

Bay Area Air Quality Management District

939 Ellis Street
San Francisco, CA 94109
(415) 771-6000

Proposed

MAJOR FACILITY REVIEW PERMIT

Issued To:
OLS Energy-Agnews, Inc.
Facility #A6044

Facility Address:
3800 Cisco Way
San Jose CA 95134

Mailing Address:
3800 Cisco Way
San Jose CA 95134

Responsible Official
Terry Mahoney, General Manager
408-361-4929

Facility Contact
Rosemary Silva, EHS Specialist
408-361-4954

Alternate Responsible Officials
Brian Sowell, Operations & Maintenance Manager
408-321-5216

Rosemary Silva, EHS Specialist
408-361-4954

Type of Facility: Electricity Generation
Primary SIC: 4911
Product: Electricity

BAAQMD Engineering Division Contact:
Dennis Jang

ISSUED BY THE BAY AREA AIR QUALITY MANAGEMENT DISTRICT

Jack P. Broadbent, Executive Officer/Air Pollution Control Officer

Date

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I. STANDARD CONDITIONS

A. Administrative Requirements

The permit holder shall comply with all applicable requirements in the following regulations:

- BAAQMD Regulation 1 - General Provisions and Definitions
(as amended by the District Board on 5/4/11);
- SIP Regulation 1 - General Provisions and Definitions
(as approved by EPA through 6/28/99);
- BAAQMD Regulation 2, Rule 1 - Permits, General Requirements
(as amended by the District Board on 4/18/12);
- SIP Regulation 2, Rule 1 - Permits, General Requirements
(as approved by EPA through 1/26/99);
- BAAQMD Regulation 2, Rule 2 - Permits, New Source Review
(as amended by the District Board on 6/15/05);
- SIP Regulation 2, Rule 2 - Permits, New Source Review and Prevention of Significant Deterioration
(as approved by EPA through 1/26/99);
- BAAQMD Regulation 2, Rule 4 - Permits, Emissions Banking
(as amended by the District Board on 12/21/04);
- SIP Regulation 2, Rule 4 - Permits, Emissions Banking
(as approved by EPA through 1/26/99);
- BAAQMD Regulation 2, Rule 5 – New Source Review of Toxic Air Contaminants
(as amended by the District Board on 01/06/10); and
- BAAQMD Regulation 2, Rule 6 - Permits, Major Facility Review
(as amended by the District Board on 4/16/03)); and
- SIP Regulation 2, Rule 6 – Permits, Major Facility Review
(as approved by EPA through 6/23/95)

B. Conditions to Implement Regulation 2, Rule 6, Major Facility Review

1. This Major Facility Review Permit was issued on [] and expires on [when issued, enter 5th anniversary of issue date]. The permit holder shall submit a complete application for renewal of this Major Facility Review Permit no later than [when issued, enter date 6 months prior to permit expiration date] and no earlier than [when issued, enter date 12 months prior to expiration date]. **If a complete application for renewal has not been submitted in accordance with this deadline, the facility may not operate after [when issued, enter 5th anniversary of issue date].** If the permit renewal has not been issued by [], but a complete application for renewal has been submitted in accordance with the above deadlines, the existing permit will continue in force until the District takes final action on the renewal application. (Regulation 2-6-307, 404.2, 407, & 409.6; MOP Volume II, Part 3, §4.2)
2. The permit holder shall comply with all conditions of this permit. The permit consists of this document and all appendices. Any non-compliance with the terms and conditions of this permit will constitute a violation of the law and will be grounds for enforcement action; permit termination, revocation and re-issuance, or modification; or denial of a permit renewal application. (Regulation 2-6-307; MOP Volume II, Part 3, §4.11)

I. Standard Conditions

3. In the event any enforcement action is brought as a result of a violation of any term or condition of this permit, the fact that it would have been necessary for the permit holder to halt or reduce the permitted activity in order to maintain compliance with such term or condition shall not be a defense to such enforcement action. (MOP Volume II, Part 3, §4.11)
4. This permit may be modified, revoked, reopened and reissued, or terminated for cause. (Regulation 2-6-307, 409.8, 415; MOP Volume II, Part 3, §4.11)
5. The filing of a request by the facility for a permit modification, revocation and re-issuance, or termination, or the filing of a notification of planned changes or anticipated non-compliance does not stay the applicability of any permit condition. (Regulation 2-6-409.7; MOP Volume II, Part 3, §4.11)
6. This permit does not convey any property rights of any sort, or any exclusive privilege. (Regulation 2-6-409.7; MOP Volume II, Part 3, §4.11)
7. The permit holder shall supply within 30 days any information that the District requests in writing to determine whether cause exists for modifying, revoking and reissuing, or terminating the permit or to determine compliance with the permit. (Regulation 1-441, Regulation 2-6-409.4 & 501; MOP Volume II, Part 3, §4.11)
8. Any records required to be maintained pursuant to this permit which the permit holder considers proprietary or trade secret information shall be prominently designated as such. Copies of any such proprietary or trade secret information which are provided to the District shall be maintained by the District in a locked confidential file, provided, however, that requests from the public for the review of any such information shall be handled in accordance with the District's procedures set forth in Section 11 of the District's Administrative Code. (Regulation 2-6-419; MOP Volume II, Part 3, §4.11)
9. Proprietary or trade secret information provided to EPA will be subject to the requirements of 40 CFR Part 2, Subpart B - Public Information, Confidentiality of Business Information. (40 CFR Part 2)
10. The emissions inventory submitted with the application for this Major Facility Review Permit is an estimate of actual emissions or the potential to emit for the time period stated and is included only as one means of determining applicable requirements for emission sources. It does not establish, or constitute a basis for establishing, any new emission limitations. (MOP Volume II, Part 3, §4.11)
11. A designated responsible official shall certify all documents submitted by the facility pursuant to the major facility review permit. The certification shall state that based on information and belief formed after reasonable inquiry, the statements and information in the document are true, accurate, and complete. The certifications shall be signed by a designated responsible official for the facility. (Regulation 2-6-409.20, MOP Volume II, Part 3, §4.11)
12. The permit holder is responsible for compliance, and certification of compliance, with all conditions of the permit, regardless of whether it acts through employees, agents, contractors, or subcontractors. (Regulation 2-6-307)

I. Standard Conditions

C. Requirement to Pay Fees

The permit holder shall pay annual fees in accordance with District Regulation 3, including Schedule P. (Regulation 2-6-402 & 409.13, Regulation 3; MOP Volume II, Part 3, §4.12)

D. Inspection and Entry

Access to Facility: The permit holder shall provide reasonable access to the facility and equipment which is subject to this permit to the APCO and/or to his or her designee. (Regulation 1-440, Regulation 2-6-409.3; MOP Volume II, Part 3, §4.14)

E. Records

1. The permit holder must provide any information, records, and reports requested or specified by the APCO. (Regulation 1-441, Regulation 2-6-409.4)
2. Notwithstanding the specific wording in any requirement, all records for federally enforceable requirements shall be maintained for at least five years from the date of creation of the record. (Regulation 2-6-501, MOP Volume II, Part 3, §4.7)

F. Monitoring Reports

Reports of all required monitoring must be submitted to the District at least once every six months, except where an applicable requirement specifies more frequent reporting. The first reporting period for this permit shall be [date of issuance] to March 30th. The report shall be submitted by April 30th. Subsequent reports shall be for the following periods: April 1st through September 30th and October 1st through March 31st], and are due on the last day of the month after the end of the reporting period. All instances of non-compliance shall be clearly identified in these reports. The reports shall be certified by the responsible official as true, accurate, and complete. In addition, all instances of non-compliance with the permit shall be reported in writing to the District's Compliance and Enforcement Division within 10 calendar days of the discovery of the incident. Within 30 calendar days of the discovery of any incident of non-compliance, the facility shall submit a written report including the probable cause of non-compliance and any corrective or preventative actions. The reports shall be sent to the following address:

Director of Compliance and Enforcement
Bay Area Air Quality Management District
939 Ellis Street
San Francisco, CA 94109
Attn: Title V Reports

(Regulation 2-6-502, MOP Volume II, Part 3, §4.7)

G. Compliance Certification

Compliance certifications shall be submitted annually by the responsible official of this facility to the Bay Area Air Quality Management District and to the Environmental Protection Agency. The certification period will be October 1st through September 30th. The certification shall be submitted by October 30th of each year. The certification must list each applicable requirement, the compliance status, whether compliance was continuous or intermittent, the method used to determine compliance, and any other

I. Standard Conditions

specific information required by the permit. The certification should be directed to the District's Compliance and Enforcement Division at the address above, and a copy of the certification shall be sent to the Environmental Protection Agency at the following address:

Director of the Air Division
USEPA, Region IX
75 Hawthorne Street
San Francisco, CA 94105
Attention: Air-3

(MOP Volume II, Part 3, §4.5 and 4.15)

H. Emergency Provisions

1. The permit holder may seek relief from enforcement action in the event of a breakdown, as defined by Regulation 1-208 of the District's Rules and Regulations, by following the procedures contained in Regulations 1-431 and 1-432. The District will thereafter determine whether breakdown relief will be granted in accordance with Regulation 1-433. (MOP Volume II, Part 3, §4.8)
2. The permit holder may seek relief from enforcement action for a violation of any of the terms and conditions of this permit by applying to the District's Hearing Board for a variance pursuant to Health and Safety Code Section 42350. The Hearing Board will determine after notice and hearing whether variance relief should be granted in accordance with the procedures and standards set forth in Health and Safety Code Section 42350 et seq. (MOP Volume II, Part 3, §4.8)
3. The granting by the District of breakdown relief or the issuance by the Hearing Board of a variance will not provide relief from federal enforcement. (MOP Volume II, Part 3, §4.8)

I. Severability

In the event that any provision of this permit is invalidated by a court or tribunal of competent jurisdiction, or by the Administrator of the EPA, all remaining portions of the permit shall remain in full force and effect. (Regulation 2-6-409.5; MOP Volume II, Part 3, §4.10)

J. Miscellaneous Conditions

1. The maximum capacity for each source as shown in Table II-A is the maximum allowable capacity. An exceedance of the maximum allowable capacity for any source is a violation of Regulation 2, Rule 1, Section 301. (Regulation 2-1-301)

K. Accidental Release

This facility is subject to 40 CFR Part 68, Chemical Accident Prevention Provisions. The permit holder shall submit a risk management plan (RMP) by the date specified in §68.10. The permit holder shall also certify compliance with the requirements of Part 68 as part of the annual compliance certification, as required by Regulation 2, Rule 6. (40 CFR Part 68, Regulation 2, Rule 6)

II. EQUIPMENT

Table II A - Permitted Sources

Each of the following sources has been issued a permit to operate pursuant to the requirements of BAAQMD Regulation 2, Permits. The capacities in this table are the maximum allowable capacities for each source, pursuant to Standard Condition I.J and Regulation 2-1-301.

Source No.	Description	Make or Type	Model	Capacity
1	Combustion Gas Turbine (natural gas)	General Electric	LM-2500-33	267 MM BTU/hour (nominal) 22.7 MW (nominal)

Table II B – Abatement Devices

Abatement Device No.	Description	Source(s) Controlled	Applicable Requirement	Operating Parameters	Limit or Efficiency
1	Water Injection	1	BAAQMD Condition #13409, part 3	None	None
2	Selective Catalytic Reduction System	1	BAAQMD Condition #13409, part 3	None	9 ppmv NOx @ 15% O2, averaged over any 3-hour period

III. GENERALLY APPLICABLE REQUIREMENTS

The permit holder shall comply with all applicable requirements, including those specified in the BAAQMD and SIP rules and regulations and other federal requirements cited below. These requirements apply in a general manner to the facility and/or to sources exempt from the requirement to obtain a District Permit to Operate. The District has determined that these requirements will not be violated under normal, routine operations, and that no additional periodic monitoring or reporting to demonstrate compliance is warranted. In cases where a requirement, in addition to being generally applicable, is also specifically applicable to one or more sources, the requirement and the source are also included in Section IV, Source-Specific Applicable Requirements, of this permit. This section also contains provisions that

III. Generally Applicable Requirements

may apply to temporary sources.

The dates in parentheses in the Title column identify the versions of the regulations being cited and are, as applicable:

1. BAAQMD regulation(s): The date(s) of adoption or most recent amendment of the regulation by the District Board of Directors
2. Any federal requirement, including a version of a District regulation that has been approved into the SIP: The most recent date of EPA approval of any portion of the rule, encompassing all actions on the rule through that date

The full language of the SIP requirements can be viewed on the EPA Region 9 website. The address is:

<http://yosemite.epa.gov/r9/r9sips.nsf/Agency?ReadForm&count=500&state=California&cat=Bay+Area+Air+Quality+Management+District-Agency-Wide+Provisions>

Please note that there are differences between the current BAAQMD rules and the versions of the rules in the SIP. All sources must comply with both versions of a rule until US EPA has reviewed and approved the District's revision of the regulation.

**Table III
 Generally Applicable Requirements**

Applicable Requirement	Regulation Title or Description of Requirement	Federally Enforceable (Y/N)
BAAQMD Regulation 1	General Provisions and Definitions 5/4/11	N
SIP Regulation 1	General Provisions and Definitions (6/28/99)	Y
BAAQMD Regulation 2, Rule 1	General Requirements (4/18/12)	N
SIP Regulation 2, Rule 1	General Requirements (1/26/99)	Y
BAAQMD 2-1-429	Federal Emissions Statement (12/21/04)	N
SIP Regulation 2-1-429	Federal Emissions Statement (4/3/95)	Y
BAAQMD Regulation 4	Air Pollution Episode Plan (3/20/91)	N
SIP Regulation 4	Air Pollution Episode Plan (8/6/90)	Y
BAAQMD Regulation 5	Open Burning (7/09/08)	N
SIP Regulation 5	Open Burning (9/4/98)	Y
BAAQMD Regulation 6, Rule 1	Particulate Matter, General Requirements (12/5/07)	N
SIP Regulation 6	Particulate Matter and Visible Emissions (9/4/98)	Y
BAAQMD Regulation 7	Odorous Substances (3/17/82)	N
BAAQMD Regulation 8, Rule 1	Organic Compounds - General Provisions (6/15/94)	Y
BAAQMD Regulation 8, Rule 2	Organic Compounds – Miscellaneous Operations (7/20/05)	N

III. Generally Applicable Requirements

**Table III
 Generally Applicable Requirements**

Applicable Requirement	Regulation Title or Description of Requirement	Federally Enforceable (Y/N)
SIP Regulation 8, Rule 2	Organic Compounds – Miscellaneous Operations (3/22/95)	Y
BAAQMD Regulation 8, Rule 3	Organic Compounds - Architectural Coatings (07/01/09)	N
SIP Regulation 8, Rule 3	Organic Compounds - Architectural Coatings (1/2/04)	Y
BAAQMD Regulation 8, Rule 4	Organic compounds - General Solvent and Surface Coating Operations (10/16/02)	Y
BAAQMD Regulation 8, Rule 15	Organic Compounds – Emulsified and Liquid Asphalts (6/1/94)	Y
BAAQMD Regulation 8, Rule 40	Organic Compounds - Aeration of Contaminated Soil and Removal of Underground Storage Tanks (6/15/05)	N
SIP Regulation 8, Rule 40	Organic Compounds - Aeration of Contaminated Soil and Removal of Underground Storage Tanks (4/19/01)	Y
BAAQMD Regulation 8, Rule 47	Organic Compounds - Air Stripping and Soil Vapor Extraction Operations (6/15/05)	N
SIP Regulation 8, Rule 47	Organic Compounds - Air Stripping and Soil Vapor Extraction Operations (4/26/95)	Y
BAAQMD Regulation 8, Rule 49	Organic Compounds - Aerosol Paint Products (12/20/95)	N
SIP Regulation 8, Rule 49	Organic Compounds - Aerosol Paint Products (3/22/95)	Y
BAAQMD Regulation 8, Rule 51	Organic Compounds - Adhesive and Sealant Products (7/17/02)	N
SIP Regulation 8, Rule 51	Organic Compounds - Adhesive and Sealant Products (2/26/02)	Y
BAAQMD Regulation 9, Rule 1	Inorganic Gaseous Pollutants - Sulfur Dioxide (3/15/95)	N
SIP Regulation 9, Rule 1	Inorganic Gaseous Pollutants - Sulfur Dioxide (6/8/99)	Y
BAAQMD Regulation 11, Rule 2	Hazardous Pollutants - Asbestos Demolition, Renovation and Manufacturing (10/7/98)	N
BAAQMD Regulation 12, Rule 4	Miscellaneous Standards of Performance - Sandblasting (7/11/90)	N
SIP Regulation 12, Rule 4	Miscellaneous Standards of Performance - Sandblasting (9/2/81)	Y
California Health and Safety Code Section 41750 et seq.	Portable Equipment	N
California Health and Safety Code Section 44300 et seq.	Air Toxics “Hot Spots” Information and Assessment Act of 1987	N
California Health and Safety Code Title 17, Section 93115	Airborne Toxic Control Measure for Stationary Compression Ignition Engines	N

III. Generally Applicable Requirements

**Table III
 Generally Applicable Requirements**

Applicable Requirement	Regulation Title or Description of Requirement	Federally Enforceable (Y/N)
California Health and Safety Code Title 17, Section 93116	Airborne Toxic Control Measure for Diesel Particulate Matter from Portable Engines Rated at 50 Horsepower and Greater	N
40 CFR Part 61, Subpart M	National Emission Standards for Hazardous Air Pollutants – National Emission Standard for Asbestos (07/20/04)	Y
EPA Regulation 40 CFR 82	Protection of Stratospheric Ozone (4/13/05)	
Subpart F, 40 CFR 82.156	Recycling and Emissions Reductions – Required Practices	Y
Subpart F, 40 CFR 82.161	Recycling and Emissions Reductions – Technician Certification	Y
Subpart F, 40 CFR 82.166	Recycling and Emissions Reductions – Reporting and Recordkeeping Requirements	Y

IV. SOURCE-SPECIFIC APPLICABLE REQUIREMENTS

The permit holder shall comply with all applicable requirements, including those specified in the BAAQMD and SIP rules and regulations and other federal requirements cited below. The requirements cited in the following tables apply in a specific manner to the indicated source(s).

The dates in parentheses in the Title column identify the versions of the regulations being cited and are, as applicable:

1. BAAQMD regulation(s): The date(s) of adoption or most recent amendment of the regulation by the District Board of Directors
2. Any federal requirement, including a version of a District regulation that has been approved into the SIP: The most recent date of EPA approval of any portion of the rule, encompassing all actions on the rule through that date

The full text of each permit condition cited is included in Section VI of this permit entitled, "Permit Conditions". The full language of the SIP requirements can be viewed on the EPA Region 9 website. The address is:

<http://yosemite.epa.gov/r9/r9sips.nsf/Agency?ReadForm&count=500&state=California&cat=Bay+Area+Air+Quality+Management+District-Agency-Wide+Provisions>

All other text may be found in the regulations themselves.

Table IV - A
Source-specific Applicable Requirements
S-1 COMBUSTION GAS TURBINE

Applicable Requirement	Regulation Title or Description of Requirement	Federally Enforceable (Y/N)	Future Effective Date
BAAQMD Regulation 1	General Provisions and Definitions (7/9/08)		
1-107	Combination of Emissions	Y	
1-520	Continuous Emission Monitoring	Y	
1-520.1	Monitoring of NO _x , CO ₂ , or O ₂	Y	
1-520.8	Monitors required per Reg. 2-1-403	Y	
1-522	Continuous Emission Monitoring and Recordkeeping Procedures	Y	
1-522.1	approval of plans and specifications	Y	
1-522.2	scheduling requirements	Y	
1-522.3	CEM performance testing	Y	
1-522.4	reporting of inoperative CEMs	Y	
1-522.5	CEM calibration requirements	Y	
1-522.6	CEM accuracy requirements	Y	
1-522.7	emission limit exceedance reporting requirements	N	

IV. Source-Specific Applicable Requirements

Table IV - A
Source-specific Applicable Requirements
S-1 COMBUSTION GAS TURBINE

Applicable Requirement	Regulation Title or Description of Requirement	Federally Enforceable (Y/N)	Future Effective Date
1-522.8	monitoring data submittal requirements	Y	
1-522.9	recordkeeping requirements	Y	
1-523	Parametric Monitoring and Recordkeeping Procedures	Y	
1-523.1	Parametric monitor periods of nonoperation	Y	
1-523.2	Limits on periods of nonoperation	Y	
1-523.3	Reports of Violations	N	
1-523.4	Records	Y	
1-523.5	Maintenance and calibration	N	
1-602	Area and Continuous Emission Monitoring Requirements	Y	
SIP Regulation 1	General Provisions and Definitions (6/28/99)		
1-522	Continuous Emission Monitoring and Recordkeeping Procedures	Y	
1-522.7	Monitor excesses	Y	
1-523	Parametric Monitoring and Recordkeeping Procedures	Y	
1-523.3	Reports of Violations	Y	
BAAQMD Regulation 2, Rule 1	Regulation 2, Rule 1 - Permits, General Requirements (7/19/06)		
2-1-501	Monitors	Y	
BAAQMD Regulation 6, Rule 1	Particulate Matter, General Requirements (12/5/07)		
6-1-301	Ringelmann Number 1 Limitation	N	
6-1-305	Visible Particles	N	
6-1-310	Particulate Weight Limitation	N	
6-1-401	Appearance of Emissions	N	
SIP Regulation 6	Particulate Matter and Visible Emissions (9/4/98)		
6-301	Ringelmann Number 1 Limitation	Y	
6-305	Visible Particles	Y	
6-310	Particulate Weight Limitation	Y	
6-310.3	Heat Transfer Operations	Y	
6-401	Appearance of Emissions	Y	

IV. Source-Specific Applicable Requirements

Table IV - A
Source-specific Applicable Requirements
S-1 COMBUSTION GAS TURBINE

Applicable Requirement	Regulation Title or Description of Requirement	Federally Enforceable (Y/N)	Future Effective Date
BAAQMD Regulation 9, Rule 1	Inorganic Gaseous Pollutants – Sulfur Dioxide (3/15/95)		
9-1-301	Limitations on Ground Level Concentrations	Y	
9-1-302	General Emission Limitations	Y	
BAAQMD Regulation 9, Rule 3	Inorganic Gaseous Pollutants, Nitrogen Oxides From Heat Transfer Operations (3/17/82)		
9-3-303	New or Modified Heat Transfer Operation Limits	N	
BAAQMD Regulation 9, Rule 9	Inorganic Gaseous Pollutants-Nitrogen Oxides from Stationary Gas Turbines (12/6/06)		
9-9-113	Exemption – Inspection/Maintenance	N	
9-9-114	Exemption – Start-Up/Shutdown	N	
9-9-301	Emission Limits, General	N	
9-9-301.1.3	Emission Limits- Turbines Rated ≥ 10 MW w/SCR	N	
9-9-301.2	Emission Limits, General	N	
9-9-401	Certification, Efficiency	N	
9-9-501	Monitoring and recordkeeping requirements	N	
SIP Regulation 9 Rule 9	Inorganic Gaseous Pollutants-Nitrogen Oxides from Stationary Gas Turbines (12/15/97)		
9-9-113	Exemption – Inspection/Maintenance	Y	
9-9-114	Exemption – Start-Up/Shutdown	Y	
9-9-301	Emission Limits, General	Y	
9-9-301.3	Emission Limits, Turbines greater than 10 MW with SCR, NO _x less than 9 ppmv (dry, 15% O ₂)	Y	
9-9-501	Monitoring and recordkeeping requirements	Y	
BAAQMD Regulation 10 Subpart GG	NSPS Incorporation by Reference, Stationary Gas Turbines (2/16/2000)		
10-40.	Subpart GG - Standards of Performance For Stationary Gas Turbines	Y	

IV. Source-Specific Applicable Requirements

Table IV - A
Source-specific Applicable Requirements
S-1 COMBUSTION GAS TURBINE

Applicable Requirement	Regulation Title or Description of Requirement	Federally Enforceable (Y/N)	Future Effective Date
BAAQMD Manual of Procedures, Volume V	Continuous Emission Monitoring Policy and Procedures (1/20/82)	Y	
40 CFR 60 Subpart A	Standards of Performance for New Stationary Sources – General Provisions (1/28/09)	Y	
60.7	Notification and Recordkeeping	Y	
60.8	Performance Tests	Y	
60.9	Availability of Information	Y	
60.11(a)	Compliance with standards in this part	Y	
60.11(d)	Minimizing emissions	Y	
60.12	Circumvention	Y	
60.13	Monitoring Requirements	Y	
60.19	General notification and reporting requirements	Y	
Subpart GG	Standards of Performance for Stationary Gas Turbines (2/24/06)		
60.332(a)(1)	NO _x limit	Y	
60.333	Standard for sulfur dioxide	Y	
60.333(a)	SO ₂ Concentration < 0.015 percent @15% O ₂ (Turbine Only)	Y	
60.333(b)	Fuel Sulfur Content cannot exceed 0.8 percent by weight (Turbine Only)	Y	
60.334	Monitoring of operations	Y	
60.334(c)	NO _x CEMs	Y	
60.334(h)(3)	Exemption from fuel sulfur monitoring requirements (Natural Gas)	Y	
60.334(j)(1)(iii)	NO _x Excess Emissions and Monitor Downtime reporting requirements	Y	
60.335	Test Methods and Procedures	Y	
40 CFR 60 Appendix B	Performance Specifications	Y	
Performance Specification 2	Specifications and test procedures for SO ₂ and NO _x continuous emission monitoring systems in stationary sources	Y	
Performance Specification 3	Specifications and test procedures for O ₂ and CO ₂ continuous emission monitoring systems	Y	
40 CFR 60 Appendix F	Quality Assurance Procedures		

IV. Source-Specific Applicable Requirements

Table IV - A
Source-specific Applicable Requirements
S-1 COMBUSTION GAS TURBINE

Applicable Requirement	Regulation Title or Description of Requirement	Federally Enforceable (Y/N)	Future Effective Date
Procedure 1	Quality assurance requirements for gas continuous emission monitoring systems used for compliance determination	Y	
BAAQMD Condition #13738			
Part 1	Natural Gas Firing Requirement	Y	
Part 2	Hours of operation limit	Y	
Part 3	NOx Emission Concentration	Y	
Part 4	Daily NOx mass emission limit	Y	
Part 5	Daily Carbon Monoxide mass emission limit	Y	
Part 6	Water injection and SCR operating requirement	Y	
Part 7	NOx, CO, and O2 CEM operating requirement	Y	
Part 9	Turbine operating hours and capacity records	Y	
Part 10	Recordkeeping	Y	
Part 11	Record retention	Y	
Part 12	Emission excess reporting	Y	
Part 13	Annual SO2 mass emission limit	Y	
Part 14	Hourly, daily, and annual NOx mass emission limits	Y	
Part 15	Annual CO mass emission limit	Y	
Part 16	PSD trigger	Y	

V. SCHEDULE OF COMPLIANCE

The permit holder shall comply with all applicable requirements cited in this permit. The permit holder shall also comply with applicable requirements that become effective during the term of this permit on a timely basis.

VI. PERMIT CONDITIONS

Any condition that is preceded by an asterisk is not federally enforceable.

Condition# 13409
For S-1 Combustion Gas Turbine

~~SYNTHETIC MINOR OPERATING PERMIT~~

OLS Energy - Agnews
3530 Zanker Road
San Jose, CA 95134
Plant 6044

~~Application 13738~~

~~Sources:~~

~~S1, Gas Turbine Generator~~

~~OLS Energy—Agnews, Plant 6044, has a synthetic minor operating permit. This operating permit covers all sources existing at this facility as of permit issuance. The sources are listed above.~~

~~Conditions #1-12 establish the federally enforceable permit terms that ensure this plant is classified as a Synthetic Minor Facility under District Regulation 2, Rule 6, Major Facility Review, and ensure it is not subject to the permitting requirements of Title V of the Federal Clean Air Act as amended in 1990 and 40 CFR Part 70. Any revision to a condition establishing this plant's status as a Synthetic Minor Facility or any new permit term that would limit emissions of a new or modified source for the purpose of maintaining the facility as a synthetic minor must under go the procedures specified by Rule 2-6, section 423.~~

~~Conditions #*13-*16 are District conditions that do not establish this facility as a synthetic minor. Each of these conditions is marked by an asterisk. The facility must comply with all conditions, regardless of asterisks, and must comply with all District requirements for new and modified sources regardless of its status as a synthetic minor.~~

~~This operating permit covers all sources existing at the facility as of permit issuance. The sources are listed below:~~

- ~~1. The owner/operator shall fire S-1 Gas T-turbine shall be fired only on natural gas.~~
- ~~2. The owner/operator shall not operate S-1 Gas tTurbine shall operate no more than 8496 hours per calendar year.~~

VI. Permit Conditions

3. The owner/operator shall operate S-1 Gas Turbine so that the concentration of oxides of nitrogen (NOx) in the gas turbine's exhaust shall not exceed 9 ppmv NOx, dry, @ 15% O2, averaged over any 3-hr period, except during a cold start-up which is not to exceed two hours and shut-down not to exceed 1 hour. (basis: BACT)
4. The owner/operator shall operate S-1 Gas Turbine so that the Oxides of Nitrogen (calculated as NO2) emissions shall not exceed 11.2 lb/hour or 220 lb/day. (basis: BACT)
5. The owner/operator shall operate S-1 Gas Turbine so that the Carbon Monoxide (CO) emissions shall not exceed 520 lb/day. (basis: BACT)
6. The owner/operator shall insure that ~~T~~the water injection and selective catalytic reduction (SCR) systems shall be operated during all periods of gas turbine operation, except during the start-up & shut-down periods provided for in Condition #3. The owner/operator shall insure that ~~T~~the turbine shall not be operated if a malfunction occurs in the water injection or the SCR systems. (basis: BACT)
7. The owner/operator shall ensure that an Oxides of nitrogen (NOx) monitor and recorder, carbon monoxide (CO) monitor and recorder, and O2 monitor and recorder, ~~shall~~will be installed, calibrated and maintained, as required by Regulation 1-520. The owner/operator shall ensure that ~~T~~these records shall be made available to the District upon request. CEM data may be used to determine compliance with the emission limits. (basis: recordkeeping)
- ~~8. Pursuant to NSPS 40 CFR 60 Subpart GG, OLS shall install and operate a continuous monitoring system to monitor and record the fuel consumption and the ratio of water injected to fuel fired in the turbine.~~
9. The owner/operator shall insure that District- approved records shall be accurately maintained on a daily basis and indicate days and hours of operation and the capacity at which the turbine is being operated. (basis: recordkeeping)
10. The owner/operator shall insure that ~~M~~monthly logs shall be ~~submitted~~maintained that containing the following ~~information~~data:
 - a) NOx maximum three hour average corrected as ~~ppmdv~~ppmv, dry for each operating day.
 - b) NOx daily mass emissions in lb/day
 - c) CO daily mass emissions in lb/day(basis: recordkeeping)
11. The owner/operator shall insure that ~~A~~all records associated with the above conditions shall be retained by OLS Energy - Agnews, for at least five years, for review by the District and shall be supplied to the District upon request. The recording format shall be subject to the approval of the APCO. (basis: recordkeeping)

VI. Permit Conditions

12. ~~The owner/operator The facility~~ shall notify the District within 96 hours of determining that the facility has exceeded any applicable emission limit. ~~The following conditions, designated by asterisks, are not part of the necessary conditions for a synthetic minor permit.~~ (basis: Regulation 1-522.7)

*13. ~~The owner/operator shall insure that~~ SO2 emissions ~~from S-1 Gas Turbine shall do~~ not exceed 39 ~~TPY tons per calendar year~~. Monitoring and recordkeeping for SO2 emissions shall not be required if the turbine is fired only on natural gas. (basis: cumulative increase)

*14. ~~The owner/operator shall insure that~~ Oxides of Nitrogen (measured as NO2) emissions ~~shall from S-1 Gas Turbine do~~ not exceed ~~11.2 lb/hr or 220 lb/day~~ or 39 ~~TPY tons per calendar year~~. (basis: cumulative increase)

*15. ~~The owner/operator shall insure that~~ Carbon Monoxide (CO) emissions ~~from S-1 Gas Turbine shall do~~ not exceed 95 ~~TPY tons per calendar year~~. (basis: cumulative increase)

*16. The gas turbine in this project is exempt from PSD because the total NOx and SO2 emissions are ~~conditioned limited by permit~~ (Condition #~~513~~ and #~~714~~) to less than 40 TPY. Any change in equipment or conditions that increase the plant's potential to emit above the applicable PSD threshold (40 TPY) will require a full PSD review of the source as though construction has not yet commenced on the source. (basis: PSD, ~~40 CFR Part 52~~)

VII. APPLICABLE LIMITS & COMPLIANCE MONITORING REQUIREMENTS

This section has been included to summarize the applicable emission limits contained in Section IV, Source-Specific Applicable Requirements, of this permit. The following tables show the relationship between each emission limit and the associated compliance monitoring provisions, if any. The monitoring frequency column indicates whether periodic (P) or continuous (C) monitoring is required. For periodic monitoring, the frequency of the monitoring has also been shown using the following codes: annual (A), quarterly (Q), monthly (M), weekly (W), daily (D), hourly (H), or on an event basis (E). No monitoring (N) has been required if the current applicable rule or regulation does not require monitoring, and the operation is unlikely to deviate from the applicable emission limit based upon the nature of the operation.

This section is only a summary of the limits and monitoring requirements. In the case of a conflict with any requirement in Sections I-VI, the preceding sections take precedence over Section VII.

Table VII - A
Applicable Limits and Compliance Monitoring Requirements
S-1 COMBUSTION GAS TURBINE

Type of Limit	Citation of Limit	FE Y/N	Future Effective Date	Limit	Monitoring Requirement Citation	Monitoring Frequency (P/C/N)	Monitoring Type
NO _x	BAAQMD 9-3-303	N		125 ppm	BAAQMD 1-520.1	C	CEM
NO _x	BAAQMD 9-9-301.2	N		0.15 lb/MW-hr or 5 ppmv	BAAQMD 9-9-501	C	CEM
NO _x	SIP 9-9-301.3	Y		9 ppmv @ 15% O ₂ , dry	BAAQMD 9-9-501	C	CEM
NO _x	NSPS, 40 CFR 60.332 (a)(1)	Y		75 ppmv, @ 15% O ₂ , dry 4-hr average	40 CFR 60.334(c)	C	CEM
NO _x		Y		None	40 CFR 75.10	C	CEM
NO _x	BAAQMD condition #13409, part 4	Y		220 lb/day	BAAQMD condition #13409, part 7	C	CEM
NO _x	BAAQMD condition #13409, part 3	Y		9.0 ppmv, @ 15% O ₂ , dry, 3-hour average except during turbine cold startup and shutdown	BAAQMD condition #13409, part 7	C	CEM

VII. Applicable Limits and Compliance Monitoring Requirements

Table VII - A
Applicable Limits and Compliance Monitoring Requirements
S-1 COMBUSTION GAS TURBINE

Type of Limit	Citation of Limit	FE Y/N	Future Effective Date	Limit	Monitoring Requirement Citation	Monitoring Frequency (P/C/N)	Monitoring Type
NO _x	BAAQMD condition #13409, part 14	Y		11.2 lb/hour, or 220 lb/day, or 39 ton/year	BAAQMD condition #13409, part 7	C	CEM
CO	BAAQMD condition #13409, part 5	Y		520 lb/day	BAAQMD condition #13409, part 7	C	CEM
CO	BAAQMD condition #13409, part 15	Y		95 ton/year	BAAQMD condition #13409, part 7	C	CEM
CO ₂		Y		None	40 CFR 75.10	C	fuel flow monitor and CO ₂ calculation
SO ₂	BAAQMD 9-1-301	Y		GLC ¹ of 0.5 ppm for 3 min or 0.25 ppm for 60 min or 0.05 ppm for 24 hours		N	
SO ₂	BAAQMD 9-1-302	Y		300 ppm (dry)		N	
SO ₂	NSPS 40 CFR 60.333	Y		0.015% (vol) @ 15% O ₂ (dry) or total sulfur content of fuel less than or equal to 0.8% sulfur by weight (8,000 ppmw)	NSPS 40 CFR 60.334(h)(3) (ii)	P/A	fuel sulfur analysis
SO ₂	BAAQMD condition #13409, part 13	Y		39 ton/year	BAAQMD condition #13409, part 13	N	

VII. Applicable Limits and Compliance Monitoring Requirements

Table VII - A
Applicable Limits and Compliance Monitoring Requirements
S-1 COMBUSTION GAS TURBINE

Type of Limit	Citation of Limit	FE Y/N	Future Effective Date	Limit	Monitoring Requirement Citation	Monitoring Frequency (P/C/N)	Monitoring Type
Opacity	BAAQMD 6-1-301	N		> Ringelmann No. 1 for no more than 3 minutes in any hour		N	
Opacity	SIP 6-301	Y		> Ringelmann No. 1 for no more than 3 minutes in any hour		N	
FP	BAAQMD 6-1-310	N		0.15 grain/dscf		N	
FP	SIP 6-310	Y		0.15 grain/dscf		N	
FP	BAAQMD 6-1-310.3	N		0.15 grain/dscf @ 6% O ₂		N	
FP	SIP 6-310.3	Y		0.15 grain/dscf @ 6% O ₂		N	

VIII. TEST METHODS

The test methods associated with the emission limit of a District regulation are generally found in Section 600 et seq. of the regulation. The following table indicates only the test methods associated with the emission limits included in Section VII, Applicable Limits & Compliance Monitoring Requirements, of this permit.

**Table VIII
 Test Methods**

Applicable Requirement	Description of Requirement	Acceptable Test Methods
BAAQMD 6-1-301	Ringelmann No. 1 Limitation	Manual of Procedures, Volume I, Evaluation of Visible Emissions; or US EPA Method 9
BAAQMD 6-301	Ringelmann No. 1 Limitation	Manual of Procedures, Volume I, Evaluation of Visible Emissions
BAAQMD 6-304	Tube Cleaning	Manual of Procedures, Volume I, Evaluation of Visible Emissions
BAAQMD 6-310	Particulate Weight Limitation	Manual of Procedures, Volume IV, ST-15, Particulates Sampling
BAAQMD 9-1-302	General Emission Limitation	Manual of Procedures, Volume IV, ST-19A, Sulfur Dioxide, Continuous Sampling, or ST-19B, Total Sulfur Oxides Integrated Sample
BAAQMD 9-3-303	New or Modified Heat Transfer Operation Limits	Manual of Procedures, Volume IV, ST-13A, Oxides of Nitrogen, Continuous Sampling
BAAQMD 9-7-301.1	Performance Standard, NO _x , Gaseous Fuel	Manual of Procedures, Volume IV, ST-13A, Oxides of Nitrogen, Continuous Sampling and ST-14, Oxygen, Continuous Sampling
BAAQMD 9-7-301.2	Performance Standard, CO, Gaseous Fuel	Manual of Procedures, Volume IV, ST-6, Carbon Monoxide, Continuous Sampling and ST-14, Oxygen, Continuous Sampling
BAAQMD 9-9-301.3	Emission Limits- Turbines Rated ≥ 10 MW w/SCR	Manual of Procedures, Volume IV, ST-13A, Oxides of Nitrogen, Continuous Sampling and ST-14, Oxygen, Continuous Sampling
Subpart GG	Standards of Performance for Stationary Gas Turbines	
60.332 (a)(1)	Performance Standard, NO _x	EPA Method 20, Determination of Nitrogen Oxides, Sulfur Dioxide, and Diluent Emissions from Stationary Gas Turbines
60.333 (a)	SO ₂ Volumetric Emission Limit	EPA Method 20, Determination of Nitrogen Oxides, Sulfur Dioxide, and Diluent Emissions from Stationary Gas Turbines

VIII. Test Methods

**Table VIII
Test Methods**

Applicable Requirement	Description of Requirement	Acceptable Test Methods
60.333 (b)	Fuel Sulfur Limit (gaseous fuel)	ASTM D 1072-80, Standard Method for Total Sulfur in Fuel Gases ASTM D 3031-81, Standard Test Method for Total Sulfur in Natural Gas by Hydrogenation

IX. PERMIT SHIELD

Not applicable

X. GLOSSARY

ACT

Federal Clean Air Act

APCO

Air Pollution Control Officer

API

American Petroleum Institute

ARB

Air Resources Board

BAAQMD

Bay Area Air Quality Management District

BACT

Best Available Control Technology

BARCT

Best Available Retrofit Control Technology

Basis

The underlying authority that allows the District to impose requirements.

C₅

An Organic chemical compound with five carbon atoms

C₆

An Organic chemical compound with six carbon atoms

CAA

The federal Clean Air Act

CAAQS

California Ambient Air Quality Standards

CAPCOA

California Air Pollution Control Officers Association

CEC

California Energy Commission

CEQA

California Environmental Quality Act

CEM

Continuous Emission Monitor: a monitoring device that provides a continuous direct measurement of some pollutant (e.g. NOx concentration) in an exhaust stream.

CFP

Clean Fuels Project

CFR

The Code of Federal Regulations. 40 CFR contains the implementing regulations for federal environmental statutes such as the Clean Air Act. Parts 50-99 of 40 CFR contain the requirements for air pollution programs.

CO

Carbon Monoxide

CO₂

Carbon Dioxide

Cumulative Increase

The sum of permitted emissions from each new or modified source since a specified date pursuant to BAAQMD Rule 2-1-403, Permit Conditions (as amended by the District Board on 7/17/91) and SIP Rule 2-1-403, Permit Conditions (as approved by EPA on 6/23/95). Used to determine whether threshold-based requirements are triggered.

DAF

A "dissolved air flotation" unit is a process vessel where air bubbles injected at the bottom of the vessel are used to carry solids in the liquid into a froth on the liquid surface, where it is removed.

DWT

Dead Weight Ton

District

The Bay Area Air Quality Management District

DNF

Dissolved Nitrogen Flotation (See DAF)

dscf

Dry Standard Cubic Feet

dscm

Dry Standard Cubic Meter

E 6, E 9, E 12

Very large or very small number values are commonly expressed in a form called scientific notation, which consists of a decimal part multiplied by 10 raised to some power. For example, 4.53 E 6 equals $(4.53) \times (10^6) = (4.53) \times (10 \times 10 \times 10 \times 10 \times 10 \times 10) = 4,530,000$. Scientific notation is used to express large or small numbers without writing out long strings of zeros.

EFRT

An "external floating roof tank" minimizes VOC emissions with a roof with floats on the surface of the liquid, thus preventing the formation of a VOC-rich vapor space above the liquid surface as the level in the tank drops. If such a vapor space were allowed to form, it would be expelled when the tank was re-filled. On an EFRT, the floating roof is not enclosed by a second, fixed tank roof, and is thus described as an "external" roof.

EPA

The federal Environmental Protection Agency.

ETP

Effluent Treatment Plant

Excluded

Not subject to any District Regulations.

FCC

Fluid Catalytic Cracker

Federally Enforceable, FE

All limitations and conditions which are enforceable by the Administrator of the EPA including those requirements developed pursuant to 40 CFR Part 51, subpart I (NSR), Part 52.21 (PSD), Part 60 (NSPS), Part 61 (NESHAPs), Part 63 (HAP), and Part 72 (Permits Regulation, Acid Rain), and also including limitations and conditions contained in operating permits issued under an EPA-approved program that has been incorporated into the SIP.

FP

Filterable Particulate as measured by BAAQMD Method ST-15, Particulate.

FR

Federal Register

FRT

Floating Roof Tank (See EFRT and IFRT)

GDF

Gasoline Dispensing Facility

GLM

Ground Level Monitor

grain

1/7000 of a pound

Graphitic

Made of graphite.

HAP

Hazardous Air Pollutant. Any pollutant listed pursuant to Section 112(b) of the Act. Also refers to the program mandated by Title I, Section 112, of the Act and implemented by 40 CFR Part 63.

H₂S

Hydrogen Sulfide

H₂SO₄

Sulfuric Acid

Hg

Mercury

HHV

Higher Heating Value. The quantity of heat evolved as determined by a calorimeter where the combustion products are cooled to 60F and all water vapor is condensed to liquid.

IFRT

An "internal floating roof tank" minimizes VOC emissions with a roof with floats on the surface of the liquid, thus preventing the formation of a VOC-rich vapor space above the liquid surface as the level in the tank drops. If such a vapor space were allowed to form, it would be expelled when the tank was re-filled. On an IFRT, the floating roof is enclosed by a second, fixed tank roof, and thus is described as an "internal" roof.

ISOM

Isomerization plant

LHV

Lower Heating Value. Similar to the higher heating value (see HHV) except that the water produced by the combustion is not condensed but retained as vapor at 60F.

Lighter

"Lightering" is a transfer operation during which liquid is pumped from an ocean-going tanker vessel to a smaller vessel such as a barge. Like any liquid transfer operation, lightering of organic liquids produces organic vapor emissions.

Long ton

2200 pounds

Major Facility

A facility with potential emissions of: (1) at least 100 tons per year of any regulated air pollutant, (2) at least 10 tons per year of any single hazardous air pollutant, and/or (3) at least 25 tons per year of any combination of hazardous air pollutants, or such lesser quantity of hazardous air pollutants as determined by the EPA administrator.

MDEA

Methyl Diethanolamine

MFR

Major Facility Review. The District's term for the federal operating permit program mandated by Title V of the Act and implemented by District Regulation 2, Rule 6.

Mo Gas

Motor gasoline

MOP

The District Manual of Procedures

MOSC

Mobil Oil Sludge Conversion (licensed technology)

MSDS

Material Safety Data Sheet

MTBE

methyl tertiary-butyl ether

NA

Not Applicable

NAAQS

National Ambient Air Quality Standard

NESHAP

National Emission Standard for Hazardous Air Pollutants as codified in 40 CFR Parts 61 and 63.

NMHC

Non-methane Hydrocarbons

NMOC

Non-methane Organic Compounds (Same as NMHC)

NO_x

Oxides of nitrogen.

NSPS

Standards of Performance for New Stationary Sources. Federal standards for emissions from new stationary sources. Mandated by Title I, Section 111 of the Act, and implemented by 40 CFR Part 60 and District Regulation 10.

NSR

New Source Review. A federal program for pre-construction review and permitting of new and modified sources of air pollutants for which the District is classified "non-attainment". Mandated by Title I of the Clean Air Act and implemented by 40 CFR Parts 51 and 52 as well as District Regulation 2, Rule 2. (Note: There are additional NSR requirements mandated by the California Clean Air Act.)

O₂

The chemical name for naturally-occurring oxygen gas.

Offset Requirement

A New Source Review requirement to provide federally enforceable emission offsets at a specified ratio for the emissions from a new or modified source and any pre-existing cumulative increase minus any onsite contemporaneous emission reduction credits. Applies to emissions of POC, NO_x, PM₁₀, and SO₂.

Phase II Acid Rain Facility

A facility that generates electricity for sale through fossil-fuel combustion and is not exempted by 40 CFR 72 from Titles IV and V of the Clean Air Act.

POC

Precursor Organic Compounds

PM

Total Particulate Matter

PM₁₀

Particulate matter with aerodynamic equivalent diameter of less than or equal to 10 microns

PSD

Prevention of Significant Deterioration. A federal program for permitting new and modified sources of air pollutants for which the District is classified "attainment" of the National Air Ambient Quality Standards. Mandated by Title I of the Act and implemented by both 40 CFR Part 52 and District Regulation 2, Rule 2.

Regulated Organic Liquid

"Regulated organic liquids" are those liquids which require permits, or which are subject to some regulation, when processed at a liquid-handling operation. For example, for refinery marine terminals, regulated organic liquids are defined as "organic liquids" in Regulation 8, Rule 44.

RFG

Refinery Fuel Gas

RMG

Refinery Make Gas

SCR

A "selective catalytic reduction" unit is an abatement device that reduces NOx concentrations in the exhaust stream of a combustion device. SCRs utilize a catalyst, which operates at a specific temperature range, and injected ammonia to promote the conversion of NOx compounds to nitrogen gas.

SIP

State Implementation Plan. State and District programs and regulations approved by EPA and developed in order to attain the National Air Ambient Quality Standards. Mandated by Title I of the Act.

SO₂

Sulfur dioxide

SO₂ Bubble

An SO₂ bubble is an overall cap on the SO₂ emissions from a defined group of sources, or from an entire facility. SO₂ bubbles are sometimes used at refineries because combustion sources are typically fired entirely or in part by "refinery fuel gas" (RFG), a waste gas product from refining operations. Thus, total SO₂ emissions may be conveniently quantified by monitoring the total amount of RFG that is consumed, and the concentration of H₂S and other sulfur compounds in the RFG.

SO₃

Sulfur trioxide

THC

Total Hydrocarbons (NMHC + Methane)

therm

100,000 British Thermal Units

Title V

Title V of the federal Clean Air Act. Requires a federally enforceable operating permit program for major and certain other facilities.

TOC

Total Organic Compounds (NMOC + Methane, Same as THC)

TPH

Total Petroleum Hydrocarbons

TRMP

Toxic Risk Management Plan

TRS

"Total reduced sulfur" is a measure of the amount of sulfur-containing compounds in a gas stream, typically a fuel gas stream, including, but not limited to, hydrogen sulfide. The TRS content of a fuel gas determines the concentration of SO₂ that will be present in the combusted fuel gas, since sulfur compounds are converted to SO₂ by the combustion process.

TSP

Total Suspended Particulate

TVP

True Vapor Pressure

VOC

Volatile Organic Compound

Units of Measure:

bbl	=	barrel of liquid (42 gallons)
bhp	=	brake-horsepower
btu	=	British Thermal Unit
C	=	degrees Celcius
F	=	degrees Fahrenheit
f ³	=	cubic feet
g	=	gram
gal	=	gallon
gpm	=	gallons per minute
gr	=	grain
hp	=	horsepower
hr	=	hour
lb	=	pound
in	=	inches
max	=	maximum
m ²	=	square meter
min	=	minute
M	=	thousand
Mg	=	mega-gram, one thousand grams
µg	=	micro-gram, one millionth of a gram
MM	=	million
mm	=	millimeter
MMbtu	=	million btu
mm Hg	=	millimeters of Mercury (pressure)
MW	=	megawatts

ppmv = parts per million, by volume
ppmw = parts per million, by weight
psia = pounds per square inch, absolute
psig = pounds per square inch, gauge
scfm = standard cubic feet per minute
yr = year

Symbols:

< = less than
> = greater than
≤ = less than or equal to
≥ = greater than or equal to