CINTICHEM HEALTH PHYSICS PROCEDURES

PREPARED BY	DATE 2/20/92
CHECKED BY	2/26/92
APPROVAL	3/17/92
ISSUED	3/17/92

ROUTINE QA BLANKS FOR HPGe COUNTING SYSTEMS | PAGE 1 OF 2 | HP-M-51

A. PURPOSE

To provide instruction in carrying out the routine QA Blank counts on the HPG systems. This is a check to help ensure validity of data generated on these systems. This check consists of control charting the activity of selected isotopes.

B. DISCUSSION

Blanks are run on each detector in conjunction with the routine source checks to validate their counting capabilities. The blanks consist of one liter samples of Deionized Water (DI Water) in a sealed marinelli beaker. Each detector has its own blank.

Control charts are kept for the activity of seven isotopes (Co-60, Cs-137, Ce-144, Th-234, Bi-214 and Pb-214). This ensures that the detector and shield have not been contaminated and that the lower limit of detection (LLD) for these isotopes is within the acceptable range.

C. PROCEDURE

The minimum frequency that this blank count is to be performed is after every routine source check (see HP-M-37).

1. Place the blank sample marinelli on the detector. (NOTE: No waiting period is needed after source check counts.)

2. Count the blank for 1800 seconds and analyze using the MIX3.LIB library, no back decay and the BLANK.MPC table.

3. Enter the activities for all seven isotopes into the appropriate control charts from the Summary of Nuclides section of the analysis report.

4. If any value falls within the warning range notify senior technical staff.

   If any value falls outside of the control limit do not put the detector in question back into service!

5. If one or more of the control charted data points exceeds the control limit attempt to decontaminate the detector. This involves the following process:

   a. Remove the blank marinelli from the detector.

   b. Using a dilute (1:10) Radiac-Wash solution on a dampened towel, wipe down the marinelli, the detector end cap and the inside of the shield including the bottom of the lid.

   c. Dry any residual moisture from the surfaces.

   d. Repeat the Blank count.

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e. If one or more data points still exceeds the control limits, notify senior technical staff and proceed as per their instructions.

A new set of control charts must be started at each new calibration with the P-3 standard

Refer to HP-M-54 for required frequencies for source checks and the details of how the warning range and control limits are determined.

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NOTE: The 'Curl' and 'Alt' keys are always used with other keys. For the sake of simplicity, the notation 'Alt+8' should be read as: strike the 8 key while holding down the Alt key. Also, there are other key combination and other methods, such as a mouse, to accomplish the same task. Only one method is presented here. Refer to the ORTEC manual or the 'Quick Reference card' for acceptable alternatives.

f. Stop any previous count by typing 'Alt+2', after verifying that the analysis for that count is complete. Clear any previous data in the MCB by typing 'Alt+3'.

g. Set the required count time by typing 'Alt+S', 'Alt+L' and enter the time in seconds, then hit 'return'.

h. Start the count by typing 'Alt+1'. Verify that the count has started by observing that the 'LIVE TIME' and 'REAL TIME' are increasing. These are displayed near the bottom of the information side bar.

i. Record the start time on the 'HPGe SAMPLE CONTROL FORM' (HP-MF-09) or 'CHAIN OF CUSTODY/ANALYSIS CONTROL FORM' (HPEM-001, Attachment 4.1.1). Use the computer clock time which is displayed near the bottom of the information side bar.

j. The count is now started and will continue to accumulate data until you stop it or until it reaches the preset count time, typically 50,000 seconds.

2. Saving sample count data

a. Repeat step 1.d. and 1.e., above, to get to the desired MCB. Be sure that you are in the MCB and not the buffer ('Alt+6' switches between these two). This is displayed near the top of the information side bar.

b. Transfer the data from the MCB to the computers memory by typing 'Alt+5'. Switch to the buffer (computers memory) by typing 'Alt+6'.

c. To save data from computer memory to a file on the hard disk, type 'Alt+f' then 'Alt+s'. The computer will then display a window asking you to input a file name. Type in the file name, usually the sample number, from the 'HPGe SAMPLE CONTROL FORM' (HP-MF-09) or 'CHAIN OF CUSTODY/ANALYSIS CONTROL FORM' (HPEM-001, Attachment 4.1.1). Type 'Enter'.

d. If the file name has been saved previously, the computer will beep and ask if you want to replace the previously saved version. If you know that this is the case, type 'Y' and 'Enter'. However, if you know or suspect that this file hasn't been previously saved, type 'Esc' twice and begin step 2.c. again. This will reduce the possibility that the sample number was incorrectly entered and prevent copying over a needed file.

e. The computer will then display a window asking you to input a sample description. Type this as specified for routine samples in the 'SAMPLE DESCRIPTION LIST', posted at the computer. For non-routine samples use the description from the control sheet for the sample (HP-MF-09 or HPEM-001 Attachment 4.1.1). Type 'Enter' and the data is saved.

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f. When the computer has finished saving the file, the file name (sample number) will be displayed at the top of the screen.

3. Analyzing count data

a. Type 'Alt+s' then 'Alt+e' to exit the 'MAESTRO' program. The DOS prompt, 'C:\USER>' should be displayed on the screen.

b. If the sample type has changed from the one previously run, be sure to run the appropriate batch file (ie. 'MRNLI', 'P3QA',etc.) by typing the batch file name, a 'SPACE' and the appropriate detector number and shelf number in the case of particulate filters. See the list posted by the computer for batch files for all sample types.

c. Type 'CONVERT' and 'ENTER'. The 'CONVERT' program screen will be displayed. This program converts the raw data file, ie. the '.CHN' or channel file created by MAESTRO, to a spectrum, or .SPC file.

d. Type in the file name (sample number) and type 'ENTER' twice. If the sample description is correct, type 'F10' to start the conversion. When the program is complete the computer returns to the DOS prompt.

e. Type 'FMPC' and 'ENTER'. The 'FMPC' program uses the spectrum file (<file name>.SPC file) along with the information on its screen, to produce an 'unformated output file' (<file name>.UFO) and a report file (<file name>.RPT).

f. Type in the file name (sample number) and type 'ENTER'. For typical environmental samples you may need to input the time and date of collection and the name of the 'MPC' table. Use the 'ENTER' key to move to the variable you need to input and type in the appropriate value(s). See the 'SAMPLE ANALYSIS CHART' posted by the computer for details for each sample type.

g. Type 'F10' to start the analysis. When the program is complete it returns to the DOS PROMPT.

4. Preliminary review of data

a. Type 'SMOOTH <file name.RPT>' and 'ENTER'. 'SMOOTH' is a utility program that allows you to review the report prior to printing it out.

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j. If the sample meets counting criteria, print a copy of the report by typing 'PRINT <file name.RPT>' at the DOS PROMPT. If it was a sample for release print a second copy of the report and proceed with the release process. Attach the 'HPGe SAMPLE CONTROL FORM' (HP-MF-09) or 'CHAIN OF CUSTODY/ANALYSIS CONTROL FORM' (HPEM-001, Attachment 4.1.1) to the second copy of the report. Complete the appropriate section of the control sheet and place the completed report in the area for QA review.

5. Ending a sample count

a. Once the sample has met the counting criteria the analysis is complete the count can be stopped.

b. Return to the MAESTRO program by typing 'EXIT' at the DOS PROMPT, 'C:\USER. Switch to the desired detector/MCB by holding down the 'Ctrl' key and striking the 'function' key (F1, F2, F3, F4 or F5) where the function key number matches the MCB number. The current MCB number is displayed at the top of the information sidebar.

c. Stop the previous count by typing 'Alt+2'. Clear any previous data in the MCB by typing 'Alt+3'.

d. Repeat the procedure from Step '1.' for a new sample.