

**DOCKETED**

<b>Docket Number:</b>	81-AFC-01C
<b>Project Title:</b>	Compliance - Application for Certification of the Occidental Plant # 1
<b>TN #:</b>	233983
<b>Document Title:</b>	Calistoga (Unit 19) Petition for Modification for Installation of a Diesel Standby Pump, Air District Health Risk Analysis
<b>Description:</b>	N/A
<b>Filer:</b>	Marichka Haws
<b>Organization:</b>	California Energy Commission
<b>Submitter Role:</b>	Commission Staff
<b>Submission Date:</b>	7/21/2020 4:15:02 PM
<b>Docketed Date:</b>	7/21/2020

**RE: Geysers Calistoga petition to amend; request for additional information, Public Health****Barbara McBride** <Barbara.McBride@calpine.com>

Mon 7/13/2020 12:26 PM

**To:** Veerkamp, Eric@Energy <Eric.Veerkamp@energy.ca.gov>**Cc:** Dave (William) Jackson <Dave.Jackson@calpine.com> 1 attachments (5 MB)

GPC20-020.pdf;

**CAUTION:** This email originated from outside of the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Here is the same information for the Calistoga petition. It appears that LCAQMD may have made a typo when transferring the data. Please let me know if you need more information.

### 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	74 hr/yr
			lb/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	Receptor	Normalization	Unit Risk	Score
		(lbs/yr)	Proximity	Factor	Factor	
	Diesel PM	2.500	0.001	7700	3.00E-04	0.00578
Chronic Impact	Compound	Emissions	Receptor	Normalization	REL	Score
		(lbs/hr)	Proximity	Factor	ug/m3	
	Diesel PM	2.5	0.001	150	5	0.0750

GPC20-020.docx

Barbara McBride  
 Director, Strategic Origination

Calpine Corporation  
 3003 Oak Road  
 Walnut Creek, CA 94597  
 P: 925-570-0849

**From:** Veerkamp, Eric@Energy <Eric.Veerkamp@energy.ca.gov>  
**Sent:** Thursday, July 2, 2020 4:34 PM  
**To:** Dave (William) Jackson <Dave.Jackson@calpine.com>; Barbara McBride <Barbara.McBride@calpine.com>  
**Cc:** Davis, Chris@Energy <Chris.Davis@energy.ca.gov>; Deric J. Wittenborn <djw@eslawfirm.com>  
**Subject:** Geysers Calistoga petition to amend; request for additional information, Public Health

**External Sender: Use caution with links/attachments.**

Hi Dave and Barbara,  
Please see the attached email inquiry from Ann Chu regarding Public Health. Thanks!

**Eric W. Veerkamp**

Compliance Project Manager  
California Energy Commission  
916-661-8458  
[www.energy.ca.gov](http://www.energy.ca.gov)



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**From:** Chu, Ann@Energy <[Ann.Chu@energy.ca.gov](mailto:Ann.Chu@energy.ca.gov)>  
**Sent:** Thursday, July 2, 2020 12:15 PM  
**To:** Veerkamp, Eric@Energy <[Eric.Veerkamp@energy.ca.gov](mailto:Eric.Veerkamp@energy.ca.gov)>  
**Cc:** Hughes, Joseph@Energy <[Joseph.Hughes@energy.ca.gov](mailto:Joseph.Hughes@energy.ca.gov)>; Fletcher, Nancy@Energy <[Nancy.Fletcher@energy.ca.gov](mailto:Nancy.Fletcher@energy.ca.gov)>; Bemis, Gerry@Energy <[Gerry.Bemis@energy.ca.gov](mailto:Gerry.Bemis@energy.ca.gov)>  
**Subject:** Geysers Calistoga petition to amend

Hi, Eric,

I am doing PH of Calistoga Amendment. I am wondering if you could pass my request to the applicant?

I tried to replicate the Carcinogen Score but couldn't. The normalization factor on Table 4 (1700) does not match the one in the Guideline (7700, formula 1, page 8). Can you explain why? Or is there any mistake? Also, the score I calculate is 0.0050898, but the report is 0.01. Is it due to rounding? Thanks.

Ann

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**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

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

DATE Feb/24/2020

Check Number  
**1000115723**

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

PAY TO THE ORDER OF  
LAKE COUNTY AIR QUALITY MNGT DIST  
2617 S MAIN ST  
LAKEPORT CA 95453-5696

\$266.99\*\*\*

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

*W. B. [Signature]*  
Authorized Signature

⑆ 1000 115723 ⑆ ⑆ 12224 150 ⑆ ⑆ 90800 15043 ⑆



**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  
doug@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  
See **Project Description**

Description of equipment by make, model, size and type:

See **Exhaust Stack and Building Dimensions Information**

Additional List and Criteria Data Attached: Yes  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.

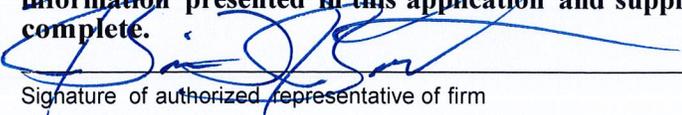
See Attachments 2&3, Project Description, List and Criteria Data Summary.

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



## **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**

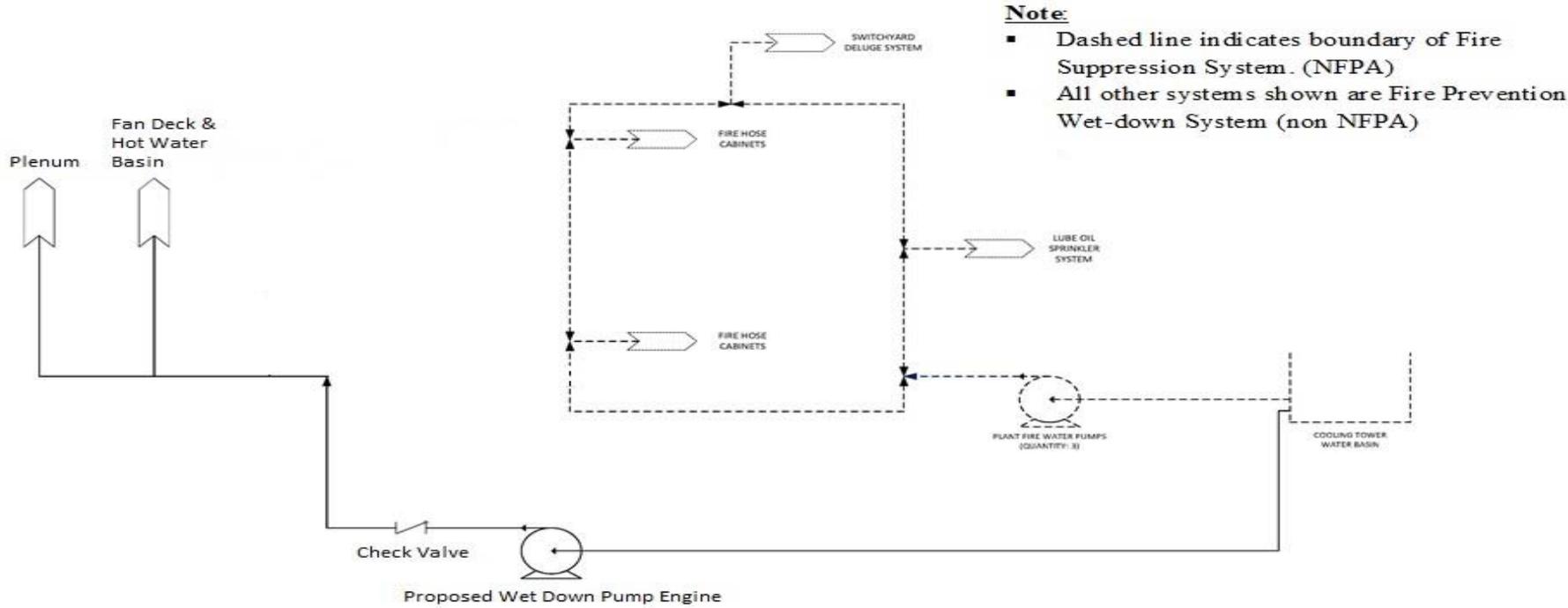
**Title 17, California Code of Regulations section 93115** Airborne Toxic Control Measure for Stationary Compression Ignition (CI) Engines.

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).

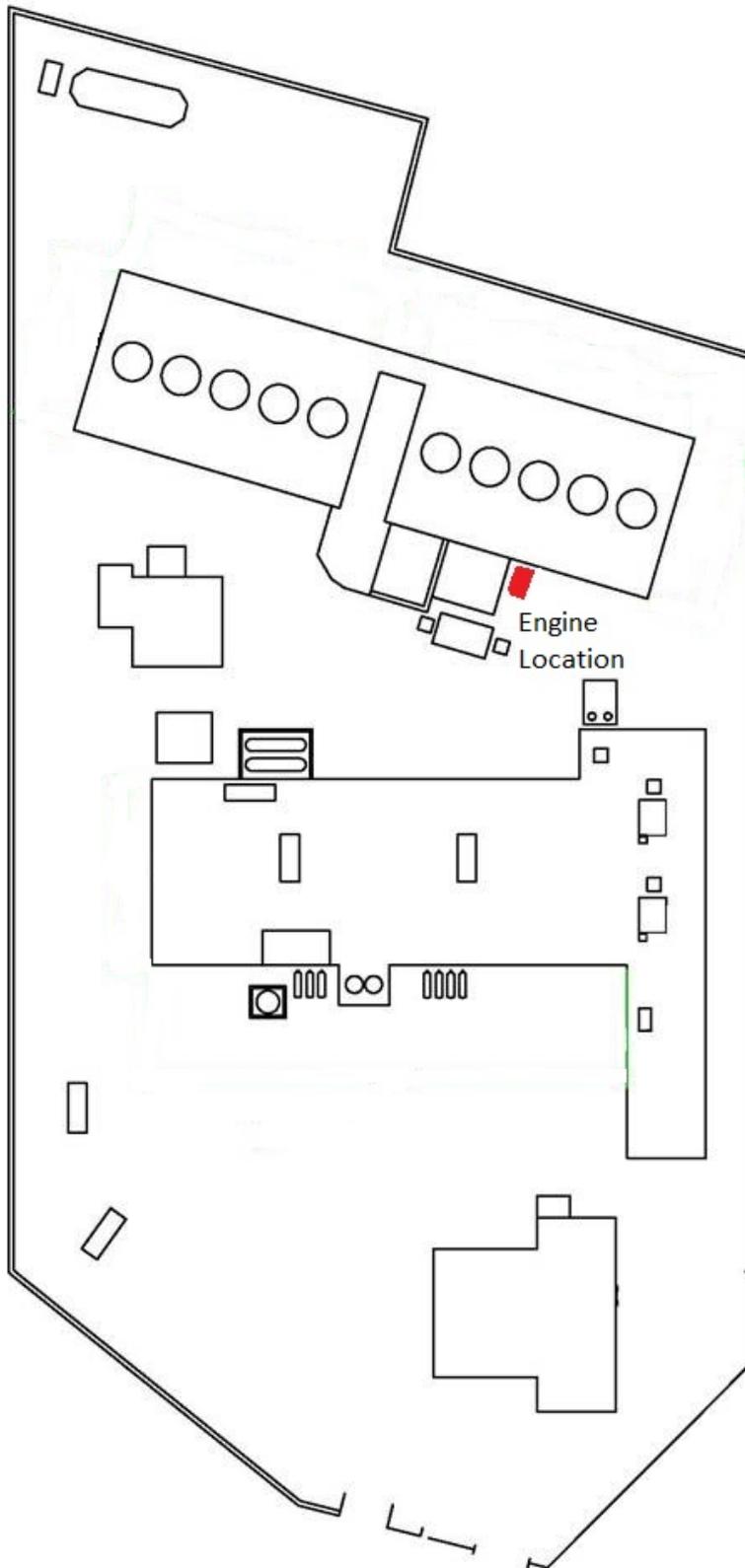
Operation of the Emergency Standby Wet-Down Pump Diesel Drive Engine meets multiple criteria of § 93115.4 (30) for definition as "Emergency Use" pursuant to (30) (A), (B), and (D), and (F).

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.

**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<sup>+</sup> LCEXL0409AAB Model CFP7E-F40

Serial Number Available Upon Delivery Year of Manufacture 2020

Rated Brake Horsepower Rating 204

### Engine Emission Factors (g/bhp-hr)<sup>++</sup>

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  Tier 3 Emission Compliance

Fuel Used:  **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

<sup>+</sup> Manufacturers Specification Sheet for the diesel engine provided (**Attachment 1**).

<sup>++</sup> 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  Up  Down  Side Raincap  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<sup>®</sup> protonode remote messaging capability.

### Variable Speed Pressure Limiting

**Control (VSPLC)** - Cummins'

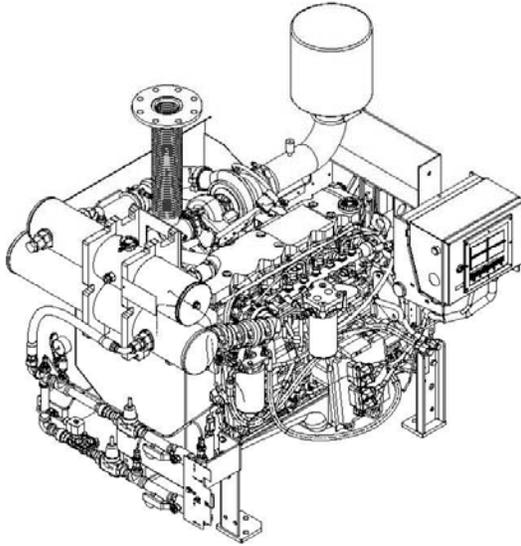
VSPLC-equipped fire pump drive engines are capable of maintaining a constant pump discharge pressure by controlling the engine speed down to 1200 RPM, while still maintaining T3 emissions certification. VSPLC fire pump drive engines provide design flexibility in the fire pump system for high-rise applications; 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)



## 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 <sup>3</sup> (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 <sup>1</sup> ; 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 <sup>2</sup>
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

<sup>1</sup> Not UL-listed and not FM-approved.

<sup>2</sup> FM-approved, but not UL-listed.

## 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 <sub>2</sub> O (635 mm H <sub>2</sub> O)
Recommended Air Cleaner Element - (Standard)	Cummins Filtration AH1196
Recommended Air Cleaner Element - (Heavy Duty)	Optional: primary element AF26124; secondary element AF26125

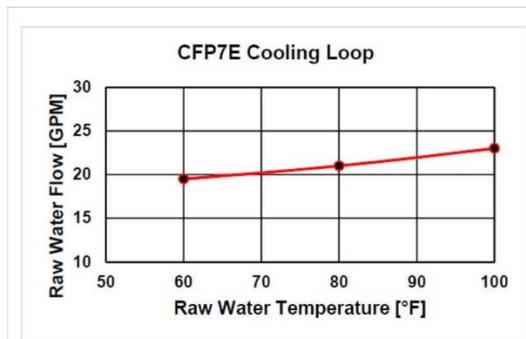
## Lubrication System

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 <sub>2</sub> O (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		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 <sup>3</sup> /hr (0.21 m <sup>3</sup> /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

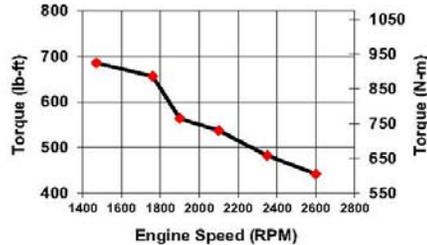
### Operating Conditions

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)	986.7	(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)

## Engine Performance Curve for CFP7E-F40 and CFP7EVS-F40

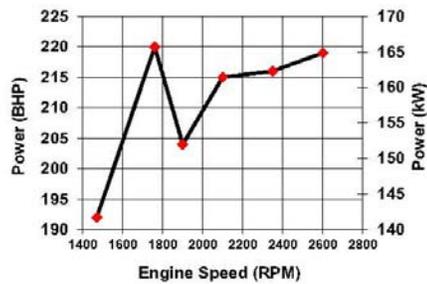
**Torque Output**

RPM	lb-ft	N-m
1470	686	930
1760	657	890
1900	964	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 <sub>x</sub>	NMHC + NO <sub>x</sub>	CO	PM	NMHC	NO <sub>x</sub>	NMHC + NO <sub>x</sub>	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<sub>2</sub>O/kg (75 grains H<sub>2</sub>O/lb) of dry air; required for NO<sub>x</sub> correction
- Intake Restriction set to a maximum allowable limit for clean filter
- Exhaust Back Pressure set to maximum allowable limit

## 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<sup>®</sup> RTU/Modbus<sup>®</sup> 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

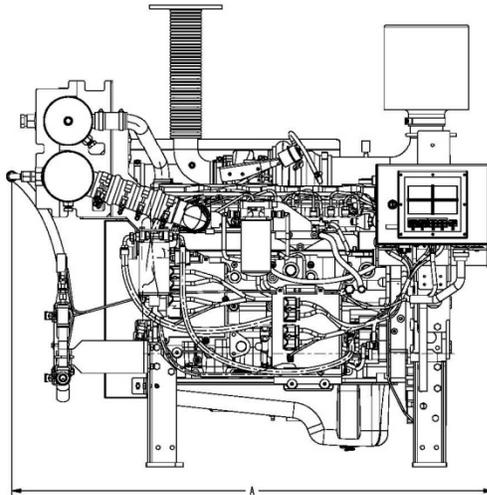
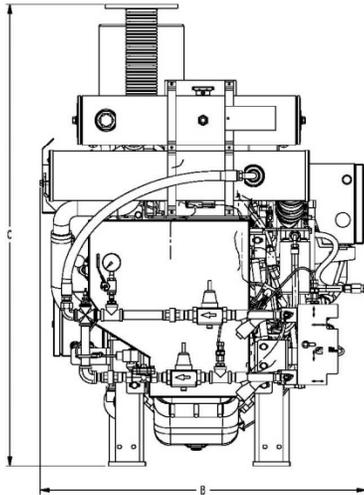
- Operating temperature - 4 to 158 °F (minus 20 to 70 °C).
- Storage temperature - minus 22 to 176 °F (minus 30 to 80 °C).
- Meets CISPR 11 Class B radiated emissions.
- Vibration: 7 G<sub>PEAK</sub>; three-axis.

### 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.



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)
<b>CFP7E</b>	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](mailto:firepumpsales@cummins.com).

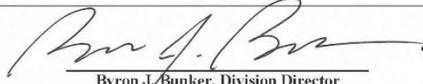


Cummins Sales and Service  
 875 Lawrence Drive  
 DePere, Wisconsin 54115  
 1 920 337 9750

[power.cummins.com/fire-power](http://power.cummins.com/fire-power)

## Attachment 2

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

	<b>UNITED STATES ENVIRONMENTAL PROTECTION AGENCY</b> <b>2020 MODEL YEAR</b> <b>CERTIFICATE OF CONFORMITY</b> <b>WITH THE CLEAN AIR ACT</b>	<b>OFFICE OF TRANSPORTATION</b> <b>AND AIR QUALITY</b> <b>ANN ARBOR, MICHIGAN 48105</b>	
<b>Certificate Issued To:</b> Cummins Inc. (U.S. Manufacturer or Importer) <b>Certificate Number:</b> LCEXL0409AAB-027	<b>Effective Date:</b> 07/08/2019 <b>Expiration Date:</b> 12/31/2020	 Byron J. Bunker, Division Director Compliance Division	<b>Issue Date:</b> 07/08/2019 <b>Revision Date:</b> N/A
<b>Model Year:</b> 2020 <b>Manufacturer Type:</b> Original Engine Manufacturer <b>Engine Family:</b> LCEXL0409AAB	<b>Mobile/Stationary Indicator:</b> Stationary <b>Emissions Power Category:</b> 130<-kW<225 <b>Fuel Type:</b> Diesel <b>After Treatment Devices:</b> No After Treatment Devices Installed <b>Non-after Treatment Devices:</b> No Non-After Treatment Devices Installed		
<p>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.</p> <p>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.</p> <p>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 <i>ab initio</i> for other reasons specified in 40 CFR Part 60.</p> <p>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.</p>			

## 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	74 hr/yr
			lb/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		Emissions	Receptor	Normalization	Unit Risk	Score
Compound	(lbs/yr)	Proximity	Factor	Factor	Factor	
Diesel PM	2.500	0.001	7700	3.00E-04		<b>0.00578</b>
Chronic Impact		Emissions	Receptor	Normalization	REL	Score
Compound	(lbs/hr)	Proximity	Factor	ug/m3		
Diesel PM	2.5	0.001	150	5		<b>0.0750</b>