DOCKETED	
Docket Number:	81-AFC-01C
Project Title:	Compliance - Application for Certification of the Occidential Plant # 1
TN #:	240994
Document Title:	2020 Annual Compliance Report - Calistoga
Description:	N/A
Filer:	William King
Organization:	Geysers Power Company, LLC
Submitter Role:	Applicant
Submission Date:	12/20/2021 2:33:29 PM
Docketed Date:	12/20/2021

GEYSERS POWER COMPANY, LLC
10350 Socrates Mine Road
Middletown, CA 95461

GWQ-21-014

December 20, 2021

Eric Veerkamp, Compliance Project Manager
Energy Facilities Siting and Environmental Protection Division
California Energy Commission
1516 Ninth Street, MS-15
Sacramento, California 95814-5512

Subject: **81-AFC-01C** 2020 Annual Compliance Report - U19 (Calistoga) Power Plant

Mr. Veerkamp:

In fulfillment of the Compliance Plan's annual reporting requirement, Geysers Power Company, LLC hereby submits the following report for Unit 19 (Calistoga).

The California Energy Commission established a monitoring program with all compliance verifications maintained by the United States Geological Survey (USGS). A letter of understanding between CEC and USGS with respect to post-licensing project compliance management duties was established in 1982. On August 25, 2010, an amendment petition was approved by the Energy Commission, which released the USGS from the compliance project manager role and placed the project compliance manager responsibilities with the Energy Commission.

If you have any comments or questions, please contact me at (707) 431-6097.

Sincerely,

Date: 2021.12.20 14:19:07 -08'00'

Bill King
Project Manager, EHS
Calpine Corporation

cc:
Mr. Nicholas Lavrov
Bureau of Land Management
2550 N. State Street
Ukiah, California 95482

Geysers Calistoga Plant (Unit 19)
81-AFC-01C
2020 Annual Compliance Report to the California Energy Commission
January 2020-December 2020 Reporting Period

EXECUTIVE SUMMARY

Section 25532 of the Public Resources Code provides that the California Energy Commission (CEC) shall establish a monitoring system to assure that any facility certified by the CEC is constructed and operated in compliance with air, water quality, public health, safety, and other applicable regulations, guidelines, and conditions adopted or established by the CEC.

On January 29, 1981, Occidental Geothermal, Inc. filed an Application for Certification (AFC) for Oxy No.1 Geothermal Power Plant. In order for the AFC to be granted the CEC issued the "Commission Decision Document for Oxy No.1 Geothermal Power Plant". Florida Power and Light Energy (FPL) subsequently purchased and renamed OXY No 1 to the "Santa Fe Geothermal Power Plant." Since October 19, 1999, when FPL sold the "Santa Fe Geothermal Power Plant" (Now Calistoga Power Plant, or Unit 19), transfer of ownership requires Geysers Power Company, LLC (GPC or Project Owner) to be responsible for administering and monitoring various Conditions for Certification as contained in the Commission Decision.

Two amendments to the Final Decision have been approved by the CEC, resulting in the inclusion of additional on-going compliance tasks for reporting in the Annual Compliance Report.

First, on October 14, 2020, the CEC Final Decision was amended to revise the Air Quality Conditions of Certification (TN#: 235330). The new Air Quality Conditions of Certification requires on-going reporting of certain monitoring and other activities at Calistoga. Second, on November 16, 2020, additional Compliance Conditions of Certification were adopted for Unit 19 (TN#: 235699): GEN-1, COM-1 through 11, FIRE PREVENTION-1 and FIRE PROTECTION-1 through 5. Condition COM-5 requires submission of Periodic and Annual Compliance Reports and details specific reporting requirements that should be included in each Annual Compliance Report (ACR). The following sections of this ACR corresponds with the reporting requirements set forth in Condition COM-5. The ongoing compliance tasks in each of the following areas are summarized below:

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Technical Area	Ongoing Tasks
Air Quality	AQ-1, AQ-2, AQ-3, AQ-4, AQ-5, AQ-6, AQ-7, AQ-8, AQ-9, AQ-10, AQ-11, AQ-12, AQ-13, AQ-14, AQ-15, AQ-16, AQ-17 AQ-E1A, E1C AQ-E2A, AQ-E2B, AQ-E2C, AQ-E2D, AQ-E2E AQ-E3A, AQ-E3B, AQ-E3C, AQ-E3D, AQ-E3E AQ-E4A, AQ-E5A, AQ-E6A AQ-F1B AQ-SC1, AQ-SC2, AQ-SC3, AQ-SC4
Biological Resources	BR 5-2, BR 5-4
Compliance	COM-1, COM-2, COM-3, COM-4, COM-5, COM-6, COM-7, COM-8, COM-9, COM-10, COM-11
Fire Prevention	Fire Prevention-1
Fire Protection	Fire Protection-1, Fire Protection-2, Fire Protection-3, Fire Protection-4, Fire Protection-5
Gen	GEN-1
Geotechnical/Seismic Hazards	GSH 7-6
Noise	Noise 16-3, Noise 16-4
Public Health	PH 2-1, PH 2-2, PH 2-3, PH 2-10
Safety	Safety 12-13
Solid Waste Management	SWM 11-1, SWM 11-2, SWM 11-3, SWM 11-4, SWM 11-5
Transmission Line Safety and Nuisance	TLSN 13-4, TLSN 13-6, TLSN 13-7, TLSN 13-8
Water Quality, Hydrology and Water Resources	WQ 6-2, WQ 6-5, WQ-6-6, WQ 6-7, WQ6-8, WQ 6-10

In accordance with Condition Compliance-5, the Project Owner reports as follows:

1. Updated Compliance Matrix

A copy of the updated compliance matrix showing the status of all conditions of certification (with the exception of fully satisfied conditions) is included as an attachment under COMPLIANCE-5.

2. Summary of current project operating status and explanation of any significant changes to facility operating status during the year.

Calistoga is currently operational and was operational during the 2020 reporting period with the exception of the following outage periods:

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Event	Summary	Start	Actual End
Maintenance Outage	Unit 2 removed from service for internal generator inspection, H2 cooler installation	6/28/2020 4:00	6/30/2020 22:05
Planned Outage, Transmission supplier	Units removed from service for scheduled 230 kV line outage	6/23/2020 5:15	6/23/2020 17:05
Planned Outage (CL/BOP)	Both Calistoga Units forced O.O.S due to "B" Circ Pump failure	6/10/2020 7:20	6/11/2020 19:25
Forced Outage, Transmission supplier	Units removed from service for PG&E Transmission line PSPS Event	10/25/2020 12:00	10/27/2020 21:00
Forced Outage, Transmission supplier	Both Units were separated from the system upon PG&E's request	10/2/2020 11:15	10/6/2020 21:10
Forced Outage, Transmission supplier	PG&E 230 kV line relay operation	9/27/2020 22:50	10/1/2020 5:30
Planned Outage, Transmission supplier	Units removed from service for scheduled P.G&E. 230 kV line outage	9/24/2020 4:00	9/25/2020 0:20

3. Required Annual Compliance Report Documents

The following documents are required by specific conditions to be submitted along with the ACR:

Geysers Calistoga Plant (Unit 19)

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Condition of Certification	Document Title	Condition of Certification	Document Title
AQ-2	A copy of the Application for Permit Modification is provided as Attachment AQ-2/AQ-SC1	AQ-E4A	Refer to attachments AQ-SC1: Application for Permit Modification & AQ-14: Application to Construct Wet Down Pump
AQ-3	Copies of the quarterly reports are provided as Attachment AQ-3/AQ-4/ AQ-9/ AQ-E3E/ AQ-SC2	AQ-SC1	A copy of the Application for Permit Modification is is provided as Attachment AQ-2/AQ-SC1
AQ-4	Copies of the quarterly reports are provided as Attachment AQ-3/AQ-4/ AQ-9/ AQ-E3E/ AQ-SC2	AQ-SC2	Copies of the quarterly reports are provided as Attachment AQ-3/AQ-4/ AQ-9/ AQ-E3E/ AQ-SC2
AQ-8	The Lake County Cooling Tower Annual Injection Report is provided as Attachment AQ-8	Public Health 2-1	See Attachment Public Health 2-1 for table of quarterly analysis
AQ-9	Copies of the quarterly reports are provided as Attachment AQ-3/AQ-4/ AQ-9/ AQ-E3E/ AQ-SC2	Public Health 2-2	See the attached table referenced in Public Health 2-1. There was no exceedance of 3.0 pCi/l during the compliance period
AQ-14	A copy of the Application to Construct Wet Down Pump is provided as Attachment AQ-14	Public Health 2-3	See the attached table referenced in Public Health 2-1. There was no exceedance of 6.0 pCi/l during the compliance period
AQ-E3E	See quarterly reports in attachment AQ-SC2		

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4. Cumulative List of All Known Post-Certification Changes Approved by the CEC or CPM

- Authorized cooling tower fill replacement project for the west tower approved 6/23/2020 per TN#233613.
- Order approving installation of a permanent standby diesel engine-power pump for the cooling tower wet-down system and revising air quality conditions of certification to conform with ATC issued on May 11, 2020 by LCAQMD. (Conditions set forth in TN#: 234737) was approved 10/20/2020 per TN#235330.
- Order approving settlement relating to fire system investigation, and adding Conditions of Certification GEN-1, COM-1 through 11, FIRE PREVENTION-1 and FIRE PROTECTION-1 through 5 was approved 11/19/2020 per TN# 235699.

5. Submittal deadlines not met

There are no past due compliance submittals.

6. Filings Submitted to or Permits Issued by Other Governmental Agencies

Permit:

- Authority to Construct Permit - Diesel Engine Powered Emergency Standby Cooling Tower Wet-Down Pump issued by LCAQMD on 5/11/20

Filings:

- Quarterly Compliance Reports submitted to CEC
- Quarterly Compliance Reports submitted to LCAQMD
- Application for Authority to Construct for an Emergency Wet-Down Pump Engine at the Calistoga Power Plant submitted to LCAQMD on 2/28/20; Permit # A/C 2020-05 issued on 5/1/2020
- Petition for Modification: Installation of a Standby Pump for the Cooling Tower Wet-Down System at the Calistoga Power Plant submitted to the CEC
- Authority to Construct Permit # A/C 2020-05 received from LCAQMD for the Diesel Engine Powered Emergency Standby Cooling Tower Wet-down Pump
- Request for APCO Approval: Other Filter Media in the Mercury Removal System at the Calistoga Power Plant submitted to LCAQMD
- 2020 PSD H2S Abatement System Performance Results: Geysers Power Company LLC's Sonoma, Lake View, Grant, Quicksilver and Calistoga Power Plants submitted to CEC
- Lake County AB2588 Air Toxics "Hot Spots" Emission Inventory Report for the Inventory Year 2020 submitted to LCAQMD
- Monthly submission of completed hazardous waste manifests to DTSC.
- Annual Hazardous Waste Report submitted to DTSC.
- Sulfur Hexafluoride (SF6) Geothermal Resource Tracer Testing Exemption- Progress Report submitted to CEC

7. Projection of Scheduled Compliance Activities for Next Year

- AQ-3: Perform periodic source test of H2S

- AQ-4: Conduct periodic source test and/or process estimates of cooling tower drift rate
- AQ-8: Perform biannual tests to determine the content of steam components
- AQ-F1B: Conduct source testing for the following: ROG, PM10, SOx, or NOx.
- Biological Resources 5-2: Inspect, maintain and repair erosion control measures in place.
- Compliance-5: Evaluate Site Contingency Plan for unplanned facility closure
- Fire Protection-1: Perform annual inspection, testing, and maintenance of the non-NFPA cooling tower wet down system
- Fire Protection-3: Perform inspections, testing, and maintenance of fire systems
- Public Health 2-1: Perform quarterly sampling and analysis of radon-222 concentrations in noncondensable gases entering the power plant in the incoming steam line, or vent off-gas line, or H2S abatement off-gas line

8. Additions to the Compliance Record

- Calistoga (Unit 19) Petition for Modification for Installation of a Standby Pump for the Cooling Tower Wet-Down System filed and docketed 6/24/20, per TN #233639.
- Calistoga (Unit 19) Petition for Modification for Installation of a Diesel Standby Pump, Air District Health Risk Analysis, docketed 7/21/2020 per TN# 233983.
- Calistoga Unit 19 PTA Diesel Amendment Staff Analysis docketed 9/15/20 per TN# 234737
- Order Approving Petition to Amend the Facility License docketed 10/20/2020 per TN# 235330
- Order Approving Settlement docketed 11/19/2020 per TN# 235699
- On-going logging of monitoring and calibration of H2S monitoring devices, continuous strip chart record and appropriate sampling line, and other additions pursuant to AQ-3.
- On-going analyses of results of source tests and other tests requested by the LCAQMD or CEC pursuant to the AQ conditions of certification.

9. Evaluation of the Site Contingency Plan

An evaluation of the Site Contingency Plan for unplanned facility closure was conducted and minor modifications were made to the plan to update the listed agency contact information for listed to be referenced in case of a facility closure.

10. Listing of complaints, notices of violations, official warnings, and citations

No complaints, notices of violations, official warnings or citations were received in the 2020 reporting period.

CONDITION OF CERTIFICATION
AQ-2/AQ-SC1

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LAKE COUNTY AIR QUALITY MANAGEMENT DISTRICT
2617 South Main Street
Lakeport, CA 95453
Phone (707) 263-7000
Fax (707) 263-0421

Douglas G. Gearhart
Air Pollution Control Officer
dougg@lcaqmd.net

Mr. James Kluesener, Vice President
Attn: Brian Berndt, ES Manager
Geysers Power Company, LLC
c/o Calpine Corporation
10350 Socrates Mine Road
Middletown, CA 95461

May 11, 2020

Subject: A/C 2020-05 Permit Issuance. Calistoga Geothermal Power Plant - Diesel Engine Powered Emergency Standby Cooling Tower Wet-Down Pump.

Dear Mr. Kluesener:

Please find the enclosed Authority to Construct permit for the facility project as specified. I have attached a copy of the permitting assessment for your reference.

Be advised, District Rule 620 requires you post the permit or a facsimile at the site to be available for District staff inspection. If you have questions, please feel free to contact the District at (707) 263-7000.

Sincerely,

Elizabeth Knight, AQPC

Atts: (2)
Permitting Assessment
Permit Card

AUTHORITY TO CONSTRUCT

Permit # A/C 2020-05

Lake County Air Quality Management District
2617 S. Main Street, Lakeport, CA 95453 (707) 263-7000, Fax (707) 263-0421

By: Douglas G. Gearhart, APCO

Type of Issuance: Original *Issuance Date:* 5/11/2020 *Valid through:* 10/31/2020 *Category:* II

Operations under this permit must be conducted in compliance with all specifications and data included with the application under which this permit was issued. Equipment must be properly maintained and kept in good condition at all times. Post this permit or a facsimile (with conditions) in a conspicuous location on or near the equipment.

Contact:	Mr. James Kluesener, Vice President
Owner:	Geysers Power Company, LLC
Mailing Address:	c/o Calpine Corporation 10350 Socrates Mine Road Middletown, CA 95461

Facility:	Calistoga Geothermal Power Plant
Location:	8950 Socrates Mine Road Middletown, CA 95461

Name and Equipment Description: **Diesel Engine Powered Emergency Standby Cooling Tower Wet-Down Pump**

One (1) 2020 Cummins Model CFP7E-F40 QSB6.7, 204 HP, Tier 3 Diesel Engine, Engine Family: LCEXL0409AAB. S/N to be provided upon installation.

Permit Conditions

Condition 1: Emissions

A. All equipment shall be regularly maintained in good working order pursuant to manufacturer's guidelines and operated in a manner to prevent or minimize air emissions. The Lake County Air Quality Management District (LCAQMD) shall be notified pursuant to Rule 510, regarding equipment breakdown.

B. The total ROG, PM-10, SOx or NOx emission rate for this facility shall not exceed 25 tons per 12-month period. This emission rate determination shall be consistent with the methodology and assumptions used to evaluate the application under which this permit was issued. Diesel particulate emissions shall not exceed 0.11 g/bhp-hr.

C. Visible emissions shall not exceed Ringelmann 0.5 (10% opacity) from the generator exhaust stack for more than three (3) minutes in any one (1) hour.

Condition 2: Administrative

A. This permit has been issued and is valid for a diesel engine powered emergency standby cooling tower wet-down pump for use when commercial line power is not available because of an emergency or line maintenance outage. Geysers Power Company, LLC (GPC) shall develop or utilize an engine maintenance plan with prescribed oil change frequency per manufacturer's specifications and/or the National Emission Standard for Hazardous Air Pollutants (NESHAP) for Reciprocating Internal Combustion Engines (RICE) and New Source Performance Standards (NSPS).

B. Testing and maintenance operations are allowed for up to 50 hours per 12-month period.

C. Diesel fuel utilized shall be California Low Sulfur Diesel containing less than 15ppmw sulfur.

(Conditions 2 through 6 are continued on the back of this card)

THIS PERMIT BECOMES VOID UPON CHANGE OF OWNERSHIP OR LOCATION

D. GPC shall comply with the requirements of the Air Toxics "Hot Spots" Information and Assessment Act as specified in Sections 44300 - 44394 of the California Health and Safety Code as well as the Air Toxix Control Measure (ATCM) for Stationary Compression Ignition Engines.

E. Within 180 days of initial operation, GPC shall apply for a Permit to Operate, and prove compliance with these conditions.

Condition 3: Records and Reporting

A. GPC shall maintain a log (logs can be hard copy or digital) meeting the requirements of the NESHAP for RICE and NSPS which contains at a minimum, the facility name, location, engine information, fuel used, emission control equipment, maintenance conducted on the engine, and documentation that the engine meets the emission standards.

B. GPC shall maintain a log of usage that shall document hours of operation, and initial startup hours. GPC shall maintain a log of engine maintenance to show compliance with maintenance plan and NSPS requirements.

C. GPC shall document fuel usage by retention of fuel purchase records, accounting for all fuel used in the engine. Log entries shall be retained for a minimum of 36 months, with 24 months of the most recent entries retained on-site. The log shall meet all requirements of the ATCM for Stationary Compression Ignition Engines.

D. GPC shall maintain a non-resettable hour meter capable of displaying 9,999 hours.

E. GPC shall furnish an annual record of fuel use (gallons) and engine use (hours), breaking down hours of testing, maintenance, and emergency use, or in a format acceptable to the LCAQMD, within 15 days of request, and by October 31st of each year.

Condition 4: Modification

A. GPC shall apply for and receive an Authority to Construct permit prior to the addition of new equipment or modification of permitted equipment.

Condition 5: Monitoring

A. The herein permitted facility shall not cause a public nuisance nor make a measurable contribution to any Ambient Air Quality Standard exceed. Should this facility result in odor or health complaints, the LCAQMD may require under Sections 430 and 670, monitoring, testing, and mitigation by GPC to abate said condition.

Condition 6: Identification and Access

A. This permit shall be posted at the equipment site and be available for GPC's reference and LCAQMD staff inspection. If locks or unmanned gates are used to secure the project area, the LCAQMD or its representative will be given free access of entry for the purposes of monitoring or inspecting during normal business hours or periods of engine use.

LAKE COUNTY
AIR QUALITY MANAGEMENT DISTRICT

2617 S. MAIN ST., LAKEPORT, CA 95453

AUTHORITY TO CONSTRUCT
PERMITTING ASSESSMENT

GEYSERS POWER COMPANY, LLC
DIESEL ENGINE POWERED EMERGENCY STANDBY COOLING TOWER WET-DOWN PUMP
8950 SOCRATES MINE ROAD, MIDDLETOWN, CA 95461
A/C 2020-05

BY DOUGLAS GEARHART, APCO AND FAHMY ATTAR, AQE

MAY 11, 2020

LAKE COUNTY AIR QUALITY MANAGEMENT DISTRICT
AUTHORITY TO CONSTRUCT PERMITTING ASSESSMENT

GEYSERS POWER COMPANY, LLC
DIESEL ENGINE POWERED EMERGENCY STANDBY COOLING TOWER WET-DOWN PUMP
8950 SOCRATES MINE ROAD, MIDDLETOWN, CA 95461
A/C 2020-05

Introduction

On March 9, 2020 the Lake County Air Quality Management District (LCAQMD) received an application (See Attachment 1) from Geysers Power Company, LLC (GPC) for an Authority to Construct permit to install a diesel engine powered emergency standby cooling tower wet-down pump at the Calistoga Geothermal Power Plant (CGPP) located at 8950 Socrates Mine Road, Middletown, CA 95461. (See Map 1). The diesel engine is a 204 bhp Tier 3 2020 Cummins Model CFPE-F40, EPA Engine Family LCEXL0409AAB and will provide power to the cooling tower wet down pump during power outages. A legal notice was published in the Lake County Record Bee on March 14, 2020 (See Attachment 2). No comments were received.

Discussion

The cooling tower wet down system is used to keep the surfaces of the cooling tower structure wet when the cooling tower is not in operation. This wetting reduces the heat below the ignition temperature of the elemental sulfur that coats the sides of the cooling tower when geothermal steam condensate is oxidized to soluble sulfur compounds during venting. This prevents the ignition of flammable sulfur. However, during a full plant shut down and the cooling tower is not circulating water, auxillary or wet down pumps are turned on to sprinkle areas of the cooling tower that can dry out so they do not become damaged or more vulnerable to fire. The Cummins Model CFPE-F40 diesel engine powers the wet-down pump for the CGPP cooling towers. Under the New Source Performance Standards (NSPS), an engine maintenance plan must be implemented either per manufacturer's specifications or by owner (equivalent to manufacturer) which includes oil change frequency, hour meter, record of hours of operation, and records of engine maintenance.

Diesel exhaust emissions will result from operation during testing, maintenance and power outages. Such outages typically occur during storm conditions, when impacts are minimized. Engine testing and maintenance operations will be limited to 50 hours per year as a condition of the permit.

The site is located approximately 8800 feet from the nearest residence, and 3 miles from the nearest school. See attached Map 1 for the location of the facility.

The Lake County Air Basin can be adversely impacted by this facility if the subject equipment is not maintained, managed, and operated properly. GPC is expected to use good management practices and judgment to avoid problems and/or violations. This and other similar installations within the District have been operated without incident or complaints while being located at similar distances from offsite receptors. The LCAQMD has not received any complaints regarding the site.

Emissions

Of primary concern are the emissions associated with the exhaust generated from the diesel-powered internal combustion engine. If the equipment is properly managed and controlled through routine preventative maintenance and adjustment to achieve high efficiency, emissions can be maintained at acceptable levels. These practices should avoid nuisance, contributing a measurable quantity to Ambient Air Quality Standards (AAQS) exceeds, and health problems.

GPC must meet all requirements of the Air Toxics Control Measure (ATCM) for Stationary Compression Ignition Engines (Section 93115, Title 17, California Code of Regulations). GPC is required to comply with the National Emission Standard for Hazardous Air Pollutants (NESHAP) for Reciprocating Internal Combustion Engines (RICE) and NSPS. Fuel type specification is addressed as a specific permit condition, and requires only California Low Sulfur Diesel containing less than 15 ppmw sulfur to be used.

GPC has specified the diesel pump engine as a 2020 model year, 204 bhp. A worst case estimate is a maximum annual fuel consumption estimated at 10,600 gallons per year, based on a maximum of 1,000 hours per year use. Diesel combustion exhaust emissions will result from operation during testing and power outages. Other similar installations within the LCAQMD are typically tested monthly under full load for approximately one hour. The LCAQMD has estimated testing and actual use at less than 200 hours per year (2,120 gallons per year) based on anticipated conditions although during a Public Safety Power Shutoff event the

hours could reach or exceed 1,000 hours. Permit conditions allow operation of up to 50 hours per year for maintenance and testing.

Table 1 presents the combustion emission estimates for the engine at full load. Emission factors were obtained from submitted Statement of Exhaust Emissions and the submitted process fuel rate information.

Table 1: Combustion Emissions

	Emission Factors	Emissions		
Pollutant	g/bhp-hr	lbs/hr	lbs/yr**	tons/yr**
CO	1.19	0.54	107.31	0.05
NMHC+NOX	2.54	1.14	228.20	0.11
Diesel Particulate	0.111	0.05	9.98	0.00
		Total:	345.49	0.17

** 200 hours per year

AB 2588 Risk Evaluation

The method used to evaluate this project originated from the California Air Pollution Control Officers Association (CAPCOA) Air Toxics "Hot Spots" Program Facility Prioritization Guidelines, and consists of the emissions and potency procedure. The method examines the type of emission, the potency or toxicity of the compound, and the proximity of the emission source to receptors. This method uses those parameters to examine the carcinogenic and non-carcinogenic effects of emissions from which a "score" is calculated based on those calculated potential effects. Carcinogenic and non-carcinogenic exposure factors presented as "unit risk factors" or "acceptable exposure levels" incorporated into the evaluation were obtained from CAPCOA's Risk Assessment Guidelines. The scores for all applicable compounds are combined to give a total score (carcinogens and non carcinogens) for the facility. The higher of the two scores is used to prioritize the facility (See Table 2) as low, intermediate, or high priority.

Table 2: Facility Prioritization

Facility Score	**Facility Designation**
Total Score ≥ 10	High Priority and Concern
Total Score ≥ 1 and <10	Intermediate Priority and Concern
Total Score <1	Low Priority and Concern

Of the compounds examined through the prioritization procedure, diesel particulate is the only pollutant released in measurable amounts for which unit risk factors exist and whose potential impacts are possible to estimate. Potential health effects from this and other compounds examined either directly cause or may contribute to respiratory, eye, nerve, kidney, liver, reproductive, or immune disorders. The toxicological endpoints of those compounds are presented below in Table 3.

Table 3

Compound	**System or organ affected**
Diesel Particulate	Central or peripheral nervous system.

Using the estimated diesel emission rate, facility prioritization scores were calculated using the CAPCOA method. The unit risk factors are statistical probabilities and represent the upper bound or "worst case" probability. Using estimated emissions for 200 hours per year and receptor proximity of more than a 2,000 meters (R = 0.001) for the facility, the resulting prioritization score is 0.01 (carcinogenic effects), a Low Priority and Concern. Even if use reaches 1,000 hours in a single year, the risk will not exceed the Medium risk category. The air toxics information and prioritization calculations are presented in Table 4. Actual production and throughput will likely be considerably less than "worst case" values used in this calculation, and along with the expected short duration of the project, the air toxics generated from the addition of this project are not considered to be significant.

Table 4: Air Toxics Estimate

Compound	Unit Risk Factor	AEL Acute	AEL Chronic
Diesel Particulate	3.00E-04	-	-

Emissions and Potency Method

Carcinogens	Risk Factor	Emissions (lbs/yr)	Receptor Proximity	Norm Factor	Score
Diesel Particulate	3.00E-04	9.98	0.001	1700	0.01

Carcinogen Score Total: 0.01

Assumptions:
Receptor Proximity = (>2000m, R=0.001)
200 hours of engine operation per year

Applicable Rules

The project is subject to several rules (See Attachment 3). Though analysis by the LCAQMD of potential impact has not been performed per New Source Review, the use of experience from similar historically operated equipment is relied upon to conclude that causing or contributing to the violation of any applicable AAQS or nuisance condition will not occur. Presently, exceeds of relevant AAQS's are not believed to occur or likely to be contributed to in a measurable quantity. This conclusion can be tested by data collected locally if complaints are received and further mitigation may be required as a result. GPC is required to maintain the subject generator in compliance with all applicable rules of the LCAQMD. GPC is required to comply with NESHAP for RICE and NSPS.

Conclusion

After a review of the application, emissions potential, and LCAQMD Rules and Regulations, the Air Pollution Control Officer (APCO) has concluded that GPC can and will be issued an Authority to Construct, as conditioned (See Attachment 4). This review is based on information provided by GPC who is expected to use good management practices and judgment to avoid problems and/or violations. In the APCO's opinion, such issuance will be in compliance with LCAQMD Rules and Regulations.

MAP 1
8950 SOCRATES MINE ROAD, MIDDLETOWN, CA 95461

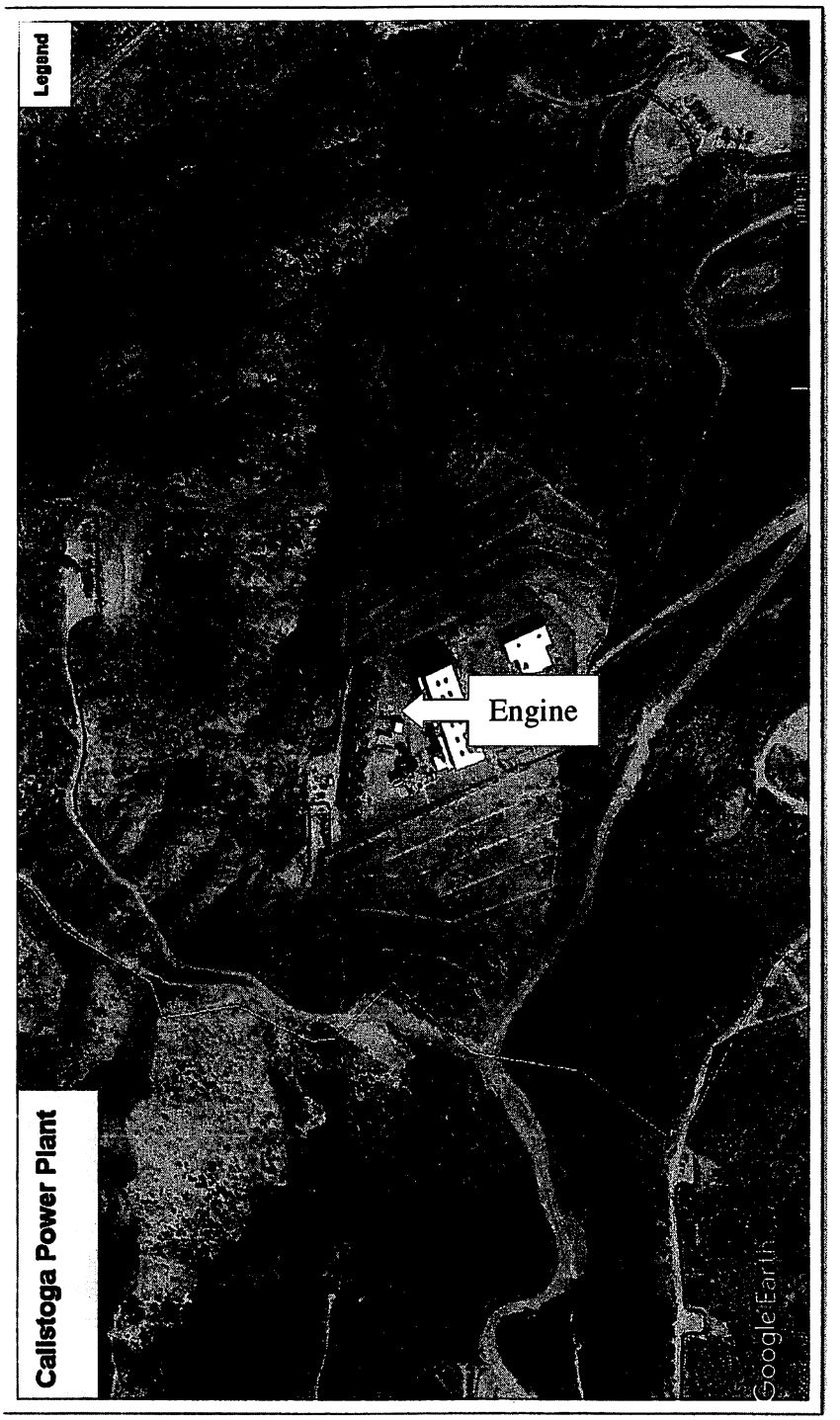

Figure 1. Google Earth View Showing Location of the Calistoga Power Plant

GPC20-020.docx

ATTACHMENT 1
APPLICATION FOR AN AUTHORITY TO CONSTRUCT

Lake County Air Quality Management District
2617 South Main Street
Lakeport, CA 95453
707-263-7000 / fax 263-0421

RECEIVED
MAR 09 2020
LAKE COUNTY AQMD

Douglas G. Gearhart
Air Pollution Control Officer
dougg@lcaqmd.net

App. # 2020-09
Alc 2020-05

Application For An Authority To Construct (& Attached List and Criteria)

Type of Application: ☐ New Facility ☑ Modification ☐ Existing Facility, Not Previously Permitted

Contact Name: Brian Berndt
Legal Owner: Geysers Power Company LLC
Mailing Address: 10350 Socrates Mine Road
Middletown, CA 95461

Facility Name: Calistoga Power Plant
Facility or Project Name: Emergency Diesel Engine
Permit #: _____ Category: II

Description of the Process/Purpose of the Facility:
The Emergency engine powers a Cooling Tower wet down pump

Equipment Location/Legal Description:
Adjacent to the cooling tower at the Calistoga Power Plant
(As shown on enclose Plot Plan)

Estimated Construction dates:
Start - August 2020 Completion - October 2020

Description of equipment by make, model, size and type:
Refer to Exhaust Stack and Building Dimensions Information attached

Diagram/Plot Plan of Facility Enclosed? ☑ Yes ☐ No

Additional List and Criteria Data Attached: Yes ☑ No ☐ (List and Criteria are attached)

If no give reason: _____

Operating Schedule: _____ Hours/Day _____ Days/Week _____ Weeks/Year Lat•N: 38.789694°

Production Rates: _____ /Hour, _____ /Day, 50 hours /Year (Specify Units) Long•W: -122.745236°

Amount, nature, and duration of emissions: Maintenance hours will not exceed 50 hours per year

Attach a Facility and Equipment Diagram, Specification Sheet(s), and Process Flow Diagram. Show the location and distance to adjacent residences, businesses, schools and hospitals.

Type and efficiency of air pollution control equipment: Tier 3 EPA Standards for Emergency Standby Diesel Engines and CARB Air Toxic Control Measures (ATCM)

Type and Estimated Quantity of fuel use: DFO #2 530 gal/yr (%S): 0.0015

Ten year projected expansion plans: _____

I have read and understand the Lake County Air Quality Management District's (District) List and Criteria for Authority to Construct Permits. I understand that I am responsible for any information listed herein or requested pursuant to this application. Based on information and belief formed after reasonable inquiry, the statements and information presented in this application and supplemental documentation are true, accurate, and complete. Applicant shall defend, indemnify and hold harmless the District and its agents, including consultants, officers and employees from any claim, action or proceeding against the District or its agents, including consultants, officers or employees to attack, set aside, void, or annul the approval of this application or adoption of the environmental document which accompanies it. This indemnification obligation shall include, but not be limited to, damages, costs, expenses, attorney's fees, or expert witness costs that may be asserted by any person or entity, including the applicant, arising out of or in connection with the approval of this application, including any claim for private attorney general fees claimed by or awarded to any party against the District, and shall also include the District's costs incurred in preparing the administrative record which are not paid by the petitioner. The District shall promptly notify the applicant of any claim, action or proceeding. Notwithstanding the foregoing, the District shall control the defense of any such claim, action or proceeding unless the settlement is approved by the applicant and that the applicant may act in its own stead as the real party in interest in any such claim, action or proceeding.

Signature of authorized representative of firm _____ Date: 3-3-2020

Name: Brian Berndt Title: EHS Manager Geysers Telephone: (707) 431-6266

FAX: (707) 431-6246

Ek 5/2018

ATTACHMENT 1
APPLICATION FOR AN AUTHORITY TO CONSTRUCT

CALPINE

GEYSERS POWER COMPANY, LLC
10350 Socrates Mine Road
Middletown, CA 95461

10350 SOCRATES MINE ROAD
MIDDLETOWN, CALIFORNIA 95461
707.431.6000

Letter GPC20-020

February 28, 2020

RECEIVED
MAR 0 2 2020
LAKE COUNTY AQMD

Douglas Gearhart
Air Pollution Control Officer
Lake County Air Quality Management District
2617 South Main Street
Lakeport, CA 95453

Dear Mr. Gearhart:

Subject: Authority To Construct Application For an Emergency Wet-Down Pump Engine at the Calistoga Power Plant

Enclosed is Geysers Power Company's application for an Authority to Construct permit for an emergency wet-down pump engine to be located at Calistoga Power Plant. Also attached is payment in the amount of $266.99 (Check No.1000115723) for the application filing and permit processing fees.

This proposed diesel engine will support operation of the Calistoga Power Plant cooling tower wetting / fire prevention system during loss of normal site power.

Please contact me at (707) 431-6266, if you need any additional information in support of this permit application.

Sincerely,

Brian J. Berndt
EHS Manager | Geysers

Enclosure & Attachments

cc: Eric VeerKamp, Compliance Project Manager
California Energy Commission (CEC),
1516 Ninth Street, MS-15
Sacramento, CA 95814-5512

ATTACHMENT 1
APPLICATION FOR AN AUTHORITY TO CONSTRUCT

Project Description

BACKGROUND:

Cooling tower wet down systems are common on wood cooling towers and are used to keep the normally wetted surfaces of the cooling tower structure wet when the cooling tower is not in operation to preserve the wood. Typically when a plant shuts down for an overhaul and the cooling tower is not circulating water, auxiliary or fire pumps are turned on to sprinkle areas of the cooling tower that can dry out, become damaged and more vulnerable to fire. These systems are not subject to NFPA or other codes. Impact spray nozzles (Rainbird™-style) are often used because they provide large coverage areas.

The desire for wetting is particularly true of cooling towers that use geothermal steam condensate for cooling. This is because, as hydrogen sulfide contained in the geothermal steam condensate is oxidized to soluble sulfur compounds, it becomes elemental sulfur for a period of time and can coat the wetted surfaces of the tower. Sulfur is a flammable solid that has a relatively low ignition temperature. Utilizing a wet down system has been very successful in preventing the ignition of cooling towers in the geothermal industry during outages.

Wet down systems are not to be confused with fire suppression systems. A wet down system prevents the ignition of vulnerable surfaces while fire suppression systems are designed to douse fires after ignition occurs. Typically, the water pumping capacity of a fire suppression system is very large and the coverage area is very small and focused (able to cover a couple of cells). Deluge systems that typically do not cover the fan or hot water decks and have limited coverage are judged not a good defense against wild land fires.

During the 2015 Valley Fire, four completely and one partially cooling towers were fire damaged at several Geysers power plants. Some of these cooling towers ignited while there was full cooling circulation water flow. Analysis of the burned cooling towers indicates that the center of the cooling towers burned in the non-wetted areas such as the fan deck and the area below the fans (plenum area). Field observations on cooling towers that did not burn showed indications that burning embers were deposited on the fan deck by the wild land fire as it passed the power plant.

Thus, there is a need to spray water to any areas where sulfur residue may be found, including increasing the spray coverage in the normally non-wetted areas such as the fan deck, hot water basin, and plenum areas for increased protection from wild land fire embers. Figure 1 shows a Google Earth view of the location of the power plant.

Project Description (continued)

PROPOSED PROJECT

An emergency wet down pump engine along with a separate water spray system is proposed to be added for use in the event of a plant evacuation due to the threat of an approaching wild land fire. Figure 2 illustrates the proposed flow diagram. The location of the emergency wet-down pump engine is shown adjacent to the cooling tower circulating water pit on the Unit 19 Power Plant Plot Plan (Figure 3).

The emergency wet down pump engine will be manually started prior to evacuation of the power plant due to an approaching wild land fire to provide continued wet down of the cooling tower for approximately 24 hours or longer depending on fuel consumed. Particulate and other exhaust emissions resulting from the operation of the diesel engine would be consistent with manufacturer's specifications for this Tier 3 engine. The exhaust emissions from the engine during emergency use would be virtually undetectable amidst the emissions resulting from an uncontrolled wild land fire.

TESTING AND MAINTENANCE:

Annual testing and maintenance operation hours are limited to no more than 50 hours. Test operation routines will vary through the year with more frequent test operations occurring during the dry season and less frequent test operation occurring during wet seasons. The hour meter indications will be logged as a result of routine inspections and at the start and completion of test and maintenance operations to ensure that annual hours of emergency use, and annual hours of test and maintenance operation are recorded.

APPLICABLE REGULATIONS

Title 17, California Code of Regulations section 93115 Airborne Toxic Control Measure for Stationary Compression Ignition (CI) Engines.

The Emergency Standby Wet-Down Pump Diesel Drive Engine meets the required criteria of § 93115.4 (29) for definition as an "Emergency Standby Engine" pursuant to (29) (A), (B), (C), (D), and (E).

Operation of the Emergency Standby Wet-Down Pump Diesel Drive Engine meets multiple criteria of § 93115.4 (30) for definition as "Emergency Use" pursuant to (30) (A), (B), and (D), and (F).

The Emergency Standby Wet Down Diesel Drive Engine meets the requirement of §93115.6(a)(3)(A)(1) Table 1: Emission Standards for New Stationary Emergency Standby Diesel-Fueled CI Engines.

ATTACHMENT 1
APPLICATION FOR AN AUTHORITY TO CONSTRUCT

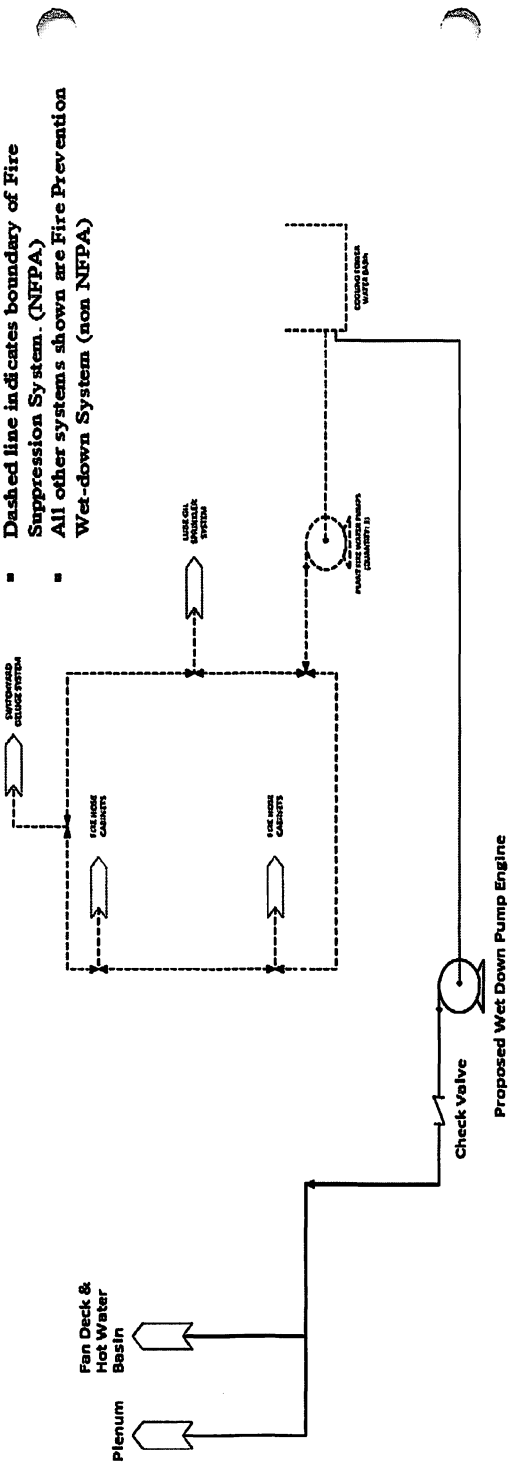

Figure 2
Flow Diagram Showing Emergency Wet Down Pump Engine

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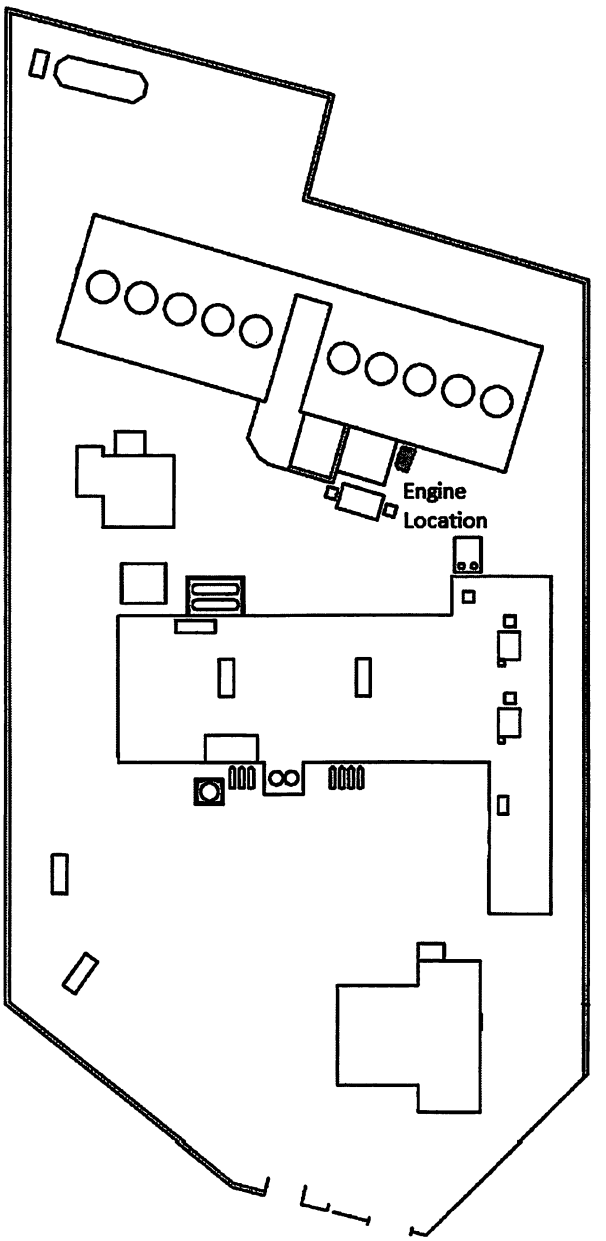
ATTACHMENT 1
APPLICATION FOR AN AUTHORITY TO CONSTRUCT

Figure 3
Calistoga Power Plant: Plot Plan Showing the Emergency Wet Down Pump Engine Location



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ATTACHMENT 1
APPLICATION FOR AN AUTHORITY TO CONSTRUCT

Exhaust Stack and Building Dimensions Information

DATA SUMMARY FOR EMERGENCY WET-DOWN PUMP ENGINE

Business Name Geysers Power Company LLC, Calistoga Power Plant

Engine Manufacturer Cummins

Engine Family+ LCEXL0409AAB Model CFP7E-F40

Serial Number Available Upon Delivery Year of Manufacture 2020

Rated Brake Horsepower Rating 204

Engine Emission Factors (g/bhp-hr)++

NOx 2.475 PM 0.111 NMHC 0.062 NMHC + NOx 2.537 CO 1.193 .

Control Equipment: [] Turbocharger [] Aftercooler [] Injection Timing Retard [] Catalyst []

Diesel Particulate Filter [X] Tier 3 Emission Compliance

Fuel Used: **[X] CARB Ultra Low Sulfur Diesel** [ ] Diesel [] Other _____

Operation Information:

Engine Operating Time for Testing and Maintenance: 50 hrs/yr

Typical load 100 % of maximum bhp rating

Total annual hours of operation 50 hours /yr (Testing and maintenance)

Fuel usage rate 10.6 gallons/hr

+ Manufacturers Specification Sheet for the diesel engine provided **(Attachment 1)**.

++ U.S. EPA Certificate of Conformity with the Clean Air Act provided **(Attachment 2)**.

EXHAUST STACK AND BUILDING DIMENSION DATA

Exhaust Stack Height Above Ground 11 ft*

Exhaust Stack Height Above Top of Building -37 ft , Exhaust stack will be below the top of the adjacent building (cooling tower.)

Exhaust Stack Diameter 0.333 ft

Exhaust Stack Flowrate 1,218 CFM

Exhaust Stack Direction [X] Up [ ] Down [ ] Side Raincap [X] Yes [ ] No

Exhaust Stack Gas Temperature 986.7 °F

Nearest Building Dimensions L: 385' W: 52' H: 48'

Distance from stack to nearest residence 8,800 ft**

Distance to nearest school grounds 2.97 mi***

* Exhaust Height may vary by +- 3 ft depending on final enclosure design.

** Distance given is from the engine stack to the nearest residence.

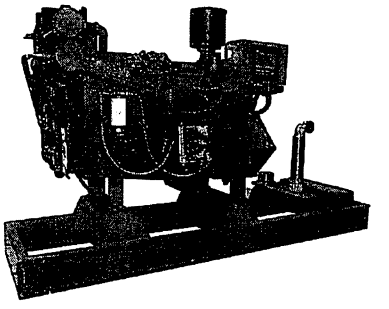
*** Distance given is from the engine stack to the Cobb Mountain Elementary School (15,700 ft).

Attachment 1
Manufacturer's Specification Sheets for the Engine

Specification sheet

Fire Pump Drive Engine

CFP7E-F40
CFP7EVS-F40



Description

Engine Series - Cummins QSB6.7
Exhaust Emissions - EPA Tier 3

When performance matters, we take notice. Our engines are an assurance of safety specifically designed to fit your needs. The Cummins CFP7E fire pump drive engine features a cast-iron parent bore block structurally designed to reduce noise and increase durability.

Features

Control System - The industry-leading, state-of-the-art Fire Pump Digital Panel (FPDP) provides total fire pump drive engine system integration and intuitive operation, including:

- Color touchscreen;
- Dual microprocessors for critical signal redundancy;
- Standard J1939 parameter and Cummins fault code display;
- Engine idling;
- Electronic Control Module (ECM) self-diagnosis; and
- Optional Modbus® protonode remote messaging capability.

Variable Speed Pressure Limiting Control (VSPLC) - Cummins' VSPLC-equipped fire pump drive engines are capable of maintaining a constant pump discharge pressure by controlling the engine speed down to 1200 RPM, while still maintaining T3 emissions certification. VSPLC fire pump drive engines provide design flexibility in the fire pump system for high-rise applications; compensate for varying discharge pressure; allow the system architect to apply a larger pump and/or a pump with a steeper curve; and significantly reduce water consumption during the weekly test.

Warranty and Service - Our models are backed by a comprehensive warranty and worldwide distributor network.

Certified Power - The CFP7E-F40 complies with NFPA 20 and is UL 1247-listed and FM 1333-approved. The CFP7EVS-F40 complies with NFPA 20 and is FM 1333-approved.

Ratings in HP (kW)

Operating Speed (RPM)	1470		1760		1900		2100		2360		2600	
CFP7E-F40	192	(143)	220	(164)	204	(152)	215	(160)	216	(161)	219	(163)
CFP7EVS-F40	192	(143)	220	(164)	204	(152)	215	(160)	216	(161)	219	(163)

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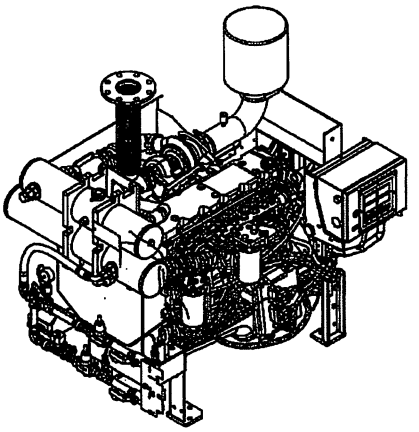

General Engine Data

Engine Family	Industrial
Engine Type	4 Cycle; In-Line, 6 Cylinder
Aspiration	Turbocharged and Charge-Air Cooled
Bore and Stroke	4.21 x 4.88 in. (107 x 124 mm)
Displacement	409 in^3 (6.7 L)
Rotation	Counterclockwise from flywheel end
Compression Ratio	17.2:1
Valves per Cylinder	Intake - 2 Exhaust - 2
Fuel System	Bosch Electronic Common Rail
Maximum Allowable Bending Moment @ Rear Face of Block	1000 lb.-ft. (1356 N-m)
Estimated Wet Weight*	TBD

*Weight includes engine, cooling loop, heat exchanger, dual Electronic Control Modules (ECMs), Fire Pump Digital Panel (FPDP), standard air cleaner, standard exhaust flex, and all fluids.

Equipment	Standard	Optional
Air Cleaner	Disposable; treated for high humidity, indoor service	Heavy-duty, two-stage with replaceable elements
Alternator	12V-DC, 95 amps; includes belt guard	24V-DC, 45 amps with belt guard
Cooling Loop (maximum pressure of 300 PSI)	3/4" diameter for fresh water; includes alarm sensors and FM-approval	Cu Ni construction available for sea water applications; approved loops up to 1 1/4"
Cooling System	Tube and shell type, 60 PSI with NPTF connections	Radiator[1]; sea water tube and shell
Engine Heater	120V-AC, 1500 watts	240V-AC, 1500 watts
Exhaust Protection	Metal guards on manifolds and turbocharger	N/A
Exhaust Flex Connection	Steel, flanged	Stainless steel flex, NPT
Flywheel Power Take-Off	Flywheel	Driveshaft system, stub shaft
Fuel Connections	Fire-resistant flexible supply and return lines	N/A
Fuel Filter	Primary and secondary	N/A
Governor, Speed	Constant speed, adjustable	VSPLC[2]
Fire Pump Digital Panel (FPDP)	7" color touchscreen; enclosure rated as Type 2/Type 4X; imperial and metric values	Optional 316SS construction; custom gauges with digital panel expansion module (DPEM)
Lube Oil Cooler	Engine-water-cooled, plate type	N/A
Lube Oil Filter	Full-flow with by-pass valve	N/A
Lube Oil Pump	Gear-driven	N/A
Manual Start Controls	On FPDP and/or contactors	N/A
Overspeed Controls	Electronic with reset and test on FPDP	N/A
Starter	12V-DC	24V-DC

[1] Not UL-listed and not FM-approved.

[2] FM-approved, but not UL-listed.

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Air Induction System

Maximum Temperature Rise Between Ambient Air and Engine Air Inlet	30.6 °F (17 °C)
Maximum Inlet Restriction with Dirty Filter	25 in. H_2O (635 mm H_2O)
Recommended Air Cleaner Element - (Standard)	Cummins Filtration AH1196
Recommended Air Cleaner Element - (Heavy Duty)	Optional: primary element AF26124; secondary element AF26125

Lubrication System

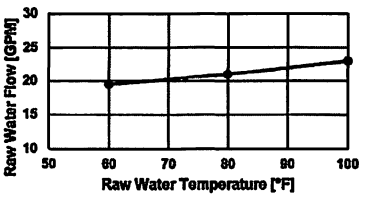
Oil Pressure Range at Rated	40-70 PSI (276-483 kPa)
Oil Capacity of Pan (High - Low)	15-13 qt. (16-14 L)
Total System Capacity	4 gal. (15.1 L)
Recommended Lube Oil Filter	Cummins Filtration LF3970

Cooling System*

Raw Water Working Pressure Range at Heat Exchanger	60 PSI (413 kPa) MAX
Recommended Minimum Water Supply Pipe Size to Heat Exchanger	.75 in. (19.05 mm)
Recommended Minimum Water Discharge Pipe Size From Heat Exchanger	1.00 in. (25.40 mm)
Coolant Water Capacity	3.75 gal. (14.2 L)
Standard Thermostat - Type	Modulating
Standard Thermostat - Range	180-199 °F (82-93 °C)
Minimum Raw Water Flow:	
- with Water Temperatures to 60 °F (16 °C)	19.5 GPM (1.23 L/sec)
- with Water Temperatures to 80 °F (27 °C)	21 GPM (1.32 L/sec)
- with Water Temperatures to 100 °F (38 °C)	23 GPM (1.45 L/sec)

* A jacket water heater is mandatory on this engine. The recommended heater wattage is 1500 down to 40 °F (4 °C)

CFP7E Cooling Loop



Exhaust System

Maximum Allowable Back Pressure by Complete Exhaust System	40.8 in. H_2O (10.2 kPa)
Exhaust Pipe Size Normally Acceptable	4 in. (102 mm)

Noise Emissions - The noise emission values are estimated sound pressure levels at 3.3 ft. (1 m).

Top	92.5 dBa
Right Side	94.3 dBa
Left Side	93.8 dBa
Front	92.1 dBa
Exhaust	114.2 dBa

Fuel Supply/Drain System

Operating Speed in RPM	1470		1780		1900		2100		2350		2600	
Fuel Rate - Gal/hr (L/hr)	9.9	(37.6)	11.4	(43.0)	10.6	(40.0)	11.3	(42.6)	11.6	(43.8)	12.3	(46.7)

Fuel Type	No. 2 diesel only
Minimum Supply Line Size	0.5 in. (12.70 mm)
Minimum Drain Line Size	0.375 in. (9.53 mm)
Maximum Fuel Height above C/L Fuel Pump	360 in. (9.1 m)
Recommended Fuel Filter - Primary	Cummins Filtration FF5612
Recommended Fuel Filter - Secondary	Cummins Filtration FS1212
Maximum Restriction @ Lift Pump-Inlet - With Clean Filter	5.0 in. Hg (127 mm Hg)
Maximum Restriction @ Lift Pump-Inlet - With Dirty Filter	10.0 in. Hg (254 mm Hg)
Maximum Return Line Restriction - Without Check Valves	5.9 in. Hg (150 mm Hg)
Minimum Fuel Tank Vent Capability	7.1 ft^3/hr (0.21 m^3/hr)
Maximum Fuel Temperature @ Lift Pump Inlet	158 °F (70 °C)

Starting and Electrical System

Min. Recommended Battery Capacity - Cold Soak at 0 °F (-18 °C) or Above	12V	24V
Engine Only - Cold Cranking Amperes	1400 CCA*	900 CCA*
Engine Only - Reserve Capacity	430 minutes*	430 minutes*

*Based on FM requirement for a minimum of 900 CCA and 430 Reserve Capacity Minutes

Battery Cable Size - Minimum of 2/0 AWG and Maximum Cable Length Not to Exceed 6 ft. (1.5 m)	12V	24V
Maximum Resistance of Starting Circuit	0.001 Ohms	0.002 Ohms
Typical Cranking Speed	120 RPM	120 RPM
Alternator (Standard), Internally Regulated	95 amps	70 amps

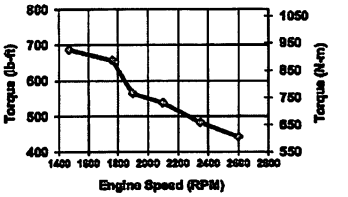
Operating Conditions

Operating Speed in RPM	1470		1780		1900		2100		2350		2600	
Output - BHP (kW)	192	(143)	220	(164)	204	(152)	215	(160)	216	(161)	219	(163)
Ventilation Air Required - CFM (litre/sec)	435	(205)	487	(230)	511	(241)	571	(270)	629	(297)	691.9	(327)
Exhaust Gas Flow - CFM (litre/sec)	1055	(498)	1219	(575)	1218	(575)	1363	(643)	1500	(708)	1650	(779)
Exhaust Gas Temperature - °F (°C)	988.7	(530)	988.7	(530)	988.7	(530)	988.7	(530)	988.7	(530)	988.7	(530)
Heat Rejection to Coolant - BTU/min. (kW)	3803	(67)	4186	(74)	3828	(68)	4263	(75)	4707	(83)	5178	(91)
Heat Rejection to Ambient - BTU/min. (kW)	1026	(18)	1091	(19)	1188	(21)	1282	(23)	1258	(22)	1231	(22)

Engine Performance Curve for CFP7E-F40 and CFP7EVS-F40

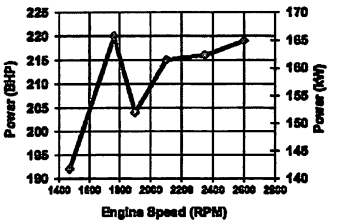
Torque Output

RPM	lb-ft	N-m
1470	685	929
1760	657	890
1980	564	765
2180	538	729
2350	483	655
2600	442	600



Horsepower Output

RPM	BHP	kW
1470	192	143
1760	220	164
1980	204	152
2180	215	160
2350	216	161
2600	219	163



All data is based on the engine operating with a fuel system, water pump, lubricating oil pump, air cleaner, and alternator. The fan, optional equipment, and driven components are not included. Data is based on operation at SAE standard J1394 conditions of 300 ft. (91.4 m) altitude, 29.61 in. (752 mm) Hg dry barometer, and 77 °F (25 °C) intake air temperature, using No.2 diesel fuel only.

Altitude above which output should be limited*:	300 ft. (91.4 m)
Correction factor per 1000 ft. (305 m) above altitude limit:	3%
Temperature above which output should be limited:	77 °F (25 °C)
Correction factor per 10 °F (11 °C) above temperature limit:	1% (2%)

* Above 5,000 feet, contact Cummins for derate information.

US EPA NSPS Tier 3 Emissions Compliance

Fuel Percentage of Sulfur	D2 Cycle Exhaust Emissions*									
	Grams per BHP - HR					Grams per kW - HR				
	NMHC	NO_x	NMHC + NO_x	CO	PM	NMHC	NO_x	NMHC + NO_x	CO	PM
15 PPM Diesel Fuel	0.092	2.475	2.537	1.185	0.111	0.093	3.319	3.402	1.600	0.149
300-4000 PPM Diesel Fuel	0.075	2.695	2.769	1.193	0.127	0.1	3.600	3.700	1.600	0.170

*The emissions values above are based on CARB approved calculations for converting EPA (500 ppm) fuel to CARB (15 ppm) fuel.

Refer to the engine data tag for the EPA Standard Engine Family.
No special options are needed to meet current regulation emissions for all fifty states.
Tests conducted using alternate test methods, instrumentation, fuel, or reference conditions can yield different results.

Diesel Fuel Specifications:
- Cetane Number: 40-48
- Reference: ASTM D975 No. 2-D

Reference Conditions:
- Air Inlet Temperature: 25 °C (77 °F)
- Fuel Inlet Temperature: 40 °C (104 °F)
- Barometric Pressure: 100 kPa (29.53 in Hg)
- Humidity: 107 g H_2O/kg (75 grains H_2O/lb) of dry air; required for NO_x correction
- Intake Restriction set to a maximum allowable limit for clean filter
- Exhaust Back Pressure set to maximum allowable limit

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Fire Pump Digital Panel (FPDP)

The Cummins FPDP is an integrated microprocessor-based control system that provides full digital technology with enhanced accuracy and built-in redundancy.

Reliable design - Designed and tested with isolated mounting to minimize vibration for longer life and durability, the Cummins FPDP proves reliable in harsh environments.

Advanced control methodology - The Cummins FPDP allows for Input/Output (I/O) expansion and remote monitoring capabilities, as well as automatic Electronic Control Module (ECM) switching for electronic engines.

Certified Quality - The Cummins FPDP is UL 1247-listed and FM 1333-approved.

Operator Panel Features

Operator/Display Panel
- 7" TFT LCD (thin-film-transistor liquid-crystal display) - color, 24-bit, 800x480 (WVGA).
- Auto, manual, start, stop, and fault reset.
- Assembly enclosure that meets Type 2 and Type 4X design requirements and is water, corrosion, fire, and impact-resistant.

Electronic Engine Communications - SAE J1939 protocol.
- Comprehensive full-authority engine (FAE) data: oil pressure and temperature; coolant temperature; and intake manifold pressure and temperature.
- Cummins fault code display.
- Sensor failure indication.
- Optional RS-485 serial - Modbus® RTU/Modbus® TCP/IP.

Variable Speed Pressure Limiting Control (VSPLC) Capabilities
- Display indicates when VSPLC is active.
- Pump discharge pressure display.
- Ability to run the engine at fixed speed from the FPDP at start-up for commissioning.

Other Control Features
- Digital Panel Expansion Module (DPEM) for additional analog/digital inputs and configurable dry relay contact output.
- Ability to idle at start-up for commissioning of electronic engines.
- Idle cool down for electronic engines.
- DC voltage.

Functional
- Configurable display units for temperature in degrees Fahrenheit or Celsius and pressure in PSI or kPa.
- Manual ECM selector switch on electronic engines.
- Ability to crank the fire pump drive engine from Battery A, Battery B, or both.
- Fixed engine speed adjustments in +/- 10 RPM increments.
- Overspeed shutdown.

Environmental
- Operating temperature - 4 to 158 °F (minus 20 to 70 °C).
- Storage temperature - minus 22 to 176 °F (minus 30 to 80 °C).
- Meets CISPR 11 Class B radiated emissions.
- Vibration: 7 G_{PEAK}; three-axis.

Electrical
- 8-30 VDC operating voltage.
- Reverse polarity protected.
- Spring cage terminal block interface.
- Built-in dual micro controllers for increased reliability.

Mechanical
- 1 3/8" pre-cut customer conduit knockout for easy field installation.
- Simplified internal design for efficiency and ease of customer connections.
- 16GA ASTM A366 material - 316 stainless steel optional.
- RAL3001 red powder coat finish.

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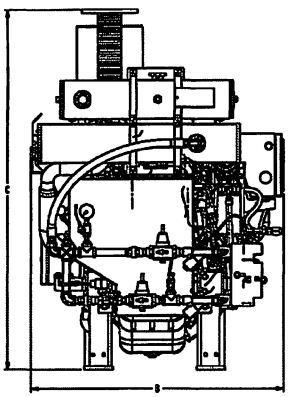
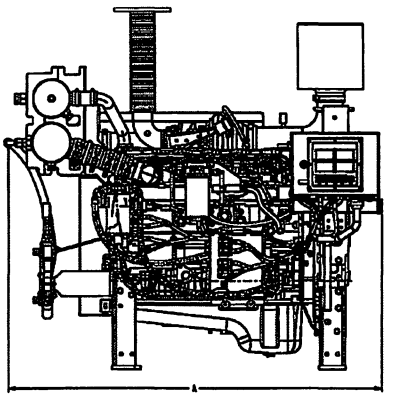
GPC20-020.docx





This outline drawing is for reference only.
Do not use for installation design.

	Dim "A" in. (mm)	Dim "B" in. (mm)	Dim "C" in. (mm)
CFP7E	60 (1514)	40 (1025)	57 (1457)

NOTE: Consult drawings or contact the factory for additional information.

This product has been manufactured under the controls established by a Bureau Veritas Certification approved management system that conforms with ISO 9001:2015.

NOTE: Codes or standards compliance may not be available with all model configurations - consult factory for availability. Specifications are subject to change without notice.

For more information, contact firepumpsales@cummins.com.

FM APPROVED

c UL us LISTED

Sales and Service

Cummins Sales and Service
875 Lawrence Drive
DePere, Wisconsin 54115
1 920 337 9750

power.cummins.com/fire-power

Doc. A042J595 Rev. 1

Attachment 2

U.S. EPA Certificate of Conformity with the Clean Air Act

	UNITED STATES ENVIRONMENTAL PROTECTION AGENCY 2020 MODEL YEAR CERTIFICATE OF CONFORMITY WITH THE CLEAN AIR ACT	OFFICE OF TRANSPORTATION AND AIR QUALITY ANN ARBOR, MICHIGAN 48105

Certificate Issued To: Cummins Inc. (U.S. Manufacturer or Importer) Certificate Number: LCKXL0409AAB-027	Effective Date: 07/08/2019 Expiration Date: 12/31/2020	Byron J. Bunker, Division Director Compliance Division	Issue Date: 07/08/2019 Revision Date: N/A

Model Year: 2020 Manufacturer Type: Original Engine Manufacturer Engine Family: LCEXL0409AAB	Mobile/Stationary Indicator: Stationary Emissions Power Category: 130<=kW<225 Fuel Type: Diesel After Treatment Device: No After Treatment Devices Installed Non-after Treatment Devices: No Non-After Treatment Devices Installed

Pursuant to Section 111 and Section 213 of the Clean Air Act (42 U.S.C. sections 7411 and 7547) and 40 CFR Part 60, and subject to the terms and conditions prescribed in those provisions, this certificate of conformity is hereby issued with respect to the test engines which have been found to conform to applicable requirements and which represent the following engines, by engine family, more fully described in the documentation required by 40 CFR Part 60 and produced in the stated model year.

This certificate of conformity covers only those new compression-ignition engines which conform in all material respects to the design specifications that applied to those engines described in the documentation required by 40 CFR Part 60 and which are produced during the model year stated on this certificate of the said manufacturer, as defined in 40 CFR Part 60.

It is a term of this certificate that the manufacturer shall consent to all inspections described in 40 CFR 1068, and authorized in a warrant or court order. Failure to comply with the requirements of such a warrant or court order may lead to revocation or suspension of this certificate for reasons specified in 40 CFR Part 60. It is also a term of this certificate that this certificate may be revoked or suspended or rendered void *ab initio* for other reasons specified in 40 CFR Part 60.

This certificate does not cover engines sold, offered for sale, or introduced, or delivered for introduction, into commerce in the U.S. prior to the effective date of the certificate

ATTACHMENT 2
LEGAL NOTICE

Lake County Publishing
Lake County Record-Bee
2150 S. Main St., PO Box 849
Lakeport, CA 95453
(707) 263-5636
advertising@record-bee.com

2110109

COUNTY OF LAKE, AIR QUALITY MANAGEMENT
2617 SOUTH MAIN ST.
LAKEPORT, CA 95453

Legal No. **0006470925**

Affidavit of Publication
STATE OF CALIFORNIA
County of Lake

I, Audrey Taylor, being first duly sworn, depose and say: That at and during all the dates and times herein mentioned I was, and now am the legal clerk of the Lake County Record-Bee, a newspaper published for the dissemination of local or telegraphic news and intelligence of a general character, having a bona fide subscription list of paying subscribers, and which is, and has been, established, printed and published at regular intervals, to-wit: Daily (except Sunday and Monday) in the City of Lakeport, County and State aforesaid, for more than one year preceding the date of the publication below mentioned, a newspaper of general circulation, as that term is defined by Section 6,000 et al, of the Government Code of the State of California, and is not and was not during any said times, a newspaper devoted to the interests or denomination, or for any members of such classes, professions, trades, callings, races or denominations.

That at, and during all of said dates and times herein mentioned, affiant had and now has knowledge and charge of all notes and advertisements appearing in said newspaper; that the notice of which the annexed is printed copy, was published each week in the regular and entire issue of one or more number of the said newspaper during the period and times of publication thereof, to-wit:

For 1 issue published therein on the following date, viz: 03/14/2020;

that said notice was published in said newspaper proper and not in a supplement; that said notice, as so published, was set in type not smaller than nonpareil, and was preceded with words printed in black face type not smaller than nonpareil, describing and expressing in general terms the purport and character of said notice, as fully appears from the exact copy of said notice, which is hereto annexed as aforesaid.

Executed this 14th day of March, 2020 at Lakeport, California. I hereby declare under penalty of perjury that I have read the foregoing and that it is true and correct.

Audrey Taylor, Legal Clerk

RB20716
LEGAL NOTICE
The Lake County Air Quality Management District has received an application from Geysers Power Company to install and operate an emergency backup diesel generator located at **8950 Socrates mine road, Middletown.** Pertinent documents are available for review at the District Office, 2617 South Main Street, Lakeport, CA 95453. Comments may be submitted by mail, by phone 263-7000, by fax 263-0421, or in person. In order to receive consideration, comments must be submitted within thirty (30) days of this notice.
3/14/2020

ATTACHMENT 3
APPLICABLE RULES

Provided below in table format are those existing LCAQMD rules most pertinent to the subject consideration from a pubic viewpoint with a statement on expected compliance. The designation "GPC" is used as the abbreviation for Geysers Power Company, LLC.

LCAQMD RULES (SECTIONS) CONSIDERED FOR THIS PERMIT:

Section #	Governs	Compliance Status
Section 400	Visible emissions	Compliance by GPC is expected, addressed by permit condition.
Section 410	Particulate matter emissions from combustion sources	Conformance by GPC is expected.
Section 411	Particulate matter emissions other sources	Compliance by GPC is expected.
Section 430	General - Nuisance	Continued conformance by GPC is anticipated.
Section 431	Burning - Non Agricultural	Conformance by GPC is expected.
Section 439	Fuel Storage	Conformance by GPC is expected.
Section 440	NSPS	Compliance by GPC is expected.
Section 450	NESHAPS	Compliance by GPC is expected.
Section 500	Maintenance reporting	Conformance by GPC is expected.
Section 510	Malfunction-Define emissions allowed	Conformance by GPC is expected.
Section 511	Defines operational time limits under Section 510	Cooperation and conformance by GPC is expected.
Section 520	Evasion	Cooperation and conformance by GPC is expected.
Section 530	Inspection/Emission Data	Cooperation and conformance access by GPC is expected.

ATTACHMENT 3
APPLICABLE RULES

Section #____	Governs_____	Compliance Status
Section 600	Permits-A/C	Conformance determined.
Section 602	Defines parameters for granting/denying A/C's to Sources undergoing New Source Review (NSR)	Conditional A/C permit issued.
Section 605	New Source Review (NSR)	Determination of compliance is the purpose of the herein contained analysis.
Section 606	Requires GPC to comply with all applicable local, state or federal air pollution rules or regulations	Conformance by GPC is expected.
Section 607	Requires CARB review and concurrence within thirty (30) days	Conformance is anticipated.
Section 610	Permits - P/O submittal requirements	Conformance by GPC is expected.
Section 620	Posting of permits	Conformance by GPC is expected.
Section 650	Source Emission Testing	Cooperation and conformance by GPC is expected.
Section 660	Permit fees	Cooperation and conformance by GPC is expected.
Section 661	Analysis fee	Cooperation and conformance by GPC is expected.
Section 671	Covers request for Plans Specifications	Cooperation and conformance by GPC is expected.
Section 700	Covers emergency conditions	Cooperation and compliance expected.
Table IV	Particulate Matter Emissions Standard for Process Units/Equipment	Conformance by GPC is expected.
Table V	Table of Standards	Conformance by GPC is expected.

ATTACHMENT 4
AUTHORITY TO CONSTRUCT PERMIT CONDITIONS

LAKE COUNTY AIR QUALITY MANAGEMENT DISTRICT

GEYSERS POWER COMPANY, LLC
DIESEL ENGINE POWERED EMERGENCY STANDBY COOLING TOWER WET-DOWN PUMP

A/C 2020-05

Equipment List: One (1) 2020 Cummins Model CFP7E-F40 QSB6.7, 204 HP, Tier 3 Diesel Engine, Engine Family: LCEXL0409AAB. S/N to be provided upon installation.

Location: 8950 Socrates Mine Road, Middletown, CA 95461.

Condition 1: Emissions

A. All equipment shall be regularly maintained in good working order pursuant to manufacturer's guidelines and operated in a manner to prevent or minimize air emissions. The Lake County Air Quality Management District (LCAQMD) shall be notified pursuant to Rule 510, regarding equipment breakdown.

B. The total ROG, PM-10, SOx or NOx emission rate for this facility shall not exceed 25 tons per 12-month period. This emission rate determination shall be consistent with the methodology and assumptions used to evaluate the application under which this permit was issued. Diesel particulate emissions shall not exceed 0.11 g/bhp-hr.

C. Visible emissions shall not exceed Ringelmann 0.5 (10% opacity) from the generator exhaust stack for more than three (3) minutes in any one (1) hour.

Condition 2: Administrative

A. This permit has been issued and is valid for a diesel engine powered emergency standby cooling tower wet-down pump for use when commercial line power is not available because of an emergency or line maintenance outage. Geysers Power Company, LLC (GPC) shall develop or utilize an engine maintenance plan with prescribed oil change frequency per manufacturer's specifications and/or the National Emission Standard for Hazardous Air Pollutants (NESHAP) for Reciprocating Internal Combustion Engines (RICE) and New Source Performance Standards (NSPS).

B. Testing and maintenance operations are allowed for up to 50 hours per 12-month period.

C. Diesel fuel utilized shall be California Low Sulfur Diesel containing less than 15ppmw sulfur.

D. GPC shall comply with the requirements of the Air Toxics "Hot Spots" Information and Assessment Act as specified in Sections 44300 - 44394 of the California Health and Safety Code as well as the Air Toxix Control Measure (ATCM) for Stationary Compression Ignition Engines.

E. Within 180 days of initial operation, GPC shall apply for a Permit to Operate, and prove compliance with these conditions.

Condition 3: Records and Reporting
A. GPC shall maintain a log (logs can be hard copy or digital) meeting the requirements of the NESHAP for RICE and NSPS which contains at a minimum, the facility name, location, engine information, fuel used, emission control equipment, maintenance conducted on the engine, and documentation that the engine meets the emission standards.

B. GPC shall maintain a log of usage that shall document hours of operation, and initial startup hours. GPC shall maintain a log of engine maintenance to show compliance with maintenance plan and NSPS requirements.

C. GPC shall document fuel usage by retention of fuel purchase records, accounting for all fuel used in the engine. Log entries shall be retained for a minimum of 36 months, with 24 months of the most recent entries retained on-site. The log shall meet all requirements of the ATCM for Stationary Compression Ignition Engines.

D. GPC shall maintain a non-resettable hour meter capable of displaying 9,999 hours.

E. GPC shall furnish an annual record of fuel use (gallons) and engine use (hours), breaking down hours of testing, maintenance, and emergency use, or in a format acceptable to the LCAQMD, within 15 days of request, and by October 31st of each year.

Condition 4: Modification
A. GPC shall apply for and receive an Authority to Construct permit prior to the addition of new equipment or modification of permitted equipment.

Condition 5: Monitoring
A. The herein permitted facility shall not cause a public nuisance nor make a measurable contribution to any Ambient Air Quality Standard exceed. Should this facility result in odor or health complaints, the LCAQMD may require under Sections 430 and 670, monitoring, testing, and mitigation by GPC to abate said condition.

Condition 6: Identification and Access
A. This permit shall be posted at the equipment site and be available for GPC's reference and LCAQMD staff inspection. If locks or unmanned gates are used to secure the project area, the LCAQMD or its representative will be given free access of entry for the purposes of monitoring or inspecting during normal business hours or periods of engine use.

CONDITION OF CERTIFICATION
AQ-3/AQ-4/ AQ-9/AQ-E3E/ AQ-SC2

Geysers Calistoga Plant (Unit 19) 81-AFC-01C
2020 Annual Compliance Report to the California Energy Commission
January 2020-December 2020

CALPINE

GEYSERS POWER COMPANY, LLC

10350 SOCRATES MINE ROAD
MIDDLETOWN, CALIFORNIA 95461
707.431.6000

GPC-20-036

April 27, 2020

Doug Gearhart, APCO
Lake County Air Quality
Management District
2617 Main South Main Street
Lakeport, CA 95453

Subject: Compliance Report – First Quarter 2020 for Calpine Geysers Power Company LLC Geothermal Power Plants Located in Lake County.

Dear Mr. Gearhart;

Enclosed is Geysers Power Company LLC's first quarter 2020 compliance report for the Calpine Geysers Power Company LLC geothermal power plants located in the Lake County Air Quality Management District. The attached report is submitted to the LCAQMD in accordance with:

- West Ford Flat (Unit 2) Power Plant P/O 90-050B Condition 3 (C)(2),
- Big Geysers (Unit 13) Power Plant (P/O) 80-001B Condition 3(b),
- [1]Quicksilver (Unit 16) Power Plant P/O 91-004 Condition 3 (b), and
- [1]Calistoga (Unit 19) Power Plant P/O 96-53D Condition 9.

If you have any questions about this report please call me at (707) 431-6266.

Sincerely,

Brian J. Berndt
EHS Manager, Geysers

cc: Eric VeerKamp, Compliance Project Manager
California Energy Commission,
1516 Ninth Street, MS-15
Sacramento, CA 95814-5512

Enclosure

[1] The enclosed report is copied to the California Energy Commission (CEC) compliance project manager as a separate enclosure containing the information required for CEC licensed facilities pursuant to: Unit 16 CEC Docket 79-AFC-05C, and Calistoga CEC Docket 81-AFC-01C.

FIRST QUARTER 2020 COMPLIANCE REPORT
TO THE CALIFORNIA ENERGY COMMISSION (CEC) COMPLIANCE PROJECT MANAGER
FOR GEYSERS POWER COMPANY LLC POWER PLANTS LOCATED IN LAKE COUNTY

CONTENTS

- ❑ Table 1: “Plant Operating Hours, Chemical Usage, and Source Tests”
- ❑ Table 2: “Plant Outages”
- ❑ Table 3: “Plant Incidents Requiring Corrective Action and Monitor Irregularities”
- ❑ Unit 16 (Quicksilver) Treated Gas Monitor Calibration and Maintenance Log Summary
- ❑ Calistoga Treated Gas Monitor Calibration and Maintenance Log Summary

FIRST QUARTER 2020 COMPLIANCE REPORT
TO THE CALIFORNIA ENERGY COMMISSION (CEC) COMPLIANCE PROJECT MANAGER
FOR GEYSERS POWER COMPANY LLC POWER PLANTS LOCATED IN LAKE COUNTY

Introduction:

This report provides data and information required for the period January 1, through March 31, 2020.

Table 1 lists required Plant monthly operating hours, iron use needed for secondary H_2S abatement in circulating water, source tests and H_2S emission results. These plants consistently operate below the permit limits for H_2S. There were no emission exceeds during this Quarter.

Table 1
PLANT OPERATING HOURS, CHEMICAL USAGE AND SOURCE TESTS

Quicksilver (Unit 16)	Monthly Hours of Operation (Hrs:Min)	Monthly Chemical Usage (Iron Gal.)	Source Test Date	Measured H_2S Emissions (Kg/Hr)*
January	482.0	0	01/08/20	1.2
February	0.0	0	plant OOS	
March	727.2	160	3/11/20	0.5
Total	1209.2	160		

*Unit 16 allowable H_2S emissions = 2.3 Kg/hr

Calistoga (Unit 19)	Monthly Hours of Operation (Hrs:Min)	Monthly Chemical Usage (Iron Gal.)	Source Test Date	Measured H_2S Emissions (lb/Hr)*
January	290.3			
February	696.0		02/05/20	2.9
March	742.7			
Total	1729.0	0		

*Calistoga allowable H_2S emissions = 8.0 lb/hr

Table 2 identifies when the plants were in an outage, the outage duration and reason for each outage. Outages occur when a plant trips off line, for planned overhauls, unscheduled Plant maintenance, scheduled transmission line maintenance and line relays. This table also identifies whether steam stacking occurred as a result of, or during the outage. Steam stacking is when a high volume of steam at high pressure is released directly to atmosphere through the plant vent until the steam field can be controlled to acceptable pressures. Steam field resource pressures have declined over the past 60 years. Interconnected steam lines can quickly shift steam to plants that remain in operation to accept rejected steam, as a result of this capability, steam stacking is no longer a typical occurrence that results from outages.

Table 2
PLANT OUTAGES

Unit	Event Beginning Date/Time	Event Ending Date/Time	Duration (Hrs)	Description	Steam Stacking Occurrence?
Quicksilver (Unit 16)	1/21/2020 2:00	3/1/2020 16:46	974.8	Transmission Induced	No
Calistoga (Unit 19)	1/1/2020 0:00	1/19/2020 21:10	453.2	Transmission Induced	No
Calistoga (Unit 19)	3/24/2020 16:10	3/24/2020 17:15	1.1	Low vacuum (CWP trip)	No

Items listed in Table 3 may include events identified under LCAQMD Rule 510 Malfunctions, upsets or breakdowns involving excess H_2S emissions when operator actions are required to maintain H_2S emissions to below permit limits. Monitor irregularities are listed separately in Table 3 to identify periods when the operator has identified or the technician has determined that the treated gas monitor is not functioning properly. Monitor irregularities are typically identified when the output of an analyzer drops to zero or suddenly spikes with no corresponding plant or abatement process changes. Operators identify suspected monitor trouble to the maintenance department when treated gas as measured with Draeger tube confirms the analyzer is not functioning properly.

Table 3
PLANT INCIDENTS REQUIRING CORRECTIVE ACTION AND MONITOR IRREGULARITIES

INCIDENTS REQUIRING CORRECTIVE ACTION:

Unit	Event Beginning Date/Time	Event Ending Date/Time	Duration (Mins)	Description	Cause	Action/Comments
Quicksilver (Unit 16)	None					
Calistoga (Unit 19)	None					

MONITOR IRREGULARITIES

Unit	Event Beginning Date/Time	Event Ending Date/Time	Duration (Mins)	Description	Cause	Action/Comments
Quicksilver (Unit 16)	None					
Calistoga (Unit 19)	None					

FIRST QUARTER 2020 COMPLIANCE REPORT
TO THE CALIFORNIA ENERGY COMMISSION (CEC) COMPLIANCE PROJECT MANAGER
FOR GEYSERS POWER COMPANY LLC POWER PLANTS LOCATED IN LAKE COUNTY

Quicksilver (Unit 16) Treated Gas Monitor Calibration and Maintenance Log Summary

Date	Work Description (Log Entry Type)	Start Time (Hr:min)	End Time (Hr:min)	Duration (Hrs.)	Input (ppm)	Response (ppm)	Found Diff %	As Left (ppm)	Left Diff %	Comments
1/6/2020	Weekly	8:30	9:15	0.75	10.3	9.2	-10.9%	9.2	-10.5%	
1/14/2020	Weekly	9:55	11:00	1.08	10.3	8.9	-13.6%	8.9	-13.5%	Cleaned optics
1/21/2020	Unit Outage	2:00								
1/21/2020	Weekly	8:40	9:20	0.67	10.3	10.1	-1.8%	10.1	-2.0%	Perform as found for **unit shut down**
2/28/2020	Weekly	11:11	14:08	2.95	10.3			9.4	-9.3%	3 Point check Input: 15.0 Results: 15.0. Performed as left for potential startup. **Unit shut down**
3/1/2020	Unit Return		16:45							
3/3/2020	Weekly	9:00	11:00	2.00	10.3	12.1	17.4%	10.6	2.8%	
3/10/2020	Weekly	8:50	9:50	1.00	10.3	9.5	-7.8%	10.6	2.9%	
3/16/2020	Weekly	9:30	10:45	1.25	10.3	9.6	-6.9%	9.6	-6.9%	
3/23/2020	Weekly	8:50	10:15	1.42	10.3	10.0	-3.3%	10.2	-0.9%	
3/30/2020	Weekly	14:25	15:00	0.58	10.3	10.2	-0.6%	10.2	-0.6%	
Quarter Total				**11.70**						

FIRST QUARTER 2020 COMPLIANCE REPORT
TO THE CALIFORNIA ENERGY COMMISSION (CEC) COMPLIANCE PROJECT MANAGER
FOR GEYSERS POWER COMPANY LLC POWER PLANTS LOCATED IN LAKE COUNTY

Calistoga Treated Gas Monitor Calibration and Maintenance Log Summary

Date	Work Description (Log Entry Type)	Start Time (Hr:min)	End Time (Hr:min)	Duration (Hrs.)	Input (ppm)	Response (ppm)	Found Diff %	As Left (ppm)	Left Diff %	Comments
1/6/2020	Weekly	0:00	0:00	0.00	10.2		-100.0%		-100.0%	Due to Kincade Fire, Cal not conducted. Plant off-line.
1/13/2020	Weekly/Quarterly	7:37	10:47	3.17	10.2	9.4	-8.3%	10.2	0.0%	Lakeville Line turned on after recovering from Kincade Fire. Qtrly 14.83 gas, 13.39 Response, LED & Man Cal, Weekly botle changed out.
1/21/2020	Weekly	7:26	8:39	1.22	10.2	11.2	9.8%	10.2	0.0%	1st Weekly cal back online. Tape changed, Man Cal conducted.
1/27/2020	Weekly	8:51	9:41	0.83	10.2	10.8	5.9%	10.2	0.0%	Manual & LED Cal conducted.
2/3/2020	Weekly	7:28	8:52	1.40	10.2	11.0	7.8%	10.2	0.0%	Manual & LED conducted.
2/10/2020	Weekly	8:30	9:29	0.98	10.2	11.4	11.8%	10.2	0.0%	Manual Cal conducted.
2/18/2020	Weekly	8:00	9:10	1.17	10.2	12.8	25.5%	10.2	0.0%	Manual Cal conducted.
2/24/2020	Weekly	7:55	9:08	1.22	10.2	12.5	22.5%	10.3	1.0%	Manual & LED Cal conducted.
3/2/2020	Weekly	7:47	9:10	1.38	10.2	9.6	-5.9%	10.3	1.0%	Manual & LED Cal conducted.
3/9/2020	Weekly	7:44	8:57	1.22	10.2	9.5	-6.9%	10.3	1.0%	Manual & LED Cal conducted.
3/16/2020	Weekly	8:36	9:32	0.93	10.2	11.5	12.7%	10.3	1.0%	Manual & LED Cal conducted.
3/23/2020	Weekly	9:44	10:48	1.07	10.2	9.2	-10.2%	10.2	0.4%	Manual Calibration conducted
3/30/2020	Weekly	7:07	8:24	1.28	10.2	13.4	31.4%	10.2	0.0%	Manual & LED Cal conducted.
Quarter Total				**15.87**						

CALPINE

GEYSERS POWER COMPANY, LLC

10350 SOCRATES MINE ROAD
MIDDLETOWN, CALIFORNIA 95461
707.431.6000

GPC-20-074

July 29, 2020

Doug Gearhart, APCO
Lake County Air Quality
Management District
2617 Main South Main Street
Lakeport, CA 95453

Subject: Compliance Report – Second Quarter 2020 for Calpine Geysers Power Company LLC Geothermal Power Plants Located in Lake County.

Dear Mr. Gearhart;

Enclosed is Geysers Power Company LLC's second quarter 2020 compliance report for the Calpine Geysers Power Company LLC geothermal power plants located in the Lake County Air Quality Management District. The attached report is submitted to the LCAQMD in accordance with:

- West Ford Flat (Unit 2) Power Plant P/O 90-050B Condition 3 (C)(2),
- Big Geysers (Unit 13) Power Plant (P/O) 80-001B Condition 3(b),
- [1]Quicksilver (Unit 16) Power Plant P/O 91-004 Condition 3 (b), and
- [1]Calistoga (Unit 19) Power Plant P/O 96-53D Condition 9.

If you have any questions about this report please call me at (707) 431-6266.

Sincerely,

Brian J. Berndt
EHS Manager, Geysers

cc: Eric VeerKamp, Compliance Project Manager
California Energy Commission,
1516 Ninth Street, MS-15
Sacramento, CA 95814-5512

Enclosure

[1] The enclosed report is copied to the California Energy Commission (CEC) compliance project manager as a separate enclosure containing the information required for CEC licensed facilities pursuant to: Unit 16 CEC Docket 79-AFC-05C, and Calistoga CEC Docket 81-AFC-01C.

SECOND QUARTER 2020 COMPLIANCE REPORT
TO THE CALIFORNIA ENERGY COMMISSION (CEC) COMPLIANCE PROJECT MANAGER FOR GEYSERS POWER COMPANY LLC POWER PLANTS LOCATED IN LAKE COUNTY

CONTENTS

- ❑ Table 1: “Plant Operating Hours, Chemical Usage, and Source Tests”
- ❑ Table 2: “Plant Outages”
- ❑ Table 3: “Plant Incidents Requiring Corrective Action and Monitor Irregularities”
- ❑ Unit 16 (Quicksilver) Treated Gas Monitor Calibration and Maintenance Log Summary
- ❑ Calistoga Treated Gas Monitor Calibration and Maintenance Log Summary

SECOND QUARTER 2020 COMPLIANCE REPORT
TO THE CALIFORNIA ENERGY COMMISSION (CEC) COMPLIANCE PROJECT MANAGER
FOR GEYSERS POWER COMPANY LLC POWER PLANTS LOCATED IN LAKE COUNTY

Introduction:

This report provides data and information required for the period April 1, through June 30, 2020.

Table 1 lists required Plant monthly operating hours, iron use needed for secondary H_2S abatement in circulating water, source tests and H_2S emission results. These plants consistently operate below the permit limits for H_2S. There were no emission exceeds during this Quarter.

Table 1
PLANT OPERATING HOURS, CHEMICAL USAGE AND SOURCE TESTS

Quicksilver (Unit 16)	Monthly Hours of Operation (Hrs:Min)	Monthly Chemical Usage (Iron Gal.)	Source Test Date	Measured H_2S Emissions (Kg/Hr)*
April	696.00	620	4/2/2020	1.0
May	742.70	0	5/6/2020	0.7
June	1729.04	0	6/17/2020	1.4
Total	3167.7	620		

*Unit 16 allowable H_2S emissions = 2.3 Kg/hr

Calistoga (Unit 19)	Monthly Hours of Operation (Hrs:Min)	Monthly Chemical Usage (Iron Gal.)	Source Test Date	Measured H_2S Emissions (lb/Hr)*
April	720.0	0		
May	744.0	0	5/13/2020	0.1
June	638.9	0		
Total	2102.9	0		

*Calistoga allowable H_2S emissions = 8.0 lb/hr

Table 2 identifies when the plants were in an outage, the outage duration and reason for each outage. Outages occur when a plant trips off line, for planned overhauls, unscheduled Plant maintenance, scheduled transmission line maintenance and line relays. This table also identifies whether steam stacking occurred as a result of, or during the outage. Steam stacking is when a high volume of steam at high pressure is released directly to atmosphere through the plant vent until the steam field can be controlled to acceptable pressures. Steam field resource pressures have declined over the past 60 years. Interconnected steam lines can quickly shift steam to plants that remain in operation to accept rejected steam, as a result of this capability, steam stacking is no longer a typical occurrence that results from outages.

Table 2
PLANT OUTAGES

Unit	Event Beginning Date/Time	Event Ending Date/Time	Duration (Hrs)	Description	Steam Stacking Occurrence?
Quicksilver (Unit 16)	6/25/2020 4:30	6/25/2020 20:50	16.3	Transmission Induced	No
Calistoga (Unit 19)	6/10/2020 7:17	6/11/2020 19:22	36.1	Circulating Water Pump Trouble	No
Calistoga (Unit 19)	6/23/2020 5:13	6/23/2020 17:01	11.8	Transmission Induced	No

Items listed in Table 3 may include events identified under LCAQMD Rule 510 Malfunctions, upsets or breakdowns involving excess H_2S emissions when operator actions are required to maintain H_2S emissions to below permit limits. Monitor irregularities are listed separately in Table 3 to identify periods when the operator has identified or the technician has determined that the treated gas monitor is not functioning properly. Monitor irregularities are typically identified when the output of an analyzer drops to zero or suddenly spikes with no corresponding plant or abatement process changes. Operators identify suspected monitor trouble to the maintenance department when treated gas as measured with Draeger tube confirms the analyzer is not functioning properly.

Table 3
PLANT INCIDENTS REQUIRING CORRECTIVE ACTION AND MONITOR IRREGULARITIES

INCIDENTS REQUIRING CORRECTIVE ACTION:

Unit	Event Beginning Date/Time	Event Ending Date/Time	Duration (Mins)	Description	Cause	Action/Comments
Quicksilver (Unit 16)	None					
Calistoga (Unit 19)	None					

MONITOR IRREGULARITIES

Unit	Event Beginning Date/Time	Event Ending Date/Time	Duration (Mins)	Description	Cause	Action/Comments
Quicksilver (Unit 16)	None					
Calistoga (Unit 19)	None					

SECOND QUARTER 2020 COMPLIANCE REPORT
TO THE CALIFORNIA ENERGY COMMISSION (CEC) COMPLIANCE PROJECT MANAGER
FOR GEYSERS POWER COMPANY LLC POWER PLANTS LOCATED IN LAKE COUNTY

Quicksilver (Unit 16) Treated Gas Monitor Calibration and Maintenance Log Summary

Date	Work Description (Log Entry Type)	Start Time (Hr:min)	End Time (Hr:min)	Duration (Hrs.)	Input (ppm)	Response (ppm)	As Found Diff %	As Left (ppm)	As Left Diff %	Comments
4/6/2020	Weekly	13:05	14:45	1.67	10.3	9.6	-6.8%	10.5	1.9%	Cleaned optics
4/13/2020	Weekly	12:40	14:12	1.53	10.3	10.6	2.7%	10.1	-2.1%	
4/20/2020	Weekly	12:15	13:45	1.50	10.3	10.0	-3.2%	10.7	3.5%	
4/25/2020	CCM OOS	13:30	16:40	3.17						CCM failed to full scale, 20ppm. Tech called in, work order #28477569
4/25/2020	Monitor Trouble	16:40	18:30	1.83	10.3			10.6	2.9%	Loss of millivolt signal to detector block, analyzer failed to dark tape mode. Replaced with portable analyzer ser#2003, returned to service at 18:30
4/27/2020	Weekly	8:35	9:55	1.33	10.3	9.9	-4.0%	9.9	-4.0%	
5/4/2020	Weekly	7:57	10:05	2.13	10.3	11.7	13.6%	10.3	0.0%	Ran manual Calibration
5/11/2020	Weekly	8:04	8:55	0.85	10.3	10.8	4.4%	10.8	4.9%	
5/18/2020	Weekly	13:30	14:50	1.33	10.3	10.4	1.1%	10.4	1.1%	
5/26/2020	Quarterly	10:00	14:00	4.00	10.3	10.9	5.3%	10.9	5.3%	Quarterly input: 15.0 results 15.9 cleaned optics and swapped sample pump
6/1/2020	Weekly	13:00	16:25	3.42	10.3	12.3	19.3%	10.3	0.0%	Ran manual Calibration
6/8/2020	Weekly	9:10	11:05	1.92	10.3	11.6	12.0%	10.3	0.0%	
6/17/2020	Weekly	8:55	9:50	0.92	10.3	11.3	9.6%	11.3	9.6%	
6/22/2020	Weekly	8:15	9:50	1.58	10.3	12.3	19.3%	10.3	0.0%	Ran manual calibration
Quarter Total				**27.18**						

SECOND QUARTER 2020 COMPLIANCE REPORT
TO THE CALIFORNIA ENERGY COMMISSION (CEC) COMPLIANCE PROJECT MANAGER
FOR GEYSERS POWER COMPANY LLC POWER PLANTS LOCATED IN LAKE COUNTY

Calistoga Treated Gas Monitor Calibration and Maintenance Log Summary

Date	Work Description (Log Entry Type)	Start Time (Hr:min)	End Time (Hr:min)	Duration (Hrs.)	Input (ppm)	Response (ppm)	As Found Diff %	As Left (ppm)	As Left Diff %	Comments
4/6/2020	Weekly	9:23	10:28	1.08	10.2	10.8	5.9%	10.2	0.0%	Manual & LED Cal conducted. Tape changed.
4/13/2020	Weekly	8:17	12:38	4.35	10.2	5.0	-51.0%	10.2	0.0%	Manual & LED Cal conducted.
4/20/2020	Weekly/Quarterly	13:26	16:13	2.78	10.2	10.3	1.0%	10.2	0.0%	Quarterly 14.83ppm gas, 11.71ppm Response, LED & Man Cal. Quarterly won't pass, but weekly will.
4/21/2020	Quarterly	8:51	10:21	1.50	10.2	10.4	2.0%	10.4	2.0%	Quarterly 15.28ppm gas, 15.17ppm Response
4/27/2020	Weekly	9:20	10:18	0.97	10.2	10.1	-1.0%	10.1	-1.0%	
5/4/2020	Weekly	10:38	11:25	0.78	10.2	10.7	4.9%	10.7	4.9%	
5/11/2020	Weekly	10:01	10:56	0.92	10.2	9.9	-2.9%	9.9	-2.9%	
5/18/2020	Weekly	7:33	8:10	0.62	10.2	10.0	-2.0%	10.0	-2.0%	
5/26/2020	Weekly	7:43	8:37	0.90	10.2	10.5	2.9%	10.5	2.9%	
6/1/2020	Weekly	8:09	9:04	0.92	10.2	10.7	4.9%	10.7	4.9%	
6/8/2020	Weekly	8:18	9:12	0.90	10.2	9.2	-9.8%	9.2	-9.8%	
6/16/2020	Weekly	13:04	13:55	0.85	10.2	10.8	5.9%	10.8	5.9%	
6/23/2020	Weekly	7:34	8:12	0.63	10.2	10.4	2.0%	10.4	2.0%	Tape changed.
6/30/2020	Weekly	7:16	8:13	0.95	10.2	10.4	2.0%	10.4	2.0%	
Quarter Total				**18.15**						

CALPINE

GEYSERS POWER COMPANY, LLC

10350 SOCRATES MINE ROAD
MIDDLETOWN, CALIFORNIA 95461
707.431.6000

GPC-20-085

October 28, 2020

Doug Gearhart, APCO
Lake County Air Quality
Management District
2617 Main South Main Street
Lakeport, CA 95453

Subject: Compliance Report – Third Quarter 2020 for Calpine Geysers Power Company LLC Geothermal Power Plants Located in Lake County.

Dear Mr. Gearhart;

Enclosed is Geysers Power Company LLC's third quarter 2020 compliance report for the Calpine Geysers Power Company LLC geothermal power plants located in the Lake County Air Quality Management District. The attached report is submitted to the LCAQMD in accordance with:

- West Ford Flat (Unit 2) Power Plant P/O 90-050B Condition 3 (C)(2),
- Big Geysers (Unit 13) Power Plant (P/O) 80-001B Condition 3(b),
- [1]Quicksilver (Unit 16) Power Plant P/O 91-004 Condition 3 (b), and
- [1]Calistoga (Unit 19) Power Plant P/O 96-53D Condition 9.

If you have any questions about this report please call me at (707) 431-6266.

Sincerely,

Dave Jackson

Dave Jackson
Regional Manager, Geysers EHS

cc: Eric VeerKamp, Compliance Project Manager
California Energy Commission,
1516 Ninth Street, MS-15
Sacramento, CA 95814-5512

Enclosure

[1] The enclosed report is copied to the California Energy Commission (CEC) compliance project manager as a separate enclosure containing the information required for CEC licensed facilities pursuant to: Unit 16 CEC Docket 79-AFC-05C, and Calistoga CEC Docket 81-AFC-01C.

THIRD QUARTER 2020 COMPLIANCE REPORT
TO THE CALIFORNIA ENERGY COMMISSION (CEC) COMPLIANCE PROJECT MANAGER FOR GEYSERS POWER COMPANY LLC POWER PLANTS LOCATED IN LAKE COUNTY

CONTENTS

- ❑ Table 1: “Plant Operating Hours, Chemical Usage, and Source Tests”
- ❑ Table 2: “Plant Outages”
- ❑ Table 3: “Plant Incidents Requiring Corrective Action and Monitor Irregularities”
- ❑ Unit 16 (Quicksilver) Treated Gas Monitor Calibration and Maintenance Log Summary
- ❑ Calistoga Treated Gas Monitor Calibration and Maintenance Log Summary

THIRD QUARTER 2020 COMPLIANCE REPORT
TO THE CALIFORNIA ENERGY COMMISSION (CEC) COMPLIANCE PROJECT MANAGER
FOR GEYSERS POWER COMPANY LLC POWER PLANTS LOCATED IN LAKE COUNTY

Introduction:

This report provides data and information required for the period April 1, through June 30, 2020.

Table 1 lists required Plant monthly operating hours, iron use needed for secondary H_2S abatement in circulating water, source tests and H_2S emission results. These plants consistently operate below the permit limits for H_2S. There were no emission exceeds during this Quarter.

Table 1
PLANT OPERATING HOURS, CHEMICAL USAGE AND SOURCE TESTS

Quicksilver (Unit 16)	Monthly Hours of Operation (Hrs:Min)	Monthly Chemical Usage (Iron Gal.)	Source Test Date	Measured H_2S Emissions (Kg/Hr)*
July	744.00	0	7/28/2020	0.6
August	731.43	0	8/11/2020	0.9
September	720.00	0	9/3/2020	0.5
Total	**2195.43**	**0**		

*Unit 16 allowable H_2S emissions = 2.3 Kg/hr

Calistoga (Unit 19)	Monthly Hours of Operation (Hrs:Min)	Monthly Chemical Usage (Iron Gal.)	Source Test Date	Measured H_2S Emissions (lb/Hr)*
July	744.0	0	7/30/2020	0.5
August	744.0	0		
September	720.0	0		
Total	**2208.0**	**0**		

*Calistoga allowable H_2S emissions = 8.0 lb/hr

Table 2 identifies when the plants were in an outage, the outage duration and reason for each outage. Outages occur when a plant trips off line, for planned overhauls, unscheduled Plant maintenance, scheduled transmission line maintenance and line relays. This table also identifies whether steam stacking occurred as a result of, or during the outage. Steam stacking is when a high volume of steam at high pressure is released directly to atmosphere through the plant vent until the steam field can be controlled to acceptable pressures. Steam field resource pressures have declined over the past 60 years. Interconnected steam lines can quickly shift steam to plants that remain in operation to accept rejected steam, as a result of this capability, steam stacking is no longer a typical occurrence that results from outages.

Table 2
PLANT OUTAGES

Unit	Event Beginning Date/Time	Event Ending Date/Time	Duration (Hrs)	Description	Steam Stacking Occurrence?
Quicksilver (Unit 16)	8/16/2020 5:15	8/16/2020 17:49	12.6	Transmission line relayed (lightning)	No
Calistoga (Unit 19)	9/24/2020 4:00	9/25/2020 0:09	20.2	Transmission induced/Stretford cleaning	No
Calistoga (Unit 19)	9/27/2020 22:48	10/1/2020 0:00	73.2	Transmission Induced	No

Items listed in Table 3 may include events identified under LCAQMD Rule 510 Malfunctions, upsets or breakdowns involving excess H_2S emissions when operator actions are required to maintain H_2S emissions to below permit limits. Monitor irregularities are listed separately in Table 3 to identify periods when the operator has identified or the technician has determined that the treated gas monitor is not functioning properly. Monitor irregularities are typically identified when the output of an analyzer drops to zero or suddenly spikes with no corresponding plant or abatement process changes. Operators identify suspected monitor trouble to the maintenance department when treated gas as measured with Draeger tube confirms the analyzer is not functioning properly.

Table 3
PLANT INCIDENTS REQUIRING CORRECTIVE ACTION AND MONITOR IRREGULARITIES

Unit	Event Beginning Date/Time	Event Ending Date/Time	Duration (Mins)	Description	Cause	Action/Comments
Quicksilver (Unit 16)	**None**					
Calistoga (Unit 19)	**None**					

MONITOR IRREGULARITIES

Unit	Event Beginning Date/Time	Event Ending Date/Time	Duration (Mins)	Description	Cause	Action/Comments
Quicksilver (Unit 16)	8/16/2020 17:49	8/19/2020 14:20	68:31	Analyzer failed	Bad resistor	Installed portable analyzer, serial #1503, no change. Analyzer taken out of service over night. Portable analyzer, serial #2003 placed in service. Dragers taken every 4 hours until repairs made. LCAQMD notified
Quicksilver (Unit 16)	9/12/2020 5:50	9/15/2020 12:55	79:05	Analyzer reading inaccurately	Defective sample flow meter	Changed humidifier, photocell & tape, no change. Analyzer taken out of service overnight. Determined sample flow meter defective. Changed flowmeter and calibrated analyzer. Drager readings were taken every 4 hours. LCAQMD notified
Quicksilver (Unit 16)	9/23/2020 7:49	9/23/2020 10:00	2:11	Analyzer reading inaccurately	Broken tape	Technician repaired broken tape, calibrated analyzer & placed back in service. LCAQMD notified
Calistoga (Unit 19)	**None**					

Quicksilver (Unit 16) Treated Gas Monitor Calibration and Maintenance Log Summary

Date	Work Description (Log Entry Type)	Start Time (Hr:min)	End Time (Hr:min)	Duration (Hrs.)	Input (ppm)	Response (ppm)	As Found Diff %	As Left (ppm)	As Left Diff %	Comments
7/1/2020	Weekly	10:40	14:50	4.17	10.3	11.7	13.3%	10.3	0.0%	Installed normal service analyzer serial # 2004. Performed 3 point check. Input:15.0 results 14.29
7/6/2020	Weekly	9:45	11:00	1.25	10.3	10.4	0.9%	10.4	0.9%	
7/13/2020	Weekly	13:30	15:05	1.58	10.3	9.3	-10.2%	10.1	-2.3%	
7/20/2020	Weekly	7:47	10:23	2.60	10.3	11.0	6.8%	11.0	6.8%	No calibration necessary
7/27/2020	Quarterly	8:55	10:45	1.83	10.3	10.0	-3.2%	10.0	-3.2%	Performed quarter check. Input:15.0 Results 15.44. Swapped sample pump
8/3/2020	Weekly	13:25	15:00	1.58	10.3	10.0	-3.1%	10.5	1.4%	
8/10/2020	Weekly	8:35	9:40	1.08	10.3	9.3	-9.4%	9.3	-9.4%	
8/17/2020	Monitor Trouble	8:00	16:45	8.75	10.3	9.8	-4.6%	9.8	-4.6%	Yokogawa not seeing output from analyzer. Installed portable analyzer serial#1503, no change. Analyzer left out of service over night
8/18/2020	Monitor Trouble	10:00	16:45	6.75	10.3	10.8	4.8%	NA	NA	Found bad resistor on Yokogawa. Portable analyzer not putting out consistent reading. Reinstalled normal service analyzer, still had loop problems. Left out of service over night
8/19/2020	Monitor Trouble	9:30	14:20	4.83	10.3	NA	NA	9.2	-10.8%	Portable analyzer in service serial # 2003 station ASI has bad loop card. ASI back in service
8/24/2020	Weekly	9:30	11:20	1.83	10.3	9.3	-9.9%	9.7	-5.9%	
8/31/2020	Weekly	13:30	15:10	1.67	10.3	10.4	0.9%	10.4	0.9%	

Quicksilver (Unit 16) Treated Gas Monitor Calibration and Maintenance Log Summary (cont.)

9/8/2020	Weekly	7:10	9:17	2.12	10.3	9.1	-12.1%	9.1	-12.1%	
9/9/2020	Monitor Trouble	8:35	15:00	6.42	10.3	NA	NA	9.9	-4.0%	Analyzer reading low, unable to calibrate. Switched to portable analyzer #1503
9/12/2020	Monitor Trouble	12:00	18:15	6.25	10.3	NA	NA	10.2	-1.4%	Analyzer spiking to full scale. Replaced detector block, LED, & tape. No change. Replaced with portable analyzer # 2003. Pressure tested sample line, no leaks. Changed gas cylinder LL125004
9/14/2020	Weekly	8:30	13:10	4.67	10.3	8.4	-19.0%	9.3	-10.1%	
9/14/2020	Monitor Trouble	15:50	17:05	1.25	NA	NA	NA	NA	NA	Analyzer reading zero. Changed humidifier, photocell & tape. No change. Unable to calibrate. Left out of service overnight.
9/15/2020	Monitor Trouble	7:20	12:55	5.58	10.3	NA	NA	10.5	1.2%	Analyzer still reading zero. Determined sample flow meter defective. Changed flowmeter & calibrated analyzer. Portable #2003 back in service
9/21/2020	Weekly	12:45	14:25	1.67	10.3	10.9	5.2%	10.9	5.2%	
9/23/2020	Monitor Trouble	8:15	10:00	1.75	10.3	NA	NA	10.5	1.5%	Analyzer flooded. Cleaned flowmeter and optics. Dried out all moisture in sample path, checked calibration and placed back in service
9/28/2020	Weekly	8:55	10:50	1.92	10.3	11.3	9.5%	9.4	-8.8%	Installed normal station analyzer #2004, performed 3-point check on new analyzer. Input 15.0 results 15.56
Quarter Total				**69.55**						

Calistoga Treated Gas Monitor Calibration and Maintenance Log Summary

Date	Work Description (Log Entry Type)	Start Time (Hr:min)	End Time (Hr:min)	Duration (Hrs.)	Input (ppm)	Response (ppm)	As Found Diff %	As Left (ppm)	As Left Diff %	Comments
7/6/2020	Weekly	8:44	9:38	0.90	10.2	9.9	-2.9%	9.9	-2.9%	
7/13/2020	Weekly/Quarterly	7:05	8:02	0.95	10.2	10.4	2.0%	10.4	2.0%	Quarterly 15.28ppm gas, 15.04ppm response
7/20/2020	Weekly	10:50	11:20	0.50	10.2	10.8	5.9%	10.8	5.9%	
7/27/2020	Weekly	7:48	8:48	1.00	10.2	10.1	-1.0%	10.1	-1.0%	
8/3/2020	Weekly	8:20	9:09	0.82	10.2	9.3	-8.8%	9.3	-8.8%	
8/10/2020	Weekly	7:02	7:57	0.92	10.2	10.7	4.9%	10.7	4.9%	
8/17/2020	Weekly	7:48	8:36	0.80	10.2	10.1	-1.0%	10.1	-1.0%	
8/25/2020	Weekly	9:11	9:43	0.53	10.2	10.0	-1.6%	9.6	-6.2%	
8/31/2020	Weekly	7:28	8:20	0.87	10.2	9.4	-7.8%	9.4	-7.8%	
9/8/2020	Weekly	7:13	8:14	1.02	10.2	10.3	1.0%	10.3	1.0%	
9/14/2020	Weekly	8:02	8:42	0.67	10.2	10.7	4.9%	10.4	2.0%	
9/21/2020	Weekly	7:57	9:15	1.30	10.2	10.8	5.9%	10.8	5.9%	
9/28/2020	Weekly	8:16	8:49	0.55	10.2	10.2	0.0%	10.2	0.0%	
Quarter Total				**10.82**						

CALPINE

GEYSERS POWER COMPANY, LLC

10350 SOCRATES MINE ROAD
MIDDLETOWN, CA 95161
707.431.6000

GPC-21-001

January 26, 2021

Doug Gearhart, APCO
Lake County Air Quality
Management District
2617 Main South Main Street
Lakeport, CA 95453

Subject: Compliance Report – Fourth Quarter 2020 for Calpine Geysers Power Company LLC Geothermal Power Plants Located in Lake County.

Dear Mr. Gearhart;

Enclosed is Geysers Power Company LLC's fourth quarter 2020 compliance report for the Calpine Geysers Power Company LLC geothermal power plants located in the Lake County Air Quality Management District. The attached report is submitted to the LCAQMD in accordance with:

- West Ford Flat (Unit 2) Power Plant P/O 90-050B Condition 3 (C)(2),
- Big Geysers (Unit 13) Power Plant (P/O) 80-001B Condition 3(b),
- [1]Quicksilver (Unit 16) Power Plant P/O 91-004 Condition 3 (b), and
- [1]Calistoga (Unit 19) Power Plant P/O 96-53D Condition 9.

If you have any questions about this report please call me at (707) 431-6858.

Sincerely,

Sharon Peterson
EHS Air Compliance Manager, Geysers

cc: Eric VeerKamp, Compliance Project Manager
California Energy Commission,
1516 Ninth Street, MS-15
Sacramento, CA 95814-5512

Enclosure

[1] The enclosed report is copied to the California Energy Commission (CEC) compliance project manager as a separate enclosure containing the information required for CEC licensed facilities pursuant to: Unit 16 CEC Docket 79-AFC-05C, and Calistoga CEC Docket 81-AFC-01C.

FOURTH 2020 COMPLIANCE REPORT
TO THE CALIFORNIA ENERGY COMMISSION (CEC) COMPLIANCE PROJECT MANAGER FOR GEYSERS POWER COMPANY LLC POWER PLANTS LOCATED IN LAKE COUNTY

CONTENTS

- ❑ Table 1: “Plant Operating Hours, Chemical Usage, and Source Tests”
- ❑ Table 2: “Plant Outages”
- ❑ Table 3: “Plant Incidents Requiring Corrective Action and Monitor Irregularities”
- ❑ Unit 16 (Quicksilver) Treated Gas Monitor Calibration and Maintenance Log Summary
- ❑ Calistoga Treated Gas Monitor Calibration and Maintenance Log Summary

FOURTH 2020 COMPLIANCE REPORT
TO THE CALIFORNIA ENERGY COMMISSION (CEC) COMPLIANCE PROJECT MANAGER
FOR GEYSERS POWER COMPANY LLC POWER PLANTS LOCATED IN LAKE COUNTY

Introduction:

This report provides data and information required for the period October 1, through December 31, 2020.

Table 1 lists required Plant monthly operating hours, iron use needed for secondary H_2S abatement in circulating water, source tests and H_2S emission results. These plants consistently operate below the permit limits for H_2S. There were no emission exceeds during this Quarter.

Table 1
PLANT OPERATING HOURS, CHEMICAL USAGE AND SOURCE TESTS

Quicksilver (Unit 16)	Monthly Hours of Operation (Hrs:Min)	Monthly Chemical Usage (Iron Gal.)	Source Test Date	Measured H_2S Emissions (Kg/Hr)*
October	667.7	0	10/8/20	0.5
November	705.2	600	11/12/20	2.2
December	744.0	600	12/9/20	0.4
Total	**2116.9**	**1200**		

*Unit 16 allowable H_2S emissions = 2.3 Kg/hr

Calistoga (Unit 19)	Monthly Hours of Operation (Hrs:Min)	Monthly Chemical Usage (Iron Gal.)	Source Test Date	Measured H_2S Emissions (lb/Hr)*
October	574.9	0	10/14/2020	0.8
November	720.0	0		
December	744.0	0		
Total	**2038.9**	**0**		

*Calistoga allowable H_2S emissions = 8.0 lb/hr

Table 2 identifies when the plants were in an outage, the outage duration and reason for each outage. Outages occur when a plant trips off line, for planned overhauls, unscheduled Plant maintenance, scheduled transmission line maintenance and line relays. This table also identifies whether steam stacking occurred as a result of, or during the outage. Steam stacking is when a high volume of steam at high pressure is released directly to atmosphere through the plant vent until the steam field can be controlled to acceptable pressures. Steam field resource pressures have declined over the past 60 years. Interconnected steam lines can quickly shift steam to plants that remain in operation to accept rejected steam, as a result of this capability, steam stacking is no longer a typical occurrence that results from outages.

Table 2
PLANT OUTAGES

Unit	Event Beginning Date/Time	Event Ending Date/Time	Duration (Hrs)	Description	Steam Stacking Occurrence?
Quicksilver (Unit 16)	10/25/2020 12:00	10/28/2020 16:20	76.3	Transmission induced (PSPS)	No
Quicksilver (Unit 16)	11/6/2020 4:30	11/6/2020 19:16	14.8	Transmission induced	No
Calistoga (Unit 19)	10/2/2020 11:26	10/6/2020 20:58	105.5	Transmission induced	No
Calistoga (Unit 19)	10/25/2020 12:00	10/27/2020 21:00	57.0	Transmission induced (PSPS)	No

Items listed in Table 3 may include events identified under LCAQMD Rule 510 Malfunctions, upsets or breakdowns involving excess H_2S emissions when operator actions are required to maintain H_2S emissions to below permit limits. Monitor irregularities are listed separately in Table 3 to identify periods when the operator has identified or the technician has determined that the treated gas monitor is not functioning properly. Monitor irregularities are typically identified when the output of an analyzer drops to zero or suddenly spikes with no corresponding plant or abatement process changes. Operators identify suspected monitor trouble to the maintenance department when treated gas as measured with Draeger tube confirms the analyzer is not functioning properly.

Table 3
PLANT INCIDENTS REQUIRING CORRECTIVE ACTION AND MONITOR IRREGULARITIES

INCIDENTS REQUIRING CORRECTIVE ACTION:

Unit	Event Beginning Date/Time	Event Ending Date/Time	Duration (Mins)	Description	Cause	Action/Comments
Quicksilver (Unit 16)	**None**					
Calistoga (Unit 19)	10/27/20 10:44 PM	10/27/20 10:48 PM	0:04	H2S increased to 15 ppm	Start up, parallel & loading of Unit	Kept load at 65 MW until system purged. LCAQMD notified

MONITOR IRREGULARITIES

Unit	Event Beginning Date/Time	Event Ending Date/Time	Duration (Mins)	Description	Cause	Action/Comments
Quicksilver (Unit 16)	12/19/2020 7:14	12/20/2020 10:15	27:01	CCM out of service. Loss of sample gas	Moisture trap in chiller frozen	Dragers used to verify compliance. Installed spare chiller and swapped sample pump. Put back in service. LCAQMD notified
Calistoga (Unit 19)	**None**					

Quicksilver (Unit 16) Treated Gas Monitor Calibration and Maintenance Log Summary

Date	Work Description (Log Entry Type)	Start Time (Hr:min)	End Time (Hr:min)	Duration (Hrs.)	Input (ppm)	Response (ppm)	As Found Diff %	As Left (ppm)	As Left Diff %	Comments
10/5/2020	Weekly Calibration	7:50	8:40	0.83	10.3	9.4	-9.1%	9.4	-9.6%	
10/12/2020	Weekly Calibration	9:15	11:05	1.83	10.3	9.0	-12.6%	9.0	-12.7%	
10/19/2020	Weekly Calibration	9:15	10:55	1.67	10.3	10.7	3.5%	10.4	0.8%	
10/29/2020	Weekly Calibration	11:05	12:15	1.17	10.3	8.6	-16.5%	8.6	-16.5%	
11/3/2020	Weekly Calibration	8:30	11:15	2.75	10.3	8.6	-16.4%	10.3	0.0%	
11/10/2020	Weekly Calibration	8:35	9:55	1.33	10.3	9.3	-10.3%	10.3	-0.4%	
11/17/2020	Quarterly Calibration	9:00	11:00	2.00	10.3	10.8	4.2%	10.8	4.2%	Quarterly Input: 15.0 Results 15.89. Swapped sample pump and performed vacuum check
11/23/2020	Weekly Calibration	14:35	15:35	1.00	10.4	11.2	8.5%	11.1	6.9%	
12/1/2020	Weekly Calibration	8:20	9:45	1.42	10.3	9.2	-11.0%	9.3	NA	
12/7/2020	Weekly Calibration	13:35	14:50	1.25	10.3	9.9	-4.2%	10.5	1.7%	

Quicksilver (Unit 16) Treated Gas Monitor Calibration and Maintenance Log Summary (cont.)

12/14/2020	Weekly Calibration	9:35	11:20	1.75	10.3	9.4	-9.4%	9.8	-5.1%	
12/20/2020	Monitor Trouble	8:05	10:15	2.17	NA	NA	NA	NA	NA	Moisture trap in chiller frozen, installed spare chiller and swapped sample pump. Put back in service no CAL needed
12/21/2020	Weekly Calibration	13:25	15:25	2.00	10.3	9.7	-6.0%	9.4	-9.0%	
12/28/2020	Weekly Calibration	11:40	12:35	0.92	10.3	9.3	-9.7%	9.3	-9.7%	
			Quarter Total	**22.08**						

FOURTH 2020 COMPLIANCE REPORT
TO THE CALIFORNIA ENERGY COMMISSION (CEC) COMPLIANCE PROJECT MANAGER
FOR GEYSERS POWER COMPANY LLC POWER PLANTS LOCATED IN LAKE COUNTY

Calistoga Treated Gas Monitor Calibration and Maintenance Log Summary

Date	Work Description (Log Entry Type)	Start Time (Hr:min)	End Time (Hr:min)	Duration (Hrs.)	Input (ppm)	Response (ppm)	As Found Diff %	As Left (ppm)	As Left Diff %	Comments
10/5/2020	Weekly Calibration	7:23	14:34	7.18	10.2	18.8	84.3%	10.4	1.9%	High H2S reading, potential card failure. Portable monitor installed while primary sent out for repair
10/6/2020	Monitor Trouble	8:25	10:59	2.57	10.2	13.8	35.3%	10.4	2.0%	Plugged flowmeter. Manual calibration conducted for portable monitor. Flowmeter replaced
10/12/2020	Weekly Calibration	7:49	9:18	1.48	10.2	11.2	9.8%	10.4	2.0%	Manual calibration conducted for portable monitor
10/19/2020	Quarterly Calibration	7:28	8:09	0.68	10.2	10.3	1.0%	10.3	1.0%	Quarterly 15.28ppm gas,15.42ppm response. Weekly & Quarterly passed w/out needing calibration
10/26/2020	Weekly Calibration	7:38	8:19	0.68	10.2	10.4	2.0%	10.4	2.0%	
11/3/2020	Weekly Calibration	7:33	8:34	1.02	10.2	10.0	-2.0%	10.0	-2.0%	
11/9/2020	Weekly Calibration	7:38	8:06	0.47	10.2	9.7	-4.9%	9.7	-4.9%	
11/17/2020	Weekly Calibration	8:11	9:17	1.10	10.2	9.7	-4.9%	9.7	-4.9%	
11/23/2020	Weekly Calibration	9:29	9:56	0.45	10.2	10.3	1.0%	10.3	1.0%	
11/30/2020	Weekly Calibration	7:47	8:45	0.97	10.2	9.8	-3.9%	9.8	-3.9%	

Calistoga (Unit 19) Treated Gas Monitor Calibration and Maintenance Log Summary (cont.)

12/7/2020	Weekly Calibration	7:23	8:02	0.65	10.2	10.0	-1.7%	10.0	-1.5%	
12/15/2020	Weekly Calibration	8:57	11:05	2.13	10.2	10.0	-2.0%	10.2	0.0%	
12/21/2020	Weekly Calibration	13:53	14:32	0.65	10.2	10.5	2.9%	10.5	2.9%	
12/28/2020	Weekly Calibration	8:30	9:30	1.00	10.2	11.4	11.5%	10.1	-0.7%	Manual calibration performed.
Quarter Total				**21.03**						

CONDITION OF CERTIFICATION
AQ-8

Geysers Calistoga Plant (Unit 19) 81-AFC-01C
2020 Annual Compliance Report to the California Energy Commission
January 2020-December 2020

Alpha Analytical Laboratories, Inc. email: clientservices@alpha-labs.com
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14 August 2020

Calpine Corp
Attn: Beth Kershaw
11756 Socrates Mine Rd.
Middletown, CA 95461
RE: Annual Injection Sampling
Work Order: 20G3448

Enclosed are the results of analyses for samples received by the laboratory on 07/29/20 15:15. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Jeanette Poplin

Jeanette L. Poplin For Sheri L. Speaks
Project Manager

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Calpine Corp	Project Manager: Beth Kershaw	
11756 Socrates Mine Rd.	Project: Annual Injection Sampling	Reported:
Middletown, CA 95461	Project Number: [none]	08/14/20 10:40

Bay Area: 262 Rickenbacker Circle | Livermore, CA 94551 | T: 925-828-6226 | F: 925-828-6309 | ELAP# 2728
Central Valley: 9090 Union Park Way Suite 113 | Elk Grove, CA 95624 | T: 916-686-5190 | F: 916-686-5192 | ELAP# 2922
North Bay: 110 Liberty Street | Petaluma, CA 94952 | T: 707-769-3128 | F: 707-769-8093 | ELAP# 2303
San Diego: 2722 Loker Avenue West Suite A | Carlsbad, CA 92010 | T: 760-930-2555 | F: 760-930-2510 | ELAP# 3055

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
U13	20G3448-01	Water	07/29/20 09:50	07/29/20 15:15
U16	20G3448-02	Water	07/29/20 09:06	07/29/20 15:15
U19	20G3448-03	Water	07/29/20 10:00	07/29/20 15:15

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Calpine Corp	Project Manager: Beth Kershaw	
11756 Socrates Mine Rd.	Project: Annual Injection Sampling	Reported:
Middletown, CA 95461	Project Number: [none]	08/14/20 10:40

	Result		Reporting Limit	Dilution	Batch	Prepared	Analyzed	ELAP#	Method	Note
U13 (20G3448-01)		**Sample Type: Water**				**Sampled: 07/29/20 09:50**				
Metals by EPA 200 Series Methods										
Mercury	**4.7**	**ug/L**	**0.20**	1	AH03281	08/05/20 09:34	08/05/20 13:27	1551	EPA 245.1	
Metals by EPA Method 200.8 ICP/MS										**P-02**
Antimony	ND	ug/L	2.0	4	AG04591	07/31/20 14:30	08/04/20 05:23	1551	EPA 200.8	R-01
Arsenic	**670**	**ug/L**	**500**	1000	AG04591	07/31/20 14:30	08/06/20 19:14	1551	EPA 200.8	
Barium	**2.7**	**ug/L**	**2.0**	4	AG04591	07/31/20 14:30	08/04/20 05:23	1551	EPA 200.8	
Beryllium	ND	ug/L	0.40	4	AG04591	07/31/20 14:30	08/04/20 05:23	1551	EPA 200.8	R-01
Boron	**130000**	**ug/L**	**50000**	1000	AG04591	07/31/20 14:30	08/06/20 19:14	1551	EPA 200.8	
Cadmium	ND	ug/L	0.40	4	AG04591	07/31/20 14:30	08/04/20 05:23	1551	EPA 200.8	R-01
Chromium	ND	ug/L	2.0	4	AG04591	07/31/20 14:30	08/04/20 05:23	1551	EPA 200.8	R-01
Cobalt	ND	ug/L	0.40	4	AG04591	07/31/20 14:30	08/04/20 05:23	1551	EPA 200.8	R-01
Copper	**3.5**	**ug/L**	**2.0**	4	AG04591	07/31/20 14:30	08/04/20 05:23	1551	EPA 200.8	
Lead	ND	ug/L	1.0	4	AG04591	07/31/20 14:30	08/04/20 05:23	1551	EPA 200.8	R-01
Molybdenum	**6.5**	**ug/L**	**1.0**	4	AG04591	07/31/20 14:30	08/04/20 05:23	1551	EPA 200.8	
Nickel	**2.0**	**ug/L**	**2.0**	4	AG04591	07/31/20 14:30	08/04/20 05:23	1551	EPA 200.8	
Selenium	ND	ug/L	8.0	4	AG04591	07/31/20 14:30	08/04/20 05:23	1551	EPA 200.8	R-01
Silver	ND	ug/L	0.40	4	AG04591	07/31/20 14:30	08/04/20 05:23	1551	EPA 200.8	R-01
Thallium	ND	ug/L	0.40	4	AG04591	07/31/20 14:30	08/04/20 05:23	1551	EPA 200.8	R-01
Vanadium	**1600**	**ug/L**	**10**	10	AG04591	07/31/20 14:30	08/04/20 00:20	1551	EPA 200.8	
Zinc	ND	ug/L	20	4	AG04591	07/31/20 14:30	08/04/20 05:23	1551	EPA 200.8	R-01
Conventional Chemistry Parameters by APHA/EPA Methods										
Ammonia as NH3	**260**	**mg/L**	**0.50**	1	AH03408	08/07/20 10:00	08/07/20 16:00	1551	SM4500NH3B,C	
pH	**6.34**	**pH Units**	**1.68**	1	AG04682	07/30/20 16:00	07/30/20 17:00	1551	SM4500-H+ B	T-14
Phosphate, Total	**0.66**	**mg/L**	**0.10**	1	AH03244	08/04/20 16:15	08/07/20 13:25	1551	SM4500-P E	
Total Dissolved Solids	**2400**	**mg/L**	**10**	1	AH03205	08/04/20 03:45	08/13/20 08:59	1551	SM2540C	
Bicarbonate Alkalinity as CaCO3	**15**	**mg/L**	**5.0**	1	AH03376	08/10/20 13:00	08/10/20 15:50	1551	SM2320B	
Carbonate Alkalinity as CaCO3	ND	mg/L	5.0	1	AH03376	08/10/20 13:00	08/10/20 15:50	1551	SM2320B	
Hydroxide Alkalinity as CaCO3	ND	mg/L	5.0	1	AH03376	08/10/20 13:00	08/10/20 15:50	1551	SM2320B	
Total Alkalinity as CaCO3	**15**	**mg/L**	**5.0**	1	AH03376	08/10/20 13:00	08/10/20 15:50	1551	SM2320B	

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Calpine Corp	Project Manager: Beth Kershaw	
11756 Socrates Mine Rd.	Project: Annual Injection Sampling	Reported:
Middletown, CA 95461	Project Number: [none]	08/14/20 10:40

	Result	Reporting Limit	Dilution	Batch	Prepared	Analyzed	ELAP#	Method	Note
U13 (20G3448-01)		**Sample Type: Water**			**Sampled: 07/29/20 09:50**				
Anions by EPA Method 300.0									
Nitrate as NO3	ND mg/L	2.0	2	AG04625	07/31/20 01:26	07/31/20 01:26	1551	EPA 300.0	R-01
Nitrite as NO2	ND mg/L	2.0	2	AG04625	07/31/20 01:26	07/31/20 01:26	1551	EPA 300.0	R-01
Sulfate as SO4	**1500 mg/L**	**25**	50	AG04625	08/01/20 01:45	08/01/20 01:45	1551	EPA 300.0	
U16 (20G3448-02)		**Sample Type: Water**			**Sampled: 07/29/20 09:06**				
Metals by EPA 200 Series Methods									
Mercury	**0.43 ug/L**	**0.20**	1	AH03281	08/05/20 09:34	08/05/20 13:29	1551	EPA 245.1	
Metals by EPA Method 200.8 ICP/MS									**P-02**
Antimony	ND ug/L	2.0	4	AG04591	07/31/20 14:30	08/04/20 05:31	1551	EPA 200.8	R-01
Arsenic	**260 ug/L**	**5.0**	10	AG04591	07/31/20 14:30	08/04/20 00:29	1551	EPA 200.8	
Barium	**2.0 ug/L**	**2.0**	4	AG04591	07/31/20 14:30	08/04/20 05:31	1551	EPA 200.8	
Beryllium	ND ug/L	0.40	4	AG04591	07/31/20 14:30	08/04/20 05:31	1551	EPA 200.8	R-01
Boron	**150000 ug/L**	**50000**	1000	AG04591	07/31/20 14:30	08/06/20 19:22	1551	EPA 200.8	
Cadmium	ND ug/L	0.40	4	AG04591	07/31/20 14:30	08/04/20 05:31	1551	EPA 200.8	R-01
Chromium	ND ug/L	2.0	4	AG04591	07/31/20 14:30	08/04/20 05:31	1551	EPA 200.8	R-01
Cobalt	ND ug/L	0.40	4	AG04591	07/31/20 14:30	08/04/20 05:31	1551	EPA 200.8	R-01
Copper	ND ug/L	2.0	4	AG04591	07/31/20 14:30	08/04/20 05:31	1551	EPA 200.8	R-01
Lead	ND ug/L	1.0	4	AG04591	07/31/20 14:30	08/04/20 05:31	1551	EPA 200.8	R-01
Molybdenum	ND ug/L	1.0	4	AG04591	07/31/20 14:30	08/04/20 05:31	1551	EPA 200.8	R-01
Nickel	ND ug/L	2.0	4	AG04591	07/31/20 14:30	08/04/20 05:31	1551	EPA 200.8	R-01
Selenium	ND ug/L	8.0	4	AG04591	07/31/20 14:30	08/04/20 05:31	1551	EPA 200.8	R-01
Silver	ND ug/L	0.40	4	AG04591	07/31/20 14:30	08/04/20 05:31	1551	EPA 200.8	R-01
Thallium	ND ug/L	0.40	4	AG04591	07/31/20 14:30	08/04/20 05:31	1551	EPA 200.8	R-01
Vanadium	**6.1 ug/L**	**4.0**	4	AG04591	07/31/20 14:30	08/04/20 05:31	1551	EPA 200.8	
Zinc	ND ug/L	20	4	AG04591	07/31/20 14:30	08/04/20 05:31	1551	EPA 200.8	R-01

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Calpine Corp	Project Manager: Beth Kershaw	
11756 Socrates Mine Rd.	Project: Annual Injection Sampling	Reported:
Middletown, CA 95461	Project Number: [none]	08/14/20 10:40

	Result		Reporting Limit	Dilution	Batch	Prepared	Analyzed	ELAP#	Method	Note
U16 (20G3448-02)			**Sample Type: Water**			**Sampled: 07/29/20 09:06**				
Conventional Chemistry Parameters by APHA/EPA Methods										
Ammonia as NH3	**190**	**mg/L**	**0.50**	1	AH03348	08/06/20 10:30	08/06/20 16:30	1551	SM4500NH3B,C	
pH	**6.96**	**pH Units**	**1.68**	1	AG04682	07/30/20 16:00	07/30/20 17:00	1551	SM4500-H+ B	T-14
Phosphate, Total	**0.33**	**mg/L**	**0.10**	1	AH03244	08/04/20 16:15	08/07/20 13:25	1551	SM4500-P E	
Total Dissolved Solids	**1300**	**mg/L**	**10**	1	AH03205	08/04/20 03:45	08/13/20 08:59	1551	SM2540C	
Bicarbonate Alkalinity as CaCO3	**10**	**mg/L**	**5.0**	1	AH03376	08/10/20 13:00	08/10/20 15:50	1551	SM2320B	
Carbonate Alkalinity as CaCO3	ND	mg/L	5.0	1	AH03376	08/10/20 13:00	08/10/20 15:50	1551	SM2320B	
Hydroxide Alkalinity as CaCO3	ND	mg/L	5.0	1	AH03376	08/10/20 13:00	08/10/20 15:50	1551	SM2320B	
Total Alkalinity as CaCO3	**10**	**mg/L**	**5.0**	1	AH03376	08/10/20 13:00	08/10/20 15:50	1551	SM2320B	
Anions by EPA Method 300.0										
Nitrate as NO3	ND	mg/L	1.0	1	AG04625	07/31/20 00:53	07/31/20 00:53	1551	EPA 300.0	
Nitrite as NO2	ND	mg/L	1.0	1	AG04625	07/31/20 00:53	07/31/20 00:53	1551	EPA 300.0	
Sulfate as SO4	**570**	**mg/L**	**10**	20	AG04625	08/01/20 01:29	08/01/20 01:29	1551	EPA 300.0	
U19 (20G3448-03)			**Sample Type: Water**			**Sampled: 07/29/20 10:00**				
Metals by EPA 200 Series Methods										
Mercury	**0.51**	**ug/L**	**0.20**	1	AH03281	08/05/20 09:34	08/05/20 13:32	1551	EPA 245.1	
Metals by EPA Method 200.8 ICP/MS										**P-02**
Antimony	ND	ug/L	2.0	4	AG04591	07/31/20 14:30	08/04/20 05:40	1551	EPA 200.8	R-01
Arsenic	**1500**	**ug/L**	**1000**	2000	AG04591	07/31/20 14:30	08/06/20 19:31	1551	EPA 200.8	
Barium	**2.9**	**ug/L**	**2.0**	4	AG04591	07/31/20 14:30	08/04/20 05:40	1551	EPA 200.8	
Beryllium	ND	ug/L	0.40	4	AG04591	07/31/20 14:30	08/04/20 05:40	1551	EPA 200.8	R-01
Boron	**320000**	**ug/L**	**100000**	2000	AG04591	07/31/20 14:30	08/06/20 19:31	1551	EPA 200.8	
Cadmium	ND	ug/L	0.40	4	AG04591	07/31/20 14:30	08/04/20 05:40	1551	EPA 200.8	R-01
Chromium	**10**	**ug/L**	**2.0**	4	AG04591	07/31/20 14:30	08/04/20 05:40	1551	EPA 200.8	
Cobalt	ND	ug/L	0.40	4	AG04591	07/31/20 14:30	08/04/20 05:40	1551	EPA 200.8	R-01
Copper	**7.3**	**ug/L**	**2.0**	4	AG04591	07/31/20 14:30	08/04/20 05:40	1551	EPA 200.8	
Lead	ND	ug/L	1.0	4	AG04591	07/31/20 14:30	08/04/20 05:40	1551	EPA 200.8	R-01
Molybdenum	ND	ug/L	1.0	4	AG04591	07/31/20 14:30	08/04/20 05:40	1551	EPA 200.8	R-01
Nickel	**2.7**	**ug/L**	**2.0**	4	AG04591	07/31/20 14:30	08/04/20 05:40	1551	EPA 200.8	
Selenium	ND	ug/L	8.0	4	AG04591	07/31/20 14:30	08/04/20 05:40	1551	EPA 200.8	R-01
Silver	ND	ug/L	0.40	4	AG04591	07/31/20 14:30	08/04/20 05:40	1551	EPA 200.8	R-01
Thallium	ND	ug/L	0.40	4	AG04591	07/31/20 14:30	08/04/20 05:40	1551	EPA 200.8	R-01
Vanadium	**9.4**	**ug/L**	**4.0**	4	AG04591	07/31/20 14:30	08/04/20 05:40	1551	EPA 200.8	
Zinc	ND	ug/L	20	4	AG04591	07/31/20 14:30	08/04/20 05:40	1551	EPA 200.8	R-01

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Calpine Corp	Project Manager: Beth Kershaw	
11756 Socrates Mine Rd.	Project: Annual Injection Sampling	Reported:
Middletown, CA 95461	Project Number: [none]	08/14/20 10:40

	Result	Reporting Limit	Dilution	Batch	Prepared	Analyzed	ELAP#	Method	Note
U19 (20G3448-03)		**Sample Type: Water**			**Sampled: 07/29/20 10:00**				
Conventional Chemistry Parameters by APHA/EPA Methods									
Ammonia as NH3	**320 mg/L**	**0.50**	1	AH03408	08/07/20 10:00	08/07/20 16:00	1551	SM4500NH3B,C	
pH	**6.74 pH Units**	**1.68**	1	AG04682	07/30/20 16:00	07/30/20 17:00	1551	SM4500-H+ B	T-14
Phosphate, Total	**1.7 mg/L**	**0.10**	2	AH03244	08/04/20 16:15	08/07/20 13:25	1551	SM4500-P E	
Total Dissolved Solids	**2400 mg/L**	**10**	1	AH03205	08/04/20 03:45	08/13/20 08:59	1551	SM2540C	
Bicarbonate Alkalinity as CaCO3	**15 mg/L**	**5.0**	1	AH03376	08/10/20 13:00	08/10/20 15:50	1551	SM2320B	
Carbonate Alkalinity as CaCO3	ND mg/L	5.0	1	AH03376	08/10/20 13:00	08/10/20 15:50	1551	SM2320B	
Hydroxide Alkalinity as CaCO3	ND mg/L	5.0	1	AH03376	08/10/20 13:00	08/10/20 15:50	1551	SM2320B	
Total Alkalinity as CaCO3	**15 mg/L**	**5.0**	1	AH03376	08/10/20 13:00	08/10/20 15:50	1551	SM2320B	
Anions by EPA Method 300.0									
Nitrate as NO3	ND mg/L	1.0	1	AG04625	07/31/20 03:05	07/31/20 03:05	1551	EPA 300.0	
Nitrite as NO2	**17 mg/L**	**1.0**	1	AG04625	07/31/20 03:05	07/31/20 03:05	1551	EPA 300.0	
Sulfate as SO4	**900 mg/L**	**25**	50	AG04625	08/01/20 02:35	08/01/20 02:35	1551	EPA 300.0	

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Calpine Corp	Project Manager: Beth Kershaw	
11756 Socrates Mine Rd.	Project: Annual Injection Sampling	Reported:
Middletown, CA 95461	Project Number: [none]	08/14/20 10:40

Notes and Definitions

P-02	Sample acidified to pH <2 and allowed to sit 24 hours before further processing.
QM-01	The spike recovery for this QC sample is outside of established control limits possibly due to a sample matrix interference.
QM-05	The spike recovery was outside acceptance limits for the MS and/or MSD due to matrix interference. The LCS and/or LCSD were within acceptance limits showing that the laboratory is in control and the data is acceptable.
QM-4X	The spike recovery was outside of QC acceptance limits for the MS and/or MSD due to analyte concentration at 4 times or greater the spike concentration. The QC batch was accepted based on LCS and/or LCSD recoveries within the acceptance limits.
R-01	The Reporting Limit for this analyte has been raised to account for matrix interference.
T-14	Residual chlorine, dissolved oxygen, sulfite, and pH must be analyzed in the field to meet the EPA specified 15 minute hold time.
ND	Analyte NOT DETECTED at or above the reporting limit
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

2063448

CHAIN OF CUSTODY

Calpine Corporation
10350 Socrates Mine Road
Middletown, CA 95461

Ship To: Alpha Labs
208 Mason St
Ukiah, CA 95482

Attention: Sheri Speaks Phone:(707)468-0401

Project: Annual Injection Fluid Sampling
Samplers: Randy Falstad
E-Mail: bkershaw@calpine.com
Turnaround Time: standard

Report To: Beth Kershaw
Phone Number: (707) 431-6174
Fax Number: (707) 431-6148
P.O. #: 2000036711
QC Data:

Sample ID	Sample Date	Sample Time	Sample Type	Matrix Type	Sample Description	No. of Containers	CAM 17 metals	SO4	B		pH, alkalinity, TDS	NO2, NO3, NH3, PO4		Comments
U13	7/29/20	09:50	grab	L	Cooling Tower water	2	X	X	X		X	X		
U16	7/29/20	08:06	grab	L	Cooling Tower water	2	X	X	X		X	X		
U19	7/29/20	10:00	grab	L	Cooling Tower water	2	X	X	X		X	X		

Analyses Requested

20

Relinquished By: (Signature) Date/Time: 7/29/20 13:07 Received By: (Signature) Date/Time: 1315
Relinquished By: (Signature) Date/Time: 1515 Received By: (Signature) Date/Time: 7-29-20
Relinquished By: (Signature) Date/Time: Received By: (Signature) Date/Time: @ 1515

Were samples received in good condition? Yes No Samples on Ice? Yes No Method of Shipment: _____ Page ___ of ___

CONDITION OF CERTIFICATION
AQ-14

Geysers Calistoga Plant (Unit 19) 81-AFC-01C
2020 Annual Compliance Report to the California Energy Commission
January 2020-December 2020

CALPINE

GEYSERS POWER COMPANY, LLC
10350 Socrates Mine Road
Middletown, CA 95461

10350 SOCRATES MINE ROAD
MIDDLETOWN, CALIFORNIA 95461
707.431.6000

Letter GPC20-020

February 28, 2020

Douglas Gearhart
Air Pollution Control Officer
Lake County Air Quality Management District
2617 South Main Street
Lakeport, CA 95453

Dear Mr. Gearhart:

Subject: Authority To Construct Application For an Emergency Wet-Down Pump Engine at the Calistoga Power Plant

Enclosed is Geysers Power Company's application for an Authority to Construct permit for an emergency wet-down pump engine to be located at Calistoga Power Plant. Also attached is payment in the amount of $266.99 (Check No.1000115723) for the application filing and permit processing fees.

This proposed diesel engine will support operation of the Calistoga Power Plant cooling tower wetting / fire prevention system during loss of normal site power.

Please contact me at (707) 431-6266, if you need any additional information in support of this permit application.

Sincerely,

Brian J. Berndt
EHS Manager | Geysers

Enclosure & Attachments

cc: Eric VeerKamp, Compliance Project Manager
California Energy Commission (CEC),
1516 Ninth Street, MS-15
Sacramento, CA 95814-5512

BJBerndt(431-6266):tbm

bcc: Shaun Robinson
Bill King
Mike Puccioni
AQChron 2020

Enclosures

Application for an Authority to Construct
Emergency Wet-Down Pump Engine at Calistoga Power Plant

- Application Form
- Project Description
- Exhaust Stack And Building Dimensions Information
- Attachment 1 – Manufacturer's Specification Sheets for the Engine
- Attachment 2 – U.S. EPA Certificate of Conformity with the Clean Air Act
- Attachment 3 – Air Emission Calculations and Health Risk Review

CALPINE

GEYSERS PWR CO, LLC
5000 John Kingcade Road
Middletown CA 95461

90-4150/1222
9080015043

Check Number
1000115723

DATE Feb/24/2020

PAY TO THE ORDER OF

****TWO HUNDRED SIXTY-SIX AND 99/100 DOLLAR****

$266.99***

LAKE COUNTY AIR QUALITY MNGT DIST
2617 S MAIN ST
LAKEPORT CA 95453-5696

Authorized Signature

MUFG UNION BANK, N.A.
San Francisco, CA

Security features included. Details on back.

⑈1000115723⑈ ⑆122241501⑆ 908001504 3⑈

Lake County Air Quality Management District
2617 South Main Street
Lakeport, CA 95453
707-263-7000 / fax 263-0421

Douglas G. Gearhart
Air Pollution Control Officer
dougg@lcaqmd.net

Application For An Authority To Construct (& Attached List and Criteria)

Type of Application: ☐ New Facility ☒ Modification ☐ Existing Facility, Not Previously Permitted

Contact Name: **Brian Berndt**
Business Name: **Geysers Power Company LLC**
Mailing Address: **10350 Socrates Mine Road**
Middletown, CA 95461

Facility Name:
Calistoga Power Plant
Facility or Project Name:
Emergency Wet-Down Pump Engine

Permit #: _____ Category: **II**

Description of the Process/Purpose of the Facility:

The Emergency Wet Down Pump Engine is part of the Cooling Tower fire prevention system.

Equipment Location/Legal Description:

Calistoga Power Plant

Estimated Construction dates:
Start - **August 2020** Completion - **October 2020**

Diagram/Plot Plan of Facility Enclosed? ☒ **Yes** ☐ No

Description of equipment by make, model, size and type:
See **Project Description**

See **Exhaust Stack and Building Dimensions Information**

Additional List and Criteria Data Attached: Yes **X** No____ (List and Criteria are attached

If no give reason: _____

Operating Schedule*: **<0.95** Hours/Day **1** Days/Week **<52** Weeks/Year Lat•N: 38.789694°
* Routine testing will vary through the year, combined with maintenance operation hours will not exceed 50 hours / year.

Production Rates: **10.6 gal /Hour**, _____/Day, _____/Year (Specify Units) Long•W: -122.745236°

Amount, nature, and duration of emissions: **Maintenance and Testing Operation of Emergency Standby Diesel Engine for will be less than 50 hours/year. Emissions for this Diesel engine are summarized on the attached Project Description, List and Criteria Data Summary.**
Attach a Facility and Equipment Diagram, Specification Sheet(s), and Process Flow Diagram. Show the location and distance to adjacent residences, businesses, schools and hospitals.
See Attachments 2&3, Project Description, List and Criteria Data Summary.

Type and efficiency of air pollution control equipment: **The proposed Diesel Engine is compliant with Tier 3 EPA Standards for Emergency Standby Diesel Engines and the CARB Air Toxic Control Standards (ATCM)**

Type and Estimated Quantity of fuel use: **DFO #3, 530 gal/year** (%S): **0.0015% by weight**

Ten year projected expansion plans:

I have read and understand the LCAQMD's List and Criteria for Authority to Construct Permits. I understand that I am responsible for any information listed herein or requested pursuant to this application. Based on information and belief formed after reasonable inquiry, the statements and information presented in this application and supplemental documentation are true, accurate, and complete.

_____ Date: 2/28/2020
Signature of authorized representative of firm

Name: Brian Berndt Title: EHS Manager Geysers Telephone: (707)431-6266
FAX: (707)431-6246

Project Description

BACKGROUND:

Cooling tower wet down systems are common on wood cooling towers and are used to keep the normally wetted surfaces of the cooling tower structure wet when the cooling tower is not in operation to preserve the wood. Typically when a plant shuts down for an overhaul and the cooling tower is not circulating water, auxiliary or fire pumps are turned on to sprinkle areas of the cooling tower that can dry out, become damaged and more vulnerable to fire. These systems are not subject to NFPA or other codes. Impact spray nozzles (Rainbird™-style) are often used because they provide large coverage areas.

The desire for wetting is particularly true of cooling towers that use geothermal steam condensate for cooling. This is because, as hydrogen sulfide contained in the geothermal steam condensate is oxidized to soluble sulfur compounds, it becomes elemental sulfur for a period of time and can coat the wetted surfaces of the tower. Sulfur is a flammable solid that has a relatively low ignition temperature. Utilizing a wet down system has been very successful in preventing the ignition of cooling towers in the geothermal industry during outages.

Wet down systems are not to be confused with fire suppression systems. A wet down system prevents the ignition of vulnerable surfaces while fire suppression systems are designed to douse fires after ignition occurs. Typically, the water pumping capacity of a fire suppression system is very large and the coverage area is very small and focused (able to cover a couple of cells). Deluge systems that typically do not cover the fan or hot water decks and have limited coverage are judged not a good defense against wild land fires.

During the 2015 Valley Fire, four completely and one partially cooling towers were fire damaged at several Geysers power plants. Some of these cooling towers ignited while there was full cooling circulation water flow. Analysis of the burned cooling towers indicates that the center of the cooling towers burned in the non-wetted areas such as the fan deck and the area below the fans (plenum area). Field observations on cooling towers that did not burn showed indications that burning embers were deposited on the fan deck by the wild land fire as it passed the power plant.

Thus, there is a need to spray water to any areas where sulfur residue may be found, including increasing the spray coverage in the normally non-wetted areas such as the fan deck, hot water basin, and plenum areas for increased protection from wild land fire embers. Figure 1 shows a Google Earth view of the location of the power plant.

Figure 1. Google Earth View Showing Location of the Calistoga Power Plant

PROPOSED PROJECT

An emergency wet down pump engine along with a separate water spray system is proposed to be added for use in the event of a plant evacuation due to the threat of an approaching wild land fire. Figure 2 illustrates the proposed flow diagram. The location of the emergency wet-down pump engine is shown adjacent to the cooling tower circulating water pit on the Unit 19 Power Plant Plot Plan (Figure 3).

The emergency wet down pump engine will be manually started prior to evacuation of the power plant due to an approaching wild land fire to provide continued wet down of the cooling tower for approximately 24 hours or longer depending on fuel consumed. Particulate and other exhaust emissions resulting from the operation of the diesel engine would be consistent with manufacturer's specifications for this Tier 3 engine. The exhaust emissions from the engine during emergency use would be virtually undetectable amidst the emissions resulting from an uncontrolled wild land fire.

TESTING AND MAINTENANCE:

Annual testing and maintenance operation hours are limited to no more than 50 hours. Test operation routines will vary through the year with more frequent test operations occurring during the dry season and less frequent test operation occurring during wet seasons. The hour meter indications will be logged as a result of routine inspections and at the start and completion of test and maintenance operations to ensure that annual hours of emergency use, and annual hours of test and maintenance operation are recorded.

APPLICABLE REGULATIONS

Title 17, California Code of Regulations section 93115 Airborne Toxic Control Measure for Stationary Compression Ignition (CI) Engines.

The Emergency Standby Wet-Down Pump Diesel Drive Engine meets the required criteria of § 93115.4 (29) for definition as an "Emergency Standby Engine" pursuant to (29) (A), (B), (C), (D), and (E).

Operation of the Emergency Standby Wet-Down Pump Diesel Drive Engine meets multiple criteria of § 93115.4 (30) for definition as "Emergency Use" pursuant to (30) (A), (B), and (D), and (F).

The Emergency Standby Wet Down Diesel Drive Engine meets the requirement of §93115.6(a)(3)(A)(1) Table 1: Emission Standards for New Stationary Emergency Standby Diesel-Fueled CI Engines.

Figure 2
Flow Diagram Showing Emergency Wet Down Pump Engine

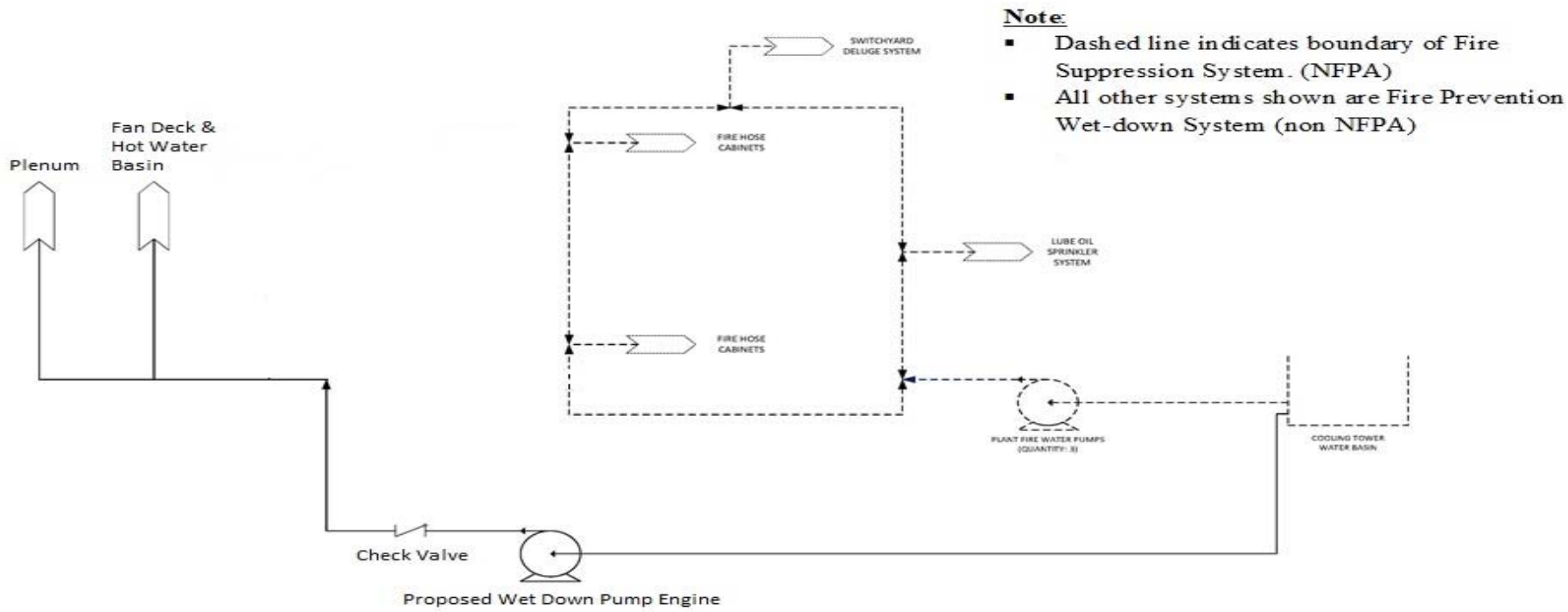
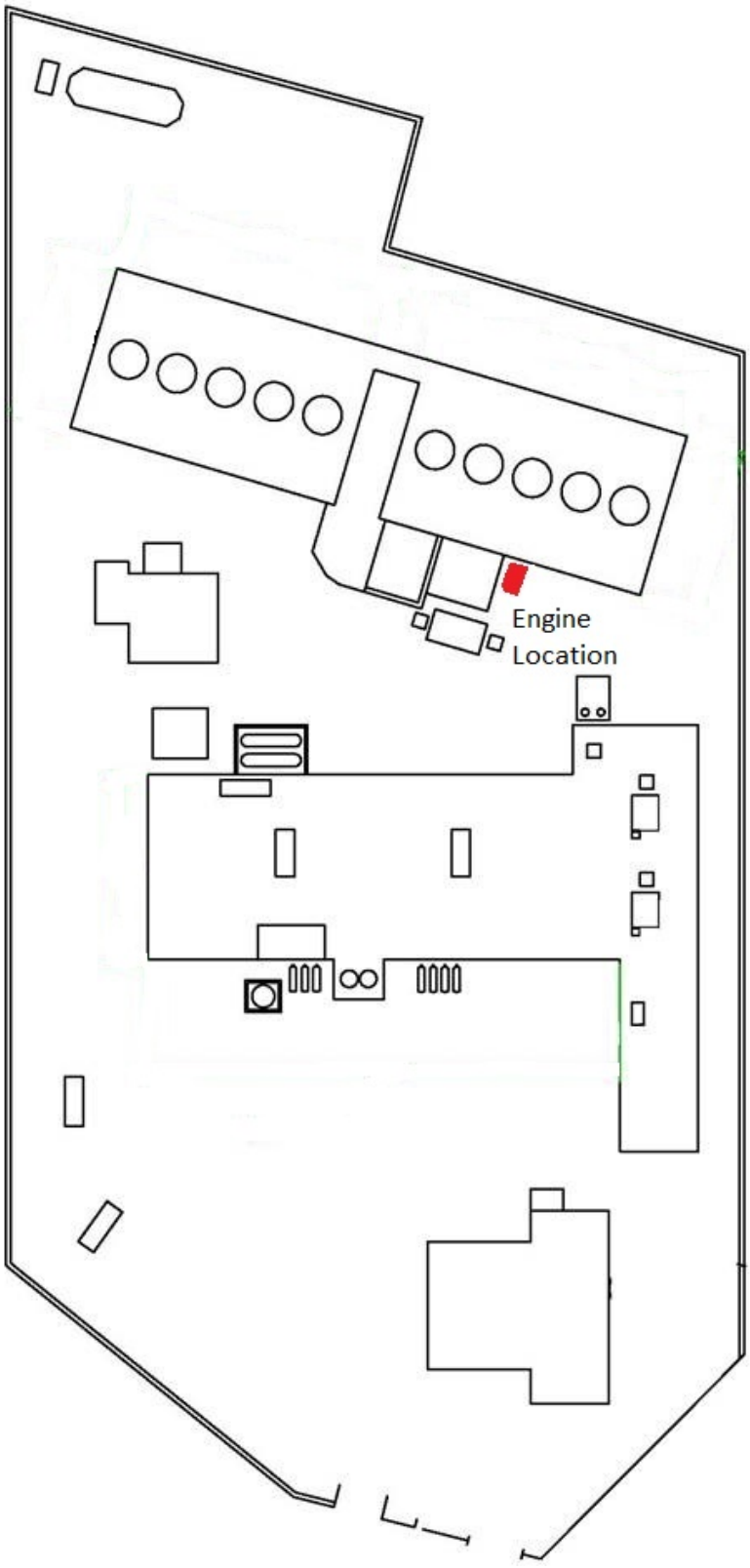


Figure 3
Calistoga Power Plant: Plot Plan Showing the Emergency Wet Down Pump Engine Location



Exhaust Stack and Building Dimensions Information

DATA SUMMARY FOR EMERGENCY WET-DOWN PUMP ENGINE

Business Name **Geysers Power Company LLC, Calistoga Power Plant**

Engine Manufacturer **Cummins**

Engine Family[+] **LCEXL0409AAB** Model **CFP7E-F40**

Serial Number **Available Upon Delivery** Year of Manufacture **2020**

Rated Brake Horsepower Rating **204**

Engine Emission Factors (g/bhp-hr)[++]

NOx **2.475** PM **0.111** NMHC **0.062** NMHC + NOx **2.537** CO **1.193** .

Control Equipment: [] Turbocharger [] Aftercooler [] Injection Timing Retard [] Catalyst []

Diesel Particulate Filter [**X**] **Tier 3 Emission Compliance**

Fuel Used: **[X] CARB Ultra Low Sulfur Diesel** [ ] Diesel [] Other _____

Operation Information:

Engine Operating Time for Testing and Maintenance: **50 hrs/yr**

Typical load **100** % of maximum bhp rating

Total annual hours of operation **50 hours /yr (Testing and maintenance)**

Fuel usage rate **10.6** gallons/hr

[+] Manufacturers Specification Sheet for the diesel engine provided (**Attachment 1**).

[++] U.S. EPA Certificate of Conformity with the Clean Air Act provided (**Attachment 2**).

EXHAUST STACK AND BUILDING DIMENSION DATA

Exhaust Stack Height Above Ground **11** ft*

Exhaust Stack Height Above Top of Building **-37** ft , Exhaust stack will be below the top of the adjacent building (cooling tower.)

Exhaust Stack Diameter **0.333** ft

Exhaust Stack Flowrate **1,218** CFM

Exhaust Stack Direction [**X**] Up [ ] Down [ ] Side Raincap [**X**] Yes [ ] No

Exhaust Stack Gas Temperature **986.7** °F

Nearest Building Dimensions L: **385'** W: **52'** H: **48'**

Distance from stack to nearest residence **8,800** ft**

Distance to nearest school grounds **2.97** mi***

[*] Exhaust Height may vary by +- 3 ft depending on final enclosure design.

[**] Distance given is from the engine stack to the nearest residence.

[***] Distance given is from the engine stack to the Cobb Mountain Elementary School (15,700 ft).

Attachment 1
Manufacturer's Specification Sheets for the Engine

Specification sheet

Fire Pump Drive Engine

CFP7E-F40
CFP7EVS-F40

Description

Engine Series - Cummins QSB6.7
Exhaust Emissions - EPA Tier 3

When performance matters, we take notice. Our engines are an assurance of safety specifically designed to fit your needs. The Cummins CFP7E fire pump drive engine features a cast-iron parent bore block structurally designed to reduce noise and increase durability.

Features

Control System - The industry-leading, state-of-the-art Fire Pump Digital Panel (FPDP) provides total fire pump drive engine system integration and intuitive operation, including:

- Color touchscreen;
- Dual microprocessors for critical signal redundancy;
- Standard J1939 parameter and Cummins fault code display;
- Engine idling;
- Electronic Control Module (ECM) self-diagnosis; and
- Optional Modbus® protonode remote messaging capability.

Variable Speed Pressure Limiting Control (VSPLC) - Cummins' VSPLC-equipped fire pump drive engines are capable of maintaining a constant pump discharge pressure by controlling the engine speed down to 1200 RPM, while still maintaining T3 emissions certification. VSPLC fire pump drive engines provide design flexibility in the fire pump system for high-rise applications; compensate for varying discharge pressure; allow the system architect to apply a larger pump and/or a pump with a steeper curve; and significantly reduce water consumption during the weekly test.

Warranty and Service - Our models are backed by a comprehensive warranty and worldwide distributor network.

Certified Power - The CFP7E-F40 complies with NFPA 20 and is UL 1247-listed and FM 1333-approved. The CFP7EVS-F40 complies with NFPA 20 and is FM 1333-approved.

Ratings in HP (kW)

Operating Speed (RPM)	1470		1760		1900		2100		2350		2600	
CFP7E-F40	192	(143)	220	(164)	204	(152)	215	(160)	216	(161)	219	(163)
CFP7EVS-F40	192	(143)	220	(164)	204	(152)	215	(160)	216	(161)	219	(163)

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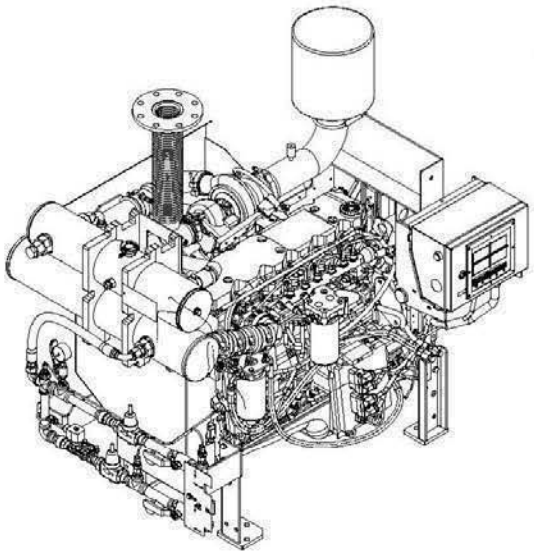
power.cummins.com/fire-power



General Engine Data

Engine Family	Industrial
Engine Type	4 Cycle; In-Line, 6 Cylinder
Aspiration	Turbocharged and Charge-Air Cooled
Bore and Stroke	4.21 x 4.88 in. (107 x 124 mm)
Displacement	409 in^3 (6.7 L)
Rotation	Counterclockwise from flywheel end
Compression Ratio	17.2:1
Valves per Cylinder	Intake - 2 Exhaust - 2
Fuel System	Bosch Electronic Common Rail
Maximum Allowable Bending Moment @ Rear Face of Block	1000 lb.-ft. (1356 N-m)
Estimated Wet Weight*	TBD

* Weight includes engine, cooling loop, heat exchanger, dual Electronic Control Modules (ECMs), Fire Pump Digital Panel (FPDP), standard air cleaner, standard exhaust flex, and all fluids.

Equipment	Standard	Optional
Air Cleaner	Disposable; treated for high humidity, indoor service	Heavy-duty, two-stage with replaceable elements
Alternator	12V-DC, 95 amps; includes belt guard	24V-DC, 45 amps with belt guard
Cooling Loop (maximum pressure of 300 PSI)	3/4" diameter for fresh water; includes alarm sensors and FM-approval	Cu Ni construction available for sea water applications; approved loops up to 1 1/4"
Cooling System	Tube and shell type, 60 PSI with NPTF connections	Radiator[1]; sea water tube and shell
Engine Heater	120V-AC, 1500 watts	240V-AC, 1500 watts
Exhaust Protection	Metal guards on manifolds and turbocharger	N/A
Exhaust Flex Connection	Steel, flanged	Stainless steel flex, NPT
Flywheel Power Take-Off	Flywheel	Driveshaft system, stub shaft
Fuel Connections	Fire-resistant flexible supply and return lines	N/A
Fuel Filter	Primary and secondary	N/A
Governor, Speed	Constant speed, adjustable	VSPLC[2]
Fire Pump Digital Panel (FPDP)	7" color touchscreen; enclosure rated as Type 2/Type 4X; Imperial and metric values	Optional 316SS construction; custom gauges with digital panel expansion module (DPEM)
Lube Oil Cooler	Engine-water-cooled, plate type	N/A
Lube Oil Filter	Full-flow with by-pass valve	N/A
Lube Oil Pump	Gear-driven	N/A
Manual Start Controls	On FPDP and/or contactors	N/A
Overspeed Controls	Electronic with reset and test on FPDP	N/A
Starter	12V-DC	24V-DC

[1] Not UL-listed and not FM-approved.

[2] FM-approved, but not UL-listed.

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Air Induction System

Maximum Temperature Rise Between Ambient Air and Engine Air Inlet	30.6 °F (17 °C)
Maximum Inlet Restriction with Dirty Filter	25 in. H_2O (635 mm H_2O)
Recommended Air Cleaner Element - (Standard)	Cummins FIltration AH1196
Recommended Air Cleaner Element - (Heavy Duty)	Optional: primary element AF26124; secondary element AF26125

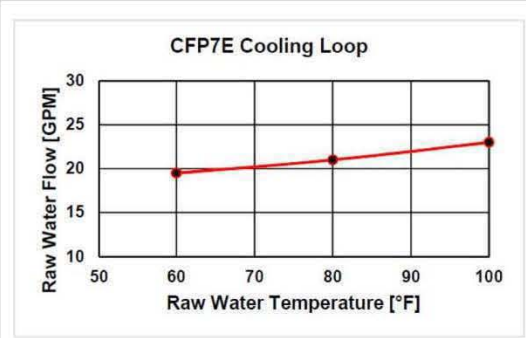
Lubrication System

Oil Pressure Range at Rated	40-70 PSI (276-483 kPa)
Oil Capacity of Pan (High - Low)	15-13 qt. (16-14 L)
Total System Capacity	4 gal. (15.1 L)
Recommended Lube Oil Filter	Cummins Filtration LF3970

Cooling System*

Raw Water Working Pressure Range at Heat Exchanger	60 PSI (413 kPa) MAX
Recommended Minimum Water Supply Pipe Size to Heat Exchanger	.75 in. (19.05 mm)
Recommended Minimum Water Discharge Pipe Size From Heat Exchanger	1.00 in. (25.40 mm)
Coolant Water Capacity	3.75 gal. (14.2 L)
Standard Thermostat - Type	Modulating
Standard Thermostat - Range	180-199 °F (82-93 °C)
Minimum Raw Water Flow:	
- with Water Temperatures to 60 °F (16 °C)	19.5 GPM (1.23 L/sec)
- with Water Temperatures to 80 °F (27 °C)	21 GPM (1.32 L/sec)
- with Water Temperatures to 100 °F (38 °C)	23 GPM (1.45 L/sec)

* A jacket water heater is mandatory on this engine. The recommended heater wattage is 1500 down to 40 °F (4 °C)



Exhaust System

Maximum Allowable Back Pressure by Complete Exhaust System	40.8 in. H_2O (10.2 kPa)
Exhaust Pipe Size Normally Acceptable	4 in. (102 mm)

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Noise Emissions - The noise emission values are estimated sound pressure levels at 3.3 ft. (1 m).

Top	92.5 dBa
Right Side	94.3 dBa
Left Side	93.8 dBa
Front	92.1 dBa
Exhaust	114.2 dBa

Fuel Supply/Drain System

Operating Speed in RPM	1470		1760		1900		2100		2350		2600	
Fuel Rate - Gal/hr (L/hr)	9.9	(37.6)	11.4	(43.0)	10.6	(40.0)	11.3	(42.6)	11.6	(43.8)	12.3	(46.7)

Fuel Type	No. 2 diesel only
Minimum Supply Line Size	0.5 in. (12.70 mm)
Minimum Drain Line Size	0.375 in. (9.53 mm)
Maximum Fuel Height above C/L Fuel Pump	360 in. (9.1 m)
Recommended Fuel Filter - Primary	Cummins Filtration FF5612
Recommended Fuel Filter - Secondary	Cummins Filtration FS1212
Maximum Restriction @ Lift Pump-Inlet - With Clean Filter	5.0 in. Hg (127 mm Hg)
Maximum Restriction @ Lift Pump-Inlet - With Dirty Filter	10.0 in. Hg (254 mm Hg)
Maximum Return Line Restriction - Without Check Valves	5.9 in. Hg (150 mm Hg)
Minimum Fuel Tank Vent Capability	7.1 ft^3/hr (0.21 m^3/hr)
Maximum Fuel Temperature @ Lift Pump Inlet	158 °F (70 °C)

Starting and Electrical System

Min. Recommended Battery Capacity - Cold Soak at 0 °F (-18 °C) or Above	12V	24V
Engine Only - Cold Cranking Amperes	1400 CCA*	900 CCA*
Engine Only - Reserve Capacity	430 minutes*	430 minutes*

*Based on FM requirement for a minimum of 900 CCA and 430 Reserve Capacity Minutes

Battery Cable Size - Minimum of 2/0 AWG and Maximum Cable Length Not to Exceed 6 ft. (1.5 m)	12V	24V
Maximum Resistance of Starting Circuit	0.001 Ohms	0.002 Ohms
Typical Cranking Speed	120 RPM	120 RPM
Alternator (Standard), Internally Regulated	95 amps	70 amps

Operating Conditions

Operating Speed in RPM	1470		1760		1900		2100		2350		2600	
Output - BHP (kW)	192	(143)	220	(164)	204	(152)	215	(160)	216	(161)	219	(163)
Ventilation Air Required - CFM (litre/sec)	435	(205)	487	(230)	511	(241)	571	(270)	629	(297)	691.9	(327)
Exhaust Gas Flow - CFM (litre/sec)	1055	(498)	1219	(575)	1218	(575)	1363	(643)	1500	(708)	1650	(779)
Exhaust Gas Temperature - °F (°C)	986.7	(530)	985.7	(530)	986.7	(530)	986.7	(530)	986.7	(530)	986.7	(530)
Heat Rejection to Coolant - BTU/min. (kW)	3803	(67)	4186	(74)	3926	(69)	4263	(75)	4707	(83)	5178	(91)
Heat Rejection to Ambient - BTU/min. (kW)	1026	(18)	1091	(19)	1186	(21)	1282	(23)	1256	(22)	1231	(22)

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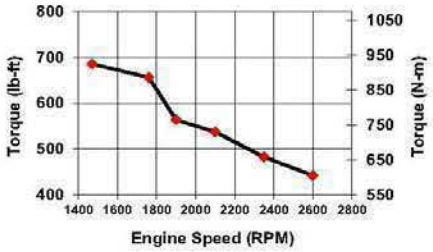
Engine Performance Curve for CFP7E-F40 and CFP7EVS-F40

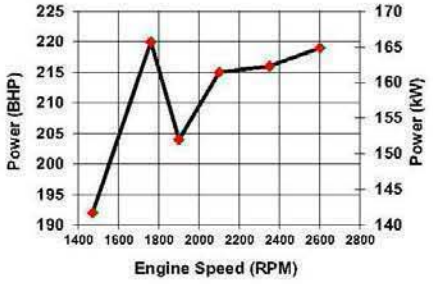
Torque Output

RPM	lb-ft	N-m
1470	686	930
1760	657	890
1900	564	765
2100	538	729
2350	483	655
2600	442	600



Horsepower Output

RPM	BHP	kW
1470	192	143
1760	220	164
1900	204	152
2100	215	160
2350	216	161
2600	219	163



All data is based on the engine operating with a fuel system, water pump, lubricating oil pump, air cleaner, and alternator. The fan, optional equipment, and driven components are not included. Data is based on operation at SAE standard J1394 conditions of 300 ft. (91.4 m) altitude, 29.61 in. (752 mm) Hg dry barometer, and 77 °F (25 °C) intake air temperature, using No.2 diesel fuel only.

Altitude above which output should be limited*:	300 ft. (91.4 m)
Correction factor per 1000 ft. (305 m) above altitude limit:	3%
Temperature above which output should be limited:	77 °F (25 °C)
Correction factor per 10 °F (11 °C) above temperature limit:	1% (2%)

* Above 5,000 feet, contact Cummins for derate information.

US EPA NSPS Tier 3 Emissions Compliance

Fuel Percentage of Sulfur	D2 Cycle Exhaust Emissions*									
	Grams per BHP - HR					Grams per kW - HR				
	NMHC	NO_x	NMHC + NO_x	CO	PM	NMHC	NO_x	NMHC + NO_x	CO	PM
15 PPM Diesel Fuel	0.062	2.475	2.537	1.193	0.111	0.083	3.319	3.402	1.600	0.149
300-4000 PPM Diesel Fuel	0.075	2.685	2.759	1.193	0.127	0.1	3.600	3.700	1.600	0.170

*The emissions values above are based on CARB approved calculations for converting EPA (500 ppm) fuel to CARB (15 ppm) fuel.

Refer to the engine data tag for the EPA Standard Engine Family.

No special options are needed to meet current regulation emissions for all fifty states.

Tests conducted using alternate test methods, instrumentation, fuel, or reference conditions can yield different results.

Diesel Fuel Specifications:

- Cetane Number: 40-48
- Reference: ASTM D975 No. 2-D

Reference Conditions:

- Air Inlet Temperature: 25 °C (77 °F)
- Fuel Inlet Temperature: 40 °C (104 °F)
- Barometric Pressure: 100 kPa (29.53 in Hg)
- Humidity: 107 g H_2O/kg (75 grains H_2O/lb) of dry air; required for NO_x correction
- Intake Restriction set to a maximum allowable limit for clean filter
- Exhaust Back Pressure set to maximum allowable limit

Doc. A042J595 Rev. 1

Fire Pump Digital Panel (FPDP)

The Cummins FPDP is an integrated microprocessor-based control system that provides full digital technology with enhanced accuracy and built-in redundancy.

Reliable design - Designed and tested with isolated mounting to minimize vibration for longer life and durability, the Cummins FPDP proves reliable in harsh environments.

Advanced control methodology - The Cummins FPDP allows for Input/Output (I/O) expansion and remote monitoring capabilities, as well as automatic Electronic Control Module (ECM) switching for electronic engines.

Certified Quality - The Cummins FPDP is UL 1247-listed and FM 1333-approved.

Operator Panel Features

Operator/Display Panel

- 7" TFT LCD (thin-film-transistor liquid-crystal display) - color, 24-bit, 800x480 (WVGA).
- Auto, manual, start, stop, and fault reset.
- Assembly enclosure that meets Type 2 and Type 4X design requirements and is water, corrosion, fire, and impact-resistant.

Electronic Engine Communications - SAE J1939 protocol.

- Comprehensive full-authority engine (FAE) data: oil pressure and temperature; coolant temperature; and intake manifold pressure and temperature.
- Cummins fault code display.
- Sensor failure indication.
- Optional RS-485 serial - Modbus® RTU/Modbus® TCP/IP.

Variable Speed Pressure Limiting Control (VSPLC) Capabilities

- Display indicates when VSPLC is active.
- Pump discharge pressure display.
- Ability to run the engine at fixed speed from the FPDP at start-up for commissioning.

Other Control Features

- Digital Panel Expansion Module (DPEM) for additional analog/digital inputs and configurable dry relay contact output.
- Ability to idle at start-up for commissioning of electronic engines.
- Idle cool down for electronic engines.
- DC voltage.

Functional

- Configurable display units for temperature in degrees Fahrenheit or Celsius and pressure in PSI or kPa.
- Manual ECM selector switch on electronic engines.
- Ability to crank the fire pump drive engine from Battery A, Battery B, or both.
- Fixed engine speed adjustments in +/- 10 RPM increments.
- Overspeed shutdown.

Environmental

- Operating temperature - 4 to 158 °F (minus 20 to 70 °C).
- Storage temperature - minus 22 to 176 °F (minus 30 to 80 °C).
- Meets CISPR 11 Class B radiated emissions.
- Vibration: 7 G_{PEAK}; three-axis.

Electrical

- 8-30 VDC operating voltage.
- Reverse polarity protected.
- Spring cage terminal block interface.
- Built-in dual micro controllers for increased reliability.

Mechanical

- 1 3/8" pre-cut customer conduit knockout for easy field installation.
- Simplified internal design for efficiency and ease of customer connections.
- 16GA ASTM A366 material - 316 stainless steel optional.
- RAL3001 red powder coat finish.

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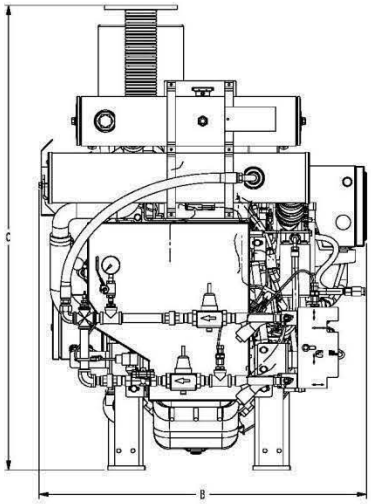

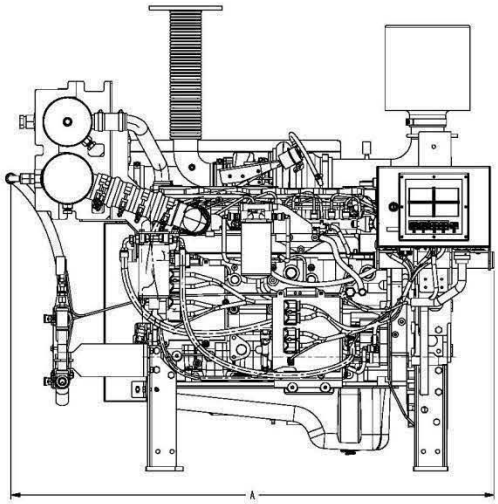

This outline drawing is for reference only.
Do not use for installation design.

	Dim "A" in. (mm)	Dim "B" in. (mm)	Dim "C" in. (mm)
CFP7E	60 (1514)	40 (1025)	57 (1457)

NOTE: Consult drawings or contact the factory for additional information.

ISO 9001
BUREAU VERITAS Certification
UKAS MANAGEMENT SYSTEMS
008

This product has been manufactured under the controls established by a Bureau Veritas Certification approved management system that conforms with ISO 9001:2015.

NOTE: Codes or standards compliance may not be available with all model configurations - consult factory for availability. Specifications are subject to change without notice.

For more information, contact firepumpsales@cummins.com.

FM APPROVED

c UL us LISTED

Sales and Service

Cummins Sales and Service
875 Lawrence Drive
DePere, Wisconsin 54115
1 920 337 9750

power.cummins.com/fire-power

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Attachment 2

U.S. EPA Certificate of Conformity with the Clean Air Act

	UNITED STATES ENVIRONMENTAL PROTECTION AGENCY **2020 MODEL YEAR** **CERTIFICATE OF CONFORMITY** **WITH THE CLEAN AIR ACT**	**OFFICE OF TRANSPORTATION AND AIR QUALITY** **ANN ARBOR, MICHIGAN 48105**

Certificate Issued To: Cummins Inc. (U.S. Manufacturer or Importer) **Certificate Number:** LCEXL0409AAB-027	**Effective Date:** 07/08/2019 **Expiration Date:** 12/31/2020	Byron J. Bunker, Division Director Compliance Division	**Issue Date:** 07/08/2019 **Revision Date:** N/A

Model Year: 2020 **Manufacturer Type:** Original Engine Manufacturer **Engine Family:** LCEXL0409AAB	**Mobile/Stationary Indicator:** Stationary **Emissions Power Category:** 130<=kW<225 **Fuel Type:** Diesel **After Treatment Devices:** No After Treatment Devices Installed **Non-after Treatment Devices:** No Non-After Treatment Devices Installed

Pursuant to Section 111 and Section 213 of the Clean Air Act (42 U.S.C. sections 7411 and 7547) and 40 CFR Part 60, and subject to the terms and conditions prescribed in those provisions, this certificate of conformity is hereby issued with respect to the test engines which have been found to conform to applicable requirements and which represent the following engines, by engine family, more fully described in the documentation required by 40 CFR Part 60 and produced in the stated model year.

This certificate of conformity covers only those new compression-ignition engines which conform in all material respects to the design specifications that applied to those engines described in the documentation required by 40 CFR Part 60 and which are produced during the model year stated on this certificate of the said manufacturer, as defined in 40 CFR Part 60.

It is a term of this certificate that the manufacturer shall consent to all inspections described in 40 CFR 1068 and authorized in a warrant or court order. Failure to comply with the requirements of such a warrant or court order may lead to revocation or suspension of this certificate for reasons specified in 40 CFR Part 60. It is also a term of this certificate that this certificate may be revoked or suspended or rendered void *ab initio* for other reasons specified in 40 CFR Part 60.

This certificate does not cover engines sold, offered for sale, or introduced, or delivered for introduction, into commerce in the U.S. prior to the effective date of the certificate.

Attachment 3
Air Emission Calculations and Health Risk Review

Emissions Review

Actual use is anticipated to be less than 50 hours per year for maintenance.
In case of a surrounding wild fire, the engine is expected to run for less than 24 hours.
The engine will have a diesel tank of 250 gallons, with 10.6 gal/hr rate, results in less than 24 hours
The diesel engine has a rated hp of : 204

Pollutant	g/bhp-hr	lb/hr	50 hr/yr lb/yr	74 hr/yr lb/yr
CO	1.193	0.536	26.80	39.67
NMHC	0.062	0.028	1.39	2.06
NOx	2.475	1.112	55.61	82.30
Particulate	0.111	0.050	2.49	3.69

Health Risk Review

Diesel PM is limited to 0.111 grams per hp
The diesel engine has a rated hp of 204 hp
Hourly emission is calculated to be 0.05 pounds per hour
With a permitted 50 hours of operation the annual emission is calculated to be 2.5 pounds per year.

Assumptions:
Receptor proximity = 2680 meters 8800 Feet
Receptor proximity factor = 0.001

CAPCOA Prioritization Review (FINAL- August 2016)

Carcinogens	Compound	Emissions (lbs/yr)	Receptor Proximity	Normalization Factor	Unit Risk Factor	**Score**
	Diesel PM	2.500	0.001	7700	3.00E-04	**0.00578**

Chronic Impact	Compound	Emissions (lbs/hr)	Receptor Proximity	Normalization Factor	REL ug/m3	**Score**
	Diesel PM	2.5	0.001	150	5	**0.0750**

CONDITION OF CERTIFICATION
COMPLIANCE-5

Geysers Calistoga Plant (Unit 19) 81-AFC-01C
2020 Annual Compliance Report to the California Energy Commission
January 2020-December 2020

Technical Area	No.	Facility Status	Report	Condition of Certification	Compliance Verification	Timeframe	Submittal Required	Status	2020 Annual Compliance Report
AQ	1	Operations/Ongoing	N/A	The project owner shall operate the power plant and air emissions control system described in 81-AFC-1 and subsequent permit modification reviews, to include A/C 97- 20, in a manner necessary to limit hydrogen sulfide (H2S) emissions on a continuous basis from Calistoga Geothermal Power Plant to eight (8) pounds or five (5) pounds of H2S per million pounds of steam flow. This same emissions limitation shall apply during power plant outages, unless Lake County Air Quality Management District (LCAQMD) Rule 510 is complied with as the result of a breakdown.	The project owner shall verify compliance by adhering to all testing and monitoring requirements. The project owner shall make the site and records available for inspection by representatives of the District, ARB, and Energy Commission upon request.			Ongoing	GPC is in compliance.
AQ	2	Operations/Ongoing	Test/Report	The use of the hydrogen peroxide/catalyst condensate abatement, Stretford type non-condensable H2S gas treatment system and surface condenser, drift eliminators, turbine bypass, dual generating units with shunt and multiple power source constitute the air emissions control system as proposed in 81-AFC-1 and is further amended to include the use of long contact time (per A/C 97-20) for dissolved H2S oxidation within the cooling tower basin, addition of oxidation enhancing catalyst to the secondary abatement system and non-condensable mercury removal system; and shall be the equipment used to satisfy the requirements of Condition AQ- 1. In the event the project owner seeks to modify the above equipment necessary to control H2S emissions, they shall first apply for and receive an Authority to Construct from the LCAQMD. The non-condensable gas treatment systems and the long retention time condensate re-route shall be fully utilized to maximize emissions control during all operations. All abatement systems shall be properly winterized and maintained to ensure proper and reliable functioning and availability. Non-condensable H2S shall be treated to a level below 10 ppmv at the discharge of the Stretford type gas treatment unit prior to introduction to the cooling tower. Abatement capacity shall be incorporated in the air emissions control system as is necessary to meet the emission requirement in Condition 1. The existing condensate line and modification including the air emissions control system shall be constructed and operated in a manner so as to preclude stacking of steam during scheduled and unscheduled power generation or transmission outages and during power plant startups and shutdowns.	The project owner shall verify compliance by adhering to all testing and monitoring requirements. The project owner shall provide the CPM with any applications and permits issued according to AQ-SC1. The project owner shall make the site and records available for inspection by representatives of the District, ARB and Energy Commission upon request.			Ongoing	GPC verifies compliance by adhering to all testing, monitoring, and reporting requirements. See AQ SC-1 for attached permit.
AQ	3	Operations/Ongoing	Test/Report	The project owner shall install, when practicable, continuous monitoring devices indicating total volume flow rates and H2S concentrations at the following locations: a) the Stretford unit; and b) in the treated condensate and in the circulating water upstream of the cooling tower. A log of such monitoring shall be maintained and made available to the LCAQMD staff upon request. The H2S monitoring devices must have an accuracy of plus or minus 1 ppm, provide measurements at least every 15 minutes, and be readily accessible to LCAQMD staff. Flow rate measuring devices shall have accuracies of plus or minus 5 percent at 40 percent to 100 percent of the total flow rate, and calibrations must be performed at least quarterly. A Houston-Atlas or equivalent type instrument, or equipment as approved on writing by the LCAQMD, shall be used in monitoring Stretford treated non-condensable gas for H2S. A continuous strip chart record and appropriate sampling line shall be maintained to ensure compliance with LCAQMD Rule 412. Said system shall be calibrated no less than monthly with a three-point calibration and such calibration indicated in a log. A one (1) point check shall be performed no less than weekly. Estimates of total Stretford tail gas, using a LCAQMD approved method, shall be logged no less than weekly. A log of the above maintenance, calibration, and associated monitoring (condensate and Stretford tail gas) shall be maintained on site and copies furnished to the LCAQMD upon request. No less than weekly, a composite or separate condensate sample(s) of steam from the hot wells (prior to mixing with the circulating water) shall be analyzed for dissolved sulfide content. Should such condensate level exceed seven (7) ppmw H2S, (assume 30% reduction by natural oxidation), the LCAQMD and CPM shall be promptly notified. Source tests and corrective actions shall be taken to ensure net emissions of the plant do not exceed eight (8) pounds per hour or five (5) pounds of H2S per million pounds of steam flow per Rule 608. Alternatively, a performance plan as specified in LCAQMD Rule 655 shall be developed and approved in writing by the Air Pollution Control Officer (APCO) to ensure operation in compliance with specified emissions limitations. The approach accepted therein by the LCAQMD may be substituted for this condition.	The project owner shall submit source test results and any description of corrective action to the CPM in the following periodic report. If a performance plan is needed or modified the plan shall be submitted to the CPM. The project owner shall make the site and records available for inspection by representatives of the District, ARB and Energy Commission upon request. The project owner shall submit source test results and any description of corrective action to the CPM in the following periodic report. If a performance plan is needed or modified the plan shall be submitted to the CPM. The project owner shall make the site and records available for inspection by representatives of the District, ARB and Energy Commission upon request.			Ongoing	See quarterly reports in attachment for AQ SC-2.

Technical Area	No.	Facility Status	Report	Condition of Certification	Compliance Verification	Timeframe	Submittal Required	Status	2020 Annual Compliance Report
AQ	4	Operations/Ongoing	Test/Report	The power plant cooling towers shall utilize drift eliminators with a guaranteed drift rate of 0.001 percent or less and the Stretford cooling tower shall have a guaranteed drift rate of 0.002 percent or less, maintained in good working order. Source tests or process estimates acceptable to the LCAQMD shall be made annually.	Source tests results and/or process estimates shall be submitted to the CPM in the following periodic report. The project owner shall make the site and records available for inspection by representatives of the District, ARB and Energy Commission upon request.			Ongoing	See quarterly reports in attachment for AQ SC-2.
AQ	5	Operations/Ongoing	N/A	The project owner shall provide safe access to sampling ports that enable representatives of the LCAQMD or California Air Resources Board to collect samples from the treated and untreated condensate and/or the circulating water upstream of the cooling tower, cooling tower stacks, the noncondensable exit gas from the Stretford unit, and the direct off-gas vent from any other port deemed necessary by the LCAQMD for sampling.	The project owner shall make the site and records available for inspection by representatives of the District, ARB and Energy Commission upon request.			Ongoing	GPC is in compliance.
AQ	6	Operations/Ongoing	N/A	If a generic monitoring program (such as GAMP) for H2S and/or other constituents of concern is continued in the Geysers KGRA by responsible agencies (NSCAPCD, ARB, CEC, and LCAQMD), the project owner shall participate to the extent equitable with other parties in funding or causing such a program to be performed. If such program does not exist and the Calistoga Geothermal Power Plant is determined to be out of compliance with any rule, regulation, or permit condition, such monitoring shall immediately be initiated and funded by the project owner until compliance is established.	If the project owner does not participate in GAMP, the project owner shall submit to the LCAQMD and CPM, for their review and approval, a detailed ambient monitoring plan prior to exiting the program.			Ongoing	GPC is in compliance and participates in GAMP.
AQ	7	Complete - report only for 2020	Sample/Report	The project owner shall (starting 1/15/1985) install continue to operate for a continuous period of one year in the Gunning Creek Drainage Basin a wet/dry deposition sampler, and analyze monthly composite of both wet and dry samples for soluble solids, boron, fluoride, arsenic, silica, and mercury. The sampler utilized shall comply with or exceed the guidelines of the National Atmospheric Deposition Program. Results shall be forwarded on a monthly basis to the LCAQMD. A review of such data and the need for a continued effort shall be jointly conducted by the LCAQMD and project owner.	The project owner shall submit any ongoing sampling results to the CPM in the following periodic report. Any change to sampling requirements shall be noted in the following periodic compliance report. The project owner shall make the site and records available for inspection by representatives of the District, ARB and Energy Commission upon request.			Complete	Condition is complete and will no longer be provided to the CEC in the ACR.
AQ	8	Operations/Ongoing	Test/Report	The project owner shall perform biannual tests to determine the content of steam components as listed below upon written request of the LCAQMD and as required in the LCAQMD's geothermal fluid transmission line permit (P/O 85-002D). The continued need for such tests shall be reviewed after two years of operation. Copies of all tests shall be forwarded to the ARB and CEC. Such monitoring is not intended to be redundant with the steam line requirements and the APCO may relieve requirements as appropriate to avoid redundancy as required in this condition. STEAM CONDENSATE/TOTAL STEAM: Ammonium (total); Arsenic (total); Asbestos (total); Benzene; Boron (total); Carbon Dioxide (total); Hydrogen Sulfide (total); Fluorides (total); Mercury; Nickel (total); pH; Total Dissolved Solids; and Total Suspended Solids. GAS PHASE: Benzene; Particulate mass in micrograms per kilogram of steam; Arsenic from particulates above; Lead from particulates above; Cadmium from particulates above; Sulfur from particulates above; Radon 222 and Daughters; Mercury Vapor; Total Methane and Non-Methane Hydrocarbons; Other non-gases as indicated by condensate analysis; and NESHAP pollutants as requested.	The project owner shall submit any test results or report to the CPM in the following quarterly report. Any change to sampling requirements shall be noted in the following periodic compliance report. The project owner shall make the site and records available for inspection by representatives of the District, ARB and Energy Commission upon request.			Ongoing	Submittal of the AB2588 report submitted to LCAQMD on 4/29/21 fulfills this condition. See attached for Lake County Cooling Tower Annual Injection Report.
AQ	9	Operations/Ongoing	Report/Records	The project owner shall issue quarterly reports to the LCAQMD detailing: a) hours of operation; b) any periods of significant abatement equipment malfunction, reasons for malfunctions, and the corrective action; c) types and amounts of chemicals used for condensate treatment; d) periods of scheduled and unscheduled outages and the cause of the outages if known; e) a summary of any irregularities that occurred with the continuous emission monitors, if used; and f) if any, the dates and hours in which Calistoga Geothermal Power Plant H2S emission rate was in excess of the emissions limitations specified in Condition AQ-1.	The project owner shall submit the quarterly reports to the CPM within 45 calendar days of the end of each quarter. The project owner shall make the site and records available for inspection by representatives of the District, ARB, U.S. EPA, and Energy Commission upon request.			Ongoing	See quarterly reports in attachment for AQ SC-2.

Technical Area	No.	Facility Status	Report	Condition of Certification	Compliance Verification	Timeframe	Submittal Required	Status	2020 Annual Compliance Report
AQ	10	Operations/Ongoing	Test/Report	Dust of three (3) minutes duration or longer in any one hour will be kept below Ringelmann 2 by use of water, oil, or surfacing of roads, pads and parking areas during operation and maintenance of the power plant, or by such other means deemed appropriate. Roads used regularly shall be maintained to avoid the generation of dust by paving or oiling as necessary.	The project owner shall perform a Visible Emissions Evaluation or source test to determine compliance as requested by the LCAQMD or CPM. The project owner shall make the site and records available for inspection by representatives of the District, ARB, and Energy Commission upon request.			Ongoing	No request has been made to perform testing.
AQ	11	Operations/Ongoing	N/A	The project owner shall allow authorized representatives of the LCAPMD and ARB to enter the premises where the source is located, within one hour of notification, to inspect the plant for compliance with the conditions of this license. Source test shall be performed in a fashion to allow Senior Plant or project owner staff reasonable opportunity for co-sampling if desired.	The project owner shall make the site and records available for inspection by representatives of the District, ARB and Energy Commission upon request.			Ongoing	No violations occurred during the reporting period.
AQ	12	Operations/Ongoing	N/A	The project owner shall comply with all applicable federal, state, and local laws, standards, and ordinances in the operation of Calistoga Geothermal Power Plant.	The project owner shall make a statement of compliance to verify compliance by adhering to all testing, monitoring, and reporting requirements. The project owner shall make the site and records available for inspection by representatives of the District, ARB and Energy Commission upon request.			Ongoing	GPC verifies compliance by adhering to all testing, monitoring, and reporting requirements. No violations occurred during the reporting period.
AQ	13	Operations/Ongoing	N/A	The project owner shall fund or supply any required special protective clothing or safety equipment for the LCAQMD's utilization should such be deemed necessary by the project owner during the life of this project.	The project owner shall make the site and records available for inspection by representatives of the District, ARB and Energy Commission upon request			Ongoing	GPC is in compliance, records available upon request.
AQ	14	Operations/Ongoing	Application/Notice	Significant deviation from license conditions cannot be granted by the APCO and can only be granted by the LCAQMD Hearing Board. This requirement does not replace the CEC amendment process.	The project owner shall follow the LCAQMD procedures for significant deviation from the license conditions. The project owner shall provide the CPM with any applications and permits issued according to AQ-SC1. The project owner shall make the site and records available for inspection by representatives of the District, ARB and Energy Commission upon request.			Ongoing	See attachment AQ-14 for the application for the associated permit for AQ SC-1.
AQ	15	Operations/Ongoing	Test/Report	GPC shall test each Stretford sulfur load for mercury total threshold limit concentration (TTLC). Test records shall be maintained on site for a period of three years or longer as otherwise required by law, and provided to the LCAQMD upon request.	The project owner shall verify compliance by adhering to all testing and monitoring requirements. The project owner shall make the site and records available for inspection by representatives of the District, ARB and Energy Commission upon request.			Ongoing	GPC is in compliance. Site and records are available upon request.
AQ	16	Operations/Ongoing	Test/Report	The mercury concentration of the non-condensable gas stream prior to and after passing through the mercury removal equipment shall be annually sampled and analyzed to establish the removal efficiency of the equipment. An alternate method of calculating the mercury efficiency may be utilized upon approval of the APCO. The annual test results shall be provided to the LCAQMD and CPM within 60 days of testing.	The project owner shall submit any test results to the CPM within 60 days of testing. The project owner shall notify the CPM of any request and subsequent approval of an alternate calculation method. The project owner shall make the site and records available for inspection by representatives of the District, ARB and Energy Commission upon request.			Ongoing	GPC complies with the condition through Hg testing of the sulfur waste product to verify Hg removal efficiency of the equipment. Results are available upon request.
AQ	17	Operations/Ongoing	Notice/Application	Activated carbon media shall be used as replacement media during the next major shut down of the facility, or not later than June 1, 2002, or prior to that date, or if the abatement efficiency drops below 65% and is not correctable by normal maintenance. A modification, other than the carbon media change out and flow/contact enhancements to the existing equipment shall require an application for a modification and approval by the LCAQMD.	The project owner shall provide the CPM with any applications and approvals/permits issued according to AQ-SC1. The project owner shall make the site and records available for inspection by representatives of the District, ARB and Energy Commission upon request			Ongoing	No violations occurred during the reporting period.

Technical Area	No.	Facility Status	Report	Condition of Certification	Compliance Verification	Timeframe	Submittal Required	Status	2020 Annual Compliance Report
AQ	E1A	Operations/Ongoing	Notice	All equipment shall be regularly maintained in good working order pursuant to manufacturer's guidelines and operated in a manner to prevent or minimize air emissions. The Lake County Air Quality Management District (LCAQMD) shall be notified pursuant to Rule 510, regarding equipment breakdown.	The project owner shall notify the CPM of breakdowns in the quarterly compliance reports. The project owner shall make the site and records available for inspection by representatives of the District, ARB, and Energy Commission upon request.			Ongoing	GPC complies with compliance to verify compliance by adhering to all testing, monitoring, and reporting requirements.
AQ	E1C	Operations/Ongoing	Test/Report	Visible emissions from E1 shall not exceed Ringelmann 0.5 (10% opacity) from the engine exhaust stack for more than three (3) minutes in any one (1) hour.	The project owner shall perform a Visible Emissions Evaluation to determine compliance as requested by the LCAQMD or CPM. The project owner shall make the site and records available for inspection by representatives of the District, ARB, and Energy Commission upon request.			Ongoing	No request has been made to perform testing.
AQ	E2A	Operations/Ongoing	Report/Records	E1 shall only operate to power emergency standby cooling tower wet-down pump for use when commercial line power is not available because of an emergency or line maintenance outage. The project owner shall develop or utilize an engine maintenance plan with prescribed oil change frequency per manufacturer's specifications and/or the National Emission Standard for Hazardous Air Pollutants (NESHAP) for Reciprocating Internal Combustion Engines (RICE) and New Source Performance Standards (NSPS).	The project owner shall make the site and records available for inspection by representatives of the District, ARB, and Energy Commission upon request.			Ongoing	The engine is operated only for emergency use. Testing and maintenance is limited in accordance to RICE and NESHAP regulations. Records available upon request.
AQ	E2B	Operations/Ongoing	Report/Records	Testing and maintenance operations for E1 is allowed for up to 50 hours per 12-month period.	The project owner shall maintain logs as required in Records and Reporting. The project owner shall make the site and records available for inspection by representatives of the District, ARB, and Energy Commission upon request.			Ongoing	GPC is in compliance, records available upon request.
AQ	E2C	Operations/Ongoing	Records	Diesel fuel utilized shall be California Low Sulfur Diesel containing less than 15 ppmw sulfur.	The project owner shall maintain logs as required in Records and Reporting. The project owner shall make the site and records available for inspection by representatives of the District, ARB, and Energy Commission upon request.			Ongoing	GPC contracts with vendors who only supply CARB diesel fuel. Records are available upon request.
AQ	E2D	Operations/Ongoing	N/A	The project owner shall comply with the requirements of the Air Toxics "Hot Spots" Information and Assessment Act as specified in Sections 44300 - 44394 of the California Health and Safety Code as well as the Air Toxic Control Measure (ATCM) for Stationary Compression Ignition Engines.	The project owner shall make the site and records available for inspection by representatives of the District, ARB, and Energy Commission upon request.			Ongoing	2020 AB2588 annual update files were exported from HARP and provided to LCAQMD on 4/29/2021.
AQ	E2E	Complete - report only for 2020	Application/Notice	Within 180 days of initial operation, the project owner shall apply for a Permit to Operate, and prove compliance with these conditions.	The project owner shall submit the Permit to Operate to the CPM according to AQ-SC1. The project owner shall make the site and records available for inspection by representatives of the District, ARB, and Energy Commission upon request.			Complete	Condition is complete as of 2020 and will no longer be provided to the CEC in the ACR.
AQ	E3A	Operations/Ongoing	Report/Records	The project owner shall maintain a log for E1 (logs can be hard copy or digital) meeting the requirements of the NESHAP for RICE and NSPS which contains at a minimum, the facility name, location, engine information, fuel used, emission control equipment, maintenance conducted on the engine, and documentation that the engine meets the emission standards.	The project owner shall make the site and records available for inspection by representatives of the District, ARB, and Energy Commission upon request.			Ongoing	GPC is in compliance, records available upon request.
AQ	E3B	Operations/Ongoing	Report/Records	The project owner shall maintain a log for E1 of usage that shall document hours of operation, and initial startup hours. The project owner shall maintain a log of engine maintenance to show compliance with maintenance plan and NSPS requirements.	The project owner shall make the site and records available for inspection by representatives of the District, ARB, and Energy Commission upon request.			Ongoing	GPC is in compliance, records available upon request.

Technical Area	No.	Facility Status	Report	Condition of Certification	Compliance Verification	Timeframe	Submittal Required	Status	2020 Annual Compliance Report
AQ	E3C	Operations/Ongoing	Report/Records	The project owner shall document fuel usage by retention of fuel purchase records or by other methods that adequately show fuel use for E1. Log entries shall be retained for a minimum of 36 months, with 24 months of the most recent entries retained / accessible on-site. The log shall meet all requirements of the ATCM for Stationary Compression Ignition Engines.	The project owner shall make the site and records available for inspection by representatives of the District, ARB, and Energy Commission upon request.			Ongoing	GPC is in compliance. Records available upon request.
AQ	E3D	Operations/Ongoing	N/A	The project owner shall maintain a non-resettable hour meter for E1 capable of displaying 9,999 hours.	The project owner shall make the site and records available for inspection by representatives of the District, ARB, and Energy Commission upon request.			Ongoing	GPC is in compliance. Records available upon request.
AQ	E3E	Operations/Ongoing	Report/Records	The project owner shall furnish an annual record of fuel use (gallons) and engine use (hours), breaking down hours of testing, maintenance, and emergency use, or in a format acceptable to the LCAQMD, within 15 days of request, and by October 31st of each year.	The content and format of the annual record submitted by the project owner to the LCAQMD shall be approved by the LCAQMD. The project owner shall provide the CPM a summary of the type of fuel used and engine use (hours) breaking down hours of testing, maintenance, and emergency use, to the CPM in the annual compliance report. The project owner shall make the site and records available for inspection by representatives of the District, ARB, and Energy Commission upon request.			Ongoing	See S-2 attachment: annual throughput report.
AQ	E4A	Operations/Ongoing	Notice/Records	The project owner shall apply for and receive an Authority to Construct permit prior to the addition of new equipment or modification of permitted equipment.	The project owner shall provide the CPM with applications and permits issued according to AQ-SC1. The project owner shall make the site and records available for inspection by representatives of the District, ARB, and Energy Commission upon request.			Ongoing	See AQ SC-1 and AQ-14 attachments.
AQ	E5A	Operations/Ongoing	Monitor/Test	The herein permitted facility shall not cause a public nuisance nor make a measurable contribution to any Ambient Air Quality Standard exceedance. Should this facility result in odor or health complaints, the LCAQMD may require under Sections 430 and 670, monitoring, testing, and mitigation by the project owner to abate said condition.	The project owner shall perform monitoring and testing as requested by the LCAQMD or CPM. The project owner shall make the site and records available for inspection by representatives of the District, ARB, U.S. EPA, and Energy Commission upon request.			Ongoing	No request has been made to perform testing.
AQ	E6A	Operations/Ongoing	N/A	The permit for the E1 shall be posted at the equipment site and be available for the project owner's reference and LCAQMD staff inspection. If locks or unmanned gates are used to secure the project area, the LCAQMD or its representative will be given free access of entry for the purposes of monitoring or inspecting during normal business hours or periods of emergency engine use.	The project owner shall make the site and records available for inspection by representatives of the District, ARB, and Energy Commission upon request.			Ongoing	GPC is in compliance. Records available upon request.
AQ	F1B	Operations/Ongoing	Test/Report	The total ROG, PM10, SOx, or NOx emission rate for this facility shall not exceed 25 tons per 12-month period. The emission rate(s) determination shall be consistent with the methodology and assumptions used to evaluate the application(s) under which the LCAQMD permit(s) was/were issued.	The project owner shall perform a source test to verify compliance with the emission rate(s) upon request of the District. The project owner shall make the site and records available for inspection by representatives of the District, ARB, and Energy Commission upon request.			Ongoing	No request has been made to perform testing.
AQ	SC1	Operations/Ongoing	Air permits	The project owner shall provide the compliance project manager (CPM) copies of any Lake County Air Quality Management District- (LCAQMD or District) issued project air permit for the facility. The project owner shall submit any new request or application for a new project air permit or project air permit modification to the CPM.	The project owner shall submit any request or application for a new project air permit or project air permit modification to the CPM at the time of its submittal to the permitting agency. The project owner shall provide the CPM a copy of all issued air permits, including all modified air permits, to the CPM within 30 days of finalization.	N/A	Provide to CPM concurrent with submittal to air district	Ongoing	See attachment AQ SC-1 for a copy of the air permit.

Technical Area	No.	Facility Status	Report	Condition of Certification	Compliance Verification	Timeframe	Submittal Required	Status	2020 Annual Compliance Report
AQ	SC2	Operations/Ongoing	Quarterly/annual reports	The project owner shall provide the CPM with copies or summaries of the quarterly and annual reports submitted to the District or ARB. The project owner shall submit to the CPM in the required quarterly reports a summary of any notices of violation and reports, and complaints relating to the project.	The project owner shall provide the reports to the CPM within the timeframes required in the conditions of certification.			Ongoing	See attachment AQ SC-2 for quarterly reports submitted during the reporting period.
AQ	SC3	Operations/Ongoing	Report	The project owner shall provide the CPM with an Annual Compliance Report demonstrating compliance with all the conditions of certification as required in the General Provisions of the Compliance Plan for the facility.	The project owner shall provide the Annual Compliance Report to the CPM within 45 calendar days after the end of the reporting period or a later date as approved by the CPM.			Ongoing	GPC is in compliance with all the conditions of certification as required in the General Provisions of the Compliance Plan.
AQ	SC4	Operations/Ongoing	Report/Records	The project owner shall maintain a current equipment list for the facility.	The project owner shall provide the CPM with the equipment list upon request.			Ongoing	GPC is in compliance, equipment list available upon request.
Biological Resources	5-2	Operations/Ongoing	Notice/Report	Project owner will implement the biological mitigation measures outlined in the AFC (pp. 5-62 through 5-67), Responses to Data Requests (dated March 20, 1981, and May 18, 1981), and other submittals from Project Owner [Proposed Scope of Work for Aquatic Monitoring, dated May 18, 1981; Monitoring and Mitigation Plan, dated August 1981; and additions to proposed mitigation measures discussed at Issues Hearing of June 15, 1981 (Transcript pp. 311 - 328)]. These mitigation measures include the following: 1. Construction activities will be restricted to the area indicated on engineering drawings (No. 13876-EY-3A-C) and shall not be exceeded without approval of the CEC. 2. No disturbance shall be allowed in the serpentine barrens area. The biologist shall establish a buffer zone around the barrens. Fences shall be placed along the boundary of any activity that occurs near the buffer zone to serve as a warning to construction workers. 3. No mass-grading shall take place during the wet season (November - March) without the written approval of the Lake County Building Department. 4. Hydromulch and seeding of native shrubs will be completed in time to ensure that seeds sprout and become established prior to the rainy season. 5. The establishment of vegetation ground cover shall be promoted by regular irrigation until natural rainfall levels provide adequate moisture. 6. The hydromulch seed mixture used by the revegetation contractor shall be checked by a qualified biologist to confirm that hydromulch specifications are met. Percent seed composition for any commercial premixed seed mixtures will be checked by counting the relative proportions of seeds in a series of random samples. 7. No construction shall be allowed within 235 feet of Anderson Creek. 8.The plant site shall be benned to control accidental spills. 9. Following each storm episode for the first winter, erosion control measures will be inspected to verify their effectiveness. 10. Erosion control measures which are damaged during storms shall be repaired as soon as possible, but in no case shall repair be delayed more than 10 days. 11. Wildlife habitat enhancement measures, including prescribed burns and snag protection, shall be implemented in accordance with the provisions of the Monitoring and Mitigation Plan, sated August 1981. These measures shall be continued on an annual rotational basis for the life of the power plant.	Project owner's biologist shall inform the CEC and the CDFG in writing no later than 10 days after completion of berm construction, construction of protective fences along the serpentine barrens, planting of native species and hydromulch of bare slopes, installation of mechanical erosion measures, and implementation of wildlife enhancement measures. The other provisions of this section need be reported only where violation of the requirement has occurred. In this case the CEC shall be informed as soon as possible by telephone and a written report shall be submitted within 10 days of the incident.	Immediate phone call	following violation of this condition, followed by written report submitted within 10 days of the incident.	Ongoing	GPC is in compliance.

Technical Area	No.	Facility Status	Report	Condition of Certification	Compliance Verification	Timeframe	Submittal Required	Status	2020 Annual Compliance Report
Biological Resources	5-4	Complete - report only for 2020	Report	Project owner shall monitor drift effects on the vegetation surrounding the power plant. Monitoring shall be conducted for one year prior to operation, annually for the first three years of operation, and then at five-year intervals for the life of the power plant. Monitoring shall include large-scale (not smaller than 1:3000) false color infrared photographs (one stereo pair), taken in June, coupled with ground sampling at permanent study plots. Ground sampling will include examination by a qualified biologist for visible foliar injury and collection of foliar samples which will be analyzed for boron content at a qualified laboratory.	Project owner shall submit annual reports to the CEC in those years in which the monitoring takes place. These reports shall include copies of all laboratory analyses, field survey work, and a stereo pair (full color copy) of aerial photographs of the leasehold. NOTE: A Petition for Amendment to suspend the monitoring requirement was submitted March 13th 2008 to Donna Stone, CPM. The Petition was granted by the Commission on 7/16/08; and allowed Geysers Power Company to suspend boron drift monitoring with CPM approval. CPM approval to suspend monitoring was given 7/16/08.			Complete	A Petition for Amendment to suspend the monitoring requirement was submitted March 13th 2008 to Donna Stone, CPM. The Petition was granted by the Commission on 7/16/08; and allowed GPC to suspend boron drift monitoring with CPM approval. CPM approval to suspend monitoring was given 7/16/08. Condition is complete and will no longer be provided to the CEC in the ACR.
COM	1	Operations/Ongoing	N/A	Unrestricted Access The project owner shall ensure that the CPM, responsible staff, and delegate agencies are granted unrestricted access to the facility site, related facilities, project-related staff, and the records maintained on-site for the purpose of conducting facility audits, surveys, inspections, or general or closure-related site visits. Although the CPM will normally schedule site visits on dates and times agreeable to the project owner, the CPM reserves the right to make unannounced visits at any time, whether such visits are by the CPM in person or through representatives from staff, delegated agencies, or consultants.	N/A	N/A	N/A	Ongoing	GPC is in compliance.
COM	2	Operations/Ongoing	ACR	Compliance Record The project owner shall maintain electronic copies of all project files and submittals on-site, or at an alternative site approved by the CPM for the operational life and closure of the project. The files shall also contain at least: 1.the facility's Application for Certification, if available; 2.all amendment petitions, staff approvals and CEC orders; 3.all site-related environmental impact and survey documentation; 4.all appraisals, assessments, and studies for the project; 5.all finalized original and amended design plans and "as-built" drawings for the entire project; 6.all citations, warnings, violations, or corrective actions applicable to the project, and 7.the most current versions of any plans, manuals, and training documentation required by the conditions of certification or applicable LORS. Staff and delegate agencies shall, upon request to the project owner, be given unrestricted access to the files maintained pursuant to this condition.	N/A	Update as needed throughout year, and report on additions in ACR	Update list of documents in Compliance Record in ACR	Ongoing	GPC is in compliance.

Technical Area	No.	Facility Status	Report	Condition of Certification	Compliance Verification	Timeframe	Submittal Required	Status	2020 Annual Compliance Report
COM	3	Operations/Ongoing	N/A	A cover letter or email from the project owner or an authorized agent is required for all compliance submittals and correspondence pertaining to compliance matters. The cover letter or email's subject line shall identify the project by the docket number for the compliance phase, cite the appropriate condition of certification number(s), and give a brief description of the subject of the submittal. When submitting supplementary or corrected information, the project owner shall reference the date of the previous submittal and the condition(s) of certification applicable. All reports and plans required by the project's conditions of certification shall be submitted in a searchable electronic format (.pdf, MS Word or Excel, etc.) and include standard formatting elements such as a table of contents identifying by title and page number each section, table, graphic, exhibit, or addendum. All report and/or plan graphics and maps shall be adequately scaled and shall include a key with descriptive labels, directional headings, a distance scale, and the most recent revision date. The project owner is responsible for the content and delivery of all verification submittals to the CPM and notification that the actions required by the verification were satisfied by the project owner or an agent of the project owner. All submittals shall be accompanied by an electronic copy on an electronic storage medium, or by e-mail, as agreed upon by the CPM. If hard copy submittals are required, they should be addressed as follows: Compliance Project Manager Geysers Energy Project (Docket Number) California Energy Commission 1516 Ninth Street (MS-2000)	N/A	N/A	N/A	Ongoing	GPC is in compliance.
COM	4	Pre-con	Report	Monthly Compliance Report During the construction of approved project modifications requiring construction of 6 months or more, the project owner or authorized agent shall submit an electronic searchable version of the MCR to the CPM within ten (10) business days after the end of each reporting month. No MCR shall be required for maintenance and repair activities, regardless of duration. MCRs shall be submitted each month until construction is complete, and the final certificate of occupancy is issued by the DCBO. MCRs shall be clearly identified for the month being reported. The MCR shall contain, at a minimum: 1.A summary of the current project construction status, a revised/updated schedule if there are significant delays, and an explanation of any significant changes to the schedule; 2.Construction submittals pending approval, including those under review, and comments issued, and those approved since last MCR; 3.A projection of project compliance activities (compliance submittals, etc.) scheduled during the next (2) two months; the project owner shall notify the CPM as soon as any changes are made to the project construction schedule that would affect compliance with conditions of certification; 4.A listing of incidents (safety, etc.), complaints, inspections (status and those requested),notices of violation, official warnings, trainings administered, and citations received during the month; a list of any incidents that occurred during the month, a description of the actions, taken to date to resolve the issues; and the status of any unresolved actions noted in the previous MCRs; 5.Documents required by specific conditions (if any) to be submitted along with each MCR. Each of these items shall be identified in the transmittal letter, as well as the conditions they satisfy, and submitted as attachments to the MCR; 6.A list of conditions (if any) that have been satisfied during the reporting period, and a description or reference to the actions that satisfied the condition; and 7.A listing of the month's additions to the Compliance Record.		10 business days	After end of each reporting month	Ongoing	GPC is in compliance. Monthly compliance reports are sent to the CEC.

Technical Area	No.	Facility Status	Report	Condition of Certification	Compliance Verification	Timeframe	Submittal Required	Status	2020 Annual Compliance Report
COM	5	Operations/Ongoing	ACR PCR	Periodic and Annual Compliance Reports The project owner shall continue to submit searchable electronic ACRs to the CPM, as well as other PCRs required by the various technical disciplines. ACRs shall be completed for each year of commercial operation and are due each year on a date agreed to by the CPM. Other PCRs (e.g. quarterly reports), may be specified by the CPM. The searchable electronic copies may be filed on an electronic storage medium or by e-mail, subject to CPM approval. Each ACR must include the AFC number, identify the reporting period, and contain the following: 1.an updated list showing the status of all conditions of certification (fully satisfied conditions do not need to be included in the matrix after they have been reported as completed); 2.a summary of the current project operating status and an explanation of any significant changes to facility operating status during the year; 3.documents required by specific conditions to be submitted along with the ACR; each of these items shall be identified in the transmittal letter with the conditions it satisfies, and submitted as an attachment to the ACR; 4.a cumulative list of all known post-certification changes approved by the CEC or the CPM; 5.an explanation for any submittal deadlines that were missed, accompanied by an estimate of when the information will be provided; 6.a listing of filings submitted to, or permits issued by, other governmental agencies during the year; 7.a projection of project compliance activities scheduled during the next year; 8.a listing of the year's additions to the Compliance Record; 9.an evaluation of the Site Contingency Plan, including amendments and plan updates; and 10.a listing of complaints, incidents, notices of violation, official warnings, and citations received during the year, a description of how the issues were resolved, and the status of any unresolved complaints.	N/A	Date or time specified by CPM or COC	ACR or PCR	Ongoing	Compliance Plan has been updated for all applicable verification items for the applicable time frame in 2020.
COM	6	Operations/Ongoing	N/A	Confidential Information Any information that the project owner designates as confidential shall be submitted to the CEC's Executive Director with an application for confidentiality, pursuant to Title 20, California Code of Regulations, section 2505(a).	N/A	N/A	Application for Confidential Designation	Ongoing	GPC is in compliance.
COM	7	Operations/Ongoing	N/A	Annual Energy Facility Compliance Fee Pursuant to the provisions of section 25806 (b) of the Public Resources Code, the project owner shall continue paying an annual compliance fee which is adjusted annually, due by July 1 of each year in which the facility retains its certification.	N/A	Annually on July 1st	N/A	Ongoing	GPC is in compliance.
COM	8	Operations/Ongoing	N/A	Amendments and Staff Approved Project Modifications The project owner shall petition the CEC, pursuant to Title 20, California Code of Regulations, section 1769, to modify the design, operation, or performance requirements of the project or linear facilities, or to transfer ownership or operational control of the facility. Section 1769 details the required contents for a Petition to Amend a CEC Decision. A project owner is required to submit a five thousand ($5,000) dollar fee for every Petition to Amend a previously certified facility, pursuant to Public Resources Code section 25806(e). If the actual amendment processing costs exceed $5,000.00, the total Petition to Amend reimbursement fees owed by a project owner will not exceed seven hundred fifty thousand dollars ($750,000), adjusted annually.	N/A	N/A	N/A	Ongoing	GPC is in compliance.
COM	9	Operations/Ongoing	Written Report	Incident-Reporting Requirements Within 24 hours of its occurrence, the project owner shall report to the CPM any safety-related incident. Such reporting shall include any incident that has resulted in death to a person; an injury or illness to a person requiring overnight hospitalization; a report to Cal/OSHA, OSHA, or other regulatory agency; or damage to the property of the project owner or another person of more than $50,000. If not initially provided, a written report also will be submitted to the CPM within five business days of the incident. The report will include copies of any reports concerning the incident that have been submitted to other governmental agencies.	N/A	24 hours	within occurrence of incident	Ongoing	GPC is in compliance.

Technical Area	No.	Facility Status	Report	Condition of Certification	Compliance Verification	Timeframe	Submittal Required	Status	2020 Annual Compliance Report
COM	10	Operations/Ongoing	notice	Non-Operation and Restoration Plans If the facility ceases operation temporarily because it is physically unable to operate (excluding maintenance or repair) for longer than three (3) months (or other CPM-approved date), the project owner shall notify the CPM. Notice of planned non-operation, excluding maintenance or repair, shall be given at least two (2) weeks prior to the scheduled date. Notice of unplanned non-operation shall be provided no later than one (1) week after non-operation begins.	N/A	2 weeks	prior to scheduled date of non-operations.	Ongoing	GPC is in compliance.
COM	11	Operations/Closure	Closure Plan	Facility Closure Planning The project owner shall coordinate with the CEC to plan and prepare for eventual permanent closure and license termination by filing a Facility Closure Plan. The Facility Closure Plan shall be filed 90 days before the commencement of closure activities or at such other time agreed to between the CPM and the project owner. The Facility Closure Plan shall include the information set forth in Title 20, California Code of Regulations, section 1769, but shall not be subject to the fee set forth in Public Resources Code section 25806(e).	N/A	90	days before commencement of closure activities	Ongoing	GPC is in compliance.
FIRE PREVENTION	1	Operations/Ongoing	Annual test results	After commissioning of the non-NFPA cooling tower wet down system, the project owner shall annually conduct the inspection, testing, and maintenance protocol designated in the Basis of Design Document for the wet down system.	The project owner shall submit the test results of the annual inspection, testing, and maintenance protocol in the Basis of Design Document 30 days after completion of the test.	30 days	provide to CPM after completion of annual inspection.	Ongoing	Once Basis of Design is completed and approved by CEC, an inspection program will be implemented.
FIRE PROTECTION	1	Operations/Ongoing	Drawings	The project owner shall notify and submit design drawings to the compliance project manager (CPM) for any planned modifications that would materially change the design, operation, or performance of the fire protection or fire alarm systems.	At least 15 business days before the start of any construction that materially changes the design, operation or performance made to the fire protection or fire alarm systems, the project owner shall submit a complete set of design drawings to the CPM for review and approval, and to the DCBO for plan check against the applicable LORS and construction inspection.	15 business days	start of construction for material change to fire protection/ fire alarm system	Ongoing	There were no modifications made during this reporting period.
FIRE PROTECTION	2	Operations/Ongoing	BOD	The project owner shall maintain and update, as appropriate, the fire protection Basis of Design documents and appendices to ensure that the fire protection and fire alarm systems are documented and accurately depicted on drawings for the project site.	The project owner shall provide the CPM with an updated Basis of Design document within 30 days of completing any changes to fire protection or fire alarm systems that result in changes to the Basis of Design.	30 days	after completing changes to fire protection or fire alarm systems resulting in BOD changes	N/A	Once Basis of Design is completed and approved by CEC, an inspection program will be implemented.
FIRE PROTECTION	3	Operations/Ongoing	ITM Reports	The project owner shall ensure that all required inspections, testing, and maintenance (ITM) are performed on the project's fire protection systems as specified and in the frequencies set forth in Title 19, California Code of Regulations, section 904(a) and on the project's fire alarm systems as specified in the applicable edition of the National Fire Protection Association (NFPA) 72 National Fire Alarm and Signaling Code.	The project owner shall provide to the CPM copies of the completed ITM reports for the project's fire protection systems and fire alarm systems within 15 days of receiving the ITM reports. The ITM reports shall be submitted quarterly for the first two years following approval of this condition, then all ITM reports shall be submitted annually thereafter.	15 days	after receiving ITM reports. Beginning in 2023, ITM reports can be submitted annually.	Ongoing	ITMs were completed and reported per December 2020 Recommissioning report dated 1/8/21, TN# 240527.
FIRE PROTECTION	4	Operations/Ongoing	Summary	Whenever deficiencies or failures are identified in any of the ITM reports for the project's fire protection or fire alarm systems, the project owner shall provide the CPM with a summary of the following information from the ITM reports required by FIRE SAFETY-3: (a)A summary of all deficiencies or failures identified; (b)The corrective action the project owner has taken, or plans to take, to address each identified deficiency or failure; and (c)The completion date or an estimated completion date to implement the corrective action.	The project owner shall provide the CPM with the information from (a)-(c) within 15 days of receiving the ITM reports.	15 days	after receiving ITM reports.	Ongoing	GPC is in compliance

Technical Area	No.	Facility Status	Report	Condition of Certification	Compliance Verification	Timeframe	Submittal Required	Status	2020 Annual Compliance Report
FIRE PROTECTION	5	Operations/Ongoing	Information/Summary	In the case of a fire protection system impairment, as defined in the latest applicable edition of NFPA-25, Standard for the Inspection, Testing, and Maintenance of Water-Based Fire Protection Systems, California Edition, that would prevent the proper functioning of any portion of the fire protection or fire alarms systems during a fire event, the project owner shall inform the CPM of the impairment along with the following information: (a)The date discovered; (b)The location of the impairment; (c)A short description, including a photograph (if applicable), of the impairment and its cause (if known), and a description of the actions to be taken to protect life and safety until the impairment is corrected; (d)The corrective action outlining how the impairment was repaired, including any engineering drawings or inspections, not already provided to the CPM or the DCBO; (e)The date the impairment was repaired; and (f)Before and after photographs (if applicable) showing the completed impairment repair.	The project owner shall provide the CPM with information from (a)-(c) within two business days of the discovery of an impairment, or within a time as approved by the CPM. The project owner shall provide the CPM with information from (d)-(f) within 5 days of correction of the impairment.	2 business days	provide initial information after discovery of impairment. Provide remaining information within 5 days of correction of the impairment.	Ongoing	No impairments were discovered during the reporting period.
GEN	1	Operations/Ongoing	Information/Summary	Whenever material modifications to the facility are planned, the project owner shall design, construct, and inspect project modifications in accordance with the applicable version of the California Building Standards Code (CBSC), also known as Title 24, California Code of Regulations, which encompasses the California Building Code (CBC), California Administrative Code, California Electrical Code, California Mechanical Code, California Plumbing Code, California Energy Code, California Fire Code, California Code for Building Conservation, California Reference Standards Code, and all other applicable engineering laws, ordinances, regulations and standards (LORS) in effect at the time initial design plans are submitted to the chief building official (CBO) for review and approval (the CBSC in effect is the edition that has been adopted by the California Building Standards Commission and published at least 180 days previously). The project owner shall ensure that the provisions of the above applicable codes are enforced during the construction, addition, alteration, or demolition of the modifications. Where, in any specific case, different applicable sections of the code specify different materials, methods of construction or other requirements, the most restrictive shall govern. Where there is a conflict between a general requirement and a specific requirement, the specific requirement shall govern. The project owner shall ensure that all contracts with contractors, subcontractors, and suppliers clearly specify that all work performed, and materials supplied comply with the codes listed above.	Within 30 days following receipt of the certificate of occupancy (if one is required by the CBO) for any material project modification completed after the effective date of this condition, the project owner shall submit to the compliance project manager (CPM) a statement of verification, signed by the responsible design engineer, attesting that all designs, construction, installation, and inspection requirements of the applicable LORS and the CEC's decision have been met in the area of facility design. The project owner shall also provide the CPM a copy of the certificate of occupancy within 30 days of receipt from the CBO. Once the certificate of occupancy has been issued, the project owner shall inform the CPM at least 30 days prior to any construction, addition, alteration, or demolition to be performed on any portion(s) of the completed facility that requires CBO approval for compliance with the above codes. The CPM will then determine if the CBO needs to approve the work.	30	days following receipt of certificate of occupancy	Ongoing	On October 20, 2020, the CEC approved the installation of a stationary permanent emergency diesel-driven engine for the cooling tower wet-down system to aid in fire prevention, per order #20-1014-3. Documents were submitted by the DCBO to the CEC.
Geotechnical/ Seismic Hazards	7-6	Operations/Ongoing	Records	Occidental shall ensure that geologic records of site inspections, especially detailed logs of excavated surfaces, will be prepared during site preparation and submitted to the CEC upon request.	Occidental shall notify the CEC of the availability of geologic records of site inspections.			Ongoing	GPC is in compliance.
Noise	16-3	Operations/Ongoing	Report	Within 90 days after the. Plant reaches its rated power generation capacity and construction is complete, project owner shall conduct a noise survey at 500 feet from the generating station or at a point acceptable to project owner, CEC, and the LCAPCD. The survey will cover a 24-hour period with results reported in terms of Lx (x = 10, 50, and 90), Leq' and Ldn levels. Project owner shall prepare a report of the survey that will be used to determine the plant's conformance with county standards. In the event that county standards are being exceeded, the report shall also contain a mitigation plan and a schedule to correct the noncompliance. No additional noise surveys of off-site operational noise are required unless the public registers complaints or the noise from the project is suspected of increasing due to a change in the operation of the facility.	Within 30 days of the noise survey project owner shall submit its report to the LCAPCD.			Ongoing	No complaints were received during the reporting period.

Technical Area	No.	Facility Status	Report	Condition of Certification	Compliance Verification	Timeframe	Submittal Required	Status	2020 Annual Compliance Report
Noise	16-4	Operations/Ongoing	Report	Within 180 days after the start of commercial operation, project owner shall prepare a noise survey report for the noise-hazardous areas in the facility. The survey shall be conducted by a qualified person in accordance with the provisions of Title 8 CAC, Article 105. The survey results will be used to determine the magnitude of employee noise exposure. If employee complaints of excessive noise arise during the life of the project, CAL/DOSH, Department of Industrial Relations, shall make a compliance determination.	Project owner shall notify CAL/DOSH and the CEC of the availability of the report.			Ongoing	No complaints were received during the reporting period.
Public Health	2-1	Operations/Ongoing	Sample/Report	Project owner shall quarterly sample and analyze radon-222 concentrations in noncondensable gases entering the power plant in the incoming steam line, or vent off-gas line, or H2S abatement off-gas line in accordance with the most recent California Department of Health Services, Radiologic Health Service (CDHS/RHS) requirements for radon-222 monitoring and reporting. This radon-222 steam monitoring program will be conducted for at least the first three years of commercial operation. If monitoring results indicate that the radon-222 release from Oxy No. 1 is well within applicable standards, the monitoring program may be modified, reduced in scope, or eliminated, provided Project Owner obtains the permission of CDHS/RHS. As new information and techniques become available, with concurrence of Project Owner and CDHS/RHS, changes may be made to the program or the methods employed in monitoring radon-222.	During the first year of commercial operation, project owner shall provide the CDHS/RHS with the results of the quarterly sampling within 30 days after sample collection. After the first year of commercial operation, project owner shall provide the CDHS/RHS with an annual report summarizing the quarterly sampling results. The annual report will comply in format and content with the most recent CDHS/RHS reporting requirements.			Ongoing	See attachment Public Health 2-1 for table of quarterly analysis.
Public Health	2-10	Operations/Ongoing	Notice	Project owner shall implement the provisions of the approved plan to to provide bottled water to the Anderson Springs community in the event of a water pollution incident related to the project, until an alternative water supply system has been established for Anderson Springs.	Project owner shall immediately notify the CEC and the Lake County Health Department when the plan is implemented.			Ongoing	A water pollution incident related to the project did not occur during the reporting period.
Public Health	2-2	Operations/Ongoing	Report	If the radon-222 concentration exceeds 3.0 picocuries (pCi/l) in the cooling tower exhaust, project owner must CDHS/RHS with a special report.	Project owner shall provide a written report to CDHS/RHS of sample results within 30 days of confirming an exceedance of 3.0 (pCi/l) radon-222 in the cooling tower exhaust.	30 days	after confirming exceedance of 3.0 (pCi/l) radon-222	Ongoing	See the attached table referenced in Public Health 2-1. There was no exceedance of 3.0 pCi/l during the reporting period.
Public Health	2-3	Operations/Ongoing	Notice/Report	If the radon-222 concentrations exceed 6.0 pCi/l in the cooling tower exhaust, project owner shall notify the CDHS/RHS and the CEC by telegram or telephone upon confirmation of the sample result. Confirmation includes re-analyzing the sample by project owner or another qualified laboratory. The confirmation procedures used shall be the same as the routine analysis, but may include sending samples to CDHS/RHS or other qualified laboratories for analysis. Sample result confirmation must be accomplished in the quickest possible manner and should take less than five calendar days.	Project owner shall notify CDHS/RHS and the CEC within 24 hours of confirming the sample; results. Project owner shall provide a special report to CDHS/RHS and the CEC outlining corrective actions taken.	24 hours	after confirming exceedance of 6.0 (pCi/l) radon-222	Ongoing	See the attached table referenced in Public Health 2-1. There was no exceedance of 6.0 pCi/l during the reporting period.
Safety	12-13	Operations/Ongoing	Report	On-site worker safety inspections shall be conducted by the California Division of Occupational Safety and Health (CAL/DOSH) during construction and operation of the facility or when an employee complaint has been received. CAL/DOSH shall notify the CEC in writing in the event of a violation that could involve DOSH action affecting the construction or operation schedule.	Project owner shall note any CAL/DOSH inspections in its periodic compliance reports.			Ongoing	No Cal/OSHA inspections were performed in 2020 on Calpine GPC policies/procedures

Technical Area	No.	Facility Status	Report	Condition of Certification	Compliance Verification	Timeframe	Submittal Required	Status	2020 Annual Compliance Report
Solid Waste Management	11-1	Operations/Ongoing	Records	Project owner shall ensure that any hazardous waste hauler employed has a certificate of registration from the California Department of Health Services (CDHS), Hazardous Materials Management Section.	Project owner shall keep a letter on file verifying that hazardous waste haulers have CDHS certificates of registration.			Ongoing	All waste haulers are in compliance and on file in the DTSC database.
Solid Waste Management	11-2	Operations/Ongoing	N/A	The only Stretford process waste is sulfur cake with some entrained process chemicals. Project owner shall ensure that the sulfur cake is properly stored in an appropriate container and removed periodically to be sold or disposed at a site approved for such wastes. Any sludge which accumulates in the cooling tower ·will be removed as needed and hauled by a registered hazardous waste hauler to an approved disposal site.	Project owner shall submit final design plans and "As Built" drawings to the Lake County CBC incorporating these design features. In addition, project owner shall each month submit completed hazardous waste manifests to CDHS in compliance with Section 66475 of Title 22, CAC			Ongoing	GPC is in compliance.
Solid Waste Management	11-3	Operations/Ongoing	Notice	Project owner shall require that hazardous wastes are taken to a facility permitted by CDHS to accept such wastes. (Project owner has indicated its intention to dispose of wastes generated at either the· Middletown or Kelseyville ·approved sites.)	Project owner shall notify the CEC, CDHS, and Solid Waste Management Board of the selected disposal site. Any notice of change in disposal sites will be submitted as changes occur.			Ongoing	GPC is in compliance. No update to changes in approved disposal sites
Solid Waste Management	11-4	Operations/Ongoing	Written Report	If a secondary treatment system is used to abate H2S emissions, the plant may produce additional hazardous wastes. To ensure that these wastes are properly disposed, project owner shall submit its secondary abatement waste disposal plans, if secondary abatement is required, to the CEC for review.	The plans shall be submitted as soon as project owner determines secondary abatement is required, but not later than 120 days prior to operation of the secondary abatement system.			As needed	GPC is in compliance.
Solid Waste Management	11-5	Operations/Ongoing	Notice	If hazardous wastes, including Stretford sulfur effluent, are stored on site for more than 60 days, project owner shall obtain a determination from the CDHS that the requirements of a Hazardous Waste Facility Permit have been satisfied.	Project owner shall notify the CEC if it files an in lieu application with CDHS for the operation of a Hazardous Waste Facility.			As needed	GPC is in compliance.
Transmission Line Safety and Nuisance	13-4	Operations/Ongoing	Records	In the event of complaints regarding induced currents from vehicles, portable objects, large metallic roofs, fences, gutters, or other objects, project owner shall investigate and take all reasonable measures at its own expense to correct the problem for valid complaints, provided that (a) the object is located outside the right-"of-way, or (b) the object is within the right-of-way and existed prior to right-of-way acquisition. For objects constructed, installed, or otherwise placed within the right-of-way after right-of-way acquisition, project owner shall notify the owner of the object that it should be grounded. In this case, grounding is the responsibility of the property owner. project owner shall advise the property owner of this responsibility in writing prior to signing the right-of-way agreement.	Project owner shall maintain a record of activities related to this paragraph. These records shall be made available to CEC staff upon request.			Ongoing	GPC is in compliance with GPC's Transmission Line maintenance program.
Transmission Line Safety and Nuisance	13-6	Operations/Ongoing	Records	On-site worker safety inspections may be conducted by the California Division of Occupational Safety and Health (CAL/DOSH) during construction and operation of the transmission line or when an employee complaint has been received. Project owner shall notify the CEC in writing in the event of a violation that could involve DOSH actions affecting the transmission line construction or operation schedule.	Project owner shall maintain records of CAL/DOSH inspections and shall make them available to CEC staff upon request.			Ongoing	No Cal/OSHA complaints have been received during the reporting period
Transmission Line Safety and Nuisance	13-7	Operations/Ongoing	Records	Project owner shall make every reasonable effort to locate and correct, on a case-by-case basis, all causes of radio interference and television interference attributed to the transmission line facilities, including, if necessary, the modification of receivers and the furnishing and installation of antennas. In addition, project owner shall take reasonable care to prevent the conductors from being scratched or abraded.	Project owner shall maintain records of complaints and corrective action and shall make these records available to CEC staff upon request.			Ongoing	No complaints received concerning induced currents from the GPC plants during the reporting period.

Technical Area	No.	Facility Status	Report	Condition of Certification	Compliance Verification	Timeframe	Submittal Required	Status	2020 Annual Compliance Report
Transmission Line Safety and Nuisance	13-8	Operations/Ongoing	Report	Project owner shall report all public or employee injury and fatal accidents to the CEC.	Within 30 days of an employee injury or fatality, project owner shall file a report with the CEC which includes (1) date accident occurred; (2) job title of injured employee or fatality; (3) description of injury; (4) description and cause of accident; (5) discussion of compliance with General Order 95 requirements and applicable DOSH regulations in vicinity of accident; and (6) a statement of corrective/preventive measures taken or to be taken.			Ongoing	No injuries have been reported during the reporting period.
Water Quality/Hydrology/Water Resources	6-10	Operations/Ongoing	Report	Project owner shall utilize condensed steam for cooling water purposes, acquire an outside source for freshwater supplies, and utilize annually approximately 3.6 million gallons (12 acre-feet) of water for construction. Project owner shall not use water from Anderson or Gunning creeks, their tributaries, springs, observation wells, or exploratory drill holes in the area unless such water can be obtained without adversely impacting the biota or the drinking water supplies of local residents. Sources in the Anderson/Gunning creeks watersheds shall not be used without first obtaining approval from the Anderson Springs Water Company Manager, CEC, and the United States Geological Survey DCM for Geothermal in consultation with the Bureau of Land Management and Lake County Planning Department.	Prior to the start of construction of the power plant and the transmission line, project owner shall provide the CEC with a periodic compliance report listing the sources of water for construction activities. Project owner shall submit subsequent reports to the CEC showing: (a) The source and amount of cooling tower basin start-up water, (b) The source, means (appropriation, purchase), and amount of freshwater supply for in-plant uses and irrigation, and (c) The source, amount. means, and construction water supply for the power plant and transmission line.			Ongoing	(a) & (c): This construction compliance verification item was completed and will not be reported on in subsequent ACRs (b) Approximately 2 acre-feet of leased groundwater was used during the reporting period.
Water Quality/Hydrology/Water Resources	6-2	Operations/Ongoing	N/A	Project owner shall comply with the waste discharge requirements of CVRWQCB Order No. 79-228.	The CVRWQCB will verify compliance with Order No. 79-228			Ongoing	GPC is in compliance
Water Quality/Hydrology/Water Resources	6-5	Complete - report only for 2020	N/A	To prevent spills of Stretford process material from leaving the immediate vicinity, Project Owner shall surround the H2S abatement process area with an impermeable concrete barrier. Spilled Stretford process material shall be drained to a sump where it will be pumped to a chemical storage tank for reuse in the Stretford process or for disposal off site at an approved Class II-1 solid waste disposal site.	Project owner shall submit final design plans and as built drawings to the Lake County CBO incorporating this design requirement,			Complete	Condition is complete and will no longer be provided to the CEC in the ACR.
Water Quality/Hydrology/Water Resources	6-6	Complete - report only for 2020	N/A	To prevent spills of condensate and other materials from leaving the site, Project owner shall construct an impermeable concrete or asphaltic concrete retention barrier around the plant. Project owner shall also pave the site, except the switchyard, with two inches of asphaltic concrete and attain a permeability of at least 1 x io-6 cm/sec. As a result of this construction, the paved area of the plant site will serve as a spill retention basin. The proposed retention basin shall be designed twice the maximum condensate spill expected to occur before plant personnel can correct the cause of the spill. In addition, the design shall accommodate runoff from a 30-minute 100-year storm. Storm water sumps shall be equipped with 100 gallon per minute pumps to return spilled material to the cooling tower basin for reinjection. Should a spill occur which exceeds the capacity of the pumps, plant personnel shall use portable pumps to remove excess materials. Alarm systems will notify plant operators when a spill has occurred and when the catch basin pump has started. Plant personnel shall respond to the alarms within 30 minutes and take measures necessary to correct the problem.	Project owner shall submit final design plans and "as built" drawings to the Lake County CBO incorporating this design requirement for the 1 x 10-6 cm/sec permeability of the pad layer. In addition, the plant superintendent shall file a statement with the CVRWQCB and the CEC at the start of the operations verifying that plant personnel are trained and prepared to handle spills.			Complete	Condition is complete and will no longer be provided to the CEC in the ACR.

Technical Area	No.	Facility Status	Report	Condition of Certification	Compliance Verification	Timeframe	Submittal Required	Status	2020 Annual Compliance Report
Water Quality/Hydrology/Water Resources	6-7	Complete - report only for 2020	N/A	Project owner shall ensure that rainwater entering the Stretford process area will not enter surface water or groundwater. The rainwater shall be used in the Stretford process or pumped to the cooling tower overflow structure. The steam condensate from the plant shall be used for cooling water, with any excess reinjected into the geothermal reservoir.	Project owner shall submit final design plans and as built drawings to the Lake County CBO incorporating this design requirement.			Complete	Condition is complete and will no longer be provided to the CEC in the ACR.
Water Quality/Hydrology/Water Resources	6-8	Operations/Ongoing	Test/Report	To minimize the potential adverse impacts of storm runoff on the water quality of Anderson Creek, Project owner shall route plant site runoff to the cooling tower basin for subsequent injection into the geothermal reservoir. When the capacity of the return system is exceeded, the runoff will be released into Anderson Creek. Under such conditions, the impacts on water quality should be minimal due to pollutant material dilution from heavy rainfall. If storm runoff is released from the power plant site, Project owner shall satisfy the intent of Basin Plan (5A) plus any applicable requirements of the CVRWQCB.	Project owner shall submit final design plans and "as-built" drawings to the Lake County CBO incorporating this design requirement. In addition, Project owner shall notify the CEC when the CVRWQCB has approved Oxy's plan.			Ongoing	No storm water runoff was discharged from the power plant site during the reporting period.

CONDITION OF CERTIFICATION
PUBLIC HEALTH 2-1

Geysers Calistoga Plant (Unit 19) 81-AFC-01C
2020 Annual Compliance Report to the California Energy Commission
January 2020-December 2020

	1Q20	2Q20	3Q20	4Q20	Calistoga 19	
Date	03/10/20	06/30/20	07/28/20	12/2/20		
Unit	CALISTOGA	CALISTOGA	CALISTOGA	CALISTOGA	19	
[Rn-222] Main Steam Sample (pCi/Kg)	**21923**	**19235**	**21983**	**25782**		
Unit gross load (MW)	**69.8**	**39.5**	**62.3**	**62.9**		
Supply steam flow rate (klb/hr)	**1125**	**685**	**980**	**1057**		
Supply Steam Flow Rate (Mg/hr)	523	311	445	479		
Steam Rate (lb/kwhr)	**16.53**	**18.03**	**17.02**	**17.32**		
Steam Rate Derived Supply Steam Flow Rate (Mg/hr)	523	323	481	494		
100% Service Cool. Tower Air flow Rate, S.T.P. (GL/hr)	26.82	26.82	26.82	26.82		
Number of Fans in Service	**10**	**7**	**10**	**10**		
Number of Fans	10	10	10	10		
Cool. Tower fract. (cells oper. /cells design)	1.00	0.70	1.00	1.00		
Cooling Tower air flow rate, S.T.P. (GL/hr)	26.82	18.77	26.82	26.82		
Unit daily Cooling Tower air flow (L/day)	6.4368E+11	4.50576E+11	6.4368E+11	6.4368E+11		
Unit Rn222 Release Rate (Ci/day)	0.28	0.14	0.23	0.30		
Unit Rn222, Emission Concentration (pCi/L)	**0.43**	**0.32**	**0.36**	**0.46**		
Notes on Color Codes:						
Data from Sample Collection Sheet						
Data from Analytical Laboratory Results						
Data From Annual Criteria Pollutant Inventory (see *updated Generation Summary* tab)						
Data Result						
Data Entry Or Import From Other Source Required						
Maxiumum Value Substiututed in lieu of corrupt data						
Anomolous Source Data Corrupt And Not Used						
Data is Constant or Calculated						
Conversion Const. Mg/klb =						
0.4535924						