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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.32.CNF

Report Generated On              : 7/25/2017   2:21:57 PM

Sample Title                     : NFB-WAREHOUSE-BAG NO.32
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                      :  9.544E+002 GWET

Sample Taken On                  : 12/7/2016  12:00:00 PM
Acquisition Started              : 7/25/2017  12:21:52 PM

Live Time                        :     7200.0 seconds
Real Time                        :     7202.5 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.32
Peak Analysis Performed on: 7/25/2017 2:21:57 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	287-	315	300.16	74.90	0.96	1.70E+002	19.62	3.30E+002
m	2	287-	315	309.27	77.18	0.96	2.91E+002	23.81	3.62E+002
	3	366-	382	372.19	92.90	1.17	1.41E+002	41.01	4.89E+002
	4	735-	752	743.69	185.75	1.34	1.69E+002	36.46	3.55E+002
	5	831-	841	836.78	209.01	0.35	5.18E+001	23.46	2.09E+002
M	6	948-	973	955.18	238.60	1.05	8.98E+002	33.63	2.44E+002
m	7	948-	973	967.98	241.80	1.05	1.19E+002	15.75	2.03E+002
	8	1107-	1116	1110.66	277.46	0.54	2.60E+001	16.79	1.13E+002
	9	1175-	1191	1181.61	295.19	1.30	2.97E+002	29.38	1.79E+002
	10	1198-	1206	1201.26	300.10	0.83	4.55E+001	16.04	9.75E+001
	11	1344-	1362	1353.64	338.19	1.09	1.89E+002	26.38	1.50E+002
	12	1397-	1419	1408.34	351.86	1.13	5.97E+002	34.45	1.52E+002
	13	1633-	1646	1638.42	409.36	0.73	2.44E+001	16.19	8.46E+001
	14	1847-	1857	1852.17	462.78	0.38	2.85E+001	14.18	7.25E+001
	15	2034-	2058	2044.13	510.75	1.15	2.86E+002	27.33	1.10E+002
	16	2324-	2341	2333.52	583.08	1.21	3.13E+002	23.99	8.08E+001
	17	2429-	2448	2438.17	609.23	1.11	4.77E+002	27.34	7.79E+001
	18	2641-	2655	2648.12	661.70	0.82	6.64E+001	13.75	4.26E+001
	19	2904-	2918	2910.17	727.19	0.84	5.08E+001	16.07	7.13E+001
	20	3174-	3185	3180.79	794.83	0.49	2.51E+001	10.72	3.59E+001
	21	3436-	3450	3442.96	860.35	1.11	4.88E+001	11.40	2.82E+001
	22	3637-	3655	3645.67	911.01	1.16	2.12E+002	19.44	4.93E+001
M	23	3854-	3887	3860.01	964.58	1.33	4.20E+001	8.03	2.80E+001
m	24	3854-	3887	3877.35	968.91	1.33	1.13E+002	11.94	3.40E+001
	25	4474-	4492	4483.62	1120.43	1.29	9.89E+001	14.51	3.31E+001
	26	4950-	4962	4955.81	1238.44	0.52	3.72E+001	10.02	2.38E+001
	27	5509-	5520	5514.20	1377.99	1.22	2.36E+001	7.04	1.04E+001
	28	5834-	5860	5847.51	1461.29	1.89	5.64E+002	26.39	3.04E+001
	29	7057-	7075	7065.64	1765.73	1.39	9.74E+001	12.64	1.86E+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.32
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	3.9849E-001	3.98E-001	3.5792E+000
	Co-60	1173.23	99.85	4.1851E-002	3.66E-002	5.4429E-003
		1332.49	99.98	3.6579E-002		2.7237E-003
>		2505.71	0.10	0.0000E+000		0.0000E+000
+	Cs-137	32.06	5.54	2.3880E+003	2.46E-002	-1.0544E+003
		661.66*	84.99	2.4628E-002		3.0199E-002
+	Tl-208	72.80	2.02	4.6425E+000	4.18E-002	2.7882E-001
		74.97*	3.41	1.5762E+000		2.1924E+000
		84.90	1.51	4.1728E+000		3.9968E+000
		277.36*	6.31	3.6185E-001		1.2223E-001
		510.77*	22.60	2.2279E-001		2.1059E-001
		583.19*	84.50	4.1795E-002		1.6022E-001
		763.13	1.81	2.4107E+000		-1.0049E+000
		860.56*	12.42	2.0689E-001		2.2665E-001
+	Bi-212	39.86	1.06	5.3279E+002	5.27E-001	-7.9874E+001
		727.33*	6.74	5.2688E-001		3.8382E-001
		785.37	1.11	3.7551E+000		-1.6439E+000
		1620.74	1.51	3.0625E+000		1.5313E+000
		1806.00	0.09	4.0682E+001		1.3909E+001
+	Pb-212	74.81*	10.40	5.1683E-001	6.87E-002	7.1887E-001
		77.11*	17.50	2.9485E-001		6.7234E-001
		87.30	7.81	7.7380E-001		3.2781E-001
		115.18	0.59	6.3925E+000		-6.3988E-001
		238.63*	43.30	6.8713E-002		5.5240E-001
		300.09*	3.28	6.6250E-001		4.2802E-001
+	Bi-214	76.86*	0.43	9.6423E+000	6.29E-002	2.1987E+001
		89.81	0.24	1.9352E+001		1.0671E+001
		386.77	0.30	1.0620E+001		7.0903E+000
		454.77	0.29	1.0382E+001		4.1366E+000
		609.31*	45.49	6.2910E-002		3.7890E-001
		665.45	1.53	2.4088E+000		4.9625E-001
		703.11	0.48	7.0228E+000		6.1920E-001
		719.86	0.39	7.9982E+000		-7.2424E+000
		768.36	4.89	7.7360E-001		6.8202E-001
		786.10	0.31	1.0716E+001		-8.7654E-001
		806.17	1.26	2.5143E+000		7.6244E-001
		934.06	3.10	1.0960E+000		6.0762E-001
		964.08*	0.36	5.1875E+000		5.8127E+000
		1051.96	0.31	1.1475E+001		6.9042E+000
		1120.29*	14.91	1.9707E-001		3.7585E-001

	Nuclide Name	Energy (keV)	Yield (%)	Line MDA (pCi/GWET)	Nuclide MDA (pCi/GWET)	Activity (pCi/GWET)
+	Bi-214	1133.66	0.25	1.4889E+001	6.29E-002	6.1674E+000
		1155.19	1.63	2.3482E+000		3.6465E-001
		1207.68	0.45	1.0127E+001		5.4967E+000
		1238.11*	5.79	4.2040E-001		3.9446E-001
		1280.96	1.43	2.5080E+000		6.3804E-002
		1377.67*	4.00	4.3872E-001		3.9288E-001
		1385.31	0.76	4.5370E+000		-1.8632E+000
		1401.50	1.27	2.7503E+000		-2.2891E+000
		1407.98	2.15	1.7613E+000		1.0114E-001
		1509.23	2.11	1.5827E+000		-1.3381E-001
		1538.50	0.38	9.1687E+000		-1.2168E-001
		1543.32	0.20	1.7596E+001		1.7878E+001
		1583.22	0.69	5.9025E+000		3.2501E-001
		1594.73	0.25	1.7915E+001		9.8086E+000
		1599.31	0.23	1.7007E+001		1.6009E+000
		1661.28	1.15	2.7571E+000		1.0643E-001
		1683.99	0.22	1.2536E+001		-3.0965E+000
		1729.59	2.92	1.2219E+000		6.4457E-001
		1764.49	15.40	3.9848E-001		5.3147E-001
		1847.42	2.11	1.4530E+000		9.1785E-001
		1873.16	0.22	1.2745E+001		3.6723E+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	2.0973E+001	8.33E-002	2.9008E+000
		74.81*	6.44	6.6441E-001		9.2415E-001
		77.11*	10.80	3.8034E-001		8.6726E-001
		87.30	4.84	9.9399E-001		4.2109E-001
		242.00*	7.43	2.8438E-001		3.5175E-001
		258.87	0.52	5.6818E+000		-1.7456E+000
		274.80	0.47	6.7935E+000		-4.9948E+000
		295.22*	19.30	1.4308E-001		3.7511E-001
		351.93*	37.60	8.3328E-002		4.1915E-001
		462.00*	0.22	8.9084E+000		3.9760E+000
		533.66	0.19	1.6503E+001		-2.8006E-001
		785.96	1.07	3.1026E+000		-2.5379E-001
		839.04	0.59	6.4898E+000		1.5733E+000
+	Ra-224	81.07	0.13	4.8836E+001	6.47E-001	-4.0135E+001
		83.78	0.22	2.7969E+001		-3.3681E+001
		240.99*	4.10	6.4738E-001		8.0075E-001
+	Ra-226	81.07	0.20	2.5852E+001	8.88E-001	-2.1246E+001
		83.78	0.33	1.4730E+001		-1.7738E+001
		94.90	0.15	2.7260E+001		-1.8942E+000
		186.21*	3.59	8.8809E-001		6.3874E-001
+	Ac-228	99.50	1.26	3.2625E+000	1.48E-001	1.0799E+000
		129.07	2.50	1.5959E+000		4.1297E-001
		209.25*	3.97	6.8414E-001		3.3276E-001
		270.24	3.55	1.1699E+000		6.8057E-001
		328.00	3.04	1.3857E+000		5.7933E-001
		338.32*	11.40	3.0968E-001		5.4597E-001
		409.46*	2.02	1.3373E+000		4.3904E-001

	Nuclide Name	Energy (keV)	Yield (%)	Line MDA (pCi/GWET)	Nuclide MDA (pCi/GWET)	Activity (pCi/GWET)
+	Ac-228	463.00*	4.45	5.5569E-001	1.48E-001	2.4802E-001
		755.31	1.03	3.8894E+000		2.1646E+000
		772.29	1.52	3.0698E+000		3.1105E+000
		794.94*	4.31	5.8973E-001		3.1596E-001
		835.70	1.70	2.8653E+000		1.9995E+000
		911.20*	26.20	1.4790E-001		4.7467E-001
		964.79*	4.99	4.7398E-001		5.3110E-001
		968.96*	15.90	1.6335E-001		4.4984E-001
		1588.20	3.06	1.8459E+000		9.0521E-001
		1630.62	1.52	2.7882E+000		-4.8987E-001
	Th-228	84.37	1.26	4.9548E+000	4.95E+000	4.2147E-001
		131.61	0.13	3.0533E+001		7.8119E+000
		166.41	0.10	3.6753E+001		9.5264E+000
		215.98	0.25	1.5877E+001		5.0664E+000
	Pa-234m	258.23	0.07	4.0900E+001	4.26E+000	-6.9526E+000
		742.81	0.09	3.4539E+001		-6.5881E+000
		766.36	0.32	1.1063E+001		-9.3275E-001
		786.27	0.05	6.2174E+001		-3.8968E+000
		1001.03	0.85	4.2579E+000		1.6992E+000
		1737.77	0.02	1.5080E+002		-4.0317E+001
	Th-234	63.30	3.75	2.8604E+000	1.03E+000	-1.0753E-001
		92.59	4.33	1.0276E+000		2.2534E-001
		112.81	0.22	1.4262E+001		-7.2363E+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 *****
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Sample Title: NFB-WAREHOUSE-BAG NO.32
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	3.57922E+000	1.99016E-001
Cs-137	0.997	32.06	@	5.54		
		661.66*		84.99	3.01987E-002	6.30379E-003
Tl-208	0.934	72.80	@	2.02		
		74.97*	@	3.41	2.19245E+000	2.61559E-001
		84.90	@	1.51		
		277.36*		6.31	1.22235E-001	7.89284E-002
		510.77*	@	22.60	2.10587E-001	5.12062E-002
		583.19*		84.50	1.60221E-001	1.35684E-002
		763.13	@	1.81		
		860.56*		12.42	2.26649E-001	5.31854E-002
Bi-211	0.896	351.03*		13.00	1.23651E+000	8.51487E-002
Bi-212	0.578	39.86	@	1.06		
		727.33*		6.74	3.83821E-001	1.22086E-001
		785.37		1.11		
		1620.74		1.51		
		1806.00	@	0.09		
Pb-212	0.832	74.81*		10.40	7.18870E-001	8.82326E-002
		77.11*		17.50	6.72344E-001	6.15540E-002
		87.30		7.81		
		115.18	@	0.59		
		238.63*		43.30	5.52398E-001	2.80265E-002
		300.09*		3.28	4.28021E-001	1.51669E-001
Bi-214	0.453	76.86*	@	0.43	2.19870E+001	2.02669E+000
		89.81	@	0.24		
		386.77	@	0.30		
		454.77	@	0.29		
		609.31*		45.49	3.78902E-001	2.44277E-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	5.81269E+000	1.13445E+000
		1051.96	@	0.31		
		1120.29*		14.91	3.75852E-001	5.59033E-002
		1133.66	@	0.25		
		1155.19	@	1.63		
		1207.68	@	0.45		

Nuclide Name	Id Confidence	Energy (keV)		Yield (%)	Activity (pCi/GWET)	Activity Uncertainty
Bi-214	0.453	1238.11*		5.79	3.94464E-001	1.06791E-001
		1280.96	@	1.43		
		1377.67*		4.00	3.92876E-001	1.17607E-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	0.855	53.28	@	1.20		
		74.81*		6.44	9.24153E-001	1.14296E-001
		77.11*		10.80	8.67265E-001	8.19877E-002
		87.30		4.84		
		242.00*		7.43	3.51753E-001	4.80360E-002
		258.87	@	0.52		
		274.80	@	0.47		
		295.22*		19.30	3.75105E-001	3.92269E-002
		351.93*		37.60	4.19146E-001	2.85559E-002
		462.00*	@	0.22	3.97604E+000	1.99083E+000
		533.66	@	0.19		
		785.96	@	1.07		
		839.04	@	0.59		
Ra-224	0.793	81.07	@	0.13		
		83.78	@	0.22		
		240.99*		4.10	8.00749E-001	1.09145E-001
Ra-226	0.748	81.07	@	0.20		
		83.78	@	0.33		
		94.90	@	0.15		
		186.21*		3.59	6.38739E-001	1.97935E-001
Ac-228	0.636	99.50	@	1.26		
		129.07	@	2.50		
		209.25*		3.97	3.32764E-001	1.51392E-001
		270.24		3.55		
		328.00		3.04		
		338.32*		11.40	5.45972E-001	8.04870E-002
		409.46*	@	2.02	4.39044E-001	2.91659E-001
		463.00*		4.45	2.48016E-001	1.24493E-001
		755.31	@	1.03		
		772.29	@	1.52		

Nuclide Name	Id Confidence	Energy (keV)	Yield (%)	Activity (pCi/GWET)	Activity Uncertainty
Ac-228	0.636	794.94*	4.31	3.15957E-001	1.35718E-001
		835.70 @	1.70		
		911.20*	26.20	4.74668E-001	4.84460E-002
		964.79*	4.99	5.31104E-001	1.03747E-001
		968.96*	15.90	4.49839E-001	5.06433E-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		0.965	3.579220E+000	1.990161E-001
Cs-137	@	0.997	3.019866E-002	6.303792E-003
Tl-208	@	0.934	1.623778E-001	1.289764E-002
Bi-211		0.896	2.881594E-001	1.308840E-001
Bi-212	@	0.578	3.838210E-001	1.220864E-001
Pb-212	@	0.832	5.159428E-001	2.448815E-002
Bi-214	@	0.453	3.792931E-001	2.149523E-002
Pb-214	@	0.855	3.214675E-001	3.424636E-002
Ra-224	@	0.793	6.894261E-002	1.337724E-001
Ra-226	@	0.748	6.387388E-001	1.979350E-001
Ac-228	@	0.636	4.535588E-001	2.758702E-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 2:21:57 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
3	92.90	8.9935E-003	63.99	Tol.	Yb-169 Th-227 Th-234
29	1765.73	1.2798E-002	13.80		

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

Errors quoted at 1.000 sigma