
***** 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 8:14:16 AM

Sample Title : UNC-IMC-2198-S-P-7

Sample Description :

Sample Identification : IMC-2198-S-P-7

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 : 3.077E+002 grams

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

Acquisition Started : 4/21/2017 11:50:30 AM

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-7

***** 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-7

Peak Analysis Performed on: 5/4/2017 8:14:10 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	99-	109	102.75	25.82	0.64	7.71E+001	18.20	6.60E+001
F	2	179-	193	186.37	46.75	0.84	1.28E+002	79.26	1.23E+002
F	3	207-	217	212.89	53.38	0.75	6.74E+001	41.26	1.01E+002
M	4	286-	314	291.10	72.96	0.69	7.03E+001	20.41	1.32E+002
m	5	286-	314	299.72	75.11	0.69	1.93E+002	28.67	1.63E+002
m	6	286-	314	308.13	77.22	0.70	9.68E+001	22.81	1.67E+002
F	7	331-	344	337.25	84.51	0.83	1.97E+002	29.80	2.19E+002
F	8	354-	364	359.53	90.08	0.66	9.50E+001	22.89	1.23E+002
F	9	364-	379	372.71	93.38	0.80	1.39E+002	26.64	2.24E+002
F	10	477-	488	483.03	120.99	0.78	4.37E+001	61.69	9.00E+001
F	11	567-	580	574.35	143.84	0.84	2.68E+002	31.60	9.98E+001
F	12	649-	665	652.50	163.40	0.82	1.02E+002	22.42	1.04E+002
F	13	735-	749	741.81	185.75	0.93	1.14E+003	63.32	1.03E+002
F	14	816-	826	820.11	205.34	0.84	9.17E+001	21.11	5.09E+001
F	15	947-	960	952.67	238.51	1.01	9.82E+001	21.67	6.30E+001
F	16	1400-	1414	1405.23	351.76	1.26	5.21E+001	16.79	3.30E+001
F	17	2425-	2440	2433.24	609.02	1.53	4.67E+001	57.44	1.47E+001
F	18	5824-	5847	5835.45	1460.40	2.47	1.32E+002	23.81	1.20E+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-7
 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	7.19505E+000	1.43562E+000
U-234	0.996	53.20*	0.12	6.92029E+001	4.55357E+001
		120.90*	0.04	8.55431E+001	1.24153E+002
U-235	1.000	105.60	1.31		
		109.19	1.66		
		143.76*	10.96	1.76350E+000	4.05856E-001
		163.36*	5.08	1.54099E+000	4.45752E-001
		202.12	1.08		
		205.32*	5.02	1.65751E+000	4.63200E-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	7.195046E+000	1.435618E+000
U-234	0.996	7.114036E+001	4.275093E+001
U-235	1.000	1.661128E+000	2.518595E-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 8:14:10 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	25.82	4.2829E-002	23.60		
F	2	46.75	7.1238E-002	61.81		
M	4	72.96	3.9054E-002	29.04		
m	5	75.11	1.0711E-001	14.87		
m	6	77.22	5.3797E-002	23.55		
F	7	84.51	1.0929E-001	15.15		
F	8	90.08	5.2762E-002	24.10		
F	9	93.38	7.7326E-002	19.14		
F	13	185.75	6.3077E-001	5.58		
F	15	238.51	5.4534E-002	22.08		
F	16	351.76	2.8937E-002	32.24		
F	17	609.02	2.5945E-002	122.99		

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-7
 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	1.097E+000	1.10E+000	7.195E+000	4.748E-00
	PA-234	742.81	0.11	1.156E+002	1.73E+001	-6.712E+001	5.371E+00
		766.42	0.32	4.339E+001		1.124E+001	2.028E+00
		1001.03	0.84	1.733E+001		2.129E+000	7.988E+00
	TH-234	63.29	3.70	1.852E+000	1.85E+000	4.797E-001	8.907E-00
		92.38	2.13	3.463E+000		8.848E+000	1.687E+00
		92.80	2.10	3.334E+000		5.996E-001	1.622E+00
		112.81	0.21	2.305E+001		-3.770E+001	1.109E+00
+	U-234	53.20*	0.12	5.987E+001	5.99E+001	6.920E+001	2.855E+00
		120.90*	0.04	1.018E+002		8.554E+001	4.826E+00
+	U-235	105.60	1.31	3.908E+000	3.77E-001	-4.103E+000	1.884E+00
		109.19	1.66	3.285E+000		-5.456E-001	1.587E+00
		143.76*	10.96	3.766E-001		1.764E+000	1.794E-00
		163.36*	5.08	9.415E-001		1.541E+000	4.502E-00
		202.12	1.08	6.063E+000		-6.500E+000	2.919E+00
		205.32*	5.02	7.024E-001		1.658E+000	3.268E-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	^	7.20E+000	19.953			
U-234	53.2	^	6.92E+001	65.800	1.000[93.056]	-1.03	0.258
	120.9		8.55E+001	145.13	1.236[159.35]		[2.248]
U-235	143.8	^	1.76E+000	23.014	1.000[32.547]	0.66	-0.140
	163.4		1.54E+000	28.926	0.874[36.965]		[1.359]
	205.3		1.66E+000	27.946	0.940[36.202]		