| SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT | PAGES 1 | PAGE 1 |
|---|---|---|
| ENGINEERING AND COMPLIANCE DIVISION | APPL NO 559796 | DATE 3/6/2014 |
| PERMIT APPLICATION EVALUATION AND CALCULATIONS | PROCESSED BY AK07 | CHECKED BY |

# TITLE V PERMIT (REV 5) EVALUATION
(Minor Permit Revision)

**APPLICANT'S NAME:** LOS ANGELES COUNTY SANITATION DISTRICTS

**MAILING ADDRESS:** P. O. BOX 4998, WHITTIER, CA 90607

**EQUIPMENT ADDRESS:** 13130 CROSSROADS PARKWAY, CITY OF INDUSTRY, CA 91746

**FACILITY ID NO.:** **025070**

**Background:**

This application 559796 was submitted for Title V permit revision (No. 5) on 01/24/2014 for Minor Permit Revision. In addition, Los Angeles County Sanitation Districts submitted two (2) applications 519251 (filed on 02/24/2011 for Rule 1110.2 I & M plan) and 559645 (filed on 01/10/2014 for alteration/modification to existing Gasoline Storage & Dispensing system to convert the existing Phase I vapor recovery system with an OPW Phase I EVR system for both above ground gasoline storage tanks – Permitted Under A/N 220688, P/N R-D37972).

**Evaluation:**

The proposed revision is considered a Minor Permit Revision since there is no increase in emissions of any pollutant and it meets the rest of the listed requirements for qualification as Minor Permit Revision (please see attached engineering evaluations). Public notice is not required; however, it is subject to EPA 45-day review and comment period. For further information, please see evaluations included in the folder.

**Rules Evaluation:**

Compliance with a Reg. XXX -Title V permits and applicable rules and regulations is expected.

**Conclusions & Recommendations:**

Issue the revised Title V permit upon completion of 45-day EPA review and commenting period.

| SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT<br><br>APPLICATION PROCESSING AND CALCULATIONS | PAGES 6 | PAGE 1 |
|---|---|---|
| | APPL NO 559645 | DATE 2/18/2014 |
| | ENGINEER JM04 | CHECK BY MKL |

# EVALUATION FOR PERMIT TO CONSTRUCT/OPERATE

**APPLICANT'S NAME:** LA CNTY SANITATION DISTRICT-PUENTE HILLS

**MAILING ADDRESS:** P O BOX 4998 , STEPHEN R. MAGUIN
WHITTIER, CA 90607 - 4998

**EQUIPMENT ADDRESS:** 13130 CROSSROADS PKYSOUTH, CITY OF INDUSTRY, CA 91745

## EQUIPMENT DESCRIPTION:

Fuel Storage and Dispensing Facility Consisting of:

1) 1 - GASOLINE ABOVEGROUND STORAGE TANK, CONVAULT AST (VR-301-E), RECTANGULAR, 11' - 0" L. X 5' - 8" W. X 4' - 0" H., 1,000 GALLON CAPACITY, EQUIPPED WITH A HUSKY 5885 PRESSURE/VACUUM RELIEF VALVE, AND AN OPW PHASE I ENHANCED VAPOR RECOVERY (EVR) SYSTEM (VR-401-C).

2) 1 - GASOLINE ABOVEGROUND STORAGE TANK, CONVAULT AST (VR-301-E), RECTANGULAR, 11' - 0" L. X 4' - 6" W. X 3' - 0" H., 500 GALLON CAPACITY, EQUIPPED WITH A HUSKY 5885 PRESSURE/VACUUM RELIEF VALVE, AND AN OPW PHASE I ENHANCED VAPOR RECOVERY (EVR) SYSTEM (VR-401-C).

3) ~~2~~ 5 GASOLINE NOZZLES DISPENSING ~~2~~ 5 PRODUCTS EQUIPPED WITH PHASE II VAPOR RECOVERY SYSTEM, BALANCE RETRACTOR, (G-70-52-AM). } Refer to sample permit

4) ~~1 - GASOLINE NOZZLE DISPENSING 1 PRODUCT, EQUIPPED WITH PHASE II VAPOR RECOVERY SYSTEM, BALANCE RETRACTOR, (G-70-52-AM).~~

## BACKGROUND HISTORY:

This application was submitted for an alteration on 1/10/2014. The planned installation date will be as soon as the permit is granted. The alteration involves the conversion of the existing Phase I vapor recovery system with an OPW Phase I EVR system for both ASTs. The facility's proposed normal operating schedule is as follows: 24 hours/day, 7 days/week, 30 days/month and 52 weeks/year. This is a governmental gasoline storage and dispensing facility. The facility has received 13 Notices to Comply and 29 Notices of Violation from the District. The notices can be found in the addendum section of the evaluation. This application was not submitted as a result of a notice. The applicant has since remedied these notices. An application, A/N 220688 was previously filed with the District for this equipment.

## PROCESS DESCRIPTION:

The gasoline storage and dispensing facility is used to store and dispense one grade of gasoline. This facility is equipped with CARB certified Phase I and Phase II vapor controls, which complies with Rule 461. Furthermore, these vapor controls are considered to be T-BACT, which complies with Rule 1401. Finally, the project will not result in a net emission increase and thus will comply with Reg. XIII.

## EMISSION CALCULATIONS:

The hydrocarbon and benzene emissions from storage tank filling and motor vehicle refueling operations are estimated by using appropriate emission factors summarized in the following table. These emission factors were developed by the Districts Planning Division.

## I. Emission Factors and Control Efficiencies

The following table summarizes the uncontrolled ROG emission factors in pounds per 1,000 gallons of gasoline throughput, benzene, ethylbenzene and naphthalene content of gasoline, and control effiencies:

*Emission Factors and Control Efficiencies for Aboveground Tanks*

| | Loading (a) | Breathing | Refueling (b) | Spillage |
|---|---|---|---|---|
| **ROG** | | | | |
| Uncontrolled ROG Emission Factors (lbs/1000 gal) | 8.40 | 0.21 | 3.95 | 0.24 (c) |
| Control Efficiency | 95.000% | 75.000% | 94.732% | 0% |
| controlled ROG Emission Factors (lbs/1000 gal) | 0.420 | 0.053 | 0.208 | 0.240 |
| **Toxic Air Contaminants (TACs) wt% (d)** | | | | |
| Benzene | 0.300% | 0.300% | 0.300% | 1.000% |
| Naphthalene | 0% | 0% | 0% | 0.140% |

(a) Revised from 90% assumed by CAPCOA to 95% based on SCAQMD's finding
(b) Revised from 99% assumed by CAPCOA to ~95% based on SCAQMD's finding.
(c) Spillage emission factor was revised from 0.42 to 0.24 based on EVR Regulation.
(d) Specification profiles for TACs are from http://www.arb.ca.gov/ei/speciate/speciate.htm

## II. MICR Calculations

The following equations are used for calculating ROG emissions and MICR from gasoline dispensing operations.

Net Increased Throughput = Proposed throughput - Total permitted throughput prior to the modification or average throughput for the last two years

ROG, uncontrolled = EF (lbs-ROG/1,000 gals gas) x Proposed gas throughput (1,000 gals/month)
ROG, controlled = ROG, uncontrolled x Control Efficiency

Benzene, uncontrolled = ROG, uncontrolled x Benzene Content in gasoline
Benzene, controlled = ROG, controlled x Benzene Content in gasoline

Naphthalene, uncontrolled = ROG, uncontrolled x Naphthalene Content in gasoline
Naphthalene, controlled = ROG, controlled x Naphthalene Content in gasoline

*Total Emission Increase - Aboveground Tanks*

Proposed GA Throughput (Gals/Month) 59700
Average GA Throughput (Gals/Month) 59700
Net GA Throughput (Gals/Month) 0

The Total Emissions are as follows:

| Emission (lbs/month) | | Process Type | | | | Total ROG |
|---|---|---|---|---|---|---|
| | | Loading | Breathing | Refueling | Spillage | |
| ROG | R1 | 501.480 | 12.656 | 235.696 | 14.328 | 764.160 |
| | R2 | 25.074 | 3.164 | 12.416 | 14.328 | 54.982 |
| Benzene | R1 | 1.504 | 0.038 | 0.707 | 0.143 | 2.392 |
| | R2 | 0.075 | 0.009 | 0.037 | 0.143 | 0.264 |
| Naphthalene | R1 | 0.000 | 0.000 | 0.000 | 0.020 | 0.020 |
| | R2 | 0.000 | 0.000 | 0.000 | 0.020 | 0.020 |

## III. Summary of Emissions

| | Total ROG | | Total Benzene Ethyl Benzene & Naphthalene | |
|---|---|---|---|---|
| | R1 | R2 | R1 | R2 |
| Monthly (lb/mo) | 764.16 | 54.98 | 2.410 | 0.290 |
| 30-day average (lb/day) | 25.47 | 1.83 | 0.080 | 0.010 |
| Hourly (lb/hr) | 1.06 | 0.08 | 0.000 | 0.000 |

**CANCER RISK ASSESSMENT:**

From gasoline storage and dispensing operations, benzene is the only toxic emittant that has significant effect to the maximum individual cancer risk (MICR). Using the CAPCOA provided risk values, the staff in the District's Planning Division prepared reference MICR's for different scenarios, i.e., for underground and aboveground tanks, and for residence and workers. These MICR's are tabulated for different downwind distances from a permit unit that is located in West LA with annual gasoline throughput of one million gallons.

Once a reference MICR is determined for a given downwind distance, it has to be adjusted by using the MET factor to reflect the meteorological conditions of a permit unit's location and the actual fuel throughput of a permit unit.

The following is the parameters used for calculating the MICR for this application. The distances are from the center of emission source to the nearest receptor areas:

Tank Type = Aboveground
GA Throughput (MMGals-GA/Year) = 0
Facility Zone = 11
MET Factor = 0.80
Downwind Distance to Residence (Meters) = 30
Downwind Distance to Workers (Meters) = 30

A reference MICR is determined for a given downwind distance in the following manner:
1. If the downwind distance is less than or equal to mimimum pre-defined distance, use the MICR at the minimum distance.
2. If the downwind distance is greater than or equal to maximum pre-defined distance, use the MICR at the maximum distance.
3. Find MICRs two distances, i.e., one for nearest higher distance and the other one for nearest lower distance, and interpolate them.

MICR, ref = MICR, low + [(MICR, high -MICR, low) / (High Distance - Low Distance)]
* (Downwind Distance - Low Distance)

where,

| | |
|---|---|
| MICR, ref | Reference MICR at a given downwind distance |
| MICR, low | MICR at a lower interpolate distance |
| MICR, high | MICR at a higher interpolate distance |
| Low Distance | Lower interpolate distance |
| High Distance | Higher interpolate distance |
| Downwind Dist | Given downwind distance |

*MICR - Aboveground Tanks*

MICR for Residences
Reference MICR [in-a-million / (1 MMGal-GA/Year)]
= 2.931

Adjusted MICR (in-a-million)
= (Reference MICR) x (MET factor) x (Annual Fuel Throughput)
= 2.931 x 0.80 x 0 = 0

MICR for Workers
Reference MICR [in-a-million / (1 MMGal-GA/Year)]
= 0.572

Adjusted MICR (in-a-million)
= (Reference MICR) x (MET factor) x (Annual Fuel Throughput)
= 0.572 x 0.80 x 0 = 0

**Modeling Assumptions:**
The modeling assumes the generic station operates 24 hours/day, with 80% of the emissions occurring between 6:00 AM and 8:00 PM, and the remaining 20% of the emissions occurring between 8:00 PM and 6:00 AM. In addition, the refueling and spillage emissions were modeled as volume sources and the loading and breathing emissions as point sources.

**Risk Calculations:**
The revised risk calculation for 1,000,000 gallons a year throughput for the different distances (20, 25, 30.....1000 meters) are based on the inhalation cancer potency factor of 0.1/(mg/kg-day) for benzene, 0.0087/(mg/kg-day) for ethyl benzene, and 0.12/(mg/kg-day) for naphthalene.

**RULES EVALUATION:**

**Rule 212** There is no school located within 1,000-feet from this facility. The maximum individual cancer risk is less than ten-in-one million. Public notice is exempt.

**Rule 461** All gasoline tanks are equipped with CARB certified Phase I vapor controls and will be installed per CARB executive order VR-401. All tanks will also be equipped with submerged fill tubes and pressure vacuum relief valves. All nozzles serving the gasoline tanks were equipped with CARB certified Phase II vapor controls and were installed per CARB executive order G-70-52. Therefore, this facility complies with Rule 461.

**Rule 1170** The facility does not have any underground storage tanks. Therefore, it is exempted from the provisions of this rule.

**Rule 1401** The alteration will not result in a net toxic emission increase and therefore is exempt from further rule evaluation per section (g)(1)(B). The facility complies with this rule.

**Rule 1401.1** The rule DOES NOT apply as facility is an existing facility.

**Rule REGXIII** No net emission increase. BACT and Offset are not required. No modeling required for VOCs. Complies with Rule. This facility complies with Rule 1313 since the operator has installed both Phase I and Phase II vapor recovery equipment, which meets current BACT requirements. Furthermore this facility will not have a maximum monthly gasoline throughput conditions since this facility has been in continuous operation prior to the adoption of this rule with no increase in the number of actively metered fueling positions.

**Reference MICR Chart - Above Ground Tanks**

MICR for Residential Areas - Above Ground Tanks per One Million Gallons for Gasoline

| Dist(m) | 20 | 25 | 30 | 40 | 50 | 60 | 70 | 75 | 80 | 90 |
|---|---|---|---|---|---|---|---|---|---|---|
| MICR | 5.440 | 3.896 | 2.931 | 1.823 | 1.249 | 0.919 | 0.706 | 0.622 | 0.559 | 0.452 |

| Dist(m) | 100 | 125 | 150 | 175 | 200 | 250 | 300 | 350 | 400 | 450 |
|---|---|---|---|---|---|---|---|---|---|---|
| MICR | 0.372 | 0.242 | 0.169 | 0.120 | 0.091 | 0.058 | 0.044 | 0.032 | 0.026 | 0.021 |

| Dist(m) | 500 | 600 | 700 | 800 | 900 | 1000 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| MICR | 0.018 | 0.013 | 0.010 | 0.008 | 0.007 | 0.006 | | | | |

MICR for Commercial Areas - Above Ground Tanks per One Million Gallons for Gasoline

| Dist(m) | 20 | 25 | 30 | 40 | 50 | 60 | 70 | 75 | 80 | 90 |
|---|---|---|---|---|---|---|---|---|---|---|
| MICR | 1.062 | 0.761 | 0.572 | 0.356 | 0.244 | 0.179 | 0.138 | 0.121 | 0.109 | 0.088 |

| Dist(m) | 100 | 125 | 150 | 175 | 200 | 250 | 300 | 350 | 400 | 450 |
|---|---|---|---|---|---|---|---|---|---|---|
| MICR | 0.073 | 0.047 | 0.033 | 0.024 | 0.018 | 0.011 | 0.008 | 0.006 | 0.005 | 0.004 |

| Dist(m) | 500 | 600 | 700 | 800 | 900 | 1000 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| MICR | 0.003 | 0.003 | 0.002 | 0.002 | 0.001 | 0.001 | | | | |

**MET Factors for Facility Zones (Aboveground Tanks)**

| Zone | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MET | 0.86 | 1.00 | 0.90 | 1.05 | 0.80 | 0.95 | 0.89 | 1.04 | 1.04 | 1.14 | 0.80 | 1.18 |

| Zone | 13 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MET | 0.70 | 0.70 | 0.96 | 0.90 | 1.08 | 0.70 | 1.08 | 0.70 | 0.91 | 0.91 | 0.81 | 0.79 |

| Zone | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 | 37 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MET | 0.79 | 0.79 | 0.81 | 0.83 | 1.00 | 1.00 | 1.04 | 1.04 | 1.06 | 1.36 | 1.04 | 1.01 |

| Zone | 38 | 39 | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MET | 1.36 | 0.00 | | | | | | | | | | |

**CONCLUSION & RECOMMENDATIONS:**

This application is expected to comply with all applicable District Rules and Regulations. A Permit to Construct/Operate is recommended subject to the conditions as outlined in the sample permit.

# Inspection and Monitoring Plan for Rule 1110.2 Emissions from Gaseous and Liquid-Fueled Engines

**Engine Operator:** **Facility ID No.: 25070**

## 5.1 Facility Information:

___ Name & address
Los Angeles County Sanitation District, Puente Hills Landfill
13130 Crossroads Parkway, City of Industry, CA 91746

___ Person responsible for implementation of the Plan, and contact information
Frank Caponi
Supervising Engineer
Email: fcaponi@lacsd.org
562-908-4288

## 5.2 Basic Engine/Permit Information:

For each engine subject to this Plan, the Plan includes: (A/N or Permit No.)

Yes.

| Equipment | Application Number | Permit Number | Comments |
|---|---|---|---|
| ICE No. 1 | 501721 | G24806 | Caterpillar, G3616, 4261 BHP, Lean Burn, Turbocharged, After cooled, Driving a 3 MW Generator |
| ICE No. 2 | 501722 | G24807 | Caterpillar, G3616, 4261 BHP, Lean Burn, Turbocharged, After cooled, Driving a 3 MW Generator |
| ICE No. 3 | 501723 | G24808 | Caterpillar, G3616, 4261 BHP, Lean Burn, Turbocharged, After cooled, Driving a 3 MW Generator |

Yes Make and model of air-to-fuel ratio controller (AFRC): ___Integral part of ECM.

The Caterpillar G3616 engine is controlled with an engine management system - ADEM III. The management system consists of an Electronic Control Module (ECM), Integrated Combustion Sensing Modules (ICSM) and an operator Machine Information Display System (MIDS). The primary inputs to the ECM and ICSM are the cylinder thermocouples and the combustions sensors. These devices work in conjunction with a fuel regulating valve, detonation sensors, engine choke, turbo- waste gate and associated pressure transducers to control engine operation.

The ECM is a propriety Caterpillar emission and control system for the engine. The engine is completely automated with limited provisions for manual inputs or adjustments. The ECM monitors various inputs from sensors in order to activate relays, solenoids and hydraulic actuators. The ECM supports 5 primary functions; governing of the engine, control of ignition, air-to-fuel ratio control, start/stop control and monitoring engine operation. Control of these parameters is determined using internal engine maps that have been developed by Caterpillar for the engines. The maps include a timing map, air/fuel ratio map, fuel correction factor map, and several other maps. The process of mapping and installation of the maps is a propriety process and can only be done by Caterpillar personnel.

There is no stand-alone air-to-fuel ratio controller on the engine. The ADEM III control system uses the ECM to control air-to-fuel ratio and uses: maps in the ECM, output drivers in the ECM, fuel actuator, air choke actuator, exhaust bypass (waste-gate) actuator, ICSM, thermocouples and cylinder combustion sensors. With the exception of fuel quality all values are locked within the ECM and can only be changed by the manufacturer. Lack of access to operating parameters does not allow operator adjustments to change engine emissions.

capable of different set points at different loads **or** ___ limited to one set point ___using an ___ unheated narrow band oxygen (O2) sensor (EGO), ___ heated narrowband O2 sensor (HEGO), **or** ___ universal wideband O2 sensor (UEGO)___using an O2 sensor ___ only upstream of the catalyst, **or** ___ both upstream and downstream.
Engine type: ___ rich-burn (RB) **or** Yes lean-burn (LB)

NA Types of emission controls: ___ selective catalytic reduction (SCR), ___ three-way catalyst (TWC), ___ oxidation catalyst (OC) – None
Yes NOx-only CEMS? __X__Yes **or** ___None
NA Maximum catalyst inlet temperature
NA For SCR, the minimum catalyst inlet exhaust temperature for reactant flow
Yes Other parameters required to be monitored by permit conditions: (list) Heat Input, inlet gas flow rate for each fuel, Inlet MMBTU/hour, NOx and O2 exhaust contentration, See permit conditions

## 5.3 Portable Analyzer (PA) Procedures

### *5.3.1 General*

Yes All PA tests performed as part of this Plan will be performed by a ___ company employee **or** Yes LACSD has own employees/technicians who certified & trained as per Rule 1110.2 Section (f) (1 ) (G).

CO emissions are first tested at least once a week or every 150 operating hours, whichever is later, using a portable analyzer. These tests are performed using the Protocol for Periodic Monitoring of NOx, CO and 02 from Stationary Engines subject to Rule 1110.2. Engines shall not be tuned within 72 hours prior to a portable analyzer tests, unless it is an unscheduled event. Personnel conducting the tests will be trained as per Rule 1110.2 Section (f) (1)(G). If an engine is found to be in compliance for 3 consecutive weeks, without any adjustments, then the frequency of CO tests will change from weekly or 150 operating hours to quarterly or every 2,000 engine operating hours, whichever occurs later per Rule 1110.2(f)(1)(b)(iii)(II), until there is a noncompliant check.

Yes Recordkeeping:

Yes Protocol Forms 1, 2 and 3 will be used, **or** ___ other equivalent have been reviewed and approved

Portable Analyzer records are being downloaded using manufacturer proprietary software.

NA $NO/NO_2$: ___ The PA will measure both NO and $NO_2$; **or** ___ Operator has provided test data that demonstrate that $NO_2$ emissions are less than 10% of total NOx emissions so that only NO emissions must be measured. *Note: Only LB engines are likely to have more than 10% $NO_2$.*

### *5.3.2 Initial AFRC Set Point(s) Check/Adjust*

_ The AFRC is an integral part of ECM. The set points have been set by the manufacturer and LCASD staff do not have access to modify these. Manufacturer representatives are only allowed to make any adjustments, do tune ups etc. ,
The initial testing on the PHLF ICE was completed by December 1, 2008, the effective date of the I&M program.

Yes Each engine will be tested at:
___ The engines have been tested at various loads as set by the manufacturer in compliance with rule 1110.2.

The load on each engine will primarily be determined by the generator kilowatt output.

Yes The load on each engine will be determined by:

- Yes The generator kilowatt output; **or**
- ___ A fuel flow meter; **or**
- ___ Other method: _____

Yes The initial testing will be completed by the effective date of the I&M program: 12/1/2008 for most operators,

Yes Recordkeeping:

Yes

### *5.3.3 Subsequent AFRC Set Point(s) Check/Adjust*

NA The set points will be tested again, and readjusted if required, as approved above within 24 hrs after an O2 sensor is changed; and : whenever the set point must be readjusted for any reason (*for example, after a periodic test described later that finds excess emissions*).

NA For RB engines, the same testing will be repeated after 100 to 150 engine operating hours after an O2 sensor is changed. *Note: O2 sensors tend to drift the most right after replacement.*

NA Recordkeeping – Same as above.

### *5.3.4 Periodic Emission Checks*

**Emission Check Frequency (Check One)**

NA Periodic emission checks are not required because engine(s) are ___ diesels **or** ___ other LB engine that are:

1) either ___ subject to RECLAIM **or** ___have a NOx CEMS; **and**
2) ___ are not subject to a CO emission limit more stringent than 2000 ppmvd corrected to 15% O2. *Note: an engine is not eligible for this exception if it has a mass emission limit that is equivalent to a CO concentration less than 2000 ppm.*

Yes Periodic CO emission checks will be conducted quarterly or every 2000 operating hours because engine(s) are ___ diesels **or** X other LB engine that are:

1) X have a NOx CEMS; and
2) are subject to a CO emission limit more stringent than 2000 ppmvd corrected to 15% O2.

NA Periodic NOx and CO emission checks will be conducted weekly (every seven days) or every 150 engine operating hours, whichever occurs later. If three consecutive weekly or 150-hour emission checks show NOx and CO emissions are in compliance, the frequency can change to monthly, or every 750 hours, until the next emission check finds emissions out of compliance.
___ Engine is in RECLAIM and only CO emissions will be tested.

NA Engine(s) are operated by a public agency, or by a contractor solely for a public agency, and in lieu of installing a CEMS, periodic NOx and CO emission checks will be conducted weekly (every seven days) or every 150 engine operating hours, whichever occurs later. *Note: Monthly/750-hour checks are not allowed.*

**Other Emission Check Requirements**

Yes No maintenance or tuning will be performed within 72 hours prior to a periodic emission check except unscheduled, required repairs caused by an unexpected breakdown or failure.

### *5.3.5 Additional Initial Testing For LB Engines with SCR*

NA A description is provided of how an acceptable range of reactant flow rate will be determined as a function of engine load, using a PA and the PA procedures previously described *Note: The minimum flow rate must be enough to achieve the NOx emission limit, whereas the maximum flow rate must be able to achieve the ammonia emission limit. The end result should be a formula, graph or table of reactant flow versus engine load.*

NA The initial testing will be completed by the effective date of the I&M program: 12/1/2008 for most operators, or 5/1/2009 for no more than 50% of engines for operators with 15 or more engines. *Note: The engines can be at multiple facilities.*

NA Recordkeeping: (Check one)

___ Form 3 from the periodic monitoring protocol with additional documentation of reactant flows and engine loads during tests, methodology and resulting acceptable range of reactant flow rates versus engine load; **or**

___ Another recordkeeping format is provided that includes engine ID, person in charge of the test, date, start/end times of testing, emissions, reactant flows and engine loads during tests, methodology and resulting acceptable range of reactant flow rates versus engine load.

## 5.4 Procedures for Alerting Operator to Emission Control Malfunctions

NA AFRC has a malfunction indicator light

NA AFRC triggers an audible alarm for the following types of malfunctions (list them):

NA Alarm will be audible to: ___ on-site personnel; **or** ___ personnel at remote location

LACSD has a control room which is 24/7 occupied and operators are monitoring system parameters.

**As per the applicant:** As the ADEM-III controls all aspects of engine operation and does not allow operators to change any parameters there are limited options to change CO emissions. The following procedure will be followed to correct a CO exceedence during a portable analyzer check:

• Ensure that all relevant operating parameters are in the normal range including cylinder temperatures, fuel quality and fuel flow.

• If necessary adjust individual cylinders air-to-fuel ratio using a local valve to increase or decrease temperature in a cylinder. This is a trimming feature and can be used to change NO emissions. However, we are not sure if this will make any difference in CO emissions. The pre-

combustion chamber needle valves adjust the air-to-fuel ratio for the small pre-combustion chamber only. Adjusting the needle valve has no effect on the air-to-fuel ratio of the main chamber. However, if the air-to-fuel ratio of the pre-combustion chamber is incorrect, the pre-combustion chamber will not fire and ignite the main chamber. The main chamber air-to-fuel ratio is regulated by the ECM using the fuel gas inlet valve (main throttle) and turbo waste-gate. This occurs when the engine is loaded more than 40%, if load is under 40'Y0 the engine uses the choke only.

• The timeframes within Rule 1110.2 allow an overall engine inspection and review process to identify gross changes to operating condition parameters that may have impacted CO emissions.

• If ICE plant personnel cannot diagnose the problem, then they will proceed to shutdown the engine and have Caterpillar determine the cause for the higher CO emissions. This will have to be done through their proprietary control system.

## 5.5 Parameter Monitoring

### *5.5.1 General*

NA Engines are diesel engines that do not require daily parameter monitoring because they do not have either exhaust gas recirculation or catalytic control devices.

Yes Engines will be monitored daily, including weekends and holidays by:

___ remote monitoring, ___ in person, **or** Yes a combination of the two.

Yes The Plan specifies ___ which in-house personnel, LACSD trained technicians/electricians will perform preventive maintenance.

Yes The format of daily monitoring and recordkeeping is provided that includes:

- NA Name of person conducting daily monitoring, if monitoring is done manually in person
- Yes Date and time of daily monitoring
- Yes All operating parameters identified in Section 5.5.2
- NA For RB engines with TWCs, whether the temperature differential ($\Delta T$) across the catalyst is normal or abnormal
- NA For engines with catalytic controls, the maximum catalyst inlet temperature
- NA For SCRs:
  - ___ The minimum catalyst inlet exhaust temperature for reactant flow
  - ___ The acceptable range of reactant flow rate for the current engine load
- NA For remotely monitored engines, a sample printout of all operating parameters that are monitored remotely

### *5.5.2 Parameters to be Monitored*

Yes The parameters to be monitored and recorded include:

- Yes Engine load and fuel flow rate

NA AFRC O2 sensor set point(s) and actual AFRC O2 sensor values

Yes The number of engine operating hours from the elapsed time meter

Yes The number of engine operating hours since the last PA emission check

NA For engines with catalytic controls, the exhaust temperature at the catalyst inlet

NA For RB engines with TWC, the catalyst $\Delta T$

NA Engine control system and AFRC faults and alarms that affect emissions

Yes Parameters required to be monitored by the AQMD permit, identified in permit conditions.

NA For LB engines with SCR:

___ the exhaust temperature at the catalyst inlet; and

___ the reactant flow rate

Yes Listening for uneven exhaust sounds, vacuum leaks, and exhaust leaks (___ not required because engine(s) are monitored remotely).

Yes Other "engine and control system operating parameters necessary to maintain pollutant emissions within the rule and permit limits": (list)

Engine load, Fuel Input rate, water jacket outlet temperature, crankcase pressure, cylinder or combustion temperature

## 5.6 Procedures for Responding to, Diagnosing and Correcting Engine Problems

Yes The Plan describes how Operator will respond to, diagnose, and correct breakdowns, faults, malfunctions, alarms, emission checks finding emissions in excess of Rule 1110.2 or permit limits, and parameters out-of-range, including:

Yes The personnel responsible for identifying the problem

Yes Internal company notifications, Control room 24/7 occupied

Yes Personnel responsible for diagnosing and correcting problems (___in-house **or** X outside contractor) Combination of both

Yes Actions to be taken to diagnose and correct emissions found to be out-of-compliance by a PA emission check.

NA Actions to be taken to diagnose and correct emissions AFRC faults and alarms *Note: AFRC manufacturers generally include in their User's Manual a list of fault codes and a troubleshooting guide. These should be included in the plan.*

Yes Actions to be taken to diagnose and correct other faults/malfunctions identified by engine control systems

Yes Actions to be taken to diagnose and correct any other parameters that are identified by this plan as out-of-range.

Definition not included in the Plan Consistent with AQMD Rule 102, the Plan defines a breakdown as "a condition caused by an accidental fire or non-preventable mechanical or electrical failure."

Yes For a breakdown resulting in a violation Rule 1110.2 or a permit condition, or for an PA emission check that finds emissions in excess of those allowed by Rule 1110.2 or a permit condition, Operator will correct the problem and demonstrate compliance with another emission check, or shut down the engine by the end of an operating cycle, or within 24 hours from the time the operator knew of the breakdown or excess emissions, or reasonably should have known, whichever is sooner.

Yes For other problems, such as faults, alarms, or parameters out-of-range that are not due to a breakdown, Operator will correct the problem and demonstrate compliance with another emission check, or shut down the engine within 48 hrs of the operator first knowing of the problem.

Per Rule 1110.2 (f)(1)(H)(i), breakdowns or malfunctions that lead to potential deviations must be reported to SCAQMD within 1 hour of discovery by calling 1- 800-CUT-SMOG (1-800-288-7664). Plant personnel will make such calls and identify (1) the time, (2) facility location, (3) equipment involved, (4) contact person, as well as (5) cause of the breakdown, if known, and (6) estimated time for repairs. Plant personnel will also notify LACSD Air Quality when such phone reports are made to SCAQMD.

Per R1110.2 (f)(1)(H)(ii), a written report will be submitted to SCAQMD within 7 calendar days after a breakdown has been corrected, but no later than 30 calendar days from the initial breakdown. This report will be completed by LACSD Air Quality personnel and include: (1) identification of equipment involved in causing, or suspected of having caused, or having been affected by the breakdown, (2) duration of breakdown, (3) date of correction and information that compliance was achieved, (4) type of excess emissions resulting from the breakdown, (5) calculation of excess emission resulting from the breakdown (e.g., NOx or CO in lbs) and basis used to quantify the emissions, (6) description of the corrective action(s) taken to address the breakdown and minimize excess emissions, and (7) description of any measures taken to avoid such breakdowns in the future.

Per R1110.2 (f)(1)(H)(iii), Within 15 days of the end of each calendar quarter, a Quarterly Report will be submitted to SCAQMD that lists each occurrence of breakdown, malfunction, or portable emissions checks that showed potential deviations. The LACSD Air Quality Section will prepare this report.

## 5.7 Procedures for Preventive and Corrective Maintenance

Yes A maintenance schedule for items that may affect emissions is provided, See Appendix D in the application folder.

Yes Preventive Maintenance will be done by _X__ Operator personnel **or** ___ outside service contractor

Yes If maintenance will be done by Operator personnel, maintenance procedures are provided

Yes The format for recordkeeping of maintenance and repairs includes date, engine operating hours, who did it, and an explanation and description of what was done and why.

## 5.8 Procedures for Reporting Engine Problems

*5.8.1 Breakdowns*

Yes Operator will report to the AQMD by telephone (1-800-CUT-SMOG or 1-800-288-7664) any breakdown resulting in emissions in excess of rule or permit emission limits within one hour of such noncompliance or within one hour of the time the operator knew or reasonably should have known of its occurrence. *Note: Rule 1110.2 allows reporting by "other District-approved method" but at this time there are no other such methods.*

Yes Such report will identify the time, specific location, equipment involved, responsible party to contact for further information, and to the extent known, the causes of the noncompliance, and the estimated time for repairs.

Yes Within seven calendar days after the reported breakdown has been corrected, but no later than thirty calendar days from the initial date of the breakdown, unless an extension has been approved in writing by AQMD, Operator will submit to AQMD (Attn. Compliance) either:

- Yes A completed AQMD Form 500–N Deviations, Emergencies & Breakdowns; **or**
- Yes A written breakdown report which includes:
  - Yes An identification of the equipment involved in causing, or suspected of having caused, or having been affected by the breakdown;
  - Yes The duration of the breakdown;
  - Yes The date of correction and information demonstrating that compliance is achieved;
  - Yes An identification of the types of excess emissions, if any, resulting from the breakdown;
  - Yes A quantification of the excess emissions, if any, resulting from the breakdown and the basis used to quantify the emissions;
  - Yes Information substantiating whether the breakdown resulted from operator error, neglect or improper operation or maintenance procedures;
  - Yes Information substantiating that steps were immediately taken to correct the condition causing the breakdown, and to minimize the emissions, if any, resulting from the breakdown;
  - Yes A description of the corrective measures undertaken and/or to be undertaken to avoid such a breakdown in the future; and
  - Yes Pictures of any equipment which failed, if available.

*5.8.2 Quarterly Report*

Yes Within 15 days of the end of each calendar quarter, Operator will submit to the AQMD (Attn: Compliance) a completed Form - Rule 1110.2 - Quarterly Report for Stationary Engines that reports each occurrence of a breakdown, fault, malfunction, alarm, engine or control system operating parameter out of the acceptable range established by an I&M plan or permit condition, or an emission check that finds excess emissions.

Yes Operator will also report if no incidents occurred.

## 5.9 Records

Yes Operator will maintain all records required by this Plan for at least five years and make them available for inspection by SCAQMD personnel.

Yes Operator will keep all records at:

Yes The same location as the engine(s) specified in this Plan; **or**
General operating records, historical recorded data, and maintenance records are available at the location of the engine.

## 5.10 I&M Plan Revisions

Yes Before any change in I&M Plan operations can be implemented, Operator will submit a revised I&M plan to AQMD for approval.

Yes Operator will submit I&M Plan revision to AQMD with Form 400A and the appropriate fee from Rule 306 – Plan Fees.

Yes Operator will apply for a plan revision prior to any change in emission limits or emission control equipment.