

ENGINEERING EVALUATION
Waste Management of Alameda, Inc.; PLANT #2066
APPLICATION #8324

BACKGROUND

Waste Management of Alameda, Inc. operates the Altamont Landfill and Resource Recovery Facility in Livermore, CA. The collected landfill gas at this facility may be controlled by several types of equipment including two gas turbines (S-6 and S-7), two internal combustion engines (S-23 and S-24), and one landfill gas flare (A-15). This application concerns the two engines (S-23 and S-24).

In May 2002, the District issued an Authority to Construct to Waste Management for the S-23 and S-24 Internal Combustion (IC) Engines and several other sources under Application # 3821. Waste Management began operating these engines in June and July of 2002. During the initial compliance demonstration tests for these engines, Waste Management discovered that the maximum firing capacity reported in Permit Application # 3821 was not correct. In addition, source test results indicated that the carbon monoxide (CO) emissions were marginally in compliance with the permit condition limit. In December 2002, Waste Management submitted Application # 6875 to correct the maximum firing rate for S-23 and S-24 and to request an increase in the CO emission limit to provide a greater compliance safety margin. Waste Management also requested modifications to several permit conditions to clarify limits and operating/monitoring requirements. The District approved these equipment capacity corrections and permit condition revisions on June 2, 2003.

The June 2003 condition changes included the incorporation of specific values for the average engine cylinder temperature limits that were established during the initial compliance demonstration tests. These average engine cylinder temperature limits were considered to be the "key emission control system operating parameters" for these engines, which are required by Regulation 8-34-509. These parameters are intended to show on-going compliance (between annual source tests) with the non-methane organic compound (NMOC) emission limits in Regulation 8-34-301.4.

8-34-509 Key Emission Control System Operating Parameter(s): Any operator using an emission control system other than a flare or other enclosed combustor shall determine the key emission control system operating parameter(s) for the device using District approved methods and shall monitor the parameter(s) on a scheduled approved by the APCO.
(Adopted October 6, 1999)

Although not required by the revised permit conditions or Regulation 8, Rule 34, Waste Management conducted additional testing at these engines in July 2003 in order to further investigate the reasons for the lower than expected engine efficiency (i.e. higher maximum firing capacity than described by the manufacturer) and several other performance issues that were not related to air quality. The preliminary results of these tests indicated that the average engine cylinder temperatures that were necessary to ensure compliance with the nitrogen oxide (NOx), CO, and NMOC emission limits had changed from the cylinder temperature limits that had just been approved in June 2003. Waste Management took the engines off line and researched this issue further. Another test was attempted in September 2003 and was aborted for the same reasons. Both engines remain off-line.

Waste Management now believes that engine cylinder temperature is highly influenced by factors such as ambient temperature and engine load that do not have an impact on compliance with the Regulation 8-34-301.4 NMOC emission limits. It appears that engine cylinder temperature may not be a good "key emission control system operating parameter", because the cylinder temperature is highly variable across the normal range of engine operating conditions. Waste

Management is requesting to change the key emission control system operating parameter from continuous measurement of average engine cylinder temperature to monthly measurement of CO and oxygen concentrations by a portable flue gas analyzer and use of a correlation factor to calculate NMOC concentration. Waste Management has requested that the CO measurements determined by the portable flue gas analyzer NOT be used to determine compliance with the CO emission limit for the engines, because the portable flue gas analyzer cannot determine the CO emission rate in terms of grams per brake-horsepower-hour.

Waste Management is also proposing to change the procedure used to determine the methane content in the landfill gas and or other waste gases combusted in these engines. Currently the calculation procedure for determining compliance with the daily heat input limits (see Condition # 19237, Part 4 and Application # 6875) requires that the methane content be determined using specific gravity, temperature, pressure, and carbon dioxide measurements and a proprietary calculation formula. Waste Management is proposing to use a daily methane concentration measurement by a gas chromatograph (GC) instead of the current calculation procedure, because the GC method has been found to be more accurate.

PERMIT CONDITIONS

The proposed permit condition changes are shown below in strikeout and underline formatting. Double strikeout indicates that the modification was previously proposed in the draft MFR Permit that is currently on public notice. A discussion of the reasons for each proposed change follows the condition text.

Condition # 19237

For S-23, INTERNAL COMBUSTION ENGINE, and

For S-24, INTERNAL COMBUSTION ENGINE:

1. The S-23 and S-24 Internal Combustion (IC) Engines may be fired on landfill gas, liquefied natural gas produced on-site at the S-25 or S-26 Liquefied Natural Gas (LNG) Plants, or LNG Plant waste gas from S-25 or S-26. (Basis: Cumulative Increase)
2. The heat input to each IC Engine (S-23 and S-24) shall not exceed 420 million BTU per day and shall not exceed 153,300 million BTU per year. (Basis: Offsets and Cumulative Increase)
3. District approved flow meters, to measure the total fuel gas flow rate into each IC Engine, shall be installed prior to any operation and shall be maintained in good working condition. (Basis: Cumulative Increase and Regulation 8-34-508)
4. The daily heat input to each IC Engine shall be determined using the fuel gas flow rate measured pursuant to Part 3 (actual cubic feet per day) and ~~above and the calculation procedures approved pursuant to Application # 6875~~ daily measurement of the fuel gas methane concentration by gas chromatograph. Fuel gas temperature and pressure measurements shall be used to convert from actual cubic feet to cubic feet at 60 °F and 14.7 psia. The daily heat input shall be determined from the following equation:

$$\text{Heat Input (MM BTU/day)} = \frac{\text{Daily Fuel Flow Rate (ft}^3\text{/day at 60 °F and 14.7 psia)} * \text{Methane Concentration (\%)} * \text{Gross Methane Heat Content (1013 BTU/ft}^3\text{ CH}_4\text{)} * \text{Conversion Factor (1E-8)}}{\text{Conversion Factor (1E-8)}}$$
 (Basis: Offsets and Cumulative Increase)
5. Each IC Engine (S-23 or S-24) shall be operated continuously during all times that landfill gas or LNG Plant waste gas is vented the IC Engine. In the event of a shut down or malfunction of S-23 or S-24 or both IC Engines, landfill gas and LNG Plant waste gas shall be diverted to other operational control device(s) with sufficient capacity to handle

the additional gas load. These gases may be diverted to A-15 Landfill Gas Flare, S-6 Gas Turbine, S-7 Gas Turbine, S-23 IC Engine, S-24 IC Engine, or any combination of these devices. The IC Engines shall each be equipped with automatically controlled valves, which shall ensure that landfill gas and LNG Plant waste gas are immediately diverted to an appropriate control device. Raw landfill gas and raw LNG Plant waste gas shall not be vented to the atmosphere, except for unavoidable landfill gas emissions that occur during control system installation, maintenance, or repair that is performed in compliance with Regulation 8, Rule 34, Sections 113, 116, 117, or 118 and inadvertent component or surface leaks that do not exceed the limits specified in Regulations 8-34-301.2 or 8-34-303. (Basis: Offsets, Cumulative Increase, Toxic Risk Management Policy, and Regulation 8-34-301)

6. Nitrogen Oxide (NO_x) emissions from each IC Engine (S-23 and S-24) shall not exceed 0.6 grams of NO_x (calculated as NO₂) per brake-horsepower-hour. The Permit Holder may demonstrate compliance with this emission rate limit by having a nitrogen oxide concentration in the engine exhaust of no more than 36 ppmv of NO_x, corrected to 15% oxygen, dry basis. An exhaust concentration measurement of more than 36 ppmv of NO_x shall not be deemed a violation of this part, if the Permit Holder can demonstrate that NO_x emissions did not exceed 0.6 g/bhp-hour during the test period.
(Basis: BACT and Offsets)
7. Carbon Monoxide (CO) emissions from each IC Engine (S-23 and S-24) shall not exceed 2.1 grams of CO per brake-horsepower-hour. The Permit Holder may demonstrate compliance with this emission rate limit by having a carbon monoxide concentration in the engine exhaust of no more than 207 ppmv of CO, corrected to 15% oxygen, dry basis. An exhaust concentration measurement of more than 207 ppmv of CO shall not be deemed a violation of this part, if the Permit Holder can demonstrate that CO emissions did not exceed 2.1 g/bhp-hour during the test period.
(Basis: BACT and Cumulative Increase)
8. Each IC Engine (S-23 and S-24) shall comply with either the destruction efficiency requirements or the non-methane organic compound (NMOC) outlet concentration limit specified in Regulation 8-34-301.4 (Basis: BACT, Offsets, and Regulation 8-34-301.4).
9. ~~The average engine cylinder temperature for each IC Engine (S-23 and S-24) shall be maintained within the temperature ranges listed below at all times except during startup and shutdown periods. In order to demonstrate compliance with this part, the Permit Holder shall continuously monitor the average cylinder temperature in each engine and shall record any dates and times when an engine was operated with an average engine cylinder temperature that was outside of the applicable range listed below.~~
 - a. ~~For S-23, the average engine cylinder temperature shall not be less than 582-degrees F and shall not be greater than 618 degrees F.~~
 - b. ~~For S-24, the average engine cylinder temperature shall not be less than 599-degrees F and shall not be greater than 635 degrees F.~~

Carbon monoxide (CO) concentration in the engine exhaust shall be used as the key emission control system operating parameter in order to demonstrate compliance with the Regulation 8-34-301.4 NMOC emission limit between annual source tests at S-23 and S-24. For the purpose of this part only, the CO concentration in the exhaust from S-23 and S-24 shall not exceed 215 ppmv at 15% oxygen (O₂), dry basis. Any CO concentrations that are measured using the procedures described in this part shall not be used to evaluate compliance with the CO emission limits in Part 7. CO and O₂ concentrations shall be measured according to the monitoring schedule in subparts a-c below using a portable flue gas analyzer capable of measuring CO concentrations within +/- 2% accuracy and O₂ concentrations within +/- 1% accuracy. The monitoring schedule in subparts a-c below shall become effective for each engine (S-23 or S-24) upon the first date that the engine is operated after [insert date of approval of this condition change].

- a. The Permit Holder shall measure the concentrations of CO and O₂ in the exhaust of each engine once per operating day for at least fifteen operating days for each engine. The Permit Holder shall calculate the standard deviation of the corrected CO measurements (dry basis CO concentrations after correction to 15% O₂) twice per calendar month (or after each fifteen daily measurements if the engine is not operated each day during the month). If the corrected CO measurements do not exceed the limit in this part, and the standard deviation of these measurements does not exceed 10, then the Permit Holder may use the monitoring schedule described in subpart b for that engine.
- b. The Permit Holder shall measure the concentrations of CO and O₂ in the exhaust of each engine once per operating week for at least thirteen operating weeks for each engine. The Permit Holder shall calculate the standard deviation of the corrected CO measurements (dry basis CO concentrations after correction to 15% O₂) once per calendar quarter (or after thirteen weekly measurements if the engine is not operated each week during the quarter). If the corrected CO measurements do not exceed the limit in this part, and the standard deviation of these corrected measurements does not exceed 10, then the Permit Holder may use the monitoring schedule described in subpart c. If a corrected CO measurement exceeds the limit in this part or if the standard deviation calculated pursuant to this subpart exceeds 10, the Permit Holder shall revert to the subpart a monitoring frequency.
- c. The Permit Holder shall measure the concentrations of CO and O₂ in the exhaust of each engine once per operating month for at least twelve operating months for each engine. The Permit Holder shall calculate the standard deviation of the corrected CO measurements (dry basis CO concentrations after correction to 15% O₂) once per calendar year (or after twelve monthly measurements if the engine is not operated each month during the year). If a corrected CO measurement exceeds the limit in this part or if the standard deviation calculated pursuant to this subpart exceeds 10, the Permit Holder shall revert to the subpart b monitoring frequency.

(Basis: BACT and Regulations 8-34-301.4, 8-34-501.11, and 8-34-509)

10. In order to demonstrate compliance with Parts 6 through 9 above and Regulations 8-34-301.4, ~~9-1-302~~, 9-8-302.1, and 9-8-302.3, the Permit Holder shall ensure that a District approved source test is conducted annually on each IC Engine (S-23 and S-24). Source tests shall be conducted no sooner than 6 months and no later than 12 months after the previous source test. The Source Test Section of the District shall be contacted to obtain approval of the source test procedures at least 14 days in advance of each source test. The Source Test Section shall be notified of the scheduled test date at least 7 days in advance of each source test. The source test report shall be submitted to the Compliance and Enforcement Division and the Source Test Section within 45 days of the test date. The annual source tests shall determine the following:
- a. total flow rate of all gaseous fuel to each IC Engine (dry basis);
 - b. concentrations (dry basis) of carbon dioxide (CO₂), nitrogen (N₂), oxygen (O₂), methane (CH₄), and total non-methane organic compounds (NMOC) in the combined gaseous fuel burned in each IC Engine
 - c. exhaust gas flow rate from each IC Engine (dry basis);
 - d. concentrations (dry basis) of NO_x, CO, CH₄, NMOC, and O₂ in the exhaust gas from each IC Engine;
 - e. emission rates for benzene, formaldehyde, and vinyl chloride in the exhaust from each IC Engine (once every four years);
 - f. NMOC destruction efficiency achieved by each IC Engine; and
 - g. ~~set point and operating range for the average engine cylinder temperature that is required to maintain compliance with Parts 6-9 above and Regulation 8-34-301.4, for each IC Engine.~~ CO and O₂ concentrations in the exhaust from each engine shall be measured using the portable flue gas analyzer method described in Part 9 above. The Permit Holder shall determine a correlation ratio by dividing

the corrected CO concentration (at 15% O₂ dry) measured by the portable analyzer by the corrected NMOC outlet concentration (at 3% O₂ dry) determined from subpart d. If this correlation ratio is less than 1.8, the Permit Holder shall submit a permit application for a change of conditions within 45 days of receiving the test results.

(Basis: BACT, Offsets, Cumulative Increase, Toxic Risk Management Policy, and Regulations 8-34-301.4, 8-34-412, ~~9-1-302~~, 9-8-302.1, and 9-8-302.3)

11. In order to demonstrate compliance with Part 2, the Permit Holder shall maintain the following records in an APCO approved logbook for each IC Engine (S-23 and S-24).
- a. Record the dates and times of all startups and shutdowns.
 - b. Record the reason for any shutdowns.
 - c. Record the heat input rate for each engine on a daily basis (determined in accordance with Part 4 above) and summarize these records on a monthly basis.
 - d. Maintain records of all compliance demonstration test results and any calculation procedures or calculated results that are used to show compliance with these conditions.

All records shall be kept on site and shall be made available to the District staff upon request. All records shall be retained for at least 5 years from the date of entry. (Basis: Offsets and Cumulative Increase)

Discussion of Proposed Condition Revisions

Part 4: The purpose of this modification is twofold. First, the applicant requested to change the calculation procedure for the heat input limits, because recent testing indicated that the methane concentrations measured by the current procedure were not consistent with methane concentration measurements by a gas chromatograph (located at another source but burning the same gas). Further testing by Waste Management confirmed that the current methane measurement procedure is not reliable over the entire range of gas conditions expected to occur. Waste Management is now proposing to measure the methane concentration in the landfill gas (and other waste gas blends that are burned in these engines) on a daily basis using a gas chromatograph (GC). The accuracy of the GC is +/- 0.05% across the full range gas temperatures expected (-18 °C to 55 °C). The GC method is expected to yield more accurate methane data. This methane data is used to calculate the daily heat input limit based on an equation discussed in Application #6875. The second purpose of these revisions is to explicitly identify the appropriate calculation equation in the permit condition rather than referencing the procedure elsewhere. During the public review process of draft MFR Permits for other sites, the District has received adverse comments about referencing procedures in material that is not readily available to the public. Therefore, the District is proposing to state the heat input calculation equation directly in this condition to improve the clarity of this part.

Part 9: The purposes of this part are to identify the key emission control system operating parameter, establish the operating limit(s) for this key parameter, and identify the monitoring frequency and procedures. A key emission control system operating parameter is required by Regulation 8-34-509 to show that these engines will comply with the Regulation 8-34-301.4 NMOC emission limits between annual source tests. As discussed in the Background Section, Waste Management has discovered through additional on-site testing that the correlation between engine cylinder temperature and NMOC destruction efficiency is masked by the much larger engine cylinder temperature variations due to ambient conditions and engine load. Therefore, the average engine cylinder temperature does not appear to be an appropriate key emission control system operating parameter for the engines at this site.

In order to resolve this issue, Waste Management has proposed to use the CO concentration in the engine exhaust as the key emission control system operating

parameter instead of the average engine cylinder temperature. Waste Management supplied CO and NMOC outlet concentration data for this type of engine and requested to test the engines for CO on a monthly basis.

The District reviewed Waste Management's CO and NMOC concentration data and established a CO emission limit using the least squares method to determine the best-fit straight line to the data. Although the data that is available on this particular engine type is very limited and the correlation factor for the best-fit line was not particularly high, engineering theory agrees that a general correlation exists between the outlet CO concentration and the outlet NMOC concentration of engines burning waste gases. The engine type (manufacturer, make, and model), engine size, engine load, and concentration of NMOC in the fuel are expected to have some influence on the CO/NMOC correlation equation. However, insufficient data is available to establish any sort of correction to the correlation equation for differences in these other factors. In order to allow Waste Management to operate these engines, the District is proposing to accept CO concentration (corrected to 15% oxygen) as the key emission control system operating parameter for these engines.

The District is proposing to require daily testing for CO and oxygen using a portable flue gas analyzer. Although this method is not an approved method for showing compliance with the CO emission limit (because it only measures concentration and not emission rate), the portable analyzer method is sufficiently accurate for demonstrating the engine is performing consistently throughout the year (between annual source tests) and should therefore be complying with the NMOC emission limit between annual source tests. After demonstrating that the CO concentration does not vary considerable on a daily basis, the District is proposing to allow Waste Management to reduce the testing frequency to a weekly basis. After demonstrating that the CO concentration does not vary considerable on a weekly basis, the District is proposing to allow Waste Management to reduce the testing frequency to a monthly basis. The testing frequency will be increased back to weekly or daily if any measured CO concentrations are above the limit or if the measured CO concentrations become erratic.

Part 10: The District is proposing to require Waste Management to review the outlet CO concentration limit on an annual basis. If the ratio between the corrected CO concentration and corrected NMOC concentration is less than 1.8, the District will need to revise the outlet CO concentration limit in Part 9.

For Part 10, the District is also proposing to delete the references to Regulation 9-1-302, because this annual source test will not measure outlet sulfur dioxide concentrations and is therefore not related to Regulation 9-1-302, which limits the outlet sulfur dioxide concentration.

Part 11: The text in this part was modified to ensure that the Permit Holder will keep all records necessary to demonstrate compliance with the heat input limit in Part 4 and the new CO concentration limit in Part 9.

EMISSIONS and PLANT CUMULATIVE INCREASE

The proposed changes to Condition # 19237, Parts 4, 9, 10, and 11 affect the monitoring, calculation, and record keeping procedures for demonstrating compliance with heat input limits and NMOC emission limits. These condition changes will not modify any emission related limits for the engines. Therefore, these condition changes will not result in any increases in maximum permitted emissions. These condition changes are expected to improve this facility's ability to comply with the existing heat input and NMOC emission limits, because the proposed heat input calculation procedure is expected to be more accurate than the current method and the proposed

CO monitoring procedure is expected to be more representative of the NMOC emissions than the current engine cylinder temperature monitoring method.

Since this application will not result in any emission changes, there will be no changes to the plant cumulative emission increase inventory for this site.

COMPLIANCE STATEMENT and MONITORING REQUIREMENTS

CEQA Requirements (Regulation 2, Rule 1)

The Engineering Evaluation for the S-23 and S-24 IC Engines uses the fixed standards and objective measurements described in District Permit Handbook Chapter 2.3 "Internal Combustion Engines". Since the approval of the Change of Conditions for the engines does not involve any element of discretion, it is considered ministerial.

This application is also categorically exempt from CEQA review pursuant to Regulation 2-1-312.1, because it is an application to modify permit conditions at existing sources that does not result in any physical modifications or emission increases.

Public Notification Requirements (Regulation 2, Rule 1)

The project is over 1000 feet from the nearest school and is therefore not subject to the public notification requirements of Regulation 2-1-412.

New Source Review (Regulation 2, Rule 2 and Toxic Risk Management Policy)

Since this application does not result in any modifications or emission increases, new source review (BACT, Offsets, and PSD) does not apply. Likewise, the MACT requirements of Regulation 2-2-317 and the District's Toxic Risk Management Policy do not apply, because this application does not result in any emission increases.

Major Facility Review (Regulation 2, Rule 6):

In accordance with the requirements of 40 CFR Part 70, Waste Management submitted Application # 25828 in October 1995 for a Title V Permit for this facility, because it is a major facility of regulated air pollutants (NO_x and CO). This application was declared complete on October 24, 1995. This site subsequently became a designated facility when EPA adopted the Emission Guidelines for MSW Landfills (40 CFR Part 60, Subpart Cc) in 1996. The District approved a draft MFR permit for this site on October 1, 2003. This draft MFR Permit is currently undergoing public and EPA review.

The permit condition revisions discussed in this application involve reducing the monitoring frequency for the key emission control system operating parameter from a continuous basis to either a daily, weekly, or monthly basis. In accordance with Regulation 2-6-226.3, this change in monitoring frequency constitutes a significant permit revision. Therefore, this permit revision will be processed following the procedures identified in Regulation 2-6-412. The draft MFR Permit for this significant revision will be issued for public and EPA comment. While the comment periods for this revision and the initial MFR Permit issuance may overlap to some extent, the initial permit issuance application and this significant revision application are distinct projects. The public/EPA comment periods for this significant revision do not extend the public/EPA comment periods for the initial MFR Permit issuance project. Any comments received on this significant revision will be handled separately from comments on the initial MFR Permit issuance application.

The MFR Permit for this facility will be revised as discussed below:

- Modify Permit Condition # 19237, Parts 4, 9, 10, and 11.

- Revise Tables IV-D, VII-D, and VIII to reflect revisions to Condition # 19237.
- Make minor corrections to requirements in Tables III, IV-A, IV-B, IV-D, and IV-E.
- Add Section X Revision History and correct numbering in subsequent sections.

Applicable District Requirements (Regulation 8, Rule 34 "Solid Waste Disposal Sites"):

The S-23 and S-24 IC Engines are subject Regulation 8-34-301.4, which limits NMOC emissions to 120 ppmv (as methane) in the exhaust at 3% oxygen or requires the device to meet an NMOC destruction efficiency of 98% by weight. The initial compliance demonstration tests showed that S-23 was emitting an average of 45 ppmv of NMOC as methane at 3% O₂ and S-24 was emitting an average 19 ppmv of NMOC as methane at 3% O₂. Therefore, S-23 and S-24 are complying with Regulation 8-34-301.4.

Waste Management is proposing to monitor the corrected carbon monoxide (CO) concentration in each engine's exhaust (CO concentration corrected to 15% oxygen, dry basis) in order to comply with the Regulation 8-34-509 requirement to monitor a key emission control system operating parameter. The CO and O₂ concentrations will be measured using a portable flue gas analyzer. Initially measurements will be on a daily basis. The testing frequency may be reduced to a weekly and then a monthly basis, if the CO concentration is found to have low variability from day to day and week to week. The available data indicates that keeping the outlet CO concentration below 215 ppmv of CO at 15% O₂ will ensure that the outlet NMOC concentration does not exceed 120 ppmv of NMOC at 3 % O₂. This CO concentration limit will be reevaluated on an annual basis during the annual compliance demonstration test.

Applicable District Requirements (Regulation 6):

The S-23 and S-24 IC Engines are expected to comply with the Ringelmann 1 limit of Regulation 6-301 and will have no visible emissions. These devices will also comply with Regulation 6-310 (PM ≤ 0.15 grains/dscf), because S-23 and S-24 will each emit less than 0.04 grains/dscf. Maximum potential emissions from each engine are 3.7 tons/year of PM₁₀ each. Since (a) the likelihood of non-compliance with these limits is expected to be very low, (b) the PM testing procedures are difficult and costly for internal combustion engines of this size, and (c) the maximum potential PM₁₀ emissions are not substantial, then no additional compliance monitoring for PM limits is justified.

Applicable District Requirements (Regulation 9):

Regulation 9-1-302 limits sulfur dioxide in the exhaust from the IC Engines to 300 ppmv. At the maximum expected landfill gas sulfur content of 200 ppmv, the exhaust from these devices will contain less than 40 ppmv of SO₂. Therefore, this equipment will comply with 9-1-302. Since this equipment will comply with 9-1-302, it is also expected to comply with the ground level SO₂ limits of 9-1-301. The sulfur concentration in the landfill gas at this site is monitored on a monthly basis pursuant to requirements for the S-6 and S-7 Gas Turbines. Due to the high margin of compliance with the Regulation 9-1-302 limit, monthly testing is adequate for demonstrating compliance with the Regulation 9-1-302 limit.

Each IC Engine (S-23 and S-24) is also subject to Regulation 9, Rule 8. These engines will only be burning waste derived fuel gases (no fossil fuels). Therefore, Section 9-8-301 is not applicable. Regulation 9-8-302.2 only applies to rich burn engines and is not applicable to S-23 and S-24. These IC Engines will comply with the Regulation 9-8-302.1 NO_x limit of 140 ppmv at 15% O₂, because the BACT requirement (0.6 grams NO_x/bhp-hour) is equivalent to 36 ppmv of NO_x at 15% O₂. These IC Engines will also comply with the Regulation 9-8-302.3 CO limit of 2000 ppmv at 15% O₂, because the BACT requirement (2.1 grams CO/bhp-hour) is equivalent to 207 ppmv of CO at 15% O₂. Sections 330 and 331 (concerning standby emergency engines) are not applicable. This facility is currently required to test for compliance with all NO_x and CO limits on an annual basis. Annual testing is adequate for determining compliance with the Regulation 9, Rule 8 limits because the margin of compliance is high (compliance ratios of 3.9:1.0 for the NO_x limit and 9.7:1.0 for the CO limit).

Federal Requirements:

NSPS: The S-2 Altamont Landfill was not modified (no vertical or horizontal expansions) after May 30, 1991. Therefore, the NSPS for MSW Landfills (40 CFR, Part 60, Subpart WWW) is not applicable. The landfill is subject to the Emission Guidelines (40 CFR Part 60, Subpart Cc). This site will comply with these requirements by complying with Regulation 8, Rule 34. All monitoring requirements in Regulation 8, Rule 34 are at least as stringent as the monitoring requirements in 40 CFR Part 60, Subpart WWW. Therefore, no additional monitoring is necessary.

NESHAPS: A NESHAPS requirement for landfills (40 CFR Part 63, Subpart AAAA) was adopted in January 2003. Since this facility is subject to the EG it is also subject to this NESHAP (regardless of whether HAP emissions are over the major facility thresholds or not). This facility is required to meet all new requirements (which include the preparation and implementation of a startup, shutdown, and malfunction plan and new reporting requirements) by January 16, 2004. This facility is aware of these new requirements and is expected to comply with all new requirements by 1/16/04.

RECOMMENDATION

Issue a Change of Conditions for the following equipment.

- S-23 Internal Combustion Engine;** Deutz, Model # TBG 620 V16; 1877 bhp, 17.5 MM BTU/hour; burning landfill gas, waste gas, and LNG; 530 scfm of gas at 550 BTU/scf.
- S-24 Internal Combustion Engine;** Deutz, Model # TBG 620 V16; 1877 bhp, 17.5 MM BTU/hour; burning landfill gas, waste gas, and LNG; 530 scfm of gas at 550 BTU/scf.

By: Carol S. Allen
Senior Air Quality Engineer

October 20, 2003
Date