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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\CALFILES\NFB-A01-S005-1218-01.CNF

Report Generated On	: 5/13/2017 4:13:50 PM
Sample Title	: NFB-A01-S005-1218-01
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	: 8.077E+002 GWET
Sample Taken On	: 5/8/2017 3:45:00 PM
Acquisition Started	: 5/13/2017 2:13:46 PM
Live Time	: 7200.0 seconds
Real Time	: 7202.0 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-A01-S005-1218-01
Peak Analysis Performed on: 5/13/2017 4:13:50 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	296-	318	300.26	74.93	1.13	2.20E+002	23.75	4.76E+002
m	2	296-	318	309.22	77.17	1.13	4.42E+002	29.38	5.39E+002
M	3	343-	381	349.70	87.28	1.19	1.51E+002	23.65	5.92E+002
m	4	343-	381	360.37	89.95	1.19	7.68E+001	20.49	5.95E+002
m	5	343-	381	371.87	92.82	1.20	2.56E+002	26.14	5.86E+002
	6	542-	553	548.87	137.06	0.38	1.58E+001	31.14	3.80E+002
	7	739-	750	744.19	185.87	1.06	2.57E+002	33.48	3.43E+002
	8	832-	843	837.23	209.13	0.65	8.75E+001	29.91	3.20E+002
M	9	946-	981	954.52	238.44	1.12	1.21E+003	38.39	2.95E+002
m	10	946-	981	967.43	241.67	1.12	2.33E+002	19.31	2.42E+002
	11	1174-	1187	1180.61	294.94	1.05	3.97E+002	32.30	2.35E+002
	12	1192-	1205	1200.42	299.89	0.76	5.51E+001	25.55	2.17E+002
	13	1304-	1317	1312.54	327.92	0.59	2.13E+001	22.24	1.72E+002
	14	1341-	1360	1352.76	337.97	1.26	2.50E+002	31.26	2.08E+002
	15	1398-	1416	1407.41	351.62	1.14	7.59E+002	38.22	2.08E+002
	16	1846-	1857	1851.68	462.66	0.31	3.01E+001	17.70	1.12E+002
	17	2032-	2054	2042.63	510.38	1.94	3.49E+002	29.26	1.31E+002
	18	2323-	2340	2331.61	582.60	1.40	4.31E+002	28.07	1.10E+002
	19	2428-	2445	2436.28	608.76	1.50	6.28E+002	30.74	9.69E+001
	20	2898-	2914	2907.71	726.58	1.36	1.11E+002	18.32	7.19E+001
	21	3014-	3025	3019.70	754.57	0.53	3.00E+001	11.30	3.90E+001
	22	3065-	3080	3071.96	767.63	0.69	5.07E+001	16.41	7.23E+001
	23	3172-	3183	3178.44	794.24	0.98	4.41E+001	12.82	4.79E+001
	24	3434-	3450	3441.89	860.08	1.11	5.73E+001	15.33	5.67E+001
	25	3632-	3655	3643.83	910.55	1.27	3.32E+002	24.77	6.95E+001
M	26	3849-	3885	3857.51	963.95	1.72	8.25E+001	9.88	1.75E+001
m	27	3849-	3885	3874.47	968.19	1.72	1.96E+002	15.00	2.91E+001
	28	4473-	4488	4480.40	1119.62	0.68	1.24E+002	17.28	5.84E+001
	29	4947-	4961	4952.56	1237.63	0.98	5.62E+001	13.19	4.08E+001
	30	5501-	5517	5509.37	1376.79	0.32	2.51E+001	11.18	3.19E+001
	31	5626-	5637	5631.21	1407.23	0.74	1.31E+001	8.54	2.29E+001
	32	5830-	5858	5843.66	1460.33	1.81	1.19E+003	35.68	1.74E+001
	33	7051-	7070	7060.79	1764.51	1.33	1.09E+002	12.69	1.49E+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-S005-1218-01
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	3.8407E-001	3.84E-001	9.1135E+000
	Co-60	1173.23	99.85	6.2683E-002	4.81E-002	1.0872E-002
		1332.49	99.98	4.8072E-002		-3.3937E-002
>		2505.71	0.10	0.0000E+000		0.0000E+000
	Cs-137	32.06	5.54	3.4963E+003	5.51E-002	-1.0719E+003
		661.66	84.99	5.5145E-002		1.1163E-002
+	Tl-208	72.80	2.02	5.2670E+000	4.55E-002	-2.2741E+000
		74.97*	3.41	1.7798E+000		2.6792E+000
		84.90	1.51	4.6607E+000		9.2903E-001
		277.36	6.31	6.9474E-001		2.2896E-001
		510.77*	22.60	2.1748E-001		3.0629E-001
		583.19*	84.50	4.5522E-002		2.0960E-001
		763.13	1.81	2.8865E+000		-2.7811E-001
		860.56*	12.42	2.8355E-001		2.5125E-001
+	Bi-212	39.86	1.06	6.1360E+002	5.17E-001	8.9090E+001
		727.33*	6.74	5.1745E-001		7.9386E-001
		785.37	1.11	4.4515E+000		3.0830E+000
		1620.74	1.51	2.9462E+000		1.9273E+000
		1806.00	0.09	3.9056E+001		-2.0522E+001
+	Pb-212	74.81*	10.40	5.8358E-001	7.09E-002	8.7847E-001
		77.11*	17.50	3.3914E-001		9.6477E-001
		87.30*	7.81	6.0339E-001		5.5939E-001
		115.18	0.59	7.3130E+000		3.2492E+000
		238.63*	43.30	7.0875E-002		7.0596E-001
		300.09*	3.28	1.0351E+000		4.8969E-001
+	Bi-214	76.86*	0.43	1.3864E+001	8.02E-002	3.9439E+001
		89.81*	0.24	1.8295E+001		8.6088E+000
		386.77	0.30	1.4069E+001		-1.1205E-001
		454.77	0.29	1.3690E+001		2.1758E+000
		609.31*	45.49	8.0167E-002		5.8907E-001
		665.45	1.53	3.0301E+000		-6.8041E-003
		703.11	0.48	8.8918E+000		2.5667E+000
		719.86	0.39	1.1569E+001		-7.1726E-001
		768.36*	4.89	7.2793E-001		5.1603E-001
		786.10	0.31	1.5729E+001		-9.1629E-001
		806.17	1.26	3.7196E+000		5.2890E-001
		934.06	3.10	1.6348E+000		5.8733E-001
		964.08*	0.36	4.9327E+000		1.3468E+001
		1051.96	0.31	1.7183E+001		8.3617E-001
		1120.29*	14.91	2.8819E-001		5.5474E-001

	Nuclide Name	Energy (keV)	Yield (%)	Line MDA (pCi/GWET)	Nuclide MDA (pCi/GWET)	Activity (pCi/GWET)
+	Bi-214	1133.66	0.25	2.0968E+001	8.02E-002	-1.6623E+000
		1155.19	1.63	3.6786E+000		2.2670E-002
		1207.68	0.45	1.3854E+001		7.3980E+000
		1238.11*	5.79	6.6579E-001		7.0393E-001
		1280.96	1.43	4.0872E+000		2.9484E+000
		1377.67*	4.00	9.6499E-001		4.9260E-001
		1385.31	0.76	6.0103E+000		-2.1387E+000
		1401.50	1.27	4.3051E+000		3.1288E-002
		1407.98*	2.15	1.4342E+000		4.8628E-001
		1509.23	2.11	2.2658E+000		8.3104E-001
		1538.50	0.38	1.0724E+001		-6.2063E-002
		1543.32	0.20	2.2116E+001		1.5021E+001
		1583.22	0.69	7.9117E+000		3.1115E+000
		1594.73	0.25	2.1289E+001		2.1168E+000
		1599.31	0.23	1.8428E+001		-2.0546E+001
		1661.28	1.15	3.3783E+000		1.3502E+000
		1683.99	0.22	1.6069E+001		-4.8012E+000
		1729.59	2.92	1.6752E+000		4.3224E-001
		1764.49*	15.40	2.2443E-001		6.0532E-001
		1847.42	2.11	2.1755E+000		9.6767E-001
		1873.16	0.22	1.5322E+001		-1.7810E+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	3.2053E+001	1.07E-001	-2.3018E+000
		74.81*	6.44	9.3783E-001		1.4117E+000
		77.11*	10.80	5.4685E-001		1.5557E+000
		87.30*	4.84	9.6889E-001		8.9824E-001
		242.00*	7.43	3.6534E-001		8.1274E-001
		258.87	0.52	7.8548E+000		-4.2053E+000
		274.80	0.47	9.2205E+000		-1.1164E+001
		295.22*	19.30	1.8031E-001		5.9104E-001
		351.93*	37.60	1.0691E-001		6.3101E-001
		462.00*	0.22	1.3352E+001		4.9641E+000
		533.66	0.19	2.2805E+001		-9.4028E-001
		785.96	1.07	4.5541E+000		-2.6530E-001
		839.04	0.59	8.7590E+000		6.1315E+000
+	Ra-224	81.07	0.13	5.3009E+001	6.65E-001	-2.4520E+001
		83.78	0.22	3.1196E+001		1.2121E+001
		240.99*	4.10	6.6532E-001		1.4801E+000
+	Ra-226	81.07	0.20	3.5078E+001	9.17E-001	-1.6225E+001
		83.78	0.33	2.0538E+001		7.9797E+000
		94.90	0.15	3.8509E+001		-1.2752E+000
		186.21*	3.59	9.1708E-001		1.3111E+000
+	Ac-228	99.50	1.26	3.7158E+000	1.44E-001	1.7776E+000
		129.07	2.50	1.8005E+000		7.7241E-001
		209.25*	3.97	8.1851E-001		5.3148E-001
		270.24	3.55	1.2725E+000		9.1763E-001
		328.00*	3.04	1.0446E+000		2.1399E-001
		338.32*	11.40	3.4899E-001		6.8162E-001
		409.46	2.02	2.0455E+000		-3.6117E-001

	Nuclide Name	Energy (keV)	Yield (%)	Line MDA (pCi/GWET)	Nuclide MDA (pCi/GWET)	Activity (pCi/GWET)
+	Ac-228	463.00*	4.45	6.6634E-001	1.44E-001	2.4774E-001
		755.31*	1.03	2.3370E+000		1.4398E+000
		772.29	1.52	3.4883E+000		-3.3750E-001
		794.94*	4.31	6.3915E-001		5.2474E-001
		835.70	1.70	2.9776E+000		-5.1663E-001
		911.20*	26.20	1.7811E-001		7.1118E-001
		964.79*	4.99	3.6059E-001		9.8455E-001
		968.96*	15.90	1.4354E-001		7.3801E-001
		1588.20	3.06	1.8640E+000		-1.3116E-001
		1630.62	1.52	2.6639E+000		-2.0157E-001
	Th-228	84.37	1.26	5.5147E+000	5.51E+000	8.8421E-001
		131.61	0.13	3.4328E+001		2.5586E+001
		166.41	0.10	4.0443E+001		7.8545E+000
		215.98	0.25	1.7508E+001		-4.6819E+000
	Pa-234m	258.23	0.07	5.5548E+001	6.14E+000	-1.9529E+001
		742.81	0.09	4.8821E+001		2.1277E+001
		766.36	0.32	1.6660E+001		9.5034E+000
		786.27	0.05	9.0068E+001		-1.6052E+001
		1001.03	0.85	6.1370E+000		4.9664E+000
		1737.77	0.02	1.8482E+002		-2.4067E+002
	Th-234	63.30	3.75	4.1944E+000	1.43E+000	1.4493E+000
		92.59	4.33	1.4309E+000		1.9521E+000
		112.81	0.22	2.0664E+001		6.6928E+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-S005-1218-01
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	0.962	1460.82*		10.55	9.11354E+000	3.71260E-001
Eu-152m	0.998	89.85*		69.90	3.00715E-002	8.07177E-003
Tl-208	0.804	72.80	@	2.02		
		74.97*	@	3.41	2.67920E+000	3.00305E-001
		84.90	@	1.51		
		277.36		6.31		
		510.77*	@	22.60	3.06288E-001	5.21024E-002
		583.19*		84.50	2.09599E-001	1.53782E-002
		763.13	@	1.81		
		860.56*		12.42	2.51250E-001	6.74724E-002
Bi-211	0.945	351.03*		13.00	1.82586E+000	1.14081E-001
Bi-212	0.524	39.86	@	1.06		
		727.33*		6.74	7.93859E-001	1.33262E-001
		785.37		1.11		
		1620.74		1.51		
		1806.00	@	0.09		
Pb-212	0.983	74.81*		10.40	8.78467E-001	1.01674E-001
		77.11*		17.50	9.64770E-001	7.54553E-002
		87.30*		7.81	5.59390E-001	9.07627E-002
		115.18	@	0.59		
		238.63*		43.30	7.05962E-001	3.26659E-002
		300.09*		3.28	4.89687E-001	2.27820E-001
Bi-214	0.676	76.86*	@	0.43	3.94390E+001	3.11340E+000
		89.81*	@	0.24	8.60882E+000	2.33132E+000
		386.77	@	0.30		
		454.77	@	0.29		
		609.31*		45.49	5.89072E-001	3.36710E-002
		665.45	@	1.53		
		703.11	@	0.48		
		719.86	@	0.39		
		768.36*		4.89	5.16028E-001	1.67634E-001
		786.10	@	0.31		
		806.17	@	1.26		
		934.06		3.10		
		964.08*	@	0.36	1.34681E+001	1.70159E+000
		1051.96	@	0.31		
		1120.29*		14.91	5.54741E-001	7.87063E-002
		1133.66	@	0.25		
		1155.19	@	1.63		
		1207.68	@	0.45		
		1238.11*		5.79	7.03932E-001	1.66386E-001

Nuclide Name	Id Confidence	Energy (keV)		Yield (%)	Activity (pCi/GWET)	Activity Uncertainty
Bi-214	0.676	1280.96	@	1.43		
		1377.67*		4.00	4.92603E-001	2.19833E-001
		1385.31	@	0.76		
		1401.50	@	1.27		
		1407.98*	@	2.15	4.86284E-001	3.17125E-001
		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	6.05323E-001	7.74166E-002
		1847.42	@	2.11		
		1873.16	@	0.22		
		2118.55	@	1.14		
		2204.21	@	5.08		
Pb-214	0.936	53.28	@	1.20		
		74.81*		6.44	1.41172E+000	1.64796E-001
		77.11*		10.80	1.55565E+000	1.27072E-001
		87.30*		4.84	8.98245E-001	1.46732E-001
		242.00*		7.43	8.12735E-001	7.29846E-002
		258.87	@	0.52		
		274.80	@	0.47		
		295.22*		19.30	5.91041E-001	5.21820E-002
		351.93*		37.60	6.31015E-001	3.89157E-002
		462.00*	@	0.22	4.96412E+000	2.93050E+000
		533.66	@	0.19		
		785.96	@	1.07		
		839.04	@	0.59		
Ra-224	0.821	81.07	@	0.13		
		83.78	@	0.22		
		240.99*		4.10	1.48006E+000	1.32329E-001
Ra-226	0.761	81.07	@	0.20		
		83.78	@	0.33		
		94.90	@	0.15		
		186.21*		3.59	1.31110E+000	2.18437E-001
Ac-228	0.632	99.50	@	1.26		
		129.07	@	2.50		
		209.25*		3.97	5.31477E-001	1.83161E-001
		270.24		3.55		
		328.00*		3.04	2.13987E-001	2.23891E-001
		338.32*		11.40	6.81625E-001	9.12618E-002
		409.46	@	2.02		
		463.00*		4.45	2.47742E-001	1.46513E-001
		755.31*	@	1.03	1.43984E+000	5.46592E-001
		772.29	@	1.52		
		794.94*		4.31	5.24744E-001	1.54044E-001

Nuclide Name	Id Confidence	Energy (keV)		Yield (%)	Activity (pCi/GWET)	Activity Uncertainty
Ac-228	0.632	835.70	@	1.70		
		911.20*		26.20	7.11178E-001	6.04290E-002
		964.79*		4.99	9.84551E-001	1.24654E-001
		968.96*		15.90	7.38011E-001	6.32865E-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 *****
****

	Nuclide Name		Nuclide Id Confidence	Wt mean Activity (pCi/GWET)	Wt mean Activity Uncertainty
	K-40		0.962	9.113537E+000	3.712602E-001
X	Cd-109		0.914		
	Eu-152m		0.998	2.801881E-002	8.068215E-003
	Tl-208	@	0.804	2.106256E-001	1.488596E-002
	Bi-211		0.945	4.180622E-001	1.715553E-001
	Bi-212	@	0.524	7.938588E-001	1.332617E-001
	Pb-212	@	0.983	6.407257E-001	2.780317E-002
	Bi-214	@	0.676	5.876295E-001	2.763092E-002
	Pb-214	@	0.936	4.865335E-001	4.523091E-002
	Ra-224	@	0.821	5.940418E-001	1.548225E-001
	Ra-226	@	0.761	1.311099E+000	2.184366E-001
	Ac-228	@	0.632	6.832435E-001	3.260106E-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: 5/13/2017 4:13:50 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	92.82	2.4980E-002	14.91	Tol.	Yb-169 Th-234
	6	137.06	2.1880E-003	197.67		

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

Errors quoted at 1.000 sigma