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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        *****
*************************************************************************


Filename: ERT01,C:\GENIE2K\CAMFILES\SMP-HTC-A01-S006-3642-01.CNF

Report Generated On              : 6/15/2017   6:49:39 PM

Sample Title                     : HTC-A01-S006-3642-01
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                      :  9.845E+002 GWET

Sample Taken On                  : 5/13/2017   4:48:00 PM
Acquisition Started              : 6/15/2017   4:49:35 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
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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-S006-3642-01
Peak Analysis Performed on: 6/15/2017 6:49:39 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	294-	321	300.04	74.87	0.88	2.49E+002	25.57	6.46E+002
m	2	294-	321	309.28	77.18	0.89	4.91E+002	31.07	6.04E+002
M	3	344-	380	349.71	87.29	1.07	1.45E+002	24.41	6.85E+002
m	4	344-	380	360.56	90.00	1.07	1.29E+002	23.30	6.63E+002
m	5	344-	380	372.02	92.86	1.07	2.53E+002	27.59	6.87E+002
	6	738-	752	744.44	185.94	1.07	2.42E+002	42.62	5.45E+002
	7	830-	844	837.55	209.21	0.88	1.05E+002	38.77	4.86E+002
M	8	945-	976	955.08	238.58	1.11	1.51E+003	43.13	3.82E+002
m	9	945-	976	967.80	241.76	1.12	2.05E+002	20.49	3.54E+002
	10	1074-	1089	1081.46	270.16	0.85	1.40E+002	32.46	3.04E+002
	11	1173-	1190	1181.71	295.22	1.07	4.18E+002	37.84	3.11E+002
	12	1192-	1205	1201.48	300.16	0.77	8.59E+001	28.50	2.64E+002
	13	1307-	1316	1312.44	327.89	1.02	6.15E+001	21.75	1.83E+002
	14	1345-	1361	1353.50	338.15	1.12	3.39E+002	33.54	2.51E+002
	15	1400-	1415	1408.26	351.84	1.24	7.00E+002	37.59	2.38E+002
	16	1630-	1643	1637.49	409.13	0.66	4.43E+001	23.31	1.81E+002
	17	1847-	1861	1852.79	462.93	1.41	8.27E+001	22.29	1.43E+002
	18	2031-	2053	2043.50	510.60	1.46	3.54E+002	34.80	2.21E+002
	19	2326-	2340	2332.86	582.91	1.38	5.49E+002	30.78	1.38E+002
	20	2429-	2446	2437.50	609.07	1.15	5.57E+002	31.58	1.35E+002
	21	2638-	2656	2646.32	661.25	0.80	6.72E+001	23.52	1.44E+002
	22	2899-	2917	2909.43	727.01	0.51	9.54E+001	21.18	1.05E+002
	23	3066-	3079	3073.77	768.08	0.46	5.98E+001	16.91	8.22E+001
	24	3174-	3190	3180.07	794.65	1.19	6.06E+001	15.87	6.04E+001
	25	3436-	3453	3443.19	860.41	0.86	9.55E+001	18.42	7.45E+001
	26	3636-	3656	3645.34	910.93	1.78	4.38E+002	26.20	6.83E+001
M	27	3846-	3887	3859.15	964.36	1.63	9.37E+001	11.37	4.80E+001
m	28	3846-	3887	3876.82	968.78	1.63	2.46E+002	17.57	6.70E+001
	29	4474-	4491	4483.09	1120.30	1.38	1.31E+002	18.71	6.75E+001
	30	4949-	4961	4954.79	1238.18	0.42	2.28E+001	15.12	7.72E+001
	31	5506-	5521	5514.36	1378.03	0.80	3.47E+001	11.32	3.03E+001
	32	5831-	5861	5846.93	1461.15	1.85	1.97E+003	46.43	3.89E+001
	33	6367-	6380	6373.70	1592.80	0.41	2.33E+001	7.75	1.27E+001
	34	6918-	6932	6924.79	1730.53	0.62	2.84E+001	8.74	1.66E+001
	35	7053-	7074	7064.43	1765.42	1.18	1.30E+002	14.17	1.85E+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-S006-3642-01
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	4.4874E-001	4.49E-001	1.2373E+001
	Co-60	1173.23	99.85	5.7895E-002	4.98E-002	-7.8765E-003
		1332.49	99.98	4.9792E-002		-4.2115E-002
>		2505.71	0.10	0.0000E+000		0.0000E+000
+	Cs-137	32.06	5.54	2.8735E+003	4.58E-002	1.0052E+003
		661.66*	84.99	4.5769E-002		2.9230E-002
+	Tl-208	72.80	2.02	4.9007E+000	4.05E-002	-2.5070E-002
		74.97*	3.41	1.7483E+000		2.5632E+000
		84.90	1.51	4.3376E+000		1.0896E+000
		277.36	6.31	6.8527E-001		3.2833E-001
		510.77*	22.60	2.2297E-001		2.6538E-001
		583.19*	84.50	4.0480E-002		2.2581E-001
		763.13	1.81	2.7006E+000		-4.2912E-001
		860.56*	12.42	2.7868E-001		3.5352E-001
+	Bi-212	39.86	1.06	5.2834E+002	5.43E-001	-1.6666E+002
		727.33*	6.74	5.4337E-001		5.7534E-001
		785.37	1.11	4.1102E+000		1.0863E+000
		1620.74	1.51	2.8683E+000		2.1220E+000
		1806.00	0.09	3.8561E+001		-1.7338E+001
+	Pb-212	74.81*	10.40	5.7323E-001	6.74E-002	8.4043E-001
		77.11*	17.50	3.0228E-001		9.0292E-001
		87.30*	7.81	5.4650E-001		4.5217E-001
		115.18	0.59	6.8717E+000		2.3154E+000
		238.63*	43.30	6.7449E-002		7.4961E-001
		300.09*	3.28	9.6091E-001		6.4459E-001
+	Bi-214	76.86*	0.43	1.2018E+001	7.72E-002	3.5898E+001
		89.81*	0.24	1.5816E+001		1.1831E+001
		386.77	0.30	1.2901E+001		9.4709E+000
		454.77	0.29	1.2830E+001		-2.3662E-001
		609.31*	45.49	7.7209E-002		4.2869E-001
		665.45	1.53	3.0364E+000		2.5442E-001
		703.11	0.48	8.7402E+000		3.5033E+000
		719.86	0.39	1.1130E+001		-1.9974E+000
		768.36*	4.89	6.0712E-001		4.9988E-001
		786.10	0.31	1.4118E+001		1.5609E+000
		806.17	1.26	3.3791E+000		-1.3340E+000
		934.06	3.10	1.5333E+000		4.8945E-001
		964.08*	0.36	6.4696E+000		1.2560E+001
		1051.96	0.31	1.4981E+001		3.6725E+000
		1120.29*	14.91	2.6358E-001		4.8042E-001

	Nuclide Name	Energy (keV)	Yield (%)	Line MDA (pCi/GWET)	Nuclide MDA (pCi/GWET)	Activity (pCi/GWET)
+	Bi-214	1133.66	0.25	2.0423E+001	7.72E-002	8.2193E+000
		1155.19	1.63	3.6069E+000		-6.9559E-001
		1207.68	0.45	1.3654E+001		2.0033E+000
		1238.11*	5.79	7.1305E-001		2.3447E-001
		1280.96	1.43	3.7761E+000		1.8143E-001
		1377.67*	4.00	7.6743E-001		5.5929E-001
		1385.31	0.76	6.1228E+000		-1.4233E+000
		1401.50	1.27	3.8221E+000		5.2904E-001
		1407.98	2.15	2.2639E+000		7.7558E-002
		1509.23	2.11	1.9709E+000		5.3903E-001
		1538.50	0.38	9.3951E+000		1.3074E+000
		1543.32	0.20	1.7373E+001		-1.1696E+000
		1583.22	0.69	7.2730E+000		5.0490E+000
		1594.73	0.25	2.0579E+001		8.0426E+000
		1599.31	0.23	1.8677E+001		4.9755E+000
		1661.28	1.15	3.3829E+000		1.1098E+000
		1683.99	0.22	1.4499E+001		-7.4990E+000
		1729.59*	2.92	8.7530E-001		7.1088E-001
		1764.49*	15.40	2.0866E-001		5.9853E-001
		1847.42	2.11	1.7199E+000		-1.6653E-001
		1873.16	0.22	1.4922E+001		3.3844E+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	2.7666E+001	8.84E-002	-2.4800E+000
		74.81*	6.44	8.9591E-001		1.3135E+000
		77.11*	10.80	4.7404E-001		1.4160E+000
		87.30*	4.84	8.5347E-001		7.0614E-001
		242.00*	7.43	3.6102E-001		5.8434E-001
		258.87	0.52	7.2440E+000		2.3737E-001
		274.80	0.47	8.7766E+000		1.7355E+000
		295.22*	19.30	1.8445E-001		5.1135E-001
		351.93*	37.60	8.8360E-002		4.7753E-001
		462.00*	0.22	1.3175E+001		1.1199E+001
		533.66	0.19	1.9655E+001		5.5577E+000
		785.96	1.07	4.0879E+000		4.5193E-001
		839.04	0.59	8.1624E+000		4.6103E+000
+	Ra-224	81.07	0.13	5.1639E+001	6.76E-001	5.0928E+000
		83.78	0.22	2.9596E+001		2.6199E+001
		240.99*	4.10	6.7601E-001		1.0942E+000
+	Ra-226	81.07	0.20	3.3233E+001	9.93E-001	3.2776E+000
		83.78	0.33	1.8950E+001		1.6775E+001
		94.90	0.15	3.4767E+001		-2.2191E+000
		186.21*	3.59	9.9297E-001		9.9381E-001
+	Ac-228	99.50	1.26	3.5249E+000	1.42E-001	1.9819E-001
		129.07	2.50	1.7302E+000		-3.1983E-001
		209.25*	3.97	9.0463E-001		5.3974E-001
		270.24*	3.55	9.3907E-001		9.1779E-001
		328.00*	3.04	8.2332E-001		5.2169E-001
		338.32*	11.40	3.0598E-001		7.7915E-001
		409.46*	2.02	1.5276E+000		6.3496E-001

	Nuclide Name	Energy (keV)	Yield (%)	Line MDA (pCi/GWET)	Nuclide MDA (pCi/GWET)	Activity (pCi/GWET)
+	Ac-228	463.00*	4.45	6.7607E-001	1.42E-001	5.7467E-001
		755.31	1.03	4.3818E+000		1.5661E+000
		772.29	1.52	3.3743E+000		-6.2915E-001
		794.94*	4.31	6.7337E-001		6.0832E-001
		835.70	1.70	2.9284E+000		2.8186E-001
		911.20*	26.20	1.4194E-001		7.9316E-001
		964.79*	4.99	4.8628E-001		9.4403E-001
		968.96*	15.90	1.7930E-001		7.7937E-001
		1588.20	3.06	1.8197E+000		4.3188E-001
		1630.62	1.52	2.6430E+000		-2.8842E+000
	Th-228	84.37	1.26	5.1888E+000	5.19E+000	2.3721E+000
		131.61	0.13	3.3037E+001		1.7186E+001
		166.41	0.10	3.8685E+001		-2.5949E+000
		215.98	0.25	1.6551E+001		-5.7083E-001
	Pa-234m	258.23	0.07	5.1900E+001	5.69E+000	7.8280E+000
		742.81	0.09	4.7552E+001		-1.0720E+001
		766.36	0.32	1.5304E+001		3.3929E+000
		786.27	0.05	8.1634E+001		1.3218E+001
		1001.03	0.85	5.6895E+000		2.1871E+000
		1737.77	0.02	1.9625E+002		-4.4205E+001
	Th-234	63.30	3.75	3.8126E+000	1.32E+000	9.7214E-001
		92.59	4.33	1.3168E+000		5.7786E-002
		112.81	0.22	1.8753E+001		5.9913E+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-S006-3642-01
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	0.983	1460.82*		10.55	1.23734E+001	4.47164E-001
Cs-137	0.974	32.06	@	5.54		
		661.66*		84.99	2.92303E-002	1.02627E-002
Eu-152m	0.996	89.85*		69.90	4.14879E-002	7.59545E-003
Tl-208	0.837	72.80	@	2.02		
		74.97*	@	3.41	2.56320E+000	2.74356E-001
		84.90	@	1.51		
		277.36		6.31		
		510.77*	@	22.60	2.65381E-001	5.17117E-002
		583.19*		84.50	2.25805E-001	1.46707E-002
		763.13	@	1.81		
		860.56*		12.42	3.53522E-001	6.87053E-002
TL-208e	0.989	1592.53*		99.16	1.71393E-002	5.79741E-003
Bi-211	0.901	351.03*		13.00	1.38508E+000	9.04185E-002
Bi-212	0.570	39.86	@	1.06		
		727.33*		6.74	5.75336E-001	1.28981E-001
		785.37		1.11		
		1620.74		1.51		
		1806.00	@	0.09		
Pb-212	0.986	74.81*		10.40	8.40433E-001	9.31666E-002
		77.11*		17.50	9.02920E-001	6.82130E-002
		87.30*		7.81	4.52166E-001	7.86602E-002
		115.18	@	0.59		
		238.63*		43.30	7.49613E-001	3.28901E-002
		300.09*		3.28	6.44589E-001	2.15001E-001
Bi-214	0.694	76.86*	@	0.43	3.58976E+001	2.73913E+000
		89.81*	@	0.24	1.18309E+001	2.20714E+000
		386.77	@	0.30		
		454.77	@	0.29		
		609.31*		45.49	4.28691E-001	2.74076E-002
		665.45	@	1.53		
		703.11	@	0.48		
		719.86	@	0.39		
		768.36*		4.89	4.99876E-001	1.41880E-001
		786.10	@	0.31		
		806.17	@	1.26		
		934.06		3.10		
		964.08*	@	0.36	1.25596E+001	1.60538E+000
		1051.96	@	0.31		
		1120.29*		14.91	4.80416E-001	6.98512E-002
		1133.66	@	0.25		

Nuclide Name	Id Confidence	Energy (keV)		Yield (%)	Activity (pCi/GWET)	Activity Uncertainty
Bi-214	0.694	1155.19	@	1.63		
		1207.68	@	0.45		
		1238.11*		5.79	2.34468E-001	1.55460E-001
		1280.96	@	1.43		
		1377.67*		4.00	5.59285E-001	1.83049E-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	7.10880E-001	2.20295E-001
		1764.49*		15.40	5.98532E-001	7.12488E-002
		1847.42	@	2.11		
		1873.16	@	0.22		
		2118.55	@	1.14		
		2204.21	@	5.08		
Pb-214	0.945	53.28	@	1.20		
		74.81*		6.44	1.31353E+000	1.46975E-001
		77.11*		10.80	1.41596E+000	1.12056E-001
		87.30*		4.84	7.06141E-001	1.23568E-001
		242.00*		7.43	5.84345E-001	6.20094E-002
		258.87	@	0.52		
		274.80	@	0.47		
		295.22*		19.30	5.11353E-001	4.94591E-002
		351.93*		37.60	4.77526E-001	3.08036E-002
		462.00*	@	0.22	1.11991E+001	3.07335E+000
		533.66	@	0.19		
		785.96	@	1.07		
		839.04	@	0.59		
Ra-224	0.802	81.07	@	0.13		
		83.78	@	0.22		
		240.99*		4.10	1.09417E+000	1.15747E-001
Ra-226	0.766	81.07	@	0.20		
		83.78	@	0.33		
		94.90	@	0.15		
		186.21*		3.59	9.93810E-001	2.24956E-001
Ac-228	0.774	99.50	@	1.26		
		129.07	@	2.50		
		209.25*		3.97	5.39738E-001	2.00118E-001
		270.24*		3.55	9.17787E-001	2.16354E-001
		328.00*		3.04	5.21687E-001	1.86272E-001
		338.32*		11.40	7.79147E-001	8.57349E-002
		409.46*	@	2.02	6.34957E-001	3.35277E-001
		463.00*		4.45	5.74669E-001	1.59010E-001

Nuclide Name	Id Confidence	Energy (keV)		Yield (%)	Activity (pCi/GWET)	Activity Uncertainty
Ac-228	0.774	755.31	@	1.03		
		772.29	@	1.52		
		794.94*		4.31	6.08316E-001	1.61312E-001
		835.70	@	1.70		
		911.20*		26.20	7.93157E-001	5.68821E-002
		964.79*		4.99	9.44032E-001	1.20917E-001
		968.96*		15.90	7.79374E-001	6.34581E-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

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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		0.983	1.237338E+001	4.471645E-001
X	Cd-109		0.914		
	Cs-137	@	0.974	2.923025E-002	1.026265E-002
	Eu-152m		0.996	3.990056E-002	7.587533E-003
	Tl-208	@	0.837	2.302413E-001	1.421787E-002
	TL-208e		0.989	1.713932E-002	5.797410E-003
	Bi-211		0.901	3.094221E-001	1.512746E-001
	Bi-212	@	0.570	5.753355E-001	1.289807E-001
	Pb-212	@	0.986	6.562530E-001	2.730016E-002
	Bi-214	@	0.694	4.526625E-001	2.316954E-002
	Pb-214	@	0.945	3.708479E-001	4.239109E-002
	Ra-224	@	0.802	3.997683E-001	1.397140E-001
	Ra-226	@	0.766	9.938096E-001	2.249563E-001
	Ac-228	@	0.774	7.683094E-001	3.085378E-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: 6/15/2017 6:49:39 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	92.86	2.4609E-002	15.93	Tol.	Yb-169 Th-234

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

Errors quoted at 1.000 sigma