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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-WAREHOUSE-BAG NO.34.CNF

Report Generated On              : 7/25/2017   8:33:38 PM

Sample Title                     : NFB-WAREHOUSE-BAG NO.34
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                      :  9.543E+002 GWET

Sample Taken On                  : 12/7/2016  12:00:00 PM
Acquisition Started              : 7/25/2017   6:33:33 PM

Live Time                        :     7200.0 seconds
Real Time                        :     7202.2 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-WAREHOUSE-BAG NO.34
Peak Analysis Performed on: 7/25/2017 8:33:38 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-	315	300.35	74.95	0.92	2.71E+002	26.13	5.31E+002
m	2	296-	315	309.30	77.19	0.93	4.62E+002	30.09	5.62E+002
M	3	343-	380	349.43	87.22	0.94	1.16E+002	23.51	7.36E+002
m	4	343-	380	360.69	90.03	0.94	1.27E+002	22.44	6.30E+002
m	5	343-	380	372.28	92.93	0.95	2.30E+002	25.85	5.81E+002
	6	736-	752	744.29	185.90	0.99	3.78E+002	45.47	5.39E+002
	7	829-	842	837.80	209.27	1.00	1.03E+002	35.21	4.13E+002
M	8	949-	973	955.28	238.63	1.04	1.45E+003	42.06	3.41E+002
m	9	949-	973	967.77	241.75	1.04	2.49E+002	20.05	2.46E+002
	10	1075-	1089	1082.01	270.30	1.24	1.27E+002	29.55	2.57E+002
	11	1105-	1115	1110.34	277.38	0.99	5.42E+001	23.14	2.02E+002
	12	1172-	1187	1181.37	295.13	1.20	3.48E+002	35.60	3.05E+002
	13	1194-	1208	1201.24	300.10	0.56	7.51E+001	28.79	2.62E+002
	14	1307-	1321	1312.38	327.87	0.96	8.78E+001	25.78	1.98E+002
M	15	1347-	1375	1353.71	338.20	1.12	3.31E+002	21.93	1.82E+002
m	16	1347-	1375	1369.69	342.20	1.13	1.77E+001	10.67	1.59E+002
	17	1402-	1418	1408.31	351.85	1.16	6.91E+002	39.44	2.71E+002
	18	1847-	1861	1852.87	462.95	1.34	1.02E+002	20.57	1.11E+002
	19	2033-	2052	2043.87	510.69	1.42	3.53E+002	30.21	1.60E+002
	20	2325-	2344	2333.65	583.11	1.33	5.19E+002	32.84	1.60E+002
	21	2430-	2447	2437.80	609.14	1.19	5.65E+002	30.99	1.20E+002
	22	2481-	2490	2485.93	621.17	0.42	1.88E+001	10.69	4.22E+001
	23	2785-	2794	2789.22	696.97	0.53	2.40E+001	10.89	4.10E+001
	24	2901-	2918	2909.82	727.11	1.33	1.34E+002	20.11	8.32E+001
M	25	3068-	3095	3074.73	768.32	1.10	3.64E+001	9.92	7.76E+001
m	26	3068-	3095	3089.52	772.02	1.11	2.37E+001	8.98	8.44E+001
	27	3173-	3190	3181.87	795.10	0.89	6.68E+001	19.59	9.72E+001
	28	3437-	3453	3443.77	860.55	1.34	4.36E+001	17.31	8.14E+001
	29	3635-	3657	3646.24	911.15	1.41	4.22E+002	26.67	7.46E+001
M	30	3851-	3886	3861.23	964.88	1.44	6.13E+001	10.30	6.45E+001
m	31	3851-	3886	3877.49	968.95	1.44	2.14E+002	16.61	7.28E+001
	32	4476-	4491	4483.99	1120.52	1.34	1.19E+002	18.81	7.81E+001
	33	4948-	4963	4955.54	1238.37	0.36	3.45E+001	15.94	7.25E+001
	34	5123-	5134	5128.22	1281.53	0.91	2.40E+001	9.92	2.90E+001
	35	5507-	5521	5515.13	1378.22	0.45	3.23E+001	9.52	1.97E+001
	36	5833-	5861	5847.77	1461.36	1.77	1.98E+003	46.00	2.92E+001
	37	7055-	7074	7065.10	1765.59	1.80	1.06E+002	13.30	2.00E+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-WAREHOUSE-BAG NO.34
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	4.0164E-001	4.02E-001	1.2870E+001
	Co-60	1173.23	99.85	6.1369E-002	5.53E-002	2.8463E-002
		1332.49	99.98	5.5350E-002		-4.8147E-003
>		2505.71	0.10	0.0000E+000		0.0000E+000
	Cs-137	32.06	5.54	2.9118E+003	4.96E-002	-2.8900E+001
		661.66	84.99	4.9611E-002		1.8869E-002
+	Tl-208	72.80	2.02	6.2829E+000	5.96E-002	-3.3373E+000
		74.97*	3.41	1.9855E+000		3.4856E+000
		84.90	1.51	5.4006E+000		1.1753E+000
		277.36*	6.31	4.9176E-001		2.5436E-001
		510.77*	22.60	2.3834E-001		3.3186E-001
		583.19*	84.50	5.9650E-002		2.6799E-001
		763.13	1.81	3.1287E+000		3.3541E-001
		860.56*	12.42	3.5821E-001		2.0267E-001
+	Bi-212	39.86	1.06	6.5031E+002	5.99E-001	-1.8545E+002
		727.33*	6.74	5.9913E-001		1.0124E+000
		785.37	1.11	4.9189E+000		1.8558E+000
		1620.74	1.51	3.1730E+000		3.3748E-001
		1806.00	0.09	4.5594E+001		-2.1372E+001
+	Pb-212	74.81*	10.40	6.5102E-001	8.03E-002	1.1429E+000
		77.11*	17.50	3.6618E-001		1.0659E+000
		87.30*	7.81	7.1166E-001		4.5430E-001
		115.18	0.59	8.4084E+000		3.0780E+000
		238.63*	43.30	8.0254E-002		9.0271E-001
		300.09*	3.28	1.2276E+000		7.0719E-001
+	Bi-214	76.86*	0.43	1.1972E+001	7.56E-002	3.4849E+001
		89.81*	0.24	1.5901E+001		1.1999E+001
		386.77	0.30	1.2192E+001		-7.1759E+000
		454.77	0.29	1.2523E+001		-1.2196E+001
		609.31*	45.49	7.5615E-002		4.4871E-001
		665.45	1.53	2.6082E+000		2.0927E-001
		703.11	0.48	8.7277E+000		6.2706E+000
		719.86	0.39	1.0100E+001		1.1258E+000
		768.36*	4.89	5.2272E-001		3.1382E-001
		786.10	0.31	1.3911E+001		-5.5383E-001
		806.17	1.26	3.3702E+000		6.6635E-001
		934.06	3.10	1.5216E+000		9.7855E-001
		964.08*	0.36	7.6792E+000		8.4862E+000
		1051.96	0.31	1.5032E+001		-6.9203E+000
		1120.29*	14.91	2.8112E-001		4.5193E-001

	Nuclide Name	Energy (keV)	Yield (%)	Line MDA (pCi/GWET)	Nuclide MDA (pCi/GWET)	Activity (pCi/GWET)
+	Bi-214	1133.66	0.25	2.0913E+001	7.56E-002	-2.5751E-001
		1155.19	1.63	3.6612E+000		3.3070E+000
		1207.68	0.45	1.3720E+001		-5.1461E+000
		1238.11*	5.79	7.5859E-001		3.6595E-001
		1280.96*	1.43	1.8878E+000		1.0566E+000
		1377.67*	4.00	6.3520E-001		5.3724E-001
		1385.31	0.76	5.9180E+000		-3.8330E+000
		1401.50	1.27	3.5747E+000		-4.1326E+000
		1407.98	2.15	2.2979E+000		1.1050E+000
		1509.23	2.11	1.8090E+000		1.5069E-001
		1538.50	0.38	1.0430E+001		-7.3046E-001
		1543.32	0.20	1.9336E+001		7.4995E+000
		1583.22	0.69	7.0959E+000		2.0615E+000
		1594.73	0.25	1.9649E+001		1.0334E+001
		1599.31	0.23	1.6321E+001		-3.0162E+000
		1661.28	1.15	3.2948E+000		1.1710E+000
		1683.99	0.22	1.3806E+001		-1.7810E+000
		1729.59	2.92	1.3858E+000		8.2486E-001
		1764.49	15.40	4.1589E-001		4.4641E-001
		1847.42	2.11	1.8253E+000		5.1045E-001
		1873.16	0.22	1.3831E+001		1.7586E-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	2.7299E+001	1.00E-001	-1.8607E+001
		74.81*	6.44	8.3671E-001		1.4689E+000
		77.11*	10.80	4.7222E-001		1.3746E+000
		87.30*	4.84	9.1393E-001		5.8342E-001
		242.00*	7.43	3.1169E-001		7.3352E-001
		258.87	0.52	6.9895E+000		-8.5232E-001
		274.80	0.47	8.6124E+000		7.1131E+000
		295.22*	19.30	1.8144E-001		4.3918E-001
		351.93*	37.60	1.0003E-001		4.8606E-001
		462.00*	0.22	1.2015E+001		1.4249E+001
		533.66	0.19	1.9890E+001		-4.7686E-001
		785.96	1.07	4.0278E+000		-1.6036E-001
		839.04	0.59	8.1708E+000		4.7100E+000
+	Ra-224	81.07	0.13	6.1874E+001	7.10E-001	-5.7767E+001
		83.78	0.22	3.6555E+001		5.3166E+000
		240.99*	4.10	7.0972E-001		1.6702E+000
+	Ra-226	81.07	0.20	3.2745E+001	1.06E+000	-3.0572E+001
		83.78	0.33	1.9247E+001		2.7994E+000
		94.90	0.15	3.5369E+001		-6.7097E+000
		186.21*	3.59	1.0590E+000		1.7562E+000
+	Ac-228	99.50	1.26	4.3019E+000	1.91E-001	7.5512E-001
		129.07	2.50	2.1333E+000		1.1754E+000
		209.25*	3.97	1.0250E+000		6.6459E-001
		270.24*	3.55	1.0679E+000		1.0437E+000
		328.00*	3.04	1.2173E+000		9.3481E-001
		338.32*	11.40	2.6346E-001		9.5562E-001
		409.46	2.02	2.3999E+000		5.2803E-001

	Nuclide Name	Energy (keV)	Yield (%)	Line MDA (pCi/GWET)	Nuclide MDA (pCi/GWET)	Activity (pCi/GWET)
+	Ac-228	463.00*	4.45	7.4967E-001	1.91E-001	8.8907E-001
		755.31	1.03	5.3175E+000		1.2401E+000
		772.29*	1.52	2.2092E+000		8.3116E-001
		794.94*	4.31	1.0784E+000		8.4300E-001
		835.70	1.70	3.5390E+000		7.8789E-001
		911.20*	26.20	1.9104E-001		9.6005E-001
		964.79*	4.99	7.0183E-001		7.7558E-001
		968.96*	15.90	2.3417E-001		8.5259E-001
		1588.20	3.06	2.1572E+000		2.9835E-002
		1630.62	1.52	3.2390E+000		1.5042E+000
	Th-228	84.37	1.26	6.4839E+000	6.48E+000	1.6783E+000
		131.61	0.13	3.9829E+001		3.0704E+000
		166.41	0.10	4.6323E+001		2.1286E+001
		215.98	0.25	1.9764E+001		-9.6891E-001
	Pa-234m	258.23	0.07	4.9723E+001	5.71E+000	-1.9138E-001
		742.81	0.09	4.7559E+001		3.2439E+001
		766.36	0.32	1.4651E+001		8.8372E-001
		786.27	0.05	8.0415E+001		-1.5160E+001
		1001.03	0.85	5.7121E+000		4.7468E+000
		1737.77	0.02	1.7540E+002		-2.0875E+001
	Th-234	63.30	3.75	3.9592E+000	1.35E+000	2.5302E+000
		92.59	4.33	1.3500E+000		6.4383E-002
		112.81	0.22	1.8887E+001		2.6845E+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-WAREHOUSE-BAG NO.34
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	0.955	1460.82*		10.55	1.28696E+001	4.61661E-001
Pr-144	0.755	696.51*		1.34	1.23438E+000	5.61437E-001
		1489.16		0.28		
Eu-152m	0.995	89.85*		69.90	4.32488E-002	7.76003E-003
Tl-208	0.935	72.80	@	2.02		
		74.97*	@	3.41	3.48565E+000	3.52546E-001
		84.90	@	1.51		
		277.36*		6.31	2.54364E-001	1.09028E-001
		510.77*	@	22.60	3.31855E-001	5.68617E-002
		583.19*		84.50	2.67991E-001	1.91501E-002
		763.13	@	1.81		
		860.56*		12.42	2.02665E-001	8.05638E-002
Bi-211	0.898	351.03*		13.00	1.43396E+000	9.77638E-002
Bi-212	0.575	39.86	@	1.06		
		727.33*		6.74	1.01236E+000	1.55366E-001
		785.37		1.11		
		1620.74		1.51		
		1806.00	@	0.09		
Pb-212	0.985	74.81*		10.40	1.14289E+000	1.20204E-001
		77.11*		17.50	1.06592E+000	8.21963E-002
		87.30*		7.81	4.54299E-001	9.43493E-002
		115.18	@	0.59		
		238.63*		43.30	9.02708E-001	3.98943E-002
		300.09*		3.28	7.07194E-001	2.72139E-001
Bi-214	0.539	76.86*	@	0.43	3.48487E+001	2.71313E+000
		89.81*	@	0.24	1.19994E+001	2.19563E+000
		386.77	@	0.30		
		454.77	@	0.29		
		609.31*		45.49	4.48713E-001	2.79534E-002
		665.45	@	1.53		
		703.11	@	0.48		
		719.86	@	0.39		
		768.36*		4.89	3.13817E-001	8.59027E-002
		786.10	@	0.31		
		806.17	@	1.26		
		934.06		3.10		
		964.08*	@	0.36	8.48620E+000	1.46547E+000
		1051.96	@	0.31		
		1120.29*		14.91	4.51927E-001	7.23203E-002
		1133.66	@	0.25		
		1155.19	@	1.63		

Nuclide Name	Id Confidence	Energy (keV)		Yield (%)	Activity (pCi/GWET)	Activity Uncertainty
Bi-214	0.539	1207.68	@	0.45		
		1238.11*		5.79	3.65951E-001	1.69188E-001
		1280.96*	@	1.43	1.05663E+000	4.38319E-001
		1377.67*		4.00	5.37240E-001	1.59017E-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	0.944	53.28	@	1.20		
		74.81*		6.44	1.46888E+000	1.56096E-001
		77.11*		10.80	1.37459E+000	1.10838E-001
		87.30*		4.84	5.83422E-001	1.21668E-001
		242.00*		7.43	7.33518E-001	6.44035E-002
		258.87	@	0.52		
		274.80	@	0.47		
		295.22*		19.30	4.39181E-001	4.73672E-002
		351.93*		37.60	4.86063E-001	3.27787E-002
		462.00*	@	0.22	1.42493E+001	2.96777E+000
		533.66	@	0.19		
		785.96	@	1.07		
		839.04	@	0.59		
Ra-224	0.803	81.07	@	0.13		
		83.78	@	0.22		
		240.99*		4.10	1.67025E+000	1.45978E-001
Ra-226	0.763	81.07	@	0.20		
		83.78	@	0.33		
		94.90	@	0.15		
		186.21*		3.59	1.75623E+000	2.51784E-001
Ac-228	0.765	99.50	@	1.26		
		129.07	@	2.50		
		209.25*		3.97	6.64590E-001	2.28295E-001
		270.24*		3.55	1.04371E+000	2.47258E-001
		328.00*		3.04	9.34809E-001	2.78127E-001
		338.32*		11.40	9.55620E-001	7.81878E-002
		409.46	@	2.02		
		463.00*		4.45	8.89066E-001	1.87820E-001
		755.31	@	1.03		

Nuclide Name	Id Confidence	Energy (keV)		Yield (%)	Activity (pCi/GWET)	Activity Uncertainty
Ac-228	0.765	772.29*	@	1.52	8.31165E-001	3.16711E-001
		794.94*		4.31	8.42996E-001	2.49439E-001
		835.70	@	1.70		
		911.20*		26.20	9.60045E-001	7.16026E-002
		964.79*		4.99	7.75581E-001	1.34086E-001
		968.96*		15.90	8.52585E-001	7.39683E-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		0.955	1.286960E+001	4.616611E-001
X	Cd-109		0.897		
	Pr-144		0.755	1.234381E+000	5.614372E-001
	Eu-152m		0.995	4.166976E-002	7.751641E-003
	Tl-208	@	0.935	2.643114E-001	1.822847E-002
	Bi-211		0.898	4.824095E-001	1.543606E-001
	Bi-212	@	0.575	1.012361E+000	1.553657E-001
	Pb-212	@	0.985	7.984057E-001	3.307987E-002
	Bi-214	@	0.539	4.380927E-001	2.434328E-002
	Pb-214	@	0.944	3.225424E-001	4.110962E-002
	Ra-224	@	0.803	9.358058E-001	1.722122E-001
	Ra-226	@	0.763	1.756225E+000	2.517838E-001
	Ac-228	@	0.765	9.026779E-001	3.538461E-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: 7/25/2017 8:33:38 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	92.93	2.1369E-002	17.24	Tol.	Yb-169 Th-227 Th-234
m	16	342.20	2.4641E-003	60.15	Tol.	Ra-223
	22	621.17	2.6070E-003	56.94	Sum	
	37	1765.59	1.3987E-002	13.28		

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

Errors quoted at 1.000 sigma