
***** 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 8:33:43 AM

Sample Title : UNC-IMC-1483-S-P-3

Sample Description : 1513-63-3

Sample Identification : IMC-1483-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 : 5.892E+002 grams

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

Acquisition Started : 4/25/2017 8:26:54 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-1483-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-1483-S-P-3

Peak Analysis Performed on: 5/4/2017 8:33:38 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	58-	70	65.17	16.42	0.86	5.96E+002	142.37	2.93E+002
F	2	98-	110	103.01	25.89	0.65	1.30E+002	27.06	2.02E+002
F	3	202-	220	213.10	53.44	0.68	2.78E+002	104.29	3.52E+002
M	4	286-	312	291.11	72.96	0.72	1.94E+002	34.89	3.93E+002
m	5	286-	312	299.84	75.14	0.72	3.43E+002	42.38	5.15E+002
m	6	286-	312	308.23	77.24	0.73	1.40E+002	32.95	5.20E+002
F	7	331-	343	337.24	84.50	0.81	6.73E+002	52.48	4.46E+002
F	8	353-	365	359.85	90.16	0.74	2.60E+002	40.56	5.05E+002
F	9	367-	378	373.33	93.53	0.82	3.39E+002	150.58	3.80E+002
F	10	429-	442	435.54	109.10	1.07	1.88E+002	148.83	4.06E+002
F	11	478-	487	483.62	121.13	0.22	6.67E+001	31.86	2.88E+002
F	12	569-	583	574.62	143.91	0.86	8.69E+002	163.24	3.38E+002
F	13	646-	659	652.78	163.47	0.79	3.35E+002	39.51	2.35E+002
F	14	735-	752	741.97	185.78	0.90	3.85E+003	115.62	2.07E+002
M	15	803-	829	807.70	202.23	1.01	5.60E+001	26.39	6.93E+001
m	16	803-	829	820.05	205.32	1.01	3.46E+002	109.35	6.96E+001
F	17	947-	958	953.18	238.64	0.90	1.83E+002	29.94	1.01E+002
F	18	1173-	1184	1179.42	295.25	0.93	3.74E+001	16.50	4.80E+001
F	19	1345-	1356	1350.38	338.04	0.84	4.28E+001	45.26	3.84E+001
F	20	1398-	1416	1405.34	351.79	1.30	1.15E+002	62.81	3.80E+001
F	21	2425-	2440	2432.90	608.93	1.13	5.27E+001	17.57	3.33E+001
F	22	5825-	5850	5837.25	1460.85	2.26	2.32E+002	30.58	1.01E+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-1483-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	1.000	1460.82*	10.66	7.88884E+000	1.23640E+000
U-234	0.991	53.20*	0.12	2.23455E+002	9.96552E+001
		120.90*	0.04	8.92622E+001	5.24379E+001
U-235	0.911	105.60	1.31		
		109.19*	1.66	5.33543E+000	4.42256E+000
		143.76*	10.96	3.85300E+000	1.05023E+000
		163.36*	5.08	3.39121E+000	7.49096E-001
		202.12*	1.08	3.05364E+000	1.52194E+000
		205.32*	5.02	4.10624E+000	1.45199E+000

* = 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	1.000	7.888836E+000	1.236398E+000
U-234	0.991	1.183608E+002	4.640560E+001
U-235	0.911	3.586359E+000	5.237200E-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 8:33:38 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	3.3114E-001	23.89		
F	2	25.89	7.2070E-002	20.86		
M	4	72.96	1.0791E-001	17.96		
m	5	75.14	1.9059E-001	12.35		
m	6	77.24	7.7646E-002	23.58		
F	7	84.50	3.7363E-001	7.80		
F	8	90.16	1.4469E-001	15.57		
F	9	93.53	1.8809E-001	44.48		
F	14	185.78	2.1386E+000	3.00		
F	17	238.64	1.0186E-001	16.33		
F	18	295.25	2.0790E-002	44.09		
F	19	338.04	2.3786E-002	105.72		
F	20	351.79	6.4041E-002	54.48		
F	21	608.93	2.9260E-002	33.37		

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-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	6.472E-001	6.47E-001	7.889E+000	2.776E-00
	PA-234	742.81	0.11	7.391E+001	1.16E+001	1.373E+000	3.435E+00
		766.42	0.32	2.787E+001		6.032E+000	1.303E+00
		1001.03	0.84	1.162E+001		5.789E+000	5.386E+00
	TH-234	63.29	3.70	2.219E+000	2.22E+000	1.354E+000	1.083E+00
		92.38	2.13	3.964E+000		1.337E+001	1.951E+00
		92.80	2.10	3.832E+000		8.995E+000	1.884E+00
		112.81	0.21	2.832E+001		3.144E+001	1.386E+00
+	U-234	53.20*	0.12	1.034E+002	1.03E+002	2.235E+002	5.062E+00
		120.90*	0.04	1.156E+002		8.926E+001	5.601E+00
+	U-235	105.60	1.31	4.639E+000	4.66E-001	3.666E+000	2.270E+00
		109.19*	1.66	3.507E+000		5.335E+000	1.715E+00
		143.76*	10.96	4.662E-001		3.853E+000	2.271E-00
		163.36*	5.08	8.720E-001		3.391E+000	4.223E-00
		202.12*	1.08	2.260E+000		3.054E+000	1.056E+00
		205.32*	5.02	4.927E-001		4.106E+000	2.303E-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	^	7.89E+000	15.673			
U-234	53.2	^	2.23E+002	44.597	1.000[63.070]	4.44	-1.118
	120.9		8.93E+001	58.746	0.399[73.756]		[1.182]
U-235	109.2		5.34E+000	82.890	1.385[87.257]	1.63	-0.327
	143.8	^	3.85E+000	27.257	1.000[38.548]		[1.180]
	163.4		3.39E+000	22.089	0.880[35.084]		
	202.1		3.05E+000	49.840	0.793[56.807]		
	205.3		4.11E+000	35.361	1.066[44.647]		