
***** G A M M A S P E C T R U M A N A L Y S I S *****

Filename: C:\GENIE2K\CAMFILES\UNC 2017\IMC Samples\IMC-1742\GFLU-1742-S

Report Generated On : 7/6/2017 10:09:26 AM

Sample Title : W3H-GFLU-1742-S-P-7
Sample Description :
Sample Identification : GFLU-1742-S-P-7
Sample Type :
Sample Geometry : cylinder

Peak Locate Threshold : 3.00
Peak Locate Range (in channels) : 40 - 8192
Peak Area Range (in channels) : 40 - 8192
Identification Energy Tolerance : 1.000 keV

Sample Size : 2.522E+002 grams

Sample Taken On : 6/7/2017 2:00:00 PM
Acquisition Started : 6/20/2017 11:26:51 AM

Live Time : 1800.0 seconds
Real Time : 1800.9 seconds

Dead Time : 0.05 %

Energy Calibration Used Done On : 4/13/2017
Efficiency Calibration Used Done On : 7/6/2017
Efficiency ID : H-IMC-2002-S-P-5

***** P E A K A N A L Y S I S R E P O R T *****

Detector Name: 8566
Sample Title: W3H-GFLU-1742-S-P-7
Peak Analysis Performed on: 7/6/2017 10:09:22 AM
Peak Analysis From Channel: 40
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	295-	314	299.88	75.15	0.65	9.91E+001	19.88	5.34E+001
m	2	295-	314	308.46	77.30	0.65	1.01E+002	20.01	5.83E+001
F	3	737-	747	741.75	185.73	1.00	7.51E+001	18.34	4.13E+001
F	4	946-	958	952.57	238.49	0.96	1.10E+002	68.87	5.69E+001
F	5	1175-	1184	1180.13	295.43	0.60	2.59E+001	30.75	2.60E+001
F	6	1397-	1412	1404.57	351.60	1.13	5.87E+001	17.31	3.68E+001
F	7	5823-	5847	5834.51	1460.17	2.48	1.53E+002	24.97	6.94E+000

M = First peak in a multiplet region

m = Other peak in a multiplet region

F = Fitted singlet

Errors quoted at 1.960 sigma

 ***** 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: W3H-GFLU-1742-S-P-7
 Nuclide Library Used: C:\GENIE2K\CAMFILES\UNC 2017 NLB 0328201

IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)	Yield (%)	Activity (pCi/gram)	Activity Uncertainty
K-40	0.933	1460.82*	10.66	1.00330E+001	1.79158E+000
Pb-212	0.995	74.82*	10.28	8.58363E-001	2.07439E-001
		77.11*	17.10	5.17547E-001	1.23108E-001
		86.83	2.07		
		87.35	3.97		
		89.78	1.46		
		115.18	0.60		
		238.63*	43.60	3.06894E-001	1.94843E-001
PB-214	0.842	300.09	3.30		
		74.82*	5.80	1.52137E+000	3.92058E-001
		77.11*	9.70	9.12376E-001	2.32050E-001
		86.83	1.70		
		87.35	2.24		
		89.78	0.82		
		241.99	7.25		
		258.76	0.53		
		295.22*	18.42	2.11506E-001	2.51589E-001
		351.93*	35.60	2.97012E-001	9.10135E-002
Ra-226	0.968	785.96	1.06		
		839.07	0.58		
		81.07	0.20		
		83.79	0.32		
		186.21*	3.64	2.03028E+000	5.40771E-001

* = Energy line found in the spectrum.
 @ = Energy line not used for Weighted Mean Activity
 Energy Tolerance : 1.000 keV
 Nuclide confidence index threshold = 0.10
 Errors quoted at 1.960 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/gram)	Wt mean Activity Uncertainty
K-40	0.933	1.003298E+001	1.791575E+000
Pb-212	0.995	4.086275E-001	9.877436E-002
PB-214	0.842	2.981132E-001	8.358655E-002
Ra-226	0.968	2.030275E+000	5.407707E-001

? = 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 1.960 sigma

***** U N I D E N T I F I E D P E A K S *****

Peak Locate Performed on: 7/6/2017 10:09:22 AM
 Peak Locate From Channel: 40
 Peak Locate To Channel: 8192

Peak No.	Energy (keV)	Peak Size in Counts per Second	Peak CPS % Uncertainty	Peak Type	Tol. Nuclide
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All peaks were identified.

 ***** N U C L I D E M D A R E P O R T *****

Detector Name: 8566
 Sample Geometry: cylinder
 Sample Title: W3H-GFLU-1742-S-P-7
 Nuclide Library Used: C:\GENIE2K\CAMFILES\UNC 2017 NLB 0328201

	Nuclide Name	Energy (keV)	Yield (%)	Line MDA (pCi/gram)	Nuclide MDA (pCi/gram)	Activity (pCi/gram)	Dec. Leve (pCi/gram)
+	K-40	1460.82*	10.66	1.055E+000	1.05E+000	1.003E+001	4.387E-00
	Pb-210	46.54	4.25	1.966E+000	1.97E+000	1.329E+000	9.260E-00
	BI-212	727.33	6.67	2.245E+000	2.24E+000	-5.946E-001	1.046E+00
		785.37	1.10	1.299E+001		-2.078E+000	5.997E+00
		1078.62	0.56	3.551E+001		4.890E+000	1.646E+00
		1620.50	1.47	9.443E+000		-3.514E+000	4.017E+00
+	Pb-212	74.82*	10.28	3.181E-001	1.20E-001	8.584E-001	1.473E-00
		77.11*	17.10	1.950E-001		5.175E-001	9.062E-00
		86.83	2.07	2.563E+000		1.190E+000	1.228E+00
		87.35	3.97	1.278E+000		-8.584E-001	6.113E-00
		89.78	1.46	3.123E+000		-4.140E+000	1.487E+00
		115.18	0.60	6.332E+000		2.416E+000	2.988E+00
		238.63*	43.60	1.199E-001		3.069E-001	5.615E-00
		300.09	3.30	2.278E+000		-2.656E+000	1.076E+00
	BI-214	76.86	0.55	1.360E+001	3.21E-001	3.150E+001	6.582E+00
		79.29	0.91	6.461E+000		1.576E-002	3.102E+00
		609.32	45.49	3.208E-001		3.393E-001	1.509E-00
		665.45	1.53	9.048E+000		4.856E-002	4.218E+00
		768.36	4.89	3.291E+000		1.811E+000	1.536E+00
		806.18	1.26	1.234E+001		1.003E+001	5.726E+00
		934.06	3.11	5.965E+000		4.068E+000	2.776E+00
		1120.29	14.92	1.499E+000		-1.351E-001	6.990E-00
		1155.21	1.63	1.043E+001		-4.107E+000	4.742E+00
		1238.11	5.83	3.928E+000		1.421E+000	1.823E+00
		1280.98	1.43	1.149E+001		5.218E+000	5.158E+00
		1377.67	3.99	4.692E+000		-5.825E-001	2.121E+00
		1385.31	0.79	2.441E+001		-1.261E+000	1.107E+00
		1401.52	1.33	1.339E+001		5.627E+000	6.008E+00
		1407.99	2.39	6.494E+000		-1.993E+000	2.865E+00
		1509.21	2.13	6.571E+000		-5.959E+000	2.829E+00
		1583.20	0.70	2.608E+001		-1.772E+000	1.160E+00
		1661.27	1.05	1.636E+001		4.523E+000	7.171E+00
		1729.59	2.88	5.312E+000		1.326E+000	2.274E+00
		1764.49	15.30	1.272E+000		4.894E-001	5.626E-00
		1847.43	2.03	7.740E+000		-8.450E+000	3.293E+00
>		2118.51	1.16	0.000E+000		0.000E+000	0.000E+00
>		2204.06	4.92	0.000E+000		0.000E+000	0.000E+00
>		2447.70	1.55	0.000E+000		0.000E+000	0.000E+00
+	PB-214	74.82*	5.80	5.638E-001	1.76E-001	1.521E+000	2.611E-00
		77.11*	9.70	3.438E-001		9.124E-001	1.598E-00
		86.83	1.70	3.120E+000		1.449E+000	1.495E+00
		87.35	2.24	2.265E+000		-1.521E+000	1.083E+00

	Nuclide Name	Energy (keV)	Yield (%)	Line MDA (pCi/gram)	Nuclide MDA (pCi/gram)	Activity (pCi/gram)	Dec. Leve (pCi/gram)
+	PB-214	89.78	0.82	5.560E+000	1.76E-001	-7.372E+000	2.647E+00
		241.99	7.25	1.221E+000		-2.937E-001	5.876E-00
		258.76	0.53	1.137E+001		3.644E+000	5.349E+00
		295.22*	18.42	2.156E-001		2.115E-001	9.677E-00
		351.93*	35.60	1.764E-001		2.970E-001	8.137E-00
		785.96	1.06	1.401E+001		-6.294E-001	6.489E+00
		839.07	0.58	2.866E+001		-1.426E+000	1.333E+00
+	Ra-226	81.07	0.20	2.063E+001	9.54E-001	-2.028E+001	9.733E+00
		83.79	0.32	1.540E+001		1.766E+001	7.351E+00
	AC-228	186.21*	3.64	9.541E-001	9.90E+014	2.030E+000	4.404E-00
		89.96	1.90	3.626E+015		-8.711E+015	1.730E+01
		93.35	3.10	2.232E+015		7.407E+014	1.066E+01
		99.51	1.26	4.406E+015		2.293E+015	2.081E+01
		105.60	0.74	7.211E+015		-3.504E+015	3.400E+01
		129.07	2.42	2.284E+015		4.800E+013	1.077E+01
		153.98	0.72	8.599E+015		-3.694E+014	4.064E+01
		209.25	3.89	2.122E+015		-1.748E+015	1.007E+01
		214.85	0.76	1.079E+016		8.151E+014	5.109E+01
		270.24	3.46	2.765E+015		1.414E+015	1.305E+01
		328.00	2.95	3.732E+015		8.183E+013	1.755E+01
		338.32	11.27	1.053E+015		6.637E+014	4.964E+01
		409.46	1.92	7.038E+015		-6.495E+015	3.304E+01
		463.00	4.40	3.900E+015		4.205E+014	1.843E+01
		562.50	0.87	2.159E+016		1.157E+016	1.013E+01
		674.75	2.10	8.986E+015		-6.175E+015	4.166E+01
		726.86	0.62	3.506E+016		-2.195E+015	1.634E+01
		755.32	1.00	2.065E+016		-2.983E+015	9.559E+01
		772.29	1.49	1.487E+016		-2.541E+015	6.911E+01
		794.95	4.25	5.520E+015		2.686E+015	2.572E+01
		830.49	0.54	4.281E+016		1.402E+016	1.986E+01
		835.71	1.61	1.491E+016		6.597E+014	6.935E+01
		840.38	0.91	2.692E+016		7.528E+015	1.254E+01
		904.20	0.77	3.104E+016		-3.060E+016	1.435E+01
		911.20	25.80	9.900E+014		-7.379E+014	4.599E+01
		964.77	4.99	5.798E+015		3.061E+015	2.708E+01
		968.97	15.80	1.863E+015		1.379E+015	8.710E+01
		1247.08	0.50	5.962E+016		-5.240E+016	2.743E+01
1459.14	0.83	7.852E+016	1.932E+017	3.762E+01			
1495.91	0.86	2.991E+016	9.696E+015	1.334E+01			
1588.20	3.22	8.742E+015	4.488E+014	3.916E+01			
1630.63	1.51	1.333E+016	2.573E+014	5.671E+01			
	TH-230	67.67	0.38	1.329E+001	1.33E+001	-1.032E+000	6.294E+00
	PA-234	742.81	0.11	1.485E+002	2.05E+001	-5.706E+001	6.934E+00
		766.42	0.32	4.812E+001		-1.278E+001	2.236E+00
		1001.03	0.84	2.053E+001		8.350E+000	9.453E+00
	TH-234	63.29	3.70	1.646E+000	1.65E+000	1.168E+000	7.845E-00
		92.38	2.13	2.355E+000		1.799E+000	1.127E+00
		92.80	2.10	2.338E+000		8.924E-001	1.117E+00
		112.81	0.21	1.739E+001		-5.410E+000	8.188E+00
	U-234	53.20	0.12	5.119E+001	5.12E+001	-8.372E+000	2.408E+00
		120.90	0.04	1.114E+002		-7.918E+000	5.263E+00

Nuclide Name	Energy (keV)	Yield (%)	Line MDA (pCi/gram)	Nuclide MDA (pCi/gram)	Activity (pCi/gram)	Dec. Leve (pCi/gram)
U-235	89.96	3.43	1.393E+000	3.90E-001	-3.346E+000	6.645E-00
	93.35	5.54	8.659E-001		2.874E-001	4.135E-00
	104.82	0.69	5.673E+000		2.892E+000	2.682E+00
	105.60	1.31	2.825E+000		-1.372E+000	1.332E+00
	108.58	0.50	7.438E+000		1.355E+000	3.507E+00
	109.19	1.66	2.229E+000		7.222E-001	1.051E+00
	143.76	10.96	3.897E-001		2.214E-001	1.845E-00
	163.36	5.08	9.331E-001		1.552E-001	4.426E-00
	194.94	0.63	7.758E+000		-4.158E+000	3.660E+00
	202.12	1.08	5.252E+000		8.406E-001	2.494E+00
	205.32	5.02	1.154E+000		3.797E-001	5.481E-00

+ = Nuclide identified during the nuclide identification

* = Energy line found in the spectrum

> = MDA value not calculated

@ = Half-life too short to be able to perform the decay correction

 *** LINE ACTIVITY CONSISTENCY EVALUATOR ***

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 Analysis using Key Line Activities
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Filename: C:\GENIE2K\CAMFILES\UNC 2017\IMC Samples\IMC-1742\GFLU-1742-S

Equation used to calculate plot: $\ln(\text{Ratio}) = A + B \cdot \ln(\text{Energy})$
 where: Ratio = Activity/KL Activity

Notes:
 '^' Denotes Key Line energy
 * All uncertainties quoted at 1.96 sigma

Nuclide	Energy (keV)	Activity (pCi/gram)	Activity %Uncert*	Ratio[%Uncert]	A	B [uncert]
K-40	1460.8	^ 1.00E+001	17.857			
Pb-212	74.8	8.58E-001	24.167	2.797[67.933]	3.76	-0.690 [0.889]
	77.1	5.18E-001	23.787	1.686[67.799]		
	238.6	^ 3.07E-001	63.489	1.000[89.787]		
PB-214	74.8	1.52E+000	25.770	5.122[40.039]	5.42	-0.933 [0.328]
	77.1	9.12E-001	25.434	3.072[39.823]		
	295.2	2.12E-001	118.95	0.712[122.83]		
	351.9	^ 2.97E-001	30.643	1.000[43.336]		
Ra-226	186.2	^ 2.03E+000	26.635			