****
***** 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-2198\UNC-IMC-219

Report Generated On : 5/4/2017 8:04:48 AM

Sample Title : UNC-IMC-2198-S-P-3
Sample Description :
Sample Identification : IMC-2198-S-P-3
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 : 4.147E+002 grams

Sample Taken On : 4/10/2017 12:00:00 AM
Acquisition Started : 4/20/2017 2:10:04 PM

Live Time : 1800.0 seconds
Real Time : 1800.4 seconds

Dead Time : 0.02 %

Energy Calibration Used Done On : 4/13/2017
Efficiency Calibration Used Done On : 5/4/2017
Efficiency ID : H-IMC-2189-S-P-3

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

Detector Name: 8566
Sample Title: UNC-IMC-2198-S-P-3
Peak Analysis Performed on: 5/4/2017 8:04:44 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	59-	70	65.44	16.49	0.84	3.59E+002	141.68	8.70E+001
F	2	176-	191	186.18	46.70	0.83	2.00E+002	89.59	1.20E+002
M	3	296-	314	299.55	75.07	0.60	1.47E+002	29.47	1.81E+002
m	4	296-	314	308.38	77.28	0.60	8.27E+001	23.21	1.89E+002
F	5	333-	344	337.46	84.56	0.86	2.18E+002	29.59	1.78E+002
F	6	354-	364	359.89	90.17	0.70	1.09E+002	24.74	1.50E+002
F	7	366-	379	373.02	93.46	0.77	1.61E+002	118.24	1.84E+002
F	8	479-	487	482.14	120.76	0.53	4.34E+001	18.80	9.34E+001
F	9	547-	554	551.01	138.00	0.58	3.30E+001	47.80	6.20E+001
F	10	568-	579	574.48	143.87	0.72	3.04E+002	91.97	1.13E+002
F	11	649-	658	652.61	163.42	0.85	1.30E+002	24.94	8.38E+001
F	12	736-	751	741.76	185.73	0.94	1.37E+003	135.30	1.08E+002
F	13	815-	827	820.30	205.39	0.93	8.34E+001	20.05	5.85E+001
F	14	941-	958	952.90	238.57	0.90	1.19E+002	68.28	9.23E+001
F	15	1175-	1183	1178.83	295.11	0.75	4.69E+001	16.64	3.06E+001
F	16	1398-	1410	1404.75	351.64	1.00	6.88E+001	52.71	3.64E+001
F	17	2425-	2439	2432.29	608.78	1.36	4.35E+001	43.82	1.88E+001
F	18	5824-	5847	5835.14	1460.32	2.37	1.21E+002	23.31	1.47E+001

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: UNC-IMC-2198-S-P-3
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	0.961	1460.82*	10.66	5.40754E+000	1.13540E+000
U-234	0.999	53.20	0.12		
		120.90*	0.04	7.36676E+001	4.06582E+001
U-235	0.999	105.60	1.31		
		109.19	1.66		
		143.76*	10.96	1.71694E+000	6.20912E-001
		163.36*	5.08	1.67813E+000	4.50079E-001
		202.12	1.08		
		205.32*	5.02	1.27444E+000	3.66930E-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	0.961	5.407545E+000	1.135395E+000
U-234	0.999	7.366755E+001	4.065817E+001
U-235	0.999	1.484406E+000	2.585638E-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 8:04:44 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	16.49	1.9935E-001	39.48		
F	2	46.70	1.1109E-001	44.80		
M	3	75.07	8.1815E-002	20.01		
m	4	77.28	4.5963E-002	28.06		
F	5	84.56	1.2096E-001	13.59		
F	6	90.17	6.0810E-002	22.60		
F	7	93.46	8.9653E-002	73.27	Tol.	TH-234
F	9	138.00	1.8310E-002	145.04		
F	12	185.73	7.6272E-001	9.85		
F	14	238.57	6.5989E-002	57.49		
F	15	295.11	2.6082E-002	35.44		
F	16	351.64	3.8202E-002	76.66		
F	17	608.78	2.4146E-002	100.82		

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 M D A R E P O R T *****
****

Detector Name: 8566
Sample Geometry: cylinder
Sample Title: UNC-IMC-2198-S-P-3
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	9.775E-001	9.77E-001	5.408E+000	4.285E-00
	PA-234	742.81	0.11	9.082E+001	1.34E+001	-3.399E+001	4.202E+00
		766.42	0.32	3.680E+001		9.595E+000	1.723E+00
		1001.03	0.84	1.338E+001		-2.187E+000	6.133E+00
	TH-234	63.29	3.70	1.955E+000	1.95E+000	9.455E-001	9.447E-00
		92.38	2.13	3.240E+000		7.805E+000	1.580E+00
		92.80	2.10	3.152E+000		4.438E+000	1.536E+00
		112.81	0.21	2.288E+001		-2.509E+001	1.106E+00
+	U-234	53.20	0.12	7.784E+001	7.78E+001	1.323E+002	3.758E+00
		120.90*	0.04	8.330E+001		7.367E+001	3.935E+00
+	U-235	105.60	1.31	3.654E+000	3.27E-001	-5.372E+000	1.765E+00
		109.19	1.66	3.055E+000		-2.997E+000	1.479E+00
		143.76*	10.96	3.273E-001		1.717E+000	1.560E-00
		163.36*	5.08	6.196E-001		1.678E+000	2.923E-00
		202.12	1.08	4.770E+000		-4.384E-001	2.290E+00
		205.32*	5.02	6.642E-001		1.274E+000	3.115E-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

****
**** 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 ***
****

==========
Analysis using Key Line Activities
==========

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	^	5.41E+000	20.997			
U-234	120.9		7.37E+001	******			
U-235	143.8	^	1.72E+000	36.164	1.000[51.143]	4.51	-0.900
	163.4		1.68E+000	26.820	0.977[45.024]		[1.884]
	205.3		1.27E+000	28.792	0.742[46.225]		