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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-A01-S007-1824-01.CNF

Report Generated On	: 6/16/2017 7:30:17 PM
Sample Title	: HTC-A01-S007-1824-01
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	: 9.965E+002 GWET
Sample Taken On	: 5/13/2017 9:12:00 AM
Acquisition Started	: 6/16/2017 5:30:12 PM
Live Time	: 7200.0 seconds
Real Time	: 7203.1 seconds
Dead Time	: 0.04 %

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

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***** 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-A01-S007-1824-01
Peak Analysis Performed on: 6/16/2017 7:30:17 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	288-	317	299.72	74.79	1.05	5.45E+002	34.85	1.08E+003
m	2	288-	317	309.17	77.15	1.05	9.58E+002	41.75	1.07E+003
M	3	343-	385	349.58	87.25	1.40	3.94E+002	37.16	1.29E+003
m	4	343-	385	360.79	90.06	1.40	3.07E+002	33.91	1.41E+003
m	5	343-	385	372.56	93.00	1.40	5.07E+002	37.24	1.19E+003
	6	510-	522	517.32	129.18	1.17	1.67E+002	50.88	9.22E+002
	7	608-	620	616.90	154.06	0.51	7.79E+001	47.84	8.41E+002
	8	734-	750	744.44	185.94	1.06	3.26E+002	59.15	1.01E+003
	9	832-	845	837.63	209.23	1.06	2.51E+002	46.87	7.04E+002
M	10	947-	981	954.95	238.55	1.08	3.11E+003	60.77	6.54E+002
m	11	947-	981	966.09	241.33	1.08	4.55E+002	27.80	5.32E+002
	12	1072-	1095	1080.85	270.01	1.21	3.03E+002	57.05	7.34E+002
	13	1104-	1118	1109.28	277.12	0.94	9.62E+001	38.12	4.69E+002
	14	1173-	1191	1181.27	295.11	1.03	6.74E+002	49.19	5.16E+002
	15	1195-	1208	1201.03	300.05	0.91	1.88E+002	35.05	3.74E+002
	16	1306-	1323	1311.81	327.73	0.46	2.26E+002	40.03	4.17E+002
	17	1345-	1360	1353.44	338.14	1.06	6.26E+002	40.77	3.45E+002
	18	1400-	1418	1407.99	351.77	1.15	1.23E+003	51.01	4.05E+002
	19	1632-	1642	1637.73	409.19	0.73	4.41E+001	22.46	1.94E+002
	20	1838-	1858	1852.33	462.82	1.08	1.71E+002	36.31	3.12E+002
	21	2031-	2055	2042.97	510.46	1.12	6.06E+002	43.95	3.20E+002
	22	2323-	2343	2332.94	582.93	1.27	1.13E+003	43.88	2.19E+002
	23	2425-	2445	2437.42	609.04	1.27	1.00E+003	41.92	2.05E+002
	24	2640-	2652	2647.20	661.47	0.59	2.30E+001	18.60	1.22E+002
	25	2899-	2919	2909.44	727.01	1.19	2.65E+002	29.16	1.61E+002
	26	3016-	3028	3021.69	755.07	0.87	4.82E+001	17.92	1.04E+002
M	27	3062-	3096	3073.60	768.04	1.61	9.58E+001	14.27	1.43E+002
m	28	3062-	3096	3087.93	771.62	1.62	5.31E+001	11.76	1.19E+002
	29	3136-	3149	3142.72	785.31	0.39	2.28E+001	17.52	1.03E+002
	30	3171-	3188	3179.93	794.61	0.63	1.69E+002	22.88	1.08E+002
	31	3335-	3350	3342.22	835.17	0.75	6.19E+001	18.24	9.01E+001
	32	3435-	3450	3442.98	860.35	1.67	9.98E+001	20.80	1.09E+002
	33	3609-	3622	3616.10	903.62	0.90	3.97E+001	14.55	6.23E+001
	34	3635-	3656	3645.55	910.98	1.32	9.03E+002	36.14	1.07E+002
	35	3725-	3743	3736.95	933.82	0.65	3.44E+001	20.05	1.06E+002
M	36	3850-	3887	3859.47	964.44	1.52	1.45E+002	14.52	9.28E+001
m	37	3850-	3887	3876.64	968.73	1.52	4.65E+002	23.41	8.59E+001
	38	4440-	4452	4445.25	1110.84	0.27	2.34E+001	11.56	4.16E+001
	39	4473-	4493	4482.11	1120.05	1.28	2.13E+002	23.58	9.45E+001
	40	4945-	4962	4954.06	1238.00	1.73	7.16E+001	17.72	7.44E+001
	41	5506-	5520	5513.58	1377.84	1.32	3.88E+001	12.77	4.32E+001
	42	5629-	5640	5634.54	1408.07	0.85	2.60E+001	9.67	2.70E+001

	Peak No.	ROI start	ROI end	Peak centroid	Energy (keV)	FWHM (keV)	Net Peak Area	Net Area Uncert.	Continuum Counts
	43	5833-	5858	5846.65	1461.08	1.61	1.32E+003	39.94	6.29E+001
	44	6033-	6046	6039.04	1509.16	0.31	2.64E+001	9.42	2.26E+001
M	45	6349-	6382	6356.68	1588.54	1.35	5.04E+001	8.65	2.91E+001
m	46	6349-	6382	6374.20	1592.92	1.35	4.05E+001	8.10	3.30E+001
	47	6480-	6494	6486.63	1621.02	0.41	3.44E+001	9.08	1.66E+001
	48	6518-	6532	6525.43	1630.72	0.36	2.49E+001	10.70	3.01E+001
	49	6916-	6930	6922.92	1730.06	0.45	4.18E+001	8.25	9.17E+000
	50	7052-	7075	7063.21	1765.12	1.81	2.22E+002	17.90	2.43E+001
	51	7390-	7403	7396.57	1848.43	0.63	3.40E+001	8.88	1.60E+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-A01-S007-1824-01
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	5.1842E-001	5.18E-001	8.1914E+000
	Co-60	1173.23	99.85	5.6972E-002	5.18E-002	-3.0095E-002
		1332.49	99.98	5.1843E-002		-7.6649E-003
>		2505.71	0.10	0.0000E+000		0.0000E+000
+	Cs-137	32.06	5.54	3.4605E+003	3.71E-002	2.8350E+002
		661.66*	84.99	3.7088E-002		9.8774E-003
+	Tl-208	72.80	2.02	6.2899E+000	5.58E-002	3.7431E-002
		74.97*	3.41	2.2390E+000		5.5640E+000
		84.90	1.51	5.6170E+000		-3.7874E-001
		277.36*	6.31	6.4369E-001		3.5602E-001
		510.77*	22.60	2.6387E-001		6.2292E-001
		583.19*	84.50	5.5752E-002		4.6195E-001
		763.13	1.81	3.2330E+000		-6.3027E-002
		860.56*	12.42	3.2071E-001		3.6563E-001
+	Bi-212	39.86	1.06	6.6017E+002	6.87E-001	2.0140E+002
		727.33*	6.74	6.8723E-001		1.5829E+000
		785.37*	1.11	3.1018E+000		8.7371E-001
		1620.74*	1.51	1.6825E+000		1.6577E+000
		1806.00	0.09	4.1804E+001		6.9431E+000
+	Pb-212	74.81*	10.40	7.3414E-001	8.61E-002	1.8244E+000
		77.11*	17.50	3.9623E-001		1.7459E+000
		87.30*	7.81	7.3850E-001		1.2185E+000
		115.18	0.59	8.4162E+000		5.0108E+000
		238.63*	43.30	8.6107E-002		1.5360E+000
		300.09*	3.28	1.1338E+000		1.3924E+000
+	Bi-214	76.86*	0.43	1.5732E+001	9.93E-002	6.9319E+001
		89.81*	0.24	2.2629E+001		2.7864E+001
		386.77	0.30	1.5238E+001		-1.8111E+000
		454.77	0.29	1.5550E+001		8.1206E+000
		609.31*	45.49	9.9337E-002		7.5973E-001
		665.45	1.53	3.4061E+000		1.8647E+000
		703.11	0.48	9.9236E+000		6.3246E+000
		719.86	0.39	1.2656E+001		-7.2555E-002
		768.36*	4.89	6.7079E-001		7.9093E-001
		786.10*	0.31	1.0735E+001		3.0237E+000
		806.17	1.26	3.7641E+000		3.2416E-001
		934.06*	3.10	1.3876E+000		5.2030E-001
		964.08*	0.36	8.7496E+000		1.9189E+001
		1051.96	0.31	1.4761E+001		-6.2860E+000
		1120.29*	14.91	3.2347E-001		7.7327E-001

	Nuclide Name	Energy (keV)	Yield (%)	Line MDA (pCi/GWET)	Nuclide MDA (pCi/GWET)	Activity (pCi/GWET)
+	Bi-214	1133.66	0.25	2.0982E+001	9.93E-002	4.9304E+000
		1155.19	1.63	3.5345E+000		-1.8142E+000
		1207.68	0.45	1.3300E+001		2.7134E+000
		1238.11*	5.79	7.6209E-001		7.2683E-001
		1280.96	1.43	3.7939E+000		-9.2285E-001
		1377.67*	4.00	8.6767E-001		6.1778E-001
		1385.31	0.76	6.5561E+000		-3.1315E+000
		1401.50	1.27	4.1815E+000		-2.4782E-001
		1407.98*	2.15	1.2304E+000		7.8141E-001
		1509.23*	2.11	1.2621E+000		8.4536E-001
		1538.50	0.38	1.1776E+001		8.7076E+000
		1543.32	0.20	2.0685E+001		-1.6006E+001
		1583.22	0.69	8.2731E+000		-1.6230E+000
		1594.73	0.25	2.5693E+001		-2.3111E-001
		1599.31	0.23	2.2229E+001		-1.7590E+001
		1661.28	1.15	3.7804E+000		7.4193E-001
		1683.99	0.22	1.6754E+001		-8.2350E+000
		1729.59*	2.92	6.5729E-001		1.0355E+000
		1764.49*	15.40	2.3920E-001		1.0227E+000
		1847.42	2.11	2.2572E+000		9.6963E-001
		1873.16	0.22	1.9440E+001		7.9544E+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	3.3974E+001	1.20E-001	-2.0977E+000
		74.81*	6.44	1.1459E+000		2.8475E+000
		77.11*	10.80	6.2054E-001		2.7342E+000
		87.30*	4.84	1.1518E+000		1.9004E+000
		242.00*	7.43	4.3528E-001		1.2817E+000
		258.87	0.52	8.6619E+000		3.6988E+000
		274.80	0.47	1.0843E+001		-2.8542E-001
		295.22*	19.30	2.3808E-001		8.1504E-001
		351.93*	37.60	1.1963E-001		8.3430E-001
		462.00*	0.22	2.1420E+001		2.2854E+001
		533.66	0.19	2.3746E+001		2.4858E+000
		785.96*	1.07	3.1100E+000		8.7602E-001
		839.04	0.59	9.4042E+000		3.4352E+000
+	Ra-224	81.07	0.13	6.5320E+001	8.16E-001	-8.9805E+000
		83.78	0.22	3.7698E+001		7.0615E+000
		240.99*	4.10	8.1614E-001		2.4031E+000
+	Ra-226	81.07	0.20	4.1982E+001	1.37E+000	-5.7718E+000
		83.78	0.33	2.4106E+001		4.5154E+000
		94.90	0.15	4.3059E+001		-6.4630E+000
		186.21*	3.59	1.3705E+000		1.4128E+000
+	Ac-228	99.50	1.26	4.4168E+000	1.76E-001	8.2857E-001
		129.07*	2.50	1.6190E+000		1.1683E+000
		209.25*	3.97	1.0533E+000		1.2730E+000
		270.24*	3.55	1.6555E+000		1.9677E+000
		328.00*	3.04	1.4702E+000		1.8955E+000
		338.32*	11.40	3.4660E-001		1.4228E+000
		409.46*	2.02	1.4529E+000		6.2586E-001

	Nuclide Name	Energy (keV)	Yield (%)	Line MDA (pCi/GWET)	Nuclide MDA (pCi/GWET)	Activity (pCi/GWET)
+	Ac-228	463.00*	4.45	1.1006E+000	1.76E-001	1.1743E+000
		755.31*	1.03	3.1870E+000		1.9317E+000
		772.29*	1.52	2.0525E+000		1.4654E+000
		794.94*	4.31	8.9747E-001		1.6754E+000
		835.70*	1.70	2.0714E+000		1.6192E+000
		911.20*	26.20	1.7633E-001		1.6276E+000
		964.79*	4.99	6.5853E-001		1.4442E+000
		968.96*	15.90	1.9985E-001		1.4595E+000
		1588.20*	3.06	8.9788E-001		1.1851E+000
		1630.62*	1.52	2.2424E+000		1.1923E+000
	Th-228	84.37	1.26	6.6881E+000	6.69E+000	4.9146E-001
		131.61	0.13	4.1771E+001		-1.0643E+001
		166.41	0.10	4.8364E+001		-1.0378E+000
		215.98	0.25	2.0833E+001		8.7105E+000
	Pa-234m	258.23	0.07	6.0492E+001	5.95E+000	-2.2689E+000
		742.81	0.09	5.1340E+001		-2.6411E+001
		766.36	0.32	1.8255E+001		4.0522E-001
		786.27	0.05	9.5292E+001		3.2363E+000
		1001.03	0.85	5.9492E+000		1.8908E+000
		1737.77	0.02	1.8426E+002		-1.4645E+002
	Th-234	63.30	3.75	4.7668E+000	1.67E+000	8.9740E-001
		92.59	4.33	1.6739E+000		4.2014E+000
		112.81	0.22	2.2401E+001		-9.6173E+000

+ = 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

****
***** 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: HTC-A01-S007-1824-01
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	0.990	1460.82*		10.55	8.19136E+000	3.35312E-001
Mn-54	0.982	834.84*		99.97	2.87221E-002	8.48621E-003
Cs-137	0.993	32.06	@	5.54		
		661.66*		84.99	9.87742E-003	8.00012E-003
Eu-152m	0.993	89.85*		69.90	9.77291E-002	1.11209E-002
Tl-208	0.926	72.80	@	2.02		
		74.97*	@	3.41	5.56401E+000	3.93676E-001
		84.90	@	1.51		
		277.36*		6.31	3.56019E-001	1.41578E-001
		510.77*	@	22.60	6.22923E-001	6.64190E-002
		583.19*		84.50	4.61946E-001	2.31441E-002
		763.13	@	1.81		
		860.56*		12.42	3.65629E-001	7.67195E-002
TL-208e	0.976	1592.53*		99.16	2.94577E-002	6.16192E-003
Bi-211	0.916	351.03*		13.00	2.42018E+000	1.33428E-001
Bi-212	0.954	39.86	@	1.06		
		727.33*		6.74	1.58294E+000	1.80836E-001
		785.37*		1.11	8.73705E-001	6.70559E-001
		1620.74*		1.51	1.65775E+000	4.40728E-001
		1806.00	@	0.09		
Pb-212	0.986	74.81*		10.40	1.82435E+000	1.39396E-001
		77.11*		17.50	1.74587E+000	1.04732E-001
		87.30*		7.81	1.21854E+000	1.25849E-001
		115.18	@	0.59		
		238.63*		43.30	1.53595E+000	5.89143E-002
		300.09*		3.28	1.39238E+000	2.64392E-001
Bi-214	0.795	76.86*	@	0.43	6.93188E+001	4.22420E+000
		89.81*	@	0.24	2.78636E+001	3.32452E+000
		386.77	@	0.30		
		454.77	@	0.29		
		609.31*		45.49	7.59726E-001	3.89623E-002
		665.45	@	1.53		
		703.11	@	0.48		
		719.86	@	0.39		
		768.36*		4.89	7.90927E-001	1.19424E-001
		786.10*	@	0.31	3.02368E+000	2.37117E+000
		806.17	@	1.26		
		934.06*		3.10	5.20297E-001	3.03103E-001
		964.08*	@	0.36	1.91888E+001	2.07185E+000
		1051.96	@	0.31		
		1120.29*		14.91	7.73266E-001	8.78360E-002

Nuclide Name	Id Confidence	Energy (keV)		Yield (%)	Activity (pCi/GWET)	Activity Uncertainty
Bi-214	0.795	1133.66	@	0.25		
		1155.19	@	1.63		
		1207.68	@	0.45		
		1238.11*		5.79	7.26834E-001	1.81009E-001
		1280.96	@	1.43		
		1377.67*		4.00	6.17779E-001	2.03961E-001
		1385.31	@	0.76		
		1401.50	@	1.27		
		1407.98*	@	2.15	7.81406E-001	2.91978E-001
		1509.23*	@	2.11	8.45359E-001	3.02761E-001
		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	1.03546E+000	2.07229E-001
		1764.49*		15.40	1.02268E+000	9.21720E-002
		1847.42	@	2.11		
		1873.16	@	0.22		
		2118.55	@	1.14		
		2204.21	@	5.08		
Pb-214	0.952	53.28	@	1.20		
		74.81*		6.44	2.84751E+000	2.21840E-001
		77.11*		10.80	2.73424E+000	1.76227E-001
		87.30*		4.84	1.90044E+000	1.99545E-001
		242.00*		7.43	1.28166E+000	9.02696E-002
		258.87	@	0.52		
		274.80	@	0.47		
		295.22*		19.30	8.15044E-001	6.56115E-002
		351.93*		37.60	8.34296E-001	4.52298E-002
		462.00*	@	0.22	2.28539E+001	4.99890E+000
		533.66	@	0.19		
		785.96*	@	1.07	8.76019E-001	6.75471E-001
		839.04	@	0.59		
Ra-224	0.869	81.07	@	0.13		
		83.78	@	0.22		
		240.99*		4.10	2.40308E+000	1.68047E-001
Ra-226	0.766	81.07	@	0.20		
		83.78	@	0.33		
		94.90	@	0.15		
		186.21*		3.59	1.41281E+000	3.07644E-001
Ac-228	0.960	99.50	@	1.26		
		129.07*	@	2.50	1.16830E+000	3.58340E-001
		209.25*		3.97	1.27302E+000	2.44337E-001
		270.24*		3.55	1.96766E+000	3.79328E-001
		328.00*		3.04	1.89552E+000	3.48378E-001
		338.32*		11.40	1.42284E+000	1.15227E-001
		409.46*	@	2.02	6.25856E-001	3.19662E-001

Nuclide Name	Id Confidence	Energy (keV)	Yield (%)	Activity (pCi/GWET)	Activity Uncertainty
Ac-228	0.960	463.00*	4.45	1.17429E+000	2.60190E-001
		755.31* @	1.03	1.93170E+000	7.23614E-001
		772.29* @	1.52	1.46538E+000	3.31447E-001
		794.94*	4.31	1.67536E+000	2.37216E-001
		835.70* @	1.70	1.61917E+000	4.83022E-001
		911.20*	26.20	1.62759E+000	9.03106E-002
		964.79*	4.99	1.44423E+000	1.56389E-001
		968.96*	15.90	1.45947E+000	9.28490E-002
		1588.20*	3.06	1.18515E+000	2.10890E-001
		1630.62* @	1.52	1.19226E+000	5.16509E-001

* = 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

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***** I N T E R F E R E N C E C O R R E C T E D R E P O R T *****
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	Nuclide Name		Nuclide Id Confidence	Wt mean Activity (pCi/GWET)	Wt mean Activity Uncertainty
	K-40		0.990	8.191364E+000	3.353116E-001
	Mn-54		0.982	2.213993E-003	8.519343E-003
X	Cd-109		0.907		
	Cs-137	@	0.993	9.877419E-003	8.000120E-003
	Eu-152m		0.993	9.497409E-002	1.108977E-002
	Tl-208	@	0.926	4.508161E-001	2.159131E-002
	TL-208e		0.976	2.945769E-002	6.161924E-003
	Bi-211		0.916	5.164196E-001	2.122033E-001
	Bi-212	@	0.954	1.501606E+000	1.606952E-001
	Pb-212	@	0.986	1.364445E+000	4.499619E-002
	Bi-214	@	0.795	7.854768E-001	3.087261E-002
	Pb-214	@	0.952	6.562728E-001	5.817412E-002
	Ra-224	@	0.869	1.172587E+000	1.981876E-001
	Ra-226	@	0.766	1.412813E+000	3.076443E-001
	Ac-228	@	0.960	1.494359E+000	4.231540E-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: 6/16/2017 7:30:17 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	93.00	5.9864E-002	8.75	Tol.	Yb-169 Th-227 Th-234
	7	154.06	1.0817E-002	61.42	Sum	
	33	903.62	5.5120E-003	36.65	Sum	
	38	1110.84	3.2511E-003	49.40	S-Esc.	
	51	1848.43	4.7278E-003	26.07		

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

Errors quoted at 1.000 sigma