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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-S003-2430-01.CNF

Report Generated On              : 6/29/2017  10:31:42 PM

Sample Title                     : HTC-A02-S003-2430-01
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                      :  9.439E+002 GWET

Sample Taken On                  : 5/15/2017  12:09:00 PM
Acquisition Started              : 6/29/2017   8:31:37 PM

Live Time                        :     7200.0 seconds
Real Time                        :     7202.4 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-A02-S003-2430-01
Peak Analysis Performed on: 6/29/2017 10:31:42 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
	1	279-	285	282.99	70.61	0.43	2.66E+001	26.28	3.49E+002
M	2	288-	319	300.14	74.90	1.01	3.77E+002	28.82	6.68E+002
m	3	288-	319	309.23	77.17	1.02	4.71E+002	30.75	6.31E+002
M	4	344-	365	349.62	87.26	0.98	2.16E+002	26.94	6.22E+002
m	5	344-	365	359.75	89.79	0.99	1.18E+002	23.35	6.98E+002
	6	514-	525	517.89	129.32	0.58	3.88E+001	38.11	5.60E+002
	7	608-	616	612.30	152.91	0.74	6.11E+000	28.64	3.81E+002
	8	738-	753	745.15	186.11	1.06	3.49E+002	43.46	5.11E+002
	9	832-	842	838.06	209.33	0.89	1.15E+002	31.79	3.77E+002
M	10	949-	974	955.30	238.63	1.09	1.51E+003	43.82	4.14E+002
m	11	949-	974	966.47	241.43	1.09	2.11E+002	21.24	4.39E+002
	12	1077-	1087	1080.97	270.04	0.51	8.72E+001	26.37	2.54E+002
	13	1175-	1189	1181.53	295.17	1.12	3.46E+002	33.42	2.67E+002
	14	1196-	1207	1200.85	300.00	1.14	7.62E+001	24.61	2.11E+002
	15	1343-	1361	1354.14	338.31	1.15	3.78E+002	36.49	2.83E+002
	16	1402-	1415	1408.33	351.86	1.19	6.94E+002	35.65	2.10E+002
	17	1845-	1860	1852.33	462.82	1.09	9.98E+001	23.48	1.50E+002
	18	2034-	2062	2043.69	510.64	1.51	3.81E+002	40.45	2.67E+002
	19	2326-	2343	2333.60	583.10	1.17	5.27E+002	32.32	1.58E+002
	20	2429-	2447	2437.72	609.12	1.16	5.37E+002	32.70	1.57E+002
	21	2902-	2916	2909.96	727.14	1.49	1.07E+002	19.84	9.95E+001
	22	3066-	3080	3074.86	768.35	0.32	4.40E+001	18.29	1.00E+002
	23	3436-	3451	3443.41	860.46	1.19	6.97E+001	18.33	8.83E+001
	24	3637-	3656	3646.61	911.25	1.54	3.74E+002	29.11	1.35E+002
	25	3730-	3743	3736.97	933.83	0.76	3.08E+001	14.99	7.02E+001
M	26	3855-	3888	3860.89	964.80	1.45	3.60E+001	10.60	9.98E+001
m	27	3855-	3888	3877.62	968.98	1.45	2.47E+002	18.18	9.34E+001
	28	4476-	4495	4483.70	1120.45	1.17	1.42E+002	20.72	8.23E+001
	29	4876-	4887	4881.46	1219.86	0.75	1.56E+001	14.40	7.44E+001
	30	5835-	5862	5847.93	1461.40	1.60	2.68E+003	53.80	5.01E+001
	31	6034-	6047	6040.96	1509.64	1.00	2.03E+001	6.66	8.72E+000
M	32	6352-	6382	6358.31	1588.95	1.44	4.75E+001	7.62	1.01E+001
m	33	6352-	6382	6375.39	1593.22	1.44	2.50E+001	6.16	1.52E+001
	34	7057-	7076	7066.19	1765.86	1.10	1.13E+002	12.88	1.50E+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-S003-2430-01
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	4.9722E-001	4.97E-001	1.7620E+001
	Co-60	1173.23	99.85	6.5424E-002	5.62E-002	-3.3481E-002
		1332.49	99.98	5.6200E-002		-1.7869E-002
>		2505.71	0.10	0.0000E+000		0.0000E+000
	Cs-137	32.06	5.54	3.0390E+003	5.30E-002	5.4921E+002
		661.66	84.99	5.3049E-002		4.0243E-003
+	Tl-208	72.80	2.02	5.5642E+000	4.84E-002	-8.6039E-002
		74.97*	3.41	1.8756E+000		4.0883E+000
		84.90	1.51	4.6945E+000		-3.3464E-001
		277.36	6.31	7.2071E-001		4.4145E-001
		510.77*	22.60	2.7530E-001		3.2173E-001
		583.19*	84.50	4.8364E-002		2.2890E-001
		763.13	1.81	2.9884E+000		-3.8879E-001
		860.56*	12.42	3.0700E-001		2.7236E-001
+	Bi-212	39.86	1.06	5.8441E+002	5.19E-001	2.7813E+002
		727.33*	6.74	5.1904E-001		6.7827E-001
		785.37	1.11	4.5316E+000		-2.3884E+000
		1620.74	1.51	3.0679E+000		1.7192E+000
		1806.00	0.09	3.3691E+001		1.2351E+001
+	Pb-212	74.81*	10.40	6.1497E-001	7.40E-002	1.3405E+000
		77.11*	17.50	3.2646E-001		9.1528E-001
		87.30*	7.81	5.5055E-001		7.1380E-001
		115.18	0.59	7.1564E+000		-2.0418E+000
		238.63*	43.30	7.3968E-002		7.9110E-001
		300.09*	3.28	8.6923E-001		6.0407E-001
+	Bi-214	76.86*	0.43	1.2821E+001	8.83E-002	3.5946E+001
		89.81*	0.24	1.6978E+001		1.1345E+001
		386.77	0.30	1.3828E+001		4.9981E+000
		454.77	0.29	1.3720E+001		5.7506E+000
		609.31*	45.49	8.8300E-002		4.3099E-001
		665.45	1.53	2.8922E+000		5.6944E-001
		703.11	0.48	1.0101E+001		-9.1717E-001
		719.86	0.39	1.1833E+001		-1.9624E+000
		768.36*	4.89	7.1467E-001		3.8413E-001
		786.10	0.31	1.5916E+001		4.8258E+000
		806.17	1.26	3.8206E+000		2.0827E+000
		934.06*	3.10	1.0762E+000		4.9148E-001
		964.08*	0.36	9.5660E+000		5.0352E+000
		1051.96	0.31	1.7243E+001		-2.3367E+000
		1120.29*	14.91	3.1331E-001		5.4454E-001

	Nuclide Name	Energy (keV)	Yield (%)	Line MDA (pCi/GWET)	Nuclide MDA (pCi/GWET)	Activity (pCi/GWET)
+	Bi-214	1133.66	0.25	2.4424E+001	8.83E-002	6.1422E-001
		1155.19	1.63	4.1725E+000		-2.5484E-001
		1207.68	0.45	1.5591E+001		-1.4535E+001
		1238.11	5.79	1.3473E+000		1.2307E+000
		1280.96	1.43	4.4441E+000		-1.1160E+000
		1377.67	4.00	1.2298E+000		-1.7534E-001
		1385.31	0.76	6.2734E+000		-1.1190E+001
		1401.50	1.27	3.9541E+000		1.2083E-001
		1407.98	2.15	2.3421E+000		1.3490E+000
		1509.23*	2.11	8.6330E-001		6.8576E-001
		1538.50	0.38	9.7993E+000		-5.2626E-001
		1543.32	0.20	1.7955E+001		-1.4122E+000
		1583.22	0.69	7.3477E+000		5.0837E-001
		1594.73	0.25	2.2177E+001		-4.2679E+000
		1599.31	0.23	1.8997E+001		-1.2734E+000
		1661.28	1.15	3.3594E+000		1.2719E+000
		1683.99	0.22	1.4935E+001		2.9722E+000
		1729.59	2.92	1.4007E+000		1.0087E+000
		1764.49	15.40	4.2693E-001		5.3892E-001
		1847.42	2.11	1.9900E+000		-5.6125E-001
		1873.16	0.22	1.5933E+001		3.7329E+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	2.8943E+001	8.34E-002	-2.9799E+000
		74.81*	6.44	9.4946E-001		2.0696E+000
		77.11*	10.80	5.0573E-001		1.4179E+000
		87.30*	4.84	8.4932E-001		1.1012E+000
		242.00*	7.43	4.1836E-001		6.2798E-001
		258.87	0.52	7.7432E+000		7.8879E-001
		274.80	0.47	9.2081E+000		9.2521E-001
		295.22*	19.30	1.6822E-001		4.4209E-001
		351.93*	37.60	8.3352E-002		4.9357E-001
		462.00*	0.22	1.4334E+001		1.4096E+001
		533.66	0.19	2.2241E+001		9.8012E-001
		785.96	1.07	4.6084E+000		1.3973E+000
		839.04	0.59	9.0302E+000		4.9395E+000
+	Ra-224	81.07	0.13	5.4692E+001	7.93E-001	-2.3962E+001
		83.78	0.22	3.1504E+001		8.5389E+000
		240.99*	4.10	7.9301E-001		1.1904E+000
+	Ra-226	81.07	0.20	3.4770E+001	1.03E+000	-1.5234E+001
		83.78	0.33	1.9926E+001		5.4008E+000
		94.90	0.15	3.6844E+001		2.3201E+001
		186.21*	3.59	1.0251E+000		1.6172E+000
+	Ac-228	99.50	1.26	3.8372E+000	2.03E-001	5.4650E-001
		129.07*	2.50	1.3248E+000		2.8933E-001
		209.25*	3.97	7.6735E-001		6.2303E-001
		270.24*	3.55	8.1266E-001		6.0342E-001
		328.00	3.04	1.5017E+000		5.0009E-001
		338.32*	11.40	3.5516E-001		9.1845E-001
		409.46	2.02	2.2176E+000		1.5109E+000

	Nuclide Name	Energy (keV)	Yield (%)	Line MDA (pCi/GWET)	Nuclide MDA (pCi/GWET)	Activity (pCi/GWET)
+	Ac-228	463.00*	4.45	7.4460E-001	2.03E-001	7.3222E-001
		755.31	1.03	4.7903E+000		5.6048E-001
		772.29	1.52	3.6533E+000		5.6011E-001
		794.94	4.31	1.2372E+000		1.4428E+000
		835.70	1.70	3.2552E+000		1.7796E+000
		911.20*	26.20	2.0309E-001		7.1411E-001
		964.79*	4.99	7.2787E-001		3.8312E-001
		968.96*	15.90	2.2200E-001		8.2793E-001
		1588.20*	3.06	5.9252E-001		1.1936E+000
		1630.62	1.52	2.8749E+000		-3.1000E-001
	Th-228	84.37	1.26	5.6030E+000	5.60E+000	7.3981E-001
		131.61	0.13	3.5290E+001		4.3622E+000
		166.41	0.10	4.0847E+001		5.5377E+000
		215.98	0.25	1.7714E+001		-8.1028E+000
	Pa-234m	258.23	0.07	5.5296E+001	6.16E+000	3.3050E+001
		742.81	0.09	4.8623E+001		1.6817E+001
		766.36	0.32	1.6390E+001		-6.3975E+000
		786.27	0.05	9.2028E+001		4.1912E+001
		1001.03	0.85	6.1583E+000		-1.4139E+000
		1737.77	0.02	1.8536E+002		6.1360E+000
	Th-234	63.30	3.75	3.9836E+000	1.39E+000	6.6091E-001
		92.59	4.33	1.3878E+000		1.3630E+000
		112.81	0.22	1.9341E+001		6.6390E+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-A02-S003-2430-01
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	0.948	1460.82*		10.55	1.76201E+001	5.96663E-001
Eu-152m	1.000	89.85*		69.90	3.98512E-002	7.97171E-003
Tl-208	0.844	72.80	@	2.02		
		74.97*	@	3.41	4.08831E+000	3.36312E-001
		84.90	@	1.51		
		277.36		6.31		
		510.77*	@	22.60	3.21734E-001	6.32185E-002
		583.19*		84.50	2.28897E-001	1.59528E-002
		763.13	@	1.81		
		860.56*		12.42	2.72360E-001	7.19140E-002
TL-208e	0.928	1592.53*		99.16	1.93726E-002	4.92525E-003
Bi-211	0.897	351.03*		13.00	1.43314E+000	9.08176E-002
Bi-212	0.577	39.86	@	1.06		
		727.33*		6.74	6.78271E-001	1.28102E-001
		785.37		1.11		
		1620.74		1.51		
		1806.00	@	0.09		
Pb-212	0.986	74.81*		10.40	1.34049E+000	1.16855E-001
		77.11*		17.50	9.15276E-001	7.06781E-002
		87.30*		7.81	7.13804E-001	9.38837E-002
		115.18	@	0.59		
		238.63*		43.30	7.91098E-001	3.49685E-002
		300.09*		3.28	6.04067E-001	1.96063E-001
Bi-214	0.476	76.86*	@	0.43	3.59461E+001	2.80240E+000
		89.81*	@	0.24	1.13447E+001	2.30555E+000
		386.77	@	0.30		
		454.77	@	0.29		
		609.31*		45.49	4.30988E-001	2.91688E-002
		665.45	@	1.53		
		703.11	@	0.48		
		719.86	@	0.39		
		768.36*		4.89	3.84126E-001	1.59765E-001
		786.10	@	0.31		
		806.17	@	1.26		
		934.06*		3.10	4.91482E-001	2.39413E-001
		964.08*	@	0.36	5.03515E+000	1.49633E+000
		1051.96	@	0.31		
		1120.29*		14.91	5.44537E-001	8.06854E-002
		1133.66	@	0.25		
		1155.19	@	1.63		
		1207.68	@	0.45		

Nuclide Name	Id Confidence	Energy (keV)		Yield (%)	Activity (pCi/GWET)	Activity Uncertainty
Bi-214	0.476	1238.11		5.79		
		1280.96	@	1.43		
		1377.67		4.00		
		1385.31	@	0.76		
		1401.50	@	1.27		
		1407.98	@	2.15		
		1509.23*	@	2.11	6.85759E-001	2.26265E-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		
		1764.49		15.40		
		1847.42	@	2.11		
		1873.16	@	0.22		
		2118.55	@	1.14		
		2204.21	@	5.08		
Pb-214	0.941	53.28	@	1.20		
		74.81*		6.44	2.06958E+000	1.83136E-001
		77.11*		10.80	1.41787E+000	1.14475E-001
		87.30*		4.84	1.10117E+000	1.46326E-001
		242.00*		7.43	6.27978E-001	6.69568E-002
		258.87	@	0.52		
		274.80	@	0.47		
		295.22*		19.30	4.42089E-001	4.52361E-002
		351.93*		37.60	4.93571E-001	3.08839E-002
		462.00*	@	0.22	1.40958E+001	3.39631E+000
		533.66	@	0.19		
		785.96	@	1.07		
		839.04	@	0.59		
Ra-224	0.858	81.07	@	0.13		
		83.78	@	0.22		
		240.99*		4.10	1.19036E+000	1.26526E-001
Ra-226	0.775	81.07	@	0.20		
		83.78	@	0.33		
		94.90	@	0.15		
		186.21*		3.59	1.61722E+000	2.42845E-001
Ac-228	0.706	99.50	@	1.26		
		129.07*	@	2.50	2.89327E-001	2.84576E-001
		209.25*		3.97	6.23033E-001	1.74227E-001
		270.24*		3.55	6.03421E-001	1.84365E-001
		328.00		3.04		
		338.32*		11.40	9.18451E-001	9.89950E-002
		409.46	@	2.02		
		463.00*		4.45	7.32218E-001	1.78314E-001
		755.31	@	1.03		
		772.29	@	1.52		

Nuclide Name	Id Confidence	Energy (keV)	Yield (%)	Activity (pCi/GWET)	Activity Uncertainty
Ac-228	0.706	794.94	4.31		
		835.70 @	1.70		
		911.20*	26.20	7.14111E-001	6.27176E-002
		964.79*	4.99	3.83122E-001	1.13898E-001
		968.96*	15.90	8.27927E-001	6.89080E-002
		1588.20*	3.06	1.19355E+000	1.99458E-001
		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		0.948	1.762014E+001	5.966631E-001
X	Cd-109		0.909		
	Eu-152m		1.000	3.830261E-002	7.964919E-003
	Tl-208	@	0.844	2.326055E-001	1.545368E-002
	TL-208e		0.928	1.937259E-002	4.925251E-003
	Bi-211		0.897	2.848574E-001	1.466481E-001
	Bi-212	@	0.577	6.782712E-001	1.281023E-001
	Pb-212	@	0.986	7.452959E-001	2.888135E-002
	Bi-214	@	0.476	4.408605E-001	2.681617E-002
	Pb-214	@	0.941	3.954665E-001	4.030584E-002
	Ra-224	@	0.858	4.407359E-001	1.470891E-001
	Ra-226	@	0.775	1.617225E+000	2.428453E-001
	Ac-228	@	0.706	7.484192E-001	3.430343E-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: 6/29/2017 10:31:42 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
1	70.61	3.6953E-003	98.78	Tol.	Gd-153 Tl-202 Hg-203
7	152.91	8.4841E-004	468.86	Sum	
29	1219.86	2.1644E-003	92.38		
34	1765.86	1.5694E-002	11.40		

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

Errors quoted at 1.000 sigma