



MOJAVE DESERT AIR QUALITY MANAGEMENT DISTRICT

14306 Park Avenue Victorville, CA 92392-2310
760.245.1661 -- 800.635.4617 -- FAX 760.245.2022

AUTHORITY TO CONSTRUCT

C015508

If construction is not completed by the expiration date of this permit, it may be renewed for one additional year upon payment of applicable fees. Any additional extension will require the written approval of the Air Pollution Control Officer. This Authority to Construct may serve as a temporary Permit to Operate provided the APCO is given prior notice of intent to operate and the Permit to Operate is not specifically denied.

EXPIRES LAST DAY OF: MARCH 2027

OWNER OF OPERATOR (Co.#3192)

Orbital Operations, Inc.
2396 East Artesia Blvd.
Long Beach, CA 90805

EQUIPMENT LOCATION (Fac.#4673)

Orbital Operations, Inc.
42120 Kaderka Road
Barstow, CA 92311

Description:

LIQUID FUELED PROPULSION SYSTEM AND FLARE consisting of: Liquid fueled thruster test stand, utilizing liquid hydrogen (LH2) and liquid oxygen (LOX) as propellants, and support equipment consisting of: one (1) 1,700 lb thruster, one (1) 1,500 gallon liquid hydrogen tank, and one (1) 1,600 gallon liquid oxygen tank. A 500 gallon catch tank will be used to capture liquid hydrogen boiloff from propellant lines, the captured hydrogen gas will be directed to an on-site flare for destruction. Facility elevation is 2800 feet above MSL.

CONDITIONS:

1. The equipment shall be installed, operated and maintained in strict accordance with those recommendations of the manufacturer/supplier and/or sound engineering principles which produce the minimum emissions of air contaminants. Unless otherwise noted, this equipment shall also be operated in accordance with all data and specifications submitted with the application for this permit. [District Rule 204; District Rule 1302]

2. This facility may not use propellants other than those listed below, for any period of time, without notifying the District at least 30 days in advance. A permit modification will be required if alternative propellants will be used at the same test stand. If a new test stand is installed, a new permit application will be required.
 - a. Fuel: Liquid hydrogen (LH2); and,
 - b. Oxidizer: Liquid oxygen (LOX).
 [District Rule 204; District Rule 1302; District Rule 1320; District Rule 1520]

Fee Schedule: 7 (h)

Rating: 1 device

SIC: 8733

SCC: 20400202

Location/UTM(Km):
564E/3874N

This permit does not authorize the emission of air contaminants in excess of those allowed by law, including Division 26 of the Health and Safety Code of the State of California and the Rules and Regulations of the District. This permit cannot be construed as permission to violate existing laws, ordinances, statutes or regulations of this or other governmental agencies. This permit must be renewed by the expiration date above. If billing for renewal fee required by Rule 301(c) is not received by expiration date above, please contact the District.

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By: **COPY**
Eldon Heaston
Air Pollution Control Officer

3. The owner/operator shall maintain an operations log for this Permit Unit, current and on-site (or at a central location), for a minimum of two (2) years, and this log shall be provided to District, State, and Federal personnel upon request. The log shall include, at a minimum, the information specified below:

- a. Date and time of each test performed;
- b. Calendar year operating hours;
- c. Date, time, and duration of any malfunctions involving the on-site flare or test stand that would generate excess emissions of any substance aside from water, oxygen, and hydrogen. Entries must include a description of each malfunction and the corrective action taken for each malfunction;
- d. Date of inspections and any testing, maintenance, or repairs performed on the test stand and flare; and,
- e. Calendar month and calendar year fuel and oxidizer consumption (in pounds).

[District Rule 204; District Rule 1302; District Rule 1320; District Rule 1520]

4. The requirements for operating the on-site flare are as follows:

- a. The on-site flare may not produce any visible emissions except during periods of startup or shutdown. If visible emissions are observed from the flare during normal operation, the flare and any thruster test must be shut-down as soon as safely possible. Operations may resume after the cause of emissions is identified, resolved, and documented; and,
- b. The energy contained within the gas stream routed to the flare may not be increased by addition of any VOC, hydrocarbon, or other combustible gas. If the flare gas has insufficient energy to generate a continuous, stable flame, the gaseous hydrogen shall be allowed to vent to atmosphere.

[District Rule 204; District Rule 401; District Rule 1320]

5. Visible emissions from this equipment and from this property shall not exceed an opacity equal to, or greater than, twenty percent (20%) for a period aggregating more than three (3) minutes in any one (1) hour, excluding uncombined water vapor. No visible emissions shall extend beyond the property line of the emission source.

[District Rule 204; District Rule 401; District Rule 403; District Rule 1302]

6. This facility shall not discharge from any source whatsoever such quantities of air contaminants or other material which cause injury, detriment, nuisance or annoyance to any considerable number of persons or to the public, or which endanger the comfort, repose, health or safety of any such persons or the public, or which cause, or have a natural tendency to cause, injury or damage to business or property.

[District Rule 204; District Rule 402]

7. A facility wide Comprehensive Emission Inventory (CEI) for all emitted criteria and toxic air pollutants must be submitted to the District, in a format approved by the District, upon District request.

[District Rule 107(b); H&S Code 39607 & 44341-44342; 17 CCR 93400 et seq.; 40 CFR 51, Subpart A]