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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-2079\W6H-IMC-207

Report Generated On : 5/1/2017 9:50:02 AM

Sample Title : W6H-IMC-2079-S-P-4
Sample Description :
Sample Identification : 2079-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 : 2.823E+002 grams

Sample Taken On : 3/17/2017 12:00:00 AM
Acquisition Started : 3/31/2017 10:31:47 AM

Live Time : 1800.0 seconds
Real Time : 1800.3 seconds

Dead Time : 0.02 %

Energy Calibration Used Done On : 3/24/2017
Efficiency Calibration Used Done On : 5/1/2017
Efficiency ID : H-IMC-2079-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: 8566
Sample Title: W6H-IMC-2079-S-P-4
Peak Analysis Performed on: 5/1/2017 9:49:59 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	249-	259	253.25	63.52	0.45	2.36E+001	13.57	5.50E+001
M	2	295-	313	300.05	75.23	0.75	7.35E+001	22.44	8.02E+001
m	3	295-	313	308.44	77.33	0.76	5.21E+001	18.42	5.62E+001
F	4	738-	749	742.53	185.91	1.14	5.77E+001	18.59	3.15E+001
F	5	947-	958	952.59	238.46	0.99	5.84E+001	17.99	2.85E+001
F	6	1173-	1182	1178.85	295.06	0.47	1.94E+001	10.61	1.90E+001
F	7	1399-	1411	1405.67	351.79	0.87	3.88E+001	14.98	2.60E+001
F	8	5825-	5850	5836.92	1460.26	2.60	1.66E+002	24.02	7.22E+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-2079-S-P-4
Nuclide Library Used: C:\GENIE2K\CAMFILES\UNC 2017 Full NLB.NL

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

Nuclide Name	Id Confidence	Energy (keV)	Yield (%)	Activity (pCi/gram)	Activity Uncertainty
K-40	0.950	1460.82*	10.66	1.03951E+001	1.74692E+000
Pb-212	0.992	74.82*	10.28	6.14753E-001	2.25028E-001
		77.11*	17.10	2.56647E-001	1.04412E-001
		86.83	2.07		
		87.35	3.97		
		89.78	1.46		
		115.18	0.60		
		238.63*	43.60	1.56351E-001	5.41586E-002
		300.09	3.30		
PB-214	0.851	74.82*	5.80	1.08960E+000	4.10584E-001
		77.11*	9.70	4.52440E-001	1.88519E-001
		86.83	1.70		
		87.35	2.24		
		89.78	0.82		
		241.99	7.25		
		258.76	0.53		
		274.80	0.35		
		295.22*	18.42	1.51555E-001	8.62018E-002
		351.93*	35.60	1.87975E-001	7.77284E-002
		462.02	0.21		
		480.43	0.34		
		487.14	0.43		
		533.66	0.18		
		580.14	0.37		
		785.96	1.06		
		839.07	0.58		
Ra-226	0.988	81.07	0.20		
		83.79	0.32		
		186.21*	3.64	1.49779E+000	5.45255E-001
TH-232	0.987	63.81*	0.26	9.14626E+000	5.63478E+000
TH-234	0.996	63.29*	3.70	6.50126E-001	4.18845E-001
		92.38	2.13		
		92.80	2.10		
		112.81	0.21		

* = 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	0.950	1.039508E+001	1.746918E+000
	Pb-212	0.992	1.715279E-001	4.750186E-002
	PB-214	0.851	1.813948E-001	5.526640E-002
	Ra-226	0.988	1.497785E+000	5.452550E-001
?	TH-232	0.987	9.146263E+000	5.634780E+000
?	TH-234	0.996	6.501263E-001	4.188448E-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: 5/1/2017 9:49:59 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

All peaks were identified.

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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: 8566
Sample Geometry: cylinder
Sample Title: W6H-IMC-2079-S-P-4
Nuclide Library Used: C:\GENIE2K\CAMFILES\UNC 2017 Full NLB.NL

	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	1.036E+000	1.04E+000	1.040E+001	4.334E-00
	CO-60	1173.23	99.85	1.833E-001	1.58E-001	-2.092E-002	8.410E-00
		1332.49	99.98	1.584E-001		-7.935E-003	7.078E-00
	CS-137	661.66	85.10	1.530E-001	1.53E-001	6.113E-003	7.125E-00
	Pb-210	46.54	4.25	2.134E+000	2.13E+000	1.924E+000	1.011E+00
	BI-212	288.20	0.34	1.858E+001	2.12E+000	4.876E+000	8.726E+00
		328.03	0.13	5.918E+001		-6.419E-001	2.786E+00
		452.98	0.36	2.290E+001		-2.535E+000	1.061E+00
		727.33	6.67	2.119E+000		1.601E+000	9.863E-00
		785.37	1.10	1.134E+001		7.690E+000	5.193E+00
		893.41	0.38	4.482E+001		1.033E+001	2.085E+00
		952.12	0.17	8.942E+001		1.140E+001	4.103E+00
		1078.62	0.56	3.037E+001		-3.028E+000	1.395E+00
		1512.70	0.29	4.311E+001		8.452E+000	1.834E+00
		1620.50	1.47	5.366E+000		-4.403E+000	2.009E+00
+	Pb-212	74.82*	10.28	3.712E-001	8.16E-002	6.148E-001	1.743E-00
		77.11*	17.10	1.851E-001		2.566E-001	8.590E-00
		86.83	2.07	2.301E+000		1.332E+000	1.099E+00
		87.35	3.97	1.189E+000		1.682E-001	5.677E-00
		89.78	1.46	2.846E+000		-3.168E+000	1.351E+00
		115.18	0.60	5.876E+000		2.894E+000	2.766E+00
		238.63*	43.60	8.161E-002		1.564E-001	3.718E-00
		300.09	3.30	1.942E+000		-3.260E+000	9.112E-00
	BI-214	76.86	0.55	1.147E+001	3.21E-001	-1.553E-001	5.525E+00
		79.29	0.91	5.183E+000		-1.096E+000	2.468E+00
		89.26	0.11	3.861E+001		1.062E+000	1.834E+00
		89.81	0.21	1.979E+001		-2.202E+001	9.392E+00
		273.80	0.13	4.592E+001		-3.075E+001	2.155E+00
		348.92	0.10	8.142E+001		-4.148E+001	3.848E+00
		386.78	0.29	2.781E+001		1.501E+001	1.303E+00
		388.89	0.40	1.920E+001		-7.829E+000	8.954E+00
		405.72	0.17	4.672E+001		4.156E+000	2.175E+00
		454.79	0.29	2.908E+001		-6.910E+000	1.349E+00
		469.77	0.13	6.709E+001		-5.645E+001	3.115E+00
		609.32	45.49	3.207E-001		1.023E-001	1.513E-00
		665.45	1.53	8.922E+000		3.103E+000	4.167E+00
		703.11	0.47	2.988E+001		-1.157E+001	1.393E+00
		719.87	0.39	3.165E+001		-2.104E+001	1.459E+00
		752.85	0.13	1.264E+002		7.304E+001	5.926E+00
		768.36	4.89	2.947E+000		-1.001E-001	1.368E+00
		786.35	0.32	3.679E+001		-1.738E+000	1.675E+00
		806.18	1.26	1.101E+001		-4.391E+000	5.081E+00

	Nuclide Name	Energy (keV)	Yield (%)	Line MDA (pCi/gram)	Nuclide MDA (pCi/gram)	Activity (pCi/gram)	Dec. Leve (pCi/gram
	BI-214	821.18	0.16	8.709E+001	3.21E-001	-1.924E+001	4.014E+00
		826.45	0.12	1.132E+002		-3.484E+001	5.189E+00
		934.06	3.11	5.116E+000		7.007E-001	2.360E+00
		964.08	0.37	4.965E+001		4.165E+001	2.309E+00
		1051.96	0.31	5.633E+001		-1.451E+001	2.598E+00
		1069.96	0.27	6.514E+001		-5.412E+000	3.002E+00
		1120.29	14.92	1.373E+000		7.453E-001	6.380E-00
		1133.66	0.25	6.476E+001		4.231E+001	2.948E+00
		1155.21	1.63	1.025E+001		3.118E+000	4.674E+00
		1207.68	0.45	4.227E+001		2.597E+000	1.943E+00
		1238.11	5.83	3.475E+000		-1.100E+000	1.603E+00
		1280.98	1.43	1.441E+001		9.371E+000	6.642E+00
		1303.75	0.11	1.735E+002		6.516E+001	7.909E+00
		1377.67	3.99	3.398E+000		-9.032E-001	1.483E+00
		1385.31	0.79	1.669E+001		-8.904E+000	7.256E+00
		1401.52	1.33	1.115E+001		1.886E-001	4.918E+00
		1407.99	2.39	5.607E+000		-3.998E+000	2.438E+00
		1509.21	2.13	6.292E+000		-1.812E+000	2.709E+00
		1538.53	0.40	3.189E+001		5.860E+000	1.356E+00
		1543.34	0.30	4.200E+001		1.659E+001	1.787E+00
		1583.20	0.70	2.497E+001		6.786E+000	1.111E+00
		1594.75	0.27	6.219E+001		4.073E+001	2.743E+00
		1599.37	0.32	4.633E+001		-1.937E+001	2.014E+00
		1661.27	1.05	1.394E+001		-8.589E-001	6.004E+00
		1684.01	0.21	6.674E+001		4.786E+000	2.857E+00
		1729.59	2.88	4.707E+000		-2.567E-001	1.988E+00
		1764.49	15.30	1.190E+000		7.948E-001	5.250E-00
		1838.36	0.35	3.533E+001		-4.365E+001	1.448E+00
		1847.43	2.03	6.483E+000		1.777E+000	2.688E+00
		1873.16	0.21	5.526E+001		-6.661E+000	2.233E+00
		1896.05	0.15	8.551E+001		3.986E+001	3.505E+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
>		2293.38	0.31	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	6.579E-001	1.37E-001	1.090E+000	3.089E-00
		77.11*	9.70	3.264E-001		4.524E-001	1.514E-00
		86.83	1.70	2.801E+000		1.622E+000	1.338E+00
		87.35	2.24	2.107E+000		2.982E-001	1.006E+00
		89.78	0.82	5.067E+000		-5.640E+000	2.405E+00
		241.99	7.25	9.713E-001		-1.979E-001	4.636E-00
		258.76	0.53	1.159E+001		1.188E+000	5.473E+00
		274.80	0.35	1.691E+001		5.281E-001	7.946E+00
		295.22*	18.42	1.795E-001		1.516E-001	7.919E-00
		351.93*	35.60	1.365E-001		1.880E-001	6.170E-00
		462.02	0.21	4.269E+001		4.250E+000	1.988E+00
		480.43	0.34	2.859E+001		2.488E+000	1.334E+00
		487.14	0.43	2.214E+001		-5.486E+000	1.031E+00
		533.66	0.18	5.803E+001		5.778E+000	2.702E+00
		580.14	0.37	3.521E+001		-6.282E+000	1.654E+00
		785.96	1.06	1.124E+001		-1.574E-001	5.126E+00

	Nuclide Name	Energy (keV)	Yield (%)	Line MDA (pCi/gram)	Nuclide MDA (pCi/gram)	Activity (pCi/gram)	Dec. Leve (pCi/gram
+	PB-214	839.07	0.58	2.789E+001	1.37E-001	5.215E+000	1.298E+00
+	Ra-226	81.07	0.20	1.962E+001	8.28E-001	4.930E+000	9.246E+00
		83.79	0.32	1.379E+001		6.080E+000	6.557E+00
		186.21*	3.64	8.285E-001		1.498E+000	3.791E-00
	AC-228	89.96	1.90	2.059E+017	6.14E+016	-2.291E+017	9.774E+01
		93.35	3.10	1.222E+017		6.181E+016	5.793E+01
		99.51	1.26	2.566E+017		1.717E+017	1.207E+01
		104.82	0.39	8.108E+017		4.971E+017	3.808E+01
		105.60	0.74	4.197E+017		8.624E+016	1.969E+01
		108.58	0.28	1.075E+018		-2.869E+017	5.032E+01
		129.07	2.42	1.397E+017		2.976E+016	6.578E+01
		145.85	0.16	2.305E+018		7.208E+017	1.087E+01
		153.98	0.72	5.108E+017		2.317E+017	2.406E+01
		191.35	0.12	3.503E+018		1.175E+018	1.652E+01
		199.41	0.31	1.377E+018		-2.165E+017	6.480E+01
		204.03	0.11	4.009E+018		1.187E+018	1.889E+01
		209.25	3.89	1.197E+017		-4.876E+016	5.646E+01
		214.85	0.76	6.639E+017		-4.941E+016	3.141E+01
		270.24	3.46	1.626E+017		1.219E+016	7.646E+01
		278.95	0.16	3.441E+018		-8.643E+017	1.612E+01
		321.65	0.23	2.939E+018		3.277E+017	1.381E+01
		327.44	0.12	5.921E+018		-1.320E+018	2.791E+01
		328.00	2.95	2.362E+017		-2.562E+015	1.112E+01
		332.37	0.40	1.668E+018		-1.475E+018	7.822E+01
		338.32	11.27	6.140E+016		1.870E+016	2.883E+01
		340.96	0.37	1.902E+018		6.185E+017	8.932E+01
		409.46	1.92	3.882E+017		-5.568E+017	1.807E+01
		440.44	0.12	7.187E+018		3.961E+018	3.363E+01
		463.00	4.40	1.971E+017		9.668E+016	9.188E+01
		478.33	0.21	4.386E+018		3.163E+018	2.047E+01
		503.82	0.18	4.889E+018		-4.278E+018	2.268E+01
		508.96	0.45	2.622E+018		1.686E+018	1.239E+01
		523.13	0.10	8.829E+018		6.580E+017	4.091E+01
		546.47	0.20	4.967E+018		0.000E+000	2.310E+01
		562.50	0.87	1.261E+018		-1.830E+017	5.894E+01
		570.91	0.18	5.734E+018		0.000E+000	2.667E+01
		572.14	0.15	7.079E+018		1.709E+018	3.296E+01
		583.41	0.11	1.180E+019		1.283E+019	5.563E+01
		674.75	2.10	6.081E+017		-3.240E+016	2.836E+01
		701.75	0.17	7.935E+018		3.104E+018	3.710E+01
		707.41	0.16	8.433E+018		3.537E+018	3.926E+01
		726.86	0.62	2.147E+018		1.622E+018	9.990E+01
		755.32	1.00	1.539E+018		5.326E+017	7.215E+01
		772.29	1.49	8.297E+017		-3.286E+016	3.821E+01
		782.14	0.49	2.246E+018		-7.312E+017	1.021E+01
		794.95	4.25	2.987E+017		1.993E+016	1.376E+01
		830.49	0.54	2.543E+018		4.490E+017	1.175E+01
		835.71	1.61	9.408E+017		5.043E+017	4.378E+01
		840.38	0.91	1.723E+018		9.120E+017	8.036E+01
		904.20	0.77	2.046E+018		1.082E+017	9.498E+01
		911.20	25.80	6.296E+016		2.089E+016	2.928E+01

	Nuclide Name	Energy (keV)	Yield (%)	Line MDA (pCi/gram)	Nuclide MDA (pCi/gram)	Activity (pCi/gram)	Dec. Leve (pCi/gram
	AC-228	947.98	0.11	1.286E+019	6.14E+016	-1.331E+018	5.874E+01
		958.61	0.28	5.311E+018		-1.566E+018	2.444E+01
		964.77	4.99	3.232E+017		7.345E+016	1.497E+01
		968.97	15.80	1.007E+017		8.054E+015	4.654E+01
		1033.25	0.20	7.309E+018		-4.425E+018	3.340E+01
		1065.18	0.13	1.183E+019		3.254E+018	5.423E+01
		1095.68	0.13	1.396E+019		2.552E+018	6.464E+01
		1110.61	0.28	6.107E+018		-8.269E+018	2.817E+01
		1153.52	0.14	1.148E+019		2.406E+018	5.238E+01
		1247.08	0.50	4.127E+018		9.624E+017	1.915E+01
		1459.14	0.83	4.991E+018		1.254E+019	2.393E+01
		1495.91	0.86	1.550E+018		5.650E+017	6.738E+01
		1501.57	0.46	3.071E+018		8.183E+017	1.345E+01
		1557.11	0.18	7.292E+018		-8.733E+017	3.139E+01
		1580.53	0.60	2.463E+018		-1.106E+018	1.079E+01
		1588.20	3.22	5.369E+017		3.392E+017	2.400E+01
		1625.06	0.25	3.828E+018		-3.724E+018	1.547E+01
		1630.63	1.51	9.529E+017		5.083E+017	4.142E+01
		1638.28	0.47	3.330E+018		9.147E+017	1.464E+01
		1666.52	0.18	8.001E+018		4.157E+018	3.463E+01
	TH-230	67.67	0.38	1.291E+001	1.29E+001	6.366E+000	6.119E+00
	PA-234	742.81	0.11	1.311E+002	2.12E+001	-5.493E+001	6.085E+00
		766.42	0.32	4.824E+001		1.679E+001	2.250E+00
		1001.03	0.84	2.118E+001		2.368E+000	9.813E+00
+	TH-234	63.29*	3.70	1.208E+000	1.21E+000	6.501E-001	5.665E-00
		92.38	2.13	2.000E+000		1.590E+000	9.512E-00
		92.80	2.10	1.941E+000		1.830E-001	9.212E-00
		112.81	0.21	1.637E+001		5.744E+000	7.699E+00
	U-234	53.20	0.12	4.806E+001	4.81E+001	1.916E+001	2.256E+00
		120.90	0.04	9.471E+001		-7.614E+000	4.441E+00
	U-235	72.70	0.12	4.499E+001	3.69E-001	-1.032E+001	2.150E+00
		89.96	3.43	1.211E+000		-1.347E+000	5.746E-00
		93.35	5.54	7.256E-001		3.671E-001	3.441E-00
		104.82	0.69	4.900E+000		3.004E+000	2.301E+00
		105.60	1.31	2.516E+000		5.171E-001	1.180E+00
		108.58	0.50	6.389E+000		-1.705E+000	2.991E+00
		109.19	1.66	1.887E+000		-9.973E-001	8.823E-00
		140.76	0.20	1.912E+001		-7.396E+000	9.017E+00
		143.76	10.96	3.693E-001		2.136E-001	1.747E-00
		163.36	5.08	8.018E-001		1.660E-001	3.779E-00
		182.62	0.39	1.334E+001		-1.510E+001	6.344E+00
		194.94	0.63	7.442E+000		1.089E+000	3.510E+00
		202.12	1.08	4.333E+000		9.347E-002	2.040E+00
		205.32	5.02	9.594E-001		-2.878E-001	4.521E-00
		221.39	0.12	4.309E+001		-1.156E+001	2.030E+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-2079\W6H-IMC-207

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	^	1.04E+001	16.805			
Pb-212	74.8		6.15E-001	36.605	3.932[50.396]	4.64	-0.850
	77.1		2.57E-001	40.683	1.641[53.432]		[0.534]
	238.6	^	1.56E-001	34.639	1.000[48.987]		
PB-214	74.8		1.09E+000	37.682	5.796[55.945]	5.53	-0.969
	77.1		4.52E-001	41.667	2.407[58.703]		[0.412]
	295.2		1.52E-001	56.878	0.806[70.321]		
	351.9	^	1.88E-001	41.350	1.000[58.478]		
Ra-226	186.2	^	1.50E+000	36.404			
TH-232	63.8	^	9.15E+000	61.607			
TH-234	63.3	^	6.50E-001	64.425			