I. Subject

Disposition of Soil from Condensate Storage Transfer Pump House Excavation

II. Objective

Document the rationale used for the decision to re-use the approximately 225 cubic yards of soil that was excavated as part of the pipe repair to mitigate the leakage of tritium to the environment under the condensate storage transfer pump house.

III. Summary

Micro-R meter results were equal to background (10 µRem/hr), and direct frisk results were all < 100 ccpm (corrected counts per minute). Twenty soil samples were taken at various depths as the excavation progressed. All sample gamma isotopic results showed either Natural Products, or a combination of Natural Products and Cesium 137 (Cs-137), Cobalt 60 (Co-60), or Xenon 135 (Xe-135). (References C and D) Based on the analysis of these results, it was determined that the soil could be returned to the excavation site from which it came.

IV. Data

Results of Soil Samples from CST Area 2009

	Cs-137		Co-60		Xe-135	
Natural Products	**µCi/g**	**pCi/g**	**µCi/g**	**pCi/g**	**µCi/g**	**pCi/g**
Pb-212	6.98E-08	0.07	2.87E-07	0.29	3.88E-08	0.04
Pb-214	8.47E-08	0.08	2.97E-07	0.30	1.95E-07	0.20
Tl-208	9.39E-08	0.09	3.68E-07	0.37		
Tl-210	9.73E-08	0.10	9.62E-07	0.96		
Bi-211	1.10E-07	0.11	1.25E-06	1.25		
Bi-214	1.13E-07	0.11	1.35E-06	1.35		
Ac-228	1.21E-07	0.12	2.18E-06	2.18		
K-40	1.39E-07	0.14	2.58E-06	2.58		
	1.46E-07	0.15	2.93E-06	2.93		
	1.66E-07	0.17	3.53E-06	3.53		
	1.72E-07	0.17	4.72E-06	4.72		
	2.17E-07	0.22				
	2.18E-07	0.22				
	2.26E-07	0.23				
	2.28E-07	0.23				
Average		**0.14**		**1.28**		**0.02**

V. Sample Counting

All soil samples were counted as flowable solids (Reference A) to meet the Offsite Dose Calculation Manual (ODCM) environmental Lower Limit of Detection (LLDs) for sediment (Reference B). A mean count time of 1736 seconds and a median count time of 1448 seconds was needed to meet the Cs-134 and Cs-137 LLDs shown in the table below.

Isotope	LLD pCi/Kg	LLD pCi/g
Cs-134	150	0.15
Cs-137	180	0.18

NOTE: Flowable solids are defined as material considered to be "free-flowing" in nature, including liquids, solids, sand, crushed asphalt and concrete, or oils that (as an aggregate) require a container to retain its shape in appropriate sample containers.

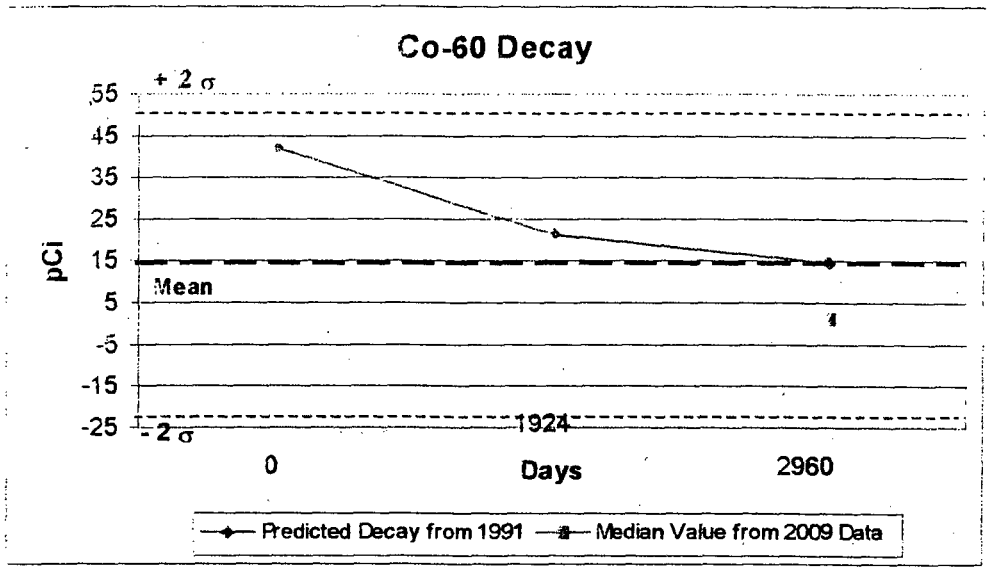
VI. Sample Evaluation

During 1991 Oyster Creek experienced a leak from the Condensate Storage Tank (CST), which resulted in contamination of the soil surrounding the tank. This event was documented under the requirements of 50 CFR 75(g). No sample data was available from 1991, however, soil samples were taken 04/09/01 from the area around the CST, with the following results:

<u>Natural Products</u>
K-40
Pb-212
Bi-214
Pb-214

Co-60	2.88E-6 to 8.1E-5 μCi/g (or 2.88 to 81 pCi/g)
Cs-137	2.21E-7 μCi/g (or 0.221 pCi/g)

<u>Cobalt 60</u>
Co-60 has a radiological half-life of 5.27 years. As shown by the graph below, the Co-60 found in 2009 falls into the range expected (+ / - 2 standard deviations (σ)) from the decay of the Co-60 seen eight (8) years ago in soil taken from approximately the same location. The median value from the range (2.88 to 81 pCi/g) found in 2001 was used (42 pCi/g) for the decay correction.



Cesium 137

Cs-137 has a radiological half-life of 30 years. The average activity found in the 2009 samples ranged from 0.07 to 0.23 pCi/g, compared to the decay corrected result of 0.18 pCi/g from the 2001 sample. The 2009 Cs-137 data is consistent with the expected results. These results are also consistent with documented amounts of Cs-137 found as part of ambient background. (See Appendix A)

Xenon-135

Xe-135 is a noble gas fission product having a radiological half-life of 9.1 hours. In Oyster Creek's steam-water cycle, steam containing various radionuclides passes from the reactor pressure vessel through the various turbine stages, and after condensing becomes condensate. This condensate is pumped to the condensate demineralizers where impurities, including radionuclides are removed. Almost all fission products are removed by the condensate demineralizers, and therefore they are not normally seen in the CST samples. However, tritium and noble gases are not removed in the condensate demineralizers.

While the condensate demineralizers do not remove noble gases, the steam-jet air ejectors (SJAE's) do remove most noble gases and other non-condensable gases prior to the condensate demineralizers. However, the SJAE's are not 100% efficient at removing all the noble gases.

In the steam-water cycle, downstream of the condensate demineralizers, the condensate can be directed to either feedwater or the CST.

Since January 1, 2009 Xe-135 has been found in the CST water three times in 23 samples.

Since the soil samples were removed from the excavation site of the leak while the leak was active, it is not unexpected to see Xe-135 that was entrained in the CST water and subsequently incorporated into the soil. Due to the short half-life, any Xe-135 in the soil has now decayed away.

VII. Conclusion

Based on the survey and sample results, the soil can be returned to the excavation site from which it came. All survey results (direct frisk and micro-R meter) were "Non Detected (ND)" above background. All sample gamma isotopic results showed either Natural Products, or a combination of Natural Products and Cs-137, Co-60, or Xe-135. Based on the analysis of these results, it was determined that the soil could be returned to the original site.

VIII. References

A. CY-OC-130-511, Isotopic Analysis for Volumetric Waste Samples

B. CY-OC-171-301, Off Site Dose Calculation Manual

C. The Health Physics and Radiological Health Handbook, 1992

D. The Gamma Rays of the Radionuclides, Tables for Applied Gamma Ray Spectrometry, 1979

IX. Attachments

a. Appendix A – Background Cesium 137

b. Appendix B - Gamma Spectroscopy Results from 2009 Soil Samples

c. Appendix C - Survey QQQ-09-03617, Survey of CST Dirt Pile

Prepared by: Linda Filippi Date: 6-2-09

Reviewed by: Date: 6/11/09

Approved by: John Rama Date: 6/11/09

Appendix A
Background Cesium 137

During January 2007, a report was prepared that evaluated soil and vegetation sample results from the Finninger Farm property. Significantly, this report described measured Cs-137 from New Jersey and property adjacent to the Oyster Creek site itself: "..., in the year 2000, as part of the confirmatory release survey for the adjacent Forked River site to the west of OCGS, the NRC reported that the maximum observed soil concentration of 0.53 pCi/g was not distinguishable from the variation in Cs-137 in the environment due to these fallout sources. The NRC also reported background Cs-137 concentrations in New Jersey coastal plain soils as high as 1.5 and 2.8 pCi/g. In addition, decay-corrected historic REMP data from a predominantly upwind location, nearly four miles from the OCGS, yields present-day Cs-137 concentrations ranging from 0.862 to 1.68 pCi/g." The highest reported sample result of 0.23 pCi/g is well below all of these numbers.

Additionally, a cesium background report was prepared February/March 2007 in order to support the above environmental project at the Oyster Creek site. The report described measured Cs-137 data from the New York area: "Following the Chernobyl event, Environmental Measurements Laboratory (EML) began a series of measurements on Long Island, NY. Post Chernobyl, EML reported 600 pCi/kg – 3,200 pCi/kg {of Cs-137} in surface soils on Long Island, near Oyster Bay, after decay correction, this represents about 60 to 1800 pCi/kg (0 – 5 cm) {depth} after decay to the present." This translates to 0.06 to 1.8 pCi/g.

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*****        G A M M A   S P E C T R U M   A N A L Y S I S
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OYSTER CREEK NUCLEAR GENERATING STATION CHEMISTRY DEPARTMENT

Detector Name	: DET01
Report Generated On	: 4/17/09 2:06:19 PM
Spectral Data File Name \2000049.CNF	: C:\PCNT2K\CAMFILES\1LSOLMDA
	:
Sample Title	: 1-L Solid Releas
Sample Description	: dirt #1 near cst
User ID	: kg
Sample Type	: 20
Sample Geometry	: 1-L Marinelli
Peak Locate Threshold	: 3.00
Peak Locate Range (in channels)	: 1 - 4096
Peak Area Range (in channels)	: 100 - 4096
Identification Energy Tolerance	: 1.000 keV
Sample Size	: 1030.00 grams
Sample Taken On	: 4/17/09 1:10:33 PM
Acquisition Started	: 4/17/09 1:51:35 PM
Decay Time	: 4.10E+001 Minutes
Live Time	: 1182.0 Seconds
Real Time	: 1182.6 Seconds
Dead Time	: 0.05 %

Energy Calibration Used Done On	: 1/8/09
Efficiency Calibration Used Done On	: 1/8/09

Reviewed By
[illegible]
5-21-09

Natural Products Only

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*****        B A C K G R O U N D   S U B T R A C T   R E P O R T
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Detector Name: DET01
Sample Title: 1-L Solid Releas
Peak Analysis Performed on: 4/17/09 2:06:19 PM

	Peak No.	Energy (keV)	Original Area	Orig. Area Uncert.	Ambient Background	Backgr. Uncert.	Subtracted Area	Subtracted Uncert.
Pb-212	1	238.40	5.56E+001	12.86			5.56E+001	1.29E+001
Bi-214	2	609.28	2.38E+001	5.53			2.38E+001	5.53E+000
K-40	3	1460.77	3.10E+001	5.57			3.10E+001	5.57E+000

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet

Errors quoted at 1.000 sigma

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*****              N U C L I D E   M D A   R E P O R T
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Detector Name: DET01
Sample Geometry: 1-L Marinelli
Sample Title: 1-L Solid Releas
Nuclide Library Used: C:\GENIE2K\CAMFILES\AnSolMDA.NLB

Nuclide Name	Energy (keV)	Yield (%)	Line MDA (uCi/gram)	Nuclide MDA (uCi/gram)	Activity (uCi/gram)
CS-134	563.23	8.38	1.12E-006	8.16E-008	7.72E-008
	569.32	15.43	6.54E-007		- 3.32E-008
	604.70	97.60	8.16E-008		- 4.20E-008
	795.84	85.40	1.94E-007		7.55E-008
	801.93	8.73	1.41E-006		- 8.76E-008
	1365.15	3.04	4.17E-006		6.94E-007
CS-137	661.65	85.12	2.02E-007	2.02E-007	6.85E-008

+ = Nuclide identified during the nuclide identification
* = Energy line found in the spectrum
> = MDA value not calculated
@ = Half-life too short to be able to perform the decay correction

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*****   N U C L I D E   I D E N T I F I C A T I O N   R E P O R T
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Sample Title: 1-L Solid Releas
Nuclide Library Used: C:\GENIE2K\CAMFILES\AnSolMDA.NLB

..... IDENTIFIED NUCLIDES .....

Nuclide Name	Id Confidence	Energy (keV)	Yield (%)	Activity (uCi/gram)	Activity Uncertainty
K-40	1.000	1460.81*	10.67	3.25E-006	5.89E-007
PB-212	0.703	87.20	6.30		
		89.80	1.75		
		238.63*	44.60	2.47E-007	5.74E-008
		300.09	3.41		
BI-214	0.662	609.31*	46.30	2.59E-007	6.07E-008
		934.06	3.21		
		1764.49	15.80		

* = Energy line found in the spectrum.
@ = Energy line not used for Weighted Mean Activity
Energy Tolerance : 1.000 keV
Nuclide confidence index threshold = 0.30
Errors quoted at 1.000 sigma

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*****   I N T E R F E R E N C E   C O R R E C T E D   R E P O R T
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Nuclide Name	Nuclide Id Confidence	Wt mean Activity (uCi/gram)	Wt mean Activity Uncertainty
K-40	1.000	3.25E-006	5.89E-007
PB-212	0.703	2.47E-007	5.74E-008
BI-214	0.662	2.59E-007	6.07E-008
Total Activity		3.76E-006	

? = nuclide is part of an undetermined solution
X = nuclide rejected by the interference analysis
@ = nuclide contains energy lines not used in Weighted Mean Activity

Errors quoted at 1.000 sigma

********** U N I D E N T I F I E D P E A K S **********

Peak Locate Performed on: 4/17/09 2:06:19 PM
Peak Locate From Channel: 100
Peak Locate To Channel: 4096

Peak No.	Energy (keV)	Peak Size in Counts per Second	Peak CPS % Uncertainty

All peaks were identified.

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet

Errors quoted at 1.000 sigma

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*****        G A M M A   S P E C T R U M   A N A L Y S I S
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OYSTER CREEK NUCLEAR GENERATING STATION CHEMISTRY DEPARTMENT

Detector Name	: DET02
Report Generated On	: 4/17/09 2:26:17 PM
Spectral Data File Name	: C:\PCNT2K\CAMFILES\1LSOLMDA \2000050.CNF
	:
Sample Title	: 1-L Solid Releas
Sample Description	: dirt #2 near cst
User ID	: kg
Sample Type	: 20
Sample Geometry	: 1-L Marinelli
Peak Locate Threshold	: 3.00
Peak Locate Range (in channels)	: 1 - 4096
Peak Area Range (in channels)	: 100 - 4096
Identification Energy Tolerance	: 1.000 keV
Sample Size	: 1066.00 grams
Sample Taken On	: 4/17/09 1:10:15 PM
Acquisition Started	: 4/17/09 1:53:17 PM
Decay Time	: 4.30E+001 Minutes
Live Time	: 2278.0 Seconds
Real Time	: 2278.9 Seconds
Dead Time	: 0.04 %

Energy Calibration Used Done On	: 3/21/08
Efficiency Calibration Used Done On	: 3/21/08

Reviewed By
Lynda Filippi
5-21-09

Natural Products, Co-60, & Cs-137

****
**
***** B A C K G R O U N D S U B T R A C T R E P O R T *****
****
**

Detector Name: DET02
Sample Title: 1-L Solid Releas
Peak Analysis Performed on: 4/17/09 2:26:17 PM

	Peak No.	Energy (keV)	Original Area	Orig. Area Uncert.	Ambient Background	Backgr. Uncert.	Subtracted Area	Subtracted Uncert.
Pb-212	1	238.45	1.66E+002	32.31			1.66E+002	3.23E+001
Pb-214	2	295.01	8.98E+001	24.76			8.98E+001	2.48E+001
Pb-214	3	351.76	1.13E+002	23.40			1.13E+002	2.34E+001
Tl-208	4	583.20	6.08E+001	17.77			6.08E+001	1.78E+001
Bi-214	5	609.17	7.55E+001	15.77			7.55E+001	1.58E+001
Cs-137	6	661.66	1.07E+002	17.70			1.07E+002	1.77E+001
Co-60	7	1173.48	1.21E+003	37.13			1.21E+003	3.71E+001
Co-60	8	1332.86	1.05E+003	33.25			1.05E+003	3.33E+001
K-40	9	1461.12	1.32E+002	12.76			1.32E+002	1.28E+001

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet

Errors quoted at 1.000 sigma

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*****              N U C L I D E   M D A   R E P O R T
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Detector Name: DET02
Sample Geometry: 1-L Marinelli
Sample Title: 1-L Solid Releas
Nuclide Library Used: C:\GENIE2K\CAMFILES\AnSolMDA.NLB

	Nuclide Name	Energy (keV)	Yield (%)	Line MDA (uCi/gram)	Nuclide MDA (uCi/gram)	Activity (uCi/gram)
	CS-134	563.23	8.38	1.00E-006	9.62E-008	3.27E-008
		569.32	15.43	5.98E-007		2.14E-007
		604.70	97.60	9.62E-008		2.06E-008
		795.84	85.40	1.57E-007		3.31E-008
		801.93	8.73	1.60E-006		3.97E-007
		1365.15	3.04	2.68E-006		6.67E-007
+	CS-137	661.65*	85.12	1.41E-007	1.41E-007	2.18E-007

+ = Nuclide identified during the nuclide identification
* = Energy line found in the spectrum
> = MDA value not calculated
@ = Half-life too short to be able to perform the decay correction

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*****   N U C L I D E   I D E N T I F I C A T I O N   R E P O R T
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Sample Title: 1-L Solid Releas
Nuclide Library Used: C:\GENIE2K\CAMFILES\AnSolMDA.NLB

..... IDENTIFIED NUCLIDES .....

Nuclide Name	Id Confidence	Energy (keV)	Yield (%)	Activity (uCi/gram)	Activity Uncertainty
K-40	0.984	1460.81*	10.67	4.38E-006	4.34E-007
CO-60	0.984	1173.22*	100.00	3.53E-006	1.25E-007
		1332.49*	100.00	3.41E-006	1.28E-007
CS-137	1.000	661.65*	85.12	2.18E-007	3.63E-008
PB-212	0.670	87.20	6.30		
		89.80	1.75		
		238.63*	44.60	2.53E-007	4.97E-008
		300.09	3.41		
BI-214	0.659	609.31*	46.30	2.62E-007	5.50E-008
		934.06	3.21		
		1764.49	15.80		
PB-214	0.673	87.20	3.70		
		89.80	1.03		
		241.98	7.49		
		295.21*	19.20	3.83E-007	1.06E-007
		351.92*	37.20	2.92E-007	6.09E-008

* = Energy line found in the spectrum.
@ = Energy line not used for Weighted Mean Activity
Energy Tolerance : 1.000 keV
Nuclide confidence index threshold = 0.30
Errors quoted at 1.000 sigma

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*****   I N T E R F E R E N C E   C O R R E C T E D   R E P O R T
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	Nuclide Name	Nuclide Id Confidence	Wt mean Activity (uCi/gram)	Wt mean Activity Uncertainty
	K-40	0.984	4.38E-006	4.34E-007
	CO-60	0.984	3.47E-006	8.96E-008
	CS-137	1.000	2.18E-007	3.63E-008
X	BI-211	0.567		
	PB-212	0.670	2.53E-007	4.97E-008
	BI-214	0.659	2.62E-007	5.50E-008
	PB-214	0.673	3.14E-007	5.28E-008
	Total Activity		8.90E-006	

? = nuclide is part of an undetermined solution
X = nuclide rejected by the interference analysis
@ = nuclide contains energy lines not used in Weighted Mean Activity

Errors quoted at 1.000 sigma

********** U N I D E N T I F I E D P E A K S **********

Peak Locate Performed on: 4/17/09 2:26:17 PM
Peak Locate From Channel: 100
Peak Locate To Channel: 4096

Peak No.	Energy (keV)	Peak Size in Counts per Second	Peak CPS % Uncertainty
Tl-208 4	583.20	2.67E-002	29.22

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet

Errors quoted at 1.000 sigma

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*****        G A M M A   S P E C T R U M   A N A L Y S I S
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OYSTER CREEK NUCLEAR GENERATING STATION CHEMISTRY DEPARTMENT

Detector Name	: DET02
Report Generated On	: 4/17/09 3:15:44 PM
Spectral Data File Name	: C:\PCNT2K\CAMFILES\1LSOLMDA \2000051.CNF
	:
Sample Title	: 1-L Solid Releas
Sample Description	: dirt #3 near cst
User ID	: kg
Sample Type	: 20
Sample Geometry	: 1-L Marinelli
Peak Locate Threshold	: 3.00
Peak Locate Range (in channels)	: 1 - 4096
Peak Area Range (in channels)	: 100 - 4096
Identification Energy Tolerance	: 1.000 keV
Sample Size	: 926.00 grams
Sample Taken On	: 4/17/09 1:10:58 PM
Acquisition Started	: 4/17/09 2:49:01 PM
Decay Time	: 9.81E+001 Minutes
Live Time	: 1902.0 Seconds
Real Time	: 1902.5 Seconds
Dead Time	: 0.03 %

Energy Calibration Used Done On	: 3/21/08
Efficiency Calibration Used Done On	: 3/21/08

Reviewed By
Lynda Filippi
5-21-09

Natural Products, Co-60, & Cs-137

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*****        B A C K G R O U N D   S U B T R A C T   R E P O R T
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Detector Name: DET02
Sample Title: 1-L Solid Releas
Peak Analysis Performed on: 4/17/09 3:15:45 PM

	Peak No.	Energy (keV)	Original Area	Orig. Area Uncert.	Ambient Background	Backgr. Uncert.	Subtracted Area	Subtracted Uncert.
Pb-212	1	76.84	6.41E+001	24.26			6.41E+001	2.43E+001
Pb-212	2	238.50	1.62E+002	27.33			1.62E+002	2.73E+001
Bi-211	3	351.88	9.07E+001	17.11			9.07E+001	1.71E+001
Tl-208	4	583.18	4.70E+001	11.80			4.70E+001	1.18E+001
Bi-214	5	609.24	9.29E+001	14.83			9.29E+001	1.48E+001
Cs-137	6	661.37	3.02E+001	13.85			3.02E+001	1.38E+001
Co-60	7	1173.50	6.44E+002	26.75			6.44E+002	2.68E+001
Co-60	8	1332.75	5.28E+002	23.55			5.28E+002	2.36E+001
K-40	9	1460.97	6.75E+001	9.21			6.75E+001	9.21E+000

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet

Errors quoted at 1.000 sigma

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*****              N U C L I D E   M D A   R E P O R T
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Detector Name: DET02
Sample Geometry: 1-L Marinelli
Sample Title: 1-L Solid Releas
Nuclide Library Used: C:\GENIE2K\CAMFILES\AnSolMDA.NLB

	Nuclide Name	Energy (keV)	Yield (%)	Line MDA (uCi/gram)	Nuclide MDA (uCi/gram)	Activity (uCi/gram)
	CS-134	563.23	8.38	1.05E-006	8.86E-008	- 2.72E-007
		569.32	15.43	6.18E-007		- 8.32E-008
		604.70	97.60	8.86E-008		5.71E-010
		795.84	85.40	1.69E-007		4.69E-008
		801.93	8.73	1.70E-006		7.95E-007
		1365.15	3.04	2.13E-006		- 3.77E-008
+	CS-137	661.65*	85.12	1.73E-007	1.73E-007	8.47E-008

+ = Nuclide identified during the nuclide identification
* = Energy line found in the spectrum
> = MDA value not calculated
@ = Half-life too short to be able to perform the decay correction

```
*************************************************************************
*
*****   N U C L I D E   I D E N T I F I C A T I O N   R E P O R T
*****
*************************************************************************
*
```

Sample Title: 1-L Solid Releas
Nuclide Library Used: C:\GENIE2K\CAMFILES\AnSolMDA.NLB

..... IDENTIFIED NUCLIDES .....

Nuclide Name	Id Confidence	Energy (keV)	Yield (%)	Activity (uCi/gram)	Activity Uncertainty
K-40	0.996	1460.81*	10.67	3.08E-006	4.26E-007
CO-60	0.988	1173.22*	100.00	2.58E-006	1.17E-007
		1332.49*	100.00	2.37E-006	1.16E-007
CS-137	0.988	661.65*	85.12	8.47E-008	3.88E-008
BI-211	0.548	351.10*	12.20	9.88E-007	1.88E-007
		404.80	4.10		
PB-212	0.672	87.20	6.30		
		89.80	1.75		
		238.63*	44.60	3.42E-007	5.81E-008
		300.09	3.41		
BI-214	0.660	609.31*	46.30	4.44E-007	7.16E-008
		934.06	3.21		
		1764.49	15.80		

* = Energy line found in the spectrum.
@ = Energy line not used for Weighted Mean Activity
Energy Tolerance : 1.000 keV
Nuclide confidence index threshold = 0.30
Errors quoted at 1.000 sigma

****
*
***** I N T E R F E R E N C E C O R R E C T E D R E P O R T *****
****
*

Nuclide Name	Nuclide Id Confidence	Wt mean Activity (uCi/gram)	Wt mean Activity Uncertainty
K-40	0.996	3.08E-006	4.26E-007
CO-60	0.988	2.47E-006	8.23E-008
CS-137	0.988	8.47E-008	3.88E-008
BI-211	0.548	9.88E-007	1.88E-007
PB-212	0.672	3.42E-007	5.81E-008
BI-214	0.660	4.44E-007	7.16E-008
Total Activity		7.42E-006	

? = nuclide is part of an undetermined solution
X = nuclide rejected by the interference analysis
@ = nuclide contains energy lines not used in Weighted Mean Activity

Errors quoted at 1.000 sigma

********** U N I D E N T I F I E D P E A K S **********

Peak Locate Performed on: 4/17/09 3:15:45 PM
Peak Locate From Channel: 100
Peak Locate To Channel: 4096

	Peak No.	Energy (keV)	Peak Size in Counts per Second	Peak CPS % Uncertainty
Pb-212	1	76.84	3.37E-002	37.85
Tl-208	4	583.18	2.47E-002	25.11

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet

Errors quoted at 1.000 sigma

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*************************************************************************
*
*****        G A M M A   S P E C T R U M   A N A L Y S I S
*****
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OYSTER CREEK NUCLEAR GENERATING STATION CHEMISTRY DEPARTMENT

Detector Name	: DET02
Report Generated On	: 4/18/09 1:54:41 PM
Spectral Data File Name	: C:\PCNT2K\CAMFILES\1LSOLMDA \2000057.CNF
	:
Sample Title	: 1-L Solid Releas
Sample Description	: Soil near CST; 3' depth
User ID	: kg
Sample Type	: 20
Sample Geometry	: 1-L Marinelli
Peak Locate Threshold	: 3.00
Peak Locate Range (in channels)	: 1 - 4096
Peak Area Range (in channels)	: 100 - 4096
Identification Energy Tolerance	: 1.000 keV
Sample Size	: 916.00 grams
Sample Taken On	: 4/17/09 6:00:39 PM
Acquisition Started	: 4/18/09 1:17:41 PM
Decay Time	: 1.16E+003 Minutes
Live Time	: 2518.0 Seconds
Real Time	: 2518.6 Seconds
Dead Time	: 0.02 %

Energy Calibration Used Done On	: 3/21/08
Efficiency Calibration Used Done On	: 3/21/08

Reviewed By
Clyde Tepper
5-21-09

Natural Products, Co-60, & Cs-137

****
**
***** B A C K G R O U N D S U B T R A C T R E P O R T
*****
****
**

Detector Name: DET02
Sample Title: 1-L Solid Releas
Peak Analysis Performed on: 4/18/09 1:54:41 PM

	Peak No.	Energy (keV)	Original Area	Orig. Area Uncert.	Ambient Background	Backgr. Uncert.	Subtracted Area	Subtracted Uncert.
Pb-212	1	238.55	8.93E+001	25.79			8.93E+001	2.58E+001
Bi-211	2	351.79	6.56E+001	20.27			6.56E+001	2.03E+001
Tl-208	3	583.11	4.83E+001	11.95			4.83E+001	1.20E+001
Bi-214	4	609.35	3.25E+001	13.39			3.25E+001	1.34E+001
Cs-137	5	661.44	6.48E+001	14.37			6.48E+001	1.44E+001
Ac-228	6	969.71	1.87E+001	11.00			1.87E+001	1.10E+001
Co-60	7	1173.52	7.12E+002	28.31			7.12E+002	2.83E+001
Co-60	8	1332.95	6.31E+002	26.51			6.31E+002	2.65E+001
K-40	9	1461.43	4.56E+001	7.94			4.56E+001	7.94E+000

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet

Errors quoted at 1.000 sigma

```
*************************************************************************
**
*****              N U C L I D E   M D A   R E P O R T
*****
*************************************************************************
**
```

Detector Name: DET02
Sample Geometry: 1-L Marinelli
Sample Title: 1-L Solid Releas
Nuclide Library Used: C:\GENIE2K\CAMFILES\AnSolMDA.NLB

	Nuclide Name	Energy (keV)	Yield (%)	Line MDA (uCi/gram)	Nuclide MDA (uCi/gram)	Activity (uCi/gram)
	CS-134	563.23	8.38	9.67E-007	8.14E-008	6.52E-008
		569.32	15.43	4.87E-007	-	3.54E-008
		604.70	97.60	8.14E-008	-	3.96E-008
		795.84	85.40	1.45E-007		7.24E-008
		801.93	8.73	1.20E-006		3.30E-007
		1365.15	3.04	2.32E-006	-	3.17E-007
+	CS-137	661.65*	85.12	1.24E-007	1.24E-007	1.39E-007

+ = Nuclide identified during the nuclide identification
* = Energy line found in the spectrum
> = MDA value not calculated
@ = Half-life too short to be able to perform the decay correction

```
*************************************************************************
*
*****   N U C L I D E   I D E N T I F I C A T I O N   R E P O R T
*****
*************************************************************************
*
```

Sample Title: 1-L Solid Releas
Nuclide Library Used: C:\GENIE2K\CAMFILES\AnSolMDA.NLB

..... IDENTIFIED NUCLIDES .....

Nuclide Name	Id Confidence	Energy (keV)	Yield (%)	Activity (uCi/gram)	Activity Uncertainty
K-40	0.940	1460.81*	10.67	1.59E-006	2.79E-007
CO-60	0.976	1173.22*	100.00	2.18E-006	9.51E-008
		1332.49*	100.00	2.16E-006	1.01E-007
CS-137	0.993	661.65*	85.12	1.39E-007	3.09E-008
BI-211	0.562	351.10*	12.20	5.46E-007	1.69E-007
		404.80	4.10		
PB-212	0.673	87.20	6.30		
		89.80	1.75		
		238.63*	44.60	1.44E-007	4.16E-008
		300.09	3.41		
BI-214	0.661	609.31*	46.30	1.19E-007	4.90E-008
		934.06	3.21		
		1764.49	15.80		

* = Energy line found in the spectrum.
@ = Energy line not used for Weighted Mean Activity
Energy Tolerance : 1.000 keV
Nuclide confidence index threshold = 0.30
Errors quoted at 1.000 sigma

```
*************************************************************************
*
*****  I N T E R F E R E N C E   C O R R E C T E D   R E P O R T
*****
*************************************************************************
*
```

Nuclide Name	Nuclide Id Confidence	Wt mean Activity (uCi/gram)	Wt mean Activity Uncertainty
K-40	0.940	1.59E-006	2.79E-007
CO-60	0.976	2.17E-006	6.92E-008
CS-137	0.993	1.39E-007	3.09E-008
BI-211	0.562	5.46E-007	1.69E-007
PB-212	0.673	1.44E-007	4.16E-008
BI-214	0.661	1.19E-007	4.90E-008
Total Activity		4.71E-006	

? = nuclide is part of an undetermined solution
X = nuclide rejected by the interference analysis
@ = nuclide contains energy lines not used in Weighted Mean Activity

Errors quoted at 1.000 sigma

********** U N I D E N T I F I E D P E A K S **********

Peak Locate Performed on: 4/18/09 1:54:41 PM
Peak Locate From Channel: 100
Peak Locate To Channel: 4096

	Peak No.	Energy (keV)	Peak Size in Counts per Second	Peak CPS % Uncertainty
Tl-208	3	583.11	1.92E-002	24.75
Ac-228	6	969.71	7.42E-003	58.89

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet

Errors quoted at 1.000 sigma

```
*************************************************************************
*
*****        G A M M A   S P E C T R U M   A N A L Y S I S
*****
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OYSTER CREEK NUCLEAR GENERATING STATION CHEMISTRY DEPARTMENT

Detector Name	: DET02
Report Generated On	: 4/18/09 2:29:49 PM
Spectral Data File Name	: C:\PCNT2K\CAMFILES\1LSOLMDA \2000059.CNF
	:
Sample Title	: 1-L Solid Releas
Sample Description	: Soil near CST; 4' depth
User ID	: kg
Sample Type	: 20
Sample Geometry	: 1-L Marinelli
Peak Locate Threshold	: 3.00
Peak Locate Range (in channels)	: 1 - 4096
Peak Area Range (in channels)	: 100 - 4096
Identification Energy Tolerance	: 1.000 keV
Sample Size	: 886.00 grams
Sample Taken On	: 4/17/09 7:00:55 PM
Acquisition Started	: 4/18/09 2:07:58 PM
Decay Time	: 1.15E+003 Minutes
Live Time	: 1610.0 Seconds
Real Time	: 1610.2 Seconds
Dead Time	: 0.01 %

Energy Calibration Used Done On	: 3/21/08
Efficiency Calibration Used Done On	: 3/21/08

Reviewed By
Lynda Zeppi
5-21-09

Natural Products, Co-60, & Cs-137

****
**
***** B A C K G R O U N D S U B T R A C T R E P O R T *****
****
**

Detector Name: DET02
Sample Title: 1-L Solid Releas
Peak Analysis Performed on: 4/18/09 2:29:49 PM

	Peak No.	Energy (keV)	Original Area	Orig. Area Uncert.	Ambient Background	Backgr. Uncert.	Subtracted Area	Subtracted Uncert.
Pb-212	1	238.44	6.08E+001	16.95			6.08E+001	1.70E+001
Bi-211	2	351.74	4.87E+001	13.45			4.87E+001	1.35E+001
Tl-208	3	583.13	1.76E+001	6.15			1.76E+001	6.15E+000
Bi-214	4	609.24	2.74E+001	8.53			2.74E+001	8.53E+000
Cs-137	5	661.57	3.18E+001	7.61			3.18E+001	7.61E+000
Ac-228	6	910.83	1.31E+001	5.53			1.31E+001	5.53E+000
Co-60	7	1173.57	5.41E+001	9.19			5.41E+001	9.19E+000
Co-60	8	1332.73	5.36E+001	7.55			5.36E+001	7.55E+000
K-40	9	1461.39	3.53E+001	6.89			3.53E+001	6.89E+000

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet

Errors quoted at 1.000 sigma

```
*************************************************************************
**
*****              N U C L I D E   M D A   R E P O R T
*****
*************************************************************************
**
```

Detector Name: DET02
Sample Geometry: 1-L Marinelli
Sample Title: 1-L Solid Releas
Nuclide Library Used: C:\GENIE2K\CAMFILES\AnSolMDA.NLB

	Nuclide Name	Energy (keV)	Yield (%)	Line MDA (uCi/gram)	Nuclide MDA (uCi/gram)	Activity (uCi/gram)
	CS-134	563.23	8.38	5.29E-007	7.84E-008	1.19E-007
		569.32	15.43	4.08E-007		1.57E-007
		604.70	97.60	7.84E-008		1.19E-008
		795.84	85.40	9.16E-008		- 7.56E-010
		801.93	8.73	8.09E-007		- 9.00E-008
		1365.15	3.04	3.51E-006		1.01E-006
+	CS-137	661.65*	85.12	9.15E-008	9.15E-008	1.10E-007

+ = Nuclide identified during the nuclide identification
* = Energy line found in the spectrum
> = MDA value not calculated
@ = Half-life too short to be able to perform the decay correction

```
*************************************************************************
*
*****  N U C L I D E   I D E N T I F I C A T I O N   R E P O R T
*****
*************************************************************************
*
```

Sample Title: 1-L Solid Releas
Nuclide Library Used: C:\GENIE2K\CAMFILES\AnSolMDA.NLB

..... IDENTIFIED NUCLIDES .....

Nuclide Name	Id Confidence	Energy (keV)	Yield (%)	Activity (uCi/gram)	Activity Uncertainty
K-40	0.947	1460.81*	10.67	1.99E-006	3.91E-007
CO-60	0.985	1173.22*	100.00	2.68E-007	4.57E-008
		1332.49*	100.00	2.97E-007	4.23E-008
CS-137	0.999	661.65*	85.12	1.10E-007	2.64E-008
BI-211	0.569	351.10*	12.20	6.55E-007	1.82E-007
		404.80	4.10		
PB-212	0.670	87.20	6.30		
		89.80	1.75		
		238.63*	44.60	1.58E-007	4.42E-008
		300.09	3.41		
BI-214	0.660	609.31*	46.30	1.62E-007	5.05E-008
		934.06	3.21		
		1764.49	15.80		

* = Energy line found in the spectrum.
@ = Energy line not used for Weighted Mean Activity
Energy Tolerance : 1.000 keV
Nuclide confidence index threshold = 0.30
Errors quoted at 1.000 sigma

```
*************************************************************************
*
*****   I N T E R F E R E N C E   C O R R E C T E D   R E P O R T
*****
*************************************************************************
*
```

Nuclide Name	Nuclide Id Confidence	Wt mean Activity (uCi/gram)	Wt mean Activity Uncertainty
K-40	0.947	1.99E-006	3.91E-007
CO-60	0.985	2.84E-007	3.10E-008
CS-137	0.999	1.10E-007	2.64E-008
BI-211	0.569	6.55E-007	1.82E-007
PB-212	0.670	1.58E-007	4.42E-008
BI-214	0.660	1.62E-007	5.05E-008
Total Activity		3.36E-006	

? = nuclide is part of an undetermined solution
X = nuclide rejected by the interference analysis
@ = nuclide contains energy lines not used in Weighted Mean Activity

Errors quoted at 1.000 sigma

********** U N I D E N T I F I E D P E A K S **********

Peak Locate Performed on: 4/18/09 2:29:49 PM
Peak Locate From Channel: 100
Peak Locate To Channel: 4096

Peak No.	Energy (keV)	Peak Size in Counts per Second	Peak CPS % Uncertainty
3	583.13	1.09E-002	34.93
6	910.83	8.16E-003	42.08

Tl-208
Ac-228

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet

Errors quoted at 1.000 sigma

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*********************************************************************
*
*****        G A M M A   S P E C T R U M   A N A L Y S I S
*****
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CYSTER CREEK NUCLEAR GENERATING STATION CHEMISTRY DEPARTMENT

Detector Name	: DET01
Report Generated On	: 4/18/09 1:36:19 PM
Spectral Data File Name	: C:\PCNT2K\CAMFILES\1LSOLMDA \2000056.CNF
	:
Sample Title	: 1-L Solid Releas
Sample Description	: Soil near CST; 2' depth
User ID	: kg
Sample Type	: 20
Sample Geometry	: 1-L Marinelli
Peak Locate Threshold	: 3.00
Peak Locate Range (in channels)	: 1 - 4096
Peak Area Range (in channels)	: 100 - 4096
Identification Energy Tolerance	: 1.000 keV
Sample Size	: 940.00 grams
Sample Taken On	: 4/17/09 8:00:18 PM
Acquisition Started	: 4/18/09 1:11:20 PM
Decay Time	: 1.03E+003 Minutes
Live Time	: 1796.0 Seconds
Real Time	: 1797.1 Seconds
Dead Time	: 0.06 %

Energy Calibration Used Done On	: 1/8/09
Efficiency Calibration Used Done On	: 1/8/09

Reviewed By
Lynda Zeger
5-21-09

Natural Products, Co-60, & Cs-137

```
*************************************************************************
**
*****        B A C K G R O U N D   S U B T R A C T   R E P O R T
*****
*************************************************************************
**
```

Detector Name: DET01
Sample Title: 1-L Solid Releas
Peak Analysis Performed on: 4/18/09 1:36:19 PM

	Peak No.	Energy (keV)	Original Area	Orig. Area Uncert.	Ambient Background	Backgr. Uncert.	Subtracted Area	Subtracted Uncert.
Pb-212	1	238.55	7.17E+001	17.15			7.17E+001	1.72E+001
Tl-208	2	582.92	1.50E+001	8.71			1.50E+001	8.71E+000
Cs-137	3	661.33	3.15E+001	8.75			3.15E+001	8.75E+000
Co-60	4	1172.72	1.89E+002	16.16			1.89E+002	1.62E+001
Co-60	5	1332.20	1.38E+002	12.43			1.38E+002	1.24E+001
K-40	6	1460.20	3.25E+001	6.03			3.25E+001	6.03E+000

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet

Errors quoted at 1.000 sigma

```
*************************************************************************
**
*****              N U C L I D E   M D A   R E P O R T
*****
*************************************************************************
**
```

Detector Name: DET01
Sample Geometry: 1-L Marinelli
Sample Title: 1-L Solid Releas
Nuclide Library Used: C:\GENIE2K\CAMFILES\AnSolMDA.NLB

	Nuclide Name	Energy (keV)	Yield (%)	Line MDA (uCi/gram)	Nuclide MDA (uCi/gram)	Activity (uCi/gram)
	CS-134	563.23	8.38	1.14E-006	1.14E-007	- 4.73E-007
		569.32	15.43	8.02E-007		7.60E-008
		604.70	97.60	1.14E-007		- 5.15E-008
		795.84	85.40	2.16E-007		8.11E-009
		801.93	8.73	1.96E-006		- 2.08E-008
		1365.15	3.04	3.53E-006		7.51E-007
+	CS-137	661.65*	85.12	1.57E-007	1.57E-007	1.46E-007

+ = Nuclide identified during the nuclide identification
* = Energy line found in the spectrum
> = MDA value not calculated
@ = Half-life too short to be able to perform the decay correction

```
*************************************************************************
*
*****   N U C L I D E   I D E N T I F I C A T I O N   R E P O R T
*****
*************************************************************************
*
```

Sample Title: 1-L Solid Releas
Nuclide Library Used: C:\GENIE2K\CAMFILES\AnSolMDA.NLB

..... IDENTIFIED NUCLIDES .....

Nuclide Name	Id Confidence	Energy (keV)	Yield (%)	Activity (uCi/gram)	Activity Uncertainty
K-40	0.942	1460.81*	10.67	2.46E-006	4.60E-007
CO-60	0.975	1173.22*	100.00	1.25E-006	1.10E-007
		1332.49*	100.00	1.03E-006	9.48E-008
CS-137	0.984	661.65*	85.12	1.46E-007	4.07E-008
PB-212	0.709	87.20	6.30		
		89.80	1.75		
		238.63*	44.60	2.30E-007	5.52E-008
		300.09	3.41		

* = Energy line found in the spectrum.
@ = Energy line not used for Weighted Mean Activity
Energy Tolerance : 1.000 keV
Nuclide confidence index threshold = 0.30
Errors quoted at 1.000 sigma

```
*************************************************************************
*
*****   I N T E R F E R E N C E   C O R R E C T E D   R E P O R T
*****
*************************************************************************
*
```

Nuclide Name	Nuclide Id Confidence	Wt mean Activity (uCi/gram)	Wt mean Activity Uncertainty
K-40	0.942	2.46E-006	4.60E-007
CO-60	0.975	1.13E-006	7.18E-008
CS-137	0.984	1.46E-007	4.07E-008
PB-212	0.709	2.30E-007	5.52E-008
Total Activity		3.96E-006	

? = nuclide is part of an undetermined solution
X = nuclide rejected by the interference analysis
@ = nuclide contains energy lines not used in Weighted Mean Activity

Errors quoted at 1.000 sigma

********** U N I D E N T I F I E D P E A K S **********

Peak Locate Performed on: 4/18/09 1:36:19 PM
Peak Locate From Channel: 100
Peak Locate To Channel: 4096

Peak No.	Energy (keV)	Peak Size in Counts per Second	Peak CPS % Uncertainty
Tl-208 2	582.92	8.35E-003	58.07

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet

Errors quoted at 1.000 sigma

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*********************************************************************
*
*****        G A M M A   S P E C T R U M   A N A L Y S I S
*****
*********************************************************************
*
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OYSTER CREEK NUCLEAR GENERATING STATION CHEMISTRY DEPARTMENT

Detector Name	: DET02
Report Generated On	: 4/18/09 11:16:54 AM
Spectral Data File Name \2000054.CNF	: C:\PCNT2K\CAMFILES\1LSOLMDA
	:
Sample Title	: 1-L Solid Releas
Sample Description	: Soil sample near CST; 4'
User ID	: kg
Sample Type	: 20
Sample Geometry	: 1-L Marinelli
Peak Locate Threshold	: 3.00
Peak Locate Range (in channels)	: 1 - 4096
Peak Area Range (in channels)	: 100 - 4096
Identification Energy Tolerance	: 1.000 keV
Sample Size	: 916.00 grams
Sample Taken On	: 4/17/09 11:00:17 PM
Acquisition Started	: 4/18/09 10:54:19 AM
Decay Time	: 7.14E+002 Minutes
Live Time	: 1653.0 Seconds
Real Time	: 1653.3 Seconds
Dead Time	: 0.02 %

Energy Calibration Used Done On	: 3/21/08
Efficiency Calibration Used Done On	: 3/21/08

Reviewed By
Lynda Filippi
5-21-09

Natural Products and Co-60

```
*************************************************************************
**
*****        B A C K G R O U N D   S U B T R A C T   R E P O R T
*****
*************************************************************************
**
```

Detector Name: DET02
Sample Title: 1-L Solid Releas
Peak Analysis Performed on: 4/18/09 11:16:54 AM

	Peak No.	Energy (keV)	Original Area	Orig. Area Uncert.	Ambient Background	Backgr. Uncert.	Subtracted Area	Subtracted Uncert.
Pb-212	1	238.30	6.55E+001	17.24			6.55E+001	1.72E+001
Bi-211	2	351.63	4.93E+001	13.38			4.93E+001	1.34E+001
Co-60	3	1173.63	2.90E+002	18.27			2.90E+002	1.83E+001
Co-60	4	1332.90	2.32E+002	15.76			2.32E+002	1.58E+001
K-40	5	1461.17	4.35E+001	7.29			4.35E+001	7.29E+000

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet

Errors quoted at 1.000 sigma

```
*************************************************************************
**
*****              N U C L I D E   M D A   R E P O R T
*****
*************************************************************************
**
```

Detector Name: DET02
Sample Geometry: 1-L Marinelli
Sample Title: 1-L Solid Releas
Nuclide Library Used: C:\GENIE2K\CAMFILES\AnSolMDA.NLB

Nuclide Name	Energy (keV)	Yield (%)	Line MDA (uCi/gram)	Nuclide MDA (uCi/gram)	Activity (uCi/gram)
CS-134	563.23	8.38	1.07E-006	9.67E-008	1.02E-007
	569.32	15.43	4.68E-007	-	2.04E-007
	604.70	97.60	9.67E-008	-	1.40E-008
	795.84	85.40	1.32E-007	-	2.88E-008
	801.93	8.73	1.13E-006	-	1.99E-007
	1365.15	3.04	2.11E-006		1.76E-007
CS-137	661.65	85.12	1.62E-007	1.62E-007	1.21E-007

+ = Nuclide identified during the nuclide identification
* = Energy line found in the spectrum
> = MDA value not calculated
@ = Half-life too short to be able to perform the decay correction

```
*************************************************************************
*
*****   N U C L I D E   I D E N T I F I C A T I O N   R E P O R T
*****
*************************************************************************
*
```

Sample Title: 1-L Solid Releas
Nuclide Library Used: C:\GENIE2K\CAMFILES\AnSolMDA.NLB

..... IDENTIFIED NUCLIDES .....

Nuclide Name	Id Confidence	Energy (keV)	Yield (%)	Activity (uCi/gram)	Activity Uncertainty
K-40	0.980	1460.81*	10.67	2.31E-006	3.91E-007
CO-60	0.973	1173.22*	100.00	1.35E-006	8.86E-008
		1332.49*	100.00	1.21E-006	8.59E-008
BI-211	0.584	351.10*	12.20	6.25E-007	1.70E-007
		404.80	4.10		
PB-212	0.661	87.20	6.30		
		89.80	1.75		
		238.63*	44.60	1.60E-007	4.24E-008
		300.09	3.41		

* = Energy line found in the spectrum.
@ = Energy line not used for Weighted Mean Activity
Energy Tolerance : 1.000 keV
Nuclide confidence index threshold = 0.30
Errors quoted at 1.000 sigma

```
*************************************************************************
*
*****  I N T E R F E R E N C E   C O R R E C T E D   R E P O R T
*****
*************************************************************************
*
```

Nuclide Name	Nuclide Id Confidence	Wt mean Activity (uCi/gram)	Wt mean Activity Uncertainty
K-40	0.980	2.31E-006	3.91E-007
CO-60	0.973	1.28E-006	6.17E-008
BI-211	0.584	6.25E-007	1.70E-007
PB-212	0.661	1.60E-007	4.24E-008
Total Activity		4.38E-006	

? = nuclide is part of an undetermined solution
X = nuclide rejected by the interference analysis
@ = nuclide contains energy lines not used in Weighted Mean Activity

Errors quoted at 1.000 sigma

********** U N I D E N T I F I E D P E A K S **********

Peak Locate Performed on: 4/18/09 11:16:54 AM
Peak Locate From Channel: 100
Peak Locate To Channel: 4096

Peak No.	Energy (keV)	Peak Size in Counts per Second	Peak CPS % Uncertainty

All peaks were identified.

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet

Errors quoted at 1.000 sigma

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*************************************************************************
*
*****        G A M M A   S P E C T R U M   A N A L Y S I S
*****
*************************************************************************
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```

OYSTER CREEK NUCLEAR GENERATING STATION CHEMISTRY DEPARTMENT

Detector Name	: DET01
Report Generated On	: 4/18/09 12:46:34 PM
Spectral Data File Name \2000055.CNF	: C:\PCNT2K\CAMFILES\1LSOLMDA
	:
Sample Title	: 1-L Solid Releas
Sample Description	: Soil near CST; 5' depth
User ID	: kg
Sample Type	: 20
Sample Geometry	: 1-L Marinelli
Peak Locate Threshold	: 3.00
Peak Locate Range (in channels)	: 1 - 4096
Peak Area Range (in channels)	: 100 - 4096
Identification Energy Tolerance	: 1.000 keV
Sample Size	: 834.00 grams
Sample Taken On	: 4/18/09 12:00:38 AM
Acquisition Started	: 4/18/09 12:05:41 PM
Decay Time	: 7.25E+002 Minutes
Live Time	: 2750.0 Seconds
Real Time	: 2751.5 Seconds
Dead Time	: 0.05 %

Energy Calibration Used Done On	: 1/8/09
Efficiency Calibration Used Done On	: 1/8/09

Reviewed By
Lynda Flepper
5-21-09

Natural Product, Co-60, + Cs-137

```
*************************************************************************
**
*****        B A C K G R O U N D   S U B T R A C T   R E P O R T
*****
*************************************************************************
**
```

Detector Name: DET01
Sample Title: 1-L Solid Releas
Peak Analysis Performed on: 4/18/09 12:46:34 PM

	Peak No.	Energy (keV)	Original Area	Orig. Area Uncert.	Ambient Background	Backgr. Uncert.	Subtracted Area	Subtracted Uncert.
Bi-211	1	351.83	4.81E+001	12.96			4.81E+001	1.30E+001
Bi-214	2	609.13	3.43E+001	9.20			3.43E+001	9.20E+000
Cs-137	3	660.87	2.75E+001	9.75			2.75E+001	9.75E+000
Ac-228	4	910.94	2.80E+001	10.37			2.80E+001	1.04E+001
Co-60	5	1172.86	1.73E+002	15.06			1.73E+002	1.51E+001
Co-60	6	1332.10	1.76E+002	14.22			1.76E+002	1.42E+001
K-40	7	1461.02	4.05E+001	7.20			4.05E+001	7.20E+000

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet

Errors quoted at 1.000 sigma

```
*************************************************************************
**
*****              N U C L I D E   M D A   R E P O R T
*****
*************************************************************************
**
```

Detector Name: DET01
Sample Geometry: 1-L Marinelli
Sample Title: 1-L Solid Releas
Nuclide Library Used: C:\GENIE2K\CAMFILES\AnSolMDA.NLB

	Nuclide Name	Energy (keV)	Yield (%)	Line MDA (uCi/gram)	Nuclide MDA (uCi/gram)	Activity (uCi/gram)
	CS-134	563.23	8.38	1.08E-006	1.02E-007	2.60E-007
		569.32	15.43	4.99E-007		- 3.02E-007
		604.70	97.60	1.02E-007		- 2.73E-009
		795.84	85.40	1.59E-007		2.57E-008
		801.93	8.73	1.37E-006		3.21E-007
		1365.15	3.04	4.99E-007		0.00E+000
+	CS-137	661.65*	85.12	1.40E-007	1.40E-007	9.39E-008

+ = Nuclide identified during the nuclide identification
* = Energy line found in the spectrum
> = MDA value not calculated
@ = Half-life too short to be able to perform the decay correction

```
*************************************************************************
*
*****   N U C L I D E   I D E N T I F I C A T I O N   R E P O R T
*****
*************************************************************************
*
```

Sample Title: 1-L Solid Releas
Nuclide Library Used: C:\GENIE2K\CAMFILES\AnSolMDA.NLB

..... IDENTIFIED NUCLIDES .....

Nuclide Name	Id Confidence	Energy (keV)	Yield (%)	Activity (uCi/gram)	Activity Uncertainty
K-40	0.993	1460.81*	10.67	2.26E-006	4.05E-007
CO-60	0.978	1173.22*	100.00	8.46E-007	7.53E-008
		1332.49*	100.00	9.62E-007	8.03E-008
CS-137	0.907	661.65*	85.12	9.39E-008	3.33E-008
BI-211	0.558	351.10*	12.20	6.06E-007	1.64E-007
		404.80	4.10		
BI-214	0.659	609.31*	46.30	1.99E-007	5.35E-008
		934.06	3.21		
		1764.49	15.80		

* = Energy line found in the spectrum.
@ = Energy line not used for Weighted Mean Activity
Energy Tolerance : 1.000 keV
Nuclide confidence index threshold = 0.30
Errors quoted at 1.000 sigma

```
*************************************************************************
*
*****   I N T E R F E R E N C E   C O R R E C T E D   R E P O R T
*****
*************************************************************************
*
```

Nuclide Name	Nuclide Id Confidence	Wt mean Activity (uCi/gram)	Wt mean Activity Uncertainty
K-40	0.993	2.26E-006	4.05E-007
CO-60	0.978	9.00E-007	5.49E-008
CS-137	0.907	9.39E-008	3.33E-008
BI-211	0.558	6.06E-007	1.64E-007
BI-214	0.659	1.99E-007	5.35E-008
Total Activity		4.05E-006	

? = nuclide is part of an undetermined solution
X = nuclide rejected by the interference analysis
@ = nuclide contains energy lines not used in Weighted Mean Activity

Errors quoted at 1.000 sigma

********** U N I D E N T I F I E D P E A K S **********

Peak Locate Performed on: 4/18/09 12:46:34 PM
Peak Locate From Channel: 100
Peak Locate To Channel: 4096

Peak No.	Energy (keV)	Peak Size in Counts per Second	Peak CPS % Uncertainty
Ac-228 4	910.94	1.02E-002	36.98

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet

Errors quoted at 1.000 sigma

```
*************************************************************************
*
*****        G A M M A   S P E C T R U M   A N A L Y S I S
*****
*************************************************************************
*
```

OYSTER CREEK NUCLEAR GENERATING STATION CHEMISTRY DEPARTMENT

Detector Name	: DET01
Report Generated On	: 4/18/09 11:52:55 AM
Spectral Data File Name	: C:\PCNT2K\CAMFILES\1LSOLMDA \2000053.CNF
	:
Sample Title	: 1-L Solid Releas
Sample Description	: Soil sample near CST; 6'
User ID	: kg
Sample Type	: 20
Sample Geometry	: 1-L Marinelli
Peak Locate Threshold	: 3.00
Peak Locate Range (in channels)	: 1 - 4096
Peak Area Range (in channels)	: 100 - 4096
Identification Energy Tolerance	: 1.000 keV
Sample Size	: 1239.00 grams
Sample Taken On	: 4/18/09 4:50:18 AM
Acquisition Started	: 4/18/09 10:50:20 AM
Decay Time	: 3.60E+002 Minutes
Live Time	: 4044.0 Seconds
Real Time	: 4046.7 Seconds
Dead Time	: 0.07 %

Energy Calibration Used Done On	: 1/8/09
Efficiency Calibration Used Done On	: 1/8/09

Reviewed By
Lynda Filippi
5-21-09

Natural Products, Co-60, & Cs-137

```
*************************************************************************
**
*****        B A C K G R O U N D   S U B T R A C T   R E P O R T
*****
*************************************************************************
**
```

Detector Name: DET01
Sample Title: 1-L Solid Releas
Peak Analysis Performed on: 4/18/09 11:52:59 AM

	Peak No.	Energy (keV)	Original Area	Orig. Area Uncert.	Ambient Background	Backgr. Uncert.	Subtracted Area	Subtracted Uncert.
Pb-212	1	238.66	1.36E+002	38.86			1.36E+002	3.89E+001
Pb-214	2	295.14	3.63E+001	22.50			3.63E+001	2.25E+001
Pb-214/Bi-211	3	351.55	7.50E+001	24.64			7.50E+001	2.46E+001
Bi-214	4	608.85	6.98E+001	19.97			6.98E+001	2.00E+001
Cs-137	5	661.22	1.44E+002	21.21			1.44E+002	2.12E+001
Co-60	6	1172.84	1.19E+003	38.28			1.19E+003	3.83E+001
Co-60	7	1332.18	1.17E+003	34.90			1.17E+003	3.49E+001

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet

Errors quoted at 1.000 sigma

```
*************************************************************************
**
*****              N U C L I D E   M D A   R E P O R T
*****
*************************************************************************
**
```

Detector Name: DET01
Sample Geometry: 1-L Marinelli
Sample Title: 1-L Solid Releas
Nuclide Library Used: C:\GENIE2K\CAMFILES\AnSolMDA.NLB

	Nuclide Name	Energy (keV)	Yield (%)	Line MDA (uCi/gram)	Nuclide MDA (uCi/gram)	Activity (uCi/gram)
	CS-134	563.23	8.38	9.56E-007	8.48E-008	1.46E-007
		569.32	15.43	5.68E-007	-	1.16E-008
		604.70	97.60	8.48E-008	-	5.91E-010
		795.84	85.40	1.39E-007	-	1.01E-008
		801.93	8.73	1.40E-006	-	1.91E-007
		1365.15	3.04	1.34E-006	-	1.37E-007
+	CS-137	661.65*	85.12	1.31E-007	1.31E-007	2.26E-007

+ = Nuclide identified during the nuclide identification
* = Energy line found in the spectrum
> = MDA value not calculated
@ = Half-life too short to be able to perform the decay correction

```
*************************************************************************
*
*****   N U C L I D E   I D E N T I F I C A T I O N   R E P O R T
*****
*************************************************************************
*
```

Sample Title: 1-L Solid Releas
Nuclide Library Used: C:\GENIE2K\CAMFILES\AnSolMDA.NLB

..... IDENTIFIED NUCLIDES .....

Nuclide Name	Id Confidence	Energy (keV)	Yield (%)	Activity (uCi/gram)	Activity Uncertainty
CO-60	0.981	1173.22*	100.00	2.67E-006	9.86E-008
		1332.49*	100.00	2.93E-006	1.06E-007
CS-137	0.971	661.65*	85.12	2.26E-007	3.35E-008
BI-211	0.596	351.10*	12.20	4.32E-007	1.42E-007
		404.80	4.10		
PB-212	0.709	87.20	6.30		
		89.80	1.75		
		238.63*	44.60	1.47E-007	4.21E-008
		300.09	3.41		
BI-214	0.638	609.31*	46.30	1.85E-007	5.31E-008
		934.06	3.21		
		1764.49	15.80		

* = Energy line found in the spectrum.
@ = Energy line not used for Weighted Mean Activity
Energy Tolerance : 1.000 keV
Nuclide confidence index threshold = 0.30
Errors quoted at 1.000 sigma

```
*************************************************************************
*
*****   I N T E R F E R E N C E   C O R R E C T E D   R E P O R T
*****
*************************************************************************
*
```

	Nuclide Name	Nuclide Id Confidence	Wt mean Activity (uCi/gram)	Wt mean Activity Uncertainty
	CO-60	0.981	2.79E-006	7.22E-008
	CS-137	0.971	2.26E-007	3.35E-008
	BI-211	0.596	4.32E-007	1.42E-007
	PB-212	0.709	1.47E-007	4.21E-008
	BI-214	0.638	1.85E-007	5.31E-008
X	PB-214	0.680		
	Total Activity		3.78E-006	

? = nuclide is part of an undetermined solution
X = nuclide rejected by the interference analysis
@ = nuclide contains energy lines not used in Weighted Mean Activity

Errors quoted at 1.000 sigma

********** U N I D E N T I F I E D P E A K S **********

Peak Locate Performed on: 4/18/09 11:52:59 AM
Peak Locate From Channel: 100
Peak Locate To Channel: 4096

Peak No.	Energy (keV)	Peak Size in Counts per Second	Peak CPS % Uncertainty
2	295.14	8.96E-003	62.05

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet

Errors quoted at 1.000 sigma

```
*************************************************************************
*
*****        G A M M A   S P E C T R U M   A N A L Y S I S
*****
*************************************************************************
*
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OYSTER CREEK NUCLEAR GENERATING STATION CHEMISTRY DEPARTMENT

Detector Name	: DET02
Report Generated On	: 4/19/09 9:24:15 AM
Spectral Data File Name \2000061.CNF	: C:\PCNT2K\CAMFILES\1LSOLMDA
	:
Sample Title	: 1-L Solid Releas
Sample Description	: Soil near CST; Lower, South of Pipe
User ID	: kg
Sample Type	: 20
Sample Geometry	: 1-L Marinelli
Peak Locate Threshold	: 3.00
Peak Locate Range (in channels)	: 1 - 4096
Peak Area Range (in channels)	: 100 - 4096
Identification Energy Tolerance	: 1.000 keV
Sample Size	: 807.00 grams
Sample Taken On	: 4/18/09 5:00:48 AM
Acquisition Started	: 4/19/09 8:10:51 AM
Decay Time	: 1.63E+003 Minutes
Live Time	: 4701.0 Seconds
Real Time	: 4702.7 Seconds
Dead Time	: 0.04 %

Energy Calibration Used Done On	: 3/21/08
Efficiency Calibration Used Done On	: 3/21/08

Reviewed B-1
Lynda Filippi
5-21-09

Natural Products, Co-60, + Cs-137

```
*************************************************************************
**
*****        B A C K G R O U N D   S U B T R A C T   R E P O R T
*****
*************************************************************************
**
```

Detector Name: DET02
Sample Title: 1-L Solid Releas
Peak Analysis Performed on: 4/19/09 9:24:15 AM

	Peak No.	Energy (keV)	Original Area	Orig. Area Uncert.	Ambient Background	Backgr. Uncert.	Subtracted Area	Subtracted Uncert.
Pb-212	1	238.66	1.42E+002	37.12			1.42E+002	3.71E+001
Bi-211	2	351.83	9.00E+001	24.23			9.00E+001	2.42E+001
Bi-211	3	401.85	3.67E+001	21.94			3.67E+001	2.19E+001
Tl-208	4	583.17	1.01E+002	24.29			1.01E+002	2.43E+001
Bi-214	5	609.39	6.12E+001	16.83			6.12E+001	1.68E+001
Cs-137	6	661.66	1.32E+002	27.66			1.32E+002	2.77E+001
Co-60	7	1173.56	2.52E+003	53.07			2.52E+003	5.31E+001
Co-60	8	1332.91	2.26E+003	48.63			2.26E+003	4.86E+001

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet

Errors quoted at 1.000 sigma

```
*************************************************************************
**
*****              N U C L I D E   M D A   R E P O R T
*****
*************************************************************************
**
```

Detector Name: DET02
Sample Geometry: 1-L Marinelli
Sample Title: 1-L Solid Releas
Nuclide Library Used: C:\GENIE2K\CAMFILES\AnSolMDA.NLB

	Nuclide Name	Energy (keV)	Yield (%)	Line MDA (uCi/gram)	Nuclide MDA (uCi/gram)	Activity (uCi/gram)
	CS-134	563.23	8.38	9.87E-007	8.74E-008	1.26E-007
		569.32	15.43	4.65E-007	-	2.20E-007
		604.70	97.60	8.74E-008	-	6.42E-009
		795.84	85.40	1.42E-007		2.12E-008
		801.93	8.73	1.32E-006	-	2.42E-007
		1365.15	3.04	1.65E-006		4.73E-008
+	CS-137	661.65*	85.12	1.56E-007	1.56E-007	1.72E-007

+ = Nuclide identified during the nuclide identification
* = Energy line found in the spectrum
> = MDA value not calculated
@ = Half-life too short to be able to perform the decay correction

```
*************************************************************************
*
*****   N U C L I D E   I D E N T I F I C A T I O N   R E P O R T
*****
*************************************************************************
*
```

Sample Title: 1-L Solid Releas
Nuclide Library Used: C:\GENIE2K\CAMFILES\AnSolMDA.NLB

..... IDENTIFIED NUCLIDES .....

Nuclide Name	Id Confidence	Energy (keV)	Yield (%)	Activity (uCi/gram)	Activity Uncertainty
CO-60	0.976	1173.22*	100.00	4.68E-006	1.30E-007
		1332.49*	100.00	4.72E-006	1.39E-007
CS-137	1.000	661.65*	85.12	1.72E-007	3.62E-008
BI-211	0.556	351.10*	12.20	4.56E-007	1.23E-007
		404.80	4.10		
PB-212	0.674	87.20	6.30		
		89.80	1.75		
		238.63*	44.60	1.39E-007	3.65E-008
		300.09	3.41		
BI-214	0.660	609.31*	46.30	1.36E-007	3.75E-008
		934.06	3.21		
		1764.49	15.80		

* = Energy line found in the spectrum.
@ = Energy line not used for Weighted Mean Activity
Energy Tolerance : 1.000 keV
Nuclide confidence index threshold = 0.30
Errors quoted at 1.000 sigma

****
*
***** I N T E R F E R E N C E C O R R E C T E D R E P O R T *****
****
*

Nuclide Name	Nuclide Id Confidence	Wt mean Activity (uCi/gram)	Wt mean Activity Uncertainty
CO-60	0.976	4.70E-006	9.48E-008
CS-137	1.000	1.72E-007	3.62E-008
BI-211	0.556	4.56E-007	1.23E-007
PB-212	0.674	1.39E-007	3.65E-008
BI-214	0.660	1.36E-007	3.75E-008
Total Activity		5.60E-006	

? = nuclide is part of an undetermined solution
X = nuclide rejected by the interference analysis
@ = nuclide contains energy lines not used in Weighted Mean Activity

Errors quoted at 1.000 sigma

********** U N I D E N T I F I E D P E A K S **********

Peak Locate Performed on: 4/19/09 9:24:15 AM
Peak Locate From Channel: 100
Peak Locate To Channel: 4096

Peak No.	Energy (keV)	Peak Size in Counts per Second	Peak CPS % Uncertainty
3	401.85	7.80E-003	59.85
Tl-208 4	583.17	2.14E-002	24.15

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet

Errors quoted at 1.000 sigma

```
*****************************************************************
*
*****        G A M M A   S P E C T R U M   A N A L Y S I S
*****
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*
```

OYSTER CREEK NUCLEAR GENERATING STATION CHEMISTRY DEPARTMENT

Detector Name	: DET01
Report Generated On	: 4/21/09 12:04:23 PM
Spectral Data File Name	: C:\PCNT2K\CAMFILES\1LSOLMDA \2000063.CNF
	:
Sample Title	: 1-L Solid Releas
Sample Description	: Soil from New Hole; Depth 1'
User ID	: kg
Sample Type	: 20
Sample Geometry	: 1-L Marinelli
Peak Locate Threshold	: 3.00
Peak Locate Range (in channels)	: 1 - 4096
Peak Area Range (in channels)	: 100 - 4096
Identification Energy Tolerance	: 1.000 keV
Sample Size	: 872.00 grams
Sample Taken On	: 4/21/09 11:25:22 AM
Acquisition Started	: 4/21/09 11:49:24 AM
Decay Time	: 2.40E+001 Minutes
Live Time	: 1197.0 Seconds
Real Time	: 1197.5 Seconds
Dead Time	: 0.04 %

Energy Calibration Used Done On	: 1/8/09
Efficiency Calibration Used Done On	: 1/8/09

Reviewed By
Lynda Pleppi
5-21-09

Natural Products Only

```
*************************************************************************
**
*****        B A C K G R O U N D   S U B T R A C T   R E P O R T
*****
*************************************************************************
**
```

Detector Name: DET01
Sample Title: 1-L Solid Releas
Peak Analysis Performed on: 4/21/09 12:04:23 PM

Peak No.	Energy (keV)	Original Area	Orig. Area Uncert.	Ambient Background	Backgr. Uncert.	Subtracted Area	Subtracted Uncert.
Pb-212 1	238.54	2.30E+001	10.40			2.30E+001	1.04E+001

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet

Errors quoted at 1.000 sigma

```
*************************************************************************
**
*****              N U C L I D E   M D A   R E P O R T
*****
*************************************************************************
**
```

Detector Name: DET01
Sample Geometry: 1-L Marinelli
Sample Title: 1-L Solid Releas
Nuclide Library Used: C:\GENIE2K\CAMFILES\AnSolMDA.NLB

Nuclide Name	Energy (keV)	Yield (%)	Line MDA (uCi/gram)	Nuclide MDA (uCi/gram)	Activity (uCi/gram)
CS-134	563.23	8.38	1.03E-006	7.20E-008	- 3.64E-007
	569.32	15.43	6.73E-007		- 8.35E-008
	604.70	97.60	7.20E-008		- 1.53E-007
	795.84	85.40	1.07E-007		- 6.66E-009
	801.93	8.73	1.23E-006		2.63E-007
	1365.15	3.04	3.76E-006		- 1.01E-007
CS-137	661.65	85.12	1.41E-007	1.41E-007	5.00E-009

+ = Nuclide identified during the nuclide identification
* = Energy line found in the spectrum
> = MDA value not calculated
@ = Half-life too short to be able to perform the decay correction

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*************************************************************************
*
*****   N U C L I D E   I D E N T I F I C A T I O N   R E P O R T
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```

Sample Title: 1-L Solid Releas
Nuclide Library Used: C:\GENIE2K\CAMFILES\AnSolMDA.NLB

..... IDENTIFIED NUCLIDES .....

Nuclide Name	Id Confidence	Energy (keV)	Yield (%)	Activity (uCi/gram)	Activity Uncertainty
PB-212	0.709	87.20	6.30		
		89.80	1.75		
		238.63*	44.60	1.19E-007	5.40E-008
		300.09	3.41		

* = Energy line found in the spectrum.
@ = Energy line not used for Weighted Mean Activity
Energy Tolerance : 1.000 keV
Nuclide confidence index threshold = 0.30
Errors quoted at 1.000 sigma

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*************************************************************************
*
*****   I N T E R F E R E N C E   C O R R E C T E D   R E P O R T
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```

Nuclide Name	Nuclide Id Confidence	Wt mean Activity (uCi/gram)	Wt mean Activity Uncertainty
PB-212	0.709	1.19E-007	5.40E-008
Total Activity		1.19E-007	

? = nuclide is part of an undetermined solution
X = nuclide rejected by the interference analysis
@ = nuclide contains energy lines not used in Weighted Mean Activity

Errors quoted at 1.000 sigma

********** U N I D E N T I F I E D P E A K S **********

Peak Locate Performed on: 4/21/09 12:04:23 PM
Peak Locate From Channel: 100
Peak Locate To Channel: 4096

Peak No.	Energy (keV)	Peak Size in Counts per Second	Peak CPS % Uncertainty

All peaks were identified.

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet

Errors quoted at 1.000 sigma

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*****************************************************************
*
*****        G A M M A   S P E C T R U M   A N A L Y S I S
*****
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OYSTER CREEK NUCLEAR GENERATING STATION CHEMISTRY DEPARTMENT

Detector Name	: DET02
Report Generated On	: 4/25/09 1:34:31 AM
Spectral Data File Name	: C:\PCNT2K\CAMFILES\1LSOLMDA \2000074.CNF
	:
Sample Title	: 1-L Solid Releas
Sample Description	: N side of pump house soil
User ID	: nc226
Sample Type	: 20
Sample Geometry	: 1-L Marinelli
Peak Locate Threshold	: 3.00
Peak Locate Range (in channels)	: 1 - 4096
Peak Area Range (in channels)	: 100 - 4096
Identification Energy Tolerance	: 1.000 keV
Sample Size	: 1742.00 grams
Sample Taken On	: 4/24/09 7:00:00 PM
Acquisition Started	: 4/25/09 1:21:23 AM
Decay Time	: 3.81E+002 Minutes
Live Time	: 1087.0 Seconds
Real Time	: 1087.2 Seconds
Dead Time	: 0.02 %

Energy Calibration Used Done On	: 3/21/08
Efficiency Calibration Used Done On	: 3/21/08

Reviewed By
Lynda Flippi
5-31-09

Natural Products + Cs-137

```
*****************************************************************
**
*****        B A C K G R O U N D   S U B T R A C T   R E P O R T
*****
*****************************************************************
**
```

Detector Name: DET02
Sample Title: 1-L Solid Releas
Peak Analysis Performed on: 4/25/09 1:34:31 AM

	Peak No.	Energy (keV)	Original Area	Orig. Area Uncert.	Ambient Background	Backgr. Uncert.	Subtracted Area	Subtracted Uncert.	
Pb-212	1	238.56	8.46E+001	17.76			8.46E+001	1.78E+001	
Bi-211	2	351.90	4.24E+001	13.46			4.24E+001	1.35E+001	
	3	583.36	2.34E+001	6.91			2.34E+001	6.91E+000	
Cs-137	4	661.81	8.72E+001	9.60			8.72E+001	9.60E+000	
Co-60	5	1332.90	3.04E+001	5.88	Tl-210 Pair Peak		3.04E+001	5.88E+000	- No, only 1 peak ID'd
K-40	6	1461.80	2.37E+001	5.19			2.37E+001	5.19E+000	

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet

Errors quoted at 1.000 sigma

```
*****************************************************************
**
*****              N U C L I D E   M D A   R E P O R T
*****
*****************************************************************
**
```

Detector Name: DET02
Sample Geometry: 1-L Marinelli
Sample Title: 1-L Solid Releas
Nuclide Library Used: C:\GENIE2K\CAMFILES\AnSolMDA.NLB

	Nuclide Name	Energy (keV)	Yield (%)	Line MDA (uCi/gram)	Nuclide MDA (uCi/gram)	Activity (uCi/gram)
	CS-134	563.23	8.38	5.37E-007	2.95E-008	1.27E-007
		569.32	15.43	3.08E-007		1.30E-007
		604.70	97.60	2.95E-008		5.12E-009
		795.84	85.40	6.55E-008		1.33E-008
		801.93	8.73	4.27E-007		2.02E-008
		1365.15	3.04	1.69E-006		2.81E-007
+	CS-137	661.65*	85.12	3.42E-008	3.42E-008	2.28E-007

+ = Nuclide identified during the nuclide identification
* = Energy line found in the spectrum
> = MDA value not calculated
@ = Half-life too short to be able to perform the decay correction

```
*************************************************************************
*
*****   N U C L I D E   I D E N T I F I C A T I O N   R E P O R T
*****
*************************************************************************
*
```

Sample Title: 1-L Solid Releas
Nuclide Library Used: C:\GENIE2K\CAMFILES\AnSolMDA.NLB

..... IDENTIFIED NUCLIDES .....

Nuclide Name	Id Confidence	Energy (keV)	Yield (%)	Activity (uCi/gram)	Activity Uncertainty
K-40	0.855	1460.81*	10.67	1.01E-006	2.22E-007
CS-137	0.996	661.65*	85.12	2.28E-007	2.55E-008
BI-211	0.544	351.10*	12.20	4.30E-007	1.37E-007
		404.80	4.10		
PB-212	0.674	87.20	6.30		
		89.80	1.75		
		238.63*	44.60	1.66E-007	3.50E-008
		300.09	3.41		

* = Energy line found in the spectrum.
@ = Energy line not used for Weighted Mean Activity
Energy Tolerance : 1.000 keV
Nuclide confidence index threshold = 0.30
Errors quoted at 1.000 sigma

```
*************************************************************************
*
*****   I N T E R F E R E N C E   C O R R E C T E D   R E P O R T
*****
*************************************************************************
*
```

Nuclide Name	Nuclide Id Confidence	Wt mean Activity (uCi/gram)	Wt mean Activity Uncertainty
K-40	0.855	1.01E-006	2.22E-007
CS-137	0.996	2.28E-007	2.55E-008
BI-211	0.544	4.30E-007	1.37E-007
PB-212	0.674	1.66E-007	3.50E-008
Total Activity		1.83E-006	

? = nuclide is part of an undetermined solution
X = nuclide rejected by the interference analysis
@ = nuclide contains energy lines not used in Weighted Mean Activity

Errors quoted at 1.000 sigma

********** U N I D E N T I F I E D P E A K S **********

Peak Locate Performed on: 4/25/09 1:34:31 AM
Peak Locate From Channel: 100
Peak Locate To Channel: 4096

	Peak No.	Energy (keV)	Peak Size in Counts per Second	Peak CPS % Uncertainty	
Tl-208	3	583.36	2.15E-002	29.58	
Co-60	5	1332.90	2.80E-002	19.32	- No, only 1 peak Id'd

Tl-210 Pair Peak

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet

Errors quoted at 1.000 sigma

```
*****************************************************************
*
*****        G A M M A   S P E C T R U M   A N A L Y S I S
*****
*****************************************************************
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OYSTER CREEK NUCLEAR GENERATING STATION CHEMISTRY DEPARTMENT

Detector Name	: DET02
Report Generated On	: 4/25/09 2:18:15 AM
Spectral Data File Name	: C:\PCNT2K\CAMFILES\1LSOLMDA \2000075.CNF
	:
Sample Title	: 1-L Solid Releas
Sample Description	: soil n of cst 1'
User ID	: nc226
Sample Type	: 20
Sample Geometry	: 1-L Marinelli
Peak Locate Threshold	: 3.00
Peak Locate Range (in channels)	: 1 - 4096
Peak Area Range (in channels)	: 100 - 4096
Identification Energy Tolerance	: 1.000 keV
Sample Size	: 1613.00 grams
Sample Taken On	: 4/25/09 2:00:05 AM
Acquisition Started	: 4/25/09 2:05:07 AM
Decay Time	: 5.04E+000 Minutes
Live Time	: 1086.0 Seconds
Real Time	: 1086.2 Seconds
Dead Time	: 0.02 %

Energy Calibration Used Done On	: 3/21/08
Efficiency Calibration Used Done On	: 3/21/08

Reviewed By
Lynda Filippi
5-21-09

Natural Products + Cs-137

```
*****************************************************************
**
*****        B A C K G R O U N D   S U B T R A C T   R E P O R T
*****
*****************************************************************
**
```

Detector Name: DET02
Sample Title: 1-L Solid Releas
Peak Analysis Performed on: 4/25/09 2:18:15 AM

	Peak No.	Energy (keV)	Original Area	Orig. Area Uncert.	Ambient Background	Backgr. Uncert.	Subtracted Area	Subtracted Uncert.	
Pb-212	1	238.51	1.17E+002	18.74			1.17E+002	1.87E+001	
Pb-214	2	295.18	4.47E+001	12.14			4.47E+001	1.21E+001	
Pb-214/Bi-211	3	352.01	8.48E+001	12.04			8.48E+001	1.20E+001	
Tl-208	4	583.11	4.76E+001	9.61			4.76E+001	9.61E+000	
Bi-214	5	609.11	3.90E+001	8.03			3.90E+001	8.03E+000	
Cs-137	6	661.83	5.89E+001	9.55			5.89E+001	9.55E+000	
Co-60	7	1332.97	1.85E+001	4.91	Tl-210 Pair Peak		1.85E+001	4.91E+000	- No, only 1 peak ID'd
K-40	8	1461.22	5.93E+001	8.57			5.93E+001	8.57E+000	

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet

Errors quoted at 1.000 sigma

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*************************************************************************
**
*****              N U C L I D E   M D A   R E P O R T
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```

Detector Name: DET02
Sample Geometry: 1-L Marinelli
Sample Title: 1-L Solid Releas
Nuclide Library Used: C:\GENIE2K\CAMFILES\AnSolMDA.NLB

	Nuclide Name	Energy (keV)	Yield (%)	Line MDA (uCi/gram)	Nuclide MDA (uCi/gram)	Activity (uCi/gram)
	CS-134	563.23	8.38	6.06E-007	5.08E-008	- 1.95E-008
		569.32	15.43	2.89E-007		9.60E-009
		604.70	97.60	5.08E-008		- 6.29E-009
		795.84	85.40	9.08E-008		1.34E-008
		801.93	8.73	4.61E-007		- 2.18E-008
		1365.15	3.04	4.11E-007		0.00E+000
+	CS-137	661.65*	85.12	8.21E-008	8.21E-008	1.66E-007

+ = Nuclide identified during the nuclide identification
* = Energy line found in the spectrum
> = MDA value not calculated
@ = Half-life too short to be able to perform the decay correction

****
***** N U C L I D E I D E N T I F I C A T I O N R E P O R T
*****
****

Sample Title: 1-L Solid Releas
Nuclide Library Used: C:\GENIE2K\CAMFILES\AnSolMDA.NLB

..... IDENTIFIED NUCLIDES .....

Nuclide Name	Id Confidence	Energy (keV)	Yield (%)	Activity (uCi/gram)	Activity Uncertainty
K-40	0.973	1460.81*	10.67	2.72E-006	3.99E-007
CS-137	0.995	661.65*	85.12	1.66E-007	2.72E-008
PB-212	0.672	87.20	6.30		
		89.80	1.75		
		238.63*	44.60	2.48E-007	4.01E-008
		300.09	3.41		
BI-214	0.656	609.31*	46.30	1.87E-007	3.88E-008
		934.06	3.21		
		1764.49	15.80		
PB-214	0.676	87.20	3.70		
		89.80	1.03		
		241.98	7.49		
		295.21*	19.20	2.65E-007	7.22E-008
		351.92*	37.20	3.05E-007	4.37E-008

* = Energy line found in the spectrum.
@ = Energy line not used for Weighted Mean Activity
Energy Tolerance : 1.000 keV
Nuclide confidence index threshold = 0.30
Errors quoted at 1.000 sigma

****
*
***** I N T E R F E R E N C E C O R R E C T E D R E P O R T *****
****
*

	Nuclide Name	Nuclide Id Confidence	Wt mean Activity (uCi/gram)	Wt mean Activity Uncertainty
	K-40	0.973	2.72E-006	3.99E-007
	CS-137	0.995	1.66E-007	2.72E-008
X	BI-211	0.522		
	PB-212	0.672	2.48E-007	4.01E-008
	BI-214	0.656	1.87E-007	3.88E-008
	PB-214	0.676	2.94E-007	3.74E-008
	Total Activity		3.62E-006	

? = nuclide is part of an undetermined solution
X = nuclide rejected by the interference analysis
@ = nuclide contains energy lines not used in Weighted Mean Activity

Errors quoted at 1.000 sigma

********** U N I D E N T I F I E D P E A K S **********

Peak Locate Performed on: 4/25/09 2:18:15 AM
Peak Locate From Channel: 100
Peak Locate To Channel: 4096

	Peak No.	Energy (keV)	Peak Size in Counts per Second	Peak CPS % Uncertainty
Tl-208	4	583.11	4.39E-002	20.16
Co60 -	7	1332.97 T, L210 Pair Peak	1.70E-002	26.57 - No, only 1 peak ID'd

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet

Errors quoted at 1.000 sigma

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*****************************************************************
*
*****        G A M M A   S P E C T R U M   A N A L Y S I S
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OYSTER CREEK NUCLEAR GENERATING STATION CHEMISTRY DEPARTMENT

Detector Name	: DET01
Report Generated On	: 4/25/09 2:30:59 AM
Spectral Data File Name	: C:\PCNT2K\CAMFILES\1LSOLMDA\2000076.CNF
	:
Sample Title	: 1-L Solid Releas
Sample Description	: soil n of cst 2'
User ID	: nc226
Sample Type	: 20
Sample Geometry	: 1-L Marinelli
Peak Locate Threshold	: 3.00
Peak Locate Range (in channels)	: 1 - 4096
Peak Area Range (in channels)	: 100 - 4096
Identification Energy Tolerance	: 1.000 keV
Sample Size	: 1617.00 grams
Sample Taken On	: 4/25/09 2:04:47 AM
Acquisition Started	: 4/25/09 2:09:49 AM
Decay Time	: 5.04E+000 Minutes
Live Time	: 1568.0 Seconds
Real Time	: 1568.8 Seconds
Dead Time	: 0.05 %

Energy Calibration Used Done On	: 1/8/09
Efficiency Calibration Used Done On	: 1/8/09

Reviewed By
Lynda Tlappi
5-21-09

Natural Products, Co-60, & Cs-137

```
*************************************************************************
**
*****        B A C K G R O U N D   S U B T R A C T   R E P O R T
*****
*************************************************************************
**
```

Detector Name: DET01
Sample Title: 1-L Solid Releas
Peak Analysis Performed on: 4/25/09 2:30:59 AM

	Peak No.	Energy (keV)	Original Area	Orig. Area Uncert.	Ambient Background	Backgr. Uncert.	Subtracted Area	Subtracted Uncert.
Pb-212	M 1	238.51	1.36E+002	12.42			1.36E+002	1.24E+001
Pb-214	m 2	241.54	4.61E+001	8.26			4.61E+001	8.26E+000
Pb-214	3	351.69	5.56E+001	12.83			5.56E+001	1.28E+001
Tl-208	4	582.82	4.45E+001	8.64			4.45E+001	8.64E+000
Bi-214	5	609.01	4.50E+001	9.08			4.50E+001	9.08E+000
Cs-137	6	661.32	3.66E+001	9.66			3.66E+001	9.66E+000
Co-60	7	1172.81	5.25E+001	8.80			5.25E+001	8.80E+000
Co-60	8	1332.64	5.80E+001	8.37			5.80E+001	8.37E+000
K-40	9	1460.69	5.98E+001	8.26			5.98E+001	8.26E+000

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet

Errors quoted at 1.000 sigma

```
*************************************************************************
**
*****              N U C L I D E   M D A   R E P O R T
*****
*************************************************************************
**
```

Detector Name: DET01
Sample Geometry: 1-L Marinelli
Sample Title: 1-L Solid Releas
Nuclide Library Used: C:\GENIE2K\CAMFILES\AnSolMDA.NLB

	Nuclide Name	Energy (keV)	Yield (%)	Line MDA (uCi/gram)	Nuclide MDA (uCi/gram)	Activity (uCi/gram)
	CS-134	563.23	8.38	9.37E-007	6.06E-008	7.83E-008
		569.32	15.43	4.39E-007		4.04E-009
		604.70	97.60	6.06E-008		- 5.35E-009
		795.84	85.40	1.03E-007		2.16E-008
		801.93	8.73	8.09E-007		- 4.91E-008
		1365.15	3.04	2.35E-006		- 1.19E-006
+	CS-137	661.65*	85.12	1.16E-007	1.16E-007	1.13E-007

+ = Nuclide identified during the nuclide identification
* = Energy line found in the spectrum
> = MDA value not calculated
@ = Half-life too short to be able to perform the decay correction

```
*************************************************************************
*
*****   N U C L I D E   I D E N T I F I C A T I O N   R E P O R T
*****
*************************************************************************
*
```

Sample Title: 1-L Solid Releas
Nuclide Library Used: C:\GENIE2K\CAMFILES\AnSolMDA.NLB

..... IDENTIFIED NUCLIDES .....

Nuclide Name	Id Confidence	Energy (keV)	Yield (%)	Activity (uCi/gram)	Activity Uncertainty
K-40	0.998	1460.81*	10.67	3.01E-006	4.22E-007
CO-60	0.985	1173.22*	100.00	2.32E-007	3.92E-008
		1332.49*	100.00	2.87E-007	4.19E-008
CS-137	0.982	661.65*	85.12	1.13E-007	2.99E-008
PB-212	0.708	87.20	6.30		
		89.80	1.75		
		238.63*	44.60	2.90E-007	2.72E-008
		300.09	3.41		
BI-214	0.652	609.31*	46.30	2.36E-007	4.79E-008
		934.06	3.21		
		1764.49	15.80		
PB-214	0.418	87.20	3.70		
		89.80	1.03		
		241.98*	7.49	5.93E-007	1.07E-007
		295.21	19.20		
		351.92*	37.20	2.08E-007	4.81E-008

* = Energy line found in the spectrum.
@ = Energy line not used for Weighted Mean Activity
Energy Tolerance : 1.000 keV
Nuclide confidence index threshold = 0.30
Errors quoted at 1.000 sigma

```
*********************************************************************
*
*****   I N T E R F E R E N C E   C O R R E C T E D   R E P O R T
*****
*********************************************************************
*
```

	Nuclide Name	Nuclide Id Confidence	Wt mean Activity (uCi/gram)	Wt mean Activity Uncertainty
	K-40	0.998	3.01E-006	4.22E-007
	CO-60	0.985	2.58E-007	2.86E-008
	CS-137	0.982	1.13E-007	2.99E-008
X	BI-211	0.578		
	PB-212	0.708	2.90E-007	2.72E-008
	BI-214	0.652	2.36E-007	4.79E-008
	PB-214	0.418	2.72E-007	4.38E-008
	Total Activity		4.18E-006	

? = nuclide is part of an undetermined solution
X = nuclide rejected by the interference analysis
@ = nuclide contains energy lines not used in Weighted Mean Activity

Errors quoted at 1.000 sigma

********** U N I D E N T I F I E D P E A K S **********

Peak Locate Performed on: 4/25/09 2:30:59 AM
Peak Locate From Channel: 100
Peak Locate To Channel: 4096

	Peak No.	Energy (keV)	Peak Size in Counts per Second	Peak CPS % Uncertainty
Tl-208	4	582.82	2.84E-002	19.41

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet

Errors quoted at 1.000 sigma

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*****************************************************************
*
*****        G A M M A   S P E C T R U M   A N A L Y S I S
*****
*****************************************************************
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OYSTER CREEK NUCLEAR GENERATING STATION CHEMISTRY DEPARTMENT

Detector Name	: DET01
Report Generated On	: 4/25/09 4:07:58 AM
Spectral Data File Name \2000077.CNF	: C:\PCNT2K\CAMFILES\1LSOLMDA
	:
Sample Title	: 1-L Solid Releas
Sample Description	: soil n of cst 3'
User ID	: nc226
Sample Type	: 20
Sample Geometry	: 1-L Marinelli
Peak Locate Threshold	: 3.00
Peak Locate Range (in channels)	: 1 - 4096
Peak Area Range (in channels)	: 100 - 4096
Identification Energy Tolerance	: 1.000 keV
Sample Size	: 1547.00 grams
Sample Taken On	: 4/25/09 3:45:47 AM
Acquisition Started	: 4/25/09 3:50:49 AM
Decay Time	: 5.04E+000 Minutes
Live Time	: 1327.0 Seconds
Real Time	: 1327.7 Seconds
Dead Time	: 0.05 %

Energy Calibration Used Done On	: 1/8/09
Efficiency Calibration Used Done On	: 1/8/09

Reviewed By
Lynda Filippi
5-21-09

Natural Products, Co-60, & Cs-137

```
*************************************************************************
**
*****        B A C K G R O U N D   S U B T R A C T   R E P O R T
*****
*************************************************************************
**
```

Detector Name: DET01
Sample Title: 1-L Solid Releas
Peak Analysis Performed on: 4/25/09 4:07:58 AM

	Peak No.	Energy (keV)	Original Area	Orig. Area Uncert.	Ambient Background	Backgr. Uncert.	Subtracted Area	Subtracted Uncert.
Pb-212	1	238.65	7.99E+001	15.97			7.99E+001	1.60E+001
Bi-211	2	351.65	3.61E+001	10.11			3.61E+001	1.01E+001
Tl-208	3	582.61	3.19E+001	7.15			3.19E+001	7.15E+000
Bi-214	4	609.11	2.77E+001	7.67			2.77E+001	7.67E+000
Cs-137	5	661.01	1.83E+001	7.07			1.83E+001	7.07E+000
Co-60	6	1172.79	6.73E+001	8.92			6.73E+001	8.92E+000
Co-60	7	1332.21	5.25E+001	7.89			5.25E+001	7.89E+000

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet

Errors quoted at 1.000 sigma

```
*************************************************************************
**
*****              N U C L I D E   M D A   R E P O R T
*****
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Detector Name: DET01
Sample Geometry: 1-L Marinelli
Sample Title: 1-L Solid Releas
Nuclide Library Used: C:\GENIE2K\CAMFILES\AnSolMDA.NLB

	Nuclide Name	Energy (keV)	Yield (%)	Line MDA (uCi/gram)	Nuclide MDA (uCi/gram)	Activity (uCi/gram)
	CS-134	563.23	8.38	7.44E-007	8.85E-008	- 8.59E-009
		569.32	15.43	3.42E-007		- 2.42E-008
		604.70	97.60	8.85E-008		1.70E-008
		795.84	85.40	9.63E-008		- 1.19E-008
		801.93	8.73	9.99E-007		- 3.21E-008
		1365.15	3.04	1.91E-006		2.06E-007
+	CS-137	661.65*	85.12	1.10E-007	1.10E-007	6.98E-008

+ = Nuclide identified during the nuclide identification
* = Energy line found in the spectrum
> = MDA value not calculated
@ = Half-life too short to be able to perform the decay correction

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*****   N U C L I D E   I D E N T I F I C A T I O N   R E P O R T
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Sample Title: 1-L Solid Releas
Nuclide Library Used: C:\GENIE2K\CAMFILES\AnSolMDA.NLB

..... IDENTIFIED NUCLIDES .....

Nuclide Name	Id Confidence	Energy (keV)	Yield (%)	Activity (uCi/gram)	Activity Uncertainty
CO-60	0.979	1173.22*	100.00	3.68E-007	4.92E-008
		1332.49*	100.00	3.21E-007	4.87E-008
CS-137	0.937	661.65*	85.12	6.98E-008	2.70E-008
BI-211	0.583	351.10*	12.20	5.07E-007	1.43E-007
		404.80	4.10		
PB-212	0.709	87.20	6.30		
		89.80	1.75		
		238.63*	44.60	2.11E-007	4.24E-008
		300.09	3.41		
BI-214	0.657	609.31*	46.30	1.79E-007	4.98E-008
		934.06	3.21		
		1764.49	15.80		

* = Energy line found in the spectrum.
@ = Energy line not used for Weighted Mean Activity
Energy Tolerance : 1.000 keV
Nuclide confidence index threshold = 0.30
Errors quoted at 1.000 sigma

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***** I N T E R F E R E N C E C O R R E C T E D R E P O R T *****
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Nuclide Name	Nuclide Id Confidence	Wt mean Activity (uCi/gram)	Wt mean Activity Uncertainty
CO-60	0.979	3.44E-007	3.46E-008
CS-137	0.937	6.98E-008	2.70E-008
BI-211	0.583	5.07E-007	1.43E-007
PB-212	0.709	2.11E-007	4.24E-008
BI-214	0.657	1.79E-007	4.98E-008
Total Activity		1.31E-006	

? = nuclide is part of an undetermined solution
X = nuclide rejected by the interference analysis
@ = nuclide contains energy lines not used in Weighted Mean Activity

Errors quoted at 1.000 sigma

********** U N I D E N T I F I E D P E A K S **********

Peak Locate Performed on: 4/25/09 4:07:58 AM
Peak Locate From Channel: 100
Peak Locate To Channel: 4096

Peak No.	Energy (keV)	Peak Size in Counts per Second	Peak CPS % Uncertainty
Tl-208 3	582.61	2.40E-002	22.44

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet

Errors quoted at 1.000 sigma

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*****        G A M M A   S P E C T R U M   A N A L Y S I S
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OYSTER CREEK NUCLEAR GENERATING STATION CHEMISTRY DEPARTMENT

Detector Name	: DET02
Report Generated On	: 4/25/09 4:06:07 AM
Spectral Data File Name	: C:\PCNT2K\CAMFILES\1LSOLMDA \2000078.CNF
	:
Sample Title	: 1-L Solid Releas
Sample Description	: soil n of cst 4'
User ID	: nc226
Sample Type	: 20
Sample Geometry	: 1-L Marinelli
Peak Locate Threshold	: 3.00
Peak Locate Range (in channels)	: 1 - 4096
Peak Area Range (in channels)	: 100 - 4096
Identification Energy Tolerance	: 1.000 keV
Sample Size	: 1420.00 grams
Sample Taken On	: 4/25/09 3:49:34 AM
Acquisition Started	: 4/25/09 3:54:36 AM
Decay Time	: 5.04E+000 Minutes
Live Time	: 989.0 Seconds
Real Time	: 989.2 Seconds
Dead Time	: 0.02 %

Energy Calibration Used Done On	: 3/21/08
Efficiency Calibration Used Done On	: 3/21/08

Reviewed By
Lynda Klepei
5-21-09

Natural Products Only

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*************************************************************************
**
*****        B A C K G R O U N D   S U B T R A C T   R E P O R T
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Detector Name: DET02
Sample Title: 1-L Solid Releas
Peak Analysis Performed on: 4/25/09 4:06:07 AM

	Peak No.	Energy (keV)	Original Area	Orig. Area Uncert.	Ambient Background	Backgr. Uncert.	Subtracted Area	Subtracted Uncert.	
Pb-212	1	238.66	6.62E+001	16.69			6.62E+001	1.67E+001	
Bi-211	2	351.81	5.20E+001	9.33			5.20E+001	9.33E+000	
Bi-214	3	609.44	2.90E+001	8.07			2.90E+001	8.07E+000	
Co-60	4	1173.52	3.59E+001	6.55			3.59E+001	6.55E+000	- No, 1 peak only ID'd
K-40	5	1461.61	4.20E+001	7.04			4.20E+001	7.04E+000	

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet

Errors quoted at 1.000 sigma

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*********************************************************************
**
*****              N U C L I D E   M D A   R E P O R T
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Detector Name: DET02
Sample Geometry: 1-L Marinelli
Sample Title: 1-L Solid Releas
Nuclide Library Used: C:\GENIE2K\CAMFILES\AnSolMDA.NLB

Nuclide Name	Energy (keV)	Yield (%)	Line MDA (uCi/gram)	Nuclide MDA (uCi/gram)	Activity (uCi/gram)
CS-134	563.23	8.38	7.24E-007	6.02E-008	-
	569.32	15.43	2.94E-007		5.07E-008
	604.70	97.60	6.02E-008		-
	795.84	85.40	1.02E-007		3.04E-008
	801.93	8.73	7.68E-007		1.13E-008
	1365.15	3.04	5.13E-007		0.00E+000
CS-137	661.65	85.12	1.56E-007	1.56E-007	1.20E-007

+ = Nuclide identified during the nuclide identification
* = Energy line found in the spectrum
> = MDA value not calculated
@ = Half-life too short to be able to perform the decay correction

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*****   N U C L I D E   I D E N T I F I C A T I O N   R E P O R T
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Sample Title: 1-L Solid Releas
Nuclide Library Used: C:\GENIE2K\CAMFILES\AnSolMDA.NLB

..... IDENTIFIED NUCLIDES .....

Nuclide Name	Id Confidence	Energy (keV)	Yield (%)	Activity (uCi/gram)	Activity Uncertainty
K-40	0.902	1460.81*	10.67	2.41E-006	4.07E-007
BI-211	0.559	351.10*	12.20	7.11E-007	1.28E-007
		404.80	4.10		
PB-212	0.674	87.20	6.30		
		89.80	1.75		
		238.63*	44.60	1.75E-007	4.43E-008
		300.09	3.41		
BI-214	0.659	609.31*	46.30	1.74E-007	4.85E-008
		934.06	3.21		
		1764.49	15.80		

* = Energy line found in the spectrum.
@ = Energy line not used for Weighted Mean Activity
Energy Tolerance : 1.000 keV
Nuclide confidence index threshold = 0.30
Errors quoted at 1.000 sigma

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*
***** I N T E R F E R E N C E C O R R E C T E D R E P O R T *****
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*

Nuclide Name	Nuclide Id Confidence	Wt mean Activity (uCi/gram)	Wt mean Activity Uncertainty
K-40	0.902	2.41E-006	4.07E-007
BI-211	0.559	7.11E-007	1.28E-007
PB-212	0.674	1.75E-007	4.43E-008
BI-214	0.659	1.74E-007	4.85E-008
Total Activity		3.47E-006	

? = nuclide is part of an undetermined solution
X = nuclide rejected by the interference analysis
@ = nuclide contains energy lines not used in Weighted Mean Activity

Errors quoted at 1.000 sigma

********** U N I D E N T I F I E D P E A K S **********

Peak Locate Performed on: 4/25/09 4:06:07 AM
Peak Locate From Channel: 100
Peak Locate To Channel: 4096

Peak No.	Energy (keV)	Peak Size in Counts per Second	Peak CPS % Uncertainty
4	1173.52	3.63E-002	18.24

Co-60 – No, only 1 peak I.D'd

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet

Errors quoted at 1.000 sigma

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*****        G A M M A   S P E C T R U M   A N A L Y S I S
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OYSTER CREEK NUCLEAR GENERATING STATION CHEMISTRY DEPARTMENT

Detector Name	: DET02
Report Generated On	: 4/25/09 4:36:37 AM
Spectral Data File Name	: C:\PCNT2K\CAMFILES\1LSOLMDA \2000079.CNF
	:
Sample Title	: 1-L Solid Releas
Sample Description	: soil n of cst 5'
User ID	: nc225
Sample Type	: 20
Sample Geometry	: 1-L Marinelli
Peak Locate Threshold	: 3.00
Peak Locate Range (in channels)	: 1 - 4096
Peak Area Range (in channels)	: 100 - 4096
Identification Energy Tolerance	: 1.000 keV
Sample Size	: 1550.00 grams
Sample Taken On	: 4/25/09 4:24:24 AM
Acquisition Started	: 4/25/09 4:29:26 AM
Decay Time	: 5.04E+000 Minutes
Live Time	: 730.0 Seconds
Real Time	: 730.1 Seconds
Dead Time	: 0.02 %

Energy Calibration Used Done On	: 3/21/08
Efficiency Calibration Used Done On	: 3/21/08

Reviewed By
Lynda Filippi
5-21-09

Natural Products & Cs-137

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*************************************************************************
**
*****        B A C K G R O U N D   S U B T R A C T   R E P O R T
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Detector Name: DET02
Sample Title: 1-L Solid Releas
Peak Analysis Performed on: 4/25/09 4:36:37 AM

	Peak No.	Energy (keV)	Original Area	Orig. Area Uncert.	Ambient Background	Backgr. Uncert.	Subtracted Area	Subtracted Uncert.
Pb-212	1	238.61	4.53E+001	12.93			4.53E+001	1.29E+001
Bi-211	2	351.62	4.30E+001	11.47			4.30E+001	1.15E+001
Tl-208	3	583.33	1.81E+001	8.19			1.81E+001	8.19E+000
Bi-214	4	609.24	2.63E+001	6.67			2.63E+001	6.67E+000
Cs-137	5	661.51	2.78E+001	6.57			2.78E+001	6.57E+000
Ac-228	6	911.24	1.04E+001	4.32			1.04E+001	4.32E+000
K-40	7	1461.60	3.69E+001	6.27			3.69E+001	6.27E+000

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet

Errors quoted at 1.000 sigma

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*************************************************************************
**
*****              N U C L I D E   M D A   R E P O R T
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Detector Name: DET02
Sample Geometry: 1-L Marinelli
Sample Title: 1-L Solid Releas
Nuclide Library Used: C:\GENIE2K\CAMFILES\AnSolMDA.NLB

	Nuclide Name	Energy (keV)	Yield (%)	Line MDA (uCi/gram)	Nuclide MDA (uCi/gram)	Activity (uCi/gram)
	CS-134	563.23	8.38	7.20E-007	7.05E-008	- 5.95E-008
		569.32	15.43	5.15E-007		1.32E-007
		604.70	97.60	7.05E-008		- 8.18E-009
		795.84	85.40	1.31E-007		1.94E-008
		801.93	8.73	8.82E-007		- 2.57E-007
		1365.15	3.04	3.31E-006		7.05E-007
+	CS-137	661.65*	85.12	9.14E-008	9.14E-008	1.21E-007

+ = Nuclide identified during the nuclide identification
* = Energy line found in the spectrum
> = MDA value not calculated
@ = Half-life too short to be able to perform the decay correction

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*****   N U C L I D E   I D E N T I F I C A T I O N   R E P O R T
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Sample Title: 1-L Solid Releas
Nuclide Library Used: C:\GENIE2K\CAMFILES\AnSolMDA.NLB

..... IDENTIFIED NUCLIDES .....

Nuclide Name	Id Confidence	Energy (keV)	Yield (%)	Activity (uCi/gram)	Activity Uncertainty
K-40	0.906	1460.81*	10.67	2.62E-006	4.50E-007
CS-137	0.997	661.65*	85.12	1.21E-007	2.88E-008
BI-211	0.585	351.10*	12.20	7.29E-007	1.95E-007
		404.80	4.10		
PB-212	0.674	87.20	6.30		
		89.80	1.75		
		238.63*	44.60	1.49E-007	4.26E-008
		300.09	3.41		
BI-214	0.660	609.31*	46.30	1.96E-007	4.98E-008
		934.06	3.21		
		1764.49	15.80		

* = Energy line found in the spectrum.
@ = Energy line not used for Weighted Mean Activity
Energy Tolerance : 1.000 keV
Nuclide confidence index threshold = 0.30
Errors quoted at 1.000 sigma

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*****  I N T E R F E R E N C E   C O R R E C T E D   R E P O R T
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Nuclide Name	Nuclide Id Confidence	Wt mean Activity (uCi/gram)	Wt mean Activity Uncertainty
K-40	0.906	2.62E-006	4.50E-007
CS-137	0.997	1.21E-007	2.88E-008
BI-211	0.585	7.29E-007	1.95E-007
PB-212	0.674	1.49E-007	4.26E-008
BI-214	0.660	1.96E-007	4.98E-008
Total Activity		3.82E-006	

? = nuclide is part of an undetermined solution
X = nuclide rejected by the interference analysis
@ = nuclide contains energy lines not used in Weighted Mean Activity

Errors quoted at 1.000 sigma

********** U N I D E N T I F I E D P E A K S **********

Peak Locate Performed on: 4/25/09 4:36:37 AM
Peak Locate From Channel: 100
Peak Locate To Channel: 4096

Peak No.	Energy (keV)	Peak Size in Counts per Second	Peak CPS % Uncertainty
3	583.33	2.48E-002	45.25
6	911.24	1.42E-002	41.68

Tl-208
Ac-228

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet

Errors quoted at 1.000 sigma

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*****        G A M M A   S P E C T R U M   A N A L Y S I S
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OYSTER CREEK NUCLEAR GENERATING STATION CHEMISTRY DEPARTMENT

Detector Name	: DET02
Report Generated On	: 4/25/09 5:35:14 PM
Spectral Data File Name	: C:\PCNT2K\CAMFILES\1LLIQMAR\700909.CNF
	:
Sample Title	: 1-L Liq. Mar'lli
Sample Description	: Soil North Pump House 3'
User ID	: n4283
Sample Type	: 7
Sample Geometry	: 1-L Marinelli
Peak Locate Threshold	: 3.00
Peak Locate Range (in channels)	: 1 - 4096
Peak Area Range (in channels)	: 100 - 4096
Identification Energy Tolerance	: 1.000 keV
Sample Size	: 2130.67 grams
Sample Taken On	: 4/25/09 5:05:00 PM
Acquisition Started	: 4/25/09 5:18:33 PM
Decay Time	: 1.36E+001 Minutes
Live Time	: 1000.0 Seconds
Real Time	: 1000.2 Seconds
Dead Time	: 0.02 %

Energy Calibration Used Done On	: 3/21/08
Efficiency Calibration Used Done On	: 3/21/08

Reviewed By
Lynda Klepei
5-21-09

Natural Products / Xe-135

****
**
***** B A C K G R O U N D S U B T R A C T R E P O R T *****
****
**

Detector Name: DET02
Sample Title: 1-L Liq. Mar'lli
Peak Analysis Performed on: 4/25/09 5:35:14 PM

	Peak No.	Energy (keV)	Original Area	Orig. Area Uncert.	Ambient Background	Backgr. Uncert.	Subtracted Area	Subtracted Uncert.
Pb-212	1	238.41	6.63E+001	20.14			6.63E+001	2.01E+001
Xe-135	2	249.71	4.21E+001	13.41			4.21E+001	1.34E+001
Pb-214	3	294.75	4.88E+001	12.73			4.88E+001	1.27E+001
Pb-214	4	351.72	5.76E+001	13.14			5.76E+001	1.31E+001
Xe-135/Bi-214	5	609.16	5.10E+001	8.34			5.10E+001	8.34E+000
Ac-228	6	911.16	1.44E+001	5.23			1.44E+001	5.23E+000
K-40	7	1461.18	3.76E+001	6.40			3.76E+001	6.40E+000

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet

Errors quoted at 1.000 sigma

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*************************************************************************
*
*****   N U C L I D E   I D E N T I F I C A T I O N   R E P O R T
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Sample Title: 1-L Liq. Mar'lli
Nuclide Library Used: C:\GENIE2K\CAMFILES\ANL002.NLB

..... IDENTIFIED NUCLIDES .....

Nuclide Name	Id Confidence	Energy (keV)	Yield (%)	Activity (uCi/gram)	Activity Uncertainty
K-40	0.979	1460.81*	10.67	1.42E-006	2.44E-007
XE-135	0.994	249.79*	89.90	3.88E-008	1.24E-008
		608.18*	2.89	3.32E-006	5.57E-007
PB-212	0.668	87.20	6.30		
		89.80	1.75		
		238.63*	44.60	1.15E-007	3.52E-008
		300.09	3.41		
BI-214	0.658	609.31*	46.30	2.02E-007	3.33E-008
		934.06	3.21		
		1764.49	15.80		
PB-214	0.664	87.20	3.70		
		89.80	1.03		
		241.98	7.49		
		295.21*	19.20	2.37E-007	6.21E-008
		351.92*	37.20	1.70E-007	3.90E-008

* = Energy line found in the spectrum.
@ = Energy line not used for Weighted Mean Activity
Energy Tolerance : 1.000 keV
Nuclide confidence index threshold = 0.30
Errors quoted at 1.000 sigma

****
*
***** I N T E R F E R E N C E C O R R E C T E D R E P O R T *****
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*

	Nuclide Name	Nuclide Id Confidence	Wt mean Activity (uCi/gram)	Wt mean Activity Uncertainty
	K-40	0.979	1.42E-006	2.44E-007
	XE-135	0.994	3.88E-008	1.24E-008
X	BI-211	0.573		
	PB-212	0.668	1.15E-007	3.52E-008
	BI-214	0.658	1.99E-007	3.33E-008
	PB-214	0.664	1.89E-007	3.30E-008
	Total Activity		1.96E-006	

? = nuclide is part of an undetermined solution
X = nuclide rejected by the interference analysis
@ = nuclide contains energy lines not used in Weighted Mean Activity

Errors quoted at 1.000 sigma

********** U N I D E N T I F I E D P E A K S **********

Peak Locate Performed on: 4/25/09 5:35:14 PM
Peak Locate From Channel: 100
Peak Locate To Channel: 4096

Peak No.	Energy (keV)	Peak Size in Counts per Second	Peak CPS % Uncertainty
6	911.16	1.44E-002	36.25

Ac-228

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet

Errors quoted at 1.000 sigma

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*********************************************************************
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*****        G A M M A   S P E C T R U M   A N A L Y S I S
*****
*********************************************************************
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OYSTER CREEK NUCLEAR GENERATING STATION CHEMISTRY DEPARTMENT

Detector Name	: DET02
Report Generated On	: 4/26/09 12:01:08 AM
Spectral Data File Name \2000080.CNF	: C:\PCNT2K\CAMFILES\1LSOLMDA
	:
Sample Title	: 1-L Solid Releas
Sample Description	: CST Pit 5'
User ID	: n4283
Sample Type	: 20
Sample Geometry	: 1-L Marinelli
Peak Locate Threshold	: 3.00
Peak Locate Range (in channels)	: 1 - 4096
Peak Area Range (in channels)	: 100 - 4096
Identification Energy Tolerance	: 1.000 keV
Sample Size	: 1998.52 grams
Sample Taken On	: 4/25/09 9:45:00 PM
Acquisition Started	: 4/25/09 11:44:27 PM
Decay Time	: 1.19E+002 Minutes
Live Time	: 1000.0 Seconds
Real Time	: 1000.2 Seconds
Dead Time	: 0.02 %

Energy Calibration Used Done On	: 3/21/08
Efficiency Calibration Used Done On	: 3/21/08

Reviewed By
Lynda Zlippi
5-21-09

Natural Products, Cs-137 + Xe-135

****
**
***** B A C K G R O U N D S U B T R A C T R E P O R T
*****
****
**

Detector Name: DET02
Sample Title: 1-L Solid Releas
Peak Analysis Performed on: 4/26/09 12:01:08 AM

	Peak No.	Energy (keV)	Original Area	Orig. Area Uncert.	Ambient Background	Backgr. Uncert.	Subtracted Area	Subtracted Uncert.
Pb-212	1	238.37	8.97E+001	18.25			8.97E+001	1.82E+001
Xe-135	2	249.61	1.74E+002	17.32			1.74E+002	1.73E+001
Bi-211	3	351.78	3.92E+001	10.75			3.92E+001	1.08E+001
Xe-135 Bi-214	4	609.31	3.99E+001	7.75			3.99E+001	7.75E+000
Cs-137	5	661.64	3.94E+001	8.27			3.94E+001	8.27E+000

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet

Errors quoted at 1.000 sigma

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*************************************************************************
**
*****              N U C L I D E   M D A   R E P O R T
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```

Detector Name: DET02
Sample Geometry: 1-L Marinelli
Sample Title: 1-L Solid Releas
Nuclide Library Used: C:\GENIE2K\CAMFILES\AnSolMDA.NLB

	Nuclide Name	Energy (keV)	Yield (%)	Line MDA (uCi/gram)	Nuclide MDA (uCi/gram)	Activity (uCi/gram)
	CS-134	563.23	8.38	5.09E-007	4.23E-008	5.49E-008
		569.32	15.43	2.07E-007		- 8.32E-008
		604.70	97.60	4.23E-008		- 2.32E-009
		795.84	85.40	6.21E-008		9.22E-009
		801.93	8.73	5.00E-007		- 1.53E-008
		1365.15	3.04	1.24E-006		- 2.00E-007
+	CS-137	661.65*	85.12	6.86E-008	6.86E-008	9.73E-008

+ = Nuclide identified during the nuclide identification
* = Energy line found in the spectrum
> = MDA value not calculated
@ = Half-life too short to be able to perform the decay correction

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*********************************************************************
*
*****   N U C L I D E   I D E N T I F I C A T I O N   R E P O R T
*****
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Sample Title: 1-L Solid Releas
Nuclide Library Used: C:\GENIE2K\CAMFILES\AnSolMDA.NLB

..... IDENTIFIED NUCLIDES .....

Nuclide Name	Id Confidence	Energy (keV)	Yield (%)	Activity (uCi/gram)	Activity Uncertainty
XE-135	0.961	249.79*	89.90	1.95E-007	2.00E-008
		608.18	2.89		
CS-137	1.000	661.65*	85.12	9.73E-008	2.05E-008
BI-211	0.563	351.10*	12.20	3.76E-007	1.04E-007
		404.80	4.10		
PB-212	0.666	87.20	6.30		
		89.80	1.75		
		238.63*	44.60	1.67E-007	3.41E-008
		300.09	3.41		
BI-214	0.661	609.31*	46.30	1.68E-007	3.29E-008
		934.06	3.21		
		1764.49	15.80		

* = Energy line found in the spectrum.
@ = Energy line not used for Weighted Mean Activity
Energy Tolerance : 1.000 keV
Nuclide confidence index threshold = 0.30
Errors quoted at 1.000 sigma

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*************************************************************************
*
*****   I N T E R F E R E N C E   C O R R E C T E D   R E P O R T
*****
*************************************************************************
*
```

Nuclide Name	Nuclide Id Confidence	Wt mean Activity (uCi/gram)	Wt mean Activity Uncertainty
XE-135	0.961	1.95E-007	2.00E-008
CS-137	1.000	9.73E-008	2.05E-008
BI-211	0.563	3.76E-007	1.04E-007
PB-212	0.666	1.67E-007	3.41E-008
BI-214	0.661	1.68E-007	3.29E-008
Total Activity		1.00E-006	

? = nuclide is part of an undetermined solution
X = nuclide rejected by the interference analysis
@ = nuclide contains energy lines not used in Weighted Mean Activity

Errors quoted at 1.000 sigma

********** U N I D E N T I F I E D P E A K S **********

Peak Locate Performed on: 4/26/09 12:01:08 AM
Peak Locate From Channel: 100
Peak Locate To Channel: 4096

Peak No.	Energy (keV)	Peak Size in Counts per Second	Peak CPS % Uncertainty

All peaks were identified.

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet

Errors quoted at 1.000 sigma

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*****************************************************************************
*****        G A M M A   S P E C T R U M   A N A L Y S I S        *****
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OYSTER CREEK NUCLEAR GENERATING STATION CHEMISTRY DEPARTMENT

Detector Name	:	DET03
Report Generated On	:	5/19/09 2:35:45 PM
Spectral Data File Name	:	C:\PCNT2K\CAMFILES\1LMARSOL\1900474.CNF
	:	
Sample Title	:	IL Solid Release
Sample Description	:	CST excavation soil composite
User ID	:	GNT
Sample Type	:	19
Sample Geometry	:	1-L Liq Marineli
Peak Locate Threshold	:	3.00
Peak Locate Range (in channels)	:	1 - 4096
Peak Area Range (in channels)	:	100 - 4096
Identification Energy Tolerance	:	1.000 keV
Sample Size	:	1026.70 g
Sample Taken On	:	5/19/09 2:30:43 PM
Acquisition Started	:	5/19/09 2:30:43 PM
Decay Time	:	0.00E+000 Minutes
Live Time	:	300.0 Seconds
Real Time	:	300.0 Seconds
Dead Time	:	0.01 %

Energy Calibration Used Done On	:	5/5/09
Efficiency Calibration Used Done On	:	5/4/09

Reviewed By
Lynda Ziegler
5-21-09

Natural Product and Cs-137

****
***** B A C K G R O U N D S U B T R A C T R E P O R T *****
****

Detector Name: DET03
Sample Title: IL Solid Release
Peak Analysis Performed on: 5/19/09 2:35:44 PM

	Peak No.	Energy (keV)	Original Area	Orig. Area Uncert.	Ambient Background	Backgr. Uncert.	Subtracted Area	Subtracted Uncert.
Cs137	1	661.29	2.93E+001	6.87			2.93E+001	6.87E+000
K-40	2	1460.56	1.23E+001	3.69			1.23E+001	3.69E+000

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet

Errors quoted at 1.000 sigma

```
*************************************************************************
*****                N U C L I D E   M D A   R E P O R T            *****
*************************************************************************
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Detector Name: DET03
Sample Geometry: 1-L Liq Marineli
Sample Title: IL Solid Release
Nuclide Library Used: C:\GENIE2K\CAMFILES\AnSOLMDA.nlb

	Nuclide Name	Energy (keV)	Yield (%)	Line MDA (uCi/g)	Nuclide MDA (uCi/g)	Activity (uCi/g)
	CS-134	563.23	8.38	9.27E-007	7.20E-008	1.39E-007
		569.32	15.43	5.08E-007		-1.32E-007
		604.70	97.60	7.20E-008		5.99E-009
		795.84	85.40	1.04E-007		1.29E-008
		801.93	8.73	1.35E-006		8.49E-008
		1365.15	3.04	1.00E-006		0.00E+000
+	CS-137	661.65*	85.12	1.66E-007	1.66E-007	2.17E-007

+ = Nuclide identified during the nuclide identification
* = Energy line found in the spectrum
> = MDA value not calculated
@ = Half-life too short to be able to perform the decay correction

****
***** N U C L I D E I D E N T I F I C A T I O N R E P O R T *****
****

Sample Title: IL Solid Release
Nuclide Library Used: C:\GENIE2K\CAMFILES\AnSOLMDA.nlb

..... IDENTIFIED NUCLIDES .....

Nuclide Name	Id Confidence	Energy (keV)	Yield (%)	Activity (uCi/g)	Activity Uncertainty
K-40	0.990	1460.81*	10.67	1.37E-006	4.10E-007
CS-137	0.979	661.65*	85.12	2.17E-007	5.11E-008

* = Energy line found in the spectrum.
@ = Energy line not used for Weighted Mean Activity
Energy Tolerance : 1.000 keV
Nuclide confidence index threshold = 0.30
Errors quoted at 1.000 sigma

****
***** I N T E R F E R E N C E C O R R E C T E D R E P O R T *****
****

Nuclide Name	Nuclide Id Confidence	Wt mean Activity (uCi/g)	Wt mean Activity Uncertainty
K-40	0.990	1.37E-006	4.10E-007
CS-137	0.979	2.17E-007	5.11E-008
Total Activity		1.58E-006	

? = nuclide is part of an undetermined solution
X = nuclide rejected by the interference analysis
@ = nuclide contains energy lines not used in Weighted Mean Activity

Errors quoted at 1.000 sigma

********** U N I D E N T I F I E D P E A K S **********

Peak Locate Performed on: 5/19/09 2:35:44 PM
Peak Locate From Channel: 1
Peak Locate To Channel: 4096

Peak No.	Energy (keV)	Peak Size in Counts per Second	Peak CPS % Uncertainty

All peaks were identified.

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet

Errors quoted at 1.000 sigma

Oyster Creek Generating Station
Radiation Protection Calculation
RP-OC-1001-09-008

Appendix C-[illegible]
Survey OOO-09-03617, Survey of C.S.T. Dirt Pile

OCGS Radiological Survey	No. QQQ-09-03617	Date 5-29-09	Time 1630	Location Northyard

RWP 100 | Reason Survey of CST Dirt Pile

Rx. Power - 100 %

Dose rates of Entire Dirt Pile = 10 μRem/HR
Direct Frisk of Accessible Areas of
Dirt were all < 100 NCPM

COPY

SMEARABLE CONTAMINATION				
	LOCATION	β γ ☐ DPM ☐ MRAD/HR	α DPM	AREA
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				

N A

INSTRUMENTATION DATA	
RADIATION SURVEY	
INST	Bicron
S/N	73366 BCF M1
CDD	10-14-09
INST	
S/N	N/A BCF
CDD	
CONTAMINATION SURVEY	
INST	E140
S/N	79608
CDD	7-21-09
EFF 10%	BKG 40 CPM
INST	
S/N	
CDD	N/A
CF	BKG CPM
AIR SAMPLE DATA	
FC	NT u
L = Large Area Smear	
NC = Not Counted	
NA = Not Applicable	
NT = Not Taken	

Surveyor: (Print Name) James Richwine	# = Gamma G.A.	⊛ = Smear
Signature [signature] Date 5-29-09	# B = Beta	DF - Direct Frisk
Reviewer: (Print Name) V. Filippi	# N = Neutron	X-X or - - = Rad Bound
Signature [signature] Date 6/1/09	# / # = Contact / 30 cm	#/# = Beta / γ Conta
Hd = Head, Ch = Chest, Kn = Knee, W = Waist	# B / # = β / γ	#/# = Beta / γ 30cm
All dose rates in mrem/hr unless otherwise noted		

– No Beta Detected Unless Otherwise Noted X No Beta Readings Taken

Remarks Pile of Dirt is ~ 60 ft x 12 ft
BKD = 10 MR/HR