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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-NFB-A01-S004-1218-01.CNF

Report Generated On	: 5/24/2017 6:43:56 PM
Sample Title	: NFB-A01-S004-1218-01
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	: 9.260E+002 GWET
Sample Taken On	: 5/10/2017 2:05:00 PM
Acquisition Started	: 5/24/2017 4:43:51 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

****
***** 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-A01-S004-1218-01
Peak Analysis Performed on: 5/24/2017 6:43:56 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	252-	259	254.18	63.41	0.65	2.20E+001	24.11	2.76E+002
M	2	292-	319	300.01	74.86	1.13	2.24E+002	24.29	5.57E+002
m	3	292-	319	309.15	77.15	1.13	3.46E+002	27.56	5.33E+002
	4	365-	383	371.95	92.84	1.29	2.12E+002	51.19	7.09E+002
	5	737-	755	744.15	185.86	1.15	2.47E+002	45.01	5.21E+002
M	6	939-	975	944.07	235.83	1.04	1.97E+001	14.16	2.88E+002
m	7	939-	975	955.06	238.57	1.04	1.11E+003	36.65	3.03E+002
m	8	939-	975	967.33	241.64	1.04	1.88E+002	18.11	2.43E+002
	9	1074-	1090	1080.04	269.81	0.97	6.03E+001	31.04	2.86E+002
	10	1173-	1193	1180.80	294.99	1.09	3.62E+002	37.07	2.78E+002
	11	1193-	1206	1201.09	300.06	0.83	6.93E+001	23.69	1.79E+002
	12	1347-	1365	1353.57	338.17	1.29	2.40E+002	29.31	1.82E+002
	13	1399-	1414	1408.00	351.77	1.16	6.77E+002	34.03	1.58E+002
	14	1845-	1858	1852.34	462.82	0.60	3.95E+001	19.28	1.19E+002
	15	2035-	2060	2043.29	510.54	1.65	3.49E+002	32.15	1.59E+002
	16	2325-	2341	2332.76	582.89	1.18	3.64E+002	26.74	1.12E+002
	17	2430-	2446	2436.77	608.88	0.97	4.67E+002	28.89	1.17E+002
	18	2903-	2918	2910.00	727.15	0.62	6.96E+001	17.28	7.54E+001
	19	3066-	3081	3074.41	768.24	1.09	5.25E+001	15.30	5.85E+001
	20	3172-	3185	3179.50	794.50	0.77	3.70E+001	13.82	5.60E+001
	21	3434-	3450	3442.78	860.30	0.89	6.04E+001	17.00	7.26E+001
	22	3636-	3655	3645.61	911.00	0.94	2.93E+002	23.58	7.50E+001
M	23	3854-	3885	3859.80	964.53	1.51	4.02E+001	9.37	5.63E+001
m	24	3854-	3885	3876.41	968.68	1.51	1.67E+002	15.27	7.13E+001
	25	4473-	4492	4482.42	1120.13	1.73	1.38E+002	17.34	4.56E+001
	26	5508-	5521	5514.24	1378.00	0.54	3.07E+001	10.46	2.83E+001
	27	5833-	5859	5846.80	1461.11	1.78	1.26E+003	37.58	3.38E+001
	28	6520-	6533	6526.73	1631.04	0.28	5.50E+000	7.36	1.75E+001
	29	6917-	6930	6923.71	1730.25	0.62	2.50E+001	6.69	7.02E+000
	30	7055-	7074	7063.52	1765.20	0.41	1.15E+002	13.49	1.94E+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-A01-S004-1218-01
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	4.2980E-001	4.30E-001	8.4221E+000
	Co-60	1173.23	99.85	5.6199E-002	4.58E-002	1.8983E-002
		1332.49	99.98	4.5778E-002		1.3475E-002
>		2505.71	0.10	0.0000E+000		0.0000E+000
	Cs-137	32.06	5.54	2.7750E+003	4.74E-002	2.4964E+002
		661.66	84.99	4.7433E-002		2.4202E-002
+	Tl-208	72.80	2.02	4.5730E+000	3.98E-002	2.6314E-001
		74.97*	3.41	1.6960E+000		2.4096E+000
		84.90	1.51	4.0017E+000		3.3554E+000
		277.36	6.31	6.1317E-001		3.0933E-001
		510.77*	22.60	2.1337E-001		2.6977E-001
		583.19*	84.50	3.9763E-002		1.5528E-001
		763.13	1.81	2.4572E+000		3.2457E-001
		860.56*	12.42	2.8209E-001		2.3336E-001
+	Bi-212	39.86	1.06	5.0679E+002	4.60E-001	-1.0459E+002
		727.33*	6.74	4.5964E-001		4.3815E-001
		785.37	1.11	3.5594E+000		2.4046E-001
		1620.74	1.51	2.5241E+000		7.1241E-002
		1806.00	0.09	3.6443E+001		-2.0168E+000
+	Pb-212	74.81*	10.40	5.5610E-001	6.32E-002	7.9007E-001
		77.11*	17.50	2.9693E-001		6.6482E-001
		87.30	7.81	7.5863E-001		5.7308E-001
		115.18	0.59	6.0462E+000		-2.4742E+000
		238.63*	43.30	6.3167E-002		5.7153E-001
		300.09*	3.28	8.2882E-001		5.4302E-001
+	Bi-214	76.86*	0.43	1.2028E+001	7.52E-002	2.6931E+001
		89.81	0.24	2.3245E+001		1.4719E+001
		386.77	0.30	1.1563E+001		2.4551E+000
		454.77	0.29	1.1762E+001		-1.0633E+001
		609.31*	45.49	7.5193E-002		3.8198E-001
		665.45	1.53	2.5174E+000		4.7249E-001
		703.11	0.48	8.2811E+000		4.6451E+000
		719.86	0.39	9.9170E+000		-8.2070E+000
		768.36*	4.89	5.8080E-001		4.6703E-001
		786.10	0.31	1.2582E+001		3.1814E+000
		806.17	1.26	3.2357E+000		1.7513E+000
		934.06	3.10	1.5219E+000		8.2749E-001
		964.08*	0.36	7.4156E+000		5.7322E+000
		1051.96	0.31	1.3883E+001		-4.4465E+000
		1120.29*	14.91	2.4247E-001		5.4151E-001

	Nuclide Name	Energy (keV)	Yield (%)	Line MDA (pCi/GWET)	Nuclide MDA (pCi/GWET)	Activity (pCi/GWET)
+	Bi-214	1133.66	0.25	1.9438E+001	7.52E-002	8.3976E+000
		1155.19	1.63	3.2549E+000		-2.5613E-001
		1207.68	0.45	1.2696E+001		-2.4164E+000
		1238.11	5.79	1.0997E+000		1.2908E-001
		1280.96	1.43	3.2247E+000		2.5870E+000
		1377.67*	4.00	7.5319E-001		5.2685E-001
		1385.31	0.76	6.2477E+000		8.3736E-001
		1401.50	1.27	3.5907E+000		-2.2663E+000
		1407.98	2.15	2.2137E+000		1.4780E+000
		1509.23	2.11	1.6802E+000		-5.2321E-001
		1538.50	0.38	1.0332E+001		3.3036E+000
		1543.32	0.20	1.7252E+001		-1.6969E+000
		1583.22	0.69	7.0530E+000		3.1727E+000
		1594.73	0.25	1.9003E+001		1.7163E+001
		1599.31	0.23	1.5767E+001		-2.1912E+000
		1661.28	1.15	3.0150E+000		1.0215E-001
		1683.99	0.22	1.3145E+001		-3.1781E+000
		1729.59*	2.92	6.2275E-001		6.6556E-001
		1764.49*	15.40	2.1777E-001		5.5561E-001
		1847.42	2.11	1.8806E+000		1.1916E+000
		1873.16	0.22	1.5864E+001		-1.8583E-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	2.5579E+001	7.80E-002	5.0703E+000
		74.81*	6.44	8.8557E-001		1.2582E+000
		77.11*	10.80	4.7445E-001		1.0623E+000
		87.30	4.84	1.2071E+000		9.1190E-001
		242.00*	7.43	3.1983E-001		5.7229E-001
		258.87	0.52	6.6430E+000		-1.5187E+000
		274.80	0.47	8.1975E+000		4.8590E+000
		295.22*	19.30	1.9599E-001		4.7062E-001
		351.93*	37.60	7.7958E-002		4.9045E-001
		462.00*	0.22	1.2578E+001		5.6786E+000
		533.66	0.19	1.8832E+001		-1.2951E+000
		785.96	1.07	3.6429E+000		9.2114E-001
		839.04	0.59	7.2283E+000		5.6464E+000
+	Ra-224	81.07	0.13	4.7068E+001	5.88E-001	-1.8473E+001
		83.78	0.22	2.6978E+001		-2.9897E+001
		240.99*	4.10	5.8775E-001		1.0517E+000
+	Ra-226	81.07	0.20	3.0864E+001	1.12E+000	-1.2113E+001
		83.78	0.33	1.7600E+001		-1.9505E+001
		94.90	0.15	3.2911E+001		2.8393E-001
		186.21*	3.59	1.1179E+000		1.0866E+000
+	Ac-228	99.50	1.26	3.2821E+000	1.52E-001	6.4984E-001
		129.07	2.50	1.5788E+000		7.1650E-002
		209.25	3.97	1.0562E+000		1.0170E+000
		270.24*	3.55	9.7377E-001		4.1216E-001
		328.00	3.04	1.2861E+000		-1.5448E-001
		338.32*	11.40	2.8415E-001		5.7647E-001
		409.46	2.02	1.7643E+000		1.9474E-001

	Nuclide Name	Energy (keV)	Yield (%)	Line MDA (pCi/GWET)	Nuclide MDA (pCi/GWET)	Activity (pCi/GWET)
+	Ac-228	463.00*	4.45	6.3346E-001	1.52E-001	2.8599E-001
		755.31	1.03	4.0762E+000		1.6247E+000
		772.29	1.52	2.9196E+000		7.9730E-002
		794.94*	4.31	6.3330E-001		3.8784E-001
		835.70	1.70	2.6080E+000		2.0588E+000
		911.20*	26.20	1.5208E-001		5.5049E-001
		964.79*	4.99	5.4705E-001		4.2287E-001
		968.96*	15.90	1.9266E-001		5.5205E-001
		1588.20	3.06	1.6825E+000		1.3209E-001
		1630.62*	1.52	1.7805E+000		2.7844E-001
	Th-228	84.37	1.26	4.7307E+000	4.73E+000	-1.0271E+000
		131.61	0.13	2.9970E+001		-1.2399E+000
		166.41	0.10	3.4614E+001		2.0421E+000
		215.98	0.25	1.5246E+001		4.1929E+000
	Pa-234m	258.23	0.07	4.7624E+001	5.52E+000	1.3621E+001
		742.81	0.09	4.5667E+001		2.2444E+001
		766.36	0.32	1.3998E+001		8.0661E+000
		786.27	0.05	7.2332E+001		2.5943E+000
		1001.03	0.85	5.5155E+000		3.8909E+000
		1737.77	0.02	1.6121E+002		-4.9902E+001
+	Th-234	63.30*	3.75	2.2083E+000	1.24E+000	-2.1009E-001
		92.59*	4.33	1.2401E+000		7.1595E-001
		112.81	0.22	1.6916E+001		-2.2757E+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-A01-S004-1218-01
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	0.986	1460.82*		10.55	8.42214E+000	3.42007E-001
Tl-208	0.834	72.80	@	2.02		
		74.97*	@	3.41	2.40961E+000	2.70888E-001
		84.90	@	1.51		
		277.36		6.31		
		510.77*	@	22.60	2.69770E-001	5.00622E-002
		583.19*		84.50	1.55277E-001	1.26404E-002
		763.13	@	1.81		
		860.56*		12.42	2.33363E-001	6.59248E-002
Bi-211	0.916	351.03*		13.00	1.42025E+000	8.87461E-002
Bi-212	0.577	39.86	@	1.06		
		727.33*		6.74	4.38150E-001	1.09554E-001
		785.37		1.11		
		1620.74		1.51		
		1806.00	@	0.09		
Pb-212	0.833	74.81*		10.40	7.90073E-001	9.16975E-002
		77.11*		17.50	6.64816E-001	5.96328E-002
		87.30		7.81		
		115.18	@	0.59		
		238.63*		43.30	5.71529E-001	2.69557E-002
		300.09*		3.28	5.43021E-001	1.86418E-001
Bi-214	0.624	76.86*	@	0.43	2.69311E+001	2.43286E+000
		89.81	@	0.24		
		386.77	@	0.30		
		454.77	@	0.29		
		609.31*		45.49	3.81985E-001	2.61923E-002
		665.45	@	1.53		
		703.11	@	0.48		
		719.86	@	0.39		
		768.36*		4.89	4.67030E-001	1.36447E-001
		786.10	@	0.31		
		806.17	@	1.26		
		934.06		3.10		
		964.08*	@	0.36	5.73222E+000	1.35534E+000
		1051.96	@	0.31		
		1120.29*		14.91	5.41511E-001	6.91280E-002
		1133.66	@	0.25		
		1155.19	@	1.63		
		1207.68	@	0.45		
		1238.11		5.79		
		1280.96	@	1.43		

Nuclide Name	Id Confidence	Energy (keV)		Yield (%)	Activity (pCi/GWET)	Activity Uncertainty
Bi-214	0.624	1377.67*		4.00	5.26847E-001	1.79909E-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	6.65561E-001	1.79569E-001
		1764.49*		15.40	5.55612E-001	7.16208E-002
		1847.42	@	2.11		
		1873.16	@	0.22		
		2118.55	@	1.14		
		2204.21	@	5.08		
Pb-214	0.851	53.28	@	1.20		
		74.81*		6.44	1.25817E+000	1.47273E-001
		77.11*		10.80	1.06228E+000	9.85186E-002
		87.30		4.84		
		242.00*		7.43	5.72295E-001	5.85203E-002
		258.87	@	0.52		
		274.80	@	0.47		
		295.22*		19.30	4.70619E-001	5.08137E-002
		351.93*		37.60	4.90449E-001	3.02496E-002
		462.00*	@	0.22	5.67860E+000	2.78839E+000
		533.66	@	0.19		
		785.96	@	1.07		
		839.04	@	0.59		
Ra-224	0.825	81.07	@	0.13		
		83.78	@	0.22		
		240.99*		4.10	1.05172E+000	1.07181E-001
Ra-226	0.760	81.07	@	0.20		
		83.78	@	0.33		
		94.90	@	0.15		
		186.21*		3.59	1.08664E+000	2.52206E-001
Ac-228	0.595	99.50	@	1.26		
		129.07	@	2.50		
		209.25		3.97		
		270.24*		3.55	4.12156E-001	2.12906E-001
		328.00		3.04		
		338.32*		11.40	5.76468E-001	7.56104E-002
		409.46	@	2.02		
		463.00*		4.45	2.85987E-001	1.40793E-001
		755.31	@	1.03		
		772.29	@	1.52		
		794.94*		4.31	3.87840E-001	1.45713E-001
		835.70	@	1.70		

Nuclide Name	Id Confidence	Energy (keV)	Yield (%)	Activity (pCi/GWET)	Activity Uncertainty
Ac-228	0.595	911.20*	26.20	5.50492E-001	4.99119E-002
		964.79*	4.99	4.22865E-001	1.00044E-001
		968.96*	15.90	5.52051E-001	5.49029E-002
		1588.20	3.06		
		1630.62* @	1.52	2.78435E-001	3.73053E-001
Th-234	0.938	63.30*	3.75	-2.10092E-001	4.60343E-001
		92.59*	4.33	7.15953E-001	2.73096E-001
		112.81 @	0.22		

* = 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 *****
****

Nuclide Name		Nuclide Id Confidence	Wt mean Activity (pCi/GWET)	Wt mean Activity Uncertainty
K-40		0.986	8.422137E+000	3.420073E-001
Tl-208	@	0.834	1.577182E-001	1.234068E-002
Bi-211		0.916	2.801267E-001	1.531717E-001
Bi-212	@	0.577	4.381501E-001	1.095538E-001
Pb-212	@	0.833	5.387981E-001	2.380348E-002
Bi-214	@	0.624	4.201908E-001	2.261852E-002
Pb-214	@	0.851	3.937143E-001	4.370323E-002
Ra-224	@	0.825	3.281824E-001	1.333184E-001
Ra-226	@	0.760	1.086644E+000	2.522060E-001
Ac-228	@	0.595	5.212712E-001	2.848560E-002
Th-234	@	0.938	7.159526E-001	2.730955E-001

? = 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: 5/24/2017 6:43:56 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	235.83	2.7310E-003	72.03	Tol.	Th-227

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

Errors quoted at 1.000 sigma