
***** 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-1483\UNC-IMC-148

Report Generated On : 5/4/2017 8:35:32 AM

Sample Title : UNC-IMC-1483-S-P-5
Sample Description :
Sample Identification : IMC-1483-S-P-5
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 : 2.555E+002 grams

Sample Taken On : 4/10/2017 12:00:00 AM
Acquisition Started : 4/25/2017 9:41:05 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-1483-S-P-5

***** 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-1483-S-P-5

Peak Analysis Performed on: 5/4/2017 8:35:28 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	103.46	26.00	0.54	4.57E+001	31.28	7.98E+001
F	2	182-	196	186.57	46.80	0.64	6.17E+001	17.25	7.50E+001
F	3	210-	217	213.29	53.49	0.48	2.57E+001	14.94	5.33E+001
F	4	295-	303	299.92	75.16	0.73	1.20E+002	85.46	1.02E+002
F	5	330-	344	337.43	84.55	0.91	1.08E+002	80.97	1.28E+002
F	6	568-	581	574.35	143.84	0.84	1.28E+002	69.64	7.70E+001
F	7	647-	657	652.40	163.37	0.75	5.96E+001	58.32	4.68E+001
F	8	733-	748	741.78	185.74	0.92	6.44E+002	47.96	6.40E+001
F	9	815-	825	820.11	205.34	0.87	6.14E+001	17.86	4.54E+001
F	10	947-	959	952.99	238.59	0.89	5.71E+001	17.27	4.23E+001
F	11	1400-	1411	1405.55	351.84	0.99	4.09E+001	15.21	2.52E+001
F	12	2032-	2042	2037.48	509.98	0.96	2.37E+001	14.06	3.03E+001
F	13	5825-	5846	5835.20	1460.34	2.36	1.01E+002	20.76	9.78E+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-1483-S-P-5
 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	0.963	1460.82*	10.66	7.03882E+000	1.56049E+000
U-234	0.990	53.20*	0.12	3.09357E+001	1.94379E+001
		120.90	0.04		
U-235	1.000	105.60	1.31		
		109.19	1.66		
		143.76*	10.96	1.04911E+000	6.06064E-001
		163.36*	5.08	1.12621E+000	1.12207E+000
		202.12	1.08		
		205.32*	5.02	1.38760E+000	4.59721E-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	0.963	7.038820E+000	1.560486E+000
U-234	0.990	3.093575E+001	1.943794E+001
U-235	1.000	1.250710E+000	3.481900E-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 8:35:28 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	26.00	2.5388E-002	68.45		
F 2	46.80	3.4299E-002	27.94		
F 4	75.16	6.6746E-002	71.13		
F 5	84.55	5.9967E-002	75.02		
F 8	185.74	3.5754E-001	7.45		
F 10	238.59	3.1727E-002	30.24		
F 11	351.84	2.2711E-002	37.20		
F 12	509.98	1.3181E-002	59.27		

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-1483-S-P-5
 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	1.252E+000	1.25E+000	7.039E+000	5.322E-00
	PA-234	742.81	0.11	1.288E+002	2.07E+001	-6.879E+001	5.921E+00
		766.42	0.32	5.343E+001		3.312E+001	2.492E+00
		1001.03	0.84	2.066E+001		1.152E+000	9.468E+00
	TH-234	63.29	3.70	1.811E+000	1.81E+000	1.222E+000	8.638E-00
		92.38	2.13	3.103E+000		4.947E+000	1.497E+00
		92.80	2.10	3.010E+000		9.777E-001	1.450E+00
		112.81	0.21	2.374E+001		-2.467E+001	1.133E+00
+	U-234	53.20*	0.12	4.736E+001	4.74E+001	3.094E+001	2.206E+00
		120.90	0.04	1.447E+002		3.837E+001	6.910E+00
+	U-235	105.60	1.31	3.944E+000	4.14E-001	3.183E+000	1.886E+00
		109.19	1.66	3.229E+000		-1.470E+000	1.546E+00
		143.76*	10.96	4.137E-001		1.049E+000	1.958E-00
		163.36*	5.08	7.063E-001		1.126E+000	3.276E-00
		202.12	1.08	6.626E+000		-8.813E-001	3.173E+00
		205.32*	5.02	8.330E-001		1.388E+000	3.859E-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-1483\UNC-IMC-148

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	^	7.04E+000	22.170			
U-234	53.2	^	3.09E+001	62.833			
U-235	143.8	^	1.05E+000	57.769	1.000[81.698]	-3.97	0.798
	163.4		1.13E+000	99.633	1.073[115.16]		[2.899]
	205.3		1.39E+000	33.131	1.323[66.595]		