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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: C:\GENIE2K\CAMFILES\UNC 2017\IMC Samples\IMC-0011\W6H-IMC-001

Report Generated On : 3/10/2017 10:09:55 AM

Sample Title : W6H-IMC-0011-S-P-4
Sample Description : UNC 2017
Sample Identification : IMC-0011-S-P-4
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 : 3.551E+002 grams

Sample Taken On : 2/28/2017 12:00:00 PM
Acquisition Started : 3/9/2017 3:53:50 PM

Live Time : 1800.0 seconds
Real Time : 1800.7 seconds

Dead Time : 0.04 %

Energy Calibration Used Done On : 3/9/2017
Efficiency Calibration Used Done On : 3/10/2017
Efficiency ID : H-IMC-0011-S-P-4

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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: 8381
Sample Title: W6H-IMC-0011-S-P-4
Peak Analysis Performed on: 3/10/2017 10:09:53 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
F	1	295-	303	299.50	74.87	0.68	7.11E+001	21.50	5.40E+001
F	2	738-	748	742.62	185.71	0.82	1.10E+002	23.01	3.12E+001
F	3	949-	959	953.95	238.57	0.78	4.92E+001	17.53	3.99E+001
F	4	1177-	1186	1180.65	295.28	0.54	1.81E+001	10.80	2.00E+001
F	5	5831-	5857	5843.59	1461.70	2.62	1.84E+002	75.42	9.00E+000

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

Errors quoted at 1.960 sigma

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***** 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: W6H-IMC-0011-S-P-4
Nuclide Library Used: C:\GENIE2K\CAMFILES\GE UNC_b_112211.NLB

..... IDENTIFIED NUCLIDES .....

Nuclide Name	Id Confidence	Energy (keV)		Yield (%)	Activity (pCi/gram)	Activity Uncertainty
K-40	0.884	1460.82*		10.66	7.07114E+000	2.94946E+000
PB-212	0.626	74.82*	@	10.28	5.05622E-001	1.86301E-001
		77.11	@	17.10		
		87.35	@	3.97		
		238.63*		43.60	1.00249E-001	3.94361E-002
		300.09		3.30		

* = 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

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***** 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/gram)	Wt mean Activity Uncertainty
K-40		0.884	7.071143E+000	2.949462E+000
PB-212	@	0.626	1.002486E-001	3.943615E-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 1.960 sigma

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

Peak Locate Performed on: 3/10/2017 10:09:53 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
F	2	185.71	6.1154E-002	20.91		
F	4	295.28	1.0061E-002	59.66	Tol.	PB-214

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

Errors quoted at 1.960 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: 8381
Sample Geometry: cylinder
Sample Title: W6H-IMC-0011-S-P-4
Nuclide Library Used: C:\GENIE2K\CAMFILES\GE UNC_b_112211.NLB

	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	7.025E-001	7.03E-001	7.071E+000	2.994E-00
	CO-60	1173.23	99.85	1.277E-001	1.18E-001	5.062E-002	5.917E-00
		1332.49	99.98	1.184E-001		1.336E-002	5.402E-00
	CS-137	661.66	85.10	1.120E-001	1.12E-001	1.969E-002	5.255E-00
	BI-212	727.33	6.67	1.556E+000	1.56E+000	4.741E-001	7.307E-00
		785.37	1.10	9.049E+000		2.121E+000	4.218E+00
		1620.50	1.47	6.941E+000		-8.757E-001	3.062E+00
+	PB-212	74.82*	10.28	3.293E-001	7.07E-002	5.056E-001	1.550E-00
		77.11	17.10	2.049E-001		8.781E-002	9.679E-00
		87.35	3.97	7.584E-001		-6.272E-002	3.566E-00
		238.63*	43.60	7.071E-002		1.002E-001	3.260E-00
		300.09	3.30	1.448E+000		5.278E-001	6.800E-00
	BI-214	609.32	45.49	2.199E-001	2.20E-001	1.195E-001	1.040E-00
		665.45	1.53	6.288E+000		-3.192E-001	2.952E+00
		768.36	4.89	2.208E+000		1.253E-001	1.036E+00
		806.18	1.26	7.944E+000		-2.928E+000	3.699E+00
		934.22	3.17	3.294E+000		1.289E+000	1.524E+00
		1120.29	14.92	8.425E-001		-2.589E-001	3.911E-00
		1155.60	1.66	6.900E+000		1.760E+000	3.172E+00
		1238.12	5.83	2.252E+000		8.176E-001	1.043E+00
		1280.98	1.43	9.327E+000		-2.858E-002	4.315E+00
		1377.67	3.99	3.252E+000		2.023E+000	1.493E+00
		1401.52	1.33	8.877E+000		3.273E+000	4.036E+00
		1407.99	2.39	5.015E+000		-1.189E+000	2.283E+00
		1509.21	2.13	5.205E+000		-1.871E+000	2.336E+00
		1729.59	2.88	3.270E+000		-1.479E+000	1.415E+00
		1764.49	15.30	8.764E-001		-2.487E-002	3.961E-00
		1847.43	2.03	4.250E+000		-1.065E+000	1.795E+00
	PB-214	53.23	1.08	3.816E+000	1.82E-001	1.539E+000	1.767E+00
		74.82	5.80	7.507E-001		4.448E-001	3.583E-00
		77.11	9.70	3.612E-001		1.548E-001	1.706E-00
		87.09	3.41	8.842E-001		-6.434E-001	4.157E-00
		241.99	7.25	5.891E-001		-2.476E-001	2.778E-00
		295.22	18.42	2.528E-001		-4.303E-003	1.186E-00
		351.93	35.60	1.821E-001		1.468E-001	8.638E-00
		785.96	1.06	9.750E+000		7.680E+000	4.556E+00
	TH-228	240.80	3.97	1.237E+000	1.24E+000	-5.097E-001	5.882E-00
	TH-230	67.67	0.38	7.596E+000	7.60E+000	-4.334E+000	3.512E+00
	TH-232	129.07	2.45	8.748E-001	2.88E-001	3.214E-001	4.021E-00
		209.25	3.88	8.476E-001		-3.636E-002	3.957E-00
		270.24	3.43	1.354E+000		7.652E-001	6.383E-00
		277.35	2.48	1.792E+000		7.428E-001	8.411E-00

Nuclide Name	Energy (keV)	Yield (%)	Line MDA (pCi/gram)	Nuclide MDA (pCi/gram)	Activity (pCi/gram)	Dec. Leve (pCi/gram
TH-232	327.99	3.06	1.627E+000	2.88E-001	6.093E-001	7.625E-00
	338.32	11.30	4.856E-001		2.307E-001	2.286E-00
	409.46	1.94	3.319E+000		1.347E+000	1.561E+00
	463.01	4.44	1.547E+000		6.573E-001	7.253E-00
	583.00	30.96	2.884E-001		7.506E-002	1.357E-00
	755.32	1.01	1.029E+001		3.129E+000	4.823E+00
	772.29	1.50	6.556E+000		-2.053E+000	3.056E+00
	794.95	4.34	2.452E+000		1.619E-001	1.147E+00
	835.71	1.68	6.471E+000		3.387E+000	3.024E+00
	860.30	4.32	2.219E+000		4.896E-002	1.025E+00
	911.21	26.60	4.754E-001		3.696E-001	2.233E-00
	964.77	5.11	2.307E+000		8.161E-001	1.075E+00
	968.97	16.20	7.141E-001		7.315E-002	3.323E-00
	1588.21	3.27	3.406E+000		2.231E+000	1.522E+00
	1630.63	1.60	5.608E+000		-1.673E-001	2.427E+00
U-233	42.44	0.06	1.143E+002	1.07E+002	6.344E+001	5.306E+00
	54.70	0.01	2.429E+002		-1.663E+002	1.111E+00
	97.14	0.02	1.073E+002		-2.907E+000	4.970E+00
	146.35	0.01	3.179E+002		-1.647E+002	1.447E+00
	164.51	0.01	4.093E+002		5.282E+000	1.904E+00
	291.32	0.01	7.906E+002		-7.134E+002	3.681E+00
	317.13	0.01	5.563E+002		-6.389E+000	2.608E+00
	320.51	0.00	1.584E+003		8.695E+001	7.425E+00
U-234	53.20	0.12	3.338E+001	3.34E+001	1.346E+001	1.546E+00
	120.90	0.04	5.244E+001		5.263E+000	2.409E+00
U-235	105.60	1.32	1.716E+000	2.10E-001	-3.104E-001	7.935E-00
	109.16	1.54	1.399E+000		-4.697E-001	6.444E-00
	143.76	10.96	2.098E-001		1.171E-001	9.680E-00
	163.33	5.08	5.216E-001		7.522E-002	2.423E-00
	202.11	1.08	2.994E+000		-1.749E+000	1.398E+00
	205.31	5.01	6.914E-001		1.310E-001	3.242E-00
U-238	63.29	3.70	1.014E+000	7.30E-001	6.388E-001	4.754E-00
	92.60	4.23	7.296E-001		1.035E-001	3.440E-00
	766.42	0.32	3.429E+001		9.779E+000	1.611E+00
	1001.03	0.84	1.332E+001		5.349E+000	6.173E+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

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**** L I N E A C T I V I T Y C O N S I S T E N C Y E V A L U A T O R ***
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Analysis using Key Line Activities
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Filename: C:\GENIE2K\CAMFILES\UNC 2017\IMC Samples\IMC-0011\W6H-IMC-001

Equation used to calculate plot: ln(Ratio) = A + B*ln(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	^	7.07E+000	41.711			
PB-212	74.8		5.06E-001	36.846	5.044[53.899]	7.64	-1.395
	238.6	^	1.00E-001	39.338	1.000[55.633]		[0.668]