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| SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT | BACKGROUND & FACILITY INFORMATION | |
| ENGINEERING & COMPLIANCE | A/N: | 486798 |
| | DATE: | 1/13/2014 |
| RULE 1110.2 INSPECTION & MONITORING (I & M) PLAN EVALUATION | PROCESSED BY: | RR08 |
| | CHECKED BY: | CS |

BACKGROUND:

SCAQMD Rule 1110.2 was amended on February 1, 2008 with additional rule language that significantly changed the way facilities will be required to demonstrate compliance with the rule. Each facility is now required to prepare an **Inspection and Monitoring Plan (I & M Plan)** which details the procedures which the facility will implement to ensure compliance with the requirements of Rule 1110.2. Although only one plan is required for each facility, the facility is required to specify in detail how they will inspect and monitor each and every engine in the facility that is subject to Rule 1110.2. The basic I & M requirements are enumerated in Rule 1110.2 (f)(1)(D).

The facility operates two (2) identical 2650-BHP Superior 16SGTA landfill gas fired with natural gas augmentation electric generator-driver internal combustion engines. These are the only engines on site that are subject to the requirements of Rule 1110.2 (f)(1)(D). Both engines are lean burn engines that are equipped with NOx CEMS (note: CO CEMS are not required for these engines). Therefore, the portable analyzer testing requirement in the I & M Plan will focus mainly on CO emission compliance. In addition, permit conditions on the permits require monitoring of the landfill gas and natural gas fuel usages, and daily total heat input (BTU/day) to the engine, in order to ensure that emissions from these engines will not exceed the permitted limits.

Toyon Landfill Gas Conversion LLC is a Title V facility. This plan, if and when approved, will become part of Section I of the facility's Title V permit.

The facility shown below has submitted the required I & M Plan. On the pages following this cover page is a detailed evaluation of whether or not the submitted I & M Plan will satisfy the basic requirements of Rule 1110.2 (f)(1)(D) for each engine that is subject to the plan. The evaluation will show whether or not each basic requirement is "Satisfied", "Deficient" or "Not Applicable". For every "Deficient" or "Not Applicable" determination, or, where important notes are warranted, additional information/explanation will be provided by the evaluating engineer.

FACILITY INFORMATION:

Facility Name: TOYON LANDFILL GAS CONVERSION, LLC ID No.: 142417

Equipment Location Address: 5050 MOUNT HOLLYWOOD DR., LOS ANGELES, CA 90027

Name(s) of Person(s) Responsible for Plan Compliance: Mr. Russ Jensen, Plant Manager

Telephone Number/Email Address: (323) 662-3475 (rjensen@scseng.com)

Number of Engines at this Facility Subject to I & M Plan: 2

ENGINE INFORMATION: (Engine #1)Permit No.: G15843 Appln. No.: 437755 Device ID: _____Engine Make: Superior Model No.: 16SGTABHP Rating: 2650 RPM: 1800 Serial No.: _____**I.C.E. Function:** Elect. Gen. Pump Driver Compressor Co-Gen Other _____Fuel: Primary: Landfill Gas Augmentation (if any): Natural Gas**Combustion Type:** Rich Burn Lean Burn**Permit Emission Limits:**NO_x = 3.41 lbs/hourRHC = 1.18 lbs/hourCO = 14.6 lbs/hourPM = 1.05 lbs/hourSO₂ = 0.33 lbs/hour**CONTROL EQUIPMENT & COMPONENTS:****Emission Control (Check all that apply):** NSCR (3-way Cat.) SCR (Selective Cat.) Oxidation Catalyst**NSCR / SCR / OXID.CAT. Make & Model:** _____If NSCR/Oxid Cat: Min. Inlet Temp.: _____ F; Max. Outlet Temp.: _____ F
(Refer to permit conditions or NSCR manufacturer specs)If SCR: Min. Inlet Temp.: _____ F; NH₃/NO_x Molar Ratio: _____
Max. Ammonia Slip: _____ ppmv

(Refer to permit conditions or SCR manufacturer specs)

Air-To-Fuel Ratio Controller (AFRC) and Oxygen Sensor:

AFRC Make: _____ AFRC Model No.: _____

AFRC Setting: Variable Set Points at Variable Loads Single Set Point**Oxygen Sensor Type:** Unheated Narrow Band (EGO) Heated Narrow Band (HEGO) Universal Wideband (UEGO) Other (specify): _____Optimum O₂ Sensor Range Setting: _____ to _____ Millivolts / Lambda**Oxygen Sensor Location (relative to catalyst):** Upstream Only Upstream and Downstream**Continuous Emissions Monitoring System (CEMS):** NO_x CO None**Other Parameters (if any):** (for example, differential pressure - ΔP):Parameter(s): Annual LFG and NGfuel input ; Daily Total Heat Input (LFG + NG)Compliance Limit (s): 5.688E+08 BTU/day (total of 2 engines)

ENGINE INFORMATION: (Engine #2)Permit No.: G15841 Appln. No.: 437754 Device ID: _____Engine Make: Superior Model No.: 16SGTABHP Rating: 2650 RPM: 1800 Serial No.: _____I.C.E. Function: Elect. Gen. Pump Driver Compressor Co-Gen Other _____Fuel: Primary: Landfill Gas Augmentation (if any): Natural GasCombustion Type: Rich Burn Lean BurnPermit Emission Limits:NO_x = 3.41 lbs/hourRHC = 1.18 lbs/hourCO = 14.6 lbs/hourPM = 1.05 lbs/hourSO₂ = 0.33 lbs/hour**CONTROL EQUIPMENT & COMPONENTS:****Emission Control (Check all that apply):** NSCR (3-way Cat.) SCR (Selective Cat.) Oxidation Catalyst**NSCR / SCR / OXID.CAT. Make & Model:** _____If NSCR/Oxid Cat: Min. Inlet Temp.: _____ F; Max. Outlet Temp.: _____ F
(Refer to permit conditions or NSCR manufacturer specs)If SCR: Min. Inlet Temp.: _____ F; NH₃/NO_x Molar Ratio: _____Max. Ammonia Slip: _____ ppmv
(Refer to permit conditions or SCR manufacturer specs)**Air-To-Fuel Ratio Controller (AFRC) and Oxygen Sensor:**

AFRC Make: _____ AFRC Model No.: _____

AFRC Setting: Variable Set Points at Variable Loads Single Set Point**Oxygen Sensor Type:** Unheated Narrow Band (EGO) Heated Narrow Band (HEGO) Universal Wideband (UEGO) Other (specify) : _____Optimum O₂ Sensor Range Setting: _____ to _____ Millivolts / Lambda**Oxygen Sensor Location (relative to catalyst):** Upstream Only Upstream and Downstream**Continuous Emissions Monitoring System (CEMS):** NO_x CO None**Other Parameters (if any):** (for example, differential pressure - ΔP):Parameter(s): Annual LFG and NGfuel input ; Daily Total Heat Input (LFG + NG)Compliance Limit (s): 5.688E+08 BTU/day (total of 2 engines)

INSPECTION & MONITORING (I & M) PLAN EVALUATION:

| Satisfied | Deficient | N/A | Requirements | Additional Info/Explanation/Condition |
|-------------------------------------|--------------------------|-------------------------------------|--|--|
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <p><u>PORTABLE ANALYZER (PA) TESTING PROCEDURES:</u></p> <p>(1) The plan should have a set procedure for conducting a portable analyzer (PA) test (measuring NO_x, CO and O₂) on this engine which includes the following:</p> <p>a) Identification of the person or company who will perform the PA test, including a declaration that this person/company has undergone AQMD PA training and is certified in the use of the particular PA equipment,</p> <p>b) A declaration, supported with O & M (operation and maintenance) information if available, indicating the proper calibration schedule and procedure used for the PA equipment,</p> <p>c) A declaration which indicates that the PA test will be conducted in accordance with the requirements in AQMD's "Protocol for the Periodic Monitoring of NO_x, CO, and O₂ from Stationary Engines Subject to SCAQMD Rule 1110.2" (approved on 2/1/2008), OR, the most recently approved USEPA protocol,</p> <p>d) An indication from the facility whether the PA equipment will measure both NO and NO₂ or, just NO (Note: For NO only, the facility must provide test data that shows that NO₂ emissions are less than 10% of total NO_x emissions), and</p> <p>e) An explanation of how the facility intends to store PA test printouts. This statement should indicate the manner, frequency and format of data storage.</p> | <p><u>Notes:</u></p> <p>1. <i>Portable Analyzer testing will be performed internally by a Toyon technician who has undergone Portable Analyzer Training and Certification by the AQMD, and uses equipment (ECOM A+) that has been properly calibrated in accordance with equipment manufacturer specifications.</i></p> <p>2. <i>Portable Analyzer testing shall be performed in accordance with the requirements in AQMD's "Protocol for the Periodic Monitoring of NO_x, CO, and O₂ from Stationary Engines Subject to SCAQMD Rule 1110.2" (approved on 2/1/2008), OR, the most recently approved USEPA protocol.</i></p> |
| <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <p>(2) The plan should have a set schedule of performing PA tests on this engine at least once a week, or, every 150 engine operating hours, whichever occurs later. If the engine is in compliance for 3 consecutive emission checks, without any adjustments to the O₂ sensor set points, then the engine may be tested once a month, or, every 750 engine operating hours, whichever occurs later.</p> <p>If the facility opts for the 150 (or 750) engine operating hours criteria, the facility should indicate on the plan how they intend to get alerted on when a PA test is due.</p> | <p><u>Notes:</u></p> <p><i>Because the engine is equipped with a NO_x CEMS, only portable analyzer testing for CO is required. However, according to Rule 1110.2 (f)(1)(D)(iii)(II), CO portable analyzer testing can be done quarterly or every 2000 engine operating hours. Hence, the weekly PA test is not applicable.</i></p> |

| Satisfied | Deficient | N/A | Requirements | Additional Info/Explanation/Condition |
|--|--------------------------|-------------------------------------|--|--|
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <p>(3) For diesel engines and lean burn engines subject to Reg. XX or have a NOx CEMS, and :</p> <p>a) If the permit contains a CO limit more stringent than 2000 ppmvd, then, the plan should have a set procedure and schedule for performing a PA test for CO only at least quarterly or every 2,000 engine operating hours, whichever occurs later.</p> <p>If the facility opts for the 2,000 engine operating hours criteria, the facility should indicate on the plan how they intend to get alerted on when a PA test is due.</p> <p>b) If the permit contains a CO limit that is NOT more stringent than 2000 ppmvd, then, no emission tests are required.</p> | <p><u>Notes:</u></p> <p><i>These engines are subject to a CO emission limit of 14.6 lbs/hour or 555.31 ppmv@ 15%O₂ (1133.29 ppmv uncorrected). Therefore, CO portable analyzer testing using a CO analyzer is scheduled once every quarter. (See Notes under #2 for more information)</i></p> |
| <input checked="" type="checkbox"/> (conditional) | <input type="checkbox"/> | <input type="checkbox"/> | <p>(4) The plan shall NOT contain a procedure for performing an engine or control system maintenance or tuning within 72 hours prior to performing a PA test, unless the maintenance or tuning is a result of an unscheduled, required repair.</p> | <p><u>Note:</u> <i>Add a condition to the plan's conditional approval to ensure compliance with this requirement.</i></p> |
| <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <p>(5) If this engine is operated by a public agency or a contractor hired by a public agency solely to operate this engine, AND, if the public agency or contractor hired by the public agency opted to perform NOx and CO PA tests in lieu of the CEMS requirement of Rule 1110.2 (f)(1)(A)(ii)(I), THEN, the plan should have a set schedule of performing PA tests on this engine at least once a week, or, every 150 engine operating hours, whichever occurs later. If the facility opts for the 150 engine operating hours criteria, the facility should indicate on the plan how they intend to get alerted on when a PA test is due.</p> | |
| <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <p>(6) If the facility is subject to RECLAIM, then only the CO emission is to be tested.</p> | <p><u>Note:</u> <i>The facility is not a RECLAIM facility.</i></p> |
| <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <p><u>NSCR, SCR, OXIDATION CATALYST I & M PROCEDURES:</u></p> <p>(7) If this engine is a rich burn engine with an NSCR (3-Way Catalyst), the plan should have a set procedure for monitoring the temperature of the exhaust gas entering and exiting the NSCR. Engine cold start-ups excluded, the plan should specify the minimum and maximum catalyst temperatures (based on permit conditions, or, if absent on the permit conditions, based on catalyst manufacturer specifications). The plan should have a set procedure for alerting the operator of deviations to the acceptable operating temperature range.</p> | <p><u>Note:</u> <i>Both engines are lean burn engines.</i></p> |

| Satisfied | Deficient | N/A | Requirements | Additional Info/Explanation |
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| <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | (8) If this engine is a rich burn engine with an NSCR (3-Way Catalyst), and a permit condition (or, the catalyst manufacturer specs) requires monitoring of the temperature increase (ΔT) across the catalyst bed, then, the plan should have a set procedure for calculating and monitoring the ΔT and for alerting the operator of any deviations to the acceptable ΔT . | <u>Note:</u> See note in #7 |
| <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | (9) If this engine is a rich burn engine with an NSCR (3-Way Catalyst), and a permit condition (or, the catalyst manufacturer specs) requires monitoring of the pressure differential (ΔP) across the catalyst bed, then, the plan should have a set procedure for calculating and monitoring the ΔP and for alerting the operator of any deviations to the acceptable ΔP . | <u>Note:</u> See note in #7 |
| <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | (10) If a permit condition or the catalyst manufacturer specifications requires cleaning or replacement of the catalyst element upon reaching a parameter milestone (e.g., after a specified number of operating hours, or, when a ΔP or ΔT limit is reached), the plan should have a set procedure for alerting the operator when such parameter milestone is reached. | |
| <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | (11) If this engine is a lean burn engine with an SCR , the plan has a set procedure for monitoring the following: (a) The temperature of the exhaust gas entering the SCR. The plan should specify the minimum catalyst inlet temperature for proper reaction to occur in the SCR and the maximum temperature to prevent catalyst decomposition. The plan should have a set procedure to alert the operator whenever the minimum temperature is not reached beyond the normal cold start-up timeframe; and (b) The NO _x control algorithm which establishes the acceptable range of reactant (ammonia or urea) flow rate, as a function of engine load. The plan should have a set procedure for establishing the acceptable range of reactant flow rate using a portable NO _x and O ₂ analyzer. | <u>Notes:</u> - The engines are not connected to SCRs. |
| <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | AIR-TO-FUEL RATIO CONTROLLER (AFRC) I & M PROCEDURES: (12) For an engine operated on variable loads , the plan should have a set procedure for establishing the optimum (i.e., compliant with NO _x & CO emission limits) AFRC set-points at 25%, 60% and 95% load ($\pm 5\%$). The loads may also be based on the minimum, midpoint and maximum loads that actually occur during normal operation ($\pm 5\%$). (continued on next page) | <u>Notes:</u> The engines are not equipped with AFRCs. However, each engine is equipped with an Altronic CPU-95 system which Toyon will use to monitor engine exhaust O ₂ and average cylinder temperature. Toyon mapped out an operating range using a PA which coincided with compliant CO emission readings. This range was determined to be between 7.6% - 10.2% O ₂ . |

| Satisfied | Deficient | N/A | Requirements | Additional Info/Explanation |
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| | | | Set points shall be established with the use of a portable NO _x , CO and O ₂ analyzer. Engine load shall be determined using acceptable means, including but not limited to: (a) generator kilowatt output; (b) fuel flow meter measurement; or (c) evaluation of pump or compressor curves with measurement of RPM and pressure. | |
| <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | (13) For an engine operated on a single load and is limited to this load by means of a permit condition, the plan should have a set procedure for establishing the optimum (i.e., compliant with No _x & CO emission limits) AFRC set-point based on the defined single load ($\pm 10\%$). Set point shall be established with the use of a portable No _x , CO and O ₂ analyzer. Engine load shall be determined using acceptable means, including but not limited to: (a) generator kilowatt output; (b) fuel flow meter measurement; or (c) evaluation of pump or compressor curves with measurement of RPM and pressure. | |
| <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | (14) For both variable-load or single-load operation, the plan should have a set procedure for verifying that the AFRC is controlling the engine to the optimum set-point(s) during the required daily monitoring (see section on General I & M Procedures for details on daily monitoring requirement). | <i>Note: See note in #12</i> |
| <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | (15) For both variable-load or single-load operation, the plan should have a set procedure for re-establishing the AFRC set-point(s) whenever a set-point must be readjusted or within 24 hours after the replacement of an oxygen sensor . If the engine is a rich burn engine with a 3-way catalyst , the plan should have a set procedure for re-establishing the AFRC set-point(s) again between 100 and 150 engine operating hours after an oxygen sensor replacement. The plan shall indicate how the operator will be alerted when 100 operating hours has been reached. Set point shall be re-established with the use of a portable NO _x , CO and O ₂ analyzer. | <i>Note: See note in #12</i> |
| <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | (16) The AFRC shall have a malfunction indicator light and audible alarm and the plan shall have procedures for alerting the operator of emission control malfunctions (see item #17 under "General I&M Procedures). | <i>Note: See note in #12</i> |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | GENERAL I & M PROCEDURES (17) The plan should have a set procedure for alerting the operator of any malfunctions in the emission control system and the AFRC. If the facility has on-site personnel, operator-alert systems may include malfunction indicator lights on the defective system or an audible alarm. (continued next page) | <i>Note: An alarm dial-out system is used to notify plant operators of an alarm indicating a malfunction.</i> |

| Satisfied | Deficient | N/A | Requirements | Additional Info/Explanation |
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| | | | If the facility is unmanned, an operator shall be alerted remotely by either a Supervisor Control and Data Acquisition (SCADA) system or other similar systems. The plan should include a list of malfunctions that will be monitored by the alarm system (including malfunction codes). | |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | (18) The plan shall describe how the operator will respond to, diagnose and correct breakdowns, faults, malfunctions, alarms, and emissions checks finding emissions in excess of rule or permit limits. | |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | (19) For breakdown resulting in a violation of Rule 1110.2 or a permit condition, the plan shall contain procedures on how the operator shall correct the problem and demonstrate compliance with another emissions check or shut down the engine at the end of the operating cycle. The breakdown shall be reported per section (H) of Rule 1110.2. | |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | (20) Within 15 days of the end of each calendar quarter, the operator will submit to the AQMD (Attention: 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. Operator will also report if no incidents occurred. | |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | (21) For other problems, such as parameters out-of-range, the operator shall correct the problem and demonstrate compliance with another emissions check within 48 hours of first knowing the problem. | |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | (22) Procedures and schedules for preventive and corrective maintenance. The maintenance schedule shall include the items on the engine and control system that are to be serviced (examples: O2 sensor replacement, catalyst replacements or washes, engines tunes ups, spark plug replacements). The plan shall indicate who will be responsible for maintenance – in-house or contractor. The format for record keeping of maintenance and repairs should include engine operating hours, explanation and description of what was done and why. | |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | (23) Procedures for recordkeeping of monitoring and other actions required by the plan. | |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | (24) For any plan revision the operator shall file a new compliance plan. | |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | GENERAL DAILY MONITORING PROCEDURES: (25) The plan need NOT require daily parameter monitoring for diesel engines or lean burn engines which do not have either exhaust gas recirculation or catalytic control devices. | |

| Satisfied | Deficient | N/A | Requirements | Additional Info/Explanation |
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| <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | (26) Engines will be monitored daily, including weekends and holidays by either remote monitoring or in person or a combination of the two. | - See note in #17 |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | (27) The Plan specifies which in-house personnel or which outside contractor will conduct the daily monitoring. | |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | (28) The format for the daily monitoring report shall include but not be limited to: name of person doing the monitoring (if not remote monitoring), date/time of monitoring, and all parameters to be monitored. | |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | PARAMETERS TO BE MONITORED DAILY (29) Engine load or fuel flow rate. | |
| <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | (30) The actual values of the AFRC set points. | |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | (31) The elapsed time meter operating hours. | |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | (32) The operating hours since the last emissions check. | |
| <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | (33) For rich burn engines with 3-way catalysts, the difference between the inlet and outlet temperature (ΔT) of the catalytic converter. | |
| <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | (34) Engine control systems and AFRC system faults or alarms that affect emissions | - See note in #17 |
| <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | (35) For lean burn engines with SCR, the exhaust temperature at the inlet to the SCR and the reactant flow rate. | - The engines are not connected to SCRs. |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | (36) Other parameters to be monitored, for example, if the permit conditions have a pressure drop requirement (ΔP), the pressure drop should be monitored. | <i>Notes: By means of permit conditions, the facility is required to measure the flow of landfill gas and natural gas (augmenting fuel), and the daily total heat input to each engine. Toyon installed flow meters and other instruments to comply with these requirements.</i> |