



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

B015540

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.#2087)

Exquadrum, Inc.
13313 Sabre Blvd., Suite 1
Victorville, CA 92394

EQUIPMENT LOCATION (Fac.#4205)

Exquadrum - Victorville
13490 Forge Street
Victorville, CA 92392

Description:

HYPERGOLIC FUEL TEST STAND consisting of: A non-atmospheric Vertical Test Stand (VTS) hosting a hypergolic combustion engine, designated VTS-2. The purpose of this stand is to perform thrust tests using hypergolic fuels, comprised of hydrazine compounds, and oxidizers, Mixed Oxides of Nitrogen (MON). This stand utilizes a 110 gallon oxidizer storage tank and a 110 gallon fuel tank. Purge and vent lines from this equipment exhaust into vapor scrubbing system under District Permit C015541.

CONDITIONS:

1. This 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 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]

2. Visible emissions from this equipment 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. This equipment shall not discharge air contaminants or materials constituting a nuisance to any considerable number of persons or to the public. No visible emissions shall extend beyond the property line of the emission source.

NOTICE: If visible emissions are observed from the exhaust of any thruster mounted on this test stand, due to incomplete combustion or other causes, operation of this test stand must cease until the cause of poor combustion is identified.

Fee Schedule: 7 (b)

Rating: 700 device

SIC: 8733

SCC: 20400202

Location/UTM(Km):
473E/3956N

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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Victorville, CA 92394

By: **COPY**
Brad Poiriez
Executive Director

[District Rule 204; District Rule 401; District Rule 402; District Rule 403]

3. The VTS-2 test stand shall not be used for:

- a. Fuels other than hydrazine and hydrazine compounds or mixtures;
- b. Oxidizers other than Mixed Oxides of Nitrogen (MON) mixtures; and,
- c. Thrusters exceeding 700lbf.

Any use of this test stand other than outlined above is strictly prohibited. If this test stand will be used for thrusters exceeding the force outlined above, or will be used for other fuel or oxidizer systems, a permit modification application must be submitted and a modified permit must be issued prior to conducting any other tests. A Health Risk Assessment (HRA) and public noticing may be required.

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

4. This test stand (VTS-2) shall not exceed the following throughputs in any year (any consecutive 12-month period):

- a. 772.7 gallons of oxidizer; nor,
- b. 854.4 gallons of fuel.

[District Rule 204; District Rule 1320]

5. All unreacted oxidizer and fuel vapor emissions from storage, loading, unloading, testing, purging and transfer activities shall be abated by the properly functioning Vapor Scrubbing System under District Permit C015541.

[District Rule 204; District Rule 1320]

6. The owner or operator shall conduct, at a minimum, weekly inspections of the vent lines, valves, seals, and appurtenant equipment to ensure there are no leaks. This system inspection shall include a weekly leak check using a portable/hand-held hydrocarbon detector when fuel is present in the system.

[District Rule 204]

7. The scrubber under District Permit C015541 associated with test stand VTS-2 under District Permit B015540 must be maintained and functionality must be verified by the following routine tests after each firing event:

- a. Refractometry for fuel scrubbers; and,
- b. Titration for oxidizer scrubbers.

These routine scrubber liquor tests must be performed in accordance with internal protocol, named TP-99-013-0004 at the time of permitting. The results of these tests must be submitted to MDAQMD with the annual CEI submission. Results may be condensed or redacted to a degree acceptable by the District.

[District Rule 204]

8. The owner/operator must maintain an operations log for this equipment. This log shall be maintained current and on-site for a minimum of two (2) years and be provided to authorized personnel including District, State, and Federal authorities upon request. The log shall contain the following at a minimum:

- a. Date and Time of test performed;
- b. Duration of the test (in seconds);
- c. Amounts of fuel and oxidizer used during each test;
- d. Consecutive 12-month totals of fuel and oxidizer used;
- e. Results of all weekly system inspections as required by Condition 6;
- f. Results of all routine scrubber liquor testing as required by Condition 7;
- g. Times and durations of malfunctions, a description of each malfunction, and the corrective action taken for each malfunction; and,
- h. Preliminary and actual semiannual test plans as required by Condition 10.

[District Rule 204]

9. In the event of a malfunction of any emissions related part of this test stand, the equipment must be shut down as soon as safely possible and shall not be restarted until all malfunctions have been corrected. Equipment breakdowns shall be reported to the District in accordance with District Rule 430.

[District Rule 430]

10. Exquadrum must submit to MDAQMD a test program plan, semiannually, by the following dates to ensure compliance on a rolling basis. The District acknowledges that this test plan is subject to change in accordance with contract requirements binding Exquadrum, therefore, actual test program data must be submitted along with subsequent preliminary plans.

a. January 1st - Covering tests to be conducted between January 1st and June 30th of that year, and actual tests conducted between July 1st through Jan 1st of the previous year; and,

b. July 1st - Covering tests to be conducted between July 1st and December 31st of that year, and actual tests conducted between January 1st through June 30th of that year.

EXAMPLE: Test plan (a) is submitted on January 1st as a preliminary plan and operations occur as normal. Upon submission of preliminary test plan (b), the actual test data for test plan (a) (which has already occurred) must be submitted to amend any inconsistencies in the preliminary submission.

[District Rule 204]

11. 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]