**6/22/09**

# Summary of Questions on Boiler ICR Presented During 6/18/09 Webinar

## Applicability, representativeness, and timing questions

Q1. Timeframe for 30-Day CO/THC Data Collection – We believe that it would be advantageous for EPA to specify that the 30-day window for CO/THC data collection correspond to the same 30-day window for boiler and fuel data collection.

A1. Response: Yes, that is what EPA intended.

Q2. Fuel/Fuel Blend Requirements for Testing – Footnote #2 in Table 1 of the guidance document specifies that the source should combust the fuel blend “reported during an emission test” or as listed in Section II-C.1.5 of the 2008 Combustion Survey. Many sources routinely change fuels/fuel blends and, therefore, these fuels/fuel blends may no longer represent typical operation. EPA should allow the option of burning alternative fuels or blends assuming they represent normal operation of the unit.

A2. Response: EPA expects testing to be conducted during typical operation including fuel type. Sources should use the fuel which the 114 letter specifies for their facility.

Q3. Control Device Operating Requirements – The guidance document should specify that all emission control devices are in operation and working properly during the test. For example, all transformer/rectifier sets in an ESP should be functioning properly during the test (no grounded fields).

A3. Response: Yes, we agree and this type of operation should occur during any preparation period (e.g., the 30-day pretest period).

Q4. Process Parameters for 30-Day Trial - The guidance document specifies that “process parameters (such as oxygen)” must be collected as part of the 30-day data collection trial prior to the emissions test. However, “process parameters” covers a broad range of operating information that may not be relevant to EPA’s evaluation. Furthermore, it may pose confidentiality issues that may not otherwise need to be addressed. RMB recommends that the “process parameters” requirement be clarified to indicate “boiler operating parameters” instead.

A4. Response: Yes, it was EPA’s intention that process information be for the boile operating parameters. Should there be any claimed confidential business information, it should be submitted separately from the test data as per the Section 114 letter.

Q5. As you know, the language at Enclosure 1 page 2 of 16 reads: "...In addition to the emissions test data, you should also report the following process information taken during the 30 day period before, at the time of, and during, the emissions test:" Some of our folks are reading it different ways. Does this "30 day period" mean to provide boiler process/operational information covering: (a) a full 30 day period BEFORE the test begins, or, (b) the 30 days applies to a pretest period but also includes the stack test testing period, or, (c) the 30 day period includes some pre-test period, during the stack test and the fuel variability sample collection (30 day) period?

A5. Response: To clarify, we want process/operational information covering a 30-day period that includes the test period (also see A3).

Q6. I need some clarification on the request for testing at our facility. In section 1.0 Stack Testing Procedures and Methods, in the last paragraph of that section it states, " You may have submitted test data for some of these pollutants already." Does this mean that if the facility has submitted test data for any of the requested pollutants in Table 1-Page 5 of the Section 114 letter, we are not required to conduct an additional stack test?

A6. Response: Boiler MACT sources must test for all pollutants listed in Table 1 on page 5 of the Section 114 letter. CISWI sources need not test if other emissions data are already submitted.

Q7. If a facility uses 2 fuels (i.e., natural gas and #6 oil), *testing for all parameters cited in the original 114 letter must be performed on each fuel*. Am I correct on this assumption?

A7. Response: No, you must test using the primary fuel or blend of fuels.

- If a unit fires fuel oil only during periods of gas curtailment, the unit should test firing gas only.
- If a unit fires fuel oil during periods other than gas curtailment, the unit should test firing fuel oil only.

Q8. We recommend that measurement uncertainty be reported along with all test results. Lack of information regarding uncertainty in emission factors has been raised as a key issue in evaluation of EPA emission inventories. ASME Performance Test Code 19.1 provides an approach for calculating measurement uncertainty incorporating all known systematic and random errors. It would be helpful to provide specific guidance and example calculations for calculating measurement uncertainty with each test method.

A8. Response: We have not established procedures for assessing measurement uncertainty. If you have such procedures and data, include that information in the report, as appropriate.

Q9. Enclosure 1, Summary of Process Heater Test Procedures, Methods, and Reporting Requirements has requested that: In addition to the emission test data, you should also report the following process information taken during the 30 day period before, at the time of, and during, the emissions test: Heat input; fuel composition and feed rate; steam output; emissions control devices in use during the test; control device operating or monitoring parameters (including, as appropriate to the control device, flue gas flow rate, pressure drop, scrubber liquor pH, scrubber liquor flow rate, sorbent type and sorbent injection rate), and process parameters (such as, oxygen). However, there are no procedures outlined for collection this data. Is the heat input and fuel composition obtained from the fuel variability testing? For our boilers:

- We are unable to monitor fuel feed rate.
- Steam output is the only operating data that is recorded (on a chart recorder).
- The only control device operating parameter that can be monitored is baghouse pressure drop. There is no automatic recordkeeping. All recordkeeping would need to be done manually.

A9. Response: You need to submit all the process and other operational data collected to the extent that you have monitoring equipment or procedures in place. If you have a monitoring system in place, but no automatic recording, then you will need to record the data manually.

## Concurrent Testing

Q10. Please clarify what is meant by the footnote 6 to Table 1: "CO testing shall be conducted simultaneously with testing for THC, CH4, formaldehyde and, if possible with testing for dioxins/furans." Does this mean CO, THC, CH4, and formaldehyde must be tested simultaneously or does it just mean that CO must be done along with each of these, whenever they are tested?

A10. Response: For the boiler MACT data collection, you will need to collect THC, CH4, formaldehyde, and CO data concurrently for all test runs. You will also need to measure CO emissions when testing for D/F and also measure THC and CH4, if logistically possible.

## Formaldehyde - Method 320 or RCRA 0011 as ppmv @ 7% $O_2$

Q11. For formaldehyde, Method 0011 and Method 320 are listed as testing options. Would it be acceptable to use EPA Method 316 also? This is the method we generally use for most formaldehyde testing.

A11. Response: Yes, Method 316 is also an option; however, if you use Method 316, you will need to conduct a breakthrough evaluation. Should you choose to use Method 320, the minimum run time is 60 minutes, which was not listed in Table 1.2. Prior to selecting a method for formaldehyde, please see the other questions and answers in this section, particularly Q12 and A12 below.

Q12. Gas-fired boilers and heaters will have formaldehyde concentrations in the range of 10 to100 ppb which will be extremely difficult to measure with Method 0011 which is laisted on Table 1.2. Method 0011 (“Sampling for Selected Aldehyde and Ketone Emissions from Stationary Sources” in SW-846) is a wet absorption method using 2,4-dinitrophenylhydrazine to collect aldehydes, with subsequent analysis by high performance liquid chromatography. The stated detection limit for a 30 ft$^3$ sample over a 1-hour sampling period 90 ppbv for formaldehyde and quantitative recoveries may not be achieved until concentration exceeds 200 ppbv. Therefore, different test methods for formaldehyde measurements are suggested. Method 320, ASTM D6348 and perhaps California Air Resources Board (CARB) Method 430 are examples of other methods that could be expected to give more robust results at these low concentrations when properly applied. We believe that extractive direct interface Fourier transform infrared (FTIR) spectroscopy, using Method 320 or ASTM D6348, is the most accurate method for determining formaldehyde emissions from gas-fired boilers and process heaters. Method 430 (“Determination of Formaldehyde and Acetaldehyde Emissions from Stationary Sources”, California Air Resources Board Stationary Source Test Methods Manual, December 13, 1991) is a wet absorption method using 2,4-dinitrophenylhydrazine and HPLC analysis, and is similar in principle to Method 0011. However, CARB 430 includes number of significant improvements in terms of equipment, procedures, QA/QC requirements and reporting such as pre-test proofing of the reagent, use of midget rather than Greenburg-Smith impingers, definition of blank corrections and blank-based reporting limits in the calculations, and others. The use of screw-top midget impingers provides a significant advantage since they can be charged in the laboratory, sealed, shipped to the field, attached directly to the sampling apparatus, removed and sealed after the test, and shipped back to the lab in the same container. This reduces the complexity of the operation and minimizes opportunities for errors and contamination during reagent and sample handling. Method 430’s performance on gas-fired units has been demonstrated with some success.

A14. Response: Either of the extractive FTIR methods Method 320 or ASTM D6348 is acceptable; in fact they are the preferred formaldehyde testing methods for this program because of ability to reach detection limits around 10 ppb. We inadvertently erred in preparing the table in the enclosure; Method 320 should have been listed as the recommended method and Method 0011 as an alternative. CARB Method 430 can also be considered a viable alternative for formaldehyde. We agree that the anticipated formaldehyde concentration is a key consideration in selecting an appropriate formaldehyde test method option and, if possible, the selected method should have a detection limit at least 10 times lower than the expected stack concentration.

Q15. If wet absorption methods are to be used for formaldehyde testing, then we recommend that modified calculations and reporting conventions applicable to all methods be developed that include full consideration of blank (without limitation) and spiking results from field blanks and field spikes in the final result. For example, when the field blank result is greater than a sample result, a simple blank subtraction leads to a negative value for the emission result. This is a perfectly acceptable, albeit physically impossible, manner of treating the data for inclusion in a larger data set. Results in this case should not be truncated at zero or greater, since this would understate the true uncertainty in a set of average results.

A15. Response: You are to document all the QA/QC data including blank results and minimum detection levels (MDLs) with the test report. Then EAP can determine how to use these data with regard to standard setting.

Q16. If wet absorption methods are to be used for measuring formaldehyde, we recommend collecting a minimum of one field train blank for each test run, and a minimum of four test runs. A single field train blank will not provide sufficient information to assess uncertainty in the background levels compared to the samples. This is necessary, for example, to determine whether samples are significantly different from blanks using a paired (or pooled) t-test at the 95% confidence level. We also recommend that paired (co-located) sampling trains be used so that measurement precision can be determined.

A16. Response: Extra test runs, field blanks, and paired sampling trains are not required, but would definitely provide very useful information.

Q17. Elevated formaldehyde emissions can be produced under certain abnormal extreme "failure mode" conditions. It is important to document any such conditions than may exist during the tests. For example, older units operating at significantly less than design load may produce poor mixing or other conditions that favor formaldehyde formation. In units with multiple burners, one burner with plugged fuel jets may have a local air-fuel ratio that is higher than normal. It is advisable that any units tested should be inspected and repairs made before proceeding with tests. If repairs are not feasible prior to testing, any known issues should be documented. It would be helpful to provide guidance on the types of abnormal conditions that may affect combustion and formaldehyde emissions. Provision should be made in the reporting summary to note any such abnormal conditions.

A17. Response: We agree that you must document the operating conditions encountered during the testing and how those conditions relate to typical conditions.

## HCl and HF - Method 26A or Method 26 as lb/mmBtu

Q18. EPA has dictated the run times for each parameter except for HCl/HF. I am assuming Method 26A need to be run for a minimum of 2 hours. Is this correct?

A18. Response: Yes.

Q19. Why did EPA not specify Method 320 as an alternate for the HCl/HF testing? We would like to offer facilities this testing option, so we would measure formaldehyde, methane, HCl, and HF simultaneously.

A19. Response: Method 320 is an acceptable alternative for measuring HCl and HF for these applications and the run time is a minimum of 60 minutes.

## Hg - Method 29, ASTM D6784 (OH) as lb/mmBtu

Q20. May I use Method 30B as an alternative to Method 29?

A20. Response: Method 30B is an acceptable alternative for sources well controlled for PM as set forth in section 1.2 of Method 30B.

## Metals - Method 29 as lb/mmBtu

Q21. We are not in favor of allowing the use of the metals train to get the filterable PM for trains with entrained water droplets, especially if mercury is being measured in the Method 29 train. The Alternative Method listed in Table 1.2 should be the Recommended Method. Additionally, OTM-028 should be included with Method 5 to get the PM2.5 for trains with entrained water droplets. This is not stated here and is another reason why Method 29 should not be used for determining particulate.

A21. Response: We agree that Method 5 should be used upstream of OTM 28 in cases where the stack contains entrained liquid droplets. When using Method 29 to measure filterable PM, you need to adhere to the requirements of sections 8.3.1.1 and 8.3.2 of the method.

Q22. I understand that the PM sampling (for boilers) must be determined when conducting the Method 29 (metals) testing. Does the requirement to conduct PM testing in conjunction with the metals testing also mean that the PM2.5 and CPM testing needs to be four hours long and be conducted during the same time period as the metals test run?

A22. Response: Yes, your understanding is correct. Note that the OTM-27 recovery includes the recovery of the greater than PM2.5 component (from the cyclone) and that material is summed to estimate total filterable PM, which is then available for comparison to the filterable PM analysis from Method 29 samples. When using Method 29 to measure filterable PM, you will need to adhere to the requirements of sections 8.3.1.1 and 8.3.2 of the method.

Q23. For the Method 29 train, will it be permissible to combine the front and back half fractions for the metals (except Hg) or will they need to be analyzed separately.

A23. Response: The front and back halves must be analyzed separately.

**PM2.5 (dry stack) - OTM 27 as lb/mmBtu**

Q24. I understand that the PM sampling (for boilers) must be determined when conducting the M29 (metals) testing. Does the requirement to conduct PM testing in conjunction with the metals testing also mean that the PM2.5 and CPM testing needs to be four hours long and be conducted during the same time period as the metals test run?

A24. Response: See A22.

Q25. Required PM Test Methods for Dry Stacks – For dry stacks, Table 1.2 specifies OTM 27 for both PM2.5 and total PM (including cyclone portion of the catch). However, in our experience, utilizing cyclone or impactor measurements to calculate total PM often biases the measurement low compared with true total PM reference methods such as Method 5 or 17. For dry stacks, EPA should specify Method 5/17 or Method 29 (PM determined according to §8.3.1.1) for total PM and OTM 27 for PM2.5. RMB notes that test methods for the ICR should be consistent with those specified for compliance determination in the final rule.

A25. Response: We agree that it is preferable to use Method 5 or Method 29 to determine filterable PM. When using Method 29, you should adhere to the procedures in sections 8.3.1.1 and 8.3.2. Method 5 is already an approved alternative method for total filterable PM. The filterable PM determined from the Method 29 or Method 5 analysis is the primary source for total filterable PM, not the components from OTM 27 analysis, which is obtained to provide a more reliable source of particle size fraction information.

Q26. We are not in favor of determining particulate matter (PM filterable) from the OTM 27 train. It is not as accurate as a separate EPA5 train and may not be comparable if the stack temperature is greater than the EPA5 filter temperature requirements.

A26. Response: As mentioned above, the primary indicator of total filterable PM is Method 29 or Method 5, not OTM-27. Method 5 is already an approved alternative method for total filterable PM. Use of a Method 29 or Method 5 train accommodates not only the filter temperature issue, but also addresses the issues of different isokinetic requirements of the methods and the aerodynamic influences of the cyclone head.

**PM2.5 (wet stacks) - Method 29 or Method 5/17 as lb/mmBtu**

Q27. We are not in favor of allowing the use of the metals train to get the filterable PM for trains with entrained water droplets, especially if mercury is being measured in the Method 29 train. The Alternative Method listed in Table 1.2 should be the Recommended Method. Additionally, OTM-028 should be included with Method 5 to get the PM2.5 for trains with entrained water droplets. This is not stated here and is another reason why Method 29 should not be used for determining particulate.

A27. Response: See A21 above. We agree that for stacks with entrained water droplets, Method 5 for total filterable particulate matter should precede OTM-28 for condensable PM. Should Method 29 be used, the analytical finish should also include the determination of the total filterable PM.

### TDS and TSS in scrubber recirculation liquid - ASTM D5907 or Method 2540B (Std Mtds) as mg/l

Q28. I would also like to confirm our interpretation of EPA's request in regards to the scrubber recirculation liquid test. We understand that we only need to test each sample for Total Solids (SM 2540B) and not for Total Suspended Solids (SM 2540D) and Total Dissolved Solids (2540C). Is our interpretation correct? Or do we also need to test for Total Suspended Solids and Total Dissolved Solids?

A28. Response: At least one scrubber recirculation liquid sample must be taken for each test run and analyzed for solids. At a minimum you must report total solids, but it is also acceptable to report total suspended solids and total dissolved solids which may be summed to yield total solids.

Q29. Standard Methods of the Examination of Water and Wastewater Method 2540 B “can be used for the tests but it does not provide much detail about the sampling; therefore; we have some questions regarding this testing that we would like to be answered: Is there a specific sampling protocol that we need to follow to collect the samples? We have only found general sampling recommendations for wastewater, are these applicable? What are the instructions for this type of sample in regards of sampling time, increments, number of samples and so forth? We are unsure how and when to collect the sample. Can we collect the samples with the same frequency as prescribed for the fuel sampling in the boiler test plan, which is "one fuel sample (comprised of three composite samples, each individually analyzed) of the fuel used during the stack test (one composite sample per test run)?” We would take the recirculation liquid samples approximately mid-point for each run or at approximately the same point for each run.

A29. Response: A single sample of the recirculating scrubber liquid for each test run is all that we require. The timing for obtaining these samples is not critical as long as you consider the sample as representative of normal operation. The general sampling recommendations for wastewater are sufficient for collecting these samples.

### Dioxin/furan - Method 23 as ng/dscm @ 7% $O_2$

Q30. Clarification on is how to report the Dioxin/Furan data. Will we be required to report individual isomers of dioxin and furans or just total tetra through octa groups?

A30. Response: You must report the 17 individual 2,3,7,8-substituted isomers and all other isomers grouped together and reported as totals for their particular isomer groups.

Q31. Will dioxin/furans be reported on a total mass basis or total TEQ basis? Gary indicated that the dioxin/furan data can be reported on either a mass basis or as TEQ's. We didn't discuss which TEQ's to use.

A31. Response: It is only necessary to report on a mass basis only.

Q32. The contract laboratory who will be performing our dioxin/furan analysis has supplied us with a list of Method 23 modifications that they routinely use. These modifications are:

1) Laboratory does not use silica gel in the soxhlet apparatus.
2) All provided solvent rinses are combined, concentrated, and added to the resin/filter components before soxhlet extraction.
3) Prior to cleanup, the extract is dried with sodium sulfate and Cleanup Recovery Standard is added.
4) The extract is split for archival. Tetradecane is added to the remaining half and the extract is concentrated to the tetradecane.
5) The extract undergoes Acid/Base Silica Gel column and Florisil column cleanup. Basic Alumina and AX-21 Carbon/Celite 545 Columns are not used.
6) After cleanup, the eluate is concentrated, added to a conical vial containing tetradecane and Recovery Standard Solution, and concentrated again to a final volume of 20 µl.
7) The internal standard mix includes $^{13}$C-OCDF. The concentration of the $^{13}$C-OCDF is 200 pg/µl. OCDF is quantified against $^{13}$C-OCDF.
8) The Initial Calibration curve includes six levels; the concentration of the lowest level is at one-helf the low point of the curve in Table 2 of Method 23.
9) Addition to Table 4 of Method 23 for CDD only:
Number of Chlorine Atoms – 5
Ion Type – M+2/M+4
Theoretical Ratio – 0.65
Lower Control Limit – 0.55
Upper Control Limit – 0.75

Please provide us with a determination of whether these analytical modifications are acceptable. The contract stack testing firm who will be performing the D/F sampling is also requesting a determination of whether their proposed modifications to the Method 23 procedure are acceptable. These modifications are as follows:

1) Can the methylene chloride and toluene rinses be combined?
2) Can the rinse be with acetone only (instead of acetone and methylene chloride)?

A32. Response: All the analytical and sampling modifications are acceptable, except that methylene chloride and toluene rinses should be kept separate during the field recovery and sample transport and then later combined by the laboratory .

**$NO_x$ - Method 7E or , 7, 7A, 7B, 7C, or 7D as ppmv @ 7%$O_2$**

Q33. Initial/Ongoing QA Procedures for Temporary Analyzers – For the ongoing QA/QC requirements, EPA should cite the procedures in Appendix F of 40 CFR Part 60. This would essentially require the daily calibration of the instruments. EPA should also consider allowing sites to use the appropriate Reference Methods to obtain the data for a 30-day trial instead of requiring the certification of a temporary analyzer.

A33. Response: You should apply the procedures and performance criteria in Method 6C (and Methods 3A and 7E) using 24 hours as the test run time for calibration checks, etc.

**$SO_2$ - Method 6C or 6 as ppmv @ 7% $O_2$**

Q34. Initial/Ongoing QA Procedures for Temporary Analyzers – For the ongoing QA/QC requirements, EPA should cite the procedures in Appendix F of 40 CFR Part 60. This would essentially require the daily calibration of the instruments. EPA should also consider allowing sites to use the appropriate Reference Methods to obtain the data for a 30-day trial instead of requiring the certification of a temporary analyzer.

A34 Response: See A33 above.

**$O_2$/$CO_2$ - Method 3A or 3B as %**

Q35 Are lb/MMBtu results to be calculated using measured heat input from process data or using Method 19 calculations? We have reservations about using the process data as some facilities don't always have accurate means of measuring fuel feed rates.

A35. Response: Method 19 is the correct method to use.

**Moisture - Method 4 as %**

**Fuel sampling and analysis - Methods ASTM D2234, D6323, D4057, D4177, fuel supplier**

Q36. Fuel/Fuel Blend Requirements for Testing – Footnote #2 in Table 1 of the guidance document specifies that the source should combust the fuel blend “reported during an emission test” or as listed in Section II-C.1.5 of the 2008 Combustion Survey. Many sources routinely change fuels/fuel blends and, therefore, these fuels/fuel blends may no longer represent typical operation. EPA should allow the option of burning alternative fuels or blends assuming they represent normal operation of the unit.

A36. Response: See A2.

Q37. 30-Day Fuel Sampling Timeframe – The timing of the 30-day fuel sampling trial relative to the emission tests is unclear. The notification letter specifies that fuel samples will be collected “during and after” the required stack tests but the guidance document specifies that “fuel composition” data will be taken 30-days “before and during” the emissions test. At a minimum, EPA should clarify whether the fuel sampling is conducted prior to or after the emissions test. However, given the limited timeframe for this evaluation, it may be best to allow the 30-day window for fuel sampling to begin and end at any time as long as the following conditions are met: (1) the emissions test is completed within that timeframe, (2) process data is collected during the same timeframe and (3) the fuel or fuel blend is consistent for the entire 30- day evaluation.

A37. Response: Yes. See A3 and A4.

Q38. Is the fuel variability testing performed before or after the stack testing? (The Section 114 request letter indicates "after the required stack test" while Enclosure 1, Summary of Process Heater Tester Procedures, Methods, and Reporting Requirements, indicates "before" the emission test).

A38. Response: See A3 and A4.

Q39. Can the fuel (coal sample) be taken from back of the stoker during the stack test, since it's the only location that a representative sample can be obtained during the stack test?

A39. Response: You need to collect a sample of the fuel that is representative of the fuel fired. The method accounts for site-specific sampling options.

Q40. Number of Fuel Samples Collected During Stack Test – It is not clear in Section 2.0 of the guidance document that the fuel sampling procedures require a total of nine individual samples during the stack test. While Table 2.1 includes the definition of a “composite sample”, it may be helpful to further clarify this issue as follows: “Each composite sample will consist of a minimum of three samples collected at approximately equal intervals during each testing run (for a minimum of nine individual samples during a 3-run test).“

A40. Response: Collect composite samples for each test run.

Q41. Sample Collection Procedures for Solid Fuels – Section 2.1 provides the option of stopped belt sampling, fuel pile/truck sampling, or fuel analysis provided by the supplier. Considering the significant variability in some fuel constituents (even from the same supplier), EPA should consider either requiring or recommending that belt/feeder sampling be conducted whenever possible in order to provide the best correlation between stack emissions and fuel analysis. To that end, EPA should also allow alternative feeder sampling techniques since some sources may not be able to conduct stopped belt sampling.

A41. Response: See above.

Q42. Fuel Sampling Analytical Method for TSM in Coal – Table 2.3 identifies ASTM D6357-04 as the analytical method for determining most of the Total Selected Metals (TSM) in coal but does not clearly identify that this method may also be used to determine antimony, cobalt, and phosphorous concentration.

A42. Response: Yes, ASTM D6357-04 may also be used to determine antimony and cobalt; however, it does not include phosphorus in the list of target analytes. SW-846 Method 6010B may be used for phosphorus as well as other metals.

Q43. My client has a wood-fired boiler (pine sawdust/bark) with the requested Test Type above. From my read of Enclosure 1, fuel analyses would NOT be required for this Test Type. Is this correct? Fuel analyses are focused on getting chlorine, Hg, and TSM data.

A43. Response: No, you must conduct fuel analysis for all fuel types except for gas. See above.

Q44. During the stack test, if a sample is collected from a belt or screw feeder, are we required to collect three samples equally spaced over the run and then composite the three samples for that run or do we just collect one sample per run? During the stack test, if a sample is collected from a fuel pile, are we required to collected one sample from five different locations on the pile (for each run) and then composite those five samples? For the nine additional samples, if we sample from a fuel pile, is it sufficient to collect one sample from five different locations on the pile, once per day and then composite those five samples into one? This process would be repeated until 9 composite samples were obtained.

A44. Response: See above.