

<b>SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT</b>  <b>ENGINEERING &amp; COMPLIANCE DIVISION</b>  <b>PERMIT APPLICATION PROCESSING AND CALCULATIONS</b>	PAGES 8	PAGE 1
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	PROCESSED BY Belinda C. Wan	CHECKED BY

## EVALUATION REPORT FOR PERMIT TO CONSTRUCT

**APPLICANT'S NAME:**

BP WEST COAST PRODUCTS ARCO VINVALE TERMINAL  
 FACILITY ID 800396  
 ATTN.: RUTHANNE WALKER @ (562) 806-4105

**BUSINESS MAILING ADDRESS:**

8601 SOUTH GARFIELD AVENUE  
 SOUTH GATE, CA 90280

**PERMIT MAILING ADDRESS:**

8601 SOUTH GARFIELD AVENUE  
 SOUTH GATE, CA 90280

**EQUIPMENT ADDRESS:**

8601 SOUTH GARFIELD AVENUE  
 SOUTH GATE, CA 90280

**EQUIPMENT DESCRIPTION:**

APPLICATION NO. 530257

INTERNAL COMBUSTION ENGINE, CUMMINS, MODEL NO. CFP7E-30 OR EQUIVALENT, 6 CYLINDERS, COMPRESSION IGNITION, TURBOCHARGED/AFTERCOOLED, 205 BHP, DIESEL FUELED, DRIVING AN EMERGENCY FIRE WATER PUMP

**Conditions:**

1. OPERATION OF THIS EQUIPMENT SHALL BE CONDUCTED IN ACCORDANCE WITH ALL DATA AND SPECIFICATIONS SUBMITTED WITH THE APPLICATION UNDER WHICH THIS PERMIT IS ISSUED UNLESS OTHERWISE NOTED BELOW.  
[RULE 204]
2. THIS EQUIPMENT SHALL BE PROPERLY MAINTAINED AND KEPT IN GOOD OPERATING CONDITION AT ALL TIMES.  
[RULE 204]
3. FOR THE LIFE OF THIS ENGINE, THE OPERATOR SHALL OPERATE AND MAINTAIN THIS ENGINE IN ACCORDANCE WITH THE MANUFACTURER'S WRITTEN INSTRUCTIONS OR PROCEDURES.  
[40 CFR 60 SUBPART III]

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4. SULFUR CONTENT OF DIESEL FUEL SUPPLIED TO THE ENGINE SHALL NOT EXCEED 15 PARTS PER MILLION (PPM) BY WEIGHT.  
[RULE 431.2, RULE 1470]
5. AN OPERATIONAL, NON-RESETTABLE TOTALIZING TIME METER SHALL BE INSTALLED AND MAINTAINED TO INDICATE THE ENGINE ELAPSED OPERATING TIME. THE METER SHALL BE READABLE AND ACCURATE TO THE NEAREST TENTH OF AN HOUR.  
[RULE 1110.2, RULE 1304 (a)(4) – MODELING AND OFFSET EXEMPTION, 40 CFR 60 SUBPART III, RULE 1470]
6. THIS INTERNAL COMBUSTION ENGINE SHALL NOT OPERATE MORE THAN 200 HOURS IN ANY ONE YEAR, WHICH INCLUDE NO MORE THAN 50 HOURS IN ANY ONE YEAR AND NO MORE THAN 4.2 HOURS IN ANY ONE MONTH FOR MAINTENANCE AND TESTING. THE ENGINE SHALL NOT BE OPERATED MORE THAN THE NUMBER OF HOURS NEEDED TO MEET NFPA 25 REQUIREMENTS .  
[RULE 1303(a)(1)-BACT, RULE 1470 ]
7. THE OPERATOR SHALL KEEP A LOG OF ENGINE OPERATIONS DOCUMENTING THE TOTAL TIME THE ENGINE IS OPERATED EACH MONTH AND THE SPECIFIC REASON FOR OPERATION AS:
  - A. EMERGENCY USE
  - B. MAINTENANCE AND TESTING
  - C. OTHER SPECIFIC REASONS

IN ADDITION, EACH TIME THE ENGINE IS MANUALLY STARTED, THE LOG SHALL INCLUDE THE DATE OF ENGINE OPERATION, THE SPECIFIC REASON FOR OPERATION, AND THE TOTALIZING HOUR METER READINGS (IN HOURS AND TENTHS OF HOURS) THE BEGINNING AND END OF EACH OPERATION.

[RULE 1110.2, RULE 1303(a)(1)-BACT, RULE 1304 (a)(4) – MODELING AND OFFSET EXEMPTION, RULE 1470]

8. ON OR BEFORE JANUARY 15 OF EACH YEAR, THE OPERATOR SHALL RECORD IN THE OPERATING LOG:
  - A. THE TOTAL HOURS OF ENGINE OPERATION FOR THE PREVIOUS CALENDAR YEAR, AND
  - B. THE TOTAL HOURS FOR MAINTENANCE AND TESTING FOR THE PREVIOUS CALENDAR YEAR

THE OPERATING LOG SHALL REMAIN ON SITE FOR THE MOST RECENT THREE YEARS AND MADE AVAILABLE TO DISTRICT PERSONNEL UPON REQUEST.

[RULE 1110.2, RULE 1303(a)(1)-BACT, RULE 1304 (a)(40) – MODELING AND OFFSET EXEMPTION, RULE 1470]

**Periodic Monitoring:**

NONE

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**Emissions and Requirements:**

9. THIS EQUIPMENT IS SUBJECT TO THE APPLICABLE REQUIREMENTS OF THE FOLLOWING RULES AND REGULATIONS:

NOX + ROG: 3.0 GMS/BHP-HR 40 CFR 60 SUBPART III, RULE 1303 (a) (1) BACT, RULE 1470  
CO 2.6 GMS/BHP-HR 40 CFR 60 SUBPART III, RULE 1303 (a) (1) BACT, RULE 1470  
PM 0.15 GMS/BHP-HR 40 CFR 60 SUBPART III, RULE 1303 (a) (1) BACT, RULE 1470  
HAP: 40 CFR 63 SUBPART ZZZZ

APPLICATION NO. 530258

**SIGNIFICANT TITLE V REVISION**

The installation of the new 205 BHP 6-cylinder Cummins diesel-powered emergency internal combustion engine driving a firewater pump to provide water for firefighting as a back-up to the existing electric firewater pump will trigger new applicable requirements under NSPS standards at 40 CFR Part 60 Subpart III and new MACT standards at 40 CFR Part 63 Subpart ZZZZ. Therefore, this change is a significant Title V revision and as such, involves 45-day EPA review and public notice distribution and participation.

**BACKGROUND:**

BP West Coast Products/Arco Vinvale Terminal with Facility ID 800396 is a Title V facility. The facility submitted application no. 530257 on December 27, 2011 for a permit to construct a 205 BHP 6-cylinder Cummins diesel-powered emergency internal combustion engine driving a firewater pump to provide water for firefighting as a back-up to the existing electric firewater pump. The proposed unit will be under cover for protection from the sun and rain, but will not be in a totally enclosed building.

The 205 BHP Cummins internal combustion engine, Model CFP7E-30 has been certified by EPA and California Air Resources Board to meet Tier 3 emission standards. Therefore, this engine will not require the use of add-on emission controls. The unit will be equipped with a non-resettable hour meter that will be used to track the engine operating hours. With the exception of an emergency fire event, this engine will normally operate about 30 minutes every week to maintain preparedness as required by NFPA 25, Chapter 8.

There is no school located within 1000 feet of the proposed internal combustion engine that will be installed at the Vinvale terminal of ARCO Terminal Services Corporation located at 8601 South Garfield Avenue, South Gate, CA 90280. Therefore, a public notice is not required under Rule 212 due to proximity to a school. Height of exhaust stack for the internal combustion engine is 12 feet above ground and diameter of exhaust stack is 4 inches. However, exhaust stack is equipped with a rain cap.

BP West Coast Products/Arco Vinvale Terminal with Facility ID 800396 also submitted application no. 530258 for a Significant Title V Revision due to the installation of a 205 BHP 6-cylinder Cummins diesel-powered emergency internal combustion engine driving a firewater pump to provide water for firefighting as a back-up to the existing electric firewater pump. As a significant Title V permit revision, it requires 45-day EPA review and public notice distribution and participation. Initial Title V facility permit was issued on February 23, 2009.

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**PROCESS DESCRIPTION:**

The 205 BHP Cummins internal combustion engine, Model CFP7E-30 has been certified by EPA and California Air Resources Board to meet Tier 3 emission standards. Therefore, this engine will not require the use of add-on emission controls. The engine will be fueled by a separate 240-gallon double wall above ground storage tank that will contain ultra low sulfur diesel fuel with no more than 15 ppm sulfur. The diesel storage tank is exempt from written permit requirements according to Rule 219(m)(9) because the capacity is less than 251 gallons.

During normal conditions, the proposed diesel firewater pump engine will operated approximately 0.5 hours per week as required by NFPA 25 Standards to ensure preparedness in the event of a fire. This standard recommends weekly 30-minute no-flow tests, which works out to 26 hours per year, plus an annual flow test. There is no time requirement for the flow test, so BP estimates this to be one hour. Therefore, the minimum number of hours per year the engine will operate is 27 but BP indicated on SCAQMD Form E-13a the engine will be permitted based on 50 hours per year to allow extra time for regular maintenance, any needed troubleshooting, and possible emission testing.

**EMISSION SOURCES:**

Emissions of ROG, NO<sub>x</sub>, SO<sub>x</sub>, CO and PM<sub>10</sub> are expected from the operation of the 205 BHP 6-cylinder Cummins diesel-powered emergency internal combustion engine driving a firewater pump to provide water for firefighting. The engine has been certified by EPA and California Air Resources Board to meet Tier 3 emission standards.

**MAJOR APPLICABLE RULES AND REGULATIONS:**

Operation of the 205 BHP 6-cylinder Cummins diesel-powered emergency internal combustion engine driving a firewater pump to provide water for firefighting is subject to Rule 404 for particulate matter concentration, Rule 431.2 for sulfur content of liquid fuel AND Rule 1303(a)(1) - BACT. Since the engine will be operating as a nonroad engine, it is exempt from the requirements of Rules 1110.1 and 1110.2 and exempt from Rule 1401.

**EMISSION CALCULATIONS**

1. Application No. 530257 - 205 BHP Cummins internal combustion engine, Model CFP7E-30 has been certified by EPA and California Air Resources Board to meet Tier 3 emission standards. Therefore, this engine will not require the use of add-on emission controls. Since the engine will be operating as a nonroad engine, it is exempt from the requirements of Rule 1110.2.

Emissions of ROG, NO<sub>x</sub>, SO<sub>x</sub>, CO and PM<sub>10</sub> are expected from the operation of the 205 BHP 6-cylinder Cummins diesel-powered emergency internal combustion engine.

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Normal operating schedule: 1.0 hour per day, 1 day per week, 50 weeks per year  
Maximum operating schedule: 50 hours per calendar year

Given Emission Factors:	ROG	NOx	CO	PM
Gm/bhp-hr	0.062	2.544	1.193	0.111
Gm/hr	0.028	521.52	244.57	22.755

Operating Schedule

Maximum daily operation: 1 hours per day  
Days per week: 1 days per week  
Weeks per year: 50 weeks per year  
Maximum fuel consumption 10.6 gallons per hour

Uncontrolled Emissions from 205 BHP 6-cylinder Cummins diesel-powered emergency internal combustion engine:

$$\text{ROG} = \frac{0.062 \text{ gm (205 BHP)}}{\text{bhp-hr.}} = \frac{12.71 \text{ gm}}{\text{hr.}} = \frac{0.028 \text{ lb}}{\text{hr}} = \frac{0.028 \text{ lb}}{\text{day}} = \frac{1.40 \text{ lb}}{\text{yr.}}$$

$$\text{NOx} = \frac{2.544 \text{ gm (205 BHP)}}{\text{bhp-hr.}} = \frac{521.52 \text{ gm}}{\text{hr.}} = \frac{1.15 \text{ lb}}{\text{hr}} = \frac{1.15 \text{ lb}}{\text{day}} = \frac{57.49 \text{ lb}}{\text{yr.}}$$

$$\text{CO} = \frac{1.193 \text{ gm (205 BHP)}}{\text{bhp-hr.}} = \frac{244.57 \text{ gm}}{\text{hr.}} = \frac{0.539 \text{ lb}}{\text{hr}} = \frac{0.539 \text{ lb}}{\text{day}} = \frac{26.96 \text{ lb}}{\text{yr.}}$$

$$\text{PM} = \frac{0.111 \text{ gm (205 BHP)}}{\text{bhp-hr.}} = \frac{22.755 \text{ gm}}{\text{hr.}} = \frac{0.050 \text{ lb}}{\text{hr}} = \frac{0.050 \text{ lb}}{\text{day}} = \frac{2.511 \text{ lb}}{\text{yr.}}$$

Maximum fuel consumption = 10.6 gallons per hour (7.1 lb per gallon) = 75.26 lb diesel/hour

Sulfur in fuel = 15 ppm by weight

$$\text{SO}_2 = 75.26 \text{ lb/hour (0.000015)} (\text{SO}_2/\text{S}) = 75.26 (0.000015) (64.1/32.1) = 0.002 \text{ lb per hour}$$

$$\text{SO}_2 = 0.113 \text{ lb per year}$$

Emissions from the operation of the 205 BHP 6-cylinder Cummins diesel-powered emergency internal combustion engine are exempt from the modeling requirement of Rule 1303(b)(1) and the offset requirements of Rule 1303(b)(2) as per Rule 1304 (a)(4) – Emergency Equipment.

NOx/ROG/CO: 205 BHP Cummins internal combustion engine, Model CFP7E-30 has been certified by EPA and California Air Resources Board to meet Tier 3 emission standards. Federal and State law require that newly manufactured off-road engines, meet established standards at the time of manufacture. Engine manufacturers undergo an extensive approval process including source testing and technical analysis to certify that newly manufactured engines meet the federal and state emission standards. Therefore, this equipment is in compliance.

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SOx: Compliance with sulfur content limit of 15 ppm by weight is expected and will be required as a permit condition.

**EVALUATION OF COMPLIANCE WITH MAJOR RULES AND ISSUES:**

Operation of the 205 BHP 6-cylinder Cummins diesel-powered emergency internal combustion engine driving a firewater pump to provide water for firefighting as a back-up to the existing electric firewater pump is expected to comply with all applicable District rules and regulations and all applicable Federal and State laws since the 205 BHP Cummins internal combustion engine, Model CFP7E-30 has been certified by EPA and California Air Resources Board to meet Tier 3 emission standards. Specific compliance with the following rules is anticipated:

- Rule 212: Standards for Approving Permits and Issuing Public Notices  
Rule 212 requires public notice for the construction of a new source at a facility if 1) it is located within 1000 feet of a school; 2) any emission increase exceeds the daily maximums as specified in subsection (g) of this rule; or 3) any emission increase in toxic air contaminants for which a person may be exposed to a Maximum Individual Cancer Risk (MICR) of 1 in a million or greater . This project is not a significant project since the 205 BHP 6-cylinder Cummins diesel-powered emergency internal combustion engine driving a firewater pump to provide water for firefighting as a back-up to the existing electric firewater pump will not be located within 1000 ft. of any school at its initial location and maximum individual cancer risk from its operation is limited to less than one-per-million as the operating time of the portable internal combustion engine is limited to 50 hours in any one calendar year. Furthermore, emission increase of criteria air contaminants does not exceed the maximum daily limit in subsection (g) of this rule. Hence, no public notice is required based on Rule 212.
- Rule 401: Based on experience with similar equipment, operation of the 205 BHP 6-cylinder Cummins diesel-powered emergency internal combustion engine driving a firewater pump to provide water for firefighting as a back-up to the existing electric firewater pump is expected to comply with visible emission limits.
- Rule 402: Based on experience with similar equipment, operation of the 205 BHP 6-cylinder Cummins diesel-powered emergency internal combustion engine driving a firewater pump to provide water for firefighting as a back-up to the existing electric firewater pump is not likely to create a public nuisance.
- Rule 404: Based on experience with similar equipment, operation of the 205 BHP 6-cylinder Cummins diesel-powered emergency internal combustion engine driving a firewater pump to provide water for firefighting as a back-up to the existing electric firewater pump is expected to comply with the particulate matter concentration specified by this rule.

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Rule 405: Estimated PM emissions from the operation of the 205 BHP 6-cylinder Cummins diesel-powered emergency internal combustion engine driving firewater pump to provide water for firefighting as a back-up to the existing electric firewater pump is less than the limits specified by Rule 405. Therefore, compliance is expected.

Rule 431.2: Compliance with sulfur content limit of 15 ppm by weight in diesel fuel is expected and is required as a permit condition.

Rule 1110.2 Operation of the 205 BHP 6-cylinder Cummins diesel-powered emergency internal combustion engine driving a firewater pump to provide water for firefighting as a back-up to the existing electric firewater pump is exempt from the requirements of Rule 1110.2 since it will be operating as a emergency off-road engine. The 250 BHP Cummins internal combustion engine, Model CFP7E-30 has been certified by EPA and California Air Resources Board to meet Tier 3 emission standards. Since the engine will be operating as a nonroad engine, it is exempt from the requirements of Rule 1110.2.

Regulation XIII - NSR: Emissions from the operation of operation of the 205 BHP 6-cylinder Cummins diesel-powered emergency internal combustion engine driving a firewater pump to provide water for firefighting as a back-up to the existing electric firewater pump are exempt from the modeling requirement of Rule 1303(b)(1) and the offset requirements of Rule 1303(b)(2) as per Rule 1304 (a)(4) – Emergency Equipment.

BACT The engine has been certified by California Air Resources Board for use as a off-road equipment. Federal and State law require that newly manufactured off-road engines meet established standards at the time of manufacture. Engine manufacturers undergo an extensive approval process including source testing and technical analysis to certify that newly manufactured engines meet the federal and state emission standards. Therefore, this equipment is in compliance.

Rule 1325: The facility is not a major source of PM<sub>10</sub> emissions and PM<sub>2.5</sub> emissions.

Rule 1401: Operation of the operation of the 205 BHP Cummins internal combustion engine, Model CFP7E-30 is exempt from health risk assessment of Rule 1401 because it is an emergency equipment.

Rule 1470: The 205 BHP Cummins internal combustion engine has been certified by the EPA or California Air Resources Board (CARB) to meet the emission requirements of 40 CFR Part 89 for Tier 3 compression ignition engines. The engine shall be operated the number of hours necessary to comply with the testing requirements of the National Fire Protection Association (NFPA) 25 “Standards for the Inspection, Testing, and Maintenance of Water-Based Protection Systems”.

The 205 BHP Cummins internal combustion engine complies with Rule 1470 by the use of diesel fuel with a sulfur content not to exceed 15 parts per million (ppm) by

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weight, by limiting operating hours to 50 hours per year for maintenance and testing and limiting diesel PM emission at a rate less than or equal to 0.15 gm/bhp-hr.

**Reg. XXX**  
11/14/97

**Title V Permits**

The Title V Permit System is implemented in accordance with Title V of the 1990 Amendments to the Federal Clean Air Act. Application no. 396948 was submitted on January 3, 2002 for an initial Title V Facility Permit and the initial Title V permit for this facility was issued effective 2/23/2009. The ARCO Vinvale terminal is subject to SCAQMD's Title V program. The installation of the new 205 BHP Cummins internal combustion engine driving the emergency firewater pump will trigger new applicable requirements under NSPS standards at 40 CFR Part 60 Subpart III and new MACT standards at 40 CFR Part 63, Subpart ZZZZ. Therefore, this change is a significant Title V permit revision as defined at Rule 3000 (28)(1) and forms 400-A, 500-A2 and 500-C1 for the Title V permit update are included as part of this submittal. As a significant Title V permit revision, it requires 45-day EPA review and public notice distribution and participation.

***PART II***

***FEDERAL REGULATIONS***

**40CFR Part 60  
Subpart III**

**Standards of Performance for Stationary Compression  
Ignition Internal Combustion Engines**

The new 205 BHP Cummins internal combustion engine, Model CFP7E-30 has been certified by EPA and California Air Resources Board to meet Tier 3 emission standards and the emission limits for NOx and ROG, CO and PM specified by 40 CFR 60 Subpart III. This engine engine complies with 40 CFR 60 Subpart III by the use of diesel fuel with a sulfur content not to exceed 15 parts per million (ppm), by the installation of an operational non-resettable totalizing hour meter to indicate the elapsed operating time and by operating and maintaining the engine in accordance with the manufacturer's written instructions and procedures.

**40CFR Part  
63 Subpart ZZZZ**

**National Emission Standards for Hazardous Air Pollutants  
for Standard Reciprocating Internal Combustion Engines**

The new 205 BHP Cummins internal combustion engine, Model CFP7E-30 complies with 40 CFR 63 Subpart ZZZZ by meeting 40 CFR 60 Subpart III.

**CONCLUSIONS/ RECOMMENDATION**

I recommend a conditional permit to construct for the 205 BHP Cummins internal combustion engine, Model CFP7E-30 that will be used to drive an emergency firewater pump to BP West Coast Products/ARCO Vinvale Terminal with Facility ID 800396.