



Shasta County

August

DEPARTMENT OF RESOURCE MANAGEMENT
1855 Placer Street, Redding, CA 96001

Richard W. Simon, AICP
Director



November 5, 2013

Diana Williams
Pacific Gas & Electric Company
6121 Bollinger Canyon Road
BR1Y, 3F, 3150-B
San Ramon, CA 94583

Dear Ms. Williams:

NOTIFICATION OF COMPLETENESS DETERMINATION

The Shasta County Air Quality Management District (District) is contacting you regarding a recent permit application submittal pertaining to Title V Operating Permit 90-VP-151d for the Pacific Gas and Electric Company - Burney Compressor Station facility in Burney, California.

On October 30, 2013, the District received your permit application for a minor permit modification of the subject facility's Title V permit. Upon District review of the application, you are hereby notified that the minor permit modification application was deemed complete on November 1, 2013.

If you have any questions regarding this letter, please contact Donal Jonio at (530) 225-5236.

Sincerely,

Richard W. Simon
Air Pollution Control Officer

Enclosures

- C: Gerardo Rios, USEPA Region IX (ENF-2), 75 Hawthorne Street, San Francisco, CA 94105
(with enclosures)
Michael Tollstrup, Chief-SSD, CARB, PO Box 2815, Sacramento, CA 95812
(w/o enclosures)

October 28, 2013

Ross Bell
Air Quality District Manager
Shasta County Air Quality Management District
1855 Placer Street
Suite 101
Redding, California 96001

RECEIVED

OCT 30 2013

SHASTA COUNTY AQMD

Subject: Pacific Gas and Electric Company Burney Compressor Station Title V Minor
Permit Modification

Dear Mr. Bell:

Pacific Gas and Electric Company (PG&E) is submitting this application for a minor permit modification to the Title V Operating Permit #90-VP-151d for PG&E's Burney Natural Gas Compressor Station located in Burney, CA. The facility is located within the Shasta County Air Quality Management District (SCAQMD). The permit expires on November 3, 2017. Permit application forms are attached.

The purpose of the compressor station is to increase the pressure of the natural gas to facilitate flow in the pipeline. The increase in gas pressure is accomplished by a compressor powered by a natural-gas fired turbine. The facility possesses two identical turbine units that are used interchangeably in order to conduct routine maintenance and cleaning on the non-operational turbine unit.

In this application, PG&E requests SCAQMD approval of proposed revisions to permit conditions 16 and 17 to clarify the requirements related to emissions testing frequency and fuel flow rate limits. PG&E believes that these proposed permit condition clarifications do not relax or significantly change monitoring conditions under our permit.

In addition, PG&E requests the SCAQMD to remove the permit for the 40 BHP gasoline-fired portable compressor at the facility. The portable compressor is no longer on site.

Equipment Description:

The subject equipment consists of two (2), identical 12,500 hp General Electric, Model LM1500 natural-gas fired turbines operating without additional emission control equipment. Only one turbine unit is operated at a time, while the other unit is shut down for cleaning and routine maintenance.

Requested Modification to Permit Condition 16:

The objective of the proposed revision to Permit Condition 16 is to eliminate unintended emissions testing should a turbine need to be replaced for maintenance more frequently than once year.

Existing Condition 16 Text:

Testing for oxides of nitrogen (NO_x), carbon monoxide (CO), and non-methane organic compound (NMOC) emissions from any replacement emission unit shall be conducted within sixty (60) days of completed installation, defined as when the replacement unit is operating at normal load under continuous service. Emissions of the above pollutants expressed in pounds per hour (lbs/hr) from the replacement emission unit shall be demonstrated to be less than or equal to the original K-2 turbine.

Proposed Condition 16 Revised Text:

Testing for oxides of nitrogen (NO_x), carbon monoxide (CO), and non-methane organic compound (NMOC) emissions from any replacement emission unit shall be conducted according to the schedule set forth by Condition #10. However, if completed installation of the replacement unit occurs more than 11 months after the most recent test of the replacement unit, testing for NO_x, CO, and NMOC emissions will be performed within sixty (60) days of completed installation, defined as when the replacement unit is operating at normal load under continuous service. Emissions of the above pollutants expressed in pounds per hour (lbs/hr) from the replacement emission unit shall be demonstrated to be less than or equal to the original K-2 turbine.

Requested Modification to Permit Condition 17:

The objective of the proposed revision to Permit Condition 17 is to eliminate an unintended reduction in allowable fuel flow rate (as measured during the biennial emissions tests) due to fuel flow rate measurement variability and the effects of ambient operating conditions on the measured fuel flow rate. A study on natural gas fired turbines prepared for the EPA (*Technology Characterization: Gas Turbines*, ICF International, Arlington, VA 2008) notes:

The ambient conditions under which a gas turbine operates have a noticeable effect on both the power output and efficiency. At elevated inlet air temperatures, both the power and efficiency decrease. The power decreases due to the decreased air flow mass rate (the density of air declines as temperature increases) and the efficiency decreases because the compressor requires more power to compress air of higher temperature. Conversely, the power and efficiency increase when the inlet air temperature is reduced.

Depending on the timing of the required emissions testing as well as measurement variability, the existing permit condition may, over time, result in an unintended reduction in allowable fuel flow and a commensurate reduction in operating efficiency. The proposed permit condition revision would limit turbine unit fuel flow to the manufacturer's recommended maximum load fuel flow of 156,000 standard cubic feet per hour (scfh). Note that the manufacturer's recommended maximum load fuel flow is based on a fuel heating content of 1,050 British Thermal Units (BTUs).

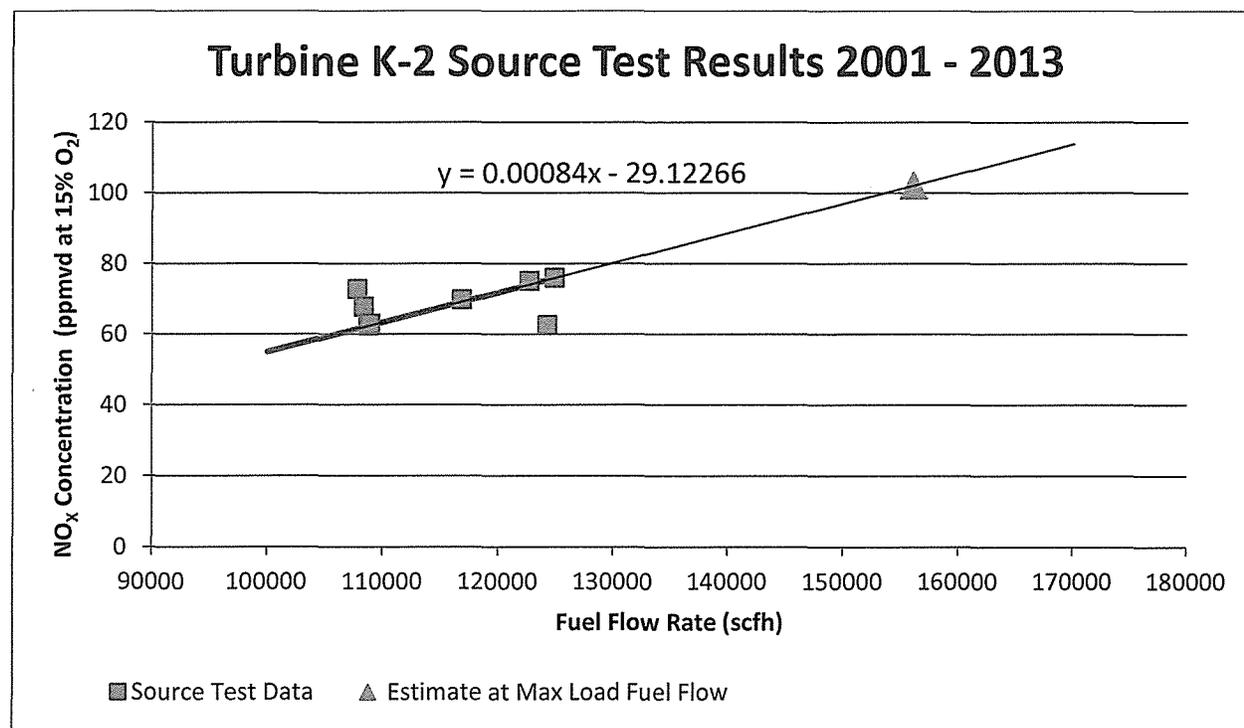
Historical source test NO_x concentration and turbine fuel flow data were reviewed. Table 1 summarizes the average, maximum and minimum measured NO_x emission concentrations and corresponding fuel flow measurements from source tests conducted from 2001 through 2013. As shown in Figure 1, there was scatter within the small data set that prevented a reasonable linear fit. Therefore, the NO_x concentration at manufacturer's maximum load fuel flow was conservatively estimated by fitting a line through the maximum and minimum NO_x concentration and fuel flow data points.

TABLE 1. TURBINE SOURCE TEST NO_x SUMMARY

Parameter	Source Test NO _x (ppmvd @ 15% O ₂)	% of Permitted Limit	Source Test Fuel Flow (scfh)
Average ¹	69	28%	112,861
Maximum	75.85	29%	124,861
Minimum	62.28	25%	108,720

ppmvd – parts per million by volume – dry
scfh – standard cubic feet per hour
¹Turbine source test data from 2001 – 2013

FIGURE 1: SOURCE TEST RESULTS FROM TURBINE K-2



Based on this approach, the estimated NO_x concentration at the manufacturer's maximum load fuel flow rate of 156,000 scfh is 102 ppmvd, which is only 41% of the permit limit. Based on this

analysis, PG&E requests the permit limit restricting fuel flow be revised to allow operation up to the manufacturer's maximum load fuel flow rate.

Existing Condition 17 Text:

Fuel flow rate to the replacement emission unit shall be limited to the amount verified on the most recent emission test of the original emission unit to assure that pertinent pollutant emissions do not increase.

Proposed Condition 17 Revised Text:

~~Fuel flow rate to the replacement emission unit shall be limited to the amount verified on the most recent emission test of the original emission unit~~ Hourly fuel flow rate to the turbine units shall be limited to 156,000 scfh to assure that pertinent pollutant emissions do not increase.

Please contact me at 925.270.8209 with any questions.

Sincerely,

Pacific Gas and Electric Company

A handwritten signature in black ink, appearing to read "Diana", with a stylized flourish extending from the end.

Diana Williams

Interim Supervisor
Environmental Management – Gas Transmission

STATIONARY SOURCE SUMMARY (FORM 5-A1)

DISTRICT: Shasta County Air Quality Management District (SCAQMD)

COMPANY NAME: Pacific Gas and Electric Company (PG&E)

< DISTRICT USE ONLY =

District ID:

Application #:

Application Received:

Application Filing Fee:

Application Deemed Complete:

I. FACILITY IDENTIFICATION

1. Facility Name: Burney Compressor Station
2. Four digit SIC Code: 4922 EPA Plant ID: 028-370-001
3. Parent Company (if different than Facility Name): Pacific Gas and Electric Company (PG&E)
4. Mailing Address: ATTN: Permits, PO Box 7640, San Francisco, CA 94120-7640
5. Street Address or Source Location: 37667 Hwy 299, Burney, CA 96013
6. UTM Coordinates (if required): East 609.7 km, North 4,526.5 km, UTM Zone 10
7. Source located within: 50 miles of the state line Yes No
50 miles of a Native American Nation Yes No Not Applicable
8. Type of Organization: Corporation Sole Ownership Government Partnership Utility Company
9. Legal Owner's Name: Pacific Gas and Electric Company
10. Owner's Agent Name (if any): N/A
11. Responsible Official: Jane Yura
12. Plant Site Manager/Contact: Curtis Tonetti Telephone #: (530) 335-5622
13. Type of facility: Natural Gas Compressor Station
14. General description of processes/products: Turbine-driven compressor raises pressure in natural gas pipeline to facilitate its movement to PG&E customers.
15. Does your facility store, or otherwise handle, greater than threshold quantities of any substance on the Section 112(r) List of Substances and their Thresholds (see attachment A)? Yes No
16. Is a Federal Risk Management Plan [pursuant to Section 112(r)] required? Not Applicable Yes No
(If yes, attach verification that Risk Management Plan is registered with appropriate agency or description of status of Risk Management Plan submittal.)

STATIONARY SOURCE SUMMARY (FORM 5-A2)

DISTRICT: Shasta County Air Quality Management District	< DISTRICT USE ONLY =
COMPANY NAME: Pacific Gas and Electric Company	DISTRICT ID:
	FACILITY NAME: Burney Compressor Station

II. TYPE OF PERMIT ACTION

	CURRENT PERMIT (permit number)	EXPIRATION (date)
<input type="checkbox"/> Initial Title V Application		
<input type="checkbox"/> Permit Renewal		
<input type="checkbox"/> Significant Permit Modification		
<input type="checkbox"/> Minor Permit Modification	90-VP-151d	November 3, 2017
<input type="checkbox"/> Administrative Amendment		

III. DESCRIPTION OF PERMIT ACTION

1. Does the permit action requested involve: a:
- | | |
|--|--|
| <input type="checkbox"/> Portable Source | <input type="checkbox"/> Voluntary Emissions Caps |
| <input type="checkbox"/> Acid Rain Source | <input type="checkbox"/> Alternative Operating Scenarios |
| <input type="checkbox"/> Source Subject to MACT Requirements [Section 112] | |
- b: None of the options in 1.a. are applicable
2. Is source operating under Compliance Schedule? Yes No

3. For permit modifications, provide a general description of the proposed permit modification: PG&E proposes modification of permit condition 16 to clarify compliance testing frequency upon installation of a replacement unit. PG&E also proposes modification of permit condition 17 to prevent unintended reduction in allowed fuel usage based on variability in compliance test conditions and accuracy of compliance test devices. PG&E believes that neither proposed modification will result in an increase in facility emissions.

COMBUSTION EMISSION UNIT (FORM 5-C1)

DISTRICT: Shasta County Air Quality Management District	< DISTRICT USE ONLY = DISTRICT ID:
COMPANY NAME: Pacific Gas and Electric Company	FACILITY NAME: Burney Compressor Station

I. PERMIT NUMBER: 90-VP-151d

II. EMISSION UNIT DESCRIPTION

1. Equipment type: Gas-fired turbine engine unit K-2
2. Equipment description: N/A
3. Equipment make, model & serial number: General Electric, Model LM1500
4. Maximum design process rate or maximum power input/output: 12,500 hp
5. Primary use: Natural-gas compressor driver
6. Burner(s) design, operating temperature and capacity: N/A
7. Control device(s) type and description (if any): None

III. OPERATIONAL INFORMATION

1. Operating schedule: 24 (hours/day) 8,760 (hours/year)
2. Exhaust gas properties (temperature, SCFM, %H₂O, %O₂ or %CO₂, % excess air): 990 degrees F, 105,760 scfm, 4.0% H₂O, 17.28% O₂ dry, 2.014% carbon dioxide, dry.
3. Fuel specifications:

FUEL TYPE (name)	ANNUAL USAGE (c.f./yr, lb/yr, gal/yr)	HEATING VALUE (BTU/lb or BTU/gal)	SULFUR (%)	NITROGEN (%)
Natural Gas	1050.8 MMSCF/yr	1020 BTU/SCF (HHV)	<0.0005 (vol)	1.0 (vol)

COMBUSTION EMISSION UNIT (FORM 5-C2)

DISTRICT: Shasta County Air Quality Management District	< DISTRICT USE ONLY =
COMPANY NAME: Pacific Gas and Electric Company	DISTRICT ID: FACILITY NAME: Burney Compressor Station

4. Unit emissions:

CRITERIA POLLUTANT EMISSIONS (tons per year)					
POLLUTANTS	NO _x	CO	PM10	VOC	SO _x
A. Emissions	148.40	82.50	3.50	0.54	7.50
B. Pre-modification Emissions ¹	148.40	82.50	3.50	0.54	7.50
C. Emission Change ²	0.00	0.00	0.00	0.00	0.00
D. Emission Limit ³					

OTHER REGULATED AIR POLLUTANT EMISSIONS (tons per year)					
POLLUTANTS	Formaldehyde	Benzene			
A. Emissions	0.38	0.01			
B. Pre-Modification Emissions ¹	0.38	0.01			
C. Emission Change ²	0.00	0.00			
D. Emission Limit ³					

¹ For permit modifications only; emissions prior to project modification.

² Difference between Pre-Modification Emissions (Section B.) and Emissions (Section A.).

³ For voluntary emissions cap and emission limits [i.e. expressed as parts per million (ppm) corrected for dilution air, pounds per hour (lbs/hr), pounds per million BTU (lb/MMBTU, etc.) required by any applicable federal requirement.

COMPLIANCE PLAN (FORM 5-I2)

DISTRICT: Shasta County Air Quality Management District	< DISTRICT USE ONLY =
COMPANY NAME: Pacific Gas and Electric Company	DISTRICT ID: FACILITY NAME: Burney Compressor Station

III. COMPLIANCE CERTIFICATION

Under penalty of perjury, I certify the following:

- Based on information and belief formed after reasonable inquiry, the source identified in this application will continue to comply with the applicable federal requirement(s) with which the source is in compliance identified in form 5-II;*
- Based on information and belief formed after reasonable inquiry, the source identified in this application will comply with the future-effective applicable federal requirement(s) identified in form 5-II, on a timely basis¹ ;*
- Based on information and belief formed after reasonable inquiry, the source identified in this application is not in compliance with the applicable federal requirement(s), identified in form 5-II, and I have attached a compliance plan schedule.²*



 Signature of Responsible Official

12/15/13

 Date

1. Unless a more detailed schedule is expressly required by the applicable federal requirement.
2. At the time of expected permit issuance, if the source expects to be out of compliance with an applicable federal requirement, the applicant is required to provide a compliance schedule with this application, with the following exception. A source which is operating under a variance that is effective for less than 90 days need not submit a Compliance Schedule. For sources operating under a variance, which is in effect for more than 90 days, the Compliance Schedule is the schedule that was approved as part of the variance granted by the hearing board.

The compliance schedule shall contain a schedule of remedial measures, including an enforceable sequence of actions with milestones, leading to compliance with this applicable federal requirement. For sources operating under a variance, the compliance schedule is part of the variance granted by the hearing board. The compliance schedule shall resemble, and be at least as stringent as that contained in any judicial consent decree or administrative order to which the source is subject. For sources not operating under a variance, consult the Air Pollution Control Officer regarding procedures for obtaining a compliance schedule.

COMPLIANCE PLAN CERTIFICATION (FORM 5-J1)

DISTRICT: Shasta County Air Quality Management District	< DISTRICT USE ONLY =
COMPANY NAME: Pacific Gas and Electric Company	DISTRICT ID:
	FACILITY NAME: Burney Compressor Station

I. CERTIFICATION STATUS

1. Indicate the dates the applicant intends to submit the **COMPLIANCE CERTIFICATION REPORT** to the district during the entire permit term. The district federal operating permits rule requires the applicant to submit this report at least annually.

Per current schedule

2. For sources required to have a schedule of compliance to remedy a violation, indicate the dates the applicant intends to submit **CERTIFIED PROGRESS REPORTS** to the district during the permit term. The district federal operating permits rule requires the applicant to submit this report at least semiannually.

N/A

3. Describe the compliance status of the source with respect to applicable enhanced monitoring, and compliance certification requirements of Section 114(a)(3) of the Clean Air Act:

N/A

COMPLIANCE PLAN CERTIFICATION (FORM 5-J2)

DISTRICT: Shasta County Air Quality Management	< DISTRICT USE ONLY = DISTRICT ID:
COMPANY NAME: Pacific Gas and Electric	FACILITY NAME: Burney Compressor Station

II. CERTIFICATION INFORMATION

EMISSION UNIT or PERMIT NUMBER: 90-VP-151d APPLICABLE FEDERAL REQUIREMENT: See application cover letter for proposed modifications to permit conditions.

METHOD	DESCRIPTION OR REFERENCE METHOD
Monitoring	
Reporting	
Record Keeping	
Test Methods	

CERTIFICATION STATEMENT (FORM 5-M)

DISTRICT: Shasta County Air Quality Management	< DISTRICT USE ONLY =
	DISTRICT ID:
COMPANY NAME: Pacific Gas and Electric Company	FACILITY NAME: Burney Compressor Station

Identify, by checking off below, the forms and attachments that are part of your application. If the application contains forms or attachments that are not identified below, please identify these attachments in the blank space provided below. Review the instructions if you are unsure of the forms and attachments that need to be included in a complete application.

Forms included with application

Stationary Source Summary Form

Total Stationary Source Emission Form

Compliance Plan Form

Compliance Plan Certification Form

Exempt Equipment Form

Certification Statement Form

List other forms or attachments

check here if additional forms listed on back

Attachments included with applications

Description of Operating Scenarios

Sample emission calculations

Fugitive emission estimates

List of Applicable requirements

Discussion of units out of compliance with applicable federal requirements and, if required, submit a schedule of Compliance

Facility schematic showing emission points

NSR Permit

PSD Permit

Enhanced monitoring protocols

Risk management verification per 112(r)

List Other Forms or Attachments (cont.)

I certify under penalty of law, based on information and belief formed after reasonable inquiry, that the information contained in this application, composed of the forms and attachments identified above, are true, accurate, and complete.

I certify that I am the responsible official, as defined in Rule 5.

 _____
Signature of Responsible Official

10/15/13

Date

Jane, Yura

Print Name of Responsible Official

Vice President Asset & Risk Management, Pacific Gas and Electric Company

Title of Responsible Official and Company Name