POGO MINE
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MINING DONE RIGHT

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August 6, 2013
COR-13-053
Certified Mail #7011 1570 0001 1569 9508

Director, Air and Waste Management Division
United States Environmental Protection Agency
1200 Sixth Avenue
Seattle, Washington 98101

SUBJECT: Sumitomo Metal Mining Pogo LLC, Revised Petition Pursuant to 40 CFR 60.2115

Dear Sir or Madame:

As requested, Sumitomo Metal Mining Pogo LLC (Pogo) revised our Petition to incorporate EPA's comments to the greatest extent practicable. In addition, the revised petition incorporates valuable information obtained from the results of the June 28 - 30, 2013 source test. For example, the primary and secondary combustion chamber temperatures were measured at 5 to 6 minute intervals during all test runs, and these data were used to propose revised minimum-temperature operating limits.

This petition provides the five items specified in 40 CFR 60.2115(a)-(e):

(a) Identification of the specific parameters you propose to use as additional operating limits.
(b) A discussion of the relationship between these parameters and emissions of regulated pollutants, identifying how emissions of regulated pollutants change with changes in these parameters and how limits on these parameters will serve to limit emissions of regulated pollutants.
(c) A discussion of how you will establish the upper and/or lower values for these parameters which will establish the operating limits on these parameters.
(d) A discussion identifying the methods you will use to measure and the instruments you will use to monitor these parameters, as well as the relative accuracy and precision of these methods and instruments.
(e) A discussion identifying the frequency and methods for recalibrating the instruments you will use for monitoring these parameters.

The operating parameters proposed to be used as additional operating limits include:

- Minimum primary and secondary chamber temperatures, to be monitored continuously during each test run,
- Minimum burn times of the primary and secondary chambers, to be monitored continuously during each test run,
- A maximum waste-load weight to be measured and recorded for each and every waste charge during each test run,

- A minimum time interval between waste charges, to be measured and recorded for every charge during each test run.

Following the performance test, each of the operating limits established during the test will be continuously monitored at all times when the incinerator is in operation.

For the temperature limits, continuously monitored is defined as recording the temperature at the start of each waste charge, at 6 minutes after each charge, at 11-minutes after each charge, and at the end of each 15-minute charge interval, as well as every 5 minutes following the completion of the final load interval until the end of the burn cycle. The temperature measurements will be converted to 1-hour average values which will be used to determine compliance with the applicable operating limits. The proposed minimum temperature limits for the primary and secondary chambers are within 5 percent and 2 percent, respectively, of the average temperatures measured during the performance testing. Pogo believes that setting these minimum temperature limits close to the average operating temperatures ensures that these operating limits provide representative and accurate indication of incinerator performance.

For burn time operating limits, the start time and end time of each chamber will be monitored. The primary chamber burn time will begin when the final waste load is charged to the primary chamber and continuously measured until the primary burn cycle is completed. The secondary chamber burn time will begin when the primary burn cycle is completed, and continuously monitored using a digital clock until the secondary burn cycle is completed. Each total burn time will be used to determine compliance with the applicable operating limit.

For the waste load interval operating limit, the start time and end time of each load interval will be monitored. The load interval will begin when the waste is charged to the primary chamber and the charge door is closed, and the interval will end when the charge door is opened to admit the next load. Each load interval will be continuously measured using a digital clock and each load interval will be recorded in order to determine compliance with the applicable operating limit.

For the waste load weight limit, the weight of each waste load will be measured using a floor scale with electronic data reporting and recorded prior to be charged to the incinerator. The recorded weight of each load will be used to determine compliance with the applicable operating limit. The proposed waste load was set to 40% of the manufacturer's specified design maximum capacity. Limiting the load weight to this level will ensure optimal incinerator performance.

Waste composition is <u>not</u> proposed as an incinerator operating parameter that maybe established as quantifiable limit. Pogo's waste it is comprised of approximately 85% municipal solid waste; 5% sewage treatment sludge; and 10% non-hazardous secondary materials (e.g., rags). Pogo measures and keeps records of the weights of each type of waste loaded during each burn cycle. These records demonstrate compliance with 40 CFR

60.2145(d), which requires that "you must burn only the same types of waste used to establish operating limits during the performance test."

Also, stack gas flow rate is not proposed as a parameter to be monitored as an indicator of incinerator performance. During the June 28 - 30, 2013 source test, three reference test methods, comprising nine test runs generated 16 hours of stack flowrate measurements. Data for all 9 test runs show that the stack gas flowrate variation was minimal, for example, the 6-hour average velocity during the RM-29 runs was 10.8 ft/s, and each 2-hour run had an average flowrate within 2.5 percent of 10.8 ft/s. Similar results were measured during the RM-5 and RM-23 tests. For this reason, stack flowrate monitoring is not considered to be a necessary operating parameter.

Because the revised petition no longer includes any reference to control unit set points or any other information in the incinerator operating manual, Attachment 1 was deleted.

If you have any questions, please give me a call at (907) 895-2879 or email me at sally.mcleod@smmpogo.com.

Sincerely,

Sally McLeod

Sally McLeod, CEM, REM
Environmental Manager

cc: John Kuterbach, ADEC

Attm: Pogo Initial CISWI Performance Test Operating Limits Revised Petition

Pogo Mine
Initial CISWI Performance Test
Incinerator Parameters / Operating Limits Revised Petition

Sumitomo Metal Mining Pogo LLC (Pogo) operates a small remote incinerator that is subject to 40 CFR 60 Subpart CCCC, *Standards of Performance for Commercial and Industrial Solid Waste Incineration Units* (CISWI Units). Because construction of this incinerator commenced after June 4, 2010, it is defined in §60.2015(a)(1) as a new CISWI unit.

According to §60,2015(a), the incinerator is subject to the emission limits in Table 8 of Subpart CCCC. Pogo intends to conduct additional source testing to quantify emissions from the incinerator. Emissions are limited by proper operation and maintenance of the incinerator according to the manufacturer's specifications, and no add-on control device is utilized. As required by §60.2115, Pogo hereby petitions the EPA Administrator for specific operating limits to be established during the initial performance test and continuously monitoring thereafter.

The subject incinerator is an ACS Inc. Model PC 0400-VO5-RC6. The unit has one 800,000 Btu/hr primary chamber propane burner, and two 800,000 Btu/hr secondary chamber propane burners. Both chambers are equipped with modulating combustion air blowers.

The following paragraphs provide the information specified in §60.2115(a) through (e).

(a) Identification of the specific parameters you propose to use as additional operating limits.

The following parameters are proposed for use as operating limits[1]:

- Waste-Load Weight Limit: Maximum load per charge = 60 pounds
- Interval Limit: Minimum time between waste loads = 15 minutes
- Primary Combustion Chamber Temperature Limit: Minimum temperature = 1,500°F
- Primary Combustion Chamber Burn Time Limit: Minimum burn time = 5 hours after the final load is charged to the primary chamber
- Secondary Combustion Chamber Temperature Limit: Minimum temperature = 1,800°F
- Secondary Combustion Chamber Burn Time Limit: Minimum = 1 hour burn time = 5 hours after the end of the primary chamber burn cycle

During the performance test, these operating parameters will be monitored and the measured values will be recorded. Following the performance test, primary and secondary chamber temperatures will be

[1] Other than batch weight, the operating limits are based on the manufacturer's specified or default operating parameters. The maximum batch load weight of 60 pounds is only 40 percent of the manufacturer's maximum charge design weight; in practice Pogo limits the batch load weight to 45 pounds or less, a value specified by the manufacturer's technician to optimize incinerator performance and minimize residual ash.

continuously monitored at all times when the incinerator is operating. The methods and the instruments to be used for measuring and monitoring these parameters are discussed in section (d), below.

(b) A discussion of the relationship between these parameters and emissions of regulated pollutants, identifying how emissions of regulated pollutants change with changes in these parameters and how limits on these parameters will serve to limit emissions of regulated pollutants.

The following discussion presents a brief description of the incinerator combustion process, the relationship between emissions of regulated pollutants and the parameters identified above, how emissions of these pollutants change with changes in these parameters, and how limits on the these parameters will serve to limit emissions of regulated pollutants.

Combustion Process Description

Emissions of regulated pollutants are minimized through proper and complete combustion of waste in the incinerator. The burnable, hydrocarbon constituents of the waste, as well as intermediate compounds formed as the waste is heated, are ideally oxidized to form carbon dioxide and water vapor, while the inert constituents are reduced to ash. Combustion is conducted in two parts within the primary combustion chamber and the secondary combustion chamber.

Primary Combustion Process

In the primary combustion step, the thermal destruction of solid waste is accomplished in four phases: (1) drying, (2) volatilization of vapors and gases, (3) in-place oxidation of burnable solids, and 4) final burn-down of char and the consolidation and cooling of inert residues (i.e., bottom ash).

- The drying phase occurs in the initial heating of the waste material in the primary oven. Moisture is driven off as the material is heated past the vaporization temperature of water. Drying is usually complete by the time the material has reached 300°F.
- In the second phase, vapors and gases diffuse out as the material temperature increases and their respective volatilization temperatures are reached. Gases having lower flash points react with primary combustion air to burn at the surface of the waste-bed. Higher flash point gases are most likely to burn after they have been entrained in the air flow and ignite when exposed to their respective ignition temperatures. Because the flash points of these gases range between approximately 500°F and 1,300°F, combustion occurs some distance above the bed where sufficient temperature and oxygen are present.
- Through further heating in the third phase, the remaining, partially oxidized cellulose, lignins, and other hydrocarbon solids are oxidized to form carbon dioxide and water vapor. The residues from this phase are incompletely burned hydrocarbons (char) and inert non-combustibles.
- In the fourth phase of the combustion process, the final burn-down of the char and the consolidation of the inert materials take place. After a short cooling period, this residual bottom ash is dropped into the ash-receiving system.

Secondary Combustion Process

Secondary combustion completes the final destruction of the waste. The secondary combustion zone provides the desired temperature, turbulence and excess air required to completely oxidize all the unburned vapors, gases, and particulates released from the primary combustion process. For this reason, the secondary chamber is designed with a sufficient volume to ensure the high-temperature residence time required to complete the oxidation of the most difficult to burn materials (i.e., high-flash-point and low-heat-content vapors).

Incinerator Operating Parameters and Operating Limits

AS discussed above, the key operating parameters include load weight, load interval, primary and secondary chamber temperatures and burn durations. The operating limits of these key parameters will be established during performance testing. Maintenance of all parameters within the established operating limits ensures continuous proper performance of the incinerator, which in turn ensures no increase in the pollutant emission levels measured during the performance test.

(c) A discussion of how you will establish the upper and/or lower values for these parameters which will establish the operating limits on these parameters.

This section contains a discussion of how the upper and/or lower values will be established for the operating parameters identified above.

- The individual load weight limit has an upper value only. The maximum allowable load weight has been set at 60 lb/load (which is only 40 percent of the manufacturer's design capacity of 150 lb/load). The primary and secondary chambers were designed with sufficient volume and residence time to effectively incinerate the design load capacity under specified operating conditions of temperature, burn time and load interval.
- The load interval limit has a lower value of 15 minutes. The manufacturer's specified this interval as a default value, designed to provide sufficient time between waste-loads for complete combustion of the maximum design load weight. This 15-minute load interval will be monitored during the performance to establish the applicable operating limit.
- The primary oven temperature limit has a lower value of 1,500°F. This temperature limit will be continuously monitored during the performance test to establish the operating limit. Based on incinerator operating data, is expected that the operating limit of 1500°F will be within 5 percent of the average primary chamber temperature, ensuring that source test emission measurements will be representative of normal operations.
- The primary burn-down time limit is a lower value of 5 hours. The 5-hour burn time begins when the final waste load is charged to the primary chamber. This parameter will be continuously monitored during the performance test to establish the applicable operating limit.

- The secondary oven temperature limit has a lower value of 1,800°F. This temperature limit will be continuously monitored during the performance test to establish the operating limit. Based on incinerator operating data, it is expected that the operating limit of 1800°F will be within 2 percent of the average secondary chamber temperature, ensuring that source test emission measurements will be representative of normal operations.
- The secondary burn time is a lower value of 1 hour. The 1-hour burn time begins when the primary burn cycle is completed. This parameter will be continuously monitored during the performance test to establish the applicable operating limit.

(d) A discussion identifying the methods you will use to measure and the instruments you will use to monitor these parameters, as well as the relative accuracy and precision of these methods and instruments.

Monitoring Methods

Table 1 is a summary of the Operating Limits Continuous Monitoring Plan. The methods to be used to measure and continuously monitor the operating limits are discussed in the following paragraphs.

For the temperature limits, continuously monitored is defined as recording the temperature at the start of each waste charge, at 6 minutes after each charge, at 11minutes after each charge, and at the end of each 15-minute charge interval, as well as every 5 minutes following the completion of the final load interval until the end of the burn cycle. The temperature measurements will be converted to *1-hour average* values which will be used to determine compliance with the applicable operating limits.

For burn time operating limits, the start time and end time of each chamber will be monitored. The primary chamber burn time will begin when the final waste load is charged to the primary chamber and continuously measured using an electronic until the primary burn cycle is completed. The secondary chamber burn time will begin when the primary burn cycle is completed, and continuously monitored using an electronic clock until the secondary burn cycle is completed. Each *total* burn time will be used to determine compliance with the applicable operating limit.

For the waste load interval operating limit, the start time and end time of each load interval will be monitored. The load interval will begin when the waste is charged to the primary chamber and the charge door is closed, and the interval will end when the charge door is opened to admit the next load. Each load interval will be continuously measured using an electronic clock and each load interval will be recorded in order to determine compliance with the applicable operating limit.

For the waste load weight limit, the weight of each waste load will be measured using a floor scale with electronic data reporting and recorded prior to be charged to the incinerator. The recorded weight f each load will be used to determine compliance with the applicable operating limit.

TABLE 1
OPERATING LIMITS MONITORING PLAN MATRIX

Parameters Identified as Operating Limits	Operating Limits Upper/Lower Values	Continuous Measurement Methods	Measurement Frequency and Averaging Periods
Waste Load Weight	Maximum Load Weight = 60 lb	Floor Scale with Electronic Weight Indicator	Weigh and Record Each Load Prior to Charging into Incinerator
Waste Load Interval	Minimum Interval Between Loads = 15 Minutes	Electronic Clock	Record For Each Interval: Start Time, 5 to 6 Minute Intermediate Times, and End Time
Primary Chamber Temperature	Minimum Temperature in Primary Chamber = 1400°F	K-Type Thermocouple with Digital Display	Measure and Record Temperature at Start, at 5-6 Minute Intervals, and at End of Burn Cycle. Determine and Record 1-Hour Average Temperatures for Primary Burn Cycle.
Primary Chamber Burn Time	Minimum Burn Time = 5 Hours Following Final Waste-Load Charge	Electronic Clock	Record Start Time of Final Charge and End Time of Primary Burn Cycle
Secondary Chamber Temperature	Minimum Temperature in Secondary Chamber = 1800°F	K-Type Thermocouple with Digital Display	Measure and Record Temperature at Start e, at 5-6 Minute Intervals, and at End of Secondary Burn Cycle. Determine and Record 1-Hour Average Temperatures for Secondary Burn Cycle.
Secondary Chamber Burn Time	Minimum Burn Time = 1 Hours Following Completion of the Primary Burn Cycle	Electronic Clock	Record Time of Primary Burn Cycle Completion and End Time of Primary Burn Cycle

Monitoring Instruments

The instruments to be used for measuring the parameters identified as operating limits are discussed below.

- Waste Load Weight. Each batch of waste is weighed immediately prior to loading on a Cardinal Model No. 205 electronic weight indicator connected to a Cardinal Model SB-2500S floor scale. The scale has an accuracy of 0.5 lb, or approximately ± 1 percent, of the maximum waste load operating limit.

- Load Interval, Primary and Secondary Burn Times. The automatic, computer-based control unit incorporates internal electronic timers that are extremely accurate. Pogo operators will utilize the electronic clock and timers displayed on the control unit to measure the load interval and burn times at the frequencies listed in Table 1.

- Primary and Secondary Burn Temperatures. The temperature measurements will be performed using Type K thermocouples mounted in each combustion chamber. The Type K thermocouple has an accuracy of ± 0.4 percent at the operating temperatures of the primary and secondary chambers. The control unit presents digital displays of real time chamber temperatures. Pogo operators will utilize the digital displays to record combustion chamber temperatures at the frequencies listed in Table 1. Temperature data will be entered into a calculation spreadsheet and 1-hour average values will be calculated and recorded.

(e) A discussion identifying the frequency and methods for recalibrating the instruments you will use for monitoring these parameters.

The following paragraphs discuss the frequency and methods for recalibrating instruments to be used for monitoring parameters.

- On an annual basis, Pogo uses certified standard weights to confirm the scale's accuracy is ± 1 percent of the incinerator's maximum load weight limit.
- ACS, Inc. performs an annual inspection and maintenance service on the incinerator during which all systems, including the electronic timers, are verified for accuracy.
- ACS, Inc. performs an annual inspection and maintenance service on the incinerator during which the thermocouples are checked for accuracy and replaced as necessary.