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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-S004-3642-01.CNF

Report Generated On              : 6/5/2017    7:24:10 PM

Sample Title                     : NFB-A04-S004-3642-01
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                      :  9.821E+002 GWET

Sample Taken On                  : 5/11/2017   3:17:00 PM
Acquisition Started              : 6/5/2017    5:24:05 PM

Live Time                        :     7200.0 seconds
Real Time                        :     7202.5 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-S004-3642-01
Peak Analysis Performed on: 6/5/2017 7:24:10 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	295-	315	300.23	74.92	0.98	3.06E+002	28.57	7.39E+002
m	2	295-	315	309.03	77.12	0.98	4.65E+002	32.05	7.01E+002
M	3	333-	383	337.43	84.22	1.16	9.11E+001	24.14	6.80E+002
m	4	333-	383	349.27	87.18	1.16	2.01E+002	26.49	8.13E+002
m	5	333-	383	360.22	89.91	1.17	1.40E+002	24.24	7.74E+002
m	6	333-	383	372.63	93.01	1.17	3.34E+002	29.72	7.31E+002
	7	431-	438	434.78	108.54	0.52	4.80E+001	28.41	3.77E+002
	8	512-	521	517.55	129.23	0.98	9.05E+001	34.63	4.91E+002
	9	733-	750	744.55	185.96	1.16	3.19E+002	50.23	6.77E+002
	10	832-	844	838.38	209.41	0.86	1.51E+002	36.11	4.35E+002
M	11	946-	978	954.98	238.55	1.08	1.87E+003	47.02	3.99E+002
m	12	946-	978	967.32	241.64	1.08	2.74E+002	22.39	3.86E+002
	13	1075-	1087	1081.22	270.10	1.31	1.25E+002	29.87	2.90E+002
M	14	1170-	1211	1181.20	295.09	1.13	4.94E+002	26.99	2.49E+002
m	15	1170-	1211	1200.24	299.85	1.13	1.21E+002	15.82	2.19E+002
	16	1308-	1318	1312.18	327.82	0.40	5.64E+001	23.64	2.10E+002
	17	1347-	1366	1353.87	338.24	1.30	3.32E+002	39.15	3.36E+002
	18	1396-	1415	1407.99	351.77	1.24	8.25E+002	42.26	2.73E+002
	19	1633-	1645	1637.91	409.23	0.45	2.66E+001	21.61	1.65E+002
	20	1846-	1865	1852.06	462.75	1.56	1.72E+002	27.22	1.61E+002
	21	2028-	2060	2043.02	510.48	1.76	4.68E+002	43.85	2.85E+002
	22	2326-	2341	2333.06	582.96	1.25	6.51E+002	33.56	1.58E+002
	23	2431-	2448	2437.58	609.08	1.16	6.12E+002	31.69	1.20E+002
	24	2902-	2920	2909.76	727.09	0.66	1.43E+002	22.55	1.07E+002
	25	3068-	3081	3074.59	768.29	0.85	2.64E+001	16.80	9.06E+001
	26	3136-	3147	3141.88	785.10	0.44	2.59E+001	15.71	8.81E+001
	27	3172-	3187	3180.28	794.70	0.92	6.48E+001	18.34	9.02E+001
	28	3434-	3451	3442.59	860.26	1.15	7.51E+001	17.42	6.99E+001
	29	3635-	3658	3645.48	910.96	1.35	4.81E+002	30.48	1.11E+002
M	30	3854-	3886	3860.45	964.69	1.35	7.46E+001	11.36	7.32E+001
m	31	3854-	3886	3876.96	968.81	1.35	2.67E+002	18.34	8.14E+001
	32	4471-	4492	4483.33	1120.36	0.60	1.58E+002	22.72	9.52E+001
	33	5507-	5520	5514.26	1378.01	0.90	3.55E+001	11.08	3.15E+001
	34	5835-	5860	5846.96	1461.15	1.59	1.87E+003	45.86	5.50E+001
	35	6351-	6364	6357.19	1588.67	1.28	2.75E+001	7.13	8.51E+000
	36	6519-	6532	6525.53	1630.74	1.11	1.74E+001	6.87	9.58E+000
	37	7053-	7074	7064.04	1765.33	1.90	1.54E+002	13.59	8.25E+000

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-S004-3642-01
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	4.9231E-001	4.92E-001	1.1794E+001
	Co-60	1173.23	99.85	5.6577E-002	5.21E-002	-5.1550E-002
		1332.49	99.98	5.2082E-002		1.8778E-002
>		2505.71	0.10	0.0000E+000		0.0000E+000
	Cs-137	32.06	5.54	3.2657E+003	5.46E-002	-1.8910E+002
		661.66	84.99	5.4586E-002		5.9713E-002
+	Tl-208	72.80	2.02	5.2486E+000	4.37E-002	-1.5230E+000
		74.97*	3.41	1.8551E+000		3.1276E+000
		84.90*	1.51	3.0012E+000		1.5709E+000
		277.36	6.31	6.7619E-001		-4.3577E-003
		510.77*	22.60	2.7607E-001		4.2833E-001
		583.19*	84.50	4.3748E-002		2.6705E-001
		763.13	1.81	2.5828E+000		1.3635E-001
		860.56*	12.42	2.6867E-001		2.7648E-001
+	Bi-212	39.86	1.06	5.7933E+002	5.49E-001	3.1118E+001
		727.33*	6.74	5.4937E-001		8.5666E-001
		785.37*	1.11	2.7636E+000		9.9610E-001
		1620.74	1.51	2.8528E+000		2.1845E+000
		1806.00	0.09	3.5678E+001		-1.4983E+000
+	Pb-212	74.81*	10.40	6.0824E-001	6.84E-002	1.0255E+000
		77.11*	17.50	3.2438E-001		8.5239E-001
		87.30*	7.81	5.9290E-001		6.2746E-001
		115.18	0.59	7.1252E+000		1.3747E+000
		238.63*	43.30	6.8425E-002		9.2307E-001
		300.09*	3.28	7.4691E-001		9.0150E-001
+	Bi-214	76.86*	0.43	1.2998E+001	7.31E-002	3.4156E+001
		89.81*	0.24	1.7139E+001		1.2891E+001
		386.77	0.30	1.2817E+001		-1.4975E+000
		454.77	0.29	1.3503E+001		5.7336E+000
		609.31*	45.49	7.3133E-002		4.7264E-001
		665.45	1.53	2.9304E+000		7.2437E-001
		703.11	0.48	8.9877E+000		-2.0062E+000
		719.86	0.39	1.1391E+001		6.8594E+000
		768.36*	4.89	6.4583E-001		2.2094E-001
		786.10*	0.31	9.6524E+000		3.4790E+000
		806.17	1.26	3.6099E+000		4.5667E-001
		934.06	3.10	1.4887E+000		2.1769E-001
		964.08*	0.36	7.9252E+000		1.0027E+001
		1051.96	0.31	1.5815E+001		1.2549E+001
		1120.29*	14.91	3.3494E-001		5.8245E-001

	Nuclide Name	Energy (keV)	Yield (%)	Line MDA (pCi/GWET)	Nuclide MDA (pCi/GWET)	Activity (pCi/GWET)
+	Bi-214	1133.66	0.25	2.1088E+001	7.31E-002	-5.7968E+000
		1155.19	1.63	3.3813E+000		4.4379E-001
		1207.68	0.45	1.4454E+001		5.4774E+000
		1238.11	5.79	1.2222E+000		7.0332E-001
		1280.96	1.43	3.8916E+000		5.6821E-002
		1377.67*	4.00	7.4566E-001		5.7387E-001
		1385.31	0.76	6.2704E+000		-3.3438E+000
		1401.50	1.27	3.8929E+000		-2.7939E+000
		1407.98	2.15	2.4290E+000		1.8854E+000
		1509.23	2.11	2.1382E+000		1.6348E+000
		1538.50	0.38	1.0056E+001		9.4503E-001
		1543.32	0.20	1.9360E+001		5.7976E+000
		1583.22	0.69	6.7206E+000		3.3466E-001
		1594.73	0.25	1.7715E+001		2.5335E+000
		1599.31	0.23	1.6782E+001		-7.8674E+000
		1661.28	1.15	3.4951E+000		-4.6001E-001
		1683.99	0.22	1.4354E+001		-1.9505E+000
		1729.59	2.92	1.4585E+000		7.0889E-001
		1764.49*	15.40	1.5092E-001		7.1192E-001
		1847.42	2.11	1.9126E+000		4.7403E-001
		1873.16	0.22	1.7589E+001		-2.0454E+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	2.9134E+001	1.02E-001	-1.8588E+001
		74.81*	6.44	9.5812E-001		1.6154E+000
		77.11*	10.80	5.1270E-001		1.3473E+000
		87.30*	4.84	9.3322E-001		9.8761E-001
		242.00*	7.43	3.7766E-001		7.8572E-001
		258.87	0.52	7.5767E+000		7.8631E-001
		274.80	0.47	8.9918E+000		-4.4868E-001
		295.22*	19.30	1.3065E-001		6.0585E-001
		351.93*	37.60	1.0225E-001		5.6456E-001
		462.00*	0.22	1.5414E+001		2.3347E+001
		533.66	0.19	2.0994E+001		-5.2538E+000
		785.96*	1.07	2.7965E+000		1.0079E+000
		839.04	0.59	8.2123E+000		6.6202E+000
+	Ra-224	81.07	0.13	5.3576E+001	7.02E-001	-1.0478E+001
		83.78*	0.22	2.0884E+001		1.0931E+001
		240.99*	4.10	7.0163E-001		1.4598E+000
+	Ra-226	81.07	0.20	3.4751E+001	1.17E+000	-6.7966E+000
		83.78*	0.33	1.3477E+001		7.0543E+000
		94.90	0.15	3.6757E+001		1.5711E+000
		186.21*	3.59	1.1675E+000		1.3969E+000
+	Ac-228	99.50	1.26	3.6852E+000	1.87E-001	4.5766E-001
		129.07*	2.50	1.1071E+000		6.3609E-001
		209.25*	3.97	8.1855E-001		7.7144E-001
		270.24*	3.55	8.5781E-001		8.1237E-001
		328.00*	3.04	9.0249E-001		4.7558E-001
		338.32*	11.40	3.7469E-001		7.5886E-001
		409.46*	2.02	1.4297E+000		3.7987E-001

	Nuclide Name	Energy (keV)	Yield (%)	Line MDA (pCi/GWET)	Nuclide MDA (pCi/GWET)	Activity (pCi/GWET)
+	Ac-228	463.00*	4.45	7.8477E-001	1.87E-001	1.1887E+000
		755.31	1.03	4.2915E+000		2.5606E+000
		772.29	1.52	3.4215E+000		1.3745E+000
		794.94*	4.31	7.9264E-001		6.4766E-001
		835.70	1.70	3.0007E+000		7.8304E-001
		911.20*	26.20	1.8652E-001		8.6745E-001
		964.79*	4.99	5.9104E-001		7.4775E-001
		968.96*	15.90	1.9572E-001		8.4258E-001
		1588.20*	3.06	5.9615E-001		6.5011E-001
		1630.62*	1.52	1.3545E+000		8.4049E-001
	Th-228	84.37*	1.26	3.5966E+000	3.60E+000	1.8826E+000
		131.61	0.13	3.4855E+001		-1.3782E+001
		166.41	0.10	3.9783E+001		-1.7542E+001
		215.98	0.25	1.7103E+001		-6.3734E+000
	Pa-234m	258.23	0.07	5.3804E+001	5.52E+000	1.2355E+001
		742.81	0.09	4.5951E+001		1.7988E+001
		766.36	0.32	1.4824E+001		-8.8808E+000
		786.27	0.05	9.2879E+001		9.0065E+001
		1001.03	0.85	5.5221E+000		-3.2472E+000
		1737.77	0.02	1.8408E+002		-7.5057E+001
	Th-234	63.30	3.75	4.0142E+000	1.38E+000	6.9539E-001
		92.59	4.33	1.3757E+000		2.5009E+000
		112.81	0.22	1.9227E+001		-7.7997E+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-S004-3642-01
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	1.17942E+001	4.33582E-001
Eu-152m	0.999	89.85*		69.90	4.51550E-002	7.93484E-003
Tm-170	1.000	84.25*		2.48	1.06920E+000	2.87327E-001
Tl-208	0.857	72.80	@	2.02		
		74.97*	@	3.41	3.12755E+000	3.06789E-001
		84.90*	@	1.51	1.57093E+000	4.18289E-001
		277.36		6.31		
		510.77*	@	22.60	4.28325E-001	6.50223E-002
		583.19*		84.50	2.67051E-001	1.62473E-002
		763.13	@	1.81		
		860.56*		12.42	2.76481E-001	6.44870E-002
Bi-211	0.916	351.03*		13.00	1.63642E+000	1.03327E-001
Bi-212	0.763	39.86	@	1.06		
		727.33*		6.74	8.56656E-001	1.37817E-001
		785.37*		1.11	9.96096E-001	6.05030E-001
		1620.74		1.51		
		1806.00	@	0.09		
Pb-212	0.985	74.81*		10.40	1.02548E+000	1.04851E-001
		77.11*		17.50	8.52389E-001	6.84905E-002
		87.30*		7.81	6.27456E-001	8.66871E-002
		115.18	@	0.59		
		238.63*		43.30	9.23068E-001	3.84497E-002
		300.09*		3.28	9.01505E-001	1.21898E-001
Bi-214	0.608	76.86*	@	0.43	3.41556E+001	2.76876E+000
		89.81*	@	0.24	1.28908E+001	2.31194E+000
		386.77	@	0.30		
		454.77	@	0.29		
		609.31*		45.49	4.72637E-001	2.81570E-002
		665.45	@	1.53		
		703.11	@	0.48		
		719.86	@	0.39		
		768.36*		4.89	2.20941E-001	1.40850E-001
		786.10*	@	0.31	3.47903E+000	2.18618E+000
		806.17	@	1.26		
		934.06		3.10		
		964.08*	@	0.36	1.00266E+001	1.57844E+000
		1051.96	@	0.31		
		1120.29*		14.91	5.82451E-001	8.50510E-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	0.608	1238.11		5.79		
		1280.96	@	1.43		
		1377.67*		4.00	5.73872E-001	1.79823E-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		
		1764.49*		15.40	7.11920E-001	7.01455E-002
		1847.42	@	2.11		
		1873.16	@	0.22		
		2118.55	@	1.14		
		2204.21	@	5.08		
Pb-214	0.956	53.28	@	1.20		
		74.81*		6.44	1.61536E+000	1.66980E-001
		77.11*		10.80	1.34725E+000	1.12813E-001
		87.30*		4.84	9.87609E-001	1.37720E-001
		242.00*		7.43	7.85724E-001	6.97418E-002
		258.87	@	0.52		
		274.80	@	0.47		
		295.22*		19.30	6.05854E-001	3.89956E-002
		351.93*		37.60	5.64563E-001	3.51959E-002
		462.00*	@	0.22	2.33471E+001	3.88924E+000
		533.66	@	0.19		
		785.96*	@	1.07	1.00794E+000	6.16780E-001
		839.04	@	0.59		
Ra-224	0.896	81.07	@	0.13		
		83.78*	@	0.22	1.09314E+001	2.93844E+000
		240.99*		4.10	1.45975E+000	1.28989E-001
Ra-226	0.873	81.07	@	0.20		
		83.78*	@	0.33	7.05433E+000	1.89599E+000
		94.90	@	0.15		
		186.21*		3.59	1.39692E+000	2.66517E-001
Ac-228	0.895	99.50	@	1.26		
		129.07*	@	2.50	6.36086E-001	2.44464E-001
		209.25*		3.97	7.71439E-001	1.87304E-001
		270.24*		3.55	8.12372E-001	1.97852E-001
		328.00*		3.04	4.75584E-001	2.00838E-001
		338.32*		11.40	7.58865E-001	9.66787E-002
		409.46*	@	2.02	3.79869E-001	3.08537E-001
		463.00*		4.45	1.18867E+000	2.02425E-001
		755.31	@	1.03		
		772.29	@	1.52		

Nuclide Name	Id Confidence	Energy (keV)	Yield (%)	Activity (pCi/GWET)	Activity Uncertainty
Ac-228	0.895	794.94*	4.31	6.47657E-001	1.85092E-001
		835.70 @	1.70		
		911.20*	26.20	8.67447E-001	6.48043E-002
		964.79*	4.99	7.47752E-001	1.17876E-001
		968.96*	15.90	8.42581E-001	6.65124E-002
		1588.20*	3.06	6.50110E-001	1.71461E-001
		1630.62* @	1.52	8.40488E-001	3.33788E-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

****
***** 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		0.983	1.179417E+001	4.335822E-001
X	Cd-109		0.889		
	Eu-152m		0.999	4.339016E-002	7.925824E-003
	Tm-170		1.000	6.212276E-001	2.880644E-001
	Tl-208	@	0.857	2.666098E-001	1.559806E-002
	Bi-211		0.916	2.328460E-001	1.436619E-001
	Bi-212	@	0.763	8.330863E-001	1.336003E-001
	Pb-212	@	0.985	7.565188E-001	2.942940E-002
	Bi-214	@	0.608	5.038254E-001	2.429100E-002
	Pb-214	@	0.956	4.842312E-001	3.540964E-002
	Ra-224	@	0.896	5.601261E-001	1.436972E-001
	Ra-226	@	0.873	1.396919E+000	2.654929E-001
	Ac-228	@	0.895	8.116908E-001	3.301962E-002
X	Th-228		0.501		
X	Th-231		0.838		

? = 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: 6/5/2017 7:24:10 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	6	93.01	3.5834E-002	11.75	Tol.	Yb-169 Th-227 Th-234
	7	108.54	6.6631E-003	59.21		

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

Errors quoted at 1.000 sigma