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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-S0001-4248-01.CNF

Report Generated On              : 6/7/2017    5:03:47 PM

Sample Title                     : HTC-A01-S0001-4248-01
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                      :  9.495E+002 GWET

Sample Taken On                  : 5/13/2017   1:15:00 PM
Acquisition Started              : 6/7/2017    3:03:38 PM

Live Time                        :     7200.0 seconds
Real Time                        :     7206.3 seconds

Dead Time                        :   0.09 %


            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-S0001-4248-01
Peak Analysis Performed on: 6/7/2017 5:03:47 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-	319	300.13	74.89	1.05	3.93E+002	30.78	7.96E+002
m	2	294-	319	309.13	77.14	1.05	5.94E+002	34.61	8.25E+002
M	3	344-	379	349.58	87.25	1.16	2.09E+002	28.21	7.69E+002
m	4	344-	379	360.18	89.90	1.17	1.16E+002	25.09	8.55E+002
m	5	344-	379	372.69	93.03	1.17	3.11E+002	30.86	8.16E+002
	6	739-	752	744.38	185.92	1.21	2.81E+002	44.08	5.99E+002
	7	829-	849	837.36	209.16	0.83	2.44E+002	51.13	6.51E+002
M	8	947-	976	954.66	238.47	1.10	2.07E+003	49.72	4.41E+002
m	9	947-	976	966.36	241.40	1.10	2.86E+002	22.89	3.96E+002
	10	1074-	1087	1081.36	270.14	1.12	1.25E+002	33.08	3.48E+002
	11	1103-	1118	1109.21	277.10	0.46	7.99E+001	34.83	3.77E+002
	12	1174-	1190	1180.89	295.01	1.09	4.38E+002	38.89	3.39E+002
	13	1190-	1206	1200.89	300.01	0.96	1.07E+002	34.72	3.51E+002
	14	1304-	1315	1311.77	327.72	0.81	8.67E+001	24.61	2.07E+002
	15	1347-	1361	1353.12	338.06	1.27	4.19E+002	35.30	2.81E+002
	16	1397-	1416	1407.65	351.69	1.12	7.54E+002	43.20	3.16E+002
	17	1630-	1644	1636.90	408.98	0.58	8.16E+001	25.58	1.98E+002
	18	1843-	1860	1852.31	462.81	1.11	1.44E+002	25.93	1.62E+002
	19	2029-	2057	2042.61	510.37	1.78	4.73E+002	41.93	2.79E+002
	20	2323-	2342	2332.21	582.75	1.33	7.64E+002	36.93	1.72E+002
	21	2429-	2445	2436.77	608.88	1.41	5.41E+002	32.56	1.66E+002
	22	2902-	2914	2908.59	726.80	1.03	1.60E+002	20.57	1.00E+002
M	23	3063-	3094	3073.46	768.00	1.08	4.22E+001	9.94	7.70E+001
m	24	3063-	3094	3088.80	771.84	1.08	3.28E+001	9.25	7.15E+001
	25	3169-	3185	3178.99	794.38	1.31	1.04E+002	19.10	8.31E+001
	26	3433-	3451	3441.16	859.90	1.62	1.18E+002	19.83	8.08E+001
	27	3634-	3653	3644.33	910.67	1.33	5.25E+002	29.89	1.05E+002
M	28	3850-	3885	3858.00	964.08	1.44	8.13E+001	12.05	8.97E+001
m	29	3850-	3885	3875.54	968.46	1.44	3.20E+002	19.93	8.61E+001
	30	4473-	4492	4481.45	1119.89	1.59	1.37E+002	21.10	8.83E+001
	31	4946-	4960	4952.75	1237.67	1.36	4.38E+001	18.70	1.04E+002
	32	5833-	5859	5845.14	1460.70	1.58	2.49E+003	51.81	4.58E+001
	33	5980-	5991	5985.50	1495.78	0.46	1.46E+001	7.46	1.64E+001
	34	7052-	7072	7061.88	1764.79	0.87	1.64E+002	14.52	1.30E+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-S0001-4248-01
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	4.7294E-001	4.73E-001	1.6262E+001
	Co-60	1173.23	99.85	6.4197E-002	5.40E-002	7.0159E-003
		1332.49	99.98	5.4049E-002		1.4089E-002
>		2505.71	0.10	0.0000E+000		0.0000E+000
	Cs-137	32.06	5.54	3.1082E+003	5.22E-002	-1.4380E+003
		661.66	84.99	5.2153E-002		-1.0844E-002
+	Tl-208	72.80	2.02	5.6418E+000	5.05E-002	1.7097E-001
		74.97*	3.41	1.9923E+000		4.1626E+000
		84.90	1.51	4.7779E+000		-2.4726E-001
		277.36*	6.31	6.1249E-001		3.0721E-001
		510.77*	22.60	2.7074E-001		4.5027E-001
		583.19*	84.50	5.0531E-002		3.2452E-001
		763.13	1.81	2.7782E+000		-5.1109E-001
		860.56*	12.42	3.0368E-001		4.4996E-001
+	Bi-212	39.86	1.06	5.9126E+002	4.85E-001	3.2458E+002
		727.33*	6.74	4.8502E-001		9.9029E-001
		785.37	1.11	4.7664E+000		2.4008E+000
		1620.74	1.51	3.3300E+000		2.2626E+000
		1806.00	0.09	4.0111E+001		6.8995E+000
+	Pb-212	74.81*	10.40	6.5324E-001	7.42E-002	1.3649E+000
		77.11*	17.50	3.6305E-001		1.1248E+000
		87.30*	7.81	5.9575E-001		6.7217E-001
		115.18	0.59	7.6897E+000		5.3111E+000
		238.63*	43.30	7.4205E-002		1.0610E+000
		300.09*	3.28	1.2105E+000		8.2296E-001
+	Bi-214	76.86*	0.43	1.4548E+001	8.67E-002	4.5071E+001
		89.81*	0.24	1.8614E+001		1.1107E+001
		386.77	0.30	1.3992E+001		-1.0694E-001
		454.77	0.29	1.4322E+001		4.2865E+000
		609.31*	45.49	8.6729E-002		4.3144E-001
		665.45	1.53	2.9041E+000		1.8983E+000
		703.11	0.48	9.4272E+000		4.3781E+000
		719.86	0.39	1.2175E+001		-4.6086E+000
		768.36*	4.89	5.2348E-001		3.6525E-001
		786.10	0.31	1.6537E+001		6.7016E+000
		806.17	1.26	3.6977E+000		-9.9016E-001
		934.06	3.10	1.6952E+000		1.0964E+000
		964.08*	0.36	9.0245E+000		1.1293E+001
		1051.96	0.31	1.8215E+001		5.6244E+000
		1120.29*	14.91	3.2208E-001		5.2157E-001

	Nuclide Name	Energy (keV)	Yield (%)	Line MDA (pCi/GWET)	Nuclide MDA (pCi/GWET)	Activity (pCi/GWET)
+	Bi-214	1133.66	0.25	2.4697E+001	8.67E-002	-1.5303E+000
		1155.19	1.63	3.9741E+000		-3.0124E-001
		1207.68	0.45	1.5396E+001		-2.1597E+000
		1238.11*	5.79	8.9466E-001		4.6611E-001
		1280.96	1.43	4.3482E+000		-1.6543E+000
		1377.67	4.00	1.3717E+000		6.6773E-001
		1385.31	0.76	6.4311E+000		-2.5425E+000
		1401.50	1.27	4.1201E+000		1.2655E+000
		1407.98	2.15	2.3568E+000		2.7004E-001
		1509.23	2.11	2.0685E+000		-4.1665E-001
		1538.50	0.38	9.8263E+000		5.2491E+000
		1543.32	0.20	1.7849E+001		5.8215E+000
		1583.22	0.69	7.3385E+000		5.7696E+000
		1594.73	0.25	2.1517E+001		1.1148E+001
		1599.31	0.23	1.9246E+001		-6.5337E+000
		1661.28	1.15	2.8399E+000		1.9378E-001
		1683.99	0.22	1.7266E+001		-2.0856E+000
		1729.59	2.92	1.4358E+000		4.5624E-003
		1764.49*	15.40	1.8302E-001		7.8730E-001
		1847.42	2.11	2.1548E+000		2.1128E+000
		1873.16	0.22	1.7059E+001		3.7218E+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	3.1359E+001	1.13E-001	-5.8938E+000
		74.81*	6.44	1.0290E+000		2.1500E+000
		77.11*	10.80	5.7382E-001		1.7778E+000
		87.30*	4.84	9.3772E-001		1.0580E+000
		242.00*	7.43	3.9530E-001		8.4721E-001
		258.87	0.52	8.1238E+000		-2.0268E-001
		274.80	0.47	9.9154E+000		1.1543E+000
		295.22*	19.30	1.9682E-001		5.5515E-001
		351.93*	37.60	1.1347E-001		5.3328E-001
		462.00*	0.22	1.5384E+001		2.0170E+001
		533.66	0.19	2.3831E+001		5.2550E+000
		785.96	1.07	4.7882E+000		1.9404E+000
		839.04	0.59	8.9179E+000		7.8855E+000
+	Ra-224	81.07	0.13	5.6987E+001	7.34E-001	-2.4953E+001
		83.78	0.22	3.2341E+001		4.1157E+000
		240.99*	4.10	7.3440E-001		1.5740E+000
+	Ra-226	81.07	0.20	3.6964E+001	1.06E+000	-1.6185E+001
		83.78	0.33	2.0871E+001		2.6560E+000
		94.90	0.15	3.8990E+001		-5.2413E+000
		186.21*	3.59	1.0560E+000		1.2397E+000
+	Ac-228	99.50	1.26	3.9870E+000	1.76E-001	8.9678E-001
		129.07	2.50	1.9288E+000		7.1528E-001
		209.25*	3.97	1.2072E+000		1.2882E+000
		270.24*	3.55	9.9483E-001		8.4092E-001
		328.00*	3.04	9.4787E-001		7.5681E-001
		338.32*	11.40	3.2277E-001		9.8977E-001
		409.46*	2.02	1.6801E+000		1.2023E+000

	Nuclide Name	Energy (keV)	Yield (%)	Line MDA (pCi/GWET)	Nuclide MDA (pCi/GWET)	Activity (pCi/GWET)
+	Ac-228	463.00*	4.45	7.8324E-001	1.76E-001	1.0269E+000
		755.31	1.03	4.7409E+000		1.3431E+000
		772.29*	1.52	1.6731E+000		9.4021E-001
		794.94*	4.31	8.0391E-001		1.0727E+000
		835.70	1.70	3.2430E+000		9.0515E-001
		911.20*	26.20	1.7563E-001		9.7968E-001
		964.79*	4.99	6.7301E-001		8.4218E-001
		968.96*	15.90	2.0794E-001		1.0425E+000
		1588.20	3.06	1.9075E+000		1.2711E+000
		1630.62	1.52	3.0146E+000		1.1203E+000
	Th-228	84.37	1.26	5.7279E+000	5.73E+000	-4.9376E-001
		131.61	0.13	3.6737E+001		1.1375E+001
		166.41	0.10	4.2267E+001		-1.2887E+001
		215.98	0.25	1.8042E+001		1.4607E+000
	Pa-234m	258.23	0.07	5.8620E+001	5.96E+000	4.5911E+001
		742.81	0.09	5.0765E+001		1.2484E+001
		766.36	0.32	1.5724E+001		2.2590E+000
		786.27	0.05	9.4868E+001		2.1518E+001
		1001.03	0.85	5.9557E+000		-2.1623E+000
		1737.77	0.02	1.7465E+002		-1.8467E+002
	Th-234	63.30	3.75	4.2955E+000	1.44E+000	3.4299E+000
		92.59	4.33	1.4407E+000		8.8020E-003
		112.81	0.22	2.1106E+001		7.3027E+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 *****
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Sample Title: HTC-A01-S0001-4248-01
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	0.998	1460.82*		10.55	1.62617E+001	5.58046E-001
Eu-152m	1.000	89.85*		69.90	3.89076E-002	8.46071E-003
Tl-208	0.906	72.80	@	2.02		
		74.97*	@	3.41	4.16263E+000	3.49031E-001
		84.90	@	1.51		
		277.36*		6.31	3.07208E-001	1.34398E-001
		510.77*	@	22.60	4.50274E-001	6.45372E-002
		583.19*		84.50	3.24515E-001	1.88171E-002
		763.13	@	1.81		
		860.56*		12.42	4.49956E-001	7.62442E-002
Bi-211	0.934	351.03*		13.00	1.54574E+000	1.05561E-001
Bi-212	0.552	39.86	@	1.06		
		727.33*		6.74	9.90287E-001	1.31275E-001
		785.37		1.11		
		1620.74		1.51		
		1806.00	@	0.09		
Pb-212	0.984	74.81*		10.40	1.36486E+000	1.21025E-001
		77.11*		17.50	1.12478E+000	8.03273E-002
		87.30*		7.81	6.72171E-001	9.50679E-002
		115.18	@	0.59		
		238.63*		43.30	1.06098E+000	4.33947E-002
		300.09*		3.28	8.22964E-001	2.69383E-001
Bi-214	0.626	76.86*	@	0.43	4.50709E+001	3.25486E+000
		89.81*	@	0.24	1.11073E+001	2.44800E+000
		386.77	@	0.30		
		454.77	@	0.29		
		609.31*		45.49	4.31441E-001	2.89357E-002
		665.45	@	1.53		
		703.11	@	0.48		
		719.86	@	0.39		
		768.36*		4.89	3.65248E-001	8.66354E-002
		786.10	@	0.31		
		806.17	@	1.26		
		934.06		3.10		
		964.08*	@	0.36	1.12929E+001	1.73424E+000
		1051.96	@	0.31		
		1120.29*		14.91	5.21572E-001	8.15169E-002
		1133.66	@	0.25		
		1155.19	@	1.63		
		1207.68	@	0.45		
		1238.11*		5.79	4.66112E-001	1.99522E-001

Nuclide Name	Id Confidence	Energy (keV)		Yield (%)	Activity (pCi/GWET)	Activity Uncertainty
Bi-214	0.626	1280.96	@	1.43		
		1377.67		4.00		
		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		
		1764.49*		15.40	7.87302E-001	7.74589E-002
		1847.42	@	2.11		
		1873.16	@	0.22		
		2118.55	@	1.14		
		2204.21	@	5.08		
Pb-214	0.936	53.28	@	1.20		
		74.81*		6.44	2.14999E+000	1.93427E-001
		77.11*		10.80	1.77780E+000	1.33698E-001
		87.30*		4.84	1.05800E+000	1.50972E-001
		242.00*		7.43	8.47215E-001	7.39440E-002
		258.87	@	0.52		
		274.80	@	0.47		
		295.22*		19.30	5.55150E-001	5.28305E-002
		351.93*		37.60	5.33281E-001	3.60243E-002
		462.00*	@	0.22	2.01704E+001	3.78854E+000
		533.66	@	0.19		
		785.96	@	1.07		
		839.04	@	0.59		
Ra-224	0.862	81.07	@	0.13		
		83.78	@	0.22		
		240.99*		4.10	1.57397E+000	1.36738E-001
Ra-226	0.765	81.07	@	0.20		
		83.78	@	0.33		
		94.90	@	0.15		
		186.21*		3.59	1.23968E+000	2.42047E-001
Ac-228	0.777	99.50	@	1.26		
		129.07	@	2.50		
		209.25*		3.97	1.28820E+000	2.75580E-001
		270.24*		3.55	8.40924E-001	2.25978E-001
		328.00*		3.04	7.56809E-001	2.17883E-001
		338.32*		11.40	9.89770E-001	9.60972E-002
		409.46*	@	2.02	1.20234E+000	3.80791E-001
		463.00*		4.45	1.02693E+000	1.96272E-001
		755.31	@	1.03		
		772.29*	@	1.52	9.40212E-001	2.68894E-001
		794.94*		4.31	1.07268E+000	2.01987E-001

Nuclide Name	Id Confidence	Energy (keV)		Yield (%)	Activity (pCi/GWET)	Activity Uncertainty
Ac-228	0.777	835.70	@	1.70		
		911.20*		26.20	9.79677E-001	6.77139E-002
		964.79*		4.99	8.42176E-001	1.29519E-001
		968.96*		15.90	1.04253E+000	7.66250E-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 *****
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	Nuclide Name		Nuclide Id Confidence	Wt mean Activity (pCi/GWET)	Wt mean Activity Uncertainty
	K-40		0.998	1.626170E+001	5.580460E-001
X	Cd-109		0.907		
	Eu-152m		1.000	3.726108E-002	8.454552E-003
	Tl-208	@	0.906	3.316154E-001	1.790795E-002
	Bi-211		0.934	3.065558E-001	1.706879E-001
	Bi-212	@	0.552	9.902873E-001	1.312748E-001
	Pb-212	@	0.984	9.280253E-001	3.451511E-002
	Bi-214	@	0.626	4.700454E-001	2.441239E-002
	Pb-214	@	0.936	4.275188E-001	4.692709E-002
	Ra-224	@	0.862	7.797195E-001	1.610263E-001
	Ra-226	@	0.765	1.239675E+000	2.420474E-001
	Ac-228	@	0.777	9.838773E-001	3.592482E-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: 6/7/2017 5:03:47 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	93.03	3.2601E-002	13.39	Tol.	Yb-169 Th-227 Th-234
	33	1495.78	2.0318E-003	50.99	Sum	

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

Errors quoted at 1.000 sigma