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

Filename: C:\GENIE2K\CAMFILES\00004631.CNF

Report Generated On : 4/11/2018 6:38:44 PM
Sample Title : B102110DFSFC003GD
Sample Description : UNIT 2 CONTAINMENT
Sample Identification : 003
Sample Type : GAMMA DIRECT
Sample Geometry :
Peak Locate Threshold : 3.00
Peak Locate Range (in channels) : 85 - 8192
Peak Area Range (in channels) : 85 - 8192
Identification Energy Tolerance : 10.000 keV
Sample Size : 2.830E+001 M^2
Sample Taken On : 4/10/2018 12:52:00 AM
Acquisition Started : 4/10/2018 1:01:43 PM
Live Time : 600.0 seconds
Real Time : 606.8 seconds
Dead Time : 1.13 %

Energy Calibration Used Done On : 3/15/2018
Efficiency Calibration Used Done On : 1/23/2018
Efficiency ID : 3M90D_ECP_17.8CM

Data Validated
4/12/18 0822
WR Mhahh

 ***** P E A K A N A L Y S I S R E P O R T *****

Detector Name: 5456-A

Sample Title: B102110DFSFC003GD

Peak Analysis Performed on: 4/11/2018 6:38:44 PM

Peak Analysis From Channel: 85

Peak Analysis To Channel: 8192

Peak No.	ROI start	ROI end	Peak centroid	Energy (keV)	FWHM (keV)	Net Peak Area	Net Area Uncert.	Continuum Counts
1	126-	135	130.36	32.59	1.09	6.04E+002	100.53	6.92E+002
2	151-	192	161.47	40.37	1.30	3.81E+003	461.93	7.87E+003
3	282-	311	301.87	75.47	1.22	7.58E+003	524.81	1.29E+004
4	333-	348	340.66	85.16	1.24	1.79E+003	332.09	8.56E+003
5	478-	499	488.72	122.18	1.23	6.67E+003	395.02	8.62E+003
6	973-	989	979.93	244.98	1.42	1.38E+003	203.36	2.85E+003
7	1174-	1194	1186.34	296.58	1.13	1.59E+002	184.09	2.29E+003
8	1365-	1390	1377.70	344.42	1.34	4.72E+003	241.79	2.33E+003
9	1465-	1484	1472.14	368.03	0.99	1.17E+002	153.44	1.64E+003
10	1636-	1652	1644.60	411.15	0.72	3.05E+002	129.12	1.24E+003
11	1768-	1789	1776.09	444.02	1.18	5.48E+002	154.61	1.44E+003
12	2056-	2075	2069.93	517.48	0.47	-1.33E+001	118.26	9.99E+002
13	2633-	2660	2646.13	661.53	1.60	8.86E+003	228.21	9.30E+002
14	2707-	2720	2713.17	678.29	0.59	7.39E+001	72.39	4.48E+002
15	2739-	2764	2754.26	688.56	0.34	1.23E+002	120.75	8.29E+002
16	2883-	2903	2892.63	723.16	1.02	1.73E+002	99.16	6.30E+002
17	3105-	3129	3114.74	778.68	1.48	2.03E+003	139.16	6.69E+002
M 18	3453-	3533	3468.50	867.13	1.67	7.06E+002	68.79	5.75E+002
m 19	3453-	3533	3526.97	881.74	1.68	2.91E+001	36.69	4.54E+002
20	3638-	3652	3644.25	911.06	0.42	5.57E+001	65.00	3.46E+002
21	3844-	3870	3855.47	963.87	1.74	2.33E+003	137.56	5.48E+002
22	4010-	4029	4018.93	1004.73	1.77	2.17E+002	73.21	3.17E+002
23	4328-	4369	4342.66	1085.66	1.75	2.03E+003	154.88	6.08E+002
24	4431-	4461	4447.60	1111.90	1.87	2.19E+003	134.61	4.80E+002
25	4678-	4705	4692.41	1173.10	1.70	3.67E+003	143.62	3.32E+002
26	4841-	4861	4851.36	1212.84	1.66	2.05E+002	56.59	1.63E+002
27	4993-	5006	4999.10	1249.77	1.25	3.54E+001	30.54	7.16E+001
28	5086-	5110	5097.30	1274.33	1.46	2.20E+002	49.88	9.79E+001
29	5186-	5206	5196.16	1299.04	1.67	2.22E+002	47.45	9.41E+001
30	5315-	5345	5329.62	1332.40	2.00	3.70E+003	128.23	8.40E+001
31	5617-	5648	5631.94	1407.99	1.83	3.50E+003	120.74	3.05E+001
32	5822-	5853	5843.62	1460.90	0.55	2.12E+002	32.98	1.20E+001
33	6106-	6120	6112.43	1528.11	1.29	3.69E+001	15.88	9.13E+000
34	7051-	7066	7058.74	1764.68	0.31	1.70E+001	11.88	6.02E+000

M = First peak in a multiplet region

m = Other peak in a multiplet region

F = Fitted singlet

Errors quoted at 2.000 sigma

 **** 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: B102110DFSFC003GD
 Nuclide Library Used: C:\GENIE2K\CAMFILES\Zion Lib-BNL.NLB

IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)	Yield (%)	Activity (pCi/M ²)	Activity Uncertainty
K-40	1.000	1460.82*	10.66	2.59605E+006	4.62424E+005
Co-60	1.000	1173.23*	99.85	4.50519E+006	4.01336E+005
		1332.49*	99.98	4.69131E+006	4.08922E+005
Cs-137	1.000	661.66*	85.10	1.11428E+007	1.36860E+006
Eu-152	1.000	121.78*	28.67	1.74777E+007	3.65028E+006
		344.28*	26.60	1.59159E+007	2.73982E+006
		1408.01*	21.07	2.14023E+007	1.86480E+006
Eu-154	0.999	123.07*	40.40	1.24036E+007	2.59892E+006
		723.30*	20.06	9.42302E+005	5.50901E+005
		1274.43*	34.80	7.92149E+005	1.90838E+005
Eu-155	0.332	86.55*	30.70	5.03224E+006	1.37334E+006
		105.31	21.10		
Bi-212	0.973	727.33*	6.67	2.83365E+006	1.65754E+006
Pb-212	0.938	238.63*	43.60	2.56692E+006	5.61940E+005
Pb-214	0.941	295.22*	18.42	7.41755E+005	8.66114E+005
		351.93*	35.60	1.18914E+007	1.99816E+006
Ac-228	0.975	338.32*	11.27	3.75627E+007	6.43597E+006
		911.20*	25.80	2.48944E+005	2.91384E+005
		968.97*	15.80	1.72626E+007	1.83696E+006

* = Energy line found in the spectrum.
 @ = Energy line not used for Weighted Mean Activity
 Energy Tolerance : 10.000 keV
 Nuclide confidence index threshold = 0.30
 Errors quoted at 2.000 sigma

 ~**** INTERFERENCE CORRECTED REPORT ****

Nuclide Name	Nuclide Id Confidence	Wt mean Activity (pCi/M ²)	Wt mean Activity Uncertainty
K-40	1.000	2.596045E+006	4.624243E+005
Co-60	1.000	4.596508E+006	2.864317E+005
Cs-137	1.000	1.114279E+007	1.368601E+006
Eu-152	1.000	1.895418E+007	1.443457E+006
Eu-154	0.999	7.822436E+005	1.899156E+005
Eu-155	0.332	5.032244E+006	1.373336E+006
Bi-212	0.973	4.813199E+005	1.751504E+006
Pb-212	0.938	2.566916E+006	5.619398E+005
Pb-214	0.941	2.297280E+005	8.128163E+005
Ac-228	0.975	7.076057E+005	2.869854E+005

? = 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 2.000 sigma

***** UNIDENTIFIED PEAKS *****

Peak Locate Performed on: 4/11/2018 6:38:43 PM
 Peak Locate From Channel: 85
 Peak Locate To Channel: 8192

Peak No.	Energy (keV)	Peak Size in Counts per Second	Peak CPS % Uncertainty	Peak Type	Tol. Nuclide
1	32.59	1.0072E+000	16.63		
2	40.37	6.3427E+000	12.14		
3	75.47	1.2636E+001	6.92		
9	368.03	1.9483E-001	131.25	Sum	
10	411.15	5.0814E-001	42.35	Sum	
11	444.02	9.1392E-001	28.20	D-Esc.	
12	517.48	-2.2099E-002	-891.91		
14	678.29	1.2314E-001	97.97		
15	688.56	2.0565E-001	97.86	Sum	
17	778.68	3.3894E+000	6.84	Sum	
M 18	867.13	1.1770E+000	9.74	Tol.	Nb-94
m 19	881.74	4.8539E-002	125.99		
22	1004.73	3.6105E-001	33.79	Sum	
23	1085.66	3.3816E+000	7.63	Sum	
24	1111.90	3.6501E+000	6.15	Tol.	Bi-214
26	1212.84	3.4114E-001	27.65	Sum	
27	1249.77	5.9023E-002	86.23	Sum	
29	1299.04	3.6989E-001	21.38	Sum	
33	1528.11	6.1449E-002	43.08	Sum	
34	1764.68	2.8297E-002	69.98	Sum	

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

Errors quoted at 2.000 sigma

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

Detector Name: 5456-A
 Sample Geometry:
 Sample Title: B102110DFSFC003GD
 Nuclide Library Used: C:\GENIE2K\CAMFILES\Zion Lib-BNL.NLB

	Nuclide Name	Energy (keV)	Yield (%)	Line MDA (pCi/M ²)	Nuclide MDA (pCi/M ²)	Activity (pCi/M ²)	Dec. Level (pCi/M ²)
+	K-40	1460.82*	10.66	3.447E+005	3.45E+005	2.596E+006	1.558E+005
+	Co-60	1173.23*	99.85	1.595E+005	8.73E+004	4.505E+006	7.809E+004
		1332.49*	99.98	8.735E+004		4.691E+006	4.196E+004
	Nb-94	702.65	99.81	2.066E+005	2.07E+005	5.238E+004	1.018E+005
		871.09	99.89	2.568E+005		8.957E+005	1.269E+005
	Ag-108m	433.90	90.50	2.739E+005	2.43E+005	-1.762E+005	1.355E+005
		614.30	89.80	2.482E+005		-5.825E+004	1.225E+005
		722.90	90.80	2.430E+005		1.925E+005	1.199E+005
	Cs-134	604.72	97.62	2.307E+005	2.31E+005	1.672E+005	1.139E+005
		795.86	85.46	2.376E+005		-2.163E+004	1.170E+005
+	Cs-137	661.66*	85.10	2.703E+005	2.70E+005	1.114E+007	1.335E+005
+	Eu-152	121.78*	28.67	1.558E+006	2.61E+005	1.748E+007	7.755E+005
		344.28*	26.60	1.112E+006		1.592E+007	5.513E+005
		1408.01*	21.07	2.607E+005		2.140E+007	1.221E+005
+	Eu-154	123.07*	40.40	1.106E+006	2.47E+005	1.240E+007	5.504E+005
		723.30*	20.06	8.710E+005		9.423E+005	4.281E+005
		1274.43*	34.80	2.471E+005		7.921E+005	1.187E+005
+	Eu-155	86.55*	30.70	1.494E+006	1.49E+006	5.032E+006	7.432E+005
		105.31	21.10	2.260E+006		-3.791E+005	1.125E+006
	Tl-208	583.19	85.00	2.749E+005	2.75E+005	2.459E+005	1.358E+005
+	Bi-212	727.33*	6.67	2.619E+006	2.62E+006	2.834E+006	1.287E+006
+	Pb-212	238.63*	43.60	5.855E+005	5.85E+005	2.567E+006	2.902E+005
	Bi-214	609.32	45.49	4.870E+005	2.69E+005	-1.691E+005	2.404E+005
		1120.29	14.92	1.375E+006		4.451E+005	6.767E+005
		1764.49	15.30	2.693E+005		3.019E+005	1.223E+005
+	Pb-214	295.22*	18.42	1.411E+006	8.31E+005	7.418E+005	6.990E+005
		351.93*	35.60	8.306E+005		1.189E+007	4.119E+005
	Ra-226	186.21	3.64	9.680E+006	9.68E+006	9.834E+006	4.812E+006
+	Ac-228	338.32*	11.27	2.624E+006	4.77E+005	3.756E+007	1.301E+006
		911.20*	25.80	4.773E+005		2.489E+005	2.326E+005
		968.97*	15.80	1.213E+006		1.726E+007	5.966E+005
	Am-241	59.54	35.90	1.663E+006	1.66E+006	3.043E+004	8.270E+005

- + = Nuclide identified during the nuclide identification
- * = Energy line found in the spectrum
- > = Calculated MDA is zero due to zero counts in the region, or the region is outside the spectrum, or MDA has not been calculated
- @ = Half-life too short to be able to perform the decay correction

***** GAMMA SPECTRUM ANALYSIS *****

filename: 5456-A

Report Generated On : 4/16/2018 10:43:09 AM

Sample Title : B102110DFSCC004GD
Sample Description : U2 CTMNT UNDERVESSEL
Sample Identification : 004
Sample Type : GAMMA DIRECT
Sample Geometry :

Peak Locate Threshold : 3.00
Peak Locate Range (in channels) : 85 - 8192
Peak Area Range (in channels) : 85 - 8192
Identification Energy Tolerance : 10.000 keV

Sample Size : 1.256E+001 M^2

Sample Taken On : 4/16/2018 10:32:00 AM
Acquisition Started : 4/16/2018 10:33:06 AM

Live Time : 600.0 seconds
Real Time : 601.4 seconds

Dead Time : 0.23 %

Energy Calibration Used Done On : 3/15/2018
Efficiency Calibration Used Done On : 1/23/2018
Efficiency ID : 2M90D_ECP_17.8CM

Data Validated
4/16/18 1700
DR Mubalik

 *** P E A K A N A L Y S I S R E P O R T ***

Detector Name: 5456-A
 Sample Title: B102110DFSCC004GD
 Peak Analysis Performed on: 4/16/2018 10:43:08 AM
 Peak Analysis From Channel: 85
 Peak Analysis To Channel: 8192

Peak No.	ROI start	ROI end	Peak centroid	Energy (keV)	FWHM (keV)	Net Peak Area	Net Area Uncert.	Continuum Counts
1	126-	135	130.19	32.55	0.73	1.21E+002	45.14	1.39E+002
2	151-	190	161.06	40.27	1.06	9.85E+002	185.97	1.27E+003
3	286-	311	301.80	75.45	0.91	1.63E+003	220.60	2.48E+003
4	334-	355	340.85	85.21	1.23	5.74E+002	196.07	2.40E+003
5	483-	499	489.09	122.27	1.06	1.21E+003	155.61	1.54E+003
6	974-	988	981.36	245.34	1.03	2.79E+002	84.96	5.30E+002
7	1371-	1392	1380.24	345.06	1.18	1.05E+003	97.30	3.54E+002
8	1404-	1420	1411.49	352.87	0.55	9.58E+001	54.65	2.08E+002
9	1642-	1655	1647.85	411.96	0.66	5.53E+001	46.90	1.80E+002
10	1772-	1786	1779.71	444.93	1.44	1.02E+002	48.01	1.65E+002
11	2435-	2449	2441.92	610.48	0.91	7.34E+001	37.22	9.46E+001
12	2640-	2659	2651.13	662.78	1.27	1.35E+002	48.75	1.27E+002
13	3111-	3130	3121.79	780.45	1.34	4.22E+002	56.80	1.10E+002
14	3464-	3483	3475.99	869.00	1.50	1.32E+002	46.41	1.16E+002
15	3852-	3876	3863.90	965.98	1.53	5.03E+002	61.39	1.06E+002
16	4021-	4035	4027.56	1006.89	0.66	7.69E+001	26.67	3.51E+001
17	4343-	4377	4352.17	1088.04	1.74	3.95E+002	59.20	8.91E+001
18	4446-	4468	4457.57	1114.39	1.63	4.27E+002	53.48	7.45E+001
19	4690-	4714	4702.88	1175.72	1.75	5.35E+002	53.49	4.36E+001
20	4853-	4872	4861.81	1215.45	0.57	7.00E+001	25.13	2.50E+001
21	5102-	5117	5109.88	1277.47	0.77	6.43E+001	19.92	1.17E+001
22	5200-	5214	5207.36	1301.84	0.41	5.11E+001	19.96	1.69E+001
23	5328-	5353	5341.50	1335.37	1.32	5.79E+002	50.37	1.30E+001
24	5632-	5657	5644.40	1411.10	1.79	6.74E+002	53.38	9.37E+000
25	5846-	5866	5856.49	1464.12	0.54	1.10E+002	29.42	2.80E+001

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

Errors quoted at 2.000 sigma

 **** 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: B102110DFSCC004GD
 Nuclide Library Used: C:\GENIE2K\CAMFILES\Zion Lib-BNL.NLB

IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)	Yield (%)	Activity (pCi/M ²)	Activity Uncertainty
K-40	0.983	1460.82*	10.66	1.33978E+006	3.76917E+005
Co-60	0.988	1173.23*	99.85	6.53305E+005	8.36163E+004
		1332.49*	99.98	7.29483E+005	8.62160E+004
Cs-137	0.998	661.66*	85.10	1.67867E+005	6.40546E+004
Eu-152	0.995	121.78*	28.67	3.13434E+006	7.45350E+005
		344.28*	26.60	3.48773E+006	6.58494E+005
		1408.01*	21.07	4.10155E+006	4.61858E+005
Eu-154	0.678	123.07*	40.40	2.22430E+006	5.30261E+005
		723.30	20.06		
Eu-155	0.332	1274.43*	34.80	2.30033E+005	7.37182E+004
		86.55*	30.70	1.58355E+006	6.27129E+005
		105.31	21.10		
Pb-212	0.931	238.63*	43.60	5.12984E+005	1.76953E+005
Bi-214	0.697	609.32*	45.49	1.67717E+005	8.73864E+004
		1120.29*	14.92	3.43791E+006	5.11485E+005
		1764.49	15.30		
Pb-214	0.444	295.22	18.42		
		351.93*	35.60	2.39847E+005	1.42183E+005

* = Energy line found in the spectrum.
 @ = Energy line not used for Weighted Mean Activity
 Energy Tolerance : 10.000 keV
 Nuclide confidence index threshold = 0.30
 Errors quoted at 2.000 sigma

 ***** INTERFERENCE CORRECTED REPORT *****

Nuclide Name	Nuclide Id Confidence	Wt mean Activity (pCi/M ²)	Wt mean Activity Uncertainty
K-40	0.983	1.339777E+006	3.769172E+005
Co-60	0.988	6.902281E+005/	6.002366E+004
Cs-137	0.998	1.678669E+005✓	6.405458E+004
Eu-152	0.995	3.677248E+006✓	3.359840E+005
Eu-154	0.678	2.183197E+005✓	7.304854E+004
Eu-155	0.332	1.583546E+006	6.271287E+005
Pb-212	0.931	5.129836E+005	1.769534E+005
Bi-214	0.697	2.604637E+005	8.613824E+004
Pb-214	0.444	2.398473E+005	1.421829E+005

? = 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 2.000 sigma

***** UNIDENTIFIED PEAKS *****

Peak Locate Performed on: 4/16/2018 10:43:08 AM
 Peak Locate From Channel: 85
 Peak Locate To Channel: 8192

Peak No.	Energy (keV)	Peak Size in Counts per Second	Peak CPS % Uncertainty	Peak Type	Tol. Nuclide
1	32.55	2.0093E-001	37.44		
2	40.27	1.6408E+000	18.89		
3	75.45	2.7134E+000	13.55		
9	411.96	9.2168E-002	84.81		
10	444.93	1.7013E-001	47.04	D-Esc.	
13	780.45	7.0362E-001	13.45	Sum	
14	869.00	2.1948E-001	35.24	Tol.	Nb-94
15	965.98	8.3792E-001	12.21	Sum	
16	1006.89	1.2808E-001	34.71	Sum	
17	1088.04	6.5814E-001	14.99		
20	1215.45	1.1667E-001	35.91	Sum	
22	1301.84	8.5245E-002	39.03	Sum	

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

Errors quoted at 2.000 sigma

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

Detector Name: 5456-A
 Sample Geometry:
 Sample Title: B102110DFSCC004GD
 Nuclide Library Used: C:\GENIE2K\CAMFILES\Zion Lib-BNL.NLB

	Nuclide Name	Energy (keV)	Yield (%)	Line MDA (pCi/M ²)	Nuclide MDA (pCi/M ²)	Activity (pCi/M ²)	Dec. Level (pCi/M ²)
+	K-40	1460.82*	10.66	4.466E+005	4.47E+005	1.340E+006	2.068E+005
+	Co-60	1173.23*	99.85	5.714E+004	3.42E+004	6.533E+005	2.692E+004
		1332.49*	99.98	3.423E+004		7.295E+005	1.541E+004
	Nb-94	702.65	99.81	9.986E+004	9.99E+004	2.971E+004	4.847E+004
		871.09	99.89	1.186E+005		1.965E+005	5.775E+004
	Ag-108m	433.90	90.50	1.140E+005	1.07E+005	-8.078E+004	5.558E+004
		614.30	89.80	1.143E+005		-1.656E+004	5.560E+004
		722.90	90.80	1.074E+005		1.185E+005	5.210E+004
	Cs-134	604.72	97.62	1.055E+005	1.05E+005	-1.912E+004	5.130E+004
		795.86	85.46	1.125E+005		6.933E+004	5.452E+004
+	Cs-137	661.66*	85.10	9.134E+004	9.13E+004	1.679E+005	4.398E+004
+	Eu-152	121.78*	28.67	5.981E+005	1.41E+005	3.134E+006	2.956E+005
		344.28*	26.60	4.071E+005		3.488E+006	1.990E+005
		1408.01*	21.07	1.413E+005		4.102E+006	6.239E+004
+	Eu-154	123.07*	40.40	4.245E+005	7.92E+004	2.224E+006	2.097E+005
		723.30	20.06	4.876E+005		5.571E+005	2.365E+005
		1274.43*	34.80	7.924E+004		2.300E+005	3.478E+004
+	Eu-155	86.55*	30.70	8.709E+005	8.71E+005	1.584E+006	4.317E+005
		105.31	21.10	1.042E+006		3.819E+005	5.159E+005
	Tl-208	583.19	85.00	1.245E+005	1.25E+005	1.354E+004	6.063E+004
	Bi-212	727.33	6.67	1.474E+006	1.47E+006	-4.614E+005	7.152E+005
+	Pb-212	238.63*	43.60	2.414E+005	2.41E+005	5.130E+005	1.182E+005
+	Bi-214	609.32*	45.49	1.303E+005	1.30E+005	1.677E+005	6.208E+004
		1120.29*	14.92	4.721E+005		3.438E+006	2.252E+005
		1764.49	15.30	2.191E+005		1.544E+005	9.719E+004
+	Pb-214	295.22	18.42	7.031E+005	2.17E+005	-2.192E+005	3.453E+005
		351.93*	35.60	2.171E+005		2.398E+005	1.051E+005
	Ra-226	186.21	3.64	4.417E+006	4.42E+006	1.123E+006	2.181E+006
	Ac-228	338.32	11.27	1.023E+006	3.82E+005	-1.707E+005	5.009E+005
		911.20	25.80	3.819E+005		2.271E+005	1.850E+005
		968.97	15.80	9.635E+005		3.824E+006	4.718E+005
	Am-241	59.54	35.90	7.522E+005	7.52E+005	-2.423E+005	3.715E+005

+ = Nuclide identified during the nuclide identification
 * = Energy line found in the spectrum
 > = Calculated MDA is zero due to zero counts in the region, or the region is outside the spectrum, or MDA has not been calculated
 @ = Half-life too short to be able to perform the decay correction

***** GAMMA SPECTRUM ANALYSIS *****

Filename: 5456-A

Report Generated On : 4/13/2018 2:04:42 PM

Sample Title : B102110DFSWC005GD
Sample Description : U2 CTMNT UNDERVESSEL
Sample Identification : 005
Sample Type : GAMMA DIRECT
Sample Geometry :

Peak Locate Threshold : 3.00
Peak Locate Range (in channels) : 85 - 8192
Peak Area Range (in channels) : 85 - 8192
Identification Energy Tolerance : 10.000 keV

Sample Size : 3.140E+000 M^2

Sample Taken On : 4/13/2018 1:54:00 PM
Acquisition Started : 4/13/2018 1:54:40 PM

Live Time : 600.0 seconds
Real Time : 601.0 seconds

Dead Time : 0.17 %

Energy Calibration Used Done On : 3/15/2018
Efficiency Calibration Used Done On : 1/23/2018
Efficiency ID : LM90D_ECP_17.8CM

Data Validated
4/13/18 1745
DR Mihalik

 ***** P E A K A N A L Y S I S R E P O R T *****

Detector Name: 5456-A

Sample Title: B102110DFSWC005GD

Peak Analysis Performed on: 4/13/2018 2:04:42 PM

Peak Analysis From Channel: 85

Peak Analysis To Channel: 8192

Peak No.	ROI start	ROI end	Peak centroid	Energy (keV)	FWHM (keV)	Net Peak Area	Net Area Uncert.	Continuum Counts
1	126-	134	130.64	32.66	0.85	9.54E+001	42.13	1.32E+002
2	145-	162	155.20	38.80	1.19	6.70E+002	111.51	7.48E+002
3	271-	300	290.30	72.57	1.49	1.33E+003	260.67	3.30E+003
4	323-	333	327.85	81.96	0.81	1.54E+002	118.94	1.41E+003
5	476-	497	487.31	121.83	1.25	1.49E+003	193.40	2.10E+003
6	971-	985	978.28	244.57	1.41	3.20E+002	90.22	5.95E+002
7	1365-	1387	1375.76	343.94	1.39	1.11E+003	106.55	4.46E+002
8	1637-	1651	1643.06	410.77	0.55	7.68E+001	54.52	2.29E+002
9	1762-	1783	1774.43	443.61	0.80	1.40E+002	69.34	2.83E+002
10	2632-	2653	2643.49	660.87	1.13	1.63E+002	56.94	1.73E+002
11	2965-	2978	2970.56	742.64	1.25	2.70E+001	34.97	1.00E+002
12	3101-	3124	3111.04	777.76	1.69	5.60E+002	69.01	1.56E+002
13	3454-	3475	3464.57	866.14	1.36	1.89E+002	50.29	1.18E+002
14	3603-	3616	3609.42	902.35	0.64	1.88E+001	31.74	8.32E+001
15	3842-	3865	3850.87	962.72	1.81	5.47E+002	66.80	1.38E+002
16	4003-	4021	4014.12	1003.53	0.40	4.80E+001	39.22	9.90E+001
17	4325-	4361	4337.96	1084.49	1.31	4.67E+002	78.13	1.76E+002
18	4431-	4457	4442.71	1110.68	2.03	5.91E+002	60.04	7.17E+001
19	4674-	4702	4687.25	1171.81	1.59	8.34E+002	65.27	5.02E+001
20	4836-	4854	4845.95	1211.49	0.38	6.46E+001	23.44	2.14E+001
21	5083-	5099	5091.13	1272.78	1.80	7.40E+001	22.58	1.70E+001
22	5179-	5201	5190.84	1297.71	1.59	8.45E+001	22.72	1.15E+001
23	5312-	5338	5324.39	1331.10	1.91	7.76E+002	59.83	2.70E+001
24	5612-	5640	5625.66	1406.41	1.78	8.71E+002	61.16	1.41E+001
25	5829-	5849	5837.76	1459.44	0.43	1.22E+002	30.15	2.98E+001

M = First peak in a multiplet region

m = Other peak in a multiplet region

F = Fitted singlet

Errors quoted at 2.000 sigma

 *** 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: B102110DFSWC005GD
 Nuclide Library Used: C:\GENIE2K\CAMFILES\Zion Lib-BNL.NLB

IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)	Yield (%)	Activity (pCi/M ²)	Activity Uncertainty
K-40	0.997	1460.82*	10.66	1.50174E+006	3.92849E+005
Co-60	0.997	1173.23*	99.85	1.02340E+006	1.14551E+005
		1332.49*	99.98	9.85310E+005	1.09475E+005
Cs-137	0.999	661.66*	85.10	2.03387E+005	7.49742E+004
Eu-152	0.999	121.78*	28.67	3.78613E+006	9.03970E+005
		344.28*	26.60	3.68632E+006	7.00897E+005
		1408.01*	21.07	5.34716E+006	5.69200E+005
Eu-154	0.682	123.07*	40.40	2.68684E+006	6.43093E+005
		723.30	20.06		
Eu-155	0.315	1274.43*	34.80	2.66498E+005	8.42401E+004
		86.55*	30.70	4.33030E+005	3.46001E+005
Pb-212	0.945	105.31	21.10		
		238.63*	43.60	5.82791E+005	1.89390E+005
Ac-228	0.913	338.32*	11.27	8.70064E+006	1.64795E+006
		911.20*	25.80	8.35919E+004	1.41059E+005
		968.97*	15.80	4.03890E+006	6.09259E+005

* = Energy line found in the spectrum.
 @ = Energy line not used for Weighted Mean Activity
 Energy Tolerance : 10.000 keV
 Nuclide confidence index threshold = 0.30
 Errors quoted at 2.000 sigma

 *** INTERFERENCE CORRECTED REPORT ***

Nuclide Name	Nuclide Id Confidence	Wt mean Activity (pCi/M ²)	Wt mean Activity Uncertainty
K-40	0.997	1.501741E+006	3.928486E+005
Co-60	0.997	1.003493E+006✓	7.914411E+004
Cs-137	0.999	2.033869E+005✓	7.497424E+004
Eu-152	0.999	4.394450E+006✓	3.954319E+005
Eu-154	0.682	2.546751E+005✓	8.353477E+004
Eu-155	0.315	4.330305E+005	3.460008E+005
Pb-212	0.945	5.827910E+005	1.893901E+005
X Pb-214	0.380		
Ac-228	0.913	2.836478E+005	1.368383E+005

? = 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 2.000 sigma

***** UNIDENTIFIED PEAKS *****

Peak Locate Performed on: 4/13/2018 2:04:42 PM
 Peak Locate From Channel: 85
 Peak Locate To Channel: 8192

Peak No.	Energy (keV)	Peak Size in Counts per Second	Peak CPS % Uncertainty	Peak Type	Tol. Nuclide
1	32.66	1.5902E-001	44.15		
2	38.80	1.1162E+000	16.65		
3	72.57	2.2163E+000	19.60		
8	410.77	1.2798E-001	71.01		
9	443.61	2.3305E-001	49.59	D-Esc.	
11	742.64	4.5020E-002	129.45	Sum	
12	777.76	9.3333E-001	12.32	Sum	
13	866.14	3.1456E-001	26.65	Tol.	Nb-94
16	1003.53	8.0043E-002	81.66	Sum	
17	1084.49	7.7816E-001	16.73	Sum	
18	1110.68	9.8547E-001	10.15		
20	1211.49	1.0774E-001	36.26	Sum	
22	1297.71	1.4083E-001	26.89	Sum	

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

Errors quoted at 2.000 sigma

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

Detector Name: 5456-A
 Sample Geometry:
 Sample Title: B102110DFSWC005GD
 Nuclide Library Used: C:\GENIE2K\CAMFILES\Zion Lib-BNL.NLB

	Nuclide Name	Energy (keV)	Yield (%)	Line MDA (pCi/M ²)	Nuclide MDA (pCi/M ²)	Activity (pCi/M ²)	Dec. Level (pCi/M ²)
+	K-40	1460.82*	10.66	4.478E+005	4.48E+005	1.502E+006	2.072E+005
+	Co-60	1173.23*	99.85	6.474E+004	4.90E+004	1.023E+006	3.071E+004
		1332.49*	99.98	4.900E+004		9.853E+005	2.278E+004
	Nb-94	702.65	99.81	1.072E+005	1.07E+005	-3.098E+004	5.216E+004
		871.09	99.89	1.294E+005		2.096E+004	6.315E+004
	Ag-108m	433.90	90.50	1.212E+005	1.21E+005	2.349E+004	5.921E+004
		614.30	89.80	1.241E+005		6.305E+004	6.049E+004
		722.90	90.80	1.237E+005		1.608E+005	6.022E+004
	Cs-134	604.72	97.62	1.144E+005	1.14E+005	6.230E+004✓	5.574E+004
		795.86	85.46	1.235E+005		4.133E+003	6.000E+004
+	Cs-137	661.66*	85.10	1.076E+005	1.08E+005	2.034E+005	5.210E+004
+	Eu-152	121.78*	28.67	7.493E+005	1.78E+005	3.786E+006	3.712E+005
		344.28*	26.60	4.607E+005		3.686E+006	2.259E+005
		1408.01*	21.07	1.784E+005		5.347E+006	8.090E+004
+	Eu-154	123.07*	40.40	5.317E+005	9.65E+004	2.687E+006	2.634E+005
		723.30	20.06	5.511E+005		7.933E+004	2.682E+005
		1274.43*	34.80	9.648E+004		2.665E+005	4.337E+004
+	Eu-155	86.55*	30.70	5.466E+005	5.47E+005	4.330E+005	2.695E+005
		105.31	21.10	1.031E+006		1.073E+005	5.105E+005
	Tl-208	583.19	85.00	1.373E+005	1.37E+005	1.177E+004	6.703E+004
	Bi-212	727.33	6.67	1.661E+006	1.66E+006	-6.923E+005	8.087E+005
+	Pb-212	238.63*	43.60	2.530E+005	2.53E+005	5.828E+005	1.241E+005
	Bi-214	609.32	45.49	2.411E+005	2.27E+005	-3.146E+003	1.175E+005
		1120.29	14.92	5.658E+005		1.219E+004	2.719E+005
		1764.49	15.30	2.267E+005		2.033E+005	1.008E+005
	Pb-214	295.22	18.42	7.371E+005	3.44E+005	6.217E+005	3.624E+005
		351.93*	35.60	3.442E+005		2.754E+006	1.688E+005
	Ra-226	186.21	3.64	4.518E+006	4.52E+006	3.891E+005	2.232E+006
+	Ac-228	338.32*	11.27	1.087E+006	2.35E+005	8.701E+006	5.331E+005
		911.20*	25.80	2.348E+005		8.359E+004	1.114E+005
		968.97*	15.80	5.992E+005		4.039E+006	2.896E+005
	Am-241	59.54	35.90	8.205E+005	8.20E+005	8.204E+005	4.056E+005

+ = Nuclide identified during the nuclide identification

* = Energy line found in the spectrum

> = Calculated MDA is zero due to zero counts in the region, or the region is outside the spectrum, or MDA has not been calculated

@ = Half-life too short to be able to perform the decay correction

***** GAMMA SPECTRUM ANALYSIS *****

_lename: 5456-A

Report Generated On : 4/13/2018 2:18:43 PM

Sample Title : B102110DFSWC006GD
Sample Description : U2 CTMNT UNDERVESSEL
Sample Identification : 006
Sample Type : GAMMA DIRECT
Sample Geometry :

Peak Locate Threshold : 3.00
Peak Locate Range (in channels) : 85 - 8192
Peak Area Range (in channels) : 85 - 8192
Identification Energy Tolerance : 10.000 keV

Sample Size : 3.140E+000 M^2

Sample Taken On : 4/13/2018 2:08:00 PM
Acquisition Started : 4/13/2018 2:08:41 PM

Live Time : 600.0 seconds
Real Time : 600.8 seconds

Dead Time : 0.13 %

Energy Calibration Used Done On : 3/15/2018
Efficiency Calibration Used Done On : 1/23/2018
Efficiency ID : 1M90D_ECP_17.8CM

Data Validated
4/14/18 1243
JR Mihalek

 P E A K A N A L Y S I S R E P O R T *****

Detector Name: 5456-A
 Sample Title: B102110DFSWC006GD
 Peak Analysis Performed on: 4/13/2018 2:18:42 PM
 Peak Analysis From Channel: 85
 Peak Analysis To Channel: 8192

Peak No.	ROI start	ROI end	Peak centroid	Energy (keV)	FWHM (keV)	Net Peak Area	Net Area Uncert.	Continuum Counts
1	145-	184	154.98	38.75	1.50	7.97E+002	185.06	1.27E+003
2	279-	299	289.81	72.45	1.70	9.88E+002	178.76	1.93E+003
3	388-	397	392.50	98.12	0.25	-3.23E+001	87.81	8.65E+002
4	476-	498	487.58	121.89	1.37	1.14E+003	174.09	1.66E+003
5	970-	986	978.66	244.66	1.29	2.22E+002	83.71	4.89E+002
6	1363-	1388	1375.86	343.97	1.42	9.23E+002	94.74	3.11E+002
7	1765-	1784	1773.66	443.41	1.45	1.15E+002	54.99	1.83E+002
8	2425-	2441	2434.03	608.51	0.87	5.08E+001	40.50	1.11E+002
9	2633-	2652	2642.15	660.54	1.21	1.85E+002	52.58	1.43E+002
10	3099-	3122	3111.44	777.86	1.52	4.15E+002	58.12	1.07E+002
11	3457-	3473	3465.68	866.42	0.87	9.58E+001	36.89	7.82E+001
12	3838-	3863	3851.27	962.82	1.56	4.50E+002	57.85	9.10E+001
13	4325-	4346	4338.19	1084.55	1.53	2.74E+002	49.18	8.93E+001
14	4428-	4456	4443.17	1110.79	1.95	4.22E+002	57.91	9.00E+001
15	4673-	4700	4687.16	1171.79	1.61	4.83E+002	54.82	5.95E+001
16	4838-	4855	4846.61	1211.65	0.37	3.77E+001	22.58	2.73E+001
17	5083-	5101	5091.68	1272.92	0.52	6.28E+001	21.08	1.43E+001
18	5184-	5198	5191.06	1297.76	0.58	3.87E+001	20.29	2.23E+001
19	5312-	5337	5324.27	1331.07	1.75	4.99E+002	48.98	2.33E+001
20	5612-	5639	5626.09	1406.52	1.94	6.33E+002	52.78	1.40E+001
21	5828-	5848	5837.64	1459.41	0.65	1.27E+002	30.05	2.74E+001

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

Errors quoted at 2.000 sigma

 *** 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: B102110DFSWC006GD
 Nuclide Library Used: C:\GENIE2K\CAMFILES\Zion Lib-BNL.NLB

..... IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)	Yield (%)	Activity (pCi/M^2)	Activity Uncertainty
K-40	0.997	1460.82*	10.66	1.55550E+006	3.93227E+005
Co-60	0.997	1173.23*	99.85	5.93436E+005	8.23499E+004
		1332.49*	99.98	6.33235E+005	8.02148E+004
Ag-108m	0.416	433.90*	90.50	1.20810E+005	6.03858E+004
		614.30*	89.80	5.86702E+004	4.72758E+004
		722.90	90.80		
Cs-137	0.998	661.66*	85.10	2.29757E+005	7.10237E+004
Eu-152	0.999	121.78*	28.67	2.89117E+006	7.29014E+005
		344.28*	26.60	3.05259E+006	5.91517E+005
		1408.01*	21.07	3.88650E+006	4.49126E+005
Eu-154	0.682	123.07*	40.40	2.05173E+006	5.18496E+005
		723.30	20.06		
		1274.43*	34.80	2.26099E+005	7.81734E+004
Pb-212	0.943	238.63*	43.60	4.04335E+005	1.65884E+005
Bi-214	0.682	609.32*	45.49	1.15818E+005	9.33288E+004
		1120.29*	14.92	3.42098E+006	5.43577E+005
		1764.49	15.30		

* = Energy line found in the spectrum.
 @ = Energy line not used for Weighted Mean Activity
 Energy Tolerance : 10.000 keV
 Nuclide confidence index threshold = 0.30
 Errors quoted at 2.000 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 (pCi/M^2)	Wt mean Activity Uncertainty
K-40	0.997	1.555498E+006	3.932272E+005
Co-60	0.997	6.138582E+005✓	5.746042E+004
Ag-108m	0.416	4.064787E+004	5.902212E+004
Cs-137	0.998	2.297568E+005✓	7.102372E+004
Eu-152	0.999	3.385187E+006✓	3.199264E+005
Eu-154	0.682	2.132358E+005✓	7.736637E+004
Pb-212	0.943	4.043351E+005	1.658844E+005
Bi-214	0.682	1.325698E+005	1.458378E+005
X Pb-214	0.380		

? = 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 2.000 sigma

***** UNIDENTIFIED PEAKS *****

Peak Locate Performed on: 4/13/2018 2:18:42 PM
 Peak Locate From Channel: 85
 Peak Locate To Channel: 8192

Peak No.	Energy (keV)	Peak Size in Counts per Second	Peak CPS % Uncertainty	Peak Type	Tol. Nuclide
1	38.75	1.3283E+000	23.22		
2	72.45	1.6469E+000	18.09		
3	98.12	-5.3786E-002	-272.10	D-Esc.	
10	777.86	6.9093E-001	14.02	Sum	
11	866.42	1.5968E-001	38.51	Tol.	Nb-94
12	962.82	7.5008E-001	12.85		
13	1084.55	4.5624E-001	17.96		
16	1211.65	6.2910E-002	59.82	Sum	
18	1297.76	6.4447E-002	52.47	Sum	

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

Errors quoted at 2.000 sigma

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

Detector Name: 5456-A
 Sample Geometry:
 Sample Title: B102110DFSWC006GD
 Nuclide Library Used: C:\GENIE2K\CAMFILES\Zion Lib-BNL.NLB

	Nuclide Name	Energy (keV)	Yield (%)	Line MDA (pCi/M ²)	Nuclide MDA (pCi/M ²)	Activity (pCi/M ²)	Dec. Level (pCi/M ²)
+	K-40	1460.82*	10.66	4.359E+005	4.36E+005	1.555E+006	2.013E+005
+	Co-60	1173.23*	99.85	6.941E+004	4.54E+004	5.934E+005	3.304E+004
		1332.49*	99.98	4.544E+004		6.332E+005	2.100E+004
	Nb-94	702.65	99.81	9.385E+004	9.38E+004	1.106E+004	4.547E+004
		871.09	99.89	1.044E+005		4.733E+004	5.066E+004
+	Ag-108m	433.90*	90.50	9.012E+004	7.51E+004	1.208E+005	4.364E+004
		614.30*	89.80	7.510E+004		5.867E+004	3.599E+004
		722.90	90.80	1.065E+005		5.701E+004	5.161E+004
	Cs-134	604.72	97.62	9.618E+004	9.62E+004	-2.194E+003	4.666E+004
		795.86	85.46	1.045E+005		6.803E+004	5.051E+004
+	Cs-137	661.66*	85.10	9.553E+004	9.55E+004	2.298E+005	4.608E+004
+	Eu-152	121.78*	28.67	6.787E+005	1.78E+005	2.891E+006	3.359E+005
		344.28*	26.60	4.044E+005		3.053E+006	1.977E+005
		1408.01*	21.07	1.777E+005		3.886E+006	8.054E+004
+	Eu-154	123.07*	40.40	4.816E+005	9.22E+004	2.052E+006	2.384E+005
		723.30	20.06	4.853E+005		6.532E+005	2.353E+005
		1274.43*	34.80	9.216E+004		2.261E+005	4.121E+004
	Eu-155	86.55	30.70	7.347E+005	7.35E+005	-7.022E+005	3.637E+005
		105.31	21.10	9.273E+005		4.109E+003	4.587E+005
	Tl-208	583.19	85.00	1.153E+005	1.15E+005	1.989E+004	5.603E+004
	Bi-212	727.33	6.67	1.439E+006	1.44E+006	7.550E+005	6.976E+005
+	Pb-212	238.63*	43.60	2.393E+005	2.39E+005	4.043E+005	1.172E+005
+	Bi-214	609.32*	45.49	1.483E+005	1.48E+005	1.158E+005	7.104E+004
		1120.29*	14.92	5.662E+005		3.421E+006	2.721E+005
		1764.49	15.30	2.173E+005		1.848E+005	9.615E+004
	Pb-214	295.22	18.42	6.530E+005	3.02E+005	-7.120E+004	3.203E+005
		351.93*	35.60	3.022E+005		2.281E+006	1.477E+005
	Ra-226	186.21	3.64	3.923E+006	3.92E+006	-1.307E+006	1.934E+006
	Ac-228	338.32	11.27	1.207E+006	3.44E+005	1.110E+005	5.930E+005
		911.20	25.80	3.437E+005		-2.776E+004	1.658E+005
		968.97	15.80	8.831E+005		-4.219E+004	4.316E+005
	Am-241	59.54	35.90	7.141E+005	7.14E+005	7.347E+004	3.525E+005

+ = Nuclide identified during the nuclide identification
 * = Energy line found in the spectrum
 > = Calculated MDA is zero due to zero counts in the region, or the region is outside the spectrum, or MDA has not been calculated
 @ = Half-life too short to be able to perform the decay correction

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

Filename: 5456-A

Report Generated On : 4/13/2018 2:56:44 PM
Sample Title : B102110DFSWC007GD
Sample Description : U2 CTMNT UNDERVESSEL
Sample Identification : 007
Sample Type : GAMMA DIRECT
Sample Geometry :
Peak Locate Threshold : 3.00
Peak Locate Range (in channels) : 85 - 8192
Peak Area Range (in channels) : 85 - 8192
Identification Energy Tolerance : 10.000 keV
Sample Size : 3.140E+000 M^2
Sample Taken On : 4/13/2018 2:46:00 PM
Acquisition Started : 4/13/2018 2:46:42 PM
Live Time : 600.0 seconds
Real Time : 600.7 seconds
Dead Time : 0.12 %

Energy Calibration Used Done On : 3/15/2018
Efficiency Calibration Used Done On : 1/23/2018
Efficiency ID : 1M90D_ECP_17.8CM

Data Validated
4/14/18 12:53
JR Mihalik

 *** P E A K A N A L Y S I S R E P O R T ***

Detector Name: 5456-A
 Sample Title: B102110DFSWC007GD
 Peak Analysis Performed on: 4/13/2018 2:56:43 PM
 Peak Analysis From Channel: 85
 Peak Analysis To Channel: 8192

Peak No.	ROI start	ROI end	Peak centroid	Energy (keV)	FWHM (keV)	Net Peak Area	Net Area Uncert.	Continuum Counts
1	126-	138	131.11	32.78	1.05	9.72E+001	47.40	1.48E+002
2	146-	164	155.02	38.75	1.80	4.49E+002	82.76	3.74E+002
3	274-	300	290.24	72.56	1.82	8.08E+002	181.78	1.70E+003
4	479-	498	487.72	121.93	1.27	5.55E+002	138.05	1.20E+003
5	949-	986	978.62	244.66	0.97	2.25E+002	142.17	8.34E+002
6	1365-	1387	1375.92	343.98	1.55	6.29E+002	77.36	2.24E+002
7	1768-	1779	1773.48	443.37	0.55	3.40E+001	36.58	1.20E+002
8	2426-	2439	2432.79	608.20	1.19	3.27E+001	32.34	8.13E+001
9	2633-	2652	2643.04	660.76	1.30	2.10E+002	47.47	1.00E+002
10	3102-	3122	3111.52	777.88	1.23	2.85E+002	45.74	6.63E+001
11	3452-	3496	3465.36	866.34	0.41	1.72E+002	61.02	1.10E+002
12	3839-	3863	3851.22	962.80	1.81	2.95E+002	46.44	5.92E+001
13	4326-	4346	4338.35	1084.59	1.09	2.16E+002	38.15	4.17E+001
14	4429-	4454	4443.05	1110.76	1.54	2.88E+002	47.35	6.45E+001
15	4676-	4701	4686.97	1171.74	1.64	4.31E+002	45.85	2.23E+001
16	5085-	5098	5091.28	1272.82	0.57	3.17E+001	15.64	1.03E+001
17	5312-	5338	5324.28	1331.07	1.79	4.15E+002	42.55	9.21E+000
18	5614-	5640	5625.85	1406.46	2.00	4.12E+002	40.60	0.00E+000
19	5827-	5847	5836.64	1459.16	1.17	1.44E+002	27.72	1.39E+001

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

Errors quoted at 2.000 sigma

 *** 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: B102110DFSWC007GD
 Nuclide Library Used: C:\GENIE2K\CAMFILES\Zion Lib-BNL.NLB

IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)	Yield (%)	Activity (pCi/M^2)	Activity Uncertainty
K-40	0.996	1460.82*	10.66	1.77156E+006	3.73864E+005
Co-60	0.997	1173.23*	99.85	5.28573E+005	7.03898E+004
		1332.49*	99.98	5.26670E+005	6.85112E+004
Ag-108m	0.415	433.90*	90.50	3.56321E+004	3.87080E+004
		614.30*	89.80	3.76977E+004	3.75934E+004
		722.90	90.80		
Cs-137	0.999	661.66*	85.10	2.61365E+005	6.69080E+004
Eu-152	0.999	121.78*	28.67	1.41171E+006	4.50872E+005
		344.28*	26.60	2.08191E+006	4.27267E+005
		1408.01*	21.07	2.52969E+006	3.21069E+005
Eu-154	0.682	123.07*	40.40	1.00183E+006	3.20406E+005
		723.30	20.06		
		1274.43*	34.80	1.14184E+005	5.71091E+004
Pb-212	0.944	238.63*	43.60	4.09146E+005	2.67258E+005
Bi-214	0.681	609.32*	45.49	7.44175E+004	7.42134E+004
		1120.29*	14.92	2.33103E+006	4.26884E+005
		1764.49	15.30		

* = Energy line found in the spectrum.
 @ = Energy line not used for Weighted Mean Activity
 Energy Tolerance : 10.000 keV
 Nuclide confidence index threshold = 0.30
 Errors quoted at 2.000 sigma

 *** INTERFERENCE CORRECTED REPORT ***

Nuclide Name	Nuclide Id Confidence	Wt mean Activity (pCi/M ²)	Wt mean Activity Uncertainty
K-40	0.996	1.771565E+006	3.738639E+005
Co-60	0.997	5.275956E+005✓	4.909546E+004
Ag-108m	0.415	6.120720E+001	3.811948E+004
Cs-137	0.999	2.613649E+005✓	6.690802E+004
Eu-152	0.999	2.100648E+006✓	2.228222E+005
Eu-154	0.682	9.556619E+004✓	5.639895E+004
Pb-212	0.944	4.091456E+005	2.672580E+005
Bi-214	0.681	1.405300E+005	1.033479E+005
X Pb-214	0.380		

? = 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 2.000 sigma

***** UNIDENTIFIED PEAKS *****

Peak Locate Performed on: 4/13/2018 2:56:43 PM
 Peak Locate From Channel: 85
 Peak Locate To Channel: 8192

Peak No.	Energy (keV)	Peak Size in Counts per Second	Peak CPS % Uncertainty	Peak Type	Tol. Nuclide
1	32.78	1.6204E-001	48.75		
2	38.75	7.4769E-001	18.45		
3	72.56	1.3460E+000	22.51		
10	777.88	4.7453E-001	16.06	Sum	
11	866.34	2.8673E-001	35.47	Tol.	Nb-94
12	962.80	4.9132E-001	15.75		
13	1084.59	3.6053E-001	17.63		

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

Errors quoted at 2.000 sigma

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

Detector Name: 5456-A
 Sample Geometry:
 Sample Title: B102110DFSWC007GD
 Nuclide Library Used: C:\GENIE2K\CAMFILES\Zion Lib-BNL.NLB

	Nuclide Name	Energy (keV)	Yield (%)	Line MDA (pCi/M ²)	Nuclide MDA (pCi/M ²)	Activity (pCi/M ²)	Dec. Level (pCi/M ²)
+	K-40	1460.82*	10.66	3.135E+005	3.13E+005	1.772E+006	1.401E+005
+	Co-60	1173.23*	99.85	4.265E+004	2.91E+004	5.286E+005	1.966E+004
		1332.49*	99.98	2.911E+004		5.267E+005	1.284E+004
	Nb-94	702.65	99.81	7.693E+004	7.69E+004	-1.239E+004	3.701E+004
		871.09	99.89	9.813E+004		-9.253E+003	4.753E+004
+	Ag-108m	433.90*	90.50	6.262E+004	6.06E+004	3.563E+004	2.989E+004
		614.30*	89.80	6.055E+004		3.770E+004	2.871E+004
		722.90	90.80	9.509E+004		9.908E+004	4.593E+004
	Cs-134	604.72	97.62	8.800E+004	8.80E+004	-6.945E+004	4.257E+004
		795.86	85.46	8.932E+004	@	-8.412E+003	4.290E+004
+	Cs-137	661.66*	85.10	8.035E+004	8.04E+004	2.614E+005	3.849E+004
+	Eu-152	121.78*	28.67	5.499E+005	1.66E+004	1.412E+006	2.715E+005
		344.28*	26.60	3.293E+005		2.082E+006	1.602E+005
		1408.01*	21.07	1.662E+004		2.530E+006	0.000E+000
+	Eu-154	123.07*	40.40	3.903E+005	7.41E+004	1.002E+006	1.927E+005
		723.30	20.06	4.297E+005		5.629E+005	2.076E+005
		1274.43*	34.80	7.406E+004		1.142E+005	3.216E+004
	Eu-155	86.55	30.70	6.362E+005	6.36E+005	4.108E+005	3.145E+005
		105.31	21.10	7.883E+005		-1.563E+005	3.892E+005
	Tl-208	583.19	85.00	1.038E+005	1.04E+005	9.619E+004	5.025E+004
	Bi-212	727.33	6.67	1.264E+006	1.26E+006	1.586E+006	6.100E+005
+	Pb-212	238.63*	43.60	4.213E+005	4.21E+005	4.091E+005	2.082E+005
+	Bi-214	609.32*	45.49	1.195E+005	1.20E+005	7.442E+004	5.668E+004
		1120.29*	14.92	4.627E+005		2.331E+006	2.204E+005
		1764.49	15.30	2.443E+005		2.403E+005	1.096E+005
	Pb-214	295.22	18.42	5.505E+005	2.46E+005	-4.212E+004	2.691E+005
		351.93*	35.60	2.461E+005		1.556E+006	1.197E+005
	Ra-226	186.21	3.64	3.414E+006	3.41E+006	-8.423E+005	1.680E+006
	Ac-228	338.32	11.27	1.041E+006	3.18E+005	-1.301E+005	5.098E+005
		911.20	25.80	3.181E+005		5.116E+004	1.530E+005
		968.97	15.80	7.236E+005		2.636E+005	3.518E+005
	Am-241	59.54	35.90	6.365E+005	6.37E+005	-1.697E+005	3.137E+005

+ = Nuclide identified during the nuclide identification

* = Energy line found in the spectrum

> = Calculated MDA is zero due to zero counts in the region, or the region is outside the spectrum, or MDA has not been calculated

@ = Half-life too short to be able to perform the decay correction

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

Filename: 5456-A

Report Generated On : 4/14/2018 9:15:10 AM
Sample Title : B102110DFSWC008GD
Sample Description : U2 CTMNT Under Vessel
Sample Identification : 008
Sample Type :
Sample Geometry :
Peak Locate Threshold : 3.00
Peak Locate Range (in channels) : 85 - 8192
Peak Area Range (in channels) : 85 - 8192
Identification Energy Tolerance : 10.000 keV
Sample Size : 3.140E+000 M^2
Sample Taken On : 4/14/2018 9:04:00 AM
Acquisition Started : 4/14/2018 9:05:08 AM
Live Time : 600.0 seconds
Real Time : 600.6 seconds
Dead Time : 0.09 %

Energy Calibration Used Done On : 3/15/2018
Efficiency Calibration Used Done On : 1/23/2018
Efficiency ID : 1M90D_ECP_17.8CM

Data Validated
4/14/18 1342
WR Mahalik

 *** P E A K A N A L Y S I S R E P O R T ***

Detector Name: 5456-A
 Sample Title: B102110DFSWC008GD
 Peak Analysis Performed on: 4/14/2018 9:15:09 AM
 Peak Analysis From Channel: 85
 Peak Analysis To Channel: 8192

Peak No.	ROI start	ROI end	Peak centroid	Energy (keV)	FWHM (keV)	Net Peak Area	Net Area Uncert.	Continuum Counts
1	126-	134	130.13	32.53	0.37	4.93E+001	28.73	5.87E+001
2	146-	165	155.80	38.95	1.55	3.17E+002	80.25	3.69E+002
3	279-	306	289.12	72.28	1.57	8.03E+002	171.08	1.45E+003
4	477-	508	486.04	121.51	2.03	4.83E+002	174.75	1.42E+003
5	953-	989	979.80	244.95	1.22	2.16E+002	119.58	5.97E+002
6	1365-	1414	1378.15	344.54	1.42	5.36E+002	121.68	4.20E+002
7	1640-	1653	1647.34	411.84	0.44	-1.39E+001	37.55	1.31E+002
8	1769-	1782	1776.23	444.06	0.89	2.89E+001	33.46	9.11E+001
9	2429-	2445	2438.31	609.58	0.35	6.36E+001	32.06	6.14E+001
10	2635-	2659	2646.75	661.69	1.49	5.45E+002	61.75	9.79E+001
11	3103-	3128	3115.57	778.89	1.63	2.09E+002	46.08	7.52E+001
12	3463-	3478	3470.26	867.57	0.34	3.26E+001	29.40	6.04E+001
13	3847-	3869	3857.15	964.29	1.79	2.43E+002	42.23	5.04E+001
14	4332-	4353	4344.49	1086.12	1.83	1.67E+002	38.15	5.24E+001
15	4440-	4460	4449.69	1112.42	1.83	1.91E+002	34.95	3.15E+001
16	4683-	4707	4693.95	1173.49	1.92	2.70E+002	37.06	1.81E+001
17	5095-	5108	5101.01	1275.25	0.38	3.11E+001	13.34	4.90E+000
18	5191-	5204	5197.95	1299.49	0.34	2.43E+001	13.89	8.69E+000
19	5322-	5344	5332.07	1333.02	1.78	2.57E+002	34.33	1.04E+001
20	5621-	5646	5634.49	1408.62	1.72	2.98E+002	38.33	1.63E+001
21	5834-	5857	5845.51	1461.38	1.25	1.43E+002	26.69	8.83E+000
22	7055-	7070	7062.52	1765.63	0.55	1.59E+001	11.74	6.06E+000

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

Errors quoted at 2.000 sigma

 *** 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: B102110DFSWC008GD
 Nuclide Library Used: C:\GENIE2K\CAMFILES\Zion Lib-BNL.NLB

IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)	Yield (%)	Activity (pCi/M^2)	Activity Uncertainty
K-40	1.000	1460.82*	10.66	1.76061E+006	3.62121E+005
Co-60	1.000	1173.23*	99.85	3.31409E+005	5.26608E+004
		1332.49*	99.98	3.25983E+005	5.08058E+004
Cs-137	1.000	661.66*	85.10	6.78822E+005	1.12065E+005
Eu-152	1.000	121.78*	28.67	1.22900E+006	5.08586E+005
		344.28*	26.60	1.77350E+006	4.97068E+005
		1408.01*	21.07	1.82870E+006	2.77235E+005
Eu-154	0.682	123.07*	40.40	8.72164E+005	3.61217E+005
		723.30	20.06		
		1274.43*	34.80	1.12106E+005	4.89483E+004
Pb-212	0.938	238.63*	43.60	3.93992E+005	2.27003E+005
Bi-214	0.980	609.32*	45.49	1.45019E+005	7.51334E+004
		1120.29*	14.92	1.54491E+006	3.09261E+005
		1764.49*	15.30	1.47378E+005	1.09157E+005
Pb-214	0.389	295.22	18.42		
		351.93*	35.60	1.32514E+006	3.68086E+005

* = Energy line found in the spectrum.
 @ = Energy line not used for Weighted Mean Activity
 Energy Tolerance : 10.000 keV
 Nuclide confidence index threshold = 0.30
 Errors quoted at 2.000 sigma

 *** INTERFERENCE CORRECTED REPORT ***

Nuclide Name	Nuclide Id Confidence	Wt mean Activity (pCi/M ²)	Wt mean Activity Uncertainty
K-40	1.000	1.760611E+006	3.621213E+005
Co-60	1.000	3.285987E+005 ✓	3.656333E+004
Cs-137	1.000	6.788217E+005 ✓	1.120653E+005
Eu-152	1.000	1.657475E+006 ✓	2.439055E+005
Eu-154	0.682	1.045959E+005 ✓	4.856739E+004
Pb-212	0.938	3.939925E+005	2.270032E+005
Bi-214	0.980	1.996531E+005	6.068656E+004
Pb-214	0.389	8.669093E+004	4.106980E+005

? = 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 2.000 sigma

***** UNIDENTIFIED PEAKS *****

Peak Locate Performed on: 4/14/2018 9:15:09 AM
 Peak Locate From Channel: 85
 Peak Locate To Channel: 8192

Peak No.	Energy (keV)	Peak Size in Counts per Second	Peak CPS % Uncertainty	Peak Type	Tol. Nuclide
1	32.53	8.2122E-002	58.32		
2	38.95	5.2791E-001	25.34		
3	72.28	1.3381E+000	21.31		
7	411.84	-2.3134E-002	-270.51		
8	444.06	4.8153E-002	115.81	D-Esc.	
11	778.89	3.4805E-001	22.07	Sum	
12	867.57	5.4368E-002	90.14	Tol.	Nb-94
13	964.29	4.0428E-001	17.41		
14	1086.12	2.7768E-001	22.90		
18	1299.49	4.0518E-002	57.13	Sum	

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

Errors quoted at 2.000 sigma

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

Detector Name: 5456-A
 Sample Geometry:
 Sample Title: B102110DFSWC008GD
 Nuclide Library Used: C:\GENIE2K\CAMFILES\Zion Lib-BNL.NLB

	Nuclide Name	Energy (keV)	Yield (%)	Line MDA (pCi/M ²)	Nuclide MDA (pCi/M ²)	Activity (pCi/M ²)	Dec. Level (pCi/M ²)
+	K-40	1460.82*	10.66	2.725E+005	2.73E+005	1.761E+006	1.196E+005
+	Co-60	1173.23*	99.85	3.793E+004	2.92E+004	3.314E+005	1.730E+004
		1332.49*	99.98	2.917E+004		3.260E+005	1.287E+004
	Nb-94	702.65	99.81	6.923E+004	6.92E+004	7.776E+004	3.316E+004
		871.09	99.89	7.997E+004		1.427E+005	3.845E+004
	Ag-108m	433.90	90.50	8.620E+004	7.91E+004	3.012E+004	4.169E+004
		614.30	89.80	8.583E+004		-2.471E+004	4.135E+004
		722.90	90.80	7.912E+004		-6.226E+004	3.794E+004
	Cs-134	604.72	97.62	8.178E+004	8.11E+004	2.090E+004	3.945E+004
		795.86	85.46	8.106E+004		5.848E+004	3.878E+004
+	Cs-137	661.66*	85.10	8.615E+004	8.61E+004	6.788E+005	4.139E+004
+	Eu-152	121.78*	28.67	7.155E+005	1.85E+005	1.229E+006	3.543E+005
		344.28*	26.60	6.215E+005		1.773E+006	3.063E+005
		1408.01*	21.07	1.853E+005		1.829E+006	8.436E+004
+	Eu-154	123.07*	40.40	5.078E+005	5.31E+004	8.722E+005	2.514E+005
		723.30	20.06	3.645E+005		6.889E+004	1.750E+005
		1274.43*	34.80	5.313E+004		1.121E+005	2.169E+004
	Eu-155	86.55	30.70	6.017E+005	6.02E+005	5.710E+005	2.973E+005
		105.31	21.10	7.309E+005		-8.887E+004	3.605E+005
	Tl-208	583.19	85.00	9.510E+004	9.51E+004	1.080E+005	4.592E+004
	Bi-212	727.33	6.67	1.095E+006	1.10E+006	8.595E+005	5.256E+005
+	Pb-212	238.63*	43.60	3.523E+005	3.52E+005	3.940E+005	1.737E+005
+	Bi-214	609.32*	45.49	1.105E+005	1.10E+005	1.450E+005	5.214E+004
		1120.29*	14.92	3.079E+005		1.545E+006	1.430E+005
		1764.49*	15.30	1.559E+005		1.474E+005	6.542E+004
+	Pb-214	295.22	18.42	5.200E+005	4.64E+005	1.191E+005	2.538E+005
		351.93*	35.60	4.643E+005		1.325E+006	2.288E+005
	Ra-226	186.21	3.64	3.068E+006	3.07E+006	2.258E+006	1.507E+006
	Ac-228	338.32	11.27	8.412E+005	2.66E+005	1.441E+005	4.101E+005
		911.20	25.80	2.659E+005		-2.165E+004	1.269E+005
		968.97	15.80	7.014E+005		-1.562E+004	3.407E+005
	Am-241	59.54	35.90	5.525E+005	5.52E+005	-1.505E+005	2.717E+005

+ = Nuclide identified during the nuclide identification
 * = Energy line found in the spectrum
 > = Calculated MDA is zero due to zero counts in the region, or the region is outside the spectrum, or MDA has not been calculated
 @ = Half-life too short to be able to perform the decay correction

***** GAMMA SPECTRUM ANALYSIS *****

Filename: 5456-A

Report Generated On : 4/13/2018 1:27:37 PM
Sample Title : B102110DFSWC009GD
Sample Description : U2 CTMNT UNDERVESSEL
Sample Identification : 009
Sample Type : GAMMA DIRECT
Sample Geometry :
Peak Locate Threshold : 3.00
Peak Locate Range (in channels) : 85 - 8192
Peak Area Range (in channels) : 85 - 8192
Identification Energy Tolerance : 10.000 keV
Sample Size : 1.256E+001 M^2
Sample Taken On : 4/13/2018 1:17:00 PM
Acquisition Started : 4/13/2018 1:17:34 PM
Live Time : 600.0 seconds
Real Time : 602.1 seconds
Dead Time : 0.35 %

Energy Calibration Used Done On : 3/15/2018
Efficiency Calibration Used Done On : 1/23/2018
Efficiency ID : 2M90D_ECP_17.8CM

Data Validated
4/14/18 1309
WR Mihalek

 *** P E A K A N A L Y S I S R E P O R T ***

Detector Name: 5456-A
 Sample Title: B102110DFSWC009GD
 Peak Analysis Performed on: 4/13/2018 1:27:37 PM
 Peak Analysis From Channel: 85
 Peak Analysis To Channel: 8192

Peak No.	ROI start	ROI end	Peak centroid	Energy (keV)	FWHM (keV)	Net Peak Area	Net Area Uncert.	Continuum Counts
1	126-	140	130.83	32.71	1.79	3.95E+002	90.63	5.07E+002
2	146-	185	155.12	38.78	1.32	1.72E+003	285.99	3.08E+003
3	285-	305	295.11	73.78	3.32	2.04E+003	276.61	4.70E+003
4	329-	344	336.86	84.22	1.96	3.61E+002	219.74	3.89E+003
5	480-	497	487.09	121.77	1.43	2.77E+003	226.41	3.08E+003
6	969-	986	978.46	244.61	1.03	7.08E+002	135.84	1.20E+003
7	1363-	1388	1375.73	343.93	1.53	2.40E+003	157.26	8.88E+002
8	1632-	1648	1641.34	410.33	1.12	1.52E+002	79.61	4.56E+002
9	1765-	1783	1773.47	443.37	1.12	2.57E+002	85.99	4.71E+002
10	2629-	2656	2642.72	660.68	1.71	1.53E+003	115.41	4.00E+002
11	3099-	3147	3110.90	777.73	1.89	1.04E+003	140.11	5.11E+002
12	3200-	3213	3206.32	801.58	0.49	4.16E+001	40.59	1.34E+002
13	3452-	3476	3464.91	866.23	1.58	3.08E+002	77.43	2.88E+002
14	3841-	3862	3850.62	962.65	1.77	1.06E+003	86.85	2.18E+002
15	4006-	4029	4014.30	1003.57	1.22	1.88E+002	53.31	1.30E+002
16	4324-	4360	4337.36	1084.34	2.20	8.72E+002	103.26	3.11E+002
17	4426-	4456	4442.14	1110.53	1.81	1.10E+003	88.02	1.71E+002
18	4674-	4701	4686.58	1171.65	2.11	1.34E+003	88.18	1.36E+002
19	4835-	4854	4844.52	1211.13	0.89	8.05E+001	39.33	8.75E+001
20	5082-	5103	5091.63	1272.91	1.85	1.20E+002	34.86	4.88E+001
21	5181-	5199	5190.41	1297.60	0.89	1.18E+002	30.32	3.31E+001
22	5309-	5338	5323.45	1330.86	1.91	1.36E+003	79.82	4.86E+001
23	5611-	5641	5625.22	1406.30	1.88	1.62E+003	81.90	1.13E+001
24	5828-	5846	5836.57	1459.14	1.88	1.16E+002	34.66	5.32E+001

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

Errors quoted at 2.000 sigma

 *** 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: B102110DFSWC009GD
 Nuclide Library Used: C:\GENIE2K\CAMFILES\Zion Lib-BNL.NLB

IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)	Yield (%)	Activity (pCi/M ²)	Activity Uncertainty
K-40	0.995	1460.82*	10.66	1.40942E+006	4.39127E+005
Co-60	0.996	1173.23*	99.85	1.63370E+006	1.69237E+005
		1332.49*	99.98	1.71475E+006	1.70034E+005
Cs-137	0.998	661.66*	85.10	1.91044E+006	2.70786E+005
Eu-152	0.999	121.78*	28.67	7.16843E+006	1.55036E+006
		344.28*	26.60	7.99632E+006	1.41460E+006
		1408.01*	21.07	9.86890E+006	9.33518E+005
Eu-154	0.681	123.07*	40.40	5.08710E+006	1.10354E+006
		723.30	20.06		
Eu-155	0.329	1274.43*	34.80	4.29613E+005	1.29451E+005
		86.55*	30.70	1.00691E+006	6.45742E+005
Pb-212	0.944	105.31	21.10		
		238.63*	43.60	1.30106E+006	3.26477E+005

* = Energy line found in the spectrum.
 @ = Energy line not used for Weighted Mean Activity
 Energy Tolerance : 10.000 keV
 Nuclide confidence index threshold = 0.30
 Errors quoted at 2.000 sigma

 ***** INTERFERENCE CORRECTED REPORT *****

Nuclide Name	Nuclide Id Confidence	Wt mean Activity (pCi/M ²)	Wt mean Activity Uncertainty
K-40	0.995	1.409421E+006	4.391266E+005
Co-60	0.996	1.674033E+006✓	1.199492E+005
Cs-137	0.998	1.910441E+006✓	2.707863E+005
Eu-152	0.999	8.745173E+006✓	6.930098E+005
Eu-154	0.681	4.084874E+005✓	1.285297E+005
Eu-155	0.329	1.006914E+006	6.457418E+005
Pb-212	0.944	1.301056E+006	3.264775E+005
X Pb-214	0.380		

? = 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 2.000 sigma

***** UNIDENTIFIED PEAKS *****

Peak Locate Performed on: 4/13/2018 1:27:37 PM
 Peak Locate From Channel: 85
 Peak Locate To Channel: 8192

Peak No.	Energy (keV)	Peak Size in Counts per Second	Peak CPS % Uncertainty	Peak Type	Tol. Nuclide
1	32.71	6.5877E-001	22.93		
2	38.78	2.8683E+000	16.62		
3	73.78	3.3956E+000	13.58		
8	410.33	2.5415E-001	52.21		
9	443.37	4.2894E-001	33.41	D-Esc.	
11	777.73	1.7326E+000	13.48	Sum	
12	801.58	6.9325E-002	97.58		
13	866.23	5.1338E-001	25.14	Tol.	Nb-94
14	962.65	1.7747E+000	8.16	Tol.	Ac-228
15	1003.57	3.1251E-001	28.43	Sum	
16	1084.34	1.4534E+000	11.84		
17	1110.53	1.8389E+000	7.98	Tol.	Bi-214
19	1211.13	1.3422E-001	48.84		
21	1297.60	1.9656E-001	25.71	Sum	

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

Errors quoted at 2.000 sigma

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

Detector Name: 5456-A
 Sample Geometry:
 Sample Title: B102110DFSWC009GD
 Nuclide Library Used: C:\GENIE2K\CAMFILES\Zion Lib-BNL.NLB

	Nuclide Name	Energy (keV)	Yield (%)	Line MDA (pCi/M ²)	Nuclide MDA (pCi/M ²)	Activity (pCi/M ²)	Dec. Level (pCi/M ²)
+	K-40	1460.82*	10.66	5.766E+005	5.77E+005	1.409E+006	2.719E+005
+	Co-60	1173.23*	99.85	1.019E+005	6.63E+004	1.634E+006	4.929E+004
		1332.49*	99.98	6.627E+004		1.715E+006	3.143E+004
	Nb-94	702.65	99.81	1.398E+005	1.40E+005	-1.067E+005	6.846E+004
		871.09	99.89	1.658E+005		1.176E+005	8.138E+004
	Ag-108m	433.90	90.50	1.706E+005	1.63E+005	-8.848E+004	8.389E+004
		614.30	89.80	1.696E+005		3.979E+004	8.321E+004
		722.90	90.80	1.629E+005		1.196E+005	7.984E+004
	Cs-134	604.72	97.62	1.559E+005	1.56E+005	1.917E+005	7.652E+004
		795.86	85.46	1.600E+005		1.202E+005	7.826E+004
+	Cs-137	661.66*	85.10	1.772E+005	1.77E+005	1.910E+006	8.690E+004
+	Eu-152	121.78*	28.67	8.593E+005	1.64E+005	7.168E+006	4.261E+005
		344.28*	26.60	6.820E+005		7.996E+006	3.365E+005
		1408.01*	21.07	1.640E+005		9.869E+006	7.375E+004
+	Eu-154	123.07*	40.40	6.098E+005	1.69E+005	5.087E+006	3.024E+005
		723.30	20.06	7.287E+005		-1.551E+005	3.570E+005
		1274.43*	34.80	1.690E+005		4.296E+005	7.966E+004
+	Eu-155	86.55*	30.70	1.002E+006	1.00E+006	1.007E+006	4.970E+005
		105.31	21.10	1.454E+006		1.015E+004	7.218E+005
	Tl-208	583.19	85.00	1.749E+005	1.75E+005	2.244E+005	8.583E+004
	Bi-212	727.33	6.67	2.170E+006	2.17E+006	-9.630E+005	1.063E+006
+	Pb-212	238.63*	43.60	3.829E+005	3.83E+005	1.301E+006	1.890E+005
	Bi-214	609.32	45.49	3.418E+005	2.61E+005	2.530E+005	1.678E+005
		1120.29	14.92	7.605E+005		3.181E+005	3.693E+005
		1764.49	15.30	2.608E+005		2.826E+005	1.181E+005
	Pb-214	295.22	18.42	9.952E+005	5.10E+005	1.162E+006	4.914E+005
		351.93*	35.60	5.096E+005		5.975E+006	2.514E+005
	Ra-226	186.21	3.64	6.151E+006	6.15E+006	-4.271E+006	3.048E+006
	Ac-228	338.32	11.27	1.969E+006	5.26E+005	4.221E+005	9.738E+005
		911.20	25.80	5.257E+005		-8.665E+004	2.569E+005
		968.97	15.80	1.345E+006		-1.985E+005	6.626E+005
	Am-241	59.54	35.90	1.119E+006	1.12E+006	5.228E+005	5.550E+005

+ = Nuclide identified during the nuclide identification

* = Energy line found in the spectrum

> = Calculated MDA is zero due to zero counts in the region, or the region is outside the spectrum, or MDA has not been calculated

@ = Half-life too short to be able to perform the decay correction

***** GAMMA SPECTRUM ANALYSIS *****

Filename: 5456-A

Report Generated On : 4/14/2018 1:31:40 PM
Sample Title : B102110DFSWC010GD
Sample Description : U2 CTMT Under Vessel
Sample Identification : 010
Sample Type : Gamma Direct
Sample Geometry :
Peak Locate Threshold : 3.00
Peak Locate Range (in channels) : 85 - 8192
Peak Area Range (in channels) : 85 - 8192
Identification Energy Tolerance : 10.000 keV
Sample Size : 1.256E+001 M^2
Sample Taken On : 4/14/2018 1:21:00 PM
Acquisition Started : 4/14/2018 1:21:36 PM
Live Time : 600.0 seconds
Real Time : 603.1 seconds
Dead Time : 0.51 %

Energy Calibration Used Done On : 3/15/2018
Efficiency Calibration Used Done On : 1/23/2018
Efficiency ID : 2M90D_ECP_17.8CM

Data Validated
4/15/18 12/3/
WR Mubalib

 *** P E A K A N A L Y S I S R E P O R T ***

Detector Name: 5456-A
 Sample Title: B102110DFSWC010GD
 Peak Analysis Performed on: 4/14/2018 1:31:39 PM
 Peak Analysis From Channel: 85
 Peak Analysis To Channel: 8192

Peak No.	ROI start	ROI end	Peak centroid	Energy (keV)	FWHM (keV)	Net Peak Area	Net Area Uncert.	Continuum Counts
1	126-	133	129.94	32.49	0.72	1.44E+002	59.82	2.76E+002
2	149-	188	158.54	39.64	2.10	1.48E+003	314.29	3.82E+003
3	280-	306	300.50	75.12	1.72	3.26E+003	347.14	6.14E+003
4	329-	346	339.45	84.86	1.29	7.48E+002	254.97	4.75E+003
5	477-	498	487.72	121.93	1.49	3.36E+003	274.91	4.14E+003
6	600-	610	604.76	151.19	0.40	-1.51E+001	123.91	1.61E+003
7	972-	986	979.37	244.84	1.15	6.87E+002	123.26	1.08E+003
8	1364-	1389	1377.19	344.30	1.44	2.49E+003	156.15	8.47E+002
9	1432-	1444	1437.90	359.47	0.43	9.71E+000	65.55	4.03E+002
10	1579-	1590	1584.60	396.15	0.87	2.14E+000	61.45	3.69E+002
11	1638-	1651	1643.87	410.97	1.31	1.51E+002	74.29	4.45E+002
12	1767-	1786	1775.82	443.95	1.88	2.93E+002	92.25	5.17E+002
13	2248-	2265	2254.69	563.67	0.76	8.37E+001	68.17	3.31E+002
14	2431-	2444	2438.12	609.53	0.73	1.98E+001	54.78	2.62E+002
15	2635-	2660	2646.71	661.68	1.45	1.87E+003	121.70	4.30E+002
16	3103-	3125	3115.74	778.93	1.56	1.01E+003	91.90	2.84E+002
17	3460-	3479	3470.20	867.55	1.61	3.35E+002	70.27	2.57E+002
18	3842-	3866	3856.74	964.19	1.76	1.22E+003	90.24	1.96E+002
19	3979-	4032	4020.33	1005.08	1.09	1.96E+002	115.96	4.02E+002
20	4199-	4212	4205.28	1051.32	0.56	9.52E-001	34.12	1.04E+002
21	4330-	4374	4343.83	1085.96	1.73	9.81E+002	108.82	2.88E+002
22	4433-	4465	4449.24	1112.31	1.91	1.15E+003	93.84	2.06E+002
23	4679-	4707	4693.90	1173.47	2.03	1.39E+003	87.65	1.16E+002
24	4842-	4864	4853.00	1213.25	1.93	1.12E+002	40.20	7.50E+001
25	5086-	5111	5099.16	1274.79	2.12	1.51E+002	40.77	6.19E+001
26	5186-	5208	5197.81	1299.45	1.29	1.26E+002	39.08	6.61E+001
27	5317-	5345	5331.54	1332.89	2.10	1.30E+003	77.44	4.35E+001
28	5620-	5650	5633.75	1408.44	2.07	1.67E+003	83.72	1.81E+001
29	5836-	5856	5846.34	1461.58	1.64	1.22E+002	32.61	3.86E+001
30	6109-	6122	6115.74	1528.93	0.50	1.91E+001	9.97	1.92E+000

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

Errors quoted at 2.000 sigma

 *** 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: B102110DFSWC010GD
 Nuclide Library Used: C:\GENIE2K\CAMFILES\Zion Lib-BNL.NLB

IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)	Yield (%)	Activity (pCi/M ²)	Activity Uncertainty
K-40	0.999	1460.82*	10.66	1.49074E+006	4.17579E+005
Co-60	1.000	1173.23*	99.85	1.68940E+006	1.72324E+005
		1332.49*	99.98	1.63366E+006	1.63055E+005
Cs-137	1.000	661.66*	85.10	2.33111E+006	3.18420E+005
Eu-152	1.000	121.78*	28.67	8.67195E+006	1.87643E+006
		344.28*	26.60	8.30408E+006	1.46044E+006
		1408.01*	21.07	1.01489E+007	9.58507E+005
Eu-154	0.682	123.07*	40.40	6.15408E+006	1.33563E+006
		723.30	20.06		
		1274.43*	34.80	5.40153E+005	1.52330E+005
Eu-155	0.331	86.55*	30.70	2.07205E+006	8.19235E+005
		105.31	21.10		
Pb-212	0.940	238.63*	43.60	1.26379E+006	3.05131E+005
Bi-214	0.689	609.32*	45.49	4.52865E+004	1.25225E+005
		1120.29*	14.92	9.25963E+006	1.05911E+006
		1764.49	15.30		
Pb-214	0.387	295.22	18.42		
		351.93*	35.60	2.44457E+004	1.65159E+005

* = Energy line found in the spectrum.
 @ = Energy line not used for Weighted Mean Activity
 Energy Tolerance : 10.000 keV
 Nuclide confidence index threshold = 0.30
 Errors quoted at 2.000 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 (pCi/M ²)	Wt mean Activity Uncertainty
K-40	0.999	1.490738E+006	4.175790E+005
Co-60	1.000	1.659989E+006/	1.184386E+005
Cs-137	1.000	2.331113E+006✓	3.184198E+005
Eu-152	1.000	9.323840E+006✓	7.330871E+005
Eu-154	0.682	5.272180E+005✓	1.512099E+005
Eu-155	0.331	2.072048E+006	8.192348E+005
Pb-212	0.940	1.263791E+006	3.051311E+005
Bi-214	0.689	1.723246E+005	1.243592E+005
Pb-214	0.387	2.444566E+004	1.651593E+005

? = 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 2.000 sigma

***** UNIDENTIFIED PEAKS *****

Peak Locate Performed on: 4/14/2018 1:31:39 PM
 Peak Locate From Channel: 85
 Peak Locate To Channel: 8192

Peak No.	Energy (keV)	Peak Size in Counts per Second	Peak CPS % Uncertainty	Peak Type	Tol. Nuclide
1	32.49	2.3960E-001	41.61		
2	39.64	2.4685E+000	21.22		
3	75.12	5.4313E+000	10.65		
6	151.19	-2.5126E-002	-821.94	D-Esc.	
10	396.15	3.5692E-003	2869.55	D-Esc.	
11	410.97	2.5141E-001	49.25		
12	443.95	4.8837E-001	31.48	D-Esc.	
13	563.67	1.3950E-001	81.45		
16	778.93	1.6815E+000	9.11	Sum	
17	867.55	5.5902E-001	20.95	Tol.	Nb-94
18	964.19	2.0259E+000	7.42	Sum	
19	1005.08	3.2659E-001	59.18	Sum	
20	1051.32	1.5873E-003	3582.11		
21	1085.96	1.6350E+000	11.09		
24	1213.25	1.8668E-001	35.89	Sum	
26	1299.45	2.0991E-001	31.03	Sum	
30	1528.93	3.1806E-002	52.27	Sum	

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

Errors quoted at 2.000 sigma

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

Detector Name: 5456-A
 Sample Geometry:
 Sample Title: B102110DFSWC010GD
 Nuclide Library Used: C:\GENIE2K\CAMFILES\Zion Lib-BNL.NLB

	Nuclide Name	Energy (keV)	Yield (%)	Line MDA (pCi/M ²)	Nuclide MDA (pCi/M ²)	Activity (pCi/M ²)	Dec. Level (pCi/M ²)
+	K-40	1460.82*	10.66	5.126E+005	5.13E+005	1.491E+006	2.398E+005
+	Co-60	1173.23*	99.85	9.616E+004	6.22E+004	1.689E+006	4.643E+004
		1332.49*	99.98	6.222E+004		1.634E+006	2.941E+004
	Nb-94	702.65	99.81	1.399E+005	1.40E+005	-2.804E+004	6.850E+004
		871.09	99.89	1.751E+005		4.914E+005	8.604E+004
	Ag-108m	433.90	90.50	1.735E+005	1.66E+005	-2.287E+004	8.532E+004
		614.30	89.80	1.683E+005		4.447E+004	8.260E+004
		722.90	90.80	1.662E+005		3.766E+004	8.150E+004
	Cs-134	604.72	97.62	1.572E+005	1.57E+005	1.198E+004	7.715E+004
		795.86	85.46	1.624E+005		-8.084E+004	7.947E+004
+	Cs-137	661.66*	85.10	1.790E+005	1.79E+005	2.331E+006	8.781E+004
+	Eu-152	121.78*	28.67	1.067E+006	2.00E+005	8.672E+006	5.299E+005
		344.28*	26.60	6.661E+005		8.304E+006	3.285E+005
		1408.01*	21.07	2.004E+005		1.015E+007	9.199E+004
+	Eu-154	123.07*	40.40	7.570E+005	2.01E+005	6.154E+006	3.760E+005
		723.30	20.06	7.517E+005		5.098E+005	3.685E+005
		1274.43*	34.80	2.010E+005		5.402E+005	9.565E+004
+	Eu-155	86.55*	30.70	1.143E+006	1.14E+006	2.072E+006	5.677E+005
		105.31	21.10	1.568E+006		2.578E+005	7.790E+005
	Tl-208	583.19	85.00	1.840E+005	1.84E+005	3.615E+004	9.036E+004
	Bi-212	727.33	6.67	2.244E+006	2.24E+006	7.056E+005	1.100E+006
+	Pb-212	238.63*	43.60	3.424E+005	3.42E+005	1.264E+006	1.687E+005
+	Bi-214	609.32*	45.49	2.092E+005	2.09E+005	4.529E+004	1.015E+005
		1120.29*	14.92	8.816E+005		9.260E+006	4.299E+005
		1764.49	15.30	2.410E+005		2.370E+005	1.081E+005
+	Pb-214	295.22	18.42	1.027E+006	2.77E+005	2.188E+005	5.074E+005
		351.93*	35.60	2.772E+005		2.445E+004	1.352E+005
	Ra-226	186.21	3.64	6.388E+006	6.39E+006	-1.670E+006	3.166E+006
	Ac-228	338.32	11.27	1.774E+006	5.48E+005	-9.167E+005	8.762E+005
		911.20	25.80	5.476E+005		-3.236E+005	2.678E+005
		968.97	15.80	1.439E+006		-2.913E+005	7.097E+005
	Am-241	59.54	35.90	1.173E+006	1.17E+006	-1.935E+005	5.818E+005

+ = Nuclide identified during the nuclide identification
 * = Energy line found in the spectrum
 > = Calculated MDA is zero due to zero counts in the region, or the region is outside the spectrum, or MDA has not been calculated
 @ = Half-life too short to be able to perform the decay correction

***** GAMMA SPECTRUM ANALYSIS *****

Filename: 5456-A

Report Generated On : 4/13/2018 2:32:56 PM

Sample Title : B102110DFSWC011GD
Sample Description : U2 CTMNT UNDERVESSEL
Sample Identification : 011
Sample Type : GAMMA DIRECT
Sample Geometry :

Peak Locate Threshold : 3.00
Peak Locate Range (in channels) : 85 - 8192
Peak Area Range (in channels) : 85 - 8192
Identification Energy Tolerance : 10.000 keV

Sample Size : 3.140E+000 M²

Sample Taken On : 4/13/2018 2:11:00 PM
Acquisition Started : 4/13/2018 2:22:55 PM

Live Time : 600.0 seconds
Real Time : 600.7 seconds

Dead Time : 0.12 %

Energy Calibration Used Done On : 3/15/2018
Efficiency Calibration Used Done On : 1/23/2018
Efficiency ID : 1M90D_ECP_17.8CM

Data Validated
4/14/18 1315
DR Mubalik

 *** P E A K A N A L Y S I S R E P O R T ***

Detector Name: 5456-A
 Sample Title: B102110DFSWC011GD
 Peak Analysis Performed on: 4/13/2018 2:32:56 PM
 Peak Analysis From Channel: 85
 Peak Analysis To Channel: 8192

Peak No.	ROI start	ROI end	Peak centroid	Energy (keV)	FWHM (keV)	Net Peak Area	Net Area Uncert.	Continuum Counts
1	126-	134	130.69	32.67	0.50	5.51E+001	34.45	8.89E+001
2	148-	184	154.74	38.69	1.13	4.33E+002	161.81	1.08E+003
3	273-	300	290.25	72.56	1.32	1.06E+003	199.19	1.97E+003
4	321-	342	326.74	81.69	0.63	3.28E+002	166.09	1.75E+003
5	479-	492	487.43	121.86	1.20	4.76E+002	115.33	1.03E+003
6	970-	984	977.91	244.48	1.03	1.58E+002	70.91	3.82E+002
7	1363-	1387	1375.64	343.91	1.55	6.17E+002	84.30	2.81E+002
8	1635-	1652	1643.67	410.92	0.77	4.11E+001	46.15	1.51E+002
9	1767-	1785	1772.78	443.19	1.23	1.12E+002	47.61	1.34E+002
10	2409-	2443	2434.18	608.55	0.75	1.10E+002	59.56	1.44E+002
11	2632-	2654	2642.95	660.74	1.52	6.64E+002	67.33	1.21E+002
12	3100-	3121	3111.37	777.84	1.56	2.81E+002	46.85	7.15E+001
13	3321-	3332	3326.58	831.65	0.35	2.41E+001	22.08	3.79E+001
14	3371-	3383	3376.73	844.18	1.19	1.41E+001	23.51	4.69E+001
15	3456-	3474	3465.13	866.28	1.30	6.03E+001	35.97	7.77E+001
16	3838-	3862	3850.90	962.72	1.36	3.06E+002	52.63	9.36E+001
17	4330-	4348	4337.76	1084.44	1.77	2.00E+002	41.79	6.99E+001
18	4432-	4454	4442.77	1110.69	1.78	3.26E+002	43.64	3.80E+001
19	4674-	4699	4687.34	1171.83	1.74	3.46E+002	48.75	5.85E+001
20	4839-	4852	4845.56	1211.39	0.63	3.30E+001	19.07	2.10E+001
21	5184-	5197	5190.80	1297.70	0.46	2.93E+001	13.98	6.69E+000
22	5311-	5337	5324.26	1331.07	1.61	4.12E+002	42.74	1.02E+001
23	5612-	5638	5625.85	1406.46	1.91	4.86E+002	44.09	0.00E+000
24	5825-	5848	5837.48	1459.37	1.70	1.47E+002	27.07	9.03E+000
25	7044-	7059	7051.06	1762.76	0.96	2.18E+001	12.79	6.16E+000

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

Errors quoted at 2.000 sigma

 *** 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: B102110DFSWC011GD
 Nuclide Library Used: C:\GENIE2K\CAMFILES\Zion Lib-BNL.NLB

IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)	Yield (%)	Activity (pCi/M ²)	Activity Uncertainty
K-40	0.997	1460.82*	10.66	1.80648E+006	3.67875E+005
Co-60	0.997	1173.23*	99.85	4.24070E+005	6.87867E+004
		1332.49*	99.98	5.22880E+005	6.85188E+004
Ag-108m	0.418	433.90*	90.50	1.17642E+005	5.28889E+004
		614.30*	89.80	1.26954E+005	7.04159E+004
		722.90	90.80		
Cs-137	0.999	661.66*	85.10	8.26830E+005	1.29939E+005
Eu-152	0.999	121.78*	28.67	1.21183E+006	3.80821E+005
		344.28*	26.60	2.03996E+006	4.36053E+005
		1408.01*	21.07	2.98406E+006	3.60941E+005
Eu-155	0.312	86.55*	30.70	9.26139E+005	5.04573E+005
		105.31	21.10		
Pb-212	0.947	238.63*	43.60	2.87140E+005	1.37214E+005
Bi-214	0.970	609.32*	45.49	2.50614E+005	1.39016E+005
		1120.29*	14.92	2.64255E+006	4.12253E+005
		1764.49*	15.30	2.01753E+005	1.19270E+005

* = Energy line found in the spectrum.
 @ = Energy line not used for Weighted Mean Activity
 Energy Tolerance : 10.000 keV
 Nuclide confidence index threshold = 0.30
 Errors quoted at 2.000 sigma

 *** INTERFERENCE CORRECTED REPORT ***
 ..*****

Nuclide Name	Nuclide Id Confidence	Wt mean Activity (pCi/M^2)	Wt mean Activity Uncertainty
K-40	0.997	1.806481E+006	3.678745E+005
Co-60	0.997	4.736682E+005 ✓	4.854454E+004
Ag-108m	0.418	7.025554E+004	4.575835E+004
Cs-137	0.999	8.268299E+005 ✓	1.299393E+005
Eu-152	0.999	2.117439E+006 ✓	2.245606E+005
Eu-155	0.312	9.261395E+005	5.045729E+005
Pb-212	0.947	2.871401E+005	1.372140E+005
Bi-214	0.970	2.777425E+005	9.566159E+004
X Pb-214	0.379		

? = 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 2.000 sigma

***** UNIDENTIFIED PEAKS *****

Peak Locate Performed on: 4/13/2018 2:32:56 PM
 Peak Locate From Channel: 85
 Peak Locate To Channel: 8192

Peak No.	Energy (keV)	Peak Size in Counts per Second	Peak CPS % Uncertainty	Peak Type	Tol. Nuclide
1	32.67	9.1837E-002	62.52		
2	38.69	7.2245E-001	37.33		
3	72.56	1.7638E+000	18.82		
8	410.92	6.8568E-002	112.18		
12	777.84	4.6750E-001	16.70	Sum	
13	831.65	4.0128E-002	91.69		
14	844.18	2.3470E-002	166.97	Sum	
15	866.28	1.0054E-001	59.64	Tol.	Nb-94
16	962.72	5.1070E-001	17.17	Tol.	Ac-228
17	1084.44	3.3351E-001	20.89		
20	1211.39	5.5000E-002	57.79	Sum	
21	1297.70	4.8843E-002	47.72	Sum	

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

Errors quoted at 2.000 sigma

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

Detector Name: 5456-A
 Sample Geometry:
 Sample Title: B102110DFSWC011GD
 Nuclide Library Used: C:\GENIE2K\CAMFILES\Zion Lib-BNL.NLB

	Nuclide Name	Energy (keV)	Yield (%)	Line MDA (pCi/M ²)	Nuclide MDA (pCi/M ²)	Activity (pCi/M ²)	Dec. Level (pCi/M ²)
+	K-40	1460.82*	10.66	2.767E+005	2.77E+005	1.806E+006	1.217E+005
+	Co-60	1173.23*	99.85	6.700E+004	3.14E+004	4.241E+005	3.184E+004
		1332.49*	99.98	3.142E+004		5.229E+005	1.399E+004
	Nb-94	702.65	99.81	7.625E+004	7.63E+004	-6.732E+004	3.667E+004
		871.09	99.89	9.144E+004		-1.518E+004	4.419E+004
+	Ag-108m	433.90*	90.50	7.633E+004	7.63E+004	1.176E+005	3.675E+004
		614.30*	89.80	1.090E+005		1.270E+005	5.292E+004
		722.90	90.80	9.790E+004		1.494E+005	4.733E+004
	Cs-134	604.72	97.62	9.205E+004	9.21E+004	-8.581E+003	4.459E+004
		795.86	85.46	1.018E+005		1.247E+005	4.914E+004
+	Cs-137	661.66*	85.10	9.207E+004	9.21E+004	8.268E+005	4.435E+004
+	Eu-152	121.78*	28.67	4.537E+005	1.66E+004	1.212E+006	2.234E+005
		344.28*	26.60	3.795E+005		2.040E+006	1.853E+005
		1408.01*	21.07	1.662E+004		2.984E+006	0.000E+000
	Eu-154	123.07	40.40	4.643E+005	1.71E+005	1.301E+006	2.297E+005
		723.30	20.06	4.410E+005		9.193E+005	2.132E+005
		1274.43	34.80	1.715E+005		2.000E+005	8.086E+004
+	Eu-155	86.55*	30.70	7.612E+005	7.61E+005	9.261E+005	3.768E+005
		105.31	21.10	8.420E+005		3.355E+005	4.161E+005
	Tl-208	583.19	85.00	1.059E+005	1.06E+005	4.274E+004	5.134E+004
	Bi-212	727.33	6.67	1.278E+006	1.28E+006	9.293E+005	6.170E+005
+	Pb-212	238.63*	43.60	2.036E+005	2.04E+005	2.871E+005	9.932E+004
+	Bi-214	609.32*	45.49	2.151E+005	1.58E+005	2.506E+005	1.045E+005
		1120.29*	14.92	3.487E+005		2.643E+006	1.634E+005
		1764.49*	15.30	1.577E+005		2.018E+005	6.636E+004
	Pb-214	295.22	18.42	5.893E+005	2.84E+005	6.378E+004	2.885E+005
		351.93*	35.60	2.836E+005		1.524E+006	1.384E+005
	Ra-226	186.21	3.64	3.625E+006	3.62E+006	5.510E+005	1.785E+006
	Ac-228	338.32	11.27	1.086E+006	3.28E+005	1.688E+005	5.327E+005
		911.20	25.80	3.278E+005		4.011E+005	1.579E+005
		968.97	15.80	7.621E+005		-4.817E+004	3.711E+005
	Am-241	59.54	35.90	6.674E+005	6.67E+005	3.249E+005	3.291E+005

+ = Nuclide identified during the nuclide identification

* = Energy line found in the spectrum

> = Calculated MDA is zero due to zero counts in the region, or the region is outside the spectrum, or MDA has not been calculated

@ = Half-life too short to be able to perform the decay correction

***** GAMMA SPECTRUM ANALYSIS *****

Filename: 5456-A

Report Generated On : 4/13/2018 2:44:56 PM
Sample Title : B102110DFSWC012GD
Sample Description : U2 CTMNT UNDERVESSEL
Sample Identification : 012
Sample Type : GAMMA DIRECT
Sample Geometry :
Peak Locate Threshold : 3.00
Peak Locate Range (in channels) : 85 - 8192
Peak Area Range (in channels) : 85 - 8192
Identification Energy Tolerance : 10.000 keV
Sample Size : 3.140E+000 M^2
Sample Taken On : 4/13/2018 2:34:00 PM
Acquisition Started : 4/13/2018 2:34:54 PM
Live Time : 600.0 seconds
Real Time : 600.7 seconds
Dead Time : 0.11 %

Energy Calibration Used Done On : 3/15/2018
Efficiency Calibration Used Done On : 1/23/2018
Efficiency ID : 1M90D_ECP_17.8CM

Data Validated
4/14/18 1321
DR Mahalik

 **** P E A K A N A L Y S I S R E P O R T ****

Detector Name: 5456-A

Sample Title: B102110DFSWC012GD

Peak Analysis Performed on: 4/13/2018 2:44:55 PM

Peak Analysis From Channel: 85

Peak Analysis To Channel: 8192

Peak No.	ROI start	ROI end	Peak centroid	Energy (keV)	FWHM (keV)	Net Peak Area	Net Area Uncert.	Continuum Counts
1	148-	163	154.22	38.55	0.75	1.03E+002	66.68	3.32E+002
2	272-	300	290.10	72.53	1.48	8.40E+002	169.95	1.38E+003
3	479-	496	487.82	121.96	1.38	2.11E+002	109.39	8.54E+002
4	947-	986	953.74	238.44	0.99	1.71E+002	124.85	6.20E+002
5	1365-	1412	1375.97	343.99	1.20	2.44E+002	113.07	4.05E+002
6	1637-	1648	1642.24	410.56	0.43	1.97E+001	30.74	8.63E+001
7	2428-	2441	2433.74	608.43	0.67	4.12E+001	25.00	4.18E+001
8	2630-	2656	2643.07	660.77	1.82	1.74E+003	90.85	7.41E+001
9	3103-	3120	3112.22	778.06	0.98	9.60E+001	29.20	3.60E+001
10	3842-	3861	3851.24	962.81	1.38	1.23E+002	30.66	3.20E+001
11	4008-	4021	4014.90	1003.72	0.32	1.44E+001	18.17	2.46E+001
12	4331-	4344	4337.86	1084.46	1.30	5.08E+001	22.17	2.62E+001
13	4434-	4452	4442.80	1110.70	1.13	1.02E+002	27.59	2.47E+001
14	4676-	4699	4687.95	1171.99	1.30	1.83E+002	34.71	2.95E+001
15	5312-	5336	5324.22	1331.06	1.95	2.08E+002	31.36	9.29E+000
16	5614-	5636	5625.78	1406.44	1.89	1.54E+002	27.41	8.63E+000
17	5826-	5848	5836.84	1459.21	1.42	1.57E+002	25.88	2.73E+000
18	7044-	7059	7051.99	1763.00	0.49	2.31E+001	10.74	1.91E+000

M = First peak in a multiplet region

m = Other peak in a multiplet region

F = Fitted singlet

Errors quoted at 2.000 sigma

 *** 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: B102110DFSWC012GD
 Nuclide Library Used: C:\GENIE2K\CAMFILES\Zion Lib-BNL.NLB

IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)	Yield (%)	Activity (pCi/M ²)	Activity Uncertainty
K-40	0.996	1460.82*	10.66	1.93300E+006	3.59708E+005
Co-60	0.997	1173.23*	99.85	2.25176E+005	4.62576E+004
		1332.49*	99.98	2.63731E+005	4.50616E+004
Cs-137	0.999	661.66*	85.10	2.16583E+006	2.83621E+005
Eu-152	0.999	121.78*	28.67	5.36033E+005	2.98275E+005
		344.28*	26.60	8.06717E+005	3.96785E+005
		1408.01*	21.07	9.47839E+005	1.84610E+005
Pb-212	1.000	238.63*	43.60	3.09060E+005	2.31122E+005
Bi-214	0.970	609.32*	45.49	9.38642E+004	5.80610E+004
		1120.29*	14.92	8.29211E+005	2.33281E+005
		1764.49*	15.30	2.13318E+005	1.00694E+005

* = Energy line found in the spectrum.
 @ = Energy line not used for Weighted Mean Activity
 Energy Tolerance : 10.000 keV
 Nuclide confidence index threshold = 0.30
 Errors quoted at 2.000 sigma

 **** INTERFERENCE CORRECTED REPORT ****

Nuclide Name	Nuclide Id Confidence	Wt mean Activity (pCi/M ²)	Wt mean Activity Uncertainty
K-40	0.996	1.932996E+006	3.597085E+005
Co-60	0.997	2.449584E+005 ✓	3.227789E+004
Cs-137	0.999	2.165826E+006 ✓	2.836205E+005
Eu-152	0.999	8.301184E+005 ✓	1.459681E+005
Pb-212	1.000	3.090602E+005	2.311219E+005
Bi-214	0.970	1.550130E+005	4.916856E+004
X Pb-214	0.381		

? = 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 2.000 sigma

***** UNIDENTIFIED PEAKS *****

Peak Locate Performed on: 4/13/2018 2:44:55 PM
 Peak Locate From Channel: 85
 Peak Locate To Channel: 8192

Peak No.	Energy (keV)	Peak Size in Counts per Second	Peak CPS % Uncertainty	Peak Type	Tot. Nuclide
1	38.55	1.7140E-001	64.84		
2	72.53	1.4003E+000	20.23		
6	410.56	3.2893E-002	155.74		
9	778.06	1.6000E-001	30.42	Sum	
10	962.81	2.0503E-001	24.92		
11	1003.72	2.4038E-002	125.98	Sum	
12	1084.46	8.4654E-002	43.65		

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

Errors quoted at 2.000 sigma

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

Detector Name: 5456-A
 Sample Geometry:
 Sample Title: B102110DFSWC012GD
 Nuclide Library Used: C:\GENIE2K\CAMFILES\Zion Lib-BNL.NLB

	Nuclide Name	Energy (keV)	Yield (%)	Line MDA (pCi/M ²)	Nuclide MDA (pCi/M ²)	Activity (pCi/M ²)	Dec. Level (pCi/M ²)
+	K-40	1460.82*	10.66	1.626E+005	1.63E+005	1.933E+006	6.468E+004
+	Co-60	1173.23*	99.85	4.714E+004	2.92E+004	2.252E+005	2.191E+004
		1332.49*	99.98	2.923E+004		2.637E+005	1.290E+004
	Nb-94	702.65	99.81	6.223E+004	6.22E+004	-3.067E+004	2.966E+004
		871.09	99.89	6.797E+004		4.147E+004	3.245E+004
	Ag-108m	433.90	90.50	8.563E+004	6.55E+004	-6.369E+003	4.141E+004
		614.30	89.80	7.831E+004		-1.150E+004	3.759E+004
		722.90	90.80	6.552E+004		1.582E+004	3.115E+004
	Cs-134	604.72	97.62	7.331E+004	6.63E+004	2.703E+004	3.522E+004
		795.86	85.46	6.625E+004		6.359E+003	3.137E+004
+	Cs-137	661.66*	85.10	7.704E+004	7.70E+004	2.166E+006	3.683E+004
+	Eu-152	121.78*	28.67	4.482E+005	1.34E+005	5.360E+005	2.207E+005
		344.28*	26.60	6.002E+005		8.067E+005	2.956E+005
		1408.01*	21.07	1.335E+005		9.478E+005	5.846E+004
	Eu-154	123.07	40.40	3.684E+005	1.33E+005	6.033E+005	1.818E+005
		723.30	20.06	2.988E+005		8.001E+004	1.421E+005
		1274.43	34.80	1.330E+005		2.576E+004	6.162E+004
	Eu-155	86.55	30.70	5.751E+005	5.75E+005	5.346E+005	2.839E+005
		105.31	21.10	6.961E+005		-1.140E+005	3.431E+005
	Tl-208	583.19	85.00	7.874E+004	7.87E+004	5.727E+004	3.774E+004
	Bi-212	727.33	6.67	9.067E+005	9.07E+005	4.713E+005	4.313E+005
+	Pb-212	238.63*	43.60	3.679E+005	3.68E+005	3.091E+005	1.815E+005
+	Bi-214	609.32*	45.49	8.656E+004	8.66E+004	9.386E+004	4.020E+004
		1120.29*	14.92	2.721E+005		8.292E+005	1.251E+005
		1764.49*	15.30	9.791E+004		2.133E+005	3.645E+004
	Pb-214	295.22	18.42	4.715E+005	4.48E+005	-3.199E+005	2.296E+005
		351.93*	35.60	4.485E+005		6.028E+005	2.209E+005
	Ra-226	186.21	3.64	3.122E+006	3.12E+006	-6.512E+005	1.533E+006
	Ac-228	338.32	11.27	8.078E+005	2.26E+005	-2.099E+005	3.934E+005
		911.20	25.80	2.265E+005		2.964E+004	1.072E+005
		968.97	15.80	5.281E+005		-3.436E+005	2.541E+005
	Am-241	59.54	35.90	5.545E+005	5.55E+005	2.157E+005	2.727E+005

- + = Nuclide identified during the nuclide identification
- * = Energy line found in the spectrum
- > = Calculated MDA is zero due to zero counts in the region, or the region is outside the spectrum, or MDA has not been calculated
- @ = Half-life too short to be able to perform the decay correction

***** GAMMA SPECTRUM ANALYSIS *****

Filename: C:\GENIE2K\CAMFILES\00004742.CNF

Report Generated On : 4/14/2018 4:26:10 PM
Sample Title : B102110DFSFC013GD
Sample Description : U2 CTMT Under Vessel
Sample Identification : 013 Sump
Sample Type : Gamma Direct
Sample Geometry :
Peak Locate Threshold : 3.00
Peak Locate Range (in channels) : 85 - 8192
Peak Area Range (in channels) : 85 - 8192
Identification Energy Tolerance : 10.000 keV
Sample Size : 1.600E+000 M^2
Sample Taken On : 4/14/2018 3:08:00 PM
Acquisition Started : 4/14/2018 3:09:06 PM
Live Time : 600.0 seconds
Real Time : 601.9 seconds
Dead Time : 0.32 %

Energy Calibration Used Done On : 3/15/2018
Efficiency Calibration Used Done On : 3/19/2018
Efficiency ID : CORE_TUNNEL_SUMP

Data Validated
4/15/18 1256
WR Mihalek

 **** P E A K A N A L Y S I S R E P O R T ****

Detector Name: 5456-A
 Sample Title: B102110DFSFC013GD
 Peak Analysis Performed on: 4/14/2018 4:26:10 PM
 Peak Analysis From Channel: 85
 Peak Analysis To Channel: 8192

Peak No.	ROI start	ROI end	Peak centroid	Energy (keV)	FWHM (keV)	Net Peak Area	Net Area Uncert.	Continuum Counts
1	126-	136	129.48	32.37	0.50	2.28E+002	56.47	1.89E+002
2	280-	346	300.36	75.09	1.36	1.42E+003	425.27	4.63E+003
3	857-	867	862.36	215.59	0.41	5.68E+001	68.21	4.65E+002
4	1403-	1416	1408.58	352.14	0.84	4.05E+001	61.05	3.23E+002
5	2432-	2445	2437.27	609.32	1.24	5.96E+001	33.01	7.64E+001
6	2634-	2660	2646.67	661.67	1.54	1.25E+004	226.37	7.93E+001
7	4441-	4489	4482.59	1120.65	0.54	5.41E+001	29.07	2.29E+001
8	4683-	4705	4694.43	1173.61	1.44	1.15E+002	27.53	1.80E+001
9	5320-	5342	5331.90	1332.98	1.69	1.58E+002	26.02	2.85E+000
10	5834-	5855	5845.33	1461.33	1.09	1.15E+002	23.24	5.44E+000

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

Errors quoted at 2.000 sigma

 **** 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: B102110DFSFC013GD
 Nuclide Library Used: C:\GENIE2K\CAMFILES\Zion Lib-BNL.NLB

IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)	Yield (%)	Activity (pCi/M ²)	Activity Uncertainty
K-40	1.000	1460.82*	10.66	2.19351E+005	4.84086E+004
Co-60	1.000	1173.23*	99.85	2.13126E+004	5.37875E+003
		1332.49*	99.98	3.07957E+004	5.63326E+003
		661.66*	85.10	2.14722E+006	2.60795E+005
Bi-214	0.726	609.32*	45.49	1.85330E+004	1.05286E+004
		1120.29*	14.92	6.58867E+004	3.58593E+004
Pb-214	0.443	1764.49	15.30		
		295.22	18.42		
		351.93*	35.60	1.27376E+004	1.93220E+004

* = Energy line found in the spectrum.
 @ = Energy line not used for Weighted Mean Activity
 Energy Tolerance : 10.000 keV
 Nuclide confidence index threshold = 0.30
 Errors quoted at 2.000 sigma

 **** INTERFERENCE CORRECTED REPORT ****

Nuclide Name	Nuclide Id Confidence	Wt mean Activity (pCi/M ²)	Wt mean Activity Uncertainty
K-40	1.000	2.193505E+005	4.840857E+004
Co-60	1.000	2.583508E+004✓	3.890216E+003
Cs-137	1.000	2.147225E+006✓	2.607946E+005
Bi-214	0.726	2.229122E+004	1.010216E+004
Pb-214	0.443	1.273759E+004	1.932200E+004

? = 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 2.000 sigma

***** UNIDENTIFIED PEAKS *****

Peak Locate Performed on: 4/14/2018 4:26:10 PM
 Peak Locate From Channel: 85
 Peak Locate To Channel: 8192

Peak No.	Energy (keV)	Peak Size in Counts per Second	Peak CPS % Uncertainty	Peak Type	Tol. Nuclide
1	32.37	3.8042E-001	24.74		
2	75.09	2.3639E+000	29.98		
3	215.59	9.4600E-002	120.18		

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

Errors quoted at 2.000 sigma

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

Detector Name: 5456-A
 Sample Geometry:
 Sample Title: B102110DFSFC013GD
 Nuclide Library Used: C:\GENIE2K\CAMFILES\Zion Lib-BNL.NLB

	Nuclide Name	Energy (keV)	Yield (%)	Line MDA (pCi/M^2)	Nuclide MDA (pCi/M^2)	Activity (pCi/M^2)	Dec. Level (pCi/M^2)
+	K-40	1460.82*	10.66	3.370E+004	3.37E+004	2.194E+005	1.426E+004
+	Co-60	1173.23*	99.85	5.762E+003	2.66E+003	2.131E+004	2.630E+003
		1332.49*	99.98	2.657E+003		3.080E+004	1.065E+003
	Nb-94	702.65	99.81	5.105E+003	5.10E+003	3.311E+002	2.349E+003
		871.09	99.89	5.795E+003		1.273E+003	2.675E+003
	Ag-108m	433.90	90.50	2.061E+004	6.59E+003	4.644E+003	1.012E+004
		614.30	89.80	1.349E+004		4.317E+003	6.533E+003
		722.90	90.80	6.585E+003		4.685E+003	3.066E+003
	Cs-134	604.72	97.62	1.288E+004	7.28E+003	-4.134E+002	6.245E+003
		795.86	85.46	7.279E+003	@	-5.931E+003	3.389E+003
+	Cs-137	661.66*	85.10	1.095E+004	1.10E+004	2.147E+006	5.242E+003
	Eu-152	121.78	28.67	7.127E+004	3.19E+004	5.390E+003✓	3.523E+004
		344.28	26.60	6.275E+004		-2.099E+004	3.081E+004
		1408.01	21.07	3.190E+004		4.182E+004	1.467E+004
	Eu-154	123.07	40.40	5.057E+004	1.35E+004	3.080E+004✓	2.500E+004
		723.30	20.06	2.981E+004		1.229E+004	1.388E+004
		1274.43	34.80	1.348E+004		-1.303E+004	5.996E+003
	Eu-155	86.55	30.70	8.426E+004	8.43E+004	-2.567E+004	4.168E+004
		105.31	21.10	1.048E+005		-8.344E+004	5.180E+004
	Tl-208	583.19	85.00	1.361E+004	1.36E+004	8.026E+003	6.584E+003
	Bi-212	727.33	6.67	9.054E+004	9.05E+004	1.135E+005	4.218E+004
	Pb-212	238.63	43.60	4.255E+004	4.25E+004	1.250E+004	2.097E+004
+	Bi-214	609.32*	45.49	1.575E+004	1.58E+004	1.853E+004	7.457E+003
		1120.29*	14.92	5.350E+004		6.589E+004	2.511E+004
		1764.49	15.30	3.531E+004		1.748E+004	1.567E+004
+	Pb-214	295.22	18.42	9.666E+004	3.18E+004	-1.988E+004	4.756E+004
		351.93*	35.60	3.176E+004		1.274E+004	1.546E+004
	Ra-226	186.21	3.64	5.298E+005	5.30E+005	-1.408E+004	2.616E+005
	Ac-228	338.32	11.27	1.509E+005	2.49E+004	-3.997E+004	7.411E+004
		911.20	25.80	2.491E+004		6.443E+003	1.158E+004
		968.97	15.80	4.604E+004		1.535E+004	2.155E+004
	Am-241	59.54	35.90	8.061E+004	8.06E+004	6.636E+003	3.973E+004

+ = Nuclide identified during the nuclide identification
 * = Energy line found in the spectrum
 > = Calculated MDA is zero due to zero counts in the region, or the region is outside the spectrum, or MDA has not been calculated
 @ = Half-life too short to be able to perform the decay correction

***** GAMMA SPECTRUM ANALYSIS *****

_ilename: 5456-A

Report Generated On : 4/10/2018 8:48:22 AM

Sample Title : B102110DFSWC014GD
Sample Description : UNIT 2 CONTAINMENT
Sample Identification : 014
Sample Type : GAMMA DIRECT
Sample Geometry :

Peak Locate Threshold : 3.00
Peak Locate Range (in channels) : 85 - 8192
Peak Area Range (in channels) : 85 - 8192
Identification Energy Tolerance : 10.000 keV

Sample Size : 2.830E+001

Sample Taken On : 4/10/2018 8:38:00 AM
Acquisition Started : 4/10/2018 8:38:14 AM

Live Time : 600.0 seconds
Real Time : 607.6 seconds

Dead Time : 1.25 %

Energy Calibration Used Done On : 3/15/2018
Efficiency Calibration Used Done On : 1/23/2018
Efficiency ID : 3M90D_ECP_17.8CM

Data Validated
4/10/18 1724
DR Mahab
SCF = 0.57200

 ***** P E A K A N A L Y S I S R E P O R T *****

Detector Name: 5456-A

Sample Title: B102110DFSWC014GD

Peak Analysis Performed on: 4/10/2018 8:48:22 AM

Peak Analysis From Channel: 85

Peak Analysis To Channel: 8192

Peak No.	ROI start	ROI end	Peak centroid	Energy (keV)	FWHM (keV)	Net Peak Area	Net Area Uncert.	Continuum Counts
1	126-	136	130.61	32.65	1.16	7.29E+002	117.90	9.48E+002
2	152-	193	161.60	40.40	1.37	8.27E+003	530.26	9.77E+003
3	214-	227	218.09	54.52	0.41	-1.68E+002	207.00	3.91E+003
4	282-	308	301.98	75.50	1.22	8.57E+003	531.73	1.42E+004
5	330-	362	340.92	85.23	1.39	3.41E+003	649.78	1.99E+004
6	438-	451	445.99	111.50	0.25	1.03E+002	285.72	7.36E+003
7	481-	499	488.88	122.22	1.27	1.14E+004	407.10	8.87E+003
8	973-	988	980.35	245.09	1.23	2.36E+003	208.63	2.83E+003
9	1176-	1192	1185.35	296.34	0.38	9.11E+001	157.83	1.96E+003
10	1369-	1390	1378.00	344.50	1.34	8.33E+003	242.84	1.70E+003
11	1459-	1480	1472.16	368.04	1.03	3.14E+002	157.91	1.58E+003
12	1632-	1653	1645.01	411.25	1.44	6.62E+002	154.82	1.42E+003
13	1765-	1789	1776.15	444.04	1.47	9.12E+002	165.53	1.44E+003
14	1948-	1964	1954.89	488.72	0.77	1.29E+002	107.79	8.84E+002
15	2248-	2261	2255.39	563.85	0.56	2.43E+001	89.73	7.22E+002
16	2338-	2353	2345.72	586.43	0.44	1.04E+002	94.78	7.13E+002
17	2430-	2448	2439.30	609.82	0.56	1.74E+002	100.16	6.90E+002
18	2637-	2656	2646.50	661.63	1.60	1.36E+003	128.40	7.87E+002
19	2707-	2723	2714.28	678.57	0.64	1.07E+002	91.84	6.34E+002
20	2746-	2767	2753.82	688.46	0.98	2.31E+002	112.36	7.75E+002
21	2886-	2903	2893.44	723.36	1.46	1.41E+002	100.64	7.34E+002
22	3100-	3129	3115.30	778.83	1.58	3.15E+003	174.05	9.31E+002
23	3231-	3248	3239.62	809.90	0.41	3.98E+001	88.95	5.96E+002
24	3456-	3507	3469.38	867.34	1.80	1.38E+003	223.33	1.45E+003
25	3669-	3687	3676.32	919.08	0.80	1.28E+002	81.02	4.41E+002
26	3843-	3867	3856.00	964.00	1.72	3.46E+003	155.00	6.15E+002
27	3974-	4029	4019.95	1004.99	1.60	4.63E+002	190.55	1.07E+003
28	4327-	4370	4343.20	1085.80	1.84	2.78E+003	171.00	6.82E+002
29	4432-	4463	4448.23	1112.06	1.64	3.25E+003	153.73	5.32E+002
30	4677-	4707	4693.08	1173.27	1.76	2.77E+003	136.82	3.92E+002
31	4841-	4864	4851.95	1212.99	1.94	3.09E+002	65.51	1.91E+002
32	5086-	5111	5098.30	1274.58	1.78	3.47E+002	60.78	1.36E+002
33	5184-	5210	5197.20	1299.30	1.61	3.82E+002	60.41	1.21E+002
34	5316-	5346	5330.70	1332.67	1.95	2.79E+003	115.77	1.16E+002
35	5616-	5649	5632.84	1408.21	1.97	5.05E+003	145.21	4.25E+001
36	5822-	5857	5844.96	1461.24	0.66	2.95E+002	37.13	9.00E+000
37	6108-	6122	6114.09	1528.52	1.04	3.73E+001	14.99	6.68E+000

M = First peak in a multiplet region

~ = Other peak in a multiplet region

= Fitted singlet

Errors quoted at 2.000 sigma

 **** 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: B102110DFSWC014GD
 Nuclide Library Used: C:\GENIE2K\CAMFILES\Zion Lib-BNL.NLB

IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)	Yield (%)	Activity (pCi/)	Activity Uncertainty
K-40	1.000	1460.82*	10.66	3.61225E+006	5.52332E+005
Co-60	1.000	1173.23*	99.85	3.40369E+006	3.20039E+005
		1332.49*	99.98	3.52748E+006	3.17991E+005
Cs-137	1.000	661.66*	85.10	1.70570E+006	2.60849E+005
Eu-152	1.000	121.78*	28.67	2.98300E+007	6.06871E+006
		344.28*	26.60	2.80614E+007	4.68412E+006
		1408.01*	21.07	3.08927E+007	2.62630E+006
Eu-154	0.999	123.07*	40.40	2.11690E+007	4.32136E+006
		723.30*	20.06	7.69460E+005	5.55203E+005
		1274.43*	34.80	1.24939E+006	2.41431E+005
Eu-155	0.974	86.55*	30.70	9.59638E+006	2.64948E+006
		105.31*	21.10	3.77475E+005	1.05122E+006
Tl-208	0.983	583.19*	85.00	1.26542E+005	1.16737E+005
Pb-212	0.936	238.63*	43.60	4.40049E+006	8.10629E+005
Bi-214	0.687	609.32*	45.49	4.00959E+005	2.35808E+005
		1120.29*	14.92	2.63721E+007	2.45363E+006
		1764.49	15.30		
Pb-214	0.943	295.22*	18.42	4.24339E+005	7.38523E+005
		351.93*	35.60	2.09673E+007	3.41101E+006
Ac-228	0.929	338.32*	11.27	6.62320E+007	1.10007E+007
		911.20*	25.80	5.72022E+005	3.66332E+005
		968.97*	15.80	2.56237E+007	2.54291E+006
Am-241	0.961	59.54*	35.90	-5.89653E+005	7.35333E+005

* = Energy line found in the spectrum.
 @ = Energy line not used for Weighted Mean Activity
 Energy Tolerance : 10.000 keV
 Nuclide confidence index threshold = 0.30
 Errors quoted at 2.000 sigma

 **** INTERFERENCE CORRECTED REPORT ****

Nuclide Name	Nuclide Id Confidence	Wt mean Activity (pCi/)	Wt mean Activity Uncertainty	
	K-40	1.000	3.612254E+006	5.523320E+005
	Co-60	1.000	3.465982E+006✓	2.255744E+005
X	Ag-108m	0.435		
	Cs-137	1.000	1.705701E+006✓	2.608489E+005
	Eu-152	1.000	2.973598E+007✓	2.142032E+006
	Eu-154	0.999	1.170635E+006✓	2.203949E+005
	Eu-155	0.974	1.631338E+006	9.771157E+005
	Tl-208	0.983	1.265415E+005	1.167372E+005
X	Bi-212	0.975		
	Pb-212	0.936	4.400488E+006	8.106288E+005
	Bi-214	0.687	6.386417E+005	2.347265E+005
	Pb-214	0.943	3.328408E+005	7.253504E+005
	Ac-228	0.929	1.158351E+006	3.613900E+005
	Am-241	0.961	-5.896525E+005	7.353330E+005

? = 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 2.000 sigma

***** UNIDENTIFIED PEAKS *****

Peak Locate Performed on: 4/10/2018 8:48:22 AM
 Peak Locate From Channel: 85
 Peak Locate To Channel: 8192

Peak No.	Energy (keV)	Peak Size in Counts per Second	Peak CPS % Uncertainty	Peak Type	Tol. Nuclide
1	32.65	1.2158E+000	16.16		
2	40.40	1.3780E+001	6.41		
4	75.50	1.4279E+001	6.21		
11	368.04	5.2364E-001	50.26	Sum	
12	411.25	1.1029E+000	23.40	Sum	
13	444.04	1.5203E+000	18.15	D-Esc.	
14	488.72	2.1540E-001	83.40	Sum	
15	563.85	4.0419E-002	370.00		
19	678.57	1.7795E-001	86.02	Sum	
20	688.46	3.8545E-001	48.59	Sum	
22	778.83	5.2441E+000	5.53	Sum	
23	809.90	6.6341E-002	223.47	Sum	
24	867.34	2.2952E+000	16.22		
27	1004.99	7.7250E-001	41.11	Sum	
28	1085.80	4.6321E+000	6.15	Sum	
31	1212.99	5.1487E-001	21.20	Sum	
33	1299.30	6.3611E-001	15.83	Sum	
37	1528.52	6.2197E-002	40.17	Sum	

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

Errors quoted at 2.000 sigma

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

Detector Name: 5456-A
 Sample Geometry:
 Sample Title: B102110DFSWC014GD
 Nuclide Library Used: C:\GENIE2K\CAMFILES\Zion Lib-BNL.NLB

	Nuclide Name	Energy (keV)	Yield (%)	Line MDA (pCi/)	Nuclide MDA (pCi/)	Activity (pCi/)	Dec. Level (pCi/)
+	K-40	1460.82*	10.66	3.169E+005	3.17E+005	3.612E+006	1.419E+005
+	Co-60	1173.23*	99.85	1.801E+005	1.02E+005	3.404E+006	8.837E+004
		1332.49*	99.98	1.024E+005		3.527E+006	4.948E+004
	Nb-94	702.65	99.81	2.202E+005	2.20E+005	-1.812E+005	1.087E+005
		871.09	99.89	2.889E+005		-1.295E+004	1.429E+005
	Ag-108m	433.90	90.50	2.612E+005	1.89E+005	-6.741E+004	1.291E+005
		614.30*	89.80	1.887E+005		2.031E+005	9.278E+004
		722.90*	90.80	1.968E+005		1.700E+005	9.675E+004
	Cs-134	604.72	97.62	2.365E+005	2.37E+005	-5.887E+004	1.168E+005
		795.86	85.46	2.588E+005	0 ✓	-2.616E+004	1.277E+005
+	Cs-137	661.66*	85.10	2.210E+005	2.21E+005	1.706E+006	1.088E+005
+	Eu-152	121.78*	28.67	1.502E+006	3.17E+005	2.983E+007	7.475E+005
		344.28*	26.60	8.970E+005		2.806E+007	4.439E+005
		1408.01*	21.07	3.173E+005		3.089E+007	1.504E+005
+	Eu-154	123.07*	40.40	1.066E+006	2.94E+005	2.117E+007	5.304E+005
		723.30*	20.06	8.906E+005		7.695E+005	4.379E+005
		1274.43*	34.80	2.940E+005		1.249E+006	1.421E+005
+	Eu-155	86.55*	30.70	2.963E+006	1.73E+006	9.596E+006	1.478E+006
		105.31*	21.10	1.730E+006		3.775E+005	8.601E+005
+	Tl-208	583.19*	85.00	1.893E+005	1.89E+005	1.265E+005	9.298E+004
	Bi-212	727.33*	6.67	2.678E+006	2.68E+006	2.314E+006	1.317E+006
+	Pb-212	238.63*	43.60	5.711E+005	5.71E+005	4.400E+006	2.830E+005
+	Bi-214	609.32*	45.49	3.725E+005	2.42E+005	4.010E+005	1.832E+005
		1120.29*	14.92	1.400E+006		2.637E+007	6.889E+005
		1764.49	15.30	2.418E+005		2.379E+005	1.085E+005
+	Pb-214	295.22*	18.42	1.213E+006	6.70E+005	4.243E+005	6.004E+005
		351.93*	35.60	6.702E+005		2.097E+007	3.317E+005
	Ra-226	186.21	3.64	9.832E+006	9.83E+006	-1.573E+006	4.888E+006
+	Ac-228	338.32*	11.27	2.117E+006	5.86E+005	6.623E+007	1.048E+006
		911.20*	25.80	5.856E+005		5.720E+005	2.867E+005
		968.97*	15.80	1.249E+006		2.562E+007	6.147E+005
+	Am-241	59.54*	35.90	1.213E+006	1.21E+006	-5.897E+005	6.016E+005

+ = Nuclide identified during the nuclide identification
 * = Energy line found in the spectrum
 > = Calculated MDA is zero due to zero counts in the region, or the region is outside the spectrum, or MDA has not been calculated
 @ = Half-life too short to be able to perform the decay correction

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

Filename: 5456-A

Report Generated On : 4/10/2018 10:08:02 AM

Sample Title : B102110DFSWC015GD
Sample Description : UNIT 2 CONTAINMENT
Sample Identification : 015
Sample Type : GAMMA DIRECT
Sample Geometry :

Peak Locate Threshold : 3.00
Peak Locate Range (in channels) : 85 - 8192
Peak Area Range (in channels) : 85 - 8192
Identification Energy Tolerance : 10.000 keV

Sample Size : 2.830E+001

Sample Taken On : 4/10/2018 9:52:00 AM
Acquisition Started : 4/10/2018 9:57:54 AM

Live Time : 600.0 seconds
Real Time : 606.8 seconds

Dead Time : 1.12 %

Energy Calibration Used Done On : 3/15/2018
Efficiency Calibration Used Done On : 1/23/2018
Efficiency ID : 3M90D_ECP_17.8CM

Data Validated
4/10/18 1731
DIR Mubalq
SCF = 0.84582

 *** P E A K A N A L Y S I S R E P O R T ***
 ^*****

Detector Name: 5456-A
 Sample Title: B102110DFSWC015GD
 Peak Analysis Performed on: 4/10/2018 10:08:02 AM
 Peak Analysis From Channel: 85
 Peak Analysis To Channel: 8192

Peak No.	ROI start	ROI end	Peak centroid	Energy (keV)	FWHM (keV)	Net Peak Area	Net Area Uncert.	Continuum Counts
1	126-	193	161.66	40.42	1.65	1.12E+004	506.95	5.72E+003
2	225-	234	230.06	57.52	0.47	9.28E+000	161.84	2.88E+003
3	283-	312	302.32	75.58	1.38	7.85E+003	551.07	1.43E+004
4	331-	347	341.08	85.27	1.41	1.72E+003	361.51	9.89E+003
5	481-	499	489.33	122.33	1.34	7.44E+003	369.27	7.88E+003
6	973-	988	981.00	245.25	1.24	1.65E+003	192.52	2.54E+003
7	1181-	1191	1186.04	296.51	1.11	1.22E+002	106.40	1.13E+003
8	1369-	1391	1378.90	344.73	1.38	5.43E+003	222.05	1.77E+003
9	1467-	1483	1472.46	368.12	1.12	1.77E+002	124.27	1.17E+003
10	1639-	1652	1646.16	411.54	1.39	4.02E+002	104.81	8.48E+002
11	1765-	1786	1777.46	444.37	1.39	5.71E+002	145.23	1.25E+003
12	2341-	2378	2346.41	586.60	0.83	1.85E+002	184.23	1.44E+003
13	2432-	2448	2438.71	609.68	0.88	9.27E+001	90.93	6.29E+002
14	2634-	2660	2648.42	662.10	1.61	6.58E+003	204.12	8.73E+002
15	2750-	2769	2756.55	689.14	0.37	1.52E+002	95.38	6.04E+002
16	2812-	2824	2817.71	704.43	0.34	1.20E+001	62.68	3.64E+002
17	2886-	2904	2894.06	723.52	1.43	2.31E+002	94.04	5.85E+002
18	3105-	3132	3117.58	779.39	1.83	2.27E+003	154.11	8.09E+002
19	3236-	3252	3243.38	810.85	0.63	8.82E+001	77.78	4.54E+002
20	3462-	3485	3471.92	867.98	1.70	7.44E+002	112.64	6.03E+002
21	3671-	3687	3680.58	920.14	0.51	9.81E+001	71.06	3.72E+002
22	3741-	3754	3747.36	936.84	0.30	-1.61E+001	56.18	2.92E+002
23	3846-	3873	3858.63	964.66	1.77	2.59E+003	141.86	5.39E+002
24	4009-	4032	4021.94	1005.49	1.26	3.01E+002	82.67	3.51E+002
25	4332-	4374	4346.24	1086.56	1.69	2.03E+003	157.88	6.43E+002
26	4435-	4463	4451.37	1112.84	1.84	2.41E+003	133.45	4.39E+002
27	4681-	4710	4696.25	1174.06	1.82	2.58E+003	134.23	4.05E+002
28	4844-	4868	4855.34	1213.84	0.84	2.29E+002	65.86	2.07E+002
29	5089-	5114	5101.51	1275.38	1.03	3.07E+002	54.77	1.04E+002
30	5188-	5213	5200.41	1300.10	1.45	2.89E+002	52.02	9.10E+001
31	5319-	5350	5334.23	1333.56	1.93	2.74E+003	110.39	6.23E+001
32	5620-	5652	5636.51	1409.13	2.12	3.82E+003	126.73	3.72E+001
33	5839-	5859	5848.29	1462.07	1.72	9.67E+001	41.64	8.03E+001
34	6110-	6126	6117.85	1529.46	1.24	5.01E+001	14.95	1.95E+000
35	7057-	7073	7064.82	1766.21	0.29	3.61E+001	12.91	1.88E+000

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

Errors quoted at 2.000 sigma

 :*** 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: B102110DFSWC015GD
 Nuclide Library Used: C:\GENIE2K\CAMFILES\Zion Lib-BNL.NLB

IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)	Yield (%)	Activity (pCi/)	Activity Uncertainty
K-40	0.998	1460.82*	10.66	1.18375E+006	5.20255E+005
Co-60	0.999	1173.23*	99.85	3.16990E+006	3.02546E+005
		1332.49*	99.98	3.47068E+006	3.10859E+005
Nb-94	0.990	702.65*	99.81	1.30706E+004	6.81888E+004
		871.09*	99.89	8.47898E+005	1.54998E+005
Cs-137	1.000	661.66*	85.10	8.28331E+006	1.02706E+006
Eu-152	0.999	121.78*	28.67	1.95063E+007	4.02470E+006
		344.28*	26.60	1.83069E+007	3.10053E+006
		1408.01*	21.07	2.34037E+007	2.02659E+006
Eu-154	0.999	123.07*	40.40	1.38427E+007	2.86561E+006
		723.30*	20.06	1.26013E+006	5.32582E+005
		1274.43*	34.80	1.10437E+006	2.16843E+005
Eu-155	0.332	86.55*	30.70	4.82564E+006	1.40114E+006
		105.31	21.10		
Tl-208	0.982	583.19*	85.00	2.25699E+005	2.26634E+005
Bi-212	0.977	727.33*	6.67	3.78982E+006	1.60339E+006
Pb-212	0.932	238.63*	43.60	3.08125E+006	6.13879E+005
Bi-214	0.982	609.32*	45.49	2.13621E+005	2.11114E+005
		1120.29*	14.92	1.95718E+007	1.90584E+006
		1764.49*	15.30	3.30644E+005	1.21111E+005
Pb-214	0.946	295.22*	18.42	5.67131E+005	5.04066E+005
		351.93*	35.60	1.36788E+007	2.25954E+006
Ac-228	0.918	338.32*	11.27	4.32088E+007	7.28268E+006
		911.20*	25.80	4.39933E+005	3.20762E+005
		968.97*	15.80	1.92049E+007	1.99906E+006
Am-241	0.993	59.54*	35.90	3.25501E+004	5.67401E+005

* = Energy line found in the spectrum.
 @ = Energy line not used for Weighted Mean Activity
 Energy Tolerance : 10.000 keV
 Nuclide confidence index threshold = 0.30
 Errors quoted at 2.000 sigma

 *** INTERFERENCE CORRECTED REPORT ***
 ..*****

Nuclide Name	Nuclide Id Confidence	Wt mean Activity (pCi/)	Wt mean Activity Uncertainty
K-40	0.998	1.183753E+006	5.202548E+005
Co-60	0.999	3.316218E+006✓	2.168118E+005
Nb-94	0.990	1.484447E+005	6.241577E+004
X Ag-108m	0.434		
Cs-137	1.000	8.283306E+006✓	1.027060E+006
Eu-152	0.999	2.098833E+007✓	1.563544E+006
Eu-154	0.999	1.092074E+006✓	2.154814E+005
Eu-155	0.332	4.825636E+006	1.401137E+006
Tl-208	0.982	2.256993E+005	2.266337E+005
Bi-212	0.977	5.054152E+005	1.726380E+006
Pb-212	0.932	3.081253E+006	6.138787E+005
Bi-214	0.982	3.600393E+005	1.048929E+005
Pb-214	0.946	4.307363E+005	4.950821E+005
Ac-228	0.918	9.632580E+005	3.156050E+005
Am-241	0.993	3.255006E+004	5.674006E+005

? = 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 2.000 sigma

***** UNIDENTIFIED PEAKS *****

Peak Locate Performed on: 4/10/2018 10:08:02 AM
 Peak Locate From Channel: 85
 Peak Locate To Channel: 8192

Peak No.	Energy (keV)	Peak Size in Counts per Second	Peak CPS % Uncertainty	Peak Type	Tol. Nuclide
1	40.42	1.8748E+001	4.51		
3	75.58	1.3079E+001	7.02		
9	368.12	2.9505E-001	70.20	Sum	
10	411.54	6.7052E-001	26.05	Sum	
11	444.37	9.5210E-001	25.42	D-Esc.	
15	689.14	2.5277E-001	62.89	Sum	
18	779.39	3.7836E+000	6.79	Sum	
19	810.85	1.4695E-001	88.22	Sum	
22	936.84	-2.6908E-002	-347.95	Sum	
24	1005.49	5.0097E-001	27.50	Sum	
25	1086.56	3.3915E+000	7.76	Sum	
28	1213.84	3.8239E-001	28.70	Sum	
30	1300.10	4.8167E-001	18.00	Sum	
34	1529.46	8.3421E-002	29.88	Sum	

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

Errors quoted at 2.000 sigma

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

Detector Name: 5456-A
 Sample Geometry:
 Sample Title: B102110DFSWC015GD
 Nuclide Library Used: C:\GENIE2K\CAMFILES\Zion Lib-BNL.NLB

	Nuclide Name	Energy (keV)	Yield (%)	Line MDA (pCi/)	Nuclide MDA (pCi/)	Activity (pCi/)	Dec. Level (pCi/)
+	K-40	1460.82*	10.66	7.727E+005	7.73E+005	1.184E+006	3.698E+005
+	Co-60	1173.23*	99.85	1.808E+005	7.63E+004	3.170E+006	8.872E+004
		1332.49*	99.98	7.627E+004		3.471E+006	3.642E+004
+	Nb-94	702.65*	99.81	1.144E+005	1.14E+005	1.307E+004	5.573E+004
		871.09*	99.89	1.877E+005		8.479E+005	9.233E+004
	Ag-108m	433.90	90.50	2.625E+005	1.74E+005	-2.368E+005	1.298E+005
		614.30*	89.80	1.738E+005		1.082E+005	8.533E+004
		722.90*	90.80	1.793E+005		2.784E+005	8.803E+004
	Cs-134	604.72	97.62	2.254E+005	2.25E+005	5.016E+004	1.112E+005
		795.86	85.46	2.336E+005		1.031E+005	1.150E+005
+	Cs-137	661.66*	85.10	2.596E+005	2.60E+005	8.283E+006	1.281E+005
+	Eu-152	121.78*	28.67	1.415E+006	2.95E+005	1.951E+007	7.038E+005
		344.28*	26.60	9.297E+005		1.831E+007	4.603E+005
		1408.01*	21.07	2.949E+005		2.340E+007	1.392E+005
+	Eu-154	123.07*	40.40	1.004E+006	2.59E+005	1.384E+007	4.994E+005
		723.30*	20.06	8.117E+005		1.260E+006	3.985E+005
		1274.43*	34.80	2.590E+005		1.104E+006	1.246E+005
+	Eu-155	86.55*	30.70	1.634E+006	1.63E+006	4.826E+006	8.132E+005
		105.31	21.10	2.355E+006		1.165E+006	1.172E+006
+	Tl-208	583.19*	85.00	3.694E+005	3.69E+005	2.257E+005	1.830E+005
+	Bi-212	727.33*	6.67	2.441E+006	2.44E+006	3.790E+006	1.198E+006
+	Pb-212	238.63*	43.60	5.402E+005	5.40E+005	3.081E+006	2.676E+005
+	Bi-214	609.32*	45.49	3.431E+005	9.57E+004	2.136E+005	1.684E+005
		1120.29*	14.92	1.229E+006		1.957E+007	6.037E+005
		1764.49*	15.30	9.574E+004		3.306E+005	3.549E+004
+	Pb-214	295.22*	18.42	8.105E+005	6.95E+005	5.671E+005	3.990E+005
		351.93*	35.60	6.947E+005		1.368E+007	3.439E+005
	Ra-226	186.21	3.64	9.532E+006	9.53E+006	-1.060E+007	4.738E+006
+	Ac-228	338.32*	11.27	2.194E+006	5.15E+005	4.321E+007	1.086E+006
		911.20*	25.80	5.153E+005		4.399E+005	2.516E+005
		968.97*	15.80	1.223E+006		1.920E+007	6.016E+005
+	Am-241	59.54*	35.90	9.421E+005	9.42E+005	3.255E+004	4.663E+005

- + = Nuclide identified during the nuclide identification
- * = Energy line found in the spectrum
- > = Calculated MDA is zero due to zero counts in the region, or the region is outside the spectrum, or MDA has not been calculated
- @ = Half-life too short to be able to perform the decay correction

***** GAMMA SPECTRUM ANALYSIS *****

.filename: 5456-A

Report Generated On : 4/10/2018 8:32:46 AM
Sample Title : B102110DFSWC016GD
Sample Description : UNIT 2 CONTAINMENT
Sample Identification : 016
Sample Type : GAMMA DIRECT
Sample Geometry :
Peak Locate Threshold : 3.00
Peak Locate Range (in channels) : 85 - 8192
Peak Area Range (in channels) : 85 - 8192
Identification Energy Tolerance : 10.000 keV
Sample Size : 2.830E+001
Sample Taken On : 4/10/2018 8:20:00 AM
Acquisition Started : 4/10/2018 8:22:38 AM
Live Time : 600.0 seconds
Real Time : 606.6 seconds
Dead Time : 1.09 %

Energy Calibration Used Done On : 3/15/2018
Efficiency Calibration Used Done On : 1/23/2018
Efficiency ID : 3M90D_ECP_17.8CM

Data Validated
4/10/18 1736
WR Mihalik
SCF = 0.45293

 P E A K A N A L Y S I S R E P O R T *****

Detector Name: 5456-A
 Sample Title: B102110DFSWC016GD
 Peak Analysis Performed on: 4/10/2018 8:32:46 AM
 Peak Analysis From Channel: 85
 Peak Analysis To Channel: 8192

Peak No.	ROI start	ROI end	Peak centroid	Energy (keV)	FWHM (keV)	Net Peak Area	Net Area Uncert.	Continuum Counts
1	126-	135	130.23	32.56	0.88	5.02E+002	103.87	7.68E+002
2	151-	193	161.51	40.38	1.39	7.30E+003	498.45	8.54E+003
3	282-	309	301.99	75.50	1.29	7.83E+003	525.27	1.36E+004
4	330-	359	341.01	85.25	1.48	3.24E+003	568.55	1.63E+004
5	478-	499	488.91	122.23	1.29	1.02E+004	417.08	8.87E+003
6	973-	988	980.21	245.05	1.25	1.91E+003	190.33	2.37E+003
7	1367-	1388	1377.82	344.46	1.50	6.41E+003	225.84	1.69E+003
8	1465-	1481	1471.82	367.96	1.29	1.29E+002	119.15	1.09E+003
9	1636-	1655	1644.89	411.22	1.26	5.87E+002	130.51	1.05E+003
10	1763-	1785	1776.37	444.09	1.27	7.50E+002	138.00	1.03E+003
11	2248-	2262	2255.54	563.88	0.75	7.30E+001	84.67	5.93E+002
12	2339-	2353	2344.99	586.25	0.52	1.22E+002	84.76	5.81E+002
13	2634-	2659	2646.56	661.64	1.61	6.71E+002	131.71	8.62E+002
14	2692-	2722	2714.26	678.56	1.31	1.11E+002	145.65	1.06E+003
15	2748-	2762	2754.10	688.52	0.45	6.58E+001	82.42	5.64E+002
16	2883-	2902	2893.00	723.25	1.69	8.63E+001	97.28	6.51E+002
17	3100-	3126	3115.27	778.82	1.69	2.40E+003	155.51	8.31E+002
18	3454-	3499	3469.17	867.29	1.71	9.58E+002	197.88	1.26E+003
19	3671-	3686	3677.23	919.31	0.36	7.60E+001	66.94	3.45E+002
20	3843-	3869	3855.67	963.92	1.68	2.77E+003	148.77	6.32E+002
21	3978-	4034	4019.39	1004.85	1.59	3.64E+002	179.48	9.43E+002
22	4331-	4374	4343.11	1085.78	1.87	2.32E+003	166.33	6.79E+002
23	4432-	4461	4448.06	1112.01	1.77	2.78E+003	135.17	3.76E+002
24	4679-	4708	4692.84	1173.21	1.83	2.35E+003	124.42	3.19E+002
25	4841-	4862	4851.28	1212.82	1.59	2.59E+002	65.34	2.16E+002
26	4993-	5009	4999.69	1249.92	0.39	6.96E+001	36.66	8.44E+001
27	5087-	5107	5097.76	1274.44	1.65	2.98E+002	52.82	1.10E+002
28	5185-	5209	5196.76	1299.19	1.81	3.17E+002	52.23	8.79E+001
29	5315-	5346	5330.06	1332.52	1.97	2.26E+003	102.17	7.03E+001
30	5617-	5648	5632.34	1408.08	1.94	4.33E+003	134.20	3.50E+001
31	5820-	5854	5843.85	1460.96	1.05	2.40E+002	35.00	1.26E+001
32	6107-	6122	6113.22	1528.31	0.64	4.41E+001	15.24	4.87E+000
33	7053-	7068	7060.04	1765.01	0.32	1.60E+001	10.59	4.00E+000

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

Errors quoted at 2.000 sigma

 :*** 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: B102110DFSWC016GD
 Nuclide Library Used: C:\GENIE2K\CAMFILES\Zion Lib-BNL.NLB

IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)	Yield (%)	Activity (pCi/)	Activity Uncertainty
K-40	1.000	1460.82*	10.66	2.94389E+006	4.99026E+005
Co-60	1.000	1173.23*	99.85	2.88563E+006	2.76902E+005
		1332.49*	99.98	2.86585E+006	2.63241E+005
Cs-137	1.000	661.66*	85.10	8.43452E+005	1.94174E+005
Eu-152	1.000	121.78*	28.67	2.68189E+007	5.48125E+006
		344.28*	26.60	2.15958E+007	3.63007E+006
		1408.01*	21.07	2.65014E+007	2.27358E+006
Eu-154	1.000	123.07*	40.40	1.90322E+007	3.90292E+006
		723.30*	20.06	4.69830E+005	5.32442E+005
		1274.43*	34.80	1.07134E+006	2.09294E+005
Eu-155	0.332	86.55*	30.70	9.10657E+006	2.42283E+006
		105.31	21.10		
Tl-208	0.985	583.19*	85.00	1.49584E+005	1.05049E+005
Pb-212	0.936	238.63*	43.60	3.55823E+006	6.75730E+005
Ac-228	0.927	338.32*	11.27	5.09714E+007	8.52586E+006
		911.20*	25.80	3.40654E+005	3.01390E+005
		968.97*	15.80	2.05133E+007	2.12450E+006

* = Energy line found in the spectrum.
 @ = Energy line not used for Weighted Mean Activity
 Energy Tolerance : 10.000 keV
 Nuclide confidence index threshold = 0.30
 Errors quoted at 2.000 sigma

 *** INTERFERENCE CORRECTED REPORT ***

Nuclide Name	Nuclide Id Confidence	Wt mean Activity (pCi/)	Wt mean Activity Uncertainty
K-40	1.000	2.943886E+006	4.990256E+005
Co-60	1.000	2.875237E+006✓	1.907862E+005
Cs-137	1.000	8.434519E+005✓	1.941737E+005
Eu-152	1.000	2.501929E+007✓	1.806206E+006
Eu-154	1.000	9.920714E+005✓	1.939073E+005
Eu-155	0.332	9.106567E+006	2.422834E+006
Tl-208	0.985	1.495837E+005	1.050486E+005
X Bi-212	0.974		
Pb-212	0.936	3.558228E+006	6.757303E+005
X Pb-214	0.388		
Ac-228	0.927	7.872120E+005	2.976269E+005

? = 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 2.000 sigma

***** UNIDENTIFIED PEAKS *****

Peak Locate Performed on: 4/10/2018 8:32:46 AM
 Peak Locate From Channel: 85
 Peak Locate To Channel: 8192

Peak No.	Energy (keV)	Peak Size in Counts per Second	Peak CPS % Uncertainty	Peak Type	Tol. Nuclide
1	32.56	8.3694E-001	20.68		
2	40.38	1.2160E+001	6.83		
3	75.50	1.3057E+001	6.70		
8	367.96	2.1471E-001	92.49	Sum	
9	411.22	9.7800E-001	22.24		
10	444.09	1.2505E+000	18.39	D-Esc.	
11	563.88	1.2171E-001	115.94		
14	678.56	1.8551E-001	130.86	Sum	
15	688.52	1.0969E-001	125.23	Sum	
17	778.82	4.0070E+000	6.47	Sum	
18	867.29	1.5970E+000	20.65	Tol.	Nb-94
21	1004.85	6.0704E-001	49.28	Sum	
22	1085.78	3.8715E+000	7.16	Sum	
23	1112.01	4.6268E+000	4.87	Tol.	Bi-214
25	1212.82	4.3245E-001	25.18	Sum	
26	1249.92	1.1601E-001	52.66	Sum	
28	1299.19	5.2851E-001	16.47	Sum	
32	1528.31	7.3554E-002	34.53	Sum	
33	1765.01	2.6667E-002	66.18	Sum	

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

Errors quoted at 2.000 sigma

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

Detector Name: 5456-A
 Sample Geometry:
 Sample Title: B102110DFSWC016GD
 Nuclide Library Used: C:\GENIE2K\CAMFILES\Zion Lib-BNL.NLB

	Nuclide Name	Energy (keV)	Yield (%)	Line MDA (pCi/)	Nuclide MDA (pCi/)	Activity (pCi/)	Dec. Level (pCi/)
+	K-40	1460.82*	10.66	3.601E+005	3.60E+005	2.944E+006	1.635E+005
+	Co-60	1173.23*	99.85	1.611E+005	8.09E+004	2.886E+006	7.887E+004
		1332.49*	99.98	8.092E+004		2.866E+006	3.875E+004
	Nb-94	702.65	99.81	2.110E+005	2.11E+005	-8.724E+004	1.040E+005
		871.09	99.89	2.673E+005		1.652E+004	1.321E+005
	Ag-108m	433.90	90.50	2.366E+005	2.37E+005	-3.603E+005	1.168E+005
		614.30	89.80	2.401E+005		1.167E+003	1.185E+005
		722.90	90.80	2.418E+005		1.575E+005	1.193E+005
	Cs-134	604.72	97.62	2.197E+005	2.20E+005	1.397E+005✓	1.084E+005
		795.86	85.46	2.443E+005		-1.105E+005	1.204E+005
+	Cs-137	661.66*	85.10	2.540E+005	2.54E+005	8.435E+005	1.253E+005
+	Eu-152	121.78*	28.67	1.580E+006	2.80E+005	2.682E+007	7.863E+005
		344.28*	26.60	8.919E+005		2.160E+007	4.414E+005
		1408.01*	21.07	2.801E+005		2.650E+007	1.318E+005
+	Eu-154	123.07*	40.40	1.121E+006	2.46E+005	1.903E+007	5.580E+005
		723.30*	20.06	8.699E+005		4.698E+005	4.276E+005
		1274.43*	34.80	2.464E+005		1.071E+006	1.183E+005
+	Eu-155	86.55*	30.70	2.583E+006	2.34E+006	9.107E+006	1.288E+006
		105.31	21.10	2.344E+006		-5.218E+005	1.167E+006
+	Tl-208	583.19*	85.00	1.676E+005	1.68E+005	1.496E+005	8.217E+004
	Bi-212	727.33*	6.67	2.616E+006	2.62E+006	1.413E+006	1.286E+006
+	Pb-212	238.63*	43.60	5.234E+005	5.23E+005	3.558E+006	2.592E+005
	Bi-214	609.32	45.49	4.748E+005	2.58E+005	1.387E+005	2.343E+005
		1120.29	14.92	1.420E+006		4.811E+005	6.989E+005
		1764.49	15.30	2.579E+005		2.745E+005	1.166E+005
	Pb-214	295.22	18.42	1.470E+006	6.66E+005	-1.804E+005	7.288E+005
		351.93*	35.60	6.664E+005		1.614E+007	3.298E+005
	Ra-226	186.21	3.64	9.285E+006	9.29E+006	-9.849E+005	4.615E+006
+	Ac-228	338.32*	11.27	2.105E+006	4.89E+005	5.097E+007	1.042E+006
		911.20*	25.80	4.885E+005		3.407E+005	2.382E+005
		968.97*	15.80	1.301E+006		2.051E+007	6.403E+005
	Am-241	59.54	35.90	1.733E+006	1.73E+006	-1.923E+005	8.618E+005

- + = Nuclide identified during the nuclide identification
- * = Energy line found in the spectrum
- > = Calculated MDA is zero due to zero counts in the region, or the region is outside the spectrum, or MDA has not been calculated
- @ = Half-life too short to be able to perform the decay correction

***** GAMMA SPECTRUM ANALYSIS *****

Filename: 5456-A

Report Generated On : 4/10/2018 10:24:19 AM

Sample Title : B102110DFSWC017GD
Sample Description : UNIT 2 CONTAINMENT
Sample Identification : 017
Sample Type : GAMMA DIRECT
Sample Geometry :

Peak Locate Threshold : 3.00
Peak Locate Range (in channels) : 85 - 8192
Peak Area Range (in channels) : 85 - 8192
Identification Energy Tolerance : 10.000 keV

Sample Size : 2.830E+001

Sample Taken On : 4/10/2018 10:12:00 AM
Acquisition Started : 4/10/2018 10:14:11 AM

Live Time : 600.0 seconds
Real Time : 607.3 seconds

Dead Time : 1.20 %

Energy Calibration Used Done On : 3/15/2018
Efficiency Calibration Used Done On : 1/23/2018
Efficiency ID : 3M90D_ECP_17.8CM

Data Validated
4/10/18 1741
WR Mihalek
SOF = 0.77696

 ***** P E A K A N A L Y S I S R E P O R T *****

Detector Name: 5456-A
 Sample Title: B102110DFSWC017GD
 Peak Analysis Performed on: 4/10/2018 10:24:19 AM
 Peak Analysis From Channel: 85
 Peak Analysis To Channel: 8192

Peak No.	ROI start	ROI end	Peak centroid	Energy (keV)	FWHM (keV)	Net Peak Area	Net Area Uncert.	Continuum Counts
1	126-	136	130.27	32.57	1.01	6.99E+002	112.25	8.44E+002
2	152-	193	161.72	40.43	1.46	5.73E+003	481.48	8.25E+003
3	282-	312	302.34	75.59	1.28	8.05E+003	585.91	1.60E+004
4	331-	360	341.53	85.38	1.45	3.69E+003	578.69	1.68E+004
5	482-	500	489.50	122.38	1.37	8.47E+003	385.99	8.48E+003
6	972-	989	981.23	245.31	1.43	1.81E+003	221.02	3.20E+003
7	1011-	1022	1017.26	254.31	1.07	9.29E+001	135.25	1.79E+003
8	1196-	1209	1203.81	300.95	1.37	1.40E+002	130.49	1.49E+003
9	1366-	1391	1379.23	344.81	1.43	6.41E+003	252.28	2.24E+003
10	1464-	1482	1473.65	368.41	0.41	1.37E+002	141.34	1.44E+003
11	1634-	1657	1647.02	411.75	1.37	7.30E+002	158.77	1.39E+003
12	1770-	1787	1777.69	444.42	1.23	6.68E+002	129.27	1.07E+003
13	2341-	2377	2346.27	586.57	0.51	1.72E+002	185.43	1.50E+003
14	2639-	2660	2648.70	662.18	1.65	3.29E+003	162.90	8.89E+002
15	2748-	2766	2757.52	689.38	0.81	1.27E+002	101.16	7.18E+002
16	2875-	2905	2894.54	723.64	1.31	1.95E+002	150.15	1.12E+003
17	3103-	3129	3118.06	779.52	1.70	2.57E+003	153.67	7.59E+002
18	3465-	3504	3472.16	868.04	1.98	9.88E+002	179.26	1.13E+003
19	3541-	3554	3547.88	886.97	0.73	1.53E+001	65.87	3.88E+002
20	3848-	3873	3859.46	964.86	1.86	2.98E+003	147.17	5.71E+002
21	3981-	4033	4022.89	1005.72	1.78	4.35E+002	176.38	9.61E+002
22	4334-	4375	4346.95	1086.74	1.87	2.41E+003	165.14	6.90E+002
23	4436-	4464	4452.10	1113.02	1.99	2.67E+003	139.91	4.74E+002
24	4682-	4710	4696.90	1174.23	1.66	3.45E+003	144.11	3.77E+002
25	4742-	4756	4748.96	1187.24	0.51	3.31E+001	41.26	1.36E+002
26	4844-	4868	4856.14	1214.04	1.63	3.14E+002	63.09	1.65E+002
27	4998-	5012	5005.04	1251.26	0.65	2.60E+001	34.03	9.10E+001
28	5089-	5114	5102.41	1275.60	1.89	3.49E+002	58.73	1.20E+002
29	5190-	5213	5201.25	1300.31	1.90	3.13E+002	51.70	8.78E+001
30	5321-	5350	5334.83	1333.71	1.83	3.55E+003	124.37	6.63E+001
31	5622-	5653	5637.43	1409.36	1.99	4.06E+003	130.43	3.88E+001
32	5824-	5861	5849.41	1462.35	0.87	2.73E+002	36.17	9.50E+000
33	6111-	6127	6119.58	1529.90	1.75	4.60E+001	15.31	4.04E+000
34	7058-	7073	7065.50	1766.37	0.43	2.90E+001	11.83	1.97E+000

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

Errors quoted at 2.000 sigma

 *** 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: B102110DFSWC017GD
 Nuclide Library Used: C:\GENIE2K\CAMFILES\Zion Lib-BNL.NLB

IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)	Yield (%)	Activity (pCi/)	Activity Uncertainty
K-40	0.996	1460.82*	10.66	3.33769E+006	5.29441E+005
Co-60	0.998	1173.23*	99.85	4.23982E+006	3.82668E+005
		1332.49*	99.98	4.50158E+006	3.93062E+005
		661.66*	85.10	4.13620E+006	5.37168E+005
Cs-137	1.000	661.66*	85.10	4.13620E+006	5.37168E+005
Eu-152	0.999	121.78*	28.67	2.22003E+007	4.55977E+006
		344.28*	26.60	2.16127E+007	3.65255E+006
		1408.01*	21.07	2.48701E+007	2.14380E+006
Eu-154	0.999	123.07*	40.40	1.57546E+007	3.24668E+006
		723.30*	20.06	1.06144E+006	8.26810E+005
		1274.43*	34.80	1.25477E+006	2.34994E+005
Eu-155	0.332	86.55*	30.70	1.03550E+007	2.63173E+006
		105.31	21.10		
Tl-208	0.982	583.19*	85.00	2.09825E+005	2.27870E+005
Pb-212	0.931	238.63*	43.60	3.36877E+006	6.82850E+005
Pb-214	0.931	295.22*	18.42	6.57318E+005	6.19693E+005
		351.93*	35.60	1.61488E+007	2.66153E+006

* = Energy line found in the spectrum.
 @ = Energy line not used for Weighted Mean Activity
 Energy Tolerance : 10.000 keV
 Nuclide confidence index threshold = 0.30
 Errors quoted at 2.000 sigma

 *** INTERFERENCE CORRECTED REPORT ***

Nuclide Name	Nuclide Id Confidence	Wt mean Activity (pCi/)	Wt mean Activity Uncertainty
K-40	0.996	3.337686E+006	5.294406E+005
Co-60	0.998	4.367193E+006✓	2.741882E+005
Cs-137	1.000	4.136204E+006✓	5.371681E+005
Eu-152	0.999	2.333810E+007✓	1.714040E+006
Eu-154	0.999	1.230536E+006✓	2.246802E+005
Eu-155	0.332	1.035496E+007	2.631729E+006
Tl-208	0.982	2.098248E+005	2.278697E+005
X Bi-212	0.978		
Pb-212	0.931	3.368771E+006	6.828496E+005
Pb-214	0.931	5.571696E+005	6.071204E+005

? = 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 2.000 sigma

***** UNIDENTIFIED PEAKS *****

Peak Locate Performed on: 4/10/2018 10:24:19 AM
 Peak Locate From Channel: 85
 Peak Locate To Channel: 8192

Peak No.	Energy (keV)	Peak Size in Counts per Second	Peak CPS % Uncertainty	Peak Type	Tol. Nuclide
1	32.57	1.1647E+000	16.06		
2	40.43	9.5511E+000	8.40		
3	75.59	1.3410E+001	7.28		
7	254.31	1.5487E-001	145.55	D-Esc.	
10	368.41	2.2816E-001	103.25	Sum	
11	411.75	1.2168E+000	21.75		
12	444.42	1.1134E+000	19.35	D-Esc.	
15	689.38	2.1129E-001	79.79	Sum	
17	779.52	4.2906E+000	5.97	Sum	
18	868.04	1.6471E+000	18.14	Tol.	Nb-94
19	886.97	2.5544E-002	429.75	Sum	
20	964.86	4.9691E+000	4.94	Sum	
21	1005.72	7.2513E-001	40.54	Sum	
22	1086.74	4.0114E+000	6.86		
23	1113.02	4.4431E+000	5.25		
25	1187.24	5.5212E-002	124.54		
26	1214.04	5.2311E-001	20.10		
27	1251.26	4.3365E-002	130.77	Sum	
29	1300.31	5.2202E-001	16.51	Sum	
33	1529.90	7.6600E-002	33.31	Sum	
34	1766.37	4.8387E-002	40.76	Sum	

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

Errors quoted at 2.000 sigma

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

Detector Name: 5456-A
 Sample Geometry:
 Sample Title: B102110DFSWC017GD
 Nuclide Library Used: C:\GENIE2K\CAMFILES\Zion Lib-BNL.NLB

	Nuclide Name	Energy (keV)	Yield (%)	Line MDA (pCi/)	Nuclide MDA (pCi/)	Activity (pCi/)	Dec. Level (pCi/)
+	K-40	1460.82*	10.66	3.310E+005	3.31E+005	3.338E+006	1.489E+005
+	Co-60	1173.23*	99.85	1.722E+005	7.71E+004	4.240E+006	8.442E+004
		1332.49*	99.98	7.706E+004		4.502E+006	3.682E+004
	Nb-94	702.65	99.81	2.196E+005	2.20E+005	2.063E+004	1.083E+005
		871.09	99.89	2.714E+005		1.125E+006	1.342E+005
	Ag-108m	433.90	90.50	2.688E+005	2.56E+005	1.517E+005	1.330E+005
		614.30	89.80	2.555E+005		9.197E+004	1.262E+005
		722.90	90.80	2.600E+005		3.249E+005	1.284E+005
	Cs-134	604.72	97.62	2.300E+005	2.30E+005	2.967E+004✓	1.135E+005
		795.86	85.46	2.485E+005		-1.211E+005	1.225E+005
+	Cs-137	661.66*	85.10	2.428E+005	2.43E+005	4.136E+006	1.197E+005
+	Eu-152	121.78*	28.67	1.470E+006	2.94E+005	2.220E+007	7.313E+005
		344.28*	26.60	1.090E+006		2.161E+007	5.403E+005
		1408.01*	21.07	2.940E+005		2.487E+007	1.387E+005
+	Eu-154	123.07*	40.40	1.043E+006	2.78E+005	1.575E+007	5.190E+005
		723.30*	20.06	1.336E+006		1.061E+006	6.607E+005
		1274.43*	34.80	2.781E+005		1.255E+006	1.342E+005
+	Eu-155	86.55*	30.70	2.619E+006	2.43E+006	1.035E+007	1.306E+006
		105.31	21.10	2.426E+006		1.141E+006	1.208E+006
+	Tl-208	583.19*	85.00	3.721E+005	3.72E+005	2.098E+005	1.844E+005
	Bi-212	727.33*	6.67	4.018E+006	4.02E+006	3.192E+006	1.987E+006
+	Pb-212	238.63*	43.60	6.307E+005	6.31E+005	3.369E+006	3.128E+005
	Bi-214	609.32	45.49	4.989E+005	2.84E+005	2.223E+005	2.464E+005
		1120.29	14.92	1.979E+006		-3.247E+005	9.783E+005
		1764.49	15.30	2.837E+005		2.781E+005	1.295E+005
+	Pb-214	295.22*	18.42	1.001E+006	8.14E+005	6.573E+005	4.939E+005
		351.93*	35.60	8.143E+005		1.615E+007	4.037E+005
	Ra-226	186.21	3.64	9.896E+006	9.90E+006	-2.906E+006	4.920E+006
	Ac-228	338.32	11.27	2.546E+006	8.18E+005	-1.454E+006	1.262E+006
		911.20	25.80	8.181E+005		-1.249E+006	4.030E+005
		968.97	15.80	2.274E+006		2.203E+007	1.127E+006
	Am-241	59.54	35.90	1.764E+006	1.76E+006	1.205E+006	8.772E+005

- + = Nuclide identified during the nuclide identification
- * = Energy line found in the spectrum
- > = Calculated MDA is zero due to zero counts in the region, or the region is outside the spectrum, or MDA has not been calculated
- @ = Half-life too short to be able to perform the decay correction

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

Filename: C:\GENIE2K\CAMFILES\00004640.CNF

Report Generated On : 4/11/2018 5:19:32 PM

Sample Title : B102110DFSWC018GD
Sample Description : U2 CTMT UNDER VESSEL
Sample Identification : 018
Sample Type : GAMMA DIRECT
Sample Geometry :

Peak Locate Threshold : 3.00
Peak Locate Range (in channels) : 85 - 8192
Peak Area Range (in channels) : 85 - 8192
Identification Energy Tolerance : 10.000 keV

Sample Size : 2.830E+001 M^2

Sample Taken On : 4/11/2018 8:05:00 AM
Acquisition Started : 4/11/2018 8:04:13 AM

Live Time : 600.0 seconds
Real Time : 609.0 seconds

Dead Time : 1.48 %

Energy Calibration Used Done On : 3/15/2018
Efficiency Calibration Used Done On : 1/23/2018
Efficiency ID : 3M90D_ECP_17.8CM

Data Validated
4/12/18 0719
SR Mubalik

 **** P E A K A N A L Y S I S R E P O R T ****

Detector Name: 5456-A
 Sample Title: B102110DFSWC018GD
 Peak Analysis Performed on: 4/11/2018 5:19:32 PM
 Peak Analysis From Channel: 85
 Peak Analysis To Channel: 8192

Peak No.	ROI start	ROI end	Peak centroid	Energy (keV)	FWHM (keV)	Net Peak Area	Net Area Uncert.	Continuum Counts
1	126-	136	130.69	32.67	1.21	7.37E+002	120.05	9.92E+002
2	151-	193	161.47	40.37	1.42	1.01E+004	557.64	1.05E+004
3	282-	312	302.48	75.62	1.19	1.01E+004	622.32	1.78E+004
4	333-	362	341.36	85.34	1.66	4.18E+003	623.46	1.95E+004
5	481-	500	489.82	122.45	1.29	1.41E+004	448.85	1.04E+004
6	972-	988	982.42	245.60	1.31	3.25E+003	237.68	3.46E+003
7	1179-	1199	1187.43	296.86	0.89	2.20E+002	207.50	2.90E+003
8	1369-	1393	1381.09	345.27	1.43	1.02E+004	288.78	2.58E+003
9	1466-	1483	1474.90	368.72	0.88	3.75E+002	149.85	1.61E+003
10	1639-	1661	1648.88	412.22	1.33	8.42E+002	175.37	1.76E+003
11	1768-	1792	1780.25	445.06	1.34	1.05E+003	186.96	1.86E+003
12	1954-	1966	1959.34	489.83	0.93	1.17E+002	98.10	8.67E+002
13	2247-	2269	2261.15	565.29	0.80	1.35E+002	148.18	1.38E+003
14	2344-	2360	2351.13	587.78	0.35	1.13E+002	112.75	9.77E+002
15	2645-	2664	2652.77	663.19	1.65	2.15E+003	153.02	1.04E+003
16	2714-	2732	2720.74	680.19	1.51	2.06E+002	112.40	8.72E+002
17	2751-	2775	2760.85	690.21	1.05	3.60E+002	138.54	1.08E+003
18	2874-	2907	2900.50	725.13	1.56	3.25E+002	187.12	1.61E+003
19	3111-	3133	3122.87	780.72	1.71	4.19E+003	173.20	8.54E+002
20	3243-	3258	3249.00	812.25	0.44	9.97E+001	88.80	6.22E+002
21	3465-	3509	3477.54	869.39	1.80	1.46E+003	232.54	1.77E+003
22	3676-	3721	3685.48	921.37	0.94	4.34E+002	189.41	1.26E+003
23	3852-	3880	3865.23	966.31	1.84	4.66E+003	179.03	7.26E+002
24	3984-	4042	4029.57	1007.39	1.88	6.82E+002	219.92	1.35E+003
25	4338-	4382	4353.56	1088.39	1.79	3.75E+003	194.23	8.49E+002
26	4447-	4473	4458.95	1114.74	1.78	4.23E+003	166.70	6.23E+002
27	4691-	4718	4704.34	1176.09	1.78	3.53E+003	149.71	4.61E+002
28	4853-	4874	4863.41	1215.85	1.77	3.81E+002	72.22	2.45E+002
29	5004-	5023	5013.68	1253.42	1.11	8.97E+001	44.61	1.16E+002
30	5099-	5122	5110.17	1277.54	1.53	3.86E+002	65.82	1.74E+002
31	5196-	5221	5209.27	1302.32	1.83	5.57E+002	60.11	8.14E+001
32	5329-	5359	5343.16	1335.79	1.93	3.65E+003	127.62	8.53E+001
33	5631-	5662	5646.23	1411.56	2.04	6.35E+003	162.26	4.72E+001
34	5834-	5869	5844.80	1461.20	1.35	2.93E+002	36.66	8.33E+000
35	6119-	6138	6127.91	1531.98	0.73	8.20E+001	19.97	5.00E+000

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

Errors quoted at 2.000 sigma

 **** 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: B102110DFSWC018GD
 Nuclide Library Used: C:\GENIE2K\CAMFILES\Zion Lib-BNL.NLB

IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)	Yield (%)	Activity (pCi/M ²)	Activity Uncertainty
K-40	1.000	1460.82*	10.66	3.58374E+006	5.46212E+005
Co-60	0.985	1173.23*	99.85	4.34253E+006	3.93179E+005
		1332.49*	99.98	4.62947E+006	4.04116E+005
Cs-137	0.996	661.66*	85.10	2.71124E+006	3.77982E+005
Eu-152	0.994	121.78*	28.67	3.68524E+007	7.47371E+006
		344.28*	26.60	3.44123E+007	5.73910E+006
		1408.01*	21.07	3.88804E+007	3.26530E+006
Eu-154	0.993	123.07*	40.40	2.61524E+007	5.32194E+006
		723.30*	20.06	1.77197E+006	1.03987E+006
		1274.43*	34.80	1.38967E+006	2.62826E+005
Eu-155	0.332	86.55*	30.70	1.17390E+007	2.92847E+006
		105.31	21.10		
Tl-208	0.967	583.19*	85.00	1.38503E+005	1.38781E+005
Bi-212	0.992	727.33*	6.67	5.32919E+006	3.12909E+006
Pb-212	0.925	238.63*	43.60	6.06132E+006	1.07533E+006
Pb-214	0.953	295.22*	18.42	1.02484E+006	9.81097E+005
		351.93*	35.60	2.57126E+007	4.17906E+006

* = Energy line found in the spectrum.
 @ = Energy line not used for Weighted Mean Activity
 Energy Tolerance : 10.000 keV
 Nuclide confidence index threshold = 0.30
 Errors quoted at 2.000 sigma

 **** INTERFERENCE CORRECTED REPORT ****

Nuclide Name	Nuclide Id Confidence	Wt mean Activity (pCi/M ²)	Wt mean Activity Uncertainty
K-40	1.000	3.583740E+006	5.462121E+005
Co-60	0.985	4.482064E+006✓	2.818067E+005
Cs-137	0.996	2.711244E+006✓	3.779820E+005
Eu-152	0.994	3.713118E+007✓	2.653620E+006
Eu-154	0.993	1.385804E+006✓	2.614525E+005
Eu-155	0.332	1.173900E+007	2.928470E+006
Tl-208	0.967	1.385033E+005	1.387813E+005
Bi-212	0.992	1.161392E+006	3.223166E+006
Pb-212	0.925	6.061315E+006	1.075334E+006
Pb-214	0.953	8.651003E+005	9.607103E+005

? = 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 2.000 sigma

***** UNIDENTIFIED PEAKS *****

Peak Locate Performed on: 4/11/2018 5:19:32 PM
 Peak Locate From Channel: 85
 Peak Locate To Channel: 8192

Peak No.	Energy (keV)	Peak Size in Counts per Second	Peak CPS % Uncertainty	Peak Type	Tol. Nuclide
1	32.67	1.2289E+000	16.28		
2	40.37	1.6907E+001	5.50		
3	75.62	1.6902E+001	6.14		
9	368.72	6.2491E-001	39.97	Sum	
10	412.22	1.4038E+000	20.82	Sum	
11	445.06	1.7482E+000	17.82	D-Esc.	
12	489.83	1.9419E-001	84.19	Sum	
13	565.29	2.2526E-001	109.63		
16	680.19	3.4282E-001	54.64	Sum	
17	690.21	5.9969E-001	38.50	Sum	
19	780.72	6.9777E+000	4.14	Sum	
20	812.25	1.6610E-001	89.11	Sum	
21	869.39	2.4392E+000	15.89	Tol.	Nb-94
22	921.37	7.2411E-001	43.60		
23	966.31	7.7620E+000	3.84	Sum	
24	1007.39	1.1368E+000	32.24	Sum	
25	1088.39	6.2452E+000	5.18		
26	1114.74	7.0477E+000	3.94		
28	1215.85	6.3442E-001	18.97		
29	1253.42	1.4942E-001	49.76	Sum	
31	1302.32	9.2769E-001	10.80	Sum	
35	1531.98	1.3667E-001	24.35	Sum	

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

Errors quoted at 2.000 sigma

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

Detector Name: 5456-A
 Sample Geometry:
 Sample Title: B102110DFSWC018GD
 Nuclide Library Used: C:\GENIE2K\CAMFILES\Zion Lib-BNL.NLB

	Nuclide Name	Energy (keV)	Yield (%)	Line MDA (pCi/M^2)	Nuclide MDA (pCi/M^2)	Activity (pCi/M^2)	Dec. Level (pCi/M^2)
+	K-40	1460.82*	10.66	2.983E+005	2.98E+005	3.584E+006	1.326E+005
+	Co-60	1173.23*	99.85	1.875E+005	8.86E+004	4.343E+006	9.208E+004
		1332.49*	99.98	8.862E+004		4.629E+006	4.260E+004
	Nb-94	702.65	99.81	2.480E+005	2.48E+005	2.840E+005	1.225E+005
		871.09	99.89	3.208E+005		1.588E+006	1.589E+005
	Ag-108m	433.90	90.50	2.902E+005	2.79E+005	-1.175E+005	1.437E+005
		614.30	89.80	2.788E+005		-8.799E+004	1.378E+005
		722.90	90.80	3.017E+005		6.178E+005	1.492E+005
	Cs-134	604.72	97.62	2.606E+005	2.61E+005	-5.153E+004	1.288E+005
		795.86	85.46	2.889E+005		5.699E+004	1.427E+005
+	Cs-137	661.66*	85.10	2.552E+005	2.55E+005	2.711E+006	1.259E+005
+	Eu-152	121.78*	28.67	1.650E+006	3.24E+005	3.685E+007	8.214E+005
		344.28*	26.60	1.153E+006		3.441E+007	5.722E+005
		1408.01*	21.07	3.241E+005		3.888E+007	1.538E+005
+	Eu-154	123.07*	40.40	1.171E+006	3.22E+005	2.615E+007	5.829E+005
		723.30*	20.06	1.660E+006		1.772E+006	8.226E+005
		1274.43*	34.80	3.224E+005		1.390E+006	1.563E+005
+	Eu-155	86.55*	30.70	2.824E+006	2.63E+006	1.174E+007	1.408E+006
		105.31	21.10	2.625E+006		2.516E+005	1.307E+006
+	Tl-208	583.19*	85.00	2.259E+005	2.26E+005	1.385E+005	1.113E+005
+	Bi-212	727.33*	6.67	4.993E+006	4.99E+006	5.329E+006	2.474E+006
+	Pb-212	238.63*	43.60	6.448E+005	6.45E+005	6.061E+006	3.199E+005
	Bi-214	609.32	45.49	5.594E+005	2.33E+005	3.191E+005	2.766E+005
		1120.29	14.92	2.818E+006		2.420E+005	1.398E+006
		1764.49	15.30	2.333E+005		1.809E+005	1.043E+005
+	Pb-214	295.22*	18.42	1.587E+006	8.62E+005	1.025E+006	7.874E+005
		351.93*	35.60	8.618E+005		2.571E+007	4.275E+005
	Ra-226	186.21	3.64	1.068E+007	1.07E+007	-4.645E+006	5.313E+006
	Ac-228	338.32	11.27	2.681E+006	9.26E+005	-7.074E+005	1.330E+006
		911.20	25.80	9.265E+005		-2.381E+005	4.572E+005
		968.97	15.80	2.726E+006		3.418E+007	1.353E+006
	Am-241	59.54	35.90	1.882E+006	1.88E+006	1.834E+006	9.363E+005

- + = Nuclide identified during the nuclide identification
- * = Energy line found in the spectrum
- > = Calculated MDA is zero due to zero counts in the region, or the region is outside the spectrum, or MDA has not been calculated
- @ = Half-life too short to be able to perform the decay correction

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

Filename: 5456-A

Report Generated On : 4/10/2018 9:52:19 AM

Sample Title : B102110DFSWC019GD
Sample Description : UNIT 2 CONTAINMENT
Sample Identification : 019
Sample Type : GAMMA DIRECT
Sample Geometry :

Peak Locate Threshold : 3.00
Peak Locate Range (in channels) : 85 - 8192
Peak Area Range (in channels) : 85 - 8192
Identification Energy Tolerance : 10.000 keV

Sample Size : 2.830E+001

Sample Taken On : 4/10/2018 9:32:00 AM
Acquisition Started : 4/10/2018 9:42:11 AM

Live Time : 600.0 seconds
Real Time : 606.7 seconds

Dead Time : 1.10 %

Energy Calibration Used Done On : 3/15/2018
Efficiency Calibration Used Done On : 1/23/2018
Efficiency ID : 3M90D_ECP_17.8CM

Data Validated
4/10/18 1753
w/ R. Mahalik
SCF = 0.67436

 P E A K A N A L Y S I S R E P O R T *****

Detector Name: 5456-A
 Sample Title: B102110DFSWC019GD
 Peak Analysis Performed on: 4/10/2018 9:52:19 AM
 Peak Analysis From Channel: 85
 Peak Analysis To Channel: 8192

Peak No.	ROI start	ROI end	Peak centroid	Energy (keV)	FWHM (keV)	Net Peak Area	Net Area Uncert.	Continuum Counts
1	126-	136	130.58	32.64	1.19	6.86E+002	106.13	7.40E+002
2	153-	193	161.73	40.43	1.33	4.64E+003	461.26	7.81E+003
3	287-	312	302.15	75.54	1.28	7.60E+003	497.49	1.27E+004
4	330-	360	341.09	85.27	1.45	3.37E+003	578.31	1.64E+004
5	481-	499	489.19	122.30	1.30	7.57E+003	369.66	7.87E+003
6	974-	988	980.81	245.20	1.27	1.59E+003	182.54	2.34E+003
7	1367-	1390	1378.67	344.67	1.46	5.65E+003	228.69	1.86E+003
8	1493-	1506	1499.34	374.84	0.71	-1.69E+001	101.74	9.44E+002
9	1633-	1658	1645.91	411.48	0.91	5.26E+002	169.40	1.56E+003
10	1764-	1790	1777.09	444.27	1.38	7.71E+002	163.65	1.35E+003
11	2634-	2661	2647.80	661.95	1.56	3.64E+003	176.96	9.31E+002
12	2708-	2720	2714.16	678.54	0.65	5.65E+001	69.31	4.33E+002
13	2746-	2767	2755.65	688.91	1.01	1.77E+002	103.37	6.62E+002
14	2870-	2903	2893.80	723.45	1.24	2.49E+002	150.94	1.04E+003
15	3069-	3082	3075.51	768.88	0.52	1.88E+001	66.60	3.90E+002
16	3106-	3128	3116.91	779.23	1.72	2.29E+003	143.91	7.46E+002
17	3460-	3484	3470.84	867.71	1.62	6.50E+002	118.49	6.88E+002
18	3671-	3714	3678.87	919.72	0.43	3.95E+001	165.51	1.05E+003
19	3842-	3868	3857.74	964.44	1.80	2.72E+003	142.14	5.23E+002
20	4010-	4031	4021.59	1005.40	1.53	2.56E+002	80.96	3.68E+002
21	4333-	4374	4345.07	1086.27	1.81	2.13E+003	152.54	5.66E+002
22	4437-	4463	4450.46	1112.61	1.66	2.37E+003	129.33	4.15E+002
23	4682-	4709	4695.25	1173.81	1.84	2.74E+003	128.15	3.05E+002
24	4842-	4867	4854.09	1213.52	1.63	2.70E+002	62.96	1.69E+002
25	4996-	5009	5002.53	1250.63	0.51	1.64E+001	29.10	6.96E+001
26	5090-	5113	5100.73	1275.18	1.35	2.98E+002	48.94	7.58E+001
27	5187-	5211	5199.76	1299.94	1.38	2.91E+002	51.58	9.06E+001
28	5319-	5349	5332.96	1333.24	1.76	2.71E+003	111.36	8.02E+001
29	5621-	5651	5635.44	1408.86	2.04	3.83E+003	125.71	2.57E+001
30	5825-	5858	5847.55	1461.89	1.34	2.25E+002	34.21	1.28E+001
31	6109-	6124	6116.95	1529.24	1.05	3.79E+001	15.02	6.07E+000
32	7056-	7071	7063.06	1765.76	1.11	2.68E+001	11.67	2.21E+000

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

Errors quoted at 2.000 sigma

 **** 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: B102110DFSWC019GD
 Nuclide Library Used: C:\GENIE2K\CAMFILES\Zion Lib-BNL.NLB

IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)	Yield (%)	Activity (pCi/)	Activity Uncertainty
K-40	0.998	1460.82*	10.66	2.75811E+006	4.82625E+005
Co-60	0.999	1173.23*	99.85	3.36944E+006	3.12206E+005
		1332.49*	99.98	3.43252E+006	3.08693E+005
Cs-137	1.000	661.66*	85.10	4.57640E+006	5.92852E+005
Eu-152	0.999	121.78*	28.67	1.98392E+007	4.08970E+006
		344.28*	26.60	1.90430E+007	3.22334E+006
		1408.01*	21.07	2.34420E+007	2.02704E+006
Eu-154	0.999	123.07*	40.40	1.40790E+007	2.91190E+006
		723.30*	20.06	1.35445E+006	8.36791E+005
		1274.43*	34.80	1.07301E+006	1.96799E+005
Eu-155	0.332	86.55*	30.70	9.47433E+006	2.49612E+006
		105.31	21.10		
Bi-212	0.976	727.33*	6.67	4.07348E+006	2.51786E+006
Pb-212	0.933	238.63*	43.60	2.95798E+006	5.86841E+005
Ac-228	0.923	338.32*	11.27	4.49462E+007	7.57108E+006
		911.20*	25.80	1.77129E+005	7.41953E+005
		968.97*	15.80	2.01176E+007	2.06930E+006

* = Energy line found in the spectrum.
 @ = Energy line not used for Weighted Mean Activity
 Energy Tolerance : 10.000 keV
 Nuclide confidence index threshold = 0.30
 Errors quoted at 2.000 sigma

 ***** INTERFERENCE CORRECTED REPORT *****

Nuclide Name	Nuclide Id Confidence	Wt mean Activity (pCi/)	Wt mean Activity Uncertainty
K-40	0.998	2.758110E+006	4.826245E+005
Co-60	0.999	3.401339E+006✓	2.195105E+005
Cs-137	1.000	4.576404E+006✓	5.928516E+005
Eu-152	0.999	2.130001E+007✓	1.574435E+006
Eu-154	0.999	1.063413E+006✓	1.955478E+005
Eu-155	0.332	9.474335E+006	2.496125E+006
Bi-212	0.976	8.752786E+005	2.583292E+006
Pb-212	0.933	2.957983E+006	5.868407E+005
X Pb-214	0.391		
Ac-228	0.923	2.690722E+006	6.899574E+005

? = 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 2.000 sigma

***** UNIDENTIFIED PEAKS *****

Peak Locate Performed on: 4/10/2018 9:52:18 AM
 Peak Locate From Channel: 85
 Peak Locate To Channel: 8192

Peak No.	Energy (keV)	Peak Size in Counts per Second	Peak CPS % Uncertainty	Peak Type	Tol. Nuclide
1	32.64	1.1427E+000	15.48		
2	40.43	7.7344E+000	9.94		
3	75.54	1.2672E+001	6.54		
8	374.84	-2.8143E-002	-602.51	Sum	
9	411.48	8.7683E-001	32.20		
10	444.27	1.2846E+000	21.23	D-Esc.	
12	678.54	9.4235E-002	122.58		
13	688.91	2.9583E-001	58.24	Sum	
15	768.88	3.1354E-002	354.01	S-Esc.	
16	779.23	3.8165E+000	6.28	Sum	
17	867.71	1.0832E+000	18.23	Tol.	Nb-94
20	1005.40	4.2650E-001	31.64	Sum	
21	1086.27	3.5504E+000	7.16	Sum	
22	1112.61	3.9453E+000	5.46		
24	1213.52	4.5000E-001	23.32	Sum	
25	1250.63	2.7267E-002	177.86	Sum	
27	1299.94	4.8562E-001	17.70	Sum	
31	1529.24	6.3220E-002	39.60	Sum	
32	1765.76	4.4655E-002	43.56		

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

Errors quoted at 2.000 sigma

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

Detector Name: 5456-A
 Sample Geometry:
 Sample Title: B102110DFSWC019GD
 Nuclide Library Used: C:\GENIE2K\CAMFILES\Zion Lib-BNL.NLB

	Nuclide Name	Energy (keV)	Yield (%)	Line MDA (pCi/)	Nuclide MDA (pCi/)	Activity (pCi/)	Dec. Level (pCi/)
+	K-40	1460.82*	10.66	3.640E+005	3.64E+005	2.758E+006	1.654E+005
+	Co-60	1173.23*	99.85	1.527E+005	8.57E+004	3.369E+006	7.467E+004
		1332.49*	99.98	8.567E+004		3.433E+006	4.112E+004
	Nb-94	702.65	99.81	2.057E+005	2.06E+005	-1.973E+004	1.014E+005
		871.09	99.89	2.530E+005		7.061E+005	1.249E+005
	Ag-108m	433.90	90.50	2.544E+005	2.41E+005	8.692E+004	1.258E+005
		614.30	89.80	2.414E+005		3.465E+004	1.191E+005
		722.90	90.80	2.452E+005		3.440E+005	1.210E+005
	Cs-134	604.72	97.62	2.218E+005	2.22E+005	3.597E+004✓	1.095E+005
		795.86	85.46	2.362E+005		-7.044E+004	1.164E+005
+	Cs-137	661.66*	85.10	2.713E+005	2.71E+005	4.576E+006	1.340E+005
+	Eu-152	121.78*	28.67	1.413E+006	2.37E+005	1.984E+007	7.031E+005
		344.28*	26.60	9.644E+005		1.904E+007	4.776E+005
		1408.01*	21.07	2.374E+005		2.344E+007	1.104E+005
+	Eu-154	123.07*	40.40	1.003E+006	2.15E+005	1.408E+007	4.989E+005
		723.30*	20.06	1.337E+006		1.354E+006	6.610E+005
		1274.43*	34.80	2.150E+005		1.073E+006	1.026E+005
+	Eu-155	86.55*	30.70	2.626E+006	2.33E+006	9.474E+006	1.309E+006
		105.31	21.10	2.331E+006		-1.902E+006	1.160E+006
	Tl-208	583.19	85.00	2.588E+005	2.59E+005	7.857E+004	1.278E+005
+	Bi-212	727.33*	6.67	4.020E+006	4.02E+006	4.073E+006	1.988E+006
+	Pb-212	238.63*	43.60	5.087E+005	5.09E+005	2.958E+006	2.518E+005
	Bi-214	609.32	45.49	4.723E+005	2.69E+005	1.955E+005	2.330E+005
		1120.29	14.92	1.700E+006		3.296E+005	8.388E+005
		1764.49	15.30	2.693E+005		2.404E+005	1.223E+005
	Pb-214	295.22	18.42	1.512E+006	7.21E+005	1.452E+006	7.498E+005
		351.93*	35.60	7.206E+005		1.423E+007	3.569E+005
	Ra-226	186.21	3.64	9.477E+006	9.48E+006	2.478E+006	4.711E+006
+	Ac-228	338.32*	11.27	2.276E+006	1.20E+006	4.495E+007	1.127E+006
		911.20*	25.80	1.229E+006		1.771E+005	6.084E+005
		968.97*	15.80	1.197E+006		2.012E+007	5.887E+005
	Am-241	59.54	35.90	1.727E+006	1.73E+006	2.501E+005	8.587E+005

- + = Nuclide identified during the nuclide identification
- * = Energy line found in the spectrum
- > = Calculated MDA is zero due to zero counts in the region, or the region is outside the spectrum, or MDA has not been calculated
- @ = Half-life too short to be able to perform the decay correction

***** GAMMA SPECTRUM ANALYSIS *****

Filename: 5456-A

Report Generated On : 4/10/2018 9:22:44 AM

Sample Title : B102110DFSWC020GD
Sample Description : UNIT 2 CONTAINMENT
Sample Identification : 020
Sample Type : GAMMA DIRECT
Sample Geometry :

Peak Locate Threshold : 3.00
Peak Locate Range (in channels) : 85 - 8192
Peak Area Range (in channels) : 85 - 8192
Identification Energy Tolerance : 10.000 keV

Sample Size : 2.830E+001

Sample Taken On : 4/10/2018 9:12:00 AM
Acquisition Started : 4/10/2018 9:12:35 AM

Live Time : 600.0 seconds
Real Time : 608.1 seconds

Dead Time : 1.33 %

Energy Calibration Used Done On : 3/15/2018
Efficiency Calibration Used Done On : 1/23/2018
Efficiency ID : 3M90D_ECP_17.8CM

Data Validated
4/10/18 1759
WR Mubalil
SOF = 0.77117

 ***** P E A K A N A L Y S I S R E P O R T *****

Detector Name: 5456-A
 Sample Title: B102110DFSWC020GD
 Peak Analysis Performed on: 4/10/2018 9:22:44 AM
 Peak Analysis From Channel: 85
 Peak Analysis To Channel: 8192

Peak No.	ROI start	ROI end	Peak centroid	Energy (keV)	FWHM (keV)	Net Peak Area	Net Area Uncert.	Continuum Counts
1	126-	135	130.58	32.64	1.06	6.64E+002	108.62	8.24E+002
2	152-	193	161.65	40.41	1.42	8.66E+003	528.66	9.67E+003
3	282-	310	302.03	75.51	1.21	7.89E+003	573.08	1.60E+004
4	330-	362	341.20	85.30	1.48	3.94E+003	645.49	1.95E+004
5	481-	499	489.21	122.30	1.34	1.19E+004	408.23	8.80E+003
6	828-	837	832.23	208.06	0.51	4.43E+001	145.63	2.33E+003
7	971-	988	980.56	245.14	1.21	2.56E+003	233.66	3.41E+003
8	1365-	1390	1378.41	344.60	1.40	8.87E+003	279.10	2.49E+003
9	1464-	1482	1472.75	368.19	0.85	1.95E+002	148.89	1.58E+003
10	1637-	1654	1645.57	411.39	1.25	5.21E+002	142.84	1.41E+003
11	1766-	1790	1777.00	444.25	1.53	1.00E+003	174.19	1.59E+003
12	2249-	2261	2255.37	563.84	0.46	1.54E+002	87.57	6.70E+002
13	2337-	2352	2346.09	586.52	0.65	9.53E+001	101.88	8.33E+002
14	2619-	2660	2647.23	661.81	1.61	3.41E+003	248.88	1.84E+003
15	2709-	2724	2715.14	678.78	0.84	1.20E+002	93.24	6.79E+002
16	2742-	2762	2754.93	688.73	1.27	2.48E+002	115.39	8.50E+002
17	2886-	2901	2893.44	723.36	1.24	2.16E+002	96.92	7.07E+002
18	2925-	2939	2932.84	733.21	0.52	3.79E+001	83.28	5.89E+002
19	3105-	3128	3116.11	779.03	1.69	3.54E+003	168.64	8.92E+002
20	3237-	3248	3242.44	810.61	0.46	5.07E+001	66.38	4.17E+002
21	3456-	3502	3470.04	867.51	1.61	1.34E+003	222.96	1.59E+003
22	3670-	3684	3677.72	919.43	0.74	1.32E+002	72.75	4.14E+002
23	3844-	3870	3857.03	964.26	1.78	3.81E+003	166.57	7.17E+002
24	3977-	4036	4020.67	1005.17	1.53	6.33E+002	207.46	1.18E+003
25	4331-	4375	4344.20	1086.05	1.70	3.31E+003	190.77	8.49E+002
26	4433-	4465	4449.25	1112.31	1.87	3.60E+003	168.31	6.80E+002
27	4677-	4708	4694.22	1173.55	1.83	3.24E+003	146.42	4.24E+002
28	4842-	4865	4853.44	1213.36	2.27	3.46E+002	72.03	2.37E+002
29	4995-	5009	5002.27	1250.57	0.32	3.52E+001	36.71	1.05E+002
30	5087-	5113	5099.19	1274.80	1.66	4.33E+002	62.11	1.22E+002
31	5187-	5211	5198.81	1299.70	1.98	4.22E+002	60.48	1.19E+002
32	5316-	5348	5331.76	1332.94	1.97	3.18E+003	119.75	8.06E+001
33	5618-	5649	5634.07	1408.52	2.09	5.76E+003	155.23	5.21E+001
34	5821-	5856	5831.10	1457.78	0.92	2.64E+002	36.90	1.37E+001
35	6108-	6123	6115.17	1528.79	1.02	6.16E+001	18.75	8.37E+000
36	7054-	7069	7061.96	1765.49	0.83	2.40E+001	11.01	2.04E+000

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

errors quoted at 2.000 sigma

 *** 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: B102110DFSWC020GD
 Nuclide Library Used: C:\GENIE2K\CAMFILES\Zion Lib-BNL.NLB

IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)	Yield (%)	Activity (pCi/)	Activity Uncertainty
K-40	0.985	1460.82*	10.66	3.23407E+006	5.31727E+005
Co-60	1.000	1173.23*	99.85	3.98027E+006	3.65766E+005
		1332.49*	99.98	4.02426E+006	3.55860E+005
Cs-137	1.000	661.66*	85.10	4.29171E+006	6.02979E+005
Eu-152	1.000	121.78*	28.67	3.11679E+007	6.33314E+006
		344.28*	26.60	2.98865E+007	5.00128E+006
		1408.01*	21.07	3.52670E+007	2.97699E+006
Eu-154	1.000	123.07*	40.40	2.21184E+007	4.50969E+006
		723.30*	20.06	1.17421E+006	5.45068E+005
		1274.43*	34.80	1.55677E+006	2.57255E+005
Eu-155	0.332	86.55*	30.70	1.10648E+007	2.86082E+006
		105.31	21.10		
Tl-208	0.982	583.19*	85.00	1.16337E+005	1.25201E+005
Pb-212	0.934	238.63*	43.60	4.76588E+006	8.84926E+005
Ac-228	0.926	338.32*	11.27	7.05395E+007	1.17459E+007
		911.20*	25.80	5.91520E+005	3.29929E+005
		968.97*	15.80	2.82087E+007	2.78600E+006

* = Energy line found in the spectrum.
 @ = Energy line not used for Weighted Mean Activity
 Energy Tolerance : 10.000 keV
 Nuclide confidence index threshold = 0.30
 Errors quoted at 2.000 sigma

 ***** INTERFERENCE CORRECTED REPORT *****

Nuclide Name	Nuclide Id Confidence	Wt mean Activity (pCi/)	Wt mean Activity Uncertainty
K-40	0.985	3.234065E+006	5.317270E+005
Co-60	1.000	4.002869E+006✓	2.550612E+005
Cs-137	1.000	4.291707E+006✓	6.029790E+005
Eu-152	1.000	3.304660E+007✓	2.358081E+006
Eu-154	1.000	1.480113E+006✓	2.313058E+005
Eu-155	0.332	1.106478E+007	2.860817E+006
Tl-208	0.982	1.163369E+005	1.252008E+005
X Bi-212	0.975		
Pb-212	0.934	4.765881E+006	8.849262E+005
X Pb-214	0.390		
Ac-228	0.926	1.030454E+006	3.266487E+005

? = 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 2.000 sigma

***** UNIDENTIFIED PEAKS *****

Peak Locate Performed on: 4/10/2018 9:22:44 AM
 Peak Locate From Channel: 85
 Peak Locate To Channel: 8192

Peak No.	Energy (keV)	Peak Size in Counts per Second	Peak CPS % Uncertainty	Peak Type	Tol. Nuclide
1	32.64	1.1064E+000	16.36		
2	40.41	1.4440E+001	6.10		
3	75.51	1.3147E+001	7.27		
6	208.06	7.3810E-002	328.84	Sum	
9	368.19	3.2502E-001	76.35	Sum	
10	411.39	8.6859E-001	27.41		
11	444.25	1.6710E+000	17.37	D-Esc.	
12	563.84	2.5658E-001	56.89		
15	678.78	2.0059E-001	77.47	Sum	
16	688.73	4.1384E-001	46.47	Sum	
18	733.21	6.3230E-002	219.53	Tol.	Eu-154 Bi-212
19	779.03	5.8918E+000	4.77	Sum	
20	810.61	8.4462E-002	130.99	Sum	
21	867.51	2.2396E+000	16.59	Tol.	Nb-94
24	1005.17	1.0549E+000	32.78	Sum	
25	1086.05	5.5201E+000	5.76	Sum	
26	1112.31	6.0024E+000	4.67		
28	1213.36	5.7610E-001	20.84	Sum	
29	1250.57	5.8708E-002	104.21	Sum	
31	1299.70	7.0375E-001	14.32	Sum	
35	1528.79	1.0271E-001	30.43	Sum	
36	1765.49	3.9936E-002	45.96	Sum	

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

Errors quoted at 2.000 sigma

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

Detector Name: 5456-A
 Sample Geometry:
 Sample Title: B102110DFSWC020GD
 Nuclide Library Used: C:\GENIE2K\CAMFILES\Zion Lib-BNL.NLB

	Nuclide Name	Energy (keV)	Yield (%)	Line MDA (pCi/)	Nuclide MDA (pCi/)	Activity (pCi/)	Dec. Level (pCi/)
+	K-40	1460.82*	10.66	3.843E+005	3.84E+005	3.234E+006	1.756E+005
+	Co-60	1173.23*	99.85	1.896E+005	8.75E+004	3.980E+006	9.312E+004
		1332.49*	99.98	8.746E+004		4.024E+006	4.201E+004
	Nb-94	702.65	99.81	2.315E+005	2.32E+005	-1.633E+005	1.143E+005
		871.09	99.89	3.021E+005		1.280E+003	1.495E+005
	Ag-108m	433.90	90.50	2.818E+005	2.72E+005	-8.402E+004	1.395E+005
		614.30	89.80	2.718E+005		-1.113E+005	1.343E+005
		722.90	90.80	2.852E+005		6.173E+005	1.410E+005
	Cs-134	604.72	97.62	2.564E+005	2.56E+005	8.715E+004	1.268E+005
		795.86	85.46	2.728E+005		1.281E+004	1.346E+005
+	Cs-137	661.66*	85.10	4.581E+005	4.58E+005	4.292E+006	2.274E+005
+	Eu-152	121.78*	28.67	1.495E+006	3.42E+005	3.117E+007	7.439E+005
		344.28*	26.60	1.151E+006		2.989E+007	5.708E+005
		1408.01*	21.07	3.418E+005		3.527E+007	1.626E+005
+	Eu-154	123.07*	40.40	1.061E+006	2.83E+005	2.212E+007	5.279E+005
		723.30*	20.06	8.419E+005		1.174E+006	4.136E+005
		1274.43*	34.80	2.827E+005		1.557E+006	1.365E+005
+	Eu-155	86.55*	30.70	2.933E+006	2.50E+006	1.106E+007	1.463E+006
		105.31	21.10	2.501E+006		-7.060E+005	1.245E+006
+	Tl-208	583.19*	85.00	2.042E+005	2.04E+005	1.163E+005	1.004E+005
	Bi-212	727.33*	6.67	2.532E+006	2.53E+006	3.531E+006	1.244E+006
+	Pb-212	238.63*	43.60	6.509E+005	6.51E+005	4.766E+006	3.229E+005
	Bi-214	609.32	45.49	5.419E+005	2.66E+005	7.260E+003	2.678E+005
		1120.29	14.92	1.871E+006		3.281E+005	9.243E+005
		1764.49	15.30	2.656E+005		2.928E+005	1.204E+005
	Pb-214	295.22	18.42	1.671E+006	8.60E+005	3.477E+005	8.291E+005
		351.93*	35.60	8.598E+005		2.233E+007	4.265E+005
	Ra-226	186.21	3.64	1.013E+007	1.01E+007	-1.722E+006	5.038E+006
+	Ac-228	338.32*	11.27	2.716E+006	5.21E+005	7.054E+007	1.347E+006
		911.20*	25.80	5.209E+005		5.915E+005	2.544E+005
		968.97*	15.80	1.383E+006		2.821E+007	6.812E+005
	Am-241	59.54	35.90	1.800E+006	1.80E+006	-6.252E+005	8.953E+005

+ = Nuclide identified during the nuclide identification
 * = Energy line found in the spectrum
 > = Calculated MDA is zero due to zero counts in the region, or the region is outside the spectrum, or MDA has not been calculated
 @ = Half-life too short to be able to perform the decay correction

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

Filename: 5456-A

Report Generated On : 4/14/2018 2:02:53 PM

Sample Title : B102110DFSFC021GD
Sample Description : U2 CTMT Under Vessel
Sample Identification : 021
Sample Type : Gamma Direct
Sample Geometry :

Peak Locate Threshold : 3.00
Peak Locate Range (in channels) : 85 - 8192
Peak Area Range (in channels) : 85 - 8192
Identification Energy Tolerance : 10.000 keV

Sample Size : 1.256E+001 M²

Sample Taken On : 4/14/2018 1:52:00 PM
Acquisition Started : 4/14/2018 1:52:49 PM

Live Time : 600.0 seconds
Real Time : 603.0 seconds

Dead Time : 0.49 %

Energy Calibration Used Done On : 3/15/2018
Efficiency Calibration Used Done On : 1/23/2018
Efficiency ID : 2M90D_ECP_17.8CM

Data Validated
4/15/18 1306
DR Mihale

 **** P E A K A N A L Y S I S R E P O R T ****

Detector Name: 5456-A
 Sample Title: B102110DFSFC021GD
 Peak Analysis Performed on: 4/14/2018 2:02:52 PM
 Peak Analysis From Channel: 85
 Peak Analysis To Channel: 8192

Peak No.	ROI start	ROI end	Peak centroid	Energy (keV)	FWHM (keV)	Net Peak Area	Net Area Uncert.	Continuum Counts
1	126-	134	130.52	32.63	0.68	1.79E+002	55.10	2.21E+002
2	148-	191	158.18	39.55	2.22	1.83E+003	294.88	3.01E+003
3	281-	310	300.46	75.12	1.28	2.96E+003	347.30	5.72E+003
4	328-	348	338.72	84.68	1.37	7.01E+002	264.39	4.61E+003
5	477-	498	487.79	121.95	1.26	2.41E+003	248.69	3.48E+003
6	974-	986	979.80	244.95	1.18	4.59E+002	98.98	7.55E+002
7	1365-	1415	1377.71	344.43	1.38	1.70E+003	235.10	1.55E+003
8	1466-	1480	1471.78	367.94	0.38	4.63E+001	69.85	4.07E+002
9	1635-	1651	1644.34	411.08	0.47	9.29E+001	75.15	4.20E+002
10	1769-	1784	1776.28	444.07	1.23	2.22E+002	68.48	3.16E+002
11	2361-	2372	2366.66	591.66	0.59	2.06E+001	40.77	1.57E+002
12	2428-	2445	2438.61	609.65	1.05	7.42E+001	60.56	2.59E+002
13	2636-	2658	2646.55	661.64	1.57	2.08E+003	111.56	2.69E+002
14	2886-	2900	2892.57	723.14	0.55	6.65E+001	45.33	1.55E+002
15	3104-	3125	3115.46	778.86	1.47	6.40E+002	78.56	2.41E+002
16	3459-	3480	3469.71	867.43	1.56	2.33E+002	58.91	1.69E+002
17	3845-	3869	3856.27	964.07	1.78	7.91E+002	79.87	1.95E+002
18	4012-	4029	4020.39	1005.10	1.28	5.68E+001	42.49	1.21E+002
19	4332-	4370	4343.78	1085.94	1.77	6.96E+002	84.86	1.85E+002
20	4437-	4491	4448.96	1112.24	1.60	7.62E+002	116.38	3.27E+002
21	4679-	4706	4693.60	1173.40	1.90	9.97E+002	79.83	1.33E+002
22	4844-	4860	4851.43	1212.86	0.37	7.39E+001	30.37	5.01E+001
23	5088-	5132	5099.14	1274.79	1.98	1.27E+002	38.15	3.38E+001
24	5187-	5210	5198.62	1299.66	0.95	8.10E+001	30.06	3.60E+001
25	5318-	5345	5331.37	1332.84	1.96	1.00E+003	67.11	2.74E+001
26	5621-	5647	5633.89	1408.47	2.05	1.26E+003	72.81	1.60E+001
27	5837-	5856	5845.67	1461.42	1.00	9.94E+001	31.33	3.96E+001
28	7053-	7068	7060.99	1765.25	0.38	1.80E+001	8.49	0.00E+000

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

Errors quoted at 2.000 sigma

 ***** 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: B102110DFSFC021GD
 Nuclide Library Used: C:\GENIE2K\CAMFILES\Zion Lib-BNL.NLB

IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)	Yield (%)	Activity (pCi/M ²)	Activity Uncertainty
K-40	0.999	1460.82*	10.66	1.21058E+006	3.95691E+005
Co-60	1.000	1173.23*	99.85	1.21644E+006	1.37665E+005
		1332.49*	99.98	1.26495E+006	1.31836E+005
		661.66*	85.10	2.58876E+006	3.40585E+005
Cs-137	1.000	661.66*	85.10	2.58876E+006	3.40585E+005
Eu-152	1.000	121.78*	28.67	6.22366E+006	1.40233E+006
		344.28*	26.60	5.64511E+006	1.21381E+006
		1408.01*	21.07	7.65492E+006	7.55867E+005
Eu-154	0.999	123.07*	40.40	4.41664E+006	9.97933E+005
		723.30*	20.06	3.58540E+005	2.48084E+005
		1274.43*	34.80	4.55014E+005	1.41411E+005
Eu-155	0.331	86.55*	30.70	1.94759E+006	8.31226E+005
		105.31	21.10		
Tl-208	0.891	583.19*	85.00	2.50229E+004	4.95497E+004
Pb-212	0.938	238.63*	43.60	8.44438E+005	2.27524E+005
Bi-214	0.979	609.32*	45.49	1.69478E+005	1.39803E+005
		1120.29*	14.92	6.14135E+006	1.05882E+006
		1764.49*	15.30	1.64127E+005	7.84790E+004

* = Energy line found in the spectrum.
 @ = Energy line not used for Weighted Mean Activity
 Energy Tolerance : 10.000 keV
 Nuclide confidence index threshold = 0.30
 Errors quoted at 2.000 sigma

 :*** INTERFERENCE CORRECTED REPORT *****

	Nuclide Name	Nuclide Id Confidence	Wt mean Activity (pCi/M ²)	Wt mean Activity Uncertainty
	K-40	0.999	1.210575E+006	3.956914E+005
	Co-60	1.000	1.241743E+006✓	9.521613E+004
X	Ag-108m	0.434		
	Cs-137	1.000	2.588761E+006✓	3.405854E+005
	Eu-152	1.000	6.831614E+006✓	5.819870E+005
	Eu-154	0.999	4.184491E+005✓	1.219336E+005
	Eu-155	0.331	1.947587E+006	8.312259E+005
	Tl-208	0.891	2.502287E+004	4.954970E+004
X	Bi-212	0.972		
	Pb-212	0.938	8.444380E+005	2.275239E+005
	Bi-214	0.979	1.902686E+005	6.829135E+004
X	Pb-214	0.388		

? = 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 2.000 sigma

***** UNIDENTIFIED PEAKS *****

Peak Locate Performed on: 4/14/2018 2:02:52 PM
 Peak Locate From Channel: 85
 Peak Locate To Channel: 8192

Peak No.	Energy (keV)	Peak Size in Counts per Second	Peak CPS % Uncertainty	Peak Type	Tol. Nuclide
1	32.63	2.9901E-001	30.71		
2	39.55	3.0462E+000	16.13		
3	75.12	4.9414E+000	11.71		
8	367.94	7.7108E-002	150.97	Sum	
9	411.08	1.5490E-001	80.86		
10	444.07	3.6966E-001	30.88	D-Esc.	
15	778.86	1.0666E+000	12.28	Sum	
16	867.43	3.8776E-001	25.32	Tol.	Nb-94
17	964.07	1.3183E+000	10.10	Sum	
18	1005.10	9.4691E-002	74.79	Sum	
19	1085.94	1.1601E+000	12.19		
22	1212.86	1.2317E-001	41.09	Sum	
24	1299.66	1.3500E-001	37.11	Sum	

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

Errors quoted at 2.000 sigma

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

Detector Name: 5456-A
 Sample Geometry:
 Sample Title: B102110DFSFC021GD
 Nuclide Library Used: C:\GENIE2K\CAMFILES\Zion Lib-BNL.NLB

	Nuclide Name	Energy (keV)	Yield (%)	Line MDA (pCi/M ²)	Nuclide MDA (pCi/M ²)	Activity (pCi/M ²)	Dec. Level (pCi/M ²)
+	K-40	1460.82*	10.66	5.169E+005	5.17E+005	1.211E+006	2.420E+005
+	Co-60	1173.23*	99.85	1.013E+005	4.90E+004	1.216E+006	4.898E+004
		1332.49*	99.98	4.903E+004		1.265E+006	2.281E+004
	Nb-94	702.65	99.81	1.192E+005	1.19E+005	5.263E+004	5.814E+004
		871.09	99.89	1.496E+005		3.098E+005	7.325E+004
	Ag-108m	433.90	90.50	1.591E+005	8.62E+004	-9.188E+003	7.812E+004
		614.30*	89.80	1.136E+005		8.585E+004	5.525E+004
		722.90*	90.80	8.615E+004		7.921E+004	4.146E+004
	Cs-134	604.72	97.62	1.434E+005	1.43E+005	9.495E+003✓	7.028E+004
		795.86	85.46	1.447E+005		7.545E+004	7.059E+004
+	Cs-137	661.66*	85.10	1.353E+005	1.35E+005	2.589E+006	6.598E+004
+	Eu-152	121.78*	28.67	9.782E+005	1.81E+005	6.224E+006	4.856E+005
		344.28*	26.60	1.215E+006		5.645E+006	6.029E+005
		1408.01*	21.07	1.809E+005		7.655E+006	8.220E+004
+	Eu-154	123.07*	40.40	6.942E+005	1.91E+005	4.417E+006	3.446E+005
		723.30*	20.06	3.900E+005		3.585E+005	1.877E+005
		1274.43*	34.80	1.906E+005		4.550E+005	9.048E+004
+	Eu-155	86.55*	30.70	1.191E+006	1.19E+006	1.948E+006	5.917E+005
		105.31	21.10	1.424E+006		-5.068E+005	7.072E+005
+	Tl-208	583.19*	85.00	8.260E+004	8.26E+004	2.502E+004	3.966E+004
	Bi-212	727.33*	6.67	1.173E+006	1.17E+006	1.078E+006	5.644E+005
+	Pb-212	238.63*	43.60	2.749E+005	2.75E+005	8.444E+005	1.350E+005
+	Bi-214	609.32*	45.49	2.243E+005	2.47E+004	1.695E+005	1.091E+005
		1120.29*	14.92	1.380E+006		6.141E+006	6.788E+005
		1764.49*	15.30	2.467E+004		1.641E+005	0.000E+000
	Pb-214	295.22	18.42	9.006E+005	9.01E+005	5.903E+004	4.441E+005
		351.93*	35.60	9.077E+005		4.218E+006	4.505E+005
	Ra-226	186.21	3.64	5.762E+006	5.76E+006	-2.400E+006	2.853E+006
	Ac-228	338.32	11.27	1.520E+006	4.62E+005	-2.866E+005	7.495E+005
		911.20	25.80	4.617E+005		-1.351E+005	2.249E+005
		968.97	15.80	1.208E+006		-4.939E+004	5.939E+005
	Am-241	59.54	35.90	1.102E+006	1.10E+006	1.169E+006	5.465E+005

+ = Nuclide identified during the nuclide identification
 * = Energy line found in the spectrum
 > = Calculated MDA is zero due to zero counts in the region, or the region is outside the spectrum, or MDA has not been calculated
 @ = Half-life too short to be able to perform the decay correction

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

Filename: 5456-A

Report Generated On : 4/14/2018 2:42:50 PM

Sample Title : B102110DFSFC022GD
Sample Description : U2 CTMT Under Vessel
Sample Identification : 022
Sample Type : Gamma Direct
Sample Geometry :

Peak Locate Threshold : 3.00
Peak Locate Range (in channels) : 85 - 8192
Peak Area Range (in channels) : 85 - 8192
Identification Energy Tolerance : 10.000 keV

Sample Size : 1.256E+001 M^2

Sample Taken On : 4/14/2018 2:32:00 PM
Acquisition Started : 4/14/2018 2:32:48 PM

Live Time : 600.0 seconds
Real Time : 601.5 seconds

Dead Time : 0.25 %

Energy Calibration Used Done On : 3/15/2018
Efficiency Calibration Used Done On : 1/23/2018
Efficiency ID : 2M90D_ECP_17.8CM

Data Validated
4/15/18 1321
DR Mihalil

 **** P E A K A N A L Y S I S R E P O R T ****

Detector Name: 5456-A
 Sample Title: B102110DFSFC022GD
 Peak Analysis Performed on: 4/14/2018 2:42:50 PM
 Peak Analysis From Channel: 85
 Peak Analysis To Channel: 8192

Peak No.	ROI start	ROI end	Peak centroid	Energy (keV)	FWHM (keV)	Net Peak Area	Net Area Uncert.	Continuum Counts
1	126-	135	129.83	32.46	0.89	1.61E+002	41.06	9.71E+001
2	286-	310	300.53	75.13	1.61	6.14E+002	175.68	1.72E+003
3	332-	346	337.75	84.44	1.39	1.28E+002	113.99	1.08E+003
4	482-	492	487.59	121.90	0.97	1.20E+002	80.98	6.37E+002
5	1368-	1389	1377.49	344.37	1.02	1.70E+002	65.83	2.43E+002
6	2430-	2445	2438.18	609.54	1.38	6.32E+001	31.54	6.18E+001
7	2632-	2660	2646.85	661.71	1.63	4.24E+003	139.04	1.27E+002
8	3108-	3124	3116.65	779.16	0.53	4.71E+001	26.70	4.19E+001
9	3848-	3882	3857.21	964.30	0.91	1.25E+002	33.85	3.00E+001
10	4439-	4458	4449.08	1112.27	1.12	7.40E+001	25.42	2.50E+001
11	4683-	4706	4694.20	1173.55	1.78	1.77E+002	29.14	8.85E+000
12	5323-	5344	5332.72	1333.18	1.50	1.61E+002	26.68	4.83E+000
13	5624-	5645	5634.81	1408.70	1.45	1.40E+002	26.09	8.13E+000
14	5835-	5857	5846.07	1461.52	1.42	1.54E+002	26.39	5.45E+000

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

Errors quoted at 2.000 sigma

 :*** 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: B102110DFSFC022GD
 Nuclide Library Used: C:\GENIE2K\CAMFILES\Zion Lib-BNL.NLB

IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)	Yield (%)	Activity (pCi/M ²)	Activity Uncertainty
K-40	0.999	1460.82*	10.66	1.86962E+006	3.59982E+005
Co-60	1.000	1173.23*	99.85	2.16067E+005	3.95174E+004
		1332.49*	99.98	2.02950E+005	3.73090E+004
		661.66*	85.10	5.28989E+006	6.58476E+005
Cs-137	1.000	661.66*	85.10	5.28989E+006	6.58476E+005
Eu-152	1.000	121.78*	28.67	3.10868E+005	2.18323E+005
		344.28*	26.60	5.66640E+005	2.38105E+005
		1408.01*	21.07	8.51131E+005	1.72740E+005
Eu-155	0.330	86.55*	30.70	3.57668E+005	3.25415E+005
		105.31	21.10		
Bi-214	0.689	609.32*	45.49	1.44391E+005	7.40861E+004
		1120.29*	14.92	5.96526E+005	2.10299E+005
		1764.49	15.30		

* = Energy line found in the spectrum.
 @ = Energy line not used for Weighted Mean Activity
 Energy Tolerance : 10.000 keV
 Nuclide confidence index threshold = 0.30
 Errors quoted at 2.000 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 (pCi/M ²)	Wt mean Activity Uncertainty
K-40	0.999	1.869622E+006	3.599816E+005
Co-60	1.000	2.091317E+005✓	2.712861E+004
Cs-137	1.000	5.289886E+006✓	6.584759E+005
Eu-152	1.000	6.244252E+005✓	1.177439E+005
Eu-155	0.330	3.576677E+005	3.254153E+005
Bi-214	0.689	1.943092E+005	6.987674E+004
X Pb-214	0.387		

? = 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 2.000 sigma

***** UNIDENTIFIED PEAKS *****

Peak Locate Performed on: 4/14/2018 2:42:50 PM
 Peak Locate From Channel: 85
 Peak Locate To Channel: 8192

Peak No.	Energy (keV)	Peak Size in Counts per Second	Peak CPS % Uncertainty	Peak Type	Tol. Nuclide
1	32.46	2.6810E-001	25.53		
2	75.13	1.0229E+000	28.62		
8	779.16	7.8539E-002	56.65	Sum	
9	964.30	2.0840E-001	27.07	Tol.	Ac-228

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

Errors quoted at 2.000 sigma

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

Detector Name: 5456-A
 Sample Geometry:
 Sample Title: B102110DFSFC022GD
 Nuclide Library Used: C:\GENIE2K\CAMFILES\Zion Lib-BNL.NLB

	Nuclide Name	Energy (keV)	Yield (%)	Line MDA (pCi/M ²)	Nuclide MDA (pCi/M ²)	Activity (pCi/M ²)	Dec. Level (pCi/M ²)
+	K-40	1460.82*	10.66	2.144E+005	2.14E+005	1.870E+006	9.075E+004
+	Co-60	1173.23*	99.85	2.706E+004	2.04E+004	2.161E+005	1.188E+004
		1332.49*	99.98	2.035E+004		2.029E+005	8.473E+003
	Nb-94	702.65	99.81	5.229E+004	5.23E+004	1.061E+003	2.469E+004
		871.09	99.89	6.015E+004		3.002E+004	2.855E+004
	Ag-108m	433.90	90.50	1.129E+005	6.03E+004	4.390E+004	5.505E+004
		614.30	89.80	9.274E+004		1.239E+004	4.480E+004
		722.90	90.80	6.032E+004		8.995E+001	2.855E+004
	Cs-134	604.72	97.62	8.256E+004	6.00E+004	-1.561E+004	3.984E+004
		795.86	85.46	5.998E+004		2.459E+004	2.824E+004
+	Cs-137	661.66*	85.10	1.031E+005	1.03E+005	5.290E+006	4.984E+004
+	Eu-152	121.78*	28.67	3.384E+005	1.27E+005	3.109E+005	1.657E+005
		344.28*	26.60	3.400E+005		5.666E+005	1.655E+005
		1408.01*	21.07	1.266E+005		8.511E+005	5.509E+004
	Eu-154	123.07	40.40	3.961E+005	1.16E+005	4.479E+005	1.956E+005
		723.30	20.06	2.779E+005		1.280E+005	1.317E+005
		1274.43	34.80	1.162E+005		9.207E+004	5.326E+004
+	Eu-155	86.55*	30.70	5.193E+005	5.19E+005	3.577E+005	2.559E+005
		105.31	21.10	7.884E+005		-4.980E+005	3.892E+005
	Tl-208	583.19	85.00	8.667E+004	8.67E+004	2.708E+004	4.170E+004
	Bi-212	727.33	6.67	8.075E+005	8.07E+005	2.611E+005	3.817E+005
	Pb-212	238.63	43.60	2.806E+005	2.81E+005	1.809E+005	1.379E+005
+	Bi-214	609.32*	45.49	1.085E+005	1.08E+005	1.444E+005	5.116E+004
		1120.29*	14.92	2.698E+005		5.965E+005	1.240E+005
		1764.49	15.30	2.491E+005		2.553E+005	1.122E+005
	Pb-214	295.22	18.42	5.894E+005	2.54E+005	1.947E+005	2.885E+005
		351.93*	35.60	2.540E+005		4.234E+005	1.236E+005
	Ra-226	186.21	3.64	3.544E+006	3.54E+006	-1.632E+006	1.744E+006
	Ac-228	338.32	11.27	9.149E+005	2.47E+005	-1.823E+005	4.469E+005
		911.20	25.80	2.470E+005		2.603E+005	1.175E+005
		968.97	15.80	4.839E+005		8.056E+005	2.320E+005
	Am-241	59.54	35.90	6.159E+005	6.16E+005	2.431E+005	3.033E+005

+ = Nuclide identified during the nuclide identification
 * = Energy line found in the spectrum
 > = Calculated MDA is zero due to zero counts in the region, or the region is outside the spectrum, or MDA has not been calculated
 @ = Half-life too short to be able to perform the decay correction

***** GAMMA SPECTRUM ANALYSIS *****

filename: 5456-A

Report Generated On : 4/16/2018 10:25:26 AM
Sample Title : B102110DFSCC023GD
Sample Description : U2 CTMNT UNDERVESSEL
Sample Identification : 023
Sample Type : GAMMA DIRECT
Sample Geometry :
Peak Locate Threshold : 3.00
Peak Locate Range (in channels) : 85 - 8192
Peak Area Range (in channels) : 85 - 8192
Identification Energy Tolerance : 10.000 keV
Sample Size : 1.256E+001 M^2
Sample Taken On : 4/16/2018 10:14:00 AM
Acquisition Started : 4/16/2018 10:15:24 AM
Live Time : 600.0 seconds
Real Time : 601.1 seconds
Dead Time : 0.18 %

Energy Calibration Used Done On : 3/15/2018
Efficiency Calibration Used Done On : 1/23/2018
Efficiency ID : 2M90D_ECP_17.8CM

*Data Validated
4/16/18 1710
DR Muball*

 **** P E A K A N A L Y S I S R E P O R T ****

Detector Name: 5456-A
 Sample Title: B102110DFSCC023GD
 Peak Analysis Performed on: 4/16/2018 10:25:26 AM
 Peak Analysis From Channel: 85
 Peak Analysis To Channel: 8192

Peak No.	ROI start	ROI end	Peak centroid	Energy (keV)	FWHM (keV)	Net Peak Area	Net Area Uncert.	Continuum Counts
1	126-	139	130.66	32.67	1.11	2.69E+002	72.75	3.20E+002
2	151-	168	160.22	40.05	1.10	2.94E+002	110.03	8.40E+002
3	287-	307	300.91	75.23	1.04	8.63E+002	154.55	1.41E+003
4	333-	346	339.82	84.95	0.67	1.96E+002	111.47	1.06E+003
5	481-	498	487.99	122.00	1.06	6.47E+002	122.21	9.46E+002
6	975-	984	979.05	244.76	0.50	1.28E+002	49.00	2.08E+002
7	1368-	1389	1376.63	344.16	1.09	4.98E+002	71.28	2.04E+002
8	1403-	1415	1408.41	352.10	0.69	2.26E+001	37.27	1.21E+002
9	1769-	1786	1774.61	443.65	0.99	5.32E+001	39.47	1.03E+002
10	2429-	2440	2434.86	608.72	0.38	3.06E+001	27.15	6.14E+001
11	2636-	2653	2645.07	661.27	1.44	1.88E+002	42.12	7.85E+001
12	2747-	2759	2753.62	688.40	0.40	2.02E+001	22.94	4.08E+001
13	3106-	3124	3113.78	778.45	1.57	2.02E+002	41.09	6.44E+001
14	3259-	3270	3264.25	816.06	0.62	3.86E+001	19.74	2.34E+001
15	3460-	3477	3467.84	866.96	0.87	7.86E+001	32.44	5.64E+001
16	3844-	3865	3854.26	963.56	1.76	2.41E+002	42.41	5.53E+001
17	4010-	4023	4016.80	1004.20	0.39	1.85E+001	20.53	3.15E+001
18	4332-	4365	4341.01	1085.25	1.17	2.08E+002	52.66	8.70E+001
19	4436-	4458	4446.35	1111.59	1.42	1.96E+002	39.27	4.85E+001
20	4679-	4704	4690.50	1172.62	1.41	2.81E+002	43.57	4.55E+001
21	5088-	5101	5094.90	1273.73	1.16	1.92E+001	15.97	1.58E+001
22	5317-	5340	5328.09	1332.02	1.39	2.97E+002	35.84	6.00E+000
23	5619-	5642	5630.63	1407.66	1.65	3.41E+002	39.45	1.20E+001
24	5833-	5852	5841.67	1460.42	0.61	9.96E+001	27.15	2.44E+001

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

Errors quoted at 2.000 sigma

 *** 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: B102110DFSCC023GD
 Nuclide Library Used: C:\GENIE2K\CAMFILES\Zion Lib-BNL.NLB

IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)	Yield (%)	Activity (pCi/M^2)	Activity Uncertainty
K-40	1.000	1460.82*	10.66	1.21262E+006	3.46803E+005
Co-60	1.000	1173.23*	99.85	3.42053E+005	5.97683E+004
		1332.49*	99.98	3.73889E+005	5.41333E+004
Ag-108m	0.414	433.90*	90.50	5.59349E+004	4.23639E+004
		614.30*	89.80	3.53436E+004	3.16825E+004
		722.90	90.80		
Cs-137	1.000	661.66*	85.10	2.34982E+005	5.96093E+004
Eu-152	1.000	121.78*	28.67	1.67050E+006	4.60017E+005
		344.28*	26.60	1.65634E+006	3.61086E+005
		1408.01*	21.07	2.07458E+006	2.91798E+005
Eu-154	0.682	123.07*	40.40	1.18548E+006	3.27060E+005
		723.30	20.06		
		1274.43*	34.80	6.85119E+004	5.73837E+004
Eu-155	0.332	86.55*	30.70	5.41379E+005	3.27089E+005
		105.31	21.10		
Pb-212	0.942	238.63*	43.60	2.35305E+005	9.77987E+004
Bi-214	0.685	609.32*	45.49	6.97705E+004	6.25450E+004
		1120.29*	14.92	1.58249E+006	3.40779E+005
		1764.49	15.30		
Pb-214	0.445	295.22	18.42		
		351.93*	35.60	5.64547E+004	9.37255E+004

* = Energy line found in the spectrum.
 @ = Energy line not used for Weighted Mean Activity
 Energy Tolerance : 10.000 keV
 Nuclide confidence index threshold = 0.30
 Errors quoted at 2.000 sigma

 ***** INTERFERENCE CORRECTED REPORT *****

Nuclide Name	Nuclide Id Confidence	Wt mean Activity (pCi/M ²)	Wt mean Activity Uncertainty
K-40	1.000	1.212619E+006	3.468026E+005
Co-60	1.000	3.595422E+005 ✓	4.012264E+004
Ag-108m	0.414	1.065335E+004	4.118085E+004
Cs-137	1.000	2.349815E+005 ✓	5.960932E+004
Eu-152	1.000	1.843382E+006 ✓	2.031124E+005
Eu-154	0.682	6.277555E+004 ✓	5.666958E+004
Eu-155	0.332	5.413787E+005	3.270887E+005
Pb-212	0.942	2.353045E+005	9.779867E+004
Bi-214	0.685	9.873522E+004	9.984459E+004
Pb-214	0.445	5.645465E+004	9.372547E+004

? = 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 2.000 sigma

***** UNIDENTIFIED PEAKS *****

Peak Locate Performed on: 4/16/2018 10:25:26 AM
 Peak Locate From Channel: 85
 Peak Locate To Channel: 8192

Peak No.	Energy (keV)	Peak Size in Counts per Second	Peak CPS % Uncertainty	Peak Type	Tol. Nuclide
1	32.67	4.4904E-001	27.00		
2	40.05	4.9059E-001	37.38		
3	75.23	1.4385E+000	17.91		
12	688.40	3.3743E-002	113.30	Sum	
13	778.45	3.3597E-001	20.38	Sum	
14	816.06	6.4301E-002	51.16	S-Esc.	
15	866.96	1.3097E-001	41.28	Tol.	Nb-94
16	963.56	4.0113E-001	17.62	Sum	
17	1004.20	3.0833E-002	110.99	Sum	
18	1085.25	3.4668E-001	25.32		

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

Errors quoted at 2.000 sigma

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

Detector Name: 5456-A
 Sample Geometry:
 Sample Title: B102110DFSCC023GD
 Nuclide Library Used: C:\GENIE2K\CAMFILES\Zion Lib-BNL.NLB

	Nuclide Name	Energy (keV)	Yield (%)	Line MDA (pCi/M ²)	Nuclide MDA (pCi/M ²)	Activity (pCi/M ²)	Dec. Level (pCi/M ²)
+	K-40	1460.82*	10.66	4.013E+005	4.01E+005	1.213E+006	1.842E+005
+	Co-60	1173.23*	99.85	5.920E+004	2.38E+004	3.421E+005	2.795E+004
		1332.49*	99.98	2.375E+004		3.739E+005	1.017E+004
	Nb-94	702.65	99.81	7.219E+004	7.22E+004	-4.148E+004	3.464E+004
		871.09	99.89	8.379E+004		1.067E+005	4.037E+004
+	Ag-108m	433.90*	90.50	6.634E+004	5.03E+004	5.593E+004	3.175E+004
		614.30*	89.80	5.030E+004		3.534E+004	2.359E+004
		722.90	90.80	9.020E+004		8.703E+004	4.349E+004
	Cs-134	604.72	97.62	8.407E+004	7.75E+004	2.735E+004	4.060E+004
		795.86	85.46	7.748E+004		-1.001E+005	3.699E+004
+	Cs-137	661.66*	85.10	6.887E+004	6.89E+004	2.350E+005	3.275E+004
+	Eu-152	121.78*	28.67	4.793E+005	1.55E+005	1.671E+006	2.361E+005
		344.28*	26.60	3.133E+005		1.656E+006	1.522E+005
		1408.01*	21.07	1.552E+005		2.075E+006	6.938E+004
+	Eu-154	123.07*	40.40	3.401E+005	8.83E+004	1.185E+006	1.676E+005
		723.30	20.06	4.076E+005		4.671E+005	1.965E+005
		1274.43*	34.80	8.825E+004		6.851E+004	3.929E+004
+	Eu-155	86.55*	30.70	4.990E+005	4.99E+005	5.414E+005	2.457E+005
		105.31	21.10	8.605E+005		7.236E+005	4.253E+005
	Tl-208	583.19	85.00	9.428E+004	9.43E+004	2.491E+004	4.551E+004
	Bi-212	727.33	6.67	1.183E+006	1.18E+006	9.814E+005	5.695E+005
+	Pb-212	238.63*	43.60	1.364E+005	1.36E+005	2.353E+005	6.573E+004
+	Bi-214	609.32*	45.49	9.930E+004	9.93E+004	6.977E+004	4.656E+004
		1120.29*	14.92	3.862E+005		1.582E+006	1.822E+005
		1764.49	15.30	2.531E+005		1.906E+005	1.142E+005
+	Pb-214	295.22	18.42	5.631E+005	1.55E+005	7.694E+005	2.753E+005
		351.93*	35.60	1.552E+005		5.645E+004	7.420E+004
	Ra-226	186.21	3.64	3.445E+006	3.44E+006	-1.801E+006	1.695E+006
	Ac-228	338.32	11.27	8.756E+005	2.95E+005	1.942E+005	4.272E+005
		911.20	25.80	2.946E+005		1.084E+005	1.413E+005
		968.97	15.80	7.184E+005		2.996E+005	3.493E+005
	Am-241	59.54	35.90	6.587E+005	6.59E+005	-1.071E+005	3.247E+005

+ = Nuclide identified during the nuclide identification

* = Energy line found in the spectrum

> = Calculated MDA is zero due to zero counts in the region, or the region is outside the spectrum, or MDA has not been calculated

@ = Half-life too short to be able to perform the decay correction

***** GAMMA SPECTRUM ANALYSIS *****

Filename: 5456-A

Report Generated On : 4/16/2018 12:42:50 PM
Sample Title : B102110DFSCC024GD
Sample Description : U2 CTMNT UNDERVESSEL
Sample Identification : 024
Sample Type : GAMMA DIRECT
Sample Geometry :
Peak Locate Threshold : 3.00
Peak Locate Range (in channels) : 85 - 8192
Peak Area Range (in channels) : 85 - 8192
Identification Energy Tolerance : 10.000 keV
Sample Size : 1.256E+001 M^2
Sample Taken On : 4/16/2018 12:32:00 PM
Acquisition Started : 4/16/2018 12:32:47 PM
Live Time : 600.0 seconds
Real Time : 602.1 seconds
Dead Time : 0.36 %

Energy Calibration Used Done On : 3/15/2018
Efficiency Calibration Used Done On : 1/23/2018
Efficiency ID : 2M90D_ECP_17.8CM

Data Validated
4/16/18 17:17
WR Mahalik

 ***** P E A K A N A L Y S I S R E P O R T *****

Detector Name: 5456-A
 Sample Title: B102110DFSCC024GD
 Peak Analysis Performed on: 4/16/2018 12:42:49 PM
 Peak Analysis From Channel: 85
 Peak Analysis To Channel: 8192

Peak No.	ROI start	ROI end	Peak centroid	Energy (keV)	FWHM (keV)	Net Peak Area	Net Area Uncert.	Continuum Counts
1	126-	139	131.20	32.80	1.67	2.77E+002	69.23	2.93E+002
2	152-	191	160.53	40.13	1.22	1.25E+003	242.85	2.22E+003
3	286-	308	301.09	75.27	1.05	2.19E+003	245.20	3.31E+003
4	330-	356	340.51	85.13	1.21	1.01E+003	275.63	4.09E+003
5	477-	498	488.09	122.02	1.11	2.25E+003	225.95	2.80E+003
6	972-	988	979.37	244.84	1.12	5.56E+002	113.75	8.50E+002
7	1364-	1389	1377.21	344.30	1.20	1.93E+003	131.39	5.61E+002
8	1637-	1651	1644.33	411.08	1.26	1.80E+002	60.90	2.60E+002
9	1764-	1785	1775.36	443.84	1.27	2.09E+002	80.92	3.80E+002
10	2248-	2263	2256.61	564.15	1.12	7.62E+001	47.95	1.66E+002
11	2429-	2442	2436.00	609.00	0.38	1.87E+001	47.85	2.01E+002
12	2637-	2656	2645.52	661.38	1.02	1.79E+002	61.48	2.19E+002
13	2704-	2721	2712.43	678.11	0.93	6.52E+001	49.56	1.69E+002
14	2884-	2898	2891.79	722.95	1.33	3.30E+001	46.21	1.72E+002
15	3102-	3125	3114.31	778.58	1.46	7.49E+002	78.21	1.95E+002
16	3459-	3477	3468.19	867.05	1.25	2.46E+002	54.82	1.50E+002
17	3844-	3866	3855.05	963.76	1.59	8.45E+002	77.81	1.73E+002
18	4012-	4026	4018.83	1004.71	0.74	5.95E+001	38.63	1.08E+002
19	4332-	4372	4342.24	1085.56	1.38	6.83E+002	88.28	1.99E+002
20	4436-	4459	4447.00	1111.75	1.58	7.24E+002	73.80	1.59E+002
21	4679-	4704	4691.79	1172.95	1.68	8.87E+002	74.72	1.20E+002
22	4842-	4860	4850.93	1212.73	1.70	9.29E+001	30.20	4.01E+001
23	5087-	5107	5096.96	1274.24	1.38	9.05E+001	28.62	3.15E+001
24	5188-	5206	5196.25	1299.06	1.35	7.57E+001	25.05	2.43E+001
25	5316-	5342	5329.37	1332.34	1.77	8.63E+002	64.00	3.69E+001
26	5619-	5645	5631.57	1407.89	1.88	1.19E+003	69.99	9.42E+000
27	5836-	5852	5843.00	1460.75	1.18	9.75E+001	24.31	1.65E+001
28	7052-	7067	7059.53	1764.88	0.27	1.70E+001	13.28	8.04E+000

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

Errors quoted at 2.000 sigma

 ***** INTERFERENCE CORRECTED REPORT *****

	Nuclide Name	Nuclide Id Confidence	Wt mean Activity (pCi/M ²)	Wt mean Activity Uncertainty
	K-40	1.000	1.186707E+006	3.133668E+005
	Co-60	1.000	1.084406E+006 ✓	8.622964E+004
X	Ag-108m	0.935		
	Cs-137	1.000	2.237284E+005 ✓	8.121548E+004
	Eu-152	1.000	6.706249E+006 ✓	5.481714E+005
	Eu-154	0.999	2.914583E+005 ✓	9.680840E+004
	Eu-155	0.332	2.802740E+006	9.457046E+005
X	Bi-212	0.970		
	Pb-212	0.940	1.022192E+006	2.665609E+005
	Bi-214	0.977	1.584294E+005	8.088090E+004
X	Pb-214	0.386		

? = 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 2.000 sigma

***** UNIDENTIFIED PEAKS *****

Peak Locate Performed on: 4/16/2018 12:42:49 PM
 Peak Locate From Channel: 85
 Peak Locate To Channel: 8192

Peak No.	Energy (keV)	Peak Size in Counts per Second	Peak CPS % Uncertainty	Peak Type	Tol. Nuclide
1	32.80	4.6203E-001	24.97		
2	40.13	2.0782E+000	19.48		
3	75.27	3.6556E+000	11.18		
8	411.08	3.0081E-001	33.74		
9	443.84	3.4832E-001	38.72	D-Esc.	
10	564.15	1.2698E-001	62.94		
13	678.11	1.0869E-001	75.99		
15	778.58	1.2484E+000	10.44	Sum	
16	867.05	4.1070E-001	22.25	Tol.	Nb-94
17	963.76	1.4075E+000	9.21	Sum	
18	1004.71	9.9226E-002	64.88	Sum	
19	1085.56	1.1377E+000	12.93		
22	1212.73	1.5492E-001	32.49	Sum	
24	1299.06	1.2615E-001	33.10	Sum	

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

Errors quoted at 2.000 sigma

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

Detector Name: 5456-A
 Sample Geometry:
 Sample Title: B102110DFSCC024GD
 Nuclide Library Used: C:\GENIE2K\CAMFILES\Zion Lib-BNL.NLB

	Nuclide Name	Energy (keV)	Yield (%)	Line MDA (pCi/M^2)	Nuclide MDA (pCi/M^2)	Activity (pCi/M^2)	Dec. Level (pCi/M^2)
+	K-40	1460.82*	10.66	3.169E+005	3.17E+005	1.187E+006	1.420E+005
+	Co-60	1173.23*	99.85	9.377E+004	5.60E+004	1.082E+006	4.524E+004
		1332.49*	99.98	5.597E+004		1.087E+006	2.628E+004
	Nb-94	702.65	99.81	1.197E+005	1.20E+005	1.039E+003	5.841E+004
		871.09	99.89	1.480E+005		3.600E+005	7.249E+004
	Ag-108m	433.90*	90.50	1.337E+005	9.10E+004	2.199E+005	6.542E+004
		614.30*	89.80	9.268E+004		2.165E+004	4.477E+004
		722.90*	90.80	9.099E+004		3.938E+004	4.388E+004
	Cs-134	604.72	97.62	1.298E+005	1.30E+005	-2.078E+004	6.348E+004
		795.86	85.46	1.396E+005		1.112E+004	6.804E+004
+	Cs-137	661.66*	85.10	1.168E+005	1.17E+005	2.237E+005	5.674E+004
+	Eu-152	121.78*	28.67	8.783E+005	1.42E+005	5.824E+006	4.357E+005
		344.28*	26.60	5.438E+005		6.427E+006	2.674E+005
		1408.01*	21.07	1.416E+005		7.213E+006	6.256E+004
+	Eu-154	123.07*	40.40	6.233E+005	1.35E+005	4.133E+006	3.092E+005
		723.30*	20.06	4.118E+005		1.783E+005	1.986E+005
		1274.43*	34.80	1.354E+005		3.236E+005	6.287E+004
+	Eu-155	86.55*	30.70	1.227E+006	1.23E+006	2.803E+006	6.095E+005
		105.31	21.10	1.280E+006		2.376E+004	6.352E+005
	Tl-208	583.19	85.00	1.548E+005	1.55E+005	1.322E+005	7.575E+004
	Bi-212	727.33*	6.67	1.239E+006	1.24E+006	5.361E+005	5.974E+005
+	Pb-212	238.63*	43.60	3.181E+005	3.18E+005	1.022E+006	1.566E+005
+	Bi-214	609.32*	45.49	1.830E+005	1.81E+005	4.274E+004	8.839E+004
		1120.29*	14.92	6.910E+005		5.834E+006	3.346E+005
		1764.49*	15.30	1.808E+005		1.546E+005	7.809E+004
	Pb-214	295.22	18.42	8.557E+005	4.06E+005	-3.495E+005	4.217E+005
		351.93*	35.60	4.063E+005		4.802E+006	1.998E+005
	Ra-226	186.21	3.64	5.301E+006	5.30E+006	-2.293E+006	2.623E+006
	Ac-228	338.32	11.27	1.475E+006	4.62E+005	-3.616E+004	7.271E+005
		911.20	25.80	4.617E+005		-1.206E+005	2.249E+005
		968.97	15.80	1.226E+006		-2.061E+005	6.032E+005
	Am-241	59.54	35.90	9.089E+005	9.09E+005	-5.936E+004	4.498E+005

- + = Nuclide identified during the nuclide identification
- * = Energy line found in the spectrum
- > = Calculated MDA is zero due to zero counts in the region, or the region is outside the spectrum, or MDA has not been calculated
- @ = Half-life too short to be able to perform the decay correction

***** GAMMA SPECTRUM ANALYSIS *****

Filename: C:\GENIE2K\CAMFILES\00004646.CNF

Report Generated On : 4/12/2018 6:23:25 PM
Sample Title : B102110DFSWM025GD
Sample Description : U2 CTMT UNDER VESSEL
Sample Identification : 025
Sample Type : GAMMA DIRECT
Sample Geometry :
Peak Locate Threshold : 3.00
Peak Locate Range (in channels) : 85 - 8192
Peak Area Range (in channels) : 85 - 8192
Identification Energy Tolerance : 10.000 keV
Sample Size : 1.256E+001 M²
Sample Taken On : 4/11/2018 1:56:00 PM
Acquisition Started : 4/11/2018 1:58:03 PM
Live Time : 600.0 seconds
Real Time : 600.2 seconds
Dead Time : 0.03 %

Energy Calibration Used Done On : 3/15/2018
Efficiency Calibration Used Done On : 4/12/2018
Efficiency ID : 2MLINER0.153CM

Data Validated
4/13/18 0707
DR Mhalik

***** P E A K A N A L Y S I S R E P O R T *****

Detector Name: 5456-A
Sample Title: B102110DFSWM025GD
Peak Analysis Performed on: 4/12/2018 6:23:25 PM
Peak Analysis From Channel: 85
Peak Analysis To Channel: 8192

Peak No.	ROI start	ROI end	Peak centroid	Energy (keV)	FWHM (keV)	Net Peak Area	Net Area Uncert.	Continuum Counts
1	284-	305	300.45	75.11	0.67	1.35E+002	58.39	1.91E+002
2	1398-	1411	1404.51	351.13	0.88	3.35E+001	21.44	2.95E+001
3	2321-	2332	2326.66	581.67	0.52	2.61E+001	14.03	8.86E+000
4	2423-	2437	2430.77	607.69	1.33	4.54E+001	18.76	1.46E+001
5	2630-	2647	2638.90	659.72	0.98	1.36E+002	28.48	2.04E+001
6	4674-	4687	4680.25	1170.06	0.79	3.58E+001	16.65	1.22E+001
7	5311-	5325	5317.12	1329.28	0.43	3.56E+001	14.27	5.36E+000
8	5818-	5839	5828.80	1457.20	1.53	1.09E+002	20.88	0.00E+000
9	7034-	7049	7041.75	1760.44	1.05	2.12E+001	12.43	5.83E+000

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

Errors quoted at 2.000 sigma

 ***** 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: B102110DFSWM025GD
 Nuclide Library Used: C:\GENIE2K\CAMFILES\Zion Lib-BNL.NLB

IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)	Yield (%)	Activity (pCi/M ²)	Activity Uncertainty
K-40	0.979	1460.82*	10.66	6.89818E+005	1.45088E+005
Co-60	0.984	1173.23*	99.85	2.14804E+004	1.01278E+004
		1332.49*	99.98	2.27917E+004	9.30417E+003
		661.66*	85.10	7.09020E+004	1.71553E+004
Tl-208	0.996	583.19*	85.00	1.28205E+004	7.05282E+003
Bi-214	0.700	609.32*	45.49	4.25297E+004	1.83144E+004
		1120.29	14.92		
		1764.49*	15.30	1.05078E+005	6.22652E+004
Pb-214	0.437	295.22	18.42		
		351.93*	35.60	2.98504E+004	1.97230E+004

* = Energy line found in the spectrum.
 @ = Energy line not used for Weighted Mean Activity
 Energy Tolerance : 10.000 keV
 Nuclide confidence index threshold = 0.30
 Errors quoted at 2.000 sigma

 ***** INTERFERENCE CORRECTED REPORT *****

Nuclide Name	Nuclide Id Confidence	Wt mean Activity (pCi/M ²)	Wt mean Activity Uncertainty
K-40	0.979	6.898178E+005	1.450878E+005
Co-60	0.984	2.219153E+004✓	6.851742E+003
Cs-137	0.994	7.090202E+004✓	1.715528E+004
Tl-208	0.996	1.282048E+004	7.052824E+003
Bi-214	0.700	4.751015E+004	1.757010E+004
Pb-214	0.437	2.985039E+004	1.972297E+004

? = 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 2.000 sigma

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

Peak Locate Performed on: 4/12/2018 6:23:25 PM
 Peak Locate From Channel: 85
 Peak Locate To Channel: 8192

Peak No.	Energy (keV)	Peak Size in Counts per Second	Peak CPS % Uncertainty	Peak Type	Tol. Nuclide
1	75.11	2.2504E-001	43.24		

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

Errors quoted at 2.000 sigma

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

Detector Name: 5456-A
 Sample Geometry:
 Sample Title: B102110DFSWM025GD
 Nuclide Library Used: C:\GENIE2K\CAMFILES\Zion Lib-BNL.NLB

	Nuclide Name	Energy (keV)	Yield (%)	Line MDA (pCi/M ²)	Nuclide MDA (pCi/M ²)	Activity (pCi/M ²)	Dec. Level (pCi/M ²)
+	K-40	1460.82*	10.66	1.713E+004	1.71E+004	6.898E+005	0.000E+000
+	Co-60	1173.23*	99.85	1.303E+004	9.95E+003	2.148E+004	5.705E+003
		1332.49*	99.98	9.946E+003		2.279E+004	4.108E+003
	Nb-94	702.65	99.81	1.317E+004	1.32E+004	-1.818E+002	5.960E+003
		871.09	99.89	1.548E+004		-4.110E+003	7.045E+003
	Ag-108m	433.90	90.50	1.745E+004	1.63E+004	-3.937E+003	8.191E+003
		614.30	89.80	1.807E+004		-1.878E+004	8.388E+003
		722.90	90.80	1.630E+004		9.890E+003	7.454E+003
	Cs-134	604.72	97.62	1.954E+004	1.80E+004	8.789E+003✓	9.179E+003
		795.86	85.46	1.795E+004		6.005E+003	8.202E+003
+	Cs-137	661.66*	85.10	1.552E+004	1.55E+004	7.090E+004	7.051E+003
	Eu-152	121.78	28.67	6.532E+004	5.77E+004	5.251E+004✓	3.166E+004
		344.28	26.60	5.765E+004		-4.326E+004	2.723E+004
		1408.01	21.07	5.907E+004		1.713E+004	2.529E+004
	Eu-154	123.07	40.40	4.485E+004	4.41E+004	-2.590E+004	2.172E+004
		723.30	20.06	7.292E+004		4.169E+004	3.331E+004
		1274.43	34.80	4.410E+004		1.214E+004✓	1.962E+004
	Eu-155	86.55	30.70	6.104E+004	6.10E+004	2.168E+004	2.953E+004
		105.31	21.10	8.587E+004		-1.922E+004	4.156E+004
+	Tl-208	583.19*	85.00	9.079E+003	9.08E+003	1.282E+004	3.876E+003
	Bi-212	727.33	6.67	2.225E+005	2.23E+005	1.315E+005	1.018E+005
	Pb-212	238.63	43.60	4.131E+004	4.13E+004	1.468E+004	1.985E+004
+	Bi-214	609.32*	45.49	2.267E+004	2.27E+004	4.253E+004	1.007E+004
		1120.29	14.92	1.231E+005		-7.715E+004	5.622E+004
		1764.49*	15.30	8.165E+004		1.051E+005	3.411E+004
+	Pb-214	295.22	18.42	9.017E+004	2.89E+004	-3.961E+004	4.295E+004
		351.93*	35.60	2.892E+004		2.985E+004	1.325E+004
	Ra-226	186.21	3.64	4.791E+005	4.79E+005	3.544E+005	2.310E+005
	Ac-228	338.32	11.27	1.361E+005	7.56E+004	-1.074E+005	6.433E+004
		911.20	25.80	7.564E+004		7.765E+004	3.507E+004
		968.97	15.80	1.114E+005		-2.839E+004	5.106E+004
	Am-241	59.54	35.90	6.572E+004	6.57E+004	2.037E+004	3.159E+004

+ = Nuclide identified during the nuclide identification

* = Energy line found in the spectrum

> = Calculated MDA is zero due to zero counts in the region, or the region is outside the spectrum, or MDA has not been calculated

@ = Half-life too short to be able to perform the decay correction

***** GAMMA SPECTRUM ANALYSIS *****

Filename: C:\GENIE2K\CAMFILES\00004647.CNF

Report Generated On : 4/12/2018 6:24:46 PM

Sample Title : B102110DFSWM026GD
Sample Description : U2 CTMT UNDER VESSEL
Sample Identification : 026
Sample Type : GAMMA DIRECT
Sample Geometry :

Peak Locate Threshold : 3.00
Peak Locate Range (in channels) : 85 - 8192
Peak Area Range (in channels) : 85 - 8192
Identification Energy Tolerance : 10.000 keV

Sample Size : 1.256E+001 M²

Sample Taken On : 4/11/2018 2:16:00 PM
Acquisition Started : 4/11/2018 2:15:10 PM

Live Time : 600.0 seconds
Real Time : 600.2 seconds

Dead Time : 0.04 %

Energy Calibration Used Done On : 3/15/2018
Efficiency Calibration Used Done On : 4/12/2018
Efficiency ID : 2MLINER0.153CM

Data Validated
4/13/18 0720
DRMhabib

 ***** P E A K A N A L Y S I S R E P O R T *****

Detector Name: 5456-A
 Sample Title: B102110DFSWM026GD
 Peak Analysis Performed on: 4/12/2018 6:24:46 PM
 Peak Analysis From Channel: 85
 Peak Analysis To Channel: 8192

Peak No.	ROI start	ROI end	Peak centroid	Energy (keV)	FWHM (keV)	Net Peak Area	Net Area Uncert.	Continuum Counts
1	126-	135	129.94	32.48	0.81	2.74E+001	20.04	2.56E+001
2	287-	306	300.59	75.15	0.79	1.55E+002	58.01	1.96E+002
3	334-	346	339.96	84.99	0.52	3.34E+001	39.62	1.36E+002
4	2423-	2438	2429.70	607.43	1.47	4.40E+001	20.48	2.00E+001
5	2630-	2650	2639.00	659.75	1.59	3.90E+002	42.47	1.74E+001
6	3629-	3642	3635.37	908.84	1.42	2.16E+001	12.13	5.37E+000
7	4673-	4686	4679.95	1169.99	0.81	3.06E+001	13.52	5.35E+000
8	5309-	5322	5315.43	1328.86	0.87	3.65E+001	13.59	3.50E+000
9	5819-	5838	5828.35	1457.09	1.85	1.19E+002	23.37	5.00E+000

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

Errors quoted at 2.000 sigma

 ***** 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: B102110DFSWM026GD
 Nuclide Library Used: C:\GENIE2K\CAMFILES\Zion Lib-BNL.NLB

IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)	Yield (%)	Activity (pCi/M ²)	Activity Uncertainty
K-40	0.978	1460.82*	10.66	7.53070E+005	1.61723E+005
Co-60	0.981	1173.23*	99.85	1.83728E+004	8.23730E+003
		1332.49*	99.98	2.33377E+004	8.88488E+003
Cs-137	0.994	661.66*	85.10	2.03768E+005	3.30494E+004
Eu-155	0.338	86.55*	30.70	2.49329E+004	2.99507E+004
		105.31	21.10		
Bi-214	0.441	609.32*	45.49	4.12390E+004	1.98207E+004
		1120.29	14.92		
		1764.49	15.30		

* = Energy line found in the spectrum.
 @ = Energy line not used for Weighted Mean Activity
 Energy Tolerance : 10.000 keV
 Nuclide confidence index threshold = 0.30
 Errors quoted at 2.000 sigma

 **** INTERFERENCE CORRECTED REPORT ****

Nuclide Name	Nuclide Id Confidence	Wt mean Activity (pCi/M ²)	Wt mean Activity Uncertainty
K-40	0.978	7.530702E+005	1.617230E+005
Co-60	0.981	2.066771E+004✓	6.040629E+003
Cs-137	0.994	2.037678E+005✓	3.304937E+004
Eu-155	0.338	2.493288E+004	2.995068E+004
Bi-214	0.441	4.123901E+004	1.982072E+004

? = 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 2.000 sigma

***** UNIDENTIFIED PEAKS *****

Peak Locate Performed on: 4/12/2018 6:24:45 PM
 Peak Locate From Channel: 85
 Peak Locate To Channel: 8192

Peak No.	Energy (keV)	Peak Size in Counts per Second	Peak CPS % Uncertainty	Peak Type	Tol. Nuclide
1	32.48	4.5723E-002	73.06		
2	75.15	2.5835E-001	37.42		
6	908.84	3.6049E-002	56.09	Tol.	Ac-228

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

Errors quoted at 2.000 sigma

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

Detector Name: 5456-A
 Sample Geometry:
 Sample Title: B102110DFSWM026GD
 Nuclide Library Used: C:\GENIE2K\CAMFILES\Zion Lib-BNL.NLB

	Nuclide Name	Energy (keV)	Yield (%)	Line MDA (pCi/M ²)	Nuclide MDA (pCi/M ²)	Activity (pCi/M ²)	Dec. Level (pCi/M ²)
+	K-40	1460.82*	10.66	1.044E+005	1.04E+005	7.531E+005	4.364E+004
+	Co-60	1173.23*	99.85	9.273E+003	8.26E+003	1.837E+004	3.826E+003
		1332.49*	99.98	8.262E+003		2.334E+004	3.266E+003
	Nb-94	702.65	99.81	1.151E+004	1.15E+004	-1.305E+004	5.134E+003
		871.09	99.89	1.527E+004		2.446E+003	6.944E+003
	Ag-108m	433.90	90.50	1.765E+004	1.53E+004	-6.811E+003	8.293E+003
		614.30	89.80	1.879E+004		5.577E+003	8.748E+003
		722.90	90.80	1.531E+004		4.286E+003	6.960E+003
	Cs-134	604.72	97.62	2.135E+004	1.88E+004	2.439E+004✓	1.009E+004
		795.86	85.46	1.879E+004		-7.156E+003	8.623E+003
+	Cs-137	661.66*	85.10	1.490E+004	1.49E+004	2.038E+005	6.740E+003
	Eu-152	121.78	28.67	6.651E+004	6.17E+004	-3.986E+003	3.226E+004
		344.28	26.60	6.167E+004		-6.118E+004	2.924E+004
		1408.01	21.07	6.312E+004	@✓	-4.096E+004	2.732E+004
	Eu-154	123.07	40.40	4.735E+004	4.58E+004	2.158E+004✓	2.297E+004
		723.30	20.06	6.931E+004		2.241E+004	3.151E+004
		1274.43	34.80	4.584E+004		2.961E+004	2.049E+004
+	Eu-155	86.55*	30.70	4.848E+004	4.85E+004	2.493E+004	2.323E+004
		105.31	21.10	9.114E+004		-9.945E+003	4.419E+004
	Tl-208	583.19	85.00	1.989E+004	1.99E+004	2.291E+004	9.281E+003
	Bi-212	727.33	6.67	1.914E+005	1.91E+005	5.874E+004	8.624E+004
	Pb-212	238.63	43.60	4.321E+004	4.32E+004	3.361E+004	2.080E+004
+	Bi-214	609.32*	45.49	2.658E+004	2.66E+004	4.124E+004	1.202E+004
		1120.29	14.92	1.071E+005		-5.618E+004	4.826E+004
		1764.49	15.30	1.169E+005		9.943E+004	5.172E+004
	Pb-214	295.22	18.42	9.048E+004	5.00E+004	4.259E+004	4.311E+004
		351.93	35.60	4.999E+004		5.904E+004	2.379E+004
	Ra-226	186.21	3.64	5.693E+005	5.69E+005	1.069E+004	2.760E+005
	Ac-228	338.32	11.27	1.467E+005	7.69E+004	-3.672E+004	6.959E+004
		911.20	25.80	7.690E+004		4.135E+004	3.570E+004
		968.97	15.80	1.089E+005		-1.038E+005	4.980E+004
	Am-241	59.54	35.90	6.557E+004	6.56E+004	7.347E+003	3.152E+004

+ = Nuclide identified during the nuclide identification

* = Energy line found in the spectrum

> = Calculated MDA is zero due to zero counts in the region, or the region is outside the spectrum, or MDA has not been calculated

@ = Half-life too short to be able to perform the decay correction

***** GAMMA SPECTRUM ANALYSIS *****

Filename: C:\GENIE2K\CAMFILES\00004648.CNF

Report Generated On : 4/12/2018 6:26:07 PM
Sample Title : B102110DFSWM027GD
Sample Description : U2 CTMT UNDER VESSEL
Sample Identification : 027
Sample Type : GAMMA DIRECT
Sample Geometry :
Peak Locate Threshold : 3.00
Peak Locate Range (in channels) : 85 - 8192
Peak Area Range (in channels) : 85 - 8192
Identification Energy Tolerance : 10.000 keV
Sample Size : 1.256E+001 M^2
Sample Taken On : 4/11/2018 2:29:00 PM
Acquisition Started : 4/11/2018 2:29:13 PM
Live Time : 600.0 seconds
Real Time : 600.2 seconds
Dead Time : 0.04 %

Energy Calibration Used Done On : 3/15/2018
Efficiency Calibration Used Done On : 4/12/2018
Efficiency ID : 2MLINER0.153CM

Data Validated
4/13/18 0733
DR Mihalik

 ***** P E A K A N A L Y S I S R E P O R T *****

Detector Name: 5456-A
 Sample Title: B102110DFSWM027GD
 Peak Analysis Performed on: 4/12/2018 6:26:06 PM
 Peak Analysis From Channel: 85
 Peak Analysis To Channel: 8192

Peak No.	ROI start	ROI end	Peak centroid	Energy (keV)	FWHM (keV)	Net Peak Area	Net Area Uncert.	Continuum Counts
1	126-	133	129.43	32.36	0.61	2.09E+001	16.81	1.91E+001
2	296-	307	301.05	75.26	1.01	8.15E+001	49.09	2.05E+002
3	2424-	2438	2431.28	607.82	1.74	5.07E+001	17.59	9.28E+000
4	2629-	2648	2638.89	659.72	1.44	2.82E+002	36.14	1.25E+001
5	4674-	4687	4680.45	1170.11	0.47	2.75E+001	14.26	8.46E+000
6	5310-	5323	5316.81	1329.20	0.68	1.89E+001	11.48	5.13E+000
7	5818-	5839	5829.11	1457.28	0.68	1.21E+002	23.72	5.36E+000

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

Errors quoted at 2.000 sigma

 ***** 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: B102110DFSWM027GD
 Nuclide Library Used: C:\GENIE2K\CAMFILES\Zion Lib-BNL.NLB

..... IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)	Yield (%)	Activity (pCi/M ²)	Activity Uncertainty
K-40	0.980	1460.82*	10.66	7.63525E+005	1.64092E+005
Co-60	0.984	1173.23*	99.85	1.65127E+004	8.65194E+003
		1332.49*	99.98	1.20701E+004	7.40607E+003
Cs-137	0.994	661.66*	85.10	1.47721E+005	2.59212E+004
Bi-214	0.442	609.32*	45.49	4.75503E+004	1.74539E+004
		1120.29	14.92		
		1764.49	15.30		

* = Energy line found in the spectrum.
 @ = Energy line not used for Weighted Mean Activity
 Energy Tolerance : 10.000 keV
 Nuclide confidence index threshold = 0.30
 Errors quoted at 2.000 sigma

 ***** INTERFERENCE CORRECTED REPORT *****

Nuclide Name	Nuclide Id Confidence	Wt mean Activity (pCi/M ²)	Wt mean Activity Uncertainty
K-40	0.980	7.635249E+005	1.640916E+005
Co-60	0.984	1.394877E+004✓	5.626282E+003
Cs-137	0.994	1.477209E+005✓	2.592115E+004
Bi-214	0.442	4.755026E+004	1.745393E+004

? = 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 2.000 sigma

***** UNIDENTIFIED PEAKS *****

Peak Locate Performed on: 4/12/2018 6:26:06 PM
 Peak Locate From Channel: 85
 Peak Locate To Channel: 8192

Peak No.	Energy (keV)	Peak Size in Counts per Second	Peak CPS % Uncertainty	Peak Type	Tol. Nuclide
1	32.36	3.4802E-002	80.50		
2	75.26	1.3587E-001	60.22		

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

Errors quoted at 2.000 sigma

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

Detector Name: 5456-A
 Sample Geometry:
 Sample Title: B102110DFSWM027GD
 Nuclide Library Used: C:\GENIE2K\CAMFILES\Zion Lib-BNL.NLB

	Nuclide Name	Energy (keV)	Yield (%)	Line MDA (pCi/M ²)	Nuclide MDA (pCi/M ²)	Activity (pCi/M ²)	Dec. Level (pCi/M ²)
+	K-40	1460.82*	10.66	1.102E+005	1.10E+005	7.635E+005	4.654E+004
+	Co-60	1173.23*	99.85	1.114E+004	9.63E+003	1.651E+004	4.761E+003
		1332.49*	99.98	9.627E+003		1.207E+004	3.948E+003
	Nb-94	702.65	99.81	1.444E+004	1.44E+004	-9.052E+003	6.599E+003
		871.09	99.89	1.527E+004		3.410E+003	6.944E+003
	Ag-108m	433.90	90.50	1.714E+004	1.55E+004	7.446E+003	8.036E+003
		614.30	89.80	1.636E+004		-2.574E+004	7.535E+003
		722.90	90.80	1.551E+004		3.940E+003	7.062E+003
	Cs-134	604.72	97.62	2.031E+004	1.75E+004	1.656E+004✓	9.563E+003
		795.86	85.46	1.751E+004		-1.471E+004	7.983E+003
+	Cs-137	661.66*	85.10	1.283E+004	1.28E+004	1.477E+005	5.709E+003
	Eu-152	121.78	28.67	7.207E+004	6.32E+004	4.047E+004✓	3.504E+004
		344.28	26.60	6.320E+004		-2.782E+004	3.000E+004
		1408.01	21.07	6.689E+004		3.408E+004	2.920E+004
	Eu-154	123.07	40.40	5.105E+004	4.13E+004	2.763E+004✓	2.482E+004
		723.30	20.06	6.931E+004		-8.858E+004	3.151E+004
		1274.43	34.80	4.133E+004		-6.340E+003	1.823E+004
	Eu-155	86.55	30.70	7.582E+004	7.58E+004	7.691E+004	3.692E+004
		105.31	21.10	9.707E+004		-3.845E+003	4.715E+004
	Tl-208	583.19	85.00	2.125E+004	2.12E+004	3.421E+004	9.960E+003
	Bi-212	727.33	6.67	2.199E+005	2.20E+005	3.360E+004	1.005E+005
	Pb-212	238.63	43.60	4.255E+004	4.26E+004	-2.065E+004	2.047E+004
+	Bi-214	609.32*	45.49	1.846E+004	1.85E+004	4.755E+004	7.959E+003
		1120.29	14.92	1.245E+005		3.332E+004	5.696E+004
		1764.49	15.30	1.336E+005		1.342E+005	6.010E+004
	Pb-214	295.22	18.42	9.854E+004	4.87E+004	4.643E+004	4.714E+004
		351.93	35.60	4.870E+004		1.185E+003	2.314E+004
	Ra-226	186.21	3.64	5.541E+005	5.54E+005	2.407E+005	2.684E+005
	Ac-228	338.32	11.27	1.484E+005	6.89E+004	6.479E+004	7.047E+004
		911.20	25.80	6.894E+004		-7.871E+003	3.172E+004
		968.97	15.80	1.139E+005		-4.955E+004	5.229E+004
	Am-241	59.54	35.90	6.880E+004	6.88E+004	1.148E+004	3.313E+004

- + = Nuclide identified during the nuclide identification
- * = Energy line found in the spectrum
- > = Calculated MDA is zero due to zero counts in the region, or the region is outside the spectrum, or MDA has not been calculated
- @ = Half-life too short to be able to perform the decay correction

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

filename: C:\GENIE2K\CAMFILES\00004649.CNF

Report Generated On : 4/12/2018 6:26:48 PM

Sample Title : B102110DFSWM028GD
Sample Description : U2 CTMT UNDER VESSEL
Sample Identification : 028
Sample Type : GAMMA DIRECT
Sample Geometry :

Peak Locate Threshold : 3.00
Peak Locate Range (in channels) : 85 - 8192
Peak Area Range (in channels) : 85 - 8192
Identification Energy Tolerance : 10.000 keV

Sample Size : 1.256E+001 M²

Sample Taken On : 4/11/2018 2:48:00 PM
Acquisition Started : 4/11/2018 2:49:12 PM

Live Time : 600.0 seconds
Real Time : 600.3 seconds

Dead Time : 0.05 %

Energy Calibration Used Done On : 3/15/2018
Efficiency Calibration Used Done On : 4/12/2018
Efficiency ID : 2MLINER0.153CM

Data Validated
4/13/18 0749
DR Mubabbh

 ***** P E A K A N A L Y S I S R E P O R T *****

Detector Name: 5456-A
 Sample Title: B102110DFSWM028GD
 Peak Analysis Performed on: 4/12/2018 6:26:48 PM
 Peak Analysis From Channel: 85
 Peak Analysis To Channel: 8192

Peak No.	ROI start	ROI end	Peak centroid	Energy (keV)	FWHM (keV)	Net Peak Area	Net Area Uncert.	Continuum Counts
1	285-	306	300.03	75.01	1.00	3.13E+002	77.31	3.15E+002
2	333-	354	339.79	84.95	1.24	8.93E+001	73.75	3.37E+002
3	480-	493	486.02	121.50	0.72	7.20E+001	44.59	1.53E+002
4	949-	959	953.28	238.32	0.75	2.34E+001	28.43	7.36E+001
5	1398-	1409	1403.45	350.86	0.62	2.85E+001	19.14	2.45E+001
6	2424-	2437	2430.24	607.56	0.54	5.05E+001	19.90	1.75E+001
7	2630-	2647	2639.06	659.77	1.17	1.78E+002	31.22	2.03E+001
8	3124-	3135	3129.81	782.45	0.76	1.50E+001	9.49	3.00E+000
9	4428-	4441	4434.99	1108.75	0.35	2.27E+001	12.26	5.31E+000
10	5610-	5623	5616.66	1404.17	1.33	3.23E+001	12.16	1.68E+000
11	5817-	5839	5828.22	1457.06	1.71	1.42E+002	25.48	5.48E+000

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

Errors quoted at 2.000 sigma

 ***** 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: B102110DFSWM028GD
 Nuclide Library Used: C:\GENIE2K\CAMFILES\Zion Lib-BNL.NLB

IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)	Yield (%)	Activity (pCi/M ²)	Activity Uncertainty
K-40	0.978	1460.82*	10.66	8.95575E+005	1.79005E+005
Cs-137	0.994	661.66*	85.10	9.29502E+004	1.97801E+004
Eu-152	0.970	121.78*	28.67	5.29644E+004	3.44519E+004
		344.28*	26.60	3.40338E+004	2.35290E+004
		1408.01*	21.07	1.01248E+005	3.89389E+004
Eu-155	0.337	86.55*	30.70	6.65660E+004	5.65870E+004
		105.31	21.10		
Pb-212	1.000	238.63*	43.60	1.39959E+004	1.71180E+004
Bi-214	0.441	609.32*	45.49	4.73366E+004	1.95062E+004
		1120.29	14.92		
		1764.49	15.30		

* = Energy line found in the spectrum.
 @ = Energy line not used for Weighted Mean Activity
 Energy Tolerance : 10.000 keV
 Nuclide confidence index threshold = 0.30
 Errors quoted at 2.000 sigma

 ***** INTERFERENCE CORRECTED REPORT *****

Nuclide Name	Nuclide Id Confidence	Wt mean Activity (pCi/M^2)	Wt mean Activity Uncertainty
K-40	0.978	8.955749E+005	1.790054E+005
Cs-137	0.994	9.295016E+004 ✓	1.978008E+004
Eu-152	0.970	5.225402E+004 ✓	1.738579E+004
Eu-155	0.337	6.656603E+004	5.658704E+004
Pb-212	1.000	1.399585E+004	1.711801E+004
Bi-214	0.441	4.733663E+004	1.950620E+004
X Pb-214	0.437		

? = 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 2.000 sigma

***** UNIDENTIFIED PEAKS *****

Peak Locate Performed on: 4/12/2018 6:26:48 PM
 Peak Locate From Channel: 85
 Peak Locate To Channel: 8192

Peak No.	Energy (keV)	Peak Size in Counts per Second	Peak CPS % Uncertainty	Peak Type	Tol. Nuclide
1	75.01	5.2203E-001	24.68		
8	782.45	2.5000E-002	63.25	Sum	
9	1108.75	3.7813E-002	54.02		

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

Errors quoted at 2.000 sigma

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

Detector Name: 5456-A
 Sample Geometry:
 Sample Title: B102110DFSWM028GD
 Nuclide Library Used: C:\GENIE2K\CAMFILES\Zion Lib-BNL.NLB

	Nuclide Name	Energy (keV)	Yield (%)	Line MDA (pCi/M ²)	Nuclide MDA (pCi/M ²)	Activity (pCi/M ²)	Dec. Level (pCi/M ²)
+	K-40	1460.82*	10.66	1.120E+005	1.12E+005	8.956E+005	4.743E+004
	Co-60	1173.23	99.85	2.380E+004	2.22E+004	1.951E+004	1.109E+004
		1332.49	99.98	2.216E+004		9.478E+003✓	1.021E+004
	Nb-94	702.65	99.81	1.479E+004	1.48E+004	9.612E+003	6.771E+003
		871.09	99.89	1.856E+004		9.248E+003	8.587E+003
	Ag-108m	433.90	90.50	1.873E+004	1.74E+004	5.264E+003	8.832E+003
		614.30	89.80	1.962E+004		-5.920E+003	9.162E+003
		722.90	90.80	1.740E+004		-8.694E+002	8.007E+003
	Cs-134	604.72	97.62	2.320E+004	1.96E+004	3.247E+004✓	1.101E+004
		795.86	85.46	1.960E+004		-9.108E+003	9.024E+003
+	Cs-137	661.66*	85.10	1.539E+004	1.54E+004	9.295E+004	6.989E+003
+	Eu-152	121.78*	28.67	5.185E+004	3.07E+004	5.296E+004	2.493E+004
		344.28*	26.60	3.443E+004		3.403E+004	1.560E+004
		1408.01*	21.07	3.066E+004		1.012E+005	1.109E+004
	Eu-154	123.07	40.40	5.576E+004	4.04E+004	-5.232E+004	2.717E+004
		723.30	20.06	7.550E+004	0✓	-7.529E+004	3.460E+004
		1274.43	34.80	4.035E+004		1.144E+004	1.774E+004
+	Eu-155	86.55*	30.70	8.947E+004	8.95E+004	6.657E+004	4.373E+004
		105.31	21.10	1.115E+005		5.352E+004	5.438E+004
	Tl-208	583.19	85.00	2.239E+004	2.24E+004	1.836E+004	1.053E+004
	Bi-212	727.33	6.67	2.376E+005	2.38E+005	-2.399E+005	1.093E+005
+	Pb-212	238.63*	43.60	2.786E+004	2.79E+004	1.400E+004	1.312E+004
+	Bi-214	609.32*	45.49	2.402E+004	2.40E+004	4.734E+004	1.074E+004
		1120.29	14.92	1.357E+005		1.245E+005	6.253E+004
		1764.49	15.30	1.116E+005		8.949E+004	4.907E+004
	Pb-214	295.22	18.42	1.022E+005	2.57E+004	3.214E+004	4.896E+004
		351.93*	35.60	2.573E+004		2.543E+004	1.166E+004
	Ra-226	186.21	3.64	5.613E+005	5.61E+005	2.095E+005	2.721E+005
	Ac-228	338.32	11.27	1.575E+005	7.56E+004	8.967E+003	7.502E+004
		911.20	25.80	7.564E+004		5.386E+004	3.507E+004
		968.97	15.80	1.232E+005		-1.699E+005	5.695E+004
	Am-241	59.54	35.90	7.523E+004	7.52E+004	-1.720E+004	3.635E+004

+ = Nuclide identified during the nuclide identification

* = Energy line found in the spectrum

> = Calculated MDA is zero due to zero counts in the region, or the region is outside the spectrum, or MDA has not been calculated

@ = Half-life too short to be able to perform the decay correction

***** GAMMA SPECTRUM ANALYSIS *****

Filename: C:\GENIE2K\CAMFILES\00004672.CNF

Report Generated On : 4/13/2018 11:00:18 AM

Sample Title : B102110DFSWM029GD
Sample Description : U2 CTMNT UNDERVESSEL
Sample Identification : 029
Sample Type : GAMMA DIRECT
Sample Geometry :

Peak Locate Threshold : 3.00
Peak Locate Range (in channels) : 85 - 8192
Peak Area Range (in channels) : 85 - 8192
Identification Energy Tolerance : 10.000 keV

Sample Size : 1.256E+001 M²

Sample Taken On : 4/12/2018 8:18:00 AM
Acquisition Started : 4/12/2018 8:21:58 AM

Live Time : 600.0 seconds
Real Time : 600.4 seconds

Dead Time : 0.07 %

Energy Calibration Used Done On : 3/15/2018
Efficiency Calibration Used Done On : 4/12/2018
Efficiency ID : 2MLINER0.153CM

Data Validated
4/13/18 1604
DR Mubahl

 ***** P E A K A N A L Y S I S R E P O R T *****

Detector Name: 5456-A
 Sample Title: B102110DFSWM029GD
 Peak Analysis Performed on: 4/13/2018 11:00:18 AM
 Peak Analysis From Channel: 85
 Peak Analysis To Channel: 8192

Peak No.	ROI start	ROI end	Peak centroid	Energy (keV)	FWHM (keV)	Net Peak Area	Net Area Uncert.	Continuum Counts
1	126-	135	129.68	32.42	0.81	5.40E+001	24.78	3.60E+001
2	283-	307	301.64	75.41	1.01	3.79E+002	106.25	5.92E+002
3	330-	347	340.86	85.21	0.54	1.22E+002	79.86	4.50E+002
4	482-	494	489.48	122.37	0.86	7.68E+001	56.22	2.71E+002
5	1373-	1386	1380.53	345.13	1.19	6.98E+001	27.48	4.32E+001
6	2436-	2450	2442.28	610.57	1.07	4.10E+001	22.69	3.00E+001
7	2642-	2660	2651.64	662.91	1.35	3.89E+002	44.76	3.32E+001
8	3116-	3128	3122.46	780.61	0.59	3.20E+001	17.29	1.60E+001
9	3858-	3871	3864.50	966.13	1.48	3.74E+001	15.61	8.55E+000
10	4450-	4463	4456.47	1114.12	0.58	2.90E+001	16.45	1.40E+001
11	4696-	4710	4703.20	1175.80	0.88	4.23E+001	19.01	1.67E+001
12	5334-	5350	5342.80	1335.70	1.15	4.88E+001	15.75	4.25E+000
13	5635-	5652	5643.78	1410.94	1.64	5.27E+001	16.33	4.31E+000
14	5846-	5866	5855.87	1463.97	0.69	1.27E+002	24.92	7.79E+000

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

Errors quoted at 2.000 sigma

 ***** 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: B102110DFSWM029GD
 Nuclide Library Used: C:\GENIE2K\CAMFILES\Zion Lib-BNL.NLB

IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)	Yield (%)	Activity (pCi/M ²)	Activity Uncertainty
K-40	0.984	1460.82*	10.66	8.07345E+005	1.73014E+005
Co-60	0.987	1173.23*	99.85	2.54008E+004	1.16079E+004
		1332.49*	99.98	3.12581E+004	1.04055E+004
Cs-137	0.997	661.66*	85.10	2.03854E+005	3.38955E+004
Eu-152	0.996	121.78*	28.67	5.64102E+004	4.28265E+004
		344.28*	26.60	8.26260E+004	3.52502E+004
		1408.01*	21.07	1.65556E+005	5.30024E+004
Eu-155	0.338	86.55*	30.70	9.09762E+004	6.21064E+004
		105.31	21.10		
Bi-214	0.723	609.32*	45.49	3.85306E+004	2.18199E+004
		1120.29*	14.92	1.13363E+005	6.49571E+004
		1764.49	15.30		

* = Energy line found in the spectrum.
 @ = Energy line not used for Weighted Mean Activity
 Energy Tolerance : 10.000 keV
 Nuclide confidence index threshold = 0.30
 Errors quoted at 2.000 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 (pCi/M ²)	Wt mean Activity Uncertainty
K-40	0.984	8.073447E+005	1.730137E+005
Co-60	0.987	2.864845E+004✓	7.748124E+003
Cs-137	0.997	2.038539E+005✓	3.389545E+004
Eu-152	0.996	9.155165E+004✓	2.421110E+004
Eu-155	0.338	9.097619E+004	6.210638E+004
Bi-214	0.723	4.611825E+004	2.068410E+004
X Pb-214	0.390		

? = 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 2.000 sigma

***** UNIDENTIFIED PEAKS *****

Peak Locate Performed on: 4/13/2018 11:00:18 AM
 Peak Locate From Channel: 85
 Peak Locate To Channel: 8192

Peak No.	Energy (keV)	Peak Size in Counts per Second	Peak CPS % Uncertainty	Peak Type	Tol. Nuclide
1	32.42	8.9981E-002	45.90		
2	75.41	6.3142E-001	28.04		
8	780.61	5.3333E-002	54.03	Sum	
9	966.13	6.2409E-002	41.69	Tol.	Ac-228

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

Errors quoted at 2.000 sigma

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

Detector Name: 5456-A
 Sample Geometry:
 Sample Title: B102110DFSWM029GD
 Nuclide Library Used: C:\GENIE2K\CAMFILES\Zion Lib-BNL.NLB

	Nuclide Name	Energy (keV)	Yield (%)	Line MDA (pCi/M ²)	Nuclide MDA (pCi/M ²)	Activity (pCi/M ²)	Dec. Level (pCi/M ²)
+	K-40	1460.82*	10.66	1.278E+005	1.28E+005	8.073E+005	5.532E+004
+	Co-60	1173.23*	99.85	1.534E+004	9.42E+003	2.540E+004	6.859E+003
		1332.49*	99.98	9.425E+003		3.126E+004	3.845E+003
	Nb-94	702.65	99.81	1.727E+004	1.73E+004	-1.065E+004	8.011E+003
		871.09	99.89	1.921E+004		7.546E+003	8.911E+003
	Ag-108m	433.90	90.50	2.211E+004	2.06E+004	-3.543E+003	1.052E+004
		614.30	89.80	2.643E+004		2.840E+004	1.257E+004
		722.90	90.80	2.063E+004		5.397E+003	9.623E+003
	Cs-134	604.72	97.62	2.244E+004	2.22E+004	-1.046E+004	1.063E+004
		795.86	85.46	2.216E+004		1.072E+004	1.031E+004
+	Cs-137	661.66*	85.10	1.967E+004	1.97E+004	2.039E+005	9.127E+003
+	Eu-152	121.78*	28.67	6.656E+004	4.57E+004	5.641E+004	3.228E+004
		344.28*	26.60	4.569E+004		8.263E+004	2.124E+004
		1408.01*	21.07	4.719E+004		1.656E+005	1.935E+004
	Eu-154	123.07	40.40	7.266E+004	5.36E+004	2.269E+004	3.562E+004
		723.30	20.06	9.343E+004		4.494E+004	4.357E+004
		1274.43	34.80	5.364E+004		3.371E+004	2.439E+004
+	Eu-155	86.55*	30.70	9.587E+004	9.59E+004	9.098E+004	4.693E+004
		105.31	21.10	1.333E+005		-1.039E+005	6.527E+004
	Tl-208	583.19	85.00	2.348E+004	2.35E+004	-1.619E+004	1.108E+004
	Bi-212	727.33	6.67	2.936E+005	2.94E+005	1.018E+005	1.373E+005
	Pb-212	238.63	43.60	5.492E+004	5.49E+004	2.263E+004	2.665E+004
+	Bi-214	609.32*	45.49	3.150E+004	3.15E+004	3.853E+004	1.448E+004
		1120.29*	14.92	9.057E+004		1.134E+005	3.999E+004
		1764.49	15.30	1.268E+005		9.492E+004	5.666E+004
	Pb-214	295.22	18.42	1.148E+005	3.41E+004	3.592E+004	5.529E+004
		351.93*	35.60	3.414E+004		6.174E+004	1.587E+004
	Ra-226	186.21	3.64	6.991E+005	6.99E+005	-2.928E+005	3.410E+005
	Ac-228	338.32	11.27	1.848E+005	9.22E+004	-1.184E+005	8.868E+004
		911.20	25.80	9.218E+004		1.140E+005	4.334E+004
		968.97	15.80	1.580E+005		1.139E+005	7.438E+004
	Am-241	59.54	35.90	9.431E+004	9.43E+004	-2.575E+004	4.589E+004

+ = Nuclide identified during the nuclide identification
 * = Energy line found in the spectrum
 > = Calculated MDA is zero due to zero counts in the region, or the region is outside the spectrum, or MDA has not been calculated
 @ = Half-life too short to be able to perform the decay correction

***** GAMMA SPECTRUM ANALYSIS *****

Filename: C:\GENIE2K\CAMFILES\00004673.CNF

Report Generated On : 4/13/2018 11:06:07 AM

Sample Title : B102110DFSWM030GD
Sample Description : U2 CTMNT UNDERVESSEL
Sample Identification : 030
Sample Type : GAMMA DIRECT
Sample Geometry :

Peak Locate Threshold : 3.00
Peak Locate Range (in channels) : 85 - 8192
Peak Area Range (in channels) : 85 - 8192
Identification Energy Tolerance : 10.000 keV

Sample Size : 1.256E+001 M²

Sample Taken On : 4/12/2018 8:43:00 AM
Acquisition Started : 4/12/2018 8:43:47 AM

Live Time : 600.0 seconds
Real Time : 600.6 seconds

Dead Time : 0.10 %

Energy Calibration Used Done On : 3/15/2018
Efficiency Calibration Used Done On : 4/12/2018
Efficiency ID : 2MLINER0.153CM

Data Validated
4/13/18 1612
DR Mhabib

 **** P E A K A N A L Y S I S R E P O R T ****

Detector Name: 5456-A
 Sample Title: B102110DFSWM030GD
 Peak Analysis Performed on: 4/13/2018 11:06:07 AM
 Peak Analysis From Channel: 85
 Peak Analysis To Channel: 8192

Peak No.	ROI start	ROI end	Peak centroid	Energy (keV)	FWHM (keV)	Net Peak Area	Net Area Uncert.	Continuum Counts
1	126-	138	130.17	32.54	0.90	1.39E+002	40.97	8.77E+001
2	284-	311	301.76	75.44	1.14	7.45E+002	133.10	8.18E+002
3	333-	346	341.16	85.29	0.76	1.49E+002	79.43	5.18E+002
4	480-	495	489.07	122.27	0.62	8.57E+001	82.07	5.32E+002
5	1375-	1389	1379.90	344.97	0.88	8.60E+001	41.13	1.12E+002
6	2435-	2448	2442.68	610.67	0.85	5.43E+001	22.96	2.77E+001
7	2640-	2665	2651.76	662.94	1.46	2.05E+003	94.08	4.00E+001
8	3114-	3130	3122.59	780.65	0.67	4.31E+001	18.97	1.49E+001
9	3856-	3872	3864.14	966.03	0.80	4.90E+001	20.22	1.70E+001
10	4450-	4465	4457.69	1114.42	0.54	4.40E+001	17.89	1.20E+001
11	4694-	4713	4702.94	1175.74	1.16	7.40E+001	23.61	1.80E+001
12	5332-	5350	5341.17	1335.29	1.02	8.48E+001	20.92	7.20E+000
13	5635-	5652	5644.62	1411.16	1.03	8.29E+001	18.92	2.10E+000
14	5848-	5867	5856.50	1464.12	1.00	1.39E+002	24.71	4.35E+000

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

Errors quoted at 2.000 sigma

 **** 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: B102110DFSWM030GD
 Nuclide Library Used: C:\GENIE2K\CAMFILES\Zion Lib-BNL.NLB

IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)	Yield (%)	Activity (pCi/M ²)	Activity Uncertainty
K-40	0.983	1460.82*	10.66	8.80012E+005	1.74476E+005
Co-60	0.989	1173.23*	99.85	4.44657E+004	1.46291E+004
		1332.49*	99.98	5.43626E+004	1.40966E+004
Cs-137	0.997	661.66*	85.10	1.07372E+006	1.37947E+005
Eu-152	0.995	121.78*	28.67	6.29874E+004	6.16103E+004
		344.28*	26.60	1.01780E+005	5.14676E+004
		1408.01*	21.07	2.60487E+005	6.29892E+004
Eu-155	0.338	86.55*	30.70	1.11068E+005	6.30537E+004
		105.31	21.10		
Bi-214	0.724	609.32*	45.49	5.09925E+004	2.24287E+004
		1120.29*	14.92	1.72023E+005	7.13025E+004
		1764.49	15.30		

* = Energy line found in the spectrum.
 @ = Energy line not used for Weighted Mean Activity
 Energy Tolerance : 10.000 keV
 Nuclide confidence index threshold = 0.30
 Errors quoted at 2.000 sigma

 **** INTERFERENCE CORRECTED REPORT ****

Nuclide Name	Nuclide Id Confidence	Wt mean Activity (pCi/M ²)	Wt mean Activity Uncertainty
K-40	0.983	8.800121E+005	1.744762E+005
Co-60	0.989	4.959757E+004✓	1.015082E+004
Cs-137	0.997	1.073716E+006✓	1.379468E+005
Eu-152	0.995	1.351290E+005✓	3.346374E+004
Eu-155	0.338	1.110676E+005	6.305365E+004
Bi-214	0.724	6.188982E+004	2.139517E+004
X Pb-214	0.388		

? = 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 2.000 sigma

***** UNIDENTIFIED PEAKS *****

Peak Locate Performed on: 4/13/2018 11:06:07 AM
 Peak Locate From Channel: 85
 Peak Locate To Channel: 8192

Peak No.	Energy (keV)	Peak Size in Counts per Second	Peak CPS % Uncertainty	Peak Type	Tol. Nuclide
1	32.54	2.3213E-001	29.42		
2	75.44	1.2425E+000	17.85		
8	780.65	7.1774E-002	44.05	Sum	
9	966.03	8.1667E-002	41.27	Tol.	Ac-228

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

Errors quoted at 2.000 sigma

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

Detector Name: 5456-A
 Sample Geometry:
 Sample Title: B102110DFSWM030GD
 Nuclide Library Used: C:\GENIE2K\CAMFILES\Zion Lib-BNL.NLB

	Nuclide Name	Energy (keV)	Yield (%)	Line MDA (pCi/M ²)	Nuclide MDA (pCi/M ²)	Activity (pCi/M ²)	Dec. Level (pCi/M ²)
+	K-40	1460.82*	10.66	9.540E+004	9.54E+004	8.800E+005	3.911E+004
+	Co-60	1173.23*	99.85	1.761E+004	1.22E+004	4.447E+004	7.993E+003
		1332.49*	99.98	1.219E+004		5.436E+004	5.228E+003
	Nb-94	702.65	99.81	1.903E+004	1.90E+004	-1.848E+004	8.893E+003
		871.09	99.89	2.308E+004		1.801E+004	1.085E+004
	Ag-108m	433.90	90.50	3.204E+004	2.12E+004	1.330E+004	1.549E+004
		614.30	89.80	2.966E+004		3.676E+004	1.418E+004
		722.90	90.80	2.122E+004		-1.295E+004	9.915E+003
	Cs-134	604.72	97.62	2.746E+004	2.30E+004	6.370E+003	1.314E+004
		795.86	85.46	2.300E+004		-7.895E+003	1.073E+004
+	Cs-137	661.66*	85.10	2.355E+004	2.35E+004	1.074E+006	1.106E+004
+	Eu-152	121.78*	28.67	9.863E+004	3.50E+004	6.299E+004	4.832E+004
		344.28*	26.60	7.467E+004		1.018E+005	3.573E+004
		1408.01*	21.07	3.500E+004		2.605E+005	1.325E+004
	Eu-154	123.07	40.40	8.953E+004	5.29E+004	1.208E+004	4.406E+004
		723.30	20.06	9.542E+004		-1.358E+005	4.457E+004
		1274.43	34.80	5.292E+004		4.613E+004	2.403E+004
+	Eu-155	86.55*	30.70	9.437E+004	9.44E+004	1.111E+005	4.618E+004
		105.31	21.10	1.721E+005		3.619E+004	8.466E+004
	Tl-208	583.19	85.00	2.941E+004	2.94E+004	1.497E+004	1.404E+004
	Bi-212	727.33	6.67	2.858E+005	2.86E+005	-2.469E+005	1.334E+005
	Pb-212	238.63	43.60	6.951E+004	6.95E+004	-1.689E+004	3.395E+004
+	Bi-214	609.32*	45.49	2.976E+004	2.98E+004	5.099E+004	1.361E+004
		1120.29*	14.92	8.781E+004		1.720E+005	3.861E+004
		1764.49	15.30	1.195E+005		4.646E+004	5.300E+004
	Pb-214	295.22	18.42	1.540E+005	5.58E+004	-3.693E+004	7.484E+004
		351.93*	35.60	5.579E+004		7.605E+004	2.670E+004
	Ra-226	186.21	3.64	9.291E+005	9.29E+005	2.433E+005	4.560E+005
	Ac-228	338.32	11.27	2.380E+005	8.85E+004	-1.869E+005	1.153E+005
		911.20	25.80	8.849E+004		4.065E+004	4.149E+004
		968.97	15.80	1.796E+005		2.815E+005	8.515E+004
	Am-241	59.54	35.90	1.199E+005	1.20E+005	-1.460E+005	5.870E+004

+ = Nuclide identified during the nuclide identification
 * = Energy line found in the spectrum
 > = Calculated MDA is zero due to zero counts in the region, or the region is outside the spectrum, or MDA has not been calculated
 @ = Half-life too short to be able to perform the decay correction

***** GAMMA SPECTRUM ANALYSIS *****

filename: C:\GENIE2K\CAMFILES\00004674.CNF

Report Generated On : 4/13/2018 11:08:17 AM

Sample Title : B102110DFSWM031GD
Sample Description : U2 CTMNT UNDERVESSEL
Sample Identification : 031
Sample Type : GAMMA DIRECT
Sample Geometry :

Peak Locate Threshold : 3.00
Peak Locate Range (in channels) : 85 - 8192
Peak Area Range (in channels) : 85 - 8192
Identification Energy Tolerance : 10.000 keV

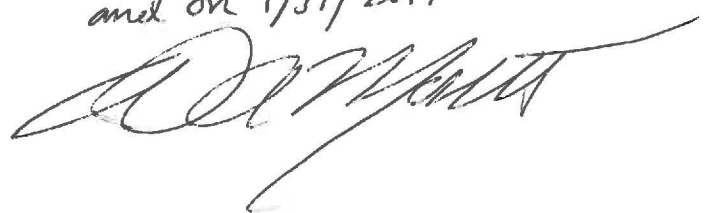
Sample Size : 1.256E+001 M²

Sample Taken On : 4/12/2018 10:17:00 AM
Acquisition Started : 4/12/2018 10:17:57 AM

Live Time : 600.0 seconds
Real Time : 600.3 seconds

Dead Time : 0.05 %

Energy Calibration Used Done On : 3/15/2018
Efficiency Calibration Used Done On : 4/12/2018
Efficiency ID : 2MLINER0.153CM

*Data Validated
4/13/18 1627
and on 1/31/2019*


 ***** P E A K A N A L Y S I S R E P O R T *****

Detector Name: 5456-A
 Sample Title: B102110DFSWM031GD
 Peak Analysis Performed on: 4/13/2018 11:08:16 AM
 Peak Analysis From Channel: 85
 Peak Analysis To Channel: 8192

Peak No.	ROI start	ROI end	Peak centroid	Energy (keV)	FWHM (keV)	Net Peak Area	Net Area Uncert.	Continuum Counts
1	126-	136	130.57	32.64	1.11	2.02E+001	20.01	2.58E+001
2	288-	310	301.65	75.41	1.12	1.69E+002	58.22	1.75E+002
3	1405-	1416	1410.80	352.70	1.12	2.52E+001	17.59	2.08E+001
4	2435-	2449	2441.62	610.40	0.38	3.58E+001	16.53	1.13E+001
5	2642-	2662	2651.57	662.89	1.69	1.77E+002	31.84	2.10E+001
6	4697-	4710	4703.63	1175.91	1.19	3.09E+001	13.41	5.15E+000
7	5335-	5349	5342.36	1335.59	1.00	4.02E+001	15.13	5.76E+000
8	5846-	5866	5856.71	1464.18	1.38	1.01E+002	22.77	7.85E+000

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

Errors quoted at 2.000 sigma

 ***** INTERFERENCE CORRECTED REPORT *****

Nuclide Name	Nuclide Id Confidence	Wt mean Activity (pCi/M ²)	Wt mean Activity Uncertainty
K-40	0.982	6.419906E+005	1.548997E+005
Co-60	0.987	2.149088E+004✓	6.317896E+003
Cs-137	0.998	9.279533E+004✓	2.006511E+004
Bi-214	0.443	3.359203E+004	1.605237E+004
Pb-214	0.437	2.252646E+004	1.613798E+004

? = 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 2.000 sigma

***** UNIDENTIFIED PEAKS *****

Peak Locate Performed on: 4/13/2018 11:08:16 AM
 Peak Locate From Channel: 85
 Peak Locate To Channel: 8192

Peak No.	Energy (keV)	Peak Size in Counts per Second	Peak CPS % Uncertainty	Peak Type	Tol. Nuclide
1	32.64	3.3623E-002	99.18		
2	75.41	2.8159E-001	34.46		

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

Errors quoted at 2.000 sigma

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

Detector Name: 5456-A
 Sample Geometry:
 Sample Title: B102110DFSWM031GD
 Nuclide Library Used: C:\GENIE2K\CAMFILES\Zion Lib-BNL.NLB

	Nuclide Name	Energy (keV)	Yield (%)	Line MDA (pCi/M^2)	Nuclide MDA (pCi/M^2)	Activity (pCi/M^2)	Dec. Level (pCi/M^2)
+	K-40	1460.82*	10.66	1.286E+005	1.29E+005	6.420E+005	5.571E+004
+	Co-60	1173.23*	99.85	9.055E+003	9.06E+003	1.855E+004	3.714E+003
		1332.49*	99.98	1.043E+004		2.580E+004	4.345E+003
	Nb-94	702.65	99.81	1.561E+004	1.56E+004	-1.278E+002	7.181E+003
		871.09	99.89	1.587E+004		1.110E+003	7.244E+003
	Ag-108m	433.90	90.50	1.693E+004	1.65E+004	1.118E+004	7.931E+003
		614.30	89.80	1.988E+004		-4.963E+003	9.295E+003
		722.90	90.80	1.649E+004		1.697E+004	7.549E+003
	Cs-134	604.72	97.62	1.701E+004	1.70E+004	-1.275E+004	7.917E+003
		795.86	85.46	1.795E+004		-2.499E+003	8.202E+003
+	Cs-137	661.66*	85.10	1.650E+004	1.65E+004	9.280E+004	7.540E+003
	Eu-152	121.78	28.67	6.239E+004	5.62E+004	1.806E+004	3.020E+004
		344.28	26.60	5.624E+004		-6.117E+004	2.652E+004
		1408.01	21.07	7.379E+004		3.911E+004	3.265E+004
	Eu-154	123.07	40.40	4.319E+004	4.04E+004	-3.334E+004	2.089E+004
		723.30	20.06	7.379E+004		4.514E+004	3.375E+004
		1274.43	34.80	4.035E+004		1.998E+004	1.774E+004
	Eu-155	86.55	30.70	6.269E+004	6.27E+004	7.443E+004	3.035E+004
		105.31	21.10	8.907E+004		2.527E+004	4.315E+004
	Tl-208	583.19	85.00	1.873E+004	1.87E+004	1.302E+004	8.701E+003
	Bi-212	727.33	6.67	2.145E+005	2.15E+005	-1.587E+005	9.779E+004
	Pb-212	238.63	43.60	4.367E+004	4.37E+004	5.081E+003	2.103E+004
+	Bi-214	609.32*	45.49	2.019E+004	2.02E+004	3.359E+004	8.825E+003
		1120.29	14.92	1.170E+005		-3.511E+004	5.318E+004
		1764.49	15.30	1.380E+005		1.442E+005	6.228E+004
+	Pb-214	295.22	18.42	8.827E+004	2.37E+004	5.763E+004	4.200E+004
		351.93*	35.60	2.367E+004		2.253E+004	1.062E+004
	Ra-226	186.21	3.64	4.800E+005	4.80E+005	6.501E+004	2.314E+005
	Ac-228	338.32	11.27	1.461E+005	6.38E+004	-7.456E+003	6.929E+004
		911.20	25.80	6.380E+004		3.760E+004	2.915E+004
		968.97	15.80	1.063E+005		-1.971E+004	4.851E+004
	Am-241	59.54	35.90	5.449E+004	5.45E+004	5.489E+003	2.598E+004

+ = Nuclide identified during the nuclide identification
 * = Energy line found in the spectrum
 > = Calculated MDA is zero due to zero counts in the region, or the region is outside the spectrum, or MDA has not been calculated
 @ = Half-life too short to be able to perform the decay correction

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

filename: C:\GENIE2K\CAMFILES\00004675.CNF

Report Generated On : 4/13/2018 11:10:05 AM

Sample Title : B102110DFSWM032GD
Sample Description : U2 CTMNT UNDERVESSEL
Sample Identification : 032
Sample Type : GAMMA DIRECT
Sample Geometry :

Peak Locate Threshold : 3.00
Peak Locate Range (in channels) : 85 - 8192
Peak Area Range (in channels) : 85 - 8192
Identification Energy Tolerance : 10.000 keV

Sample Size : 1.256E+001 M²

Sample Taken On : 4/12/2018 12:46:00 PM
Acquisition Started : 4/12/2018 12:46:24 PM

Live Time : 600.0 seconds
Real Time : 600.5 seconds

Dead Time : 0.08 %

Energy Calibration Used Done On : 3/15/2018
Efficiency Calibration Used Done On : 4/12/2018
Efficiency ID : 2MLINER0.153CM

Data Validated
4/13/18 1649
DR Muballh

 ***** P E A K A N A L Y S I S R E P O R T *****

Detector Name: 5456-A
 Sample Title: B102110DFSWM032GD
 Peak Analysis Performed on: 4/13/2018 11:10:05 AM
 Peak Analysis From Channel: 85
 Peak Analysis To Channel: 8192

Peak No.	ROI start	ROI end	Peak centroid	Energy (keV)	FWHM (keV)	Net Peak Area	Net Area Uncert.	Continuum Counts
1	126-	136	129.73	32.43	0.76	7.47E+001	25.38	3.03E+001
2	286-	309	300.72	75.18	1.28	2.49E+002	73.16	2.72E+002
3	335-	345	340.03	85.01	1.12	4.81E+001	41.34	1.58E+002
4	1172-	1183	1178.69	294.67	0.77	8.87E+000	23.64	5.11E+001
5	2428-	2443	2436.44	609.11	0.56	4.89E+001	19.16	1.41E+001
6	2634-	2659	2645.70	661.42	1.53	1.02E+003	67.76	2.95E+001
7	5834-	5855	5843.70	1460.93	0.95	1.32E+002	22.98	0.00E+000

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

Errors quoted at 2.000 sigma

 ***** 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: B102110DFSWM032GD
 Nuclide Library Used: C:\GENIE2K\CAMFILES\Zion Lib-BNL.NLB

IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)	Yield (%)	Activity (pCi/M ²)	Activity Uncertainty
K-40	1.000	1460.82*	10.66	8.36632E+005	1.62753E+005
Cs-137	1.000	661.66*	85.10	5.34395E+005	7.33330E+004
Eu-155	0.338	86.55*	30.70	3.58821E+004	3.16333E+004
		105.31	21.10		
Bi-214	0.444	609.32*	45.49	4.58648E+004	1.88053E+004
		1120.29	14.92		
		1764.49	15.30		

* = Energy line found in the spectrum.
 @ = Energy line not used for Weighted Mean Activity
 Energy Tolerance : 10.000 keV
 Nuclide confidence index threshold = 0.30
 Errors quoted at 2.000 sigma

 ***** INTERFERENCE CORRECTED REPORT *****

Nuclide Name	Nuclide Id Confidence	Wt mean Activity (pCi/M ²)	Wt mean Activity Uncertainty
K-40	1.000	8.366321E+005	1.627535E+005
Cs-137	1.000	5.343946E+005✓	7.333305E+004
Eu-155	0.338	3.588208E+004	3.163334E+004
Bi-214	0.444	4.586481E+004	1.880534E+004

? = 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 2.000 sigma

***** UNIDENTIFIED PEAKS *****

Peak Locate Performed on: 4/13/2018 11:10:05 AM
 Peak Locate From Channel: 85
 Peak Locate To Channel: 8192

Peak No.	Energy (keV)	Peak Size in Counts per Second	Peak CPS % Uncertainty	Peak Type	Tol. Nuclide
1	32.43	1.2452E-001	33.97		
2	75.18	4.1456E-001	29.41		
4	294.67	1.4778E-002	266.67	Tol.	Pb-214

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

Errors quoted at 2.000 sigma

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

Detector Name: 5456-A
 Sample Geometry:
 Sample Title: B102110DFSWM032GD
 Nuclide Library Used: C:\GENIE2K\CAMFILES\Zion Lib-BNL.NLB

	Nuclide Name	Energy (keV)	Yield (%)	Line MDA (pCi/M^2)	Nuclide MDA (pCi/M^2)	Activity (pCi/M^2)	Dec# Level (pCi/M^2)
+	K-40	1460.82*	10.66	1.715E+004	1.72E+004	8.366E+005	0.000E+000
	Co-60	1173.23	99.85	2.215E+004	1.86E+004	2.800E+004	1.026E+004
		1332.49	99.98	1.859E+004		6.273E+003✓	8.426E+003
	Nb-94	702.65	99.81	1.529E+004	1.40E+004	1.392E+004	7.020E+003
		871.09	99.89	1.399E+004		-3.058E+003	6.301E+003
	Ag-108m	433.90	90.50	2.146E+004	1.63E+004	-1.835E+004	1.020E+004
		614.30	89.80	2.340E+004		-1.286E+004	1.105E+004
		722.90	90.80	1.630E+004		6.413E+003	7.454E+003
	Cs-134	604.72	97.62	2.155E+004	1.90E+004	1.800E+003✓	1.019E+004
		795.86	85.46	1.900E+004		8.865E+003	8.725E+003
+	Cs-137	661.66*	85.10	2.086E+004	2.09E+004	5.344E+005	9.721E+003
	Eu-152	121.78	28.67	7.549E+004	6.90E+004	-3.772E+004	3.675E+004
		344.28	26.60	6.898E+004		-4.037E+004	3.289E+004
		1408.01	21.07	7.698E+004		3.530E+004✓	3.424E+004
	Eu-154	123.07	40.40	5.455E+004	4.23E+004	5.185E+004✓	2.657E+004
		723.30	20.06	7.292E+004		5.456E+003	3.331E+004
		1274.43	34.80	4.227E+004		2.346E+004	1.870E+004
+	Eu-155	86.55*	30.70	4.976E+004	4.98E+004	3.588E+004	2.387E+004
		105.31	21.10	1.049E+005		2.323E+004	5.106E+004
	Tl-208	583.19	85.00	2.239E+004	2.24E+004	7.550E+003	1.053E+004
	Bi-212	727.33	6.67	2.118E+005	2.12E+005	7.506E+003	9.642E+004
	Pb-212	238.63	43.60	5.046E+004	5.05E+004	1.629E+004	2.442E+004
+	Bi-214	609.32*	45.49	2.276E+004	2.28E+004	4.586E+004	1.011E+004
		1120.29	14.92	1.330E+005		1.166E+005	6.118E+004
		1764.49	15.30	1.060E+005		7.954E+004	4.626E+004
	Pb-214	295.22	18.42	1.114E+005	5.18E+004	4.999E+001	5.355E+004
		351.93	35.60	5.178E+004		-5.847E+003	2.468E+004
	Ra-226	186.21	3.64	6.270E+005	6.27E+005	-2.494E+005	3.049E+005
	Ac-228	338.32	11.27	1.733E+005	7.50E+004	3.209E+004	8.289E+004
		911.20	25.80	7.500E+004		-6.098E+003	3.475E+004
		968.97	15.80	1.163E+005		1.543E+005	5.350E+004
	Am-241	59.54	35.90	7.418E+004	7.42E+004	-2.867E+004	3.582E+004

- + = Nuclide identified during the nuclide identification
- * = Energy line found in the spectrum
- > = Calculated MDA is zero due to zero counts in the region, or the region is outside the spectrum, or MDA has not been calculated
- @ = Half-life too short to be able to perform the decay correction

***** GAMMA SPECTRUM ANALYSIS *****

filename: C:\GENIE2K\CAMFILES\00004676.CNF

Report Generated On : 4/13/2018 11:11:37 AM
Sample Title : B102110DFSWM033GD
Sample Description : U2 CTMNT UNDERVESSEL
Sample Identification : 033
Sample Type : GAMMA DIRECT
Sample Geometry :
Peak Locate Threshold : 3.00
Peak Locate Range (in channels) : 85 - 8192
Peak Area Range (in channels) : 85 - 8192
Identification Energy Tolerance : 10.000 keV
Sample Size : 1.256E+001 M^2
Sample Taken On : 4/12/2018 12:59:00 PM
Acquisition Started : 4/12/2018 12:58:49 PM
Live Time : 600.0 seconds
Real Time : 600.4 seconds
Dead Time : 0.07 %

Energy Calibration Used Done On : 3/15/2018
Efficiency Calibration Used Done On : 4/12/2018
Efficiency ID : 2MLINER0.153CM

Data Validated
4/13/18 1712
DR Mihalek

 ***** P E A K A N A L Y S I S R E P O R T *****

Detector Name: 5456-A
 Sample Title: B102110DFSWM033GD
 Peak Analysis Performed on: 4/13/2018 11:11:37 AM
 Peak Analysis From Channel: 85
 Peak Analysis To Channel: 8192

Peak No.	ROI start	ROI end	Peak centroid	Energy (keV)	FWHM (keV)	Net Peak Area	Net Area Uncert.	Continuum Counts
1	126-	134	129.81	32.45	0.67	7.38E+001	26.55	4.02E+001
2	282-	307	301.06	75.27	1.09	3.53E+002	78.21	2.78E+002
3	2327-	2338	2332.27	583.07	0.64	2.26E+001	13.95	1.04E+001
4	2429-	2443	2436.07	609.02	0.25	3.02E+001	21.53	2.98E+001
5	2635-	2657	2645.90	661.48	1.39	1.21E+003	71.21	1.42E+001
6	3868-	3881	3874.70	968.67	0.67	1.16E+001	10.38	5.38E+000
7	4685-	4698	4691.81	1172.95	0.75	2.48E+001	12.53	5.23E+000
8	5324-	5337	5330.48	1332.62	0.56	3.01E+001	13.20	4.94E+000
9	5834-	5855	5843.82	1460.95	0.90	1.21E+002	23.52	4.90E+000

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

Errors quoted at 2.000 sigma

 ***** 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: B102110DFSWM033GD
 Nuclide Library Used: C:\GENIE2K\CAMFILES\Zion Lib-BNL.NLB

IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)	Yield (%)	Activity (pCi/M ²)	Activity Uncertainty
K-40	1.000	1460.82*	10.66	7.67526E+005	1.63320E+005
Co-60	1.000	1173.23*	99.85	1.48681E+004	7.61504E+003
		1332.49*	99.98	1.92463E+004	8.58862E+003
Cs-137	1.000	661.66*	85.10	6.35131E+005	8.49024E+004
Tl-208	1.000	583.19*	85.00	1.10780E+004	6.98022E+003
Bi-214	0.444	609.32*	45.49	2.83592E+004	2.04901E+004
		1120.29	14.92		
		1764.49	15.30		

* = Energy line found in the spectrum.
 @ = Energy line not used for Weighted Mean Activity
 Energy Tolerance : 10.000 keV
 Nuclide confidence index threshold = 0.30
 Errors quoted at 2.000 sigma

 ***** INTERFERENCE CORRECTED REPORT *****

Nuclide Name	Nuclide Id Confidence	Wt mean Activity (pCi/M^2)	Wt mean Activity Uncertainty
K-40	1.000	7.675259E+005	1.633195E+005
Co-60	1.000	1.679512E+004	5.697905E+003
Cs-137	1.000	6.351308E+005	8.490243E+004
Tl-208	1.000	1.107802E+004	6.980217E+003
Bi-214	0.444	2.835917E+004	2.049010E+004

? = 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 2.000 sigma

***** UNIDENTIFIED PEAKS *****

Peak Locate Performed on: 4/13/2018 11:11:37 AM
 Peak Locate From Channel: 85
 Peak Locate To Channel: 8192

Peak No.	Energy (keV)	Peak Size in Counts per Second	Peak CPS % Uncertainty	Peak Type	Tol. Nuclide
1	32.45	1.2303E-001	35.96		
2	75.27	5.8871E-001	22.14		
6	968.67	1.9363E-002	89.35	Tol.	Ac-228

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

Errors quoted at 2.000 sigma

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

Detector Name: 5456-A
 Sample Geometry:
 Sample Title: B102110DFSWM033GD
 Nuclide Library Used: C:\GENIE2K\CAMFILES\Zion Lib-BNL.NLB

	Nuclide Name	Energy (keV)	Yield (%)	Line MDA (pCi/M ²)	Nuclide MDA (pCi/M ²)	Activity (pCi/M ²)	Dec. Level (pCi/M ²)
+	K-40	1460.82*	10.66	1.038E+005	1.04E+005	7.675E+005	4.331E+004
+	Co-60	1173.23*	99.85	9.140E+003	9.14E+003	1.487E+004	3.758E+003
		1332.49*	99.98	9.466E+003		1.925E+004	3.866E+003
	Nb-94	702.65	99.81	1.444E+004	1.44E+004	-3.966E+003	6.599E+003
		871.09	99.89	1.607E+004		6.230E+003	7.341E+003
	Ag-108m	433.90	90.50	2.530E+004	1.78E+004	3.699E+004	1.212E+004
		614.30	89.80	2.406E+004		-1.616E+004	1.138E+004
		722.90	90.80	1.775E+004		-6.168E+002	8.183E+003
	Cs-134	604.72	97.62	2.125E+004	1.77E+004	7.883E+003 ✓	1.004E+004
		795.86	85.46	1.773E+004		6.322E+003	8.094E+003
+	Cs-137	661.66*	85.10	1.418E+004	1.42E+004	6.351E+005	6.381E+003
	Eu-152	121.78	28.67	8.768E+004	7.84E+004	3.072E+004 ✓	4.285E+004
		344.28	26.60	7.842E+004		-1.350E+004	3.761E+004
		1408.01	21.07	8.575E+004		6.601E+004	3.863E+004
	Eu-154	123.07	40.40	6.172E+004	4.13E+004	-2.605E+004	3.016E+004
		723.30	20.06	8.117E+004		-6.011E+004	3.744E+004
		1274.43	34.80	4.133E+004	o✓	-7.499E+003	1.823E+004
	Eu-155	86.55	30.70	8.716E+004	8.72E+004	1.297E+005	4.259E+004
		105.31	21.10	1.147E+005		-1.133E+005	5.597E+004
+	Tl-208	583.19*	85.00	9.585E+003	9.59E+003	1.108E+004	4.128E+003
	Bi-212	727.33	6.67	2.277E+005	2.28E+005	1.527E+005	1.044E+005
	Pb-212	238.63	43.60	5.478E+004	5.48E+004	-1.025E+004	2.658E+004
+	Bi-214	609.32*	45.49	3.112E+004	3.11E+004	2.836E+004	1.429E+004
		1120.29	14.92	1.288E+005		-8.261E+003	5.911E+004
		1764.49	15.30	1.143E+005		9.446E+004	5.041E+004
	Pb-214	295.22	18.42	1.170E+005	6.18E+004	-4.820E+004	5.637E+004
		351.93	35.60	6.179E+004		2.642E+004	2.968E+004
	Ra-226	186.21	3.64	7.004E+005	7.00E+005	3.442E+005	3.416E+005
	Ac-228	338.32	11.27	1.876E+005	6.89E+004	-1.424E+005	9.006E+004
		911.20	25.80	6.894E+004		2.167E+004	3.172E+004
		968.97	15.80	1.175E+005		1.379E+005	5.409E+004
	Am-241	59.54	35.90	8.138E+004	8.14E+004	-4.091E+004	3.942E+004

- + = Nuclide identified during the nuclide identification
- * = Energy line found in the spectrum
- > = Calculated MDA is zero due to zero counts in the region, or the region is outside the spectrum, or MDA has not been calculated
- @ = Half-life too short to be able to perform the decay correction

***** GAMMA SPECTRUM ANALYSIS *****

Filename: C:\GENIE2K\CAMFILES\00004677.CNF

Report Generated On : 4/13/2018 11:14:01 AM

Sample Title : B102110DFSWM034GD
Sample Description : U2 CTMNT UNDERVESSEL
Sample Identification : 034
Sample Type : GAMMA DIRECT
Sample Geometry :

Peak Locate Threshold : 3.00
Peak Locate Range (in channels) : 85 - 8192
Peak Area Range (in channels) : 85 - 8192
Identification Energy Tolerance : 10.000 keV

Sample Size : 1.256E+001 M^2

Sample Taken On : 4/12/2018 1:15:00 PM
Acquisition Started : 4/12/2018 1:16:03 PM

Live Time : 600.0 seconds
Real Time : 600.5 seconds

Dead Time : 0.08 %

Energy Calibration Used Done On : 3/15/2018
Efficiency Calibration Used Done On : 4/12/2018
Efficiency ID : 2MLINER0.153CM

Data Validated
4/13/18 1718
DR Mubalid

 ***** P E A K A N A L Y S I S R E P O R T *****

Detector Name: 5456-A
 Sample Title: B102110DFSWM034GD
 Peak Analysis Performed on: 4/13/2018 11:14:01 AM
 Peak Analysis From Channel: 85
 Peak Analysis To Channel: 8192

Peak No.	ROI start	ROI end	Peak centroid	Energy (keV)	FWHM (keV)	Net Peak Area	Net Area Uncert.	Continuum Counts
1	126-	134	129.58	32.40	0.55	3.79E+001	25.59	4.51E+001
2	287-	308	301.20	75.30	1.03	3.28E+002	81.37	3.54E+002
3	332-	345	339.48	84.87	1.15	1.02E+002	54.64	2.33E+002
4	480-	493	488.07	122.02	0.69	4.56E+001	52.55	2.33E+002
5	1370-	1384	1377.33	344.33	0.70	1.66E+001	26.43	5.34E+001
6	2326-	2337	2331.22	582.80	0.54	1.13E+001	17.49	2.57E+001
7	2430-	2443	2437.10	609.27	0.89	3.02E+001	18.63	1.98E+001
8	2635-	2657	2645.87	661.47	1.38	8.03E+002	59.81	2.33E+001
9	3850-	3863	3856.22	964.06	0.53	1.79E+001	14.24	1.11E+001
10	4684-	4699	4692.17	1173.04	0.45	4.30E+001	13.11	0.00E+000
11	5322-	5336	5329.85	1332.46	0.42	4.45E+001	16.32	7.55E+000
12	5625-	5638	5631.17	1407.79	1.39	3.00E+001	10.95	0.00E+000
13	5833-	5854	5843.47	1460.87	2.07	1.14E+002	22.38	2.86E+000

* = First peak in a multiplet region
) = Other peak in a multiplet region
 F = Fitted singlet

Errors quoted at 2.000 sigma

 ***** 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: B102110DFSWM034GD
 Nuclide Library Used: C:\GENIE2K\CAMFILES\Zion Lib-BNL.NLB

IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)	Yield (%)	Activity (pCi/M ²)	Activity Uncertainty
K-40	1.000	1460.82*	10.66	7.23435E+005	1.55143E+005
Co-60	1.000	1173.23*	99.85	2.58152E+004	8.13991E+003
		1332.49*	99.98	2.84618E+004	1.06926E+004
Cs-137	1.000	661.66*	85.10	4.20365E+005	5.94095E+004
Eu-152	1.000	121.78*	28.67	3.35122E+004	3.91860E+004
		344.28*	26.60	1.95753E+004	3.14159E+004
		1408.01*	21.07	9.41337E+004	3.51880E+004
Eu-155	0.337	86.55*	30.70	7.64141E+004	4.35552E+004
		105.31	21.10		
Tl-208	1.000	583.19*	85.00	5.56592E+003	8.61178E+003
Bi-214	0.444	609.32*	45.49	2.83450E+004	1.78172E+004
		1120.29	14.92		
		1764.49	15.30		

* = Energy line found in the spectrum.
 @ = Energy line not used for Weighted Mean Activity
 Energy Tolerance : 10.000 keV
 Nuclide confidence index threshold = 0.30
 Errors quoted at 2.000 sigma

 ***** INTERFERENCE CORRECTED REPORT *****

Nuclide Name	Nuclide Id Confidence	Wt mean Activity (pCi/M ²)	Wt mean Activity Uncertainty
K-40	1.000	7.234352E+005	1.551432E+005
Co-60	1.000	2.678621E+004✓	6.476730E+003
Cs-137	1.000	4.203649E+005✓	5.940949E+004
Eu-152	1.000	4.760502E+004✓	2.011266E+004
Eu-155	0.337	7.641414E+004	4.355523E+004
Tl-208	1.000	5.565916E+003	8.611783E+003
Bi-214	0.444	2.834501E+004	1.781723E+004
X Pb-214	0.379		

? = 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 2.000 sigma

***** UNIDENTIFIED PEAKS *****

Peak Locate Performed on: 4/13/2018 11:14:01 AM
Peak Locate From Channel: 85
Peak Locate To Channel: 8192

Peak No.	Energy (keV)	Peak Size in Counts per Second	Peak CPS % Uncertainty	Peak Type	Tol. Nuclide
1	32.40	6.3233E-002	67.44		
2	75.30	5.4681E-001	24.80		
9	964.06	2.9828E-002	79.56	Tol.	Ac-228

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

Errors quoted at 2.000 sigma

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

Detector Name: 5456-A
 Sample Geometry:
 Sample Title: B102110DFSWM034GD
 Nuclide Library Used: C:\GENIE2K\CAMFILES\Zion Lib-BNL.NLB

	Nuclide Name	Energy (keV)	Yield (%)	Line MDA (pCi/M ²)	Nuclide MDA (pCi/M ²)	Activity (pCi/M ²)	Dec. Level (pCi/M ²)
+	K-40	1460.82*	10.66	8.660E+004	8.66E+004	7.234E+005	3.473E+004
+	Co-60	1173.23*	99.85	1.625E+003	1.62E+003	2.582E+004	0.000E+000
		1332.49*	99.98	1.164E+004		2.846E+004	4.952E+003
	Nb-94	702.65	99.81	1.654E+004	1.65E+004	1.773E+003	7.645E+003
		871.09	99.89	1.872E+004		2.905E+003	8.669E+003
	Ag-108m	433.90	90.50	2.350E+004	1.78E+004	1.069E+004	1.122E+004
		614.30	89.80	2.318E+004		-6.992E+003	1.094E+004
		722.90	90.80	1.775E+004		7.180E+003	8.183E+003
	Cs-134	604.72	97.62	2.283E+004	2.11E+004	-1.102E+004	1.082E+004
		795.86	85.46	2.110E+004		7.292E+003✓	9.778E+003
+	Cs-137	661.66*	85.10	1.790E+004	1.79E+004	4.204E+005	8.242E+003
+	Eu-152	121.78*	28.67	6.336E+004	8.49E+003	3.351E+004	3.069E+004
		344.28*	26.60	5.211E+004		1.958E+004	2.446E+004
		1408.01*	21.07	8.491E+003		9.413E+004	0.000E+000
	Eu-154	123.07	40.40	6.426E+004	4.91E+004	2.727E+004✓	3.142E+004
		723.30	20.06	7.959E+004		2.752E+004	3.665E+004
		1274.43	34.80	4.913E+004		-1.040E+004	2.213E+004
+	Eu-155	86.55*	30.70	6.434E+004	6.43E+004	7.641E+004	3.116E+004
		105.31	21.10	1.252E+005		2.248E+004	6.121E+004
+	Tl-208	583.19*	85.00	1.436E+004	1.44E+004	5.566E+003	6.517E+003
	Bi-212	727.33	6.67	2.277E+005	2.28E+005	-2.697E+005	1.044E+005
	Pb-212	238.63	43.60	5.353E+004	5.35E+004	9.231E+003	2.596E+004
+	Bi-214	609.32*	45.49	2.577E+004	2.58E+004	2.835E+004	1.161E+004
		1120.29	14.92	1.370E+005		-1.468E+005	6.319E+004
		1764.49	15.30	1.268E+005		7.064E+004	5.666E+004
	Pb-214	295.22	18.42	1.191E+005	3.89E+004	5.944E+004	5.744E+004
		351.93*	35.60	3.894E+004		1.463E+004	1.827E+004
	Ra-226	186.21	3.64	6.487E+005	6.49E+005	2.394E+005	3.158E+005
	Ac-228	338.32	11.27	1.830E+005	8.00E+004	7.328E+004	8.774E+004
		911.20	25.80	7.997E+004		1.016E+004	3.723E+004
		968.97	15.80	1.349E+005		-9.842E+003	6.279E+004
	Am-241	59.54	35.90	8.561E+004	8.56E+004	-2.582E+004	4.154E+004

+ = Nuclide identified during the nuclide identification

* = Energy line found in the spectrum

> = Calculated MDA is zero due to zero counts in the region, or the region is outside the spectrum, or MDA has not been calculated

@ = Half-life too short to be able to perform the decay correction

***** GAMMA SPECTRUM ANALYSIS *****

Filename: C:\GENIE2K\CAMFILES\00004678.CNF

Report Generated On : 4/13/2018 11:15:30 AM
Sample Title : B102110DFSWM035GD
Sample Description : U2 CTMNT UNDERVESSEL
Sample Identification : 035
Sample Type : GAMMA DIRECT
Sample Geometry :
Peak Locate Threshold : 3.00
Peak Locate Range (in channels) : 85 - 8192
Peak Area Range (in channels) : 85 - 8192
Identification Energy Tolerance : 10.000 keV
Sample Size : 1.256E+001 M^2
Sample Taken On : 4/12/2018 1:35:00 PM
Acquisition Started : 4/12/2018 1:38:15 PM
Live Time : 600.0 seconds
Real Time : 600.6 seconds
Dead Time : 0.11 %

Energy Calibration Used Done On : 3/15/2018
Efficiency Calibration Used Done On : 4/12/2018
Efficiency ID : 2MLINER0.153CM

Data Validated
4/13/18 1724
WR Mihalek

 ***** P E A K A N A L Y S I S R E P O R T *****

Detector Name: 5456-A
 Sample Title: B102110DFSWM035GD
 Peak Analysis Performed on: 4/13/2018 11:15:30 AM
 Peak Analysis From Channel: 85
 Peak Analysis To Channel: 8192

Peak No.	ROI start	ROI end	Peak centroid	Energy (keV)	FWHM (keV)	Net Peak Area	Net Area Uncert.	Continuum Counts
1	126-	165	129.64	32.41	0.73	4.30E+002	95.61	2.69E+002
2	287-	311	301.02	75.26	1.21	4.72E+002	112.35	6.49E+002
3	333-	346	339.37	84.84	1.03	5.51E+001	71.22	4.34E+002
4	1369-	1414	1408.26	352.06	0.54	1.37E+002	86.84	2.55E+002
5	2428-	2443	2436.18	609.05	1.47	6.10E+001	24.58	3.00E+001
6	2634-	2657	2645.83	661.46	1.37	2.12E+003	96.37	5.10E+001
7	3106-	3121	3115.00	778.75	0.75	4.07E+001	16.67	9.35E+000
8	4440-	4454	4447.88	1111.97	0.32	4.10E+001	18.34	1.50E+001
9	4682-	4702	4692.48	1173.12	0.90	8.49E+001	20.34	5.11E+000
10	5320-	5338	5329.52	1332.38	0.93	6.29E+001	18.67	7.15E+000
11	5622-	5640	5631.60	1407.90	0.72	8.00E+001	17.89	0.00E+000
12	5833-	5854	5843.78	1460.95	1.95	1.29E+002	25.19	7.94E+000

M = First peak in a multiplet region

m = Other peak in a multiplet region

| = Fitted singlet

Errors quoted at 2.000 sigma

 ***** 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: B102110DFSWM035GD
 Nuclide Library Used: C:\GENIE2K\CAMFILES\Zion Lib-BNL.NLB

IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)	Yield (%)	Activity (pCi/M ²)	Activity Uncertainty
K-40	1.000	1460.82*	10.66	8.18018E+005	1.74725E+005
Co-60	1.000	1173.23*	99.85	5.09684E+004	1.28720E+004
		1332.49*	99.98	4.02427E+004	1.23779E+004
Cs-137	1.000	661.66*	85.10	1.10921E+006	1.42448E+005
Eu-155	0.337	86.55*	30.70	4.11336E+004	5.38057E+004
		105.31	21.10		
Bi-214	0.715	609.32*	45.49	5.72566E+004	2.40731E+004
		1120.29*	14.92	1.60107E+005	7.27734E+004
		1764.49	15.30		
Pb-214	0.438	295.22	18.42		
		351.93*	35.60	1.22302E+005	8.00298E+004

* = Energy line found in the spectrum.
 @ = Energy line not used for Weighted Mean Activity
 Energy Tolerance : 10.000 keV
 Nuclide confidence index threshold = 0.30
 Errors quoted at 2.000 sigma

 ***** INTERFERENCE CORRECTED REPORT *****

Nuclide Name	Nuclide Id Confidence	Wt mean Activity (pCi/M ²)	Wt mean Activity Uncertainty
K-40	1.000	8.180183E+005	1.747252E+005
Co-60	1.000	4.539575E+004✓	8.922061E+003
Cs-137	1.000	1.109214E+006✓	1.424478E+005
Eu-155	0.337	4.113361E+004	5.380566E+004
Bi-214	0.715	6.740101E+004	2.285511E+004
Pb-214	0.438	1.223019E+005	8.002982E+004

? = 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 2.000 sigma

***** UNIDENTIFIED PEAKS *****

Peak Locate Performed on: 4/13/2018 11:15:30 AM
 Peak Locate From Channel: 85
 Peak Locate To Channel: 8192

Peak No.	Energy (keV)	Peak Size in Counts per Second	Peak CPS % Uncertainty	Peak Type	Tol. Nuclide
1	32.41	7.1648E-001	22.24		
2	75.26	7.8634E-001	23.81		
7	778.75	6.7750E-002	41.01		
11	1407.90	1.3333E-001	22.36	Sum	

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

Errors quoted at 2.000 sigma

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

Detector Name: 5456-A
 Sample Geometry:
 Sample Title: B102110DFSWM035GD
 Nuclide Library Used: C:\GENIE2K\CAMFILES\Zion Lib-BNL.NLB

	Nuclide Name	Energy (keV)	Yield (%)	Line MDA (pCi/M ²)	Nuclide MDA (pCi/M ²)	Activity (pCi/M ²)	Dec. Level (pCi/M ²)
+	K-40	1460.82*	10.66	1.305E+005	1.30E+005	8.180E+005	5.665E+004
+	Co-60	1173.23*	99.85	1.012E+004	1.01E+004	5.097E+004	4.247E+003
		1332.49*	99.98	1.211E+004		4.024E+004	5.188E+003
	Nb-94	702.65	99.81	1.966E+004	1.97E+004	1.140E+004	9.209E+003
		871.09	99.89	1.968E+004		9.726E+003	9.147E+003
	Ag-108m	433.90	90.50	2.962E+004	2.25E+004	6.164E+003	1.428E+004
		614.30	89.80	2.957E+004		-1.722E+004	1.414E+004
		722.90	90.80	2.247E+004		-9.801E+002	1.054E+004
	Cs-134	604.72	97.62	2.754E+004	2.32E+004	-5.679E+003	1.318E+004
		795.86	85.46	2.317E+004		-5.054E+003	1.081E+004
+	Cs-137	661.66*	85.10	2.601E+004	2.60E+004	1.109E+006	1.230E+004
	Eu-152	121.78	28.67	1.075E+005	1.07E+005	-3.383E+003	5.275E+004
		344.28	26.60	1.097E+005		1.642E+002	5.326E+004
		1408.01	21.07	1.439E+005		2.699E+005	6.770E+004
	Eu-154	123.07	40.40	7.558E+004	4.13E+004	-2.719E+003	3.708E+004
		723.30	20.06	1.042E+005		6.737E+004	4.894E+004
		1274.43	34.80	4.133E+004		6.742E+003	1.823E+004
+	Eu-155	86.55*	30.70	8.757E+004	8.76E+004	4.113E+004	4.277E+004
		105.31	21.10	1.498E+005		-9.207E+004	7.353E+004
	Tl-208	583.19	85.00	2.875E+004	2.87E+004	2.987E+004	1.371E+004
	Bi-212	727.33	6.67	3.087E+005	3.09E+005	1.942E+005	1.449E+005
	Pb-212	238.63	43.60	6.474E+004	6.47E+004	-4.654E+004	3.156E+004
+	Bi-214	609.32*	45.49	3.184E+004	3.18E+004	5.726E+004	1.465E+004
		1120.29*	14.92	9.494E+004		1.601E+005	4.219E+004
		1764.49	15.30	1.195E+005		1.044E+005	5.300E+004
+	Pb-214	295.22	18.42	1.490E+005	1.25E+005	5.547E+004	7.237E+004
		351.93*	35.60	1.253E+005		1.223E+005	6.146E+004
	Ra-226	186.21	3.64	8.057E+005	8.06E+005	-6.999E+004	3.943E+005
	Ac-228	338.32	11.27	2.307E+005	8.17E+004	5.254E+004	1.116E+005
		911.20	25.80	8.175E+004		1.780E+004	3.812E+004
		968.97	15.80	1.623E+005		1.509E+005	7.649E+004
	Am-241	59.54	35.90	1.059E+005	1.06E+005	3.073E+004	5.168E+004

+ = Nuclide identified during the nuclide identification
 * = Energy line found in the spectrum
 > = Calculated MDA is zero due to zero counts in the region, or the region is outside the spectrum, or MDA has not been calculated
 @ = Half-life too short to be able to perform the decay correction

***** GAMMA SPECTRUM ANALYSIS *****

filename: C:\GENIE2K\CAMFILES\00004679.CNF

Report Generated On : 4/13/2018 11:16:59 AM

Sample Title : B102110DFSWM036GD
Sample Description : U2 CTMNT UNDERVESSEL
Sample Identification : 036
Sample Type : GAMMA DIRECT
Sample Geometry :

Peak Locate Threshold : 3.00
Peak Locate Range (in channels) : 85 - 8192
Peak Area Range (in channels) : 85 - 8192
Identification Energy Tolerance : 10.000 keV

Sample Size : 1.256E+001 M²

Sample Taken On : 4/12/2018 1:53:00 PM
Acquisition Started : 4/12/2018 1:53:24 PM

Live Time : 600.0 seconds
Real Time : 600.9 seconds

Dead Time : 0.16 %

Energy Calibration Used Done On : 3/15/2018
Efficiency Calibration Used Done On : 4/12/2018
Efficiency ID : 2MLINER0.153CM

Data Validated
4/13/18 11:31
DR Mubalib

 ***** P E A K A N A L Y S I S R E P O R T *****

Detector Name: 5456-A
 Sample Title: B102110DFSWM036GD
 Peak Analysis Performed on: 4/13/2018 11:16:59 AM
 Peak Analysis From Channel: 85
 Peak Analysis To Channel: 8192

Peak No.	ROI start	ROI end	Peak centroid	Energy (keV)	FWHM (keV)	Net Peak Area	Net Area Uncert.	Continuum Counts
1	126-	153	129.67	32.42	0.78	6.00E+002	100.00	3.42E+002
2	282-	308	301.01	75.25	1.04	6.77E+002	151.47	1.16E+003
3	334-	355	340.15	85.04	1.68	2.86E+002	125.04	9.60E+002
4	435-	450	445.74	111.44	0.26	-7.76E+000	94.36	7.43E+002
5	484-	499	488.39	122.10	0.81	1.42E+002	91.55	6.45E+002
6	1368-	1413	1376.19	344.05	0.86	2.72E+000	137.56	6.90E+002
7	2431-	2445	2437.31	609.33	0.63	2.83E+001	28.15	5.87E+001
8	2632-	2657	2645.78	661.44	1.45	6.87E+003	169.72	7.67E+001
9	3108-	3121	3114.32	778.58	0.50	3.95E+001	17.51	1.35E+001
10	3500-	3513	3506.71	876.68	0.56	1.50E+001	14.67	1.40E+001
11	3849-	3862	3855.06	963.77	1.60	5.39E+001	19.94	1.61E+001
12	4336-	4349	4342.74	1085.68	0.63	2.78E+001	14.96	1.02E+001
13	4441-	4485	4448.57	1112.14	1.03	5.99E+001	36.05	4.11E+001
14	4683-	4702	4692.58	1173.14	1.95	1.04E+002	23.10	7.90E+000
15	5321-	5339	5330.07	1332.52	1.59	1.05E+002	24.31	1.23E+001
16	5622-	5642	5632.32	1408.08	0.84	8.94E+001	19.88	2.60E+000
17	5832-	5855	5843.41	1460.85	2.11	1.48E+002	27.74	1.14E+001
18	7052-	7067	7059.01	1764.75	0.56	1.60E+001	8.00	0.00E+000

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

Errors quoted at 2.000 sigma

 ***** 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: B102110DFSWM036GD
 Nuclide Library Used: C:\GENIE2K\CAMFILES\Zion Lib-BNL.NLB

IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)	Yield (%)	Activity (pCi/M^2)	Activity Uncertainty
K-40	1.000	1460.82*	10.66	9.35700E+005	1.93680E+005
Co-60	1.000	1173.23*	99.85	6.25026E+004	1.47419E+004
		1332.49*	99.98	6.70464E+004	1.64664E+004
		661.66*	85.10	3.59689E+006	4.41007E+005
Cs-137	1.000	661.66*	85.10	3.59689E+006	4.41007E+005
Eu-152	1.000	121.78*	28.67	1.04418E+005	7.04353E+004
		344.28*	26.60	3.21413E+003	1.62568E+005
		1408.01*	21.07	2.80559E+005	6.63099E+004
Eu-155	0.974	86.55*	30.70	2.12892E+005	1.02428E+005
		105.31*	21.10	-7.85266E+003	9.55373E+004
		609.32*	45.49	2.66013E+004	2.66198E+004
Bi-214	0.979	1120.29*	14.92	2.33955E+005	1.42046E+005
		1764.49*	15.30	7.95505E+004	4.02824E+004

* = Energy line found in the spectrum.
 @ = Energy line not used for Weighted Mean Activity
 Energy Tolerance : 10.000 keV
 Nuclide confidence index threshold = 0.30
 Errors quoted at 2.000 sigma

 ***** INTERFERENCE CORRECTED REPORT *****

Nuclide Name	Nuclide Id Confidence	Wt mean Activity (pCi/M^2)	Wt mean Activity Uncertainty
K-40	1.000	9.357004E+005	1.936799E+005
Co-60	1.000	6.452419E+004✓	1.098337E+004
Cs-137	1.000	3.596889E+006✓	4.410072E+005
Eu-152	1.000	1.820261E+005✓	4.628277E+004
Eu-155	0.974	2.128922E+005	1.024275E+005
Bi-214	0.979	4.725944E+004	2.194212E+004
X Pb-214	0.375		

? = 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 2.000 sigma

***** UNIDENTIFIED PEAKS *****

Peak Locate Performed on: 4/13/2018 11:16:59 AM
 Peak Locate From Channel: 85
 Peak Locate To Channel: 8192

Peak No.	Energy (keV)	Peak Size in Counts per Second	Peak CPS % Uncertainty	Peak Type	Tol. Nuclide
1	32.42	1.0000E+000	16.67		
2	75.25	1.1289E+000	22.36		
9	778.58	6.5802E-002	44.34	Sum	
10	876.68	2.5000E-002	97.81		
11	963.77	8.9827E-002	37.00		
12	1085.68	4.6294E-002	53.86		

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

Errors quoted at 2,000 sigma

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

Detector Name: 5456-A
 Sample Geometry:
 Sample Title: B102110DFSWM036GD
 Nuclide Library Used: C:\GENIE2K\CAMFILES\Zion Lib-BNL.NLB

	Nuclide Name	Energy (keV)	Yield (%)	Line MDA (pCi/M ²)	Nuclide MDA (pCi/M ²)	Activity (pCi/M ²)	Dec. Level (pCi/M ²)
+	K-40	1460.82*	10.66	1.566E+005	1.57E+005	9.357E+005	6.973E+004
+	Co-60	1173.23*	99.85	1.231E+004	1.23E+004	6.250E+004	5.344E+003
		1332.49*	99.98	1.556E+004		6.705E+004	6.914E+003
	Nb-94	702.65	99.81	1.966E+004	1.97E+004	4.717E+003	9.209E+003
		871.09	99.89	2.591E+004		5.385E+003	1.226E+004
	Ag-108m	433.90	90.50	4.437E+004	2.12E+004	2.137E+004	2.165E+004
		614.30	89.80	3.232E+004		8.147E+003	1.551E+004
		722.90	90.80	2.122E+004		3.625E+003	9.915E+003
	Cs-134	604.72	97.62	3.035E+004	2.49E+004	4.738E+003	1.458E+004
		795.86	85.46	2.490E+004		-3.692E+003	1.168E+004
+	Cs-137	661.66*	85.10	3.286E+004	3.29E+004	3.597E+006	1.572E+004
+	Eu-152	121.78*	28.67	1.088E+005	4.02E+004	1.044E+005	5.341E+004
		344.28*	26.60	2.705E+005		3.214E+003	1.337E+005
		1408.01*	21.07	4.020E+004		2.806E+005	1.585E+004
	Eu-154	123.07	40.40	1.001E+005	5.44E+004	7.101E+003	4.934E+004
		723.30	20.06	9.476E+004		-1.294E+004	4.424E+004
		1274.43	34.80	5.435E+004		1.879E+004	2.474E+004
+	Eu-155	86.55*	30.70	1.496E+005	1.50E+005	2.129E+005	7.377E+004
		105.31*	21.10	1.601E+005		-7.853E+003	7.870E+004
	Tl-208	583.19	85.00	3.181E+004	3.18E+004	1.586E+004	1.524E+004
	Bi-212	727.33	6.67	2.878E+005	2.88E+005	2.354E+005	1.344E+005
	Pb-212	238.63	43.60	9.032E+004	9.03E+004	3.930E+004	4.435E+004
+	Bi-214	609.32*	45.49	4.278E+004	1.35E+004	2.660E+004	2.012E+004
		1120.29*	14.92	2.198E+005		2.340E+005	1.046E+005
		1764.49*	15.30	1.345E+004		7.955E+004	0.000E+000
	Pb-214	295.22	18.42	1.982E+005	1.98E+005	1.182E+004	9.695E+004
		351.93*	35.60	2.021E+005		2.402E+003	9.988E+004
	Ra-226	186.21	3.64	1.089E+006	1.09E+006	-4.016E+005	5.361E+005
	Ac-228	338.32	11.27	3.141E+005	9.32E+004	5.756E+004	1.533E+005
		911.20	25.80	9.320E+004		3.002E+003	4.385E+004
		968.97	15.80	1.925E+005		1.761E+005	9.162E+004
	Am-241	59.54	35.90	1.415E+005	1.42E+005	-5.936E+003	6.949E+004

+ = Nuclide identified during the nuclide identification
 * = Energy line found in the spectrum
 > = Calculated MDA is zero due to zero counts in the region, or the region is outside the spectrum, or MDA has not been calculated
 @ = Half-life too short to be able to perform the decay correction

***** GAMMA SPECTRUM ANALYSIS *****

Filename: C:\GENIE2K\CAMFILES\00004771.CNF

Report Generated On : 4/19/2018 3:34:15 PM

Sample Title : B102110DFSFM037GD
Sample Description : UNIT 2 CONTAINMENT
Sample Identification : 037
Sample Type : GAMMA DIRECT
Sample Geometry :

Peak Locate Threshold : 3.00
Peak Locate Range (in channels) : 85 - 8192
Peak Area Range (in channels) : 85 - 8192
Identification Energy Tolerance : 10.000 keV

Sample Size : 1.134E+001 m²

Sample Taken On : 4/10/2018 1:58:00 PM
Acquisition Started : 4/10/2018 2:03:23 PM

Live Time : 600.0 seconds
Real Time : 600.1 seconds

Dead Time : 0.02 %

Energy Calibration Used Done On : 3/15/2018
Efficiency Calibration Used Done On : 4/19/2018
Efficiency ID : 1.9M0.153CMLINER

Data Validated
4/19/18 1550
DR Mubaly

 ***** P E A K A N A L Y S I S R E P O R T *****

Detector Name: 5456-A

Sample Title: B102110DFSFM037GD

Peak Analysis Performed on: 4/19/2018 3:34:14 PM

Peak Analysis From Channel: 85

Peak Analysis To Channel: 8192

Peak No.	ROI start	ROI end	Peak centroid	Energy (keV)	FWHM (keV)	Net Peak Area	Net Area Uncert.	Continuum Counts
1	297-	308	301.81	75.45	0.87	5.12E+001	34.42	9.58E+001
2	332-	344	339.03	84.76	0.90	4.15E+001	30.15	6.85E+001
3	950-	960	954.97	238.74	0.79	2.14E+001	23.62	4.76E+001
4	2430-	2443	2436.69	609.17	0.91	2.29E+001	16.57	1.61E+001
5	2637-	2654	2646.04	661.51	0.86	8.35E+001	22.60	1.35E+001
6	4683-	4699	4691.28	1172.82	1.11	3.44E+001	15.73	8.58E+000
7	5323-	5337	5329.48	1332.37	1.74	4.40E+001	13.27	0.00E+000
8	5832-	5852	5843.06	1460.76	1.27	8.99E+001	20.84	5.14E+000

M = First peak in a multiplet region

m = Other peak in a multiplet region

F = Fitted singlet

Errors quoted at 2.000 sigma

 ***** 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: B102110DFSFM037GD
 Nuclide Library Used: C:\GENIE2K\CAMFILES\Zion Lib-BNL.NLB

IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)	Yield (%)	Activity (pCi/m ²)	Activity Uncertainty
K-40	1.000	1460.82*	10.66	4.35618E+005	1.07857E+005
Co-60	1.000	1173.23*	99.85	1.58191E+004	7.33934E+003
		1332.49*	99.98	2.15544E+004	6.72377E+003
Cs-137	1.000	661.66*	85.10	3.40152E+004	1.00719E+004
Eu-155	0.336	86.55*	30.70	2.58789E+004	1.95040E+004
		105.31	21.10		
Pb-212	1.000	238.63*	43.60	1.02907E+004	1.14807E+004
Bi-214	0.441	609.32*	45.49	1.68150E+004	1.23109E+004
		1120.29	14.92		
		1764.49	15.30		

* = Energy line found in the spectrum.
 @ = Energy line not used for Weighted Mean Activity
 Energy Tolerance : 10.000 keV
 Nuclide confidence index threshold = 0.30
 Errors quoted at 2.000 sigma

 ***** INTERFERENCE CORRECTED REPORT *****

Nuclide Name	Nuclide Id Confidence	Wt mean Activity (pCi/m ²)	Wt mean Activity Uncertainty
K-40	1.000	4.356182E+005	1.078568E+005
Co-60	1.000	1.893733E+004	4.957788E+003
Cs-137	1.000	3.401516E+004	1.007193E+004
Eu-155	0.336	2.587890E+004	1.950396E+004
Pb-212	1.000	1.029073E+004	1.148066E+004
Bi-214	0.441	1.681502E+004	1.231092E+004

? = 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 2.000 sigma

***** UNIDENTIFIED PEAKS *****

Peak Locate Performed on: 4/19/2018 3:34:14 PM
 Peak Locate From Channel: 85
 Peak Locate To Channel: 8192

Peak No.	Energy (keV)	Peak Size in Counts per Second	Peak CPS % Uncertainty	Peak Type	Tol. Nuclide
1	75.45	8.5329E-002	67.23		

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

Errors quoted at 2.000 sigma

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

Detector Name: 5456-A
 Sample Geometry:
 Sample Title: B102110DFSFM037GD
 Nuclide Library Used: C:\GENIE2K\CAMFILES\Zion Lib-BNL.NLB

	Nuclide Name	Energy (keV)	Yield (%)	Line MDA (pCi/m ²)	Nuclide MDA (pCi/m ²)	Activity (pCi/m ²)	Dec. Level (pCi/m ²)
+	K-40	1460.82*	10.66	8.203E+004	8.20E+004	4.356E+005	3.446E+004
+	Co-60	1173.23*	99.85	9.165E+003	1.33E+003	1.582E+004	3.961E+003
		1332.49*	99.98	1.326E+003		2.155E+004	0.000E+000
	Nb-94	702.65	99.81	1.008E+004	1.01E+004	8.343E+003	4.554E+003
		871.09	99.89	1.080E+004		2.937E+003	4.867E+003
	Ag-108m	433.90	90.50	1.280E+004	1.22E+004	2.214E+003	5.978E+003
		614.30	89.80	1.603E+004		1.341E+003	7.510E+003
		722.90	90.80	1.219E+004		3.783E+003	5.559E+003
	Cs-134	604.72	97.62	1.388E+004	1.29E+004	-3.634E+003	6.481E+003
		795.86	85.46	1.285E+004		1.993E+003	5.828E+003
+	Cs-137	661.66*	85.10	1.001E+004	1.00E+004	3.402E+004	4.454E+003
	Eu-152	121.78	28.67	4.572E+004	4.06E+004	-1.027E+004	2.203E+004
		344.28	26.60	4.059E+004		-1.918E+004	1.902E+004
		1408.01	21.07	5.645E+004		2.929E+004	2.498E+004
	Eu-154	123.07	40.40	3.251E+004	2.77E+004	-1.270E+004	1.567E+004
		723.30	20.06	5.451E+004		3.516E+003	2.482E+004
		1274.43	34.80	2.767E+004		-1.720E+003	1.198E+004
+	Eu-155	86.55*	30.70	2.966E+004	2.97E+004	2.588E+004	1.398E+004
		105.31	21.10	6.398E+004		2.692E+004	3.084E+004
	Tl-208	583.19	85.00	1.500E+004	1.50E+004	3.842E+003	6.981E+003
	Bi-212	727.33	6.67	1.665E+005	1.66E+005	-8.933E+004	7.589E+004
+	Pb-212	238.63*	43.60	1.849E+004	1.85E+004	1.029E+004	8.597E+003
+	Bi-214	609.32*	45.49	1.828E+004	1.83E+004	1.682E+004	8.150E+003
		1120.29	14.92	8.968E+004		1.052E+004	4.077E+004
		1764.49	15.30	9.683E+004		2.563E+004	4.328E+004
	Pb-214	295.22	18.42	6.537E+004	3.51E+004	4.801E+004	3.097E+004
		351.93	35.60	3.510E+004		-1.266E+004	1.659E+004
	Ra-226	186.21	3.64	3.809E+005	3.81E+005	-9.169E+004	1.835E+005
	Ac-228	338.32	11.27	1.056E+005	5.58E+004	-4.946E+004	4.982E+004
		911.20	25.80	5.584E+004		5.494E+004	2.580E+004
		968.97	15.80	7.555E+004		4.655E+004	3.420E+004
	Am-241	59.54	35.90	4.051E+004	4.05E+004	6.914E+002	1.921E+004

+ = Nuclide identified during the nuclide identification
 * = Energy line found in the spectrum
 > = Calculated MDA is zero due to zero counts in the region, or the region is outside the spectrum, or MDA has not been calculated
 @ = Half-life too short to be able to perform the decay correction

***** GAMMA SPECTRUM ANALYSIS *****

Filename: C:\GENIE2K\CAMFILES\00004772.CNF

Report Generated On : 4/19/2018 3:35:33 PM

Sample Title : B102110DFSFM038GD
Sample Description : UNIT 2 CONTAINMENT
Sample Identification : 038
Sample Type : GAMMA DIRECT
Sample Geometry :

Peak Locate Threshold : 3.00
Peak Locate Range (in channels) : 85 - 8192
Peak Area Range (in channels) : 85 - 8192
Identification Energy Tolerance : 10.000 keV

Sample Size : 1.134E+001 m²

Sample Taken On : 4/10/2018 2:18:00 PM
Acquisition Started : 4/10/2018 2:18:33 PM

Live Time : 600.0 seconds
Real Time : 600.2 seconds

Dead Time : 0.03 %

Energy Calibration Used Done On : 3/15/2018
Efficiency Calibration Used Done On : 4/19/2018
Efficiency ID : 1.9M0.153CMLINER

Data Validated
4/19/18 1552
WR Mhalik

 ***** P E A K A N A L Y S I S R E P O R T *****

Detector Name: 5456-A
 Sample Title: B102110DFSFM038GD
 Peak Analysis Performed on: 4/19/2018 3:35:32 PM
 Peak Analysis From Channel: 85
 Peak Analysis To Channel: 8192

Peak No.	ROI start	ROI end	Peak centroid	Energy (keV)	FWHM (keV)	Net Peak Area	Net Area Uncert.	Continuum Counts
1	291-	310	301.92	75.48	0.94	1.48E+002	42.20	8.47E+001
2	335-	345	340.76	85.19	0.97	2.23E+001	29.10	7.98E+001
3	1011-	1020	1015.83	253.96	0.36	1.90E+001	16.06	2.00E+001
4	1402-	1414	1407.48	351.87	0.78	3.57E+001	16.18	1.13E+001
5	2430-	2441	2435.67	608.92	0.53	2.90E+001	13.27	6.00E+000
6	2638-	2653	2646.14	661.53	1.54	4.90E+001	15.62	4.00E+000
7	5834-	5853	5843.08	1460.77	1.33	1.28E+002	22.63	0.00E+000

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

Errors quoted at 2.000 sigma

 ***** 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: B102110DFSFM038GD
 Nuclide Library Used: C:\GENIE2K\CAMFILES\Zion Lib-BNL.NLB

IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)	Yield (%)	Activity (pCi/m ²)	Activity Uncertainty
K-40	1.000	1460.82*	10.66	6.20527E+005	1.22215E+005
Cs-137	1.000	661.66*	85.10	1.99638E+004	6.80079E+003
Eu-155	0.337	86.55*	30.70	1.38100E+004	1.82734E+004
		105.31	21.10		
Bi-214	0.440	609.32*	45.49	2.12506E+004	1.00518E+004
		1120.29	14.92		
		1764.49	15.30		
Pb-214	0.439	295.22	18.42	2.54200E+004	1.22304E+004
		351.93*	35.60		

* = Energy line found in the spectrum.
 @ = Energy line not used for Weighted Mean Activity
 Energy Tolerance : 10.000 keV
 Nuclide confidence index threshold = 0.30
 Errors quoted at 2.000 sigma

 ***** INTERFERENCE CORRECTED REPORT *****

Nuclide Name	Nuclide Id Confidence	Wt mean Activity (pCi/m ²)	Wt mean Activity Uncertainty
K-40	1.000	6.205273E+005	1.222147E+005
Cs-137	1.000	1.996378E+004	6.800788E+003
Eu-155	0.337	1.381001E+004	1.827340E+004
Bi-214	0.440	2.125063E+004	1.005179E+004
Pb-214	0.439	2.541995E+004	1.223041E+004

? = 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 2.000 sigma

***** UNIDENTIFIED PEAKS *****

Peak Locate Performed on: 4/19/2018 3:35:32 PM
 Peak Locate From Channel: 85
 Peak Locate To Channel: 8192

Peak No.	Energy (keV)	Peak Size in Counts per Second	Peak CPS % Uncertainty	Peak Type	Tol. Nuclide
1	75.48	2.4721E-001	28.45		
3	253.96	3.1667E-002	84.53		

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

Errors quoted at 2.000 sigma

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

Detector Name: 5456-A
 Sample Geometry:
 Sample Title: B102110DFSFM038GD
 Nuclide Library Used: C:\GENIE2K\CAMFILES\Zion Lib-BNL.NLB

	Nuclide Name	Energy (keV)	Yield (%)	Line MDA (pCi/m ²)	Nuclide MDA (pCi/m ²)	Activity (pCi/m ²)	Dec. Level (pCi/m ²)
+	K-40	1460.82*	10.66	1.312E+004	1.31E+004	6.205E+005	0.000E+000
	Co-60	1173.23	99.85	1.407E+004	1.36E+004	2.873E+003	6.415E+003
		1332.49	99.98	1.360E+004		1.018E+004	6.137E+003
	Nb-94	702.65	99.81	9.447E+003	9.45E+003	-4.378E+003	4.240E+003
		871.09	99.89	1.195E+004		3.516E+003	5.442E+003
	Ag-108m	433.90	90.50	1.160E+004	1.16E+004	4.186E+003	5.377E+003
		614.30	89.80	1.364E+004		-1.410E+004	6.313E+003
		722.90	90.80	1.323E+004		-3.982E+003	6.075E+003
	Cs-134	604.72	97.62	1.308E+004	1.31E+004	1.270E+004	6.082E+003
		795.86	85.46	1.547E+004		9.788E+003	7.137E+003
+	Cs-137	661.66*	85.10	5.746E+003	5.75E+003	1.996E+004	2.322E+003
	Eu-152	121.78	28.67	5.080E+004	4.35E+004	1.676E+004	2.457E+004
		344.28	26.60	4.352E+004		2.413E+004	2.048E+004
		1408.01	21.07	5.388E+004		2.511E+004	2.369E+004
	Eu-154	123.07	40.40	3.541E+004	2.59E+004	-3.043E+004	1.712E+004
		723.30	20.06	6.115E+004		1.879E+004	2.814E+004
		1274.43	34.80	2.590E+004		6.277E+003	1.109E+004
+	Eu-155	86.55*	30.70	2.979E+004	2.98E+004	1.381E+004	1.405E+004
		105.31	21.10	6.166E+004		-2.356E+004	2.968E+004
	Tl-208	583.19	85.00	1.393E+004	1.39E+004	7.603E+003	6.445E+003
	Bi-212	727.33	6.67	1.863E+005	1.86E+005	6.947E+004	8.578E+004
	Pb-212	238.63	43.60	3.156E+004	3.16E+004	1.899E+004	1.513E+004
+	Bi-214	609.32*	45.49	1.132E+004	1.13E+004	2.125E+004	4.669E+003
		1120.29	14.92	9.435E+004		2.978E+004	4.311E+004
		1764.49	15.30	8.929E+004		4.509E+004	3.951E+004
+	Pb-214	295.22	18.42	6.309E+004	1.47E+004	-2.589E+004	2.984E+004
		351.93*	35.60	1.473E+004		2.542E+004	6.400E+003
	Ra-226	186.21	3.64	4.132E+005	4.13E+005	2.912E+005	1.996E+005
	Ac-228	338.32	11.27	9.556E+004	5.48E+004	-3.130E+004	4.479E+004
		911.20	25.80	5.480E+004		5.390E+004	2.528E+004
		968.97	15.80	7.878E+004		6.780E+004	3.582E+004
	Am-241	59.54	35.90	3.915E+004	3.91E+004	-2.123E+002	1.853E+004

+ = Nuclide identified during the nuclide identification

* = Energy line found in the spectrum

> = Calculated MDA is zero due to zero counts in the region, or the region is outside the spectrum, or MDA has not been calculated

@ = Half-life too short to be able to perform the decay correction

***** GAMMA SPECTRUM ANALYSIS *****

Filename: C:\GENIE2K\CAMFILES\00004761.CNF

Report Generated On : 4/19/2018 11:49:26 AM

Sample Title : B102110DFSFM039GD
Sample Description : UNIT 2 CONTAINMENT
Sample Identification : 039
Sample Type : GAMMA DIRECT
Sample Geometry :

Peak Locate Threshold : 3.00
Peak Locate Range (in channels) : 85 - 8192
Peak Area Range (in channels) : 85 - 8192
Identification Energy Tolerance : 10.000 keV

Sample Size : 1.134E+001

Sample Taken On : 4/10/2018 2:38:00 PM
Acquisition Started : 4/10/2018 2:36:27 PM

Live Time : 600.0 seconds
Real Time : 600.2 seconds

Dead Time : 0.03 %

Energy Calibration Used Done On : 3/15/2018
Efficiency Calibration Used Done On : 4/19/2018
Efficiency ID : 1.9M0.153CMLINER

*Data Validated
4/19/18 1345
WR Mahalik*

 ***** P E A K A N A L Y S I S R E P O R T *****

Detector Name: 5456-A
 Sample Title: B102110DFSM039GD
 Peak Analysis Performed on: 4/19/2018 11:49:26 AM
 Peak Analysis From Channel: 85
 Peak Analysis To Channel: 8192

Peak No.	ROI start	ROI end	Peak centroid	Energy (keV)	FWHM (keV)	Net Peak Area	Net Area Uncert.	Continuum Counts
1	297-	307	301.98	75.49	1.12	8.25E+001	34.24	8.65E+001
2	338-	348	342.02	85.51	0.87	3.57E+001	28.77	6.83E+001
3	1401-	1415	1407.92	351.98	0.33	3.71E+001	18.55	1.69E+001
4	2430-	2442	2436.06	609.02	0.78	3.53E+001	16.65	1.28E+001
5	2639-	2653	2645.96	661.49	1.10	6.45E+001	21.15	1.65E+001
6	4686-	4699	4692.91	1173.23	0.36	3.05E+001	12.67	3.50E+000
7	5834-	5853	5842.77	1460.69	1.16	9.46E+001	21.49	6.39E+000

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

Errors quoted at 2.000 sigma

 ***** 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: B102110DFSFM039GD
 Nuclide Library Used: C:\GENIE2K\CAMFILES\Zion Lib-BNL.NLB

***** IDENTIFIED NUCLIDES *****

Nuclide Name	Id Confidence	Energy (keV)	Yield (%)	Activity (pCi/)	Activity Uncertainty
K-40	1.000	1460.82*	10.66	4.58624E+005	1.11517E+005
Cs-137	1.000	661.66*	85.10	2.62856E+004	9.17648E+003
Eu-155	0.338	86.55*	30.70	2.20585E+004	1.83344E+004
		105.31	21.10		
Bi-214	0.440	609.32*	45.49	2.58325E+004	1.25891E+004
		1120.29	14.92		
		1764.49	15.30		
Pb-214	0.439	295.22	18.42	2.64192E+004	1.38848E+004
		351.93*	35.60		

* = Energy line found in the spectrum.
 @ = Energy line not used for Weighted Mean Activity
 Energy Tolerance : 10.000 keV
 Nuclide confidence index threshold = 0.30
 Errors quoted at 2.000 sigma

 ***** INTERFERENCE CORRECTED REPORT *****

Nuclide Name	Nuclide Id Confidence	Wt mean Activity (pCi/)	Wt mean Activity Uncertainty
K-40	1.000	4.586244E+005	1.115166E+005
Cs-137	1.000	2.628557E+004✓	9.176478E+003
Eu-155	0.338	2.205851E+004	1.833442E+004
Bi-214	0.440	2.583247E+004	1.258912E+004
Pb-214	0.439	2.641924E+004	1.388479E+004

? = 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 2.000 sigma

***** UNIDENTIFIED PEAKS *****

Peak Locate Performed on: 4/19/2018 11:49:26 AM
 Peak Locate From Channel: 85
 Peak Locate To Channel: 8192

Peak No.	Energy (keV)	Peak Size in Counts per Second	Peak CPS % Uncertainty	Peak Type	Tol. Nuclide
1	75.49	1.3742E-001	41.53		
6	1173.23	5.0833E-002	41.54		

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

Errors quoted at 2.000 sigma

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

Detector Name: 5456-A
 Sample Geometry:
 Sample Title: B102110DFSFM039GD
 Nuclide Library Used: C:\GENIE2K\CAMFILES\Zion Lib-BNL.NLB

	Nuclide Name	Energy (keV)	Yield (%)	Line MDA (pCi/)	Nuclide MDA (pCi/)	Activity (pCi/)	Dec. Level (pCi/)
+	K-40	1460.82*	10.66	8.589E+004	8.59E+004	4.586E+005	3.638E+004
	Co-60	1173.23	99.85	1.590E+004	1.29E+004	1.459E+004	7.330E+003
		1332.49	99.98	1.295E+004		1.818E+003✓	5.811E+003
	Nb-94	702.65	99.81	1.008E+004	1.01E+004	-8.221E+002	4.554E+003
		871.09	99.89	1.063E+004		-3.112E+002	4.780E+003
	Ag-108m	433.90	90.50	1.323E+004	1.16E+004	9.805E+003	6.194E+003
		614.30	89.80	1.573E+004		-8.946E+003	7.358E+003
		722.90	90.80	1.156E+004		6.820E+003	5.241E+003
	Cs-134	604.72	97.62	1.464E+004	1.36E+004	6.903E+003✓	6.857E+003
		795.86	85.46	1.356E+004		3.487E+003	6.181E+003
+	Cs-137	661.66*	85.10	1.032E+004	1.03E+004	2.629E+004	4.609E+003
	Eu-152	121.78	28.67	4.939E+004	3.74E+004	-3.381E+004	2.387E+004
		344.28	26.60	3.741E+004		-2.335E+004	1.743E+004
		1408.01	21.07	5.518E+004		4.561E+004✓	2.434E+004
	Eu-154	123.07	40.40	3.576E+004	3.09E+004	-5.542E+003	1.730E+004
		723.30	20.06	5.083E+004		-9.917E+003	2.297E+004
		1274.43	34.80	3.088E+004		1.534E+004✓	1.358E+004
+	Eu-155	86.55*	30.70	2.831E+004	2.83E+004	2.206E+004	1.332E+004
		105.31	21.10	6.706E+004		-6.326E+003	3.238E+004
	Tl-208	583.19	85.00	1.578E+004	1.58E+004	1.097E+004	7.371E+003
	Bi-212	727.33	6.67	1.622E+005	1.62E+005	1.128E+005	7.375E+004
	Pb-212	238.63	43.60	3.222E+004	3.22E+004	3.561E+004	1.546E+004
+	Bi-214	609.32*	45.49	1.605E+004	1.60E+004	2.583E+004	7.033E+003
		1120.29	14.92	8.600E+004		6.945E+004	3.893E+004
		1764.49	15.30	8.312E+004		9.493E+002	3.642E+004
+	Pb-214	295.22	18.42	6.702E+004	1.83E+004	3.843E+004	3.180E+004
		351.93*	35.60	1.834E+004		2.642E+004	8.207E+003
	Ra-226	186.21	3.64	4.081E+005	4.08E+005	-3.544E+004	1.971E+005
	Ac-228	338.32	11.27	1.024E+005	5.48E+004	-2.259E+004	4.820E+004
		911.20	25.80	5.480E+004		4.158E+004	2.528E+004
		968.97	15.80	6.979E+004		9.648E+003	3.132E+004
	Am-241	59.54	35.90	4.166E+004	4.17E+004	-1.008E+004	1.979E+004

+ = Nuclide identified during the nuclide identification
 * = Energy line found in the spectrum
 > = Calculated MDA is zero due to zero counts in the region, or the region is outside the spectrum, or MDA has not been calculated
 @ = Half-life too short to be able to perform the decay correction

***** GAMMA SPECTRUM ANALYSIS *****

Filename: C:\GENIE2K\CAMFILES\00004762.CNF

Report Generated On : 4/19/2018 3:01:15 PM

Sample Title : B102110DFSFM040GD
Sample Description : UNIT 2 CONTAINMENT
Sample Identification : 040
Sample Type : GAMMA DIRECT
Sample Geometry :

Peak Locate Threshold : 3.00
Peak Locate Range (in channels) : 85 - 8192
Peak Area Range (in channels) : 85 - 8192
Identification Energy Tolerance : 10.000 keV

Sample Size : 1.134E+001 m²

Sample Taken On : 4/10/2018 2:50:00 PM
Acquisition Started : 4/10/2018 2:51:16 PM

Live Time : 600.0 seconds
Real Time : 600.2 seconds

Dead Time : 0.03 %

Energy Calibration Used Done On : 3/15/2018
Efficiency Calibration Used Done On : 4/19/2018
Efficiency ID : 1.9M0.153CMLINER

Data Validated
4/19/18 1606
WR Mihals

 ***** P E A K A N A L Y S I S R E P O R T *****

Detector Name: 5456-A
 Sample Title: B102110DFSFM040GD
 Peak Analysis Performed on: 4/19/2018 3:01:14 PM
 Peak Analysis From Channel: 85
 Peak Analysis To Channel: 8192

Peak No.	ROI start	ROI end	Peak centroid	Energy (keV)	FWHM (keV)	Net Peak Area	Net Area Uncert.	Continuum Counts
1	296-	306	300.89	75.22	1.03	7.05E+001	36.26	1.02E+002
2	345-	355	349.98	87.50	0.31	8.42E+000	32.76	1.09E+002
3	1402-	1413	1407.96	351.99	1.03	1.66E+001	16.15	1.94E+001
4	2327-	2338	2332.83	583.21	0.49	2.01E+001	12.30	6.94E+000
5	2639-	2652	2645.62	661.40	0.73	5.52E+001	20.50	1.78E+001
6	4685-	4698	4691.94	1172.98	1.28	1.31E+001	12.32	8.86E+000
7	5832-	5853	5842.26	1460.56	1.40	1.29E+002	25.20	8.06E+000

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

Errors quoted at 2.000 sigma

 ***** 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: B102110DFSFM040GD
 Nuclide Library Used: C:\GENIE2K\CAMFILES\Zion Lib-BNL.NLB

IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)	Yield (%)	Activity (pCi/m ²)	Activity Uncertainty
K-40	1.000	1460.82*	10.66	6.25048E+005	1.33687E+005
Cs-137	1.000	661.66*	85.10	2.24899E+004	8.77855E+003
Eu-155	0.338	86.55*	30.70	5.09716E+003	1.98536E+004
		105.31	21.10		
Tl-208	1.000	583.19*	85.00	7.70570E+003	4.81698E+003
Pb-214	0.439	295.22	18.42		
		351.93*	35.60	1.18581E+004	1.16664E+004

* = Energy line found in the spectrum.
 @ = Energy line not used for Weighted Mean Activity
 Energy Tolerance : 10.000 keV
 Nuclide confidence index threshold = 0.30
 Errors quoted at 2.000 sigma

 ***** INTERFERENCE CORRECTED REPORT *****

Nuclide Name	Nuclide Id Confidence	Wt mean Activity (pCi/m ²)	Wt mean Activity Uncertainty
K-40	1.000	6.250483E+005	1.336871E+005
Cs-137	1.000	2.248995E+004 /	8.778553E+003
Eu-155	0.338	5.097156E+003	1.985363E+004
Tl-208	1.000	7.705699E+003	4.816985E+003
Pb-214	0.439	1.185814E+004	1.166642E+004

? = 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 2.000 sigma

***** UNIDENTIFIED PEAKS *****

Peak Locate Performed on: 4/19/2018 3:01:14 PM
 Peak Locate From Channel: 85
 Peak Locate To Channel: 8192

Peak No.	Energy (keV)	Peak Size in Counts per Second	Peak CPS % Uncertainty	Peak Type	Tol. Nuclide
1	75.22	1.1742E-001	51.47		
6	1172.98	2.1894E-002	93.80	Sum	

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

Errors quoted at 2.000 sigma

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

Detector Name: 5456-A
 Sample Geometry:
 Sample Title: B102110DFSFM040GD
 Nuclide Library Used: C:\GENIE2K\CAMFILES\Zion Lib-BNL.NLB

	Nuclide Name	Energy (keV)	Yield (%)	Line MDA (pCi/m ²)	Nuclide MDA (pCi/m ²)	Activity (pCi/m ²)	Dec. Level (pCi/m ²)
+	K-40	1460.82*	10.66	1.003E+005	1.00E+005	6.250E+005	4.357E+004
	Co-60	1173.23	99.85	1.477E+004	1.27E+004	7.997E+003	6.762E+003
		1332.49	99.98	1.272E+004		8.348E+003	5.698E+003
	Nb-94	702.65	99.81	9.767E+003	9.77E+003	5.451E+003	4.400E+003
		871.09	99.89	1.131E+004		6.821E+003	5.122E+003
	Ag-108m	433.90	90.50	1.262E+004	1.26E+004	4.165E+003	5.890E+003
		614.30	89.80	1.552E+004		1.490E+004	7.255E+003
		722.90	90.80	1.391E+004		3.285E+003	6.419E+003
	Cs-134	604.72	97.62	1.369E+004	1.37E+004	6.211E+003	6.384E+003
		795.86	85.46	1.455E+004		-2.744E+003	6.676E+003
+	Cs-137	661.66*	85.10	1.057E+004	1.06E+004	2.249E+004	4.733E+003
	Eu-152	121.78	28.67	5.614E+004	4.06E+004	-1.042E+004	2.725E+004
		344.28	26.60	4.059E+004		-1.416E+004	1.902E+004
		1408.01	21.07	4.829E+004		-4.201E+003	2.090E+004
	Eu-154	123.07	40.40	3.926E+004	2.93E+004	-3.514E+004	1.905E+004
		723.30	20.06	6.239E+004		1.256E+004	2.876E+004
		1274.43	34.80	2.933E+004		-7.287E+003	1.280E+004
+	Eu-155	86.55*	30.70	3.374E+004	3.37E+004	5.097E+003	1.605E+004
		105.31	21.10	7.171E+004		-2.824E+004	3.471E+004
+	Tl-208	583.19*	85.00	6.371E+003	6.37E+003	7.706E+003	2.666E+003
	Bi-212	727.33	6.67	1.747E+005	1.75E+005	1.753E+004	7.999E+004
	Pb-212	238.63	43.60	3.463E+004	3.46E+004	3.245E+003	1.667E+004
	Bi-214	609.32	45.49	3.031E+004	3.03E+004	1.799E+004	1.416E+004
		1120.29	14.92	1.020E+005		2.246E+004	4.691E+004
		1764.49	15.30	8.929E+004		1.234E+004	3.951E+004
+	Pb-214	295.22	18.42	7.199E+004	1.83E+004	2.388E+004	3.428E+004
		351.93*	35.60	1.827E+004		1.186E+004	8.171E+003
	Ra-226	186.21	3.64	4.497E+005	4.50E+005	1.294E+004	2.179E+005
	Ac-228	338.32	11.27	1.051E+005	4.86E+004	-2.358E+004	4.955E+004
		911.20	25.80	4.863E+004		3.762E+004	2.219E+004
		968.97	15.80	7.983E+004		9.242E+004	3.634E+004
	Am-241	59.54	35.90	4.340E+004	4.34E+004	1.165E+004	2.066E+004

- + = Nuclide identified during the nuclide identification
- * = Energy line found in the spectrum
- > = Calculated MDA is zero due to zero counts in the region, or the region is outside the spectrum, or MDA has not been calculated
- @ = Half-life too short to be able to perform the decay correction

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

Filename: C:\GENIE2K\CAMFILES\00004720.CNF

Report Generated On : 4/19/2018 11:43:59 AM

Sample Title : B102110DFSFM041GD
Sample Description : U2 CTMNT
Sample Identification : 041
Sample Type : GAMMA DIRECT
Sample Geometry :

Peak Locate Threshold : 3.00
Peak Locate Range (in channels) : 85 - 8192
Peak Area Range (in channels) : 85 - 8192
Identification Energy Tolerance : 10.000 keV

Sample Size : 1.134E+001 M^2

Sample Taken On : 4/13/2018 9:12:00 AM
Acquisition Started : 4/13/2018 9:13:00 AM

Live Time : 600.0 seconds
Real Time : 600.2 seconds

Dead Time : 0.03 %

Energy Calibration Used Done On : 3/15/2018
Efficiency Calibration Used Done On : 4/19/2018
Efficiency ID : 1.9M0.153CMLINER

*Data Validated
4/19/18 1356
DR Mihalek*

 ***** P E A K A N A L Y S I S R E P O R T *****

Detector Name: 5456-A
 Sample Title: B102110DFSFM041GD
 Peak Analysis Performed on: 4/19/2018 11:43:58 AM
 Peak Analysis From Channel: 85
 Peak Analysis To Channel: 8192

Peak No.	ROI start	ROI end	Peak centroid	Energy (keV)	FWHM (keV)	Net Peak Area	Net Area Uncert.	Continuum Counts
1	295-	307	299.43	74.86	0.39	5.84E+001	49.83	1.95E+002
2	2327-	2338	2332.17	583.04	0.42	1.55E+001	13.34	1.15E+001
3	2638-	2652	2645.21	661.30	1.14	7.70E+001	21.95	1.50E+001
4	5325-	5338	5331.47	1332.87	0.95	2.31E+001	14.18	8.86E+000
5	5833-	5853	5842.78	1460.69	2.05	1.50E+002	26.25	5.67E+000
6	7052-	7067	7059.86	1764.96	0.29	2.00E+001	8.94	0.00E+000

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

Errors quoted at 2.000 sigma

 ***** 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: B102110DFSFM041GD
 Nuclide Library Used: C:\GENIE2K\CAMFILES\Zion Lib-BNL.NLB

IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)	Yield (%)	Activity (pCi/M^2)	Activity Uncertainty
K-40	1.000	1460.82*	10.66	7.28742E+005	1.42135E+005
Cs-137	1.000	661.66*	85.10	3.13531E+004 ✓	9.70105E+003
Tl-208	1.000	583.19*	85.00	5.96164E+003	5.17559E+003

* = Energy line found in the spectrum.
 @ = Energy line not used for Weighted Mean Activity
 Energy Tolerance : 10.000 keV
 Nuclide confidence index threshold = 0.30
 Errors quoted at 2.000 sigma

 ***** INTERFERENCE CORRECTED REPORT *****

Nuclide Name	Nuclide Id Confidence	Wt mean Activity (pCi/M^2)	Wt mean Activity Uncertainty
K-40	1.000	7.287421E+005	1.421354E+005
Cs-137	1.000	3.135315E+004	9.701051E+003
Tl-208	1.000	5.961643E+003	5.175594E+003

? = 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 2.000 sigma

***** UNIDENTIFIED PEAKS *****

Peak Locate Performed on: 4/19/2018 11:43:58 AM
 Peak Locate From Channel: 85
 Peak Locate To Channel: 8192

Peak No.	Energy (keV)	Peak Size in Counts per Second	Peak CPS % Uncertainty	Peak Type	Tol. Nuclide
1	74.86	9.7355E-002	85.30		
4	1332.87	3.8568E-002	61.27		
6	1764.96	3.3333E-002	44.72	Tol.	Bi-214

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

Errors quoted at 2.000 sigma

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

Detector Name: 5456-A
 Sample Geometry:
 Sample Title: B102110DFSFM041GD
 Nuclide Library Used: C:\GENIE2K\CAMFILES\Zion Lib-BNL.NLB

	Nuclide Name	Energy (keV)	Yield (%)	Line MDA (pCi/M ²)	Nuclide MDA (pCi/M ²)	Activity (pCi/M ²)	Dec. Level (pCi/M ²)
+	K-40	1460.82*	10.66	8.791E+004	8.79E+004	7.287E+005	3.739E+004
	Co-60	1173.23	99.85	1.590E+004	1.59E+004	3.951E+003	7.330E+003
		1332.49	99.98	1.627E+004		2.107E+004✓	7.473E+003
	Nb-94	702.65	99.81	1.225E+004	1.08E+004	1.418E+004	5.640E+003
		871.09	99.89	1.080E+004		-2.574E+003	4.867E+003
	Ag-108m	433.90	90.50	1.315E+004	1.31E+004	4.385E+003	6.152E+003
		614.30	89.80	1.603E+004		6.989E+003	7.510E+003
		722.90	90.80	1.482E+004		3.694E+003	6.871E+003
	Cs-134	604.72	97.62	1.445E+004	1.45E+004	1.183E+004✓	6.765E+003
		795.86	85.46	1.689E+004		6.932E+003	7.846E+003
+	Cs-137	661.66*	85.10	9.937E+003	9.94E+003	3.135E+004	4.417E+003
	Eu-152	121.78	28.67	6.134E+004	4.67E+004	-2.852E+003	2.985E+004
		344.28	26.60	4.669E+004		-4.108E+004	2.207E+004
		1408.01	21.07	5.889E+004	0↓	-2.281E+004	2.619E+004
	Eu-154	123.07	40.40	4.466E+004	3.09E+004	-3.345E+002	2.175E+004
		723.30	20.06	6.709E+004		2.750E+004✓	3.111E+004
		1274.43	34.80	3.088E+004		-4.204E+003	1.358E+004
	Eu-155	86.55	30.70	5.962E+004	5.96E+004	1.018E+004	2.898E+004
		105.31	21.10	8.513E+004		-2.346E+004	4.142E+004
+	Tl-208	583.19*	85.00	7.844E+003	7.84E+003	5.962E+003	3.402E+003
	Bi-212	727.33	6.67	1.971E+005	1.97E+005	2.690E+004	9.121E+004
	Pb-212	238.63	43.60	3.610E+004	3.61E+004	1.570E+004	1.740E+004
	Bi-214	609.32	45.49	3.152E+004	3.15E+004	3.150E+004	1.477E+004
		1120.29	14.92	8.080E+004		-2.271E+004	3.634E+004
		1764.49	15.30	9.314E+004		8.354E+004	4.143E+004
	Pb-214	295.22	18.42	7.686E+004	3.72E+004	8.057E+004	3.672E+004
		351.93	35.60	3.719E+004		1.335E+004	1.763E+004
	Ra-226	186.21	3.64	5.091E+005	5.09E+005	2.649E+005	2.476E+005
	Ac-228	338.32	11.27	1.103E+005	4.49E+004	3.865E+003	5.215E+004
		911.20	25.80	4.487E+004		-2.127E+004	2.031E+004
		968.97	15.80	9.226E+004		-9.833E+003	4.256E+004
	Am-241	59.54	35.90	5.055E+004	5.06E+004	-3.832E+004	2.423E+004

- + = Nuclide identified during the nuclide identification
- * = Energy line found in the spectrum
- > = Calculated MDA is zero due to zero counts in the region, or the region is outside the spectrum, or MDA has not been calculated
- @ = Half-life too short to be able to perform the decay correction

***** GAMMA SPECTRUM ANALYSIS *****

Filename: C:\GENIE2K\CAMFILES\00004763.CNF

Report Generated On : 4/19/2018 11:52:45 AM

Sample Title : B102110DFSFM042GD
Sample Description : U2 CTMNT
Sample Identification : 042
Sample Type : GAMMA DIRECT
Sample Geometry :

Peak Locate Threshold : 3.00
Peak Locate Range (in channels) : 85 - 8192
Peak Area Range (in channels) : 85 - 8192
Identification Energy Tolerance : 10.000 keV

Sample Size : 1.134E+001 M²

Sample Taken On : 4/13/2018 9:32:00 AM
Acquisition Started : 4/13/2018 9:31:33 AM

Live Time : 600.0 seconds
Real Time : 600.3 seconds

Dead Time : 0.05 %

Energy Calibration Used Done On : 3/15/2018
Efficiency Calibration Used Done On : 4/19/2018
Efficiency ID : 1.9M0.153CMLINER

Data Validated
4/19/18 1403
DR Mihail

***** P E A K A N A L Y S I S R E P O R T *****

Detector Name: 5456-A
Sample Title: B102110DFSFM042GD
Peak Analysis Performed on: 4/19/2018 11:52:45 AM
Peak Analysis From Channel: 85
Peak Analysis To Channel: 8192

Peak No.	ROI start	ROI end	Peak centroid	Energy (keV)	FWHM (keV)	Net Peak Area	Net Area Uncert.	Continuum Counts
1	295-	310	300.16	75.04	0.34	1.04E+002	60.43	2.53E+002
2	2430-	2442	2436.08	609.02	0.66	3.99E+001	15.65	8.10E+000
3	2635-	2656	2645.73	661.43	1.57	2.27E+002	39.66	4.40E+001
4	4684-	4698	4691.21	1172.80	1.07	2.88E+001	14.95	9.22E+000
5	5324-	5338	5330.47	1332.62	0.34	3.11E+001	14.00	5.91E+000
6	5832-	5856	5843.59	1460.90	2.03	1.75E+002	26.46	0.00E+000

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

Errors quoted at 2.000 sigma

 ***** 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: B102110DFSFM042GD
 Nuclide Library Used: C:\GENIE2K\CAMFILES\Zion Lib-BNL.NLB

IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)	Yield (%)	Activity (pCi/M^2)	Activity Uncertainty
K-40	1.000	1460.82*	10.66	8.48423E+005	1.47922E+005
Co-60	1.000	1173.23*	99.85	1.32265E+004	6.95209E+003
		1332.49*	99.98	1.52306E+004	6.96712E+003
Cs-137	1.000	661.66*	85.10	9.24627E+004	1.96065E+004
Bi-214	0.440	609.32*	45.49	2.92372E+004	1.19928E+004
		1120.29	14.92		
		1764.49	15.30		

* = Energy line found in the spectrum.
 @ = Energy line not used for Weighted Mean Activity
 Energy Tolerance : 10.000 keV
 Nuclide confidence index threshold = 0.30
 Errors quoted at 2.000 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 (pCi/M^2)	Wt mean Activity Uncertainty
K-40	1.000	8.484228E+005	1.479218E+005
Co-60	1.000	1.422640E+004√	4.921174E+003
Cs-137	1.000	9.246265E+004J	1.960645E+004
Bi-214	0.440	2.923724E+004	1.199283E+004

? = 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 2.000 sigma

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

Peak Locate Performed on: 4/19/2018 11:52:45 AM
 Peak Locate From Channel: 85
 Peak Locate To Channel: 8192

Peak No.	Energy (keV)	Peak Size in Counts per Second	Peak CPS % Uncertainty	Peak Type	Tol. Nuclide
1	75.04	1.7403E-001	57.87		

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

Errors quoted at 2.000 sigma

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

Detector Name: 5456-A
 Sample Geometry:
 Sample Title: B102110DFSFM042GD
 Nuclide Library Used: C:\GENIE2K\CAMFILES\Zion Lib-BNL.NLB

	Nuclide Name	Energy (keV)	Yield (%)	Line MDA (pCi/M ²)	Nuclide MDA (pCi/M ²)	Activity (pCi/M ²)	Dec. Level (pCi/M ²)
+	K-40	1460.82*	10.66	1.312E+004	1.31E+004	8.484E+005	0.000E+000
+	Co-60	1173.23*	99.85	9.115E+003	8.15E+003	1.323E+004	3.936E+003
		1332.49*	99.98	8.150E+003		1.523E+004	3.412E+003
	Nb-94	702.65	99.81	1.162E+004	1.16E+004	-3.411E+003	5.324E+003
		871.09	99.89	1.195E+004		-5.036E+003	5.442E+003
	Ag-108m	433.90	90.50	1.397E+004	1.35E+004	7.478E+003	6.565E+003
		614.30	89.80	1.671E+004		-1.848E+004	7.853E+003
		722.90	90.80	1.351E+004		-3.843E+003	6.215E+003
	Cs-134	604.72	97.62	1.578E+004	1.32E+004	8.593E+003	7.428E+003
		795.86	85.46	1.321E+004		-1.847E+004	6.007E+003
+	Cs-137	661.66*	85.10	1.839E+004	1.84E+004	9.246E+004	8.644E+003
	Eu-152	121.78	28.67	6.922E+004	4.94E+004	5.701E+003✓	3.379E+004
		344.28	26.60	4.944E+004		-2.552E+004	2.344E+004
		1408.01	21.07	6.968E+004		3.901E+004	3.159E+004
	Eu-154	123.07	40.40	4.946E+004	3.76E+004	2.372E+004✓	2.415E+004
		723.30	20.06	6.300E+004		3.343E+003	2.906E+004
		1274.43	34.80	3.759E+004		2.817E+004	1.694E+004
	Eu-155	86.55	30.70	6.685E+004	6.68E+004	2.641E+004	3.260E+004
		105.31	21.10	9.690E+004		1.301E+005	4.730E+004
	Tl-208	583.19	85.00	1.762E+004	1.76E+004	1.629E+004	8.289E+003
	Bi-212	727.33	6.67	1.989E+005	1.99E+005	3.675E+004	9.208E+004
	Pb-212	238.63	43.60	4.107E+004	4.11E+004	2.978E+004	1.988E+004
+	Bi-214	609.32*	45.49	1.311E+004	1.31E+004	2.924E+004	5.565E+003
		1120.29	14.92	1.020E+005		4.983E+004	4.691E+004
		1764.49	15.30	7.148E+004		4.557E+004	3.060E+004
	Pb-214	295.22	18.42	8.883E+004	4.19E+004	3.917E+004	4.270E+004
		351.93	35.60	4.187E+004		1.573E+004	1.997E+004
	Ra-226	186.21	3.64	5.583E+005	5.58E+005	6.445E+005	2.722E+005
	Ac-228	338.32	11.27	1.218E+005	5.15E+004	-1.767E+004	5.790E+004
		911.20	25.80	5.153E+004		4.352E+004	2.365E+004
		968.97	15.80	9.658E+004		-8.529E+004	4.472E+004
	Am-241	59.54	35.90	5.805E+004	5.80E+004	1.944E+004	2.798E+004

+ = Nuclide identified during the nuclide identification
 * = Energy line found in the spectrum
 > = Calculated MDA is zero due to zero counts in the region, or the region is outside the spectrum, or MDA has not been calculated
 @ = Half-life too short to be able to perform the decay correction

***** GAMMA SPECTRUM ANALYSIS *****

Filename: 5456-A

Report Generated On : 4/13/2018 8:26:03 AM

Sample Title : B102110DFSCC043GD
Sample Description : U2 CTMNT
Sample Identification : 043
Sample Type : GAMMA DIRECT
Sample Geometry :

Peak Locate Threshold : 3.00
Peak Locate Range (in channels) : 85 - 8192
Peak Area Range (in channels) : 85 - 8192
Identification Energy Tolerance : 10.000 keV

Sample Size : 1.256E+001 M^2

Sample Taken On : 4/13/2018 8:13:00 AM
Acquisition Started : 4/13/2018 8:16:01 AM

Live Time : 600.0 seconds
Real Time : 600.4 seconds

Dead Time : 0.07 %

Energy Calibration Used Done On : 3/15/2018
Efficiency Calibration Used Done On : 1/23/2018
Efficiency ID : 2M90D_ECP_17.8CM

*Date Validated
4/16/18 1649
WR Mihalik*

 ***** P E A K A N A L Y S I S R E P O R T *****

Detector Name: 5456-A
 Sample Title: B102110DFSCC043GD
 Peak Analysis Performed on: 4/13/2018 8:26:02 AM
 Peak Analysis From Channel: 85
 Peak Analysis To Channel: 8192

Peak No.	ROI start	ROI end	Peak centroid	Energy (keV)	FWHM (keV)	Net Peak Area	Net Area Uncert.	Continuum Counts
1	126-	134	129.40	32.35	0.54	5.92E+001	28.76	5.28E+001
2	285-	309	299.90	74.98	0.84	3.69E+002	99.34	5.08E+002
3	332-	345	340.14	85.04	0.78	9.47E+001	63.30	3.29E+002
4	2131-	2142	2136.53	534.13	0.39	7.42E+000	18.62	3.16E+001
5	2428-	2445	2436.72	609.18	1.27	5.65E+001	25.16	3.05E+001
6	2632-	2657	2645.07	661.27	1.58	3.31E+003	116.88	2.60E+001
7	3637-	3650	3643.26	910.82	0.55	1.87E+001	13.65	9.26E+000
8	4681-	4700	4690.93	1172.73	0.85	7.34E+001	18.19	2.58E+000
9	5319-	5336	5328.12	1332.03	1.50	6.75E+001	18.18	4.54E+000
10	5831-	5852	5842.07	1460.52	1.74	1.32E+002	23.84	2.64E+000
11	7050-	7065	7057.33	1764.33	0.50	2.00E+001	8.94	0.00E+000

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

Errors quoted at 2.000 sigma

 ***** 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: B102110DFSCC043GD
 Nuclide Library Used: C:\GENIE2K\CAMFILES\Zion Lib-BNL.NLB

IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)	Yield (%)	Activity (pCi/M ²)	Activity Uncertainty
K-40	1.000	1460.82*	10.66	1.61111E+006	3.22133E+005
Co-60	1.000	1173.23*	99.85	8.95386E+004	2.33114E+004
		1332.49*	99.98	8.49225E+004	2.38726E+004
Cs-137	1.000	661.66*	85.10	4.12005E+006	5.15794E+005
Eu-155	0.332	86.55*	30.70	2.62039E+005	1.82774E+005
		105.31	21.10		
Bi-214	0.694	609.32*	45.49	1.28941E+005	5.95159E+004
		1120.29	14.92		
		1764.49*	15.30	1.82329E+005	8.28375E+004

* = Energy line found in the spectrum.
 @ = Energy line not used for Weighted Mean Activity
 Energy Tolerance : 10.000 keV
 Nuclide confidence index threshold = 0.30
 Errors quoted at 2.000 sigma

 ***** INTERFERENCE CORRECTED REPORT *****

Nuclide Name	Nuclide Id Confidence	Wt mean Activity (pCi/M ²)	Wt mean Activity Uncertainty
K-40	1.000	1.611112E+006	3.221326E+005
Co-60	1.000	8.728544E+004 ✓	1.667855E+004
Cs-137	1.000	4.120052E+006 ✓	5.157936E+005
Eu-155	0.332	2.620393E+005	1.827741E+005
Bi-214	0.694	1.471169E+005	4.833435E+004

? = 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 2.000 sigma

***** UNIDENTIFIED PEAKS *****

Peak Locate Performed on: 4/13/2018 8:26:02 AM
 Peak Locate From Channel: 85
 Peak Locate To Channel: 8192

Peak No.	Energy (keV)	Peak Size in Counts per Second	Peak CPS % Uncertainty	Peak Type	Tol. Nuclide
1	32.35	9.8683E-002	48.57		
2	74.98	6.1474E-001	26.93		
4	534.13	1.2372E-002	250.84		
7	910.82	3.1235E-002	72.83	Tol.	Ac-228

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

Errors quoted at 2.000 sigma

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

Detector Name: 5456-A
 Sample Geometry:
 Sample Title: B102110DFSCC043GD
 Nuclide Library Used: C:\GENIE2K\CAMFILES\Zion Lib-BNL.NLB

	Nuclide Name	Energy (keV)	Yield (%)	Line MDA (pCi/M ²)	Nuclide MDA (pCi/M ²)	Activity (pCi/M ²)	Dec. Level (pCi/M ²)
+	K-40	1460.82*	10.66	1.577E+005	1.58E+005	1.611E+006	6.237E+004
+	Co-60	1173.23*	99.85	1.554E+004	1.55E+004	8.954E+004	6.119E+003
		1332.49*	99.98	1.953E+004		8.492E+004	8.064E+003
	Nb-94	702.65	99.81	3.299E+004	3.30E+004	1.238E+004	1.504E+004
		871.09	99.89	3.752E+004		6.679E+003	1.723E+004
	Ag-108m	433.90	90.50	8.864E+004	4.20E+004	5.149E+004	4.290E+004
		614.30	89.80	6.534E+004		-9.280E+003	3.110E+004
		722.90	90.80	4.204E+004		2.553E+004	1.941E+004
	Cs-134	604.72	97.62	6.360E+004	4.48E+004	1.286E+004✓	3.036E+004
		795.86	85.46	4.477E+004		1.732E+004	2.064E+004
+	Cs-137	661.66*	85.10	4.646E+004	4.65E+004	4.120E+006	2.155E+004
	Eu-152	121.78	28.67	3.448E+005	1.19E+005	-3.141E+004	1.689E+005
		344.28	26.60	2.886E+005		-3.589E+003	1.398E+005
		1408.01	21.07	1.185E+005	o✓	-6.704E+004	5.103E+004
	Eu-154	123.07	40.40	2.430E+005	7.83E+004	1.395E+005✓	1.190E+005
		723.30	20.06	1.903E+005		8.831E+004	8.787E+004
		1274.43	34.80	7.827E+004		-5.263E+004	3.430E+004
+	Eu-155	86.55*	30.70	2.816E+005	2.82E+005	2.620E+005	1.370E+005
		105.31	21.10	5.048E+005		4.728E+005	2.474E+005
	Tl-208	583.19	85.00	5.836E+004	5.84E+004	1.953E+004	2.755E+004
	Bi-212	727.33	6.67	5.161E+005	5.16E+005	-8.593E+005	2.361E+005
	Pb-212	238.63	43.60	2.030E+005	2.03E+005	1.824E+005	9.904E+004
+	Bi-214	609.32*	45.49	8.199E+004	2.47E+004	1.289E+005	3.791E+004
		1120.29	14.92	2.926E+005		4.237E+004	1.354E+005
		1764.49*	15.30	2.467E+004		1.823E+005	0.000E+000
	Pb-214	295.22	18.42	4.476E+005	2.19E+005	-1.403E+004	2.176E+005
		351.93	35.60	2.186E+005		1.404E+005	1.059E+005
	Ra-226	186.21	3.64	2.534E+006	2.53E+006	1.992E+006	1.239E+006
	Ac-228	338.32	11.27	6.798E+005	1.68E+005	-9.805E+005	3.293E+005
		911.20	25.80	1.676E+005		1.263E+005	7.782E+004
		968.97	15.80	2.666E+005		1.491E+005	1.233E+005
	Am-241	59.54	35.90	3.588E+005	3.59E+005	1.527E+005	1.748E+005

+ = Nuclide identified during the nuclide identification

* = Energy line found in the spectrum

> = Calculated MDA is zero due to zero counts in the region, or the region is outside the spectrum, or MDA has not been calculated

@ = Half-life too short to be able to perform the decay correction

***** GAMMA SPECTRUM ANALYSIS *****

filename: C:\GENIE2K\CAMFILES\00004680.CNF

Report Generated On : 4/13/2018 11:24:53 AM

Sample Title : B102110DFSCC044GD
Sample Description : U2 CTMNT UNDERVESSEL CEILING
Sample Identification : 044
Sample Type : GAMMA DIRECT
Sample Geometry :

Peak Locate Threshold : 3.00
Peak Locate Range (in channels) : 85 - 8192
Peak Area Range (in channels) : 85 - 8192
Identification Energy Tolerance : 10.000 keV

Sample Size : 1.256E+001 M^2

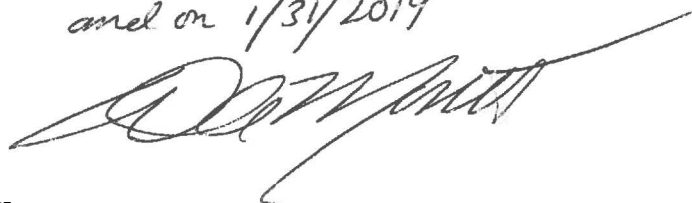
Sample Taken On : 4/12/2018 2:37:00 PM
Acquisition Started : 4/12/2018 2:37:33 PM

Live Time : 600.0 seconds
Real Time : 600.6 seconds

Dead Time : 0.11 %

Energy Calibration Used Done On : 3/15/2018
Efficiency Calibration Used Done On : 1/23/2018
Efficiency ID : 2M90D_ECP_17.8CM

Data Validated
4/13/18 1542
and on 1/31/2019



 ***** P E A K A N A L Y S I S R E P O R T *****

Detector Name: 5456-A
 Sample Title: B102110DFSCC044GD
 Peak Analysis Performed on: 4/13/2018 11:24:52 AM
 Peak Analysis From Channel: 85
 Peak Analysis To Channel: 8192

Peak No.	ROI start	ROI end	Peak centroid	Energy (keV)	FWHM (keV)	Net Peak Area	Net Area Uncert.	Continuum Counts
1	126-	155	129.66	32.42	0.98	3.43E+002	78.54	2.16E+002
2	287-	309	301.03	75.26	0.99	4.70E+002	108.58	6.39E+002
3	332-	345	340.83	85.21	0.86	1.09E+002	71.65	4.26E+002
4	947-	962	954.58	238.64	0.62	5.89E+001	55.92	2.40E+002
5	1369-	1413	1408.01	352.00	0.83	7.86E+001	102.21	3.82E+002
6	2427-	2445	2436.41	609.10	0.87	6.26E+001	27.97	3.84E+001
7	2634-	2658	2645.67	661.42	1.46	3.63E+003	123.35	4.33E+001
8	3108-	3120	3114.15	778.54	0.63	3.11E+001	13.29	4.92E+000
9	4684-	4699	4692.22	1173.06	1.14	6.80E+001	21.54	1.60E+001
10	5320-	5339	5329.80	1332.45	1.94	9.70E+001	19.70	0.00E+000
11	5624-	5637	5630.97	1407.74	0.82	1.97E+001	11.74	5.29E+000
12	5833-	5854	5843.08	1460.77	1.32	1.35E+002	26.23	1.02E+001

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

Errors quoted at 2.000 sigma

 ***** 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: B102110DFSCC044GD
 Nuclide Library Used: C:\GENIE2K\CAMFILES\Zion Lib-BNL.NLB

IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)	Yield (%)	Activity (pCi/M^2)	Activity Uncertainty
K-40	1.000	1460.82*	10.66	1.64097E+006	3.49700E+005
Co-60	1.000	1173.23*	99.85	8.29293E+004	2.70967E+004
		1332.49*	99.98	1.22122E+005	2.66543E+004
Cs-137	1.000	661.66*	85.10	4.52002E+006	5.64180E+005
Eu-152	0.303	121.78	28.67		
		344.28*	26.60	2.63398E+005	3.45128E+005
		1408.01*	21.07	1.19914E+005	7.20888E+004
Eu-155	0.332	86.55*	30.70	3.00437E+005	2.06733E+005
		105.31	21.10		
Pb-212	1.000	238.63*	43.60	1.07439E+005	1.03539E+005
Bi-214	0.403	609.32*	45.49	1.42925E+005	6.61432E+004
		1120.29	14.92		
		1764.49	15.30		
Pb-214	0.445	295.22	18.42		
		351.93*	35.60	1.96809E+005	2.57771E+005

* = Energy line found in the spectrum.
 @ = Energy line not used for Weighted Mean Activity
 Energy Tolerance : 10.000 keV
 Nuclide confidence index threshold = 0.30
 Errors quoted at 2.000 sigma

 ***** INTERFERENCE CORRECTED REPORT *****

Nuclide Name	Nuclide Id Confidence	Wt mean Activity (pCi/M^2)	Wt mean Activity Uncertainty
K-40	1.000	1.640965E+006	3.497000E+005
Co-60	1.000	1.028483E+005✓	1.900192E+004
Cs-137	1.000	4.520022E+006✓	5.641803E+005
Eu-152	0.303	1.199144E+005✓	7.208881E+004
Eu-155	0.332	3.004372E+005	2.067332E+005
Pb-212	1.000	1.074390E+005	1.035392E+005
Bi-214	0.403	1.429249E+005	6.614316E+004
Pb-214	0.445	1.072099E+005	2.633377E+005

? = 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 2.000 sigma

***** UNIDENTIFIED PEAKS *****

Peak Locate Performed on: 4/13/2018 11:24:52 AM
Peak Locate From Channel: 85
Peak Locate To Channel: 8192

Peak No.	Energy (keV)	Peak Size in Counts per Second	Peak CPS % Uncertainty	Peak Type	Tol. Nuclide
1	32.42	5.7217E-001	22.88		
2	75.26	7.8393E-001	23.08		
8	778.54	5.1794E-002	42.78		

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

Errors quoted at 2.000 sigma

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

Detector Name: 5456-A
 Sample Geometry:
 Sample Title: B102110DFSCC044GD
 Nuclide Library Used: C:\GENIE2K\CAMFILES\Zion Lib-BNL.NLB

	Nuclide Name	Energy (keV)	Yield (%)	Line MDA (pCi/M ²)	Nuclide MDA (pCi/M ²)	Activity (pCi/M ²)	Dec. Level (pCi/M ²)
+	K-40	1460.82*	10.66	2.774E+005	2.77E+005	1.641E+006	1.222E+005
+	Co-60	1173.23*	99.85	3.110E+004	3.41E+003	8.293E+004	1.390E+004
		1332.49*	99.98	3.407E+003		1.221E+005	0.000E+000
	Nb-94	702.65	99.81	3.540E+004	3.54E+004	-2.161E+004	1.624E+004
		871.09	99.89	4.477E+004		8.069E+001	2.086E+004
	Ag-108m	433.90	90.50	9.281E+004	4.72E+004	5.621E+004	4.499E+004
		614.30	89.80	7.158E+004		7.374E+003	3.422E+004
		722.90	90.80	4.724E+004		1.925E+004	2.201E+004
	Cs-134	604.72	97.62	6.712E+004	4.39E+004	4.248E+003✓	3.212E+004
		795.86	85.46	4.389E+004		-5.542E+003	2.019E+004
+	Cs-137	661.66*	85.10	5.811E+004	5.81E+004	4.520E+006	2.737E+004
+	Eu-152	121.78	28.67	4.081E+005	9.34E+004	5.055E+004	2.005E+005
		344.28*	26.60	5.638E+005		2.634E+005	2.774E+005
		1408.01*	21.07	9.338E+004		1.199E+005	3.846E+004
	Eu-154	123.07	40.40	2.893E+005	8.03E+004	1.532E+005✓	1.422E+005
		723.30	20.06	2.058E+005		-1.247E+004	9.560E+004
		1274.43	34.80	8.026E+004		-2.394E+004	3.529E+004
+	Eu-155	86.55*	30.70	3.188E+005	3.19E+005	3.004E+005	1.556E+005
		105.31	21.10	5.598E+005		-8.575E+004	2.749E+005
	Tl-208	583.19	85.00	6.738E+004	6.74E+004	9.761E+003	3.206E+004
	Bi-212	727.33	6.67	6.344E+005	6.34E+005	-1.967E+005	2.952E+005
+	Pb-212	238.63*	43.60	1.664E+005	1.66E+005	1.074E+005	8.073E+004
+	Bi-214	609.32*	45.49	9.282E+004	9.28E+004	1.429E+005	4.332E+004
		1120.29	14.92	3.053E+005		-3.126E+005	1.417E+005
		1764.49	15.30	2.720E+005		3.100E+005	1.237E+005
+	Pb-214	295.22	18.42	4.636E+005	4.21E+005	1.820E+003	2.256E+005
		351.93*	35.60	4.212E+005		1.968E+005	2.072E+005
	Ra-226	186.21	3.64	2.719E+006	2.72E+006	-9.879E+005	1.332E+006
	Ac-228	338.32	11.27	7.073E+005	1.63E+005	-1.565E+005	3.431E+005
		911.20	25.80	1.635E+005		1.421E+005	7.574E+004
		968.97	15.80	2.935E+005		3.182E+004	1.368E+005
	Am-241	59.54	35.90	4.201E+005	4.20E+005	4.550E+005	2.054E+005

+ = Nuclide identified during the nuclide identification

* = Energy line found in the spectrum

> = Calculated MDA is zero due to zero counts in the region, or the region is outside the spectrum, or MDA has not been calculated

@ = Half-life too short to be able to perform the decay correction

***** GAMMA SPECTRUM ANALYSIS *****

Filename: C:\GENIE2K\CAMFILES\00004681.CNF

Report Generated On : 4/13/2018 11:22:10 AM

Sample Title : B102110DFSCC045GD
Sample Description : U2 CTMNT UNDERVESSEL CEILING
Sample Identification : 045
Sample Type : GAMMA DIRECT
Sample Geometry :

Peak Locate Threshold : 3.00
Peak Locate Range (in channels) : 85 - 8192
Peak Area Range (in channels) : 85 - 8192
Identification Energy Tolerance : 10.000 keV

Sample Size : 1.256E+001 M^2

Sample Taken On : 4/12/2018 2:52:00 PM
Acquisition Started : 4/12/2018 2:52:51 PM

Live Time : 600.0 seconds
Real Time : 600.9 seconds

Dead Time : 0.15 %

Energy Calibration Used Done On : 3/15/2018
Efficiency Calibration Used Done On : 1/23/2018
Efficiency ID : 2M90D_ECP_17.8CM

Data Validated
4/13/18 1550
WR Mubahl

 ***** P E A K A N A L Y S I S R E P O R T *****

Detector Name: 5456-A
 Sample Title: B102110DFSCC045GD
 Peak Analysis Performed on: 4/13/2018 11:22:09 AM
 Peak Analysis From Channel: 85
 Peak Analysis To Channel: 8192

Peak No.	ROI start	ROI end	Peak centroid	Energy (keV)	FWHM (keV)	Net Peak Area	Net Area Uncert.	Continuum Counts
1	126-	166	129.76	32.44	0.83	5.90E+002	109.29	3.59E+002
2	285-	311	300.97	75.24	1.23	7.63E+002	142.92	9.90E+002
3	332-	346	340.26	85.06	0.62	1.01E+002	93.33	7.17E+002
4	483-	494	487.94	121.99	1.01	2.40E+002	73.65	4.43E+002
5	566-	579	570.24	142.56	0.45	-1.54E+001	70.30	4.51E+002
6	1178-	1187	1182.33	295.58	0.53	4.36E+001	35.08	1.16E+002
7	1369-	1416	1377.25	344.31	1.19	2.72E+002	116.65	4.46E+002
8	2428-	2444	2436.17	609.04	0.91	6.43E+001	31.49	5.87E+001
9	2635-	2658	2645.69	661.42	1.44	3.30E+003	120.03	7.40E+001
10	3106-	3123	3114.43	778.61	1.38	8.46E+001	26.89	2.94E+001
11	3637-	3650	3643.41	910.85	0.55	1.74E+001	17.18	1.96E+001
12	3847-	3863	3854.71	963.68	1.53	1.03E+002	28.29	3.12E+001
13	4336-	4366	4342.95	1085.74	1.08	7.03E+001	33.16	3.88E+001
14	4439-	4487	4446.70	1111.68	1.15	1.02E+002	40.17	4.40E+001
15	4682-	4702	4692.36	1173.09	1.35	1.61E+002	31.48	2.37E+001
16	5319-	5339	5329.16	1332.29	1.05	1.71E+002	28.29	7.94E+000
17	5621-	5643	5631.34	1407.84	1.54	1.52E+002	24.66	0.00E+000
18	5833-	5855	5843.59	1460.90	1.99	1.39E+002	24.44	2.70E+000
19	7051-	7066	7058.14	1764.54	0.71	2.40E+001	9.80	0.00E+000

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

Errors quoted at 2.000 sigma

 ***** 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: B102110DFSCC045GD
 Nuclide Library Used: C:\GENIE2K\CAMFILES\Zion Lib-BNL.NLB

IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)	Yield (%)	Activity (pCi/M^2)	Activity Uncertainty
K-40	1.000	1460.82*	10.66	1.69584E+006	3.31990E+005
Co-60	1.000	1173.23*	99.85	1.96678E+005	4.14882E+004
		1332.49*	99.98	2.15353E+005	3.95642E+004
Cs-137	1.000	661.66*	85.10	4.11034E+006	5.15800E+005
Eu-152	1.000	121.78*	28.67	6.18939E+005	2.27098E+005
		344.28*	26.60	9.05508E+005	4.15817E+005
		1408.01*	21.07	9.24778E+005	1.67269E+005
Eu-155	0.332	86.55*	30.70	2.79173E+005	2.64045E+005
		105.31	21.10		
Bi-214	0.977	609.32*	45.49	1.46843E+005	7.40417E+004
		1120.29*	14.92	8.21791E+005	3.30200E+005
		1764.49*	15.30	2.18805E+005	9.10295E+004
Pb-214	0.941	295.22*	18.42	2.00326E+005	1.64470E+005
		351.93*	35.60	6.76587E+005	3.09663E+005
Ac-228	0.975	338.32*	11.27	2.13722E+006	9.80788E+005
		911.20*	25.80	7.71644E+004	7.63949E+004
		968.97*	15.80	7.54330E+005	2.18187E+005

* = Energy line found in the spectrum.
 @ = Energy line not used for Weighted Mean Activity
 Energy Tolerance : 10.000 keV
 Nuclide confidence index threshold = 0.30
 Errors quoted at 2.000 sigma

 ***** INTERFERENCE CORRECTED REPORT *****

Nuclide Name	Nuclide Id Confidence	Wt mean Activity (pCi/M^2)	Wt mean Activity Uncertainty
K-40	1.000	1.695835E+006	3.319901E+005
Co-60	1.000	2.064587E+005✓	2.863210E+004
Cs-137	1.000	4.110339E+006✓	5.158002E+005
Eu-152	1.000	7.986455E+005✓	1.294571E+005
Eu-155	0.332	2.791729E+005	2.640447E+005
Bi-214	0.977	1.944783E+005	5.659020E+004
Pb-214	0.941	1.633704E+005	1.468742E+005
Ac-228	0.975	1.499603E+005	7.186241E+004

? = 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 2.000 sigma

***** UNIDENTIFIED PEAKS *****

Peak Locate Performed on: 4/13/2018 11:22:09 AM
Peak Locate From Channel: 85
Peak Locate To Channel: 8192

Peak No.	Energy (keV)	Peak Size in Counts per Second	Peak CPS % Uncertainty	Peak Type	Tol. Nuclide
1	32.44	9.8341E-001	18.52		
2	75.24	1.2711E+000	18.74		
5	142.56	-2.5629E-002	-457.17	D-Esc.	
10	778.61	1.4105E-001	31.78	Sum	
13	1085.74	1.1708E-001	47.20	Sum	

M = First peak in a multiplet region

m = Other peak in a multiplet region

F = Fitted singlet

Errors quoted at 2,000 sigma

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

Detector Name: 5456-A
 Sample Geometry:
 Sample Title: B102110DFSCC045GD
 Nuclide Library Used: C:\GENIE2K\CAMFILES\Zion Lib-BNL.NLB

	Nuclide Name	Energy (keV)	Yield (%)	Line MDA (pCi/M ²)	Nuclide MDA (pCi/M ²)	Activity (pCi/M ²)	Dec. Level (pCi/M ²)
+	K-40	1460.82*	10.66	1.599E+005	1.60E+005	1.696E+006	6.346E+004
+	Co-60	1173.23*	99.85	4.060E+004	2.57E+004	1.967E+005	1.865E+004
		1332.49*	99.98	2.572E+004		2.154E+005	1.116E+004
	Nb-94	702.65	99.81	5.152E+004	5.15E+004	-9.272E+003	2.430E+004
		871.09	99.89	6.435E+004		8.831E+004	3.065E+004
	Ag-108m	433.90	90.50	9.953E+004	5.98E+004	5.042E+004	4.835E+004
		614.30	89.80	7.980E+004		-2.093E+004	3.833E+004
		722.90	90.80	5.978E+004		1.375E+004	2.828E+004
	Cs-134	604.72	97.62	7.831E+004	5.73E+004	-2.007E+004	3.772E+004
		795.86	85.46	5.735E+004		4.901E+004	2.692E+004
+	Cs-137	661.66*	85.10	7.495E+004	7.49E+004	4.110E+006	3.579E+004
+	Eu-152	121.78*	28.67	2.910E+005	1.65E+004	6.189E+005	1.420E+005
		344.28*	26.60	6.216E+005		9.055E+005	3.063E+005
		1408.01*	21.07	1.646E+004		9.248E+005	0.000E+000
	Eu-154	123.07	40.40	3.484E+005	1.16E+005	7.606E+004	1.717E+005
		723.30	20.06	2.731E+005		2.214E+005	1.292E+005
		1274.43	34.80	1.162E+005		-1.295E+005	5.326E+004
+	Eu-155	86.55*	30.70	4.221E+005	4.22E+005	2.792E+005	2.073E+005
		105.31	21.10	7.073E+005		3.610E+005	3.487E+005
	Tl-208	583.19	85.00	7.808E+004	7.81E+004	7.366E+004	3.740E+004
	Bi-212	727.33	6.67	8.112E+005	8.11E+005	6.898E+005	3.836E+005
	Pb-212	238.63	43.60	2.499E+005	2.50E+005	4.740E+003	1.225E+005
+	Bi-214	609.32*	45.49	1.080E+005	2.47E+004	1.468E+005	5.090E+004
		1120.29*	14.92	4.819E+005		8.218E+005	2.300E+005
		1764.49*	15.30	2.467E+004		2.188E+005	0.000E+000
+	Pb-214	295.22*	18.42	2.583E+005	2.58E+005	2.003E+005	1.229E+005
		351.93*	35.60	4.645E+005		6.766E+005	2.289E+005
	Ra-226	186.21	3.64	3.180E+006	3.18E+006	2.094E+006	1.562E+006
+	Ac-228	338.32*	11.27	1.467E+006	1.21E+005	2.137E+006	7.230E+005
		911.20*	25.80	1.214E+005		7.716E+004	5.471E+004
		968.97*	15.80	2.582E+005		7.543E+005	1.192E+005
	Am-241	59.54	35.90	4.953E+005	4.95E+005	-5.630E+004	2.430E+005

+ = Nuclide identified during the nuclide identification

* = Energy line found in the spectrum

> = Calculated MDA is zero due to zero counts in the region, or the region is outside the spectrum, or MDA has not been calculated

@ = Half-life too short to be able to perform the decay correction

***** GAMMA SPECTRUM ANALYSIS *****

Filename: 5456-A

Report Generated On : 4/14/2018 1:15:29 PM

Sample Title : B102110DFSWC046GD
Sample Description : U2 CTMT Under Vessel
Sample Identification : 046
Sample Type : Gamma Direct
Sample Geometry :

Peak Locate Threshold : 3.00
Peak Locate Range (in channels) : 85 - 8192
Peak Area Range (in channels) : 85 - 8192
Identification Energy Tolerance : 10.000 keV

Sample Size : 3.140E+000 M²

Sample Taken On : 4/14/2018 1:05:00 PM
Acquisition Started : 4/14/2018 1:05:27 PM

Live Time : 600.0 seconds
Real Time : 601.4 seconds

Dead Time : 0.23 %

Energy Calibration Used Done On : 3/15/2018
Efficiency Calibration Used Done On : 1/23/2018
Efficiency ID : 1M90D_ECP_17.8CM

Data Validated
4/15/18 1330
WR Mihalek

 ***** P E A K A N A L Y S I S R E P O R T *****

Detector Name: 5456-A

Sample Title: B102110DFSWC046GD

Peak Analysis Performed on: 4/14/2018 1:15:29 PM

Peak Analysis From Channel: 85

Peak Analysis To Channel: 8192

Peak No.	ROI start	ROI end	Peak centroid	Energy (keV)	FWHM (keV)	Net Peak Area	Net Area Uncert.	Continuum Counts
1	126-	134	129.90	32.47	0.41	5.52E+001	38.84	1.13E+002
2	151-	185	160.69	40.17	1.76	4.54E+002	157.83	1.04E+003
3	280-	310	300.05	75.01	1.70	1.35E+003	236.58	2.59E+003
4	335-	344	339.00	84.75	1.04	2.17E+002	99.99	1.01E+003
5	477-	498	487.65	121.91	1.37	7.46E+002	160.28	1.51E+003
6	761-	774	766.00	191.50	0.62	5.18E+001	69.77	4.21E+002
7	973-	986	979.32	244.83	0.93	1.44E+002	67.96	3.67E+002
8	1366-	1414	1377.34	344.33	1.41	5.88E+002	134.81	5.22E+002
9	2429-	2444	2436.99	609.25	1.33	4.60E+001	35.90	9.20E+001
10	2636-	2658	2646.61	661.65	1.40	6.34E+002	63.71	9.78E+001
11	2868-	2879	2873.71	718.43	0.37	1.60E+000	20.59	4.14E+001
12	3105-	3125	3116.11	779.03	1.08	2.36E+002	44.44	7.09E+001
13	3460-	3477	3469.43	867.36	0.63	7.47E+001	34.24	6.63E+001
14	3848-	3868	3856.15	964.04	1.58	2.33E+002	42.02	5.69E+001
15	4013-	4026	4019.29	1004.82	0.55	2.75E+001	21.42	3.15E+001
16	4334-	4352	4343.45	1085.86	1.18	1.48E+002	37.36	5.88E+001
17	4436-	4491	4448.85	1112.21	1.63	2.67E+002	73.92	1.26E+002
18	4681-	4704	4693.97	1173.49	1.56	4.18E+002	49.94	5.12E+001
19	5092-	5105	5098.58	1274.64	0.68	2.78E+001	17.96	1.92E+001
20	5320-	5344	5331.02	1332.75	1.87	3.49E+002	39.52	9.68E+000
21	5620-	5645	5633.76	1408.44	1.10	4.27E+002	42.55	6.23E+000
22	5834-	5856	5845.44	1461.36	0.88	1.46E+002	28.36	1.43E+001
23	7054-	7069	7061.69	1765.42	0.34	1.52E+001	9.05	1.78E+000

M = First peak in a multiplet region

m = Other peak in a multiplet region

F = Fitted singlet

Errors quoted at 2.000 sigma

 ***** 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: B102110DFSWC046GD
 Nuclide Library Used: C:\GENIE2K\CAMFILES\Zion Lib-BNL.NLB

IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)	Yield (%)	Activity (pCi/M ²)	Activity Uncertainty
K-40	1.000	1460.82*	10.66	1.79147E+006	3.81887E+005
Co-60	1.000	1173.23*	99.85	5.13036E+005	7.37860E+004
		1332.49*	99.98	4.43704E+005	6.14818E+004
Cs-137	1.000	661.66*	85.10	7.89775E+005	1.23650E+005
Eu-152	1.000	121.78*	28.67	1.89895E+006	5.57601E+005
		344.28*	26.60	1.94454E+006	5.48687E+005
		1408.01*	21.07	2.62163E+006	3.35102E+005
Eu-154	0.991	123.07*	40.40	1.34760E+006	3.96351E+005
		723.30*	20.06	8.65006E+003	1.11001E+005
		1274.43*	34.80	1.00121E+005	6.52690E+004
Eu-155	0.331	86.55*	30.70	5.92214E+005	2.97111E+005
		105.31	21.10		
Pb-212	0.940	238.63*	43.60	2.63239E+005	1.30918E+005
Bi-214	0.979	609.32*	45.49	1.04840E+005	8.27876E+004
		1120.29*	14.92	2.16521E+006	6.24028E+005
		1764.49*	15.30	1.40692E+005	8.44366E+004
Ra-226	0.956	186.21*	3.64	1.05423E+006	1.43052E+006

* = Energy line found in the spectrum.
 @ = Energy line not used for Weighted Mean Activity
 Energy Tolerance : 10.000 keV
 Nuclide confidence index threshold = 0.30
 Errors quoted at 2.000 sigma

 ***** INTERFERENCE CORRECTED REPORT *****

	Nuclide Name	Nuclide Id Confidence	Wt mean Activity (pCi/M ²)	Wt mean Activity Uncertainty
	K-40	1.000	1.791473E+006	3.818866E+005
	Co-60	1.000	4.721153E+005✓	4.723369E+004
X	Ag-108m	0.421		
	Cs-137	1.000	7.897754E+005✓	1.236499E+005
	Eu-152	1.000	2.303584E+006✓	2.544652E+005
	Eu-154	0.991	6.941880E+004✓	5.580315E+004
	Eu-155	0.331	5.922143E+005	2.971106E+005
X	Bi-212	0.881		
	Pb-212	0.940	2.632388E+005	1.309176E+005
	Bi-214	0.979	1.405809E+005	5.885060E+004
X	Pb-214	0.386		
	Ra-226	0.956	1.054230E+006	1.430524E+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 2.000 sigma

***** UNIDENTIFIED PEAKS *****

Peak Locate Performed on: 4/14/2018 1:15:29 PM
 Peak Locate From Channel: 85
 Peak Locate To Channel: 8192

Peak No.	Energy (keV)	Peak Size in Counts per Second	Peak CPS % Uncertainty	Peak Type	Tol. Nuclide
1	32.47	9.1972E-002	70.38		
2	40.17	7.5674E-001	34.76		
3	75.01	2.2523E+000	17.51		
12	779.03	3.9349E-001	18.82	Sum	
13	867.36	1.2449E-001	45.84	Tol.	Nb-94
14	964.04	3.8857E-001	18.02	Sum	
15	1004.82	4.5833E-002	77.91	Sum	
16	1085.86	2.4694E-001	25.22		

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

Errors quoted at 2.000 sigma

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

Detector Name: 5456-A
 Sample Geometry:
 Sample Title: B102110DFSWC046GD
 Nuclide Library Used: C:\GENIE2K\CAMFILES\Zion Lib-BNL.NLB

	Nuclide Name	Energy (keV)	Yield (%)	Line MDA (pCi/M ²)	Nuclide MDA (pCi/M ²)	Activity (pCi/M ²)	Dec. Level (pCi/M ²)
+	K-40	1460.82*	10.66	3.344E+005	3.34E+005	1.791E+006	1.506E+005
+	Co-60	1173.23*	99.85	6.125E+004	3.03E+004	5.130E+005	2.896E+004
		1332.49*	99.98	3.025E+004		4.437E+005	1.341E+004
	Nb-94	702.65	99.81	8.328E+004	8.33E+004	1.062E+004	4.018E+004
		871.09	99.89	9.393E+004		1.028E+005	4.543E+004
	Ag-108m	433.90	90.50	9.791E+004	4.33E+004	-2.864E+003	4.755E+004
		614.30*	89.80	6.625E+004		5.311E+004	3.156E+004
		722.90*	90.80	4.325E+004		1.911E+003	2.002E+004
	Cs-134	604.72	97.62	9.068E+004	9.07E+004	-4.461E+004	4.390E+004
		795.86	85.46	9.265E+004	9.265E+004	-1.134E+004	4.457E+004
+	Cs-137	661.66*	85.10	8.328E+004	8.33E+004	7.898E+005	3.996E+004
+	Eu-152	121.78*	28.67	6.375E+005	1.19E+005	1.899E+006	3.153E+005
		344.28*	26.60	6.935E+005		1.945E+006	3.423E+005
		1408.01*	21.07	1.192E+005		2.622E+006	5.129E+004
+	Eu-154	123.07*	40.40	4.524E+005	9.60E+004	1.348E+006	2.238E+005
		723.30*	20.06	1.958E+005		8.650E+003	9.060E+004
		1274.43*	34.80	9.601E+004		1.001E+005	4.313E+004
+	Eu-155	86.55*	30.70	4.357E+005	4.36E+005	5.922E+005	2.142E+005
		105.31	21.10	9.202E+005		-2.566E+005	4.552E+005
	Tl-208	583.19	85.00	1.059E+005	1.06E+005	3.396E+004	5.134E+004
	Bi-212	727.33*	6.67	5.888E+005	5.89E+005	2.602E+004	2.725E+005
+	Pb-212	238.63*	43.60	1.954E+005	1.95E+005	2.632E+005	9.525E+004
+	Bi-214	609.32*	45.49	1.308E+005	9.48E+004	1.048E+005	6.231E+004
		1120.29*	14.92	9.064E+005		2.165E+006	4.422E+005
		1764.49*	15.30	9.482E+004		1.407E+005	3.490E+004
	Pb-214	295.22	18.42	5.787E+005	5.18E+005	-6.238E+004	2.832E+005
		351.93*	35.60	5.182E+005		1.453E+006	2.558E+005
+	Ra-226	186.21*	3.64	2.341E+006	2.34E+006	1.054E+006	1.143E+006
	Ac-228	338.32	11.27	9.565E+005	3.12E+005	-1.231E+006	4.677E+005
		911.20	25.80	3.117E+005		-9.313E+004	1.498E+005
		968.97	15.80	7.203E+005		1.767E+006	3.501E+005
	Am-241	59.54	35.90	6.993E+005	6.99E+005	-5.364E+004	3.451E+005

+ = Nuclide identified during the nuclide identification

* = Energy line found in the spectrum

> = Calculated MDA is zero due to zero counts in the region, or the region is outside the spectrum, or MDA has not been calculated

@ = Half-life too short to be able to perform the decay correction

***** GAMMA SPECTRUM ANALYSIS *****

Filename: 5456-A

Report Generated On : 4/14/2018 10:33:56 AM

Sample Title : B102110DFSWC047GD
Sample Description : U2 CTMNT Under Vessel
Sample Identification : 047
Sample Type : Gamma Direct
Sample Geometry :

Peak Locate Threshold : 3.00
Peak Locate Range (in channels) : 85 - 8192
Peak Area Range (in channels) : 85 - 8192
Identification Energy Tolerance : 10.000 keV

Sample Size : 3.140E+000 M²

Sample Taken On : 4/14/2018 10:23:00 AM
Acquisition Started : 4/14/2018 10:23:54 AM

Live Time : 600.0 seconds
Real Time : 601.1 seconds

Dead Time : 0.19 %

Energy Calibration Used Done On : 3/15/2018
Efficiency Calibration Used Done On : 1/23/2018
Efficiency ID : 1M90D_ECP_17.8CM

Data Validated
4/14/18 1420
DRM hall

 ***** P E A K A N A L Y S I S R E P O R T *****

Detector Name: 5456-A

Sample Title: B102110DFSWC047GD

Peak Analysis Performed on: 4/14/2018 10:33:56 AM

Peak Analysis From Channel: 85

Peak Analysis To Channel: 8192

Peak No.	ROI start	ROI end	Peak centroid	Energy (keV)	FWHM (keV)	Net Peak Area	Net Area Uncert.	Continuum Counts
1	126-	136	129.82	32.45	0.74	1.32E+002	56.65	2.28E+002
2	148-	186	155.27	38.82	1.16	1.02E+003	226.68	1.96E+003
3	276-	300	290.78	72.69	1.51	1.57E+003	245.33	3.27E+003
4	473-	494	484.02	121.01	2.10	1.62E+003	206.89	2.42E+003
5	859-	868	863.41	215.85	0.28	3.33E+001	67.81	4.91E+002
6	969-	986	976.66	244.17	1.22	3.08E+002	106.62	7.77E+002
7	1363-	1387	1376.09	344.02	1.51	1.37E+003	114.19	4.59E+002
8	1462-	1478	1469.49	367.37	0.66	5.33E+001	63.72	3.08E+002
9	1635-	1655	1644.25	411.06	0.66	1.24E+002	69.73	3.01E+002
10	1765-	1785	1775.86	443.97	1.47	1.12E+002	70.73	3.13E+002
11	2431-	2442	2436.91	609.23	0.76	4.36E+001	35.15	1.05E+002
12	2506-	2517	2511.22	627.80	0.30	2.63E+001	32.56	9.47E+001
13	2639-	2657	2647.09	661.77	1.49	4.73E+002	62.57	1.49E+002
14	3106-	3126	3116.31	779.08	1.29	5.01E+002	67.50	1.76E+002
15	3462-	3478	3470.42	867.61	1.31	1.56E+002	52.44	1.69E+002
16	3637-	3650	3643.86	910.97	1.00	2.85E+001	32.86	8.75E+001
17	3848-	3869	3857.42	964.36	1.41	5.91E+002	65.17	1.25E+002
18	4013-	4031	4021.73	1005.43	0.38	8.09E+001	38.41	8.51E+001
19	4333-	4354	4344.43	1086.11	1.45	3.81E+002	61.15	1.48E+002
20	4437-	4461	4450.04	1112.51	1.83	5.50E+002	64.20	1.16E+002
21	4685-	4709	4694.96	1173.74	1.88	7.67E+002	65.94	7.89E+001
22	4843-	4862	4853.24	1213.31	0.82	8.38E+001	30.49	4.22E+001
23	5092-	5108	5099.56	1274.89	1.24	7.33E+001	25.80	2.98E+001
24	5190-	5207	5199.12	1299.78	0.94	6.03E+001	23.22	2.27E+001
25	5318-	5346	5332.56	1333.14	1.78	8.57E+002	60.77	1.44E+001
26	5621-	5648	5634.85	1408.71	2.02	9.68E+002	64.22	1.40E+001
27	5835-	5857	5846.63	1461.66	1.64	1.26E+002	32.78	3.71E+001

M = First peak in a multiplet region

m = Other peak in a multiplet region

F = Fitted singlet

Errors quoted at 2.000 sigma

 ***** 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: B102110DFSWC047GD
 Nuclide Library Used: C:\GENIE2K\CAMFILES\Zion Lib-BNL.NLB

IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)	Yield (%)	Activity (pCi/M ²)	Activity Uncertainty
K-40	0.999	1460.82*	10.66	1.54857E+006	4.24989E+005
Co-60	0.999	1173.23*	99.85	9.41912E+005	1.10606E+005
		1332.49*	99.98	1.08810E+006	1.16350E+005
Cs-137	1.000	661.66*	85.10	5.89320E+005	1.05254E+005
Eu-152	0.999	121.78*	28.67	4.12417E+006	9.80073E+005
		344.28*	26.60	4.52592E+006	8.34260E+005
		1408.01*	21.07	5.94682E+006	6.18047E+005
Eu-154	0.681	123.07*	40.40	2.92673E+006	6.97250E+005
		723.30	20.06		
		1274.43*	34.80	2.64046E+005	9.54843E+004
Pb-212	0.952	238.63*	43.60	5.59927E+005	2.14141E+005
Bi-214	0.692	609.32*	45.49	9.93019E+004	8.09997E+004
		1120.29*	14.92	4.46216E+006	6.31505E+005
		1764.49	15.30		
Ac-228	0.979	338.32*	11.27	1.06823E+007	1.96104E+006
		911.20*	25.80	1.26952E+005	1.46783E+005
		968.97*	15.80	4.36434E+006	6.17369E+005

* = Energy line found in the spectrum.
 @ = Energy line not used for Weighted Mean Activity
 Energy Tolerance : 10.000 keV
 Nuclide confidence index threshold = 0.30
 Errors quoted at 2.000 sigma

 ***** INTERFERENCE CORRECTED REPORT *****

Nuclide Name	Nuclide Id Confidence	Wt mean Activity (pCi/M^2)	Wt mean Activity Uncertainty
K-40	0.999	1.548573E+006	4.249893E+005
Co-60	0.999	1.011310E+006 ✓	8.016403E+004
Cs-137	1.000	5.893204E+005 ✓	1.052535E+005
Eu-152	0.999	5.050737E+006 ✓	4.413925E+005
Eu-154	0.681	2.470029E+005 ✓	9.466707E+004
Pb-212	0.952	5.599275E+005	2.141415E+005
Bi-214	0.692	1.699169E+005	8.034149E+004
X Pb-214	0.381		
Ac-228	0.979	3.613606E+005	1.421837E+005

? = 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 2.000 sigma

***** UNIDENTIFIED PEAKS *****

Peak Locate Performed on: 4/14/2018 10:33:56 AM
 Peak Locate From Channel: 85
 Peak Locate To Channel: 8192

Peak No.	Energy (keV)	Peak Size in Counts per Second	Peak CPS % Uncertainty	Peak Type	Tol. Nuclide
1	32.45	2.2031E-001	42.86		
2	38.82	1.6922E+000	22.33		
3	72.69	2.6173E+000	15.62		
5	215.85	5.5453E-002	203.82		
8	367.37	8.8848E-002	119.54	Sum	
9	411.06	2.0717E-001	56.09		
10	443.97	1.8672E-001	63.13	D-Esc.	
12	627.80	4.3815E-002	123.86	Tol.	Sb-125
14	779.08	8.3540E-001	13.47	Sum	
15	867.61	2.6077E-001	33.52	Tol.	Nb-94
18	1005.43	1.3488E-001	47.46	Sum	
19	1086.11	6.3569E-001	16.03	Sum	
22	1213.31	1.3960E-001	36.40	Sum	
24	1299.78	1.0055E-001	38.48	Sum	

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

Errors quoted at 2.000 sigma

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

Detector Name: 5456-A
 Sample Geometry:
 Sample Title: B102110DFSWC047GD
 Nuclide Library Used: C:\GENIE2K\CAMFILES\Zion Lib-BNL.NLB

	Nuclide Name	Energy (keV)	Yield (%)	Line MDA (pCi/M ²)	Nuclide MDA (pCi/M ²)	Activity (pCi/M ²)	Dec. Level (pCi/M ²)
+	K-40	1460.82*	10.66	5.167E+005	5.17E+005	1.549E+006	2.417E+005
+	Co-60	1173.23*	99.85	7.557E+004	3.76E+004	9.419E+005	3.612E+004
		1332.49*	99.98	3.759E+004		1.088E+006	1.708E+004
	Nb-94	702.65	99.81	1.111E+005	1.11E+005	1.955E+004	5.411E+004
		871.09	99.89	1.374E+005		2.493E+005	6.717E+004
	Ag-108m	433.90	90.50	1.264E+005	1.26E+005	-8.803E+003	6.178E+004
		614.30	89.80	1.281E+005		7.442E+003	6.249E+004
		722.90	90.80	1.257E+005		2.556E+004	6.123E+004
	Cs-134	604.72	97.62	1.153E+005	1.15E+005	1.060E+004/	5.623E+004
		795.86	85.46	1.252E+005		-2.396E+004	6.083E+004
+	Cs-137	661.66*	85.10	9.547E+004	9.55E+004	5.893E+005	4.605E+004
+	Eu-152	121.78*	28.67	8.065E+005	1.77E+005	4.124E+006	3.998E+005
		344.28*	26.60	4.822E+005		4.526E+006	2.366E+005
		1408.01*	21.07	1.771E+005		5.947E+006	8.022E+004
+	Eu-154	123.07*	40.40	5.723E+005	1.24E+005	2.927E+006	2.837E+005
		723.30	20.06	5.702E+005		2.812E+005	2.778E+005
		1274.43*	34.80	1.242E+005		2.640E+005	5.724E+004
	Eu-155	86.55	30.70	9.111E+005	9.11E+005	1.056E+006	4.519E+005
		105.31	21.10	1.144E+006		4.600E+005	5.672E+005
	Tl-208	583.19	85.00	1.414E+005	1.41E+005	6.195E+004	6.905E+004
	Bi-212	727.33	6.67	1.693E+006	1.69E+006	-4.966E+005	8.245E+005
+	Pb-212	238.63*	43.60	3.064E+005	3.06E+005	5.599E+005	1.507E+005
+	Bi-214	609.32*	45.49	1.283E+005	1.28E+005	9.930E+004	6.107E+004
		1120.29*	14.92	6.065E+005		4.462E+006	2.923E+005
		1764.49	15.30	2.400E+005		1.465E+005	1.075E+005
	Pb-214	295.22	18.42	7.600E+005	3.60E+005	-2.489E+005	3.738E+005
		351.93*	35.60	3.603E+005		3.382E+006	1.768E+005
	Ra-226	186.21	3.64	4.619E+006	4.62E+006	-1.470E+006	2.282E+006
+	Ac-228	338.32*	11.27	1.138E+006	2.40E+005	1.068E+007	5.585E+005
		911.20*	25.80	2.398E+005		1.270E+005	1.139E+005
		968.97*	15.80	5.474E+005		4.364E+006	2.637E+005
	Am-241	59.54	35.90	8.801E+005	8.80E+005	-4.618E+005	4.355E+005

+ = Nuclide identified during the nuclide identification

* = Energy line found in the spectrum

> = Calculated MDA is zero due to zero counts in the region, or the region is outside the spectrum, or MDA has not been calculated

@ = Half-life too short to be able to perform the decay correction

***** GAMMA SPECTRUM ANALYSIS *****

Filename: 5456-A

Report Generated On : 4/14/2018 1:01:56 PM

Sample Title : B102110DFSWC048GD
Sample Description : U2 CTMT Under Vessel
Sample Identification : 048
Sample Type : Gamma Direct
Sample Geometry :

Peak Locate Threshold : 3.00
Peak Locate Range (in channels) : 85 - 8192
Peak Area Range (in channels) : 85 - 8192
Identification Energy Tolerance : 10.000 keV

Sample Size : 3.140E+000 M^2

Sample Taken On : 4/14/2018 12:51:00 PM
Acquisition Started : 4/14/2018 12:51:54 PM

Live Time : 600.0 seconds
Real Time : 601.4 seconds

Dead Time : 0.23 %

Energy Calibration Used Done On : 3/15/2018
Efficiency Calibration Used Done On : 1/23/2018
Efficiency ID : 1M90D_ECP_17.8CM

Data Validated
4/15/18 1338
OR Mahalik

 ***** P E A K A N A L Y S I S R E P O R T *****

Detector Name: 5456-A
 Sample Title: B102110DFSWC048GD
 Peak Analysis Performed on: 4/14/2018 1:01:56 PM
 Peak Analysis From Channel: 85
 Peak Analysis To Channel: 8192

Peak No.	ROI start	ROI end	Peak centroid	Energy (keV)	FWHM (keV)	Net Peak Area	Net Area Uncert.	Continuum Counts
1	126-	137	131.07	32.77	0.77	1.14E+002	48.07	1.53E+002
2	151-	168	159.17	39.79	2.02	4.38E+002	93.40	5.35E+002
3	285-	310	300.50	75.12	1.34	1.09E+003	203.90	2.19E+003
4	330-	345	339.74	84.94	0.96	2.91E+002	143.05	1.61E+003
5	477-	498	487.68	121.92	1.32	9.32E+002	161.45	1.49E+003
6	540-	550	545.27	136.32	0.62	5.00E+001	77.71	6.11E+002
7	974-	989	979.65	244.91	1.01	2.39E+002	75.99	3.98E+002
8	1368-	1412	1377.21	344.30	1.33	6.79E+002	142.03	6.20E+002
9	1635-	1650	1644.14	411.04	0.76	6.77E+001	46.52	1.57E+002
10	1768-	1785	1775.72	443.93	1.04	1.11E+002	45.77	1.27E+002
11	2428-	2443	2437.31	609.33	1.11	7.50E+001	37.16	9.00E+001
12	2636-	2660	2645.96	661.49	1.42	1.03E+003	76.64	1.07E+002
13	2887-	2899	2892.47	723.12	0.40	2.81E+001	27.48	6.09E+001
14	3105-	3124	3114.81	778.70	1.74	3.17E+002	48.90	8.01E+001
15	3462-	3477	3469.71	867.43	1.60	6.02E+001	35.61	8.48E+001
16	3845-	3865	3856.11	964.03	1.72	3.45E+002	47.88	6.29E+001
17	4012-	4026	4018.91	1004.73	0.56	2.04E+001	26.35	5.16E+001
18	4332-	4352	4342.90	1085.72	1.05	1.87E+002	40.72	6.27E+001
19	4437-	4458	4448.28	1112.07	1.22	2.86E+002	46.59	6.85E+001
20	4680-	4705	4693.08	1173.27	1.80	4.42E+002	52.07	5.54E+001
21	4844-	4857	4850.53	1212.63	0.81	3.07E+001	16.87	1.43E+001
22	5092-	5105	5098.60	1274.65	1.11	3.17E+001	18.44	1.93E+001
23	5191-	5206	5197.92	1299.48	1.01	4.66E+001	17.80	1.04E+001
24	5317-	5343	5330.53	1332.63	1.79	4.66E+002	46.49	1.69E+001
25	5619-	5646	5633.05	1408.26	1.79	5.34E+002	46.85	3.43E+000
26	5834-	5854	5843.26	1460.81	1.92	1.26E+002	27.34	1.72E+001
27	7055-	7070	7062.86	1765.72	0.61	2.40E+001	12.00	4.00E+000

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

Errors quoted at 2.000 sigma

 ***** 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: B102110DFSWC048GD
 Nuclide Library Used: C:\GENIE2K\CAMFILES\Zion Lib-BNL.NLB

IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)	Yield (%)	Activity (pCi/M ²)	Activity Uncertainty
K-40	1.000	1460.82*	10.66	1.54700E+006	3.62056E+005
Co-60	1.000	1173.23*	99.85	5.42175E+005	7.72578E+004
		1332.49*	99.98	5.92019E+005	7.56957E+004
Cs-137	1.000	661.66*	85.10	1.28494E+006	1.81433E+005
Eu-152	1.000	121.78*	28.67	2.37107E+006	6.27857E+005
		344.28*	26.60	2.24642E+006	5.97593E+005
		1408.01*	21.07	3.27758E+006	3.89336E+005
Eu-154	0.999	123.07*	40.40	1.68264E+006	4.46458E+005
		723.30*	20.06	1.51907E+005	1.49404E+005
		1274.43*	34.80	1.14232E+005	6.71202E+004
Eu-155	0.332	86.55*	30.70	7.90629E+005	4.19908E+005
		105.31	21.10		
Bi-212	0.972	727.33*	6.67	4.56860E+005	4.49417E+005
Pb-212	0.939	238.63*	43.60	4.35973E+005	1.55350E+005
Bi-214	0.978	609.32*	45.49	1.70910E+005	8.71617E+004
		1120.29*	14.92	2.31538E+006	4.20902E+005
		1764.49*	15.30	2.21859E+005	1.12346E+005

* = Energy line found in the spectrum.
 @ = Energy line not used for Weighted Mean Activity
 Energy Tolerance : 10.000 keV
 Nuclide confidence index threshold = 0.30
 Errors quoted at 2.000 sigma

 ***** INTERFERENCE CORRECTED REPORT *****

	Nuclide Name	Nuclide Id Confidence	Wt mean Activity (pCi/M^2)	Wt mean Activity Uncertainty
	K-40	1.000	1.546997E+006	3.620555E+005
	Co-60	1.000	5.676058E+005	5.406875E+004
X	Ag-108m	0.432		
	Cs-137	1.000	1.284936E+006✓	1.814332E+005
	Eu-152	1.000	2.808663E+006✓	2.894158E+005
	Eu-154	0.999	1.047999E+005✓	6.649881E+004
	Eu-155	0.332	7.906291E+005	4.199076E+005
	Bi-212	0.972	1.416745E+005	4.917531E+005
	Pb-212	0.939	4.359733E+005	1.553497E+005
	Bi-214	0.978	2.454651E+005	6.796239E+004
X	Pb-214	0.385		

? = 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 2.000 sigma

***** UNIDENTIFIED PEAKS *****

Peak Locate Performed on: 4/14/2018 1:01:56 PM
 Peak Locate From Channel: 85
 Peak Locate To Channel: 8192

Peak No.	Energy (keV)	Peak Size in Counts per Second	Peak CPS % Uncertainty	Peak Type	Tol. Nuclide
1	32.77	1.9019E-001	42.12		
2	39.79	7.3061E-001	21.31		
3	75.12	1.8148E+000	18.73		
6	136.32	8.3295E-002	155.48		
9	411.04	1.1277E-001	68.75		
10	443.93	1.8554E-001	41.12	D-Esc.	
14	778.70	5.2813E-001	15.43	Sum	
15	867.43	1.0029E-001	59.17	Tol.	Nb-94
16	964.03	5.7513E-001	13.87	Sum	
17	1004.73	3.3918E-002	129.48	Sum	
18	1085.72	3.1209E-001	21.75		
21	1212.63	5.1148E-002	54.97	Sum	
23	1299.48	7.7727E-002	38.17	Sum	

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

Errors quoted at 2.000 sigma

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

Detector Name: 5456-A
 Sample Geometry:
 Sample Title: B102110DFSWC048GD
 Nuclide Library Used: C:\GENIE2K\CAMFILES\Zion Lib-BNL.NLB

	Nuclide Name	Energy (keV)	Yield (%)	Line MDA (pCi/M ²)	Nuclide MDA (pCi/M ²)	Activity (pCi/M ²)	Dec. Level (pCi/M ²)
+	K-40	1460.82*	10.66	3.495E+005	3.49E+005	1.547E+006	1.581E+005
+	Co-60	1173.23*	99.85	6.541E+004	3.94E+004	5.422E+005	3.105E+004
		1332.49*	99.98	3.944E+004		5.920E+005	1.800E+004
	Nb-94	702.65	99.81	8.202E+004	8.20E+004	9.632E+003	3.955E+004
		871.09	99.89	9.725E+004		3.949E+004	4.709E+004
	Ag-108m	433.90	90.50	1.071E+005	5.30E+004	-5.657E+004	5.214E+004
		614.30*	89.80	6.558E+004		8.658E+004	3.123E+004
		722.90*	90.80	5.296E+004		3.356E+004	2.487E+004
	Cs-134	604.72	97.62	9.824E+004	9.82E+004	-2.035E+004	4.769E+004
		795.86	85.46	1.038E+005		1.345E+005	5.015E+004
+	Cs-137	661.66*	85.10	8.895E+004	8.90E+004	1.285E+006	4.279E+004
+	Eu-152	121.78*	28.67	6.324E+005	9.55E+004	2.371E+006	3.127E+005
		344.28*	26.60	7.280E+005		2.246E+006	3.595E+005
		1408.01*	21.07	9.546E+004		3.278E+006	3.942E+004
+	Eu-154	123.07*	40.40	4.488E+005	9.63E+004	1.683E+006	2.219E+005
		723.30*	20.06	2.397E+005		1.519E+005	1.126E+005
		1274.43*	34.80	9.634E+004		1.142E+005	4.329E+004
+	Eu-155	86.55*	30.70	6.288E+005	6.29E+005	7.906E+005	3.107E+005
		105.31	21.10	9.297E+005		-4.173E+005	4.600E+005
	Tl-208	583.19	85.00	1.058E+005	1.06E+005	2.892E+003	5.126E+004
+	Bi-212	727.33*	6.67	7.210E+005	7.21E+005	4.569E+005	3.385E+005
+	Pb-212	238.63*	43.60	2.129E+005	2.13E+005	4.360E+005	1.040E+005
+	Bi-214	609.32*	45.49	1.295E+005	1.29E+005	1.709E+005	6.164E+004
		1120.29*	14.92	4.498E+005		2.315E+006	2.139E+005
		1764.49*	15.30	1.304E+005		2.219E+005	5.268E+004
	Pb-214	295.22	18.42	5.893E+005	5.44E+005	8.201E+003	2.885E+005
		351.93*	35.60	5.440E+005		1.679E+006	2.686E+005
	Ra-226	186.21	3.64	3.807E+006	3.81E+006	7.378E+005	1.876E+006
	Ac-228	338.32	11.27	1.031E+006	3.33E+005	-3.780E+005	5.050E+005
		911.20	25.80	3.332E+005		-1.213E+005	1.606E+005
		968.97	15.80	8.018E+005		7.317E+004	3.909E+005
	Am-241	59.54	35.90	7.022E+005	7.02E+005	-4.794E+005	3.465E+005

+ = Nuclide identified during the nuclide identification
 * = Energy line found in the spectrum
 > = Calculated MDA is zero due to zero counts in the region, or the region is outside the spectrum, or MDA has not been calculated
 @ = Half-life too short to be able to perform the decay correction

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

Filename: 5456-A

Report Generated On : 4/14/2018 10:19:47 AM

Sample Title : B102110DFSWC049GD
Sample Description : U2 CTMNT Under Vessel
Sample Identification : 049
Sample Type : Gamma Direct
Sample Geometry :

Peak Locate Threshold : 3.00
Peak Locate Range (in channels) : 85 - 8192
Peak Area Range (in channels) : 85 - 8192
Identification Energy Tolerance : 10.000 keV

Sample Size : 3.140E+000 M^2

Sample Taken On : 4/14/2018 10:09:00 AM
Acquisition Started : 4/14/2018 10:09:46 AM

Live Time : 600.0 seconds
Real Time : 600.9 seconds

Dead Time : 0.15 %

Energy Calibration Used Done On : 3/15/2018
Efficiency Calibration Used Done On : 1/23/2018
Efficiency ID : 1M90D_ECP_17.8CM

Data Validated
4/14/18 1412
DR Mahalik

 **** P E A K A N A L Y S I S R E P O R T ****
 (*****

Detector Name: 5456-A
 Sample Title: B102110DFSWC049GD
 Peak Analysis Performed on: 4/14/2018 10:19:47 AM
 Peak Analysis From Channel: 85
 Peak Analysis To Channel: 8192

Peak No.	ROI start	ROI end	Peak centroid	Energy (keV)	FWHM (keV)	Net Peak Area	Net Area Uncert.	Continuum Counts
1	126-	137	131.38	32.84	0.55	1.16E+002	47.15	1.48E+002
2	147-	186	155.44	38.86	1.37	8.13E+002	193.83	1.41E+003
3	272-	305	290.94	72.73	3.16	1.50E+003	270.68	3.20E+003
4	474-	496	485.47	121.37	1.41	1.15E+003	186.64	1.95E+003
5	974-	987	979.89	244.97	0.87	2.83E+002	77.96	4.45E+002
6	1365-	1415	1377.85	344.46	1.31	9.44E+002	167.52	7.66E+002
7	1638-	1650	1644.71	411.18	0.54	5.74E+001	43.79	1.61E+002
8	1769-	1785	1775.68	443.92	1.18	1.18E+002	51.40	1.73E+002
9	2636-	2656	2647.16	661.79	1.44	3.81E+002	59.11	1.36E+002
10	3106-	3127	3116.57	779.14	1.45	3.82E+002	62.64	1.60E+002
11	3461-	3481	3470.45	867.61	0.91	1.30E+002	45.74	1.08E+002
12	3847-	3868	3857.29	964.32	1.80	4.89E+002	53.39	5.98E+001
13	4012-	4027	4019.81	1004.95	1.12	4.60E+001	27.72	4.70E+001
14	4335-	4368	4344.79	1086.20	1.26	3.87E+002	56.66	7.75E+001
15	4435-	4461	4449.73	1112.43	1.32	4.47E+002	56.64	8.10E+001
16	4681-	4708	4694.52	1173.63	1.28	5.08E+002	57.83	7.31E+001
17	4847-	4861	4853.53	1213.38	1.04	5.11E+001	20.02	1.59E+001
18	5093-	5110	5101.21	1275.30	0.46	5.69E+001	23.19	2.31E+001
19	5190-	5206	5197.94	1299.49	0.38	4.93E+001	18.22	1.07E+001
20	5319-	5345	5332.36	1333.09	1.56	4.74E+002	46.80	1.68E+001
21	5621-	5648	5634.82	1408.70	1.95	7.27E+002	55.14	7.20E+000
22	5836-	5857	5846.24	1461.56	1.84	1.45E+002	30.25	2.28E+001

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

Errors quoted at 2.000 sigma

 **** 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: B102110DFSWC049GD
 Nuclide Library Used: C:\GENIE2K\CAMFILES\Zion Lib-BNL.NLB

IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)	Yield (%)	Activity (pCi/M ²)	Activity Uncertainty
K-40	0.999	1460.82*	10.66	1.78629E+006	4.03013E+005
Co-60	1.000	1173.23*	99.85	6.23639E+005	8.67832E+004
		1332.49*	99.98	6.02383E+005	7.65240E+004
Cs-137	1.000	661.66*	85.10	4.74649E+005	9.30941E+004
Eu-152	1.000	121.78*	28.67	2.94023E+006	7.56869E+005
		344.28*	26.60	3.12436E+006	7.55605E+005
		1408.01*	21.07	4.46503E+006	4.92265E+005
Eu-154	0.682	123.07*	40.40	2.08655E+006	5.38259E+005
		723.30	20.06		
Pb-212	0.938	1274.43*	34.80	2.05172E+005	8.52835E+004
		238.63*	43.60	5.14977E+005	1.64650E+005

* = Energy line found in the spectrum.
 @ = Energy line not used for Weighted Mean Activity
 Energy Tolerance : 10.000 keV
 Nuclide confidence index threshold = 0.30
 Errors quoted at 2.000 sigma

 ***** INTERFERENCE CORRECTED REPORT *****

Nuclide Name	Nuclide Id Confidence	Wt mean Activity (pCi/M ²)	Wt mean Activity Uncertainty
K-40	0.999	1.786287E+006	4.030133E+005
Co-60	1.000	6.116807E+005✓	5.739682E+004
Cs-137	1.000	4.746493E+005✓	9.309407E+004
Eu-152	1.000	3.743910E+006✓	3.620930E+005
Eu-154	0.682	1.861026E+005↓	8.439279E+004
Pb-212	0.938	5.149765E+005	1.646497E+005
X Pb-214	0.388		

? = 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 2.000 sigma

***** UNIDENTIFIED PEAKS *****

Peak Locate Performed on: 4/14/2018 10:19:47 AM
 Peak Locate From Channel: 85
 Peak Locate To Channel: 8192

Peak No.	Energy (keV)	Peak Size in Counts per Second	Peak CPS % Uncertainty	Peak Type	Tol. Nuclide
1	32.84	1.9370E-001	40.57		
2	38.86	1.3546E+000	23.85		
3	72.73	2.4923E+000	18.10		
7	411.18	9.5627E-002	76.32		
8	443.92	1.9677E-001	43.54	D-Esc.	
10	779.14	6.3583E-001	16.42	Sum	
11	867.61	2.1697E-001	35.13	Tol.	Nb-94
12	964.32	8.1532E-001	10.91	Tol.	Ac-228
13	1004.95	7.6671E-002	60.27	Sum	
14	1086.20	6.4418E-001	14.66		
15	1112.43	7.4500E-001	12.67	Tol.	Bi-214
17	1213.38	8.5137E-002	39.19		
19	1299.49	8.2188E-002	36.94	Sum	

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

Errors quoted at 2.000 sigma

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

Detector Name: 5456-A
 Sample Geometry:
 Sample Title: B102110DFSWC049GD
 Nuclide Library Used: C:\GENIE2K\CAMFILES\Zion Lib-BNL.NLB

	Nuclide Name	Energy (keV)	Yield (%)	Line MDA (pCi/M ²)	Nuclide MDA (pCi/M ²)	Activity (pCi/M ²)	Dec. Level (pCi/M ²)
+	K-40	1460.82*	10.66	4.029E+005	4.03E+005	1.786E+006	1.848E+005
+	Co-60	1173.23*	99.85	7.650E+004	3.92E+004	6.236E+005	3.659E+004
		1332.49*	99.98	3.921E+004		6.024E+005	1.788E+004
	Nb-94	702.65	99.81	9.118E+004	9.12E+004	-2.446E+003	4.413E+004
		871.09	99.89	1.105E+005		1.278E+005	5.373E+004
	Ag-108m	433.90	90.50	1.109E+005	1.09E+005	-6.149E+004	5.402E+004
		614.30	89.80	1.137E+005		-3.160E+004	5.530E+004
		722.90	90.80	1.091E+005		6.256E+004	5.294E+004
	Cs-134	604.72	97.62	1.026E+005	1.03E+005	-1.665E+002	4.987E+004
		795.86	85.46	1.090E+005		8.416E+004✓	5.272E+004
+	Cs-137	661.66*	85.10	9.427E+004	9.43E+004	4.746E+005	4.545E+004
+	Eu-152	121.78*	28.67	7.354E+005	1.33E+005	2.940E+006	3.643E+005
		344.28*	26.60	8.572E+005		3.124E+006	4.241E+005
		1408.01*	21.07	1.331E+005		4.465E+006	5.822E+004
+	Eu-154	123.07*	40.40	5.219E+005	1.14E+005	2.087E+006	2.585E+005
		723.30	20.06	4.893E+005		2.685E+004	2.373E+005
		1274.43*	34.80	1.142E+005		2.052E+005	5.223E+004
	Eu-155	86.55	30.70	7.993E+005	7.99E+005	8.069E+005	3.961E+005
		105.31	21.10	9.852E+005		-1.587E+006	4.877E+005
	Tl-208	583.19	85.00	1.195E+005	1.19E+005	5.255E+004	5.810E+004
	Bi-212	727.33	6.67	1.468E+006	1.47E+006	6.987E+005	7.118E+005
+	Pb-212	238.63*	43.60	2.158E+005	2.16E+005	5.150E+005	1.054E+005
	Bi-214	609.32	45.49	2.261E+005	2.26E+005	2.596E+005	1.100E+005
		1120.29	14.92	7.261E+005		4.295E+005	3.521E+005
		1764.49	15.30	2.400E+005		1.617E+005	1.075E+005
	Pb-214	295.22	18.42	6.754E+005	6.40E+005	9.232E+004	3.315E+005
		351.93*	35.60	6.405E+005		2.334E+006	3.169E+005
	Ra-226	186.21	3.64	4.022E+006	4.02E+006	-4.351E+006	1.984E+006
	Ac-228	338.32	11.27	1.060E+006	3.51E+005	-4.815E+005	5.197E+005
		911.20	25.80	3.514E+005		9.887E+004	1.697E+005
		968.97	15.80	9.155E+005		2.348E+005	4.477E+005
	Am-241	59.54	35.90	7.608E+005	7.61E+005	1.440E+004	3.758E+005

- + = Nuclide identified during the nuclide identification
- * = Energy line found in the spectrum
- > = Calculated MDA is zero due to zero counts in the region, or the region is outside the spectrum, or MDA has not been calculated
- @ = Half-life too short to be able to perform the decay correction

***** GAMMA SPECTRUM ANALYSIS *****

Filename: 5456-A

Report Generated On : 4/14/2018 12:48:46 PM
Sample Title : B102110DFSWC050GD
Sample Description : U2 CTMT Under Vessel
Sample Identification : 050
Sample Type : Gamma Direct
Sample Geometry :
Peak Locate Threshold : 3.00
Peak Locate Range (in channels) : 85 - 8192
Peak Area Range (in channels) : 85 - 8192
Identification Energy Tolerance : 10.000 keV
Sample Size : 3.140E+000 M^2
Sample Taken On : 4/14/2018 12:38:00 PM
Acquisition Started : 4/14/2018 12:38:44 PM
Live Time : 600.0 seconds
Real Time : 601.1 seconds
Dead Time : 0.18 %

Energy Calibration Used Done On : 3/15/2018
Efficiency Calibration Used Done On : 1/23/2018
Efficiency ID : 1M90D_ECP_17.8CM

Data Validated
4/15/18 1355
WRMubalik

 ***** P E A K A N A L Y S I S R E P O R T *****

Detector Name: 5456-A
 Sample Title: B102110DFSWC050GD
 Peak Analysis Performed on: 4/14/2018 12:48:46 PM
 Peak Analysis From Channel: 85
 Peak Analysis To Channel: 8192

Peak No.	ROI start	ROI end	Peak centroid	Energy (keV)	FWHM (keV)	Net Peak Area	Net Area Uncert.	Continuum Counts
1	126-	138	129.91	32.48	0.88	2.09E+002	56.59	1.90E+002
2	280-	310	300.75	75.19	1.57	1.02E+003	208.58	2.02E+003
3	335-	347	339.58	84.90	0.73	1.53E+002	107.62	1.04E+003
4	478-	498	488.08	122.02	1.22	2.92E+002	138.91	1.25E+003
5	951-	985	979.57	244.89	0.99	1.40E+002	129.69	7.56E+002
6	1368-	1387	1376.82	344.20	1.17	2.53E+002	67.05	2.49E+002
7	2429-	2442	2435.64	608.91	1.19	1.76E+001	32.30	8.64E+001
8	2633-	2659	2645.40	661.35	1.63	2.48E+003	109.36	1.17E+002
9	3107-	3124	3114.51	778.63	1.04	1.14E+002	30.74	3.79E+001
10	3845-	3865	3854.39	963.60	1.85	1.46E+002	32.40	3.18E+001
11	4331-	4352	4341.63	1085.41	1.39	1.00E+002	33.32	4.66E+001
12	4437-	4457	4446.47	1111.62	1.59	1.48E+002	29.66	2.02E+001
13	4679-	4703	4691.65	1172.91	1.89	1.89E+002	36.35	3.43E+001
14	5317-	5342	5328.81	1332.20	1.57	2.43E+002	33.68	9.56E+000
15	5619-	5643	5630.40	1407.60	2.13	2.17E+002	32.75	1.25E+001
16	5833-	5856	5842.26	1460.56	1.76	1.52E+002	25.42	2.55E+000

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

Errors quoted at 2.000 sigma

 **** 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: B102110DFSWC050GD
 Nuclide Library Used: C:\GENIE2K\CAMFILES\Zion Lib-BNL.NLB

IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)	Yield (%)	Activity (pCi/M ²)	Activity Uncertainty
K-40	1.000	1460.82*	10.66	1.87431E+006	3.52414E+005
Co-60	1.000	1173.23*	99.85	2.31681E+005	4.83201E+004
		1332.49*	99.98	3.09176E+005	4.94117E+004
Cs-137	1.000	661.66*	85.10	3.08770E+006	3.95018E+005
Eu-152	1.000	121.78*	28.67	7.43254E+005	3.83399E+005
		344.28*	26.60	8.37438E+005	2.61052E+005
		1408.01*	21.07	1.32969E+006	2.27541E+005
Eu-155	0.332	86.55*	30.70	4.17537E+005	3.04459E+005
		105.31	21.10		
Pb-212	0.939	238.63*	43.60	2.54744E+005	2.39837E+005
Bi-214	0.687	609.32*	45.49	4.01418E+004	7.37563E+004
		1120.29*	14.92	1.19873E+006	2.58940E+005
		1764.49	15.30		

* = Energy line found in the spectrum.
 @ = Energy line not used for Weighted Mean Activity
 Energy Tolerance : 10.000 keV
 Nuclide confidence index threshold = 0.30
 Errors quoted at 2.000 sigma

 **** INTERFERENCE CORRECTED REPORT ****

Nuclide Name	Nuclide Id Confidence	Wt mean Activity (pCi/M ²)	Wt mean Activity Uncertainty
K-40	1.000	1.874310E+006	3.524140E+005
Co-60	1.000	2.695632E+005✓	3.454694E+004
Cs-137	1.000	3.087696E+006/	3.950182E+005
Eu-152	1.000	1.054807E+006✓	1.565729E+005
Eu-155	0.332	4.175370E+005	3.044589E+005
Pb-212	0.939	2.547437E+005	2.398373E+005
Bi-214	0.687	1.270876E+005	7.093480E+004
X Pb-214	0.384		

? = 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 2.000 sigma

***** UNIDENTIFIED PEAKS *****

Peak Locate Performed on: 4/14/2018 12:48:46 PM
 Peak Locate From Channel: 85
 Peak Locate To Channel: 8192

Peak No.	Energy (keV)	Peak Size in Counts per Second	Peak CPS % Uncertainty	Peak Type	Tol. Nuclide
1	32.48	3.4898E-001	27.03		
2	75.19	1.7068E+000	20.37		
9	778.63	1.9024E-001	26.93	Sum	
10	963.60	2.4373E-001	22.16	Tol.	Ac-228
11	1085.41	1.6728E-001	33.20		

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

Errors quoted at 2.000 sigma

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

Detector Name: 5456-A
 Sample Geometry:
 Sample Title: B102110DFSWC050GD
 Nuclide Library Used: C:\GENIE2K\CAMFILES\Zion Lib-BNL.NLB

	Nuclide Name	Energy (keV)	Yield (%)	Line MDA (pCi/M ²)	Nuclide MDA (pCi/M ²)	Activity (pCi/M ²)	Dec. Level (pCi/M ²)
+	K-40	1460.82*	10.66	1.556E+005	1.56E+005	1.874E+006	6.116E+004
+	Co-60	1173.23*	99.85	5.138E+004	2.99E+004	2.317E+005	2.403E+004
		1332.49*	99.98	2.992E+004		3.092E+005	1.324E+004
	Nb-94	702.65	99.81	6.051E+004	6.05E+004	-5.022E+004	2.880E+004
		871.09	99.89	7.720E+004		6.540E+004	3.706E+004
	Ag-108m	433.90	90.50	9.975E+004	7.52E+004	1.386E+004	4.846E+004
		614.30	89.80	8.722E+004		1.795E+004	4.205E+004
		722.90	90.80	7.516E+004		6.640E+004	3.597E+004
	Cs-134	604.72	97.62	8.147E+004	7.07E+004	1.077E+004	3.930E+004
		795.86	85.46	7.074E+004		-6.272E+004	3.362E+004
+	Cs-137	661.66*	85.10	9.589E+004	9.59E+004	3.088E+006	4.626E+004
+	Eu-152	121.78*	28.67	5.702E+005	1.62E+005	7.433E+005	2.817E+005
		344.28*	26.60	3.301E+005		8.374E+005	1.606E+005
		1408.01*	21.07	1.618E+005		1.330E+006	7.261E+004
	Eu-154	123.07	40.40	4.201E+005	1.43E+005	5.995E+005	2.076E+005
		723.30	20.06	3.354E+005		1.386E+005	1.604E+005
		1274.43	34.80	1.429E+005		5.816E+004	6.655E+004
+	Eu-155	86.55*	30.70	4.761E+005	4.76E+005	4.175E+005	2.343E+005
		105.31	21.10	8.366E+005		4.132E+005	4.134E+005
	Tl-208	583.19	85.00	9.196E+004	9.20E+004	9.359E+004	4.435E+004
	Bi-212	727.33	6.67	9.860E+005	9.86E+005	-6.733E+004	4.710E+005
+	Pb-212	238.63*	43.60	3.871E+005	3.87E+005	2.547E+005	1.911E+005
+	Bi-214	609.32*	45.49	1.231E+005	1.23E+005	4.014E+004	5.845E+004
		1120.29*	14.92	2.484E+005		1.199E+006	1.132E+005
		1764.49	15.30	2.566E+005		2.680E+005	1.158E+005
	Pb-214	295.22	18.42	5.650E+005	2.47E+005	-2.131E+005	2.763E+005
		351.93*	35.60	2.467E+005		6.257E+005	1.200E+005
	Ra-226	186.21	3.64	3.501E+006	3.50E+006	-1.201E+006	1.723E+006
	Ac-228	338.32	11.27	8.929E+005	2.66E+005	2.904E+005	4.359E+005
		911.20	25.80	2.659E+005		2.057E+003	1.269E+005
		968.97	15.80	5.739E+005		-8.511E+003	2.769E+005
	Am-241	59.54	35.90	6.549E+005	6.55E+005	4.717E+004	3.228E+005

+ = Nuclide identified during the nuclide identification

* = Energy line found in the spectrum

> = Calculated MDA is zero due to zero counts in the region, or the region is outside the spectrum, or MDA has not been calculated

@ = Half-life too short to be able to perform the decay correction

***** GAMMA SPECTRUM ANALYSIS *****

Filename: 5456-A

Report Generated On : 4/14/2018 9:54:24 AM

Sample Title : B102110DFSWC051GD
Sample Description : U2 CTMNT Under Vessel
Sample Identification : 051
Sample Type : Gamma Direct
Sample Geometry :

Peak Locate Threshold : 3.00
Peak Locate Range (in channels) : 85 - 8192
Peak Area Range (in channels) : 85 - 8192
Identification Energy Tolerance : 10.000 keV

Sample Size : 3.140E+000 M^2

Sample Taken On : 4/14/2018 9:44:00 AM
Acquisition Started : 4/14/2018 9:44:21 AM

Live Time : 600.0 seconds
Real Time : 600.7 seconds

Dead Time : 0.12 %

Energy Calibration Used Done On : 3/15/2018
Efficiency Calibration Used Done On : 1/23/2018
Efficiency ID : 1M90D_ECP_17.8CM

Data Validated
4/14/18 1404
DR Mihalek

 *** P E A K A N A L Y S I S R E P O R T ***

Detector Name: 5456-A
 Sample Title: B102110DFSWC051GD
 Peak Analysis Performed on: 4/14/2018 9:54:23 AM
 Peak Analysis From Channel: 85
 Peak Analysis To Channel: 8192

Peak No.	ROI start	ROI end	Peak centroid	Energy (keV)	FWHM (keV)	Net Peak Area	Net Area Uncert.	Continuum Counts
1	126-	137	130.21	32.55	1.20	8.52E+001	44.23	1.35E+002
2	145-	186	155.06	38.77	1.55	5.33E+002	176.60	1.13E+003
3	280-	303	290.19	72.55	2.84	1.04E+003	177.32	1.70E+003
4	474-	496	485.40	121.35	1.69	9.07E+002	159.84	1.41E+003
5	974-	986	980.25	245.06	0.91	1.38E+002	63.12	3.26E+002
6	1365-	1387	1377.91	344.48	1.26	6.95E+002	76.81	2.01E+002
7	1637-	1653	1644.00	411.00	0.76	5.86E+001	41.50	1.18E+002
8	1768-	1787	1776.32	444.08	1.80	1.05E+002	46.89	1.27E+002
9	2432-	2447	2437.71	609.43	0.40	5.93E+001	35.48	8.47E+001
10	2637-	2658	2647.01	661.75	1.47	1.96E+002	45.43	8.50E+001
11	3107-	3128	3115.90	778.98	1.50	2.80E+002	47.38	7.59E+001
12	3464-	3478	3470.33	867.58	0.93	7.34E+001	33.67	7.26E+001
13	3846-	3869	3857.30	964.32	0.67	3.27E+002	50.01	7.32E+001
14	4335-	4354	4344.98	1086.24	1.49	2.01E+002	42.22	6.97E+001
15	4438-	4489	4449.08	1112.27	1.28	3.06E+002	69.72	1.12E+002
16	4683-	4708	4694.63	1173.66	2.00	4.53E+002	48.00	2.89E+001
17	5093-	5106	5099.24	1274.81	0.43	3.87E+001	19.30	1.83E+001
18	5193-	5206	5199.13	1299.78	0.44	2.64E+001	15.30	1.16E+001
19	5320-	5346	5332.15	1333.04	1.59	4.21E+002	42.25	6.20E+000
20	5622-	5648	5634.69	1408.67	1.99	4.16E+002	42.23	6.75E+000
21	5838-	5857	5846.44	1461.61	1.75	1.24E+002	28.70	2.40E+001
22	7054-	7069	7061.99	1765.50	0.43	2.00E+001	11.32	4.00E+000

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

Errors quoted at 2.000 sigma

 *** 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: B102110DFSWC051GD
 Nuclide Library Used: C:\GENIE2K\CAMFILES\Zion Lib-BNL.NLB

IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)	Yield (%)	Activity (pCi/M ²)	Activity Uncertainty
K-40	0.999	1460.82*	10.66	1.52493E+006	3.76953E+005
Co-60	1.000	1173.23*	99.85	5.56331E+005	7.38531E+004
		1332.49*	99.98	5.34536E+005	6.86256E+004
Cs-137	1.000	661.66*	85.10	2.44057E+005	6.37108E+004
Eu-152	1.000	121.78*	28.67	2.31169E+006	6.16591E+005
		344.28*	26.60	2.30002E+006	4.55512E+005
		1408.01*	21.07	2.55717E+006	3.30394E+005
Eu-154	0.682	123.07*	40.40	1.64050E+006	4.38434E+005
		723.30	20.06		
Pb-212	0.936	1274.43*	34.80	1.39538E+005	7.04905E+004
		238.63*	43.60	2.51507E+005	1.22004E+005
Bi-214	0.980	609.32*	45.49	1.35089E+005	8.24796E+004
		1120.29*	14.92	2.47837E+006	5.99201E+005
		1764.49*	15.30	1.84874E+005	1.05636E+005

* = Energy line found in the spectrum.
 @ = Energy line not used for Weighted Mean Activity
 Energy Tolerance : 10.000 keV
 Nuclide confidence index threshold = 0.30
 Errors quoted at 2.000 sigma

 *** INTERFERENCE CORRECTED REPORT ***

Nuclide Name	Nuclide Id Confidence	Wt mean Activity (pCi/M ²)	Wt mean Activity Uncertainty
K-40	0.999	1.524934E+006	3.769534E+005
Co-60	1.000	5.446347E+005✓	5.027217E+004
Cs-137	1.000	2.440574E+005✓	6.371081E+004
Eu-152	1.000	2.412452E+006✓	2.444984E+005
Eu-154	0.682	1.341978E+005✓	6.969079E+004
Pb-212	0.936	2.515067E+005	1.220038E+005
Bi-214	0.980	1.809872E+005	6.463116E+004
X Pb-214	0.388		

? = 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 2.000 sigma

***** UNIDENTIFIED PEAKS *****

Peak Locate Performed on: 4/14/2018 9:54:23 AM
 Peak Locate From Channel: 85
 Peak Locate To Channel: 8192

Peak No.	Energy (keV)	Peak Size in Counts per Second	Peak CPS % Uncertainty	Peak Type	Tol. Nuclide
1	32.55	1.4193E-001	51.94		
2	38.77	8.8904E-001	33.11		
3	72.55	1.7334E+000	17.05		
7	411.00	9.7695E-002	70.80		
8	444.08	1.7493E-001	44.68	D-Esc.	
11	778.98	4.6688E-001	16.91	Sum	
12	867.58	1.2233E-001	45.87	Tol.	Nb-94
13	964.32	5.4467E-001	15.30		
14	1086.24	3.3543E-001	20.98		
18	1299.78	4.4002E-002	57.95	Sum	

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

Errors quoted at 2.000 sigma

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

Detector Name: 5456-A
 Sample Geometry:
 Sample Title: B102110DFSWC051GD
 Nuclide Library Used: C:\GENIE2K\CAMFILES\Zion Lib-BNL.NLB

	Nuclide Name	Energy (keV)	Yield (%)	Line MDA (pCi/M ²)	Nuclide MDA (pCi/M ²)	Activity (pCi/M ²)	Dec. Level (pCi/M ²)
+	K-40	1460.82*	10.66	3.994E+005	3.99E+005	1.525E+006	1.831E+005
+	Co-60	1173.23*	99.85	4.810E+004	2.46E+004	5.563E+005	2.239E+004
		1332.49*	99.98	2.455E+004		5.345E+005	1.056E+004
	Nb-94	702.65	99.81	7.811E+004	7.81E+004	-3.858E+004	3.760E+004
		871.09	99.89	9.409E+004		1.403E+005	4.551E+004
	Ag-108m	433.90	90.50	9.516E+004	9.52E+004	-6.100E+003	4.617E+004
		614.30	89.80	1.011E+005		-1.154E+004	4.897E+004
		722.90	90.80	9.559E+004		3.766E+004	4.618E+004
	Cs-134	604.72	97.62	9.540E+004	9.53E+004	1.643E+004	4.626E+004
		795.86	85.46	9.527E+004		5.660E+004	4.588E+004
+	Cs-137	661.66*	85.10	7.665E+004	7.67E+004	2.441E+005	3.664E+004
+	Eu-152	121.78*	28.67	6.274E+005	1.27E+005	2.312E+006	3.103E+005
		344.28*	26.60	3.129E+005		2.300E+006	1.520E+005
		1408.01*	21.07	1.266E+005		2.557E+006	5.500E+004
+	Eu-154	123.07*	40.40	4.452E+005	9.72E+004	1.641E+006	2.202E+005
		723.30	20.06	4.335E+005		3.299E+005	2.094E+005
		1274.43*	34.80	9.721E+004		1.395E+005	4.373E+004
	Eu-155	86.55	30.70	6.881E+005	6.88E+005	6.686E+005	3.404E+005
		105.31	21.10	8.589E+005		-6.245E+005	4.245E+005
	Tl-208	583.19	85.00	1.044E+005	1.04E+005	7.809E+004	5.057E+004
	Bi-212	727.33	6.67	1.264E+006	1.26E+006	-6.465E+005	6.100E+005
+	Pb-212	238.63*	43.60	1.806E+005	1.81E+005	2.515E+005	8.782E+004
+	Bi-214	609.32*	45.49	1.260E+005	1.26E+005	1.351E+005	5.992E+004
		1120.29*	14.92	8.265E+005		2.478E+006	4.023E+005
		1764.49*	15.30	1.304E+005		1.849E+005	5.269E+004
	Pb-214	295.22	18.42	5.735E+005	2.34E+005	-1.967E+005	2.806E+005
		351.93*	35.60	2.338E+005		1.719E+006	1.136E+005
	Ra-226	186.21	3.64	3.509E+006	3.51E+006	3.078E+005	1.727E+006
	Ac-228	338.32	11.27	9.431E+005	3.24E+005	1.292E+005	4.611E+005
		911.20	25.80	3.244E+005		-1.600E+005	1.561E+005
		968.97	15.80	7.919E+005		3.145E+004	3.859E+005
	Am-241	59.54	35.90	6.489E+005	6.49E+005	-1.071E+005	3.199E+005

+ = Nuclide identified during the nuclide identification

* = Energy line found in the spectrum

> = Calculated MDA is zero due to zero counts in the region, or the region is outside the spectrum, or MDA has not been calculated

@ = Half-life too short to be able to perform the decay correction

***** GAMMA SPECTRUM ANALYSIS *****

Filename: C:\GENIE2K\CAMFILES\00004727.CNF

Report Generated On : 4/14/2018 4:28:10 PM
Sample Title : B102110DFSWC052GD
Sample Description : U2 CTMNT Under Vessel
Sample Identification : 052
Sample Type : Gamma Direct
Sample Geometry :
Peak Locate Threshold : 3.00
Peak Locate Range (in channels) : 85 - 8192
Peak Area Range (in channels) : 85 - 8192
Identification Energy Tolerance : 10.000 keV
Sample Size : 3.140E+000 M^2
Sample Taken On : 4/14/2018 9:31:00 AM
Acquisition Started : 4/14/2018 9:31:25 AM
Live Time : 600.0 seconds
Real Time : 600.5 seconds
Dead Time : 0.09 %

Energy Calibration Used Done On : 3/15/2018
Efficiency Calibration Used Done On : 1/23/2018
Efficiency ID : 1M90D_ECP_17.8CM

Data Validated
4/15/18 1410
DR Michalek

 ***** P E A K A N A L Y S I S R E P O R T *****

Detector Name: 5456-A
 Sample Title: B102110DFSWC052GD
 Peak Analysis Performed on: 4/14/2018 4:28:10 PM
 Peak Analysis From Channel: 85
 Peak Analysis To Channel: 8192

Peak No.	ROI start	ROI end	Peak centroid	Energy (keV)	FWHM (keV)	Net Peak Area	Net Area Uncert.	Continuum Counts
1	126-	134	130.08	32.52	0.72	5.30E+001	29.98	6.40E+001
2	148-	186	155.24	38.81	1.61	4.49E+002	140.36	7.57E+002
3	278-	292	282.27	70.57	0.29	8.19E+001	119.76	1.19E+003
4	398-	410	402.41	100.60	0.43	5.71E+001	86.58	6.89E+002
5	474-	494	485.51	121.38	2.00	5.40E+002	130.97	1.03E+003
6	970-	986	978.33	244.58	0.96	9.61E+001	64.28	2.98E+002
7	1367-	1414	1377.17	344.29	1.51	5.46E+002	119.14	4.00E+002
8	1768-	1784	1776.93	444.23	1.21	6.57E+001	37.58	9.03E+001
9	2327-	2339	2333.65	583.41	0.58	1.71E+001	26.39	5.89E+001
10	2430-	2444	2438.11	609.53	0.44	7.62E+001	33.51	7.08E+001
11	2638-	2657	2646.99	661.75	1.44	2.62E+002	46.79	8.15E+001
12	2888-	2899	2893.53	723.38	0.56	1.97E+001	23.19	4.53E+001
13	3105-	3127	3115.68	778.92	0.74	1.93E+002	39.81	5.21E+001
14	3461-	3477	3470.15	867.54	1.03	7.21E+001	30.06	4.89E+001
15	3847-	3869	3856.97	964.24	1.72	2.22E+002	40.36	4.80E+001
16	4335-	4352	4344.77	1086.19	1.45	1.64E+002	33.49	3.56E+001
17	4438-	4490	4449.35	1112.34	1.60	2.08E+002	69.75	1.29E+002
18	4683-	4706	4694.65	1173.66	1.75	2.39E+002	36.61	2.40E+001
19	5194-	5207	5200.14	1300.03	0.87	2.99E+001	12.39	3.12E+000
20	5320-	5343	5332.64	1333.16	2.11	2.49E+002	33.10	6.13E+000
21	5623-	5647	5635.15	1408.79	1.94	3.31E+002	37.69	6.01E+000
22	5836-	5857	5845.97	1461.49	0.86	1.55E+002	29.56	1.75E+001
23	7054-	7069	7061.87	1765.47	0.44	2.50E+001	10.00	0.00E+000

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

Errors quoted at 2.000 sigma

 ***** 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: B102110DFSWC052GD
 Nuclide Library Used: C:\GENIE2K\CAMFILES\Zion Lib-BNL.NLB

IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)	Yield (%)	Activity (pCi/M^2)	Activity Uncertainty
K-40	0.999	1460.82*	10.66	1.90038E+006	3.99176E+005
Co-60	0.999	1173.23*	99.85	2.93466E+005	5.07119E+004
		1332.49*	99.98	3.16139E+005	4.90711E+004
Cs-137	1.000	661.66*	85.10	3.26829E+005	7.02473E+004
Eu-152	1.000	121.78*	28.67	1.37506E+006	4.32629E+005
		344.28*	26.60	1.80561E+006	4.93394E+005
		1408.01*	21.07	2.03341E+006	2.83004E+005
Tl-208	1.000	583.19*	85.00	2.06259E+004	3.19133E+004
Bi-212	0.975	727.33*	6.67	3.20109E+005	3.78520E+005
Pb-212	0.945	238.63*	43.60	1.75029E+005	1.20430E+005
Bi-214	0.980	609.32*	45.49	1.73642E+005	7.91846E+004
		1120.29*	14.92	1.68637E+006	5.81528E+005
		1764.49*	15.30	2.31090E+005	9.42711E+004

* = Energy line found in the spectrum.
 @ = Energy line not used for Weighted Mean Activity
 Energy Tolerance : 10.000 keV
 Nuclide confidence index threshold = 0.30
 Errors quoted at 2.000 sigma

 **** INTERFERENCE CORRECTED REPORT ****

Nuclide Name	Nuclide Id Confidence	Wt mean Activity (pCi/M^2)	Wt mean Activity Uncertainty
K-40	0.999	1.900384E+006	3.991757E+005
Co-60	0.999	3.051754E+005 ✓	3.526428E+004
X Ag-108m	0.433		
Cs-137	1.000	3.268290E+005 ✓	7.024726E+004
Eu-152	1.000	1.830409E+006 ✓	2.135096E+005
X Eu-154	0.489		
Tl-208	1.000	2.062592E+004	3.191334E+004
Bi-212	0.975	3.201091E+005	3.785202E+005
Pb-212	0.945	1.750292E+005	1.204304E+005
Bi-214	0.980	2.134198E+005	6.030610E+004
X Pb-214	0.385		

? = 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 2.000 sigma

***** UNIDENTIFIED PEAKS *****

Peak Locate Performed on: 4/14/2018 4:28:10 PM
 Peak Locate From Channel: 85
 Peak Locate To Channel: 8192

Peak No.	Energy (keV)	Peak Size in Counts per Second	Peak CPS % Uncertainty	Peak Type	Tol. Nuclide
1	32.52	8.8333E-002	56.57		
2	38.81	7.4842E-001	31.26		
3	70.57	1.3643E-001	146.30		
4	100.60	9.5157E-002	151.64		
8	444.23	1.0954E-001	57.17	D-Esc.	
13	778.92	3.2154E-001	20.64	Sum	
14	867.54	1.2018E-001	41.69	Tol.	Nb-94
15	964.24	3.7007E-001	18.18	Sum	
16	1086.19	2.7395E-001	20.37		
19	1300.03	4.9798E-002	41.47	Sum	

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

Errors quoted at 2.000 sigma

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

Detector Name: 5456-A
 Sample Geometry:
 Sample Title: B102110DFSWC052GD
 Nuclide Library Used: C:\GENIE2K\CAMFILES\Zion Lib-BNL.NLB

	Nuclide Name	Energy (keV)	Yield (%)	Line MDA (pCi/M ²)	Nuclide MDA (pCi/M ²)	Activity (pCi/M ²)	Dec. Level (pCi/M ²)
+	K-40	1460.82*	10.66	3.566E+005	3.57E+005	1.900E+006	1.617E+005
+	Co-60	1173.23*	99.85	4.291E+004	2.44E+004	2.935E+005	1.979E+004
		1332.49*	99.98	2.437E+004		3.161E+005	1.047E+004
	Nb-94	702.65	99.81	7.147E+004	7.15E+004	8.280E+003	3.428E+004
		871.09	99.89	8.574E+004		1.169E+005	4.133E+004
	Ag-108m	433.90	90.50	8.275E+004	4.53E+004	7.460E+003	3.996E+004
		614.30*	89.80	5.746E+004		8.796E+004	2.717E+004
		722.90*	90.80	4.527E+004		2.351E+004	2.102E+004
	Cs-134	604.72	97.62	8.700E+004	8.11E+004	-1.667E+004	4.206E+004
		795.86	85.46	8.106E+004		6.860E+003✓	3.878E+004
+	Cs-137	661.66*	85.10	7.251E+004	7.25E+004	3.268E+005	3.457E+004
+	Eu-152	121.78*	28.67	5.201E+005	1.16E+005	1.375E+006	2.566E+005
		344.28*	26.60	6.054E+005		1.806E+006	2.982E+005
		1408.01*	21.07	1.161E+005		2.033E+006	4.975E+004
	Eu-154	123.07*	40.40	3.691E+005	1.46E+005	9.758E+005✓	1.821E+005
		723.30*	20.06	2.049E+005		1.064E+005	9.515E+004
		1274.43	34.80	1.460E+005		1.003E+005	6.812E+004
	Eu-155	86.55	30.70	6.128E+005	6.13E+005	2.663E+005	3.028E+005
		105.31	21.10	7.620E+005		-1.809E+004	3.761E+005
+	Tl-208	583.19*	85.00	5.296E+004	5.30E+004	2.063E+004	2.485E+004
+	Bi-212	727.33*	6.67	6.163E+005	6.16E+005	3.201E+005	2.862E+005
+	Pb-212	238.63*	43.60	1.883E+005	1.88E+005	1.750E+005	9.169E+004
+	Bi-214	609.32*	45.49	1.134E+005	2.50E+004	1.736E+005	5.363E+004
		1120.29*	14.92	8.691E+005		1.686E+006	4.236E+005
		1764.49*	15.30	2.501E+004		2.311E+005	0.000E+000
	Pb-214	295.22	18.42	5.274E+005	4.52E+005	4.545E+005	2.576E+005
		351.93*	35.60	4.524E+005		1.349E+006	2.228E+005
	Ra-226	186.21	3.64	3.110E+006	3.11E+006	-1.853E+005	1.528E+006
	Ac-228	338.32	11.27	8.451E+005	2.88E+005	1.601E+005	4.121E+005
		911.20	25.80	2.878E+005		1.078E+005	1.379E+005
		968.97	15.80	6.629E+005		5.491E+004	3.215E+005
	Am-241	59.54	35.90	5.747E+005	5.75E+005	-1.483E+005	2.827E+005

- + = Nuclide identified during the nuclide identification
- * = Energy line found in the spectrum
- > = Calculated MDA is zero due to zero counts in the region, or the region is outside the spectrum, or MDA has not been calculated
- @ = Half-life too short to be able to perform the decay correction

***** GAMMA SPECTRUM ANALYSIS *****

Filename: 5456-A

Report Generated On : 4/13/2018 1:48:08 PM
Sample Title : B102110DFSWC053GD
Sample Description : U2 CTMNT UNDERVESSEL
Sample Identification : 053
Sample Type : GAMMA DIRECT
Sample Geometry :
Peak Locate Threshold : 3.00
Peak Locate Range (in channels) : 85 - 8192
Peak Area Range (in channels) : 85 - 8192
Identification Energy Tolerance : 10.000 keV
Sample Size : 3.140E+000 M^2
Sample Taken On : 4/13/2018 1:37:00 PM
Acquisition Started : 4/13/2018 1:38:06 PM
Live Time : 600.0 seconds
Real Time : 600.7 seconds
Dead Time : 0.12 %

Energy Calibration Used Done On : 3/15/2018
Efficiency Calibration Used Done On : 1/23/2018
Efficiency ID : 1M90D_ECP_17.8CM

Data Validated
4/14/18 1333
DR Mihails

 ***** P E A K A N A L Y S I S R E P O R T *****

Detector Name: 5456-A
 Sample Title: B102110DFSWC053GD
 Peak Analysis Performed on: 4/13/2018 1:48:08 PM
 Peak Analysis From Channel: 85
 Peak Analysis To Channel: 8192

Peak No.	ROI start	ROI end	Peak centroid	Energy (keV)	FWHM (keV)	Net Peak Area	Net Area Uncert.	Continuum Counts
1	126-	139	130.45	32.61	0.73	1.36E+002	52.74	1.70E+002
2	145-	164	155.42	38.85	1.04	3.52E+002	92.06	5.05E+002
3	287-	307	297.66	74.42	2.15	6.56E+002	168.30	1.76E+003
4	328-	343	338.22	84.56	0.66	1.71E+002	131.08	1.37E+003
5	476-	497	487.33	121.83	1.71	6.57E+002	151.84	1.36E+003
6	972-	987	978.05	244.51	1.04	9.47E+001	72.04	3.99E+002
7	1366-	1385	1375.49	343.87	1.28	5.20E+002	70.32	2.05E+002
8	1401-	1413	1406.77	351.69	1.04	7.05E+001	39.86	1.24E+002
9	2425-	2442	2434.32	608.58	0.66	5.77E+001	39.67	1.03E+002
10	2632-	2654	2642.75	660.69	1.46	5.68E+002	65.59	1.30E+002
11	3100-	3121	3111.55	777.89	1.70	2.60E+002	47.70	8.22E+001
12	3458-	3471	3464.78	866.20	0.78	6.64E+001	30.01	5.76E+001
13	3840-	3861	3850.89	962.72	1.61	2.79E+002	46.44	6.91E+001
14	4327-	4346	4337.48	1084.37	1.11	1.84E+002	37.28	4.67E+001
15	4431-	4451	4442.13	1110.53	1.66	2.33E+002	42.50	6.04E+001
16	4677-	4699	4687.16	1171.79	1.71	3.41E+002	46.61	5.28E+001
17	4839-	4853	4846.28	1211.57	0.40	2.55E+001	19.00	2.25E+001
18	5085-	5098	5091.20	1272.80	0.53	3.31E+001	16.84	1.29E+001
19	5312-	5336	5323.72	1330.93	1.52	3.80E+002	42.79	1.88E+001
20	5612-	5639	5625.54	1406.38	1.69	4.10E+002	42.83	1.06E+001
21	5827-	5847	5836.92	1459.23	1.46	1.23E+002	28.69	2.29E+001
22	7044-	7059	7051.58	1762.90	0.34	2.59E+001	11.45	2.14E+000

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

Errors quoted at 2.000 sigma

 **** 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: B102110DFSWC053GD
 Nuclide Library Used: C:\GENIE2K\CAMFILES\Zion Lib-BNL.NLB

IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)	Yield (%)	Activity (pCi/M ²)	Activity Uncertainty
K-40	0.996	1460.82*	10.66	1.51325E+006	3.76282E+005
Co-60	0.996	1173.23*	99.85	4.18783E+005	6.63001E+004
		1332.49*	99.98	4.82798E+005	6.66629E+004
Cs-137	0.998	661.66*	85.10	7.06853E+005	1.17779E+005
Eu-152	0.999	121.78*	28.67	1.67169E+006	5.11262E+005
		344.28*	26.60	1.72116E+006	3.66197E+005
		1408.01*	21.07	2.51978E+006	3.31336E+005
Eu-154	0.682	123.07*	40.40	1.18632E+006	3.63367E+005
		723.30	20.06		
Eu-155	0.331	1274.43*	34.80	1.19254E+005	6.14592E+004
		86.55*	30.70	4.66316E+005	3.69965E+005
Pb-212	0.946	105.31	21.10		
		238.63*	43.60	1.72460E+005	1.34123E+005
Bi-214	0.969	609.32*	45.49	1.31578E+005	9.17711E+004
		1120.29*	14.92	1.88590E+006	3.76204E+005
		1764.49*	15.30	2.38877E+005	1.07494E+005
Pb-214	0.445	295.22	18.42		
		351.93*	35.60	1.75390E+005	1.03059E+005

* = Energy line found in the spectrum.
 @ = Energy line not used for Weighted Mean Activity
 Energy Tolerance : 10.000 keV
 Nuclide confidence index threshold = 0.30
 Errors quoted at 2.000 sigma

 *** INTERFERENCE CORRECTED REPORT ***

Nuclide Name	Nuclide Id Confidence	Wt mean Activity (pCi/M ²)	Wt mean Activity Uncertainty
K-40	0.996	1.513248E+006	3.762822E+005
Co-60	0.996	4.506156E+005✓	4.700900E+004
Cs-137	0.998	7.068532E+005✓	1.177792E+005
Eu-152	0.999	2.036053E+006✓	2.207038E+005
Eu-154	0.682	1.087147E+005/	6.071939E+004
Eu-155	0.331	4.663164E+005	3.699646E+005
Pb-212	0.946	1.724595E+005	1.341229E+005
Bi-214	0.969	2.336823E+005	6.862437E+004
Pb-214	0.445	1.753898E+005	1.030592E+005

? = 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 2.000 sigma

***** UNIDENTIFIED PEAKS *****

Peak Locate Performed on: 4/13/2018 1:48:08 PM
 Peak Locate From Channel: 85
 Peak Locate To Channel: 8192

Peak No.	Energy (keV)	Peak Size in Counts per Second	Peak CPS % Uncertainty	Peak Type	Tol. Nuclide
1	32.61	2.2669E-001	38.77		
2	38.85	5.8730E-001	26.12		
3	74.42	1.0926E+000	25.67		
11	777.89	4.3299E-001	18.36	Sum	
12	866.20	1.1060E-001	45.22	Tol.	Nb-94
13	962.72	4.6490E-001	16.65	Sum	
14	1084.37	3.0710E-001	20.23		
17	1211.57	4.2500E-002	74.51	Sum	

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

Errors quoted at 2.000 sigma

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

Detector Name: 5456-A
 Sample Geometry:
 Sample Title: B102110DFSWC053GD
 Nuclide Library Used: C:\GENIE2K\CAMFILES\Zion Lib-BNL.NLB

	Nuclide Name	Energy (keV)	Yield (%)	Line MDA (pCi/M ²)	Nuclide MDA (pCi/M ²)	Activity (pCi/M ²)	Dec. Level (pCi/M ²)
+	K-40	1460.82*	10.66	4.008E+005	4.01E+005	1.513E+006	1.838E+005
+	Co-60	1173.23*	99.85	6.071E+004	4.02E+004	4.188E+005	2.870E+004
		1332.49*	99.98	4.022E+004		4.828E+005	1.839E+004
	Nb-94	702.65	99.81	6.999E+004	7.00E+004	-7.540E+004	3.354E+004
		871.09	99.89	9.065E+004		1.080E+005	4.379E+004
	Ag-108m	433.90	90.50	9.704E+004	9.01E+004	2.003E+004	4.711E+004
		614.30	89.80	9.607E+004		-9.257E+003	4.647E+004
		722.90	90.80	9.009E+004		6.754E+004	4.343E+004
	Cs-134	604.72	97.62	9.205E+004	8.87E+004	4.579E+004	4.459E+004
		795.86	85.46	8.868E+004		-6.364E+004	4.258E+004
+	Cs-137	661.66*	85.10	9.565E+004	9.56E+004	7.069E+005	4.614E+004
+	Eu-152	121.78*	28.67	6.052E+005	1.57E+005	1.672E+006	2.992E+005
		344.28*	26.60	3.000E+005		1.721E+006	1.455E+005
		1408.01*	21.07	1.568E+005		2.520E+006	7.010E+004
+	Eu-154	123.07*	40.40	4.295E+005	8.26E+004	1.186E+006	2.123E+005
		723.30	20.06	4.087E+005		3.895E+005	1.970E+005
		1274.43*	34.80	8.264E+004		1.193E+005	3.644E+004
+	Eu-155	86.55*	30.70	5.845E+005	5.85E+005	4.663E+005	2.886E+005
		105.31	21.10	8.675E+005		2.483E+005	4.289E+005
	Tl-208	583.19	85.00	1.056E+005	1.06E+005	4.786E+004	5.118E+004
	Bi-212	727.33	6.67	1.156E+006	1.16E+006	-3.659E+005	5.560E+005
+	Pb-212	238.63*	43.60	2.127E+005	2.13E+005	1.725E+005	1.039E+005
+	Bi-214	609.32*	45.49	1.435E+005	1.05E+005	1.316E+005	6.868E+004
		1120.29*	14.92	4.166E+005		1.886E+006	1.973E+005
		1764.49*	15.30	1.049E+005		2.389E+005	3.997E+004
+	Pb-214	295.22	18.42	5.779E+005	1.55E+005	1.940E+005	2.828E+005
		351.93*	35.60	1.547E+005		1.754E+005	7.397E+004
	Ra-226	186.21	3.64	3.654E+006	3.65E+006	1.709E+006	1.800E+006
	Ac-228	338.32	11.27	1.015E+006	3.22E+005	3.611E+005	4.972E+005
		911.20	25.80	3.223E+005		-7.890E+004	1.551E+005
		968.97	15.80	7.370E+005		2.555E+005	3.585E+005
	Am-241	59.54	35.90	6.589E+005	6.59E+005	-2.931E+005	3.249E+005

+ = Nuclide identified during the nuclide identification
 * = Energy line found in the spectrum
 > = Calculated MDA is zero due to zero counts in the region, or the region is outside the spectrum, or MDA has not been calculated
 @ = Half-life too short to be able to perform the decay correction

***** GAMMA SPECTRUM ANALYSIS *****

Filename: C:\GENIE2K\CAMFILES\00004697.CNF

Report Generated On : 4/19/2018 11:32:34 AM
Sample Title : B102110DFSFM054GD
Sample Description : U2 CTMNT
Sample Identification : 054
Sample Type : GAMMA DIRECT
Sample Geometry :
Peak Locate Threshold : 3.00
Peak Locate Range (in channels) : 85 - 8192
Peak Area Range (in channels) : 85 - 8192
Identification Energy Tolerance : 10.000 keV
Sample Size : 1.134E+001 M²
Sample Taken On : 4/13/2018 9:49:00 AM
Acquisition Started : 4/13/2018 9:49:36 AM
Live Time : 600.0 seconds
Real Time : 600.3 seconds
Dead Time : 0.05 %

Energy Calibration Used Done On : 3/15/2018
Efficiency Calibration Used Done On : 4/19/2018
Efficiency ID : 1.9M0.153CMLINER

Data Validated
4/19/18 1415
DR M. Hall

 **** P E A K A N A L Y S I S R E P O R T ****

Detector Name: 5456-A
 Sample Title: B102110DFSFM054GD
 Peak Analysis Performed on: 4/19/2018 11:32:34 AM
 Peak Analysis From Channel: 85
 Peak Analysis To Channel: 8192

Peak No.	ROI start	ROI end	Peak centroid	Energy (keV)	FWHM (keV)	Net Peak Area	Net Area Uncert.	Continuum Counts
1	286-	309	299.60	74.90	2.11	3.57E+002	87.83	3.93E+002
2	2067-	2078	2072.28	518.07	0.48	1.30E+001	15.14	1.70E+001
3	2429-	2441	2435.95	608.99	0.70	2.55E+001	17.55	1.95E+001
4	2636-	2657	2645.83	661.46	1.55	6.48E+002	53.93	2.15E+001
5	4686-	4699	4692.95	1173.24	1.04	3.84E+001	15.76	8.64E+000
6	5323-	5336	5329.75	1332.44	0.33	2.92E+001	17.06	1.58E+001
7	5626-	5639	5632.19	1408.05	0.82	2.31E+001	10.71	1.87E+000
8	5832-	5853	5843.62	1460.91	1.47	1.38E+002	25.15	5.50E+000

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

Errors quoted at 2.000 sigma

 **** 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: B102110DFSFM054GD
 Nuclide Library Used: C:\GENIE2K\CAMFILES\Zion Lib-BNL.NLB

IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)	Yield (%)	Activity (pCi/M^2)	Activity Uncertainty
K-40	1.000	1460.82*	10.66	6.66620E+005	1.34976E+005
Co-60	1.000	1173.23*	99.85	1.76291E+004	7.37870E+003
		1332.49*	99.98	1.43128E+004	8.43601E+003
Cs-137	1.000	661.66*	85.10	2.63808E+005	3.85549E+004
Bi-214	0.440	609.32*	45.49	1.86828E+004	1.30535E+004
		1120.29	14.92		
		1764.49	15.30		

* = Energy line found in the spectrum.
 @ = Energy line not used for Weighted Mean Activity
 Energy Tolerance : 10.000 keV
 Nuclide confidence index threshold = 0.30
 Errors quoted at 2.000 sigma

 **** INTERFERENCE CORRECTED REPORT ****

Nuclide Name	Nuclide Id Confidence	Wt mean Activity (pCi/M ²)	Wt mean Activity Uncertainty
K-40	1.000	6.666201E+005	1.349759E+005
Co-60	1.000	1.619168E+004	5.553956E+003
Cs-137	1.000	2.638080E+005✓	3.855489E+004
Bi-214	0.440	1.868285E+004	1.305355E+004

? = 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 2.000 sigma

***** UNIDENTIFIED PEAKS *****

Peak Locate Performed on: 4/19/2018 11:32:34 AM
 Peak Locate From Channel: 85
 Peak Locate To Channel: 8192

Peak No.	Energy (keV)	Peak Size in Counts per Second	Peak CPS % Uncertainty	Peak Type	Tol. Nuclide
1	74.90	5.9524E-001	24.59		
2	518.07	2.1750E-002	116.00		
7	1408.05	3.8550E-002	46.29		

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

Errors quoted at 2.000 sigma

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

Detector Name: 5456-A
 Sample Geometry:
 Sample Title: B102110DFSFM054GD
 Nuclide Library Used: C:\GENIE2K\CAMFILES\Zion Lib-BNL.NLB

	Nuclide Name	Energy (keV)	Yield (%)	Line MDA (pCi/M ²)	Nuclide MDA (pCi/M ²)	Activity (pCi/M ²)	Dec. Level (pCi/M ²)
+	K-40	1460.82*	10.66	8.558E+004	8.56E+004	6.666E+005	3.623E+004
+	Co-60	1173.23*	99.85	8.609E+003	8.61E+003	1.763E+004	3.683E+003
		1332.49*	99.98	1.196E+004		1.431E+004	5.318E+003
	Nb-94	702.65	99.81	1.307E+004	1.26E+004	-5.012E+003	6.053E+003
		871.09	99.89	1.256E+004		-6.326E+003	5.744E+003
	Ag-108m	433.90	90.50	1.666E+004	1.47E+004	-1.388E+004	7.909E+003
		614.30	89.80	1.737E+004		-8.155E+003	8.181E+003
		722.90	90.80	1.469E+004		1.095E+004	6.808E+003
	Cs-134	604.72	97.62	1.684E+004	1.66E+004	9.435E+003✓	7.957E+003
		795.86	85.46	1.662E+004		7.465E+003	7.709E+003
+	Cs-137	661.66*	85.10	1.306E+004	1.31E+004	2.638E+005	5.981E+003
	Eu-152	121.78	28.67	7.871E+004	5.72E+004	6.207E+004✓	3.853E+004
		344.28	26.60	5.723E+004		-5.327E+004	2.734E+004
		1408.01	21.07	7.163E+004		1.546E+004	3.256E+004
	Eu-154	123.07	40.40	5.597E+004	3.64E+004	1.912E+003✓	2.740E+004
		723.30	20.06	6.595E+004		3.536E+004	3.054E+004
		1274.43	34.80	3.636E+004		-2.717E+004	1.632E+004
	Eu-155	86.55	30.70	8.233E+004	8.23E+004	1.040E+005	4.034E+004
		105.31	21.10	1.056E+005		1.198E+004	5.168E+004
	Tl-208	583.19	85.00	1.819E+004	1.82E+004	-3.592E+003	8.573E+003
	Bi-212	727.33	6.67	1.918E+005	1.92E+005	1.098E+004	8.854E+004
	Pb-212	238.63	43.60	4.297E+004	4.30E+004	-3.157E+004	2.084E+004
+	Bi-214	609.32*	45.49	1.928E+004	1.93E+004	1.868E+004	8.649E+003
		1120.29	14.92	1.090E+005		-1.840E+005	5.043E+004
		1764.49	15.30	7.638E+004		5.316E+004	3.305E+004
	Pb-214	295.22	18.42	8.574E+004	4.51E+004	5.623E+004	4.116E+004
		351.93	35.60	4.505E+004		2.387E+004	2.156E+004
	Ra-226	186.21	3.64	5.932E+005	5.93E+005	3.799E+005	2.896E+005
	Ac-228	338.32	11.27	1.392E+005	5.93E+004	2.132E+004	6.660E+004
		911.20	25.80	5.934E+004		6.803E+004	2.755E+004
		968.97	15.80	9.314E+004		8.123E+003	4.300E+004
	Am-241	59.54	35.90	7.329E+004	7.33E+004	1.719E+004	3.560E+004

+ = Nuclide identified during the nuclide identification
 * = Energy line found in the spectrum
 > = Calculated MDA is zero due to zero counts in the region, or the region is outside the spectrum, or MDA has not been calculated
 @ = Half-life too short to be able to perform the decay correction

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

Filename: C:\GENIE2K\CAMFILES\00004658.CNF

Report Generated On : 4/11/2018 5:18:26 PM
Sample Title : B102110DFQWC016GD
Sample Description : U2 CTMT UNDER VESSEL
Sample Identification : 016QC
Sample Type : GAMMA DIRECT
Sample Geometry :
Peak Locate Threshold : 3.00
Peak Locate Range (in channels) : 85 - 8192
Peak Area Range (in channels) : 85 - 8192
Identification Energy Tolerance : 10.000 keV
Sample Size : 2.830E+001 M^2
Sample Taken On : 4/11/2018 7:45:00 AM
Acquisition Started : 4/11/2018 7:47:40 AM
Live Time : 600.0 seconds
Real Time : 606.4 seconds
Dead Time : 1.06 %

Energy Calibration Used Done On : 3/15/2018
Efficiency Calibration Used Done On : 1/23/2018
Efficiency ID : 3M90D_ECP_17.8CM

Data Validated
4/12/18 0815
WR Muball

 ***** P E A K A N A L Y S I S R E P O R T *****

Detector Name: 5456-A

Sample Title: B102110DFQWC016GD

Peak Analysis Performed on: 4/11/2018 5:18:26 PM

Peak Analysis From Channel: 85

Peak Analysis To Channel: 8192

Peak No.	ROI start	ROI end	Peak centroid	Energy (keV)	FWHM (keV)	Net Peak Area	Net Area Uncert.	Continuum Counts
1	126-	135	130.29	32.57	0.85	4.77E+002	100.95	7.30E+002
2	151-	193	161.41	40.35	1.43	7.32E+003	488.74	8.11E+003
3	283-	312	302.26	75.57	1.26	8.04E+003	547.74	1.41E+004
4	331-	357	341.32	85.33	1.37	3.31E+003	509.56	1.41E+004
5	483-	498	489.65	122.41	1.32	9.14E+003	332.63	6.15E+003
6	974-	989	981.98	245.49	1.38	1.94E+003	186.51	2.25E+003
7	1016-	1025	1021.00	255.25	0.53	4.17E+001	105.19	1.20E+003
8	1371-	1390	1380.73	345.18	1.43	6.34E+003	210.42	1.35E+003
9	1468-	1486	1474.75	368.69	1.25	2.55E+002	124.89	1.07E+003
10	1640-	1661	1648.22	412.06	1.18	4.08E+002	136.24	1.12E+003
11	1769-	1791	1780.08	445.02	1.48	8.06E+002	136.13	9.86E+002
12	1853-	1865	1858.01	464.50	0.43	-1.32E+001	76.41	5.57E+002
13	1950-	1963	1957.28	489.32	0.56	8.80E+001	82.69	5.89E+002
14	2335-	2378	2349.01	587.25	0.59	3.28E+002	197.53	1.45E+003
15	2639-	2663	2652.00	663.00	0.99	4.49E+002	126.12	8.55E+002
16	2715-	2726	2720.48	680.12	0.25	1.84E+001	66.06	4.28E+002
17	2752-	2772	2760.41	690.10	1.23	1.83E+002	100.12	6.40E+002
18	2876-	2910	2899.38	724.85	1.71	3.72E+002	147.98	9.49E+002
19	3111-	3136	3121.82	780.46	1.67	2.49E+003	145.20	6.56E+002
20	3468-	3508	3476.61	869.15	1.62	7.53E+002	180.51	1.15E+003
21	3615-	3638	3623.43	905.86	0.35	5.12E+001	91.70	5.13E+002
22	3675-	3696	3685.17	921.29	1.38	1.21E+002	85.88	4.59E+002
23	3851-	3879	3864.22	966.05	1.75	2.72E+003	144.70	5.43E+002
24	3984-	4042	4028.14	1007.03	1.57	4.93E+002	176.42	8.70E+002
25	4341-	4380	4352.23	1088.06	1.86	2.19E+003	157.64	6.55E+002
26	4441-	4473	4457.81	1114.45	1.89	2.66E+003	142.43	4.70E+002
27	4687-	4717	4703.13	1175.78	1.86	2.18E+003	131.32	4.37E+002
28	4756-	4770	4762.75	1190.69	0.91	2.49E+001	44.67	1.64E+002
29	4850-	4875	4862.99	1215.75	1.89	3.11E+002	65.49	1.79E+002
30	5004-	5018	5010.87	1252.72	0.34	4.80E+001	32.90	7.70E+001
31	5096-	5120	5108.67	1277.17	2.16	3.27E+002	53.46	9.36E+001
32	5195-	5220	5207.85	1301.96	1.49	3.03E+002	54.28	1.01E+002
33	5326-	5356	5341.96	1335.49	1.85	2.27E+003	104.43	9.28E+001
34	5629-	5661	5644.76	1411.19	1.84	4.17E+003	132.57	4.47E+001
35	5833-	5868	5857.56	1464.39	1.07	2.72E+002	34.50	4.52E+000
36	6118-	6135	6126.79	1531.70	1.09	4.99E+001	17.91	9.12E+000
37	7066-	7081	7073.55	1768.39	0.48	3.20E+001	13.36	4.03E+000

M = First peak in a multiplet region

m = Other peak in a multiplet region

~ = Fitted singlet

Errors quoted at 2.000 sigma

 *** 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: B102110DFQWC016GD
 Nuclide Library Used: C:\GENIE2K\CAMFILES\Zion Lib-BNL.NLB

IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)	Yield (%)	Activity (pCi/M ²)	Activity Uncertainty
K-40	0.980	1460.82*	10.66	3.33916E+006	5.12632E+005
Co-60	0.988	1173.23*	99.85	2.68144E+006	2.68505E+005
		1332.49*	99.98	2.88127E+006	2.65773E+005
Cs-137	0.997	661.66*	85.10	5.64790E+005	1.72568E+005
Eu-152	0.995	121.78*	28.67	2.39461E+007	4.87436E+006
		344.28*	26.60	2.13708E+007	3.58336E+006
		1408.01*	21.07	2.55121E+007	2.19648E+006
Eu-154	0.995	123.07*	40.40	1.69934E+007	3.47088E+006
		723.30*	20.06	2.02514E+006	8.39673E+005
		1274.43*	34.80	1.17870E+006	2.15272E+005
Eu-155	0.332	86.55*	30.70	9.28814E+006	2.34474E+006
		105.31	21.10		
Tl-208	0.974	583.19*	85.00	4.00899E+005	2.46078E+005
Bi-212	0.990	727.33*	6.67	6.09059E+006	2.52802E+006
Pb-212	0.927	238.63*	43.60	3.60986E+006	6.79272E+005
Ac-228	0.958	338.32*	11.27	5.04403E+007	8.41595E+006
		911.20*	25.80	2.28587E+005	4.09593E+005
		968.97*	15.80	2.01888E+007	2.08465E+006

* = Energy line found in the spectrum.
 @ = Energy line not used for Weighted Mean Activity
 Energy Tolerance : 10.000 keV
 Nuclide confidence index threshold = 0.30
 Errors quoted at 2.000 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 (pCi/M^2)	Wt mean Activity Uncertainty
K-40	0.980	3.339165E+006	5.126321E+005
Co-60	0.988	2.782378E+006✓	1.888883E+005
Cs-137	0.997	5.647895E+005✓	1.725679E+005
Eu-152	0.995	2.396605E+007✓	1.737828E+006
Eu-154	0.995	1.174127E+006✓	2.139515E+005
Eu-155	0.332	9.288141E+006	2.344737E+006
Tl-208	0.974	4.008994E+005	2.460776E+005
Bi-212	0.990	2.559409E+006	2.603445E+006
Pb-212	0.927	3.609860E+006	6.792715E+005
X Pb-214	0.398		
Ac-228	0.958	1.064343E+006	4.003322E+005

? = 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 2.000 sigma

***** UNIDENTIFIED PEAKS *****

Peak Locate Performed on: 4/11/2018 5:18:26 PM
 Peak Locate From Channel: 85
 Peak Locate To Channel: 8192

Peak No.	Energy (keV)	Peak Size in Counts per Second	Peak CPS % Uncertainty	Peak Type	Tol. Nuclide
1	32.57	7.9436E-001	21.18		
2	40.35	1.2205E+001	6.67		
3	75.57	1.3401E+001	6.81		
7	255.25	6.9420E-002	252.53	D-Esc.	
9	368.69	4.2569E-001	48.90	Sum	
10	412.06	6.7921E-001	33.43		
11	445.02	1.3434E+000	16.89	D-Esc.	
12	464.50	-2.1988E-002	-579.16	Sum	
13	489.32	1.4674E-001	93.92	Sum	
16	680.12	3.0649E-002	359.24	Sum	
17	690.10	3.0536E-001	54.65	Sum	
19	780.46	4.1418E+000	5.84	Sum	
20	869.15	1.2558E+000	23.96	Tol.	Nb-94
22	921.29	2.0190E-001	70.89		
24	1007.03	8.2203E-001	35.77	Sum	
25	1088.06	3.6470E+000	7.20	Sum	
26	1114.45	4.4363E+000	5.35		
28	1190.69	4.1442E-002	179.65		
29	1215.75	5.1857E-001	21.05	Sum	
30	1252.72	7.9967E-002	68.57	Sum	
32	1301.96	5.0443E-001	17.93	Sum	
36	1531.70	8.3136E-002	35.91	Sum	
37	1768.39	5.3287E-002	41.78	Sum	

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

Errors quoted at 2.000 sigma

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

Detector Name: 5456-A
 Sample Geometry:
 Sample Title: B102110DFQWC016GD
 Nuclide Library Used: C:\GENIE2K\CAMFILES\Zion Lib-BNL.NLB

	Nuclide Name	Energy (keV)	Yield (%)	Line MDA (pCi/M^2)	Nuclide MDA (pCi/M^2)	Activity (pCi/M^2)	Dec. Level (pCi/M^2)
+	K-40	1460.82*	10.66	2.349E+005	2.35E+005	3.339E+006	1.008E+005
+	Co-60	1173.23*	99.85	1.901E+005	9.21E+004	2.681E+006	9.337E+004
		1332.49*	99.98	9.205E+004		2.881E+006	4.431E+004
	Nb-94	702.65	99.81	2.014E+005	2.01E+005	-9.315E+004	9.921E+004
		871.09	99.89	2.552E+005		8.705E+005	1.260E+005
	Ag-108m	433.90	90.50	2.344E+005	2.34E+005	-2.556E+005	1.158E+005
		614.30	89.80	2.370E+005		1.161E+005	1.169E+005
		722.90	90.80	2.431E+005		3.517E+004	1.199E+005
	Cs-134	604.72	97.62	2.158E+005	2.16E+005	-2.256E+005	1.064E+005
		795.86	85.46	2.378E+005		1.586E+004	1.171E+005
+	Cs-137	661.66*	85.10	2.493E+005	2.49E+005	5.648E+005	1.229E+005
+	Eu-152	121.78*	28.67	1.181E+006	3.20E+005	2.395E+007	5.868E+005
		344.28*	26.60	7.720E+005		2.137E+007	3.814E+005
		1408.01*	21.07	3.202E+005		2.551E+007	1.518E+005
+	Eu-154	123.07*	40.40	8.378E+005	2.43E+005	1.699E+007	4.164E+005
		723.30*	20.06	1.295E+006		2.025E+006	6.400E+005
		1274.43*	34.80	2.428E+005		1.179E+006	1.165E+005
+	Eu-155	86.55*	30.70	2.300E+006	2.29E+006	9.288E+006	1.146E+006
		105.31	21.10	2.294E+006		1.282E+006	1.142E+006
+	Tl-208	583.19*	85.00	3.935E+005	3.94E+005	4.009E+005	1.951E+005
+	Bi-212	727.33*	6.67	3.894E+006	3.89E+006	6.091E+006	1.925E+006
+	Pb-212	238.63*	43.60	5.095E+005	5.09E+005	3.610E+006	2.522E+005
	Bi-214	609.32	45.49	4.649E+005	2.97E+005	2.062E+005	2.293E+005
		1120.29	14.92	2.247E+006		-3.491E+005	1.112E+006
		1764.49	15.30	2.973E+005		2.469E+005	1.363E+005
	Pb-214	295.22	18.42	1.436E+006	5.77E+005	7.159E+002	7.116E+005
		351.93*	35.60	5.768E+005		1.597E+007	2.850E+005
	Ra-226	186.21	3.64	9.079E+006	9.08E+006	5.941E+006	4.511E+006
+	Ac-228	338.32*	11.27	1.822E+006	6.77E+005	5.044E+007	9.002E+005
		911.20*	25.80	6.767E+005		2.286E+005	3.323E+005
		968.97*	15.80	1.241E+006		2.019E+007	6.106E+005
	Am-241	59.54	35.90	1.698E+006	1.70E+006	1.352E+005	8.443E+005

+ = Nuclide identified during the nuclide identification
 * = Energy line found in the spectrum
 > = Calculated MDA is zero due to zero counts in the region, or the region is outside the spectrum, or MDA has not been calculated
 @ = Half-life too short to be able to perform the decay correction

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

Filename: C:\GENIE2K\CAMFILES\00004641.CNF

Report Generated On : 4/11/2018 5:20:29 PM
Sample Title : B102110DFQWC017GD
Sample Description : U2 CTMT UNDER VESSEL
Sample Identification : 017QC
Sample Type : GAMMA DIRECT
Sample Geometry :
Peak Locate Threshold : 3.00
Peak Locate Range (in channels) : 85 - 8192
Peak Area Range (in channels) : 85 - 8192
Identification Energy Tolerance : 10.000 keV
Sample Size : 2.830E+001 M^2
Sample Taken On : 4/11/2018 8:25:00 AM
Acquisition Started : 4/11/2018 8:25:56 AM
Live Time : 600.0 seconds
Real Time : 607.4 seconds
Dead Time : 1.21 %

Energy Calibration Used Done On : 3/15/2018
Efficiency Calibration Used Done On : 1/23/2018
Efficiency ID : 3M90D_ECP_17.8CM

Data Validated
4/12/18 0758
DR M. Habib

 **** P E A K A N A L Y S I S R E P O R T ****

Detector Name: 5456-A
 Sample Title: B102110DFQWC017GD
 Peak Analysis Performed on: 4/11/2018 5:20:28 PM
 Peak Analysis From Channel: 85
 Peak Analysis To Channel: 8192

Peak No.	ROI start	ROI end	Peak centroid	Energy (keV)	FWHM (keV)	Net Peak Area	Net Area Uncert.	Continuum Counts
1	126-	135	130.34	32.59	0.93	5.48E+002	103.85	7.63E+002
2	153-	193	161.50	40.38	1.39	5.01E+003	474.29	8.20E+003
3	283-	312	302.43	75.61	1.30	8.58E+003	564.98	1.50E+004
4	333-	360	341.47	85.37	1.49	3.40E+003	546.75	1.58E+004
5	480-	500	489.74	122.44	1.26	8.06E+003	417.81	9.81E+003
6	744-	753	748.62	187.16	0.44	3.28E+001	149.42	2.46E+003
7	973-	990	982.26	245.56	1.35	1.85E+003	218.47	3.10E+003
8	1181-	1196	1187.07	296.77	0.85	1.75E+002	153.14	1.89E+003
9	1368-	1390	1380.98	345.24	1.40	6.23E+003	241.18	2.13E+003
10	1470-	1483	1475.15	368.79	0.77	3.73E+001	115.33	1.18E+003
11	1638-	1657	1648.77	412.19	0.82	4.57E+002	143.14	1.33E+003
12	1768-	1789	1780.25	445.06	1.41	5.75E+002	152.09	1.39E+003
13	2642-	2663	2652.82	663.20	1.50	3.31E+003	161.85	8.63E+002
14	2752-	2770	2760.94	690.24	1.60	2.50E+002	96.45	6.14E+002
15	2891-	2907	2900.18	725.05	1.42	1.14E+002	94.14	6.71E+002
16	3112-	3135	3122.73	780.68	1.61	2.56E+003	149.02	7.43E+002
17	3467-	3487	3477.48	869.37	1.50	8.19E+002	111.28	6.27E+002
18	3678-	3695	3685.59	921.40	0.96	8.41E+001	82.90	4.95E+002
19	3852-	3880	3864.80	966.20	1.85	2.93E+003	151.50	6.07E+002
20	3983-	4041	4028.89	1007.22	1.70	5.11E+002	194.69	1.07E+003
21	4341-	4379	4353.29	1088.32	1.67	2.28E+003	162.67	7.22E+002
22	4445-	4499	4458.72	1114.68	1.80	2.58E+003	204.33	9.03E+002
23	4689-	4718	4704.04	1176.01	1.77	3.55E+003	149.11	4.24E+002
24	4738-	4753	4744.92	1186.23	0.71	3.37E+001	46.79	1.70E+002
25	4851-	4876	4862.52	1215.63	2.36	2.70E+002	71.18	2.35E+002
26	5094-	5122	5110.59	1277.65	1.75	4.15E+002	58.58	9.65E+001
27	5199-	5221	5208.84	1302.21	1.10	2.99E+002	52.47	1.01E+002
28	5330-	5358	5343.17	1335.79	1.77	3.48E+003	126.75	1.19E+002
29	5633-	5662	5646.07	1411.52	2.03	4.19E+003	131.53	2.90E+001
30	5837-	5871	5858.99	1464.75	1.54	2.51E+002	31.69	0.00E+000
31	6121-	6136	6127.45	1531.86	1.06	4.06E+001	17.13	1.04E+001
32	6395-	6410	6402.04	1600.51	0.49	2.04E+001	11.21	3.60E+000
33	7069-	7084	7076.44	1769.11	0.88	1.99E+001	12.43	6.11E+000

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

Errors quoted at 2.000 sigma

 **** 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: B102110DFQWC017GD
 Nuclide Library Used: C:\GENIE2K\CAMFILES\Zion Lib-BNL.NLB

IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)	Yield (%)	Activity (pCi/M ²)	Activity Uncertainty
K-40	0.976	1460.82*	10.66	3.07621E+006	4.71341E+005
Co-60	0.985	1173.23*	99.85	4.36093E+006	3.94135E+005
		1332.49*	99.98	4.40414E+006	3.87207E+005
Cs-137	0.996	661.66*	85.10	4.16846E+006	5.39940E+005
Eu-152	0.994	121.78*	28.67	2.11261E+007	4.37038E+006
		344.28*	26.60	2.10036E+007	3.54656E+006
		1408.01*	21.07	2.56533E+007	2.20468E+006
Eu-154	0.993	123.07*	40.40	1.49922E+007	3.11168E+006
		723.30*	20.06	6.23553E+005	5.17913E+005
		1274.43*	34.80	1.49240E+006	2.43716E+005
Eu-155	0.332	86.55*	30.70	9.54672E+006	2.44955E+006
		105.31	21.10		
Pb-212	0.926	238.63*	43.60	3.44590E+006	6.90081E+005
Pb-214	0.953	295.22*	18.42	8.17888E+005	7.25740E+005
		351.93*	35.60	1.56937E+007	2.58419E+006
		186.21*	3.64	6.80660E+005	3.10314E+006

* = Energy line found in the spectrum.
 @ = Energy line not used for Weighted Mean Activity
 Energy Tolerance : 10.000 keV
 Nuclide confidence index threshold = 0.30
 Errors quoted at 2.000 sigma

 **** INTERFERENCE CORRECTED REPORT ****

Nuclide Name	Nuclide Id Confidence	Wt mean Activity (pCi/M ²)	Wt mean Activity Uncertainty
K-40	0.976	3.076212E+006	4.713409E+005
Co-60	0.985	4.382921E+006 /	2.762133E+005
Cs-137	0.996	4.168455E+006 ✓	5.399404E+005
Eu-152	0.994	2.332793E+007 ✓	1.726462E+006
Eu-154	0.993	1.321777E+006 ✓	2.190358E+005
Eu-155	0.332	9.546718E+006	2.449547E+006
X Bi-212	0.992		
Pb-212	0.926	3.445897E+006	6.900808E+005
Pb-214	0.953	6.310393E+005	7.050286E+005
Ra-226	0.999	6.806602E+005	3.103144E+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 2.000 sigma

***** UNIDENTIFIED PEAKS *****

Peak Locate Performed on: 4/11/2018 5:20:28 PM
 Peak Locate From Channel: 85
 Peak Locate To Channel: 8192

Peak No.	Energy (keV)	Peak Size in Counts per Second	Peak CPS % Uncertainty	Peak Type	Tol. Nuclide
1	32.59	9.1378E-001	18.94		
2	40.38	8.3495E+000	9.47		
3	75.61	1.4293E+001	6.59		
10	368.79	6.2131E-002	309.36	Sum	
11	412.19	7.6222E-001	31.30	Sum	
12	445.06	9.5857E-001	26.44	D-Esc.	
14	690.24	4.1643E-001	38.60	Sum	
16	780.68	4.2643E+000	5.82	Sum	
17	869.37	1.3646E+000	13.59	Tol.	Nb-94
18	921.40	1.4010E-001	98.62	Sum	
19	966.20	4.8909E+000	5.16	Sum	
20	1007.22	8.5156E-001	38.10	Sum	
21	1088.32	3.8024E+000	7.13		
22	1114.68	4.2917E+000	7.94	Tol.	Bi-214
24	1186.23	5.6164E-002	138.85		
25	1215.63	4.5048E-001	26.33		
27	1302.21	4.9850E-001	17.54	Sum	
31	1531.86	6.7696E-002	42.18	Sum	
32	1600.51	3.3993E-002	54.94	Sum	
33	1769.11	3.3157E-002	62.50	Sum	

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

Errors quoted at 2.000 sigma

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

Detector Name: 5456-A
 Sample Geometry:
 Sample Title: B102110DFQWC017GD
 Nuclide Library Used: C:\GENIE2K\CAMFILES\Zion Lib-BNL.NLB

	Nuclide Name	Energy (keV)	Yield (%)	Line MDA (pCi/M ²)	Nuclide MDA (pCi/M ²)	Activity (pCi/M ²)	Dec. Level (pCi/M ²)
+	K-40	1460.82*	10.66	3.316E+004	3.32E+004	3.076E+006	0.000E+000
+	Co-60	1173.23*	99.85	1.848E+005	1.00E+005	4.361E+006	9.074E+004
		1332.49*	99.98	1.003E+005		4.404E+006	4.845E+004
	Nb-94	702.65	99.81	2.186E+005	2.19E+005	-1.075E+005	1.078E+005
		871.09	99.89	2.715E+005		1.115E+006	1.342E+005
	Ag-108m	433.90	90.50	2.689E+005	2.56E+005	2.108E+005	1.330E+005
		614.30	89.80	2.557E+005		2.667E+005	1.263E+005
		722.90	90.80	2.612E+005		3.690E+005	1.290E+005
	Cs-134	604.72	97.62	2.380E+005	2.38E+005	-4.252E+004	1.175E+005
		795.86	85.46	2.505E+005	@ /	-2.574E+005	1.235E+005
+	Cs-137	661.66*	85.10	2.389E+005	2.39E+005	4.168E+006	1.178E+005
+	Eu-152	121.78*	28.67	1.633E+006	2.52E+005	2.113E+007	8.132E+005
		344.28*	26.60	1.020E+006		2.100E+007	5.056E+005
		1408.01*	21.07	2.515E+005		2.565E+007	1.175E+005
+	Eu-154	123.07*	40.40	1.159E+006	2.59E+005	1.499E+007	5.771E+005
		723.30*	20.06	8.363E+005		6.236E+005	4.108E+005
		1274.43*	34.80	2.592E+005		1.492E+006	1.247E+005
+	Eu-155	86.55*	30.70	2.474E+006	2.41E+006	9.547E+006	1.233E+006
		105.31	21.10	2.410E+006		5.768E+005	1.200E+006
	Tl-208	583.19	85.00	2.823E+005	2.82E+005	1.418E+005	1.395E+005
	Bi-212	727.33*	6.67	2.515E+006	2.52E+006	1.875E+006	1.235E+006
+	Pb-212	238.63*	43.60	6.212E+005	6.21E+005	3.446E+006	3.081E+005
	Bi-214	609.32	45.49	5.123E+005	2.84E+005	4.275E+005	2.530E+005
		1120.29	14.92	2.265E+006		5.694E+004	1.122E+006
		1764.49	15.30	2.837E+005		3.385E+005	1.295E+005
+	Pb-214	295.22*	18.42	1.169E+006	7.62E+005	8.179E+005	5.783E+005
		351.93*	35.60	7.624E+005		1.569E+007	3.778E+005
+	Ra-226	186.21*	3.64	5.143E+006	5.14E+006	6.807E+005	2.543E+006
	Ac-228	338.32	11.27	2.456E+006	8.23E+005	-5.137E+005	1.217E+006
		911.20	25.80	8.226E+005		3.604E+005	4.053E+005
		968.97	15.80	2.243E+006		2.118E+007	1.111E+006
	Am-241	59.54	35.90	1.755E+006	1.76E+006	-1.344E+005	8.728E+005

+ = Nuclide identified during the nuclide identification
 * = Energy line found in the spectrum
 > = Calculated MDA is zero due to zero counts in the region, or the region is outside the spectrum, or MDA has not been calculated
 @ = Half-life too short to be able to perform the decay correction

***** GAMMA SPECTRUM ANALYSIS *****

Filename: 5456-A

Report Generated On : 4/14/2018 10:05:26 AM
Sample Title : B102110DFQWC051GD
Sample Description : U2 CTMNT Under Vessel
Sample Identification : 051 QC
Sample Type : Gamma Direct
Sample Geometry :
Peak Locate Threshold : 3.00
Peak Locate Range (in channels) : 85 - 8192
Peak Area Range (in channels) : 85 - 8192
Identification Energy Tolerance : 10.000 keV
Sample Size : 3.140E+000 M^2
Sample Taken On : 4/14/2018 9:55:00 AM
Acquisition Started : 4/14/2018 9:55:25 AM
Live Time : 600.0 seconds
Real Time : 600.7 seconds
Dead Time : 0.11 %

Energy Calibration Used Done On : 3/15/2018
Efficiency Calibration Used Done On : 1/23/2018
Efficiency ID : 1M90D_ECP_17.8CM

Data Validated
4/25/18 144!
DR Michalek

 ***** P E A K A N A L Y S I S R E P O R T *****

Detector Name: 5456-A
 Sample Title: B102110DFQWC051GD
 Peak Analysis Performed on: 4/14/2018 10:05:26 AM
 Peak Analysis From Channel: 85
 Peak Analysis To Channel: 8192

Peak No.	ROI start	ROI end	Peak centroid	Energy (keV)	FWHM (keV)	Net Peak Area	Net Area Uncert.	Continuum Counts
1	147-	164	154.91	38.73	1.50	3.57E+002	90.09	5.13E+002
2	210-	219	214.87	53.72	0.30	3.52E+001	58.23	3.57E+002
3	480-	496	485.92	121.48	1.13	5.43E+002	130.46	1.17E+003
4	530-	540	534.25	133.56	0.68	9.35E+000	72.33	5.42E+002
5	643-	653	648.24	162.06	0.54	5.06E+001	66.03	4.36E+002
6	974-	988	979.74	244.93	1.05	1.51E+002	69.41	3.64E+002
7	1368-	1416	1377.72	344.43	1.18	7.77E+002	131.02	4.79E+002
8	1466-	1481	1471.89	367.97	1.09	3.91E+001	43.87	1.47E+002
9	1771-	1783	1777.57	444.39	0.56	5.61E+001	35.83	9.89E+001
10	2430-	2445	2437.00	609.25	0.46	2.77E+001	37.47	1.06E+002
11	2635-	2656	2647.18	661.79	1.38	2.01E+002	48.88	1.06E+002
12	3106-	3128	3116.13	779.03	1.35	3.34E+002	50.04	7.48E+001
13	3456-	3478	3469.91	867.48	1.69	1.09E+002	42.40	8.78E+001
14	3847-	3867	3856.94	964.23	1.74	2.74E+002	48.85	8.89E+001
15	4333-	4353	4344.43	1086.11	1.09	1.90E+002	42.50	7.23E+001
16	4437-	4489	4449.55	1112.39	1.55	3.32E+002	70.06	1.06E+002
17	4682-	4706	4694.43	1173.61	1.69	4.15E+002	46.00	2.77E+001
18	5094-	5108	5100.03	1275.01	0.42	4.88E+001	18.06	1.13E+001
19	5320-	5344	5332.36	1333.09	1.68	4.06E+002	40.95	3.20E+000
20	5622-	5649	5634.92	1408.73	1.94	4.74E+002	46.15	1.34E+001
21	5835-	5857	5845.32	1461.33	0.89	1.49E+002	29.96	1.96E+001

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

Errors quoted at 2.000 sigma

 **** 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: B102110DFQWC051GD
 Nuclide Library Used: C:\GENIE2K\CAMFILES\Zion Lib-BNL.NLB

IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)	Yield (%)	Activity (pCi/M ²)	Activity Uncertainty
K-40	1.000	1460.82*	10.66	1.83771E+006	4.01497E+005
Co-60	1.000	1173.23*	99.85	5.09930E+005	6.96727E+004
		1332.49*	99.98	5.15480E+005	6.63848E+004
Cs-137	1.000	661.66*	85.10	2.50334E+005	6.78896E+004
Eu-152	1.000	121.78*	28.67	1.38240E+006	4.32502E+005
		344.28*	26.60	2.56984E+006	6.05245E+005
		1408.01*	21.07	2.90932E+006	3.66822E+005
Eu-154	0.682	123.07*	40.40	9.81025E+005	3.07369E+005
		723.30	20.06		
		1274.43*	34.80	1.75734E+005	6.66859E+004
Pb-212	0.938	238.63*	43.60	2.74850E+005	1.34034E+005
Bi-214	0.691	609.32*	45.49	6.31948E+004	8.57440E+004
		1120.29*	14.92	2.69243E+006	6.07759E+005
		1764.49	15.30		
Pb-214	0.387	295.22	18.42		
		351.93*	35.60	1.92016E+006	4.46499E+005
Am-241	0.947	59.54*	35.90	1.19400E+005	1.98913E+005

* = Energy line found in the spectrum.
 @ = Energy line not used for Weighted Mean Activity
 Energy Tolerance : 10.000 keV
 Nuclide confidence index threshold = 0.30
 Errors quoted at 2.000 sigma

 **** INTERFERENCE CORRECTED REPORT ****

Nuclide Name	Nuclide Id Confidence	Wt mean Activity (pCi/M^2)	Wt mean Activity Uncertainty
K-40	1.000	1.837710E+006	4.014970E+005
Co-60	1.000	5.128389E+005✓	4.806148E+004
Cs-137	1.000	2.503343E+005✓	6.788959E+004
Eu-152	1.000	2.186221E+006✓	2.823618E+005
Eu-154	0.682	1.421289E+005✓	6.572215E+004
Pb-212	0.938	2.748496E+005	1.340339E+005
Bi-214	0.691	1.145063E+005	8.490321E+004
Pb-214	0.387	2.866403E+005	4.937775E+005
Am-241	0.947	1.194001E+005	1.989130E+005

? = 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 2.000 sigma

***** UNIDENTIFIED PEAKS *****

Peak Locate Performed on: 4/14/2018 10:05:26 AM
 Peak Locate From Channel: 85
 Peak Locate To Channel: 8192

Peak No.	Energy (keV)	Peak Size in Counts per Second	Peak CPS % Uncertainty	Peak Type	Tol. Nuclide
1	38.73	5.9555E-001	25.21		
4	133.56	1.5577E-002	773.95		
5	162.06	8.4301E-002	130.54		
8	367.97	6.5161E-002	112.21	Sum	
9	444.39	9.3454E-002	63.89	D-Esc.	
12	779.03	5.5708E-001	14.97	Sum	
13	867.48	1.8207E-001	38.81		
14	964.23	4.5678E-001	17.82		
15	1086.11	3.1623E-001	22.40		

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

Errors quoted at 2.000 sigma

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

Detector Name: 5456-A
 Sample Geometry:
 Sample Title: B102110DFQWC051GD
 Nuclide Library Used: C:\GENIE2K\CAMFILES\Zion Lib-BNL.NLB

	Nuclide Name	Energy (keV)	Yield (%)	Line MDA (pCi/M ²)	Nuclide MDA (pCi/M ²)	Activity (pCi/M ²)	Dec. Level (pCi/M ²)
+	K-40	1460.82*	10.66	3.835E+005	3.84E+005	1.838E+006	1.751E+005
+	Co-60	1173.23*	99.85	4.639E+004	1.88E+004	5.099E+005	2.153E+004
		1332.49*	99.98	1.879E+004		5.155E+005	7.676E+003
	Nb-94	702.65	99.81	7.399E+004	7.40E+004	-2.681E+004	3.554E+004
		871.09	99.89	1.002E+005		3.453E+004	4.855E+004
	Ag-108m	433.90	90.50	9.284E+004	9.28E+004	-3.159E+004	4.501E+004
		614.30	89.80	9.822E+004		2.131E+004	4.755E+004
		722.90	90.80	9.475E+004		1.432E+005	4.576E+004
	Cs-134	604.72	97.62	8.914E+004	8.91E+004	-3.654E+004	4.314E+004
		795.86	85.46	9.286E+004		4.672E+004	4.467E+004
+	Cs-137	661.66*	85.10	8.493E+004	8.49E+004	2.503E+005	4.078E+004
+	Eu-152	121.78*	28.67	5.174E+005	1.72E+005	1.382E+006	2.553E+005
		344.28*	26.60	6.543E+005		2.570E+006	3.227E+005
		1408.01*	21.07	1.718E+005		2.909E+006	7.757E+004
+	Eu-154	123.07*	40.40	3.672E+005	7.77E+004	9.810E+005	1.812E+005
		723.30	20.06	4.267E+005		2.020E+005	2.060E+005
		1274.43*	34.80	7.770E+004		1.757E+005	3.397E+004
	Eu-155	86.55	30.70	6.972E+005	6.97E+005	1.104E+006	3.450E+005
		105.31	21.10	8.780E+005		4.894E+005	4.341E+005
	Tl-208	583.19	85.00	1.055E+005	1.05E+005	1.033E+005	5.111E+004
	Bi-212	727.33	6.67	1.296E+006	1.30E+006	3.676E+005	6.262E+005
+	Pb-212	238.63*	43.60	1.995E+005	1.99E+005	2.748E+005	9.728E+004
+	Bi-214	609.32*	45.49	1.410E+005	1.41E+005	6.319E+004	6.742E+004
		1120.29*	14.92	8.203E+005		2.692E+006	3.992E+005
		1764.49	15.30	2.400E+005		1.452E+005	1.075E+005
+	Pb-214	295.22	18.42	5.678E+005	4.89E+005	1.629E+004	2.777E+005
		351.93*	35.60	4.889E+005		1.920E+006	2.411E+005
	Ra-226	186.21	3.64	3.513E+006	3.51E+006	-7.849E+005	1.729E+006
	Ac-228	338.32	11.27	9.683E+005	3.09E+005	-1.084E+005	4.736E+005
		911.20	25.80	3.088E+005		-1.398E+005	1.484E+005
		968.97	15.80	7.818E+005		2.369E+005	3.809E+005
+	Am-241	59.54*	35.90	3.272E+005	3.27E+005	1.194E+005	1.590E+005

+ = Nuclide identified during the nuclide identification

* = Energy line found in the spectrum

> = Calculated MDA is zero due to zero counts in the region, or the region is outside the spectrum, or MDA has not been calculated

@ = Half-life too short to be able to perform the decay correction