dual concentrator connected to a regenerative thermal oxidizer and an acid gas scrubber to meet Best Available Control Technology requirements. A site plan is included as Figure 1. Floor plans are included as Figure 2.

EQUIPMENT DESCRIPTION

Northrop plans to install a Global Finishing Systems 215.5' x 120' x 33.5' cross draft paint hangar with air recirculation to lower energy use requirements. A booth drawing in included as Figure 3. The design intent is to provide a cross draft air velocity through the hangar that falls within the range of 75-125 FPM at the asset location. To achieve this desired velocity, approximately 708,000 CFM of air in drawn through the hangar during the painting process. Of the total flow, 20-25% is exhausted from the building and 75-80% is recirculated within the process. 20-25% of the total CFM is outside air is brought into the process as make-up air. This air is then conditioned and the system is designed to allow mixing of this conditioned air with the recirculated air to provide an indoor condition that falls within 70-80°F and 50-70% relative humidity.

The system also incorporates multiple stages of dry-filter particulate capture. The first stage, a blanket filter, covers an area 176' W x 30' H. The system includes a NESHAP compliant bag filter exhaust system followed by a HEPA filter system rated at an efficiency of 99.99 @ 0.3 microns. Manufacturer's information is included as Appendix A.

The exhaust air is then sent to two rotary concentrators connected to a regenerative thermal oxidizer system.

Capacity and horsepower for all the fans is as follows:

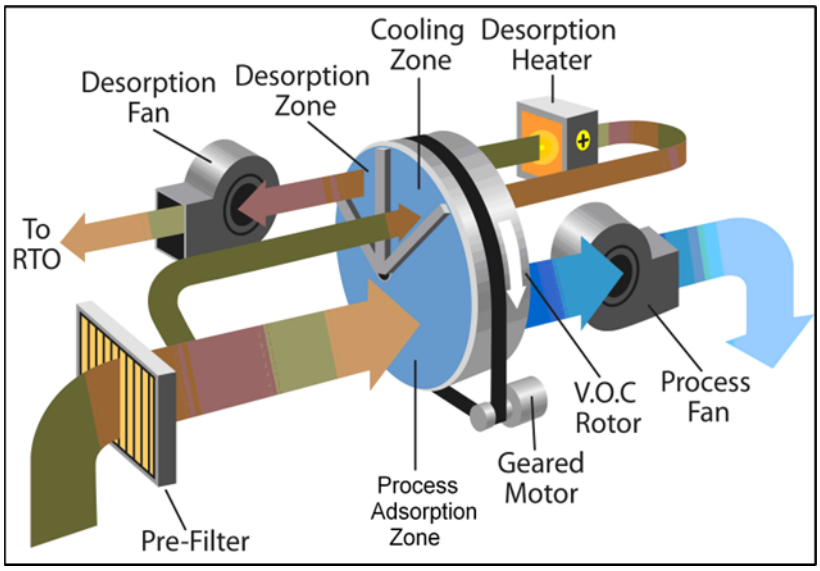
- Exhaust Fans: (2) 200 HP each
- Recirculation Fans: (6) 150 HP each

The number and type of filters is as follows:

- 3-Stage NESHAP Filters - (1,120) 24x24x12” (consists of roll media, panel filter and bag filter)
- HEPA - (416) 24x24x12 (efficiency of 99.99% @ 0.3 micron)

The exhaust air is then sent to Seibu Giken VMU II-4250 V50-N Concentrator + One (1) Oxidizers Inc. Series II 11.9RTO95 dual chamber RTO oxidizer system and then to a 2-stage acid scrubber. The rotary concentrators will capture/route to the thermal oxidizer 96% of the VOC vented to it. The control efficiency of the thermal oxidizer is 98% for an overall control efficiency of 94.08%. Manufacturer’s information is summarized below:

Zeolite Rotary Concentrator

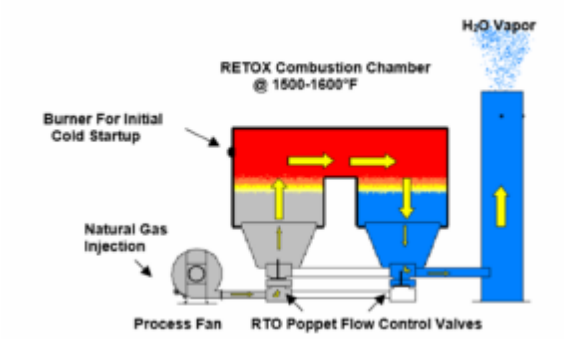


The system consists of a zeolite rotor in a steel reinforced modular housing, complete with shop assembled seals, chain drive, air heaters, process fan, motor and VFD. The Zeolite Rotor Concentrator provides a 20:1 concentration ratio so that the 228,000 SCFM exhaust stream is concentrated into a smaller energy eAicient 11,900 SCFM RETOX RTO system. The main exhaust air stream from the paint finishing process splits into the adsorption air stream and a purge air stream. The Seibu Giken zeolite wheel VOC concentrator module collects the volatile organic compounds from the exhaust air in the adsorption zone. The zeolite wheel rotates with a low rpm chain drive rotor to adsorb or desorb the VOCs from the process stream. The desorption air stream is heated with a 1.5-MMBtu/hr natural gas fired duct heater to approximately 428 deg F. Under the elevated temperature the VOCs will be released in the desorption zone from the zeolite material. The Purge air stream is also used to cool the zeolite material to enable VOC capture with ambient temperature in the adsorption zone.

Rotary Concentrator

- Quantity: 2
- Manufacturer: Seibu Giken
- Model: VMU II-4250 V50-N Concentrator
- Concentrates VOC emission stream and sends to RTO for destruction. 96% minimum capture with a 20:1 concentration ratio.
- Adsorption fan
  - o Quantity: 2
  - o Design Flow: 100,500 ACFM @ 62 F
  - o Maximum Flow: 127,900 ACFM @ 72 F
  - o WEG, Westinghouse, TECO, or equal fan motor
  - o Motor size: 300 HP (each) w/ VFD
- Desorption fan
  - o Quantity: 2
  - o Design Flow: 5,900 ACFM @ 428 F
  - o Maximum Flow: 7,020 ACFM @ 109 F
  - o WEG, Westinghouse, TECO, or equal fan motor
  - o Motor size: 30 HP (each) w/ VFD
- Desorption heater
  - o Quantity: 2
  - o Designed Fired Capacity: 1.4 MMBTU/hr each (2.8 MMBTU/hr total for 2)
  - o Burner emissions: Low NOx, 30 ppm NOx @3% O2, 400 ppm CO @3% O2
  - o Desorption heater combustion air motor size: 3 HP
- Desorption outlet temperature: 428 F

Regenerative Thermal Oxidizer



Oxidizers Inc. Series II 11.9RTO95 RTO Systems oxidizes volatile organic compounds (VOC) and solvent laden gas into carbon dioxide and water vapor. The RTO system consists of a reinforced, insulated dual chamber filled with low pressure drop ceramic heat exchange media. The process gas flow is automatically controlled by a zero leakage poppet valve mechanism which changes the direction of the gas flow at regular intervals via an integral programmable logic control (PLC) system. A 4.6-MMBtu/hr external burner is used only for a rapid initial cold startup, typically 80 minutes. Only one fan is needed for normal RTO operation. Due to the abundant oxygen content of the process gas, complete combustion readily occurs when the ignition point is reached in the RTO (typically 1,500-1,600ºF). With a sufficient concentration of VOCs in the incoming process gas, the exotherm of the solvents oxidation will be enough so that the destruction of VOCs will be self-sustaining with no auxiliary heat energy required from the fuel source. The high level of up to 95% heat recovery at full flow achieved is the result of regenerative heat transfer. The VOC laden process air enters a porous bed filled with high temperature, low pressure drop turbulent flow ceramic heat transfer media. The air is preheated by bed #1 to a maximum temperature, passes through a central combustion chamber where the hydrocarbons are oxidized to carbon dioxide and water vapor, and then exits a second bed where heat is transferred from the hot air back into the bed. To avoid an uneven temperature distribution in the RTO, the gas flow direction is changed automatically at regular intervals by the poppet valve flow control mechanism to maintain even temperature profiles between the dual ceramic media chambers.

<u>RTO</u>

- Quantity: 1
- Manufacturer: Oxidizers Inc.
- Model: Series II 11.9RTO95
- Destroys VOC emissions in exhaust stream. 98% minimum RTO destruction efficiency. 95% thermal energy recovery.
- Solvent loading: 87 lb/hr peak // 17.4 lb/hr average
- Oxidation temperature: 1,550ºF
- Burner:
    - Quantity: 1
    - Maxon Kinedizer LE
    - BTU rating: 4.6 MMBTU/hr
    - Burner emissions: Low NOx, 30 ppm NOx @ 3% O2, 400 ppm CO @ 3% O2
    - Combustion air motor size: 10 Hp
- Series II 11.9RTO95 FAN

- Design Flow: 11,900 ACFM @ 428 F
- Maximum Flow: 14,400 ACFM @ 109 F
- WEG, Westinghouse, TECO, or equal fan motor
- Motor Size 75 HP

Acid Gas Scrubber

To control emissions from combustion of PCBTF (CAS No. 98-56-6) and trifluoropropylmethyl (2374-13-3) a 2-stage packed bed acid gas scrubber will be installed as follows:

Stage 1: Hastelloy Quench by Monroe Environmental

Stage 2: Polypropylene Scrubber Monroe Environmental MSSS-21000

Stage 1: 3'diameter by 10' Tall

Stage 2: Scrubber Foot Print: 6'x4'x25'Tall

Overall System Envelope: 14 X 8'x 35'Tall

Quench

- Quantity: 1
- Manufacturer: Monroe Environmental
- Reduces RTO discharge temperature via a co-current quench, utilizing "one pass" potable water

Scrubber

- Quantity: 1
- Manufacturer: Monroe Environmental
- Model MSSS-21000
- Neutralizes acidic gas waste
- 99.5% removal efficiency of HCl gas; 99.5% removal efficiency of HF gas; 99.5% removal efficiency of 2 micron and larger mist

Gas Conditions:	Quench Inlet	Scrubber Outlet
Flow Rate, ACFM	16,400	11,900
Temperature, °F	454	124
Water Content	1% by Vol.	Saturated
Bulk Gas Composition	Air w/ Acid Fume	

OPERATING SCHEDULE

The system can operate 24 hours per day, 7 days per week, 52 weeks per year.

3

EMISSION CALCULATIONS

Pursuant to Rule 1304, the emissions change for a new facility or emissions unit is calculated, in pounds per day, from proposed emissions. Proposed emissions are based on facility throughput and a capture and control efficiency. The equipment performance guarantee is 94.08%.

PROPOSED EMISSIONS

Proposed emissions for the new system are the equipment potential to emit, defined by District Rule 1301(FFF) as the maximum capacity of the emission unit to emit any regulated air pollutant under its physical and operational design. The materials Northrop plans to use and the VOCs are included as well as annual usage and uncontrolled emissions are expressed in Table 1. Total annual controlled VOC emissions are as specified in Table 2 and will not exceed 2484 pounds per year. Total annual controlled PM emissions are contained in Table 3 and will not exceed 1.5 pounds per year. Table 4 contains the annual fuel use consumed to operate the Rotary Concentrator Desorption Heaters and the external burner while Table 5 contains the criteria pollutant and HAP emissions that will result from the operation of these units.

HAP EMISSIONS

The HAP content of the materials that will be sprayed in the B/421 spray hangar are described in Rule 1401 Health Risk Assessment that accompanies this application. The HRA also includes emission calculations for those materials and tabulates total estimated HAP emissions.

4

RULE COMPLIANCE EVALUATION

GENERAL REQUIREMENTS

Rule 212 - Standards for Approving Permits

This equipment is not located within 1,000 feet from the outer boundary of a school. This permit application will not result in criteria pollutants in excess of the specified thresholds and emissions of toxics will not result in a MICR greater than one in one million. Notification pursuant to Rule 212 is not required.

Rule 401 - Visible Emissions

No visible emissions are expected.

Rule 402 - Nuisance

The facility will not cause or contribute to a nuisance condition.

Rule 1124 - Aerospace Assembly and Component Manufacturing Operations

Northrop will comply with all applicable provisions of Rule 1124. While we expect that the majority of the coatings used will be compliant, Northrop may also comply with provisions of paragraphs Rule 1124 (C)(1), (C)(2), and (C)(5) by using approved air pollution control equipment. The control equipment will more than meet the requirements of Rule 1124 (C) (6) which are as follows:

(a) The control device will reduce emissions from an emission collection system by at least 95 percent (95%), by weight, or reduce the output of the air pollution control device to less than 50 ppm calculated for carbon with no dilution.

(b) The system will collect at least 90 percent (90%), by weight, of the emissions generated by the sources of emissions.

Rule 1171

Compliance with Rule 1171 requirements will be maintained.

NEW SOURCE REQUIREMENTS

Regulation XIII – Criteria Pollutants

Maximum Annual Emissions

The addition of the paint spray hangar and carbon control systems will increase VOC emissions by less than 2500 pounds/year. The estimated NOx emission increase is 892 pounds per year from the rotary concentrator desorption heaters and 1465 pounds from the RTO external burner for a total of 2357 pounds per year. The estimated PM emission increase totals less than 1.5 pounds per year from painting and less than 500 pounds per year from combustion.

BACT Evaluation

Best Available Control Technology (BACT) is required for each new or modified permit unit at any facility that emits, or has the potential to emit, 25 tons per year or more of any nonattainment pollutant or its precursors (District Rule 1303(A)(3)). Northrop has a maximum potential to emit in excess of 25 tons per year for VOC and less than 15 tons per year for PM10. Similar types of aerospace coating application equipment permitted in AVAQMD as well as in Bay Area AQMD, South Coast AQMD, and CARB and EPA clearinghouses results in a determination of BACT for the proposed class and category of VOC control as a VOC control system with an overall efficiency of at least 81% (carbon)/90% (other technologies) and a HEPA PM control system with a control efficiency of 99.97%. This control system will meet this requirement and therefore meet BACT. Low NOx burners on combustion equipment will also meet MACT requirements.

Offsets

New Source Review requires offsets for non-attainment pollutants and their precursors emitted by the addition of new equipment or modifications resulting in a net increase at existing major sources. The Northrop facility is an existing major source of VOC; however, the facility has a monthly VOC limit of 118,625 pounds in any 30-day period based on a 30-day rolling average that has been fully offset. This equipment will operate within the existing limit and there will, therefore, be no net increase in VOC emissions.

Offsets will be required for NOx at a rate of 1.3:1. A total of 3064 pounds of NOx are required to offset the 2357 pound per year increase from the concentrator desorption heater and the external burner.

Rule 1314 - AVAQMD Rule 1314 — Federal Nonattainment New Source Review for Ozone Precursors

This project is not a Federal Major Modification as demonstrated in the Title V application that accompanies this application. Rule 1314 does not apply.

Rule 1401 – New Source Review of Toxic Air Contaminants

Rule 1401 establishes allowable risks for equipment requiring new permits pursuant to Rules 201 or 203. To demonstrate compliance with Rule 1401, risk assessment was prepared and submitted with this application.

NESHAP REQUIREMENTS

40 CFR 63 Subpart GG – Aerospace NESHAP

Northrop will comply with all applicable provisions of 40 CFR 63 Subpart GG. While we expect that the majority of the coating used will be compliant, Northrop may also comply via control as specified in §63.745 (d) which states: "Controlled coatings—control system requirements. Each control system shall reduce the operation's organic HAP and VOC emissions to the atmosphere by 81% or greater, taking into account capture and destruction or removal efficiencies, as determined using the procedures in §63.750(g) when a carbon adsorber is used and in §63.750(h) when a control device other than a carbon adsorber is used."

5

FEE EVALUATION

Pursuant to Rule 301 (D) (1) any person who applies for the issuance of a new or modified permit and subject to the Provisions of Regulation XXX – Federal Operating Permits (Title V) shall be assessed a fee of $1008. This application filing fee is submitted with the application.

Total application fees included with this application are as follows:

- Paint spray hangar x $1089 = $1089
- Concentrator/Regenerative Thermal Oxidizer/Scrubber = $1089
- Total Fees due = $1089 + $1089 - $2178

TABLES

Table 1: Materials to be used in B/421 Phase III spray hangar

Type of Coating	QTY	Gallons	VOC (g/l)	VOC lb/gal	VOC lbs/aircraft	Total lb/year (6 aircraft)
RELEASE AGENT, MOLD	1 GAL	1	440	3.67	3.67	22.00
Silica	(1) 10 LB BAG	600	0	0.00	0.00	0.00
ADHESIVE/SEALANT	(35) 3 OZ	0.82	59	0.49	0.40	2.42
Primer	162 GAL	162	600	5.00	810.00	4860.00
ADHESIVE/SEALANT	(70) 10.3 OZ	5.63	60	0.50	2.82	16.89
ADHESIVE/SEALANT	(6) 10.3 OZ	0.482	60	0.50	0.24	1.45
EREC	450 LBS	0	0	0.00	0.00	0.00
Silicone Primer	(1)8 OZ	0.0625	37	0.31	0.02	0.12
Solvent	(1) 200LTR	52.83	860	7.17	378.62	2271.69
Silicone Primer	4 PINT	0.5	770	6.42	3.21	19.25
FLUOROSILICONE	(4) 200 ml. KITS	0.211	464	3.87	0.82	4.90
Adhesion Promoter	16 GAL	16	751	6.26	100.13	600.80
EREC	(25) 4 OZ	0.78	0	0.00	0.00	0.00
Topcoat	2 GAL	2	572	4.77	9.53	57.20
Rain Erosion	55 GAL	55	605	5.04	277.29	1663.75
EREC	90 GAL	90	409	3.41	306.75	1840.50
Primer	(2) 2 GAL	2	195	1.63	3.25	19.50
SILICONE PRIMER	8 GAL	8	720	6.00	48.00	288.00
Adhesive	2 QT	0.5	10	0.08	0.04	0.25
Adhesive Sealant	(2) 6 OZ		10	0.08	0.00	0.00
Primer	4 GAL	4	338	2.82	11.27	67.60
EREC	77 GAL	77	255	2.13	163.63	981.75
EREC	194 GAL	194	476	3.97	769.53	4617.20
EREC	552 GAL	552	650	5.42	2,990.00	17940.00
FLUOROSILICONE ADHESIVE	(10) 6OZ SEMKITS	0.468	0	0.00	0.00	0.00
FLUOROSILICONE ADHESIVE	(10) 6OZ SEMKITS	0.468	10	0.08	0.04	0.23
Silicone Adhesive	(20) 6OZ SEMKITS	0.937	0	0.00	0.00	0.00
SILICONE ADHESIVE	(50) 6OZ SEMKITS	2.34	0	0.00	0.00	0.00
Silicone Primer	65 GAL	65	720	6.00	390.00	2340.00
Silicone Primer	(1) 80Z	0.625	720	6.00	3.75	22.50
EREC	(50) 6OZ SEMKITS	2.34	0	0.00	0.00	0.00
EREC	(4) 1500 GRAM	1.02	399.1	3.33	3.39	20.35
FLUOROSILICONE	(3) 20 FT	0	0	0.00	0.00	0.00
FLUOROSILICONE	(9) 20 FT	0	0	0.00	0.00	0.00
FLUOROSILICONE	(10) 20 FT	0	0	0.00	0.00	0.00
FLUOROSILICONE	(5) 20 FT	0	0	0.00	0.00	0.00
FLUOROSILICONE	(5) 20 FT	0	0	0.00	0.00	0.00
CAAPCOAT Lusterless Coat	45 GAL	45	793.3	6.61	297.49	1784.93
Primer	2 QT	0.5	350	2.92	1.46	8.75
Topcoat	1 GAL	1	491	4.09	4.09	24.55
Topcoat	4 GAL	4	340	2.83	11.33	68.00
Topcoat	100 GAL	100	368	3.07	306.67	1840.00
Topcoat	20 GAL	20	368	3.07	61.33	368.00
Topcoat	1 GAL	1	368	3.07	3.07	18.40
Topcoat	10 GAL	10	368	3.07	30.67	184.00
TOTAL		**2079.51**			**6992.49**	**41954.97**

Table 2: Estimated controlled VOC emissions from materials to be used in B/421 Phase III spray hangar

VOC lbs/aircraft	Total lb/year (6 aircraft)	Capture Efficiency %	Capture Loss lbs/yr	Control Efficiency %	Controlled Loss lbs/yr	Total VOC Emissions lbs/yr	Overall Efficiency
6,992.49	41954.97	96	1678.20	98	805.54	2483.73	94.08%

Table 3: Particulate emissions from B/421 spray hangar

Usage		Solids	Solids	Transfer	Fallout	Uncontrolled PM	Control	PM Emissions
gal/shipset	gal/yr	lb/gal	lbs/yr	Efficiency		lbs/yr	Efficiency	lbs/yr
2079.51	24954	3.000	74862.49	0.65	0.5	13100.94	0.9999	1.31

Table 4: Natural gas consumption in the Rotary Concentrator and Regenerative Thermal Oxidizer

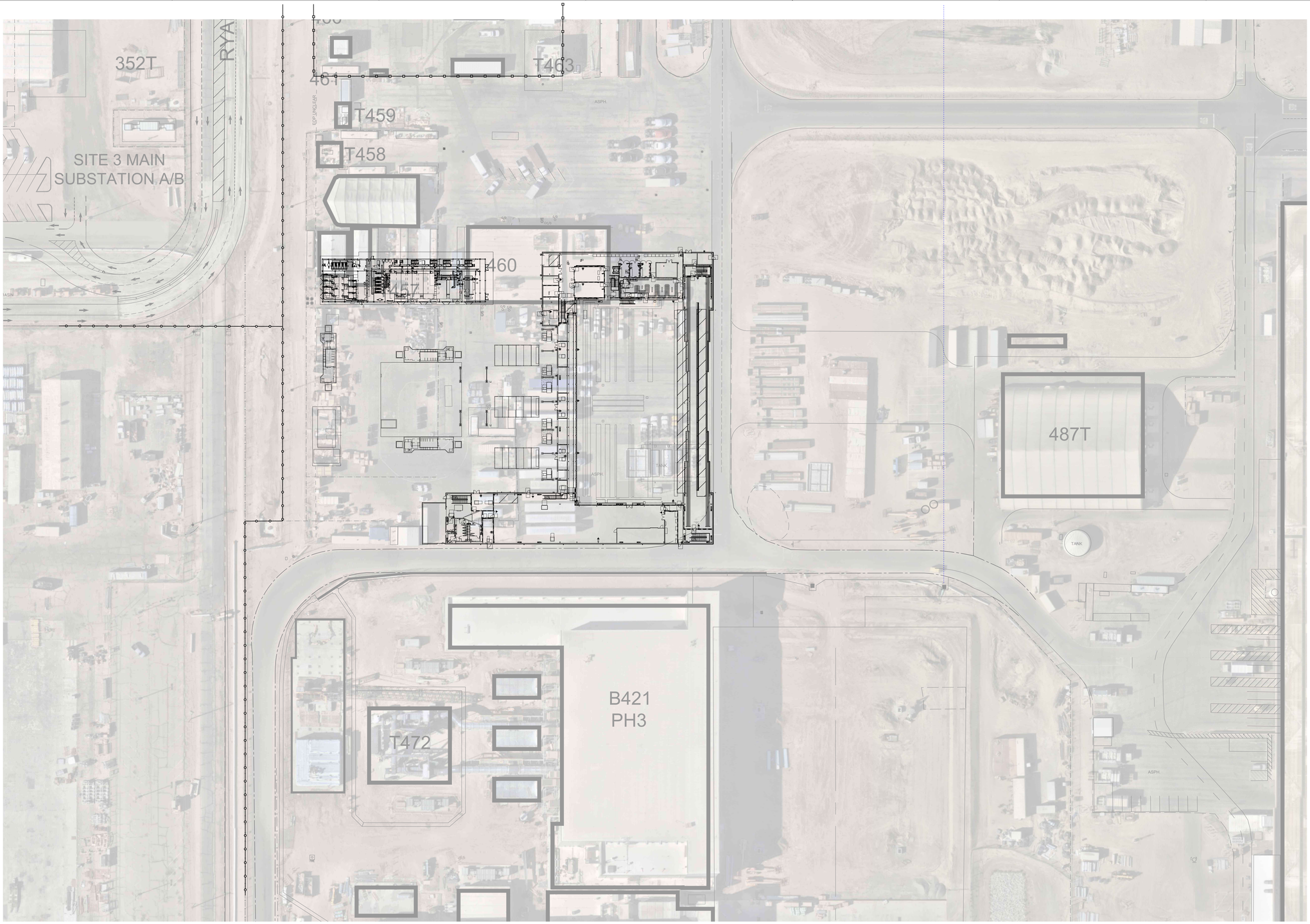
Unit	Capacity	Opeating	Heat Input			
	mmBtu/hr	Hours	mmBtu/yr	mmBtu/hr	mmscf/yr	mmscf/hr
RC Desorption Heater (2 @ 1.4 mmBtu/hr each)	2.8	8760	24528	2.8	24.528	0.0028
RTO External burner	4.6	8760	40296	4.6	40.296	0.0046

Table 5: Emissions from natural gas combustion in the rotary concentrator and regenerative thermal oxidizer

Pollutant	A2588 ID	Emission factor		Source	RC		RTO	
		lb/mmscf	lb/mmBtu		lb/year	lb/hr	lb/year	lb/hr
NOx	42603	36.3587	3.64E-02	30 ppm NOx at 3% O2	891.807	1.02E-01	1465.112	1.67E-01
SOx	42401	0.6000	6.00E-04	AVAQMD Default	14.717	1.68E-03	24.178	2.76E-03
CO	42101	15.8081	1.58E-02	20 ppm CO at 3% O2	387.742	4.43E-02	637.005	7.27E-02
PM	11101	7.6000	7.60E-03	AVAQMD Default	186.413	2.13E-02	306.250	3.50E-02
PM-Filterable	11105	1.9000	1.90E-03	AVAQMD Default	46.603	5.32E-03	76.562	8.74E-03
PM10	85101	7.6000	7.60E-03	AVAQMD Default	186.413	2.13E-02	306.250	3.50E-02
PM10-Filterable	85105	1.9000	1.90E-03	AVAQMD Default	46.603	5.32E-03	76.562	8.74E-03
PM2.5	88101	7.6000	7.60E-03	AVAQMD Default	186.413	2.13E-02	306.250	3.50E-02
PM2.5-Filterable	88105	1.9000	1.90E-03	AVAQMD Default	46.603	5.32E-03	76.562	8.74E-03
VOC	43101	5.5000	5.50E-03	AVAQMD Default	134.904	1.54E-02	221.628	2.53E-02
Lead	12128	0.0005	5.00E-07	AVAQMD Default	0.012	1.40E-06	0.020	2.30E-06

Figure 1

SITE PLAN



EXISTING CONDITIONS PLAN

0 20' 40' 80'

SCALE IN FEET

N

REVISIONS			
REV	DESCRIPTION	DATE	APPROVED

BURNS McDONNELL

140 S. STATE COLLEGE BLVD. SUITE 100 BREA, CA 92821
BMCD LICENSE NO. 755238

APPROVED BY	NORTHROP GRUMMAN ENVIRONMENTAL HEALTH AND SAFETY	DATE
APPROVED BY	NORTHROP GRUMMAN FIRE DEPARTMENT	DATE
APPROVED BY	NORTHROP GRUMMAN SECURITY	DATE
APPROVED BY		DATE
APPROVED BY		DATE
APPROVED BY		DATE
APPROVED BY		DATE
	NORTHROP/GRUMMAN BUSINESS MANAGEMENT DEPT.	DATE
	NORTHROP/GRUMMAN FACILITIES ENGINEER MANAGER	DATE
PREPARED BY	ENGINEER	DATE
RECOMMENDED BY	NORTHROP/GRUMMAN FACILITY MANAGER - LESSEE	DATE
APPROVED BY	LESSOR SUPERVISING ENGINEER	DATE
APPROVED BY	LESSOR FIRE PROTECTION ENGINEER	DATE
APPROVED BY	LESSOR SAFETY SPECIALIST	DATE

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NORTHROP GRUMMAN CORP.
3520 EAST AVENUE "M"
PALMDALE, CALIFORNIA 93550

PLANT 42	BUILDING NO. 421	AREA -

TITLE **B421 PHASE 3 COATING HANGAR**

SITE LAYOUT PLAN

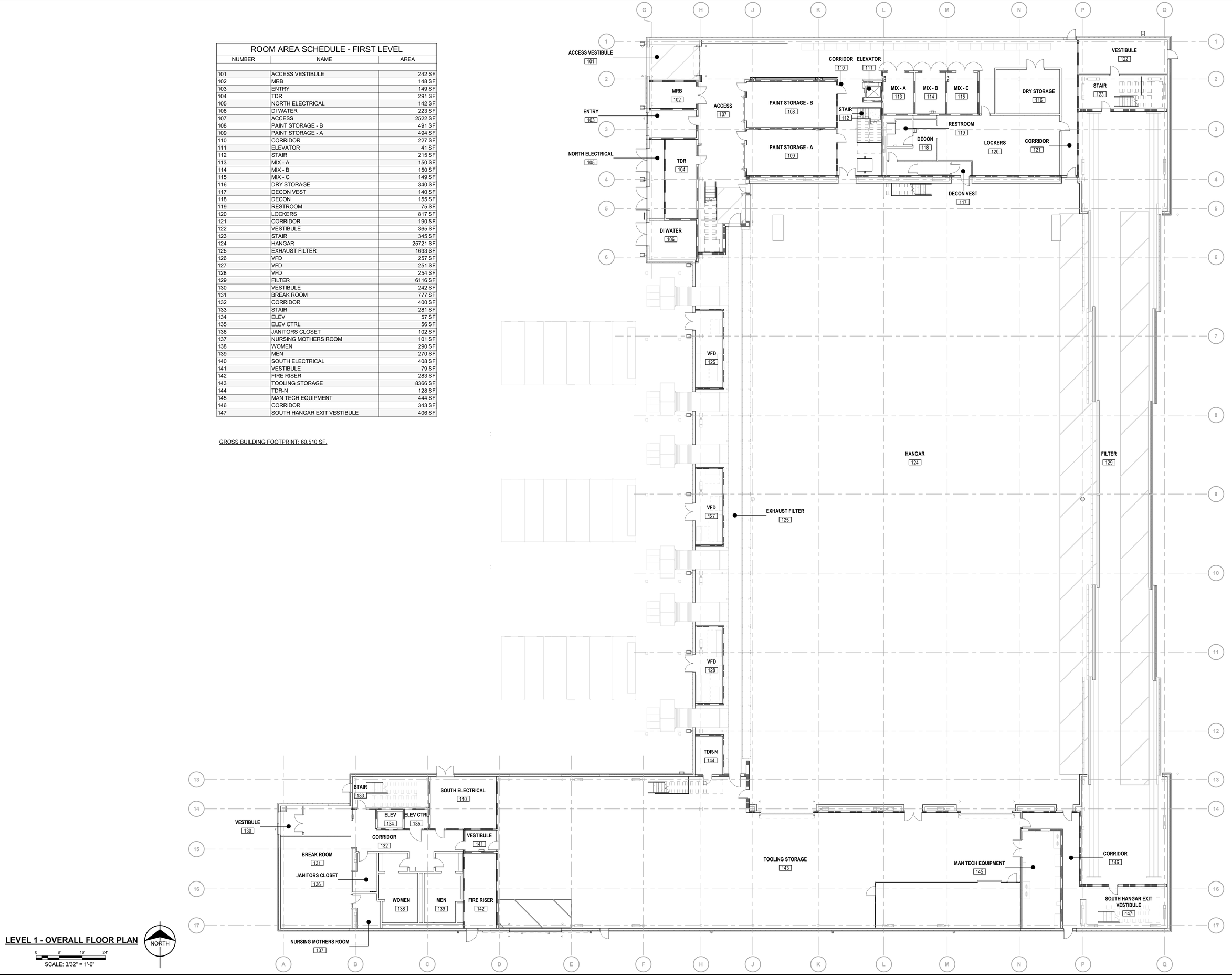
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DRAWN	DESIGNED	CHECKED
PROJECT NO. 148039		DRAWING NO.

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ROOM AREA SCHEDULE - FIRST LEVEL

NUMBER	NAME	AREA
101	ACCESS VESTIBULE	242 SF
102	MRB	148 SF
103	ENTRY	149 SF
104	TDR	291 SF
105	NORTH ELECTRICAL	142 SF
106	DI WATER	223 SF
107	ACCESS	2522 SF
108	PAINT STORAGE - B	491 SF
109	PAINT STORAGE - A	494 SF
110	CORRIDOR	227 SF
111	ELEVATOR	41 SF
112	STAIR	215 SF
113	MIX - A	150 SF
114	MIX - B	150 SF
115	MIX - C	149 SF
116	DRY STORAGE	340 SF
117	DECON VEST	140 SF
118	DECON	155 SF
119	RESTROOM	75 SF
120	LOCKERS	817 SF
121	CORRIDOR	190 SF
122	VESTIBULE	365 SF
123	STAIR	345 SF
124	HANGAR	25721 SF
125	EXHAUST FILTER	1693 SF
126	VFD	257 SF
127	VFD	251 SF
128	VFD	254 SF
129	FILTER	6116 SF
130	VESTIBULE	242 SF
131	BREAK ROOM	777 SF
132	CORRIDOR	400 SF
133	STAIR	281 SF
134	ELEV	57 SF
135	ELEV CTRL	56 SF
136	JANITORS CLOSET	102 SF
137	NURSING MOTHERS ROOM	101 SF
138	WOMEN	290 SF
139	MEN	270 SF
140	SOUTH ELECTRICAL	408 SF
141	VESTIBULE	79 SF
142	FIRE RISER	283 SF
143	TOOLING STORAGE	8366 SF
144	TDR-N	128 SF
145	MAN TECH EQUIPMENT	444 SF
146	CORRIDOR	343 SF
147	SOUTH HANGAR EXIT VESTIBULE	406 SF

GROSS BUILDING FOOTPRINT: 60,510 SF.



LEVEL 1 - OVERALL FLOOR PLAN

0 8' 16' 24'

SCALE: 3/32" = 1'-0"

NORTH

BURNS McDONNELL

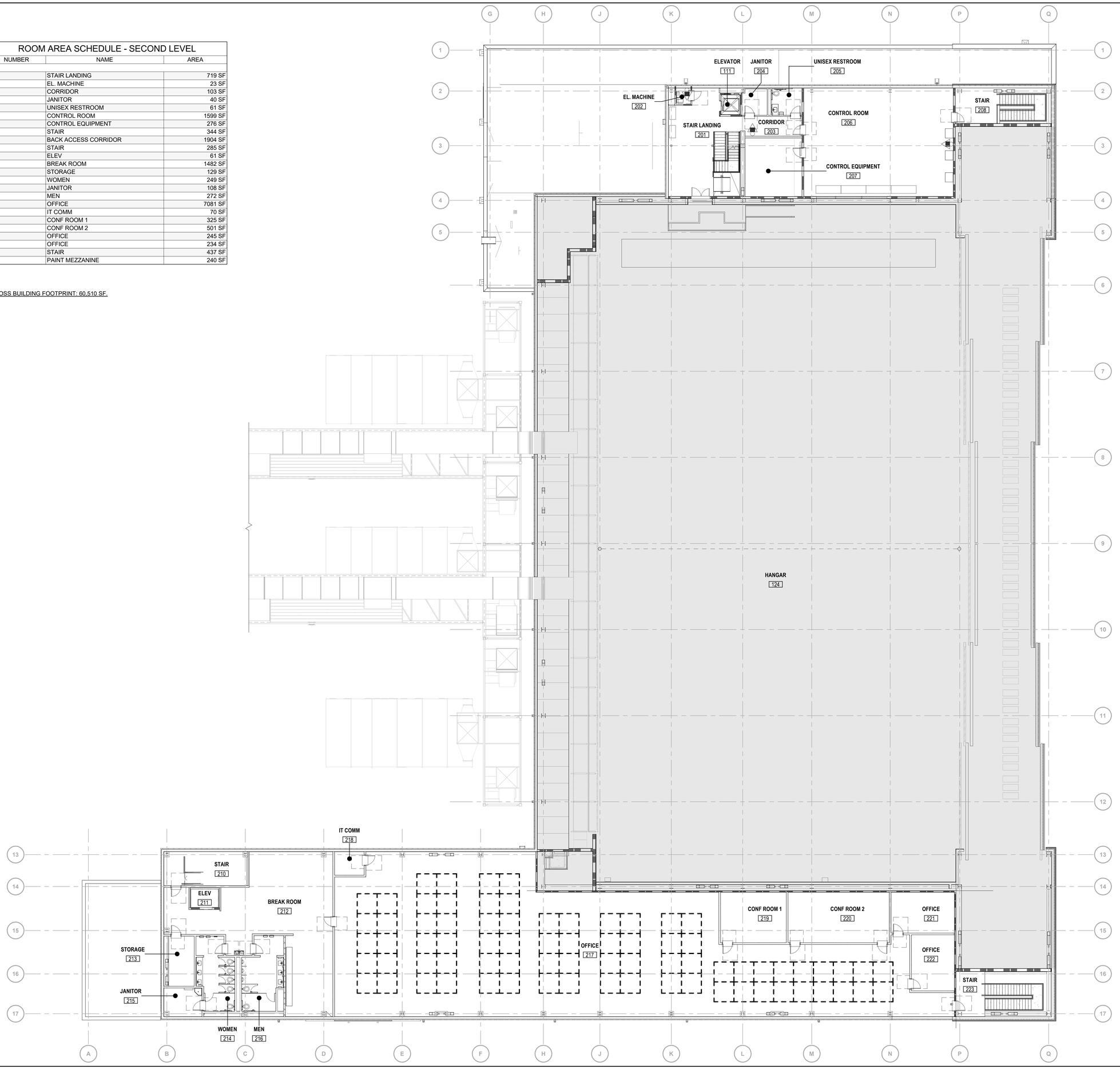
NORTHROP GRUMMAN

B474 COATING HANGAR

Congressional Approval Plan

ROOM AREA SCHEDULE - SECOND LEVEL		
NUMBER	NAME	AREA
201	STAIR LANDING	719 SF
202	EL. MACHINE	23 SF
203	CORRIDOR	103 SF
204	JANITOR	40 SF
205	UNISEX RESTROOM	61 SF
206	CONTROL ROOM	1599 SF
207	CONTROL EQUIPMENT	276 SF
208	STAIR	344 SF
209	BACK ACCESS CORRIDOR	1904 SF
210	STAIR	285 SF
211	ELEV	61 SF
212	BREAK ROOM	1482 SF
213	STORAGE	129 SF
214	WOMEN	249 SF
215	JANITOR	108 SF
216	MEN	272 SF
217	OFFICE	7081 SF
218	IT COMM	70 SF
219	CONF ROOM 1	325 SF
220	CONF ROOM 2	501 SF
221	OFFICE	245 SF
222	OFFICE	234 SF
223	STAIR	437 SF
301	PAINT MEZZANINE	240 SF

GROSS BUILDING FOOTPRINT: 60,510 SF.



LEVEL 2 - OVERALL FLOOR PLAN

0 8' 16' 24'

SCALE: 3/32" = 1'-0"

NORTH

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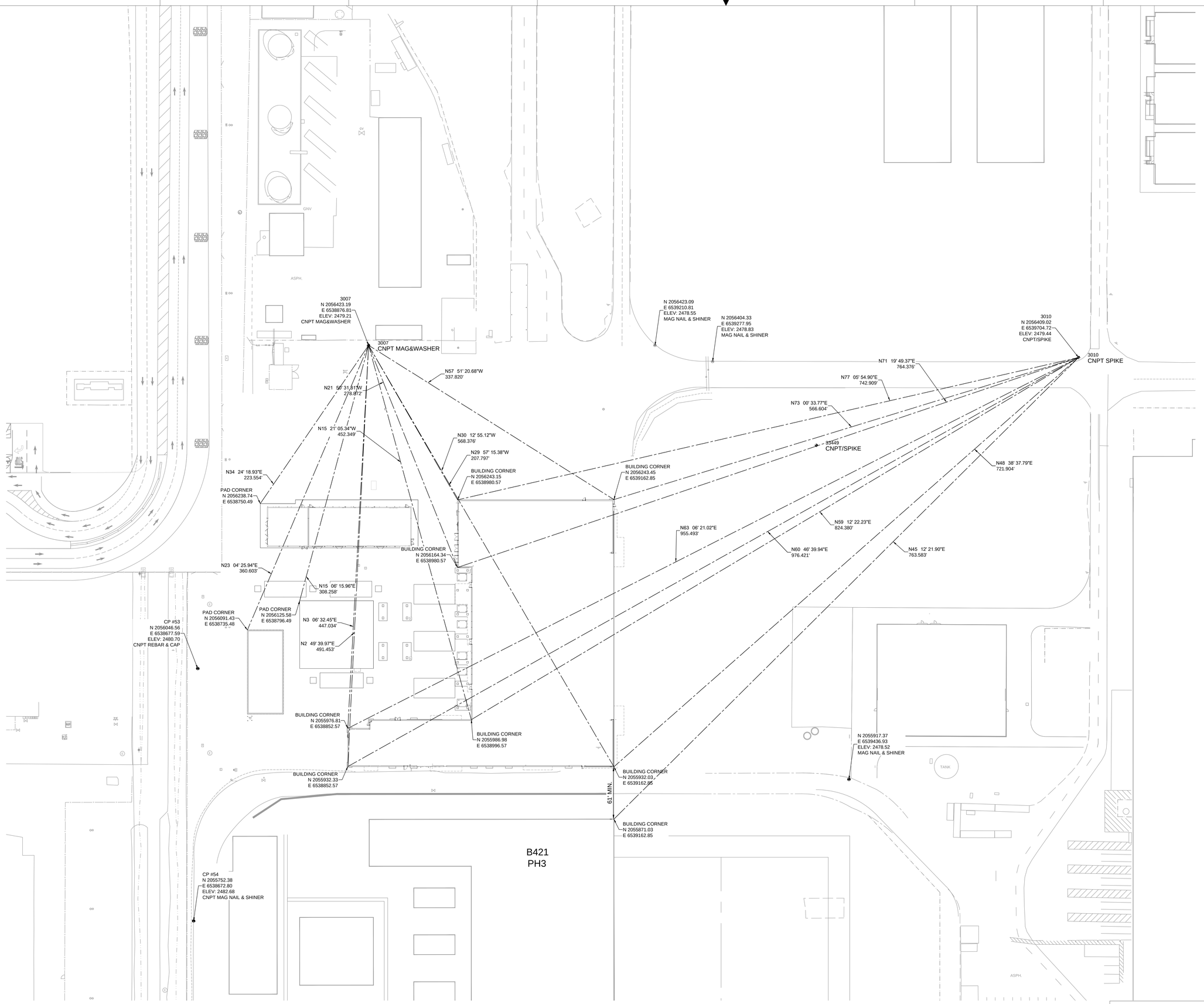
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B474 COATING HANGAR

Congressional Approval Plan

Figure 2

FLOOR PLAN



HORIZONTAL CONTROL PLAN

0 20' 40' 80'

SCALE IN FEET

N

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REVISIONS

REV	DESCRIPTION	DATE	APPROVED
A	ISSUED FOR REVIEW	04/24/2026	PB

GENERAL NOTES:

1. CONTRACTOR TO ESTABLISH SURVEY CONTROL AND CONFIRM ALL BENCHMARKS SHOWN ON PLAN ARE FOUND, CORRECT, AND ACCURATE PRIOR TO THE START OF CONSTRUCTION

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145 S. STATE COLLEGE BLVD. SUITE 600 BREA, CA 92821
BMCD LICENSE NO. 755238

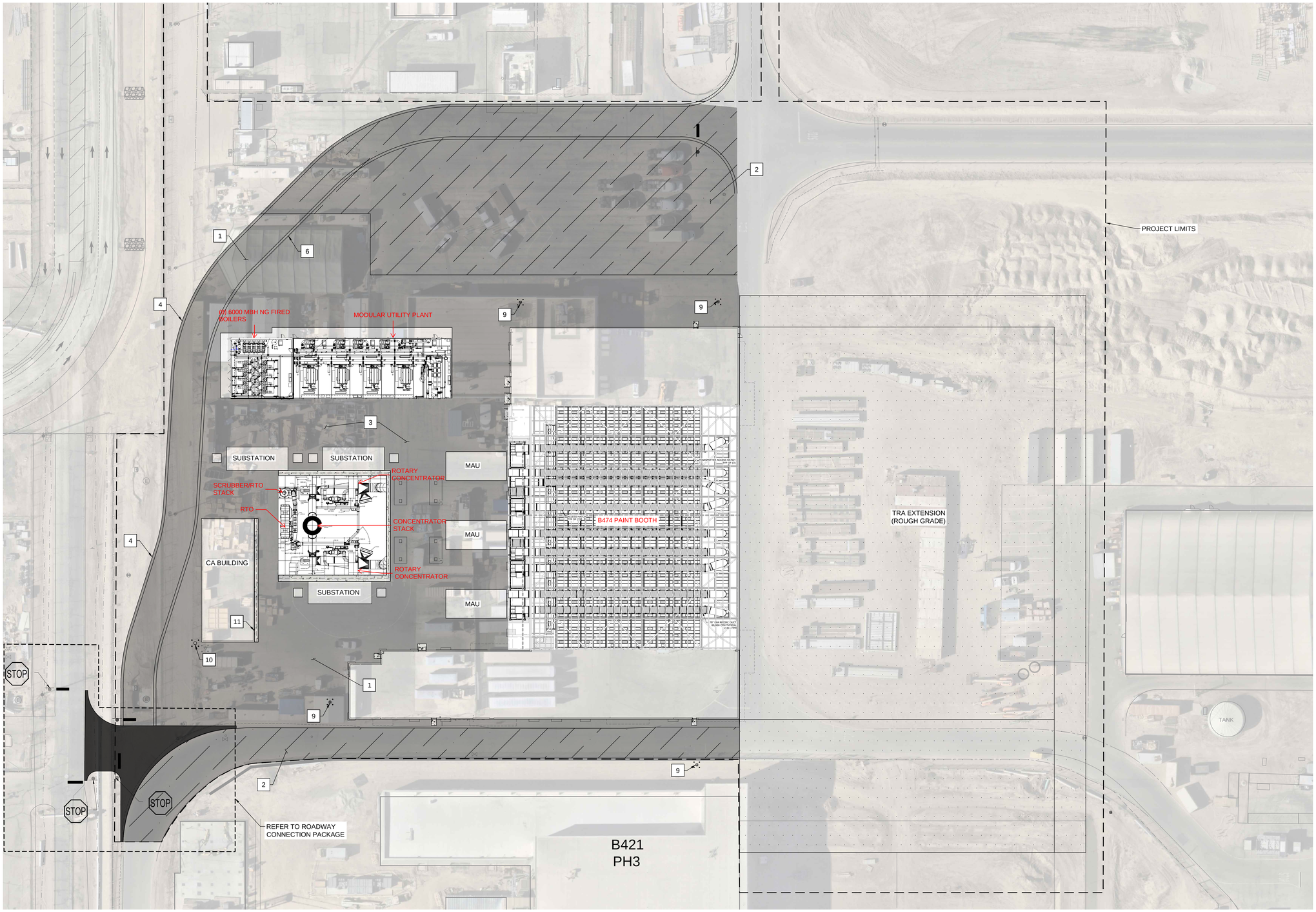
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APPROVED BY	NORTHROP GRUMMAN FIRE DEPARTMENT	DATE
APPROVED BY	NORTHROP GRUMMAN SECURITY	DATE
APPROVED BY		DATE
APPROVED BY		DATE
APPROVED BY		DATE
APPROVED BY		DATE
	NORTHROP/GRUMMAN BUSINESS MANAGEMENT DEPT.	DATE
	NORTHROP/GRUMMAN FACILITIES ENGINEER MANAGER	DATE
PREPARED BY	ENGINEER	DATE
RECOMMENDED BY	NORTHROP/GRUMMAN FACILITY MANAGER - LESSEE	DATE
APPROVED BY	LESSOR SUPERVISING ENGINEER	DATE
APPROVED BY	LESSOR FIRE PROTECTION ENGINEER	DATE
APPROVED BY	LESSOR SAFETY SPECIALIST	DATE

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NORTHROP GRUMMAN CORP.
3520 EAST AVENUE "M"
PALMDALE, CALIFORNIA 93550

PLANT 42	BUILDING NO. 474	AREA
TITLE	B474 PAINT HANGAR	
	HORIZONTAL CONTROL PLAN	
SCALE AS INDICATED	SHEET 3 OF 47	DATE 04/24/2026
DRAWN P. AVALOS	DESIGNED P. BOROVILOS	CHECKED J. DYE
PROJECT NO. 191358		DRAWING NO. C-020



SITE PLAN

0 30' 60'

SCALE IN FEET

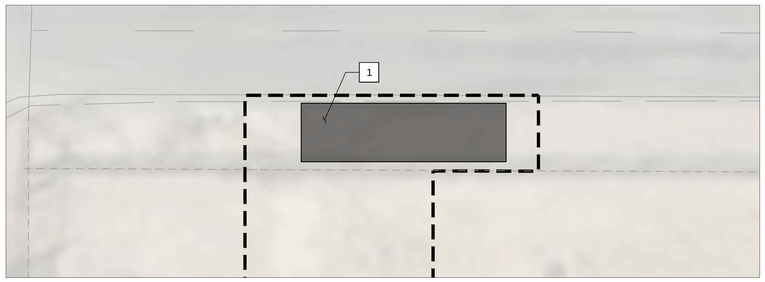
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CONSTRUCTION NOTES

1	ASPHALT PAVEMENT	XX XXX
2	MILL AND OVERLAY	XX XXX
3	MECHANICAL YARD	
4	PAVEMENT HEADER	XX XXX
5	BOLLARD	XX XXX
6	6" WHITE ROADWAY STRIPING	
9	FIRE HYDRANT	XX XXX
10	RELOCATED PIV	
11	PCC VALLEY GUTTER	

SITE LEGEND:

- ASPHALT PAVEMENT (VEHICULAR)
- MILL AND OVERLAY
- TRA ROUGH GRADING
- ASPHALT PAVEMENT (ROADWAY CONNECTION PACKAGE)
- PCC VALLEY GUTTER
- PROJECT LIMITS
- ROADWAY CONNECTION PACKAGE SCOPE
- EMBEDDED BOLLARD



SCG GAS METER GRADING DETAIL

0 10' 20'

SCALE IN FEET

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A	ISSUED FOR REVIEW	04/24/2026	PB

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BMCD LICENSE NO. 755238

APPROVED BY	NORTHROP GRUMMAN ENVIRONMENTAL HEALTH AND SAFETY	DATE
APPROVED BY	NORTHROP GRUMMAN FIRE DEPARTMENT	DATE
APPROVED BY	NORTHROP GRUMMAN SECURITY	DATE
APPROVED BY		DATE
APPROVED BY		DATE
APPROVED BY		DATE
APPROVED BY		DATE
	NORTHROP/GRUMMAN BUSINESS MANAGEMENT DEPT.	DATE
	NORTHROP/GRUMMAN FACILITIES ENGINEER MANAGER	DATE
PREPARED BY	ENGINEER	DATE
RECOMMENDED BY	NORTHROP/GRUMMAN FACILITY MANAGER - LESSEE	DATE
APPROVED BY	LESSOR SUPERVISING ENGINEER	DATE
APPROVED BY	LESSOR FIRE PROTECTION ENGINEER	DATE
APPROVED BY	LESSOR SAFETY SPECIALIST	DATE

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NORTHROP GRUMMAN CORP.
3520 EAST AVENUE "M"
PALMDALE, CALIFORNIA 93550

PLANT 42	BUILDING NO. 474	AREA

TITLE
B474 PAINT HANGAR
SITE PLAN

SCALE AS INDICATED	SHEET 14 OF 47	DATE 04/24/2026
DRAWN P. AVALOS	DESIGNED P. BOROVILOS	CHECKED J. DYE
PROJECT NO. 191358		DRAWING NO. CS100

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Figure 3

BOOTH DRAWING

U185614-A-DS90 DRAWING SET

B-474 CROSSDRAFT PAINT SPRAY HANGAR INSERT

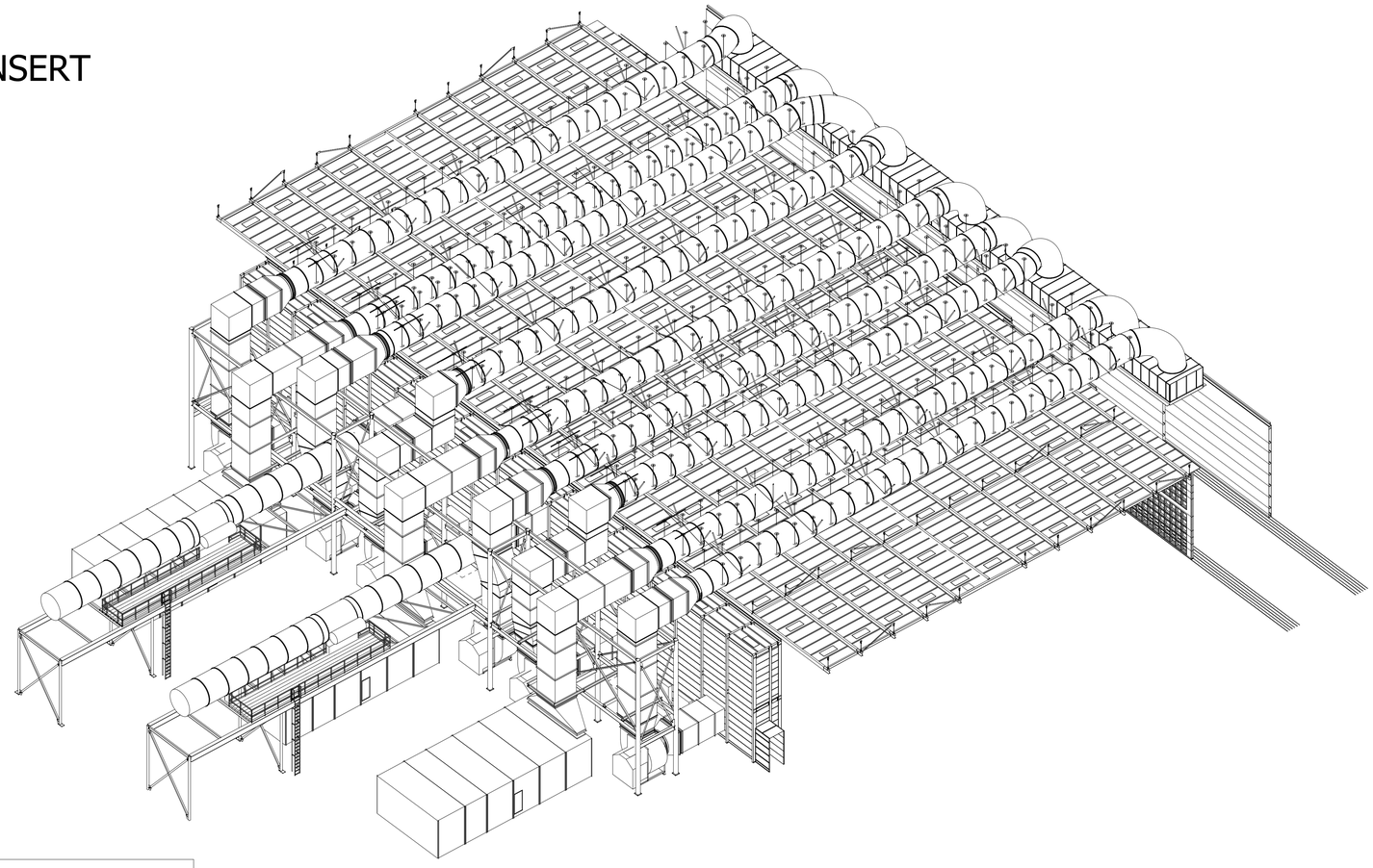
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BURNS & MCDONNELL

FOR

B-474 CROSSDRAFT PAINT SPRAY HANGAR INSERT

CUSTOMER APPROVAL of DRAWINGS		
SIGNED DRAWING(S) IS A STATEMENT THAT THE DIMENSIONS, DESIGN AND APPLICATION HAVE BEEN REVIEWED AND ARE APPROVED FOR FABRICATION. MANUFACTURE OF EQUIPMENT WILL BE SCHEDULED AFTER RECEIPT OF APPROVED DRAWINGS.		
REQUIRED INFORMATION		
INFO	VALUE	CUSTOMER VERIFICATION
GAS PRESSURE:		☐ YES ☐ OTHER:
VOLTAGE:		☐ YES ☐ OTHER:
PHASE:		☐ YES ☐ OTHER:
ROOF PITCH:		☐ YES ☐ OTHER:
GFS STANDARD CONTROL PANEL S.C.C.R.		65KA RMS
☐ APPROVED AS SUBMITTED ☐ DISAPPROVED - PLEASE RESUBMIT		
GFS WILL NOT BE RESPONSIBLE FOR BACK CHARGES WHEN INFORMATION PROVIDED IS INCORRECT.		
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SE-DETAILS.2	A	U185614-DS90-SE-DETAILS.2	GENERAL STRUCTURE DETAILS
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ORDER/SERIAL NUMBER
U185614

DRAWING SET
DS90

REVISION
A

MAKE UP AIR SCHEDULE

AREA SERVED	TAG	PART NUMBER	DESIGN CRITERIA									MECHANICAL																				ELECTRICAL		NOTES
								TARGET		TOLERANCE			PRE-HEAT COIL						EVAP HUMIDIFIER				COOLING COIL							RE-HEAT COIL							
			FLOW (CFM)	EXTERNAL STATIC PRESSURE (IN. W.C.)	FAN DESIGN SPEED (HZ)	HEATING SOURCE	COOLING SOURCE	DB (°F)	RH (%)	DB (°F)	RH (%)	PROJECT SPECIFIC NGC REQUIREMENTS (°F DB / °F WB)	FLOW (GPM / TOTAL)	HWS / HWR (°F)	EDB (°F)	LDB (°F)	HEAT (MBH / TOTAL)	CONN. SIZE (INCH)	FILL RATE (GPM)	USE RATE (GPM)	DRAIN RATE (GPM)	EDB / EWB (°F)	LDB / LWB (°F)	FLOW (GPM / TOTAL)	CWS / CWR (°F)	EDB / EWB (°F)	LDB / LWB (°F)	COOL (MBH / TOTAL)	CONN. SIZE (INCH)	DRAIN RATE (GPM)	DRAIN CONN. (INCH)	FLOW (GPM / TOTAL)	HWS / HWR (°F)	EDB (°F)	LDB (°F)	HEAT (MBH / TOTAL)	CONN. SIZE (INCH)	ELECTRICAL SUPPLY (V/PH/HZ)	SUPPLY MOTOR HP	
PAINT HANGAR	MAU-101	1115561	76,000	2.5	59	HOT WATER (30% EG)	CHILLED WATER (30% EG)	70 75	60 55	+5/-10 +/-5 +/-15	+/-10 +/-5 +/-25	SUMMER: 112 / 83.5 WINTER: 14.7 / 11.8	(4) 165 / 660	160 / 130	12	123	(4) 2,285 / 9,141	3	15	3.6	15	107 / 59	64 / 59	(9) 193 / 1737	36 / 49	112 / 83.5	47 / 47	(9) 1,136 / 10,274	3	(2) 4.7	(2) 1-1/4	(4) 34 / 136	160 / 130	120	141	(4) 470.1 / 1,880.4	2	480/3/60	(2) 75	
PAINT HANGAR	MAU-101	1115561	76,000	2.5	59	HOT WATER (30% EG)	CHILLED WATER (30% EG)	70 75	60 55	+5/-10 +/-5 +/-15	+/-10 +/-5 +/-25	SUMMER: 112 / 83.5 WINTER: 14.7 / 11.8	(4) 165 / 660	160 / 130	12	123	(4) 2,285 / 9,141	3	15	3.6	15	107 / 59	64 / 59	(9) 193 / 1737	36 / 49	112 / 83.5	47 / 47	(9) 1,136 / 10,274	3	(2) 4.7	(2) 1-1/4	(4) 34 / 136	160 / 130	120	141	(4) 470.1 / 1,880.4	2	480/3/60	(2) 75	
PAINT HANGAR	MAU-101	1115561	76,000	2.5	59	HOT WATER (30% EG)	CHILLED WATER (30% EG)	70 75	60 55	+5/-10 +/-5 +/-15	+/-10 +/-5 +/-25	SUMMER: 112 / 83.5 WINTER: 14.7 / 11.8	(4) 165 / 660	160 / 130	12	123	(4) 2,285 / 9,141	3	15	3.6	15	107 / 59	64 / 59	(9) 193 / 1737	36 / 49	112 / 83.5	47 / 47	(9) 1,136 / 10,274	3	(2) 4.7	(2) 1-1/4	(4) 34 / 136	160 / 130	120	141	(4) 470.1 / 1,880.4	2	480/3/60	(2) 75	

FAN SCHEDULE

AREA SERVED	ITEM	TAG	MECHANICAL DATA										GENERAL NOTES
			MFG.	MODEL	PART NUMBER	FLOW (CFM)	ESP (IN. W.C.)	RPM	MAX RPM	BHP	MOTOR HP	INLET dBA	OUTLET dBA	
PAINT HANGAR	RECIRC FAN 1	RF-101	GREENHECK	USF-73	1064965	80,000	8.17	662	673	135.8	150	88	91	A,B,C,D,E
PAINT HANGAR	RECIRC FAN 2	RF-102	GREENHECK	USF-73	1064965	80,000	8.17	662	673	135.8	150	88	91	A,B,C,D,E
PAINT HANGAR	RECIRC FAN 3	RF-103	GREENHECK	USF-73	1064968	80,000	8.17	662	673	135.8	150	88	91	A,B,C,D,E
PAINT HANGAR	RECIRC FAN 4	RF-104	GREENHECK	USF-73	1064965	80,000	8.17	662	673	135.8	150	88	91	A,B,C,D,E
PAINT HANGAR	RECIRC FAN 5	RF-105	GREENHECK	USF-73	1064965	80,000	8.17	662	673	135.8	150	88	91	A,B,C,D,E
PAINT HANGAR	RECIRC FAN 6	RF-106	GREENHECK	USF-73	1064965	80,000	8.17	662	673	135.8	150	88	91	A,B,C,D,E
PAINT HANGAR	EXHAUST FAN 1	EF-101	IAP	660	1115562	114,000	6.00	956	985	183.0	200	109	109	A,B,C,D,E
PAINT HANGAR	EXHAUST FAN 2	EF-102	IAP	660	1115562	114,000	6.00	956	985	183.0	200	109	109	A,B,C,D,E

FAN GENERAL NOTES
A. VFD AND INVERTER RATED MOTOR
B. SPARK PROOF CONSTRUCTION
C. SURE-AIRE/PIEZOMETER RING
D. VIBRATION ISOLATION
E. SHAFT GROUNDING

LIGHTING SCHEDULE

AREA SERVED	MFG	LIGHT MODEL	PART NUMBER	QTY	CLASS	LOCATION	EMERGENCY	NOTES
PAINT HANGAR	LDPI	LE485-180-V1-A-5-WH-H	1060524	219	C1D2	CEILING	NA	180 WATT FIXTURES
PAINT HANGAR	LDPI	LE485-180-V1-A-5-WH-H	1060524	6	C1D2	CEILING	BLDG. UPS BACKUP	180 WATT FIXTURES
PAINT HANGAR	LDPI	LE485-180-V1-A-5-WH-H	1060524	10	C1D2	HEPA CHAMBER	NA	180 WATT FIXTURES
PAINT HANGAR	MULE LIGHTING	XPEX-1-R-DT-WP-SD	1110725	6	C1D1	EXIT LIGHTS	BLDG. UPS BACKUP	1.5 WATT FIXTURES

section view shows 1200

FILTER SCHEDULE

AREA SERVED	ITEM	MFG	MODEL	PART NUMBER	QTY	SIZE (INxIN)	AIRFLOW (CFM)	FILTER VELOCITY	CHANGE OUT PRESSURE (IN W.C.)	NOTES
PLENUM DOOR	HIGH DIFFUSION INTAKE	A.J. DRALLE	SFR	1011591	828	24x24	708,000	214	1	QUANTITY REPRESENTS A SINGLE FILTER CHANGE
HANGAR EXHAUST	EX. 1ST STAGE	ATI	ULTRA PRE FILTER - ROLL MEDIA	1039667	7	110x90'	708,000	158	0.5	QUANTITY REPRESENTS A SINGLE FILTER CHANGE. TWO FILTER CHANGES TO BE PROVIDED WITH EQUIPMENT
HANGAR EXHAUST	EX. 2ND STAGE	ATI	OSM-100	1011681	1120	24x24	708,000	158	1	QUANTITY REPRESENTS A SINGLE FILTER CHANGE
HANGAR EXHAUST	EX. 3RD STAGE	ATI	A-3000	1011680	1120	24x24	708,000	158	1	QUANTITY REPRESENTS A SINGLE FILTER CHANGE
HANGAR EXHAUST	EX. 4TH STAGE	AAF	ASTROCEL I	1036786	480	23.375X23.375	708,000	389	2	99.99@0.3 MICRON

DOOR SCHEDULE

AREA SERVED	TAG	ITEM	MANUFACTURER	MODEL	PART NUMBER	EXTERIOR / INTERIOR	FIRE RATING	SWING/OPENING	DOOR COLOR	DOOR CLOSER	DOOR SWITCH CLASSIFICATION	NOMINAL DIMENSION	NOTES
PAINT HANGAR	HFD-1	PLENUM DOOR	DOOR ENGINEERING	23081H	1115585	INTERIOR	NA	194'-6" W x 28'-0" H	WHITE	MOTOR	C1D1	262'-0" W x 27'-9.75" H x 4'-3"D	

DAMPER SCHEDULE

AREA SERVED	TAG	LOCATION	MFG	MODEL	DAMPER PART NUMBER	DAMPER QTY	SIZE (INxIN)	AIRFLOW (CFM)	VELOCITY (FPM)	PRESSURE DROP (IN W.C.)	ACTUATOR PART NUMBER	ACTUATOR QUANTITY	NOTES
PAINT HANGAR	DM-101	INTAKE PLENUM	GREENHECK	VCD-20	1064969	54	24x60	13,111	1311	0.034	NA	NA	MANUAL QUADRANT, FLANGE AND SLEEVE

SPRAY AIR SOLENOID VALVE SCHEDULE

AREA SERVED	PART NUMBER	QTY	SIZE	CV	OPERATING PRESSURE (PSIG)	POWER	SCFM*	NOTES
PAINT HANGAR	1029772	2	2"	70	15-150	120VAC	3224	VENT PORT INCLUDES MUFFLER
*BASED ON 80 PSIG UPSTREAM PRESSURE TO ATMOSHPERIC PRESSURE (14.5 PSI) AT 68°F								

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SCALE N/A
DRAWN BY NCG
DATE 4/24/2026
REVIEW BY NCD
REVIEW DATE 4/24/2026

MODEL INFO
CROSSDRAFT PAINT SPRAY HANGAR INSERT
EQUIPMENT SCHEDULE

SOLD TO
BURN & MCDONNELL
PO BOX 219308
KANSAS CITY, MO 64121-9308

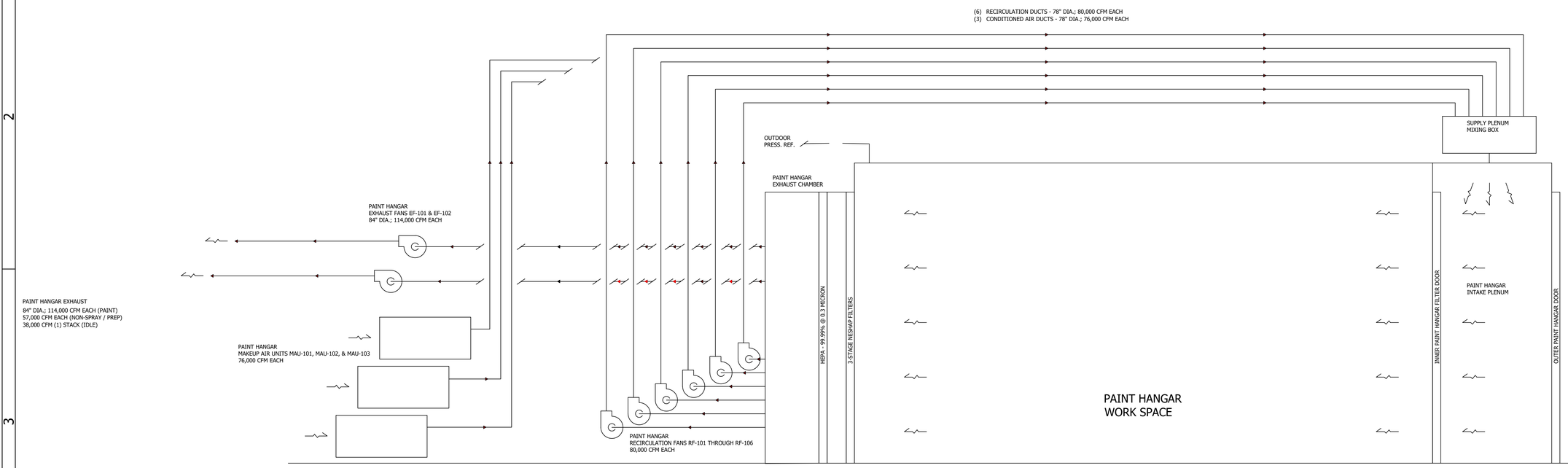
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BREA, CA 92821

ORDER/SERIAL NUMBER
U185614-A

DRAWING SET
DS90

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A

DRAWING
A-EQ



PAINT HANGAR AIRFLOW DIAGRAM

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SCALE	NTS
DRAWN BY	NCG
DATE	4-23-2026
REVIEW BY	NCD
REVIEW DATE	4-23-2026

MODEL INFO
B474- CROSSDRAFT PAINT SPRAY HANGAR INSERT
PROCESS DIAGRAM

SHIP TO
BURNS & MCDONNELL
140 S STATE COLLEGE BOULEVARD
BREA, CA 92821

SOLD TO
BURN & MCDONNELL
PO BOX 219308
KANSAS CITY, MO 64121-9308

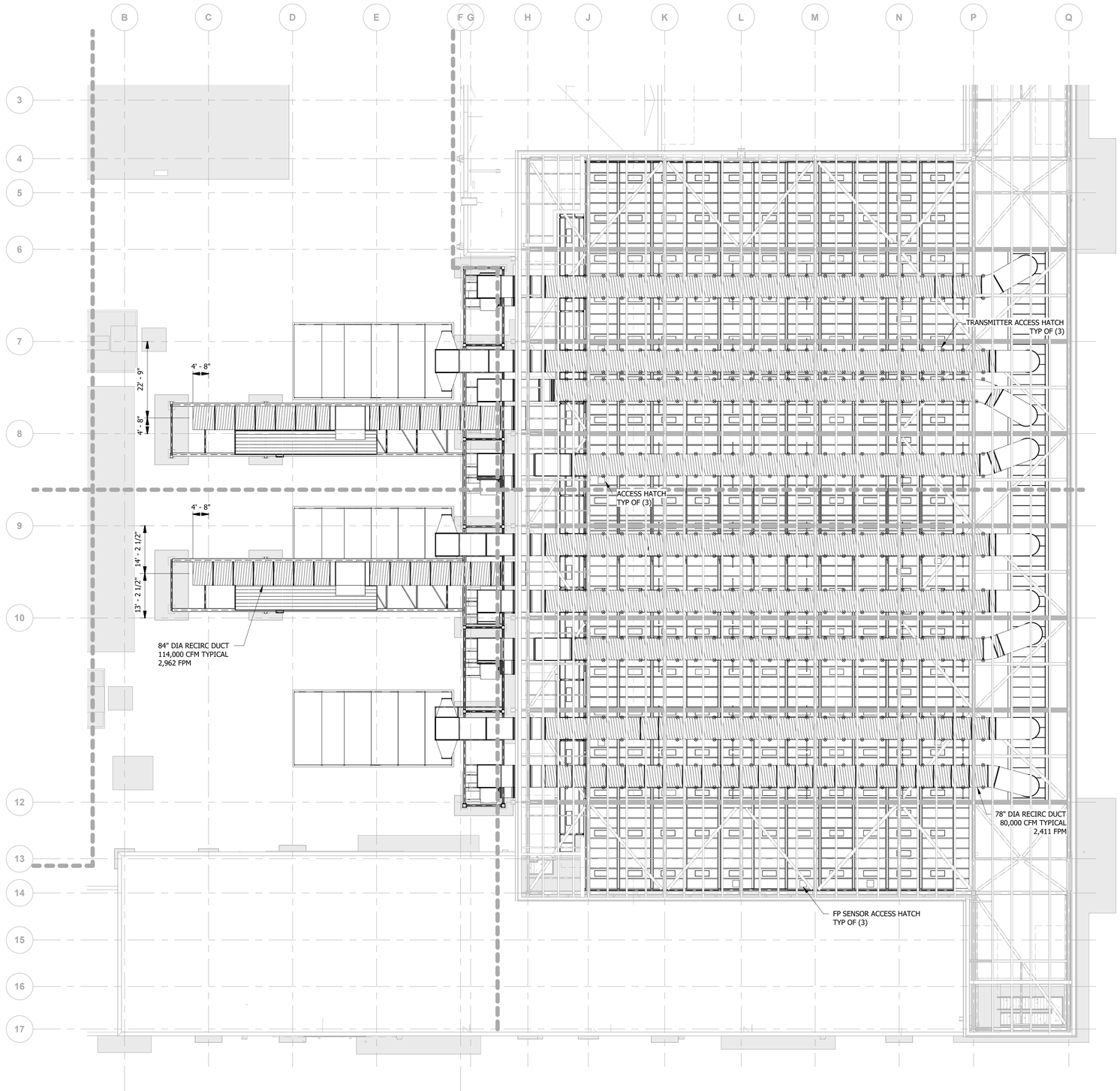
ORDER/SERIAL NUMBER
U185614

DRAWING SET	REVISION
DS90	A

DRAWING
A-PD

NOTES:

1. CEILING IS FABRICATED FROM 20 GAUSE DUAL SKIN INSULATED WHITE PRE-COAT SHEET STEEL; PRE-PUNCHED AND FLANGED FOR BOLT TOGETHER ASSEMBLY.
2. CEILING SUPPORT STRUCTURE IS FABRICATED FROM STRUCTURAL I-BEAM; PRE-DRILLED AND FACTORY PRIMED & PAINTED WHITE.
3. ALL OUTDOOR STRUCTURAL STEEL TO BE HOT DIPPED GALVANIZED AND UNPAINTED
4. ALL INDOOR STRUCTURAL STEEL TO BE PAINTED
   A. PRIMER: VOGEL INDUSTRIAL COATINGS #PL-0568 MODIFIED EPOXY ESTER SINGLE COAT
   B. TOP COAT: VODEL INDUSTRIAL COATINGS #1B15-49783 MODIFIED ALKYD SINGLE COAT
5. ALL OUTDOOR AHUs TO BE GALVANIZED G90 FINISH, UNPAINTED
6. ALL INDOR RECIRC AND SUPPLY AIR DUCTING TO BE INSULATED WITH 2" FSK WRAP FIBERGLASS INSUALTION
7. INDOOR SUPPLY AIR MIXING BOX TO BE SINGLE SKIN 18GA PRECOAT WHITE AND INSULATED WITH 2" FSK WRAP FIBERGLASS INSULATION
8. OUTDOOR RECIRC AND SUPPLY DUCTING TO BE 16GA SINGLE SKIN AND FIELD INSULATED WITH THE FOLLOWING:
   A. 3" HUNTER H-SHIELD F (POLYISO FOAM) BASE
   B. ALUMAGUARD FLEXIBLE WEATHER-PROOFING "COOL WRAP" OUTER JACKET OR EQUAL
9. QUANTITY (2) NON-CLASSIFIED NON-I/S DISPLAY BOARDS FOR VISUAL DISPLAY OF BOOTH TEMPERATURE AND HUMIDITY. BOARDS TO BE LOCATED BEHIND VIEWING WINDOW IN PAINT BOOTH SIDE WALL (WINDOW BY BURNS AND MCDONNELL
10. ALL ROBOT TRENCHES, PIT VENTILATION AND MONITORING IS TO BE PROVIDED BY BURNS AND MCDONNELL



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DATE	4/24/2026 3:49:52 PM
REVIEW BY	DWQ
REVIEW DATE	04/22/2026

MODEL INFO
B-474 CROSSDRAFT PAINT SPRAY HANGAR INSERT
GENERAL ARANGEMENT - CEILING PLAN

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PO BOX 219308
KANSAS CITY, MO 64211-9308

SHIP TO
BURNS & MCDONNELL
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BREA, CA 92821

ORDER/SERIAL NUMBER
U185614

DRAWING SET	REVISION
DS90	A

DRAWING
A-GA.1

APPENDIX A

MANUFACTURERS DATA

A-3000™

Paint Booth Overspray Collection System

For New Systems

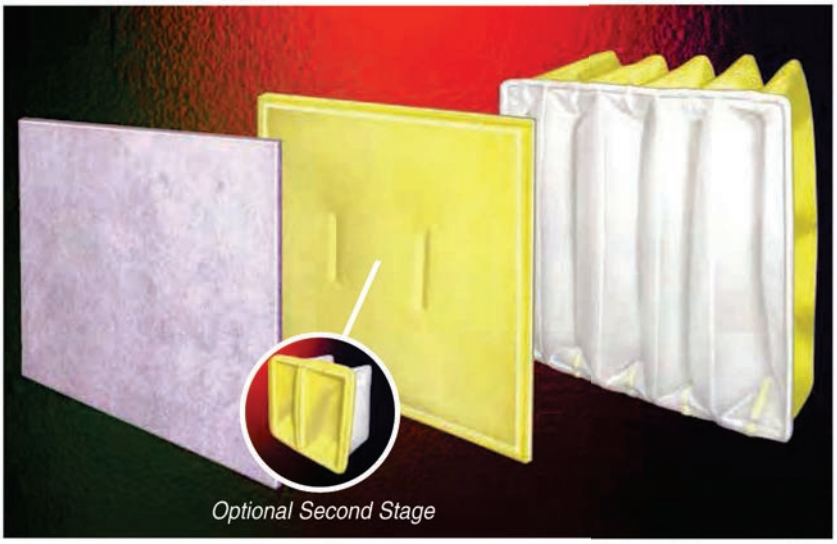
ATi

Clean Air Solutions for a Perfect Finish

NESHAP Compliant Tested Under EPA Method 319

- Removes liquid and solid overspray in new paint booths in excess of NESHAP (EPA) Standard
- Keeps motors, fans, duct work clean
- Prevents discharging contaminants to the atmosphere
- Three stage A-3000 system can be installed in a single holding frame

The A-3000 system – The original NESHAP compliant three-stage paint booth filtration system tested under EPA Method 319.



The A-3000 system, consists of Ultra prefilter media pads or blankets followed by an OSM-100 ring panel or multi-pocket bag filter. The final stage is the A-3000 high efficiency multi-pocket bag filter.

Three Stage A-3000 Filtration System

First Stage - The Ultra™ prefilter is a two ply media designed to maximize depth loading and prevent faceloading for longer life. The more open fiber structure on the air entering side substantially increases paint holding capacity.

Second Stage - The second stage is a four ply, OSM-100 self-sealing ring panel designed for excellent retention of smaller paint particles. An optional second stage is an OSM-100 multi-pocket bag. Both the panel and bag are made with a dual layer media on the air entering side followed by a needled fiber media with a latex foam backing on the downstream side.

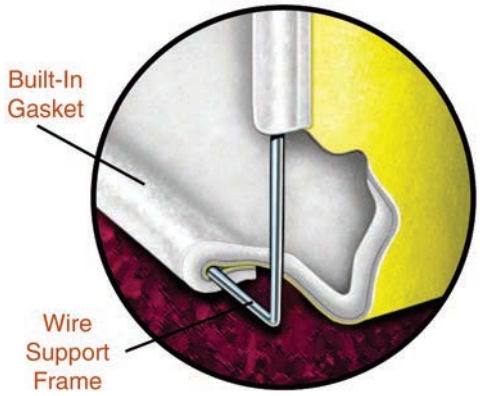
Third Stage - The final stage is a three ply, self-supported A-3000 bag filter consisting of a high loft polyester layer for high paint holding capacity followed by a dual layer high efficiency media to capture the smallest paint particles. The A-3000 bag filter exceeds the NESHAP efficiency requirements for new booths even without the first two stages of the system.

For Existing Source applications, refer to the ATI OSM-100 System.

Test Method 319 Results

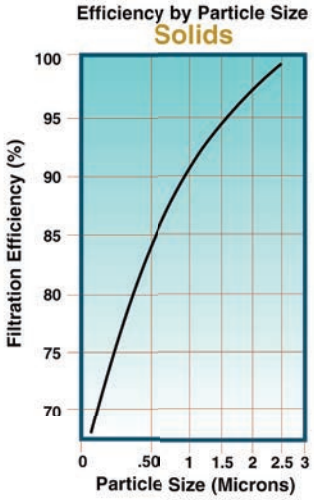
Particle Size (Microns)	NESHAP Efficiency Requirements for New Systems	A-3000 System Efficiency
	SOLIDS	
>0.70	>75%	88%
>1.10	>85%	92%
>2.50	>95%	98%
	LIQUIDS	
>0.42	>65%	75%
>1.00	>80%	87%
>2.00	>95%	99%

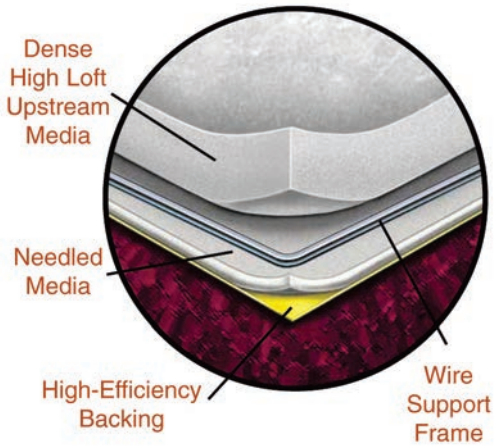
A-3000™ Paint Booth Overspray Collection System for New Systems



Self-Sealing - No Bypass

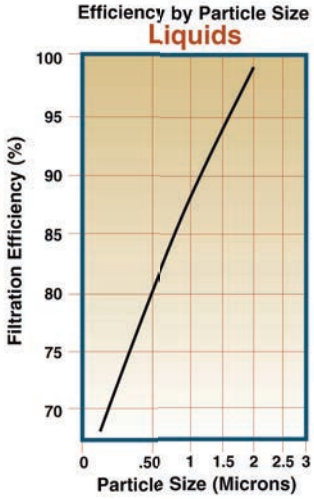
The media is sewn around an internal wire support frame that forms a built in gasket. The filters are automatically sealed when installed to prevent leakage.





A-3000 Pocket Filters Feature 3-Ply Media Construction

A-3000 filters are made with two distinct media layers. The upstream layer is a high loft polyester layer with high paint holding capacity. The downstream layer is a dual layer high efficiency media designed to capture the smallest particles



Fast, Easy Installation - Endorsed by Maintenance Personnel Worldwide
Save on labor due to reduced changeout time. Simply push the filter into the frame. No clips or latches required.

Standard Size A-3000 Bag information

Nominal Size (Inches)	No. of Pockets	Air Flow Capacity (CFM) @ 120 FPM	Initial Resistance (In. W.G.)		Recommended Final Resistance (In. W.G.)
			A-3000 Bag Filter Only	Three Stage Filtration System	
12 x 24 x 12	2	240	.25”	.45”	1.45”
20 x 20 x 12	5	333	.25”	.45”	1.45”
20 x 25 x 12	5	417	.25”	.45”	1.45”
24 x 24 x 12	5	480	.25”	.45”	1.45”
12 x 24 x 20	2	240	.20”	.40”	1.40”
20 x 20 x 20	5	333	.20”	.40”	1.40”
20 x 25 x 20	5	417	.20”	.40”	1.40”
24 x 24 x 20	5	480	.20”	.40”	1.40”

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