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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-2198\UNC-IMC-219

Report Generated On : 5/4/2017 8:02:14 AM

Sample Title : UNC-IMC-2198-S-P-1
Sample Description :
Sample Identification : IMC-2198-S-P-1
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 : 6.165E+002 grams

Sample Taken On : 4/10/2017 12:00:00 AM
Acquisition Started : 4/20/2017 11:57:36 AM

Live Time : 1800.0 seconds
Real Time : 1800.8 seconds

Dead Time : 0.04 %

Energy Calibration Used Done On : 4/13/2017
Efficiency Calibration Used Done On : 5/4/2017
Efficiency ID : H-IMC-2189-S-P-1

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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: UNC-IMC-2198-S-P-1
Peak Analysis Performed on: 5/4/2017 8:02:07 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	45-	56	52.56	13.26	0.57	2.17E+002	97.80	2.97E+002
F	2	59-	71	65.10	16.40	0.91	7.51E+002	158.70	2.99E+002
F	3	71-	85	77.12	19.41	0.77	2.85E+002	34.38	2.59E+002
F	4	97-	111	103.26	25.95	0.66	1.89E+002	30.60	2.40E+002
F	5	207-	216	213.02	53.42	0.60	2.67E+002	37.06	2.25E+002
M	6	283-	315	290.95	72.92	0.81	2.62E+002	78.27	5.45E+002
m	7	283-	315	299.56	75.07	0.82	5.88E+002	151.94	6.16E+002
m	8	283-	315	308.27	77.25	0.82	1.88E+002	57.06	6.01E+002
M	9	332-	366	337.11	84.47	0.76	6.58E+002	54.82	4.98E+002
m	10	332-	366	348.76	87.39	0.77	6.80E+001	32.20	6.99E+002
m	11	332-	366	359.63	90.11	0.78	2.63E+002	42.11	7.02E+002
F	12	366-	378	373.33	93.53	0.82	4.60E+002	167.14	5.33E+002
F	13	430-	443	436.12	109.25	0.92	1.91E+002	37.16	5.23E+002
F	14	477-	492	483.95	121.22	0.35	1.19E+002	157.03	5.54E+002
F	15	565-	580	574.53	143.88	0.85	1.24E+003	35.15	4.64E+002
F	16	647-	657	652.48	163.39	0.86	4.10E+002	43.99	2.64E+002
F	17	735-	750	741.70	185.72	0.96	4.90E+003	247.41	2.52E+002
F	18	774-	787	778.48	194.92	0.74	5.67E+001	18.92	9.10E+001
M	19	802-	828	806.92	202.04	0.99	7.58E+001	9.74	7.78E+001
m	20	802-	828	819.89	205.28	1.00	3.91E+002	27.73	9.43E+001
F	21	947-	958	952.81	238.55	1.01	1.88E+002	29.12	8.40E+001
F	22	1173-	1183	1179.22	295.21	0.66	5.07E+001	46.49	4.40E+001
F	23	1396-	1411	1404.69	351.63	1.31	9.14E+001	68.43	4.48E+001
F	24	2321-	2335	2328.51	582.81	1.36	5.12E+001	57.23	2.63E+001
F	25	2425-	2443	2432.78	608.90	1.79	8.07E+001	69.88	3.01E+001
F	26	5822-	5847	5834.45	1460.15	2.49	2.38E+002	31.22	1.30E+001

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: UNC-IMC-2198-S-P-1
Nuclide Library Used: C:\GENIE2K\CAMFILES\GE_UNC_U-NLB.NLB

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

Nuclide Name	Id Confidence	Energy (keV)	Yield (%)	Activity (pCi/gram)	Activity Uncertainty
K-40	0.930	1460.82*	10.66	7.58409E+000	1.18572E+000
U-234	0.991	53.20*	0.12	2.46534E+002	6.85807E+001
		120.90*	0.04	1.64839E+002	2.23946E+002
U-235	0.913	105.60	1.31		
		109.19*	1.66	5.64968E+000	1.78359E+000
		143.76*	10.96	5.59355E+000	1.11652E+000
		163.36*	5.08	4.17173E+000	8.99211E-001
		202.12*	1.08	4.10887E+000	8.50216E-001
		205.32*	5.02	4.61168E+000	8.00937E-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

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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	0.930	7.584085E+000	1.185720E+000
U-234	0.991	2.395293E+002	6.557476E+001
U-235	0.913	4.587931E+000	4.345575E-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: 5/4/2017 8:02:07 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	1	13.26	1.2029E-001	45.17		
F	2	16.40	4.1747E-001	21.12		
F	3	19.41	1.5857E-001	12.04		
F	4	25.95	1.0496E-001	16.20		
M	6	72.92	1.4534E-001	29.92		
m	7	75.07	3.2676E-001	25.83		
m	8	77.25	1.0446E-001	30.35		
M	9	84.47	3.6548E-001	8.33		
m	10	87.39	3.7801E-002	47.32		
m	11	90.11	1.4626E-001	15.99		
F	12	93.53	2.5579E-001	36.30	Tol.	TH-234
F	17	185.72	2.7198E+000	5.05		
F	18	194.92	3.1473E-002	33.40		
F	21	238.55	1.0447E-001	15.48		
F	22	295.21	2.8166E-002	91.70		
F	23	351.63	5.0775E-002	74.87		
F	24	582.81	2.8443E-002	111.79		
F	25	608.90	4.4825E-002	86.61		

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: 8566
Sample Geometry: cylinder
Sample Title: UNC-IMC-2198-S-P-1
Nuclide Library Used: C:\GENIE2K\CAMFILES\GE_UNC_U-NLB.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	6.772E-001	6.77E-001	7.584E+000	2.955E-00
	PA-234	742.81	0.11	7.017E+001	1.11E+001	1.288E+001	3.260E+00
		766.42	0.32	2.734E+001		1.063E+001	1.281E+00
		1001.03	0.84	1.112E+001		4.727E+000	5.158E+00
	TH-234	63.29	3.70	2.692E+000	2.69E+000	-5.807E-001	1.316E+00
		92.38	2.13	4.643E+000		1.698E+001	2.288E+00
		92.80	2.10	4.488E+000		1.100E+000	2.210E+00
		112.81	0.21	3.206E+001		1.275E+001	1.572E+00
+	U-234	53.20*	0.12	7.687E+001	7.69E+001	2.465E+002	3.718E+00
		120.90*	0.04	1.889E+002		1.648E+002	9.257E+00
+	U-235	105.60	1.31	5.530E+000	5.65E-001	5.046E+000	2.714E+00
		109.19*	1.66	4.133E+000		5.650E+000	2.026E+00
		143.76*	10.96	5.649E-001		5.594E+000	2.763E-00
		163.36*	5.08	8.659E-001		4.172E+000	4.192E-00
		202.12*	1.08	2.371E+000		4.109E+000	1.112E+00
		205.32*	5.02	5.646E-001		4.612E+000	2.664E-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-2198\UNC-IMC-219

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	^	7.58E+000	15.634			
U-234	53.2	^	2.47E+002	27.818	1.000[39.341]	1.95	-0.490
	120.9		1.65E+002	135.85	0.669[138.67]		[1.756]
U-235	109.2		5.65E+000	31.570	1.010[37.351]	2.21	-0.465
	143.8	^	5.59E+000	19.961	1.000[28.229]		[0.616]
	163.4		4.17E+000	21.555	0.746[29.378]		
	202.1		4.11E+000	20.692	0.735[28.751]		
	205.3		4.61E+000	17.368	0.824[26.459]		