RMRS Rocky Mountain Remediation Services, L.L.C.
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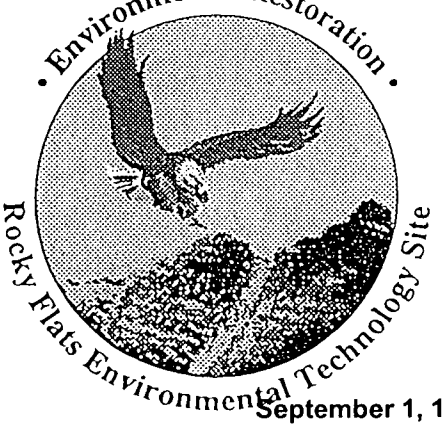
CANBERRA IN SITU SERVICES

EDD BUILD PROCEDURE

RF/RMRS-98-266



September 1, 1998
Revision 0

RF/RMRS-98-266

CANBERRA IN SITU SERVICES

EDD BUILD PROCEDURE

Rocky Mountain Remediation Services, L.L.C.

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Revision 0

AFFRIMATIVE INFORMATION

Site:	Rocky Flats Environmental Technology Site (RFETS), Golden, Colorado
Project Name:	Site Characterization of the 903 Drum Storage Area (IHSS 112), 903 Lip Area (IHSS 155), and Americium Zone
Procedure Name:	RF/RMRS-98-266, EDD Build Procedure
Date Prepared:	September 1, 1998

Approvals

I have read and concur for release of this procedure with respect to the hazards, regulatory requirements and objectives of the project.

Name Canberra Project Manager	Date 9/8/98
Name RMRS Quality Assurance Representative	Date 9/8/98
Name RMRS Contract Technical Representative/Project Manager	Date 9/3/98
Name RMRS Radiological Engineering	Date 9/8/98

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APPENDIX

1.0 PURPOSE

This procedure describes the steps used to create the Electronic Data Deliverables (EDD) files for the Canberra Mobile In Situ Services sample data collected for projects at the Rocky Flats Environmental Technology Site. This procedure will create the formats specified in the Exhibit B section of Statement of Work for the Determination of Radionuclides by In Situ Gamma Spectrometry (4/28/98 revision) and complies with the SOW.

2.0 SCOPE

The scope of this Electronic Data Deliverable procedure is to define a consistent data deliverable for use with Canberra's In Situ Gamma Spectroscopy equipment. This procedure requires that an electronic data deliverable will be provided with each Sample Data Package.

3.0 DESCRIPTION

3.1 The procedure program is made up of one REXX command procedure file and a number of supporting Form Design Specification (FDS) files. These are listed below with a brief description of their function.

3.2 These files are to be installed in the C:\GENIE2K\EDD directory:

EDD.CMD - REXX procedure
PADMENU.FDS - Selection lists or options for procedure
PADNUM.FDS - Query box prompting the operator for a search file filter
PADLIST.FDS - List box to pick 1 or more files for processing
PADDIR.FDS - Query box to change the directory to look for files
PADINFO.FDS - GBT_PARS screen for checking/editing sample parameters
TYPE.FDS - GBT_PARS screen for reviewing some sample parameters and final acceptance
PADQA.FDS - File list to select appropriate QC Measurement data
REXXMATH.DLL - Additional required REXX math functions

These filetypes are defined as follows:

.CMD - Command files which contain a REXX procedure
.FDS - File Design Specification files which provide a query box or GBT_PARS screen for reviewing, checking, or editing sample parameters
.DLL - Dynamically Linked Library files contain REXX mathematical functions
.CNF - Configuration files contain spectral data from a specific measurement
A GBT_PARS screen displays specific parameters from a .CNF file

3.3 In addition these files should be placed in the C:\PCNT2K directory and used for sample parameter input for the various sample types:

PAD903.PAR - Used for most sample types

3.4 The output files are created in the C:\GENIE2K\REPFILES directory. Each selected sample count file will have an EDD file produced, with the filename being the same as the sample count file and the extension of TXT. Thus the format of the name will be nnnnnnnn.TXT. (For example 3A200010.TXT)

3.5 The EDD file for each count file selected will have one and only one set of results, as any existing file will be deleted prior to the build.

3.6 The EDD.CMD is run in one of two ways:

1. Type REXX EDD at the DOS command prompt.
2. Create a Shortcut on the Desktop to run this procedure.

The target file would be: C:\ENTREXX\REXX C:\GENIE2K\EDDPAD
The Working directory would be: C:\GENIE2K\EDD

Prior to running the procedure, the operator should have a list of the files which should be included in this EDD. In addition the list should identify the type of file (Background, QC Calibration Check, Field Control Measurement, or Duplicate) and specifics of the type, such as:

3.7 For QC Duplicate Area (RPx) counts, the original count file needs to be known.

3.8 For QC type counts, the QC Measurement file and date needs to be known.

3.9 All count files must be analyzed for Minimum Detectable Concentration (MDC) prior to running the build procedure.

3.10 When the procedure comes up a Selection list is presented with the following options

1 Change Data File Directory
2 Search Filter, File Selection
3 Edit EDD Info
4 Review Sample ID and Build EDD
5 Exit

Press 1 Change Data File Directory

This option allows the operator to change the directory that will be searched for files using the search filter defined in Selection 1. The operator must enter the complete pathname correctly. The initial value will be set to the current default directory path.

An example directory would be C:\PCNT2K\CAMFILES\RCO3A001.

Clicking on OK will confirm that the directory exists and set it as the new default if it does exist. If it doesn't exist the operator will be made to enter a new path.

Clicking on Cancel will keep the old directory.

2 Search Filter, File Selection

This option presents a dialog box where a file search filter can be entered. The box can also be left blank. In that case all configuration files (.CNF files) in the current directory will be listed. The default directory is C:\GENIE2K\CAMFILES\

After entering a search filter, which will typically be the batch ID, a list of files meeting the filter criteria is presented. The list box will show the File Name, Measurement Set ID, Measurement Location, and Result Identifier. Using the mouse, the operator selects one or more of the files by clicking on the line in the list. Clicking again will deselect the file. After selecting the desired files the operator clicks on the Done button. The operator can also select all the listed files by clicking on the Select All button.

The files are listed in the order that they were created and in which they will be processed. It does not matter in what order they are selected.

After clicking any of the three buttons (Done, Cancel , Select All) the operator is returned to the selection menu.

3 Edit EDD Info

This option brings up a sample edit screen an allows the operator to inspect and edit certain EDD related parameters.. Any changes made when the OK button is clicked will be made permanent in the file. Each file selected by way of Selection 1 will be seen.

4 Review Sample ID and Build EDD

This option builds the text EDD files (.TXT). For each selected file the operator is prompted by a review box that allows inspection of certain parameters. Click on Continue to process the file or Cancel to skip this file.

The files will be processed in the order that they were listed above.

During processing, certain types of results will cause further dialog screens to appear.

a. If this is a duplicate count (RPx), the operator will have to select the original count of which this is a replicate.

5 Exit

This option exits the EDD procedure and returns the operator to the DOS prompt or Desktop depending on how the procedure was launched.

4.0 PARAMETER USE

4.1 To create the EDD file, a REXX procedure has been constructed that has a menu allowing the user to select files and dictate how the EDD is built. In some cases it prompts for user input, but most parameters are just read from the datasource file. The menu has an Edit option to edit or enter some of the parameters. Most of the sample description parameters are entered by the user at the time of the count or at the time when the EDD is built. It is the responsibility of the user to ensure that the inputs are correct. In this case, inputs will be verified by ensuring that they are identical to data in the log book.

4.2 Each record corresponds to one line per nuclide for nuclides identified in the Nuclide Library (see Appendix A).

Project Identification = **"Nameof Project"**
File Date = system date (MM/DD/YYYY) format
Measurement Set ID Number = SBATCHID
Measurement Location = SDESC2 (the GPS coordinates)
Measurement Date = ASTIME (the acquisition start date)
Result Identifier = SDESC4
Isotope = NCLNAME (Nuclide name from the Nuclide Library. See Appendix A.)
Result = NCLWTMEAN (from Nuclide Identification Number (NID) results multiplied by 1,000,000 to convert v units to pCi/unit)
Result Units = PCI/SUNITS
Result Qualifier = Result qualifiers will be utilized as per ES/ER/MS-5, *Evaluation of Radiochemical Data Usability*, J.G. Paar and D.R. Porterfield, April 1997, page A-3, and are listed below:

U = Nuclide considered not detected above the reported MDC or 2 sigma counting uncertainty.

J = Nuclide identified; The associated numerical value approximated.

M = Replicate instrument readings not within control limits. The control limit is an F/E value of less then 1.96, where F/E is defined (as in p. 30 of Paar and Porterfield) as follows:

$$F = |S-R|$$
$$E = SQRT(Es^2 + Er^2)$$
$$F/E <= 1.96$$

Where:

F = the statistical function for testing equivalence
S = Original sample activity
R = Replicate sample activity
E = Propagated measurement uncertainty, of the difference, at 2 sigma
Es = 2-sigma measurement uncertainty of sample activity

Er = 2-sigma measurement uncertainty of Duplicate activity

Value will be blank for other conditions.

2 sigma error = NCLWTMERR (NID results multiplied by 2,000,000 to get 2 sigma and pCi/unit)
Minimal detection limit = NCLMDA (Detection limits results multiplied by 1,000,000 to get pCi/unit)
F/E = if the sample is a Duplicate Count, the Result Identifier (SDESC4) is "RPx", and the user must select the sample file of which this count is a duplicate.
CAS Number = NCLSBHDR (this is the Nuclide type field in the Nuclide Library, see Appendix A).
Total Propagated Uncertainty = calculated as per Paar and Porterfield, op. cit., p.C-8.
Test Method = Selected as ISOCS.Procedure RF/RMRS-98-268
Source Check = the QA results, stored as RVALUE in the QA database for 1 key energy line in the check source. This will be carried out as in Paar and Porterfield, "Calibration Verification for Gamma Spectroscopy", op.cit., p.24.
Count Time = Live time of the measurement expressed in minutes.
Efficiency = the decay-corrected activity of the same energy line of the check source
Instrument/System ID # = the detector name, e.g. DET01.

4.3 For each file selected by the operator, a list of QA files appears, and the user must pick the appropriate QA measurement for the date/time at which this count was done. The Quality Control steps performed in this procedure as part of the total QA plan are: Source Checks, Field Control Measurements, Duplicate Samples, Background Measurements, Global Positioning System Units, and ISOCS parameters including ambient temperature, atmospheric pressure, humidity, soil density, and detector distance.

5.0 EDD HARDCOPY

5.1 If it is required to generate a hardcopy of the EDD file, the file should be opened in a text editor and printed using landscape mode or large format paper (such as 8.5X14) with the smallest readable font.

5.2 The hardcopy of the EDD must have the filename (EDD text filename) and specific means of transmittal and destination as specified on page B-9 of SOW-GR01-1. This would have to be added in the editor. Depending on the editor and printer combination, a header which would include the filename may be available as an option.

6.0 PROCEDURE

6.1 Running the Procedure.

6.1.1 Determine the filename, ID Number, and other pertinent information for the file(s) to be processed.

a. For each duplicate (RPx) count, record the file name corresponding to the sample of which this is a replicate.
b. For each calibration (CA) count, PROcount will calculate a percent yield, which is the ratio of measured to true activity.

c. Determine the applicable QA file name and measurement time.

d. Copy the count files and QA files from the field PC to the lab PC where the EDD Build procedure is to be run.

6.1.2 Run the EDD.CMD procedure by double-clicking on the icon on the desktop.

6.2 To set directory and EDD File name:

6.2.1 Select option 1 (Change Data File Directory) and enter the full path where the files to be processed will be found. Click on Ok.

6.2.2 Select option 2 (Search Filter, File Selection);

6.2.3 Enter the 8 or less characters that would uniquely identify the files that will be included in this EDD, or leave blank. Click on OK.

6.2.4 A list of filenames, Measurement Set ID numbers, Measurement Location, and Result Type code will be seen.

- If all the files listed will be processed, click the Select All button.

- If only some of the files will be processed, click on each desired file with the mouse until all those files to be included are highlighted. Then click on the Done button.

6.2.5 The procedure will use the filename as the base name of the .TXT file.

6.3 To edit EDD Info select Option 3 (Edit EDD Info), parameters for each selected file will be shown in turn;

6.3.1 Check the Result Identifier field and note that further information may need to be provided as the file is processed.

6.3.2 Make any necessary changes as each file's parameters are shown. Clicking OK will make these changes. In most cases no changes will be required. Cancel will not save the changes.

6.4 To build the EDD File select Option 4 (Review Sample ID and Build EDD) to process the selected files and build the individual (.TXT) EDD files. Exact steps are dependent on the type of file being processed.

If the file is for a Field Control Measurement (CA):

6.4.1 Review the information to ensure you have all information pertaining to the count, and that the information is identical to that in the logbook. The Result Identifier will be CA. Click on Continue to process, or Cancel to skip this file.

6.4.2 Select the appropriate QA file from the list of Calibration QA files. Click on Ok.

6.4.3 Select the appropriate Measurement Date/ID from the Get the Correct QA Record list. (This will be the most recent source check count prior to this CA count.) Click on Ok.

6.4.4 This file's processing is complete. If more files had been selected, the Setup dialog box would be shown.

If the file is for a Background (BG):

6.4.5 Review the information to ensure it is identical to that listed in the logbook. The Result Identifier will be BG. Click on Continue to process or Cancel to skip this file.

6.4.6 Select the appropriate QA file from the list of Calibration QA files. Click on Ok.

6.4.7 Select the appropriate Measurement Date/ID from the Get the Correct QA Record list. (This will be the most recent source check count prior to this background count.) Click on Ok.

6.4.8 This file's processing is complete. If more files had been selected, the Setup dialog box would be shown.

If the file is for a normal count:

6.4.9 Review the information to ensure it is identical to that listed in the logbook. The Result Identifier will be blank . Click on Continue to process, or Cancel to skip this file.

6.4.10 Select the appropriate QA file from the list of Calibration QA files. Click on Ok.

6.4.11 Select the appropriate Measurement Date/ID from the Get the Correct QA Record list. (This will be the most recent source check count prior to this sample count.) Click on Ok.

6.4.12 This file's processing is complete. If more files had been selected the Setup dialog box will be shown.

If the file is for a duplicate count (RP):

6.4.13 Review the information to ensure it is identical to that listed in the logbook. The Result Identifier will be RP. Click on Continue to process, or Cancel to skip this file.

6.4.14 Select from the list of files the original sample count to which this count is to be compared. Click on Ok.

6.4.15 Select the appropriate QA file from the list of Calibration QA files. Click on Ok.

6.4.16 Select the appropriate Measurement Date/ID from the Get the Correct QA Record list. (This will be the most recent source check count prior to this sample count.) Click on Ok.

6.4.17 This file's processing is complete. If more files had been selected the Setup dialog box will be shown.

If the file is for a batch calibration check (SC):

6.4.18 Review the information to ensure it is identical to that listed in the logbook. The Result Identifier will be SC. Click on Continue to process, or Cancel to skip this file.

6.4.19 Select the appropriate QA file from the list of Calibration QA files. Click on Ok.

6.4.20 Select the appropriate Measurement Date/ID from the Get the Correct QA Record list. (This will be the most recent source check count prior to this SC count.) Click on Ok.

6.4.21 This file's processing is complete. If more files had been selected the Setupdialog box will be shown.

6.5 Select Option 5 (Exit) to exit the procedure.

6.6 Open the EDD file in a text editor or Word Processor in order to generate the hardcopy report.

6.6.1 Ensure that all information in the EDD is complete.

6.6.2 Add the EDD Filename and the method of transmission to the APO EDD Server at the top of the text. DO NOT SAVE THESE CHANGES!

6.6.3 Setup the page and print parameters to Landscape and appropriate values to allow the longest lines of the EDD to fit on 1 line of the printout. (If possible, if not allow wrap around to take place.)

6.7 Include the hardcopy printout created above in the Sample Data Packet for this sample.

6.8 Copy each of the separate EDD files built for the analytical batch being processed to a Iomega Zip Drive diskette.

7.0 VERIFICATION & VALIDATION OF PROCEDURE

7.1 The following steps should be taken to ensure the EDD is being produced in accordance with the SOW.

7.1.1 Verify the number of characters (columns, including spaces) for each field of each line.

7.1.2 Verify that for the selected .TXT EDD file the values in each field are correct. For CAM parameters this can be done by comparing to a Genie-2000 report output using the 302.TPL report template.

7.2 Inspect the output EDD file. Ensure it has the following;

10 Char.	Project Identification = **"Name of Project"**
10 Char.	File Date = System date (MM/DD/YYYY)
15 Char.	Measurement Set ID Number = SBATCHID
15 Char.	Measurement Location = SDESC2
10 Char.	Measurement Date = ASTIME (MM/DD/YYYY)
5 Char.	Result Identifier = SDESC4
30 Char.	Isotope = NCLNAME (Nuclide name from library, (See Appendix A.)
10 Char.	Result = NCLWTMEAN (Activity in PCI/SUNITS)
10 Char.	Result Units = PCI/SUNITS
5 Char.	Result Qualifier = 'M','U', 'J', or blank
0 Char.	2 sigma error = NCLWTMERR (Activity Uncertainty at 2 sigma in PCI/SUNITS)
10 Char.	MDC = NCLMDA (Curie MDA at PCI/SUNITS)
10 Char.	F/E = Value if STYPE = "RPx" otherwise spaces
5 Char.	FCM = Value if STYPE = "CAx" otherwise spaces
20 Char.	CAS Number = NCLSBHDR (this is the Nuclide type field in the nuclide library)

10 Char.	Total Propagated Error = Calculated as in Paar and Porterfield, op. cit., p.C-7.
25 Char.	Test Method = **ISOCS**
10 Char.	Batch Calib. Check = energy line parameter
5 Char.	Count Time = ELIVE in minutes
5 Char.	Efficiency = decay corrected activity of check source energy line
15 Char	Instrument/System ID = DETNAME

7.3 Verification of non CAM parameter or non reported fields.

7.3.1 Verify that the File create Date (Field 2) matches the create date of the EDD file.

7.3.2 Verify that In Situ ID (Field 1 of Header line) is Project Name.

7.3.3 Verify that the Result Identifier (SDESC4) is one of the following:

"BG " QC Background Check
"CA " QC Field Control Sample
"SC " QC Batch Calibration Check
"RP " QC Duplicate Check
" " Normal measurement

7.3.4 Verify that each reported CAS Number matches the Analyte it is associated with.

7.3.5 Verify that the Result Qualifier is:

"U" = Nuclide considered not detected above the reported MDC or 2 sigma counting uncertainty.

"J" = Nuclide identified; The associated numerical value is approximated.

"M" = Replicate instrument readings not within control limits. The control limit is an F/E value of less then 1.96, where F/E is defined as in Section 5.2 above and p. 30 of Paar and Porterfield op. cit.

" " None of the above conditions U, J, or M apply to this sample.

7.3.6 Verify that on duplicate samples (Result Identifier = RP) that the value in the F/E (Field 13) has been calculated correctly.

Verify that the Test Method is ISOCS.

8.0 REFERENCES

Evaluation of Radiochemical Data Usability, ES/ER/MS-5, Lockheed Martin Environmental Restoration Program, April 1997.
ISOCS Gamma Spectroscopy Routine Operations Procedure, RF/RMRS-98-268
Detector Characterization Document D903-002.
Control of Non-conforming Items, 1-65-ADM-15.01

APPENDIX A

List of a Representative Nuclide Library for the EDD Build Procedure

****
***** LIBRARY LISTING REPORT *****
****

Nuclide Library Title: Pad903

Nuclide Library Description: Standadr Soil Library

Nuclide Name	Half-Life (Seconds)	Energy (keV)	Energy Uncert. (keV)	Yield (%)	Yield Uncert.(Abs.+-)
K-40	4.039E+016	1460.700*	0.200	10.6000	0.1000
CS-137	9.467E+008	661.660*	0.003	85.2100	0.0700
TL-208	1.832E+002	72.804	0.001	2.0200	0.0700
		74.969	0.001	3.4100	0.1100
		84.900	0.000	1.5100	0.0600
		277.358	0.010	6.3100	0.0900
		510.770	0.100	22.6000	0.3000
		583.191	0.002	84.5000	0.7000
		763.130	0.080	1.8100	0.0500
		860.564	0.005	12.4200	0.1000
		2614.533*	0.013	99.1600	0.0000
BI-212	3.633E+003	727.180*	0.060	6.6500	0.1500
		785.420	0.060	1.1100	0.0300
		1620.560	0.070	1.5100	0.0500
PB-212	3.830E+004	74.810	0.000	10.5000	0.4000
		77.110	0.000	17.6000	0.7000
		87.300	0.000	7.9000	0.4000
		238.633*	0.004	43.6000	1.3000
		300.087	0.010	3.3400	0.1100
BI-214	1.194E+003	79.290	0.005	0.7580	0.0150
		665.453	0.022	1.2900	0.0300
		768.356	0.010	4.8000	0.0700
		806.174	0.018	1.1200	0.0300
		934.061	0.012	3.0300	0.0500
		1120.287	0.010	14.8000	0.2000
		1155.190	0.020	1.6400	0.0400
		1238.110	0.012	5.8600	0.0800
		1280.960	0.020	1.4400	0.0300
		1377.669	0.012	3.9200	0.0800
		1401.500	0.040	1.5500	0.1700
		1407.980	0.040	2.8000	0.4000
		1509.228	0.015	2.1200	0.0400
		1661.280	0.060	1.1400	0.0300
		1729.595	0.015	2.8800	0.0600
		1764.494	0.014	15.3600	0.2000
		1847.420	0.030	2.0400	0.0400
		2118.550	0.030	1.1400	0.0300
		2204.210	0.040	4.8600	0.0900
		2447.860	0.100	1.5000	0.0400

AC-228	2.214E+004	89.953	0.002	1.9400	0.1600
		93.350	0.002	3.2000	0.3000
		99.497	0.006	1.2800	0.0800

Library Title: Pad903

Nuclide Name	Half-Life (Seconds)	Energy (keV)	Energy Uncert. (keV)	Yield (%)	Yield Uncert.(Abs.+-)
AC-228	2.214E+004	105.000	0.000	1.4700	0.1200
		129.065	0.003	2.4500	0.1900
		209.253	0.006	3.8800	0.1100
		270.243	0.004	3.4300	0.0800
		327.995	0.002	2.9500	0.1600
		338.322	0.002	11.3000	0.3000
		409.456	0.005	1.9400	0.0600
		463.005	0.004	4.4400	0.1100
		755.315	0.004	1.0100	0.0600
		772.291	0.004	1.5000	0.0700
		794.947	0.006	4.3400	0.1100
		835.710	0.006	1.6800	0.1100
		911.205*	0.004	26.6000	0.7000
		964.770	0.010	5.1100	0.1400
		968.971	0.010	16.2000	0.4000
		1588.210	0.030	3.2700	0.1100
		1630.627	0.010	1.6000	0.0800
U-235	2.222E+016	143.800	0.100	10.9000	0.1000
		163.400*	0.100	5.0000	0.1000
		185.700	0.100	57.5000	0.1000
		205.300	0.100	5.0000	0.1000
U-238	1.474E+017	63.300	0.100	4.5000	0.0000
		92.600	0.300	5.2000	0.0000
		1001.000*	0.300	0.8500	0.0000
Pu-239	1.578E+017				
Am-241	1.439E+010	59.500*	0.100	35.9000	0.1000

* = key line

TOTALS: 13 Nuclides 70 Energy Lines

903PAD 09/02/1998QA Baseline Office 9/02/1998SC K-40
9.3257E+03pCi/g -5.8222 3.5862E+02 2.8852E+03RF/RMRS-98-268
59.822 15.001.9594E+08DET01
903PAD 09/02/1998QA Baseline Office 9/02/1998SC CS-137
4.5386E+03pCi/g -2.0529E+09.7615E+01 1.2017E+03RF/RMRS-98-268
59.822 15.001.9594E+08DET01
903PAD 09/02/1998QA Baseline Office 9/02/1998SC TL-208
6.7516E+02pCi/g 1.1566E+023.0495E+02 3.2496E+02RF/RMRS-98-268
59.822 15.001.9594E+08DET01
903PAD 09/02/1998QA Baseline Office 9/02/1998SC BI-212 0.0000
pCi/g U 0.0000 9.9940E+02 0.0000 RF/RMRS-98-268 59.822
15.001.9594E+08DET01
903PAD 09/02/1998QA Baseline Office 9/02/1998SC PB-212
2.2211E+02pCi/g 7.1517E+011.5154E+02 1.4037E+02RF/RMRS-98-268
59.822 15.001.9594E+08DET01
903PAD 09/02/1998QA Baseline Office 9/02/1998SC BI-214
7.6819E+02pCi/g 1.2606E+022.7967E+02 3.6420E+02RF/RMRS-98-268
59.822 15.001.9594E+08DET01
903PAD 09/02/1998QA Baseline Office 9/02/1998SC Pb-214
2.7841E+02pCi/g 6.3525E+011.6528E+02 1.4983E+02RF/RMRS-98-268
59.822 15.001.9594E+08DET01
903PAD 09/02/1998QA Baseline Office 9/02/1998SC Ra-226 0.0000
pCi/g U 0.0000 1.4512E+03 0.0000 RF/RMRS-98-268 59.822
15.001.9594E+08DET01
903PAD 09/02/1998QA Baseline Office 9/02/1998SC AC-228 0.0000
pCi/g U 0.0000 3.4577E+02 0.0000 RF/RMRS-98-268 59.822
15.001.9594E+08DET01
903PAD 09/02/1998QA Baseline Office 9/02/1998SC U-235 0.0000
pCi/g U 0.0000 8.7622E+01 0.0000 RF/RMRS-98-268 59.822
15.001.9594E+08DET01
903PAD 09/02/1998QA Baseline Office 9/02/1998SC U-238 0.0000
pCi/g U 0.0000 1.2714E+03 0.0000 RF/RMRS-98-268 59.822
15.001.9594E+08DET01
903PAD 09/02/1998QA Baseline Office 9/02/1998SC Am-241
2.6195E+04pCi/g 1.7609E+034.3720E+02 9.8814E+03RF/RMRS-98-268
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