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*********************************************************************
*****        G A M M A   S P E C T R U M   A N A L Y S I S        *****
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Filename: ERT01,C:\GENIE2K\CAMFILES\SMP-HTC-A02-S002-3642-01.CNF

Report Generated On	: 6/28/2017 3:12:40 PM
Sample Title	: HTC-A02-S002-3642-01
Sample Description	: 450 cc Soil
Sample Identification	:
Sample Type	:
Sample Geometry	:
Peak Locate Threshold	: 3.00
Peak Locate Range (in channels)	: 100 - 8192
Peak Area Range (in channels)	: 100 - 8192
Identification Energy Tolerance	: 1.000 keV
Sample Size	: 1.120E+003 GWET
Sample Taken On	: 5/15/2017 11:39:00 AM
Acquisition Started	: 6/28/2017 1:12:35 PM
Live Time	: 7200.0 seconds
Real Time	: 7202.2 seconds
Dead Time	: 0.03 %

Energy Calibration Used Done On	: 5/10/2017
Efficiency Calibration Used Done On	: 12/14/2016
Efficiency ID	: ERT0101

****
***** P E A K A N A L Y S I S R E P O R T *****
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Detector Name: ERT01
Sample Title: HTC-A02-S002-3642-01
Peak Analysis Performed on: 6/28/2017 3:12:40 PM
Peak Analysis From Channel: 100
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
M	1	293-	319	300.57	75.01	0.95	2.07E+002	24.65	6.56E+002
m	2	293-	319	309.14	77.15	0.96	3.79E+002	29.24	5.69E+002
M	3	342-	378	350.30	87.43	1.11	1.76E+002	24.23	6.37E+002
m	4	342-	378	360.39	89.95	1.11	1.26E+002	22.22	6.63E+002
m	5	342-	378	371.96	92.85	1.12	2.79E+002	27.15	5.97E+002
	6	420-	427	423.01	105.60	0.72	1.44E+001	27.24	3.61E+002
	7	571-	579	575.32	143.67	0.86	6.19E+001	29.54	3.80E+002
	8	734-	751	744.62	185.98	1.15	2.82E+002	47.83	6.17E+002
	9	834-	844	837.60	209.22	0.60	7.20E+001	30.23	3.50E+002
M	10	949-	974	954.95	238.55	1.06	1.30E+003	40.65	3.53E+002
m	11	949-	974	967.49	241.68	1.06	2.29E+002	20.78	3.21E+002
	12	1175-	1188	1181.09	295.06	1.11	3.44E+002	32.70	2.63E+002
	13	1194-	1211	1201.05	300.05	0.90	9.19E+001	31.79	2.82E+002
	14	1304-	1318	1312.51	327.91	0.78	6.67E+001	26.65	2.22E+002
	15	1347-	1360	1353.57	338.17	0.78	2.50E+002	29.01	2.14E+002
	16	1402-	1420	1407.97	351.76	1.01	6.86E+002	41.09	2.73E+002
	17	1845-	1860	1851.95	462.72	0.74	4.62E+001	23.11	1.62E+002
	18	2031-	2058	2043.28	510.54	1.54	3.74E+002	36.75	2.16E+002
	19	2326-	2342	2332.87	582.92	1.30	4.69E+002	30.25	1.42E+002
	20	2427-	2448	2437.04	608.95	1.24	5.87E+002	33.30	1.39E+002
	21	2902-	2919	2909.58	727.05	1.39	1.24E+002	20.78	9.39E+001
	22	3172-	3187	3180.83	794.84	0.38	5.80E+001	16.23	6.70E+001
	23	3434-	3453	3443.24	860.42	0.72	8.38E+001	19.35	8.22E+001
	24	3635-	3655	3645.58	910.99	1.50	3.50E+002	24.02	6.26E+001
	25	3868-	3885	3877.08	968.84	1.56	2.14E+002	21.30	7.36E+001
	26	4474-	4489	4482.13	1120.06	0.82	9.60E+001	18.00	7.60E+001
	27	4948-	4960	4954.08	1238.01	1.04	4.58E+001	14.53	6.22E+001
	28	5505-	5521	5513.51	1377.82	0.79	4.34E+001	11.39	2.76E+001
	29	5832-	5859	5846.51	1461.04	1.81	1.96E+003	45.70	2.80E+001
	30	6479-	6492	6485.94	1620.85	0.30	7.16E+000	5.80	8.84E+000
	31	6917-	6930	6923.84	1730.29	1.32	3.53E+001	7.75	8.75E+000
	32	7054-	7074	7064.35	1765.40	2.19	1.21E+002	13.23	1.51E+001

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

Errors quoted at 1.000 sigma

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***** N U C L I D E M D A R E P O R T *****
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Detector Name: ERT01
Sample Geometry:
Sample Title: HTC-A02-S002-3642-01
Nuclide Library Used: C:\GENIE2K\CAMFILES\ERT_LIBRARY_LMDA.NLB

	Nuclide Name	Energy (keV)	Yield (%)	Line MDA (pCi/GWET)	Nuclide MDA (pCi/GWET)	Activity (pCi/GWET)
+	K-40	1460.82*	10.55	3.3227E-001	3.32E-001	1.0857E+001
	Co-60	1173.23	99.85	5.1902E-002	3.96E-002	-1.2747E-003
		1332.49	99.98	3.9554E-002		2.2328E-002
>		2505.71	0.10	0.0000E+000		0.0000E+000
	Cs-137	32.06	5.54	2.5853E+003	4.29E-002	1.5185E+003
		661.66	84.99	4.2871E-002		-2.0380E-002
+	Tl-208	72.80	2.02	4.2418E+000	3.79E-002	-6.6320E-001
		74.97*	3.41	1.5588E+000		1.8851E+000
		84.90	1.51	3.7012E+000		2.5888E-001
		277.36	6.31	5.7945E-001		3.4819E-001
		510.77*	22.60	2.0907E-001		2.6148E-001
		583.19*	84.50	3.7937E-002		1.7143E-001
		763.13	1.81	2.4051E+000		-6.0904E-001
		860.56*	12.42	2.6968E-001		2.7579E-001
+	Bi-212	39.86	1.06	4.6516E+002	4.52E-001	1.0503E+001
		727.33*	6.74	4.5192E-001		6.6539E-001
		785.37	1.11	3.5892E+000		1.5011E+000
		1620.74*	1.51	1.1543E+000		3.0987E-001
		1806.00	0.09	3.2306E+001		-4.0273E+000
+	Pb-212	74.81*	10.40	5.1109E-001	5.78E-002	6.1810E-001
		77.11*	17.50	2.6143E-001		6.2122E-001
		87.30*	7.81	4.6754E-001		4.8721E-001
		115.18	0.59	6.0016E+000		4.8021E-001
		238.63*	43.30	5.7792E-002		5.6927E-001
		300.09*	3.28	9.5847E-001		6.1324E-001
+	Bi-214	76.86*	0.43	1.0280E+001	7.37E-002	2.4429E+001
		89.81*	0.24	1.3915E+001		1.0187E+001
		386.77	0.30	1.1115E+001		9.5688E-001
		454.77	0.29	1.0941E+001		-3.7102E-001
		609.31*	45.49	7.3745E-002		3.9715E-001
		665.45	1.53	2.3203E+000		8.4178E-001
		703.11	0.48	7.1348E+000		2.2818E-001
		719.86	0.39	9.2907E+000		-3.2402E+000
		768.36	4.89	8.6686E-001		4.7187E-001
		786.10	0.31	1.2190E+001		3.5729E+000
		806.17	1.26	2.9455E+000		1.1033E+000
		934.06	3.10	1.3152E+000		2.8027E-001
		964.08	0.36	1.7307E+001		9.3942E+000
		1051.96	0.31	1.3318E+001		3.2543E+000
		1120.29*	14.91	2.3628E-001		3.1098E-001

	Nuclide Name	Energy (keV)	Yield (%)	Line MDA (pCi/GWET)	Nuclide MDA (pCi/GWET)	Activity (pCi/GWET)
+	Bi-214	1133.66	0.25	1.9450E+001	7.37E-002	9.0578E+000
		1155.19	1.63	3.0940E+000		-1.2675E-001
		1207.68	0.45	1.2383E+001		7.2997E-001
		1238.11*	5.79	5.6438E-001		4.1389E-001
		1280.96	1.43	3.4049E+000		8.9664E-003
		1377.67*	4.00	6.4980E-001		6.1483E-001
		1385.31	0.76	4.9929E+000		-2.0789E+000
		1401.50	1.27	3.1210E+000		-7.2084E-001
		1407.98	2.15	1.9502E+000		1.2101E+000
		1509.23	2.11	1.6683E+000		6.8700E-001
		1538.50	0.38	8.7539E+000		-7.4313E-001
		1543.32	0.20	1.6220E+001		2.3129E+000
		1583.22	0.69	6.0175E+000		5.3176E+000
		1594.73	0.25	1.6663E+001		4.0922E+000
		1599.31	0.23	1.6222E+001		1.3513E+001
		1661.28	1.15	2.4940E+000		-1.2851E+000
		1683.99	0.22	1.3364E+001		3.0535E-001
		1729.59*	2.92	5.6963E-001		7.7657E-001
		1764.49*	15.40	1.6446E-001		4.8620E-001
		1847.42	2.11	1.5556E+000		-1.2257E+000
		1873.16	0.22	1.4469E+001		2.8851E+000
>		2118.55	1.14	0.0000E+000		0.0000E+000
>		2204.21	5.08	0.0000E+000		0.0000E+000
+	Pb-214	53.28	1.20	2.4020E+001	9.16E-002	1.6047E+001
		74.81*	6.44	7.9008E-001		9.5550E-001
		77.11*	10.80	4.0550E-001		9.6358E-001
		87.30*	4.84	7.2219E-001		7.5256E-001
		242.00*	7.43	3.0272E-001		5.7466E-001
		258.87	0.52	6.4221E+000		3.0567E-001
		274.80	0.47	7.5237E+000		-4.7169E+000
		295.22*	19.30	1.3764E-001		3.7036E-001
		351.93*	37.60	9.1591E-002		4.1119E-001
		462.00*	0.22	1.2544E+001		5.4958E+000
		533.66	0.19	1.7991E+001		1.3768E+001
		785.96	1.07	3.5295E+000		1.0345E+000
		839.04	0.59	6.9088E+000		2.6776E+000
+	Ra-224	81.07	0.13	4.5107E+001	5.73E-001	-2.0709E-001
		83.78	0.22	2.5381E+001		1.6128E+001
		240.99*	4.10	5.7309E-001		1.0879E+000
+	Ra-226	81.07	0.20	2.8712E+001	9.79E-001	-1.3182E-001
		83.78	0.33	1.6074E+001		1.0214E+001
		94.90	0.15	3.0110E+001		-1.2304E+001
		186.21*	3.59	9.7902E-001		1.0601E+000
+	Ac-228	99.50	1.26	3.1583E+000	1.21E-001	1.3814E+000
		129.07	2.50	1.5254E+000		5.4987E-001
		209.25*	3.97	6.2682E-001		3.2797E-001
		270.24	3.55	1.0370E+000		-1.8973E-001
		328.00*	3.04	9.1013E-001		5.0339E-001
		338.32*	11.40	2.3682E-001		5.1118E-001
		409.46	2.02	1.7423E+000		1.0690E-001

	Nuclide Name	Energy (keV)	Yield (%)	Line MDA (pCi/GWET)	Nuclide MDA (pCi/GWET)	Activity (pCi/GWET)
+	Ac-228	463.00*	4.45	6.5080E-001	1.21E-001	2.8512E-001
		755.31	1.03	3.6987E+000		3.0349E+000
		772.29	1.52	2.8702E+000		1.2930E+000
		794.94*	4.31	6.1983E-001		5.1800E-001
		835.70	1.70	2.5848E+000		6.9057E-001
		911.20*	26.20	1.2082E-001		5.6254E-001
		964.79	4.99	1.3322E+000		7.7320E-001
		968.96*	15.90	2.1054E-001		6.0469E-001
		1588.20	3.06	1.4476E+000		1.5000E-001
		1630.62	1.52	2.2580E+000		-1.6607E+000
	Th-228	84.37	1.26	4.3916E+000	4.39E+000	-1.4442E-001
		131.61	0.13	2.8633E+001		7.3842E+000
		166.41	0.10	3.3513E+001		1.8980E+001
		215.98	0.25	1.4551E+001		-1.9647E+000
	Pa-234m	258.23	0.07	4.5741E+001	4.92E+000	6.9829E+000
		742.81	0.09	3.9064E+001		2.0267E+001
		766.36	0.32	1.3275E+001		1.1003E+001
		786.27	0.05	7.0041E+001		-1.2272E+000
		1001.03	0.85	4.9184E+000		6.7005E-001
		1737.77	0.02	1.6020E+002		-1.0530E+002
	Th-234	63.30	3.75	3.1751E+000	1.11E+000	-3.7567E-001
		92.59	4.33	1.1148E+000		-1.0673E-001
		112.81	0.22	1.5940E+001		7.4453E-001

+ = 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 has not been calculated
@ = Half-life too short to be able to perform the decay correction

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*********************************************************************
*****  N U C L I D E   I D E N T I F I C A T I O N   R E P O R T  *****
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Sample Title: HTC-A02-S002-3642-01
Nuclide Library Used: C:\GENIE2K\CAMFILES\ERT_LIBRARY_LMDA.NLB

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

Nuclide Name	Id Confidence	Energy (keV)		Yield (%)	Activity (pCi/GWET)	Activity Uncertainty
K-40	0.992	1460.82*		10.55	1.08574E+001	3.89973E-001
Eu-152m	0.998	89.85*		69.90	3.57774E-002	6.39135E-003
Tl-208	0.836	72.80	@	2.02		
		74.97*	@	3.41	1.88511E+000	2.31489E-001
		84.90	@	1.51		
		277.36		6.31		
		510.77*	@	22.60	2.61481E-001	4.85808E-002
		583.19*		84.50	1.71427E-001	1.24560E-002
		763.13	@	1.81		
		860.56*		12.42	2.75794E-001	6.40105E-002
Bi-211	0.917	351.03*		13.00	1.19380E+000	8.43181E-002
Bi-212	0.769	39.86	@	1.06		
		727.33*		6.74	6.65390E-001	1.13334E-001
		785.37		1.11		
		1620.74*		1.51	3.09867E-001	2.51501E-001
		1806.00	@	0.09		
Pb-212	0.985	74.81*		10.40	6.18099E-001	7.79676E-002
		77.11*		17.50	6.21224E-001	5.43049E-002
		87.30*		7.81	4.87207E-001	7.01994E-002
		115.18	@	0.59		
		238.63*		43.30	5.69268E-001	2.61451E-002
		300.09*		3.28	6.13235E-001	2.13117E-001
Bi-214	0.619	76.86*	@	0.43	2.44287E+001	2.15146E+000
		89.81*	@	0.24	1.01867E+001	1.85611E+000
		386.77	@	0.30		
		454.77	@	0.29		
		609.31*		45.49	3.97145E-001	2.54059E-002
		665.45	@	1.53		
		703.11	@	0.48		
		719.86	@	0.39		
		768.36		4.89		
		786.10	@	0.31		
		806.17	@	1.26		
		934.06		3.10		
		964.08	@	0.36		
		1051.96	@	0.31		
		1120.29*		14.91	3.10979E-001	5.88058E-002
		1133.66	@	0.25		
		1155.19	@	1.63		
		1207.68	@	0.45		
		1238.11*		5.79	4.13886E-001	1.31758E-001

Nuclide Name	Id Confidence	Energy (keV)		Yield (%)	Activity (pCi/GWET)	Activity Uncertainty
Bi-214	0.619	1280.96	@	1.43		
		1377.67*		4.00	6.14826E-001	1.62238E-001
		1385.31	@	0.76		
		1401.50	@	1.27		
		1407.98	@	2.15		
		1509.23	@	2.11		
		1538.50	@	0.38		
		1543.32	@	0.20		
		1583.22	@	0.69		
		1594.73	@	0.25		
		1599.31	@	0.23		
		1661.28	@	1.15		
		1683.99	@	0.22		
		1729.59*	@	2.92	7.76569E-001	1.72656E-001
		1764.49*		15.40	4.86200E-001	5.84816E-002
		1847.42	@	2.11		
		1873.16	@	0.22		
		2118.55	@	1.14		
		2204.21	@	5.08		
Pb-214	0.942	53.28	@	1.20		
		74.81*		6.44	9.55497E-001	1.21400E-001
		77.11*		10.80	9.63577E-001	8.72395E-002
		87.30*		4.84	7.52563E-001	1.09365E-001
		242.00*		7.43	5.74659E-001	5.59283E-002
		258.87	@	0.52		
		274.80	@	0.47		
		295.22*		19.30	3.70361E-001	3.73765E-002
		351.93*		37.60	4.11189E-001	2.87485E-002
		462.00*	@	0.22	5.49579E+000	2.76492E+000
		533.66	@	0.19		
		785.96	@	1.07		
		839.04	@	0.59		
Ra-224	0.818	81.07	@	0.13		
		83.78	@	0.22		
		240.99*		4.10	1.08791E+000	1.05485E-001
Ra-226	0.769	81.07	@	0.20		
		83.78	@	0.33		
		94.90	@	0.15		
		186.21*		3.59	1.06013E+000	2.22128E-001
Ac-228	0.585	99.50	@	1.26		
		129.07	@	2.50		
		209.25*		3.97	3.27968E-001	1.38467E-001
		270.24		3.55		
		328.00*		3.04	5.03395E-001	2.02505E-001
		338.32*		11.40	5.11175E-001	6.42132E-002
		409.46	@	2.02		
		463.00*		4.45	2.85120E-001	1.43797E-001
		755.31	@	1.03		
		772.29	@	1.52		
		794.94*		4.31	5.17997E-001	1.46533E-001

Nuclide Name	Id Confidence	Energy (keV)		Yield (%)	Activity (pCi/GWET)	Activity Uncertainty
Ac-228	0.585	835.70	@	1.70		
		911.20*		26.20	5.62545E-001	4.47551E-002
		964.79		4.99		
		968.96*		15.90	6.04690E-001	6.45208E-002
		1588.20		3.06		
		1630.62	@	1.52		

* = Energy line found in the spectrum.
@ = Energy line not used for Weighted Mean Activity
Energy Tolerance : 1.000 keV
Nuclide confidence index threshold = 0.45
Errors quoted at 1.000 sigma

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

	Nuclide Name		Nuclide Id Confidence	Wt mean Activity (pCi/GWET)	Wt mean Activity Uncertainty
	K-40		0.992	1.085741E+001	3.899727E-001
X	Cd-109		0.944		
	Eu-152m		0.998	3.436696E-002	6.384404E-003
X	Eu-155		0.901		
	Tl-208	@	0.836	1.740989E-001	1.213470E-002
	Bi-211		0.917	3.709198E-001	1.256881E-001
	Bi-212	@	0.769	6.053807E-001	1.033270E-001
	Pb-212	@	0.985	5.076684E-001	2.193689E-002
	Bi-214	@	0.619	4.015811E-001	2.114313E-002
	Pb-214	@	0.942	2.834301E-001	3.266235E-002
	Ra-224	@	0.818	5.513343E-001	1.215507E-001
	Ra-226	@	0.769	1.060128E+000	2.221284E-001
	Ac-228	@	0.585	5.371846E-001	2.789899E-002

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

Errors quoted at 1.000 sigma

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

Peak Locate Performed on: 6/28/2017 3:12:40 PM
Peak Locate From Channel: 100
Peak Locate To Channel: 8192

	Peak No.	Energy (keV)	Peak Size in Counts per Second	Peak CPS % Uncertainty	Peak Type	Tol. Nuclide
m	5	92.85	2.8167E-002	13.71	Tol.	Yb-169 Th-234
	6	105.60	2.0008E-003	189.06	Tol.	Te-129m Eu-155 Np-239
	7	143.67	7.3863E-003	55.68	Tol.	Ra-223

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

Errors quoted at 1.000 sigma