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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-NFB-A04-S004-0006-01.CNF

Report Generated On              : 6/4/2017    8:05:45 PM

Sample Title                     : NFB-A04-S004-0006-01
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                      :  9.359E+002 GWET

Sample Taken On                  : 5/11/2017   3:43:00 PM
Acquisition Started              : 6/4/2017    6:05:35 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: NFB-A04-S004-0006-01
Peak Analysis Performed on: 6/4/2017 8:05:46 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	291-	315	300.16	74.90	0.98	2.75E+002	25.51	5.68E+002
m	2	291-	315	309.37	77.20	0.99	4.63E+002	29.84	5.42E+002
M	3	344-	380	349.17	87.15	1.06	1.67E+002	23.55	5.35E+002
m	4	344-	380	360.79	90.05	1.06	6.53E+001	19.95	6.10E+002
m	5	344-	380	372.47	92.97	1.07	2.78E+002	27.01	5.50E+002
	6	736-	751	744.32	185.91	1.09	2.48E+002	42.33	5.14E+002
	7	825-	844	837.80	209.27	0.70	1.42E+002	46.02	5.63E+002
M	8	949-	973	954.89	238.53	1.16	1.45E+003	42.17	3.10E+002
m	9	949-	973	967.53	241.69	1.16	2.31E+002	20.35	2.86E+002
	10	1103-	1119	1110.57	277.44	0.34	5.99E+001	29.85	2.65E+002
	11	1173-	1190	1181.11	295.07	1.08	3.89E+002	35.71	2.72E+002
	12	1196-	1209	1200.47	299.91	1.24	9.66E+001	24.97	1.89E+002
	13	1307-	1316	1311.74	327.71	0.28	3.77E+001	19.64	1.53E+002
	14	1344-	1360	1353.13	338.06	0.96	2.92E+002	32.09	2.36E+002
	15	1398-	1415	1407.74	351.71	1.24	6.95E+002	37.51	2.19E+002
	16	1631-	1647	1637.35	409.09	0.82	8.43E+001	22.05	1.27E+002
	17	1847-	1866	1851.78	462.68	1.14	1.03E+002	24.45	1.40E+002
	18	2036-	2052	2042.81	510.43	0.97	2.99E+002	28.47	1.64E+002
	19	2322-	2343	2332.40	582.80	1.20	5.26E+002	31.95	1.32E+002
	20	2430-	2445	2436.80	608.89	1.19	5.85E+002	30.29	1.11E+002
	21	2901-	2917	2908.42	726.76	0.77	1.13E+002	18.19	6.96E+001
	22	3169-	3186	3178.72	794.31	0.76	8.03E+001	16.00	5.37E+001
	23	3437-	3450	3442.96	860.35	1.27	5.66E+001	13.62	4.64E+001
	24	3633-	3655	3644.73	910.78	1.28	3.77E+002	25.38	6.88E+001
	25	3730-	3743	3736.61	933.74	1.47	4.31E+001	11.94	3.59E+001
M	26	3849-	3887	3858.71	964.25	1.68	8.06E+001	10.85	4.67E+001
m	27	3849-	3887	3876.03	968.58	1.68	2.15E+002	16.27	5.67E+001
	28	4473-	4488	4481.49	1119.90	1.08	1.02E+002	17.01	6.20E+001
	29	4947-	4964	4954.84	1238.20	1.10	5.53E+001	15.08	5.27E+001
	30	5833-	5858	5845.72	1460.85	1.65	8.28E+002	31.35	3.61E+001
	31	6032-	6045	6038.35	1508.99	0.53	1.56E+001	7.09	1.24E+001
	32	6349-	6362	6355.53	1588.26	0.45	2.58E+001	8.86	1.92E+001
	33	7053-	7072	7062.33	1764.90	1.63	1.04E+002	13.85	2.50E+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: NFB-A04-S004-0006-01
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	4.3273E-001	4.33E-001	5.4159E+000
	Co-60	1173.23	99.85	4.9095E-002	4.20E-002	1.7357E-003
		1332.49	99.98	4.2015E-002		-1.0201E-002
>		2505.71	0.10	0.0000E+000		0.0000E+000
	Cs-137	32.06	5.54	4.0795E+003	4.76E-002	-5.5250E+001
		661.66	84.99	4.7649E-002		1.4906E-003
+	Tl-208	72.80	2.02	4.8913E+000	4.67E-002	8.6816E-002
		74.97*	3.41	1.7093E+000		2.9521E+000
		84.90	1.51	4.2616E+000		-2.7424E-001
		277.36*	6.31	5.3370E-001		2.3374E-001
		510.77*	22.60	1.9187E-001		1.9451E-001
		583.19*	84.50	4.6690E-002		2.2573E-001
		763.13	1.81	2.6197E+000		2.9873E-001
		860.56*	12.42	2.1403E-001		2.1858E-001
+	Bi-212	39.86	1.06	6.3365E+002	4.48E-001	-2.5043E+002
		727.33*	6.74	4.4785E-001		7.1296E-001
		785.37	1.11	3.7743E+000		1.9341E+000
		1620.74	1.51	2.8504E+000		-3.3891E-001
		1806.00	0.09	3.6913E+001		6.8237E+000
+	Pb-212	74.81*	10.40	5.6045E-001	6.38E-002	9.6794E-001
		77.11*	17.50	2.9877E-001		8.8823E-001
		87.30*	7.81	5.0610E-001		5.4450E-001
		115.18	0.59	6.8958E+000		2.3956E+000
		238.63*	43.30	6.3777E-002		7.4939E-001
		300.09*	3.28	8.5597E-001		7.5549E-001
+	Bi-214	76.86*	0.43	1.1983E+001	7.09E-002	3.5627E+001
		89.81*	0.24	1.5946E+001		6.3063E+000
		386.77	0.30	1.2724E+001		-1.4484E+000
		454.77	0.29	1.2226E+001		-3.1592E+000
		609.31*	45.49	7.0856E-002		4.7351E-001
		665.45	1.53	2.7231E+000		2.4964E+000
		703.11	0.48	8.7176E+000		5.4790E+000
		719.86	0.39	9.7375E+000		3.8006E-001
		768.36	4.89	9.7036E-001		5.8810E-001
		786.10	0.31	1.2973E+001		3.8918E+000
		806.17	1.26	3.2102E+000		8.5722E-001
		934.06*	3.10	7.8980E-001		6.9294E-001
		964.08*	0.36	6.7172E+000		1.1366E+001
		1051.96	0.31	1.3637E+001		2.6354E+000
		1120.29*	14.91	2.5677E-001		3.9498E-001

	Nuclide Name	Energy (keV)	Yield (%)	Line MDA (pCi/GWET)	Nuclide MDA (pCi/GWET)	Activity (pCi/GWET)
+	Bi-214	1133.66	0.25	1.8030E+001	7.09E-002	-2.8823E-001
		1155.19	1.63	2.8949E+000		-1.0047E+000
		1207.68	0.45	1.1171E+001		3.3828E+000
		1238.11*	5.79	6.8795E-001		5.9742E-001
		1280.96	1.43	3.5402E+000		5.3319E-001
		1377.67	4.00	1.1596E+000		-6.7286E-001
		1385.31	0.76	5.3606E+000		-6.3576E+000
		1401.50	1.27	3.4013E+000		-2.4302E-001
		1407.98	2.15	2.1044E+000		7.4373E-001
		1509.23*	2.11	1.0260E+000		5.3251E-001
		1538.50	0.38	1.0633E+001		4.2119E+000
		1543.32	0.20	2.0611E+001		-5.5322E+000
		1583.22	0.69	7.3754E+000		4.4064E+000
		1594.73	0.25	2.1829E+001		6.9344E+000
		1599.31	0.23	1.9282E+001		-6.5953E+000
		1661.28	1.15	3.4459E+000		3.3417E+000
		1683.99	0.22	1.5805E+001		1.9955E+000
		1729.59	2.92	1.5809E+000		1.0982E+000
		1764.49*	15.40	2.4166E-001		4.9669E-001
		1847.42	2.11	1.9108E+000		4.6059E-002
		1873.16	0.22	1.5314E+001		-4.5060E-001
>		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	2.8642E+001	9.29E-002	-8.8658E+000
		74.81*	6.44	8.8371E-001		1.5262E+000
		77.11*	10.80	4.7268E-001		1.4053E+000
		87.30*	4.84	7.9738E-001		8.5788E-001
		242.00*	7.43	3.4203E-001		6.9540E-001
		258.87	0.52	7.1372E+000		-2.7096E+000
		274.80	0.47	8.4816E+000		-6.2525E+000
		295.22*	19.30	1.8160E-001		5.0096E-001
		351.93*	37.60	9.2861E-002		4.9889E-001
		462.00*	0.22	1.5111E+001		1.4660E+001
		533.66	0.19	2.0459E+001		-2.0411E+000
		785.96	1.07	3.7562E+000		1.1268E+000
		839.04	0.59	7.7373E+000		4.6808E+000
+	Ra-224	81.07	0.13	4.9794E+001	6.35E-001	-3.2097E+001
		83.78	0.22	2.8908E+001		6.6091E+000
		240.99*	4.10	6.3481E-001		1.2907E+000
+	Ra-226	81.07	0.20	3.2330E+001	1.03E+000	-2.0840E+001
		83.78	0.33	1.8674E+001		4.2692E+000
		94.90	0.15	3.5305E+001		-2.8342E-001
		186.21*	3.59	1.0346E+000		1.0812E+000
+	Ac-228	99.50	1.26	3.5784E+000	1.53E-001	5.2968E-001
		129.07	2.50	1.6919E+000		6.8381E-002
		209.25*	3.97	1.1190E+000		7.5667E-001
		270.24	3.55	1.2270E+000		8.3118E-001
		328.00*	3.04	7.9094E-001		3.3320E-001
		338.32*	11.40	3.0931E-001		7.0014E-001
		409.46*	2.02	1.4333E+000		1.2595E+000

	Nuclide Name	Energy (keV)	Yield (%)	Line MDA (pCi/GWET)	Nuclide MDA (pCi/GWET)	Activity (pCi/GWET)
+	Ac-228	463.00*	4.45	7.6859E-001	1.53E-001	7.4565E-001
		755.31	1.03	4.1601E+000		2.5433E+000
		772.29	1.52	3.0927E+000		3.1566E-001
		794.94*	4.31	6.7343E-001		8.4021E-001
		835.70	1.70	2.7389E+000		1.3775E+000
		911.20*	26.20	1.5297E-001		7.1106E-001
		964.79*	4.99	5.0046E-001		8.4679E-001
		968.96*	15.90	1.7271E-001		7.1281E-001
		1588.20*	3.06	9.0480E-001		6.4017E-001
		1630.62	1.52	2.9591E+000		4.3199E-001
	Th-228	84.37	1.26	5.0884E+000	5.09E+000	-5.8332E-001
		131.61	0.13	3.2040E+001		5.1324E+000
		166.41	0.10	3.8975E+001		1.8423E+001
		215.98	0.25	1.5735E+001		-6.9377E+000
	Pa-234m	258.23	0.07	5.1082E+001	4.67E+000	-1.0578E+001
		742.81	0.09	4.1922E+001		-1.3208E+001
		766.36	0.32	1.4621E+001		-1.1939E+000
		786.27	0.05	7.5209E+001		2.9502E+000
		1001.03	0.85	4.6702E+000		-5.4156E-001
		1737.77	0.02	1.9163E+002		-1.0654E+002
	Th-234	63.30	3.75	3.6975E+000	1.30E+000	1.8770E+000
		92.59	4.33	1.3047E+000		3.3793E-002
		112.81	0.22	1.8357E+001		-2.0925E+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: NFB-A04-S004-0006-01
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	1.000	1460.82*		10.55	5.41585E+000	2.56427E-001
Eu-152m	0.993	89.85*		69.90	2.20874E-002	6.77826E-003
Tl-208	0.917	72.80	@	2.02		
		74.97*	@	3.41	2.95207E+000	2.87595E-001
		84.90	@	1.51		
		277.36*		6.31	2.33737E-001	1.16774E-001
		510.77*	@	22.60	1.94508E-001	4.42962E-002
		583.19*		84.50	2.25728E-001	1.55997E-002
		763.13	@	1.81		
		860.56*		12.42	2.18580E-001	5.28070E-002
Bi-211	0.929	351.03*		13.00	1.44595E+000	9.47015E-002
Bi-212	0.547	39.86	@	1.06		
		727.33*		6.74	7.12960E-001	1.16439E-001
		785.37		1.11		
		1620.74		1.51		
		1806.00	@	0.09		
Pb-212	0.985	74.81*		10.40	9.67938E-001	9.83448E-002
		77.11*		17.50	8.88225E-001	6.79176E-002
		87.30*		7.81	5.44503E-001	8.02996E-002
		115.18	@	0.59		
		238.63*		43.30	7.49390E-001	3.31670E-002
		300.09*		3.28	7.55493E-001	1.96946E-001
Bi-214	0.621	76.86*	@	0.43	3.56265E+001	2.75080E+000
		89.81*	@	0.24	6.30634E+000	1.94849E+000
		386.77	@	0.30		
		454.77	@	0.29		
		609.31*		45.49	4.73508E-001	2.82287E-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	6.92943E-001	1.92756E-001
		964.08*	@	0.36	1.13657E+001	1.59559E+000
		1051.96	@	0.31		
		1120.29*		14.91	3.94984E-001	6.65297E-002
		1133.66	@	0.25		
		1155.19	@	1.63		
		1207.68	@	0.45		
		1238.11*		5.79	5.97417E-001	1.63740E-001

Nuclide Name	Id Confidence	Energy (keV)		Yield (%)	Activity (pCi/GWET)	Activity Uncertainty
Bi-214	0.621	1280.96	@	1.43		
		1377.67		4.00		
		1385.31	@	0.76		
		1401.50	@	1.27		
		1407.98	@	2.15		
		1509.23*	@	2.11	5.32511E-001	2.42384E-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	4.96685E-001	7.21683E-002
		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	1.52622E+000	1.56795E-001
		77.11*		10.80	1.40527E+000	1.12441E-001
		87.30*		4.84	8.57883E-001	1.27553E-001
		242.00*		7.43	6.95399E-001	6.57882E-002
		258.87	@	0.52		
		274.80	@	0.47		
		295.22*		19.30	5.00964E-001	4.90176E-002
		351.93*		37.60	4.98894E-001	3.22900E-002
		462.00*	@	0.22	1.46599E+001	3.56394E+000
		533.66	@	0.19		
		785.96	@	1.07		
		839.04	@	0.59		
Ra-224	0.816	81.07	@	0.13		
		83.78	@	0.22		
		240.99*		4.10	1.29067E+000	1.21623E-001
Ra-226	0.764	81.07	@	0.20		
		83.78	@	0.33		
		94.90	@	0.15		
		186.21*		3.59	1.08124E+000	2.35240E-001
Ac-228	0.721	99.50	@	1.26		
		129.07	@	2.50		
		209.25*		3.97	7.56669E-001	2.48234E-001
		270.24		3.55		
		328.00*		3.04	3.33196E-001	1.74403E-001
		338.32*		11.40	7.00139E-001	8.39804E-002
		409.46*	@	2.02	1.25948E+000	3.34170E-001
		463.00*		4.45	7.45652E-001	1.83181E-001
		755.31	@	1.03		
		772.29	@	1.52		
		794.94*		4.31	8.40212E-001	1.70852E-001

Nuclide Name	Id Confidence	Energy (keV)		Yield (%)	Activity (pCi/GWET)	Activity Uncertainty
Ac-228	0.721	835.70	@	1.70		
		911.20*		26.20	7.11060E-001	5.57107E-002
		964.79*		4.99	8.46791E-001	1.19082E-001
		968.96*		15.90	7.12806E-001	6.05353E-002
		1588.20*		3.06	6.40166E-001	2.21862E-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 *****
****

	Nuclide Name		Nuclide Id Confidence	Wt mean Activity (pCi/GWET)	Wt mean Activity Uncertainty
	K-40		1.000	5.415854E+000	2.564274E-001
X	Cd-109		0.883		
	Eu-152m		0.993	2.043384E-002	6.776125E-003
	Tl-208	@	0.917	2.250943E-001	1.472442E-002
	Bi-211		0.929	3.196567E-001	1.535220E-001
	Bi-212	@	0.547	7.129601E-001	1.164388E-001
	Pb-212	@	0.985	6.731366E-001	2.745093E-002
	Bi-214	@	0.621	4.721257E-001	2.393575E-002
	Pb-214	@	0.941	3.886035E-001	4.232376E-002
	Ra-224	@	0.816	5.694183E-001	1.439273E-001
	Ra-226	@	0.764	1.081243E+000	2.352400E-001
	Ac-228	@	0.721	7.093685E-001	3.067760E-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: 6/4/2017 8:05:45 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	92.97	2.8024E-002	13.71	Tol.	Yb-169 Th-227 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