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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-A04-S002-1218-01.CNF

Report Generated On	: 5/23/2017 4:10:56 PM
Sample Title	: NFB-A04-S002-1218-01
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	: 8.245E+002 GWET
Sample Taken On	: 5/11/2017 11:37:00 AM
Acquisition Started	: 5/23/2017 2:10:51 PM
Live Time	: 7200.0 seconds
Real Time	: 7202.1 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-A04-S002-1218-01
Peak Analysis Performed on: 5/23/2017 4:10:56 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
M	1	291-	316	299.96	74.85	0.90	2.00E+002	23.82	5.81E+002
m	2	291-	316	309.26	77.18	0.90	4.31E+002	29.69	5.68E+002
	3	344-	353	348.96	87.10	1.26	1.28E+002	34.04	4.57E+002
	4	365-	377	371.64	92.77	1.26	2.39E+002	42.21	5.86E+002
	5	738-	755	744.44	185.94	0.94	3.68E+002	47.07	5.57E+002
	6	831-	848	836.45	208.93	0.87	1.61E+002	40.98	4.62E+002
M	7	948-	982	954.82	238.51	1.02	1.23E+003	36.61	3.81E+002
m	8	948-	982	967.49	241.68	1.02	2.79E+002	19.33	2.97E+002
m	9	948-	982	978.84	244.52	1.03	2.36E+001	12.20	2.30E+002
	10	1073-	1084	1079.77	269.74	0.35	9.84E+001	25.39	2.17E+002
	11	1171-	1192	1180.64	294.95	0.89	6.11E+002	43.27	3.36E+002
	12	1193-	1208	1200.12	299.82	1.37	1.22E+002	26.46	1.92E+002
	13	1302-	1317	1311.95	327.77	0.61	1.04E+002	26.87	2.06E+002
	14	1346-	1362	1352.85	337.99	1.44	2.97E+002	31.66	2.23E+002
	15	1401-	1418	1407.35	351.61	1.11	1.08E+003	43.61	2.44E+002
	16	1846-	1863	1850.84	462.45	0.92	7.62E+001	24.03	1.52E+002
	17	2030-	2055	2042.71	510.40	1.52	4.05E+002	32.62	1.55E+002
	18	2325-	2341	2331.89	582.67	1.26	4.44E+002	28.85	1.23E+002
	19	2428-	2447	2436.39	608.79	1.22	8.65E+002	36.28	1.29E+002
	20	2902-	2917	2907.68	726.57	0.67	9.12E+001	18.30	8.08E+001
	21	3064-	3080	3072.74	767.82	1.27	6.66E+001	18.01	8.24E+001
	22	3173-	3186	3179.01	794.38	0.90	4.11E+001	14.85	6.49E+001
	23	3435-	3448	3440.89	859.83	0.97	5.19E+001	13.90	5.11E+001
	24	3636-	3655	3644.37	910.68	1.46	3.38E+002	25.18	8.29E+001
	25	3729-	3743	3734.64	933.24	0.65	3.96E+001	14.25	5.64E+001
M	26	3851-	3886	3857.71	964.00	1.57	5.33E+001	9.79	5.60E+001
m	27	3851-	3886	3875.74	968.51	1.57	2.12E+002	16.07	5.38E+001
	28	3998-	4009	4003.86	1000.53	0.45	1.33E+001	11.50	4.57E+001
	29	4470-	4489	4480.73	1119.71	1.07	1.74E+002	18.88	5.22E+001
	30	4947-	4961	4953.32	1237.82	0.87	5.43E+001	14.47	5.37E+001
	31	5505-	5519	5512.70	1377.62	0.58	6.12E+001	11.02	2.08E+001
	32	5831-	5856	5844.23	1460.47	1.60	8.45E+002	32.65	5.20E+001
	33	6915-	6928	6921.38	1729.67	0.76	2.74E+001	8.05	1.36E+001
	34	7051-	7071	7060.90	1764.54	1.59	1.71E+002	16.24	2.57E+001
	35	7388-	7401	7394.06	1847.81	1.33	2.88E+001	6.13	3.17E+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-S002-1218-01
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	5.7181E-001	5.72E-001	6.2756E+000
	Co-60	1173.23	99.85	5.1363E-002	5.09E-002	2.2203E-002
		1332.49	99.98	5.0876E-002		2.9349E-002
>		2505.71	0.10	0.0000E+000		0.0000E+000
	Cs-137	32.06	5.54	3.9572E+003	5.45E-002	-3.6894E+002
		661.66	84.99	5.4486E-002		4.0523E-004
+	Tl-208	72.80	2.02	5.4412E+000	4.67E-002	-1.3239E+000
		74.97*	3.41	1.9422E+000		2.4087E+000
		84.90	1.51	4.7564E+000		-9.5927E-001
		277.36	6.31	6.9339E-001		-5.3659E-001
		510.77*	22.60	2.3588E-001		3.9631E-001
		583.19*	84.50	4.6704E-002		2.1325E-001
		763.13	1.81	2.9440E+000		-8.2639E-001
		860.56*	12.42	2.5074E-001		2.2437E-001
+	Bi-212	39.86	1.06	7.0396E+002	5.31E-001	-1.7762E+001
		727.33*	6.74	5.3081E-001		6.4278E-001
		785.37	1.11	4.5547E+000		1.6660E+000
		1620.74	1.51	3.1273E+000		4.2108E-001
		1806.00	0.09	4.6097E+001		9.0280E+000
+	Pb-212	74.81*	10.40	6.3683E-001	7.88E-002	7.8978E-001
		77.11*	17.50	3.4304E-001		9.2827E-001
		87.30*	7.81	5.5813E-001		4.6941E-001
		115.18	0.59	7.5042E+000		-1.5981E-001
		238.63*	43.30	7.8762E-002		7.1228E-001
		300.09*	3.28	1.0048E+000		1.0687E+000
+	Bi-214	76.86*	0.43	1.3924E+001	9.32E-002	3.7678E+001
		89.81	0.24	2.7931E+001		-1.5541E+000
		386.77	0.30	1.4201E+001		-4.9278E+000
		454.77	0.29	1.4140E+001		-5.8371E+000
		609.31*	45.49	9.3226E-002		7.9447E-001
		665.45	1.53	2.9995E+000		1.7855E+000
		703.11	0.48	9.7919E+000		-8.3124E-001
		719.86	0.39	1.1633E+001		-1.2765E+001
		768.36*	4.89	7.7160E-001		6.6494E-001
		786.10	0.31	1.5990E+001		3.2462E+000
		806.17	1.26	3.5944E+000		1.4674E+000
		934.06*	3.10	1.1341E+000		7.2244E-001
		964.08*	0.36	8.3027E+000		8.5233E+000
		1051.96	0.31	1.7039E+001		4.0198E+000
		1120.29*	14.91	2.8816E-001		7.6410E-001

	Nuclide Name	Energy (keV)	Yield (%)	Line MDA (pCi/GWET)	Nuclide MDA (pCi/GWET)	Activity (pCi/GWET)
+	Bi-214	1133.66	0.25	1.9709E+001	9.32E-002	-1.8866E+001
		1155.19	1.63	3.4541E+000		1.5553E+000
		1207.68	0.45	1.2340E+001		6.2763E-001
		1238.11*	5.79	7.4288E-001		6.6506E-001
		1280.96	1.43	3.8558E+000		-1.1915E-002
		1377.67*	4.00	7.4586E-001		1.1777E+000
		1385.31	0.76	6.3867E+000		-3.9699E-002
		1401.50	1.27	4.3361E+000		-8.8672E-001
		1407.98	2.15	2.5568E+000		1.5877E-001
		1509.23	2.11	2.6380E+000		1.7357E+000
		1538.50	0.38	1.1699E+001		1.0339E+000
		1543.32	0.20	2.0744E+001		-3.1850E+000
		1583.22	0.69	8.5294E+000		6.6469E+000
		1594.73	0.25	2.1100E+001		-7.2150E+000
		1599.31	0.23	1.9681E+001		-1.4691E+001
		1661.28	1.15	3.9759E+000		1.2139E+000
		1683.99	0.22	1.8743E+001		9.2579E+000
		1729.59*	2.92	9.3248E-001		8.1935E-001
		1764.49*	15.40	2.8030E-001		9.4756E-001
		1847.42*	2.11	6.9268E-001		1.2145E+000
		1873.16	0.22	1.5265E+001		-4.7784E+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	3.2349E+001	1.13E-001	-1.5357E+001
		74.81*	6.44	1.0161E+000		1.2602E+000
		77.11*	10.80	5.4922E-001		1.4862E+000
		87.30*	4.84	8.8987E-001		7.4842E-001
		242.00*	7.43	3.9568E-001		9.5033E-001
		258.87	0.52	8.0809E+000		3.2329E+000
		274.80	0.47	9.7391E+000		-1.4385E+000
		295.22*	19.30	2.4513E-001		8.9214E-001
		351.93*	37.60	1.1291E-001		8.8158E-001
		462.00*	0.22	1.7253E+001		1.2309E+001
		533.66	0.19	2.3428E+001		1.1576E+001
		785.96	1.07	4.6298E+000		9.3989E-001
		839.04	0.59	8.6214E+000		5.9800E+000
+	Ra-224	81.07	0.13	5.6406E+001	7.26E-001	-3.0189E+001
		83.78	0.22	3.2344E+001		-2.5564E+000
		240.99*	4.10	7.2571E-001		1.7430E+000
+	Ra-226	81.07	0.20	3.7061E+001	1.28E+000	-1.9836E+001
		83.78	0.33	2.1143E+001		-1.6711E+000
		94.90	0.15	3.8707E+001		-2.3409E+001
		186.21*	3.59	1.2787E+000		1.9670E+000
+	Ac-228	99.50	1.26	3.7623E+000	1.80E-001	4.2319E-001
		129.07	2.50	1.9025E+000		4.7466E-001
		209.25*	3.97	1.1010E+000		9.6608E-001
		270.24*	3.55	8.5344E-001		7.5355E-001
		328.00*	3.04	1.1732E+000		1.0317E+000
		338.32*	11.40	3.3932E-001		7.9737E-001
		409.46	2.02	2.1866E+000		1.0121E+000

	Nuclide Name	Energy (keV)	Yield (%)	Line MDA (pCi/GWET)	Nuclide MDA (pCi/GWET)	Activity (pCi/GWET)
+	Ac-228	463.00*	4.45	8.6716E-001	1.80E-001	6.1868E-001
		755.31	1.03	4.5250E+000		1.2479E+000
		772.29	1.52	3.6933E+000		5.8758E-001
		794.94*	4.31	7.6346E-001		4.8316E-001
		835.70	1.70	3.0234E+000		3.1919E-002
		911.20*	26.20	1.7999E-001		7.1372E-001
		964.79*	4.99	6.1127E-001		6.2752E-001
		968.96*	15.90	1.8890E-001		7.8471E-001
		1588.20	3.06	1.9759E+000		1.2373E+000
		1630.62	1.52	3.1614E+000		9.1791E-001
	Th-228	84.37	1.26	5.7053E+000	5.71E+000	1.9557E-001
		131.61	0.13	3.6468E+001		2.6573E+001
		166.41	0.10	4.3739E+001		1.9509E+001
		215.98	0.25	1.7829E+001		-5.7870E+000
	Pa-234m	258.23	0.07	5.7065E+001	6.16E+000	5.0533E-001
		742.81	0.09	5.0841E+001		1.3278E+001
		766.36	0.32	1.6957E+001		4.4844E+000
		786.27	0.05	9.2869E+001		2.6021E+001
		1001.03	0.85	6.1584E+000		4.5605E-001
		1737.77	0.02	1.9336E+002		-4.5775E+001
	Th-234	63.30	3.75	4.2448E+000	1.49E+000	-1.8217E+000
		92.59	4.33	1.4856E+000		2.7937E+000
		112.81	0.22	2.0817E+001		5.0222E+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-S002-1218-01
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	0.981	1460.82*		10.55	6.27562E+000	3.01105E-001
Tl-208	0.808	72.80	@	2.02		
		74.97*	@	3.41	2.40872E+000	2.96014E-001
		84.90	@	1.51		
		277.36		6.31		
		510.77*	@	22.60	3.96313E-001	5.74765E-002
		583.19*		84.50	2.13246E-001	1.55992E-002
		763.13	@	1.81		
		860.56*		12.42	2.24369E-001	6.03534E-002
Bi-211	0.947	351.03*		13.00	2.55245E+000	1.38946E-001
Bi-212	0.523	39.86	@	1.06		
		727.33*		6.74	6.42782E-001	1.30543E-001
		785.37		1.11		
		1620.74		1.51		
		1806.00	@	0.09		
Pb-212	0.984	74.81*		10.40	7.89783E-001	9.96965E-002
		77.11*		17.50	9.28272E-001	7.44780E-002
		87.30*		7.81	4.69408E-001	1.26525E-001
		115.18	@	0.59		
		238.63*		43.30	7.12280E-001	3.18919E-002
		300.09*		3.28	1.06869E+000	2.34914E-001
Bi-214	0.749	76.86*	@	0.43	3.76782E+001	3.04990E+000
		89.81	@	0.24		
		386.77	@	0.30		
		454.77	@	0.29		
		609.31*		45.49	7.94474E-001	4.07523E-002
		665.45	@	1.53		
		703.11	@	0.48		
		719.86	@	0.39		
		768.36*		4.89	6.64936E-001	1.80397E-001
		786.10	@	0.31		
		806.17	@	1.26		
		934.06*		3.10	7.22443E-001	2.60524E-001
		964.08*	@	0.36	8.52330E+000	1.60245E+000
		1051.96	@	0.31		
		1120.29*		14.91	7.64103E-001	8.50454E-002
		1133.66	@	0.25		
		1155.19	@	1.63		
		1207.68	@	0.45		
		1238.11*		5.79	6.65064E-001	1.78344E-001
		1280.96	@	1.43		

Nuclide Name	Id Confidence	Energy (keV)		Yield (%)	Activity (pCi/GWET)	Activity Uncertainty
Bi-214	0.749	1377.67*		4.00	1.17770E+000	2.14708E-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	8.19347E-001	2.42459E-001
		1764.49*		15.40	9.47560E-001	9.87829E-002
		1847.42*	@	2.11	1.21455E+000	2.63096E-001
		1873.16	@	0.22		
		2118.55	@	1.14		
		2204.21	@	5.08		
Pb-214	0.935	53.28	@	1.20		
		74.81*		6.44	1.26021E+000	1.60229E-001
		77.11*		10.80	1.48620E+000	1.24279E-001
		87.30*		4.84	7.48415E-001	2.02226E-001
		242.00*		7.43	9.50331E-001	7.38301E-002
		258.87	@	0.52		
		274.80	@	0.47		
		295.22*		19.30	8.92142E-001	7.01087E-002
		351.93*		37.60	8.81579E-001	4.71695E-002
		462.00*	@	0.22	1.23091E+001	3.93424E+000
		533.66	@	0.19		
		785.96	@	1.07		
		839.04	@	0.59		
Ra-224	0.818	81.07	@	0.13		
		83.78	@	0.22		
		240.99*		4.10	1.74299E+000	1.34618E-001
Ra-226	0.767	81.07	@	0.20		
		83.78	@	0.33		
		94.90	@	0.15		
		186.21*		3.59	1.96702E+000	3.00457E-001
Ac-228	0.710	99.50	@	1.26		
		129.07	@	2.50		
		209.25*		3.97	9.66078E-001	2.49176E-001
		270.24*		3.55	7.53548E-001	1.97168E-001
		328.00*		3.04	1.03167E+000	2.71183E-001
		338.32*		11.40	7.97368E-001	9.33404E-002
		409.46	@	2.02		
		463.00*		4.45	6.18682E-001	1.98951E-001
		755.31	@	1.03		
		772.29	@	1.52		
		794.94*		4.31	4.83159E-001	1.75535E-001
		835.70	@	1.70		

Nuclide Name	Id Confidence	Energy (keV)	Yield (%)	Activity (pCi/GWET)	Activity Uncertainty
Ac-228	0.710	911.20*	26.20	7.13719E-001	6.06056E-002
		964.79*	4.99	6.27516E-001	1.18091E-001
		968.96*	15.90	7.84709E-001	6.69786E-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		0.981	6.275619E+000	3.011050E-001
X	Cd-109		0.869		
	Tl-208	@	0.808	2.115786E-001	1.499493E-002
	Bi-211		0.947	7.585275E-001	2.109579E-001
	Bi-212	@	0.523	6.427819E-001	1.305432E-001
	Pb-212	@	0.984	6.325521E-001	2.811877E-002
	Bi-214	@	0.749	8.045232E-001	3.248112E-002
	Pb-214	@	0.935	6.195955E-001	5.631892E-002
	Ra-224	@	0.818	6.065968E-001	1.683439E-001
	Ra-226	@	0.767	1.967023E+000	3.004573E-001
	Ac-228	@	0.710	7.327160E-001	3.359984E-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: 5/23/2017 4:10:56 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
	4	92.77	2.2655E-002	26.13	Tol.	Yb-169 Th-234
m	9	244.52	3.2827E-003	51.61	Tol.	Eu-152
	28	1000.53	1.2786E-003	126.41	Tol.	Pa-234m

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

Errors quoted at 1.000 sigma