
***** 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 8:10:56 AM

Sample Title : UNC-IMC-2198-S-P-6

Sample Description :

Sample Identification : IMC-2198-S-P-6

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 : 5.880E+002 grams

Sample Taken On : 4/10/2017 12:00:00 AM

Acquisition Started : 4/21/2017 9:22:45 AM

Live Time : 1800.0 seconds

Real Time : 1800.7 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-6

***** 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-6

Peak Analysis Performed on: 5/4/2017 8:10:51 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-	72	65.17	16.42	0.87	6.35E+002	169.05	3.19E+002
F	2	73-	83	76.96	19.37	0.74	2.05E+002	27.92	1.71E+002
F	3	98-	106	103.11	25.91	0.57	1.71E+002	97.53	1.42E+002
F	4	205-	217	212.94	53.40	0.75	2.60E+002	109.29	2.62E+002
M	5	281-	315	290.86	72.90	0.84	1.44E+002	71.61	5.11E+002
m	6	281-	315	299.56	75.07	0.84	3.52E+002	154.91	5.03E+002
m	7	281-	315	308.33	77.27	0.85	1.46E+002	70.31	4.94E+002
F	8	333-	343	337.31	84.52	0.78	5.60E+002	49.04	4.03E+002
F	9	355-	365	359.43	90.06	0.66	2.36E+002	37.42	3.54E+002
F	10	365-	379	373.46	93.57	0.73	3.99E+002	148.58	4.75E+002
F	11	430-	443	436.45	109.33	0.78	1.71E+002	142.07	4.11E+002
F	12	477-	488	482.54	120.86	0.76	1.02E+002	50.56	3.09E+002
F	13	568-	585	574.46	143.87	0.85	8.79E+002	58.30	4.01E+002
F	14	648-	663	652.53	163.40	0.90	3.89E+002	41.64	2.76E+002
F	15	735-	750	741.77	185.73	0.93	3.90E+003	115.87	2.28E+002
M	16	802-	828	807.40	202.16	0.93	6.73E+001	19.93	7.50E+001
m	17	802-	828	819.88	205.28	0.94	3.45E+002	36.17	8.40E+001
F	18	943-	959	952.73	238.53	0.95	2.10E+002	45.92	1.38E+002
F	19	1174-	1185	1178.89	295.12	1.11	5.35E+001	17.75	4.44E+001
F	20	1400-	1412	1405.15	351.74	1.20	8.45E+001	20.98	4.42E+001
F	21	2321-	2336	2328.22	582.73	1.27	4.26E+001	48.49	2.93E+001
F	22	2425-	2442	2433.09	608.98	1.23	6.95E+001	51.41	2.70E+001
F	23	5822-	5850	5835.46	1460.40	2.86	2.57E+002	32.24	6.44E+000
F	24	7039-	7054	7046.28	1763.40	1.46	2.48E+001	10.35	2.40E+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: UNC-IMC-2198-S-P-6
 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	0.972	1460.82*	10.66	8.99221E+000	1.36354E+000
U-234	0.995	53.20*	0.12	2.44887E+002	1.18595E+002
		120.90*	0.04	1.48869E+002	8.97926E+001
U-235	0.913	105.60	1.31		
		109.19*	1.66	5.31452E+000	4.62114E+000
		143.76*	10.96	4.21709E+000	8.78971E-001
		163.36*	5.08	4.23467E+000	9.12115E-001
		202.12*	1.08	3.91783E+000	1.32341E+000
		205.32*	5.02	4.36746E+000	8.30385E-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	0.972	8.992210E+000	1.363535E+000
U-234	0.995	1.838555E+002	7.158798E+001
U-235	0.913	4.243321E+000	4.680683E-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 8:10:51 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	16.42	3.5275E-001	26.62		
F	2	19.37	1.1401E-001	13.60		
F	3	25.91	9.5109E-002	56.97		
M	5	72.90	7.9781E-002	49.86		
m	6	75.07	1.9564E-001	43.99		
m	7	77.27	8.1027E-002	48.20		
F	8	84.52	3.1136E-001	8.75		
F	9	90.06	1.3115E-001	15.85		
F	10	93.57	2.2162E-001	37.25	Tol.	TH-234
F	15	185.73	2.1639E+000	2.97		
F	18	238.53	1.1689E-001	21.82		
F	19	295.12	2.9707E-002	33.19		
F	20	351.74	4.6921E-002	24.84		
F	21	582.73	2.3663E-002	113.85		
F	22	608.98	3.8617E-002	73.96		
F	24	1763.40	1.3763E-002	41.77		

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-6
 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	5.671E-001	5.67E-001	8.992E+000	2.362E-00
	PA-234	742.81	0.11	8.352E+001	1.22E+001	-2.765E+001	3.904E+00
		766.42	0.32	2.749E+001		1.590E+001	1.280E+00
		1001.03	0.84	1.217E+001		-8.809E+000	5.642E+00
	TH-234	63.29	3.70	2.453E+000	2.45E+000	-5.637E-002	1.196E+00
		92.38	2.13	4.383E+000		1.907E+001	2.156E+00
		92.80	2.10	4.199E+000		-3.803E-001	2.064E+00
		112.81	0.21	3.109E+001		4.901E+000	1.521E+00
+	U-234	53.20*	0.12	9.174E+001	9.17E+001	2.449E+002	4.460E+00
		120.90*	0.04	1.378E+002		1.489E+002	6.690E+00
+	U-235	105.60	1.31	5.089E+000	5.75E-001	5.840E-001	2.491E+00
		109.19*	1.66	3.878E+000		5.315E+000	1.897E+00
		143.76*	10.96	5.826E-001		4.217E+000	2.848E-00
		163.36*	5.08	1.060E+000		4.235E+000	5.151E-00
		202.12*	1.08	2.505E+000		3.918E+000	1.174E+00
		205.32*	5.02	5.746E-001		4.367E+000	2.702E-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-2198\UNC-IMC-219

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]
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K-40	1460.8	^	8.99E+000	15.164			
U-234	53.2	^	2.45E+002	48.428	1.000[68.488]	2.41	-0.606
	120.9		1.49E+002	60.317	0.608[77.352]		[1.259]
U-235	109.2		5.31E+000	86.953	1.260[89.416]	0.56	-0.108
	143.8	^	4.22E+000	20.843	1.000[29.477]		[0.906]
	163.4		4.23E+000	21.539	1.004[29.973]		
	202.1		3.92E+000	33.779	0.929[39.692]		
	205.3		4.37E+000	19.013	1.036[28.212]		