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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-A02-S002-1824-01.CNF

Report Generated On              : 5/19/2017  11:22:40 AM

Sample Title                     : NFB-A02-S002-1824-01
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                      :  8.323E+002 GWET

Sample Taken On                  : 5/9/2017    1:15:00 PM
Acquisition Started              : 5/19/2017   9:22:35 AM

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
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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-A02-S002-1824-01
Peak Analysis Performed on: 5/19/2017 11:22:40 AM
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	300.39	74.96	1.02	2.70E+002	27.04	7.04E+002
m	2	291-	316	309.17	77.15	1.03	5.59E+002	33.10	7.22E+002
	3	367-	382	373.06	93.12	1.15	2.02E+002	51.79	8.20E+002
	4	458-	466	461.99	115.35	0.92	4.18E+001	29.12	3.75E+002
	5	514-	521	517.21	129.15	0.57	6.71E+001	28.63	3.73E+002
	6	736-	754	744.54	185.96	1.02	2.92E+002	50.52	6.68E+002
	7	830-	843	837.71	209.25	0.90	7.60E+001	37.66	4.88E+002
M	8	947-	974	955.08	238.58	1.07	1.69E+003	45.78	4.56E+002
m	9	947-	974	966.95	241.55	1.07	2.45E+002	21.93	4.05E+002
	10	1076-	1090	1080.92	270.03	0.92	8.32E+001	33.22	3.50E+002
	11	1103-	1118	1109.65	277.21	0.78	4.96E+001	32.36	3.28E+002
	12	1175-	1190	1181.42	295.15	1.24	4.28E+002	35.58	2.78E+002
	13	1192-	1207	1201.49	300.16	1.37	1.34E+002	31.21	2.80E+002
	14	1306-	1317	1312.90	328.01	1.22	6.61E+001	23.94	2.01E+002
	15	1347-	1363	1353.53	338.16	0.95	4.23E+002	33.83	2.28E+002
	16	1400-	1421	1408.24	351.83	1.23	6.96E+002	43.05	3.00E+002
	17	1845-	1860	1852.53	462.87	1.13	1.07E+002	22.63	1.35E+002
	18	2027-	2059	2043.36	510.56	1.53	4.85E+002	41.09	2.35E+002
	19	2326-	2345	2333.35	583.03	1.32	6.16E+002	33.03	1.35E+002
	20	2427-	2448	2437.81	609.14	1.23	6.22E+002	34.22	1.46E+002
	21	2903-	2918	2909.64	727.06	1.09	1.01E+002	22.49	1.32E+002
	22	3170-	3189	3179.77	794.57	0.98	8.29E+001	21.25	1.05E+002
	23	3430-	3451	3443.55	860.50	1.66	9.81E+001	20.33	8.39E+001
	24	3637-	3656	3646.19	911.14	1.25	4.12E+002	28.64	1.17E+002
M	25	3854-	3888	3860.37	964.67	1.38	6.02E+001	10.94	8.01E+001
m	26	3854-	3888	3878.03	969.08	1.38	2.41E+002	17.79	8.75E+001
	27	4472-	4492	4483.74	1120.46	0.77	1.29E+002	21.93	9.71E+001
	28	4951-	4966	4956.49	1238.61	0.94	5.78E+001	18.51	9.42E+001
	29	5506-	5520	5513.50	1377.82	0.67	4.62E+001	10.32	2.08E+001
	30	5832-	5860	5847.51	1461.29	1.84	2.61E+003	53.14	4.50E+001
	31	6351-	6364	6357.76	1588.81	0.78	2.48E+001	8.85	1.92E+001
	32	6520-	6533	6526.80	1631.06	1.21	8.19E+000	7.65	1.78E+001
	33	7054-	7075	7065.23	1765.62	1.12	1.17E+002	13.36	1.65E+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-A02-S002-1824-01
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	5.5903E-001	5.59E-001	1.9493E+001
	Co-60	1173.23	99.85	7.2836E-002	5.67E-002	-1.8620E-002
		1332.49	99.98	5.6673E-002		2.7505E-003
>		2505.71	0.10	0.0000E+000		0.0000E+000
	Cs-137	32.06	5.54	3.3974E+003	5.59E-002	7.2101E+002
		661.66	84.99	5.5888E-002		-1.1350E-002
+	Tl-208	72.80	2.02	5.7570E+000	5.08E-002	5.3283E-001
		74.97*	3.41	2.1019E+000		3.2065E+000
		84.90	1.51	5.1048E+000		4.8090E+000
		277.36*	6.31	6.4644E-001		2.1450E-001
		510.77*	22.60	2.9601E-001		5.2602E-001
		583.19*	84.50	5.0816E-002		2.9339E-001
		763.13	1.81	3.1065E+000		-1.5520E+000
		860.56*	12.42	3.6476E-001		4.1954E-001
+	Bi-212	39.86	1.06	6.0371E+002	6.71E-001	-1.6440E+002
		727.33*	6.74	6.7122E-001		7.0405E-001
		785.37	1.11	5.2051E+000		3.0864E+000
		1620.74	1.51	3.2054E+000		4.0070E-001
		1806.00	0.09	3.8672E+001		-1.1753E+001
+	Pb-212	74.81*	10.40	6.8920E-001	8.47E-002	1.0514E+000
		77.11*	17.50	3.8186E-001		1.1899E+000
		87.30	7.81	9.5044E-001		1.9498E-001
		115.18*	0.59	4.7880E+000		1.4869E+000
		238.63*	43.30	8.4703E-002		9.7055E-001
		300.09*	3.28	1.1926E+000		1.1628E+000
+	Bi-214	76.86*	0.43	1.5534E+001	1.02E-001	4.8405E+001
		89.81	0.24	2.9134E+001		8.4588E+000
		386.77	0.30	1.4685E+001		-1.1249E+000
		454.77	0.29	1.5390E+001		3.5530E+000
		609.31*	45.49	1.0170E-001		5.6630E-001
		665.45	1.53	3.1091E+000		-6.8846E-002
		703.11	0.48	1.0586E+001		8.6869E+000
		719.86	0.39	1.2273E+001		-9.4789E+000
		768.36	4.89	1.2203E+000		1.2734E+000
		786.10	0.31	1.8417E+001		1.4469E+001
		806.17	1.26	4.1767E+000		1.3276E+000
		934.06	3.10	1.9188E+000		2.3477E-001
		964.08*	0.36	9.7654E+000		9.5512E+000
		1051.96	0.31	2.0615E+001		-7.4594E+000
		1120.29*	14.91	3.9194E-001		5.6147E-001

	Nuclide Name	Energy (keV)	Yield (%)	Line MDA (pCi/GWET)	Nuclide MDA (pCi/GWET)	Activity (pCi/GWET)
+	Bi-214	1133.66	0.25	2.6441E+001	1.02E-001	-3.5872E+000
		1155.19	1.63	4.4683E+000		6.5078E-001
		1207.68	0.45	1.7971E+001		2.7598E+000
		1238.11*	5.79	9.8667E-001		7.0266E-001
		1280.96	1.43	4.7620E+000		-1.8069E+000
		1377.67*	4.00	7.3898E-001		8.8053E-001
		1385.31	0.76	6.5418E+000		-2.3562E+000
		1401.50	1.27	4.5026E+000		-1.5966E+000
		1407.98	2.15	2.6994E+000		-4.0800E-002
		1509.23	2.11	2.1836E+000		-1.4310E+000
		1538.50	0.38	1.2741E+001		3.7018E+000
		1543.32	0.20	2.3984E+001		1.2278E+001
		1583.22	0.69	8.4495E+000		3.7623E+000
		1594.73	0.25	2.3926E+001		2.6803E+000
		1599.31	0.23	2.1956E+001		2.0097E+001
		1661.28	1.15	3.5369E+000		-1.9564E-001
		1683.99	0.22	1.6937E+001		2.3310E-001
		1729.59	2.92	1.6740E+000		1.4303E+000
		1764.49	15.40	4.8563E-001		7.4350E-001
		1847.42	2.11	2.2567E+000		1.2684E+000
		1873.16	0.22	1.6090E+001		-8.4035E+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	3.3676E+001	1.32E-001	5.2302E+000
		74.81*	6.44	1.1022E+000		1.6814E+000
		77.11*	10.80	6.1275E-001		1.9093E+000
		87.30	4.84	1.5188E+000		3.1157E-001
		242.00*	7.43	4.5607E-001		8.2830E-001
		258.87	0.52	8.7315E+000		-4.0089E-002
		274.80	0.47	1.0490E+001		2.3563E+000
		295.22*	19.30	1.9881E-001		6.1934E-001
		351.93*	37.60	1.3201E-001		5.6123E-001
		462.00*	0.22	1.5413E+001		1.7166E+001
		533.66	0.19	2.4885E+001		1.1052E+001
		785.96	1.07	5.3324E+000		4.1893E+000
		839.04	0.59	9.7783E+000		7.9477E+000
+	Ra-224	81.07	0.13	5.9670E+001	8.35E-001	-4.1476E+001
		83.78	0.22	3.4841E+001		-2.1854E+001
		240.99*	4.10	8.3459E-001		1.5158E+000
+	Ra-226	81.07	0.20	3.9294E+001	1.39E+000	-2.7313E+001
		83.78	0.33	2.2827E+001		-1.4318E+001
		94.90	0.15	4.1412E+001		-6.9305E+000
		186.21*	3.59	1.3938E+000		1.4860E+000
+	Ac-228	99.50	1.26	4.2441E+000	2.07E-001	1.9103E+000
		129.07*	2.50	1.0643E+000		5.4856E-001
		209.25*	3.97	1.0249E+000		4.4983E-001
		270.24*	3.55	1.1461E+000		6.3042E-001
		328.00*	3.04	1.0535E+000		6.4794E-001
		338.32*	11.40	3.3918E-001		1.1236E+000
		409.46	2.02	2.3826E+000		1.6415E+000

	Nuclide Name	Energy (keV)	Yield (%)	Line MDA (pCi/GWET)	Nuclide MDA (pCi/GWET)	Activity (pCi/GWET)
+	Ac-228	463.00*	4.45	7.7294E-001	2.07E-001	8.6088E-001
		755.31	1.03	5.3274E+000		1.4950E+000
		772.29	1.52	3.9125E+000		1.3783E+000
		794.94*	4.31	1.0682E+000		9.6336E-001
		835.70	1.70	3.5113E+000		1.8503E+000
		911.20*	26.20	2.0708E-001		8.6346E-001
		964.79*	4.99	7.1735E-001		7.0162E-001
		968.96*	15.90	2.3564E-001		8.8585E-001
		1588.20*	3.06	1.0090E+000		6.8182E-001
		1630.62*	1.52	2.0028E+000		4.5941E-001
	Th-228	84.37	1.26	6.1137E+000	6.11E+000	4.5628E+000
		131.61	0.13	3.8952E+001		1.4825E+001
		166.41	0.10	4.5231E+001		9.0368E+000
		215.98	0.25	1.9662E+001		-5.1043E+000
	Pa-234m	258.23	0.07	6.2667E+001	6.94E+000	3.0449E+001
		742.81	0.09	5.4325E+001		7.5901E+000
		766.36	0.32	1.7911E+001		-1.0945E+001
		786.27	0.05	1.0596E+002		3.8635E+001
		1001.03	0.85	6.9371E+000		-1.3381E+000
		1737.77	0.02	2.1548E+002		-3.2836E+001
	Th-234	63.30	3.75	4.5847E+000	1.56E+000	-1.8267E-001
		92.59	4.33	1.5566E+000		3.0824E-001
		112.81	0.22	2.1781E+001		-7.2268E+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-A02-S002-1824-01
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	0.965	1460.82*		10.55	1.94929E+001	6.63142E-001
Tl-208	0.933	72.80	@	2.02		
		74.97*	@	3.41	3.20655E+000	3.34897E-001
		84.90	@	1.51		
		277.36*		6.31	2.14503E-001	1.40059E-001
		510.77*	@	22.60	5.26018E-001	7.13393E-002
		583.19*		84.50	2.93385E-001	1.83914E-002
		763.13	@	1.81		
		860.56*		12.42	4.19536E-001	8.75675E-002
Bi-211	0.902	351.03*		13.00	1.62461E+000	1.17465E-001
Bi-212	0.573	39.86	@	1.06		
		727.33*		6.74	7.04050E-001	1.58331E-001
		785.37		1.11		
		1620.74		1.51		
		1806.00	@	0.09		
Pb-212	0.846	74.81*		10.40	1.05138E+000	1.13919E-001
		77.11*		17.50	1.18987E+000	8.58588E-002
		87.30		7.81		
		115.18*	@	0.59	1.48695E+000	1.03557E+000
		238.63*		43.30	9.70551E-001	4.16179E-002
		300.09*		3.28	1.16283E+000	2.73559E-001
Bi-214	0.451	76.86*	@	0.43	4.84052E+001	3.53116E+000
		89.81	@	0.24		
		386.77	@	0.30		
		454.77	@	0.29		
		609.31*		45.49	5.66296E-001	3.53624E-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		
		964.08*	@	0.36	9.55121E+000	1.77603E+000
		1051.96	@	0.31		
		1120.29*		14.91	5.61467E-001	9.65158E-002
		1133.66	@	0.25		
		1155.19	@	1.63		
		1207.68	@	0.45		
		1238.11*		5.79	7.02658E-001	2.25861E-001
		1280.96	@	1.43		

Nuclide Name	Id Confidence	Energy (keV)		Yield (%)	Activity (pCi/GWET)	Activity Uncertainty
Bi-214	0.451	1377.67*		4.00	8.80532E-001	1.98210E-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		
		1847.42	@	2.11		
		1873.16	@	0.22		
		2118.55	@	1.14		
		2204.21	@	5.08		
Pb-214	0.852	53.28	@	1.20		
		74.81*		6.44	1.68139E+000	1.83968E-001
		77.11*		10.80	1.90932E+000	1.44934E-001
		87.30		4.84		
		242.00*		7.43	8.28298E-001	7.95207E-002
		258.87	@	0.52		
		274.80	@	0.47		
		295.22*		19.30	6.19340E-001	5.56580E-002
		351.93*		37.60	5.61225E-001	4.01869E-002
		462.00*	@	0.22	1.71662E+001	3.73226E+000
		533.66	@	0.19		
		785.96	@	1.07		
		839.04	@	0.59		
Ra-224	0.842	81.07	@	0.13		
		83.78	@	0.22		
		240.99*		4.10	1.51575E+000	1.44963E-001
Ra-226	0.768	81.07	@	0.20		
		83.78	@	0.33		
		94.90	@	0.15		
		186.21*		3.59	1.48605E+000	3.15215E-001
Ac-228	0.856	99.50	@	1.26		
		129.07*	@	2.50	5.48562E-001	2.34769E-001
		209.25*		3.97	4.49827E-001	2.23930E-001
		270.24*		3.55	6.30417E-001	2.53164E-001
		328.00*		3.04	6.47940E-001	2.36914E-001
		338.32*		11.40	1.12363E+000	1.04894E-001
		409.46	@	2.02		
		463.00*		4.45	8.60876E-001	1.89630E-001
		755.31	@	1.03		
		772.29	@	1.52		
		794.94*		4.31	9.63362E-001	2.49816E-001
		835.70	@	1.70		

Nuclide Name	Id Confidence	Energy (keV)	Yield (%)	Activity (pCi/GWET)	Activity Uncertainty
Ac-228	0.856	911.20*	26.20	8.63457E-001	6.91947E-002
		964.79*	4.99	7.01615E-001	1.30592E-001
		968.96*	15.90	8.85851E-001	7.38074E-002
		1588.20*	3.06	6.81815E-001	2.45266E-001
		1630.62* @	1.52	4.59410E-001	4.29727E-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		0.965	1.949291E+001	6.631420E-001
Tl-208	@	0.933	2.947212E-001	1.768237E-002
Bi-211		0.902	4.056488E-002	1.855650E-001
Bi-212	@	0.573	7.040497E-001	1.583313E-001
Pb-212	@	0.846	9.137835E-001	3.518685E-002
Bi-214	@	0.451	5.756698E-001	3.233864E-002
Pb-214	@	0.852	5.472120E-001	5.029873E-002
Ra-224	@	0.842	5.143766E-001	1.707182E-001
Ra-226	@	0.768	1.486045E+000	3.152152E-001
Ac-228	@	0.856	8.659014E-001	3.672942E-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: 5/19/2017 11:22:40 AM
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
3	93.12	1.7572E-002	41.20	Tol.	Yb-169 Th-227 Th-234
33	1765.62	1.5447E-002	12.08		

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

Errors quoted at 1.000 sigma