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DRAFT PERMIT TO OPERATE

Number 0232

Valid October 1, 1993 to September 30, 1994

This Permit Has Been Issued To The Following:

Company Name / Address:

Rockwell Int'l Rocketdyne Div.
P.O. Box 7922 MS T486
Canoga Park, CA 91309-7922

Facility Name / Address:

Rocketdyne Division
Rocket Engine Testing
Simi Valley, CA 93065

Permission Is Hereby Granted To Operate The Following:

Alfa Test Area consisting of:

- 2 - Rocket Engine Test Stands (Nos. Alfa-1 and Alfa-3)
- 1 - Trichloroethylene (TCE) Flushing System

Bravo Test Area consisting of:

- 2 - Rocket Engine Test Stands (Nos. Bravo-1 and Bravo-2)

Coca Test Area consisting of:

- 1 - Rocket Engine Test Stand (Coca)

Systems Test Laboratory No. 4 (STL-4) consisting of:

- 7 - Rocket Engine Test Positions, using monomethyl hydrazine (MMH), nitrogen tetroxide (NTO), and nitrogen oxide as propellants (Nos. 24A, 24B, 29A, 29B, 35, 37A, and 37B)
- 2 - Hyperflow Steam Ejection Systems, using alcohol and liquid oxygen (Nos. 29 (A and B) and 37 (A and B))
- 1 - Nitrogen Tetroxide (NTO) Water Aspiration System with a 3500 gallon capacity caustic scrubber

Propellant Load Facility consisting of:

- 2 - 360 gallon Nitrogen Tetroxide (NTO) Storage Tanks with a Graham type 800 fume scrubber
- 1 - 320 gallon Monomethyl Hydrazine (MMH) Storage Tank with a Graham type 800 fume scrubber

Engineering Chemistry Laboratory consisting of:

- 1 - 4.18 MMBTU/hr Clayton Industries Steam Generator, Model EG-100 (100 hp), fired on natural gas only



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Component Test Lab III (CTL-III) consisting of:

- 1 - Hyperflow System with two steam generators rated at 11.8 MMBTU/hr, fired with isopropyl alcohol.
- 1 - Pressure Recovery System equipped with a Chemical Scrubber

Wipe Cleaning Operations (conducted throughout the facility)

This Permit Has Been Issued Subject To The Following Conditions:

1. Permitted Emissions:	Tons/Year	Pounds/Hour
Reactive Organic Compounds	73.08	2,039.85
Nitrogen Oxides	44.82	2,172.70
Particulate Matter	2.64	400.01
Sulfur Oxides	0.88	60.00
Carbon Monoxide	1,428.62	90,361.40
1,1,1-trichloroethane	0.44	0.42

2. Permitted Emissions Limits:

ROCKET ENGINE TESTING:

Permitted emissions from rocket engine testing conducted at Alfa/Bravo, Coca, and STL-4 shall not exceed:

	ROC	NOx	PM	SOx	CO
Tons/Year	1.42	34.93	2.61	0.87	1,071.78
Pounds/Hour	70.00	2,152.34	400.00	60.00	80,271.35

Permittee may perform any combination of rocket engine tests where the total emissions from testing do not exceed the annual or hourly emission limits listed above.

HYPERFLOW OPERATIONS:

Permitted emissions from hyperflow operations conducted at STL-4 and CTL-III shall not exceed:

	ROC	NOx	PM	SOx	CO
Tons/Year	64.45	0	0	0	356.65
Pounds/Hour	1,835.12	0.70	0	0	10,089.98

Permittee may perform any combination of hyperflow operations where the total emissions from hyperflow operations do not exceed the annual or hourly emission limits or pressure recovery test limits listed above.



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ROCKET ENGINE FLUSHING AND CLEANING OPERATIONS:

Permitted emissions from the trichloroethylene (TCE) flushing operations at the Alfa Test Area shall not exceed:

	ROC	NOx	PM	SOx	CO
Tons/Year	6.71	0	0	0	0
Pounds/Hour	134.20	0	0	0	0

NITROGEN TETROXIDE (NTO) VENTING OPERATIONS:

Permitted emissions from the STL-4 nitrogen tetroxide (NTO) venting operations and the STL-4 nitrogen tetroxide (NTO) water aspiration system shall not exceed:

	ROC	NOx	PM	SOx	CO
Tons/Year	0	8.79	0	0	0
Pounds/Hour	0	16.03	0	0	0

In addition, the water aspiration of NTO shall not exceed 360 pounds of NTO per year.

Permittees may perform any combination of NTO and MMH ventings and NTO aspiration where the total emissions from these operations do not exceed the annual or hourly emission limits or aspiration limits listed above.

NTO venting emissions at STL-4 include associated venting, nitrogen purging or nitrogen aspiration and maintenance operations of NTO from tanks and lines.

PROPELLANT LOAD FACILITY:

The permitted emissions from the propellant load facility shall not exceed:

	ROC	NOx	PM	SOx	CO
Tons/Year	0	0.14	0	0	0
Pounds/Hour	0.08	3.23	0	0	0

In addition, NTO propellant loading shall not exceed 86.4 ventings per year, MMH propellant loading shall not exceed 108 ventings per year, and MMH tank venting shall not exceed 170 ventings per year.



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ENGINEERING CHEMISTRY LABORATORY OPERATIONS:

Permitted emissions from the Clayton Industries steam generator located in the Engineering Chemistry Laboratory shall not exceed:

	ROC	NOx	PM	SOx	CO
Tons/Year	0.05	0.96	0.03	0.01	0.19
Pounds/Hour	0.02	0.40	0.01	0	0.08

In addition, natural gas consumption in the Clayton Industries steam generator shall not exceed 19.15 million cubic feet per year as determined by Condition No. 10.

WIPE CLEANING OPERATIONS:

Permitted emissions from wipe cleaning operations conducted throughout the facility shall not exceed:

	ROC	NOx	PM	SOx	CO
Tons/Year	0.45	0	0	0	0
Pounds/Hour	0.43	0	0	0	0

In addition, reactive organic compound (ROC) solvent usage is limited to 130 gallons per year and 857 lbs ROC per year and Trichloroethane (TCA) solvent usage is limited to 83.9 gallons per year with a maximum ROC content of 5% by weight. Solvent usage is defined as solvent purchased and utilized minus solvent that is recycled or properly disposed.

In order to demonstrate compliance with the emissions or usage limits specified above, permittee shall update emission or usage information each day a change occurs as required by Condition No. 12. These daily calculations shall be combined into monthly summaries. The monthly summaries shall be summed for the previous 12 consecutive months. Totals for the previous 12 consecutive months exceeding the annual limits for that specific operation, facility, or usage, as shown above, shall be considered a violation of this condition.

3. The amount of solvent emitted from rocket engine flushing operations at the Alfa Test Area shall be determined on each day that engine flushing operations occur. Emissions shall be determined by measuring the level in the clean solvent supply tank(s) and the level in the spent solvent collection tank(s) before and after flushing operations for each day. Each tank shall be equipped with a fluid level measuring device(s) demonstrated to be accurate to plus or minus 1 gallon.
4. The exhaust scrubber at CTL-III shall be operational during all tests of the pressure recovery system.
5. Iodine concentrations shall not exceed 0.1 ppm at any point at or beyond the property line. Chlorine concentrations shall not exceed 1 ppm, averaged over 15 minutes, at any point at or beyond the property line.



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6. Propellant use at the STL-4 facility shall be restricted to nitrogen tetroxide, nitrogen tetroxide with a maximum of 25% nitrogen oxide, and monomethyl hydrazine.
7. All nitrogen tetroxide that is being water aspirated at the STL-4 facility, shall be aspirated through the caustic scrubber. The NO content of the nitrogen tetroxide that is water aspirated shall not exceed 3 percent by weight.
8. The Clayton steam generator at the Engineering Chemistry Laboratory is limited to a maximum of 14 hours per start-up, averaged annually. Maximum number of start-ups is limited to 345 per year. If operation is for less than one hour for any start-up, that start-up shall not be considered for the calculation of the above annual average, but the operating time shall be added to the annual total operating hours. If equipment is started-up more than once in any 24 hour period, only one start-up shall be considered in calculating the above annual average, but operating hours shall be included in the annual total operating hours. Any request to modify the above requirements shall be considered a modification to the emissions unit and the Best Available Control Technology (BACT) analysis shall be conducted as if construction of the source had not yet commenced.
9. If an emission level of 45 pounds of oxides of nitrogen per billion Btu output (equivalent to Clayton Industries estimate for a flue gas recirculation system) is achieved, operating limits outlined in Condition No. 7 above will be modified to allow up to 26 hours operation per start-up, averaged annually, with no limitation on the number of start-ups per year. All other provisions of Condition No. 7 would remain in effect. Emissions levels shall be determined by a source test performed by certified independent laboratory by methods approved by the APCD. If air pollution controls are installed and the oxides of nitrogen emission level falls between the uncontrolled level (95 pounds per billion Btu output) and 45 pounds per billion Btu output, alternate operating limits will be determined based on actual oxides of nitrogen emissions.
10. Permittee shall maintain records on a daily basis of the clock time at which the Clayton steam generator is started up and shut down. Where operation is for less than one hour for any start-up or where there is more than one start-up in any 24 hour period, reasons for such operation shall be documented. Records of natural gas consumption shall also be maintained. The above records shall be maintained for at least two years and shall be made available to the APCD upon request.
11. The permittee shall submit an Authority to Construct application to the District for any necessary modifications to meet the emission limits in Rule 74.15.1 by May 31, 1994. If total permitted annual emissions of NOx from all stationary sources in the District owned or operated by the permittee are less than 25 tons per year, and four or more emission units at these stationary sources are subject to the emission limits in rule 74.15.1, the permittee shall instead submit a compliance schedule for all necessary modifications to the units by May 31, 1994. (Rule 74.15.1.H.1 & H.2)



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12. Permittee shall maintain daily records and prepare monthly summaries of the following. The records and summaries shall be maintained for at least two years and be made available to the APCD upon request.

Rocket Engine Test Areas:

The date, time, location, hardware tested, test duration (in seconds), emission factor, and the emissions based on actual engine testing operations.

Hyperflow Operations:

The date, time, location, and operation duration (in seconds) for each test of the hyperflow system, the pressure recovery system (for CTL-III only), emission factor, and the emissions. Additionally, the number of tests utilizing the pressure recovery system and the chlorine emissions and iodine emissions from the pressure recovery system testing shall be recorded.

Rocket Engine Flushing And Cleaning Operations:

The amount of TCE used in engine flushing operations, including engine type, date, the amount of clean solvent used, the amount of spent solvent collected, and the emissions.

STL-4 Nitrogen Tetroxide Venting Operations:

The permittee shall determine the total emissions from NTO venting operations at STL-4 and the amount of NTO, in pounds, aspirated at STL-4.

Propellant Load Facility:

The permittee shall record the number of ventings and calculate the emissions during NTO loading, MMH loading, and MMH tank venting.

Wipe Cleaning Operations:

Permittee shall maintain records of the net wipe cleaning solvent used (purchase and usage minus recycle and disposal) and the emissions.

Within ten days after receipt of this permit, the applicant may petition the Hearing Board to review any new or modified condition on the permit (Rule 22).

This permit, or a copy, shall be posted reasonably close to the subject equipment and shall be readily accessible to inspection personnel (Rule 19). This permit is not transferable from one location to another unless the equipment is specifically listed as being portable (Rule 20).

In reliance upon the statement of the applicant that operation of the equipment described herein shall meet the requirements as specified in the Rules and Regulations of the Air Pollution Control District, permission is hereby granted



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to operate; provided, however, the permission granted hereby shall not be construed to permit said equipment to operate in violation of any applicable State or Federal emission standard or Rules and Regulations of the District.

For:

Karl E. Krause, Manager
Engineering Section

Richard H. Baldwin
Air Pollution Control Officer



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