



October 03, 2016

Ms. Laurie Losey
MJW Technical Services
15 Hazelwood Drive
Suite 112
Buffalo, New York 14228

Re: Soil Radioisotopes
Work Order: 405245

Dear Ms. Losey:

GEL Laboratories, LLC (GEL) appreciates the opportunity to provide the enclosed analytical results for the sample(s) we received on December 21, 2015. This original data report has been prepared and reviewed in accordance with GEL's standard operating procedures.

Our policy is to provide high quality, personalized analytical services to enable you to meet your analytical needs on time every time. We trust that you will find everything in order and to your satisfaction. If you have any questions, please do not hesitate to call me at (843) 556-8171, ext. 4422.

Sincerely,

Jake Crook
Project Manager

Purchase Order: GELP15-0894
Chain of Custody: NYSERDA-20
Enclosures



MJW Technical Services
Soil Radioisotopes
SDG: 405245

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Case Narrative

**Case Narrative
for
MJW Technical Services
SDG: 405245**

October 03, 2016

Laboratory Identification:

GEL Laboratories LLC
2040 Savage Road
Charleston, South Carolina 29407
(843) 556-8171

Summary

Sample Receipt The samples arrived at GEL Laboratories LLC, Charleston, South Carolina on December 21, 2015 for analysis. The samples were delivered with proper chain of custody documentation and signatures. All sample containers arrived without any visible signs of tampering or breakage. There are no additional comments concerning sample receipt.

Sample Identification The laboratory received the following samples:

<u>Laboratory ID</u>	<u>Client ID</u>
405245001	HO.1.1
405245002	HO.1.2
405245003	HO.1.5
405245004	HO.1.6
405245005	HO.2.1
405245006	HO.2.2
405245007	HO.3.1
405245008	HO.3.2
405245009	HO.4.1
405245010	HO.4.2
405245011	HO.5.1
405245012	HO.5.2
405245013	REACH7.1.1
405245014	REACH7.1.2
405245015	REACH21.1.1
405245016	REACH21.1.2

Case Narrative

Sample analyses were conducted using methodology as outlined in GEL Laboratories, LLC (GEL) Standard Operating Procedures. Any technical or administrative problems during analysis, data review, and reduction are contained in the analytical case narratives in the enclosed data package.

Data Package

The enclosed data package contains the following sections: General Narrative, Chain of Custody and Supporting Documentation, and data from the following fractions: Radiochemistry.

A handwritten signature in black ink that reads "Jake W. Crook". The signature is written in a cursive style with a large initial 'J'.

Jake Crook
Project Manager

List of current GEL Certifications as of 03 October 2016

State	Certification
Alaska	UST-0110
Arkansas	88-0651
CLIA	42D0904046
California	2940
Colorado	SC00012
Connecticut	PH-0169
Delaware	SC00012
DoD ELAP/ ISO17025 A2LA	2567.01
Florida NELAP	E87156
Foreign Soils Permit	P330-15-00283, P330-15-00253
Georgia	SC00012
Georgia SDWA	967
Hawaii	SC00012
Idaho Chemistry	SC00012
Idaho Radiochemistry	SC00012
Illinois NELAP	200029
Indiana	C-SC-01
Kansas NELAP	E-10332
Kentucky SDWA	90129
Kentucky Wastewater	90129
Louisiana NELAP	03046 (AI33904)
Louisiana SDWA	LA160006
Maryland	270
Massachusetts	M-SC012
Michigan	9976
Mississippi	SC00012
Nebraska	NE-OS-26-13
Nevada	SC000122016-1
New Hampshire NELAP	205415
New Jersey NELAP	SC002
New Mexico	SC00012
New York NELAP	11501
North Carolina	233
North Carolina SDWA	45709
North Dakota	R-158
Oklahoma	9904
Pennsylvania NELAP	68-00485
S.Carolina Radchem	10120002
South Carolina Chemistry	10120001
Tennessee	TN 02934
Texas NELAP	T104704235-16-11
Utah NELAP	SC000122016-20
Vermont	VT87156
Virginia NELAP	460202
Washington	C780
West Virginia	997404

Chain of Custody and Supporting Documentation

Data Review Qualifier Definitions

Data Review Qualifier Definitions

Qualifier	Explanation
*	A quality control analyte recovery is outside of specified acceptance criteria
**	Analyte is a surrogate compound
<	Result is less than value reported
>	Result is greater than value reported
^	RPD of sample and duplicate evaluated using +/-RL. Concentrations are <5X the RL
A	The TIC is a suspected aldol-condensation product
B	Target analyte was detected in the associated blank
B	Metals-Either presence of analyte detected in the associated blank, or MDL/IDL < sample value < PQL
BD	Results are either below the MDC or tracer recovery is low
C	Analyte has been confirmed by GC/MS analysis
D	Results are reported from a diluted aliquot of the sample
d	5-day BOD-The 2:1 depletion requirement was not met for this sample
E	Organics-Concentration of the target analyte exceeds the instrument calibration range
E	Metals-%difference of sample and SD is >10%. Sample concentration must meet flagging criteria
H	Analytical holding time was exceeded
h	Preparation or preservation holding time was exceeded
J	Value is estimated
N	Metals-The Matrix spike sample recovery is not within specified control limits
N	Organics-Presumptive evidence based on mass spectral library search to make a tentative identification of the analyte (TIC). Quantitation is based on nearest internal standard response factor
N/A	Spike recovery limits do not apply. Sample concentration exceeds spike concentration by 4X or more
ND	Analyte concentration is not detected above the reporting limit
UI	Gamma Spectroscopy-Uncertain identification
X	Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
Y	QC Samples were not spiked with this compound
Z	Paint Filter Test-Particulates passed through the filter, however no free liquids were observed.

- P Organics-The concentrations between the primary and confirmation columns/detectors is >40% difference.
For HPLC, the difference is >70%.
- U Analyte was analyzed for, but not detected above the MDL, MDA, or LOD.

Radiological Analysis

Case Narrative

Radiochemistry
Technical Case Narrative
MJW Technical Services (MJWC)
SDG #: 405245

Product: Gamma with Ingrowth

Analytical Method: DOE HASL 300, 4.5.2.3/Ga-01-R

Analytical Procedure: GL-RAD-A-013 REV# 25

Analytical Batch: 1596387

Preparation Method: Dry Soil Prep

Preparation Procedure: GL-RAD-A-021 REV# 20

Preparation Batch: 1596281

The following samples were analyzed using the above methods and analytical procedure(s).

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
405245001	HO.1.1
405245002	HO.1.2
405245003	HO.1.5
405245004	HO.1.6
405245005	HO.2.1
405245006	HO.2.2
405245007	HO.3.1
405245008	HO.3.2
405245009	HO.4.1
405245010	HO.4.2
405245011	HO.5.1
405245012	HO.5.2
405245013	REACH7.1.1
405245014	REACH7.1.2
405245015	REACH21.1.1
405245016	REACH21.1.2
1203621685	Method Blank (MB)
1203621686	405245001(HO.1.1) Sample Duplicate (DUP)
1203621687	Laboratory Control Sample (LCS)

The samples in this SDG were analyzed on a "dry weight" basis.

Data Summary:

All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable, with the following exceptions.

Technical Information

Holding Time

Refer to Miscellaneous Information section.

Miscellaneous Information

Samples 405245 001, 002, 003, 004, 005, 006, 007, 008, 009, 010, 011, 012, 013, 014, 015, 016, and 1203621686 (duplicate) were logged out of the holding period. Samples were analyzed as soon as possible. Reporting result.

Qualifier Information

Qualifier	Reason	Analyte	Sample	Client Sample
UI	Data rejected due to high counting uncertainty.	Bismuth-212	405245013	REACH7.1.1
		Protactinium-231	405245003	HO.1.5
			405245007	HO.3.1
UI	Data rejected due to high peak-width.	Bismuth-212	405245005	HO.2.1
		Protactinium-231	405245013	REACH7.1.1
			405245015	REACH21.1.1
		Tin-126	405245005	HO.2.1
		UI	Data rejected due to interference.	Protactinium-231
405245012	HO.5.2			
405245016	REACH21.1.2			
Tin-126	405245002			HO.1.2
	405245003			HO.1.5
	405245004			HO.1.6
	405245006			HO.2.2
	405245007			HO.3.1
	405245008			HO.3.2
	405245010			HO.4.2
	405245012			HO.5.2
	405245013			REACH7.1.1
405245014	REACH7.1.2			
405245016	REACH21.1.2			
1203621686	HO.1.1(405245001DUP)			
UI	Data rejected due to low abundance.	Actinium-227	405245011	HO.5.1
			405245013	REACH7.1.1

		Antimony-125	405245012	HO.5.2
		Bismuth-212	405245002	HO.1.2
			405245003	HO.1.5
			405245004	HO.1.6
			405245006	HO.2.2
			405245007	HO.3.1
			405245008	HO.3.2
			405245009	HO.4.1
			405245010	HO.4.2
			405245011	HO.5.1
			405245014	REACH7.1.2
			405245015	REACH21.1.1
			405245016	REACH21.1.2
		Cesium-137	405245013	REACH7.1.1
		Europium-154	405245015	REACH21.1.1
		Radium-228	405245003	HO.1.5
			405245009	HO.4.1
		Tin-126	405245015	REACH21.1.1
UI	Data rejected due to no valid peak.	Cesium-137	405245016	REACH21.1.2

Product: GFPC, Gross A/B, solid

Analytical Method: EPA 900.0/SW846 9310/SM 7110B Modified

Analytical Procedure: GL-RAD-A-001B REV# 17

Analytical Batch: 1597819

Preparation Method: Dry Soil Prep

Preparation Procedure: GL-RAD-A-021 REV# 20

Preparation Batch: 1596281

The following samples were analyzed using the above methods and analytical procedure(s).

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
405245001	HO.1.1
405245002	HO.1.2
405245003	HO.1.5
405245004	HO.1.6
405245005	HO.2.1
405245006	HO.2.2

405245007	HO.3.1
405245008	HO.3.2
405245009	HO.4.1
405245010	HO.4.2
405245011	HO.5.1
405245012	HO.5.2
405245013	REACH7.1.1
405245014	REACH7.1.2
405245015	REACH21.1.1
405245016	REACH21.1.2
1203625471	Method Blank (MB)
1203625472	405245003(HO.1.5) Sample Duplicate (DUP)
1203625473	405245003(HO.1.5) Matrix Spike (MS)
1203625474	405245003(HO.1.5) Matrix Spike Duplicate (MSD)
1203625475	Laboratory Control Sample (LCS)

The samples in this SDG were analyzed on a "dry weight" basis.

Data Summary:

All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable, with the following exceptions.

Technical Information

Holding Time

Refer to Miscellaneous Information section.

Gross Alpha/Beta Preparation Information

High hygroscopic salt content in evaporated samples can cause the sample mass to fluctuate due to moisture absorption. To minimize this interference, the salts are converted to oxides by heating the sample under a flame until a dull red color is obtained. The conversion to oxides stabilizes the sample weight and ensures that proper alpha/beta efficiencies are assigned for each sample. Volatile radioisotopes of carbon, hydrogen, technetium, polonium and cesium may be lost during sample heating.

Recounts

Sample 1203625474 (HO.1.5MSD) was recounted due to high recovery. The recount is reported.

Miscellaneous Information

1. Samples 405245001, 405245002, 405245003, 405245004, 405245005, 405245006, 405245007, 405245008, 405245009, 405245010, 405245011, 405245012, 405245013, 405245014, 405245015, 405245016, 1203625472, 1203625473, and 1203625474 were received within holding but analyzed out of holding. 1. Reporting results

Certification Statement

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless otherwise noted in the analytical case narrative.

GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Qualifier Definition Report for

MJWC001 MJW Technical Services
Client SDG: 405245 GEL Work Order: 405245


The Qualifiers in this report are defined as follows:

- * A quality control analyte recovery is outside of specified acceptance criteria
- ** Analyte is a Tracer compound
- H Analytical holding time was exceeded
- U Analyte was analyzed for, but not detected above the Lc.
- UI Gamma Spectroscopy--Uncertain identification
- h Preparation or preservation holding time was exceeded

Review/Validation

GEL requires all analytical data to be verified by a qualified data reviewer. In addition, all CLP-like deliverables receive a third level review of the fractional data package.

The following data validator verified the information presented in this data report:

Signature: 

Name: Theresa Austin

Date: 03 OCT 2016

Title: Group Leader

Sample Data Summary

GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Company : MJW Technical Services
 Address : 15 Hazelwood Drive
 Suite 112
 Buffalo, New York 14228
 Contact: Ms. Laurie Losey
 Project: Soil Radioisotopes

Report Date: October 3, 2016

Client Sample ID: HO.1.1
 Sample ID: 405245001
 Matrix: Soil
 Collect Date: 15-DEC-15
 Receive Date: 21-DEC-15
 Collector: Client
 Moisture: 15.8%

Project: MJWC00115
 Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	Lc	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
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Rad Gamma Spec Analysis

Gamma with Ingrowth "Dry Weight Corrected"

Actinium-227	HUh	-0.102	+/-0.238	0.400	0.183	+/-0.242		pCi/g			MXR1	10/03/16	0432	1596387	1
Antimony-125	HUh	0.0136	+/-0.0951	0.192	0.0855	+/-0.0953		pCi/g							
Bismuth-212	HUh	0.431	+/-0.522	1.12	0.500	+/-0.558		pCi/g							
Bismuth-214	Hh	0.916	+/-0.168	0.114	0.0498	+/-0.172		pCi/g							
Cesium-137	Hh	0.117	+/-0.0893	0.0608	0.0261	+/-0.0894	0.100	pCi/g							
Cobalt-60	HUh	0.00955	+/-0.0372	0.0825	0.0343	+/-0.0374		pCi/g							
Europium-154	HUh	0.0399	+/-0.107	0.238	0.101	+/-0.108		pCi/g							
Lead-212	Hh	0.732	+/-0.122	0.0956	0.0442	+/-0.128		pCi/g							
Lead-214	Hh	0.954	+/-0.186	0.106	0.047	+/-0.190		pCi/g							
Potassium-40	Hh	12.4	+/-1.49	0.597	0.235	+/-1.62		pCi/g							
Protactinium-231	HUh	0.158	+/-0.424	0.863	0.397	+/-0.432		pCi/g							
Radium-226	Hh	0.916	+/-0.168	0.114	0.0498	+/-0.172		pCi/g							
Radium-228	Hh	0.724	+/-0.282	0.219	0.0915	+/-0.284		pCi/g							
Thallium-208	Hh	0.291	+/-0.0707	0.0589	0.0257	+/-0.0718		pCi/g							
Tin-126	HUh	0.0412	+/-0.193	0.141	0.0665	+/-0.193		pCi/g							

Rad Gas Flow Proportional Counting

GFPC, Gross A/B, solid "Dry Weight Corrected"

Alpha	Hh	8.85	+/-3.18	3.98	1.74	+/-3.62	4.00	pCi/g			JXC9	09/26/16	1358	1597819	2
Beta	Hh	20.5	+/-2.69	2.73	1.27	+/-3.93	10.0	pCi/g							

The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
Dry Soil Prep	Dry Soil Prep GL-RAD-A-021	JXO1	09/08/16	1343	1596281

The following Analytical Methods were performed

Method	Description
1	DOE HASL 300, 4.5.2.3/Ga-01-R
2	EPA 900.0/SW846 9310/SM 7110B Modified

Surrogate/Tracer Recovery	Test	Batch ID	Recovery%	Acceptable Limits
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GEL LABORATORIES LLC

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Certificate of Analysis

Company : MJW Technical Services
Address : 15 Hazelwood Drive
Suite 112
Buffalo, New York 14228
Contact: Ms. Laurie Losey
Project: Soil Radioisotopes
Client Sample ID: HO.1.1
Sample ID: 405245001

Report Date: October 3, 2016

Project: MJWC00115
Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	Lc	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
Surrogate/Tracer	Recovery	Test										Batch ID	Recovery%	Acceptable Limits	

Notes:

The MDC is a sample specific MDC.
TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).

Column headers are defined as follows:

DF: Dilution Factor	Mtd.: Method
DL: Detection Limit	PF: Prep Factor
Lc/LC: Critical Level	RL: Reporting Limit
MDA: Minimum Detectable Activity	TPU: Total Propagated Uncertainty
MDC: Minimum Detectable Concentration	

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Certificate of Analysis

Company : MJW Technical Services
 Address : 15 Hazelwood Drive
 Suite 112
 Buffalo, New York 14228

Report Date: October 3, 2016

Contact: Ms. Laurie Losey
 Project: Soil Radioisotopes

Client Sample ID: HO.1.2
 Sample ID: 405245002
 Matrix: Soil
 Collect Date: 15-DEC-15
 Receive Date: 21-DEC-15
 Collector: Client
 Moisture: 15.5%

Project: MJWC00115
 Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	Lc	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
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Rad Gamma Spec Analysis

Gamma with Ingrowth "Dry Weight Corrected"

Actinium-227	HUh	-0.00153	+/-0.182	0.337	0.154	+/-0.182		pCi/g			MXR1	10/03/16	0433	1596387	1
Antimony-125	HUh	0.0263	+/-0.0863	0.177	0.0799	+/-0.0871		pCi/g							
Bismuth-212	HUIh	0.00	+/-0.636	0.938	0.422	+/-0.674		pCi/g							
Bismuth-214	Hh	0.922	+/-0.158	0.110	0.049	+/-0.163		pCi/g							
Cesium-137	Hh	0.193	+/-0.0585	0.0546	0.0238	+/-0.0591	0.100	pCi/g							
Cobalt-60	HUh	-0.0313	+/-0.0364	0.0599	0.0242	+/-0.0391		pCi/g							
Europium-154	HUh	-0.00507	+/-0.0893	0.181	0.0751	+/-0.0893		pCi/g							
Lead-212	Hh	0.710	+/-0.101	0.0796	0.0368	+/-0.108		pCi/g							
Lead-214	Hh	0.973	+/-0.183	0.106	0.0481	+/-0.188		pCi/g							
Potassium-40	Hh	11.5	+/-1.36	0.472	0.183	+/-1.48		pCi/g							
Protactinium-231	HUh	-0.0503	+/-0.371	0.668	0.304	+/-0.372		pCi/g							
Radium-226	Hh	0.922	+/-0.158	0.110	0.049	+/-0.163		pCi/g							
Radium-228	Hh	0.715	+/-0.222	0.204	0.0874	+/-0.225		pCi/g							
Thallium-208	Hh	0.227	+/-0.0578	0.053	0.0234	+/-0.0586		pCi/g							
Tin-126	HUIh	0.00	+/-0.0706	0.0657	0.0306	+/-0.0721		pCi/g							

Rad Gas Flow Proportional Counting

GFPC, Gross A/B, solid "Dry Weight Corrected"

Alpha	Hh	9.14	+/-3.27	3.91	1.69	+/-3.79	4.00	pCi/g			JXC9	09/26/16	1359	1597819	2
Beta	Hh	15.2	+/-2.34	2.50	1.16	+/-3.17	10.0	pCi/g							

The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
Dry Soil Prep	Dry Soil Prep GL-RAD-A-021	JXO1	09/08/16	1343	1596281

The following Analytical Methods were performed

Method	Description
1	DOE HASL 300, 4.5.2.3/Ga-01-R
2	EPA 900.0/SW846 9310/SM 7110B Modified

Surrogate/Tracer Recovery	Test	Batch ID	Recovery%	Acceptable Limits
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Certificate of Analysis

Company : MJW Technical Services
Address : 15 Hazelwood Drive
Suite 112
Buffalo, New York 14228
Contact: Ms. Laurie Losey
Project: Soil Radioisotopes
Client Sample ID: HO.1.2
Sample ID: 405245002

Report Date: October 3, 2016

Project: MJWC00115
Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	Lc	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
Surrogate/Tracer Recovery	Test											Batch ID	Recovery%	Acceptable Limits	

Notes:

The MDC is a sample specific MDC.
TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).

Column headers are defined as follows:

DF: Dilution Factor	Mtd.: Method
DL: Detection Limit	PF: Prep Factor
Lc/LC: Critical Level	RL: Reporting Limit
MDA: Minimum Detectable Activity	TPU: Total Propagated Uncertainty
MDC: Minimum Detectable Concentration	

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Certificate of Analysis

Company : MJW Technical Services
 Address : 15 Hazelwood Drive
 Suite 112
 Buffalo, New York 14228

Report Date: October 3, 2016

Contact: Ms. Laurie Losey
 Project: Soil Radioisotopes

Client Sample ID: HO.1.5
 Sample ID: 405245003
 Matrix: Soil
 Collect Date: 15-DEC-15
 Receive Date: 21-DEC-15
 Collector: Client
 Moisture: 16.8%

Project: MJWC00115
 Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	Lc	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
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Rad Gamma Spec Analysis

Gamma with Ingrowth "Dry Weight Corrected"

Actinium-227	HUh	-0.0247	+/-0.225	0.406	0.184	+/-0.225		pCi/g			MXR1	10/03/16	0433	1596387	1
Antimony-125	HUh	-0.0427	+/-0.104	0.172	0.0754	+/-0.106		pCi/g							
Bismuth-212	HUIh	0.00	+/-0.562	1.31	0.595	+/-0.742		pCi/g							
Bismuth-214	Hh	0.494	+/-0.202	0.106	0.0454	+/-0.206		pCi/g							
Cesium-137	Hh	0.0702	+/-0.0581	0.0664	0.0288	+/-0.0584	0.100	pCi/g							
Cobalt-60	HUh	0.0242	+/-0.0344	0.0845	0.0348	+/-0.0362		pCi/g							
Europium-154	HUh	-0.024	+/-0.124	0.242	0.101	+/-0.125		pCi/g							
Lead-212	Hh	0.686	+/-0.132	0.108	0.0501	+/-0.145		pCi/g							
Lead-214	Hh	0.961	+/-0.188	0.338	0.163	+/-0.207		pCi/g							
Potassium-40	Hh	10.3	+/-1.49	0.665	0.264	+/-1.73		pCi/g							
Protactinium-231	HUIh	0.00	+/-0.665	0.776	0.350	+/-0.675		pCi/g							
Radium-226	Hh	0.494	+/-0.202	0.106	0.0454	+/-0.206		pCi/g							
Radium-228	HUIh	0.00	+/-0.341	0.468	0.216	+/-0.417		pCi/g							
Thallium-208	Hh	0.291	+/-0.0831	0.0544	0.0233	+/-0.0868		pCi/g							
Tin-126	HUIh	0.00	+/-0.140	0.0943	0.0432	+/-0.141		pCi/g							

Rad Gas Flow Proportional Counting

GFPC, Gross A/B, solid "Dry Weight Corrected"

Alpha	Hh	14.2	+/-3.88	3.89	1.65	+/-4.82	4.00	pCi/g			JXC9	09/26/16	1359	1597819	2
Beta	Hh	16.4	+/-2.82	3.45	1.63	+/-3.64	10.0	pCi/g							

The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
Dry Soil Prep	Dry Soil Prep GL-RAD-A-021	JXO1	09/08/16	1343	1596281

The following Analytical Methods were performed

Method	Description
1	DOE HASL 300, 4.5.2.3/Ga-01-R
2	EPA 900.0/SW846 9310/SM 7110B Modified

Surrogate/Tracer Recovery	Test	Batch ID	Recovery%	Acceptable Limits
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Certificate of Analysis

Company : MJW Technical Services
Address : 15 Hazelwood Drive
Suite 112
Buffalo, New York 14228
Contact: Ms. Laurie Losey
Project: Soil Radioisotopes
Client Sample ID: HO.1.5
Sample ID: 405245003

Report Date: October 3, 2016

Project: MJWC00115
Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	Lc	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.	
Surrogate/Tracer Recovery	Test													Batch ID	Recovery%	Acceptable Limits

Notes:

The MDC is a sample specific MDC.
TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).

Column headers are defined as follows:

DF: Dilution Factor	Mtd.: Method
DL: Detection Limit	PF: Prep Factor
Lc/LC: Critical Level	RL: Reporting Limit
MDA: Minimum Detectable Activity	TPU: Total Propagated Uncertainty
MDC: Minimum Detectable Concentration	

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Company : MJW Technical Services
 Address : 15 Hazelwood Drive
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Report Date: October 3, 2016

Contact: Ms. Laurie Losey
 Project: Soil Radioisotopes

Client Sample ID: HO.1.6
 Sample ID: 405245004
 Matrix: Soil
 Collect Date: 15-DEC-15
 Receive Date: 21-DEC-15
 Collector: Client
 Moisture: 14.9%

Project: MJWC00115
 Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	Lc	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
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Rad Gamma Spec Analysis

Gamma with Ingrowth "Dry Weight Corrected"

Actinium-227	HUh	0.0199	+/-0.205	0.409	0.188	+/-0.205		pCi/g			MXR1	10/03/16	0434	1596387	1
Antimony-125	HUh	-0.0875	+/-0.0936	0.160	0.0703	+/-0.102		pCi/g							
Bismuth-212	HUIh	0.00	+/-0.967	1.23	0.559	+/-1.08		pCi/g							
Bismuth-214	Hh	0.897	+/-0.193	0.0954	0.0408	+/-0.196		pCi/g							
Cesium-137	Hh	0.256	+/-0.0754	0.0559	0.0239	+/-0.0762	0.100	pCi/g							
Cobalt-60	HUh	0.0043	+/-0.031	0.0671	0.0271	+/-0.031		pCi/g							
Europium-154	HUh	-0.0493	+/-0.134	0.246	0.106	+/-0.136		pCi/g							
Lead-212	Hh	0.700	+/-0.111	0.0876	0.0404	+/-0.117		pCi/g							
Lead-214	Hh	0.854	+/-0.189	0.305	0.147	+/-0.192		pCi/g							
Potassium-40	Hh	11.6	+/-1.39	0.476	0.179	+/-1.51		pCi/g							
Protactinium-231	HUh	0.0641	+/-0.422	0.815	0.375	+/-0.423		pCi/g							
Radium-226	Hh	0.897	+/-0.193	0.0954	0.0408	+/-0.196		pCi/g							
Radium-228	Hh	0.871	+/-0.253	0.213	0.090	+/-0.257		pCi/g							
Thallium-208	Hh	0.193	+/-0.062	0.0592	0.0261	+/-0.0626		pCi/g							
Tin-126	HUIh	0.00	+/-0.114	0.104	0.0487	+/-0.114		pCi/g							

Rad Gas Flow Proportional Counting

GFPC, Gross A/B, solid "Dry Weight Corrected"

Alpha	Hh	13.7	+/-4.00	3.97	1.64	+/-4.82	4.00	pCi/g			JXC9	09/26/16	1359	1597819	2
Beta	Hh	13.0	+/-2.56	2.95	1.36	+/-3.16	10.0	pCi/g							

The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
Dry Soil Prep	Dry Soil Prep GL-RAD-A-021	JXO1	09/08/16	1343	1596281

The following Analytical Methods were performed

Method	Description
1	DOE HASL 300, 4.5.2.3/Ga-01-R
2	EPA 900.0/SW846 9310/SM 7110B Modified

Surrogate/Tracer Recovery	Test	Batch ID	Recovery%	Acceptable Limits
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Contact: Ms. Laurie Losey
Project: Soil Radioisotopes
Client Sample ID: HO.1.6
Sample ID: 405245004

Report Date: October 3, 2016

Project: MJWC00115
Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	Lc	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
Surrogate/Tracer Recovery	Test											Batch ID	Recovery%	Acceptable Limits	

Notes:

The MDC is a sample specific MDC.
TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).

Column headers are defined as follows:

DF: Dilution Factor	Mtd.: Method
DL: Detection Limit	PF: Prep Factor
Lc/LC: Critical Level	RL: Reporting Limit
MDA: Minimum Detectable Activity	TPU: Total Propagated Uncertainty
MDC: Minimum Detectable Concentration	

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Company : MJW Technical Services
 Address : 15 Hazelwood Drive
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Report Date: October 3, 2016

Contact: Ms. Laurie Losey
 Project: Soil Radioisotopes

Client Sample ID: HO.2.1
 Sample ID: 405245005
 Matrix: Soil
 Collect Date: 15-DEC-15
 Receive Date: 21-DEC-15
 Collector: Client
 Moisture: 20.8%

Project: MJWC00115
 Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	Lc	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
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Rad Gamma Spec Analysis

Gamma with Ingrowth "Dry Weight Corrected"

Actinium-227	HUh	0.000117	+/-0.214	0.401	0.186	+/-0.214		pCi/g			MXR1	10/03/16	0434	1596387	1
Antimony-125	HUh	0.0422	+/-0.105	0.197	0.0907	+/-0.107		pCi/g							
Bismuth-212	HUIh	0.00	+/-0.967	0.826	0.372	+/-0.971		pCi/g							
Bismuth-214	Hh	0.990	+/-0.180	0.120	0.0548	+/-0.185		pCi/g							
Cesium-137	Hh	0.107	+/-0.0573	0.0483	0.0211	+/-0.0574	0.100	pCi/g							
Cobalt-60	HUh	0.0126	+/-0.0406	0.0799	0.0353	+/-0.041		pCi/g							
Europium-154	HUh	-0.0362	+/-0.120	0.214	0.0946	+/-0.121		pCi/g							
Lead-212	Hh	1.22	+/-0.127	0.0976	0.0458	+/-0.142		pCi/g							
Lead-214	Hh	1.02	+/-0.179	0.122	0.0564	+/-0.184		pCi/g							
Potassium-40	Hh	18.2	+/-1.49	0.610	0.263	+/-1.76		pCi/g							
Protactinium-231	Hh	0.472	+/-0.482	0.913	0.428	+/-0.536		pCi/g							
Radium-226	Hh	0.990	+/-0.180	0.120	0.0548	+/-0.185		pCi/g							
Radium-228	Hh	1.11	+/-0.340	0.188	0.0814	+/-0.345		pCi/g							
Thallium-208	Hh	0.341	+/-0.0925	0.0546	0.0245	+/-0.0937		pCi/g							
Tin-126	HUIh	0.00	+/-0.199	0.148	0.070	+/-0.200		pCi/g							

Rad Gas Flow Proportional Counting

GFPC, Gross A/B, solid "Dry Weight Corrected"

Alpha	Hh	14.8	+/-4.05	3.90	1.62	+/-4.97	4.00	pCi/g			JXC9	09/26/16	1359	1597819	2
Beta	Hh	21.5	+/-2.77	2.51	1.15	+/-4.19	10.0	pCi/g							

The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
Dry Soil Prep	Dry Soil Prep GL-RAD-A-021	JXO1	09/08/16	1343	1596281

The following Analytical Methods were performed

Method	Description
1	DOE HASL 300, 4.5.2.3/Ga-01-R
2	EPA 900.0/SW846 9310/SM 7110B Modified

Surrogate/Tracer Recovery	Test	Batch ID	Recovery%	Acceptable Limits
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Report Date: October 3, 2016

Contact: Ms. Laurie Losey
Project: Soil Radioisotopes

Client Sample ID: HO.2.1
Sample ID: 405245005

Project: MJWC00115
Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	Lc	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
Surrogate/Tracer	Recovery	Test							Batch ID	Recovery%	Acceptable Limits				

Notes:

The MDC is a sample specific MDC.
TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).

Column headers are defined as follows:

DF: Dilution Factor	Mtd.: Method
DL: Detection Limit	PF: Prep Factor
Lc/LC: Critical Level	RL: Reporting Limit
MDA: Minimum Detectable Activity	TPU: Total Propagated Uncertainty
MDC: Minimum Detectable Concentration	

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Report Date: October 3, 2016

Contact: Ms. Laurie Losey
 Project: Soil Radioisotopes

Client Sample ID: HO.2.2
 Sample ID: 405245006
 Matrix: Soil
 Collect Date: 15-DEC-15
 Receive Date: 21-DEC-15
 Collector: Client
 Moisture: 18.6%

Project: MJWC00115
 Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	Lc	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
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Rad Gamma Spec Analysis

Gamma with Ingrowth "Dry Weight Corrected"

Actinium-227	HUh	0.105	+/-0.242	0.479	0.222	+/-0.247		pCi/g			MXR1	10/03/16	0434	1596387	1
Antimony-125	HUh	0.0228	+/-0.0901	0.181	0.0802	+/-0.0907		pCi/g							
Bismuth-212	HUIh	0.00	+/-0.952	1.46	0.677	+/-1.12		pCi/g							
Bismuth-214	Hh	0.979	+/-0.218	0.134	0.0599	+/-0.222		pCi/g							
Cesium-137	Hh	0.222	+/-0.0656	0.0703	0.031	+/-0.0663	0.100	pCi/g							
Cobalt-60	HUh	-0.0182	+/-0.0494	0.0908	0.0388	+/-0.0501		pCi/g							
Europium-154	HUh	0.0588	+/-0.106	0.236	0.100	+/-0.109		pCi/g							
Lead-212	Hh	1.12	+/-0.129	0.0991	0.046	+/-0.142		pCi/g							
Lead-214	Hh	1.35	+/-0.217	0.381	0.185	+/-0.224		pCi/g							
Potassium-40	Hh	19.8	+/-1.84	0.625	0.253	+/-2.10		pCi/g							
Protactinium-231	HUh	0.127	+/-0.495	0.957	0.444	+/-0.499		pCi/g							
Radium-226	Hh	0.979	+/-0.218	0.134	0.0599	+/-0.222		pCi/g							
Radium-228	Hh	1.02	+/-0.375	0.269	0.118	+/-0.378		pCi/g							
Thallium-208	Hh	0.455	+/-0.104	0.0555	0.024	+/-0.106		pCi/g							
Tin-126	HUIh	0.00	+/-0.120	0.140	0.0667	+/-0.121		pCi/g							

Rad Gas Flow Proportional Counting

GFPC, Gross A/B, solid "Dry Weight Corrected"

Alpha	Hh	19.1	+/-4.61	3.88	1.60	+/-6.05	4.00	pCi/g			JXC9	09/26/16	1359	1597819	2
Beta	Hh	25.6	+/-3.03	2.71	1.25	+/-4.72	10.0	pCi/g							

The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
Dry Soil Prep	Dry Soil Prep GL-RAD-A-021	JXO1	09/08/16	1343	1596281

The following Analytical Methods were performed

Method	Description
1	DOE HASL 300, 4.5.2.3/Ga-01-R
2	EPA 900.0/SW846 9310/SM 7110B Modified

Surrogate/Tracer Recovery	Test	Batch ID	Recovery%	Acceptable Limits
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Report Date: October 3, 2016

Contact: Ms. Laurie Losey
Project: Soil Radioisotopes

Client Sample ID: HO.2.2
Sample ID: 405245006

Project: MJWC00115
Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	Lc	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
Surrogate/Tracer Recovery	Test											Batch ID	Recovery%	Acceptable Limits	

Notes:
The MDC is a sample specific MDC.
TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).

Column headers are defined as follows:

DF: Dilution Factor	Mtd.: Method
DL: Detection Limit	PF: Prep Factor
Lc/LC: Critical Level	RL: Reporting Limit
MDA: Minimum Detectable Activity	TPU: Total Propagated Uncertainty
MDC: Minimum Detectable Concentration	

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Company : MJW Technical Services
 Address : 15 Hazelwood Drive
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Report Date: October 3, 2016

Contact: Ms. Laurie Losey
 Project: Soil Radioisotopes

Client Sample ID: HO.3.1
 Sample ID: 405245007
 Matrix: Soil
 Collect Date: 15-DEC-15
 Receive Date: 21-DEC-15
 Collector: Client
 Moisture: 14.9%

Project: MJWC00115
 Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	Lc	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
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Rad Gamma Spec Analysis

Gamma with Ingrowth "Dry Weight Corrected"

Actinium-227	HUh	-0.0737	+/-0.237	0.374	0.170	+/-0.240		pCi/g			MXR1	10/03/16	0435	1596387	1
Antimony-125	HUh	-0.0843	+/-0.100	0.177	0.0791	+/-0.107		pCi/g							
Bismuth-212	HUIh	0.00	+/-0.961	1.27	0.584	+/-1.27		pCi/g							
Bismuth-214	Hh	0.727	+/-0.187	0.121	0.0537	+/-0.189		pCi/g							
Cesium-137	Hh	0.174	+/-0.0812	0.0757	0.034	+/-0.0816	0.100	pCi/g							
Cobalt-60	HUh	-0.0108	+/-0.0399	0.0721	0.0299	+/-0.0402		pCi/g							
Europium-154	HUh	0.0494	+/-0.112	0.217	0.0924	+/-0.114		pCi/g							
Lead-212	Hh	0.722	+/-0.137	0.113	0.0531	+/-0.142		pCi/g							
Lead-214	Hh	0.880	+/-0.190	0.313	0.151	+/-0.193		pCi/g							
Potassium-40	Hh	13.2	+/-1.53	0.626	0.257	+/-1.68		pCi/g							
Protactinium-231	HUIh	0.00	+/-0.837	0.756	0.345	+/-0.848		pCi/g							
Radium-226	Hh	0.727	+/-0.187	0.121	0.0537	+/-0.189		pCi/g							
Radium-228	Hh	1.14	+/-0.340	0.199	0.0837	+/-0.345		pCi/g							
Thallium-208	Hh	0.324	+/-0.0784	0.061	0.0271	+/-0.0796		pCi/g							
Tin-126	HUIh	0.00	+/-0.108	0.124	0.0586	+/-0.109		pCi/g							

Rad Gas Flow Proportional Counting

GFPC, Gross A/B, solid "Dry Weight Corrected"

Alpha	Hh	16.6	+/-4.43	3.85	1.55	+/-5.51	4.00	pCi/g			JXC9	09/26/16	1359	1597819	2
Beta	Hh	13.6	+/-2.37	2.29	1.04	+/-3.24	10.0	pCi/g							

The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
Dry Soil Prep	Dry Soil Prep GL-RAD-A-021	JXO1	09/08/16	1343	1596281

The following Analytical Methods were performed

Method	Description
1	DOE HASL 300, 4.5.2.3/Ga-01-R
2	EPA 900.0/SW846 9310/SM 7110B Modified

Surrogate/Tracer Recovery	Test	Batch ID	Recovery%	Acceptable Limits
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Address : 15 Hazelwood Drive
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Contact: Ms. Laurie Losey
Project: Soil Radioisotopes
Client Sample ID: HO.3.1
Sample ID: 405245007

Report Date: October 3, 2016

Project: MJWC00115
Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	Lc	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
Surrogate/Tracer Recovery	Test											Batch ID	Recovery%	Acceptable Limits	

Notes:

The MDC is a sample specific MDC.
TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).

Column headers are defined as follows:

DF: Dilution Factor	Mtd.: Method
DL: Detection Limit	PF: Prep Factor
Lc/LC: Critical Level	RL: Reporting Limit
MDA: Minimum Detectable Activity	TPU: Total Propagated Uncertainty
MDC: Minimum Detectable Concentration	

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Report Date: October 3, 2016

Contact: Ms. Laurie Losey
 Project: Soil Radioisotopes

Client Sample ID: HO.3.2
 Sample ID: 405245008
 Matrix: Soil
 Collect Date: 15-DEC-15
 Receive Date: 21-DEC-15
 Collector: Client
 Moisture: 14.2%

Project: MJWC00115
 Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	Lc	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
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Rad Gamma Spec Analysis

Gamma with Ingrowth "Dry Weight Corrected"

Actinium-227	HUh	-0.0292	+/-0.185	0.335	0.153	+/-0.186		pCi/g			MXR1	10/03/16	0435	1596387	1
Antimony-125	HUh	-0.0494	+/-0.0834	0.155	0.0695	+/-0.0864		pCi/g							
Bismuth-212	HUIh	0.00	+/-0.809	1.08	0.495	+/-0.968		pCi/g							
Bismuth-214	Hh	0.643	+/-0.145	0.0909	0.0399	+/-0.154		pCi/g							
Cesium-137	Hh	0.203	+/-0.068	0.049	0.0213	+/-0.0698	0.100	pCi/g							
Cobalt-60	HUh	-0.0216	+/-0.0292	0.0518	0.0206	+/-0.0308		pCi/g							
Europium-154	HUh	0.0524	+/-0.0866	0.185	0.0787	+/-0.0899		pCi/g							
Lead-212	Hh	0.780	+/-0.105	0.0714	0.0327	+/-0.123		pCi/g							
Lead-214	Hh	0.953	+/-0.159	0.273	0.132	+/-0.177		pCi/g							
Potassium-40	Hh	12.2	+/-1.27	0.371	0.137	+/-1.67		pCi/g							
Protactinium-231	HUh	0.242	+/-0.351	0.694	0.319	+/-0.371		pCi/g							
Radium-226	Hh	0.643	+/-0.145	0.0909	0.0399	+/-0.154		pCi/g							
Radium-228	Hh	0.987	+/-0.244	0.162	0.0675	+/-0.281		pCi/g							
Thallium-208	Hh	0.249	+/-0.0653	0.0542	0.0242	+/-0.0684		pCi/g							
Tin-126	HUIh	0.00	+/-0.109	0.0923	0.0432	+/-0.111		pCi/g							

Rad Gas Flow Proportional Counting

GFPC, Gross A/B, solid "Dry Weight Corrected"

Alpha	Hh	15.2	+/-3.99	3.96	1.69	+/-5.05	4.00	pCi/g			JXC9	09/26/16	1359	1597819	2
Beta	Hh	17.4	+/-2.89	3.53	1.67	+/-3.83	10.0	pCi/g							

The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
Dry Soil Prep	Dry Soil Prep GL-RAD-A-021	JXO1	09/08/16	1343	1596281

The following Analytical Methods were performed

Method	Description
1	DOE HASL 300, 4.5.2.3/Ga-01-R
2	EPA 900.0/SW846 9310/SM 7110B Modified

Surrogate/Tracer Recovery	Test	Batch ID	Recovery%	Acceptable Limits
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Certificate of Analysis

Company : MJW Technical Services
Address : 15 Hazelwood Drive
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Buffalo, New York 14228
Contact: Ms. Laurie Losey
Project: Soil Radioisotopes
Client Sample ID: HO.3.2
Sample ID: 405245008

Report Date: October 3, 2016

Project: MJWC00115
Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	Lc	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
Surrogate/Tracer Recovery	Test											Batch ID	Recovery%	Acceptable Limits	

Notes:

The MDC is a sample specific MDC.
TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).

Column headers are defined as follows:

DF: Dilution Factor	Mtd.: Method
DL: Detection Limit	PF: Prep Factor
Lc/LC: Critical Level	RL: Reporting Limit
MDA: Minimum Detectable Activity	TPU: Total Propagated Uncertainty
MDC: Minimum Detectable Concentration	

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Certificate of Analysis

Company : MJW Technical Services
 Address : 15 Hazelwood Drive
 Suite 112
 Buffalo, New York 14228

Report Date: October 3, 2016

Contact: Ms. Laurie Losey
 Project: Soil Radioisotopes

Client Sample ID: HO.4.1
 Sample ID: 405245009
 Matrix: Soil
 Collect Date: 15-DEC-15
 Receive Date: 21-DEC-15
 Collector: Client
 Moisture: 22.2%

Project: MJWC00115
 Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	Lc	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
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Rad Gamma Spec Analysis

Gamma with Ingrowth "Dry Weight Corrected"

Actinium-227	HUh	-0.0177	+/-0.225	0.433	0.199	+/-0.225		pCi/g			MXR1	10/03/16	0436	1596387	1
Antimony-125	HUh	0.0747	+/-0.102	0.214	0.097	+/-0.108		pCi/g							
Bismuth-212	HUIh	0.00	+/-0.543	1.23	0.556	+/-0.659		pCi/g							
Bismuth-214	Hh	0.655	+/-0.176	0.115	0.0503	+/-0.178		pCi/g							
Cesium-137	Hh	0.286	+/-0.0876	0.0632	0.0274	+/-0.0884	0.100	pCi/g							
Cobalt-60	HUh	0.0109	+/-0.0331	0.0748	0.0307	+/-0.0335		pCi/g							
Europium-154	HUh	0.0837	+/-0.102	0.241	0.102	+/-0.109		pCi/g							
Lead-212	Hh	0.776	+/-0.172	0.125	0.0587	+/-0.177		pCi/g							
Lead-214	Hh	0.936	+/-0.186	0.307	0.148	+/-0.190		pCi/g							
Potassium-40	Hh	12.1	+/-1.51	0.636	0.257	+/-1.63		pCi/g							
Protactinium-231	HUIh	0.00	+/-0.679	0.805	0.367	+/-0.712		pCi/g							
Radium-226	Hh	0.655	+/-0.176	0.115	0.0503	+/-0.178		pCi/g							
Radium-228	HUIh	0.00	+/-0.370	0.595	0.280	+/-0.502		pCi/g							
Thallium-208	Hh	0.312	+/-0.0922	0.0593	0.0259	+/-0.0932		pCi/g							
Tin-126	HUh	0.0457	+/-0.155	0.173	0.0822	+/-0.156		pCi/g							

Rad Gas Flow Proportional Counting

GFPC, Gross A/B, solid "Dry Weight Corrected"

Alpha	Hh	11.9	+/-3.56	3.98	1.71	+/-4.26	4.00	pCi/g			JXC9	09/26/16	1359	1597819	2
Beta	Hh	18.3	+/-2.39	2.07	0.945	+/-3.63	10.0	pCi/g							

The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
Dry Soil Prep	Dry Soil Prep GL-RAD-A-021	JXO1	09/08/16	1343	1596281

The following Analytical Methods were performed

Method	Description
1	DOE HASL 300, 4.5.2.3/Ga-01-R
2	EPA 900.0/SW846 9310/SM 7110B Modified

Surrogate/Tracer Recovery	Test	Batch ID	Recovery%	Acceptable Limits
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Contact: Ms. Laurie Losey
Project: Soil Radioisotopes
Client Sample ID: HO.4.1
Sample ID: 405245009

Report Date: October 3, 2016

Project: MJWC00115
Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	Lc	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
Surrogate/Tracer Recovery	Test											Batch ID	Recovery%	Acceptable Limits	

Notes:

The MDC is a sample specific MDC.
TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).

Column headers are defined as follows:

DF: Dilution Factor	Mtd.: Method
DL: Detection Limit	PF: Prep Factor
Lc/LC: Critical Level	RL: Reporting Limit
MDA: Minimum Detectable Activity	TPU: Total Propagated Uncertainty
MDC: Minimum Detectable Concentration	

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 Address : 15 Hazelwood Drive
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Report Date: October 3, 2016

Contact: Ms. Laurie Losey
 Project: Soil Radioisotopes

Client Sample ID: HO.4.2
 Sample ID: 405245010
 Matrix: Soil
 Collect Date: 15-DEC-15
 Receive Date: 21-DEC-15
 Collector: Client
 Moisture: 17.6%

Project: MJWC00115
 Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	Lc	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
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Rad Gamma Spec Analysis

Gamma with Ingrowth "Dry Weight Corrected"

Actinium-227	HUh	-0.0539	+/-0.242	0.461	0.211	+/-0.243		pCi/g			MXR1	10/03/16	0436	1596387	1
Antimony-125	HUh	0.0919	+/-0.0994	0.220	0.098	+/-0.108		pCi/g							
Bismuth-212	HUIh	0.00	+/-0.676	1.50	0.685	+/-0.819		pCi/g							
Bismuth-214	Hh	0.796	+/-0.197	0.136	0.0596	+/-0.200		pCi/g							
Cesium-137	Hh	0.330	+/-0.0895	0.0763	0.0332	+/-0.0906	0.100	pCi/g							
Cobalt-60	HUh	0.019	+/-0.0543	0.115	0.0491	+/-0.055		pCi/g							
Europium-154	HUh	0.0648	+/-0.164	0.340	0.148	+/-0.166		pCi/g							
Lead-212	Hh	0.972	+/-0.138	0.0934	0.0427	+/-0.147		pCi/g							
Lead-214	Hh	1.02	+/-0.195	0.355	0.171	+/-0.200		pCi/g							
Potassium-40	Hh	12.4	+/-1.62	0.672	0.261	+/-1.75		pCi/g							
Protactinium-231	HUh	0.404	+/-0.542	1.03	0.473	+/-0.578		pCi/g							
Radium-226	Hh	0.796	+/-0.197	0.136	0.0596	+/-0.200		pCi/g							
Radium-228	Hh	0.899	+/-0.413	0.352	0.155	+/-0.416		pCi/g							
Thallium-208	Hh	0.209	+/-0.0971	0.072	0.0316	+/-0.0975		pCi/g							
Tin-126	HUIh	0.00	+/-0.124	0.105	0.0496	+/-0.124		pCi/g							

Rad Gas Flow Proportional Counting

GFPC, Gross A/B, solid "Dry Weight Corrected"

Alpha	Hh	13.7	+/-3.63	4.00	1.75	+/-4.51	4.00	pCi/g			JXC9	09/26/16	1359	1597819	2
Beta	Hh	14.5	+/-2.54	3.02	1.42	+/-3.30	10.0	pCi/g							

The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
Dry Soil Prep	Dry Soil Prep GL-RAD-A-021	JXO1	09/08/16	1343	1596281

The following Analytical Methods were performed

Method	Description
1	DOE HASL 300, 4.5.2.3/Ga-01-R
2	EPA 900.0/SW846 9310/SM 7110B Modified

Surrogate/Tracer Recovery	Test	Batch ID	Recovery%	Acceptable Limits
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Report Date: October 3, 2016

Contact: Ms. Laurie Losey
Project: Soil Radioisotopes

Client Sample ID: HO.4.2
Sample ID: 405245010

Project: MJWC00115
Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	Lc	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
Surrogate/Tracer Recovery	Test											Batch ID	Recovery%	Acceptable Limits	

Notes:

The MDC is a sample specific MDC.
TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).

Column headers are defined as follows:

DF: Dilution Factor	Mtd.: Method
DL: Detection Limit	PF: Prep Factor
Lc/LC: Critical Level	RL: Reporting Limit
MDA: Minimum Detectable Activity	TPU: Total Propagated Uncertainty
MDC: Minimum Detectable Concentration	

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 Address : 15 Hazelwood Drive
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Report Date: October 3, 2016

Contact: Ms. Laurie Losey
 Project: Soil Radioisotopes

Client Sample ID: HO.5.1
 Sample ID: 405245011
 Matrix: Soil
 Collect Date: 15-DEC-15
 Receive Date: 21-DEC-15
 Collector: Client
 Moisture: 21.9%

Project: MJWC00115
 Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	Lc	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
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Rad Gamma Spec Analysis

Gamma with Ingrowth "Dry Weight Corrected"

Actinium-227	HUlh	0.00	+/-0.265	0.559	0.259	+/-0.296		pCi/g			MXR1	10/03/16	0445	1596387	1
Antimony-125	HUh	0.0977	+/-0.121	0.254	0.115	+/-0.129		pCi/g							
Bismuth-212	HUIh	0.00	+/-1.07	1.57	0.716	+/-1.26		pCi/g							
Bismuth-214	Hh	0.813	+/-0.225	0.157	0.0696	+/-0.228		pCi/g							
Cesium-137	Hh	0.340	+/-0.113	0.096	0.0429	+/-0.114	0.100	pCi/g							
Cobalt-60	HUh	0.0173	+/-0.0471	0.102	0.0429	+/-0.0478		pCi/g							
Europium-154	HUh	-0.112	+/-0.149	0.247	0.102	+/-0.158		pCi/g							
Lead-212	Hh	1.05	+/-0.144	0.109	0.0503	+/-0.155		pCi/g							
Lead-214	Hh	0.894	+/-0.226	0.362	0.174	+/-0.229		pCi/g							
Potassium-40	Hh	12.6	+/-1.80	0.851	0.352	+/-1.92		pCi/g							
Protactinium-231	HUh	0.00969	+/-0.518	0.995	0.456	+/-0.518		pCi/g							
Radium-226	Hh	0.813	+/-0.225	0.157	0.0696	+/-0.228		pCi/g							
Radium-228	Hh	1.14	+/-0.292	0.253	0.106	+/-0.298		pCi/g							
Thallium-208	Hh	0.331	+/-0.104	0.0704	0.0307	+/-0.105		pCi/g							
Tin-126	HUh	0.0211	+/-0.204	0.183	0.0866	+/-0.205		pCi/g							

Rad Gas Flow Proportional Counting

GFPC, Gross A/B, solid "Dry Weight Corrected"

Alpha	Hh	13.0	+/-3.87	3.88	1.60	+/-4.56	4.00	pCi/g			JXC9	09/26/16	1359	1597819	2
Beta	Hh	17.3	+/-2.90	3.38	1.58	+/-3.66	10.0	pCi/g							

The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
Dry Soil Prep	Dry Soil Prep GL-RAD-A-021	JXO1	09/08/16	1343	1596281

The following Analytical Methods were performed

Method	Description
1	DOE HASL 300, 4.5.2.3/Ga-01-R
2	EPA 900.0/SW846 9310/SM 7110B Modified

Surrogate/Tracer Recovery	Test	Batch ID	Recovery%	Acceptable Limits
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Certificate of Analysis

Company : MJW Technical Services
Address : 15 Hazelwood Drive
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Buffalo, New York 14228

Report Date: October 3, 2016

Contact: Ms. Laurie Losey
Project: Soil Radioisotopes

Client Sample ID: HO.5.1
Sample ID: 405245011

Project: MJWC00115
Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	Lc	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
Surrogate/Tracer	Recovery	Test							Batch ID	Recovery%	Acceptable Limits				

Notes:

The MDC is a sample specific MDC.

TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).

Column headers are defined as follows:

DF: Dilution Factor

DL: Detection Limit

Lc/LC: Critical Level

MDA: Minimum Detectable Activity

MDC: Minimum Detectable Concentration

Mtd.: Method

PF: Prep Factor

RL: Reporting Limit

TPU: Total Propagated Uncertainty

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Certificate of Analysis

Company : MJW Technical Services
 Address : 15 Hazelwood Drive
 Suite 112
 Buffalo, New York 14228
 Contact: Ms. Laurie Losey
 Project: Soil Radioisotopes

Report Date: October 3, 2016

Client Sample ID: HO.5.2
 Sample ID: 405245012
 Matrix: Soil
 Collect Date: 15-DEC-15
 Receive Date: 21-DEC-15
 Collector: Client
 Moisture: 19.7%

Project: MJWC00115
 Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	Lc	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
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Rad Gamma Spec Analysis

Gamma with Ingrowth "Dry Weight Corrected"

Actinium-227	HUh	-0.0295	+/-0.236	0.428	0.196	+/-0.237		pCi/g			MXR1	10/03/16	0446	1596387	1
Antimony-125	HUIh	0.00	+/-0.181	0.202	0.0903	+/-0.231		pCi/g							
Bismuth-212	Hh	2.06	+/-0.633	0.768	0.326	+/-0.641		pCi/g							
Bismuth-214	Hh	0.777	+/-0.182	0.130	0.0574	+/-0.185		pCi/g							
Cesium-137	Hh	0.789	+/-0.104	0.0656	0.0285	+/-0.110	0.100	pCi/g							
Cobalt-60	HUh	-0.00627	+/-0.0384	0.0771	0.0317	+/-0.0385		pCi/g							
Europium-154	HUh	-0.0502	+/-0.115	0.216	0.0895	+/-0.117		pCi/g							
Lead-212	Hh	1.05	+/-0.134	0.107	0.0497	+/-0.145		pCi/g							
Lead-214	Hh	1.00	+/-0.167	0.333	0.161	+/-0.172		pCi/g							
Potassium-40	Hh	13.9	+/-1.66	0.725	0.300	+/-1.81		pCi/g							
Protactinium-231	HUIh	0.00	+/-0.598	0.674	0.301	+/-0.629		pCi/g							
Radium-226	Hh	0.777	+/-0.182	0.130	0.0574	+/-0.185		pCi/g							
Radium-228	Hh	0.981	+/-0.360	0.179	0.0715	+/-0.364		pCi/g							
Thallium-208	Hh	0.320	+/-0.0776	0.068	0.0302	+/-0.0788		pCi/g							
Tin-126	HUIh	0.00	+/-0.123	0.128	0.0596	+/-0.124		pCi/g							

Rad Gas Flow Proportional Counting

GFPC, Gross A/B, solid "Dry Weight Corrected"

Alpha	Hh	12.2	+/-3.35	3.58	1.55	+/-4.15	4.00	pCi/g			JXC9	09/26/16	1404	1597819	2
Beta	Hh	17.1	+/-2.59	3.06	1.45	+/-3.65	10.0	pCi/g							

The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
Dry Soil Prep	Dry Soil Prep GL-RAD-A-021	JXO1	09/08/16	1343	1596281

The following Analytical Methods were performed

Method	Description
1	DOE HASL 300, 4.5.2.3/Ga-01-R
2	EPA 900.0/SW846 9310/SM 7110B Modified

Surrogate/Tracer Recovery	Test	Batch ID	Recovery%	Acceptable Limits
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Report Date: October 3, 2016

Contact: Ms. Laurie Losey
Project: Soil Radioisotopes

Client Sample ID: HO.5.2
Sample ID: 405245012

Project: MJWC00115
Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	Lc	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.	
Surrogate/Tracer Recovery	Test													Batch ID	Recovery%	Acceptable Limits

Notes:

The MDC is a sample specific MDC.
TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).

Column headers are defined as follows:

DF: Dilution Factor	Mtd.: Method
DL: Detection Limit	PF: Prep Factor
Lc/LC: Critical Level	RL: Reporting Limit
MDA: Minimum Detectable Activity	TPU: Total Propagated Uncertainty
MDC: Minimum Detectable Concentration	

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Certificate of Analysis

Company : MJW Technical Services
 Address : 15 Hazelwood Drive
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Report Date: October 3, 2016

Contact: Ms. Laurie Losey
 Project: Soil Radioisotopes

Client Sample ID: REACH7.1.1
 Sample ID: 405245013
 Matrix: Soil
 Collect Date: 15-DEC-15
 Receive Date: 21-DEC-15
 Collector: Client
 Moisture: 25.4%

Project: MJWC00115
 Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	Lc	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
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Rad Gamma Spec Analysis

Gamma with Ingrowth "Dry Weight Corrected"

Actinium-227	HUIh	0.00	+/-0.250	0.516	0.241	+/-0.281		pCi/g			MXR1	10/03/16	0446	1596387	1
Antimony-125	HUh	0.0536	+/-0.115	0.227	0.104	+/-0.118		pCi/g							
Bismuth-212	HUIh	0.00	+/-1.28	1.04	0.462	+/-1.29		pCi/g							
Bismuth-214	Hh	0.815	+/-0.183	0.137	0.0612	+/-0.187		pCi/g							
Cesium-137	HUIh	0.00	+/-0.0534	0.116	0.054	+/-0.0759	0.100	pCi/g							
Cobalt-60	HUh	-0.00756	+/-0.0409	0.078	0.0324	+/-0.041		pCi/g							
Europium-154	HUh	-0.0163	+/-0.0781	0.156	0.0604	+/-0.0785		pCi/g							
Lead-212	Hh	1.18	+/-0.137	0.0966	0.0447	+/-0.151		pCi/g							
Lead-214	Hh	0.864	+/-0.174	0.144	0.0661	+/-0.177		pCi/g							
Potassium-40	Hh	13.6	+/-1.56	0.606	0.243	+/-1.71		pCi/g							
Protactinium-231	HUIh	0.00	+/-1.21	0.689	0.310	+/-1.28		pCi/g							
Radium-226	Hh	0.815	+/-0.183	0.137	0.0612	+/-0.187		pCi/g							
Radium-228	Hh	1.08	+/-0.327	0.253	0.109	+/-0.332		pCi/g							
Thallium-208	Hh	0.284	+/-0.111	0.0641	0.0283	+/-0.112		pCi/g							
Tin-126	HUIh	0.00	+/-0.128	0.159	0.0756	+/-0.129		pCi/g							

Rad Gas Flow Proportional Counting

GFPC, Gross A/B, solid "Dry Weight Corrected"

Alpha	Hh	11.9	+/-3.37	3.93	1.74	+/-4.09	4.00	pCi/g			JXC9	09/26/16	1359	1597819	2
Beta	Hh	18.7	+/-2.48	2.50	1.17	+/-3.63	10.0	pCi/g							

The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
Dry Soil Prep	Dry Soil Prep GL-RAD-A-021	JXO1	09/08/16	1343	1596281

The following Analytical Methods were performed

Method	Description
1	DOE HASL 300, 4.5.2.3/Ga-01-R
2	EPA 900.0/SW846 9310/SM 7110B Modified

Surrogate/Tracer Recovery	Test	Batch ID	Recovery%	Acceptable Limits
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Buffalo, New York 14228

Report Date: October 3, 2016

Contact: Ms. Laurie Losey
Project: Soil Radioisotopes

Client Sample ID: REACH7.1.1
Sample ID: 405245013

Project: MJWC00115
Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	Lc	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
Surrogate/Tracer	Recovery	Test										Batch ID	Recovery%	Acceptable Limits	

Notes:

The MDC is a sample specific MDC.
TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).

Column headers are defined as follows:

DF: Dilution Factor	Mtd.: Method
DL: Detection Limit	PF: Prep Factor
Lc/LC: Critical Level	RL: Reporting Limit
MDA: Minimum Detectable Activity	TPU: Total Propagated Uncertainty
MDC: Minimum Detectable Concentration	

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Certificate of Analysis

Company : MJW Technical Services
 Address : 15 Hazelwood Drive
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 Buffalo, New York 14228

Report Date: October 3, 2016

Contact: Ms. Laurie Losey
 Project: Soil Radioisotopes

Client Sample ID: REACH7.1.2
 Sample ID: 405245014
 Matrix: Soil
 Collect Date: 15-DEC-15
 Receive Date: 21-DEC-15
 Collector: Client
 Moisture: 15.3%

Project: MJWC00115
 Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	Lc	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
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Rad Gamma Spec Analysis

Gamma with Ingrowth "Dry Weight Corrected"

Actinium-227	HUh	-0.108	+/-0.182	0.342	0.157	+/-0.189		pCi/g			MXR1	10/03/16	0447	1596387	1
Antimony-125	HUh	-0.0465	+/-0.0854	0.156	0.0698	+/-0.088		pCi/g							
Bismuth-212	HUIh	0.00	+/-0.944	1.14	0.526	+/-1.05		pCi/g							
Bismuth-214	Hh	0.792	+/-0.152	0.0918	0.0402	+/-0.155		pCi/g							
Cesium-137	Hh	0.151	+/-0.0607	0.0521	0.0228	+/-0.061	0.100	pCi/g							
Cobalt-60	HUh	-0.00814	+/-0.0382	0.0732	0.0314	+/-0.0384		pCi/g							
Europium-154	HUh	0.048	+/-0.099	0.208	0.0904	+/-0.101		pCi/g							
Lead-212	Hh	0.950	+/-0.112	0.0726	0.0334	+/-0.123		pCi/g							
Lead-214	Hh	1.00	+/-0.134	0.282	0.136	+/-0.140		pCi/g							
Potassium-40	Hh	13.3	+/-1.43	0.581	0.243	+/-1.59		pCi/g							
Protactinium-231	HUh	0.304	+/-0.623	0.712	0.328	+/-0.626		pCi/g							
Radium-226	Hh	0.792	+/-0.152	0.0918	0.0402	+/-0.155		pCi/g							
Radium-228	Hh	0.718	+/-0.248	0.169	0.071	+/-0.250		pCi/g							
Thallium-208	Hh	0.337	+/-0.0722	0.0522	0.0232	+/-0.0736		pCi/g							
Tin-126	HUIh	0.00	+/-0.118	0.0986	0.0465	+/-0.119		pCi/g							

Rad Gas Flow Proportional Counting

GFPC, Gross A/B, solid "Dry Weight Corrected"

Alpha	Hh	11.8	+/-3.72	3.99	1.67	+/-4.37	4.00	pCi/g			JXC9	09/26/16	1404	1597819	2
Beta	Hh	17.2	+/-2.55	2.45	1.12	+/-3.58	10.0	pCi/g							

The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
Dry Soil Prep	Dry Soil Prep GL-RAD-A-021	JXO1	09/08/16	1343	1596281

The following Analytical Methods were performed

Method	Description
1	DOE HASL 300, 4.5.2.3/Ga-01-R
2	EPA 900.0/SW846 9310/SM 7110B Modified

Surrogate/Tracer Recovery	Test	Batch ID	Recovery%	Acceptable Limits
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GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Company : MJW Technical Services
Address : 15 Hazelwood Drive
Suite 112
Buffalo, New York 14228

Report Date: October 3, 2016

Contact: Ms. Laurie Losey
Project: Soil Radioisotopes

Client Sample ID: REACH7.1.2
Sample ID: 405245014

Project: MJWC00115
Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	Lc	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
Surrogate/Tracer Recovery	Test											Batch ID	Recovery%	Acceptable Limits	

Notes:

The MDC is a sample specific MDC.
TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).

Column headers are defined as follows:

DF: Dilution Factor	Mtd.: Method
DL: Detection Limit	PF: Prep Factor
Lc/LC: Critical Level	RL: Reporting Limit
MDA: Minimum Detectable Activity	TPU: Total Propagated Uncertainty
MDC: Minimum Detectable Concentration	

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Certificate of Analysis

Company : MJW Technical Services
 Address : 15 Hazelwood Drive
 Suite 112
 Buffalo, New York 14228

Report Date: October 3, 2016

Contact: Ms. Laurie Losey

Project: Soil Radioisotopes

Client Sample ID: REACH21.1.1

Project: MJWC00115

Sample ID: 405245015

Client ID: MJWC001

Matrix: Soil

Collect Date: 15-DEC-15

Receive Date: 21-DEC-15

Collector: Client

Moisture: 29.6%

Parameter	Qualifier	Result	Uncertainty	MDC	Lc	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
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Rad Gamma Spec Analysis

Gamma with Ingrowth "Dry Weight Corrected"

Actinium-227	HUh	-0.0146	+/-0.280	0.475	0.219	+/-0.280		pCi/g			MXR1	10/03/16	0447	1596387	1
Antimony-125	HUh	0.0611	+/-0.125	0.245	0.112	+/-0.128		pCi/g							
Bismuth-212	HUIh	0.00	+/-0.928	1.44	0.663	+/-1.21		pCi/g							
Bismuth-214	Hh	1.04	+/-0.217	0.162	0.0735	+/-0.222		pCi/g							
Cesium-137	Hh	0.302	+/-0.130	0.0861	0.0387	+/-0.130	0.100	pCi/g							
Cobalt-60	HUh	-0.00192	+/-0.0484	0.0937	0.0399	+/-0.0484		pCi/g							
Europium-154	HUIh	0.00	+/-0.177	0.280	0.122	+/-0.190		pCi/g							
Lead-212	Hh	1.17	+/-0.150	0.114	0.0533	+/-0.163		pCi/g							
Lead-214	Hh	1.08	+/-0.231	0.140	0.0637	+/-0.235		pCi/g							
Potassium-40	Hh	17.6	+/-1.82	0.632	0.253	+/-2.05		pCi/g							
Protactinium-231	HUIh	0.00	+/-1.43	0.883	0.404	+/-1.47		pCi/g							
Radium-226	Hh	1.04	+/-0.217	0.162	0.0735	+/-0.222		pCi/g							
Radium-228	Hh	1.24	+/-0.325	0.284	0.124	+/-0.331		pCi/g							
Thallium-208	Hh	0.419	+/-0.106	0.0645	0.0283	+/-0.108		pCi/g							
Tin-126	HUIh	0.00	+/-0.136	0.194	0.0928	+/-0.145		pCi/g							

Rad Gas Flow Proportional Counting

GFPC, Gross A/B, solid "Dry Weight Corrected"

Alpha	Hh	11.7	+/-3.49	3.88	1.67	+/-4.19	4.00	pCi/g			JXC9	09/26/16	1359	1597819	2
Beta	Hh	20.1	+/-2.60	2.55	1.19	+/-3.83	10.0	pCi/g							

The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
Dry Soil Prep	Dry Soil Prep GL-RAD-A-021	JXO1	09/08/16	1343	1596281

The following Analytical Methods were performed

Method	Description
1	DOE HASL 300, 4.5.2.3/Ga-01-R
2	EPA 900.0/SW846 9310/SM 7110B Modified

Surrogate/Tracer Recovery	Test	Batch ID	Recovery%	Acceptable Limits
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Certificate of Analysis

Company : MJW Technical Services
Address : 15 Hazelwood Drive
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Buffalo, New York 14228
Contact: Ms. Laurie Losey
Project: Soil Radioisotopes
Client Sample ID: REACH21.1.1
Sample ID: 405245015

Report Date: October 3, 2016

Project: MJWC00115
Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	Lc	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
Surrogate/Tracer Recovery	Test											Batch ID	Recovery%	Acceptable Limits	

Notes:

The MDC is a sample specific MDC.
TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).

Column headers are defined as follows:

DF: Dilution Factor	Mtd.: Method
DL: Detection Limit	PF: Prep Factor
Lc/LC: Critical Level	RL: Reporting Limit
MDA: Minimum Detectable Activity	TPU: Total Propagated Uncertainty
MDC: Minimum Detectable Concentration	

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Certificate of Analysis

Company : MJW Technical Services
 Address : 15 Hazelwood Drive
 Suite 112
 Buffalo, New York 14228

Report Date: October 3, 2016

Contact: Ms. Laurie Losey

Project: Soil Radioisotopes

Client Sample ID: REACH21.1.2

Project: MJWC00115

Sample ID: 405245016

Client ID: MJWC001

Matrix: Soil

Collect Date: 15-DEC-15

Receive Date: 21-DEC-15

Collector: Client

Moisture: 21.6%

Parameter	Qualifier	Result	Uncertainty	MDC	Lc	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
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Rad Gamma Spec Analysis

Gamma with Ingrowth "Dry Weight Corrected"

Actinium-227	HUh	-0.00748	+/-0.285	0.526	0.236	+/-0.285		pCi/g			MXR1	10/03/16	0448	1596387	1
Antimony-125	HUh	0.00945	+/-0.151	0.304	0.135	+/-0.151		pCi/g							
Bismuth-212	HUIh	0.00	+/-1.15	1.78	0.790	+/-1.23		pCi/g							
Bismuth-214	Hh	0.959	+/-0.234	0.178	0.0762	+/-0.238		pCi/g							
Cesium-137	HUIh	0.0908	+/-0.0871	0.094	0.0397	+/-0.0872	0.100	pCi/g							
Cobalt-60	HUh	0.0216	+/-0.0616	0.140	0.0574	+/-0.0624		pCi/g							
Europium-154	HUh	-0.0358	+/-0.183	0.365	0.149	+/-0.184		pCi/g							
Lead-212	Hh	1.19	+/-0.160	0.107	0.0482	+/-0.172		pCi/g							
Lead-214	Hh	1.17	+/-0.221	0.141	0.0607	+/-0.226		pCi/g							
Potassium-40	Hh	16.0	+/-2.26	1.02	0.393	+/-2.41		pCi/g							
Protactinium-231	HUIh	0.00	+/-0.806	0.997	0.444	+/-0.840		pCi/g							
Radium-226	Hh	0.959	+/-0.234	0.178	0.0762	+/-0.238		pCi/g							
Radium-228	Hh	1.14	+/-0.437	0.362	0.150	+/-0.441		pCi/g							
Thallium-208	Hh	0.379	+/-0.121	0.110	0.0483	+/-0.122		pCi/g							
Tin-126	HUIh	0.00	+/-0.143	0.133	0.0615	+/-0.144		pCi/g							

Rad Gas Flow Proportional Counting

GFPC, Gross A/B, solid "Dry Weight Corrected"

Alpha	Hh	16.8	+/-4.38	3.90	1.60	+/-5.50	4.00	pCi/g			JXC9	09/26/16	1400	1597819	2
Beta	Hh	22.6	+/-2.94	2.81	1.30	+/-4.35	10.0	pCi/g							

The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
Dry Soil Prep	Dry Soil Prep GL-RAD-A-021	JXO1	09/08/16	1343	1596281

The following Analytical Methods were performed

Method	Description
1	DOE HASL 300, 4.5.2.3/Ga-01-R
2	EPA 900.0/SW846 9310/SM 7110B Modified

Surrogate/Tracer Recovery	Test	Batch ID	Recovery%	Acceptable Limits
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Certificate of Analysis

Company : MJW Technical Services
Address : 15 Hazelwood Drive
Suite 112
Buffalo, New York 14228
Contact: Ms. Laurie Losey
Project: Soil Radioisotopes
Client Sample ID: REACH21.1.2
Sample ID: 405245016

Report Date: October 3, 2016

Project: MJWC00115
Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	Lc	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
Surrogate/Tracer Recovery	Test											Batch ID	Recovery%	Acceptable Limits	

Notes:

The MDC is a sample specific MDC.
TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).

Column headers are defined as follows:

DF: Dilution Factor	Mtd.: Method
DL: Detection Limit	PF: Prep Factor
Lc/LC: Critical Level	RL: Reporting Limit
MDA: Minimum Detectable Activity	TPU: Total Propagated Uncertainty
MDC: Minimum Detectable Concentration	

Quality Control Summary

GEL LABORATORIES LLC

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QC Summary

Report Date: October 3, 2016

Page 1 of 5

Client : MJW Technical Services
15 Hazelwood Drive
Suite 112
Buffalo, New York

Contact: Ms. Laurie Losey

Workorder: 405245

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Rad Gamma Spec											
Batch	1596387										
QC1203621686	405245001 DUP										
Actinium-227	HUh	-0.102	HU	0.140	pCi/g	0		N/A	MXR1	10/03/16	05:34
	Uncert:	+/-0.238		+/-0.160							
	TPU:	+/-0.242		+/-0.173							
Antimony-125	HUh	0.0136	HU	0.0587	pCi/g	0		N/A			
	Uncert:	+/-0.0951		+/-0.0791							
	TPU:	+/-0.0953		+/-0.0835							
Bismuth-212	HUh	0.431	H	1.05	pCi/g	5.91		(0% - 100%)			
	Uncert:	+/-0.522		+/-0.674							
	TPU:	+/-0.558		+/-0.677							
Bismuth-214	Hh	0.916	H	0.759	pCi/g	18.7		(0%-20%)			
	Uncert:	+/-0.168		+/-0.147							
	TPU:	+/-0.172		+/-0.151							
Cesium-137	Hh	0.117	H	0.0935	pCi/g	22.6		(0% - 100%)			
	Uncert:	+/-0.0893		+/-0.0546							
	TPU:	+/-0.0894		+/-0.0547							
Cobalt-60	HUh	0.00955	HU	-0.0229	pCi/g	0		N/A			
	Uncert:	+/-0.0372		+/-0.034							
	TPU:	+/-0.0374		+/-0.0356							
Europium-154	HUh	0.0399	HU	-0.00679	pCi/g	0		N/A			
	Uncert:	+/-0.107		+/-0.0882							
	TPU:	+/-0.108		+/-0.0883							
Lead-212	Hh	0.732	H	0.866	pCi/g	16.7		(0%-20%)			
	Uncert:	+/-0.122		+/-0.106							
	TPU:	+/-0.128		+/-0.116							
Lead-214	Hh	0.954	H	0.946	pCi/g	.832		(0%-20%)			
	Uncert:	+/-0.186		+/-0.157							
	TPU:	+/-0.190		+/-0.162							
Potassium-40	Hh	12.4	H	12.9	pCi/g	3.79		(0%-20%)			
	Uncert:	+/-1.49		+/-1.33							
	TPU:	+/-1.62		+/-1.49							
Protactinium-231	HUh	0.158	HU	0.234	pCi/g	0		N/A			
	Uncert:	+/-0.424		+/-0.417							
	TPU:	+/-0.432		+/-0.420							
Radium-226	Hh	0.916	H	0.759	pCi/g	18.7		(0%-20%)			
	Uncert:	+/-0.168		+/-0.147							
	TPU:	+/-0.172		+/-0.151							
Radium-228	Hh	0.724	H	1.03	pCi/g	34.6		(0% - 100%)			
	Uncert:	+/-0.282		+/-0.278							
	TPU:	+/-0.284		+/-0.283							
Thallium-208	Hh	0.291	H	0.202	pCi/g	36.1		(0% - 100%)			
	Uncert:	+/-0.0707		+/-0.0675							

GEL LABORATORIES LLC

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QC Summary

Workorder: 405245

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Parmname	NOM	Sample Qual	QC	Units	RPD%	REC%	Range	Anlst	Date Time
Rad Gamma Spec									
Batch	1596387								
Tin-126	TPU:	+/-0.0718	+/-0.0681						
	HUh	0.0412	HUI	0.00	pCi/g	33.9		N/A	
	Uncert:	+/-0.193		+/-0.0737					
	TPU:	+/-0.193		+/-0.075					
QC1203621687	LCS								
Americium-241	489			564	pCi/g		115 (75%-125%)	MXR1	10/03/1604:53
	Uncert:			+/-9.29					
	TPU:			+/-42.6					
Actinium-227			U	-0.947	pCi/g				
	Uncert:			+/-3.68					
	TPU:			+/-3.70					
Antimony-125			U	0.0977	pCi/g				
	Uncert:			+/-1.62					
	TPU:			+/-1.62					
Bismuth-212			U	0.990	pCi/g				
	Uncert:			+/-7.40					
	TPU:			+/-7.42					
Bismuth-214			U	-0.43	pCi/g				
	Uncert:			+/-0.957					
	TPU:			+/-0.976					
Cesium-137	179			192	pCi/g		107 (75%-125%)		
	Uncert:			+/-3.33					
	TPU:			+/-8.89					
Cobalt-60	162			159	pCi/g		98.6 (75%-125%)		
	Uncert:			+/-3.49					
	TPU:			+/-6.82					
Europium-154			U	-0.581	pCi/g				
	Uncert:			+/-0.887					
	TPU:			+/-0.925					
Lead-212				0.726	pCi/g				
	Uncert:			+/-0.707					
	TPU:			+/-0.780					
Lead-214			U	0.150	pCi/g				
	Uncert:			+/-1.01					
	TPU:			+/-1.01					
Potassium-40			U	-1.8	pCi/g				
	Uncert:			+/-2.12					
	TPU:			+/-2.27					
Protactinium-231			U	0.967	pCi/g				
	Uncert:			+/-6.53					
	TPU:			+/-6.54					
Radium-226			U	-0.43	pCi/g				
	Uncert:			+/-0.957					
	TPU:			+/-0.976					
Radium-228			U	-1.06	pCi/g				
	Uncert:			+/-3.32					

GEL LABORATORIES LLC

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QC Summary

Workorder: 405245

Page 3 of 5

Parmname	NOM	Sample Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Rad Gamma Spec										
Batch	1596387									
Thallium-208	TPU:		+/-3.35							
		U	-0.254	pCi/g						
	Uncert:		+/-0.492							
Tin-126	TPU:		+/-0.505							
			38.9	pCi/g						
	Uncert:		+/-2.11							
	TPU:		+/-3.21							
QC1203621685	MB									
Actinium-227		U	-0.00882	pCi/g				MXR1	10/03/1604:48	
	Uncert:		+/-0.125							
	TPU:		+/-0.125							
Antimony-125		U	0.00683	pCi/g						
	Uncert:		+/-0.048							
	TPU:		+/-0.0481							
Bismuth-212		U	-0.159	pCi/g						
	Uncert:		+/-0.245							
	TPU:		+/-0.255							
Bismuth-214		U	0.0396	pCi/g						
	Uncert:		+/-0.0524							
	TPU:		+/-0.0554							
Cesium-137		U	-0.00704	pCi/g						
	Uncert:		+/-0.0222							
	TPU:		+/-0.0224							
Cobalt-60		U	-0.00884	pCi/g						
	Uncert:		+/-0.0211							
	TPU:		+/-0.0214							
Europium-154		U	-0.0279	pCi/g						
	Uncert:		+/-0.0554							
	TPU:		+/-0.0568							
Lead-212		U	-0.0119	pCi/g						
	Uncert:		+/-0.0271							
	TPU:		+/-0.0277							
Lead-214		U	-0.0541	pCi/g						
	Uncert:		+/-0.0482							
	TPU:		+/-0.0541							
Potassium-40		U	0.0791	pCi/g						
	Uncert:		+/-0.264							
	TPU:		+/-0.266							
Protactinium-231		U	-0.0237	pCi/g						
	Uncert:		+/-0.198							
	TPU:		+/-0.199							
Radium-226		U	0.0396	pCi/g						
	Uncert:		+/-0.0524							
	TPU:		+/-0.0554							
Radium-228		U	-0.0548	pCi/g						
	Uncert:		+/-0.0902							

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QC Summary

Workorder: 405245

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Rad Gamma Spec											
Batch	1596387										
Thallium-208											
	TPU:			+/-0.0936							
			U	0.00473	pCi/g						
	Uncert:			+/-0.0242							
	TPU:			+/-0.0243							
Tin-126											
			U	0.0148	pCi/g						
	Uncert:			+/-0.0326							
	TPU:			+/-0.0332							
Rad Gas Flow											
Batch	1597819										
QC1203625472	405245003 DUP										
Alpha	Hh	14.2	H	7.98	pCi/g	56.1		(0% - 100%)	JXC9	09/26/16	13:58
	Uncert:	+/-3.88		+/-2.96							
	TPU:	+/-4.82		+/-3.35							
Beta	Hh	16.4	H	17.2	pCi/g	4.55		(0%-20%)			
	Uncert:	+/-2.82		+/-2.14							
	TPU:	+/-3.64		+/-3.20							
QC1203625475	LCS										
Alpha		110		121	pCi/g		110	(75%-125%)	JXC9	09/26/16	13:58
	Uncert:			+/-11.0							
	TPU:			+/-25.7							
Beta		399		453	pCi/g		113	(75%-125%)			
	Uncert:			+/-15.7							
	TPU:			+/-64.9							
QC1203625471	MB										
Alpha			U	-1.11	pCi/g				JXC9	09/26/16	13:58
	Uncert:			+/-1.30							
	TPU:			+/-1.30							
Beta			U	-2.22	pCi/g						
	Uncert:			+/-2.56							
	TPU:			+/-2.56							
QC1203625473	405245003 MS										
Alpha	121 Hh	14.2	H	159	pCi/g		120	(75%-125%)	JXC9	09/26/16	13:58
	Uncert:	+/-3.88		+/-17.9							
	TPU:	+/-4.82		+/-34.3							
Beta	440 Hh	16.4	H	477	pCi/g		105	(75%-125%)			
	Uncert:	+/-2.82		+/-17.3							
	TPU:	+/-3.64		+/-62.4							
QC1203625474	405245003 MSD										
Alpha	118 Hh	14.2	H	144	pCi/g	9.84	110	(0%-20%)	JXC9	09/27/16	10:14
	Uncert:	+/-3.88		+/-16.3							
	TPU:	+/-4.82		+/-34.7							
Beta	427 Hh	16.4	H	436	pCi/g	8.92	98.4	(0%-20%)			
	Uncert:	+/-2.82		+/-16.1							
	TPU:	+/-3.64		+/-63.1							

Notes:

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QC Summary

Workorder: 405245

Page 5 of 5

Parmname	NOM	Sample Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
----------	-----	-------------	----	-------	------	------	-------	-------	------	------

TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).

The Qualifiers in this report are defined as follows:

- ** Analyte is a Tracer compound
- < Result is less than value reported
- > Result is greater than value reported
- BD Results are either below the MDC or tracer recovery is low
- FA Failed analysis.
- H Analytical holding time was exceeded
- J Value is estimated
- K Analyte present. Reported value may be biased high. Actual value is expected to be lower.
- L Analyte present. Reported value may be biased low. Actual value is expected to be higher.
- M M if above MDC and less than LLD
- M REMP Result > MDC/CL and < RDL
- N/A RPD or %Recovery limits do not apply.
- N1 See case narrative
- ND Analyte concentration is not detected above the detection limit
- NJ Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- Q One or more quality control criteria have not been met. Refer to the applicable narrative or DER.
- R Sample results are rejected
- U Analyte was analyzed for, but not detected above the Lc.
- UI Gamma Spectroscopy--Uncertain identification
- UJ Gamma Spectroscopy--Uncertain identification
- UL Not considered detected. The associated number is the reported concentration, which may be inaccurate due to a low bias.
- X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- Y Other specific qualifiers were required to properly define the results. Consult case narrative.
- ^ RPD of sample and duplicate evaluated using +/-RL. Concentrations are <5X the RL. Qualifier Not Applicable for Radiochemistry.
- h Preparation or preservation holding time was exceeded

N/A indicates that spike recovery limits do not apply when sample concentration exceeds spike conc. by a factor of 4 or more or %RPD not applicable.

** Indicates analyte is a surrogate/tracer compound.

^ The Relative Percent Difference (RPD) obtained from the sample duplicate (DUP) is evaluated against the acceptance criteria when the sample is greater than five times (5X) the contract required detection limit (RL). In cases where either the sample or duplicate value is less than 5X the RL, a control limit of +/- the RL is used to evaluate the DUP result.

For PS, PSD, and SDILT results, the values listed are the measured amounts, not final concentrations.

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the QC Summary.

Gamma Spectroscopy Raw Data

30-Sep-2016

Batch# 1596381

Product: Y solid/MSW Date: 10/3/16

Criteria:	Yes	No	Comments
Sample Solids are less than or equal to 100 mg for GAB.			NA
Samples have been blank corrected (if required). Blank correction reported included (if required).			NA
If activity less than 10x MDA/MDC, error is less than or equal to 150% of sample activity. If greater than 10* MDA/ MDC, error is 40% or less. If below the MDA/ MDC, error is okay.	/		
Instrument source check is within limits.	/		
Instrument bkg check is within limits.	/		
Method RDL/ LLD has been met.	/		
If duplicate activities are: Less than 5* MDA/ MDC, then RPD is 100% or less, If greater 5* MDA/ MDC, then RPD 20% or less, If below the MDA/ MDC, the RPD is 0%, Or meets the client's required RER acceptance criteria.	/		
Tracer yield is 15-125% . Carrier yield 25-125%. (Or meets the client's contract acceptance criteria).			NA
Method blank is less than the RDL/ LLD. (If rad samples, < 5% of lowest activity)	/		
Sample was run within hold time.		/	Det # 1563681
Sample was correctly preserved if required.			NA
Smears Taken for Radioactive batches.			NA
Method Spike and LCS are within 75-125% (or meets the client's contract acceptance criteria).	/		
No blank spaces on data forms. All line outs initialed and dated. No transcription errors are apparent.	/		
Aux data is correct.			NA
Client Special requirements page has been checked.	/		
Raw Data and/ or spectrum are included and properly stasured.	/		
MS, LCS, and Duplicate RPD/RER values uploaded to LIMS and values verified	/		
Hit notification complete (if necessary)			NA
Batch entered into Case Narrative.	/		
Batch Data Exception Reports (DER) completed, if applicable.	/		Det # 1563681
Batch Data Exception Reports (DER) second reviewed. Disposition verified to be completed.	/		
Aliquot Correction completed if required.			NA
Review sample historical results if available (If REMP, results above MDC have been verified by historical results, recount or re-analysis.)			NA

Primary Review Performed By: B. Wilk 10/3/16

Secondary Review Performed By: unintentional 10-3-16

10/4

DATA EXCEPTION REPORT

Mo.Day Yr. 03-OCT-16	Division: Radiochemistry	Quality Criteria: Specifications	Type: Process
Instrument Type: GAMMA SPECTROMETER	Test / Method: DOE HASL 300, 4.5.2.3/Ga-01-R	Matrix Type: Solid	Client Code: MJWC
Batch ID: 1596387	Sample Numbers: See Below		
Potentially affected work order(s)(SDG): 405245			
Application Issues: Sample Analyzed out of Holding Sample Logged out of Holding			
Specification and Requirements Exception Description:		DER Disposition:	
Samples 405245 001, 002, 003, 004, 005, 006, 007, 008, 009, 010, 011, 012, 013, 014, 015, 016, and 1203621686 (duplicate) were logged out of the holding period.		Samples were analyzed as soon as possible. Reporting result.	

Originator's Name:

Bryan Williams 03-OCT-16

Data Validator/Group Leader:

Michael Hilton 03-OCT-16

Gamma Spec Queue Sheet

1.6-10/3/16

09/16/2016

Batch #: 1596387 Analyst: MXRI First Client Due Date: 09/30/2016 Internal Due Date: 09/30/2016
 Gamma LCS Isotope: Mixed Gamma LCS Code: 1556 Expiration Date: 4/1/37 Vol: 1.0 ML
 Initials: MS Prep Date: 9/12/16 Library: SOLID Balance ID: N/A

Sample ID	Client Description / Container ID	Type	Hazard Code	Client	Matrix	Collect Date	Geometry	Wet/Dry Aliquot (1/g)	Detector	Sealing Date/Time (if Applicable)
405245001-1	HO.1.1	SAMPLE		MJWC001	SOIL	15-DEC-15 10:14:00	CAN	155.344 g	1	9/12/16
405245002-1	HO.1.2	SAMPLE		MJWC001	SOIL	15-DEC-15 10:19:00		146.202 g	5	
405245003-1	HO.1.5	SAMPLE		MJWC001	SOIL	15-DEC-15 10:18:00		139.591 g	6	
405245004-1	HO.1.6	SAMPLE		MJWC001	SOIL	15-DEC-15 10:21:00		145.276 g	7	
405245005-1	HO.2.1	SAMPLE		MJWC001	SOIL	15-DEC-15 11:42:00		117.771 g	18	
405245006-1	HO.2.2	SAMPLE		MJWC001	SOIL	15-DEC-15 11:46:00		116.68 g	24	
405245007-1	HO.3.1	SAMPLE		MJWC001	SOIL	15-DEC-15 12:17:00		126.52 g	29	
405245008-1	HO.3.2	SAMPLE		MJWC001	SOIL	15-DEC-15 12:20:00		153.247 g	30	
405245009-1	HO.4.1	SAMPLE		MJWC001	SOIL	15-DEC-15 12:31:00		139.119 g	32	
405245010-1	HO.4.2	SAMPLE		MJWC001	SOIL	15-DEC-15 12:35:00		142.421 g	39	
405245011-1	HO.5.1	SAMPLE		MJWC001	SOIL	15-DEC-15 12:53:00		134.661 g	8	
405245012-1	HO.5.2	SAMPLE		MJWC001	SOIL	15-DEC-15 12:56:00		132.296 g	9	
405245013-1	REACH7.1.1	SAMPLE		MJWC001	SOIL	15-DEC-15 11:04:00		136.095 g	19	
405245014-1	REACH7.1.2	SAMPLE		MJWC001	SOIL	15-DEC-15 11:08:00		154.135 g	20	
405245015-1	REACH21.1.1	SAMPLE		MJWC001	SOIL	15-DEC-15 14:02:00		120.577 g	28	
405245016-1	REACH21.1.2	SAMPLE		MJWC001	SOIL	15-DEC-15 14:06:00		125.408 g	30	
1203621685-1	MB	MB		QC ACCOUNT	SOIL	9/12/16		155.344	44	
1203621686-1	DUP HO.1.1(405245001)	DUP		QC ACCOUNT	SOIL	9/12/16		155.344	5	
1203621687-1	LCS	LCS		QC ACCOUNT	SOIL	9/12/16		115	H	

Data Reviewed By: B. Wilk 9/16/16/3/16
 Page 1 of 1
 10/3/16

GEL Laboratories LLC, Radiochemistry Division

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*****
*                               GEL Laboratories LLC                               *
*                               2040 Savage Road                               *
*                               Charleston, SC 29407                            *
*****
Configuration   : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]R405245001.CNF;1
Background file  : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]BKG_GAM01.CNF;402
Background date  : 2-OCT-2016 10:59:55.
Sample date     : 15-DEC-2015 10:14:00 Acquisition date : 3-OCT-2016 04:32:47.
Sample ID      : R405245001 Sample quantity   : 1.55344E+02 GRAM
Detector name   : GAM01 Detector geometry: CAN
Elapsed live time: 0 01:00:00.00 Elapsed real time: 0 01:00:00.34 0.0%
Energy tolerance : 1.50000 keV Analyst Initials : MXR1
Abundance limit : 75.00000 Sensitivity : 3.00000
Batch ID       : 1596387 Detector SN# :
Matrix Spike ID : LCS ID : 1556
*****
    
```

BACKGROUND CORRECTED SAMPLE PEAK REPORT

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	6	35.53*	50	18	2.02	71.76	68	17	1.38E-02	28.2	2.53E+00
2	6	38.03*	15	53	1.52	76.76	68	17	4.24E-03	106.8	
3	0	63.56*	27	139	1.11	127.81	123	10	7.49E-03	87.3	
4	1	72.27	29	63	1.32	145.24	143	16	8.00E-03	39.3	3.30E+00
5	1	74.77	102	117	1.31	150.24	143	16	2.82E-02	21.1	
6	1	77.18*	160	104	1.32	155.04	143	16	4.45E-02	14.4	
7	4	87.59	40	184	1.78	175.87	171	22	1.11E-02	66.5	1.66E+00
8	4	90.15	33	108	1.22	181.00	171	22	9.25E-03	54.0	
9	4	92.71*	70	135	1.75	186.12	171	22	1.95E-02	36.7	
10	0	129.33	30	141	0.96	259.34	255	10	8.30E-03	76.4	
11	0	139.79	32	89	2.42	280.26	275	9	8.77E-03	56.9	
12	0	185.74*	69	92	1.06	372.15	367	11	1.91E-02	31.8	
13	3	238.62*	250	70	1.12	477.91	472	19	6.95E-02	8.5	2.26E+00
14	3	241.75*	66	99	1.80	484.15	472	19	1.84E-02	35.8	
15	0	254.14	37	53	3.92	508.94	504	11	1.04E-02	40.8	
16	0	271.21	52	98	2.34	543.07	537	16	1.44E-02	45.1	
17	0	278.31	32	51	3.46	557.27	552	11	8.90E-03	47.0	
18	0	295.40*	141	63	1.30	591.45	585	12	3.92E-02	14.2	
19	0	329.40	23	62	1.95	659.43	649	14	6.35E-03	76.5	
20	0	338.67*	55	49	1.15	677.98	672	10	1.53E-02	28.2	
21	0	351.92*	200	46	1.13	704.46	699	12	5.55E-02	9.9	
22	0	425.92	29	90	7.93	852.45	835	30	8.06E-03	97.2	
23	0	510.85*	20	45	1.95	1022.27	1016	13	5.58E-03	85.4	
24	0	566.17*	28	39	2.42	1132.89	1125	13	7.89E-03	50.6	
25	0	583.28*	100	13	1.04	1167.09	1163	10	2.77E-02	12.4	
26	0	609.34*	163	15	1.73	1219.20	1213	12	4.52E-02	9.3	
27	0	641.93	23	84	14.10	1284.37	1254	37	6.52E-03	126.2	
28	0	662.94	36	33	1.41	1326.39	1318	15	1.00E-02	38.8	
29	3	768.52	30	9	2.15	1537.49	1532	23	8.28E-03	27.6	7.45E-01
30	3	772.75	24	8	2.15	1545.95	1532	23	6.81E-03	33.8	
31	0	795.17	14	3	1.67	1590.77	1587	7	3.77E-03	35.4	
32	0	821.93	12	6	0.88	1644.27	1640	9	3.25E-03	49.3	
33	0	855.23	10	20	5.47	1710.85	1700	14	2.70E-03	104.5	
34	0	860.24	22	5	0.57	1720.88	1715	10	6.06E-03	28.8	

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
35	0	911.34*	55	14	1.31	1823.04	1815	13	1.52E-02	19.9	
36	0	935.69	19	8	0.85	1871.72	1866	14	5.40E-03	41.1	
37	0	941.67	11	4	2.38	1883.67	1880	7	3.17E-03	40.3	
38	0	950.88	15	8	2.93	1902.08	1896	12	4.12E-03	47.6	
39	4	964.42	24	14	2.47	1929.15	1923	20	6.65E-03	34.9	7.58E-01
40	4	969.26	32	3	2.26	1938.84	1923	20	8.82E-03	21.6	
41	0	1003.09	8	2	0.53	2006.48	2003	6	2.35E-03	41.4	
42	0	1023.96	13	7	4.35	2048.20	2041	13	3.47E-03	50.7	
43	0	1043.93	10	16	0.98	2088.12	2079	13	2.75E-03	89.8	
44	0	1120.13*	33	5	1.47	2240.47	2235	11	9.13E-03	22.5	
45	0	1156.54	16	14	7.72	2313.26	2302	18	4.31E-03	61.1	
46	0	1178.64	5	9	0.52	2357.44	2350	9	1.25E-03	128.1	
47	0	1199.54	17	6	1.13	2399.23	2395	11	4.70E-03	36.5	
48	0	1295.19	9	0	0.63	2590.44	2586	8	2.50E-03	33.3	
49	0	1355.94	5	6	0.62	2711.90	2708	8	1.28E-03	104.5	
50	0	1460.73*	275	0	1.81	2921.37	2916	12	7.63E-02	6.1	
51	0	1764.31*	20	0	1.99	3528.22	3522	13	5.68E-03	24.0	

Flag: "*" = Peak area was modified by background subtraction

```

Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]R405245001.CNF;1
Analyses by       : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.4,INTERF V2.4
Sample title      : MXR1
Sample date       : 15-DEC-2015 10:14:00 Acquisition date : 3-OCT-2016 04:32:47
Sample ID        : R405245001 Sample quantity   : 155.34 GRAM
Sample type      : SOLID Sample geometry   :
Detector name    : GAMMA1 Detector geometry: CAN
Elapsed live time: 0 01:00:00.00 Elapsed real time: 0 01:00:00.34 0.0%
Energy tolerance : 1.50 keV Half life ratio  : 10.00
Errors propagated: No Systematic Error  : 0.00 %
Efficiency type  : Linear Efficiencies at   : Peak Energy
Abundance limit  : 75.00
    
```

Interference Report

Interfering		Interfered	
Nuclide	Line	Nuclide	Line
PB-214	242.00	RA-224	240.99
PB-214	87.09	SN-126	86.94
PB-214	87.09	SN-126	87.57
PB-214	87.09	CD-109	88.03
TL-208	277.37	HG-203	279.20
PB-214	74.82	AM-243	74.66
PB-214	74.82	TH-228	74.82
PB-214	74.82	PB-212	74.82
PB-214	351.93	BI-211	351.06

Nuclide Type:

Nuclide	Energy	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error	Status
K-40	1460.82	10.66*	9.709E-01	1.241E+01	1.241E+01	12.21	OK
CD-109	88.03	3.70*	4.607E+00	4.115E-01	6.389E-01	477.37	OK
SN-126	64.28	9.60	2.329E+00	7.734E-01	7.734E-01	174.58	OK
	86.94	8.90	4.607E+00	1.711E-01	1.711E-01	477.37	OK
	87.57	37.00*	4.607E+00	4.115E-02	4.115E-02	477.37	OK
BA-137M	661.66	89.90*	1.880E+00	1.091E-01	1.112E-01	77.55	OK
CS-137	661.66	85.10*	1.880E+00	1.153E-01	1.174E-01	77.55	OK
HG-203	70.83	3.69	3.267E+00	1.516E+00	1.181E+02	78.53	OK
	72.87	6.19	3.267E+00	9.035E-01	7.042E+01	78.53	OK
	279.20	81.56*	3.932E+00	3.130E-02	2.440E+00	168.78	OK
TL-208	277.37	6.60	3.944E+00	----- Line	Not Found	-----	<<INT Reject
	583.19	85.00*	2.089E+00	2.910E-01	2.910E-01	24.81	OK
	860.56	12.50	1.520E+00	5.705E-01	5.705E-01	57.62	OK
PB-212	74.82	10.28	3.518E+00	1.134E+00	1.134E+00	68.06	OK
	77.11	17.10	3.748E+00	1.577E+00	1.577E+00	28.80	OK
	238.63	43.60*	4.455E+00	7.320E-01	7.320E-01	16.98	OK
	300.09	3.30	3.690E+00	----- Line	Not Found	-----	Absent
BI-214	609.32	45.49*	2.015E+00	9.153E-01	9.156E-01	18.67	OK
	1120.29	14.92	1.223E+00	8.690E-01	8.693E-01	45.06	OK
	1764.49	15.30	8.117E-01	7.525E-01	7.527E-01	48.04	OK
PB-214	74.82	5.80	3.522E+00	----- Line	Not Found	-----	<<INT Reject
	77.11	9.70	3.748E+00	2.781E+00	2.781E+00	28.80	OK
	87.09	3.41	4.572E+00	----- Line	Not Found	-----	<<INT Reject
	242.00	7.25	4.406E+00	----- Line	Not Found	-----	<<INT Reject
	295.22	18.42	3.740E+00	1.138E+00	1.139E+00	28.50	OK
	351.93	35.60*	3.216E+00	9.533E-01	9.536E-01	19.86	OK
RN-222	609.32	45.49*	2.015E+00	9.153E-01	9.156E-01	18.67	OK
	1120.29	14.92	1.223E+00	8.690E-01	8.693E-01	45.06	OK
	1764.49	15.30	8.117E-01	7.525E-01	7.527E-01	48.04	OK
RA-224	240.99	4.10*	4.410E+00	6.071E-02	6.071E-02	2621.68	OK
RA-226	609.32	45.49*	2.015E+00	9.153E-01	9.156E-01	18.67	OK
	1120.29	14.92	1.223E+00	8.690E-01	8.693E-01	45.06	OK
	1764.49	15.30	8.117E-01	7.525E-01	7.527E-01	48.04	OK
AC-228	105.21	1.10	5.519E+00	----- Line	Not Found	-----	Absent
	338.32	11.27	3.325E+00	8.066E-01	8.066E-01	56.41	OK
	794.95	4.25	1.621E+00	9.890E-01	9.890E-01	70.78	OK
	835.71	1.61	1.557E+00	----- Line	Not Found	-----	Absent
	911.20	25.80*	1.451E+00	7.237E-01	7.237E-01	39.75	OK
	968.97	15.80	1.379E+00	7.144E-01	7.144E-01	43.19	OK
RA-228	105.21	1.10	5.519E+00	----- Line	Not Found	-----	Absent
	338.32	11.27	3.325E+00	8.066E-01	8.066E-01	56.41	OK
	794.95	4.25	1.621E+00	9.890E-01	9.890E-01	70.78	OK
	835.71	1.61	1.557E+00	----- Line	Not Found	-----	Absent
	911.20	25.80*	1.451E+00	7.237E-01	7.237E-01	39.75	OK
	968.97	15.80	1.379E+00	7.144E-01	7.144E-01	43.19	OK
TH-228	74.82	10.28	3.518E+00	1.134E+00	1.134E+00	68.06	OK
	77.11	17.10	3.748E+00	1.577E+00	1.577E+00	28.80	OK
	238.63	43.60*	4.455E+00	7.320E-01	7.320E-01	16.98	OK
	300.09	3.30	3.690E+00	----- Line	Not Found	-----	Absent

Nuclide Type:

Nuclide	Energy	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error	Status
TH-230	609.32	45.49*	2.015E+00	9.153E-01	9.153E-01	18.67	OK
	1120.29	14.92	1.223E+00	8.690E-01	8.690E-01	45.06	OK
	1764.49	15.30	8.117E-01	7.525E-01	7.525E-01	48.04	OK
TH-232	105.21	1.10	5.519E+00	-----	Line Not Found	-----	Absent
	338.32	11.27	3.325E+00	8.066E-01	8.066E-01	56.41	OK
	835.71	1.61	1.557E+00	-----	Line Not Found	-----	Absent
	911.20	25.80*	1.451E+00	7.237E-01	7.237E-01	39.75	OK
	968.97	15.80	1.379E+00	7.144E-01	7.144E-01	43.19	OK
TH-234	63.29	3.70*	2.329E+00	2.007E+00	2.007E+00	174.58	OK
	92.59	4.23	4.941E+00	2.080E+00	2.080E+00	73.37	OK
U-234	609.32	45.49*	2.015E+00	9.153E-01	9.153E-01	18.67	OK
	1120.29	14.92	1.223E+00	8.690E-01	8.690E-01	45.06	OK
	1764.49	15.30	8.117E-01	7.525E-01	7.525E-01	48.04	OK
U-235	89.96	3.47	4.782E+00	1.248E+00	1.248E+00	108.08	OK
	93.35	5.60	4.941E+00	1.571E+00	1.571E+00	73.37	OK
	143.76	10.96*	5.868E+00	-----	Line Not Found	-----	Absent
	163.33	5.08	5.647E+00	-----	Line Not Found	-----	Absent
	185.72	57.20	5.296E+00	1.318E-01	1.318E-01	63.51	OK
U-238	205.31	5.01	4.973E+00	-----	Line Not Found	-----	Absent
	63.29	3.70*	2.329E+00	2.007E+00	2.007E+00	174.58	OK
	92.59	4.23	4.941E+00	2.080E+00	2.080E+00	73.37	OK
AM-243	43.53	5.90	3.822E-01	-----	Line Not Found	-----	Absent
	74.66	67.20*	3.518E+00	1.735E-01	1.735E-01	68.06	OK
ANH-511	511.00	100.00*	2.335E+00	4.520E-02	4.520E-02	170.89	OK

Flag: "*" = Keyline

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*****
*                               GEL Laboratories LLC                               *
*                               2040 Savage Road                               *
*                               Charleston, SC 29407                          *
*****
*                               DETECTOR AND SAMPLE DATA                       *
*
* Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]R405245001.CNF;1
* Acquisition date   : 3-OCT-2016 04:32:47 Sensitivity      : 3.000
* Detector ID       : GAM01 Energy tolerance: 1.500
* Elapsed live time : 0 01:00:00.00 Abundance limit : 75.000
* Elapsed real time : 0 01:00:00.34 Half life ratio : *****
* Sample date       : 15-DEC-2015 10:14:00 Analyst initials: MXR1
* Sample ID         : R405245001 Sample Quantity : 1.5534E+02 GRAM
* Batch Number      : 1596387 Wet Weight : 0.00000
* Wet wt corr       : 1.00000 Dry Weight : 0.00000
* Nuclide Library   : SOLID.NLB;6
*****
*                               CALIBRATION INFORMATION                         *
*
* Eff. Cal. date    : 20-JUL-2016 07:03:55 Eff. Geometry   : CAN
* Eff. File         : DKA100:[CANBERRA.GAMMA]EFF_GAM01_CAN.CNF;9
*****

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Combined Activity-MDA Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM)	Cnt uncert (1.96-sigma)	MDA (pCi/GRAM)
K-40	1.241E+01	1.485E+00	5.972E-01
CD-109	6.389E-01	2.989E+00	2.179E+00
SN-126	4.115E-02	1.925E-01	1.413E-01
BA-137M	1.112E-01	8.449E-02	5.751E-02
CS-137	1.174E-01	8.925E-02	6.075E-02
HG-203	2.440E+00	4.035E+00	3.721E+00
TL-208	2.910E-01	7.074E-02	5.889E-02
PB-212	7.320E-01	1.218E-01	9.555E-02
BI-214	9.156E-01	1.675E-01	1.144E-01
PB-214	9.536E-01	1.856E-01	1.059E-01
RN-222	9.156E-01	1.675E-01	1.144E-01
RA-224	6.071E-02	1.560E+00	1.024E+00
RA-226	9.156E-01	1.675E-01	1.144E-01
AC-228	7.237E-01	2.819E-01	2.186E-01
RA-228	7.237E-01	2.819E-01	2.186E-01
TH-228	7.320E-01	1.218E-01	9.555E-02
TH-230	9.153E-01	1.675E-01	1.144E-01
TH-232	7.237E-01	2.819E-01	2.186E-01
TH-234	2.007E+00	3.433E+00	2.705E+00
U-234	9.153E-01	1.675E-01	1.144E-01
U-235	6.146E-02	2.016E-01	3.940E-01
U-238	2.007E+00	3.433E+00	2.705E+00
AM-243	1.735E-01	1.157E-01	9.277E-02
ANH-511	4.520E-02	7.570E-02	5.480E-02

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/GRAM)	K.L. Cnt Uncert (1.96-sigma)	MDA (pCi/GRAM)	
BE-7	-8.557E+00	1.141E+01	2.009E+01	NOT IDENT.
NA-22	1.076E-02	4.437E-02	9.633E-02	NOT IDENT.
NA-24	0.000E+00	1.960E+41	0.000E+00	SHORT HLIF
AL-26	1.877E-02	3.142E-02	8.039E-02	NOT IDENT.
SC-46	-5.998E-02	3.698E-01	6.989E-01	FAIL ABUN
V-48	0.000E+00	1.273E+04	0.000E+00	SHORT HLIF

CR-51	0.000E+00	3.347E+02	0.000E+00	SHORT HLIF
MN-54	4.997E-02	5.188E-02	1.219E-01	NOT IDENT.
CO-56	-3.808E-01	5.580E-01	8.829E-01	NOT IDENT.
MN-56	0.000E+00	1.465E+41	0.000E+00	SHORT HLIF
CO-57	-8.520E-03	4.598E-02	9.151E-02	NOT IDENT.
CO-58	-1.159E-01	4.179E-01	7.980E-01	NOT IDENT.
FE-59	2.891E+00	4.883E+00	1.115E+01	NOT IDENT.
CO-60	9.548E-03	3.719E-02	8.249E-02	NOT IDENT.
ZN-65	-5.723E-02	2.065E-01	3.251E-01	NOT IDENT.
GE-68	-1.773E+00	2.462E+00	4.024E+00	NOT IDENT.
AS-73	-3.901E+00	1.111E+01	2.039E+01	NOT IDENT.
AS-74	0.000E+00	3.856E+03	0.000E+00	SHORT HLIF
SE-75	2.424E-02	1.808E-01	3.635E-01	FAIL ABUN
BR-77	0.000E+00	2.791E+36	0.000E+00	SHORT HLIF
SR-82	0.000E+00	4.402E+02	0.000E+00	SHORT HLIF
RB-83	-2.286E-01	5.753E-01	1.071E+00	NOT IDENT.
KR-85	4.749E+00	7.057E+00	1.384E+01	NOT IDENT.
SR-85	4.652E-01	6.922E-01	1.357E+00	NOT IDENT.
RB-86	0.000E+00	2.288E+04	0.000E+00	SHORT HLIF
Y-88	3.844E-03	1.981E-01	4.519E-01	NOT IDENT.
Y-91	-3.010E+02	5.713E+02	9.044E+02	NOT IDENT.
NB-94	1.152E-02	3.216E-02	6.552E-02	NOT IDENT.
NB-95	-6.143E-02	8.671E-01	1.476E+00	NOT IDENT.
NB-95M	-1.172E+00	2.336E+00	3.904E+00	NOT IDENT.
ZR-95	6.073E-02	1.405E+00	2.732E+00	NOT IDENT.
NB-97	0.000E+00	1.960E+41	0.000E+00	SHORT HLIF
ZR-97	0.000E+00	1.960E+41	0.000E+00	SHORT HLIF
MO-99	0.000E+00	2.462E+31	0.000E+00	SHORT HLIF
TC-99M	0.000E+00	1.116E+41	0.000E+00	SHORT HLIF
RH-101	-2.873E-02	3.728E-02	6.281E-02	NOT IDENT.
RH-102	4.733E-02	5.899E-02	1.287E-01	NOT IDENT.
RU-103	-2.341E+00	4.452E+00	8.145E+00	FAIL ABUN
RH-106	2.108E-01	5.440E-01	1.107E+00	NOT IDENT.
RU-106	2.108E-01	5.440E-01	1.107E+00	NOT IDENT.
AG-108M	-1.111E-02	3.098E-02	5.117E-02	NOT IDENT.
AG-110M	-1.017E-02	1.149E-01	2.170E-01	NOT IDENT.
SN-113	-1.704E-01	2.177E-01	3.876E-01	NOT IDENT.
CD-115	0.000E+00	3.178E+38	0.000E+00	SHORT HLIF
SN-117M	0.000E+00	7.081E+04	0.000E+00	SHORT HLIF
TE-123M	5.353E-02	1.277E-01	2.608E-01	NOT IDENT.
SB-124	-2.806E-01	1.762E+00	3.778E+00	NOT IDENT.
SB-125	1.360E-02	9.507E-02	1.915E-01	NOT IDENT.
TE-125M	-8.139E+01	2.827E+02	5.029E+02	NOT IDENT.
I-126	0.000E+00	5.223E+05	0.000E+00	SHORT HLIF
SB-126	0.000E+00	7.821E+05	0.000E+00	SHORT HLIF
SB-127	0.000E+00	6.827E+21	0.000E+00	SHORT HLIF
I-131	0.000E+00	2.373E+09	0.000E+00	SHORT HLIF
I-132	0.000E+00	1.395E+41	0.000E+00	SHORT HLIF
TE-132	0.000E+00	7.772E+25	0.000E+00	SHORT HLIF
BA-133	1.544E-02	3.948E-02	7.466E-02	NOT IDENT.
I-133	0.000E+00	1.786E+41	0.000E+00	SHORT HLIF
CS-134	6.433E-02	4.462E-02	1.045E-01	FAIL ABUN
CS-135	-4.598E-02	1.464E-01	2.495E-01	NOT IDENT.
I-135	0.000E+00	1.960E+41	0.000E+00	SHORT HLIF
CS-136	0.000E+00	2.591E+05	0.000E+00	SHORT HLIF
CE-139	5.839E-03	9.319E-02	1.877E-01	NOT IDENT.
BA-140	0.000E+00	9.365E+05	0.000E+00	SHORT HLIF
LA-140	0.000E+00	2.859E+05	0.000E+00	SHORT HLIF
CE-141	1.070E+01	2.123E+01	4.359E+01	NOT IDENT.
CE-143	0.000E+00	1.960E+41	0.000E+00	SHORT HLIF
CE-144	-2.255E-01	3.973E-01	6.811E-01	NOT IDENT.
PM-144	-2.252E-03	5.565E-02	1.073E-01	NOT IDENT.
PR-144	-1.786E-01	4.819E+00	9.292E+00	NOT IDENT.
PM-146	2.629E-02	4.461E-02	9.325E-02	NOT IDENT.
ND-147	0.000E+00	1.805E+07	0.000E+00	SHORT HLIF
PM-147	-2.500E+02	7.723E+02	1.526E+03	NOT IDENT.
PM-149	0.000E+00	5.091E+39	0.000E+00	SHORT HLIF
EU-150	8.498E-03	2.721E-02	5.000E-02	FAIL ABUN
EU-152	2.762E-02	9.267E-02	1.873E-01	FAIL ABUN
GD-153	1.030E-01	1.995E-01	3.559E-01	NOT IDENT.
EU-154	3.988E-02	1.069E-01	2.380E-01	NOT IDENT.
EU-155	9.628E-02	1.181E-01	2.311E-01	FAIL ABUN
TB-160	-4.843E-01	1.748E+00	3.239E+00	FAIL ABUN
HO-166M	-1.687E-02	5.919E-02	1.096E-01	FAIL ABUN
TM-171	-3.152E+00	2.764E+01	5.201E+01	NOT IDENT.
HF-172	-2.829E-03	2.553E-01	4.620E-01	FAIL ABUN
LU-172	7.992E-02	7.174E-02	1.705E-01	FAIL ABUN
LU-176	2.388E-03	2.271E-02	4.538E-02	FAIL ABUN

HF-181	-1.701E+00	4.052E+00	7.487E+00	NOT IDENT.
TA-182	-3.106E-01	7.780E-01	1.503E+00	FAIL ABUN
RE-183	-1.380E+00	3.550E+00	6.466E+00	NOT IDENT.
RE-184	7.641E+00	2.158E+01	4.670E+01	NOT IDENT.
W-188	-6.523E+01	1.250E+02	2.055E+02	FAIL ABUN
IR-192	-2.993E-02	3.752E-01	7.403E-01	FAIL ABUN
BI-207	2.439E-02	4.992E-02	1.052E-01	FAIL ABUN
PB-210	3.137E+00	4.274E+00	8.895E+00	NOT IDENT.
BI-211	0.000E+00	5.112E-01	8.325E-01	FAIL ABUN
PB-211	-2.608E-01	6.629E-01	1.239E+00	FAIL ABUN
BI-212	4.306E-01	5.224E-01	1.115E+00	NOT IDENT.
RN-219	1.820E-01	3.694E-01	7.656E-01	FAIL ABUN
RA-223	-1.887E-01	6.476E-01	1.096E+00	FAIL ABUN
AC-227	-1.022E-01	2.375E-01	3.995E-01	NOT IDENT.
TH-227	-1.022E-01	2.375E-01	3.995E-01	NOT IDENT.
TH-229	-8.025E-02	4.318E-01	8.451E-01	FAIL ABUN
PA-231	1.575E-01	4.244E-01	8.625E-01	NOT IDENT.
TH-231	-1.887E-01	6.476E-01	1.096E+00	FAIL ABUN
PA-233	8.381E-03	5.640E-02	1.130E-01	NOT IDENT.
PA-234	-1.257E-01	2.781E-01	3.692E-01	NOT IDENT.
PA-234M	-2.831E+00	4.115E+00	6.676E+00	NOT IDENT.
NP-237	8.381E-03	5.640E-02	1.130E-01	NOT IDENT.
NP-238	0.000E+00	5.616E+00	0.000E+00	SHORT HLIF
NP-239	1.660E-01	2.657E-01	5.102E-01	FAIL ABUN
PU-239	4.823E+02	7.218E+02	6.857E+02	FAIL ABUN
AM-241	6.847E-02	1.857E-01	3.349E-01	NOT IDENT.
CM-243	-7.309E-02	1.096E-01	1.888E-01	FAIL ABUN
BK-247	6.953E-03	6.668E-02	1.334E-01	NOT IDENT.
CM-247	3.252E-02	3.365E-02	7.315E-02	FAIL ABUN
CF-249	6.152E-03	3.612E-02	7.241E-02	FAIL ABUN
CF-251	-2.702E-02	1.088E-01	2.123E-01	NOT IDENT.

Nuclide Line Activity Report

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
K-40	1460.82	266	10.66*	9.709E-01	1.241E+01	1.241E+01	12.21
CD-109	88.03	52	3.70*	4.607E+00	1.461E+00	2.268E+00	132.92
SN-126	64.28	36	9.60	2.329E+00	7.734E-01	7.734E-01	174.58
	86.94	52	8.90	4.607E+00	6.073E-01	6.073E-01	132.92
	87.57	52	37.00*	4.607E+00	1.461E-01	1.461E-01	132.92
BA-137M	661.66	38	89.90*	1.880E+00	1.091E-01	1.112E-01	77.55
CS-137	661.66	38	85.10*	1.880E+00	1.153E-01	1.174E-01	77.55
HG-203	70.83	38	3.69	3.267E+00	1.516E+00	1.181E+02	78.53
	72.87	38	6.19	3.267E+00	9.035E-01	7.042E+01	78.53
	279.20	37	81.56*	3.932E+00	5.589E-02	4.356E+00	93.98
TL-208	277.37	37	6.60	3.932E+00	6.907E-01	6.907E-01	93.98
	583.19	107	85.00*	2.089E+00	2.910E-01	2.910E-01	24.81
	860.56	22	12.50	1.520E+00	5.705E-01	5.705E-01	57.62
BI-211	72.87	38	1.23	3.267E+00	4.547E+00	4.547E+00	78.53
	351.06	226	12.92*	3.216E+00	2.627E+00	2.627E+00	19.86
PB-212	74.82	133	10.28	3.518E+00	1.776E+00	1.776E+00	42.21
	77.11	209	17.10	3.748E+00	1.577E+00	1.577E+00	28.80
	238.63	294	43.60*	4.455E+00	7.320E-01	7.320E-01	16.98
	300.09	-----	3.30	3.690E+00	-----	Line Not Found	-----
BI-214	609.32	174	45.49*	2.015E+00	9.153E-01	9.156E-01	18.67
	1120.29	33	14.92	1.223E+00	8.690E-01	8.693E-01	45.06
	1764.49	19	15.30	8.117E-01	7.525E-01	7.527E-01	48.04
PB-214	74.82	133	5.80	3.518E+00	3.148E+00	3.150E+00	42.21
	77.11	209	9.70	3.748E+00	2.781E+00	2.781E+00	28.80
	87.09	52	3.41	4.607E+00	1.585E+00	1.585E+00	132.92
	242.00	78	7.25	4.410E+00	1.173E+00	1.173E+00	71.59
	295.22	162	18.42	3.740E+00	1.138E+00	1.139E+00	28.50
	351.93	226	35.60*	3.216E+00	9.533E-01	9.536E-01	19.86
RN-222	609.32	174	45.49*	2.015E+00	9.153E-01	9.156E-01	18.67
	1120.29	33	14.92	1.223E+00	8.690E-01	8.693E-01	45.06
	1764.49	19	15.30	8.117E-01	7.525E-01	7.527E-01	48.04
RA-224	240.99	78	4.10*	4.410E+00	2.074E+00	2.074E+00	71.59
RA-226	609.32	174	45.49*	2.015E+00	9.153E-01	9.156E-01	18.67
	1120.29	33	14.92	1.223E+00	8.690E-01	8.693E-01	45.06
	1764.49	19	15.30	8.117E-01	7.525E-01	7.527E-01	48.04
AC-228	105.21	-----	1.10	5.519E+00	-----	Line Not Found	-----
	338.32	63	11.27	3.325E+00	8.066E-01	8.066E-01	56.41
	794.95	14	4.25	1.621E+00	9.890E-01	9.890E-01	70.78
	835.71	-----	1.61	1.557E+00	-----	Line Not Found	-----
	911.20	56	25.80*	1.451E+00	7.237E-01	7.237E-01	39.75
	968.97	32	15.80	1.379E+00	7.144E-01	7.144E-01	43.19
RA-228	105.21	-----	1.10	5.519E+00	-----	Line Not Found	-----
	338.32	63	11.27	3.325E+00	8.066E-01	8.066E-01	56.41
	794.95	14	4.25	1.621E+00	9.890E-01	9.890E-01	70.78
	835.71	-----	1.61	1.557E+00	-----	Line Not Found	-----
	911.20	56	25.80*	1.451E+00	7.237E-01	7.237E-01	39.75
	968.97	32	15.80	1.379E+00	7.144E-01	7.144E-01	43.19

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
TH-228	74.82	133	10.28	3.518E+00	1.776E+00	1.776E+00	42.21
	77.11	209	17.10	3.748E+00	1.577E+00	1.577E+00	28.80
	238.63	294	43.60*	4.455E+00	7.320E-01	7.320E-01	16.98
	300.09	-----	3.30	3.690E+00	-----	Line Not Found	-----
TH-230	609.32	174	45.49*	2.015E+00	9.153E-01	9.153E-01	18.67
	1120.29	33	14.92	1.223E+00	8.690E-01	8.690E-01	45.06
	1764.49	19	15.30	8.117E-01	7.525E-01	7.525E-01	48.04
TH-232	105.21	-----	1.10	5.519E+00	-----	Line Not Found	-----
	338.32	63	11.27	3.325E+00	8.066E-01	8.066E-01	56.41
	835.71	-----	1.61	1.557E+00	-----	Line Not Found	-----
	911.20	56	25.80*	1.451E+00	7.237E-01	7.237E-01	39.75
TH-234	968.97	32	15.80	1.379E+00	7.144E-01	7.144E-01	43.19
	63.29	36	3.70*	2.329E+00	2.007E+00	2.007E+00	174.58
	92.59	90	4.23	4.941E+00	2.080E+00	2.080E+00	73.37
U-234	609.32	174	45.49*	2.015E+00	9.153E-01	9.153E-01	18.67
	1120.29	33	14.92	1.223E+00	8.690E-01	8.690E-01	45.06
	1764.49	19	15.30	8.117E-01	7.525E-01	7.525E-01	48.04
U-235	89.96	43	3.47	4.782E+00	1.248E+00	1.248E+00	108.08
	93.35	90	5.60	4.941E+00	1.571E+00	1.571E+00	73.37
	143.76	-----	10.96*	5.868E+00	-----	Line Not Found	-----
	163.33	-----	5.08	5.647E+00	-----	Line Not Found	-----
	185.72	83	57.20	5.296E+00	1.318E-01	1.318E-01	63.51
U-238	205.31	-----	5.01	4.973E+00	-----	Line Not Found	-----
	63.29	36	3.70*	2.329E+00	2.007E+00	2.007E+00	174.58
	92.59	90	4.23	4.941E+00	2.080E+00	2.080E+00	73.37
AM-243	43.53	-----	5.90	3.822E-01	-----	Line Not Found	-----
	74.66	133	67.20*	3.518E+00	2.717E-01	2.718E-01	42.21
ANH-511	511.00	22	100.00*	2.335E+00	4.520E-02	4.520E-02	170.89

Flag: "*" = Keyline

Total number of lines in spectrum 51
 Number of unidentified lines 16
 Number of lines tentatively identified by NID 35 68.63%

Nuclide Type :

Nuclide	Hlife	Decay	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
K-40	1.25E+09Y	1.00	1.241E+01	1.241E+01	0.152E+01	12.21	
CD-109	461.40D	1.55	1.461E+00	2.268E+00	3.014E+00	132.92	
SN-126	2.30E+05Y	1.00	1.461E-01	1.461E-01	1.942E-01	132.92	
BA-137M	30.08Y	1.02	1.091E-01	1.112E-01	0.862E-01	77.55	
CS-137	30.08Y	1.02	1.153E-01	1.174E-01	0.911E-01	77.55	
HG-203	46.59D	77.9	5.589E-02	4.356E+00	4.094E+00	93.98	
TL-208	1.41E+10Y	1.00	2.910E-01	2.910E-01	0.722E-01	24.81	
BI-211	7.04E+08Y	1.00	2.627E+00	2.627E+00	0.522E+00	19.86	
PB-212	1.41E+10Y	1.00	7.320E-01	7.320E-01	1.243E-01	16.98	
BI-214	1600.00Y	1.00	9.153E-01	9.156E-01	1.710E-01	18.67	
PB-214	1600.00Y	1.00	9.533E-01	9.536E-01	1.894E-01	19.86	
RN-222	1600.00Y	1.00	9.153E-01	9.156E-01	1.710E-01	18.67	
RA-224	1.41E+10Y	1.00	2.074E+00	2.074E+00	1.485E+00	71.59	
RA-226	1600.00Y	1.00	9.153E-01	9.156E-01	1.710E-01	18.67	
AC-228	1.41E+10Y	1.00	7.237E-01	7.237E-01	2.877E-01	39.75	
RA-228	1.41E+10Y	1.00	7.237E-01	7.237E-01	2.877E-01	39.75	
TH-228	1.41E+10Y	1.00	7.320E-01	7.320E-01	1.243E-01	16.98	
TH-230	7.54E+04Y	1.00	9.153E-01	9.153E-01	1.709E-01	18.67	
TH-232	1.41E+10Y	1.00	7.237E-01	7.237E-01	2.877E-01	39.75	
TH-234	4.47E+09Y	1.00	2.007E+00	2.007E+00	3.503E+00	174.58	
U-234	2.45E+05Y	1.00	9.153E-01	9.153E-01	1.709E-01	18.67	
U-235	7.04E+08Y	1.00	1.318E-01	1.318E-01	0.837E-01	63.51	K
U-238	4.47E+09Y	1.00	2.007E+00	2.007E+00	3.503E+00	174.58	
AM-243	7370.00Y	1.00	2.717E-01	2.718E-01	1.147E-01	42.21	
ANH-511	1.00E+09Y	1.00	4.520E-02	4.520E-02	7.725E-02	170.89	
Total Activity :			3.291E+01	3.803E+01			

Grand Total Activity : 3.291E+01 3.803E+01

Flags: "K" = Keyline not found "M" = Manually accepted
 "E" = Manually edited "A" = Nuclide specific abn. limit

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
6	35.53	69	25	2.02	71.76	68	17	1.38E-02	56.3	4.36E-02	
6	38.03	21	74	1.52	76.76	68	17	4.24E-03	****	1.08E-01	
0	129.33	37	176	0.96	259.34	255	10	8.30E-03	****	5.91E+00	T
0	139.79	39	111	2.42	280.26	275	9	8.77E-03	****	5.89E+00	T
0	254.14	44	61	3.92	508.94	504	11	1.04E-02	81.6	4.24E+00	T
0	271.21	60	114	2.34	543.07	537	16	1.44E-02	90.3	4.02E+00	T
0	329.40	26	71	1.95	659.43	649	14	6.35E-03	****	3.41E+00	T
0	425.92	32	100	7.93	852.45	835	30	8.06E-03	****	2.73E+00	T
0	566.17	31	42	2.42	1132.89	1125	13	7.89E-03	****	2.14E+00	
0	641.93	25	89	14.10	1284.37	1254	37	6.52E-03	****	1.93E+00	
3	768.52	31	10	2.15	1537.49	1532	23	8.28E-03	55.2	1.67E+00	
3	772.75	25	8	2.15	1545.95	1532	23	6.81E-03	67.7	1.66E+00	T
0	821.93	12	7	0.88	1644.27	1640	9	3.25E-03	98.5	1.58E+00	
0	855.23	10	21	5.47	1710.85	1700	14	2.70E-03	****	1.53E+00	
0	935.69	20	8	0.85	1871.72	1866	14	5.40E-03	82.1	1.42E+00	
0	941.67	12	4	2.38	1883.67	1880	7	3.17E-03	80.6	1.41E+00	
0	950.88	15	8	2.93	1902.08	1896	12	4.12E-03	95.2	1.40E+00	
4	964.42	24	14	2.47	1929.15	1923	20	6.65E-03	69.8	1.38E+00	T
0	1003.09	9	2	0.53	2006.48	2003	6	2.35E-03	82.8	1.34E+00	T
0	1023.96	13	7	4.35	2048.20	2041	13	3.47E-03	****	1.32E+00	
0	1043.93	10	16	0.98	2088.12	2079	13	2.75E-03	****	1.30E+00	
0	1156.54	15	13	7.72	2313.26	2302	18	4.31E-03	****	1.19E+00	
0	1178.64	4	8	0.52	2357.44	2350	9	1.25E-03	****	1.17E+00	T
0	1199.54	17	6	1.13	2399.23	2395	11	4.70E-03	73.0	1.15E+00	
0	1295.19	9	0	0.63	2590.44	2586	8	2.50E-03	66.7	1.08E+00	
0	1355.94	4	6	0.62	2711.90	2708	8	1.28E-03	****	1.04E+00	

Flags: "T" = Tentatively associated

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*****
*                               GEL Laboratories LLC                               *
*                               2040 Savage Road                               *
*                               Charleston, SC 29407                           *
*****
*                               DETECTOR AND SAMPLE DATA                       *
*
* Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]R405245001.CNF;1
* Acquisition date   : 3-OCT-2016 04:32:47 Sensitivity      : 3.000
* Detector ID       : GAM01 Energy tolerance: 1.500
* Elapsed live time: 0 01:00:00.00 Abundance limit : 75.000
* Elapsed real time: 0 01:00:00.34 Half life ratio : *****
* Sample date      : 15-DEC-2015 10:14:00 Nuclide Library : SOLID
* Sample ID       : R405245001 Analyst initials: MXR1
* Batch Number    : 1596387 Sample Quantity : 1.5534E+02 GRAM
* Wet wt corr     : 1.00000 Wet Weight : 0.00000
*                               Dry Weight : 0.00000
*****
*                               CALIBRATION INFORMATION                         *
*
* Eff. Cal. date    : 20-JUL-2016 07:03:55 Eff. Geometry   : CAN
* Eff. File        : DKA100:[CANBERRA.GAMMA]EFF_GAM01_CAN.CNF;9
*****

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Combined Critical Level Report

NOTE: Not all "Identified Nuclides" are valid.
 Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Lc (pCi/GRAM)
K-40	2.349E-01
CD-109	1.026E+00
SN-126	6.653E-02
BA-137M	2.471E-02
CS-137	2.610E-02
HG-203	1.693E+00
TL-208	2.565E-02
PB-212	4.423E-02
BI-214	4.984E-02
PB-214	4.696E-02
RN-222	4.984E-02
RA-224	4.742E-01
RA-226	4.984E-02
AC-228	9.148E-02
RA-228	9.148E-02
TH-228	4.423E-02
TH-230	4.983E-02
TH-232	9.148E-02
TH-234	1.269E+00
U-234	4.983E-02
U-235	1.862E-01
U-238	1.269E+00
AM-243	4.338E-02
ANH-511	2.450E-02

---- Non-Identified Nuclides ----

Nuclide	Lc (pCi/GRAM)	
BE-7	8.857E+00	NOT IDENT.
NA-22	4.069E-02	NOT IDENT.
NA-24	0.000E+00	SHORT HLIF
AL-26	3.190E-02	NOT IDENT.
SC-46	2.986E-01	FAIL ABUN
V-48	0.000E+00	SHORT HLIF
CR-51	0.000E+00	SHORT HLIF

MN-54	5.275E-02	NOT IDENT.
CO-56	3.814E-01	NOT IDENT.
MN-56	0.000E+00	SHORT HLIF
CO-57	4.282E-02	NOT IDENT.
CO-58	3.250E-01	NOT IDENT.
FE-59	4.672E+00	NOT IDENT.
CO-60	3.428E-02	NOT IDENT.
ZN-65	1.380E-01	NOT IDENT.
GE-68	1.667E+00	NOT IDENT.
AS-73	9.492E+00	NOT IDENT.
AS-74	0.000E+00	SHORT HLIF
SE-75	1.663E-01	FAIL ABUN
BR-77	0.000E+00	SHORT HLIF
SR-82	0.000E+00	SHORT HLIF
RB-83	4.665E-01	NOT IDENT.
KR-85	6.212E+00	NOT IDENT.
SR-85	6.093E-01	NOT IDENT.
RB-86	0.000E+00	SHORT HLIF
Y-88	1.692E-01	NOT IDENT.
Y-91	3.812E+02	NOT IDENT.
NB-94	2.901E-02	NOT IDENT.
NB-95	6.424E-01	NOT IDENT.
NB-95M	1.805E+00	NOT IDENT.
ZR-95	1.192E+00	NOT IDENT.
NB-97	0.000E+00	SHORT HLIF
ZR-97	0.000E+00	SHORT HLIF
MO-99	0.000E+00	SHORT HLIF
TC-99M	0.000E+00	SHORT HLIF
RH-101	2.935E-02	NOT IDENT.
RH-102	5.722E-02	NOT IDENT.
RU-103	3.524E+00	FAIL ABUN
RH-106	4.947E-01	NOT IDENT.
RU-106	4.947E-01	NOT IDENT.
AG-108M	2.278E-02	NOT IDENT.
AG-110M	9.458E-02	NOT IDENT.
SN-113	1.729E-01	NOT IDENT.
CD-115	0.000E+00	SHORT HLIF
SN-117M	0.000E+00	SHORT HLIF
TE-123M	1.225E-01	NOT IDENT.
SB-124	1.414E+00	NOT IDENT.
SB-125	8.548E-02	NOT IDENT.
TE-125M	2.357E+02	NOT IDENT.
I-126	0.000E+00	SHORT HLIF
SB-126	0.000E+00	SHORT HLIF
SB-127	0.000E+00	SHORT HLIF
I-131	0.000E+00	SHORT HLIF
I-132	0.000E+00	SHORT HLIF
TE-132	0.000E+00	SHORT HLIF
BA-133	3.369E-02	NOT IDENT.
I-133	0.000E+00	SHORT HLIF
CS-134	4.595E-02	FAIL ABUN
CS-135	1.141E-01	NOT IDENT.
I-135	0.000E+00	SHORT HLIF
CS-136	0.000E+00	SHORT HLIF
CE-139	8.710E-02	NOT IDENT.
BA-140	0.000E+00	SHORT HLIF
LA-140	0.000E+00	SHORT HLIF
CE-141	2.053E+01	NOT IDENT.
CE-143	0.000E+00	SHORT HLIF
CE-144	3.188E-01	NOT IDENT.
PM-144	4.709E-02	NOT IDENT.
PR-144	4.080E+00	NOT IDENT.
PM-146	4.215E-02	NOT IDENT.
ND-147	0.000E+00	SHORT HLIF
PM-147	7.114E+02	NOT IDENT.
PM-149	0.000E+00	SHORT HLIF
EU-150	2.285E-02	FAIL ABUN
EU-152	8.551E-02	FAIL ABUN
GD-153	1.671E-01	NOT IDENT.
EU-154	1.006E-01	NOT IDENT.
EU-155	1.088E-01	FAIL ABUN
TB-160	1.373E+00	FAIL ABUN
HO-166M	4.781E-02	FAIL ABUN
TM-171	2.421E+01	NOT IDENT.
HF-172	2.169E-01	FAIL ABUN
LU-172	7.391E-02	FAIL ABUN
LU-176	2.067E-02	FAIL ABUN
HF-181	3.331E+00	NOT IDENT.

TA-182	6.243E-01	FAIL ABUN
RE-183	3.013E+00	NOT IDENT.
RE-184	1.965E+01	NOT IDENT.
W-188	9.451E+01	FAIL ABUN
IR-192	3.334E-01	FAIL ABUN
BI-207	4.551E-02	FAIL ABUN
PB-210	4.160E+00	NOT IDENT.
BI-211	4.000E-01	FAIL ABUN
PB-211	5.565E-01	FAIL ABUN
BI-212	4.997E-01	NOT IDENT.
RN-219	3.468E-01	FAIL ABUN
RA-223	4.985E-01	FAIL ABUN
AC-227	1.826E-01	NOT IDENT.
TH-227	1.826E-01	NOT IDENT.
TH-229	3.922E-01	FAIL ABUN
PA-231	3.965E-01	NOT IDENT.
TH-231	4.985E-01	FAIL ABUN
PA-233	5.151E-02	NOT IDENT.
PA-234	1.451E-01	NOT IDENT.
PA-234M	2.748E+00	NOT IDENT.
NP-237	5.151E-02	NOT IDENT.
NP-238	0.000E+00	SHORT HLIF
NP-239	2.399E-01	FAIL ABUN
PU-239	3.242E+02	FAIL ABUN
AM-241	1.569E-01	NOT IDENT.
CM-243	8.811E-02	FAIL ABUN
BK-247	6.112E-02	NOT IDENT.
CM-247	3.328E-02	FAIL ABUN
CF-249	3.271E-02	FAIL ABUN
CF-251	9.879E-02	NOT IDENT.

```

*****
*
*           GEL Laboratories LLC
*           2040 Savage Road
*           Charleston, SC 29407
*****
*
*           DETECTOR AND SAMPLE DATA
*
* Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]R405245001.CNF;1
* Acquisition date   : 3-OCT-2016 04:32:47 Sensitivity      : 3.000
* Detector ID        : GAM01 Energy tolerance: 1.500
* Elapsed live time  : 0 01:00:00.00 Abundance limit : 75.000
* Elapsed real time  : 0 01:00:00.34 Half life ratio  : *****
* Sample date        : 15-DEC-2015 10:14:00 Nuclide Library : SOLID
* Sample ID          : R405245001 Analyst initials: MXR1
* Batch Number       : 1596387 Sample Quantity : 1.5534E+02 GRAM
*                    : Quantity Err(%) : 1.2875E-03 %
* Wet wt corr        : 1.00000 Wet Weight      : 0.00000
*                    : Dry Weight       : 0.00000
*****
*
*           CALIBRATION INFORMATION
*
* Eff. Cal. date     : 20-JUL-2016 07:03:55 Eff. Geometry  : CAN
* Eff. File          : DKA100:[CANBERRA.GAMMA]EFF_GAM01_CAN.CNF;9
*****

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Combined Activity-MDA Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM)	Act Error (1.96-sigma)	TPU (1.96-sigma)
K-40	1.241E+01	1.620E+00	1.620E+00
CD-109	6.389E-01	2.996E+00	2.996E+00
SN-126	4.115E-02	1.930E-01	1.930E-01
BA-137M	1.112E-01	8.462E-02	8.462E-02
CS-137	1.174E-01	8.940E-02	8.940E-02
HG-203	2.438E+00	4.042E+00	4.042E+00
TL-208	2.910E-01	7.182E-02	7.182E-02
PB-212	7.320E-01	1.278E-01	1.278E-01
BI-214	9.156E-01	1.721E-01	1.721E-01
PB-214	9.536E-01	1.898E-01	1.898E-01
RN-222	9.156E-01	1.721E-01	1.721E-01
RA-224	6.071E-02	1.565E+00	1.565E+00
RA-226	9.156E-01	1.721E-01	1.721E-01
AC-228	7.237E-01	2.844E-01	2.844E-01
RA-228	7.237E-01	2.844E-01	2.844E-01
TH-228	7.320E-01	1.278E-01	1.278E-01
TH-230	9.153E-01	1.720E-01	1.720E-01
TH-232	7.237E-01	2.844E-01	2.844E-01
TH-234	2.007E+00	3.462E+00	3.462E+00
U-234	9.153E-01	1.720E-01	1.720E-01
U-235	6.146E-02	2.016E-01	2.016E-01
U-238	2.007E+00	3.462E+00	3.462E+00
AM-243	1.735E-01	1.169E-01	1.169E-01
ANH-511	4.520E-02	7.572E-02	7.572E-02

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/GRAM)	K.L Act error (1.96-sigma)	TPU (1.96-sigma)	
BE-7	-8.557E+00	1.141E+01	1.205E+01	NOT IDENT.
NA-22	1.076E-02	4.437E-02	4.463E-02	NOT IDENT.
NA-24	-1.000E+41	3.718E+41	0.000E+00	SHORT HLIF
AL-26	1.877E-02	3.144E-02	3.256E-02	NOT IDENT.
SC-46	-5.998E-02	3.698E-01	3.708E-01	FAIL ABUN
V-48	7.902E+03	1.273E+04	1.322E+04	SHORT HLIF

CR-51	-1.912E+02	3.348E+02	3.457E+02	SHORT HLIF
MN-54	4.997E-02	5.192E-02	5.660E-02	NOT IDENT.
CO-56	-3.808E-01	5.582E-01	5.840E-01	NOT IDENT.
MN-56	-1.000E+41	1.466E+41	0.000E+00	SHORT HLIF
CO-57	-8.520E-03	4.598E-02	4.614E-02	NOT IDENT.
CO-58	-1.159E-01	4.179E-01	4.212E-01	NOT IDENT.
FE-59	2.891E+00	4.888E+00	5.058E+00	NOT IDENT.
CO-60	9.548E-03	3.719E-02	3.744E-02	NOT IDENT.
ZN-65	-5.723E-02	2.065E-01	2.081E-01	NOT IDENT.
GE-68	-1.773E+00	2.463E+00	2.589E+00	NOT IDENT.
AS-73	-3.901E+00	1.114E+01	1.127E+01	NOT IDENT.
AS-74	3.920E+01	3.856E+03	3.856E+03	SHORT HLIF
SE-75	2.424E-02	1.808E-01	1.811E-01	FAIL ABUN
BR-77	1.677E+37	1.417E+38	0.000E+00	SHORT HLIF
SR-82	3.704E+02	4.405E+02	4.711E+02	SHORT HLIF
RB-83	-2.286E-01	5.762E-01	5.853E-01	NOT IDENT.
KR-85	4.749E+00	7.060E+00	7.377E+00	NOT IDENT.
SR-85	4.652E-01	6.925E-01	7.235E-01	NOT IDENT.
RB-86	-1.832E+04	2.290E+04	2.434E+04	SHORT HLIF
Y-88	3.844E-03	1.981E-01	1.981E-01	NOT IDENT.
Y-91	-3.010E+02	5.714E+02	5.873E+02	NOT IDENT.
NB-94	1.152E-02	3.216E-02	3.258E-02	NOT IDENT.
NB-95	-6.143E-02	8.671E-01	8.675E-01	NOT IDENT.
NB-95M	-1.172E+00	2.338E+00	2.397E+00	NOT IDENT.
ZR-95	6.073E-02	1.405E+00	1.405E+00	NOT IDENT.
NB-97	1.000E+41	4.943E+41	0.000E+00	SHORT HLIF
ZR-97	1.000E+41	6.925E+41	0.000E+00	SHORT HLIF
MO-99	-4.521E+30	2.462E+31	0.000E+00	SHORT HLIF
TC-99M	1.000E+41	1.120E+41	0.000E+00	SHORT HLIF
RH-101	-2.873E-02	3.764E-02	3.980E-02	NOT IDENT.
RH-102	4.733E-02	5.912E-02	6.285E-02	NOT IDENT.
RU-103	-2.341E+00	4.453E+00	4.576E+00	FAIL ABUN
RH-106	2.108E-01	5.442E-01	5.524E-01	NOT IDENT.
RU-106	2.108E-01	5.442E-01	5.524E-01	NOT IDENT.
AG-108M	-1.111E-02	3.098E-02	3.138E-02	NOT IDENT.
AG-110M	-1.017E-02	1.149E-01	1.150E-01	NOT IDENT.
SN-113	-1.704E-01	2.178E-01	2.310E-01	NOT IDENT.
CD-115	1.691E+38	3.192E+38	0.000E+00	SHORT HLIF
SN-117M	2.606E+04	7.087E+04	7.184E+04	SHORT HLIF
TE-123M	5.353E-02	1.277E-01	1.300E-01	NOT IDENT.
SB-124	-2.806E-01	1.762E+00	1.767E+00	NOT IDENT.
SB-125	1.360E-02	9.508E-02	9.527E-02	NOT IDENT.
TE-125M	-8.139E+01	2.827E+02	2.851E+02	NOT IDENT.
I-126	3.430E+05	5.243E+05	5.466E+05	SHORT HLIF
SB-126	-3.363E+05	7.845E+05	7.990E+05	SHORT HLIF
SB-127	-2.602E+21	7.669E+21	0.000E+00	SHORT HLIF
I-131	1.166E+08	2.373E+09	2.373E+09	SHORT HLIF
I-132	-1.000E+41	1.810E+42	0.000E+00	SHORT HLIF
TE-132	-3.613E+25	7.904E+25	0.000E+00	SHORT HLIF
BA-133	1.544E-02	3.948E-02	4.009E-02	NOT IDENT.
I-133	-1.000E+41	2.512E+41	0.000E+00	SHORT HLIF
CS-134	6.433E-02	4.471E-02	5.329E-02	FAIL ABUN
CS-135	-4.598E-02	1.465E-01	1.479E-01	NOT IDENT.
I-135	-1.000E+41	7.555E+41	0.000E+00	SHORT HLIF
CS-136	3.188E+05	2.614E+05	2.983E+05	SHORT HLIF
CE-139	5.839E-03	9.319E-02	9.323E-02	NOT IDENT.
BA-140	2.159E+05	9.366E+05	9.416E+05	SHORT HLIF
LA-140	-3.831E+05	2.865E+05	3.345E+05	SHORT HLIF
CE-141	1.070E+01	2.123E+01	2.177E+01	NOT IDENT.
CE-143	1.000E+41	2.827E+41	0.000E+00	SHORT HLIF
CE-144	-2.255E-01	3.975E-01	4.103E-01	NOT IDENT.
PM-144	-2.252E-03	5.565E-02	5.566E-02	NOT IDENT.
PR-144	-1.786E-01	4.819E+00	4.819E+00	NOT IDENT.
PM-146	2.629E-02	4.465E-02	4.620E-02	NOT IDENT.
ND-147	-3.831E+05	1.805E+07	1.805E+07	SHORT HLIF
PM-147	-2.500E+02	7.724E+02	7.806E+02	NOT IDENT.
PM-149	-3.924E+39	5.161E+39	0.000E+00	SHORT HLIF
EU-150	8.498E-03	2.721E-02	2.748E-02	FAIL ABUN
EU-152	2.762E-02	9.268E-02	9.352E-02	FAIL ABUN
GD-153	1.030E-01	1.996E-01	2.049E-01	NOT IDENT.
EU-154	3.988E-02	1.069E-01	1.084E-01	NOT IDENT.
EU-155	9.628E-02	1.183E-01	1.260E-01	FAIL ABUN
TB-160	-4.843E-01	1.748E+00	1.762E+00	FAIL ABUN
HO-166M	-1.687E-02	5.920E-02	5.969E-02	FAIL ABUN
TM-171	-3.152E+00	2.764E+01	2.768E+01	NOT IDENT.
HF-172	-2.829E-03	2.553E-01	2.553E-01	FAIL ABUN
LU-172	7.992E-02	7.219E-02	8.068E-02	FAIL ABUN
LU-176	2.388E-03	2.271E-02	2.274E-02	FAIL ABUN

HF-181	-1.701E+00	4.053E+00	4.125E+00	NOT IDENT.
TA-182	-3.106E-01	7.781E-01	7.906E-01	FAIL ABUN
RE-183	-1.380E+00	3.556E+00	3.610E+00	NOT IDENT.
RE-184	7.641E+00	2.166E+01	2.193E+01	NOT IDENT.
W-188	-6.523E+01	1.252E+02	1.286E+02	FAIL ABUN
IR-192	-2.993E-02	3.752E-01	3.754E-01	FAIL ABUN
BI-207	2.439E-02	4.993E-02	5.113E-02	FAIL ABUN
PB-210	3.137E+00	4.283E+00	4.510E+00	NOT IDENT.
BI-211	2.627E+00	5.245E-01	1.295E+00	FAIL ABUN
PB-211	-2.608E-01	6.630E-01	6.734E-01	FAIL ABUN
BI-212	4.306E-01	5.228E-01	5.577E-01	NOT IDENT.
RN-219	1.820E-01	3.701E-01	3.791E-01	FAIL ABUN
RA-223	-1.887E-01	6.477E-01	6.533E-01	FAIL ABUN
AC-227	-1.022E-01	2.379E-01	2.423E-01	NOT IDENT.
TH-227	-1.022E-01	2.379E-01	2.423E-01	NOT IDENT.
TH-229	-8.025E-02	4.318E-01	4.333E-01	FAIL ABUN
PA-231	1.575E-01	4.258E-01	4.317E-01	NOT IDENT.
TH-231	-1.887E-01	6.477E-01	6.533E-01	FAIL ABUN
PA-233	8.381E-03	5.640E-02	5.653E-02	NOT IDENT.
PA-234	-1.257E-01	3.131E-01	3.182E-01	NOT IDENT.
PA-234M	-2.831E+00	4.117E+00	4.310E+00	NOT IDENT.
NP-237	8.381E-03	5.640E-02	5.653E-02	NOT IDENT.
NP-238	2.873E+40	5.617E+40	0.000E+00	SHORT HLIF
NP-239	1.660E-01	2.661E-01	2.764E-01	FAIL ABUN
PU-239	4.823E+02	7.221E+02	7.541E+02	FAIL ABUN
AM-241	6.847E-02	1.858E-01	1.883E-01	NOT IDENT.
CM-243	-7.309E-02	1.098E-01	1.147E-01	FAIL ABUN
BK-247	6.953E-03	6.669E-02	6.677E-02	NOT IDENT.
CM-247	3.252E-02	3.409E-02	3.711E-02	FAIL ABUN
CF-249	6.152E-03	3.612E-02	3.623E-02	FAIL ABUN
CF-251	-2.702E-02	1.088E-01	1.095E-01	NOT IDENT.

 * GEL Laboratories LLC *
 * 2040 Savage Road *
 * Charleston, SC 29407 *
 * GAMMA SPECTROSCOPY BACKGROUND REPORT *

ENERGY	MDA COUNTS	ENERGY	MDA COUNTS	ENERGY	MDA COUNTS
43.53	52.3803	87.09	86.2328	136.47	70.8579
45.60	57.9401	87.57	86.2721	140.51	0.0000
46.54	44.0913	88.03	86.3097	143.76	80.3896
49.72	0.0000	88.34	86.3352	144.24	76.3449
51.35	73.5669	88.47	86.3455	145.44	75.5609
51.87	74.7847	89.96	86.4668	152.43	80.1932
52.39	63.1416	1093.63	86.5215	153.25	0.0000
52.97	71.3792	91.11	0.0000	323.87	84.5615
53.44	69.0801	92.59	86.6780	156.02	0.0000
54.07	59.7606	93.35	86.7382	158.56	0.0000
57.36	0.0000	94.56	86.8341	159.00	69.4100
57.53	68.2535	94.65	86.8411	162.33	54.1047
57.98	71.8227	94.67	86.8427	162.66	0.0000
59.27	64.4652	94.87	65.2458	163.33	54.1406
59.32	64.4691	97.43	62.1265	165.86	54.2297
59.54	64.4860	98.43	67.5000	176.31	58.9252
60.96	69.3205	98.44	67.5008	176.60	0.0000
61.17	67.7616	99.53	74.9367	177.52	65.0398
62.93	76.9797	100.11	90.9531	181.07	0.0000
63.29	77.0116	102.03	68.9447	181.52	69.1137
63.58	77.0371	103.18	82.5697	184.41	60.0914
64.28	77.0986	103.37	82.5835	143.76	60.1392
66.73	74.5357	105.21	65.4304	193.51	59.5450
67.24	80.9254	105.31	65.4360	197.03	50.0159
125.81	84.1399	106.12	63.0099	198.01	57.0687
67.75	84.1458	106.47	86.5099	201.83	48.3958
69.67	70.0042	109.28	81.7598	203.43	50.2020
70.83	79.6499	111.00	78.1550	205.31	56.4277
72.81	69.4418	111.76	0.0000	210.85	60.1426
72.87	69.4463	114.06	69.6454	215.65	47.8883
74.66	69.5768	116.30	0.0000	222.11	58.7376
74.82	69.5883	116.74	67.3039	227.09	53.5413
74.97	69.5992	119.76	66.2164	227.38	58.9048
77.11	69.7529	121.12	66.7041	228.16	0.0000
78.74	75.4905	121.22	70.0449	228.18	52.6795
79.69	70.7395	121.78	75.0810	116.74	52.6795
80.12	62.7279	122.06	75.0975	235.69	61.8532
80.19	0.0000	122.92	80.1577	235.96	59.1727
80.57	59.5378	123.07	80.1670	238.63	52.0728
81.00	70.8322	265.00	66.0021	238.98	0.0000
81.07	70.8371	125.81	79.0816	240.99	52.1365
81.75	88.2035	127.23	87.9638	242.00	52.1637
83.79	80.7124	127.91	72.9221	244.70	36.4749
84.00	80.7292	129.30	70.4819	252.40	0.0000
85.43	92.1588	131.20	73.1036	252.80	42.5029
86.55	86.1884	133.02	80.7754	254.15	0.0000
86.79	86.2079	133.52	87.1186	256.23	46.1990
86.94	86.2203	136.00	65.7744	260.90	0.0000

ENERGY	MDA COUNTS	ENERGY	MDA COUNTS	ENERGY	MDA COUNTS
264.66	36.3851	355.39	0.0000	584.27	15.3522
264.80	38.2069	356.01	22.7300	595.83	0.0000
265.00	38.2103	364.49	0.0000	427.87	21.5947
268.22	45.1041	366.42	0.0000	602.52	0.0000
269.46	32.8228	372.51	22.8794	604.72	13.8988
270.03	32.8315	375.05	24.8109	607.14	21.6349
271.23	32.8506	377.52	31.5209	609.32	15.4633
273.65	0.0000	356.01	20.1079	610.33	15.4675
276.40	27.4432	388.16	26.8544	614.28	13.9362
277.37	34.3193	388.63	0.0000	618.01	21.7015
277.60	34.3231	391.69	34.5740	620.36	23.7843
278.00	34.3300	264.66	28.9087	621.93	18.6218
279.20	34.3491	401.81	24.1013	630.19	0.0000
279.54	34.3544	402.40	20.2493	631.29	12.4468
279.70	38.4803	404.85	31.8492	633.25	12.4536
280.46	42.6184	410.95	29.9865	634.78	0.0000
283.69	33.0447	413.71	23.2388	635.95	12.4629
284.31	0.0000	414.70	0.0000	636.99	0.0000
285.41	49.6066	423.72	0.0000	645.85	15.6207
285.90	0.0000	427.09	21.4056	657.76	12.5371
287.50	45.9768	427.87	21.4119	657.90	0.0000
290.67	55.2527	433.94	27.7978	661.66	12.5503
293.27	0.0000	439.40	22.4768	664.57	0.0000
351.93	36.9116	453.88	21.6079	666.33	0.0000
295.96	36.9238	463.37	15.7660	666.50	0.0000
879.38	38.8162	468.07	16.7780	667.71	0.0000
299.98	33.2922	473.00	0.0000	677.62	17.8550
300.09	41.6171	475.06	17.8066	685.70	0.0000
300.13	41.6180	476.78	16.8271	695.00	0.0000
301.36	37.0142	477.60	28.7127	696.49	17.9428
302.85	44.4463	482.18	27.7653	696.51	17.9428
256.23	34.2863	487.02	0.0000	697.00	0.0000
304.85	0.0000	492.35	0.0000	697.30	17.9470
306.78	33.3933	497.08	19.9292	697.49	14.7804
308.46	35.2748	505.52	10.4912	702.65	15.8569
311.90	33.4688	507.63	0.0000	706.68	19.0481
316.51	28.8783	511.00	24.0222	711.68	19.0730
319.41	0.0000	514.00	16.5309	720.70	0.0000
320.08	0.0000	514.00	16.5309	721.93	0.0000
321.04	38.0823	520.40	20.0781	722.78	14.8761
323.87	39.2502	520.69	0.0000	722.91	14.8767
325.23	35.0647	522.65	0.0000	723.31	14.8778
328.76	0.0000	527.90	0.0000	724.19	17.0072
333.37	37.5317	528.26	15.0958	727.33	14.8932
333.97	32.3795	529.59	19.1291	733.00	13.8490
334.37	39.4254	529.87	0.0000	735.93	8.5286
338.28	36.6688	531.02	0.0000	333.97	17.0638
338.32	36.6696	537.26	0.0000	739.50	0.0000
311.90	26.8208	546.56	0.0000	747.24	8.5527
340.48	26.8208	552.55	19.2644	748.06	9.6237
340.55	0.0000	563.25	15.2576	752.31	8.5632
344.28	32.0472	569.33	24.4561	753.82	0.0000
345.93	27.3533	946.00	19.8713	756.73	13.9305
351.06	20.7942	569.70	19.8729	756.80	13.9305
351.93	20.8014	583.19	15.3473	884.68	6.4407

ENERGY	MDA COUNTS	ENERGY	MDA COUNTS	ENERGY	MDA COUNTS
765.81	16.1090	1274.44	13.5601	1620.50	5.6484
766.42	20.9449	1001.03	8.4830	1621.92	4.7079
766.84	19.3359	1002.74	11.3147	1678.03	0.0000
772.60	0.0000	1004.73	6.7915	1690.97	3.8030
776.52	0.0000	507.63	0.0000	1750.46	0.0000
739.50	0.0000	1025.87	0.0000	1764.49	2.8810
778.90	8.0801	1028.54	0.0000	1063.66	2.8832
783.70	0.0000	1037.84	17.0911	1771.35	2.8835
785.37	17.2643	1038.76	0.0000	1791.20	0.0000
792.07	8.1055	631.29	15.4083	1808.65	1.9319
794.95	4.3258	1048.07	0.0000	1810.72	0.0000
795.86	9.7354	1049.04	11.4185	1836.06	2.9083
810.06	11.9382	1050.41	17.1326		
810.29	11.9390	1063.66	9.1608		
344.28	10.8541	1077.00	0.0000		
810.76	8.6839	1077.34	14.9255		
815.77	0.0000	1085.87	8.0499		
1048.07	0.0000	1093.63	4.6068		
832.01	7.6357	1099.45	4.6120		
834.85	5.4576	1112.07	15.0238		
835.71	10.9176	1112.84	13.8701		
836.80	0.0000	1115.54	13.8770		
846.75	0.0000	1120.29	10.4172		
846.77	22.3274	1120.55	10.4180		
856.80	0.0000	1221.41	8.6829		
860.56	4.9406	1129.67	10.4355		
871.09	14.3060	1131.51	0.0000		
873.19	12.1109	1147.95	0.0000		
875.33	0.0000	1173.23	19.6342		
879.38	13.2300	1177.95	8.4223		
880.51	9.9247	1189.05	11.4274		
883.24	12.1378	1204.77	15.5139		
884.68	16.5564	1221.41	11.4932		
889.28	13.2588	1231.02	9.7411		
894.76	12.1682	1235.36	0.0000		
898.04	5.5349	1238.28	16.8465		
900.72	7.7534	1260.41	0.0000		
903.28	6.6494	1271.87	8.9178		
911.20	8.8812	1274.44	7.1372		
912.08	6.6621	1274.54	8.0299		
923.98	0.0000	1291.59	2.8633		
926.50	15.5928	1298.22	0.0000		
929.11	11.1438	1312.11	0.0000		
937.49	8.3728	1332.49	6.3062		
944.13	0.0000	1362.66	0.0000		
946.00	8.9469	1365.19	3.6228		
949.00	5.0358	1368.63	0.0000		
667.71	0.0000	1384.29	3.6338		
962.31	15.1496	1408.01	2.7356		
964.08	11.2260	1457.56	0.0000		
966.17	11.2309	1460.82	4.5972		
911.20	11.2370	1489.16	5.5404		
968.97	11.2370	1505.03	2.7768		
983.53	0.0000	1584.12	6.5557		
984.45	0.0000	1596.21	0.0000		

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*****
*                               GEL Laboratories LLC                               *
*                               2040 Savage Road                               *
*                               Charleston, SC 29407                          *
*****
Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]R405245002.CNF;1
Background file    : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]BKG_GAM05.CNF;477
Background date    : 2-OCT-2016 11:00:07.
Sample date        : 15-DEC-2015 10:19:00 Acquisition date : 3-OCT-2016 04:33:24.
Sample ID          : R405245002 Sample quantity : 1.46202E+02 GRAM
Detector name      : GAM05 Detector geometry: CAN
Elapsed live time  : 0 01:00:00.00 Elapsed real time: 0 01:00:00.55 0.0%
Energy tolerance  : 1.50000 keV Analyst Initials : MXR1
Abundance limit   : 75.00000 Sensitivity : 3.00000
Batch ID          : 1596387 Detector SN# :
Matrix Spike ID   : LCS ID : 1556
*****
    
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BACKGROUND CORRECTED SAMPLE PEAK REPORT

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	46.06*	73	179	0.97	93.95	88	11	2.04E-02	38.9	
2	0	63.37*	41	187	1.14	128.53	123	8	1.13E-02	62.8	
3	2	73.11*	32	94	0.85	148.00	145	22	8.86E-03	52.7	1.15E+01
4	2	76.75*	328	89	0.91	155.27	145	22	9.11E-02	7.1	
5	0	83.35*	40	102	1.10	168.46	166	6	1.10E-02	44.6	
6	3	86.66*	109	86	0.91	175.09	172	22	3.03E-02	16.3	1.34E+00
7	3	89.41	74	101	1.05	180.58	172	22	2.04E-02	24.5	
8	3	92.33*	125	115	1.18	186.42	172	22	3.48E-02	17.9	
9	0	111.16	11	112	0.97	224.05	223	7	3.01E-03	164.1	
10	0	128.56	43	87	0.99	258.83	256	7	1.21E-02	38.5	
11	0	131.48	25	114	1.31	264.67	263	9	6.87E-03	80.6	
12	0	146.79	19	66	1.47	295.26	294	6	5.28E-03	71.4	
13	0	153.57	13	76	0.56	308.80	307	6	3.60E-03	109.7	
14	0	185.50*	85	90	1.41	372.63	369	9	2.36E-02	23.9	
15	0	208.78	65	102	1.36	419.16	415	12	1.81E-02	33.1	
16	5	238.33*	294	64	0.98	478.20	474	16	8.17E-02	7.3	9.23E-01
17	5	241.49	115	79	1.82	484.53	474	16	3.19E-02	21.2	
18	0	264.00	25	85	3.49	529.51	523	13	6.81E-03	79.9	
19	0	278.10	22	79	1.29	557.71	552	11	6.10E-03	82.5	
20	0	294.96*	172	50	1.09	591.39	587	8	4.78E-02	10.6	
21	0	313.44	15	54	1.34	628.33	623	12	4.17E-03	101.3	
22	3	338.21*	76	25	1.30	677.84	673	16	2.11E-02	16.7	1.74E+00
23	3	341.71	33	21	1.66	684.83	673	16	9.25E-03	30.9	
24	0	344.69	17	26	1.37	690.80	689	6	4.75E-03	51.9	
25	0	351.82*	247	72	1.18	705.04	698	13	6.87E-02	9.6	
26	0	462.45	30	36	3.31	926.15	920	13	8.24E-03	45.5	
27	0	540.47	13	12	3.44	1082.09	1075	10	3.49E-03	59.7	
28	0	583.26*	95	13	1.18	1167.60	1163	11	2.65E-02	13.0	
29	0	609.29*	201	24	1.34	1219.63	1214	12	5.58E-02	8.7	
30	0	648.28*	8	36	6.05	1297.57	1287	18	2.30E-03	177.0	
31	2	661.44	73	15	1.62	1323.87	1318	26	2.03E-02	15.5	1.22E+00
32	2	664.89	19	10	1.74	1330.77	1318	26	5.14E-03	46.9	
33	2	668.19	19	7	1.87	1337.35	1318	26	5.18E-03	48.5	
34	0	727.84	14	20	1.43	1456.57	1449	10	3.83E-03	66.4	

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
35	0	767.88*	24	18	2.31	1536.62	1532	9	6.78E-03	38.2	
36	0	772.02	11	17	0.63	1544.87	1540	9	3.06E-03	75.2	
37	0	795.23	11	17	1.01	1591.27	1587	7	3.03E-03	70.3	
38	0	803.94*	17	5	3.39	1608.68	1604	10	4.75E-03	37.9	
39	0	910.96*	67	12	1.24	1822.58	1816	11	1.85E-02	15.8	
40	0	934.03	18	10	1.56	1868.69	1861	13	5.13E-03	41.8	
41	0	949.79	20	4	3.57	1900.19	1893	15	5.60E-03	30.6	
42	0	964.36	22	6	1.88	1929.33	1924	11	5.97E-03	30.2	
43	0	969.11	51	14	1.34	1938.81	1934	13	1.41E-02	20.4	
44	0	1028.78	9	5	1.47	2058.08	2054	7	2.42E-03	55.3	
45	0	1120.17*	36	13	0.79	2240.75	2235	11	1.01E-02	26.3	
46	4	1148.31	10	4	1.72	2296.99	2295	19	2.71E-03	35.5	1.80E+00
47	4	1151.32	17	9	1.87	2303.00	2295	19	4.65E-03	43.0	
48	0	1245.48	8	9	1.32	2491.22	2485	10	2.16E-03	83.5	
49	0	1309.85	8	0	1.50	2619.88	2617	6	2.22E-03	35.4	
50	0	1461.03*	308	7	2.10	2922.04	2915	14	8.57E-02	6.0	
51	0	1495.95	9	3	4.27	2991.85	2983	14	2.40E-03	57.1	
52	0	1509.22	13	0	1.16	3018.38	3012	12	3.61E-03	27.7	
53	0	1765.09	36	9	2.02	3529.82	3520	17	9.86E-03	25.2	

Flag: "*" = Peak area was modified by background subtraction

```

Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]R405245002.CNF;1
Analyses by       : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.4,INTERF V2.4
Sample title      : MXR1
Sample date       : 15-DEC-2015 10:19:00 Acquisition date : 3-OCT-2016 04:33:24
Sample ID         : R405245002           Sample quantity  : 146.20 GRAM
Sample type       : SOLID                 Sample geometry   :
Detector name     : GAMMA5               Detector geometry: CAN
Elapsed live time: 0 01:00:00.00         Elapsed real time: 0 01:00:00.55   0.0%
Energy tolerance  : 1.50 keV             Half life ratio   : 10.00
Errors propagated: No                    Systematic Error  : 0.00 %
Efficiency type   : Linear                Efficiencies at   : Peak Energy
Abundance limit   : 75.00
    
```

Interference Report

Interfering		Interfered	
Nuclide	Line	Nuclide	Line
PB-214	242.00	RA-224	240.99
PB-214	87.09	TH-229	85.43
PB-214	87.09	SN-126	86.94
PB-214	87.09	SN-126	87.57
PB-214	87.09	CD-109	88.03
TL-208	277.37	HG-203	279.20
PB-214	351.93	BI-211	351.06

Nuclide Type:

Nuclide	Energy	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error	Status
K-40	1460.82	10.66*	1.244E+00	1.149E+01	1.149E+01	12.06	OK
CD-109	88.03	3.70*	8.914E+00	1.044E+00	1.621E+00	68.96	OK
SN-126	64.28	9.60	9.112E+00	3.030E-01	3.030E-01	125.65	OK
	86.94	8.90	8.914E+00	4.341E-01	4.341E-01	68.96	OK
	87.57	37.00*	8.914E+00	1.044E-01	1.044E-01	68.96	OK
BA-137M	661.66	89.90*	2.417E+00	1.793E-01	1.827E-01	30.91	OK
CS-137	661.66	85.10*	2.417E+00	1.895E-01	1.930E-01	30.91	OK
CE-141	145.44	48.29*	7.727E+00	3.106E-02	1.597E+01	142.79	OK
HG-203	70.83	3.69	9.006E+00	-----	Line Not Found	-----	Absent
	72.87	6.19	8.988E+00	3.696E-01	2.881E+01	105.40	OK
	279.20	81.56*	4.912E+00	1.330E-02	1.037E+00	394.12	OK
TL-208	277.37	6.60	4.923E+00	-----	Line Not Found	-----	<<INT Reject
	583.19	85.00*	2.673E+00	2.269E-01	2.269E-01	26.01	OK
	860.56	12.50	1.959E+00	-----	Line Not Found	-----	Absent
PB-210	46.54	4.25*	9.664E+00	1.193E+00	1.223E+00	77.76	OK
PB-212	74.82	10.28	8.977E+00	-----	Line Not Found	-----	Absent
	77.11	17.10	8.967E+00	1.375E+00	1.375E+00	14.17	OK
	238.63	43.60*	5.564E+00	7.101E-01	7.101E-01	14.56	OK
	300.09	3.30	4.613E+00	-----	Line Not Found	-----	Absent
BI-214	609.32	45.49*	2.581E+00	9.214E-01	9.217E-01	17.45	OK
	1120.29	14.92	1.576E+00	7.846E-01	7.849E-01	52.53	OK
	1764.49	15.30	1.032E+00	1.089E+00	1.090E+00	50.43	OK
PB-214	74.82	5.80	8.977E+00	-----	Line Not Found	-----	Absent
	77.11	9.70	8.967E+00	2.424E+00	2.425E+00	14.17	OK
	87.09	3.41	8.912E+00	-----	Line Not Found	-----	<<INT Reject
	242.00	7.25	5.497E+00	-----	Line Not Found	-----	<<INT Reject
	295.22	18.42	4.680E+00	1.148E+00	1.148E+00	21.11	OK
	351.93	35.60*	4.042E+00	9.731E-01	9.734E-01	19.21	OK
RN-222	609.32	45.49*	2.581E+00	9.214E-01	9.217E-01	17.45	OK
	1120.29	14.92	1.576E+00	7.846E-01	7.849E-01	52.53	OK
	1764.49	15.30	1.032E+00	1.089E+00	1.090E+00	50.43	OK
RA-224	240.99	4.10*	5.506E+00	9.455E-01	9.455E-01	141.15	OK
RA-226	609.32	45.49*	2.581E+00	9.214E-01	9.217E-01	17.45	OK
	1120.29	14.92	1.576E+00	7.846E-01	7.849E-01	52.53	OK
	1764.49	15.30	1.032E+00	1.089E+00	1.090E+00	50.43	OK
AC-228	105.21	1.10	8.704E+00	-----	Line Not Found	-----	Absent
	338.32	11.27	4.177E+00	9.167E-01	9.167E-01	33.46	OK
	794.95	4.25	2.087E+00	6.444E-01	6.444E-01	140.58	OK
	835.71	1.61	2.005E+00	-----	Line Not Found	-----	Absent
	911.20	25.80*	1.871E+00	7.147E-01	7.147E-01	31.63	OK
	968.97	15.80	1.778E+00	9.305E-01	9.305E-01	40.78	OK
RA-228	105.21	1.10	8.704E+00	-----	Line Not Found	-----	Absent
	338.32	11.27	4.177E+00	9.167E-01	9.167E-01	33.46	OK
	794.95	4.25	2.087E+00	6.444E-01	6.444E-01	140.58	OK
	835.71	1.61	2.005E+00	-----	Line Not Found	-----	Absent
	911.20	25.80*	1.871E+00	7.147E-01	7.147E-01	31.63	OK
	968.97	15.80	1.778E+00	9.305E-01	9.305E-01	40.78	OK
TH-228	74.82	10.28	8.977E+00	-----	Line Not Found	-----	Absent
	77.11	17.10	8.967E+00	1.375E+00	1.375E+00	14.17	OK

Nuclide Type:

Nuclide	Energy	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error	Status
	238.63	43.60*	5.564E+00	7.101E-01	7.101E-01	14.56	OK
	300.09	3.30	4.613E+00	-----	Line Not Found	-----	Absent
TH-229	85.43	14.70	8.914E+00	2.628E-01	2.629E-01	68.96	OK
	88.47	24.00	8.895E+00	2.188E-01	2.188E-01	48.98	OK
	193.51	4.41*	6.511E+00	-----	Line Not Found	-----	Absent
	210.85	2.80	6.116E+00	-----	Line Not Found	-----	Absent
TH-230	609.32	45.49*	2.581E+00	9.214E-01	9.214E-01	17.45	OK
	1120.29	14.92	1.576E+00	7.846E-01	7.846E-01	52.53	OK
	1764.49	15.30	1.032E+00	1.089E+00	1.089E+00	50.43	OK
TH-232	105.21	1.10	8.704E+00	-----	Line Not Found	-----	Absent
	338.32	11.27	4.177E+00	9.167E-01	9.167E-01	33.46	OK
	835.71	1.61	2.005E+00	-----	Line Not Found	-----	Absent
	911.20	25.80*	1.871E+00	7.147E-01	7.147E-01	31.63	OK
	968.97	15.80	1.778E+00	9.305E-01	9.305E-01	40.78	OK
TH-234	63.29	3.70*	9.112E+00	7.863E-01	7.863E-01	125.65	OK
	92.59	4.23	8.870E+00	2.115E+00	2.115E+00	35.86	OK
U-234	609.32	45.49*	2.581E+00	9.214E-01	9.214E-01	17.45	OK
	1120.29	14.92	1.576E+00	7.846E-01	7.846E-01	52.53	OK
	1764.49	15.30	1.032E+00	1.089E+00	1.089E+00	50.43	OK
U-235	89.96	3.47	8.895E+00	1.513E+00	1.513E+00	48.98	OK
	93.35	5.60	8.870E+00	1.598E+00	1.598E+00	35.86	OK
	143.76	10.96*	7.808E+00	-----	Line Not Found	-----	Absent
	163.33	5.08	7.279E+00	-----	Line Not Found	-----	Absent
	185.72	57.20	6.705E+00	1.325E-01	1.325E-01	47.81	OK
	205.31	5.01	6.238E+00	-----	Line Not Found	-----	Absent
U-238	63.29	3.70*	9.112E+00	7.863E-01	7.863E-01	125.65	OK
	92.59	4.23	8.870E+00	2.115E+00	2.115E+00	35.86	OK
BK-247	84.00	40.00	8.934E+00	7.103E-02	7.106E-02	89.14	OK
	102.03	7.00	8.754E+00	-----	Line Not Found	-----	Absent
	106.47	11.00	8.683E+00	-----	Line Not Found	-----	Absent
	119.76	4.00	8.417E+00	-----	Line Not Found	-----	Absent
	123.68	1.00	8.326E+00	-----	Line Not Found	-----	Absent
	265.00	30.00*	5.126E+00	9.246E-02	9.249E-02	159.89	OK

Flag: "*" = Keyline

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*****
*                               GEL Laboratories LLC                               *
*                               2040 Savage Road                               *
*                               Charleston, SC 29407                          *
*****
*                               DETECTOR AND SAMPLE DATA                       *
*
* Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]R405245002.CNF;1
* Acquisition date   : 3-OCT-2016 04:33:24 Sensitivity      : 3.000
* Detector ID       : GAM05 Energy tolerance: 1.500
* Elapsed live time : 0 01:00:00.00 Abundance limit : 75.000
* Elapsed real time : 0 01:00:00.55 Half life ratio : *****
* Sample date      : 15-DEC-2015 10:19:00 Analyst initials: MXR1
* Sample ID       : R405245002 Sample Quantity : 1.4620E+02 GRAM
* Batch Number    : 1596387 Wet Weight : 0.00000
* Wet wt corr    : 1.00000 Dry Weight : 0.00000
* Nuclide Library : SOLID.NLB;6
*****
*                               CALIBRATION INFORMATION                         *
*
* Eff. Cal. date    : 4-SEP-2016 08:00:28 Eff. Geometry   : CAN
* Eff. File        : DKA100:[CANBERRA.GAMMA]EFF_GAM05_CAN.CNF;20
*****

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Combined Activity-MDA Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM)	Cnt uncert (1.96-sigma)	MDA (pCi/GRAM)
K-40	1.149E+01	1.358E+00	4.719E-01
CD-109	1.621E+00	1.096E+00	1.021E+00
SN-126	1.044E-01	7.057E-02	6.573E-02
BA-137M	1.827E-01	5.535E-02	5.173E-02
CS-137	1.930E-01	5.847E-02	5.464E-02
CE-141	1.597E+01	2.234E+01	2.785E+01
HG-203	1.037E+00	4.005E+00	3.225E+00
TL-208	2.269E-01	5.783E-02	5.302E-02
PB-210	1.223E+00	9.322E-01	5.315E-01
PB-212	7.101E-01	1.013E-01	7.956E-02
BI-214	9.217E-01	1.576E-01	1.101E-01
PB-214	9.734E-01	1.833E-01	1.063E-01
RN-222	9.217E-01	1.576E-01	1.101E-01
RA-224	9.455E-01	1.308E+00	8.535E-01
RA-226	9.217E-01	1.576E-01	1.101E-01
AC-228	7.147E-01	2.216E-01	2.041E-01
RA-228	7.147E-01	2.216E-01	2.041E-01
TH-228	7.101E-01	1.013E-01	7.956E-02
TH-229	4.111E-02	3.446E-01	6.583E-01
TH-230	9.214E-01	1.576E-01	1.101E-01
TH-232	7.147E-01	2.216E-01	2.041E-01
TH-234	7.863E-01	9.682E-01	7.165E-01
U-234	9.214E-01	1.576E-01	1.101E-01
U-235	1.240E-01	1.242E-01	2.557E-01
U-238	7.863E-01	9.682E-01	7.165E-01
BK-247	9.249E-02	1.449E-01	1.007E-01

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/GRAM)	K.L.	Cnt Uncert (1.96-sigma)	MDA (pCi/GRAM)	
BE-7	-1.411E+00		9.423E+00	1.829E+01	NOT IDENT.
NA-22	-2.963E-03		3.606E-02	7.261E-02	NOT IDENT.
NA-24	0.000E+00		1.960E+41	0.000E+00	SHORT HLIF
AL-26	8.253E-03		2.517E-02	6.048E-02	NOT IDENT.

SC-46	-4.709E-02	2.838E-01	5.338E-01	FAIL ABUN
V-48	0.000E+00	8.167E+03	0.000E+00	SHORT HLIF
CR-51	0.000E+00	2.845E+02	0.000E+00	SHORT HLIF
MN-54	9.319E-03	5.275E-02	1.043E-01	NOT IDENT.
CO-56	-3.511E-01	4.574E-01	7.780E-01	NOT IDENT.
MN-56	0.000E+00	1.309E+41	0.000E+00	SHORT HLIF
CO-57	-9.265E-04	2.980E-02	5.812E-02	NOT IDENT.
CO-58	-2.103E-02	4.699E-01	8.991E-01	NOT IDENT.
FE-59	1.073E+00	5.855E+00	1.194E+01	NOT IDENT.
CO-60	-3.131E-02	3.643E-02	5.990E-02	NOT IDENT.
ZN-65	6.694E-02	1.490E-01	2.946E-01	NOT IDENT.
GE-68	-7.621E-03	1.609E+00	3.360E+00	NOT IDENT.
AS-73	4.056E-01	1.515E+00	3.142E+00	NOT IDENT.
AS-74	0.000E+00	2.953E+03	0.000E+00	SHORT HLIF
SE-75	2.563E-01	4.015E-01	3.170E-01	FAIL ABUN
BR-77	0.000E+00	2.320E+36	0.000E+00	SHORT HLIF
SR-82	0.000E+00	5.606E+02	0.000E+00	SHORT HLIF
RB-83	1.979E-01	5.532E-01	1.129E+00	NOT IDENT.
KR-85	-1.875E+01	7.824E+00	1.118E+01	NOT IDENT.
SR-85	-1.840E+00	7.674E-01	1.096E+00	NOT IDENT.
RB-86	0.000E+00	1.593E+04	0.000E+00	SHORT HLIF
Y-88	5.782E-02	2.032E-01	4.597E-01	NOT IDENT.
Y-91	-2.666E+02	4.379E+02	7.817E+02	NOT IDENT.
NB-94	-9.042E-03	2.805E-02	5.125E-02	NOT IDENT.
NB-95	7.622E-01	6.564E-01	1.411E+00	NOT IDENT.
NB-95M	7.419E-01	1.945E+00	3.462E+00	NOT IDENT.
ZR-95	6.262E-02	9.712E-01	1.943E+00	NOT IDENT.
NB-97	0.000E+00	1.960E+41	0.000E+00	SHORT HLIF
ZR-97	0.000E+00	8.795E+40	0.000E+00	SHORT HLIF
MO-99	0.000E+00	2.755E+31	0.000E+00	SHORT HLIF
TC-99M	0.000E+00	9.488E+40	0.000E+00	SHORT HLIF
RH-101	0.000E+00	4.289E-02	4.301E-02	FAIL ABUN
RH-102	-4.160E-03	4.497E-02	8.803E-02	FAIL ABUN
RU-103	-5.818E-01	4.125E+00	8.023E+00	FAIL ABUN
RH-106	-1.935E-01	4.723E-01	8.602E-01	NOT IDENT.
RU-106	-1.935E-01	4.723E-01	8.602E-01	NOT IDENT.
AG-108M	-1.399E-02	2.051E-02	3.758E-02	NOT IDENT.
AG-110M	8.388E-02	6.297E-02	1.612E-01	NOT IDENT.
SN-113	-1.557E-01	1.655E-01	2.955E-01	NOT IDENT.
CD-115	0.000E+00	3.101E+38	0.000E+00	SHORT HLIF
SN-117M	0.000E+00	5.224E+04	0.000E+00	SHORT HLIF
TE-123M	6.150E-02	9.954E-02	1.986E-01	NOT IDENT.
SB-124	-1.718E-01	1.418E+00	3.004E+00	NOT IDENT.
SB-125	2.633E-02	8.626E-02	1.768E-01	FAIL ABUN
TE-125M	7.225E+01	1.762E+02	3.326E+02	NOT IDENT.
I-126	0.000E+00	7.508E+05	0.000E+00	SHORT HLIF
SB-126	0.000E+00	6.691E+05	0.000E+00	SHORT HLIF
SB-127	0.000E+00	6.093E+21	0.000E+00	SHORT HLIF
I-131	0.000E+00	2.263E+09	0.000E+00	SHORT HLIF
I-132	0.000E+00	9.504E+40	0.000E+00	SHORT HLIF
TE-132	0.000E+00	7.028E+25	0.000E+00	SHORT HLIF
BA-133	-7.818E-03	3.522E-02	6.190E-02	NOT IDENT.
I-133	0.000E+00	1.045E+41	0.000E+00	SHORT HLIF
CS-134	4.192E-02	5.775E-02	1.004E-01	FAIL ABUN
CS-135	-1.671E-01	1.384E-01	1.941E-01	NOT IDENT.
I-135	0.000E+00	1.960E+41	0.000E+00	SHORT HLIF
CS-136	0.000E+00	2.082E+05	0.000E+00	SHORT HLIF
CE-139	3.877E-04	7.825E-02	1.492E-01	NOT IDENT.
BA-140	0.000E+00	7.973E+05	0.000E+00	SHORT HLIF
LA-140	0.000E+00	2.499E+05	0.000E+00	SHORT HLIF
CE-143	0.000E+00	1.960E+41	0.000E+00	SHORT HLIF
CE-144	-1.407E-01	2.639E-01	4.465E-01	NOT IDENT.
PM-144	3.701E-02	5.401E-02	1.112E-01	NOT IDENT.
PR-144	3.217E+00	4.676E+00	9.627E+00	NOT IDENT.
PM-146	6.202E-03	3.326E-02	6.803E-02	NOT IDENT.
ND-147	0.000E+00	1.714E+07	0.000E+00	SHORT HLIF
PM-147	-1.225E+02	5.215E+02	9.998E+02	NOT IDENT.
PM-149	0.000E+00	4.149E+39	0.000E+00	SHORT HLIF
EU-150	1.118E-02	2.301E-02	4.140E-02	FAIL ABUN
EU-152	9.243E-02	9.408E-02	1.516E-01	FAIL ABUN
GD-153	-4.378E-02	1.117E-01	1.975E-01	NOT IDENT.
EU-154	-5.066E-03	8.925E-02	1.805E-01	NOT IDENT.
EU-155	4.441E-02	6.377E-02	1.326E-01	FAIL ABUN
TB-160	-3.327E-01	1.189E+00	2.217E+00	FAIL ABUN
HO-166M	-3.863E-02	4.996E-02	8.524E-02	FAIL ABUN
TM-171	-2.645E-01	3.651E+00	7.408E+00	NOT IDENT.
HF-172	4.258E-02	1.671E-01	3.086E-01	FAIL ABUN
LU-172	1.530E-02	6.221E-02	1.316E-01	FAIL ABUN

LU-176	-2.269E-02	2.089E-02	3.267E-02	FAIL ABUN
HF-181	2.349E+00	3.237E+00	6.934E+00	FAIL ABUN
TA-182	2.945E-01	8.486E-01	1.745E+00	FAIL ABUN
RE-183	2.481E-01	6.553E-01	1.368E+00	NOT IDENT.
RE-184	1.006E+01	2.336E+01	4.790E+01	NOT IDENT.
W-188	-1.339E+01	9.683E+01	1.599E+02	FAIL ABUN
IR-192	-4.173E-02	3.623E-01	6.026E-01	FAIL ABUN
BI-207	1.538E-02	3.974E-02	8.564E-02	FAIL ABUN
BI-211	0.000E+00	5.049E-01	7.797E-01	FAIL ABUN
PB-211	-5.500E-02	5.704E-01	1.119E+00	NOT IDENT.
BI-212	4.886E-01	6.363E-01	9.377E-01	FAIL ABUN
RN-219	2.169E-01	2.862E-01	6.214E-01	NOT IDENT.
RA-223	-4.078E-02	4.470E-01	8.131E-01	FAIL ABUN
AC-227	-1.525E-03	1.819E-01	3.371E-01	NOT IDENT.
TH-227	-1.525E-03	1.819E-01	3.371E-01	NOT IDENT.
PA-231	-5.029E-02	3.714E-01	6.675E-01	NOT IDENT.
TH-231	-4.078E-02	4.470E-01	8.131E-01	FAIL ABUN
PA-233	1.599E-02	5.078E-02	9.639E-02	FAIL ABUN
PA-234	-9.473E-02	2.512E-01	3.841E-01	FAIL ABUN
PA-234M	-2.454E+00	4.278E+00	7.935E+00	FAIL ABUN
NP-237	1.599E-02	5.078E-02	9.639E-02	FAIL ABUN
NP-238	0.000E+00	3.610E+40	0.000E+00	SHORT HLIF
NP-239	-8.720E-03	1.552E-01	3.024E-01	FAIL ABUN
PU-239	0.000E+00	3.905E+02	4.657E+02	FAIL ABUN
AM-241	-1.774E-02	3.884E-02	7.085E-02	NOT IDENT.
AM-243	0.000E+00	3.132E-02	7.135E-02	NOT IDENT.
CM-243	-4.978E-02	5.846E-02	1.073E-01	FAIL ABUN
CM-247	4.474E-04	2.807E-02	5.604E-02	FAIL ABUN
CF-249	1.129E-03	3.052E-02	6.111E-02	NOT IDENT.
CF-251	2.295E-02	7.908E-02	1.553E-01	NOT IDENT.
ANH-511	-1.800E-02	4.236E-02	9.021E-02	NOT IDENT.

Nuclide Line Activity Report

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
K-40	1460.82	297	10.66*	1.244E+00	1.149E+01	1.149E+01	12.06
CD-109	88.03	135	3.70*	8.914E+00	2.102E+00	3.263E+00	32.57
SN-126	64.28	52	9.60	9.112E+00	3.030E-01	3.030E-01	125.65
	86.94	135	8.90	8.914E+00	8.739E-01	8.739E-01	32.57
	87.57	135	37.00*	8.914E+00	2.102E-01	2.102E-01	32.57
BA-137M	661.66	76	89.90*	2.417E+00	1.793E-01	1.827E-01	30.91
CS-137	661.66	76	85.10*	2.417E+00	1.895E-01	1.930E-01	30.91
CE-141	145.44	23	48.29*	7.727E+00	3.106E-02	1.597E+01	142.79
HG-203	70.83	-----	3.69	9.006E+00	-----	Line Not Found	-----
	72.87	40	6.19	8.988E+00	3.696E-01	2.881E+01	105.40
	279.20	25	81.56*	4.912E+00	3.166E-02	2.468E+00	164.91
TL-208	277.37	25	6.60	4.912E+00	3.913E-01	3.913E-01	164.91
	583.19	100	85.00*	2.673E+00	2.269E-01	2.269E-01	26.01
	860.56	-----	12.50	1.959E+00	-----	Line Not Found	-----
PB-210	46.54	95	4.25*	9.664E+00	1.193E+00	1.223E+00	77.76
BI-211	72.87	40	1.23	8.988E+00	1.860E+00	1.860E+00	105.40
	351.06	273	12.92*	4.042E+00	2.681E+00	2.681E+00	19.21
PB-212	74.82	-----	10.28	8.977E+00	-----	Line Not Found	-----
	77.11	411	17.10	8.967E+00	1.375E+00	1.375E+00	14.17
	238.63	335	43.60*	5.564E+00	7.101E-01	7.101E-01	14.56
	300.09	-----	3.30	4.613E+00	-----	Line Not Found	-----
BI-214	609.32	211	45.49*	2.581E+00	9.214E-01	9.217E-01	17.45
	1120.29	36	14.92	1.576E+00	7.846E-01	7.849E-01	52.53
	1764.49	33	15.30	1.032E+00	1.089E+00	1.090E+00	50.43
PB-214	74.82	-----	5.80	8.977E+00	-----	Line Not Found	-----
	77.11	411	9.70	8.967E+00	2.424E+00	2.425E+00	14.17
	87.09	135	3.41	8.914E+00	2.281E+00	2.282E+00	32.57
	242.00	131	7.25	5.506E+00	1.683E+00	1.683E+00	42.48
	295.22	193	18.42	4.680E+00	1.148E+00	1.148E+00	21.11
	351.93	273	35.60*	4.042E+00	9.731E-01	9.734E-01	19.21
RN-222	609.32	211	45.49*	2.581E+00	9.214E-01	9.217E-01	17.45
	1120.29	36	14.92	1.576E+00	7.846E-01	7.849E-01	52.53
	1764.49	33	15.30	1.032E+00	1.089E+00	1.090E+00	50.43
RA-224	240.99	131	4.10*	5.506E+00	2.975E+00	2.975E+00	42.48
RA-226	609.32	211	45.49*	2.581E+00	9.214E-01	9.217E-01	17.45
	1120.29	36	14.92	1.576E+00	7.846E-01	7.849E-01	52.53
	1764.49	33	15.30	1.032E+00	1.089E+00	1.090E+00	50.43
AC-228	105.21	-----	1.10	8.704E+00	-----	Line Not Found	-----
	338.32	84	11.27	4.177E+00	9.167E-01	9.167E-01	33.46
	794.95	11	4.25	2.087E+00	6.444E-01	6.444E-01	140.58
	835.71	-----	1.61	2.005E+00	-----	Line Not Found	-----
	911.20	67	25.80*	1.871E+00	7.147E-01	7.147E-01	31.63
	968.97	51	15.80	1.778E+00	9.305E-01	9.305E-01	40.78
RA-228	105.21	-----	1.10	8.704E+00	-----	Line Not Found	-----
	338.32	84	11.27	4.177E+00	9.167E-01	9.167E-01	33.46
	794.95	11	4.25	2.087E+00	6.444E-01	6.444E-01	140.58
	835.71	-----	1.61	2.005E+00	-----	Line Not Found	-----

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
	911.20	67	25.80*	1.871E+00	7.147E-01	7.147E-01	31.63
	968.97	51	15.80	1.778E+00	9.305E-01	9.305E-01	40.78
TH-228	74.82	-----	10.28	8.977E+00	-----	Line Not Found	-----
	77.11	411	17.10	8.967E+00	1.375E+00	1.375E+00	14.17
	238.63	335	43.60*	5.564E+00	7.101E-01	7.101E-01	14.56
	300.09	-----	3.30	4.613E+00	-----	Line Not Found	-----
TH-229	85.43	135	14.70	8.914E+00	5.291E-01	5.291E-01	32.57
	88.47	91	24.00	8.895E+00	2.188E-01	2.188E-01	48.98
	193.51	-----	4.41*	6.511E+00	-----	Line Not Found	-----
	210.85	-----	2.80	6.116E+00	-----	Line Not Found	-----
TH-230	609.32	211	45.49*	2.581E+00	9.214E-01	9.214E-01	17.45
	1120.29	36	14.92	1.576E+00	7.846E-01	7.846E-01	52.53
	1764.49	33	15.30	1.032E+00	1.089E+00	1.089E+00	50.43
TH-232	105.21	-----	1.10	8.704E+00	-----	Line Not Found	-----
	338.32	84	11.27	4.177E+00	9.167E-01	9.167E-01	33.46
	835.71	-----	1.61	2.005E+00	-----	Line Not Found	-----
	911.20	67	25.80*	1.871E+00	7.147E-01	7.147E-01	31.63
	968.97	51	15.80	1.778E+00	9.305E-01	9.305E-01	40.78
TH-234	63.29	52	3.70*	9.112E+00	7.863E-01	7.863E-01	125.65
	92.59	155	4.23	8.870E+00	2.115E+00	2.115E+00	35.86
U-234	609.32	211	45.49*	2.581E+00	9.214E-01	9.214E-01	17.45
	1120.29	36	14.92	1.576E+00	7.846E-01	7.846E-01	52.53
	1764.49	33	15.30	1.032E+00	1.089E+00	1.089E+00	50.43
U-235	89.96	91	3.47	8.895E+00	1.513E+00	1.513E+00	48.98
	93.35	155	5.60	8.870E+00	1.598E+00	1.598E+00	35.86
	143.76	-----	10.96*	7.808E+00	-----	Line Not Found	-----
	163.33	-----	5.08	7.279E+00	-----	Line Not Found	-----
	185.72	99	57.20	6.705E+00	1.325E-01	1.325E-01	47.81
	205.31	-----	5.01	6.238E+00	-----	Line Not Found	-----
U-238	63.29	52	3.70*	9.112E+00	7.863E-01	7.863E-01	125.65
	92.59	155	4.23	8.870E+00	2.115E+00	2.115E+00	35.86
BK-247	84.00	49	40.00	8.934E+00	7.103E-02	7.106E-02	89.14
	102.03	-----	7.00	8.754E+00	-----	Line Not Found	-----
	106.47	-----	11.00	8.683E+00	-----	Line Not Found	-----
	119.76	-----	4.00	8.417E+00	-----	Line Not Found	-----
	123.68	-----	1.00	8.326E+00	-----	Line Not Found	-----
	265.00	28	30.00*	5.126E+00	9.246E-02	9.249E-02	159.89

Flag: "*" = Keyline

Total number of lines in spectrum 53
 Number of unidentified lines 11
 Number of lines tentatively identified by NID 42 79.25%

Nuclide Type :

Nuclide	Hlife	Decay	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
K-40	1.25E+09Y	1.00	1.149E+01	1.149E+01	0.139E+01	12.06	
CD-109	461.40D	1.55	2.102E+00	3.263E+00	1.063E+00	32.57	
SN-126	2.30E+05Y	1.00	2.102E-01	2.102E-01	0.685E-01	32.57	
BA-137M	30.08Y	1.02	1.793E-01	1.827E-01	0.565E-01	30.91	
CS-137	30.08Y	1.02	1.895E-01	1.930E-01	0.597E-01	30.91	
CE-141	32.51D	514.	3.106E-02	1.597E+01	2.280E+01	142.79	
HG-203	46.59D	77.9	3.166E-02	2.468E+00	4.069E+00	164.91	
TL-208	1.41E+10Y	1.00	2.269E-01	2.269E-01	0.590E-01	26.01	
PB-210	22.20Y	1.03	1.193E+00	1.223E+00	0.951E+00	77.76	
BI-211	7.04E+08Y	1.00	2.681E+00	2.681E+00	0.515E+00	19.21	
PB-212	1.41E+10Y	1.00	7.101E-01	7.101E-01	1.034E-01	14.56	
BI-214	1600.00Y	1.00	9.214E-01	9.217E-01	1.608E-01	17.45	
PB-214	1600.00Y	1.00	9.731E-01	9.734E-01	1.870E-01	19.21	
RN-222	1600.00Y	1.00	9.214E-01	9.217E-01	1.608E-01	17.45	
RA-224	1.41E+10Y	1.00	2.975E+00	2.975E+00	1.264E+00	42.48	
RA-226	1600.00Y	1.00	9.214E-01	9.217E-01	1.608E-01	17.45	
AC-228	1.41E+10Y	1.00	7.147E-01	7.147E-01	2.261E-01	31.63	
RA-228	1.41E+10Y	1.00	7.147E-01	7.147E-01	2.261E-01	31.63	
TH-228	1.41E+10Y	1.00	7.101E-01	7.101E-01	1.034E-01	14.56	
TH-229	7340.00Y	1.00	2.188E-01	2.188E-01	1.072E-01	48.98	K
TH-230	7.54E+04Y	1.00	9.214E-01	9.214E-01	1.608E-01	17.45	
TH-232	1.41E+10Y	1.00	7.147E-01	7.147E-01	2.261E-01	31.63	
TH-234	4.47E+09Y	1.00	7.863E-01	7.863E-01	9.879E-01	125.65	
U-234	2.45E+05Y	1.00	9.214E-01	9.214E-01	1.608E-01	17.45	
U-235	7.04E+08Y	1.00	1.325E-01	1.325E-01	0.634E-01	47.81	K
U-238	4.47E+09Y	1.00	7.863E-01	7.863E-01	9.879E-01	125.65	
BK-247	1380.00Y	1.00	9.246E-02	9.249E-02	14.79E-02	159.89	
Total Activity :			3.247E+01	5.204E+01			

Grand Total Activity : 3.247E+01 5.204E+01

Flags: "K" = Keyline not found "M" = Manually accepted
 "E" = Manually edited "A" = Nuclide specific abn. limit

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
0	111.16	13	136	0.97	224.05	223	7	3.01E-03	****	8.60E+00	T
0	128.56	52	104	0.99	258.83	256	7	1.21E-02	77.0	8.21E+00	T
0	131.48	30	137	1.31	264.67	263	9	6.87E-03	****	8.13E+00	T
0	153.57	15	90	0.56	308.80	307	6	3.60E-03	****	7.54E+00	T
0	208.78	75	118	1.36	419.16	415	12	1.81E-02	66.3	6.16E+00	
0	313.44	17	60	1.34	628.33	623	12	4.17E-03	****	4.45E+00	
3	341.71	37	24	1.66	684.83	673	16	9.25E-03	61.9	4.14E+00	T
0	344.69	19	29	1.37	690.80	689	6	4.75E-03	****	4.11E+00	T
0	462.45	32	39	3.31	926.15	920	13	8.24E-03	91.0	3.22E+00	T
0	540.47	13	13	3.44	1082.09	1075	10	3.49E-03	****	2.84E+00	
0	648.28	9	38	6.05	1297.57	1287	18	2.30E-03	****	2.46E+00	
2	664.89	19	10	1.74	1330.77	1318	26	5.14E-03	93.7	2.41E+00	T
2	668.19	19	8	1.87	1337.35	1318	26	5.18E-03	97.0	2.40E+00	T
0	727.84	14	21	1.43	1456.57	1449	10	3.83E-03	****	2.24E+00	T
0	767.88	25	18	2.31	1536.62	1532	9	6.78E-03	76.3	2.15E+00	T
0	772.02	11	17	0.63	1544.87	1540	9	3.06E-03	****	2.14E+00	T
0	803.94	17	5	3.39	1608.68	1604	10	4.75E-03	75.7	2.07E+00	
0	934.03	19	10	1.56	1868.69	1861	13	5.13E-03	83.7	1.83E+00	
0	949.79	20	4	3.57	1900.19	1893	15	5.60E-03	61.2	1.81E+00	T
0	964.36	22	6	1.88	1929.33	1924	11	5.97E-03	60.4	1.79E+00	T
0	1028.78	9	5	1.47	2058.08	2054	7	2.42E-03	****	1.69E+00	T
4	1148.31	10	4	1.72	2296.99	2295	19	2.71E-03	71.1	1.54E+00	T
4	1151.32	16	9	1.87	2303.00	2295	19	4.65E-03	86.0	1.54E+00	
0	1245.48	8	9	1.32	2491.22	2485	10	2.16E-03	****	1.44E+00	
0	1309.85	8	0	1.50	2619.88	2617	6	2.22E-03	70.7	1.38E+00	
0	1495.95	8	3	4.27	2991.85	2983	14	2.40E-03	****	1.22E+00	
0	1509.22	12	0	1.16	3018.38	3012	12	3.61E-03	55.5	1.21E+00	

Flags: "T" = Tentatively associated

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*****
*                               GEL Laboratories LLC                       *
*                               2040 Savage Road                          *
*                               Charleston, SC 29407                     *
*****
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DETECTOR AND SAMPLE DATA

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* Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]R405245002.CNF;1
* Acquisition date   : 3-OCT-2016 04:33:24 Sensitivity      : 3.000
* Detector ID       : GAM05 Energy tolerance: 1.500
* Elapsed live time : 0 01:00:00.00 Abundance limit : 75.000
* Elapsed real time : 0 01:00:00.55 Half life ratio : *****
* Sample date       : 15-DEC-2015 10:19:00 Nuclide Library : SOLID
* Sample ID         : R405245002 Analyst initials: MXR1
* Batch Number      : 1596387 Sample Quantity : 1.4620E+02 GRAM
* Wet wt corr       : 1.00000 Wet Weight : 0.00000
*                               Dry Weight : 0.00000
*****
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CALIBRATION INFORMATION

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* Eff. Cal. date    : 4-SEP-2016 08:00:28 Eff. Geometry   : CAN
* Eff. File         : DKA100:[CANBERRA.GAMMA]EFF_GAM05_CAN.CNF;20
*****
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Combined Critical Level Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Lc (pCi/GRAM)
K-40	1.833E-01
CD-109	4.757E-01
SN-126	3.062E-02
BA-137M	2.253E-02
CS-137	2.380E-02
CE-141	1.292E+01
HG-203	1.471E+00
TL-208	2.338E-02
PB-210	2.470E-01
PB-212	3.679E-02
BI-214	4.900E-02
PB-214	4.814E-02
RN-222	4.900E-02
RA-224	3.947E-01
RA-226	4.900E-02
AC-228	8.742E-02
RA-228	8.742E-02
TH-228	3.679E-02
TH-229	3.038E-01
TH-230	4.899E-02
TH-232	8.742E-02
TH-234	3.362E-01
U-234	4.899E-02
U-235	1.193E-01
U-238	3.362E-01
BK-247	4.563E-02

---- Non-Identified Nuclides ----

Nuclide	Lc (pCi/GRAM)	
BE-7	8.159E+00	NOT IDENT.
NA-22	3.015E-02	NOT IDENT.
NA-24	0.000E+00	SHORT HLIF
AL-26	2.332E-02	NOT IDENT.
SC-46	2.252E-01	FAIL ABUN

V-48	0.000E+00	SHORT HLIF
CR-51	0.000E+00	SHORT HLIF
MN-54	4.541E-02	NOT IDENT.
CO-56	3.397E-01	NOT IDENT.
MN-56	0.000E+00	SHORT HLIF
CO-57	2.689E-02	NOT IDENT.
CO-58	3.889E-01	NOT IDENT.
FE-59	5.227E+00	NOT IDENT.
CO-60	2.421E-02	NOT IDENT.
ZN-65	1.272E-01	NOT IDENT.
GE-68	1.397E+00	NOT IDENT.
AS-73	1.475E+00	NOT IDENT.
AS-74	0.000E+00	SHORT HLIF
SE-75	1.454E-01	FAIL ABUN
BR-77	0.000E+00	SHORT HLIF
SR-82	0.000E+00	SHORT HLIF
RB-83	5.076E-01	NOT IDENT.
KR-85	5.003E+00	NOT IDENT.
SR-85	4.906E-01	NOT IDENT.
RB-86	0.000E+00	SHORT HLIF
Y-88	1.824E-01	NOT IDENT.
Y-91	3.324E+02	NOT IDENT.
NB-94	2.254E-02	NOT IDENT.
NB-95	6.269E-01	NOT IDENT.
NB-95M	1.607E+00	NOT IDENT.
ZR-95	8.289E-01	NOT IDENT.
NB-97	0.000E+00	SHORT HLIF
ZR-97	0.000E+00	SHORT HLIF
MO-99	0.000E+00	SHORT HLIF
TC-99M	0.000E+00	SHORT HLIF
RH-101	1.995E-02	FAIL ABUN
RH-102	3.814E-02	FAIL ABUN
RU-103	3.557E+00	FAIL ABUN
RH-106	3.815E-01	NOT IDENT.
RU-106	3.815E-01	NOT IDENT.
AG-108M	1.645E-02	NOT IDENT.
AG-110M	6.919E-02	NOT IDENT.
SN-113	1.303E-01	NOT IDENT.
CD-115	0.000E+00	SHORT HLIF
SN-117M	0.000E+00	SHORT HLIF
TE-123M	9.285E-02	NOT IDENT.
SB-124	1.107E+00	NOT IDENT.
SB-125	7.986E-02	FAIL ABUN
TE-125M	1.554E+02	NOT IDENT.
I-126	0.000E+00	SHORT HLIF
SB-126	0.000E+00	SHORT HLIF
SB-127	0.000E+00	SHORT HLIF
I-131	0.000E+00	SHORT HLIF
I-132	0.000E+00	SHORT HLIF
TE-132	0.000E+00	SHORT HLIF
BA-133	2.790E-02	NOT IDENT.
I-133	0.000E+00	SHORT HLIF
CS-134	4.501E-02	FAIL ABUN
CS-135	8.812E-02	NOT IDENT.
I-135	0.000E+00	SHORT HLIF
CS-136	0.000E+00	SHORT HLIF
CE-139	6.909E-02	NOT IDENT.
BA-140	0.000E+00	SHORT HLIF
LA-140	0.000E+00	SHORT HLIF
CE-143	0.000E+00	SHORT HLIF
CE-144	2.066E-01	NOT IDENT.
PM-144	5.022E-02	NOT IDENT.
PR-144	4.349E+00	NOT IDENT.
PM-146	3.030E-02	NOT IDENT.
ND-147	0.000E+00	SHORT HLIF
PM-147	4.619E+02	NOT IDENT.
PM-149	0.000E+00	SHORT HLIF
EU-150	1.890E-02	FAIL ABUN
EU-152	6.897E-02	FAIL ABUN
GD-153	9.203E-02	NOT IDENT.
EU-154	7.510E-02	NOT IDENT.
EU-155	6.180E-02	FAIL ABUN
TB-160	9.064E-01	FAIL ABUN
HO-166M	3.687E-02	FAIL ABUN
TM-171	3.481E+00	NOT IDENT.
HF-172	1.437E-01	FAIL ABUN
LU-172	5.648E-02	FAIL ABUN
LU-176	1.463E-02	FAIL ABUN

HF-181	3.125E+00	FAIL ABUN
TA-182	7.679E-01	FAIL ABUN
RE-183	6.415E-01	NOT IDENT.
RE-184	2.092E+01	NOT IDENT.
W-188	7.299E+01	FAIL ABUN
IR-192	2.704E-01	FAIL ABUN
BI-207	3.701E-02	FAIL ABUN
BI-211	3.763E-01	FAIL ABUN
PB-211	5.066E-01	NOT IDENT.
BI-212	4.215E-01	FAIL ABUN
RN-219	2.807E-01	NOT IDENT.
RA-223	3.648E-01	FAIL ABUN
AC-227	1.540E-01	NOT IDENT.
TH-227	1.540E-01	NOT IDENT.
PA-231	3.044E-01	NOT IDENT.
TH-231	3.648E-01	FAIL ABUN
PA-233	4.401E-02	FAIL ABUN
PA-234	1.597E-01	FAIL ABUN
PA-234M	3.484E+00	FAIL ABUN
NP-237	4.401E-02	FAIL ABUN
NP-238	0.000E+00	SHORT HLIF
NP-239	1.403E-01	FAIL ABUN
PU-239	2.187E+02	FAIL ABUN
AM-241	3.317E-02	NOT IDENT.
AM-243	3.446E-02	NOT IDENT.
CM-243	4.952E-02	FAIL ABUN
CM-247	2.527E-02	FAIL ABUN
CF-249	2.763E-02	NOT IDENT.
CF-251	7.153E-02	NOT IDENT.
ANH-511	4.272E-02	NOT IDENT.

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*****
*                               GEL Laboratories LLC                               *
*                               2040 Savage Road                               *
*                               Charleston, SC 29407                          *
*****
*                               DETECTOR AND SAMPLE DATA                       *
*
* Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]R405245002.CNF;1
* Acquisition date   : 3-OCT-2016 04:33:24 Sensitivity      : 3.000
* Detector ID        : GAM05 Energy tolerance: 1.500
* Elapsed live time : 0 01:00:00.00 Abundance limit : 75.000
* Elapsed real time : 0 01:00:00.55 Half life ratio : *****
* Sample date        : 15-DEC-2015 10:19:00 Nuclide Library : SOLID
* Sample ID          : R405245002 Analyst initials: MXR1
* Batch Number       : 1596387 Sample Quantity : 1.4620E+02 GRAM
*                               Quantity Err(%) : 1.3680E-03 %
* Wet wt corr        : 1.00000 Wet Weight : 0.00000
*                               Dry Weight  : 0.00000
*****
*                               CALIBRATION INFORMATION                          *
*
* Eff. Cal. date     : 4-SEP-2016 08:00:28 Eff. Geometry   : CAN
* Eff. File          : DKA100:[CANBERRA.GAMMA]EFF_GAM05_CAN.CNF;20
*****

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Combined Activity-MDA Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM)	Act Error (1.96-sigma)	TPU (1.96-sigma)
K-40	1.149E+01	1.484E+00	1.484E+00
CD-109	1.621E+00	1.122E+00	1.122E+00
SN-126	1.044E-01	7.208E-02	7.208E-02
BA-137M	1.827E-01	5.590E-02	5.590E-02
CS-137	1.930E-01	5.905E-02	5.905E-02
CE-141	1.597E+01	2.235E+01	2.235E+01
HG-203	1.037E+00	4.008E+00	4.008E+00
TL-208	2.269E-01	5.863E-02	5.863E-02
PB-210	1.223E+00	9.391E-01	9.391E-01
PB-212	7.101E-01	1.081E-01	1.081E-01
BI-214	9.217E-01	1.625E-01	1.625E-01
PB-214	9.734E-01	1.877E-01	1.877E-01
RN-222	9.217E-01	1.625E-01	1.625E-01
RA-224	9.455E-01	1.316E+00	1.316E+00
RA-226	9.217E-01	1.625E-01	1.625E-01
AC-228	7.147E-01	2.246E-01	2.246E-01
RA-228	7.147E-01	2.246E-01	2.246E-01
TH-228	7.101E-01	1.081E-01	1.081E-01
TH-229	4.111E-02	3.446E-01	3.446E-01
TH-230	9.214E-01	1.625E-01	1.625E-01
TH-232	7.147E-01	2.246E-01	2.246E-01
TH-234	7.863E-01	9.837E-01	9.837E-01
U-234	9.214E-01	1.625E-01	1.625E-01
U-235	1.240E-01	1.244E-01	1.244E-01
U-238	7.863E-01	9.837E-01	9.837E-01
BK-247	9.249E-02	1.461E-01	1.461E-01

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/GRAM)	K.L Act error (1.96-sigma)	TPU (1.96-sigma)	
BE-7	-1.411E+00	9.423E+00	9.444E+00	NOT IDENT.
NA-22	-2.963E-03	3.606E-02	3.608E-02	NOT IDENT.
NA-24	1.000E+41	5.443E+42	0.000E+00	SHORT HLIF
AL-26	8.253E-03	2.518E-02	2.545E-02	NOT IDENT.

SC-46	-4.709E-02	2.838E-01	2.846E-01	FAIL ABUN
V-48	-4.551E+03	8.169E+03	8.422E+03	SHORT HLIF
CR-51	-5.622E+01	2.845E+02	2.856E+02	SHORT HLIF
MN-54	9.319E-03	5.275E-02	5.292E-02	NOT IDENT.
CO-56	-3.511E-01	4.576E-01	4.842E-01	NOT IDENT.
MN-56	-1.000E+41	1.309E+41	0.000E+00	SHORT HLIF
CO-57	-9.265E-04	2.980E-02	2.980E-02	NOT IDENT.
CO-58	-2.103E-02	4.699E-01	4.700E-01	NOT IDENT.
FE-59	1.073E+00	5.855E+00	5.875E+00	NOT IDENT.
CO-60	-3.131E-02	3.645E-02	3.909E-02	NOT IDENT.
ZN-65	6.694E-02	1.490E-01	1.520E-01	NOT IDENT.
GE-68	-7.621E-03	1.609E+00	1.609E+00	NOT IDENT.
AS-73	4.056E-01	1.517E+00	1.528E+00	NOT IDENT.
AS-74	9.519E+02	2.954E+03	2.985E+03	SHORT HLIF
SE-75	2.563E-01	4.017E-01	4.180E-01	FAIL ABUN
BR-77	1.625E+37	1.374E+38	0.000E+00	SHORT HLIF
SR-82	-3.095E+02	5.608E+02	5.779E+02	SHORT HLIF
RB-83	1.979E-01	5.539E-01	5.610E-01	NOT IDENT.
KR-85	-1.875E+01	7.861E+00	1.154E+01	NOT IDENT.
SR-85	-1.840E+00	7.711E-01	1.132E+00	NOT IDENT.
RB-86	-7.136E+03	1.593E+04	1.625E+04	SHORT HLIF
Y-88	5.782E-02	2.033E-01	2.049E-01	NOT IDENT.
Y-91	-2.666E+02	4.380E+02	4.542E+02	NOT IDENT.
NB-94	-9.042E-03	2.806E-02	2.835E-02	NOT IDENT.
NB-95	7.622E-01	6.572E-01	7.416E-01	NOT IDENT.
NB-95M	7.419E-01	1.946E+00	1.975E+00	NOT IDENT.
ZR-95	6.262E-02	9.712E-01	9.717E-01	NOT IDENT.
NB-97	1.000E+41	2.458E+41	0.000E+00	SHORT HLIF
ZR-97	-1.000E+41	8.805E+40	0.000E+00	SHORT HLIF
MO-99	1.533E+31	2.757E+31	0.000E+00	SHORT HLIF
TC-99M	-1.000E+41	9.539E+40	0.000E+00	SHORT HLIF
RH-101	5.686E-02	4.410E-02	5.101E-02	FAIL ABUN
RH-102	-4.160E-03	4.497E-02	4.501E-02	FAIL ABUN
RU-103	-5.818E-01	4.125E+00	4.134E+00	FAIL ABUN
RH-106	-1.935E-01	4.725E-01	4.805E-01	NOT IDENT.
RU-106	-1.935E-01	4.725E-01	4.805E-01	NOT IDENT.
AG-108M	-1.399E-02	2.052E-02	2.147E-02	NOT IDENT.
AG-110M	8.388E-02	6.312E-02	7.358E-02	NOT IDENT.
SN-113	-1.557E-01	1.656E-01	1.799E-01	NOT IDENT.
CD-115	-1.006E+38	3.106E+38	0.000E+00	SHORT HLIF
SN-117M	6.616E+04	5.280E+04	6.064E+04	SHORT HLIF
TE-123M	6.150E-02	9.957E-02	1.034E-01	NOT IDENT.
SB-124	-1.718E-01	1.418E+00	1.421E+00	NOT IDENT.
SB-125	2.633E-02	8.626E-02	8.708E-02	FAIL ABUN
TE-125M	7.225E+01	1.763E+02	1.792E+02	NOT IDENT.
I-126	8.173E+05	7.586E+05	8.434E+05	SHORT HLIF
SB-126	1.225E+05	6.694E+05	6.717E+05	SHORT HLIF
SB-127	-2.770E+21	7.138E+21	0.000E+00	SHORT HLIF
I-131	-1.462E+09	2.264E+09	2.358E+09	SHORT HLIF
I-132	1.000E+41	1.807E+42	0.000E+00	SHORT HLIF
TE-132	6.523E+25	7.490E+25	0.000E+00	SHORT HLIF
BA-133	-7.818E-03	3.522E-02	3.540E-02	NOT IDENT.
I-133	1.000E+41	2.052E+41	0.000E+00	SHORT HLIF
CS-134	4.192E-02	5.778E-02	6.079E-02	FAIL ABUN
CS-135	-1.671E-01	1.389E-01	1.580E-01	NOT IDENT.
I-135	1.000E+41	1.356E+42	0.000E+00	SHORT HLIF
CS-136	-1.060E+05	2.085E+05	2.140E+05	SHORT HLIF
CE-139	3.877E-04	7.825E-02	7.825E-02	NOT IDENT.
BA-140	-6.390E+05	7.977E+05	8.481E+05	SHORT HLIF
LA-140	-2.496E+05	2.501E+05	2.743E+05	SHORT HLIF
CE-143	1.000E+41	2.433E+41	0.000E+00	SHORT HLIF
CE-144	-1.407E-01	2.640E-01	2.715E-01	NOT IDENT.
PM-144	3.701E-02	5.406E-02	5.657E-02	NOT IDENT.
PR-144	3.217E+00	4.678E+00	4.898E+00	NOT IDENT.
PM-146	6.202E-03	3.326E-02	3.338E-02	NOT IDENT.
ND-147	1.512E+06	1.714E+07	1.716E+07	SHORT HLIF
PM-147	-1.225E+02	5.215E+02	5.244E+02	NOT IDENT.
PM-149	1.879E+39	4.169E+39	0.000E+00	SHORT HLIF
EU-150	1.118E-02	2.301E-02	2.356E-02	FAIL ABUN
EU-152	9.243E-02	9.422E-02	1.030E-01	FAIL ABUN
GD-153	-4.378E-02	1.117E-01	1.135E-01	NOT IDENT.
EU-154	-5.066E-03	8.925E-02	8.928E-02	NOT IDENT.
EU-155	4.441E-02	6.384E-02	6.691E-02	FAIL ABUN
TB-160	-3.327E-01	1.189E+00	1.198E+00	FAIL ABUN
HO-166M	-3.863E-02	5.001E-02	5.295E-02	FAIL ABUN
TM-171	-2.645E-01	3.651E+00	3.653E+00	NOT IDENT.
HF-172	4.258E-02	1.672E-01	1.683E-01	FAIL ABUN
LU-172	1.530E-02	6.223E-02	6.261E-02	FAIL ABUN

LU-176	-2.269E-02	2.091E-02	2.328E-02	FAIL ABUN
HF-181	2.349E+00	3.239E+00	3.407E+00	FAIL ABUN
TA-182	2.945E-01	8.486E-01	8.590E-01	FAIL ABUN
RE-183	2.481E-01	6.564E-01	6.659E-01	NOT IDENT.
RE-184	1.006E+01	2.348E+01	2.391E+01	NOT IDENT.
W-188	-1.339E+01	9.685E+01	9.703E+01	FAIL ABUN
IR-192	-4.173E-02	3.623E-01	3.628E-01	FAIL ABUN
BI-207	1.538E-02	3.974E-02	4.034E-02	FAIL ABUN
BI-211	2.681E+00	5.190E-01	1.315E+00	FAIL ABUN
PB-211	-5.500E-02	5.704E-01	5.709E-01	NOT IDENT.
BI-212	4.886E-01	6.368E-01	6.738E-01	FAIL ABUN
RN-219	2.169E-01	2.875E-01	3.036E-01	NOT IDENT.
RA-223	-4.078E-02	4.470E-01	4.473E-01	FAIL ABUN
AC-227	-1.525E-03	1.819E-01	1.819E-01	NOT IDENT.
TH-227	-1.525E-03	1.819E-01	1.819E-01	NOT IDENT.
PA-231	-5.029E-02	3.716E-01	3.723E-01	NOT IDENT.
TH-231	-4.078E-02	4.470E-01	4.473E-01	FAIL ABUN
PA-233	1.599E-02	5.079E-02	5.130E-02	FAIL ABUN
PA-234	-9.473E-02	2.736E-01	2.769E-01	FAIL ABUN
PA-234M	-2.454E+00	4.280E+00	4.420E+00	FAIL ABUN
NP-237	1.599E-02	5.079E-02	5.130E-02	FAIL ABUN
NP-238	5.448E+39	3.610E+40	0.000E+00	SHORT HLIF
NP-239	-8.720E-03	1.552E-01	1.553E-01	FAIL ABUN
PU-239	5.178E+02	3.912E+02	4.556E+02	FAIL ABUN
AM-241	-1.774E-02	3.886E-02	3.967E-02	NOT IDENT.
AM-243	1.508E-01	3.265E-02	7.541E-02	NOT IDENT.
CM-243	-4.978E-02	5.864E-02	6.279E-02	FAIL ABUN
CM-247	4.474E-04	2.807E-02	2.807E-02	FAIL ABUN
CF-249	1.129E-03	3.052E-02	3.052E-02	NOT IDENT.
CF-251	2.295E-02	7.913E-02	7.980E-02	NOT IDENT.
ANH-511	-1.800E-02	4.237E-02	4.314E-02	NOT IDENT.

 * GEL Laboratories LLC *
 * 2040 Savage Road *
 * Charleston, SC 29407 *
 * GAMMA SPECTROSCOPY BACKGROUND REPORT *

ENERGY	MDA COUNTS	ENERGY	MDA COUNTS	ENERGY	MDA COUNTS
43.53	55.2632	87.09	62.0565	136.47	58.3932
45.60	58.0361	87.57	62.1304	140.51	0.0000
46.54	58.2461	88.03	62.2005	143.76	40.4132
49.72	0.0000	88.34	62.2474	144.24	46.0365
51.35	79.0527	88.47	62.2673	145.44	55.3566
51.87	72.8633	89.96	62.4927	152.43	50.6713
52.39	72.9973	1093.63	62.5951	153.25	0.0000
52.97	65.9902	91.11	0.0000	323.87	57.1705
53.44	62.9130	92.59	62.8863	156.02	0.0000
54.07	76.6183	93.35	62.9990	158.56	0.0000
57.36	0.0000	94.56	63.1774	159.00	55.5908
57.53	65.4059	94.65	63.1909	162.33	50.8026
57.98	67.1199	94.67	63.1936	162.66	0.0000
59.27	77.9597	94.87	63.2227	163.33	53.9349
59.32	77.9725	97.43	67.1961	165.86	52.1035
59.54	83.4464	98.43	44.1975	176.31	58.1166
60.96	71.8511	98.44	44.1984	176.60	0.0000
61.17	76.8010	99.53	60.5833	177.52	40.5455
62.93	77.2259	100.11	64.2836	181.07	0.0000
63.29	77.3122	102.03	42.7354	181.52	44.6152
63.58	75.7349	103.18	56.5167	184.41	48.9994
64.28	83.5974	103.37	65.6592	143.76	47.3373
66.73	84.7722	105.21	52.1881	193.51	45.7256
67.24	96.5537	105.31	48.5363	197.03	52.3556
125.81	90.8453	106.12	52.2903	198.01	44.9352
67.75	92.5308	106.47	64.2642	201.83	50.5414
69.67	67.0648	109.28	59.1060	203.43	42.0272
70.83	78.5029	111.00	65.4974	205.31	46.0924
72.81	74.4326	111.76	0.0000	210.85	38.0820
72.87	74.4454	114.06	52.2300	215.65	33.9361
74.66	74.8160	116.30	0.0000	222.11	47.4518
74.82	74.8489	116.74	56.2637	227.09	36.6386
74.97	74.8798	119.76	58.4873	227.38	33.3192
77.11	75.3168	121.12	53.9137	228.16	0.0000
78.74	75.6458	121.22	53.9241	228.18	40.0221
79.69	75.8358	121.78	57.7706	116.74	40.0221
80.12	75.9211	122.06	52.1168	235.69	47.8587
80.19	0.0000	122.92	52.2033	235.96	47.8744
80.57	76.0104	123.07	56.0161	238.63	50.6497
81.00	76.0956	265.00	62.7350	238.98	0.0000
81.07	76.1097	125.81	55.9910	240.99	50.7884
81.75	51.9841	127.23	57.4162	242.00	50.8482
83.79	74.9009	127.91	49.8243	244.70	31.7367
84.00	60.9985	129.30	49.9529	252.40	0.0000
85.43	61.2185	131.20	50.1282	252.80	17.1577
86.55	61.9740	133.02	63.1910	254.15	0.0000
86.79	62.0107	133.52	63.2478	256.23	37.8904
86.94	62.0339	136.00	51.8620	260.90	0.0000

ENERGY	MDA COUNTS	ENERGY	MDA COUNTS	ENERGY	MDA COUNTS
264.66	31.2863	355.39	0.0000	584.27	18.7271
264.80	31.2913	356.01	31.5979	595.83	0.0000
265.00	31.2979	364.49	0.0000	427.87	18.8995
268.22	58.9343	366.42	0.0000	602.52	0.0000
269.46	36.1058	372.51	40.1506	604.72	13.4588
270.03	32.6313	375.05	26.5378	607.14	23.9590
271.23	49.0085	377.52	30.8796	609.32	21.9884
273.65	0.0000	356.01	25.0021	610.33	22.0009
276.40	36.3688	388.16	29.4131	614.28	16.5363
277.37	36.4057	388.63	0.0000	618.01	16.0671
277.60	36.4142	391.69	31.2305	620.36	22.1208
278.00	36.4294	264.66	20.0927	621.93	26.1650
279.20	36.4748	401.81	19.2361	630.19	0.0000
279.54	29.8174	402.40	27.9922	631.29	13.1476
279.70	29.8220	404.85	32.4269	633.25	15.1862
280.46	34.5581	410.95	25.5337	634.78	0.0000
283.69	29.5502	413.71	28.2337	635.95	19.2636
284.31	0.0000	414.70	0.0000	636.99	0.0000
285.41	27.2339	423.72	0.0000	645.85	13.2486
285.90	0.0000	427.09	23.1689	657.76	10.7670
287.50	35.5966	427.87	24.9654	657.90	0.0000
290.67	39.6779	433.94	25.0759	661.66	15.4120
293.27	0.0000	439.40	21.5781	664.57	0.0000
351.93	41.8498	453.88	19.9832	666.33	0.0000
295.96	55.8411	463.37	20.1147	666.50	0.0000
879.38	47.9858	468.07	23.1144	667.71	0.0000
299.98	46.8505	473.00	0.0000	677.62	10.3581
300.09	46.8552	475.06	22.1177	685.70	0.0000
300.13	46.8576	476.78	21.2209	695.00	0.0000
301.36	38.4932	477.60	24.9247	696.49	19.8643
302.85	34.9349	482.18	18.5193	696.51	19.8651
256.23	30.1636	487.02	0.0000	697.00	0.0000
304.85	0.0000	492.35	0.0000	697.30	23.0107
306.78	43.5311	497.08	22.4409	697.49	24.0585
308.46	25.8372	505.52	35.7247	702.65	22.0220
311.90	31.5923	507.63	0.0000	706.68	26.2675
316.51	27.6610	511.00	38.6794	711.68	21.0645
319.41	0.0000	514.00	68.9989	720.70	0.0000
320.08	0.0000	514.00	68.9989	721.93	0.0000
321.04	20.8329	520.40	21.8264	722.78	22.2347
323.87	27.0307	520.69	0.0000	722.91	22.2365
325.23	27.0643	522.65	0.0000	723.31	22.2407
328.76	0.0000	527.90	0.0000	724.19	19.0715
333.37	28.0898	528.26	20.0259	727.33	11.1413
333.97	28.1051	529.59	15.2702	733.00	17.0228
334.37	26.4609	529.87	0.0000	735.93	21.3078
338.28	23.2342	531.02	0.0000	333.97	22.3885
338.32	23.2348	537.26	0.0000	739.50	0.0000
311.90	23.2792	546.56	0.0000	747.24	19.2773
340.48	23.2792	552.55	14.5154	748.06	16.0706
340.55	0.0000	563.25	21.4235	752.31	22.5432
344.28	12.5125	569.33	18.5678	753.82	0.0000
345.93	30.0732	946.00	18.5702	756.73	10.7564
351.06	31.0456	569.70	20.5266	756.80	10.7568
351.93	31.0689	583.19	18.7163	884.68	19.4253

ENERGY	MDA COUNTS	ENERGY	MDA COUNTS	ENERGY	MDA COUNTS
765.81	8.1006	1274.44	14.2202	1620.50	0.0000
766.42	9.7233	1001.03	21.3669	1621.92	2.1299
766.84	11.3459	1002.74	18.7076	1678.03	0.0000
772.60	0.0000	1004.73	10.6974	1690.97	3.2463
776.52	0.0000	507.63	0.0000	1750.46	0.0000
739.50	0.0000	1025.87	0.0000	1764.49	6.5999
778.90	13.0371	1028.54	0.0000	1063.66	1.7621
783.70	0.0000	1037.84	7.2153	1771.35	6.6097
785.37	19.6121	1038.76	0.0000	1791.20	0.0000
792.07	19.6699	631.29	18.0933	1808.65	2.2211
794.95	15.3182	1048.07	0.0000	1810.72	0.0000
795.86	18.0610	1049.04	15.3928	1836.06	3.3510
810.06	15.4190	1050.41	9.9647		
810.29	14.3187	1063.66	10.0097		
344.28	14.3198	1077.00	0.0000		
810.76	14.3219	1077.34	8.2282		
815.77	0.0000	1085.87	13.7531		
1048.07	0.0000	1093.63	10.1118		
832.01	12.2282	1099.45	14.7363		
834.85	13.3560	1112.07	18.4973		
835.71	11.1340	1112.84	17.5759		
836.80	0.0000	1115.54	8.8887		
846.75	0.0000	1120.29	15.7642		
846.77	21.2521	1120.55	15.7663		
856.80	0.0000	1221.41	14.8418		
860.56	17.9987	1129.67	8.3716		
871.09	20.3350	1131.51	0.0000		
873.19	10.1763	1147.95	0.0000		
875.33	0.0000	1173.23	14.1467		
879.38	9.0680	1177.95	12.2787		
880.51	11.3403	1189.05	15.1650		
883.24	4.5410	1204.77	17.1431		
884.68	2.2718	1221.41	14.3582		
889.28	11.3802	1231.02	21.1205		
894.76	15.9665	1235.36	0.0000		
898.04	11.4197	1238.28	14.2940		
900.72	14.8609	1260.41	0.0000		
903.28	11.4429	1271.87	7.7734		
911.20	12.0526	1274.44	8.7517		
912.08	15.5012	1274.54	8.7517		
923.98	0.0000	1291.59	5.8634		
926.50	11.5466	1298.22	0.0000		
929.11	6.9348	1312.11	0.0000		
937.49	10.4355	1332.49	12.8524		
944.13	0.0000	1362.66	0.0000		
946.00	12.2141	1365.19	3.9907		
949.00	8.1519	1368.63	0.0000		
667.71	0.0000	1384.29	5.0143		
962.31	12.6400	1408.01	2.0186		
964.08	11.2430	1457.56	0.0000		
966.17	0.0000	1460.82	4.0935		
911.20	8.4475	1489.16	1.6494		
968.97	8.4475	1505.03	4.9682		
983.53	0.0000	1584.12	9.4982		
984.45	0.0000	1596.21	0.0000		

```

*****
*                               GEL Laboratories LLC                               *
*                               2040 Savage Road                               *
*                               Charleston, SC 29407                            *
*****
Configuration   : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]R405245003.CNF;1
Background file : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]BKG_GAM06.CNF;499
Background date : 2-OCT-2016 11:00:12.
Sample date     : 15-DEC-2015 10:18:00 Acquisition date : 3-OCT-2016 04:33:45.
Sample ID      : R405245003 Sample quantity   : 1.39591E+02 GRAM
Detector name  : GAM06 Detector geometry: CAN
Elapsed live time: 0 01:00:00.00 Elapsed real time: 0 01:00:00.57 0.0%
Energy tolerance : 1.50000 keV Analyst Initials : MXR1
Abundance limit : 75.00000 Sensitivity : 3.00000
Batch ID      : 1596387 Detector SN# :
Matrix Spike ID : LCS ID : 1556
*****
    
```

BACKGROUND CORRECTED SAMPLE PEAK REPORT

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	62.98*	51	113	1.41	125.68	120	10	1.41E-02	42.5	
2	3	74.90*	98	107	1.09	149.49	144	20	2.73E-02	20.0	2.23E+00
3	3	77.22	153	92	1.24	154.12	144	20	4.25E-02	14.0	
4	6	84.07*	37	79	1.68	167.81	164	30	1.02E-02	46.7	1.10E+00
5	6	86.98	84	95	1.61	173.64	164	30	2.32E-02	25.0	
6	6	89.88	51	65	1.14	179.42	164	30	1.43E-02	30.4	
7	6	92.92*	110	89	1.71	185.49	164	30	3.05E-02	20.2	
8	0	106.95	73	83	4.40	213.55	208	12	2.02E-02	27.8	
9	0	128.44	19	77	1.24	256.49	254	7	5.21E-03	80.5	
10	0	140.14*	6	77	1.00	279.88	276	7	1.54E-03	272.5	
11	0	185.44*	40	138	1.18	370.39	366	11	1.10E-02	60.7	
12	0	209.34	48	72	0.86	418.16	413	10	1.32E-02	36.4	
13	0	238.58*	221	78	1.02	476.61	473	8	6.14E-02	9.8	
14	0	242.01*	44	63	1.27	483.47	481	8	1.21E-02	37.2	
15	0	270.78*	11	69	1.14	540.97	535	10	3.12E-03	145.4	
16	4	278.23	25	28	1.80	555.84	552	30	6.94E-03	40.4	2.82E+00
17	4	286.81	15	28	1.24	573.00	552	30	4.29E-03	60.8	
18	4	288.75	17	44	1.82	576.87	552	30	4.84E-03	78.4	
19	0	295.09*	85	40	1.23	589.55	585	8	2.37E-02	17.4	
20	0	300.58	17	39	1.70	600.52	597	8	4.67E-03	68.3	
21	0	328.96	35	23	3.36	657.24	653	9	9.80E-03	29.5	
22	0	351.98	194	52	1.19	703.27	698	10	5.40E-02	10.0	
23	0	432.88	16	23	1.79	864.97	859	9	4.44E-03	60.8	
24	0	446.86	11	19	0.92	892.92	889	8	3.01E-03	77.2	
25	0	452.84	13	29	0.69	904.88	898	10	3.70E-03	81.1	
26	0	467.87	10	19	1.15	934.91	929	8	2.81E-03	82.2	
27	0	470.69	15	16	0.66	940.54	937	8	4.04E-03	54.6	
28	0	504.73	6	17	0.87	1008.59	1004	7	1.65E-03	119.4	
29	0	511.24*	25	31	1.88	1021.62	1015	16	7.04E-03	63.9	
30	0	583.29*	99	20	1.42	1165.65	1159	15	2.76E-02	14.6	
31	0	609.34*	88	50	1.52	1217.73	1212	15	2.43E-02	20.8	
32	0	645.09	16	16	1.58	1289.20	1281	12	4.36E-03	59.1	
33	0	661.59	22	17	2.52	1322.20	1316	10	5.98E-03	42.2	
34	0	681.05	5	10	0.49	1361.10	1356	8	1.51E-03	108.9	

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
35	0	729.59	52	22	6.44	1458.15	1447	23	1.45E-02	27.5	
36	0	768.42	19	9	1.17	1535.80	1530	11	5.20E-03	40.8	
37	0	786.45	5	10	0.79	1571.86	1565	8	1.41E-03	116.8	
38	0	806.09	10	7	1.01	1611.13	1608	6	2.88E-03	51.2	
39	0	911.01*	38	27	1.12	1820.93	1814	15	1.05E-02	34.1	
40	0	969.52	29	12	1.47	1937.94	1932	13	8.09E-03	31.3	
41	5	997.79	8	2	2.08	1994.47	1993	15	2.28E-03	28.6	2.55E+00
42	5	1000.55	25	6	1.79	2000.00	1993	15	6.84E-03	25.7	
43	0	1009.10	14	5	3.89	2017.09	2011	11	3.82E-03	42.5	
44	0	1018.37	9	6	0.79	2035.63	2028	10	2.61E-03	55.8	
45	0	1120.79*	21	25	0.65	2240.47	2231	16	5.92E-03	59.3	
46	0	1200.89	9	14	1.04	2400.69	2392	12	2.51E-03	91.2	
47	0	1210.55	11	2	1.13	2420.01	2416	8	3.04E-03	37.6	
48	0	1239.01*	14	15	0.86	2476.94	2466	15	4.00E-03	65.0	
49	0	1459.87*	213	7	2.48	2918.77	2912	14	5.93E-02	7.4	
50	0	1762.91	28	0	1.46	3525.14	3517	14	7.78E-03	18.9	

Flag: "*" = Peak area was modified by background subtraction

```

Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]R405245003.CNF;1
Analyses by       : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.4,INTERF V2.4
Sample title      : MXR1
Sample date       : 15-DEC-2015 10:18:00 Acquisition date : 3-OCT-2016 04:33:45
Sample ID        : R405245003 Sample quantity   : 139.59 GRAM
Sample type       : SOLID Sample geometry    :
Detector name    : GAMMA6 Detector geometry: CAN
Elapsed live time: 0 01:00:00.00 Elapsed real time: 0 01:00:00.57 0.0%
Energy tolerance : 1.50 keV Half life ratio  : 10.00
Errors propagated: No Systematic Error  : 0.00 %
Efficiency type  : Empirical Efficiencies at  : Peak Energy
Abundance limit  : 75.00
    
```

Interference Report

Interfering		Interfered	
Nuclide	Line	Nuclide	Line
PB-214	242.00	RA-224	240.99
PB-214	87.09	SN-126	86.94
PB-214	87.09	SN-126	87.57
PB-214	87.09	CD-109	88.03
TL-208	277.37	HG-203	279.20
PB-214	74.82	AM-243	74.66
PB-214	74.82	TH-228	74.82
PB-214	74.82	PB-212	74.82
PB-214	351.93	BI-211	351.06

Nuclide Type:

Nuclide	Energy	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error	Status
K-40	1460.82	10.66*	1.005E+00	1.027E+01	1.027E+01	14.84	OK
CD-109	88.03	3.70*	5.183E+00	2.151E+00	3.340E+00	66.31	OK
SN-126	64.28	9.60	2.597E+00	1.343E+00	1.343E+00	85.08	OK
	86.94	8.90	5.183E+00	8.944E-01	8.944E-01	66.31	OK
	87.57	37.00*	5.183E+00	2.151E-01	2.151E-01	66.31	OK
BA-137M	661.66	89.90*	2.028E+00	6.523E-02	6.645E-02	84.47	OK
CS-137	661.66	85.10*	2.028E+00	6.891E-02	7.020E-02	84.47	OK
HG-203	70.83	3.69	3.616E+00	-----	Line Not Found	-----	Absent
	72.87	6.19	3.859E+00	-----	Line Not Found	-----	Absent
	279.20	81.56*	3.949E+00	2.241E-02	1.747E+00	168.54	OK
TL-208	277.37	6.60	3.958E+00	-----	Line Not Found	-----	<<INT Reject
	583.19	85.00*	2.243E+00	2.911E-01	2.911E-01	29.14	OK
	860.56	12.50	1.624E+00	-----	Line Not Found	-----	Absent
BI-211	72.87	1.23	3.859E+00	-----	Line Not Found	-----	Absent
	351.06	12.92*	3.303E+00	6.575E-01	6.575E-01	132.62	OK
PB-212	74.82	10.28	4.088E+00	1.120E+00	1.120E+00	55.88	OK
	77.11	17.10	4.336E+00	1.344E+00	1.344E+00	27.96	OK
	238.63	43.60*	4.430E+00	6.858E-01	6.858E-01	19.59	OK
	300.09	3.30	3.724E+00	8.057E-01	8.057E-01	136.60	OK
BI-214	609.32	45.49*	2.166E+00	4.937E-01	4.938E-01	41.69	OK
	1120.29	14.92	1.279E+00	5.890E-01	5.892E-01	118.70	OK
	1764.49	15.30	8.592E-01	-----	Line Not Found	-----	Absent
PB-214	74.82	5.80	4.080E+00	-----	Line Not Found	-----	<<INT Reject
	77.11	9.70	4.336E+00	2.368E+00	2.369E+00	27.96	OK
	87.09	3.41	5.190E+00	-----	Line Not Found	-----	<<INT Reject
	242.00	7.25	4.384E+00	-----	Line Not Found	-----	<<INT Reject
	295.22	18.42	3.777E+00	7.220E-01	7.223E-01	34.84	OK
	351.93	35.60*	3.304E+00	-----	Line Not Found	-----	<<INT Reject
RN-222	609.32	45.49*	2.166E+00	4.937E-01	4.938E-01	41.69	OK
	1120.29	14.92	1.279E+00	5.890E-01	5.892E-01	118.70	OK
	1764.49	15.30	8.592E-01	-----	Line Not Found	-----	Absent
RA-224	240.99	4.10*	4.384E+00	1.740E-01	1.740E-01	671.36	OK
RA-226	609.32	45.49*	2.166E+00	4.937E-01	4.938E-01	41.69	OK
	1120.29	14.92	1.279E+00	5.890E-01	5.892E-01	118.70	OK
	1764.49	15.30	8.592E-01	-----	Line Not Found	-----	Absent
TH-228	74.82	10.28	4.088E+00	1.120E+00	1.120E+00	55.88	OK
	77.11	17.10	4.336E+00	1.344E+00	1.344E+00	27.96	OK
	238.63	43.60*	4.430E+00	6.858E-01	6.858E-01	19.59	OK
	300.09	3.30	3.724E+00	8.057E-01	8.057E-01	136.60	OK
TH-229	85.43	14.70	4.963E+00	3.260E-01	3.260E-01	93.48	OK
	88.47	24.00	5.374E+00	2.567E-01	2.567E-01	60.87	OK
	193.51	4.41*	5.130E+00	-----	Line Not Found	-----	Absent
	210.85	2.80	4.841E+00	-----	Line Not Found	-----	Absent
TH-230	609.32	45.49*	2.166E+00	4.937E-01	4.937E-01	41.69	OK
	1120.29	14.92	1.279E+00	5.890E-01	5.890E-01	118.70	OK
	1764.49	15.30	8.592E-01	-----	Line Not Found	-----	Absent
PA-231	283.69	1.70	3.891E+00	-----	Line Not Found	-----	Absent
	301.36	5.35*	3.724E+00	4.970E-01	4.970E-01	136.60	OK
TH-234	63.29	3.70*	2.597E+00	3.485E+00	3.485E+00	85.08	OK

Nuclide Type:

Nuclide	Energy	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error	Status
U-234	92.59	4.23	5.549E+00	3.009E+00	3.009E+00	40.48	OK
	609.32	45.49*	2.166E+00	4.937E-01	4.937E-01	41.69	OK
	1120.29	14.92	1.279E+00	5.890E-01	5.890E-01	118.70	OK
U-235	1764.49	15.30	8.592E-01	-----	Line Not Found	-----	Absent
	89.96	3.47	5.374E+00	1.776E+00	1.776E+00	60.87	OK
	93.35	5.60	5.549E+00	2.273E+00	2.273E+00	40.48	OK
	143.76	10.96*	5.990E+00	-----	Line Not Found	-----	Absent
	163.33	5.08	5.669E+00	-----	Line Not Found	-----	Absent
	185.72	57.20	5.272E+00	8.051E-02	8.051E-02	121.47	OK
U-238	205.31	5.01	4.931E+00	-----	Line Not Found	-----	Absent
	63.29	3.70*	2.597E+00	3.485E+00	3.485E+00	85.08	OK
AM-243	92.59	4.23	5.549E+00	3.009E+00	3.009E+00	40.48	OK
	43.53	5.90	3.924E-01	-----	Line Not Found	-----	Absent
ANH-511	74.66	67.20*	4.088E+00	1.714E-01	1.714E-01	55.88	OK
	511.00	100.00*	2.486E+00	5.751E-02	5.751E-02	127.71	OK

Flag: "*" = Keyline

```

*****
*                                     *
*                               GEL Laboratories LLC                       *
*                               2040 Savage Road                          *
*                               Charleston, SC 29407                     *
*                               *****                                  *
*                               *                                         *
*                               DETECTOR AND SAMPLE DATA                 *
*                               *                                         *
* Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]R405245003.CNF;1 *
* Acquisition date   : 3-OCT-2016 04:33:45 Sensitivity      : 3.000      *
* Detector ID        : GAM06 Energy tolerance: 1.500        *
* Elapsed live time : 0 01:00:00.00 Abundance limit : 75.000    *
* Elapsed real time : 0 01:00:00.57 Half life ratio : ***** *
* Sample date        : 15-DEC-2015 10:18:00 Analyst initials: MXR1    *
* Sample ID          : R405245003 Sample Quantity : 1.3959E+02 GRAM *
* Batch Number       : 1596387 Wet Weight : 0.00000        *
* Wet wt corr        : 1.00000 Dry Weight : 0.00000         *
* Nuclide Library    : SOLID.NLB;6 *
*                               *****                                  *
*                               *                                         *
*                               CALIBRATION INFORMATION                   *
*                               *                                         *
* Eff. Cal. date    : 8-MAR-2016 07:26:53 Eff. Geometry : CAN *
* Eff. File         : DKA100:[CANBERRA.GAMMA]EFF_GAM06_CAN.CNF;14 *
*                               *****                                  *

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Combined Activity-MDA Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM)	Cnt uncert (1.96-sigma)	MDA (pCi/GRAM)
K-40	1.027E+01	1.493E+00	6.651E-01
CD-109	3.340E+00	2.171E+00	1.455E+00
SN-126	2.151E-01	1.398E-01	9.425E-02
BA-137M	6.645E-02	5.501E-02	6.282E-02
CS-137	7.020E-02	5.811E-02	6.637E-02
HG-203	1.747E+00	2.885E+00	3.567E+00
TL-208	2.911E-01	8.313E-02	5.440E-02
BI-211	6.575E-01	8.545E-01	3.490E-01
PB-212	6.858E-01	1.316E-01	1.080E-01
BI-214	4.938E-01	2.017E-01	1.058E-01
PB-214	9.610E-01	1.883E-01	3.381E-01
RN-222	4.938E-01	2.017E-01	1.058E-01
RA-224	1.740E-01	1.145E+00	1.218E+00
RA-226	4.938E-01	2.017E-01	1.058E-01
TH-228	6.858E-01	1.316E-01	1.080E-01
TH-229	1.472E-01	4.110E-01	7.976E-01
TH-230	4.937E-01	2.017E-01	1.058E-01
PA-231	4.970E-01	6.653E-01	7.758E-01
TH-234	3.485E+00	2.905E+00	2.068E+00
U-234	4.937E-01	2.017E-01	1.058E-01
U-235	1.603E-03	1.646E-01	3.111E-01
U-238	3.485E+00	2.905E+00	2.068E+00
AM-243	1.714E-01	9.387E-02	8.083E-02
ANH-511	5.751E-02	7.198E-02	4.657E-02

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/GRAM)	K.L. Cnt Uncert (1.96-sigma)	MDA (pCi/GRAM)	
BE-7	6.326E+00	1.109E+01	2.339E+01	NOT IDENT.
NA-22	-9.751E-03	5.054E-02	9.832E-02	NOT IDENT.
NA-24	0.000E+00	1.960E+41	0.000E+00	SHORT HLIF
AL-26	2.281E-02	2.366E-02	7.339E-02	NOT IDENT.
SC-46	1.761E-01	3.709E-01	7.775E-01	FAIL ABUN
V-48	0.000E+00	1.079E+04	0.000E+00	SHORT HLIF

CR-51	0.000E+00	3.117E+02	0.000E+00	SHORT HLIF
MN-54	7.700E-03	6.068E-02	1.201E-01	NOT IDENT.
CO-56	-1.667E-01	3.752E-01	6.673E-01	FAIL ABUN
MN-56	0.000E+00	1.960E+41	0.000E+00	SHORT HLIF
CO-57	-2.167E-02	4.134E-02	7.501E-02	NOT IDENT.
CO-58	-3.004E-01	4.309E-01	7.139E-01	NOT IDENT.
FE-59	-1.371E+00	7.038E+00	1.365E+01	NOT IDENT.
CO-60	2.424E-02	3.444E-02	8.452E-02	NOT IDENT.
ZN-65	2.748E-02	1.942E-01	3.586E-01	NOT IDENT.
GE-68	8.989E-02	2.510E+00	5.104E+00	NOT IDENT.
AS-73	2.816E+00	9.446E+00	1.939E+01	NOT IDENT.
AS-74	0.000E+00	4.151E+03	0.000E+00	SHORT HLIF
SE-75	-2.556E-01	2.099E-01	3.195E-01	FAIL ABUN
BR-77	0.000E+00	3.014E+36	0.000E+00	SHORT HLIF
SR-82	0.000E+00	5.088E+02	0.000E+00	SHORT HLIF
RB-83	-3.816E-02	6.165E-01	1.200E+00	NOT IDENT.
KR-85	2.045E+00	6.060E+00	1.254E+01	NOT IDENT.
SR-85	2.000E-01	5.944E-01	1.230E+00	NOT IDENT.
RB-86	0.000E+00	2.415E+04	0.000E+00	SHORT HLIF
Y-88	-5.704E-02	2.030E-01	4.042E-01	NOT IDENT.
Y-91	2.784E+02	5.049E+02	1.003E+03	NOT IDENT.
NB-94	9.614E-03	3.493E-02	6.909E-02	NOT IDENT.
NB-95	-1.514E-01	8.974E-01	1.473E+00	NOT IDENT.
NB-95M	8.180E-01	2.071E+00	3.724E+00	NOT IDENT.
ZR-95	-7.747E-01	1.453E+00	2.531E+00	NOT IDENT.
NB-97	0.000E+00	1.960E+41	0.000E+00	SHORT HLIF
ZR-97	0.000E+00	1.375E+41	0.000E+00	SHORT HLIF
MO-99	0.000E+00	2.671E+31	0.000E+00	SHORT HLIF
TC-99M	0.000E+00	1.960E+41	0.000E+00	SHORT HLIF
RH-101	3.330E-02	5.253E-02	5.145E-02	FAIL ABUN
RH-102	-3.298E-02	4.741E-02	8.179E-02	NOT IDENT.
RU-103	-2.737E+00	4.585E+00	8.290E+00	FAIL ABUN
RH-106	-3.395E-01	4.155E-01	6.967E-01	NOT IDENT.
RU-106	-3.395E-01	4.155E-01	6.967E-01	NOT IDENT.
AG-108M	3.585E-02	4.273E-02	5.028E-02	FAIL ABUN
AG-110M	-4.974E-02	1.025E-01	1.777E-01	NOT IDENT.
SN-113	-1.454E-01	2.128E-01	3.877E-01	NOT IDENT.
CD-115	0.000E+00	3.021E+38	0.000E+00	SHORT HLIF
SN-117M	0.000E+00	6.502E+04	0.000E+00	SHORT HLIF
TE-123M	7.576E-03	1.195E-01	2.254E-01	NOT IDENT.
SB-124	1.706E+00	1.559E+00	4.705E+00	FAIL ABUN
SB-125	-4.269E-02	1.040E-01	1.724E-01	NOT IDENT.
TE-125M	2.581E+01	2.245E+02	4.068E+02	NOT IDENT.
I-126	0.000E+00	5.520E+05	0.000E+00	SHORT HLIF
SB-126	0.000E+00	6.504E+05	0.000E+00	SHORT HLIF
SB-127	0.000E+00	4.811E+21	0.000E+00	SHORT HLIF
I-131	0.000E+00	2.523E+09	0.000E+00	SHORT HLIF
I-132	0.000E+00	1.960E+41	0.000E+00	SHORT HLIF
TE-132	0.000E+00	8.575E+25	0.000E+00	SHORT HLIF
BA-133	-3.913E-02	3.962E-02	5.934E-02	NOT IDENT.
I-133	0.000E+00	1.960E+41	0.000E+00	SHORT HLIF
CS-134	2.231E-03	5.876E-02	1.113E-01	NOT IDENT.
CS-135	5.092E-02	1.476E-01	2.611E-01	NOT IDENT.
I-135	0.000E+00	1.960E+41	0.000E+00	SHORT HLIF
CS-136	0.000E+00	2.159E+05	0.000E+00	SHORT HLIF
CE-139	-3.726E-02	1.054E-01	1.897E-01	NOT IDENT.
BA-140	0.000E+00	6.849E+05	0.000E+00	SHORT HLIF
LA-140	0.000E+00	2.487E+05	0.000E+00	SHORT HLIF
CE-141	-1.205E+01	1.903E+01	3.363E+01	NOT IDENT.
CE-143	0.000E+00	1.628E+41	0.000E+00	SHORT HLIF
CE-144	-9.951E-02	2.986E-01	5.499E-01	NOT IDENT.
PM-144	-2.843E-02	5.865E-02	1.038E-01	NOT IDENT.
PR-144	-2.461E+00	5.076E+00	8.982E+00	NOT IDENT.
PM-146	4.736E-02	7.531E-02	7.401E-02	FAIL ABUN
ND-147	0.000E+00	1.805E+07	0.000E+00	SHORT HLIF
PM-147	3.770E+02	6.933E+02	1.399E+03	NOT IDENT.
PM-149	0.000E+00	6.437E+39	0.000E+00	SHORT HLIF
EU-150	-1.892E-02	2.198E-02	3.974E-02	FAIL ABUN
EU-152	3.678E-02	9.054E-02	1.876E-01	NOT IDENT.
GD-153	-1.816E-02	1.482E-01	2.634E-01	NOT IDENT.
EU-154	-2.399E-02	1.243E-01	2.419E-01	NOT IDENT.
EU-155	9.186E-02	1.604E-02	1.994E-01	FAIL ABUN
TB-160	-9.759E-02	1.687E+00	3.246E+00	FAIL ABUN
HO-166M	3.261E-03	4.365E-02	8.908E-02	FAIL ABUN
TM-171	1.586E+01	2.286E+01	4.875E+01	NOT IDENT.
HF-172	-1.668E-02	2.209E-01	3.857E-01	FAIL ABUN
LU-172	-6.278E-02	8.847E-02	1.566E-01	FAIL ABUN
LU-176	7.675E-04	1.957E-02	4.006E-02	FAIL ABUN

HF-181	5.413E-01	3.180E+00	6.570E+00	NOT IDENT.
TA-182	1.037E-01	8.225E-01	1.716E+00	FAIL ABUN
RE-183	-1.582E+00	2.568E+00	4.875E+00	NOT IDENT.
RE-184	1.580E+01	2.332E+01	5.229E+01	NOT IDENT.
W-188	-3.657E+01	1.246E+02	1.700E+02	FAIL ABUN
IR-192	6.990E-03	3.687E-01	7.479E-01	FAIL ABUN
BI-207	1.211E-02	4.769E-02	1.015E-01	FAIL ABUN
PB-210	-1.820E-01	4.564E+00	9.112E+00	NOT IDENT.
PB-211	-7.835E-02	6.041E-01	1.185E+00	NOT IDENT.
BI-212	1.049E+00	5.620E-01	1.307E+00	FAIL ABUN
RN-219	1.052E-01	3.519E-01	7.246E-01	FAIL ABUN
RA-223	-7.988E-02	5.172E-01	9.806E-01	FAIL ABUN
AC-227	-2.469E-02	2.246E-01	4.056E-01	FAIL ABUN
TH-227	-2.469E-02	2.246E-01	4.056E-01	FAIL ABUN
AC-228	0.000E+00	3.414E-01	4.681E-01	FAIL ABUN
RA-228	0.000E+00	3.414E-01	4.681E-01	FAIL ABUN
TH-231	-7.988E-02	5.172E-01	9.806E-01	FAIL ABUN
TH-232	0.000E+00	3.414E-01	4.681E-01	FAIL ABUN
PA-233	2.989E-04	5.079E-02	1.028E-01	FAIL ABUN
PA-234	-4.292E-02	2.281E-01	4.654E-01	NOT IDENT.
PA-234M	0.000E+00	5.549E+00	1.098E+01	FAIL ABUN
NP-237	2.989E-04	5.079E-02	1.028E-01	FAIL ABUN
NP-238	0.000E+00	4.590E+00	0.000E+00	SHORT HLIF
NP-239	-1.120E-01	2.165E-01	3.943E-01	FAIL ABUN
PU-239	3.032E+02	4.784E+02	5.827E+02	FAIL ABUN
AM-241	4.912E-02	1.253E-01	2.458E-01	NOT IDENT.
CM-243	1.578E-02	8.653E-02	1.588E-01	FAIL ABUN
BK-247	-1.130E-01	7.617E-02	1.103E-01	FAIL ABUN
CM-247	-1.105E-02	3.367E-02	6.410E-02	FAIL ABUN
CF-249	2.750E-02	3.845E-02	8.138E-02	NOT IDENT.
CF-251	3.097E-02	1.102E-01	2.109E-01	FAIL ABUN

Nuclide Line Activity Report

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
K-40	1460.82	205	10.66*	1.005E+00	1.027E+01	1.027E+01	14.84
CD-109	88.03	100	3.70*	5.183E+00	2.817E+00	4.373E+00	49.97
SN-126	64.28	62	9.60	2.597E+00	1.343E+00	1.343E+00	85.08
	86.94	100	8.90	5.183E+00	1.171E+00	1.171E+00	49.97
	87.57	100	37.00*	5.183E+00	2.817E-01	2.817E-01	49.97
BA-137M	661.66	22	89.90*	2.028E+00	6.523E-02	6.645E-02	84.47
CS-137	661.66	22	85.10*	2.028E+00	6.891E-02	7.020E-02	84.47
HG-203	70.83	-----	3.69	3.616E+00	-----	Line Not Found	-----
	72.87	-----	6.19	3.859E+00	-----	Line Not Found	-----
	279.20	28	81.56*	3.949E+00	4.597E-02	3.583E+00	80.80
TL-208	277.37	28	6.60	3.949E+00	5.681E-01	5.681E-01	80.80
	583.19	103	85.00*	2.243E+00	2.911E-01	2.911E-01	29.14
	860.56	-----	12.50	1.624E+00	-----	Line Not Found	-----
BI-211	72.87	-----	1.23	3.859E+00	-----	Line Not Found	-----
	351.06	210	12.92*	3.303E+00	2.647E+00	2.647E+00	19.99
PB-212	74.82	119	10.28	4.088E+00	1.528E+00	1.528E+00	39.92
	77.11	185	17.10	4.336E+00	1.344E+00	1.344E+00	27.96
	238.63	246	43.60*	4.430E+00	6.858E-01	6.858E-01	19.59
	300.09	18	3.30	3.724E+00	8.057E-01	8.057E-01	136.60
BI-214	609.32	90	45.49*	2.166E+00	4.937E-01	4.938E-01	41.69
	1120.29	21	14.92	1.279E+00	5.890E-01	5.892E-01	118.70
	1764.49	-----	15.30	8.592E-01	-----	Line Not Found	-----
PB-214	74.82	119	5.80	4.088E+00	2.708E+00	2.709E+00	39.92
	77.11	185	9.70	4.336E+00	2.368E+00	2.369E+00	27.96
	87.09	100	3.41	5.183E+00	3.056E+00	3.057E+00	49.97
	242.00	48	7.25	4.384E+00	8.204E-01	8.207E-01	74.45
	295.22	93	18.42	3.777E+00	7.220E-01	7.223E-01	34.84
	351.93	210	35.60*	3.303E+00	9.606E-01	9.610E-01	19.99
RN-222	609.32	90	45.49*	2.166E+00	4.937E-01	4.938E-01	41.69
	1120.29	21	14.92	1.279E+00	5.890E-01	5.892E-01	118.70
	1764.49	-----	15.30	8.592E-01	-----	Line Not Found	-----
RA-224	240.99	48	4.10*	4.384E+00	1.451E+00	1.451E+00	74.45
RA-226	609.32	90	45.49*	2.166E+00	4.937E-01	4.938E-01	41.69
	1120.29	21	14.92	1.279E+00	5.890E-01	5.892E-01	118.70
	1764.49	-----	15.30	8.592E-01	-----	Line Not Found	-----
TH-228	74.82	119	10.28	4.088E+00	1.528E+00	1.528E+00	39.92
	77.11	185	17.10	4.336E+00	1.344E+00	1.344E+00	27.96
	238.63	246	43.60*	4.430E+00	6.858E-01	6.858E-01	19.59
	300.09	18	3.30	3.724E+00	8.057E-01	8.057E-01	136.60
TH-229	85.43	44	14.70	4.963E+00	3.260E-01	3.260E-01	93.48
	88.47	62	24.00	5.374E+00	2.567E-01	2.567E-01	60.87
	193.51	-----	4.41*	5.130E+00	-----	Line Not Found	-----
	210.85	-----	2.80	4.841E+00	-----	Line Not Found	-----
TH-230	609.32	90	45.49*	2.166E+00	4.937E-01	4.937E-01	41.69
	1120.29	21	14.92	1.279E+00	5.890E-01	5.890E-01	118.70
	1764.49	-----	15.30	8.592E-01	-----	Line Not Found	-----
PA-231	283.69	-----	1.70	3.891E+00	-----	Line Not Found	-----

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
	301.36	18	5.35*	3.724E+00	4.970E-01	4.970E-01	136.60
TH-234	63.29	62	3.70*	2.597E+00	3.485E+00	3.485E+00	85.08
	92.59	131	4.23	5.549E+00	3.009E+00	3.009E+00	40.48
U-234	609.32	90	45.49*	2.166E+00	4.937E-01	4.937E-01	41.69
	1120.29	21	14.92	1.279E+00	5.890E-01	5.890E-01	118.70
	1764.49	-----	15.30	8.592E-01	-----	Line Not Found	-----
U-235	89.96	62	3.47	5.374E+00	1.776E+00	1.776E+00	60.87
	93.35	131	5.60	5.549E+00	2.273E+00	2.273E+00	40.48
	143.76	-----	10.96*	5.990E+00	-----	Line Not Found	-----
	163.33	-----	5.08	5.669E+00	-----	Line Not Found	-----
	185.72	45	57.20	5.272E+00	8.051E-02	8.051E-02	121.47
	205.31	-----	5.01	4.931E+00	-----	Line Not Found	-----
U-238	63.29	62	3.70*	2.597E+00	3.485E+00	3.485E+00	85.08
	92.59	131	4.23	5.549E+00	3.009E+00	3.009E+00	40.48
AM-243	43.53	-----	5.90	3.924E-01	-----	Line Not Found	-----
	74.66	119	67.20*	4.088E+00	2.337E-01	2.337E-01	39.92
ANH-511	511.00	27	100.00*	2.486E+00	5.751E-02	5.751E-02	127.71

Flag: "*" = Keyline

Total number of lines in spectrum 50
 Number of unidentified lines 14
 Number of lines tentatively identified by NID 36 72.00%

Nuclide Type :

Nuclide	Hlife	Decay	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
K-40	1.25E+09Y	1.00	1.027E+01	1.027E+01	0.152E+01	14.84	
CD-109	461.40D	1.55	2.817E+00	4.373E+00	2.185E+00	49.97	
SN-126	2.30E+05Y	1.00	2.817E-01	2.817E-01	1.408E-01	49.97	
BA-137M	30.08Y	1.02	6.523E-02	6.645E-02	5.613E-02	84.47	
CS-137	30.08Y	1.02	6.891E-02	7.020E-02	5.930E-02	84.47	
HG-203	46.59D	77.9	4.597E-02	3.583E+00	2.895E+00	80.80	
TL-208	1.41E+10Y	1.00	2.911E-01	2.911E-01	0.848E-01	29.14	
BI-211	7.04E+08Y	1.00	2.647E+00	2.647E+00	0.529E+00	19.99	
PB-212	1.41E+10Y	1.00	6.858E-01	6.858E-01	1.343E-01	19.59	
BI-214	1600.00Y	1.00	4.937E-01	4.938E-01	2.059E-01	41.69	
PB-214	1600.00Y	1.00	9.606E-01	9.610E-01	1.921E-01	19.99	
RN-222	1600.00Y	1.00	4.937E-01	4.938E-01	2.059E-01	41.69	
RA-224	1.41E+10Y	1.00	1.451E+00	1.451E+00	1.080E+00	74.45	
RA-226	1600.00Y	1.00	4.937E-01	4.938E-01	2.059E-01	41.69	
TH-228	1.41E+10Y	1.00	6.858E-01	6.858E-01	1.343E-01	19.59	
TH-229	7340.00Y	1.00	2.567E-01	2.567E-01	1.563E-01	60.87	K
TH-230	7.54E+04Y	1.00	4.937E-01	4.937E-01	2.058E-01	41.69	
PA-231	7.04E+08Y	1.00	4.970E-01	4.970E-01	6.789E-01	136.60	
TH-234	4.47E+09Y	1.00	3.485E+00	3.485E+00	2.965E+00	85.08	
U-234	2.45E+05Y	1.00	4.937E-01	4.937E-01	2.058E-01	41.69	
U-235	7.04E+08Y	1.00	8.051E-02	8.051E-02	9.779E-02	121.47	K
U-238	4.47E+09Y	1.00	3.485E+00	3.485E+00	2.965E+00	85.08	
AM-243	7370.00Y	1.00	2.337E-01	2.337E-01	0.933E-01	39.92	
ANH-511	1.00E+09Y	1.00	5.751E-02	5.751E-02	7.345E-02	127.71	
Total Activity :			3.083E+01	3.593E+01			

Grand Total Activity : 3.083E+01 3.593E+01

Flags: "K" = Keyline not found "M" = Manually accepted
 "E" = Manually edited "A" = Nuclide specific abn. limit

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
0	106.95	86	99	4.40	213.55	208	12	2.02E-02	55.7	6.05E+00	T
0	128.44	22	90	1.24	256.49	254	7	5.21E-03	****	6.15E+00	T
0	140.14	6	90	1.00	279.88	276	7	1.54E-03	****	6.04E+00	T
0	209.34	54	81	0.86	418.16	413	10	1.32E-02	72.9	4.87E+00	
0	270.78	12	76	1.14	540.97	535	10	3.12E-03	****	4.03E+00	T
4	286.81	17	31	1.24	573.00	552	30	4.29E-03	****	3.86E+00	T
4	288.75	19	48	1.82	576.87	552	30	4.84E-03	****	3.84E+00	
0	328.96	38	25	3.36	657.24	653	9	9.80E-03	59.1	3.48E+00	T
0	432.88	17	24	1.79	864.97	859	9	4.44E-03	****	2.82E+00	T
0	446.86	11	20	0.92	892.92	889	8	3.01E-03	****	2.76E+00	
0	452.84	14	30	0.69	904.88	898	10	3.70E-03	****	2.73E+00	T
0	467.87	11	20	1.15	934.91	929	8	2.81E-03	****	2.66E+00	T
0	470.69	15	17	0.66	940.54	937	8	4.04E-03	****	2.65E+00	
0	504.73	6	18	0.87	1008.59	1004	7	1.65E-03	****	2.51E+00	T
0	645.09	16	17	1.58	1289.20	1281	12	4.36E-03	****	2.07E+00	T
0	681.05	6	10	0.49	1361.10	1356	8	1.51E-03	****	1.98E+00	
0	729.59	53	22	6.44	1458.15	1447	23	1.45E-02	55.0	1.87E+00	
0	768.42	19	9	1.17	1535.80	1530	11	5.20E-03	81.6	1.79E+00	
0	786.45	5	10	0.79	1571.86	1565	8	1.41E-03	****	1.76E+00	T
0	806.09	10	7	1.01	1611.13	1608	6	2.88E-03	****	1.72E+00	
0	911.01	38	27	1.12	1820.93	1814	15	1.05E-02	68.3	1.54E+00	T
0	969.52	29	12	1.47	1937.94	1932	13	8.09E-03	62.7	1.46E+00	T
5	997.79	8	2	2.08	1994.47	1993	15	2.28E-03	57.2	1.42E+00	
5	1000.55	24	6	1.79	2000.00	1993	15	6.84E-03	51.5	1.42E+00	T
0	1009.10	14	5	3.89	2017.09	2011	11	3.82E-03	85.1	1.41E+00	
0	1018.37	9	6	0.79	2035.63	2028	10	2.61E-03	****	1.40E+00	
0	1200.89	9	14	1.04	2400.69	2392	12	2.51E-03	****	1.20E+00	
0	1210.55	11	2	1.13	2420.01	2416	8	3.04E-03	75.2	1.19E+00	
0	1239.01	14	15	0.86	2476.94	2466	15	4.00E-03	****	1.17E+00	T
0	1762.91	26	0	1.46	3525.14	3517	14	7.78E-03	37.8	8.60E-01	

Flags: "T" = Tentatively associated

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*****
*
*               GEL Laboratories LLC
*               2040 Savage Road
*               Charleston, SC 29407
*
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*
*               DETECTOR AND SAMPLE DATA
*
* Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]R405245003.CNF;1
* Acquisition date   : 3-OCT-2016 04:33:45 Sensitivity      : 3.000
* Detector ID       : GAM06 Energy tolerance: 1.500
* Elapsed live time : 0 01:00:00.00 Abundance limit : 75.000
* Elapsed real time : 0 01:00:00.57 Half life ratio  : *****
* Sample date       : 15-DEC-2015 10:18:00 Nuclide Library : SOLID
* Sample ID        : R405245003 Analyst initials: MXR1
* Batch Number     : 1596387 Sample Quantity  : 1.3959E+02 GRAM
* Wet wt corr      : 1.00000 Wet Weight      : 0.00000
* Dry Weight       : 0.00000
*****
*
*               CALIBRATION INFORMATION
*
* Eff. Cal. date    : 8-MAR-2016 07:26:53 Eff. Geometry   : CAN
* Eff. File        : DKA100:[CANBERRA.GAMMA]EFF_GAM06_CAN.CNF;14
*****

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Combined Critical Level Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Lc (pCi/GRAM)
K-40	2.644E-01
CD-109	6.661E-01
SN-126	4.315E-02
BA-137M	2.727E-02
CS-137	2.881E-02
HG-203	1.601E+00
TL-208	2.331E-02
BI-211	1.570E-01
PB-212	5.010E-02
BI-214	4.536E-02
PB-214	1.627E-01
RN-222	4.536E-02
RA-224	5.670E-01
RA-226	4.536E-02
TH-228	5.010E-02
TH-229	3.653E-01
TH-230	4.535E-02
PA-231	3.501E-01
TH-234	9.550E-01
U-234	4.535E-02
U-235	1.440E-01
U-238	9.550E-01
AM-243	3.759E-02
ANH-511	2.029E-02

---- Non-Identified Nuclides ----

Nuclide	Lc (pCi/GRAM)	
BE-7	1.046E+01	NOT IDENT.
NA-22	4.119E-02	NOT IDENT.
NA-24	0.000E+00	SHORT HLIF
AL-26	2.806E-02	NOT IDENT.
SC-46	3.361E-01	FAIL ABUN
V-48	0.000E+00	SHORT HLIF
CR-51	0.000E+00	SHORT HLIF

MN-54	5.158E-02	NOT IDENT.
CO-56	2.716E-01	FAIL ABUN
MN-56	0.000E+00	SHORT HLIF
CO-57	3.446E-02	NOT IDENT.
CO-58	2.808E-01	NOT IDENT.
FE-59	5.872E+00	NOT IDENT.
CO-60	3.481E-02	NOT IDENT.
ZN-65	1.534E-01	NOT IDENT.
GE-68	2.189E+00	NOT IDENT.
AS-73	8.992E+00	NOT IDENT.
AS-74	0.000E+00	SHORT HLIF
SE-75	1.428E-01	FAIL ABUN
BR-77	0.000E+00	SHORT HLIF
SR-82	0.000E+00	SHORT HLIF
RB-83	5.292E-01	NOT IDENT.
KR-85	5.539E+00	NOT IDENT.
SR-85	5.432E-01	NOT IDENT.
RB-86	0.000E+00	SHORT HLIF
Y-88	1.432E-01	NOT IDENT.
Y-91	4.258E+02	NOT IDENT.
NB-94	3.071E-02	NOT IDENT.
NB-95	6.382E-01	NOT IDENT.
NB-95M	1.700E+00	NOT IDENT.
ZR-95	1.087E+00	NOT IDENT.
NB-97	0.000E+00	SHORT HLIF
ZR-97	0.000E+00	SHORT HLIF
MO-99	0.000E+00	SHORT HLIF
TC-99M	0.000E+00	SHORT HLIF
RH-101	2.357E-02	FAIL ABUN
RH-102	3.359E-02	NOT IDENT.
RU-103	3.578E+00	FAIL ABUN
RH-106	2.878E-01	NOT IDENT.
RU-106	2.878E-01	NOT IDENT.
AG-108M	2.221E-02	FAIL ABUN
AG-110M	7.446E-02	NOT IDENT.
SN-113	1.718E-01	NOT IDENT.
CD-115	0.000E+00	SHORT HLIF
SN-117M	0.000E+00	SHORT HLIF
TE-123M	1.041E-01	NOT IDENT.
SB-124	1.851E+00	FAIL ABUN
SB-125	7.544E-02	NOT IDENT.
TE-125M	1.874E+02	NOT IDENT.
I-126	0.000E+00	SHORT HLIF
SB-126	0.000E+00	SHORT HLIF
SB-127	0.000E+00	SHORT HLIF
I-131	0.000E+00	SHORT HLIF
I-132	0.000E+00	SHORT HLIF
TE-132	0.000E+00	SHORT HLIF
BA-133	2.578E-02	NOT IDENT.
I-133	0.000E+00	SHORT HLIF
CS-134	4.917E-02	NOT IDENT.
CS-135	1.190E-01	NOT IDENT.
I-135	0.000E+00	SHORT HLIF
CS-136	0.000E+00	SHORT HLIF
CE-139	8.747E-02	NOT IDENT.
BA-140	0.000E+00	SHORT HLIF
LA-140	0.000E+00	SHORT HLIF
CE-141	1.546E+01	NOT IDENT.
CE-143	0.000E+00	SHORT HLIF
CE-144	2.520E-01	NOT IDENT.
PM-144	4.520E-02	NOT IDENT.
PR-144	3.912E+00	NOT IDENT.
PM-146	3.235E-02	FAIL ABUN
ND-147	0.000E+00	SHORT HLIF
PM-147	6.459E+02	NOT IDENT.
PM-149	0.000E+00	SHORT HLIF
EU-150	1.756E-02	FAIL ABUN
EU-152	8.507E-02	NOT IDENT.
GD-153	1.210E-01	NOT IDENT.
EU-154	1.013E-01	NOT IDENT.
EU-155	9.293E-02	FAIL ABUN
TB-160	1.368E+00	FAIL ABUN
HO-166M	3.737E-02	FAIL ABUN
TM-171	2.256E+01	NOT IDENT.
HF-172	1.781E-01	FAIL ABUN
LU-172	6.631E-02	FAIL ABUN
LU-176	1.784E-02	FAIL ABUN
HF-181	2.858E+00	NOT IDENT.

TA-182	7.227E-01	FAIL ABUN
RE-183	2.224E+00	NOT IDENT.
RE-184	2.231E+01	NOT IDENT.
W-188	7.602E+01	FAIL ABUN
IR-192	3.344E-01	FAIL ABUN
BI-207	4.329E-02	FAIL ABUN
PB-210	4.254E+00	NOT IDENT.
PB-211	5.258E-01	NOT IDENT.
BI-212	5.946E-01	FAIL ABUN
RN-219	3.244E-01	FAIL ABUN
RA-223	4.368E-01	FAIL ABUN
AC-227	1.839E-01	FAIL ABUN
TH-227	1.839E-01	FAIL ABUN
AC-228	2.157E-01	FAIL ABUN
RA-228	2.157E-01	FAIL ABUN
TH-231	4.368E-01	FAIL ABUN
TH-232	2.157E-01	FAIL ABUN
PA-233	4.603E-02	FAIL ABUN
PA-234	1.916E-01	NOT IDENT.
PA-234M	4.876E+00	FAIL ABUN
NP-237	4.603E-02	FAIL ABUN
NP-238	0.000E+00	SHORT HLIF
NP-239	1.815E-01	FAIL ABUN
PU-239	2.717E+02	FAIL ABUN
AM-241	1.128E-01	NOT IDENT.
CM-243	7.313E-02	FAIL ABUN
BK-247	4.903E-02	FAIL ABUN
CM-247	2.857E-02	FAIL ABUN
CF-249	3.700E-02	NOT IDENT.
CF-251	9.737E-02	FAIL ABUN

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*****
*
*           GEL Laboratories LLC
*           2040 Savage Road
*           Charleston, SC 29407
*****
*
*           DETECTOR AND SAMPLE DATA
*
* Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]R405245003.CNF;1
* Acquisition date   : 3-OCT-2016 04:33:45 Sensitivity      : 3.000
* Detector ID        : GAM06 Energy tolerance: 1.500
* Elapsed live time  : 0 01:00:00.00 Abundance limit : 75.000
* Elapsed real time  : 0 01:00:00.57 Half life ratio  : *****
* Sample date        : 15-DEC-2015 10:18:00 Nuclide Library : SOLID
* Sample ID          : R405245003 Analyst initials: MXR1
* Batch Number       : 1596387 Sample Quantity : 1.3959E+02 GRAM
*                   :                               Quantity Err(%) : 1.4328E-03 %
* Wet wt corr        : 1.00000 Wet Weight      : 0.00000
*                   :                               Dry Weight      : 0.00000
*****
*
*           CALIBRATION INFORMATION
*
* Eff. Cal. date     : 8-MAR-2016 07:26:53 Eff. Geometry   : CAN
* Eff. File          : DKA100:[CANBERRA.GAMMA]EFF_GAM06_CAN.CNF;14
*****

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Combined Activity-MDA Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM)	Act Error (1.96-sigma)	TPU (1.96-sigma)
K-40	1.027E+01	1.730E+00	1.730E+00
CD-109	3.340E+00	2.201E+00	2.201E+00
SN-126	2.151E-01	1.413E-01	1.413E-01
BA-137M	6.645E-02	5.528E-02	5.528E-02
CS-137	7.020E-02	5.840E-02	5.840E-02
HG-203	1.747E+00	2.904E+00	2.904E+00
TL-208	2.911E-01	8.680E-02	8.680E-02
BI-211	6.575E-01	8.953E-01	8.953E-01
PB-212	6.858E-01	1.454E-01	1.454E-01
BI-214	4.938E-01	2.061E-01	2.061E-01
PB-214	9.610E-01	2.070E-01	2.070E-01
RN-222	4.938E-01	2.061E-01	2.061E-01
RA-224	1.740E-01	1.157E+00	1.157E+00
RA-226	4.938E-01	2.061E-01	2.061E-01
TH-228	6.858E-01	1.454E-01	1.454E-01
TH-229	1.472E-01	4.112E-01	4.112E-01
TH-230	4.937E-01	2.060E-01	2.060E-01
PA-231	4.970E-01	6.750E-01	6.750E-01
TH-234	3.485E+00	3.009E+00	3.009E+00
U-234	4.937E-01	2.060E-01	2.060E-01
U-235	1.603E-03	1.646E-01	1.646E-01
U-238	3.485E+00	3.009E+00	3.009E+00
AM-243	1.714E-01	9.526E-02	9.526E-02
ANH-511	5.751E-02	7.215E-02	7.215E-02

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/GRAM)	K.L Act error (1.96-sigma)	TPU (1.96-sigma)	
BE-7	6.326E+00	1.110E+01	1.146E+01	NOT IDENT.
NA-22	-9.751E-03	5.054E-02	5.073E-02	NOT IDENT.
NA-24	-1.000E+41	4.031E+41	0.000E+00	SHORT HLIF
AL-26	2.281E-02	2.372E-02	2.585E-02	NOT IDENT.
SC-46	1.761E-01	3.715E-01	3.799E-01	FAIL ABUN
V-48	-6.421E+03	1.083E+04	1.121E+04	SHORT HLIF

CR-51	3.219E+01	3.117E+02	3.121E+02	SHORT HLIF
MN-54	7.700E-03	6.069E-02	6.079E-02	NOT IDENT.
CO-56	-1.667E-01	3.757E-01	3.832E-01	FAIL ABUN
MN-56	-1.000E+41	2.201E+41	0.000E+00	SHORT HLIF
CO-57	-2.167E-02	4.137E-02	4.251E-02	NOT IDENT.
CO-58	-3.004E-01	4.321E-01	4.528E-01	NOT IDENT.
FE-59	-1.371E+00	7.043E+00	7.070E+00	NOT IDENT.
CO-60	2.424E-02	3.449E-02	3.618E-02	NOT IDENT.
ZN-65	2.748E-02	1.943E-01	1.947E-01	NOT IDENT.
GE-68	8.989E-02	2.510E+00	2.511E+00	NOT IDENT.
AS-73	2.816E+00	9.464E+00	9.548E+00	NOT IDENT.
AS-74	-6.140E+02	4.152E+03	4.161E+03	SHORT HLIF
SE-75	-2.556E-01	2.113E-01	2.407E-01	FAIL ABUN
BR-77	1.570E+37	1.327E+38	0.000E+00	SHORT HLIF
SR-82	9.702E+00	5.088E+02	5.088E+02	SHORT HLIF
RB-83	-3.816E-02	6.165E-01	6.167E-01	NOT IDENT.
KR-85	2.045E+00	6.063E+00	6.133E+00	NOT IDENT.
SR-85	2.000E-01	5.947E-01	6.015E-01	NOT IDENT.
RB-86	-1.102E+03	2.415E+04	2.416E+04	SHORT HLIF
Y-88	-5.704E-02	2.031E-01	2.047E-01	NOT IDENT.
Y-91	2.784E+02	5.055E+02	5.209E+02	NOT IDENT.
NB-94	9.614E-03	3.494E-02	3.521E-02	NOT IDENT.
NB-95	-1.514E-01	8.975E-01	9.001E-01	NOT IDENT.
NB-95M	8.180E-01	2.073E+00	2.106E+00	NOT IDENT.
ZR-95	-7.747E-01	1.455E+00	1.497E+00	NOT IDENT.
NB-97	-1.000E+41	6.173E+41	0.000E+00	SHORT HLIF
ZR-97	-1.000E+41	1.378E+41	0.000E+00	SHORT HLIF
MO-99	-1.288E+31	2.675E+31	0.000E+00	SHORT HLIF
TC-99M	1.000E+41	5.342E+41	0.000E+00	SHORT HLIF
RH-101	3.330E-02	5.291E-02	5.500E-02	FAIL ABUN
RH-102	-3.298E-02	4.755E-02	4.982E-02	NOT IDENT.
RU-103	-2.737E+00	4.591E+00	4.754E+00	FAIL ABUN
RH-106	-3.395E-01	4.168E-01	4.440E-01	NOT IDENT.
RU-106	-3.395E-01	4.168E-01	4.440E-01	NOT IDENT.
AG-108M	3.585E-02	4.284E-02	4.579E-02	FAIL ABUN
AG-110M	-4.974E-02	1.027E-01	1.051E-01	NOT IDENT.
SN-113	-1.454E-01	2.131E-01	2.230E-01	NOT IDENT.
CD-115	1.092E+38	3.028E+38	0.000E+00	SHORT HLIF
SN-117M	-2.850E+04	6.512E+04	6.638E+04	SHORT HLIF
TE-123M	7.576E-03	1.195E-01	1.196E-01	NOT IDENT.
SB-124	1.706E+00	1.564E+00	1.743E+00	FAIL ABUN
SB-125	-4.269E-02	1.041E-01	1.058E-01	NOT IDENT.
TE-125M	2.581E+01	2.246E+02	2.249E+02	NOT IDENT.
I-126	1.280E+05	5.523E+05	5.553E+05	SHORT HLIF
SB-126	-3.968E+05	6.553E+05	6.793E+05	SHORT HLIF
SB-127	2.858E+21	6.157E+21	0.000E+00	SHORT HLIF
I-131	-2.666E+09	2.535E+09	2.805E+09	SHORT HLIF
I-132	1.000E+41	4.574E+43	0.000E+00	SHORT HLIF
TE-132	4.515E+25	8.766E+25	0.000E+00	SHORT HLIF
BA-133	-3.913E-02	3.978E-02	4.351E-02	NOT IDENT.
I-133	-1.000E+41	2.908E+41	0.000E+00	SHORT HLIF
CS-134	2.231E-03	5.876E-02	5.877E-02	NOT IDENT.
CS-135	5.092E-02	1.477E-01	1.494E-01	NOT IDENT.
I-135	-1.000E+41	1.263E+42	0.000E+00	SHORT HLIF
CS-136	-1.030E+05	2.168E+05	2.217E+05	SHORT HLIF
CE-139	-3.726E-02	1.057E-01	1.070E-01	NOT IDENT.
BA-140	3.026E+05	6.854E+05	6.989E+05	SHORT HLIF
LA-140	5.651E+03	2.487E+05	2.487E+05	SHORT HLIF
CE-141	-1.205E+01	1.905E+01	1.981E+01	NOT IDENT.
CE-143	1.000E+41	1.633E+41	0.000E+00	SHORT HLIF
CE-144	-9.951E-02	2.987E-01	3.021E-01	NOT IDENT.
PM-144	-2.843E-02	5.872E-02	6.010E-02	NOT IDENT.
PR-144	-2.461E+00	5.080E+00	5.200E+00	NOT IDENT.
PM-146	4.736E-02	7.547E-02	7.844E-02	FAIL ABUN
ND-147	-9.058E+06	1.807E+07	1.853E+07	SHORT HLIF
PM-147	3.770E+02	6.938E+02	7.143E+02	NOT IDENT.
PM-149	5.401E+39	6.557E+39	0.000E+00	SHORT HLIF
EU-150	-1.892E-02	2.205E-02	2.364E-02	FAIL ABUN
EU-152	3.678E-02	9.061E-02	9.212E-02	NOT IDENT.
GD-153	-1.816E-02	1.482E-01	1.484E-01	NOT IDENT.
EU-154	-2.399E-02	1.244E-01	1.248E-01	NOT IDENT.
EU-155	9.186E-02	9.637E-02	1.049E-01	FAIL ABUN
TB-160	-9.759E-02	1.687E+00	1.688E+00	FAIL ABUN
HO-166M	3.261E-03	4.365E-02	4.368E-02	FAIL ABUN
TM-171	1.586E+01	2.291E+01	2.400E+01	NOT IDENT.
HF-172	-1.668E-02	2.209E-01	2.211E-01	FAIL ABUN
LU-172	-6.278E-02	8.933E-02	9.370E-02	FAIL ABUN
LU-176	7.675E-04	1.957E-02	1.958E-02	FAIL ABUN

HF-181	5.413E-01	3.180E+00	3.190E+00	NOT IDENT.
TA-182	1.037E-01	8.226E-01	8.239E-01	FAIL ABUN
RE-183	-1.582E+00	2.579E+00	2.676E+00	NOT IDENT.
RE-184	1.580E+01	2.368E+01	2.473E+01	NOT IDENT.
W-188	-3.657E+01	1.247E+02	1.257E+02	FAIL ABUN
IR-192	6.990E-03	3.687E-01	3.687E-01	FAIL ABUN
BI-207	1.211E-02	4.773E-02	4.804E-02	FAIL ABUN
PB-210	-1.820E-01	4.564E+00	4.564E+00	NOT IDENT.
PB-211	-7.835E-02	6.041E-01	6.051E-01	NOT IDENT.
BI-212	1.049E+00	5.711E-01	7.415E-01	FAIL ABUN
RN-219	1.052E-01	3.522E-01	3.554E-01	FAIL ABUN
RA-223	-7.988E-02	5.173E-01	5.186E-01	FAIL ABUN
AC-227	-2.469E-02	2.246E-01	2.249E-01	FAIL ABUN
TH-227	-2.469E-02	2.246E-01	2.249E-01	FAIL ABUN
AC-228	5.102E-01	3.478E-01	4.170E-01	FAIL ABUN
RA-228	5.102E-01	3.478E-01	4.170E-01	FAIL ABUN
TH-231	-7.988E-02	5.173E-01	5.186E-01	FAIL ABUN
TH-232	5.102E-01	3.478E-01	4.170E-01	FAIL ABUN
PA-233	2.989E-04	5.079E-02	5.079E-02	FAIL ABUN
PA-234	-4.292E-02	2.334E-01	2.342E-01	NOT IDENT.
PA-234M	1.100E+01	5.789E+00	7.623E+00	FAIL ABUN
NP-237	2.989E-04	5.079E-02	5.079E-02	FAIL ABUN
NP-238	-2.239E+40	4.601E+40	0.000E+00	SHORT HLIF
NP-239	-1.120E-01	2.168E-01	2.226E-01	FAIL ABUN
PU-239	3.032E+02	4.789E+02	4.980E+02	FAIL ABUN
AM-241	4.912E-02	1.254E-01	1.273E-01	NOT IDENT.
CM-243	1.578E-02	8.654E-02	8.684E-02	FAIL ABUN
BK-247	-1.130E-01	8.002E-02	9.487E-02	FAIL ABUN
CM-247	-1.105E-02	3.373E-02	3.410E-02	FAIL ABUN
CF-249	2.750E-02	3.857E-02	4.051E-02	NOT IDENT.
CF-251	3.097E-02	1.103E-01	1.111E-01	FAIL ABUN

 * GEL Laboratories LLC *
 * 2040 Savage Road *
 * Charleston, SC 29407 *
 * GAMMA SPECTROSCOPY BACKGROUND REPORT *

ENERGY	MDA COUNTS	ENERGY	MDA COUNTS	ENERGY	MDA COUNTS
43.53	51.0306	87.09	39.3807	136.47	52.7247
45.60	50.5219	87.57	39.4204	140.51	0.0000
46.54	60.9815	88.03	39.4583	143.76	47.3463
49.72	0.0000	88.34	39.4838	144.24	43.1684
51.35	53.1770	88.47	39.4945	145.44	55.9017
51.87	48.0209	89.96	39.6163	152.43	50.0766
52.39	39.3505	1093.63	39.6718	153.25	0.0000
52.97	43.7973	91.11	0.0000	323.87	50.2029
53.44	49.1205	92.59	39.8291	156.02	0.0000
54.07	50.0892	93.35	39.8900	158.56	0.0000
57.36	0.0000	94.56	39.9865	159.00	47.3133
57.53	43.4838	94.65	39.9937	162.33	46.4493
57.98	47.0919	94.67	39.9953	162.66	0.0000
59.27	28.5337	94.87	40.0111	163.33	36.7771
59.32	34.4828	97.43	45.4017	165.86	54.2686
59.54	34.5034	98.43	49.3887	176.31	39.6112
60.96	48.3706	98.44	49.3899	176.60	0.0000
61.17	48.3978	99.53	50.7959	177.52	42.9782
62.93	48.6234	100.11	46.9409	181.07	0.0000
63.29	48.6691	102.03	30.0995	181.52	59.0714
63.58	48.7059	103.18	41.9681	184.41	48.9099
64.28	55.4205	103.37	41.9831	143.76	48.9891
66.73	58.1924	105.21	43.4431	193.51	33.7189
67.24	63.7296	105.31	43.4511	197.03	36.1177
125.81	61.0653	106.12	43.5159	198.01	38.4191
67.75	61.0761	106.47	43.5438	201.83	35.1858
69.67	54.9550	109.28	43.7664	203.43	35.2511
70.83	67.3569	111.00	55.8744	205.31	33.4279
72.81	67.6769	111.76	0.0000	210.85	38.2253
72.87	59.0718	114.06	45.1418	215.65	39.1989
74.66	59.3213	116.30	0.0000	222.11	35.9932
74.82	59.3433	116.74	55.4297	227.09	49.0258
74.97	59.3643	119.76	56.7285	227.38	42.0353
77.11	59.6577	121.12	38.5824	228.16	0.0000
78.74	59.8789	121.22	38.5888	228.18	36.2278
79.69	60.0063	121.78	44.7234	116.74	36.2278
80.12	60.0640	122.06	52.8795	235.69	29.8390
80.19	0.0000	122.92	44.8083	235.96	34.5603
80.57	60.1240	123.07	50.9312	238.63	55.1333
81.00	37.6135	265.00	54.0416	238.98	0.0000
81.07	37.6193	125.81	50.4787	240.99	61.5826
81.75	37.6755	127.23	50.5948	242.00	37.9355
83.79	39.1048	127.91	41.0681	244.70	22.1897
84.00	39.1224	129.30	47.3336	252.40	0.0000
85.43	39.2426	131.20	44.0365	252.80	26.3633
86.55	39.3359	133.02	54.8584	254.15	0.0000
86.79	39.3555	133.52	46.6143	256.23	33.6659
86.94	39.3681	136.00	54.0733	260.90	0.0000

ENERGY	MDA COUNTS	ENERGY	MDA COUNTS	ENERGY	MDA COUNTS
264.66	44.8487	355.39	0.0000	584.27	12.0610
264.80	47.2789	356.01	28.8052	595.83	0.0000
265.00	47.2873	364.49	0.0000	427.87	28.3771
268.22	29.1885	366.42	0.0000	602.52	0.0000
269.46	35.3110	372.51	19.4407	604.72	24.3730
270.03	35.3296	375.05	28.3294	607.14	21.3521
271.23	35.3694	377.52	16.8507	609.32	12.2144
273.65	0.0000	356.01	18.7095	610.33	12.2207
276.40	31.0451	388.16	23.2356	614.28	13.7752
277.37	25.7578	388.63	0.0000	618.01	11.2448
277.60	25.7629	391.69	29.5645	620.36	8.1875
278.00	25.7726	264.66	12.6211	621.93	15.3632
279.20	25.8008	401.81	20.7511	630.19	0.0000
279.54	25.8084	402.40	27.0776	631.29	13.3756
279.70	25.8123	404.85	22.6028	633.25	11.3281
280.46	25.8302	410.95	26.3285	634.78	0.0000
283.69	25.9059	413.71	21.8296	635.95	9.2805
284.31	0.0000	414.70	0.0000	636.99	0.0000
285.41	25.9456	423.72	0.0000	645.85	6.2163
285.90	0.0000	427.09	16.5187	657.76	23.4421
287.50	25.9943	427.87	22.0361	657.90	0.0000
290.67	29.7913	433.94	17.9754	661.66	14.6124
293.27	0.0000	439.40	25.9019	664.57	0.0000
351.93	26.1718	453.88	22.4067	666.33	0.0000
295.96	34.9180	463.37	25.3570	666.50	0.0000
879.38	24.9988	468.07	8.4767	667.71	0.0000
299.98	29.2001	473.00	0.0000	677.62	12.6172
300.09	29.2030	475.06	21.2819	685.70	0.0000
300.13	29.2037	476.78	20.8309	695.00	0.0000
301.36	28.8174	477.60	17.0519	696.49	21.2085
302.85	28.8539	482.18	13.2990	696.51	21.2085
256.23	26.3820	487.02	0.0000	697.00	0.0000
304.85	0.0000	492.35	0.0000	697.30	14.8511
306.78	21.8180	497.08	20.1246	697.49	16.9743
308.46	21.0088	505.52	31.7794	702.65	18.0763
311.90	24.4410	507.63	0.0000	706.68	18.1088
316.51	23.6888	511.00	15.4567	711.68	8.5404
319.41	0.0000	514.00	15.4831	720.70	0.0000
320.08	0.0000	514.00	15.4831	721.93	0.0000
321.04	23.7771	520.40	19.4238	722.78	8.0453
323.87	24.5133	520.69	0.0000	722.91	9.6552
325.23	19.1721	522.65	0.0000	723.31	9.6566
328.76	0.0000	527.90	0.0000	724.19	6.4402
333.37	24.4441	528.26	11.7061	727.33	9.6735
333.97	30.8914	529.59	15.6191	733.00	9.6969
334.37	32.6184	529.87	0.0000	735.93	6.4727
338.28	26.6917	531.02	0.0000	333.97	9.7156
338.32	28.4151	537.26	0.0000	739.50	0.0000
311.90	60.3756	546.56	0.0000	747.24	14.0918
340.48	60.3756	552.55	16.8049	748.06	13.0122
340.55	0.0000	563.25	10.9355	752.31	17.3802
344.28	25.9521	569.33	8.9762	753.82	0.0000
345.93	34.6476	946.00	8.9769	756.73	18.5011
351.06	26.9579	569.70	8.9777	756.80	18.5011
351.93	26.9755	583.19	12.0547	884.68	9.8240

ENERGY	MDA COUNTS	ENERGY	MDA COUNTS	ENERGY	MDA COUNTS
765.81	16.3855	1274.44	9.9907	1620.50	6.3270
766.42	13.1118	1001.03	12.2528	1621.92	2.1097
766.84	13.1143	1002.74	7.1516	1678.03	0.0000
772.60	0.0000	1004.73	0.0000	1690.97	0.0000
776.52	0.0000	507.63	0.0000	1750.46	0.0000
739.50	0.0000	1025.87	0.0000	1764.49	1.7396
778.90	8.7861	1028.54	0.0000	1063.66	1.0885
783.70	0.0000	1037.84	9.0424	1771.35	2.1776
785.37	8.2587	1038.76	0.0000	1791.20	0.0000
792.07	18.7701	631.29	11.7876	1808.65	0.0000
794.95	13.2646	1048.07	0.0000	1810.72	0.0000
795.86	18.7985	1049.04	10.8896	1836.06	3.3091
810.06	12.0098	1050.41	10.8940		
810.29	13.3457	1063.66	8.2051		
344.28	12.2345	1077.00	0.0000		
810.76	10.0111	1077.34	11.9026		
815.77	0.0000	1085.87	9.1797		
1048.07	0.0000	1093.63	17.4832		
832.01	8.9727	1099.45	14.7490		
834.85	11.2280	1112.07	9.5179		
835.71	7.8622	1112.84	13.5754		
836.80	0.0000	1115.54	10.3749		
846.75	0.0000	1120.29	9.2767		
846.77	10.1514	1120.55	9.2773		
856.80	0.0000	1221.41	9.2798		
860.56	7.9368	1129.67	12.0939		
871.09	17.0740	1131.51	0.0000		
873.19	7.9741	1147.95	0.0000		
875.33	0.0000	1173.23	12.2502		
879.38	10.2759	1177.95	10.3796		
880.51	7.9958	1189.05	5.6796		
883.24	5.7170	1204.77	5.7052		
884.68	13.7280	1221.41	8.5979		
889.28	9.1673	1231.02	15.3262		
894.76	10.3337	1235.36	0.0000		
898.04	8.0470	1238.28	13.4369		
900.72	8.0547	1260.41	0.0000		
903.28	5.7587	1271.87	8.7182		
911.20	6.9302	1274.44	10.6630		
912.08	6.9324	1274.54	10.6630		
923.98	0.0000	1291.59	4.8691		
926.50	3.4839	1298.22	0.0000		
929.11	6.9744	1312.11	0.0000		
937.49	11.6581	1332.49	2.9531		
944.13	0.0000	1362.66	0.0000		
946.00	8.7695	1365.19	0.0000		
949.00	7.0229	1368.63	0.0000		
667.71	0.0000	1384.29	6.9825		
962.31	10.5824	1408.01	6.0209		
964.08	9.8831	1457.56	0.0000		
966.17	15.5418	1460.82	5.0824		
911.20	14.1421	1489.16	4.0935		
968.97	14.1421	1505.03	7.1906		
983.53	0.0000	1584.12	4.1841		
984.45	0.0000	1596.21	0.0000		

```

*****
*                               GEL Laboratories LLC                               *
*                               2040 Savage Road                                   *
*                               Charleston, SC 29407                             *
*****
Configuration : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]R405245004.CNF;1
Background file : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]BKG_GAM07.CNF;484
Background date : 2-OCT-2016 11:00:17.
Sample date      : 15-DEC-2015 10:21:00 Acquisition date : 3-OCT-2016 04:34:09.
Sample ID       : R405245004 Sample quantity : 1.45276E+02 GRAM
Detector name   : GAM07 Detector geometry: CAN
Elapsed live time: 0 01:00:00.00 Elapsed real time: 0 01:00:00.46 0.0%
Energy tolerance : 1.50000 keV Analyst Initials : MXR1
Abundance limit : 75.00000 Sensitivity : 3.00000
Batch ID        : 1596387 Detector SN# :
Matrix Spike ID : LCS ID : 1556
*****
    
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BACKGROUND CORRECTED SAMPLE PEAK REPORT

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	63.61*	23	142	1.13	127.70	124	9	6.44E-03	98.8	
2	3	74.93*	115	104	1.15	150.34	143	19	3.20E-02	17.9	8.78E-01
3	3	77.17	170	99	1.20	154.82	143	19	4.73E-02	13.0	
4	1	87.15	60	104	1.16	174.79	164	28	1.66E-02	31.6	1.71E+00
5	1	89.87	35	105	1.16	180.21	164	28	9.81E-03	50.7	
6	1	92.65*	62	107	1.17	185.79	164	28	1.72E-02	33.1	
7	0	116.85	32	65	1.57	234.16	230	8	8.78E-03	47.9	
8	0	186.16*	37	72	1.12	372.75	369	8	1.02E-02	45.9	
9	0	209.35	33	72	1.45	419.12	414	9	9.17E-03	49.5	
10	3	238.56*	256	59	1.23	477.53	472	17	7.12E-02	8.1	1.23E+00
11	3	241.72	89	56	1.38	483.86	472	17	2.48E-02	18.8	
12	0	247.43	22	27	1.46	495.27	493	6	6.11E-03	43.0	
13	0	295.43*	112	52	1.21	591.25	586	9	3.10E-02	15.2	
14	0	328.25	24	36	1.73	656.88	651	9	6.67E-03	49.5	
15	0	338.10*	56	55	1.12	676.57	671	12	1.55E-02	30.1	
16	0	351.90*	192	66	0.97	704.16	698	12	5.34E-02	11.3	
17	0	438.68	27	22	1.94	877.69	871	11	7.52E-03	38.7	
18	0	455.84	42	41	7.79	912.00	902	20	1.17E-02	41.8	
19	0	466.46	23	24	4.06	933.22	926	12	6.25E-03	50.1	
20	0	510.87*	58	23	1.90	1022.04	1015	13	1.62E-02	26.8	
21	0	515.00	9	18	0.52	1030.29	1027	8	2.60E-03	82.0	
22	0	563.50	18	19	3.14	1127.27	1121	11	4.91E-03	53.7	
23	2	583.01*	72	15	1.83	1166.29	1161	16	1.99E-02	16.4	2.01E+00
24	2	586.48	18	5	1.92	1173.22	1161	16	4.99E-03	36.9	
25	0	609.15*	172	31	1.66	1218.56	1210	18	4.79E-02	10.9	
26	0	633.57	13	21	3.57	1267.38	1259	14	3.61E-03	79.8	
27	0	661.26	85	18	1.31	1322.75	1316	14	2.37E-02	15.0	
28	0	720.50	19	13	1.72	1441.22	1434	13	5.31E-03	45.1	
29	0	728.18	26	26	1.68	1456.58	1449	15	7.29E-03	46.8	
30	0	763.76	15	16	1.42	1527.72	1523	9	4.20E-03	53.9	
31	0	769.14	19	25	2.22	1538.48	1533	11	5.14E-03	57.0	
32	0	794.40	18	5	1.37	1589.00	1585	9	5.11E-03	31.3	
33	0	807.64	25	31	8.72	1615.47	1599	25	6.86E-03	64.2	
34	0	829.21	5	10	1.37	1658.60	1650	10	1.39E-03	126.5	

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
35	0	883.39	14	10	1.54	1766.94	1760	13	3.95E-03	52.5	
36	0	910.90*	72	7	1.04	1821.96	1815	14	1.99E-02	14.8	
37	0	964.36	17	16	2.34	1928.87	1921	13	4.73E-03	54.3	
38	0	969.06*	32	8	1.06	1938.28	1934	9	8.93E-03	25.3	
39	0	1043.01	13	4	1.73	2086.15	2081	9	3.53E-03	41.0	
40	0	1069.53	7	7	1.42	2139.19	2132	10	1.85E-03	86.1	
41	0	1120.09	41	14	2.07	2240.30	2232	14	1.13E-02	25.1	
42	0	1152.22	6	11	1.02	2304.55	2299	7	1.53E-03	106.6	
43	0	1162.76	26	4	0.82	2325.62	2317	17	7.22E-03	26.7	
44	0	1168.69	9	4	0.80	2337.47	2333	7	2.36E-03	50.1	
45	0	1195.15	10	16	4.26	2390.39	2381	13	2.76E-03	89.5	
46	0	1219.53	12	13	2.73	2439.16	2433	10	3.43E-03	60.7	
47	0	1341.69	9	0	1.38	2683.44	2676	12	2.50E-03	33.3	
48	0	1460.29*	280	0	2.29	2920.64	2914	13	7.77E-02	6.1	
49	0	1764.30*	15	6	2.56	3528.62	3522	12	4.10E-03	44.9	

Flag: "*" = Peak area was modified by background subtraction

```

Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]R405245004.CNF;1
Analyses by       : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.4,INTERF V2.4
Sample title      : MXR1
Sample date       : 15-DEC-2015 10:21:00 Acquisition date : 3-OCT-2016 04:34:09
Sample ID        : R405245004 Sample quantity   : 145.28 GRAM
Sample type      : SOLID Sample geometry    :
Detector name    : GAMMA7 Detector geometry: CAN
Elapsed live time: 0 01:00:00.00 Elapsed real time: 0 01:00:00.46 0.0%
Energy tolerance : 1.50 keV Half life ratio   : 10.00
Errors propagated: No Systematic Error    : 0.00 %
Efficiency type  : Linear Efficiencies at   : Peak Energy
Abundance limit  : 75.00
    
```

Interference Report

Interfering		Interfered	
Nuclide	Line	Nuclide	Line
PB-214	242.00	RA-224	240.99
PB-214	87.09	SN-126	86.94
PB-214	87.09	SN-126	87.57
PB-214	87.09	CD-109	88.03
PB-214	74.82	AM-243	74.66
PB-214	74.82	TH-228	74.82
PB-214	74.82	PB-212	74.82
PB-214	351.93	BI-211	351.06

Nuclide Type:

Nuclide	Energy	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error	Status
K-40	1460.82	10.66*	1.122E+00	1.162E+01	1.162E+01	12.17	OK
KR-85	514.00	0.43*	2.617E+00	4.529E+00	4.774E+00	163.95	OK
SR-85	514.00	96.00*	2.617E+00	2.048E-02	4.683E-01	163.95	OK
CD-109	88.03	3.70*	5.740E+00	1.019E+00	1.582E+00	113.65	OK
SN-126	64.28	9.60	3.539E+00	4.456E-01	4.456E-01	197.70	OK
	86.94	8.90	5.740E+00	4.237E-01	4.237E-01	113.65	OK
	87.57	37.00*	5.740E+00	1.019E-01	1.019E-01	113.65	OK
BA-137M	661.66	89.90*	2.139E+00	2.382E-01	2.426E-01	30.02	OK
CS-137	661.66	85.10*	2.139E+00	2.516E-01	2.563E-01	30.02	OK
TL-208	277.37	6.60	4.377E+00	----- Line	Not Found	-----	Absent
	583.19	85.00*	2.366E+00	1.934E-01	1.934E-01	32.74	OK
	860.56	12.50	1.736E+00	----- Line	Not Found	-----	Absent
BI-211	72.87	1.23	4.591E+00	----- Line	Not Found	-----	Absent
	351.06	12.92*	3.592E+00	3.851E-02	3.851E-02	2293.92	OK
PB-212	74.82	10.28	4.791E+00	1.034E+00	1.034E+00	53.90	OK
	77.11	17.10	4.995E+00	1.283E+00	1.283E+00	26.03	OK
	238.63	43.60*	4.931E+00	6.998E-01	6.998E-01	16.24	OK
	300.09	3.30	4.103E+00	----- Line	Not Found	-----	Absent
BI-214	609.32	45.49*	2.284E+00	8.971E-01	8.974E-01	21.88	OK
	1120.29	14.92	1.406E+00	9.903E-01	9.907E-01	50.10	OK
	1764.49	15.30	9.423E-01	4.996E-01	4.998E-01	89.81	OK
PB-214	74.82	5.80	4.781E+00	----- Line	Not Found	-----	<<INT Reject
	77.11	9.70	4.995E+00	2.262E+00	2.263E+00	26.03	OK
	87.09	3.41	5.736E+00	----- Line	Not Found	-----	<<INT Reject
	242.00	7.25	4.877E+00	----- Line	Not Found	-----	<<INT Reject
	295.22	18.42	4.157E+00	8.398E-01	8.400E-01	30.50	OK
	351.93	35.60*	3.592E+00	----- Line	Not Found	-----	<<INT Reject
RN-222	609.32	45.49*	2.284E+00	8.971E-01	8.974E-01	21.88	OK
	1120.29	14.92	1.406E+00	9.903E-01	9.907E-01	50.10	OK
	1764.49	15.30	9.423E-01	4.996E-01	4.998E-01	89.81	OK
RA-224	240.99	4.10*	4.882E+00	1.137E+00	1.137E+00	95.45	OK
RA-226	609.32	45.49*	2.284E+00	8.971E-01	8.974E-01	21.88	OK
	1120.29	14.92	1.406E+00	9.903E-01	9.907E-01	50.10	OK
	1764.49	15.30	9.423E-01	4.996E-01	4.998E-01	89.81	OK
AC-228	105.21	1.10	6.488E+00	----- Line	Not Found	-----	Absent
	338.32	11.27	3.715E+00	7.607E-01	7.607E-01	60.29	OK
	794.95	4.25	1.850E+00	1.234E+00	1.234E+00	62.59	OK
	835.71	1.61	1.777E+00	----- Line	Not Found	-----	Absent
	911.20	25.80*	1.660E+00	8.711E-01	8.711E-01	29.66	OK
	968.97	15.80	1.580E+00	6.660E-01	6.660E-01	50.59	OK
RA-228	105.21	1.10	6.488E+00	----- Line	Not Found	-----	Absent
	338.32	11.27	3.715E+00	7.607E-01	7.607E-01	60.29	OK
	794.95	4.25	1.850E+00	1.234E+00	1.234E+00	62.59	OK
	835.71	1.61	1.777E+00	----- Line	Not Found	-----	Absent
	911.20	25.80*	1.660E+00	8.711E-01	8.711E-01	29.66	OK
	968.97	15.80	1.580E+00	6.660E-01	6.660E-01	50.59	OK
TH-228	74.82	10.28	4.791E+00	1.034E+00	1.034E+00	53.90	OK
	77.11	17.10	4.995E+00	1.283E+00	1.283E+00	26.03	OK
	238.63	43.60*	4.931E+00	6.998E-01	6.998E-01	16.24	OK

Nuclide Type:

Nuclide	Energy	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error	Status
	300.09	3.30	4.103E+00	----- Line	Not Found	-----	Absent
TH-230	609.32	45.49*	2.284E+00	8.971E-01	8.971E-01	21.88	OK
	1120.29	14.92	1.406E+00	9.903E-01	9.904E-01	50.10	OK
	1764.49	15.30	9.423E-01	4.996E-01	4.996E-01	89.81	OK
TH-232	105.21	1.10	6.488E+00	----- Line	Not Found	-----	Absent
	338.32	11.27	3.715E+00	7.607E-01	7.607E-01	60.29	OK
	835.71	1.61	1.777E+00	----- Line	Not Found	-----	Absent
	911.20	25.80*	1.660E+00	8.711E-01	8.711E-01	29.66	OK
	968.97	15.80	1.580E+00	6.660E-01	6.660E-01	50.59	OK
TH-234	63.29	3.70*	3.539E+00	1.156E+00	1.156E+00	197.70	OK
	92.59	4.23	6.041E+00	1.540E+00	1.540E+00	66.18	OK
U-234	609.32	45.49*	2.284E+00	8.971E-01	8.971E-01	21.88	OK
	1120.29	14.92	1.406E+00	9.903E-01	9.903E-01	50.10	OK
	1764.49	15.30	9.423E-01	4.996E-01	4.996E-01	89.81	OK
U-235	89.96	3.47	5.897E+00	1.097E+00	1.097E+00	101.46	OK
	93.35	5.60	6.041E+00	1.163E+00	1.163E+00	66.18	OK
	143.76	10.96*	6.563E+00	----- Line	Not Found	-----	Absent
	163.33	5.08	6.266E+00	----- Line	Not Found	-----	Absent
	185.72	57.20	5.849E+00	6.586E-02	6.586E-02	91.82	OK
	205.31	5.01	5.496E+00	----- Line	Not Found	-----	Absent
U-238	63.29	3.70*	3.539E+00	1.156E+00	1.156E+00	197.70	OK
	92.59	4.23	6.041E+00	1.540E+00	1.540E+00	66.18	OK
AM-243	43.53	5.90	6.933E-01	----- Line	Not Found	-----	Absent
	74.66	67.20*	4.791E+00	1.582E-01	1.582E-01	53.90	OK
ANH-511	511.00	100.00*	2.634E+00	1.213E-01	1.213E-01	53.56	OK

Flag: "*" = Keyline

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*****
*                               GEL Laboratories LLC                               *
*                               2040 Savage Road                               *
*                               Charleston, SC 29407                           *
*****
*                               DETECTOR AND SAMPLE DATA                       *
*
* Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]R405245004.CNF;1
* Acquisition date   : 3-OCT-2016 04:34:09 Sensitivity      : 3.000
* Detector ID        : GAM07 Energy tolerance: 1.500
* Elapsed live time  : 0 01:00:00.00 Abundance limit : 75.000
* Elapsed real time  : 0 01:00:00.46 Half life ratio : *****
* Sample date        : 15-DEC-2015 10:21:00 Analyst initials: MXR1
* Sample ID          : R405245004 Sample Quantity : 1.4528E+02 GRAM
* Batch Number       : 1596387 Wet Weight : 0.00000
* Wet wt corr        : 1.00000 Dry Weight : 0.00000
* Nuclide Library    : SOLID.NLB;6
*****
*                               CALIBRATION INFORMATION                         *
*
* Eff. Cal. date     : 19-AUG-2016 11:09:59 Eff. Geometry : CAN
* Eff. File          : DKA100:[CANBERRA.GAMMA]EFF_GAM07_CAN.CNF;15
*****

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Combined Activity-MDA Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM)	Cnt uncert (1.96-sigma)	MDA (pCi/GRAM)
K-40	1.162E+01	1.386E+00	4.761E-01
KR-85	4.774E+00	7.670E+00	1.337E+00
SR-85	4.683E-01	7.524E-01	1.311E-01
CD-109	1.582E+00	1.762E+00	1.613E+00
SN-126	1.019E-01	1.135E-01	1.044E-01
BA-137M	2.426E-01	7.138E-02	5.290E-02
CS-137	2.563E-01	7.541E-02	5.589E-02
TL-208	1.934E-01	6.204E-02	5.923E-02
BI-211	3.851E-02	8.658E-01	3.049E-01
PB-212	6.998E-01	1.113E-01	8.756E-02
BI-214	8.974E-01	1.925E-01	9.536E-02
PB-214	8.540E-01	1.891E-01	3.045E-01
RN-222	8.974E-01	1.925E-01	9.536E-02
RA-224	1.137E+00	1.063E+00	9.389E-01
RA-226	8.974E-01	1.925E-01	9.536E-02
AC-228	8.711E-01	2.532E-01	2.132E-01
RA-228	8.711E-01	2.532E-01	2.132E-01
TH-228	6.998E-01	1.113E-01	8.756E-02
TH-230	8.971E-01	1.924E-01	9.533E-02
TH-232	8.711E-01	2.532E-01	2.132E-01
TH-234	1.156E+00	2.240E+00	1.705E+00
U-234	8.971E-01	1.924E-01	9.533E-02
U-235	6.032E-02	1.756E-01	3.296E-01
U-238	1.156E+00	2.240E+00	1.705E+00
AM-243	1.582E-01	8.358E-02	6.844E-02
ANH-511	1.213E-01	6.366E-02	4.901E-02

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/GRAM)	K.L.	Cnt Uncert (1.96-sigma)	MDA (pCi/GRAM)	
BE-7	-3.991E+00		9.372E+00	1.727E+01	NOT IDENT.
NA-22	-2.205E-02		5.428E-02	9.865E-02	NOT IDENT.
NA-24	0.000E+00		1.960E+41	0.000E+00	SHORT HLIF
AL-26	1.237E-02		2.618E-02	6.766E-02	NOT IDENT.

SC-46	1.249E-01	3.166E-01	6.590E-01	FAIL ABUN
V-48	0.000E+00	1.177E+04	0.000E+00	SHORT HLIF
CR-51	0.000E+00	3.224E+02	0.000E+00	SHORT HLIF
MN-54	-7.402E-03	6.152E-02	1.218E-01	NOT IDENT.
CO-56	-1.756E-01	3.769E-01	7.165E-01	NOT IDENT.
MN-56	0.000E+00	1.960E+41	0.000E+00	SHORT HLIF
CO-57	-4.962E-03	4.000E-02	7.401E-02	NOT IDENT.
CO-58	2.247E-01	5.655E-01	1.056E+00	NOT IDENT.
FE-59	2.504E+00	5.739E+00	1.234E+01	NOT IDENT.
CO-60	4.295E-03	3.097E-02	6.712E-02	NOT IDENT.
ZN-65	8.316E-02	1.615E-01	3.244E-01	NOT IDENT.
GE-68	1.137E-02	1.877E+00	3.874E+00	NOT IDENT.
AS-73	3.403E+00	5.851E+00	1.211E+01	NOT IDENT.
AS-74	0.000E+00	3.680E+03	0.000E+00	SHORT HLIF
SE-75	9.329E-02	1.688E-01	3.532E-01	NOT IDENT.
BR-77	0.000E+00	2.548E+36	0.000E+00	SHORT HLIF
SR-82	0.000E+00	4.673E+02	0.000E+00	SHORT HLIF
RB-83	-2.952E-02	6.277E-01	1.200E+00	NOT IDENT.
RB-86	0.000E+00	1.662E+04	0.000E+00	SHORT HLIF
Y-88	-2.056E-02	2.152E-01	4.630E-01	NOT IDENT.
Y-91	-3.763E+02	4.578E+02	7.703E+02	NOT IDENT.
NB-94	3.121E-02	3.079E-02	6.691E-02	NOT IDENT.
NB-95	5.723E-02	9.964E-01	1.353E+00	NOT IDENT.
NB-95M	1.085E+00	1.897E+00	3.636E+00	NOT IDENT.
ZR-95	7.605E-01	1.119E+00	2.448E+00	NOT IDENT.
NB-97	0.000E+00	1.960E+41	0.000E+00	SHORT HLIF
ZR-97	0.000E+00	1.960E+41	0.000E+00	SHORT HLIF
MO-99	0.000E+00	2.293E+31	0.000E+00	SHORT HLIF
TC-99M	0.000E+00	1.614E+41	0.000E+00	SHORT HLIF
RH-101	-1.411E-02	3.001E-02	5.338E-02	NOT IDENT.
RH-102	2.281E-03	5.350E-02	1.043E-01	NOT IDENT.
RU-103	-3.220E+00	3.985E+00	6.811E+00	FAIL ABUN
RH-106	6.663E-03	4.076E-01	8.014E-01	NOT IDENT.
RU-106	6.663E-03	4.076E-01	8.014E-01	NOT IDENT.
AG-108M	-5.691E-03	2.756E-02	4.660E-02	NOT IDENT.
AG-110M	1.352E-01	1.392E-01	2.063E-01	FAIL ABUN
SN-113	-6.069E-02	2.162E-01	4.070E-01	NOT IDENT.
CD-115	0.000E+00	3.574E+38	0.000E+00	SHORT HLIF
SN-117M	0.000E+00	5.801E+04	0.000E+00	SHORT HLIF
TE-123M	1.819E-02	1.107E-01	2.071E-01	NOT IDENT.
SB-124	2.565E-01	1.471E+00	3.475E+00	NOT IDENT.
SB-125	-8.754E-02	9.356E-02	1.600E-01	NOT IDENT.
TE-125M	-1.009E+02	2.323E+02	4.171E+02	NOT IDENT.
I-126	0.000E+00	6.028E+05	0.000E+00	SHORT HLIF
SB-126	0.000E+00	1.145E+06	0.000E+00	SHORT HLIF
SB-127	0.000E+00	5.746E+21	0.000E+00	SHORT HLIF
I-131	0.000E+00	2.360E+09	0.000E+00	SHORT HLIF
I-132	0.000E+00	1.960E+41	0.000E+00	SHORT HLIF
TE-132	0.000E+00	7.789E+25	0.000E+00	SHORT HLIF
BA-133	-1.835E-03	3.516E-02	6.234E-02	NOT IDENT.
I-133	0.000E+00	1.960E+41	0.000E+00	SHORT HLIF
CS-134	8.024E-02	4.922E-02	1.006E-01	FAIL ABUN
CS-135	-6.629E-02	1.348E-01	2.538E-01	NOT IDENT.
I-135	0.000E+00	1.960E+41	0.000E+00	SHORT HLIF
CS-136	0.000E+00	2.329E+05	0.000E+00	SHORT HLIF
CE-139	-1.868E-02	1.032E-01	1.849E-01	NOT IDENT.
BA-140	0.000E+00	8.358E+05	0.000E+00	SHORT HLIF
LA-140	0.000E+00	1.621E+05	0.000E+00	SHORT HLIF
CE-141	3.631E+00	1.772E+01	3.342E+01	NOT IDENT.
CE-143	0.000E+00	1.560E+41	0.000E+00	SHORT HLIF
CE-144	-7.396E-02	3.033E-01	5.508E-01	NOT IDENT.
PM-144	-3.632E-03	5.263E-02	9.904E-02	NOT IDENT.
PR-144	-3.297E-01	4.552E+00	8.562E+00	NOT IDENT.
PM-146	3.561E-02	4.560E-02	9.514E-02	FAIL ABUN
ND-147	0.000E+00	2.063E+07	0.000E+00	SHORT HLIF
PM-147	-2.860E+01	7.157E+02	1.334E+03	NOT IDENT.
PM-149	0.000E+00	4.248E+39	0.000E+00	SHORT HLIF
EU-150	4.386E-03	2.183E-02	4.027E-02	FAIL ABUN
EU-152	1.257E-02	7.952E-02	1.597E-01	FAIL ABUN
GD-153	-5.148E-02	1.718E-01	2.917E-01	NOT IDENT.
EU-154	-4.926E-02	1.344E-01	2.460E-01	NOT IDENT.
EU-155	8.929E-02	9.866E-02	1.986E-01	FAIL ABUN
TB-160	-1.907E-01	1.315E+00	2.391E+00	FAIL ABUN
HO-166M	2.470E-03	4.343E-02	8.644E-02	NOT IDENT.
TM-171	8.058E-01	1.468E+01	2.914E+01	NOT IDENT.
HF-172	7.599E-02	1.991E-01	3.840E-01	FAIL ABUN
LU-172	8.966E-02	8.055E-02	1.843E-01	FAIL ABUN
LU-176	-2.181E-02	2.153E-02	3.792E-02	FAIL ABUN

HF-181	5.003E-01	3.715E+00	7.323E+00	NOT IDENT.
TA-182	6.708E-01	9.605E-01	1.918E+00	FAIL ABUN
RE-183	-4.652E-01	2.065E+00	3.960E+00	NOT IDENT.
RE-184	3.527E+00	2.116E+01	4.517E+01	NOT IDENT.
W-188	-3.743E+00	9.989E+01	1.769E+02	FAIL ABUN
IR-192	-4.365E-02	3.891E-01	7.468E-01	FAIL ABUN
HG-203	-4.933E-01	1.815E+00	3.505E+00	NOT IDENT.
BI-207	1.554E-02	5.154E-02	9.743E-02	FAIL ABUN
PB-210	8.024E-01	2.383E+00	4.827E+00	NOT IDENT.
PB-211	2.423E-01	5.761E-01	1.188E+00	NOT IDENT.
BI-212	1.055E+00	9.671E-01	1.226E+00	FAIL ABUN
RN-219	2.732E-02	3.440E-01	6.784E-01	NOT IDENT.
RA-223	-6.272E-02	5.220E-01	9.157E-01	FAIL ABUN
AC-227	1.988E-02	2.049E-01	4.091E-01	NOT IDENT.
TH-227	1.988E-02	2.049E-01	4.091E-01	NOT IDENT.
TH-229	-1.344E-01	4.101E-01	7.195E-01	FAIL ABUN
PA-231	6.407E-02	4.219E-01	8.153E-01	NOT IDENT.
TH-231	-6.272E-02	5.220E-01	9.157E-01	FAIL ABUN
PA-233	1.337E-02	5.079E-02	1.033E-01	NOT IDENT.
PA-234	-8.799E-02	2.695E-01	5.155E-01	FAIL ABUN
PA-234M	7.491E-01	4.041E+00	8.500E+00	NOT IDENT.
NP-237	1.337E-02	5.079E-02	1.033E-01	NOT IDENT.
NP-238	0.000E+00	5.552E+40	0.000E+00	SHORT HLIF
NP-239	3.721E-01	3.490E-01	4.168E-01	FAIL ABUN
PU-239	1.602E+02	2.637E+02	5.179E+02	NOT IDENT.
AM-241	1.874E-03	1.070E-01	1.941E-01	NOT IDENT.
CM-243	3.622E-03	9.231E-02	1.738E-01	NOT IDENT.
BK-247	2.066E-02	6.238E-02	1.277E-01	NOT IDENT.
CM-247	-4.188E-03	3.124E-02	6.013E-02	NOT IDENT.
CF-249	-1.316E-03	3.146E-02	6.172E-02	NOT IDENT.
CF-251	-5.224E-02	1.023E-01	1.768E-01	NOT IDENT.

Nuclide Line Activity Report

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
K-40	1460.82	269	10.66*	1.122E+00	1.162E+01	1.162E+01	12.17
KR-85	514.00	10	0.43*	2.617E+00	4.529E+00	4.774E+00	163.95
SR-85	514.00	10	96.00*	2.617E+00	2.048E-02	4.683E-01	163.95
CD-109	88.03	74	3.70*	5.740E+00	1.793E+00	2.784E+00	63.24
SN-126	64.28	29	9.60	3.539E+00	4.456E-01	4.456E-01	197.70
	86.94	74	8.90	5.740E+00	7.454E-01	7.454E-01	63.24
	87.57	74	37.00*	5.740E+00	1.793E-01	1.793E-01	63.24
BA-137M	661.66	89	89.90*	2.139E+00	2.382E-01	2.426E-01	30.02
CS-137	661.66	89	85.10*	2.139E+00	2.516E-01	2.563E-01	30.02
TL-208	277.37	-----	6.60	4.377E+00	-----	Line Not Found	-----
	583.19	75	85.00*	2.366E+00	1.934E-01	1.934E-01	32.74
	860.56	-----	12.50	1.736E+00	-----	Line Not Found	-----
BI-211	72.87	-----	1.23	4.591E+00	-----	Line Not Found	-----
	351.06	211	12.92*	3.592E+00	2.352E+00	2.352E+00	22.60
PB-212	74.82	144	10.28	4.791E+00	1.508E+00	1.508E+00	35.70
	77.11	212	17.10	4.995E+00	1.283E+00	1.283E+00	26.03
	238.63	291	43.60*	4.931E+00	6.998E-01	6.998E-01	16.24
	300.09	-----	3.30	4.103E+00	-----	Line Not Found	-----
BI-214	609.32	180	45.49*	2.284E+00	8.971E-01	8.974E-01	21.88
	1120.29	40	14.92	1.406E+00	9.903E-01	9.907E-01	50.10
	1764.49	14	15.30	9.423E-01	4.996E-01	4.998E-01	89.81
PB-214	74.82	144	5.80	4.791E+00	2.673E+00	2.674E+00	35.70
	77.11	212	9.70	4.995E+00	2.262E+00	2.263E+00	26.03
	87.09	74	3.41	5.740E+00	1.946E+00	1.946E+00	63.24
	242.00	102	7.25	4.882E+00	1.483E+00	1.483E+00	37.61
	295.22	124	18.42	4.157E+00	8.398E-01	8.400E-01	30.50
	351.93	211	35.60*	3.592E+00	8.537E-01	8.540E-01	22.60
RN-222	609.32	180	45.49*	2.284E+00	8.971E-01	8.974E-01	21.88
	1120.29	40	14.92	1.406E+00	9.903E-01	9.907E-01	50.10
	1764.49	14	15.30	9.423E-01	4.996E-01	4.998E-01	89.81
RA-224	240.99	102	4.10*	4.882E+00	2.622E+00	2.622E+00	37.61
RA-226	609.32	180	45.49*	2.284E+00	8.971E-01	8.974E-01	21.88
	1120.29	40	14.92	1.406E+00	9.903E-01	9.907E-01	50.10
	1764.49	14	15.30	9.423E-01	4.996E-01	4.998E-01	89.81
AC-228	105.21	-----	1.10	6.488E+00	-----	Line Not Found	-----
	338.32	62	11.27	3.715E+00	7.607E-01	7.607E-01	60.29
	794.95	19	4.25	1.850E+00	1.234E+00	1.234E+00	62.59
	835.71	-----	1.61	1.777E+00	-----	Line Not Found	-----
	911.20	72	25.80*	1.660E+00	8.711E-01	8.711E-01	29.66
	968.97	32	15.80	1.580E+00	6.660E-01	6.660E-01	50.59
RA-228	105.21	-----	1.10	6.488E+00	-----	Line Not Found	-----
	338.32	62	11.27	3.715E+00	7.607E-01	7.607E-01	60.29
	794.95	19	4.25	1.850E+00	1.234E+00	1.234E+00	62.59
	835.71	-----	1.61	1.777E+00	-----	Line Not Found	-----
	911.20	72	25.80*	1.660E+00	8.711E-01	8.711E-01	29.66
	968.97	32	15.80	1.580E+00	6.660E-01	6.660E-01	50.59
TH-228	74.82	144	10.28	4.791E+00	1.508E+00	1.508E+00	35.70

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
	77.11	212	17.10	4.995E+00	1.283E+00	1.283E+00	26.03
	238.63	291	43.60*	4.931E+00	6.998E-01	6.998E-01	16.24
	300.09	-----	3.30	4.103E+00	-----	Line Not Found	-----
TH-230	609.32	180	45.49*	2.284E+00	8.971E-01	8.971E-01	21.88
	1120.29	40	14.92	1.406E+00	9.903E-01	9.904E-01	50.10
	1764.49	14	15.30	9.423E-01	4.996E-01	4.996E-01	89.81
TH-232	105.21	-----	1.10	6.488E+00	-----	Line Not Found	-----
	338.32	62	11.27	3.715E+00	7.607E-01	7.607E-01	60.29
	835.71	-----	1.61	1.777E+00	-----	Line Not Found	-----
	911.20	72	25.80*	1.660E+00	8.711E-01	8.711E-01	29.66
	968.97	32	15.80	1.580E+00	6.660E-01	6.660E-01	50.59
TH-234	63.29	29	3.70*	3.539E+00	1.156E+00	1.156E+00	197.70
	92.59	76	4.23	6.041E+00	1.540E+00	1.540E+00	66.18
U-234	609.32	180	45.49*	2.284E+00	8.971E-01	8.971E-01	21.88
	1120.29	40	14.92	1.406E+00	9.903E-01	9.903E-01	50.10
	1764.49	14	15.30	9.423E-01	4.996E-01	4.996E-01	89.81
U-235	89.96	43	3.47	5.897E+00	1.097E+00	1.097E+00	101.46
	93.35	76	5.60	6.041E+00	1.163E+00	1.163E+00	66.18
	143.76	-----	10.96*	6.563E+00	-----	Line Not Found	-----
	163.33	-----	5.08	6.266E+00	-----	Line Not Found	-----
	185.72	43	57.20	5.849E+00	6.586E-02	6.586E-02	91.82
	205.31	-----	5.01	5.496E+00	-----	Line Not Found	-----
U-238	63.29	29	3.70*	3.539E+00	1.156E+00	1.156E+00	197.70
	92.59	76	4.23	6.041E+00	1.540E+00	1.540E+00	66.18
AM-243	43.53	-----	5.90	6.933E-01	-----	Line Not Found	-----
	74.66	144	67.20*	4.791E+00	2.307E-01	2.307E-01	35.70
ANH-511	511.00	62	100.00*	2.634E+00	1.213E-01	1.213E-01	53.56

Flag: "*" = Keyline

Total number of lines in spectrum 49
 Number of unidentified lines 16
 Number of lines tentatively identified by NID 33 67.35%

Nuclide Type :

Nuclide	Hlife	Decay	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
K-40	1.25E+09Y	1.00	1.162E+01	1.162E+01	0.141E+01	12.17	
KR-85	10.56Y	1.05	4.529E+00	4.774E+00	7.827E+00	163.95	
SR-85	64.84D	22.9	2.048E-02	4.683E-01	7.678E-01	163.95	
CD-109	461.40D	1.55	1.793E+00	2.784E+00	1.760E+00	63.24	
SN-126	2.30E+05Y	1.00	1.793E-01	1.793E-01	1.134E-01	63.24	
BA-137M	30.08Y	1.02	2.382E-01	2.426E-01	0.728E-01	30.02	
CS-137	30.08Y	1.02	2.516E-01	2.563E-01	0.769E-01	30.02	
TL-208	1.41E+10Y	1.00	1.934E-01	1.934E-01	0.633E-01	32.74	
BI-211	7.04E+08Y	1.00	2.352E+00	2.352E+00	0.532E+00	22.60	
PB-212	1.41E+10Y	1.00	6.998E-01	6.998E-01	1.136E-01	16.24	
BI-214	1600.00Y	1.00	8.971E-01	8.974E-01	1.964E-01	21.88	
PB-214	1600.00Y	1.00	8.537E-01	8.540E-01	1.930E-01	22.60	
RN-222	1600.00Y	1.00	8.971E-01	8.974E-01	1.964E-01	21.88	
RA-224	1.41E+10Y	1.00	2.622E+00	2.622E+00	0.986E+00	37.61	
RA-226	1600.00Y	1.00	8.971E-01	8.974E-01	1.964E-01	21.88	
AC-228	1.41E+10Y	1.00	8.711E-01	8.711E-01	2.584E-01	29.66	
RA-228	1.41E+10Y	1.00	8.711E-01	8.711E-01	2.584E-01	29.66	
TH-228	1.41E+10Y	1.00	6.998E-01	6.998E-01	1.136E-01	16.24	
TH-230	7.54E+04Y	1.00	8.971E-01	8.971E-01	1.963E-01	21.88	
TH-232	1.41E+10Y	1.00	8.711E-01	8.711E-01	2.584E-01	29.66	
TH-234	4.47E+09Y	1.00	1.156E+00	1.156E+00	2.286E+00	197.70	
U-234	2.45E+05Y	1.00	8.971E-01	8.971E-01	1.963E-01	21.88	
U-235	7.04E+08Y	1.00	6.586E-02	6.586E-02	6.047E-02	91.82	K
U-238	4.47E+09Y	1.00	1.156E+00	1.156E+00	2.286E+00	197.70	
AM-243	7370.00Y	1.00	2.307E-01	2.307E-01	0.824E-01	35.70	
ANH-511	1.00E+09Y	1.00	1.213E-01	1.213E-01	0.650E-01	53.56	
Total Activity :			3.589E+01	3.758E+01			

Grand Total Activity : 3.589E+01 3.758E+01

Flags: "K" = Keyline not found "M" = Manually accepted
 "E" = Manually edited "A" = Nuclide specific abn. limit

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
0	116.85	38	79	1.57	234.16	230	8	8.78E-03	95.7	6.67E+00	T
0	209.35	38	83	1.45	419.12	414	9	9.17E-03	99.0	5.42E+00	
0	247.43	25	31	1.46	495.27	493	6	6.11E-03	86.0	4.79E+00	
0	328.25	27	40	1.73	656.88	651	9	6.67E-03	99.0	3.81E+00	T
0	438.68	29	24	1.94	877.69	871	11	7.52E-03	77.3	2.99E+00	T
0	455.84	45	44	7.79	912.00	902	20	1.17E-02	83.7	2.89E+00	
0	466.46	24	25	4.06	933.22	926	12	6.25E-03	****	2.84E+00	
0	563.50	19	20	3.14	1127.27	1121	11	4.91E-03	****	2.43E+00	T
2	586.48	19	5	1.92	1173.22	1161	16	4.99E-03	73.9	2.35E+00	
0	633.57	14	22	3.57	1267.38	1259	14	3.61E-03	****	2.21E+00	T
0	720.50	20	13	1.72	1441.22	1434	13	5.31E-03	90.1	2.00E+00	T
0	728.18	27	27	1.68	1456.58	1449	15	7.29E-03	93.5	1.98E+00	T
0	763.76	15	16	1.42	1527.72	1523	9	4.20E-03	****	1.91E+00	T
0	769.14	19	25	2.22	1538.48	1533	11	5.14E-03	****	1.90E+00	
0	807.64	25	32	8.72	1615.47	1599	25	6.86E-03	****	1.83E+00	
0	829.21	5	10	1.37	1658.60	1650	10	1.39E-03	****	1.79E+00	
0	883.39	14	10	1.54	1766.94	1760	13	3.95E-03	****	1.70E+00	T
0	964.36	17	16	2.34	1928.87	1921	13	4.73E-03	****	1.59E+00	T
0	1043.01	13	4	1.73	2086.15	2081	9	3.53E-03	82.0	1.49E+00	
0	1069.53	7	7	1.42	2139.19	2132	10	1.85E-03	****	1.46E+00	
0	1152.22	5	10	1.02	2304.55	2299	7	1.53E-03	****	1.37E+00	
0	1162.76	26	4	0.82	2325.62	2317	17	7.22E-03	53.3	1.36E+00	
0	1168.69	8	3	0.80	2337.47	2333	7	2.36E-03	****	1.36E+00	
0	1195.15	10	16	4.26	2390.39	2381	13	2.76E-03	****	1.33E+00	
0	1219.53	12	12	2.73	2439.16	2433	10	3.43E-03	****	1.31E+00	
0	1341.69	9	0	1.38	2683.44	2676	12	2.50E-03	66.7	1.21E+00	

Flags: "T" = Tentatively associated


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*****
*                               GEL Laboratories LLC                       *
*                               2040 Savage Road                          *
*                               Charleston, SC 29407                     *
*****
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DETECTOR AND SAMPLE DATA

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* Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]R405245004.CNF;1
* Acquisition date   : 3-OCT-2016 04:34:09 Sensitivity      : 3.000
* Detector ID       : GAM07 Energy tolerance: 1.500
* Elapsed live time : 0 01:00:00.00 Abundance limit : 75.000
* Elapsed real time : 0 01:00:00.46 Half life ratio : *****
* Sample date       : 15-DEC-2015 10:21:00 Nuclide Library : SOLID
* Sample ID         : R405245004 Analyst initials: MXR1
* Batch Number      : 1596387 Sample Quantity : 1.4528E+02 GRAM
* Wet wt corr       : 1.00000 Wet Weight : 0.00000
*                               Dry Weight : 0.00000
*****
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CALIBRATION INFORMATION

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* Eff. Cal. date    : 19-AUG-2016 11:09:59 Eff. Geometry   : CAN
* Eff. File         : DKA100:[CANBERRA.GAMMA]EFF_GAM07_CAN.CNF;15
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Combined Critical Level Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Lc (pCi/GRAM)
K-40	1.793E-01
KR-85	0.000E+00
SR-85	0.000E+00
CD-109	7.529E-01
SN-126	4.871E-02
BA-137M	2.266E-02
CS-137	2.394E-02
TL-208	2.605E-02
BI-211	1.369E-01
PB-212	4.039E-02
BI-214	4.079E-02
PB-214	1.467E-01
RN-222	4.079E-02
RA-224	4.331E-01
RA-226	4.079E-02
AC-228	9.000E-02
RA-228	9.000E-02
TH-228	4.039E-02
TH-230	4.077E-02
TH-232	9.000E-02
TH-234	7.946E-01
U-234	4.077E-02
U-235	1.546E-01
U-238	7.946E-01
AM-243	3.189E-02
ANH-511	2.178E-02

---- Non-Identified Nuclides ----

Nuclide	Lc (pCi/GRAM)	
BE-7	7.515E+00	NOT IDENT.
NA-22	4.242E-02	NOT IDENT.
NA-24	0.000E+00	SHORT HLIF
AL-26	2.621E-02	NOT IDENT.
SC-46	2.822E-01	FAIL ABUN

V-48	0.000E+00	SHORT HLIF
CR-51	0.000E+00	SHORT HLIF
MN-54	5.324E-02	NOT IDENT.
CO-56	3.023E-01	NOT IDENT.
MN-56	0.000E+00	SHORT HLIF
CO-57	3.428E-02	NOT IDENT.
CO-58	4.591E-01	NOT IDENT.
FE-59	5.334E+00	NOT IDENT.
CO-60	2.713E-02	NOT IDENT.
ZN-65	1.395E-01	NOT IDENT.
GE-68	1.617E+00	NOT IDENT.
AS-73	5.628E+00	NOT IDENT.
AS-74	0.000E+00	SHORT HLIF
SE-75	1.618E-01	NOT IDENT.
BR-77	0.000E+00	SHORT HLIF
SR-82	0.000E+00	SHORT HLIF
RB-83	5.352E-01	NOT IDENT.
RB-86	0.000E+00	SHORT HLIF
Y-88	1.794E-01	NOT IDENT.
Y-91	3.194E+02	NOT IDENT.
NB-94	2.995E-02	NOT IDENT.
NB-95	5.873E-01	NOT IDENT.
NB-95M	1.678E+00	NOT IDENT.
ZR-95	1.062E+00	NOT IDENT.
NB-97	0.000E+00	SHORT HLIF
ZR-97	0.000E+00	SHORT HLIF
MO-99	0.000E+00	SHORT HLIF
TC-99M	0.000E+00	SHORT HLIF
RH-101	2.477E-02	NOT IDENT.
RH-102	4.547E-02	NOT IDENT.
RU-103	2.890E+00	FAIL ABUN
RH-106	3.453E-01	NOT IDENT.
RU-106	3.453E-01	NOT IDENT.
AG-108M	2.065E-02	NOT IDENT.
AG-110M	9.019E-02	FAIL ABUN
SN-113	1.837E-01	NOT IDENT.
CD-115	0.000E+00	SHORT HLIF
SN-117M	0.000E+00	SHORT HLIF
TE-123M	9.596E-02	NOT IDENT.
SB-124	1.301E+00	NOT IDENT.
SB-125	7.028E-02	NOT IDENT.
TE-125M	1.943E+02	NOT IDENT.
I-126	0.000E+00	SHORT HLIF
SB-126	0.000E+00	SHORT HLIF
SB-127	0.000E+00	SHORT HLIF
I-131	0.000E+00	SHORT HLIF
I-132	0.000E+00	SHORT HLIF
TE-132	0.000E+00	SHORT HLIF
BA-133	2.772E-02	NOT IDENT.
I-133	0.000E+00	SHORT HLIF
CS-134	4.440E-02	FAIL ABUN
CS-135	1.168E-01	NOT IDENT.
I-135	0.000E+00	SHORT HLIF
CS-136	0.000E+00	SHORT HLIF
CE-139	8.599E-02	NOT IDENT.
BA-140	0.000E+00	SHORT HLIF
LA-140	0.000E+00	SHORT HLIF
CE-141	1.551E+01	NOT IDENT.
CE-143	0.000E+00	SHORT HLIF
CE-144	2.550E-01	NOT IDENT.
PM-144	4.341E-02	NOT IDENT.
PR-144	3.752E+00	NOT IDENT.
PM-146	4.336E-02	FAIL ABUN
ND-147	0.000E+00	SHORT HLIF
PM-147	6.190E+02	NOT IDENT.
PM-149	0.000E+00	SHORT HLIF
EU-150	1.810E-02	FAIL ABUN
EU-152	7.210E-02	FAIL ABUN
GD-153	1.364E-01	NOT IDENT.
EU-154	1.060E-01	NOT IDENT.
EU-155	9.323E-02	FAIL ABUN
TB-160	9.662E-01	FAIL ABUN
HO-166M	3.668E-02	NOT IDENT.
TM-171	1.348E+01	NOT IDENT.
HF-172	1.789E-01	FAIL ABUN
LU-172	8.162E-02	FAIL ABUN
LU-176	1.704E-02	FAIL ABUN
HF-181	3.273E+00	NOT IDENT.

TA-182	8.415E-01	FAIL ABUN
RE-183	1.838E+00	NOT IDENT.
RE-184	1.914E+01	NOT IDENT.
W-188	8.058E+01	FAIL ABUN
IR-192	3.385E-01	FAIL ABUN
HG-203	1.593E+00	NOT IDENT.
BI-207	4.214E-02	FAIL ABUN
PB-210	2.249E+00	NOT IDENT.
PB-211	5.340E-01	NOT IDENT.
BI-212	5.594E-01	FAIL ABUN
RN-219	3.052E-01	NOT IDENT.
RA-223	4.107E-01	FAIL ABUN
AC-227	1.881E-01	NOT IDENT.
TH-227	1.881E-01	NOT IDENT.
TH-229	3.307E-01	FAIL ABUN
PA-231	3.745E-01	NOT IDENT.
TH-231	4.107E-01	FAIL ABUN
PA-233	4.689E-02	NOT IDENT.
PA-234	2.211E-01	FAIL ABUN
PA-234M	3.703E+00	NOT IDENT.
NP-237	4.689E-02	NOT IDENT.
NP-238	0.000E+00	SHORT HLIF
NP-239	1.944E-01	FAIL ABUN
PU-239	2.415E+02	NOT IDENT.
AM-241	9.011E-02	NOT IDENT.
CM-243	8.129E-02	NOT IDENT.
BK-247	5.849E-02	NOT IDENT.
CM-247	2.694E-02	NOT IDENT.
CF-249	2.755E-02	NOT IDENT.
CF-251	8.136E-02	NOT IDENT.

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*****
*
*           GEL Laboratories LLC
*           2040 Savage Road
*           Charleston, SC 29407
*****
*
*           DETECTOR AND SAMPLE DATA
*
* Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]R405245004.CNF;1
* Acquisition date   : 3-OCT-2016 04:34:09 Sensitivity      : 3.000
* Detector ID       : GAM07 Energy tolerance: 1.500
* Elapsed live time : 0 01:00:00.00 Abundance limit : 75.000
* Elapsed real time : 0 01:00:00.46 Half life ratio  : *****
* Sample date       : 15-DEC-2015 10:21:00 Nuclide Library : SOLID
* Sample ID         : R405245004 Analyst initials: MXR1
* Batch Number      : 1596387 Sample Quantity : 1.4528E+02 GRAM
*                   Quantity Err(%) : 1.3767E-03 %
* Wet wt corr       : 1.00000 Wet Weight      : 0.00000
*                   Dry Weight      : 0.00000
*****
*
*           CALIBRATION INFORMATION
*
* Eff. Cal. date    : 19-AUG-2016 11:09:59 Eff. Geometry   : CAN
* Eff. File         : DKA100:[CANBERRA.GAMMA]EFF_GAM07_CAN.CNF;15
*****

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Combined Activity-MDA Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM)	Act Error (1.96-sigma)	TPU (1.96-sigma)
K-40	1.162E+01	1.513E+00	1.513E+00
KR-85	4.774E+00	7.673E+00	7.673E+00
SR-85	4.683E-01	7.527E-01	7.527E-01
CD-109	1.582E+00	1.773E+00	1.773E+00
SN-126	1.019E-01	1.141E-01	1.141E-01
BA-137M	2.426E-01	7.214E-02	7.214E-02
CS-137	2.563E-01	7.621E-02	7.621E-02
TL-208	1.934E-01	6.258E-02	6.258E-02
BI-211	3.851E-02	8.773E-01	8.773E-01
PB-212	6.998E-01	1.174E-01	1.174E-01
BI-214	8.974E-01	1.963E-01	1.963E-01
PB-214	8.540E-01	1.924E-01	1.924E-01
RN-222	8.974E-01	1.963E-01	1.963E-01
RA-224	1.137E+00	1.070E+00	1.070E+00
RA-226	8.974E-01	1.963E-01	1.963E-01
AC-228	8.711E-01	2.571E-01	2.571E-01
RA-228	8.711E-01	2.571E-01	2.571E-01
TH-228	6.998E-01	1.174E-01	1.174E-01
TH-230	8.971E-01	1.962E-01	1.962E-01
TH-232	8.711E-01	2.571E-01	2.571E-01
TH-234	1.156E+00	2.255E+00	2.255E+00
U-234	8.971E-01	1.962E-01	1.962E-01
U-235	6.032E-02	1.756E-01	1.756E-01
U-238	1.156E+00	2.255E+00	2.255E+00
AM-243	1.582E-01	8.465E-02	8.465E-02
ANH-511	1.213E-01	6.385E-02	6.385E-02

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/GRAM)	K.L Act error (1.96-sigma)	TPU (1.96-sigma)	
BE-7	-3.991E+00	9.373E+00	9.544E+00	NOT IDENT.
NA-22	-2.205E-02	5.429E-02	5.519E-02	NOT IDENT.
NA-24	-1.000E+41	6.542E+41	0.000E+00	SHORT HLIF
AL-26	1.237E-02	2.620E-02	2.678E-02	NOT IDENT.

SC-46	1.249E-01	3.166E-01	3.216E-01	FAIL ABUN
V-48	-2.022E+03	1.177E+04	1.181E+04	SHORT HLIF
CR-51	-2.593E+02	3.226E+02	3.431E+02	SHORT HLIF
MN-54	-7.402E-03	6.152E-02	6.161E-02	NOT IDENT.
CO-56	-1.756E-01	3.770E-01	3.852E-01	NOT IDENT.
MN-56	-1.000E+41	2.125E+41	0.000E+00	SHORT HLIF
CO-57	-4.962E-03	4.001E-02	4.007E-02	NOT IDENT.
CO-58	2.247E-01	5.656E-01	5.746E-01	NOT IDENT.
FE-59	2.504E+00	5.742E+00	5.852E+00	NOT IDENT.
CO-60	4.295E-03	3.097E-02	3.103E-02	NOT IDENT.
ZN-65	8.316E-02	1.615E-01	1.658E-01	NOT IDENT.
GE-68	1.137E-02	1.877E+00	1.877E+00	NOT IDENT.
AS-73	3.403E+00	5.893E+00	6.089E+00	NOT IDENT.
AS-74	-3.071E+02	3.681E+03	3.683E+03	SHORT HLIF
SE-75	9.329E-02	1.689E-01	1.741E-01	NOT IDENT.
BR-77	1.601E+37	1.353E+38	0.000E+00	SHORT HLIF
SR-82	-4.385E+02	4.678E+02	5.078E+02	SHORT HLIF
RB-83	-2.952E-02	6.277E-01	6.279E-01	NOT IDENT.
RB-86	8.078E+03	1.663E+04	1.702E+04	SHORT HLIF
Y-88	-2.056E-02	2.152E-01	2.154E-01	NOT IDENT.
Y-91	-3.763E+02	4.581E+02	4.885E+02	NOT IDENT.
NB-94	3.121E-02	3.082E-02	3.388E-02	NOT IDENT.
NB-95	5.723E-02	9.964E-01	9.967E-01	NOT IDENT.
NB-95M	1.085E+00	1.899E+00	1.961E+00	NOT IDENT.
ZR-95	7.605E-01	1.119E+00	1.171E+00	NOT IDENT.
NB-97	-1.000E+41	5.085E+41	0.000E+00	SHORT HLIF
ZR-97	1.000E+41	2.773E+41	0.000E+00	SHORT HLIF
MO-99	1.473E+31	2.296E+31	0.000E+00	SHORT HLIF
TC-99M	-1.000E+41	1.617E+41	0.000E+00	SHORT HLIF
RH-101	-1.411E-02	3.012E-02	3.079E-02	NOT IDENT.
RH-102	2.281E-03	5.350E-02	5.351E-02	NOT IDENT.
RU-103	-3.220E+00	3.988E+00	4.244E+00	FAIL ABUN
RH-106	6.663E-03	4.076E-01	4.076E-01	NOT IDENT.
RU-106	6.663E-03	4.076E-01	4.076E-01	NOT IDENT.
AG-108M	-5.691E-03	2.757E-02	2.768E-02	NOT IDENT.
AG-110M	1.352E-01	1.393E-01	1.521E-01	FAIL ABUN
SN-113	-6.069E-02	2.162E-01	2.179E-01	NOT IDENT.
CD-115	-7.180E+37	3.576E+38	0.000E+00	SHORT HLIF
SN-117M	1.842E+04	5.805E+04	5.864E+04	SHORT HLIF
TE-123M	1.819E-02	1.107E-01	1.110E-01	NOT IDENT.
SB-124	2.565E-01	1.472E+00	1.476E+00	NOT IDENT.
SB-125	-8.754E-02	9.363E-02	1.016E-01	NOT IDENT.
TE-125M	-1.009E+02	2.324E+02	2.368E+02	NOT IDENT.
I-126	-1.596E+05	6.031E+05	6.074E+05	SHORT HLIF
SB-126	1.296E+06	1.169E+06	1.307E+06	SHORT HLIF
SB-127	-2.179E+21	6.448E+21	0.000E+00	SHORT HLIF
I-131	1.575E+09	2.362E+09	2.466E+09	SHORT HLIF
I-132	-1.000E+41	1.867E+42	0.000E+00	SHORT HLIF
TE-132	-1.626E+25	7.816E+25	0.000E+00	SHORT HLIF
BA-133	-1.835E-03	3.516E-02	3.517E-02	NOT IDENT.
I-133	1.000E+41	2.934E+41	0.000E+00	SHORT HLIF
CS-134	8.024E-02	4.934E-02	6.118E-02	FAIL ABUN
CS-135	-6.629E-02	1.349E-01	1.382E-01	NOT IDENT.
I-135	1.000E+41	1.626E+42	0.000E+00	SHORT HLIF
CS-136	-2.579E+04	2.330E+05	2.333E+05	SHORT HLIF
CE-139	-1.868E-02	1.032E-01	1.036E-01	NOT IDENT.
BA-140	4.870E+05	8.361E+05	8.644E+05	SHORT HLIF
LA-140	1.599E+05	1.622E+05	1.775E+05	SHORT HLIF
CE-141	3.631E+00	1.772E+01	1.779E+01	NOT IDENT.
CE-143	1.000E+41	1.563E+41	0.000E+00	SHORT HLIF
CE-144	-7.396E-02	3.033E-01	3.052E-01	NOT IDENT.
PM-144	-3.632E-03	5.263E-02	5.266E-02	NOT IDENT.
PR-144	-3.297E-01	4.552E+00	4.555E+00	NOT IDENT.
PM-146	3.561E-02	4.567E-02	4.841E-02	FAIL ABUN
ND-147	-5.092E+06	2.063E+07	2.075E+07	SHORT HLIF
PM-147	-2.860E+01	7.157E+02	7.158E+02	NOT IDENT.
PM-149	-4.118E+37	4.249E+39	0.000E+00	SHORT HLIF
EU-150	4.386E-03	2.183E-02	2.192E-02	FAIL ABUN
EU-152	1.257E-02	7.953E-02	7.973E-02	FAIL ABUN
GD-153	-5.148E-02	1.718E-01	1.734E-01	NOT IDENT.
EU-154	-4.926E-02	1.345E-01	1.363E-01	NOT IDENT.
EU-155	8.929E-02	9.887E-02	1.067E-01	FAIL ABUN
TB-160	-1.907E-01	1.315E+00	1.318E+00	FAIL ABUN
HO-166M	2.470E-03	4.343E-02	4.345E-02	NOT IDENT.
TM-171	8.058E-01	1.468E+01	1.469E+01	NOT IDENT.
HF-172	7.599E-02	1.995E-01	2.024E-01	FAIL ABUN
LU-172	8.966E-02	8.106E-02	9.058E-02	FAIL ABUN
LU-176	-2.181E-02	2.155E-02	2.369E-02	FAIL ABUN

HF-181	5.003E-01	3.715E+00	3.722E+00	NOT IDENT.
TA-182	6.708E-01	9.608E-01	1.007E+00	FAIL ABUN
RE-183	-4.652E-01	2.066E+00	2.076E+00	NOT IDENT.
RE-184	3.527E+00	2.117E+01	2.123E+01	NOT IDENT.
W-188	-3.743E+00	9.989E+01	9.990E+01	FAIL ABUN
IR-192	-4.365E-02	3.891E-01	3.896E-01	FAIL ABUN
HG-203	-4.933E-01	1.815E+00	1.829E+00	NOT IDENT.
BI-207	1.554E-02	5.154E-02	5.202E-02	FAIL ABUN
PB-210	8.024E-01	2.384E+00	2.411E+00	NOT IDENT.
PB-211	2.423E-01	5.762E-01	5.865E-01	NOT IDENT.
BI-212	1.055E+00	9.685E-01	1.079E+00	FAIL ABUN
RN-219	2.732E-02	3.440E-01	3.442E-01	NOT IDENT.
RA-223	-6.272E-02	5.220E-01	5.227E-01	FAIL ABUN
AC-227	1.988E-02	2.049E-01	2.051E-01	NOT IDENT.
TH-227	1.988E-02	2.049E-01	2.051E-01	NOT IDENT.
TH-229	-1.344E-01	4.102E-01	4.146E-01	FAIL ABUN
PA-231	6.407E-02	4.221E-01	4.231E-01	NOT IDENT.
TH-231	-6.272E-02	5.220E-01	5.227E-01	FAIL ABUN
PA-233	1.337E-02	5.079E-02	5.115E-02	NOT IDENT.
PA-234	-8.799E-02	2.877E-01	2.904E-01	FAIL ABUN
PA-234M	7.491E-01	4.041E+00	4.055E+00	NOT IDENT.
NP-237	1.337E-02	5.079E-02	5.115E-02	NOT IDENT.
NP-238	2.264E+40	5.552E+40	0.000E+00	SHORT HLIF
NP-239	3.721E-01	3.503E-01	3.884E-01	FAIL ABUN
PU-239	1.602E+02	2.638E+02	2.735E+02	NOT IDENT.
AM-241	1.874E-03	1.070E-01	1.070E-01	NOT IDENT.
CM-243	3.622E-03	9.231E-02	9.232E-02	NOT IDENT.
BK-247	2.066E-02	6.252E-02	6.321E-02	NOT IDENT.
CM-247	-4.188E-03	3.125E-02	3.130E-02	NOT IDENT.
CF-249	-1.316E-03	3.146E-02	3.147E-02	NOT IDENT.
CF-251	-5.224E-02	1.025E-01	1.052E-01	NOT IDENT.

 * GEL Laboratories LLC *
 * 2040 Savage Road *
 * Charleston, SC 29407 *
 * GAMMA SPECTROSCOPY BACKGROUND REPORT *

ENERGY	MDA COUNTS	ENERGY	MDA COUNTS	ENERGY	MDA COUNTS
43.53	44.7171	87.09	65.1390	136.47	60.2016
45.60	43.0673	87.57	65.1967	140.51	0.0000
46.54	46.0591	88.03	65.2520	143.76	63.0877
49.72	0.0000	88.34	65.2889	144.24	70.0137
51.35	51.5180	88.47	65.3045	145.44	51.7312
51.87	48.6675	89.96	65.4819	152.43	52.1988
52.39	50.6823	1093.63	65.5623	153.25	0.0000
52.97	58.5665	91.11	0.0000	323.87	45.3407
53.44	45.9320	92.59	65.7917	156.02	0.0000
54.07	61.6667	93.35	65.8802	158.56	0.0000
57.36	0.0000	94.56	58.2118	159.00	50.2896
57.53	60.2219	94.65	58.2210	162.33	59.8886
57.98	60.2870	94.67	58.2231	162.66	0.0000
59.27	68.4044	94.87	58.2435	163.33	57.6095
59.32	68.4125	97.43	65.6365	165.86	63.6817
59.54	55.5522	98.43	55.7439	176.31	46.5577
60.96	55.7381	98.44	55.7447	176.60	0.0000
61.17	58.4207	99.53	61.2179	177.52	54.9900
62.93	62.9912	100.11	64.5030	181.07	0.0000
63.29	63.0430	102.03	70.1039	181.52	52.8375
63.58	63.0847	103.18	69.1567	184.41	49.7954
64.28	63.1847	103.37	69.1787	143.76	42.2263
66.73	60.5054	105.21	57.4617	193.51	49.8862
67.24	60.5731	105.31	57.4710	197.03	47.6306
125.81	78.1475	106.12	74.9197	198.01	50.1252
67.75	78.1593	106.47	65.1842	201.83	54.0084
69.67	70.3654	109.28	67.6616	203.43	51.6393
70.83	67.8263	111.00	44.8656	205.31	55.8456
72.81	62.3194	111.76	0.0000	210.85	61.1171
72.87	62.3273	114.06	63.0390	215.65	62.2406
74.66	62.5577	116.30	0.0000	222.11	41.7577
74.82	62.5781	116.74	46.3698	227.09	54.5462
74.97	62.5977	119.76	54.7149	227.38	52.0432
77.11	62.8690	121.12	50.0098	228.16	0.0000
78.74	63.0733	121.22	56.6863	228.18	55.4431
79.69	62.1556	121.78	55.6210	116.74	55.4431
80.12	55.9870	122.06	55.6438	235.69	36.8018
80.19	0.0000	122.92	57.9430	235.96	40.6189
80.57	62.2627	123.07	57.9557	238.63	47.5063
81.00	62.3145	265.00	54.6607	238.98	0.0000
81.07	62.3232	125.81	53.7114	240.99	47.6095
81.75	60.3249	127.23	66.1551	242.00	47.6533
83.79	64.7374	127.91	61.7304	244.70	25.5914
84.00	64.7634	129.30	50.6065	252.40	0.0000
85.43	64.9379	131.20	50.7424	252.80	44.6812
86.55	65.0737	133.02	56.5239	254.15	0.0000
86.79	65.1026	133.52	57.6948	256.23	42.2310
86.94	65.1210	136.00	65.8385	260.90	0.0000

ENERGY	MDA COUNTS	ENERGY	MDA COUNTS	ENERGY	MDA COUNTS
264.66	31.2539	355.39	0.0000	584.27	18.0085
264.80	34.7314	356.01	22.3452	595.83	0.0000
265.00	34.7371	364.49	0.0000	427.87	18.1462
268.22	53.9902	366.42	0.0000	602.52	0.0000
269.46	43.5862	372.51	26.3622	604.72	8.0209
270.03	37.5025	375.05	29.2359	607.14	11.7770
271.23	39.2862	377.52	16.0589	609.32	11.7891
273.65	0.0000	356.01	20.8685	610.33	11.7945
276.40	32.4420	388.16	23.7803	614.28	12.8896
277.37	36.8551	388.63	0.0000	618.01	13.9876
277.60	43.8843	391.69	33.3679	620.36	18.3108
278.00	37.7527	264.66	22.0529	621.93	12.9346
279.20	37.7903	401.81	25.9069	630.19	0.0000
279.54	38.6799	402.40	26.8766	631.29	15.1536
279.70	38.6844	404.85	21.1496	633.25	15.1667
280.46	27.2720	410.95	29.9152	634.78	0.0000
283.69	44.1040	413.71	26.0997	635.95	8.1348
284.31	0.0000	414.70	0.0000	636.99	0.0000
285.41	32.6821	423.72	0.0000	645.85	17.4297
285.90	0.0000	427.09	23.3887	657.76	14.7827
287.50	36.2771	427.87	30.2249	657.90	0.0000
290.67	35.9253	433.94	23.4849	661.66	12.0653
293.27	0.0000	439.40	26.5056	664.57	0.0000
351.93	38.2811	453.88	23.7593	666.33	0.0000
295.96	30.7322	463.37	27.8690	666.50	0.0000
879.38	42.8457	468.07	11.9756	667.71	0.0000
299.98	33.0630	473.00	0.0000	677.62	18.7729
300.09	33.0660	475.06	14.0259	685.70	0.0000
300.13	33.0675	476.78	26.0730	695.00	0.0000
301.36	39.3612	477.60	20.0651	696.49	17.8079
302.85	43.8849	482.18	22.1276	696.51	17.8079
256.23	30.4895	487.02	0.0000	697.00	0.0000
304.85	0.0000	492.35	0.0000	697.30	18.9272
306.78	42.2218	497.08	19.2648	697.49	12.2479
308.46	29.6827	505.52	10.6942	702.65	12.2738
311.90	28.8594	507.63	0.0000	706.68	21.2351
316.51	30.7696	511.00	21.4499	711.68	10.0792
319.41	0.0000	514.00	0.0000	720.70	0.0000
320.08	0.0000	514.00	0.0000	721.93	0.0000
321.04	34.5063	520.40	23.6083	722.78	20.2485
323.87	27.2992	520.69	0.0000	722.91	20.2500
325.23	31.4250	522.65	0.0000	723.31	20.2529
328.76	0.0000	527.90	0.0000	724.19	20.2603
333.37	28.8635	528.26	18.5508	727.33	18.9328
333.97	23.3760	529.59	15.4694	733.00	6.7771
334.37	23.3828	529.87	0.0000	735.93	12.4390
338.28	25.7470	531.02	0.0000	333.97	9.0521
338.32	25.7481	537.26	0.0000	739.50	0.0000
311.90	33.1553	546.56	0.0000	747.24	14.7657
340.48	33.1553	552.55	20.8643	748.06	9.0895
340.55	0.0000	563.25	12.5845	752.31	17.0709
344.28	26.7804	569.33	17.8806	753.82	0.0000
345.93	28.8457	946.00	17.8820	756.73	7.9801
351.06	25.9805	569.70	16.8314	756.80	7.9804
351.93	25.9959	583.19	17.9989	884.68	17.1478

ENERGY	MDA COUNTS	ENERGY	MDA COUNTS	ENERGY	MDA COUNTS
765.81	13.7280	1274.44	11.1427	1620.50	6.5175
766.42	13.7314	1001.03	10.2292	1621.92	8.6924
766.84	13.7334	1002.74	9.3042	1678.03	0.0000
772.60	0.0000	1004.73	11.1720	1690.97	2.2039
776.52	0.0000	507.63	0.0000	1750.46	0.0000
739.50	0.0000	1025.87	0.0000	1764.49	2.2360
778.90	5.7485	1028.54	0.0000	1063.66	2.2384
783.70	0.0000	1037.84	15.0459	1771.35	3.3583
785.37	18.4401	1038.76	0.0000	1791.20	0.0000
792.07	8.6655	631.29	12.0688	1808.65	1.8039
794.95	10.4095	1048.07	0.0000	1810.72	0.0000
795.86	8.6777	1049.04	13.2096	1836.06	4.5332
810.06	13.9570	1050.41	13.2147		
810.29	13.9580	1063.66	10.6135		
344.28	10.4692	1077.00	0.0000		
810.76	10.4703	1077.34	8.5627		
815.77	0.0000	1085.87	9.5374		
1048.07	0.0000	1093.63	8.6028		
832.01	18.2882	1099.45	9.5752		
834.85	17.6025	1112.07	15.3750		
835.71	22.0100	1112.84	9.2268		
836.80	0.0000	1115.54	7.6948		
846.75	0.0000	1120.29	12.5208		
846.77	14.1421	1120.55	12.5223		
856.80	0.0000	1221.41	10.7905		
860.56	10.6578	1129.67	13.5198		
871.09	12.4794	1131.51	0.0000		
873.19	9.8123	1147.95	0.0000		
875.33	0.0000	1173.23	11.1698		
879.38	7.1516	1177.95	10.7643		
880.51	2.8617	1189.05	14.1337		
883.24	6.2658	1204.77	15.7705		
884.68	11.4633	1221.41	9.5039		
889.28	8.3715	1231.02	9.9243		
894.76	5.3917	1235.36	0.0000		
898.04	9.8959	1238.28	10.9376		
900.72	8.1038	1260.41	0.0000		
903.28	9.0118	1271.87	11.0322		
911.20	9.9395	1274.44	17.0612		
912.08	9.9422	1274.54	17.0612		
923.98	0.0000	1291.59	9.0714		
926.50	8.1736	1298.22	0.0000		
929.11	10.9072	1312.11	0.0000		
937.49	21.8745	1332.49	5.0909		
944.13	0.0000	1362.66	0.0000		
946.00	15.5370	1365.19	2.0525		
949.00	10.9779	1368.63	0.0000		
667.71	0.0000	1384.29	1.0309		
962.31	7.3499	1408.01	7.2568		
964.08	7.3540	1457.56	0.0000		
966.17	11.0383	1460.82	3.1479		
911.20	10.3117	1489.16	3.1681		
968.97	10.3117	1505.03	8.4780		
983.53	0.0000	1584.12	6.4680		
984.45	0.0000	1596.21	0.0000		

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*****
*                               GEL Laboratories LLC                               *
*                               2040 Savage Road                               *
*                               Charleston, SC 29407                          *
*****
Configuration : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]R405245005.CNF;1
Background file : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]BKG_GAM18.CNF;511
Background date : 2-OCT-2016 11:01:02.
Sample date      : 15-DEC-2015 11:42:00 Acquisition date : 3-OCT-2016 04:34:32.
Sample ID       : R405245005 Sample quantity : 1.17771E+02 GRAM
Detector name   : GAM18 Detector geometry: CAN
Elapsed live time: 0 01:00:00.00 Elapsed real time: 0 01:00:00.96 0.0%
Energy tolerance : 2.00000 keV Analyst Initials : MXR1
Abundance limit : 75.00000 Sensitivity : 3.00000
Batch ID        : 1596387 Detector SN# :
Matrix Spike ID : LCS ID : 1556
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BACKGROUND CORRECTED SAMPLE PEAK REPORT

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	3	74.80	115	185	1.18	150.40	147	14	3.20E-02	21.3	5.71E-01
2	3	77.13*	229	143	0.96	155.05	147	14	6.37E-02	10.9	
3	0	86.33	115	253	3.69	173.43	167	11	3.21E-02	28.2	
4	0	92.50*	143	298	1.19	185.77	179	14	3.96E-02	27.9	
5	0	128.75	33	184	1.56	258.19	254	10	9.16E-03	78.7	
6	0	154.76	22	119	1.39	310.19	306	8	6.10E-03	88.9	
7	0	186.35*	134	167	1.29	373.31	366	14	3.71E-02	23.1	
8	0	209.31	46	126	1.19	419.19	415	11	1.29E-02	49.3	
9	3	238.80*	546	97	1.21	478.12	473	16	1.52E-01	5.3	2.61E+00
10	3	241.82	153	128	1.72	484.17	473	16	4.25E-02	18.5	
11	0	270.21	66	99	2.81	540.89	535	12	1.82E-02	32.8	
12	0	295.46*	214	117	1.44	591.36	585	13	5.95E-02	12.6	
13	0	328.61	15	68	0.69	657.60	654	8	4.21E-03	96.8	
14	0	338.17*	110	78	1.54	676.71	669	12	3.06E-02	19.1	
15	0	352.35*	294	81	1.53	705.06	699	14	8.16E-02	8.9	
16	0	403.36	11	45	2.79	807.00	800	9	3.06E-03	114.0	
17	0	448.14	16	48	1.00	896.50	887	12	4.44E-03	90.1	
18	2	463.21	51	20	2.09	926.62	921	26	1.41E-02	24.6	2.17E+00
19	2	471.91	26	23	1.74	944.00	921	26	7.28E-03	30.2	
20	0	511.51*	21	83	2.18	1023.16	1015	15	5.81E-03	113.6	
21	0	583.73*	169	68	1.55	1167.51	1159	17	4.69E-02	13.9	
22	0	609.70*	255	63	1.49	1219.41	1213	14	7.10E-02	9.3	
23	0	658.73	12	12	0.99	1317.42	1314	6	3.33E-03	54.0	
24	0	662.16	48	37	1.38	1324.27	1320	10	1.33E-02	27.3	
25	0	666.37	26	16	1.52	1332.68	1329	9	7.25E-03	34.8	
26	0	678.58	11	16	0.65	1357.09	1354	7	3.06E-03	67.2	
27	0	703.87	35	48	7.76	1407.64	1396	18	9.62E-03	50.5	
28	0	727.51	59	43	3.59	1454.89	1446	16	1.64E-02	28.3	
29	0	769.77	31	44	2.05	1539.35	1532	17	8.58E-03	53.6	
30	0	787.99	22	45	4.55	1575.79	1568	14	6.09E-03	70.4	
31	0	796.88*	15	27	1.37	1593.56	1587	11	4.16E-03	77.1	
32	0	861.40	40	27	3.80	1722.53	1712	18	1.12E-02	34.2	
33	0	911.94*	125	40	1.81	1823.55	1814	20	3.48E-02	15.7	
34	0	970.68*	48	61	2.03	1940.99	1934	13	1.34E-02	38.9	

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
35	0	1070.11	13	18	4.74	2139.75	2134	14	3.57E-03	74.8	
36	0	1086.80	11	14	1.84	2173.11	2163	12	3.06E-03	76.1	
37	0	1095.35	18	37	4.46	2190.21	2181	18	5.08E-03	80.6	
38	0	1122.25*	46	79	0.95	2243.99	2234	24	1.27E-02	55.4	
39	0	1190.32	20	15	3.98	2380.06	2371	15	5.60E-03	47.4	
40	0	1379.12	15	7	0.95	2757.54	2752	12	4.27E-03	45.5	
41	0	1461.81*	615	5	2.11	2922.86	2912	21	1.71E-01	4.2	
42	0	1621.98	14	4	1.35	3243.12	3236	14	4.00E-03	38.2	
43	0	1657.60	14	0	0.81	3314.36	3306	15	3.89E-03	26.7	
44	0	1766.28*	40	10	2.34	3531.67	3520	19	1.10E-02	25.9	

Flag: "*" = Peak area was modified by background subtraction

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Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]R405245005.CNF;1
Analyses by       : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.4,INTERF V2.4
Sample title      : MXR1
Sample date       : 15-DEC-2015 11:42:00 Acquisition date : 3-OCT-2016 04:34:32
Sample ID         : R405245005 Sample quantity   : 117.77 GRAM
Sample type       : SOLID Sample geometry    :
Detector name    : GAMMA18 Detector geometry: CAN
Elapsed live time: 0 01:00:00.00 Elapsed real time: 0 01:00:00.96 0.0%
Energy tolerance : 2.00 keV Half life ratio   : 10.00
Errors propagated: No Systematic Error    : 0.00 %
Efficiency type  : Linear Efficiencies at   : Peak Energy
Abundance limit  : 75.00
    
```

Interference Report

Interfering		Interfered	
Nuclide	Line	Nuclide	Line
PB-214	242.00	RA-224	240.99
PB-214	87.09	SN-126	86.94
PB-214	87.09	SN-126	87.57
PB-214	87.09	CD-109	88.03
PB-214	74.82	BI-211	72.87
PB-214	74.82	AM-243	74.66
PB-214	74.82	TH-228	74.82
PB-214	74.82	PB-212	74.82
PB-214	351.93	BI-211	351.06

Nuclide Type:

Nuclide	Energy	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error	Status
K-40	1460.82	10.66*	1.911E+00	1.818E+01	1.818E+01	8.34	OK
CD-109	88.03	3.70*	6.049E+00	2.361E+00	3.665E+00	85.80	OK
SN-126	64.28	9.60	3.252E+00	----- Line	Not Found	-----	Absent
	86.94	8.90	6.049E+00	9.814E-01	9.814E-01	85.80	OK
	87.57	37.00*	6.049E+00	2.361E-01	2.361E-01	85.80	OK
CS-135	268.22	16.00*	6.231E+00	4.296E-01	4.296E-01	65.56	OK
BA-137M	661.66	89.90*	3.370E+00	9.933E-02	1.012E-01	54.66	OK
CS-137	661.66	85.10*	3.370E+00	1.049E-01	1.069E-01	54.66	OK
TL-208	277.37	6.60	6.127E+00	----- Line	Not Found	-----	Absent
	583.19	85.00*	3.675E+00	3.408E-01	3.408E-01	27.70	OK
	860.56	12.50	2.812E+00	7.060E-01	7.060E-01	68.39	OK
BI-212	727.33	6.67*	3.159E+00	1.743E+00	1.743E+00	56.60	OK
	785.37	1.10	2.998E+00	----- Line	Not Found	-----	Absent
	1620.50	1.47	1.756E+00	3.347E+00	3.347E+00	76.30	OK
PB-212	74.82	10.28	4.750E+00	9.044E-01	9.044E-01	79.31	OK
	77.11	17.10	5.043E+00	1.836E+00	1.836E+00	21.82	OK
	238.63	43.60*	6.720E+00	1.224E+00	1.224E+00	10.55	OK
	300.09	3.30	5.819E+00	----- Line	Not Found	-----	Absent
BI-214	609.32	45.49*	3.566E+00	9.898E-01	9.901E-01	18.56	OK
	1120.29	14.92	2.334E+00	8.011E-01	8.014E-01	110.72	OK
	1764.49	15.30	1.632E+00	9.475E-01	9.478E-01	51.79	OK
PB-214	74.82	5.80	4.752E+00	----- Line	Not Found	-----	<<INT Reject
	77.11	9.70	5.043E+00	3.237E+00	3.238E+00	21.82	OK
	87.09	3.41	6.121E+00	----- Line	Not Found	-----	<<INT Reject
	242.00	7.25	6.668E+00	----- Line	Not Found	-----	<<INT Reject
	295.22	18.42	5.879E+00	1.287E+00	1.287E+00	25.22	OK
	351.93	35.60*	5.217E+00	1.021E+00	1.021E+00	17.89	OK
RN-219	271.23	10.80	6.231E+00	6.365E-01	6.365E-01	65.56	OK
	401.81	6.60*	4.750E+00	2.249E-01	2.249E-01	228.00	OK
RN-222	609.32	45.49*	3.566E+00	9.898E-01	9.901E-01	18.56	OK
	1120.29	14.92	2.334E+00	8.011E-01	8.014E-01	110.72	OK
	1764.49	15.30	1.632E+00	9.475E-01	9.478E-01	51.79	OK
RA-224	240.99	4.10*	6.670E+00	1.398E+00	1.398E+00	105.46	OK
RA-226	609.32	45.49*	3.566E+00	9.898E-01	9.901E-01	18.56	OK
	1120.29	14.92	2.334E+00	8.011E-01	8.014E-01	110.72	OK
	1764.49	15.30	1.632E+00	9.475E-01	9.478E-01	51.79	OK
AC-228	105.21	1.10	7.385E+00	----- Line	Not Found	-----	Absent
	338.32	11.27	5.367E+00	1.177E+00	1.177E+00	38.14	OK
	794.95	4.25	2.968E+00	7.373E-01	7.373E-01	154.20	OK
	835.71	1.61	2.872E+00	----- Line	Not Found	-----	Absent
	911.20	25.80*	2.703E+00	1.107E+00	1.107E+00	31.37	OK
	968.97	15.80	2.588E+00	7.250E-01	7.250E-01	77.72	OK
RA-228	105.21	1.10	7.385E+00	----- Line	Not Found	-----	Absent
	338.32	11.27	5.367E+00	1.177E+00	1.177E+00	38.14	OK
	794.95	4.25	2.968E+00	7.373E-01	7.373E-01	154.20	OK
	835.71	1.61	2.872E+00	----- Line	Not Found	-----	Absent
	911.20	25.80*	2.703E+00	1.107E+00	1.107E+00	31.37	OK
	968.97	15.80	2.588E+00	7.250E-01	7.250E-01	77.72	OK
TH-228	74.82	10.28	4.750E+00	9.044E-01	9.044E-01	79.31	OK

Nuclide Type:

Nuclide	Energy	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error	Status
	77.11	17.10	5.043E+00	1.836E+00	1.836E+00	21.82	OK
	238.63	43.60*	6.720E+00	1.224E+00	1.224E+00	10.55	OK
	300.09	3.30	5.819E+00	-----	Line Not Found	-----	Absent
TH-230	609.32	45.49*	3.566E+00	9.898E-01	9.898E-01	18.56	OK
	1120.29	14.92	2.334E+00	8.011E-01	8.011E-01	110.72	OK
	1764.49	15.30	1.632E+00	9.475E-01	9.475E-01	51.79	OK
TH-232	105.21	1.10	7.385E+00	-----	Line Not Found	-----	Absent
	338.32	11.27	5.367E+00	1.177E+00	1.177E+00	38.14	OK
	835.71	1.61	2.872E+00	-----	Line Not Found	-----	Absent
	911.20	25.80*	2.703E+00	1.107E+00	1.107E+00	31.37	OK
	968.97	15.80	2.588E+00	7.250E-01	7.250E-01	77.72	OK
U-234	609.32	45.49*	3.566E+00	9.898E-01	9.898E-01	18.56	OK
	1120.29	14.92	2.334E+00	8.011E-01	8.011E-01	110.72	OK
	1764.49	15.30	1.632E+00	9.475E-01	9.475E-01	51.79	OK
AM-243	43.53	5.90	3.443E-01	-----	Line Not Found	-----	Absent
	74.66	67.20*	4.750E+00	1.384E-01	1.384E-01	79.31	OK
CM-247	278.00	3.40	6.118E+00	-----	Line Not Found	-----	Absent
	287.50	2.00	5.986E+00	-----	Line Not Found	-----	Absent
	402.40	72.00*	4.750E+00	2.062E-02	2.062E-02	228.00	OK
ANH-511	511.00	100.00*	4.026E+00	3.296E-02	3.296E-02	227.25	OK

Flag: "*" = Keyline

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*****
*                               GEL Laboratories LLC                               *
*                               2040 Savage Road                               *
*                               Charleston, SC 29407                          *
*****
*                               DETECTOR AND SAMPLE DATA                       *
*
* Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]R405245005.CNF;1
* Acquisition date   : 3-OCT-2016 04:34:32 Sensitivity      : 3.000
* Detector ID       : GAM18 Energy tolerance: 2.000
* Elapsed live time : 0 01:00:00.00 Abundance limit : 75.000
* Elapsed real time : 0 01:00:00.96 Half life ratio : *****
* Sample date       : 15-DEC-2015 11:42:00 Analyst initials: MXR1
* Sample ID        : R405245005 Sample Quantity : 1.1777E+02 GRAM
* Batch Number     : 1596387 Wet Weight : 0.00000
* Wet wt corr     : 1.00000 Dry Weight : 0.00000
* Nuclide Library  : SOLID.NLB;6
*****
*                               CALIBRATION INFORMATION                         *
*
* Eff. Cal. date    : 25-JUN-2016 08:25:19 Eff. Geometry   : CAN
* Eff. File        : DKA100:[CANBERRA.GAMMA]EFF_GAM18_CAN.CNF;10
*****

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Combined Activity-MDA Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM)	Cnt uncert (1.96-sigma)	MDA (pCi/GRAM)
K-40	1.818E+01	1.486E+00	6.103E-01
CD-109	3.665E+00	3.082E+00	2.499E+00
SN-126	2.361E-01	1.985E-01	1.477E-01
CS-135	4.296E-01	2.760E-01	2.431E-01
BA-137M	1.012E-01	5.420E-02	4.569E-02
CS-137	1.069E-01	5.725E-02	4.826E-02
TL-208	3.408E-01	9.252E-02	5.459E-02
BI-212	1.743E+00	9.667E-01	8.263E-01
PB-212	1.224E+00	1.266E-01	9.756E-02
BI-214	9.901E-01	1.801E-01	1.202E-01
PB-214	1.021E+00	1.791E-01	1.221E-01
RN-219	2.249E-01	5.026E-01	6.181E-01
RN-222	9.901E-01	1.801E-01	1.202E-01
RA-224	1.398E+00	1.445E+00	1.045E+00
RA-226	9.901E-01	1.801E-01	1.202E-01
AC-228	1.107E+00	3.403E-01	1.876E-01
RA-228	1.107E+00	3.403E-01	1.876E-01
TH-228	1.224E+00	1.266E-01	9.756E-02
TH-230	9.898E-01	1.800E-01	1.201E-01
TH-232	1.107E+00	3.403E-01	1.876E-01
U-234	9.898E-01	1.800E-01	1.201E-01
AM-243	1.384E-01	1.075E-01	9.896E-02
CM-247	2.062E-02	4.607E-02	5.673E-02
ANH-511	3.296E-02	7.340E-02	5.293E-02

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/GRAM)	K.L. Cnt Uncert (1.96-sigma)	MDA (pCi/GRAM)	
BE-7	-5.997E+00	1.174E+01	1.965E+01	NOT IDENT.
NA-22	7.733E-03	4.605E-02	8.856E-02	NOT IDENT.
NA-24	0.000E+00	1.960E+41	0.000E+00	SHORT HLIF
AL-26	1.198E-02	2.599E-02	5.968E-02	NOT IDENT.
SC-46	-2.058E-02	3.819E-01	6.906E-01	FAIL ABUN
V-48	0.000E+00	1.003E+04	0.000E+00	SHORT HLIF

CR-51	0.000E+00	3.808E+02	0.000E+00	SHORT HLIF
MN-54	-2.032E-02	6.127E-02	1.075E-01	NOT IDENT.
CO-56	2.021E-02	4.432E-01	8.182E-01	NOT IDENT.
MN-56	0.000E+00	1.960E+41	0.000E+00	SHORT HLIF
CO-57	-2.383E-02	4.694E-02	8.087E-02	NOT IDENT.
CO-58	-8.559E-02	5.596E-01	1.009E+00	NOT IDENT.
FE-59	-1.668E+00	7.385E+00	1.158E+01	NOT IDENT.
CO-60	1.261E-02	4.063E-02	7.994E-02	NOT IDENT.
ZN-65	-5.153E-04	2.125E-01	3.441E-01	NOT IDENT.
GE-68	8.991E-01	2.875E+00	4.478E+00	NOT IDENT.
AS-73	6.839E+00	1.105E+01	2.213E+01	NOT IDENT.
AS-74	0.000E+00	4.518E+03	0.000E+00	SHORT HLIF
SE-75	8.365E-02	2.139E-01	3.732E-01	NOT IDENT.
BR-77	0.000E+00	2.850E+36	0.000E+00	SHORT HLIF
SR-82	0.000E+00	6.167E+02	0.000E+00	SHORT HLIF
RB-83	5.939E-01	5.706E-01	1.203E+00	NOT IDENT.
KR-85	0.000E+00	7.919E+00	1.647E+01	NOT IDENT.
SR-85	0.000E+00	7.760E-01	1.614E+00	NOT IDENT.
RB-86	0.000E+00	2.655E+04	0.000E+00	SHORT HLIF
Y-88	-1.346E-03	2.010E-01	4.077E-01	NOT IDENT.
Y-91	-3.102E+01	4.913E+02	9.100E+02	NOT IDENT.
NB-94	0.000E+00	6.634E-02	6.172E-02	FAIL ABUN
NB-95	3.984E-01	8.217E-01	1.440E+00	NOT IDENT.
NB-95M	-4.195E-01	2.467E+00	4.070E+00	NOT IDENT.
ZR-95	1.042E+00	1.358E+00	2.731E+00	NOT IDENT.
NB-97	0.000E+00	1.059E+41	0.000E+00	SHORT HLIF
ZR-97	0.000E+00	1.822E+41	0.000E+00	SHORT HLIF
MO-99	0.000E+00	2.585E+31	0.000E+00	SHORT HLIF
TC-99M	0.000E+00	1.960E+41	0.000E+00	SHORT HLIF
RH-101	4.825E-02	7.443E-02	5.871E-02	FAIL ABUN
RH-102	4.322E-03	6.135E-02	1.155E-01	NOT IDENT.
RU-103	-2.988E+00	5.328E+00	9.492E+00	FAIL ABUN
RH-106	1.282E-01	5.111E-01	9.808E-01	NOT IDENT.
RU-106	1.282E-01	5.111E-01	9.808E-01	NOT IDENT.
AG-108M	2.628E-02	2.835E-02	5.581E-02	NOT IDENT.
AG-110M	2.548E-02	9.967E-02	1.888E-01	FAIL ABUN
SN-113	-6.546E-03	2.155E-01	3.898E-01	NOT IDENT.
CD-115	0.000E+00	3.166E+38	0.000E+00	SHORT HLIF
SN-117M	0.000E+00	7.632E+04	0.000E+00	SHORT HLIF
TE-123M	6.066E-02	1.285E-01	2.342E-01	NOT IDENT.
SB-124	3.184E-01	2.137E+00	4.319E+00	NOT IDENT.
SB-125	4.221E-02	1.052E-01	1.970E-01	FAIL ABUN
TE-125M	9.814E+01	2.540E+02	4.752E+02	NOT IDENT.
I-126	0.000E+00	6.594E+05	0.000E+00	SHORT HLIF
SB-126	0.000E+00	9.603E+05	0.000E+00	SHORT HLIF
SB-127	0.000E+00	6.086E+21	0.000E+00	SHORT HLIF
I-131	0.000E+00	2.711E+09	0.000E+00	SHORT HLIF
I-132	0.000E+00	6.822E+40	0.000E+00	SHORT HLIF
TE-132	0.000E+00	7.841E+25	0.000E+00	SHORT HLIF
BA-133	1.302E-02	4.454E-02	7.527E-02	NOT IDENT.
I-133	0.000E+00	1.960E+41	0.000E+00	SHORT HLIF
CS-134	4.795E-02	7.247E-02	1.068E-01	FAIL ABUN
I-135	0.000E+00	1.654E+41	0.000E+00	SHORT HLIF
CS-136	0.000E+00	2.103E+05	0.000E+00	SHORT HLIF
CE-139	-1.645E-01	1.142E-01	1.732E-01	NOT IDENT.
BA-140	0.000E+00	7.788E+05	0.000E+00	SHORT HLIF
LA-140	0.000E+00	2.662E+05	0.000E+00	SHORT HLIF
CE-141	-6.220E+00	2.412E+01	4.166E+01	NOT IDENT.
CE-143	0.000E+00	8.850E+40	0.000E+00	SHORT HLIF
CE-144	-2.150E-01	3.878E-01	6.578E-01	NOT IDENT.
PM-144	-2.227E-04	6.791E-02	1.094E-01	NOT IDENT.
PR-144	5.230E-02	5.884E+00	9.499E+00	NOT IDENT.
PM-146	2.906E-02	5.130E-02	9.568E-02	NOT IDENT.
ND-147	0.000E+00	1.788E+07	0.000E+00	SHORT HLIF
PM-147	-2.415E+02	7.751E+02	1.363E+03	NOT IDENT.
PM-149	0.000E+00	4.996E+39	0.000E+00	SHORT HLIF
EU-150	2.422E-02	2.794E-02	5.022E-02	FAIL ABUN
EU-152	-6.247E-02	9.576E-02	1.639E-01	FAIL ABUN
GD-153	1.057E-01	1.915E-01	3.410E-01	NOT IDENT.
EU-154	-3.618E-02	1.195E-01	2.138E-01	NOT IDENT.
EU-155	5.827E-02	1.103E-01	2.088E-01	FAIL ABUN
TB-160	1.042E+00	1.951E+00	3.766E+00	FAIL ABUN
HO-166M	9.322E-03	5.583E-02	1.057E-01	FAIL ABUN
TM-171	6.243E+00	2.951E+01	5.753E+01	NOT IDENT.
HF-172	6.244E-03	2.448E-01	4.065E-01	FAIL ABUN
LU-172	1.004E-01	1.587E-01	1.744E-01	FAIL ABUN
LU-176	1.384E-03	2.270E-02	4.225E-02	NOT IDENT.
HF-181	-1.493E+00	4.073E+00	6.935E+00	NOT IDENT.

TA-182	1.305E-01	8.530E-01	1.627E+00	FAIL ABUN
RE-183	-5.188E-01	3.440E+00	6.498E+00	NOT IDENT.
RE-184	-1.101E+01	3.165E+01	4.985E+01	NOT IDENT.
W-188	-8.881E+01	1.262E+02	1.922E+02	NOT IDENT.
IR-192	-1.078E-02	4.385E-01	8.034E-01	FAIL ABUN
HG-203	-8.708E-01	2.268E+00	4.059E+00	FAIL ABUN
BI-207	3.316E-02	5.585E-02	1.011E-01	FAIL ABUN
PB-210	2.724E+00	5.364E+00	1.063E+01	NOT IDENT.
BI-211	0.000E+00	4.932E-01	7.483E-01	FAIL ABUN
PB-211	3.927E-01	8.775E-01	1.125E+00	FAIL ABUN
RA-223	-5.476E-02	6.354E-01	1.098E+00	FAIL ABUN
AC-227	1.169E-04	2.144E-01	4.012E-01	NOT IDENT.
TH-227	1.169E-04	2.144E-01	4.012E-01	NOT IDENT.
TH-229	-6.928E-02	4.499E-01	8.467E-01	FAIL ABUN
PA-231	4.718E-01	4.815E-01	9.128E-01	NOT IDENT.
TH-231	-5.476E-02	6.354E-01	1.098E+00	FAIL ABUN
PA-233	-9.210E-03	5.821E-02	1.057E-01	NOT IDENT.
PA-234	-5.350E-02	2.739E-01	5.133E-01	NOT IDENT.
PA-234M	2.695E+00	4.249E+00	8.528E+00	NOT IDENT.
TH-234	1.332E-01	1.433E+00	2.783E+00	FAIL ABUN
U-235	2.973E-02	2.095E-01	3.724E-01	FAIL ABUN
NP-237	-9.210E-03	5.821E-02	1.057E-01	NOT IDENT.
NP-238	0.000E+00	4.546E+40	0.000E+00	SHORT HLIF
U-238	1.332E-01	1.433E+00	2.783E+00	FAIL ABUN
NP-239	-1.035E-01	2.480E-01	4.323E-01	NOT IDENT.
PU-239	4.394E+02	6.779E+02	6.716E+02	FAIL ABUN
AM-241	7.547E-02	1.688E-01	3.304E-01	NOT IDENT.
CM-243	-8.887E-02	1.004E-01	1.701E-01	NOT IDENT.
BK-247	-4.871E-03	8.005E-02	1.328E-01	NOT IDENT.
CF-249	2.464E-02	3.556E-02	6.923E-02	NOT IDENT.
CF-251	4.699E-02	1.217E-01	2.176E-01	NOT IDENT.

Nuclide Line Activity Report

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
K-40	1460.82	581	10.66*	1.911E+00	1.818E+01	1.818E+01	8.34
CD-109	88.03	125	3.70*	6.049E+00	3.547E+00	5.506E+00	56.49
SN-126	64.28	-----	9.60	3.252E+00	-----	Line Not Found	-----
	86.94	125	8.90	6.049E+00	1.474E+00	1.474E+00	56.49
	87.57	125	37.00*	6.049E+00	3.547E-01	3.547E-01	56.49
CS-135	268.22	67	16.00*	6.231E+00	4.296E-01	4.296E-01	65.56
BA-137M	661.66	47	89.90*	3.370E+00	9.933E-02	1.012E-01	54.66
CS-137	661.66	47	85.10*	3.370E+00	1.049E-01	1.069E-01	54.66
TL-208	277.37	-----	6.60	6.127E+00	-----	Line Not Found	-----
	583.19	167	85.00*	3.675E+00	3.408E-01	3.408E-01	27.70
	860.56	39	12.50	2.812E+00	7.060E-01	7.060E-01	68.39
BI-211	72.87	125	1.23	4.750E+00	1.363E+01	1.363E+01	42.54
	351.06	297	12.92*	5.217E+00	2.813E+00	2.813E+00	17.89
BI-212	727.33	58	6.67*	3.159E+00	1.743E+00	1.743E+00	56.60
	785.37	-----	1.10	2.998E+00	-----	Line Not Found	-----
	1620.50	14	1.47	1.756E+00	3.347E+00	3.347E+00	76.30
PB-212	74.82	125	10.28	4.750E+00	1.630E+00	1.630E+00	42.54
	77.11	248	17.10	5.043E+00	1.836E+00	1.836E+00	21.82
	238.63	563	43.60*	6.720E+00	1.224E+00	1.224E+00	10.55
	300.09	-----	3.30	5.819E+00	-----	Line Not Found	-----
BI-214	609.32	252	45.49*	3.566E+00	9.898E-01	9.901E-01	18.56
	1120.29	44	14.92	2.334E+00	8.011E-01	8.014E-01	110.72
	1764.49	37	15.30	1.632E+00	9.475E-01	9.478E-01	51.79
PB-214	74.82	125	5.80	4.750E+00	2.890E+00	2.891E+00	42.54
	77.11	248	9.70	5.043E+00	3.237E+00	3.238E+00	21.82
	87.09	125	3.41	6.049E+00	3.848E+00	3.850E+00	56.49
	242.00	158	7.25	6.670E+00	2.077E+00	2.078E+00	36.97
	295.22	219	18.42	5.879E+00	1.287E+00	1.287E+00	25.22
	351.93	297	35.60*	5.217E+00	1.021E+00	1.021E+00	17.89
RN-219	271.23	67	10.80	6.231E+00	6.365E-01	6.365E-01	65.56
	401.81	11	6.60*	4.750E+00	2.249E-01	2.249E-01	228.00
RN-222	609.32	252	45.49*	3.566E+00	9.898E-01	9.901E-01	18.56
	1120.29	44	14.92	2.334E+00	8.011E-01	8.014E-01	110.72
	1764.49	37	15.30	1.632E+00	9.475E-01	9.478E-01	51.79
RA-224	240.99	158	4.10*	6.670E+00	3.673E+00	3.673E+00	36.97
RA-226	609.32	252	45.49*	3.566E+00	9.898E-01	9.901E-01	18.56
	1120.29	44	14.92	2.334E+00	8.011E-01	8.014E-01	110.72
	1764.49	37	15.30	1.632E+00	9.475E-01	9.478E-01	51.79
AC-228	105.21	-----	1.10	7.385E+00	-----	Line Not Found	-----
	338.32	112	11.27	5.367E+00	1.177E+00	1.177E+00	38.14
	794.95	15	4.25	2.968E+00	7.373E-01	7.373E-01	154.20
	835.71	-----	1.61	2.872E+00	-----	Line Not Found	-----
	911.20	121	25.80*	2.703E+00	1.107E+00	1.107E+00	31.37
	968.97	47	15.80	2.588E+00	7.250E-01	7.250E-01	77.72
RA-228	105.21	-----	1.10	7.385E+00	-----	Line Not Found	-----
	338.32	112	11.27	5.367E+00	1.177E+00	1.177E+00	38.14
	794.95	15	4.25	2.968E+00	7.373E-01	7.373E-01	154.20

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
	835.71	-----	1.61	2.872E+00	-----	Line Not Found	-----
	911.20	121	25.80*	2.703E+00	1.107E+00	1.107E+00	31.37
	968.97	47	15.80	2.588E+00	7.250E-01	7.250E-01	77.72
TH-228	74.82	125	10.28	4.750E+00	1.630E+00	1.630E+00	42.54
	77.11	248	17.10	5.043E+00	1.836E+00	1.836E+00	21.82
	238.63	563	43.60*	6.720E+00	1.224E+00	1.224E+00	10.55
	300.09	-----	3.30	5.819E+00	-----	Line Not Found	-----
TH-230	609.32	252	45.49*	3.566E+00	9.898E-01	9.898E-01	18.56
	1120.29	44	14.92	2.334E+00	8.011E-01	8.011E-01	110.72
	1764.49	37	15.30	1.632E+00	9.475E-01	9.475E-01	51.79
TH-232	105.21	-----	1.10	7.385E+00	-----	Line Not Found	-----
	338.32	112	11.27	5.367E+00	1.177E+00	1.177E+00	38.14
	835.71	-----	1.61	2.872E+00	-----	Line Not Found	-----
	911.20	121	25.80*	2.703E+00	1.107E+00	1.107E+00	31.37
	968.97	47	15.80	2.588E+00	7.250E-01	7.250E-01	77.72
U-234	609.32	252	45.49*	3.566E+00	9.898E-01	9.898E-01	18.56
	1120.29	44	14.92	2.334E+00	8.011E-01	8.011E-01	110.72
	1764.49	37	15.30	1.632E+00	9.475E-01	9.475E-01	51.79
AM-243	43.53	-----	5.90	3.443E-01	-----	Line Not Found	-----
	74.66	125	67.20*	4.750E+00	2.494E-01	2.494E-01	42.54
CM-247	278.00	-----	3.40	6.118E+00	-----	Line Not Found	-----
	287.50	-----	2.00	5.986E+00	-----	Line Not Found	-----
	402.40	11	72.00*	4.750E+00	2.062E-02	2.062E-02	228.00
ANH-511	511.00	21	100.00*	4.026E+00	3.296E-02	3.296E-02	227.25

Flag: "*" = Keyline

Total number of lines in spectrum 44
 Number of unidentified lines 6
 Number of lines tentatively identified by NID 38 86.36%

Nuclide Type :

Nuclide	Hlife	Decay	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
K-40	1.25E+09Y	1.00	1.818E+01	1.818E+01	0.152E+01	8.34	
CD-109	461.40D	1.55	3.547E+00	5.506E+00	3.110E+00	56.49	
SN-126	2.30E+05Y	1.00	3.547E-01	3.547E-01	2.003E-01	56.49	
CS-135	2.30E+06Y	1.00	4.296E-01	4.296E-01	2.816E-01	65.56	
BA-137M	30.08Y	1.02	9.933E-02	1.012E-01	0.553E-01	54.66	
CS-137	30.08Y	1.02	1.049E-01	1.069E-01	0.584E-01	54.66	
TL-208	1.41E+10Y	1.00	3.408E-01	3.408E-01	0.944E-01	27.70	
BI-211	7.04E+08Y	1.00	2.813E+00	2.813E+00	0.503E+00	17.89	
BI-212	1.41E+10Y	1.00	1.743E+00	1.743E+00	0.986E+00	56.60	
PB-212	1.41E+10Y	1.00	1.224E+00	1.224E+00	0.129E+00	10.55	
BI-214	1600.00Y	1.00	9.898E-01	9.901E-01	1.838E-01	18.56	
PB-214	1600.00Y	1.00	1.021E+00	1.021E+00	0.183E+00	17.89	
RN-219	7.04E+08Y	1.00	2.249E-01	2.249E-01	5.129E-01	228.00	
RN-222	1600.00Y	1.00	9.898E-01	9.901E-01	1.838E-01	18.56	
RA-224	1.41E+10Y	1.00	3.673E+00	3.673E+00	1.358E+00	36.97	
RA-226	1600.00Y	1.00	9.898E-01	9.901E-01	1.838E-01	18.56	
AC-228	1.41E+10Y	1.00	1.107E+00	1.107E+00	0.347E+00	31.37	
RA-228	1.41E+10Y	1.00	1.107E+00	1.107E+00	0.347E+00	31.37	
TH-228	1.41E+10Y	1.00	1.224E+00	1.224E+00	0.129E+00	10.55	
TH-230	7.54E+04Y	1.00	9.898E-01	9.898E-01	1.837E-01	18.56	
TH-232	1.41E+10Y	1.00	1.107E+00	1.107E+00	0.347E+00	31.37	
U-234	2.45E+05Y	1.00	9.898E-01	9.898E-01	1.837E-01	18.56	
AM-243	7370.00Y	1.00	2.494E-01	2.494E-01	1.061E-01	42.54	
CM-247	1.56E+07Y	1.00	2.062E-02	2.062E-02	4.701E-02	228.00	
ANH-511	1.00E+09Y	1.00	3.296E-02	3.296E-02	7.490E-02	227.25	
Total Activity :			4.356E+01	4.552E+01			

Grand Total Activity : 4.356E+01 4.552E+01

Flags: "K" = Keyline not found "M" = Manually accepted
 "E" = Manually edited "A" = Nuclide specific abn. limit

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
0	92.50	153	320	1.19	185.77	179	14	3.96E-02	55.9	6.59E+00	T
0	128.75	35	195	1.56	258.19	254	10	9.16E-03	****	8.03E+00	T
0	154.76	23	125	1.39	310.19	306	8	6.10E-03	****	8.03E+00	T
0	186.35	139	174	1.29	373.31	366	14	3.71E-02	46.2	7.61E+00	T
0	209.31	48	130	1.19	419.19	415	11	1.29E-02	98.5	7.22E+00	T
0	328.61	15	69	0.69	657.60	654	8	4.21E-03	****	5.47E+00	T
0	448.14	16	48	1.00	896.50	887	12	4.44E-03	****	4.41E+00	
2	463.21	51	20	2.09	926.62	921	26	1.41E-02	49.2	4.31E+00	T
2	471.91	26	23	1.74	944.00	921	26	7.28E-03	60.4	4.26E+00	T
0	658.73	12	12	0.99	1317.42	1314	6	3.33E-03	****	3.38E+00	T
0	666.37	26	16	1.52	1332.68	1329	9	7.25E-03	69.6	3.36E+00	T
0	678.58	11	16	0.65	1357.09	1354	7	3.06E-03	****	3.31E+00	T
0	703.87	34	47	7.76	1407.64	1396	18	9.62E-03	****	3.23E+00	T
0	769.77	30	43	2.05	1539.35	1532	17	8.58E-03	****	3.04E+00	
0	787.99	21	44	4.55	1575.79	1568	14	6.09E-03	****	2.99E+00	
0	1070.11	12	17	4.74	2139.75	2134	14	3.57E-03	****	2.41E+00	
0	1086.80	11	13	1.84	2173.11	2163	12	3.06E-03	****	2.39E+00	T
0	1095.35	18	35	4.46	2190.21	2181	18	5.08E-03	****	2.37E+00	T
0	1190.32	19	14	3.98	2380.06	2371	15	5.60E-03	94.8	2.24E+00	T
0	1379.12	15	6	0.95	2757.54	2752	12	4.27E-03	91.0	2.00E+00	
0	1657.60	13	0	0.81	3314.36	3306	15	3.89E-03	53.5	1.72E+00	

Flags: "T" = Tentatively associated

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*****
*                               GEL Laboratories LLC                               *
*                               2040 Savage Road                               *
*                               Charleston, SC 29407                           *
*****
*                               DETECTOR AND SAMPLE DATA                       *
*
* Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]R405245005.CNF;1
* Acquisition date   : 3-OCT-2016 04:34:32 Sensitivity      : 3.000
* Detector ID       : GAM18 Energy tolerance: 2.000
* Elapsed live time : 0 01:00:00.00 Abundance limit : 75.000
* Elapsed real time : 0 01:00:00.96 Half life ratio : *****
* Sample date       : 15-DEC-2015 11:42:00 Nuclide Library : SOLID
* Sample ID        : R405245005 Analyst initials: MXR1
* Batch Number     : 1596387 Sample Quantity : 1.1777E+02 GRAM
* Wet wt corr      : 1.00000 Wet Weight : 0.00000
*                               Dry Weight : 0.00000
*****
*                               CALIBRATION INFORMATION                         *
*
* Eff. Cal. date    : 25-JUN-2016 08:25:19 Eff. Geometry   : CAN
* Eff. File         : DKA100:[CANBERRA.GAMMA]EFF_GAM18_CAN.CNF;10
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Combined Critical Level Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Lc (pCi/GRAM)
K-40	2.630E-01
CD-109	1.190E+00
SN-126	7.001E-02
CS-135	1.129E-01
BA-137M	1.994E-02
CS-137	2.106E-02
TL-208	2.452E-02
BI-212	3.722E-01
PB-212	4.581E-02
BI-214	5.475E-02
PB-214	5.638E-02
RN-219	2.815E-01
RN-222	5.475E-02
RA-224	4.908E-01
RA-226	5.475E-02
AC-228	8.143E-02
RA-228	8.143E-02
TH-228	4.581E-02
TH-230	5.473E-02
TH-232	8.143E-02
U-234	5.473E-02
AM-243	4.671E-02
CM-247	2.583E-02
ANH-511	2.432E-02

---- Non-Identified Nuclides ----

Nuclide	Lc (pCi/GRAM)	
BE-7	8.936E+00	NOT IDENT.
NA-22	3.928E-02	NOT IDENT.
NA-24	0.000E+00	SHORT HLIF
AL-26	2.447E-02	NOT IDENT.
SC-46	3.100E-01	FAIL ABUN
V-48	0.000E+00	SHORT HLIF
CR-51	0.000E+00	SHORT HLIF

MN-54	4.802E-02	NOT IDENT.
CO-56	3.672E-01	NOT IDENT.
MN-56	0.000E+00	SHORT HLIF
CO-57	3.771E-02	NOT IDENT.
CO-58	4.528E-01	NOT IDENT.
FE-59	5.174E+00	NOT IDENT.
CO-60	3.533E-02	NOT IDENT.
ZN-65	1.554E-01	NOT IDENT.
GE-68	2.004E+00	NOT IDENT.
AS-73	1.038E+01	NOT IDENT.
AS-74	0.000E+00	SHORT HLIF
SE-75	1.738E-01	NOT IDENT.
BR-77	0.000E+00	SHORT HLIF
SR-82	0.000E+00	SHORT HLIF
RB-83	5.508E-01	NOT IDENT.
KR-85	7.715E+00	NOT IDENT.
SR-85	7.558E-01	NOT IDENT.
RB-86	0.000E+00	SHORT HLIF
Y-88	1.672E-01	NOT IDENT.
Y-91	4.072E+02	NOT IDENT.
NB-94	2.819E-02	FAIL ABUN
NB-95	6.526E-01	NOT IDENT.
NB-95M	1.912E+00	NOT IDENT.
ZR-95	1.243E+00	NOT IDENT.
NB-97	0.000E+00	SHORT HLIF
ZR-97	0.000E+00	SHORT HLIF
MO-99	0.000E+00	SHORT HLIF
TC-99M	0.000E+00	SHORT HLIF
RH-101	2.745E-02	FAIL ABUN
RH-102	5.260E-02	NOT IDENT.
RU-103	4.339E+00	FAIL ABUN
RH-106	4.477E-01	NOT IDENT.
RU-106	4.477E-01	NOT IDENT.
AG-108M	2.578E-02	NOT IDENT.
AG-110M	8.474E-02	FAIL ABUN
SN-113	1.789E-01	NOT IDENT.
CD-115	0.000E+00	SHORT HLIF
SN-117M	0.000E+00	SHORT HLIF
TE-123M	1.100E-01	NOT IDENT.
SB-124	1.851E+00	NOT IDENT.
SB-125	9.072E-02	FAIL ABUN
TE-125M	2.229E+02	NOT IDENT.
I-126	0.000E+00	SHORT HLIF
SB-126	0.000E+00	SHORT HLIF
SB-127	0.000E+00	SHORT HLIF
I-131	0.000E+00	SHORT HLIF
I-132	0.000E+00	SHORT HLIF
TE-132	0.000E+00	SHORT HLIF
BA-133	3.479E-02	NOT IDENT.
I-133	0.000E+00	SHORT HLIF
CS-134	4.898E-02	FAIL ABUN
I-135	0.000E+00	SHORT HLIF
CS-136	0.000E+00	SHORT HLIF
CE-139	8.057E-02	NOT IDENT.
BA-140	0.000E+00	SHORT HLIF
LA-140	0.000E+00	SHORT HLIF
CE-141	1.968E+01	NOT IDENT.
CE-143	0.000E+00	SHORT HLIF
CE-144	3.090E-01	NOT IDENT.
PM-144	5.007E-02	NOT IDENT.
PR-144	4.346E+00	NOT IDENT.
PM-146	4.448E-02	NOT IDENT.
ND-147	0.000E+00	SHORT HLIF
PM-147	6.335E+02	NOT IDENT.
PM-149	0.000E+00	SHORT HLIF
EU-150	2.341E-02	FAIL ABUN
EU-152	7.553E-02	FAIL ABUN
GD-153	1.603E-01	NOT IDENT.
EU-154	9.460E-02	NOT IDENT.
EU-155	9.808E-02	FAIL ABUN
TB-160	1.712E+00	FAIL ABUN
HO-166M	4.787E-02	FAIL ABUN
TM-171	2.698E+01	NOT IDENT.
HF-172	1.902E-01	FAIL ABUN
LU-172	7.948E-02	FAIL ABUN
LU-176	1.951E-02	NOT IDENT.
HF-181	3.160E+00	NOT IDENT.
TA-182	7.279E-01	FAIL ABUN

RE-183	3.043E+00	NOT IDENT.
RE-184	2.236E+01	NOT IDENT.
W-188	8.943E+01	NOT IDENT.
IR-192	3.725E-01	FAIL ABUN
HG-203	1.894E+00	FAIL ABUN
BI-207	4.570E-02	FAIL ABUN
PB-210	4.983E+00	NOT IDENT.
BI-211	3.614E-01	FAIL ABUN
PB-211	5.140E-01	FAIL ABUN
RA-223	5.099E-01	FAIL ABUN
AC-227	1.864E-01	NOT IDENT.
TH-227	1.864E-01	NOT IDENT.
TH-229	3.969E-01	FAIL ABUN
PA-231	4.284E-01	NOT IDENT.
TH-231	5.099E-01	FAIL ABUN
PA-233	4.888E-02	NOT IDENT.
PA-234	2.294E-01	NOT IDENT.
PA-234M	3.860E+00	NOT IDENT.
TH-234	1.315E+00	FAIL ABUN
U-235	1.763E-01	FAIL ABUN
NP-237	4.888E-02	NOT IDENT.
NP-238	0.000E+00	SHORT HLIF
U-238	1.315E+00	FAIL ABUN
NP-239	2.020E-01	NOT IDENT.
PU-239	3.185E+02	FAIL ABUN
AM-241	1.554E-01	NOT IDENT.
CM-243	7.916E-02	NOT IDENT.
BK-247	6.181E-02	NOT IDENT.
CF-249	3.192E-02	NOT IDENT.
CF-251	1.023E-01	NOT IDENT.


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*****
*                               GEL Laboratories LLC                               *
*                               2040 Savage Road                               *
*                               Charleston, SC 29407                          *
*****
*                               DETECTOR AND SAMPLE DATA                       *
*
* Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]R405245005.CNF;1
* Acquisition date   : 3-OCT-2016 04:34:32 Sensitivity      : 3.000
* Detector ID       : GAM18 Energy tolerance: 2.000
* Elapsed live time : 0 01:00:00.00 Abundance limit : 75.000
* Elapsed real time : 0 01:00:00.96 Half life ratio : *****
* Sample date       : 15-DEC-2015 11:42:00 Nuclide Library : SOLID
* Sample ID        : R405245005 Analyst initials: MXR1
* Batch Number     : 1596387 Sample Quantity : 1.1777E+02 GRAM
*                               Quantity Err(%) : 1.6982E-03 %
* Wet wt corr      : 1.00000 Wet Weight      : 0.00000
*                               Dry Weight     : 0.00000
*****
*                               CALIBRATION INFORMATION                          *
*
* Eff. Cal. date    : 25-JUN-2016 08:25:19 Eff. Geometry   : CAN
* Eff. File         : DKA100:[CANBERRA.GAMMA]EFF_GAM18_CAN.CNF;10
*****

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Combined Activity-MDA Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM)	Act Error (1.96-sigma)	TPU (1.96-sigma)
K-40	1.818E+01	1.764E+00	1.764E+00
CD-109	3.665E+00	3.105E+00	3.105E+00
SN-126	2.361E-01	1.996E-01	1.996E-01
CS-135	4.296E-01	2.775E-01	2.775E-01
BA-137M	1.012E-01	5.437E-02	5.437E-02
CS-137	1.069E-01	5.744E-02	5.744E-02
TL-208	3.408E-01	9.365E-02	9.365E-02
BI-212	1.743E+00	9.707E-01	9.707E-01
PB-212	1.224E+00	1.422E-01	1.422E-01
BI-214	9.901E-01	1.850E-01	1.850E-01
PB-214	1.021E+00	1.840E-01	1.840E-01
RN-219	2.249E-01	5.034E-01	5.034E-01
RN-222	9.901E-01	1.850E-01	1.850E-01
RA-224	1.398E+00	1.455E+00	1.455E+00
RA-226	9.901E-01	1.850E-01	1.850E-01
AC-228	1.107E+00	3.450E-01	3.450E-01
RA-228	1.107E+00	3.450E-01	3.450E-01
TH-228	1.224E+00	1.422E-01	1.422E-01
TH-230	9.898E-01	1.850E-01	1.850E-01
TH-232	1.107E+00	3.450E-01	3.450E-01
U-234	9.898E-01	1.850E-01	1.850E-01
AM-243	1.384E-01	1.088E-01	1.088E-01
CM-247	2.062E-02	4.620E-02	4.620E-02
ANH-511	3.296E-02	7.341E-02	7.341E-02

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/GRAM)	K.L Act error (1.96-sigma)	TPU (1.96-sigma)	
BE-7	-5.997E+00	1.174E+01	1.205E+01	NOT IDENT.
NA-22	7.733E-03	4.605E-02	4.618E-02	NOT IDENT.
NA-24	1.000E+41	3.280E+41	0.000E+00	SHORT HLIF
AL-26	1.198E-02	2.600E-02	2.655E-02	NOT IDENT.
SC-46	-2.058E-02	3.819E-01	3.820E-01	FAIL ABUN
V-48	1.146E+03	1.003E+04	1.004E+04	SHORT HLIF

CR-51	-5.564E+01	3.808E+02	3.816E+02	SHORT HLIF
MN-54	-2.032E-02	6.127E-02	6.195E-02	NOT IDENT.
CO-56	2.021E-02	4.432E-01	4.433E-01	NOT IDENT.
MN-56	1.000E+41	2.498E+42	0.000E+00	SHORT HLIF
CO-57	-2.383E-02	4.696E-02	4.817E-02	NOT IDENT.
CO-58	-8.559E-02	5.596E-01	5.609E-01	NOT IDENT.
FE-59	-1.668E+00	7.386E+00	7.424E+00	NOT IDENT.
CO-60	1.261E-02	4.064E-02	4.103E-02	NOT IDENT.
ZN-65	-5.153E-04	2.125E-01	2.125E-01	NOT IDENT.
GE-68	8.991E-01	2.875E+00	2.904E+00	NOT IDENT.
AS-73	6.839E+00	1.114E+01	1.156E+01	NOT IDENT.
AS-74	3.037E+03	4.525E+03	4.728E+03	SHORT HLIF
SE-75	8.365E-02	2.140E-01	2.173E-01	NOT IDENT.
BR-77	2.756E+37	2.329E+38	0.000E+00	SHORT HLIF
SR-82	8.600E+01	6.167E+02	6.179E+02	SHORT HLIF
RB-83	5.939E-01	5.764E-01	6.356E-01	NOT IDENT.
KR-85	1.808E+01	7.953E+00	1.139E+01	NOT IDENT.
SR-85	1.769E+00	7.794E-01	1.115E+00	NOT IDENT.
RB-86	1.023E+03	2.655E+04	2.656E+04	SHORT HLIF
Y-88	-1.346E-03	2.010E-01	2.010E-01	NOT IDENT.
Y-91	-3.102E+01	4.913E+02	4.915E+02	NOT IDENT.
NB-94	6.700E-02	6.640E-02	7.295E-02	FAIL ABUN
NB-95	3.984E-01	8.219E-01	8.413E-01	NOT IDENT.
NB-95M	-4.195E-01	2.467E+00	2.474E+00	NOT IDENT.
ZR-95	1.042E+00	1.359E+00	1.437E+00	NOT IDENT.
NB-97	1.000E+41	1.059E+41	0.000E+00	SHORT HLIF
ZR-97	1.000E+41	1.823E+41	0.000E+00	SHORT HLIF
MO-99	8.127E+30	2.585E+31	0.000E+00	SHORT HLIF
TC-99M	1.000E+41	4.022E+41	0.000E+00	SHORT HLIF
RH-101	4.825E-02	7.495E-02	7.804E-02	FAIL ABUN
RH-102	4.322E-03	6.135E-02	6.138E-02	NOT IDENT.
RU-103	-2.988E+00	5.330E+00	5.497E+00	FAIL ABUN
RH-106	1.282E-01	5.111E-01	5.144E-01	NOT IDENT.
RU-106	1.282E-01	5.111E-01	5.144E-01	NOT IDENT.
AG-108M	2.628E-02	2.837E-02	3.074E-02	NOT IDENT.
AG-110M	2.548E-02	9.968E-02	1.003E-01	FAIL ABUN
SN-113	-6.546E-03	2.155E-01	2.156E-01	NOT IDENT.
CD-115	2.290E+38	3.192E+38	0.000E+00	SHORT HLIF
SN-117M	4.778E+03	7.633E+04	7.636E+04	SHORT HLIF
TE-123M	6.066E-02	1.285E-01	1.314E-01	NOT IDENT.
SB-124	3.184E-01	2.137E+00	2.142E+00	NOT IDENT.
SB-125	4.221E-02	1.052E-01	1.069E-01	FAIL ABUN
TE-125M	9.814E+01	2.540E+02	2.579E+02	NOT IDENT.
I-126	9.666E+05	6.719E+05	8.008E+05	SHORT HLIF
SB-126	-1.120E+05	9.605E+05	9.618E+05	SHORT HLIF
SB-127	-4.906E+21	8.966E+21	0.000E+00	SHORT HLIF
I-131	1.750E+09	2.712E+09	2.825E+09	SHORT HLIF
I-132	1.000E+41	1.806E+42	0.000E+00	SHORT HLIF
TE-132	2.428E+25	7.900E+25	0.000E+00	SHORT HLIF
BA-133	1.302E-02	4.454E-02	4.492E-02	NOT IDENT.
I-133	-1.000E+41	7.190E+41	0.000E+00	SHORT HLIF
CS-134	4.795E-02	7.250E-02	7.565E-02	FAIL ABUN
I-135	-1.000E+41	6.817E+41	0.000E+00	SHORT HLIF
CS-136	5.177E+04	2.103E+05	2.116E+05	SHORT HLIF
CE-139	-1.645E-01	1.189E-01	1.401E-01	NOT IDENT.
BA-140	5.939E+05	7.792E+05	8.239E+05	SHORT HLIF
LA-140	-1.965E+04	2.662E+05	2.664E+05	SHORT HLIF
CE-141	-6.220E+00	2.412E+01	2.428E+01	NOT IDENT.
CE-143	1.000E+41	8.906E+40	0.000E+00	SHORT HLIF
CE-144	-2.150E-01	3.879E-01	3.999E-01	NOT IDENT.
PM-144	-2.227E-04	6.791E-02	6.791E-02	NOT IDENT.
PR-144	5.230E-02	5.884E+00	5.884E+00	NOT IDENT.
PM-146	2.906E-02	5.134E-02	5.298E-02	NOT IDENT.
ND-147	6.406E+06	1.789E+07	1.812E+07	SHORT HLIF
PM-147	-2.415E+02	7.752E+02	7.828E+02	NOT IDENT.
PM-149	-5.952E+39	5.159E+39	0.000E+00	SHORT HLIF
EU-150	2.422E-02	2.796E-02	3.002E-02	FAIL ABUN
EU-152	-6.247E-02	9.582E-02	9.987E-02	FAIL ABUN
GD-153	1.057E-01	1.916E-01	1.975E-01	NOT IDENT.
EU-154	-3.618E-02	1.195E-01	1.206E-01	NOT IDENT.
EU-155	5.827E-02	1.103E-01	1.134E-01	FAIL ABUN
TB-160	1.042E+00	1.952E+00	2.008E+00	FAIL ABUN
HO-166M	9.322E-03	5.584E-02	5.599E-02	FAIL ABUN
TM-171	6.243E+00	2.952E+01	2.965E+01	NOT IDENT.
HF-172	6.244E-03	2.448E-01	2.448E-01	FAIL ABUN
LU-172	1.004E-01	1.590E-01	1.653E-01	FAIL ABUN
LU-176	1.384E-03	2.270E-02	2.271E-02	NOT IDENT.
HF-181	-1.493E+00	4.074E+00	4.129E+00	NOT IDENT.

TA-182	1.305E-01	8.530E-01	8.550E-01	FAIL ABUN
RE-183	-5.188E-01	3.441E+00	3.449E+00	NOT IDENT.
RE-184	-1.101E+01	3.175E+01	3.214E+01	NOT IDENT.
W-188	-8.881E+01	1.266E+02	1.328E+02	NOT IDENT.
IR-192	-1.078E-02	4.385E-01	4.386E-01	FAIL ABUN
HG-203	-8.708E-01	2.268E+00	2.302E+00	FAIL ABUN
BI-207	3.316E-02	5.587E-02	5.783E-02	FAIL ABUN
PB-210	2.724E+00	5.370E+00	5.509E+00	NOT IDENT.
BI-211	2.813E+00	5.089E-01	1.366E+00	FAIL ABUN
PB-211	3.927E-01	8.778E-01	8.955E-01	FAIL ABUN
RA-223	-5.476E-02	6.354E-01	6.359E-01	FAIL ABUN
AC-227	1.169E-04	2.144E-01	2.144E-01	NOT IDENT.
TH-227	1.169E-04	2.144E-01	2.144E-01	NOT IDENT.
TH-229	-6.928E-02	4.500E-01	4.510E-01	FAIL ABUN
PA-231	4.718E-01	4.919E-01	5.359E-01	NOT IDENT.
TH-231	-5.476E-02	6.354E-01	6.359E-01	FAIL ABUN
PA-233	-9.210E-03	5.821E-02	5.836E-02	NOT IDENT.
PA-234	-5.350E-02	2.807E-01	2.817E-01	NOT IDENT.
PA-234M	2.695E+00	4.251E+00	4.421E+00	NOT IDENT.
TH-234	1.332E-01	1.433E+00	1.434E+00	FAIL ABUN
U-235	2.973E-02	2.095E-01	2.099E-01	FAIL ABUN
NP-237	-9.210E-03	5.821E-02	5.836E-02	NOT IDENT.
NP-238	-1.449E+40	4.546E+40	0.000E+00	SHORT HLIF
U-238	1.332E-01	1.433E+00	1.434E+00	FAIL ABUN
NP-239	-1.035E-01	2.482E-01	2.525E-01	NOT IDENT.
PU-239	4.394E+02	6.782E+02	7.065E+02	FAIL ABUN
AM-241	7.547E-02	1.689E-01	1.723E-01	NOT IDENT.
CM-243	-8.887E-02	1.008E-01	1.084E-01	NOT IDENT.
BK-247	-4.871E-03	8.006E-02	8.009E-02	NOT IDENT.
CF-249	2.464E-02	3.562E-02	3.731E-02	NOT IDENT.
CF-251	4.699E-02	1.218E-01	1.237E-01	NOT IDENT.

 * GEL Laboratories LLC *
 * 2040 Savage Road *
 * Charleston, SC 29407 *
 * GAMMA SPECTROSCOPY BACKGROUND REPORT *

ENERGY	MDA COUNTS	ENERGY	MDA COUNTS	ENERGY	MDA COUNTS
43.53	79.6968	87.09	112.3475	136.47	71.8643
45.60	69.9273	87.57	109.9099	140.51	0.0000
46.54	56.2287	88.03	133.6644	143.76	92.4722
49.72	0.0000	88.34	133.8013	144.24	79.9997
51.35	68.6747	88.47	133.8584	145.44	95.1088
51.87	71.4034	89.96	85.7185	152.43	69.7998
52.39	71.5876	1093.63	85.9076	153.25	0.0000
52.97	64.9547	91.11	0.0000	323.87	77.0688
53.44	62.5339	92.59	86.4452	156.02	0.0000
54.07	72.1766	93.35	86.6528	158.56	0.0000
57.36	0.0000	94.56	86.9827	159.00	67.2239
57.53	77.7290	94.65	87.0072	162.33	81.9291
57.98	76.1386	94.67	87.0125	162.66	0.0000
59.27	80.1058	94.87	70.9928	163.33	61.8674
59.32	80.1238	97.43	68.8545	165.86	96.8562
59.54	73.1522	98.43	81.2512	176.31	64.6649
60.96	94.0140	98.44	81.2537	176.60	0.0000
61.17	94.1006	99.53	82.5400	177.52	72.1493
62.93	76.9310	100.11	83.7035	181.07	0.0000
63.29	75.2577	102.03	65.7021	181.52	80.4873
63.58	77.1449	103.18	80.3435	184.41	65.6386
64.28	99.8665	103.37	81.4187	143.76	65.7939
66.73	83.6207	105.21	67.3466	193.51	78.8736
67.24	87.4380	105.31	67.3660	197.03	79.3546
125.81	93.0694	106.12	62.3282	198.01	72.7226
67.75	93.0959	106.47	74.8680	201.83	68.0876
69.67	95.6560	109.28	67.0767	203.43	66.5631
70.83	104.4090	111.00	86.3511	205.31	55.2151
72.81	111.7310	111.76	0.0000	210.85	66.5157
72.87	111.7566	114.06	70.0822	215.65	66.1591
74.66	94.7029	116.30	0.0000	222.11	62.4363
74.82	94.7599	116.74	78.0699	227.09	67.3458
74.97	94.8131	119.76	65.7521	227.38	60.2830
77.11	95.5675	121.12	64.9008	228.16	0.0000
78.74	96.1354	121.22	64.9173	228.18	61.2440
79.69	82.7741	121.78	76.9288	116.74	61.2440
80.12	86.7272	122.06	75.8992	235.69	84.8235
80.19	0.0000	122.92	63.0251	235.96	78.1225
80.57	91.9761	123.07	68.4842	238.63	79.3302
81.00	99.7923	265.00	71.8557	238.98	0.0000
81.07	99.8169	125.81	70.0498	240.99	79.6023
81.75	61.5728	127.23	65.9017	242.00	79.7187
83.79	99.4740	127.91	81.4154	244.70	66.8419
84.00	111.1804	129.30	81.6906	252.40	0.0000
85.43	111.7228	131.20	84.2847	252.80	62.5485
86.55	112.1445	133.02	80.1958	254.15	0.0000
86.79	112.2337	133.52	94.7884	256.23	57.3004
86.94	112.2906	136.00	85.2460	260.90	0.0000

ENERGY	MDA COUNTS	ENERGY	MDA COUNTS	ENERGY	MDA COUNTS
264.66	53.2844	355.39	0.0000	584.27	26.3696
264.80	53.2937	356.01	43.6953	595.83	0.0000
265.00	61.7246	364.49	0.0000	427.87	51.4078
268.22	56.3538	366.42	0.0000	602.52	0.0000
269.46	52.6834	372.51	32.7956	604.72	51.9264
270.03	52.7222	375.05	39.2417	607.14	53.5391
271.23	52.8053	377.52	41.4637	609.32	35.4237
273.65	0.0000	356.01	45.9998	610.33	35.4463
276.40	61.7045	388.16	34.3750	614.28	26.1242
277.37	62.7317	388.63	0.0000	618.01	35.6213
277.60	57.0459	391.69	42.0358	620.36	27.9610
278.00	52.3189	264.66	47.2843	621.93	32.8140
279.20	73.3577	401.81	34.8210	630.19	0.0000
279.54	80.0625	402.40	34.8398	631.29	33.9789
279.70	67.6849	404.85	40.9210	633.25	34.0205
280.46	62.9801	410.95	50.4781	634.78	0.0000
283.69	57.4878	413.71	36.3039	635.95	32.1299
284.31	0.0000	414.70	0.0000	636.99	0.0000
285.41	60.4929	423.72	0.0000	645.85	36.2446
285.90	0.0000	427.09	42.3078	657.76	26.8381
287.50	59.6879	427.87	37.8806	657.90	0.0000
290.67	78.2867	433.94	32.4822	661.66	15.8242
293.27	0.0000	439.40	38.2625	664.57	0.0000
351.93	61.2299	453.88	43.2927	666.33	0.0000
295.96	61.2850	463.37	35.5965	666.50	0.0000
879.38	83.4352	468.07	35.7334	667.71	0.0000
299.98	61.5824	473.00	0.0000	677.62	23.9612
300.09	45.4594	475.06	24.3441	685.70	0.0000
300.13	45.4622	476.78	45.2723	695.00	0.0000
301.36	55.2227	477.60	42.9792	696.49	38.7598
302.85	75.5259	482.18	41.9700	696.51	38.7598
256.23	57.9845	487.02	0.0000	697.00	0.0000
304.85	0.0000	492.35	0.0000	697.30	30.6987
306.78	47.3008	497.08	41.5775	697.49	35.5502
308.46	52.3304	505.52	48.4359	702.65	30.3873
311.90	53.5320	507.63	0.0000	706.68	17.8680
316.51	54.8143	511.00	42.9155	711.68	28.5059
319.41	0.0000	514.00	25.8073	720.70	0.0000
320.08	0.0000	514.00	25.8073	721.93	0.0000
321.04	64.1133	520.40	23.4102	722.78	27.8632
323.87	57.8859	520.69	0.0000	722.91	36.0605
325.23	45.2921	522.65	0.0000	723.31	36.0690
328.76	0.0000	527.90	0.0000	724.19	34.4459
333.37	46.7178	528.26	22.6402	727.33	27.7276
333.97	44.2080	529.59	29.9143	733.00	29.6684
334.37	47.2776	529.87	0.0000	735.93	28.8904
338.28	57.1781	531.02	0.0000	333.97	36.1429
338.32	57.1815	537.26	0.0000	739.50	0.0000
311.90	39.9156	546.56	0.0000	747.24	30.1054
340.48	39.9156	552.55	38.7034	748.06	31.1572
340.55	0.0000	563.25	33.4226	752.31	34.3515
344.28	59.6025	569.33	48.4802	753.82	0.0000
345.93	48.3836	946.00	46.6202	756.73	22.9547
351.06	48.6457	569.70	45.6938	756.80	22.9554
351.93	48.6906	583.19	26.3508	884.68	31.8398

ENERGY	MDA COUNTS	ENERGY	MDA COUNTS	ENERGY	MDA COUNTS
765.81	23.4842	1274.44	32.6724	1620.50	13.0887
766.42	33.5596	1001.03	18.7065	1621.92	10.5018
766.84	35.2458	1002.74	22.4637	1678.03	0.0000
772.60	0.0000	1004.73	28.1030	1690.97	10.6916
776.52	0.0000	507.63	0.0000	1750.46	0.0000
739.50	0.0000	1025.87	0.0000	1764.49	6.9294
778.90	19.0003	1028.54	0.0000	1063.66	6.7974
783.70	0.0000	1037.84	27.5316	1771.35	8.4992
785.37	15.2508	1038.76	0.0000	1791.20	0.0000
792.07	34.0068	631.29	22.8645	1808.65	4.0020
794.95	23.4139	1048.07	0.0000	1810.72	0.0000
795.86	19.1662	1049.04	27.6548	1836.06	7.0493
810.06	31.1001	1050.41	25.7607		
810.29	32.1762	1063.66	20.7801		
344.28	32.1780	1077.00	0.0000		
810.76	27.8924	1077.34	19.2832		
815.77	0.0000	1085.87	19.3467		
1048.07	0.0000	1093.63	21.3447		
832.01	30.3541	1099.45	27.5489		
834.85	28.2249	1112.07	27.1376		
835.71	31.4948	1112.84	28.0958		
836.80	0.0000	1115.54	29.3467		
846.75	0.0000	1120.29	23.5184		
846.77	25.1120	1120.55	23.5207		
856.80	0.0000	1221.41	23.5277		
860.56	21.9800	1129.67	22.9448		
871.09	32.0294	1131.51	0.0000		
873.19	18.7943	1147.95	0.0000		
875.33	0.0000	1173.23	19.9800		
879.38	25.5009	1177.95	23.0157		
880.51	19.9677	1189.05	17.0780		
883.24	34.4323	1204.77	25.2539		
884.68	22.2290	1221.41	22.3513		
889.28	26.7312	1231.02	37.7136		
894.76	29.0310	1235.36	0.0000		
898.04	23.4834	1238.28	34.7421		
900.72	23.5122	1260.41	0.0000		
903.28	31.3855	1271.87	22.7337		
911.20	14.6238	1274.44	23.7873		
912.08	18.0059	1274.54	18.6170		
923.98	0.0000	1291.59	16.6414		
926.50	19.0277	1298.22	0.0000		
929.11	21.7711	1312.11	0.0000		
937.49	27.3142	1332.49	15.8071		
944.13	0.0000	1362.66	0.0000		
946.00	26.5014	1365.19	13.8411		
949.00	22.8760	1368.63	0.0000		
667.71	0.0000	1384.29	8.9246		
962.31	39.8792	1408.01	15.1013		
964.08	36.8389	1457.56	0.0000		
966.17	33.7994	1460.82	13.1479		
911.20	56.9122	1489.16	16.5696		
968.97	56.9122	1505.03	19.4192		
983.53	0.0000	1584.12	14.1772		
984.45	0.0000	1596.21	0.0000		

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*****
*                               GEL Laboratories LLC                               *
*                               2040 Savage Road                               *
*                               Charleston, SC 29407                           *
*****
Configuration : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]R405245006.CNF;1
Background file : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]BKG_GAM24.CNF;330
Background date : 2-OCT-2016 11:01:18.
Sample date      : 15-DEC-2015 11:46:00 Acquisition date : 3-OCT-2016 04:34:54.
Sample ID       : R405245006 Sample quantity : 1.16680E+02 GRAM
Detector name   : GAM24 Detector geometry: CAN
Elapsed live time: 0 01:00:00.00 Elapsed real time: 0 01:00:02.16 0.1%
Energy tolerance : 1.50000 keV Analyst Initials : MXR1
Abundance limit : 75.00000 Sensitivity : 3.00000
Batch ID        : 1596387 Detector SN# :
Matrix Spike ID : LCS ID : 1556
*****

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BACKGROUND CORRECTED SAMPLE PEAK REPORT

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	47.10*	36	140	1.10	94.24	90	9	1.01E-02	62.4	
2	0	63.30*	18	164	0.76	126.65	124	6	5.04E-03	117.9	
3	2	74.91*	206	183	1.26	149.89	145	16	5.72E-02	13.8	1.32E+00
4	2	77.18*	310	149	1.12	154.43	145	16	8.60E-02	9.1	
5	0	82.94*	26	234	3.89	165.95	161	10	7.16E-03	112.9	
6	0	87.27	100	175	1.12	174.61	172	7	2.78E-02	24.1	
7	0	93.61*	74	278	1.46	187.29	181	11	2.04E-02	47.4	
8	0	122.95	9	168	1.43	245.98	241	11	2.50E-03	280.3	
9	0	129.60	37	170	1.45	259.28	254	11	1.02E-02	71.0	
10	0	143.71*	19	72	1.31	287.51	285	6	5.19E-03	77.7	
11	0	186.05*	126	120	1.47	372.21	367	12	3.49E-02	20.2	
12	0	202.36	18	61	0.68	404.83	401	6	5.04E-03	72.2	
13	4	207.68	17	26	0.83	415.48	414	9	4.68E-03	45.5	5.12E+00
14	4	209.44	57	61	1.23	419.00	414	9	1.60E-02	26.4	
15	4	238.76*	418	67	1.06	477.65	471	19	1.16E-01	5.8	8.56E-01
16	4	241.92	129	99	1.82	483.98	471	19	3.59E-02	19.1	
17	0	270.53	25	68	0.73	541.22	538	8	6.85E-03	61.9	
18	0	277.39	44	69	2.32	554.95	551	10	1.21E-02	38.5	
19	0	295.51	153	61	1.32	591.20	585	10	4.25E-02	12.5	
20	0	308.36	29	44	0.67	616.90	611	11	8.02E-03	50.1	
21	0	338.70	87	84	1.20	677.60	673	12	2.43E-02	23.8	
22	0	351.95*	308	70	1.12	704.10	697	14	8.55E-02	8.2	
23	0	410.00	26	48	1.55	820.25	815	10	7.18E-03	54.5	
24	0	420.95	18	28	1.09	842.14	837	8	4.99E-03	57.3	
25	0	463.68	33	55	2.32	927.63	920	14	9.26E-03	52.7	
26	4	510.80*	0	61	2.18	1021.91	1015	18	1.99E-05	*****	1.13E+00
27	4	514.57	15	22	1.65	1029.45	1015	18	4.03E-03	59.5	
28	0	583.20*	170	45	1.44	1166.76	1158	15	4.73E-02	11.7	
29	0	609.53*	190	54	1.64	1219.44	1213	16	5.27E-02	11.3	
30	0	646.74	12	8	1.41	1293.88	1291	6	3.43E-03	45.3	
31	4	661.89	74	14	1.75	1324.19	1315	27	2.07E-02	15.1	1.74E+00
32	4	666.53	23	11	2.33	1333.48	1315	27	6.44E-03	48.5	
33	0	675.49	6	17	1.22	1351.40	1346	7	1.54E-03	135.8	
34	0	727.41*	33	27	1.13	1455.28	1449	12	9.18E-03	36.8	

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
35	0	769.41*	9	20	0.84	1539.32	1533	8	2.51E-03	94.4	
36	0	795.22*	34	15	2.36	1590.97	1584	12	9.55E-03	29.0	
37	0	870.33	10	23	3.41	1741.26	1732	13	2.81E-03	102.3	
38	0	911.40*	84	34	1.77	1823.43	1817	14	2.33E-02	18.8	
39	0	951.00	6	15	1.07	1902.66	1898	6	1.53E-03	119.4	
40	0	969.40*	52	28	1.11	1939.49	1934	12	1.45E-02	25.7	
41	0	1009.31	11	10	0.78	2019.35	2013	10	3.11E-03	60.6	
42	0	1113.14	25	3	0.87	2227.11	2222	11	6.96E-03	23.8	
43	0	1120.52*	47	20	1.89	2241.89	2236	13	1.29E-02	24.9	
44	0	1160.45	11	6	0.78	2321.80	2316	9	2.98E-03	52.8	
45	0	1282.67	12	3	1.53	2566.37	2564	6	3.31E-03	39.2	
46	0	1298.87	10	5	1.51	2598.79	2595	8	2.64E-03	53.7	
47	0	1378.62	7	5	1.18	2758.39	2754	7	1.91E-03	67.0	
48	0	1399.55	9	6	3.94	2800.28	2792	12	2.50E-03	63.8	
49	0	1460.79*	470	3	2.06	2922.83	2916	15	1.30E-01	4.7	
50	0	1588.22	12	3	2.48	3177.87	3172	10	3.44E-03	37.2	
51	0	1764.87*	32	9	0.76	3531.43	3524	12	8.95E-03	26.7	

Flag: "*" = Peak area was modified by background subtraction


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Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]R405245006.CNF;1
Analyses by       : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.4,INTERF V2.4
Sample title      : MXR1
Sample date       : 15-DEC-2015 11:46:00 Acquisition date : 3-OCT-2016 04:34:54
Sample ID        : R405245006 Sample quantity   : 116.68 GRAM
Sample type      : SOLID Sample geometry    :
Detector name    : GAMMA24 Detector geometry: CAN
Elapsed live time: 0 01:00:00.00 Elapsed real time: 0 01:00:02.16 0.1%
Energy tolerance : 1.50 keV Half life ratio   : 10.00
Errors propagated: No Systematic Error   : 0.00 %
Efficiency type  : Linear Efficiencies at   : Peak Energy
Abundance limit  : 75.00
    
```

Interference Report

Interfering		Interfered	
Nuclide	Line	Nuclide	Line
PB-214	242.00	RA-224	240.99
PB-214	87.09	SN-126	86.94
PB-214	87.09	SN-126	87.57
PB-214	87.09	CD-109	88.03
PB-214	74.82	AM-243	74.66
PB-214	74.82	TH-228	74.82
PB-214	74.82	PB-212	74.82
PB-214	351.93	BI-211	351.06

Nuclide Type:

Nuclide	Energy	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error	Status
K-40	1460.82	10.66*	1.354E+00	1.978E+01	1.978E+01	9.47	OK
CO-57	122.06	85.60*	7.935E+00	9.019E-03	1.903E-02	560.56	OK
	136.47	10.68	7.753E+00	-----	Line Not Found	-----	Absent
KR-85	514.00	0.43*	3.075E+00	6.937E+00	7.312E+00	118.95	OK
SR-85	514.00	96.00*	3.075E+00	3.136E-02	7.168E-01	118.95	OK
CD-109	88.03	3.70*	7.497E+00	1.438E+00	2.232E+00	85.32	OK
SN-126	64.28	9.60	5.531E+00	2.387E-01	2.387E-01	235.82	OK
	86.94	8.90	7.497E+00	5.978E-01	5.978E-01	85.32	OK
	87.57	37.00*	7.497E+00	1.438E-01	1.438E-01	85.32	OK
BA-137M	661.66	89.90*	2.533E+00	2.060E-01	2.098E-01	30.21	OK
CS-137	661.66	85.10*	2.533E+00	2.176E-01	2.216E-01	30.21	OK
TL-208	277.37	6.60	5.023E+00	8.633E-01	8.633E-01	76.95	OK
	583.19	85.00*	2.791E+00	4.550E-01	4.550E-01	23.40	OK
	860.56	12.50	2.074E+00	-----	Line Not Found	-----	Absent
PB-210	46.54	4.25*	2.569E+00	2.354E+00	2.413E+00	124.76	OK
BI-211	72.87	1.23	6.565E+00	-----	Line Not Found	-----	Absent
	351.06	12.92*	4.155E+00	5.897E-01	5.897E-01	168.07	OK
PB-212	74.82	10.28	6.738E+00	1.423E+00	1.423E+00	41.71	OK
	77.11	17.10	6.913E+00	1.815E+00	1.815E+00	18.27	OK
	238.63	43.60*	5.636E+00	1.123E+00	1.123E+00	11.67	OK
	300.09	3.30	4.720E+00	-----	Line Not Found	-----	Absent
BI-214	609.32	45.49*	2.698E+00	9.790E-01	9.793E-01	22.66	OK
	1120.29	14.92	1.689E+00	1.136E+00	1.137E+00	49.78	OK
	1764.49	15.30	1.138E+00	1.114E+00	1.115E+00	53.30	OK
PB-214	74.82	5.80	6.730E+00	-----	Line Not Found	-----	<<INT Reject
	77.11	9.70	6.913E+00	3.200E+00	3.202E+00	18.27	OK
	87.09	3.41	7.489E+00	-----	Line Not Found	-----	<<INT Reject
	242.00	7.25	5.579E+00	-----	Line Not Found	-----	<<INT Reject
	295.22	18.42	4.778E+00	1.137E+00	1.137E+00	24.94	OK
	351.93	35.60*	4.155E+00	-----	Line Not Found	-----	<<INT Reject
RN-222	609.32	45.49*	2.698E+00	9.790E-01	9.793E-01	22.66	OK
	1120.29	14.92	1.689E+00	1.136E+00	1.137E+00	49.78	OK
	1764.49	15.30	1.138E+00	1.114E+00	1.115E+00	53.30	OK
RA-224	240.99	4.10*	5.581E+00	1.717E+00	1.717E+00	88.00	OK
RA-226	609.32	45.49*	2.698E+00	9.790E-01	9.793E-01	22.66	OK
	1120.29	14.92	1.689E+00	1.136E+00	1.137E+00	49.78	OK
	1764.49	15.30	1.138E+00	1.114E+00	1.115E+00	53.30	OK
AC-228	105.21	1.10	7.950E+00	-----	Line Not Found	-----	Absent
	338.32	11.27	4.285E+00	1.177E+00	1.177E+00	47.56	OK
	794.95	4.25	2.203E+00	2.297E+00	2.297E+00	57.96	OK
	835.71	1.61	2.121E+00	-----	Line Not Found	-----	Absent
	911.20	25.80*	1.985E+00	1.016E+00	1.016E+00	37.62	OK
	968.97	15.80	1.892E+00	1.085E+00	1.085E+00	51.41	OK
RA-228	105.21	1.10	7.950E+00	-----	Line Not Found	-----	Absent
	338.32	11.27	4.285E+00	1.177E+00	1.177E+00	47.56	OK
	794.95	4.25	2.203E+00	2.297E+00	2.297E+00	57.96	OK
	835.71	1.61	2.121E+00	-----	Line Not Found	-----	Absent
	911.20	25.80*	1.985E+00	1.016E+00	1.016E+00	37.62	OK
	968.97	15.80	1.892E+00	1.085E+00	1.085E+00	51.41	OK

Nuclide Type:

Nuclide	Energy	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error	Status
TH-228	74.82	10.28	6.738E+00	1.423E+00	1.423E+00	41.71	OK
	77.11	17.10	6.913E+00	1.815E+00	1.815E+00	18.27	OK
	238.63	43.60*	5.636E+00	1.123E+00	1.123E+00	11.67	OK
TH-230	300.09	3.30	4.720E+00	-----	Line Not Found	-----	Absent
	609.32	45.49*	2.698E+00	9.790E-01	9.790E-01	22.66	OK
	1120.29	14.92	1.689E+00	1.136E+00	1.136E+00	49.78	OK
TH-232	1764.49	15.30	1.138E+00	1.114E+00	1.114E+00	53.30	OK
	105.21	1.10	7.950E+00	-----	Line Not Found	-----	Absent
	338.32	11.27	4.285E+00	1.177E+00	1.177E+00	47.56	OK
TH-234	835.71	1.61	2.121E+00	-----	Line Not Found	-----	Absent
	911.20	25.80*	1.985E+00	1.016E+00	1.016E+00	37.62	OK
	968.97	15.80	1.892E+00	1.085E+00	1.085E+00	51.41	OK
U-234	63.29	3.70*	5.531E+00	6.194E-01	6.194E-01	235.82	OK
	92.59	4.23	7.730E+00	1.546E+00	1.546E+00	94.71	OK
	609.32	45.49*	2.698E+00	9.790E-01	9.790E-01	22.66	OK
U-235	1120.29	14.92	1.689E+00	1.136E+00	1.136E+00	49.78	OK
	1764.49	15.30	1.138E+00	1.114E+00	1.114E+00	53.30	OK
	89.96	3.47	7.607E+00	-----	Line Not Found	-----	Absent
U-238	93.35	5.60	7.730E+00	1.168E+00	1.168E+00	94.71	OK
	143.76	10.96*	7.621E+00	1.509E-01	1.509E-01	155.48	OK
	163.33	5.08	7.206E+00	-----	Line Not Found	-----	Absent
AM-243	185.72	57.20	6.695E+00	2.192E-01	2.192E-01	40.31	OK
	205.31	5.01	6.280E+00	-----	Line Not Found	-----	Absent
	63.29	3.70*	5.531E+00	6.194E-01	6.194E-01	235.82	OK
ANH-511	92.59	4.23	7.730E+00	1.546E+00	1.546E+00	94.71	OK
	43.53	5.90	1.694E+00	-----	Line Not Found	-----	Absent
ANH-511	74.66	67.20*	6.738E+00	2.177E-01	2.177E-01	41.71	OK
	511.00	100.00*	3.093E+00	1.475E-04	1.475E-04	*****	OK

Flag: "*" = Keyline

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*****
*                               GEL Laboratories LLC                               *
*                               2040 Savage Road                               *
*                               Charleston, SC 29407                           *
*****
*                               DETECTOR AND SAMPLE DATA                       *
*
* Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]R405245006.CNF;1
* Acquisition date   : 3-OCT-2016 04:34:54 Sensitivity      : 3.000
* Detector ID        : GAM24 Energy tolerance: 1.500
* Elapsed live time  : 0 01:00:00.00 Abundance limit : 75.000
* Elapsed real time  : 0 01:00:02.16 Half life ratio : *****
* Sample date        : 15-DEC-2015 11:46:00 Analyst initials: MXR1
* Sample ID          : R405245006 Sample Quantity : 1.1668E+02 GRAM
* Batch Number       : 1596387 Wet Weight : 0.00000
* Wet wt corr        : 1.00000 Dry Weight : 0.00000
* Nuclide Library    : SOLID.NLB;6
*****
*                               CALIBRATION INFORMATION                         *
*
* Eff. Cal. date     : 17-JUN-2016 07:45:20 Eff. Geometry : CAN
* Eff. File          : DKA100:[CANBERRA.GAMMA]EFF_GAM24_CAN.CNF;7
*****

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Combined Activity-MDA Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM)	Cnt uncert (1.96-sigma)	MDA (pCi/GRAM)
K-40	1.978E+01	1.835E+00	6.251E-01
CO-57	1.903E-02	1.045E-01	8.760E-02
KR-85	7.312E+00	8.523E+00	1.479E+01
SR-85	7.168E-01	8.356E-01	1.450E+00
CD-109	2.232E+00	1.866E+00	2.165E+00
SN-126	1.438E-01	1.202E-01	1.398E-01
BA-137M	2.098E-01	6.212E-02	6.651E-02
CS-137	2.216E-01	6.562E-02	7.026E-02
TL-208	4.550E-01	1.043E-01	5.545E-02
PB-210	2.413E+00	2.951E+00	2.730E+00
BI-211	5.897E-01	9.713E-01	3.545E-01
PB-212	1.123E+00	1.285E-01	9.911E-02
BI-214	9.793E-01	2.175E-01	1.340E-01
PB-214	1.352E+00	2.169E-01	3.809E-01
RN-222	9.793E-01	2.175E-01	1.340E-01
RA-224	1.717E+00	1.481E+00	1.063E+00
RA-226	9.793E-01	2.175E-01	1.340E-01
AC-228	1.016E+00	3.746E-01	2.692E-01
RA-228	1.016E+00	3.746E-01	2.692E-01
TH-228	1.123E+00	1.285E-01	9.911E-02
TH-230	9.790E-01	2.174E-01	1.339E-01
TH-232	1.016E+00	3.746E-01	2.692E-01
TH-234	6.194E-01	1.432E+00	1.756E+00
U-234	9.790E-01	2.174E-01	1.339E-01
U-235	1.509E-01	2.300E-01	3.270E-01
U-238	6.194E-01	1.432E+00	1.756E+00
AM-243	2.177E-01	8.898E-02	7.563E-02
ANH-511	1.475E-04	7.713E-02	6.060E-02

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/GRAM)	K.L. Cnt Uncert (1.96-sigma)	MDA (pCi/GRAM)	
BE-7	8.377E+00	1.166E+01	2.405E+01	NOT IDENT.
NA-22	2.076E-02	4.237E-02	9.351E-02	NOT IDENT.

NA-24	0.000E+00	1.960E+41	0.000E+00	SHORT HLIF
AL-26	-1.271E-02	2.384E-02	4.247E-02	NOT IDENT.
SC-46	-8.079E-03	3.899E-01	7.408E-01	FAIL ABUN
V-48	0.000E+00	1.306E+04	0.000E+00	SHORT HLIF
CR-51	0.000E+00	3.801E+02	0.000E+00	SHORT HLIF
MN-54	-4.346E-02	7.237E-02	1.208E-01	NOT IDENT.
CO-56	-3.249E-02	4.410E-01	8.225E-01	NOT IDENT.
MN-56	0.000E+00	1.960E+41	0.000E+00	SHORT HLIF
CO-58	4.157E-02	5.748E-01	1.095E+00	NOT IDENT.
FE-59	-9.791E+00	7.740E+00	1.230E+01	NOT IDENT.
CO-60	-1.823E-02	4.942E-02	9.075E-02	NOT IDENT.
ZN-65	5.287E-02	2.492E-01	3.470E-01	NOT IDENT.
GE-68	1.716E+00	2.660E+00	5.672E+00	NOT IDENT.
AS-73	-1.585E+00	5.279E+00	9.372E+00	NOT IDENT.
AS-74	0.000E+00	5.185E+03	0.000E+00	SHORT HLIF
SE-75	-1.620E-01	2.032E-01	3.629E-01	NOT IDENT.
BR-77	0.000E+00	2.891E+36	0.000E+00	SHORT HLIF
SR-82	0.000E+00	7.531E+02	0.000E+00	SHORT HLIF
RB-83	2.444E-01	6.175E-01	1.241E+00	NOT IDENT.
RB-86	0.000E+00	2.602E+04	0.000E+00	SHORT HLIF
Y-88	1.300E-01	3.165E-01	6.783E-01	NOT IDENT.
Y-91	9.783E+01	5.441E+02	1.088E+03	NOT IDENT.
NB-94	-1.265E-02	3.475E-02	6.132E-02	FAIL ABUN
NB-95	-7.441E-01	1.055E+00	1.486E+00	NOT IDENT.
NB-95M	9.138E-01	2.449E+00	4.381E+00	NOT IDENT.
ZR-95	4.605E-01	1.349E+00	2.694E+00	NOT IDENT.
NB-97	0.000E+00	1.960E+41	0.000E+00	SHORT HLIF
ZR-97	0.000E+00	1.960E+41	0.000E+00	SHORT HLIF
MO-99	0.000E+00	3.012E+31	0.000E+00	SHORT HLIF
TC-99M	0.000E+00	1.960E+41	0.000E+00	SHORT HLIF
RH-101	5.084E-03	4.348E-02	6.338E-02	NOT IDENT.
RH-102	3.200E-02	6.658E-02	1.327E-01	FAIL ABUN
RU-103	8.407E+00	5.378E+00	1.200E+01	FAIL ABUN
RH-106	3.012E-01	5.429E-01	1.096E+00	NOT IDENT.
RU-106	3.012E-01	5.429E-01	1.096E+00	NOT IDENT.
AG-108M	-4.400E-03	3.287E-02	6.099E-02	NOT IDENT.
AG-110M	8.467E-02	1.188E-01	2.430E-01	NOT IDENT.
SN-113	-6.167E-02	2.509E-01	4.625E-01	NOT IDENT.
CD-115	0.000E+00	3.213E+38	0.000E+00	SHORT HLIF
SN-117M	0.000E+00	7.282E+04	0.000E+00	SHORT HLIF
TE-123M	6.423E-02	1.405E-01	2.563E-01	NOT IDENT.
SB-124	3.634E-01	1.504E+00	3.632E+00	FAIL ABUN
SB-125	2.281E-02	9.007E-02	1.805E-01	FAIL ABUN
TE-125M	-1.043E+02	2.748E+02	4.746E+02	NOT IDENT.
I-126	0.000E+00	1.094E+06	0.000E+00	SHORT HLIF
SB-126	0.000E+00	8.706E+05	0.000E+00	SHORT HLIF
SB-127	0.000E+00	7.065E+21	0.000E+00	SHORT HLIF
I-131	0.000E+00	2.789E+09	0.000E+00	SHORT HLIF
I-132	0.000E+00	9.501E+40	0.000E+00	SHORT HLIF
TE-132	0.000E+00	9.289E+25	0.000E+00	SHORT HLIF
BA-133	1.240E-02	4.128E-02	7.483E-02	FAIL ABUN
I-133	0.000E+00	8.163E+40	0.000E+00	SHORT HLIF
CS-134	0.000E+00	8.484E-02	1.426E-01	FAIL ABUN
CS-135	1.313E-01	1.545E-01	2.921E-01	NOT IDENT.
I-135	0.000E+00	1.960E+41	0.000E+00	SHORT HLIF
CS-136	0.000E+00	2.087E+05	0.000E+00	SHORT HLIF
CE-139	1.570E-02	1.175E-01	2.086E-01	NOT IDENT.
BA-140	0.000E+00	9.213E+05	0.000E+00	SHORT HLIF
LA-140	0.000E+00	3.024E+05	0.000E+00	SHORT HLIF
CE-141	-1.345E+01	2.607E+01	4.002E+01	NOT IDENT.
CE-143	0.000E+00	1.960E+41	0.000E+00	SHORT HLIF
CE-144	6.808E-02	3.711E-01	6.218E-01	NOT IDENT.
PM-144	2.687E-02	6.863E-02	1.323E-01	NOT IDENT.
PR-144	2.293E+00	5.935E+00	1.143E+01	NOT IDENT.
PM-146	-1.302E-02	4.337E-02	7.975E-02	NOT IDENT.
ND-147	0.000E+00	1.864E+07	0.000E+00	SHORT HLIF
PM-147	3.476E+01	8.390E+02	1.394E+03	NOT IDENT.
PM-149	0.000E+00	5.288E+39	0.000E+00	SHORT HLIF
EU-150	2.370E-02	2.936E-02	5.519E-02	FAIL ABUN
EU-152	-6.812E-02	1.114E-01	1.749E-01	FAIL ABUN
GD-153	-9.474E-02	1.856E-01	2.924E-01	NOT IDENT.
EU-154	5.883E-02	1.061E-01	2.355E-01	FAIL ABUN
EU-155	-6.420E-03	1.158E-01	2.056E-01	FAIL ABUN
TB-160	-3.894E-01	1.923E+00	3.466E+00	FAIL ABUN
HO-166M	-1.446E-02	6.050E-02	1.095E-01	FAIL ABUN
TM-171	9.517E+00	1.196E+01	2.332E+01	NOT IDENT.
HF-172	-1.215E-01	3.086E-01	4.196E-01	FAIL ABUN
LU-172	5.472E-02	9.675E-02	2.006E-01	FAIL ABUN

LU-176	4.886E-03	2.367E-02	4.643E-02	FAIL ABUN
HF-181	1.335E+00	3.898E+00	7.756E+00	NOT IDENT.
TA-182	6.620E-01	1.031E+00	2.162E+00	FAIL ABUN
RE-183	7.508E-02	1.926E+00	3.531E+00	NOT IDENT.
RE-184	2.128E+01	2.931E+01	6.092E+01	NOT IDENT.
W-188	-1.753E+01	1.204E+02	2.035E+02	FAIL ABUN
IR-192	1.009E-01	4.482E-01	8.749E-01	FAIL ABUN
HG-203	1.120E+00	2.498E+00	4.514E+00	NOT IDENT.
BI-207	1.782E-02	5.140E-02	1.069E-01	FAIL ABUN
PB-211	-3.460E-01	9.169E-01	1.467E+00	NOT IDENT.
BI-212	1.319E+00	9.515E-01	1.464E+00	FAIL ABUN
RN-219	2.150E-02	4.642E-01	8.744E-01	FAIL ABUN
RA-223	1.462E-01	5.805E-01	1.140E+00	FAIL ABUN
AC-227	1.049E-01	2.419E-01	4.786E-01	NOT IDENT.
TH-227	1.049E-01	2.419E-01	4.786E-01	NOT IDENT.
TH-229	2.137E-01	5.566E-01	9.976E-01	FAIL ABUN
PA-231	1.270E-01	4.947E-01	9.567E-01	NOT IDENT.
TH-231	1.462E-01	5.805E-01	1.140E+00	FAIL ABUN
PA-233	2.060E-02	6.012E-02	1.096E-01	NOT IDENT.
PA-234	-5.351E-02	3.945E-01	6.393E-01	FAIL ABUN
PA-234M	1.471E+00	4.979E+00	1.011E+01	NOT IDENT.
NP-237	2.060E-02	6.012E-02	1.096E-01	FAIL ABUN
NP-238	0.000E+00	5.423E+40	0.000E+00	SHORT HLIF
NP-239	-5.837E-02	2.387E-01	4.182E-01	FAIL ABUN
PU-239	5.036E+02	7.007E+02	6.781E+02	FAIL ABUN
AM-241	-2.704E-02	9.973E-02	1.786E-01	NOT IDENT.
CM-243	-8.335E-02	1.017E-01	1.701E-01	FAIL ABUN
BK-247	-4.380E-02	7.150E-02	1.301E-01	FAIL ABUN
CM-247	-2.627E-02	4.190E-02	7.388E-02	FAIL ABUN
CF-249	1.815E-02	4.056E-02	8.038E-02	NOT IDENT.
CF-251	-2.968E-02	1.219E-01	2.090E-01	NOT IDENT.

Nuclide Line Activity Report

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
K-40	1460.82	444	10.66*	1.354E+00	1.978E+01	1.978E+01	9.47
CO-57	122.06	10	85.60*	7.935E+00	9.019E-03	1.903E-02	560.56
	136.47	-----	10.68	7.753E+00	-----	Line Not Found	-----
KR-85	514.00	14	0.43*	3.075E+00	6.937E+00	7.312E+00	118.95
SR-85	514.00	14	96.00*	3.075E+00	3.136E-02	7.168E-01	118.95
CD-109	88.03	107	3.70*	7.497E+00	2.486E+00	3.859E+00	48.22
SN-126	64.28	20	9.60	5.531E+00	2.387E-01	2.387E-01	235.82
	86.94	107	8.90	7.497E+00	1.033E+00	1.033E+00	48.22
	87.57	107	37.00*	7.497E+00	2.486E-01	2.486E-01	48.22
BA-137M	661.66	73	89.90*	2.533E+00	2.060E-01	2.098E-01	30.21
CS-137	661.66	73	85.10*	2.533E+00	2.176E-01	2.216E-01	30.21
TL-208	277.37	44	6.60	5.023E+00	8.633E-01	8.633E-01	76.95
	583.19	168	85.00*	2.791E+00	4.550E-01	4.550E-01	23.40
	860.56	-----	12.50	2.074E+00	-----	Line Not Found	-----
PB-210	46.54	40	4.25*	2.569E+00	2.354E+00	2.413E+00	124.76
BI-211	72.87	-----	1.23	6.565E+00	-----	Line Not Found	-----
	351.06	311	12.92*	4.155E+00	3.723E+00	3.723E+00	16.38
PB-212	74.82	222	10.28	6.738E+00	2.064E+00	2.064E+00	27.68
	77.11	334	17.10	6.913E+00	1.815E+00	1.815E+00	18.27
	238.63	429	43.60*	5.636E+00	1.123E+00	1.123E+00	11.67
	300.09	-----	3.30	4.720E+00	-----	Line Not Found	-----
BI-214	609.32	187	45.49*	2.698E+00	9.790E-01	9.793E-01	22.66
	1120.29	44	14.92	1.689E+00	1.136E+00	1.137E+00	49.78
	1764.49	30	15.30	1.138E+00	1.114E+00	1.115E+00	53.30
PB-214	74.82	222	5.80	6.738E+00	3.659E+00	3.660E+00	27.68
	77.11	334	9.70	6.913E+00	3.200E+00	3.202E+00	18.27
	87.09	107	3.41	7.497E+00	2.697E+00	2.698E+00	48.22
	242.00	133	7.25	5.581E+00	2.108E+00	2.109E+00	38.24
	295.22	156	18.42	4.778E+00	1.137E+00	1.137E+00	24.94
	351.93	311	35.60*	4.155E+00	1.351E+00	1.352E+00	16.38
RN-222	609.32	187	45.49*	2.698E+00	9.790E-01	9.793E-01	22.66
	1120.29	44	14.92	1.689E+00	1.136E+00	1.137E+00	49.78
	1764.49	30	15.30	1.138E+00	1.114E+00	1.115E+00	53.30
RA-224	240.99	133	4.10*	5.581E+00	3.728E+00	3.728E+00	38.24
RA-226	609.32	187	45.49*	2.698E+00	9.790E-01	9.793E-01	22.66
	1120.29	44	14.92	1.689E+00	1.136E+00	1.137E+00	49.78
	1764.49	30	15.30	1.138E+00	1.114E+00	1.115E+00	53.30
AC-228	105.21	-----	1.10	7.950E+00	-----	Line Not Found	-----
	338.32	88	11.27	4.285E+00	1.177E+00	1.177E+00	47.56
	794.95	33	4.25	2.203E+00	2.297E+00	2.297E+00	57.96
	835.71	-----	1.61	2.121E+00	-----	Line Not Found	-----
	911.20	81	25.80*	1.985E+00	1.016E+00	1.016E+00	37.62
	968.97	50	15.80	1.892E+00	1.085E+00	1.085E+00	51.41
RA-228	105.21	-----	1.10	7.950E+00	-----	Line Not Found	-----
	338.32	88	11.27	4.285E+00	1.177E+00	1.177E+00	47.56
	794.95	33	4.25	2.203E+00	2.297E+00	2.297E+00	57.96
	835.71	-----	1.61	2.121E+00	-----	Line Not Found	-----

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
	911.20	81	25.80*	1.985E+00	1.016E+00	1.016E+00	37.62
	968.97	50	15.80	1.892E+00	1.085E+00	1.085E+00	51.41
TH-228	74.82	222	10.28	6.738E+00	2.064E+00	2.064E+00	27.68
	77.11	334	17.10	6.913E+00	1.815E+00	1.815E+00	18.27
	238.63	429	43.60*	5.636E+00	1.123E+00	1.123E+00	11.67
	300.09	-----	3.30	4.720E+00	-----	Line Not Found	-----
TH-230	609.32	187	45.49*	2.698E+00	9.790E-01	9.790E-01	22.66
	1120.29	44	14.92	1.689E+00	1.136E+00	1.136E+00	49.78
	1764.49	30	15.30	1.138E+00	1.114E+00	1.114E+00	53.30
TH-232	105.21	-----	1.10	7.950E+00	-----	Line Not Found	-----
	338.32	88	11.27	4.285E+00	1.177E+00	1.177E+00	47.56
	835.71	-----	1.61	2.121E+00	-----	Line Not Found	-----
	911.20	81	25.80*	1.985E+00	1.016E+00	1.016E+00	37.62
	968.97	50	15.80	1.892E+00	1.085E+00	1.085E+00	51.41
TH-234	63.29	20	3.70*	5.531E+00	6.194E-01	6.194E-01	235.82
	92.59	79	4.23	7.730E+00	1.546E+00	1.546E+00	94.71
U-234	609.32	187	45.49*	2.698E+00	9.790E-01	9.790E-01	22.66
	1120.29	44	14.92	1.689E+00	1.136E+00	1.136E+00	49.78
	1764.49	30	15.30	1.138E+00	1.114E+00	1.114E+00	53.30
U-235	89.96	-----	3.47	7.607E+00	-----	Line Not Found	-----
	93.35	79	5.60	7.730E+00	1.168E+00	1.168E+00	94.71
	143.76	20	10.96*	7.621E+00	1.509E-01	1.509E-01	155.48
	163.33	-----	5.08	7.206E+00	-----	Line Not Found	-----
	185.72	130	57.20	6.695E+00	2.192E-01	2.192E-01	40.31
	205.31	-----	5.01	6.280E+00	-----	Line Not Found	-----
U-238	63.29	20	3.70*	5.531E+00	6.194E-01	6.194E-01	235.82
	92.59	79	4.23	7.730E+00	1.546E+00	1.546E+00	94.71
AM-243	43.53	-----	5.90	1.694E+00	-----	Line Not Found	-----
	74.66	222	67.20*	6.738E+00	3.158E-01	3.158E-01	27.68
ANH-511	511.00	0	100.00*	3.093E+00	1.475E-04	1.475E-04	53366.13

Flag: "*" = Keyline

Total number of lines in spectrum 51
 Number of unidentified lines 11
 Number of lines tentatively identified by NID 40 78.43%

Nuclide Type :

Nuclide	Hlife	Decay	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
K-40	1.25E+09Y	1.00	1.978E+01	1.978E+01	0.187E+01	9.47	
CO-57	271.74D	2.11	9.019E-03	1.903E-02	10.67E-02	560.56	
KR-85	10.56Y	1.05	6.937E+00	7.312E+00	8.697E+00	118.95	
SR-85	64.84D	22.9	3.136E-02	7.168E-01	8.526E-01	118.95	
CD-109	461.40D	1.55	2.486E+00	3.859E+00	1.861E+00	48.22	
SN-126	2.30E+05Y	1.00	2.486E-01	2.486E-01	1.199E-01	48.22	
BA-137M	30.08Y	1.02	2.060E-01	2.098E-01	0.634E-01	30.21	
CS-137	30.08Y	1.02	2.176E-01	2.216E-01	0.670E-01	30.21	
TL-208	1.41E+10Y	1.00	4.550E-01	4.550E-01	1.065E-01	23.40	
PB-210	22.20Y	1.03	2.354E+00	2.413E+00	3.011E+00	124.76	
BI-211	7.04E+08Y	1.00	3.723E+00	3.723E+00	0.610E+00	16.38	
PB-212	1.41E+10Y	1.00	1.123E+00	1.123E+00	0.131E+00	11.67	
BI-214	1600.00Y	1.00	9.790E-01	9.793E-01	2.219E-01	22.66	
PB-214	1600.00Y	1.00	1.351E+00	1.352E+00	0.221E+00	16.38	
RN-222	1600.00Y	1.00	9.790E-01	9.793E-01	2.219E-01	22.66	
RA-224	1.41E+10Y	1.00	3.728E+00	3.728E+00	1.425E+00	38.24	
RA-226	1600.00Y	1.00	9.790E-01	9.793E-01	2.219E-01	22.66	
AC-228	1.41E+10Y	1.00	1.016E+00	1.016E+00	0.382E+00	37.62	
RA-228	1.41E+10Y	1.00	1.016E+00	1.016E+00	0.382E+00	37.62	
TH-228	1.41E+10Y	1.00	1.123E+00	1.123E+00	0.131E+00	11.67	
TH-230	7.54E+04Y	1.00	9.790E-01	9.790E-01	2.219E-01	22.66	
TH-232	1.41E+10Y	1.00	1.016E+00	1.016E+00	0.382E+00	37.62	
TH-234	4.47E+09Y	1.00	6.194E-01	6.194E-01	14.61E-01	235.82	
U-234	2.45E+05Y	1.00	9.790E-01	9.790E-01	2.219E-01	22.66	
U-235	7.04E+08Y	1.00	1.509E-01	1.509E-01	2.347E-01	155.48	
U-238	4.47E+09Y	1.00	6.194E-01	6.194E-01	14.61E-01	235.82	
AM-243	7370.00Y	1.00	3.158E-01	3.158E-01	0.874E-01	27.68	
ANH-511	1.00E+09Y	1.00	1.475E-04	1.475E-04	787.0E-04	53366.13	
Total Activity :			5.342E+01	5.593E+01			

Grand Total Activity : 5.342E+01 5.593E+01

Flags: "K" = Keyline not found "M" = Manually accepted
 "E" = Manually edited "A" = Nuclide specific abn. limit

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
0	82.94	28	251	3.89	165.95	161	10	7.16E-03	****	7.28E+00	T
0	129.60	39	179	1.45	259.28	254	11	1.02E-02	****	7.86E+00	T
0	202.36	19	63	0.68	404.83	401	6	5.04E-03	****	6.34E+00	T
4	207.68	17	27	0.83	415.48	414	9	4.68E-03	91.0	6.23E+00	
4	209.44	59	63	1.23	419.00	414	9	1.60E-02	52.8	6.19E+00	T
0	270.53	25	70	0.73	541.22	538	8	6.85E-03	****	5.12E+00	T
0	308.36	29	45	0.67	616.90	611	11	8.02E-03	****	4.62E+00	T
0	410.00	26	48	1.55	820.25	815	10	7.18E-03	****	3.68E+00	T
0	420.95	18	28	1.09	842.14	837	8	4.99E-03	****	3.60E+00	
0	463.68	33	54	2.32	927.63	920	14	9.26E-03	****	3.34E+00	T
0	646.74	12	8	1.41	1293.88	1291	6	3.43E-03	90.5	2.58E+00	T
4	666.53	23	11	2.33	1333.48	1315	27	6.44E-03	97.0	2.52E+00	T
0	675.49	5	17	1.22	1351.40	1346	7	1.54E-03	****	2.49E+00	
0	727.41	32	26	1.13	1455.28	1449	12	9.18E-03	73.6	2.36E+00	T
0	769.41	9	20	0.84	1539.32	1533	8	2.51E-03	****	2.26E+00	
0	870.33	10	22	3.41	1741.26	1732	13	2.81E-03	****	2.06E+00	T
0	951.00	5	15	1.07	1902.66	1898	6	1.53E-03	****	1.92E+00	
0	1009.31	11	9	0.78	2019.35	2013	10	3.11E-03	****	1.83E+00	
0	1113.14	24	3	0.87	2227.11	2222	11	6.96E-03	47.6	1.70E+00	T
0	1160.45	10	6	0.78	2321.80	2316	9	2.98E-03	****	1.64E+00	
0	1282.67	11	3	1.53	2566.37	2564	6	3.31E-03	78.4	1.51E+00	
0	1298.87	9	4	1.51	2598.79	2595	8	2.64E-03	****	1.50E+00	T
0	1378.62	7	5	1.18	2758.39	2754	7	1.91E-03	****	1.42E+00	
0	1399.55	9	6	3.94	2800.28	2792	12	2.50E-03	****	1.40E+00	
0	1588.22	12	2	2.48	3177.87	3172	10	3.44E-03	74.4	1.26E+00	

Flags: "T" = Tentatively associated

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*****
*                               GEL Laboratories LLC                               *
*                               2040 Savage Road                               *
*                               Charleston, SC 29407                           *
*****
*                               DETECTOR AND SAMPLE DATA                       *
*
* Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]R405245006.CNF;1
* Acquisition date   : 3-OCT-2016 04:34:54 Sensitivity      : 3.000
* Detector ID       : GAM24 Energy tolerance: 1.500
* Elapsed live time : 0 01:00:00.00 Abundance limit : 75.000
* Elapsed real time : 0 01:00:02.16 Half life ratio : *****
* Sample date       : 15-DEC-2015 11:46:00 Nuclide Library : SOLID
* Sample ID         : R405245006 Analyst initials: MXR1
* Batch Number      : 1596387 Sample Quantity : 1.1668E+02 GRAM
* Wet wt corr       : 1.00000 Wet Weight : 0.00000
*                               Dry Weight : 0.00000
*****
*                               CALIBRATION INFORMATION                         *
*
* Eff. Cal. date    : 17-JUN-2016 07:45:20 Eff. Geometry   : CAN
* Eff. File         : DKA100:[CANBERRA.GAMMA]EFF_GAM24_CAN.CNF;7
*****

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Combined Critical Level Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Lc (pCi/GRAM)
K-40	2.525E-01
CO-57	4.106E-02
KR-85	6.707E+00
SR-85	6.575E-01
CD-109	1.033E+00
SN-126	6.671E-02
BA-137M	2.935E-02
CS-137	3.101E-02
TL-208	2.404E-02
PB-210	1.277E+00
BI-211	1.609E-01
PB-212	4.598E-02
BI-214	5.988E-02
PB-214	1.846E-01
RN-222	5.988E-02
RA-224	4.930E-01
RA-226	5.988E-02
AC-228	1.176E-01
RA-228	1.176E-01
TH-228	4.598E-02
TH-230	5.986E-02
TH-232	1.176E-01
TH-234	8.348E-01
U-234	5.986E-02
U-235	1.529E-01
U-238	8.348E-01
AM-243	3.585E-02
ANH-511	2.747E-02

---- Non-Identified Nuclides ----

Nuclide	Lc (pCi/GRAM)	
BE-7	1.086E+01	NOT IDENT.
NA-22	3.969E-02	NOT IDENT.
NA-24	0.000E+00	SHORT HLIF

AL-26	1.342E-02	NOT IDENT.
SC-46	3.220E-01	FAIL ABUN
V-48	0.000E+00	SHORT HLIF
CR-51	0.000E+00	SHORT HLIF
MN-54	5.253E-02	NOT IDENT.
CO-56	3.538E-01	NOT IDENT.
MN-56	0.000E+00	SHORT HLIF
CO-58	4.768E-01	NOT IDENT.
FE-59	5.296E+00	NOT IDENT.
CO-60	3.880E-02	NOT IDENT.
ZN-65	1.503E-01	NOT IDENT.
GE-68	2.509E+00	NOT IDENT.
AS-73	4.413E+00	NOT IDENT.
AS-74	0.000E+00	SHORT HLIF
SE-75	1.659E-01	NOT IDENT.
BR-77	0.000E+00	SHORT HLIF
SR-82	0.000E+00	SHORT HLIF
RB-83	5.534E-01	NOT IDENT.
RB-86	0.000E+00	SHORT HLIF
Y-88	2.858E-01	NOT IDENT.
Y-91	4.768E+02	NOT IDENT.
NB-94	2.705E-02	FAIL ABUN
NB-95	6.516E-01	NOT IDENT.
NB-95M	2.043E+00	NOT IDENT.
ZR-95	1.180E+00	NOT IDENT.
NB-97	0.000E+00	SHORT HLIF
ZR-97	0.000E+00	SHORT HLIF
MO-99	0.000E+00	SHORT HLIF
TC-99M	0.000E+00	SHORT HLIF
RH-101	2.974E-02	NOT IDENT.
RH-102	5.949E-02	FAIL ABUN
RU-103	5.465E+00	FAIL ABUN
RH-106	4.909E-01	NOT IDENT.
RU-106	4.909E-01	NOT IDENT.
AG-108M	2.774E-02	NOT IDENT.
AG-110M	1.082E-01	NOT IDENT.
SN-113	2.107E-01	NOT IDENT.
CD-115	0.000E+00	SHORT HLIF
SN-117M	0.000E+00	SHORT HLIF
TE-123M	1.202E-01	NOT IDENT.
SB-124	1.369E+00	FAIL ABUN
SB-125	8.016E-02	FAIL ABUN
TE-125M	2.232E+02	NOT IDENT.
I-126	0.000E+00	SHORT HLIF
SB-126	0.000E+00	SHORT HLIF
SB-127	0.000E+00	SHORT HLIF
I-131	0.000E+00	SHORT HLIF
I-132	0.000E+00	SHORT HLIF
TE-132	0.000E+00	SHORT HLIF
BA-133	3.380E-02	FAIL ABUN
I-133	0.000E+00	SHORT HLIF
CS-134	6.526E-02	FAIL ABUN
CS-135	1.354E-01	NOT IDENT.
I-135	0.000E+00	SHORT HLIF
CS-136	0.000E+00	SHORT HLIF
CE-139	9.756E-02	NOT IDENT.
BA-140	0.000E+00	SHORT HLIF
LA-140	0.000E+00	SHORT HLIF
CE-141	1.877E+01	NOT IDENT.
CE-143	0.000E+00	SHORT HLIF
CE-144	2.901E-01	NOT IDENT.
PM-144	5.985E-02	NOT IDENT.
PR-144	5.172E+00	NOT IDENT.
PM-146	3.549E-02	NOT IDENT.
ND-147	0.000E+00	SHORT HLIF
PM-147	6.489E+02	NOT IDENT.
PM-149	0.000E+00	SHORT HLIF
EU-150	2.546E-02	FAIL ABUN
EU-152	7.931E-02	FAIL ABUN
GD-153	1.371E-01	NOT IDENT.
EU-154	1.004E-01	FAIL ABUN
EU-155	9.687E-02	FAIL ABUN
TB-160	1.499E+00	FAIL ABUN
HO-166M	4.801E-02	FAIL ABUN
TM-171	1.099E+01	NOT IDENT.
HF-172	1.965E-01	FAIL ABUN
LU-172	8.955E-02	FAIL ABUN
LU-176	2.119E-02	FAIL ABUN

HF-181	3.475E+00	NOT IDENT.
TA-182	9.610E-01	FAIL ABUN
RE-183	1.667E+00	NOT IDENT.
RE-184	2.694E+01	NOT IDENT.
W-188	9.350E+01	FAIL ABUN
IR-192	4.009E-01	FAIL ABUN
HG-203	2.089E+00	NOT IDENT.
BI-207	4.671E-02	FAIL ABUN
PB-211	6.713E-01	NOT IDENT.
BI-212	6.769E-01	FAIL ABUN
RN-219	4.018E-01	FAIL ABUN
RA-223	5.204E-01	FAIL ABUN
AC-227	2.220E-01	NOT IDENT.
TH-227	2.220E-01	NOT IDENT.
TH-229	4.683E-01	FAIL ABUN
PA-231	4.435E-01	NOT IDENT.
TH-231	5.204E-01	FAIL ABUN
PA-233	4.981E-02	NOT IDENT.
PA-234	2.821E-01	FAIL ABUN
PA-234M	4.497E+00	NOT IDENT.
NP-237	4.981E-02	FAIL ABUN
NP-238	0.000E+00	SHORT HLIF
NP-239	1.951E-01	FAIL ABUN
PU-239	3.213E+02	FAIL ABUN
AM-241	8.434E-02	NOT IDENT.
CM-243	7.963E-02	FAIL ABUN
BK-247	5.941E-02	FAIL ABUN
CM-247	3.369E-02	FAIL ABUN
CF-249	3.673E-02	NOT IDENT.
CF-251	9.710E-02	NOT IDENT.

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*****
*                                     GEL Laboratories LLC                       *
*                                     2040 Savage Road                          *
*                                     Charleston, SC 29407                       *
*****
*                                     DETECTOR AND SAMPLE DATA                   *
*
* Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]R405245006.CNF;1
* Acquisition date   : 3-OCT-2016 04:34:54 Sensitivity      : 3.000
* Detector ID       : GAM24 Energy tolerance: 1.500
* Elapsed live time : 0 01:00:00.00 Abundance limit : 75.000
* Elapsed real time : 0 01:00:02.16 Half life ratio : *****
* Sample date       : 15-DEC-2015 11:46:00 Nuclide Library : SOLID
* Sample ID         : R405245006 Analyst initials: MXR1
* Batch Number      : 1596387 Sample Quantity : 1.1668E+02 GRAM
* Wet wt corr       : 1.00000 Quantity Err(%) : 1.7141E-03 %
* Wet Weight        : 0.00000
* Dry Weight        : 0.00000
*****
*                                     CALIBRATION INFORMATION                   *
*
* Eff. Cal. date    : 17-JUN-2016 07:45:20 Eff. Geometry   : CAN
* Eff. File         : DKA100:[CANBERRA.GAMMA]EFF_GAM24_CAN.CNF;7
*****

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Combined Activity-MDA Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM)	Act Error (1.96-sigma)	TPU (1.96-sigma)
K-40	1.978E+01	2.104E+00	2.104E+00
CO-57	1.903E-02	1.045E-01	1.045E-01
KR-85	7.312E+00	8.529E+00	8.529E+00
SR-85	7.168E-01	8.361E-01	8.361E-01
CD-109	2.232E+00	1.886E+00	1.886E+00
SN-126	1.438E-01	1.213E-01	1.213E-01
BA-137M	2.098E-01	6.277E-02	6.277E-02
CS-137	2.216E-01	6.631E-02	6.631E-02
TL-208	4.550E-01	1.061E-01	1.061E-01
PB-210	2.413E+00	2.957E+00	2.957E+00
BI-211	5.897E-01	9.901E-01	9.901E-01
PB-212	1.123E+00	1.415E-01	1.415E-01
BI-214	9.793E-01	2.215E-01	2.215E-01
PB-214	1.352E+00	2.240E-01	2.240E-01
RN-222	9.793E-01	2.215E-01	2.215E-01
RA-224	1.717E+00	1.489E+00	1.489E+00
RA-226	9.793E-01	2.215E-01	2.215E-01
AC-228	1.016E+00	3.782E-01	3.782E-01
RA-228	1.016E+00	3.782E-01	3.782E-01
TH-228	1.123E+00	1.415E-01	1.415E-01
TH-230	9.790E-01	2.214E-01	2.214E-01
TH-232	1.016E+00	3.782E-01	3.782E-01
TH-234	6.194E-01	1.438E+00	1.438E+00
U-234	9.790E-01	2.214E-01	2.214E-01
U-235	1.509E-01	2.301E-01	2.301E-01
U-238	6.194E-01	1.438E+00	1.438E+00
AM-243	2.177E-01	9.083E-02	9.083E-02
ANH-511	1.475E-04	7.713E-02	7.713E-02

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/GRAM)	K.L Act error (1.96-sigma)	TPU (1.96-sigma)	
BE-7	8.377E+00	1.166E+01	1.226E+01	NOT IDENT.
NA-22	2.076E-02	4.238E-02	4.340E-02	NOT IDENT.

NA-24	-1.000E+41	1.284E+43	0.000E+00	SHORT HLIF
AL-26	-1.271E-02	2.385E-02	2.453E-02	NOT IDENT.
SC-46	-8.079E-03	3.899E-01	3.899E-01	FAIL ABUN
V-48	-4.229E+03	1.306E+04	1.320E+04	SHORT HLIF
CR-51	9.950E+00	3.801E+02	3.802E+02	SHORT HLIF
MN-54	-4.346E-02	7.239E-02	7.499E-02	NOT IDENT.
CO-56	-3.249E-02	4.410E-01	4.412E-01	NOT IDENT.
MN-56	-1.000E+41	3.525E+41	0.000E+00	SHORT HLIF
CO-58	4.157E-02	5.748E-01	5.752E-01	NOT IDENT.
FE-59	-9.791E+00	7.773E+00	8.939E+00	NOT IDENT.
CO-60	-1.823E-02	4.943E-02	5.011E-02	NOT IDENT.
ZN-65	5.287E-02	2.492E-01	2.503E-01	NOT IDENT.
GE-68	1.716E+00	2.661E+00	2.771E+00	NOT IDENT.
AS-73	-1.585E+00	5.289E+00	5.338E+00	NOT IDENT.
AS-74	1.241E+03	5.186E+03	5.216E+03	SHORT HLIF
SE-75	-1.620E-01	2.034E-01	2.161E-01	NOT IDENT.
BR-77	2.528E+37	2.136E+38	0.000E+00	SHORT HLIF
SR-82	-4.481E+02	7.533E+02	7.800E+02	SHORT HLIF
RB-83	2.444E-01	6.185E-01	6.282E-01	NOT IDENT.
RB-86	6.200E+03	2.603E+04	2.618E+04	SHORT HLIF
Y-88	1.300E-01	3.166E-01	3.220E-01	NOT IDENT.
Y-91	9.783E+01	5.442E+02	5.459E+02	NOT IDENT.
NB-94	-1.265E-02	3.476E-02	3.522E-02	FAIL ABUN
NB-95	-7.441E-01	1.055E+00	1.107E+00	NOT IDENT.
NB-95M	9.138E-01	2.450E+00	2.484E+00	NOT IDENT.
ZR-95	4.605E-01	1.349E+00	1.365E+00	NOT IDENT.
NB-97	-1.000E+41	5.339E+41	0.000E+00	SHORT HLIF
ZR-97	-1.000E+41	4.343E+41	0.000E+00	SHORT HLIF
MO-99	-1.017E+31	3.013E+31	0.000E+00	SHORT HLIF
TC-99M	1.000E+41	2.855E+41	0.000E+00	SHORT HLIF
RH-101	5.084E-03	4.349E-02	4.355E-02	NOT IDENT.
RH-102	3.200E-02	6.663E-02	6.817E-02	FAIL ABUN
RU-103	8.407E+00	5.393E+00	6.592E+00	FAIL ABUN
RH-106	3.012E-01	5.432E-01	5.599E-01	NOT IDENT.
RU-106	3.012E-01	5.432E-01	5.599E-01	NOT IDENT.
AG-108M	-4.400E-03	3.287E-02	3.293E-02	NOT IDENT.
AG-110M	8.467E-02	1.188E-01	1.248E-01	NOT IDENT.
SN-113	-6.167E-02	2.509E-01	2.524E-01	NOT IDENT.
CD-115	1.124E+38	3.219E+38	0.000E+00	SHORT HLIF
SN-117M	4.657E+04	7.302E+04	7.597E+04	SHORT HLIF
TE-123M	6.423E-02	1.405E-01	1.435E-01	NOT IDENT.
SB-124	3.634E-01	1.504E+00	1.513E+00	FAIL ABUN
SB-125	2.281E-02	9.008E-02	9.066E-02	FAIL ABUN
TE-125M	-1.043E+02	2.749E+02	2.789E+02	NOT IDENT.
I-126	1.151E+06	1.105E+06	1.220E+06	SHORT HLIF
SB-126	7.010E+05	8.802E+05	9.352E+05	SHORT HLIF
SB-127	6.793E+21	1.153E+22	0.000E+00	SHORT HLIF
I-131	6.858E+08	2.789E+09	2.807E+09	SHORT HLIF
I-132	1.000E+41	1.807E+42	0.000E+00	SHORT HLIF
TE-132	4.876E+25	9.489E+25	0.000E+00	SHORT HLIF
BA-133	1.240E-02	4.128E-02	4.166E-02	FAIL ABUN
I-133	-1.000E+41	1.946E+41	0.000E+00	SHORT HLIF
CS-134	1.494E-01	8.508E-02	1.085E-01	FAIL ABUN
CS-135	1.313E-01	1.548E-01	1.657E-01	NOT IDENT.
I-135	-1.000E+41	7.754E+41	0.000E+00	SHORT HLIF
CS-136	6.614E+03	2.087E+05	2.087E+05	SHORT HLIF
CE-139	1.570E-02	1.175E-01	1.177E-01	NOT IDENT.
BA-140	1.470E+05	9.213E+05	9.237E+05	SHORT HLIF
LA-140	-9.474E+04	3.024E+05	3.054E+05	SHORT HLIF
CE-141	-1.345E+01	2.607E+01	2.677E+01	NOT IDENT.
CE-143	-1.000E+41	5.967E+42	0.000E+00	SHORT HLIF
CE-144	6.808E-02	3.711E-01	3.724E-01	NOT IDENT.
PM-144	2.687E-02	6.865E-02	6.971E-02	NOT IDENT.
PR-144	2.293E+00	5.936E+00	6.025E+00	NOT IDENT.
PM-146	-1.302E-02	4.338E-02	4.377E-02	NOT IDENT.
ND-147	-3.468E+06	1.864E+07	1.870E+07	SHORT HLIF
PM-147	3.476E+01	8.390E+02	8.392E+02	NOT IDENT.
PM-149	-3.972E+39	5.357E+39	0.000E+00	SHORT HLIF
EU-150	2.370E-02	2.938E-02	3.126E-02	FAIL ABUN
EU-152	-6.812E-02	1.114E-01	1.156E-01	FAIL ABUN
GD-153	-9.474E-02	1.856E-01	1.905E-01	NOT IDENT.
EU-154	5.883E-02	1.061E-01	1.094E-01	FAIL ABUN
EU-155	-6.420E-03	1.158E-01	1.158E-01	FAIL ABUN
TB-160	-3.894E-01	1.923E+00	1.931E+00	FAIL ABUN
HO-166M	-1.446E-02	6.050E-02	6.085E-02	FAIL ABUN
TM-171	9.517E+00	1.198E+01	1.273E+01	NOT IDENT.
HF-172	-1.215E-01	3.092E-01	3.140E-01	FAIL ABUN
LU-172	5.472E-02	9.691E-02	1.000E-01	FAIL ABUN

LU-176	4.886E-03	2.367E-02	2.378E-02	FAIL ABUN
HF-181	1.335E+00	3.899E+00	3.945E+00	NOT IDENT.
TA-182	6.620E-01	1.032E+00	1.074E+00	FAIL ABUN
RE-183	7.508E-02	1.926E+00	1.926E+00	NOT IDENT.
RE-184	2.128E+01	2.973E+01	3.124E+01	NOT IDENT.
W-188	-1.753E+01	1.204E+02	1.206E+02	FAIL ABUN
IR-192	1.009E-01	4.482E-01	4.505E-01	FAIL ABUN
HG-203	1.120E+00	2.499E+00	2.549E+00	NOT IDENT.
BI-207	1.782E-02	5.141E-02	5.203E-02	FAIL ABUN
PB-211	-3.460E-01	9.171E-01	9.302E-01	NOT IDENT.
BI-212	1.319E+00	9.538E-01	1.124E+00	FAIL ABUN
RN-219	2.150E-02	4.642E-01	4.643E-01	FAIL ABUN
RA-223	1.462E-01	5.806E-01	5.843E-01	FAIL ABUN
AC-227	1.049E-01	2.423E-01	2.469E-01	NOT IDENT.
TH-227	1.049E-01	2.423E-01	2.469E-01	NOT IDENT.
TH-229	2.137E-01	5.567E-01	5.649E-01	FAIL ABUN
PA-231	1.270E-01	4.954E-01	4.987E-01	NOT IDENT.
TH-231	1.462E-01	5.806E-01	5.843E-01	FAIL ABUN
PA-233	2.060E-02	6.013E-02	6.084E-02	NOT IDENT.
PA-234	-5.351E-02	3.992E-01	4.000E-01	FAIL ABUN
PA-234M	1.471E+00	4.979E+00	5.023E+00	NOT IDENT.
NP-237	2.060E-02	6.013E-02	6.084E-02	FAIL ABUN
NP-238	4.382E+40	5.426E+40	0.000E+00	SHORT HLIF
NP-239	-5.837E-02	2.388E-01	2.402E-01	FAIL ABUN
PU-239	5.036E+02	7.011E+02	7.369E+02	FAIL ABUN
AM-241	-2.704E-02	9.975E-02	1.005E-01	NOT IDENT.
CM-243	-8.335E-02	1.020E-01	1.087E-01	FAIL ABUN
BK-247	-4.380E-02	7.205E-02	7.470E-02	FAIL ABUN
CM-247	-2.627E-02	4.213E-02	4.377E-02	FAIL ABUN
CF-249	1.815E-02	4.059E-02	4.140E-02	NOT IDENT.
CF-251	-2.968E-02	1.219E-01	1.227E-01	NOT IDENT.

 * GEL Laboratories LLC *
 * 2040 Savage Road *
 * Charleston, SC 29407 *
 * GAMMA SPECTROSCOPY BACKGROUND REPORT *

ENERGY	MDA COUNTS	ENERGY	MDA COUNTS	ENERGY	MDA COUNTS
43.53	46.6934	87.09	145.6589	136.47	61.3499
45.60	66.4874	87.57	145.7721	140.51	0.0000
46.54	69.5789	88.03	145.8800	143.76	69.9058
49.72	0.0000	88.34	148.7874	144.24	81.0290
51.35	83.2463	88.47	148.8184	145.44	91.8591
51.87	83.3441	89.96	149.1730	152.43	83.3357
52.39	68.5410	1093.63	119.4674	153.25	0.0000
52.97	76.5867	91.11	0.0000	323.87	75.3844
53.44	92.5970	92.59	110.2045	156.02	0.0000
54.07	97.7106	93.35	110.3341	158.56	0.0000
57.36	0.0000	94.56	110.5408	159.00	66.4568
57.53	102.4584	94.65	67.2642	162.33	77.2279
57.98	93.5059	94.67	67.2661	162.66	0.0000
59.27	103.8389	94.87	67.2866	163.33	58.5693
59.32	103.8499	97.43	90.5452	165.86	66.9491
59.54	103.8970	98.43	75.5681	176.31	59.3689
60.96	106.5601	98.44	75.5692	176.60	0.0000
61.17	106.6055	99.53	91.9123	177.52	63.0087
62.93	122.8957	100.11	85.4979	181.07	0.0000
63.29	122.9836	102.03	86.8256	181.52	58.8859
63.58	123.0547	103.18	97.8429	184.41	57.4592
64.28	137.1428	103.37	92.4324	143.76	57.5339
66.73	124.1539	105.21	83.9562	193.51	68.8391
67.24	110.6186	105.31	90.5109	197.03	55.7403
125.81	106.6113	106.12	76.4231	198.01	67.9210
67.75	104.5751	106.47	79.7379	201.83	57.2088
69.67	113.1866	109.28	88.8286	203.43	71.5161
70.83	96.2443	111.00	75.8504	205.31	43.9607
72.81	120.0533	111.76	0.0000	210.85	52.3646
72.87	120.0666	114.06	86.1052	215.65	64.0939
74.66	110.7633	116.30	0.0000	222.11	55.7817
74.82	110.7951	116.74	70.9072	227.09	57.2670
74.97	110.8244	119.76	68.2260	227.38	57.2810
77.11	111.2451	121.12	59.4332	228.16	0.0000
78.74	111.5617	121.22	59.4409	228.18	48.5977
79.69	83.8080	121.78	74.7273	116.74	48.5977
80.12	83.8702	122.06	74.7550	235.69	55.1766
80.19	0.0000	122.92	74.8383	235.96	61.4601
80.57	83.9343	123.07	74.8531	238.63	55.3115
81.00	83.9960	265.00	74.9119	238.98	0.0000
81.07	84.0057	125.81	85.2078	240.99	55.4189
81.75	103.0259	127.23	74.1297	242.00	55.4653
83.79	103.3788	127.91	70.8214	244.70	50.5341
84.00	103.4147	129.30	70.9452	252.40	0.0000
85.43	139.6226	131.20	61.7069	252.80	50.8636
86.55	112.3274	133.02	57.3208	254.15	0.0000
86.79	145.5877	133.52	60.3752	256.23	46.7520
86.94	145.6233	136.00	63.5862	260.90	0.0000

ENERGY	MDA COUNTS	ENERGY	MDA COUNTS	ENERGY	MDA COUNTS
264.66	52.1935	355.39	0.0000	584.27	14.3486
264.80	52.1985	356.01	24.6055	595.83	0.0000
265.00	47.9279	364.49	0.0000	427.87	27.8657
268.22	37.3217	366.42	0.0000	602.52	0.0000
269.46	55.3903	372.51	30.3789	604.72	17.0586
270.03	52.4082	375.05	26.7373	607.14	18.6284
271.23	52.4554	377.52	31.3936	609.32	23.8254
273.65	0.0000	356.01	25.9509	610.33	23.8348
276.40	49.2070	388.16	30.6622	614.28	32.6971
277.37	44.9224	388.63	0.0000	618.01	30.1493
277.60	44.9308	391.69	39.1050	620.36	24.9756
278.00	44.9435	264.66	29.9486	621.93	17.7021
279.20	42.8210	401.81	42.1436	630.19	0.0000
279.54	44.1301	402.40	46.8414	631.29	18.8159
279.70	44.1353	404.85	46.4375	633.25	20.9229
280.46	41.5625	410.95	31.0651	634.78	0.0000
283.69	45.1329	413.71	29.6992	635.95	23.0402
284.31	0.0000	414.70	0.0000	636.99	0.0000
285.41	53.8804	423.72	0.0000	645.85	12.6177
285.90	0.0000	427.09	16.1467	657.76	22.1860
287.50	35.6844	427.87	18.0541	657.90	0.0000
290.67	45.7986	433.94	36.2273	661.66	19.0459
293.27	0.0000	439.40	34.4209	664.57	0.0000
351.93	45.5106	453.88	26.0140	666.33	0.0000
295.96	42.0313	463.37	31.9513	666.50	0.0000
879.38	47.3730	468.07	23.2935	667.71	0.0000
299.98	43.2052	473.00	0.0000	677.62	14.3734
300.09	45.6672	475.06	31.1680	685.70	0.0000
300.13	45.6682	476.78	25.3462	695.00	0.0000
301.36	49.2244	477.60	19.5052	696.49	24.6659
302.85	52.7954	482.18	20.5275	696.51	24.6659
256.23	44.9280	487.02	0.0000	697.00	0.0000
304.85	0.0000	492.35	0.0000	697.30	25.7461
306.78	33.5283	497.08	13.7858	697.49	26.8209
308.46	33.5677	505.52	25.2131	702.65	23.6480
311.90	27.8913	507.63	0.0000	706.68	17.2246
316.51	36.4172	511.00	31.7227	711.68	17.2565
319.41	0.0000	514.00	31.7682	720.70	0.0000
320.08	0.0000	514.00	31.7682	721.93	0.0000
321.04	37.4199	520.40	17.9238	722.78	12.9961
323.87	33.0276	520.69	0.0000	722.91	12.9966
325.23	34.8447	522.65	0.0000	723.31	17.8730
328.76	0.0000	527.90	0.0000	724.19	26.0049
333.37	37.7267	528.26	12.9931	727.33	18.4416
333.97	32.3496	529.59	24.0020	733.00	18.2622
334.37	32.3577	529.87	0.0000	735.93	14.1468
338.28	43.2539	531.02	0.0000	333.97	16.3324
338.32	43.2549	537.26	0.0000	739.50	0.0000
311.90	43.3154	546.56	0.0000	747.24	16.3898
340.48	43.3154	552.55	18.1912	748.06	13.1157
340.55	0.0000	563.25	24.3721	752.31	17.5143
344.28	43.4209	569.33	27.4922	753.82	0.0000
345.93	42.1075	946.00	27.4944	756.73	13.1563
351.06	32.7056	569.70	23.4230	756.80	13.1567
351.93	32.7231	583.19	14.3418	884.68	18.1362

ENERGY	MDA COUNTS	ENERGY	MDA COUNTS	ENERGY	MDA COUNTS
765.81	28.0473	1274.44	15.9730	1620.50	4.1082
766.42	24.7522	1001.03	15.1064	1621.92	3.0818
766.84	21.4551	1002.74	13.0392	1678.03	0.0000
772.60	0.0000	1004.73	22.7727	1690.97	2.0818
776.52	0.0000	507.63	0.0000	1750.46	0.0000
739.50	0.0000	1025.87	0.0000	1764.49	6.3307
778.90	24.3087	1028.54	0.0000	1063.66	9.5059
783.70	0.0000	1037.84	13.4683	1771.35	5.2823
785.37	23.2550	1038.76	0.0000	1791.20	0.0000
792.07	9.9895	631.29	8.1002	1808.65	3.1906
794.95	19.9988	1048.07	0.0000	1810.72	0.0000
795.86	21.6725	1049.04	11.7083	1836.06	6.4120
810.06	17.8685	1050.41	14.4160		
810.29	15.6361	1063.66	12.6593		
344.28	13.4028	1077.00	0.0000		
810.76	14.5213	1077.34	12.7072		
815.77	0.0000	1085.87	11.8265		
1048.07	0.0000	1093.63	16.4092		
832.01	12.3746	1099.45	28.3038		
834.85	22.5203	1112.07	16.1229		
835.71	15.7688	1112.84	13.6130		
836.80	0.0000	1115.54	11.0024		
846.75	0.0000	1120.29	13.6393		
846.77	13.5649	1120.55	13.6402		
856.80	0.0000	1221.41	13.6429		
860.56	20.4382	1129.67	9.2029		
871.09	20.5078	1131.51	0.0000		
873.19	13.6807	1147.95	0.0000		
875.33	0.0000	1173.23	13.9590		
879.38	15.9921	1177.95	13.0438		
880.51	18.2832	1189.05	14.0140		
883.24	19.4432	1204.77	15.0068		
884.68	13.7305	1221.41	14.1266		
889.28	11.4587	1231.02	16.0475		
894.76	13.7739	1235.36	0.0000		
898.04	10.3411	1238.28	18.9124		
900.72	21.8497	1260.41	0.0000		
903.28	11.5088	1271.87	14.2987		
911.20	16.1516	1274.44	6.6766		
912.08	16.1562	1274.54	6.6770		
923.98	0.0000	1291.59	4.7882		
926.50	11.5910	1298.22	0.0000		
929.11	11.6003	1312.11	0.0000		
937.49	26.7482	1332.49	15.4678		
944.13	0.0000	1362.66	0.0000		
946.00	17.4890	1365.19	5.8433		
949.00	15.4038	1368.63	0.0000		
667.71	0.0000	1384.29	7.8242		
962.31	28.1182	1408.01	4.9158		
964.08	12.6598	1457.56	0.0000		
966.17	21.1121	1460.82	5.9659		
911.20	26.4120	1489.16	5.0012		
968.97	26.4120	1505.03	3.0106		
983.53	0.0000	1584.12	4.8946		
984.45	0.0000	1596.21	0.0000		

```

*****
*                               GEL Laboratories LLC                               *
*                               2040 Savage Road                               *
*                               Charleston, SC 29407                          *
*****
Configuration : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]R405245007.CNF;1
Background file : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]BKG_GAM29.CNF;354
Background date : 2-OCT-2016 11:01:41.
Sample date      : 15-DEC-2015 12:17:00 Acquisition date : 3-OCT-2016 04:35:17.
Sample ID       : R405245007 Sample quantity : 1.26520E+02 GRAM
Detector name   : GAM29 Detector geometry: CAN
Elapsed live time: 0 01:00:00.00 Elapsed real time: 0 01:00:01.44 0.0%
Energy tolerance : 1.50000 keV Analyst Initials : MXR1
Abundance limit : 75.00000 Sensitivity : 3.00000
Batch ID       : 1596387 Detector SN# :
Matrix Spike ID : LCS ID : 1556
*****
    
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BACKGROUND CORRECTED SAMPLE PEAK REPORT

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	46.47*	57	128	1.47	92.96	89	9	1.59E-02	39.5	
2	1	63.61*	7	150	1.06	127.20	124	14	1.99E-03	273.6	1.01E+00
3	1	67.42	39	88	1.09	134.80	124	14	1.08E-02	41.4	
4	3	74.85*	138	150	1.10	149.64	145	14	3.84E-02	17.0	4.56E-01
5	3	77.18*	205	118	1.02	154.29	145	14	5.70E-02	11.4	
6	0	87.38	75	101	0.95	174.65	172	6	2.09E-02	24.5	
7	3	90.01	47	55	0.93	179.90	178	13	1.31E-02	28.0	1.27E+00
8	3	92.83*	82	136	1.37	185.54	178	13	2.29E-02	28.3	
9	0	99.13	21	137	1.35	198.12	193	9	5.73E-03	105.3	
10	0	129.34*	12	122	1.59	258.47	253	8	3.23E-03	169.9	
11	0	153.20	10	84	1.33	306.12	305	6	2.80E-03	146.2	
12	0	186.27*	73	151	1.07	372.18	367	11	2.04E-02	36.2	
13	0	209.50	45	97	1.12	418.56	415	9	1.25E-02	42.2	
14	0	238.56*	274	139	1.04	476.62	473	8	7.61E-02	9.7	
15	0	241.86	59	85	1.54	483.22	481	7	1.63E-02	30.7	
16	0	258.67	19	51	1.67	516.78	513	7	5.41E-03	64.6	
17	0	270.26	40	76	1.20	539.94	535	10	1.11E-02	43.4	
18	0	295.05*	117	103	1.10	589.46	585	11	3.24E-02	19.3	
19	0	300.33	26	79	0.89	600.03	595	9	7.15E-03	65.8	
20	0	330.08	94	94	7.04	659.46	649	20	2.60E-02	28.0	
21	0	338.27*	67	59	1.05	675.83	672	9	1.86E-02	24.4	
22	0	351.99*	207	78	1.24	703.24	698	11	5.76E-02	11.0	
23	0	464.01	19	48	0.65	927.07	920	10	5.34E-03	71.0	
24	5	511.10*	0	30	2.22	1021.17	1013	25	1.13E-04	*****	1.39E+00
25	5	516.93	14	22	1.84	1032.83	1013	25	3.93E-03	73.8	
26	0	540.89	28	37	6.78	1080.72	1072	17	7.84E-03	53.5	
27	0	583.12*	128	27	1.11	1165.11	1159	12	3.55E-02	12.3	
28	0	609.57*	149	51	1.26	1217.98	1211	13	4.13E-02	13.1	
29	0	638.53*	17	18	3.10	1275.88	1271	10	4.61E-03	55.1	
30	0	661.67	62	41	1.18	1322.12	1316	11	1.72E-02	23.8	
31	0	668.71	20	7	1.70	1336.20	1333	7	5.56E-03	31.3	
32	0	677.84	12	5	1.16	1354.46	1351	7	3.33E-03	42.6	
33	0	680.98	9	5	0.76	1360.73	1358	6	2.56E-03	49.4	
34	0	727.93	49	22	3.41	1454.59	1448	15	1.36E-02	26.7	

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
35	0	844.31	19	4	1.07	1687.29	1683	9	5.31E-03	30.1	
36	0	861.44	22	20	0.92	1721.56	1714	12	6.11E-03	46.6	
37	0	883.46	14	15	0.63	1765.58	1761	9	3.75E-03	59.4	
38	0	911.32*	100	22	1.55	1821.30	1812	18	2.79E-02	15.2	
39	0	969.29*	36	21	0.95	1937.23	1932	12	9.91E-03	31.6	
40	0	1001.44*	21	3	1.42	2001.54	1996	11	5.92E-03	28.8	
41	0	1011.73	9	9	1.03	2022.12	2018	7	2.48E-03	67.4	
42	0	1107.69	14	5	3.23	2214.07	2209	10	3.89E-03	40.1	
43	0	1121.76*	42	47	1.94	2242.22	2233	20	1.16E-02	42.8	
44	0	1175.01	12	14	2.51	2348.76	2341	12	3.33E-03	70.3	
45	0	1181.49	6	12	0.86	2361.72	2356	8	1.77E-03	101.4	
46	0	1201.49	8	9	1.52	2401.75	2397	9	2.22E-03	76.3	
47	0	1239.76	15	30	2.65	2478.33	2471	11	4.16E-03	75.6	
48	0	1280.36	12	10	0.52	2559.56	2553	13	3.42E-03	59.5	
49	0	1378.36*	8	8	2.84	2755.69	2749	11	2.18E-03	82.9	
50	0	1460.95*	335	12	1.95	2921.01	2913	13	9.30E-02	5.9	
51	0	1508.40	12	0	0.96	3016.00	3012	9	3.33E-03	28.9	
52	0	1629.16	13	0	0.98	3257.77	3251	12	3.61E-03	27.7	
53	0	1729.76	9	0	1.42	3459.22	3453	10	2.50E-03	33.3	
54	0	1764.66*	35	0	2.37	3529.12	3524	11	9.72E-03	18.7	

Flag: "*" = Peak area was modified by background subtraction

```

Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]R405245007.CNF;1
Analyses by       : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.4,INTERF V2.4
Sample title      : MXR1
Sample date       : 15-DEC-2015 12:17:00 Acquisition date : 3-OCT-2016 04:35:17
Sample ID        : R405245007 Sample quantity  : 126.52 GRAM
Sample type       : SOLID Sample geometry   :
Detector name    : GAMMA29 Detector geometry: CAN
Elapsed live time: 0 01:00:00.00 Elapsed real time: 0 01:00:01.44 0.0%
Energy tolerance : 1.50 keV Half life ratio  : 10.00
Errors propagated: No Systematic Error  : 0.00 %
Efficiency type  : Linear Efficiencies at  : Peak Energy
Abundance limit  : 75.00
    
```

Interference Report

Interfering		Interfered	
Nuclide	Line	Nuclide	Line
PB-214	242.00	RA-224	240.99
PB-214	87.09	SN-126	86.94
PB-214	87.09	SN-126	87.57
PB-214	87.09	CD-109	88.03
PB-214	74.82	AM-243	74.66
PB-214	74.82	TH-228	74.82
PB-214	74.82	PB-212	74.82
PB-214	351.93	BI-211	351.06

Nuclide Type:

Nuclide	Energy	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error	Status
K-40	1460.82	10.66*	1.347E+00	1.315E+01	1.315E+01	11.90	OK
CD-109	88.03	3.70*	6.278E+00	1.385E+00	2.149E+00	79.49	OK
SN-126	64.28	9.60	3.641E+00	1.398E-01	1.398E-01	547.22	OK
	86.94	8.90	6.278E+00	5.757E-01	5.757E-01	79.49	OK
	87.57	37.00*	6.278E+00	1.385E-01	1.385E-01	79.49	OK
BA-137M	661.66	89.90*	2.522E+00	1.617E-01	1.647E-01	47.63	OK
CS-137	661.66	85.10*	2.522E+00	1.708E-01	1.740E-01	47.63	OK
TL-208	277.37	6.60	4.914E+00	-----	Line Not Found	-----	Absent
	583.19	85.00*	2.773E+00	3.242E-01	3.242E-01	24.66	OK
	860.56	12.50	2.068E+00	4.970E-01	4.970E-01	93.10	OK
PB-210	46.54	4.25*	1.128E+00	8.245E+00	8.454E+00	79.01	OK
BI-211	72.87	1.23	4.875E+00	-----	Line Not Found	-----	Absent
	351.06	12.92*	4.087E+00	1.012E-01	1.012E-01	1033.04	OK
PB-212	74.82	10.28	5.107E+00	1.302E+00	1.302E+00	48.63	OK
	77.11	17.10	5.363E+00	1.506E+00	1.506E+00	22.83	OK
	238.63	43.60*	5.497E+00	7.221E-01	7.221E-01	19.36	OK
	300.09	3.30	4.623E+00	1.051E+00	1.051E+00	131.60	OK
BI-214	609.32	45.49*	2.682E+00	7.268E-01	7.271E-01	26.22	OK
	1120.29	14.92	1.684E+00	9.567E-01	9.570E-01	85.59	OK
	1764.49	15.30	1.129E+00	1.129E+00	1.129E+00	37.30	OK
PB-214	74.82	5.80	5.103E+00	-----	Line Not Found	-----	<<INT Reject
	77.11	9.70	5.363E+00	2.655E+00	2.656E+00	22.83	OK
	87.09	3.41	6.257E+00	-----	Line Not Found	-----	<<INT Reject
	242.00	7.25	5.441E+00	-----	Line Not Found	-----	<<INT Reject
	295.22	18.42	4.687E+00	8.430E-01	8.433E-01	38.68	OK
	351.93	35.60*	4.087E+00	-----	Line Not Found	-----	<<INT Reject
RN-222	609.32	45.49*	2.682E+00	7.268E-01	7.271E-01	26.22	OK
	1120.29	14.92	1.684E+00	9.567E-01	9.570E-01	85.59	OK
	1764.49	15.30	1.129E+00	1.129E+00	1.129E+00	37.30	OK
RA-224	240.99	4.10*	5.443E+00	1.682E-01	1.682E-01	695.88	OK
RA-226	609.32	45.49*	2.682E+00	7.268E-01	7.271E-01	26.22	OK
	1120.29	14.92	1.684E+00	9.567E-01	9.570E-01	85.59	OK
	1764.49	15.30	1.129E+00	1.129E+00	1.129E+00	37.30	OK
AC-228	105.21	1.10	7.155E+00	-----	Line Not Found	-----	Absent
	338.32	11.27	4.215E+00	8.694E-01	8.694E-01	48.80	OK
	794.95	4.25	2.197E+00	-----	Line Not Found	-----	Absent
	835.71	1.61	2.116E+00	-----	Line Not Found	-----	Absent
	911.20	25.80*	1.981E+00	1.142E+00	1.142E+00	30.33	OK
	968.97	15.80	1.889E+00	6.924E-01	6.924E-01	63.27	OK
RA-228	105.21	1.10	7.155E+00	-----	Line Not Found	-----	Absent
	338.32	11.27	4.215E+00	8.694E-01	8.694E-01	48.80	OK
	794.95	4.25	2.197E+00	-----	Line Not Found	-----	Absent
	835.71	1.61	2.116E+00	-----	Line Not Found	-----	Absent
	911.20	25.80*	1.981E+00	1.142E+00	1.142E+00	30.33	OK
	968.97	15.80	1.889E+00	6.924E-01	6.924E-01	63.27	OK
TH-228	74.82	10.28	5.107E+00	1.302E+00	1.302E+00	48.63	OK
	77.11	17.10	5.363E+00	1.506E+00	1.506E+00	22.83	OK
	238.63	43.60*	5.497E+00	7.221E-01	7.221E-01	19.36	OK
	300.09	3.30	4.623E+00	1.051E+00	1.051E+00	131.60	OK

Nuclide Type:

Nuclide	Energy	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error	Status
TH-230	609.32	45.49*	2.682E+00	7.268E-01	7.268E-01	26.22	OK
	1120.29	14.92	1.684E+00	9.567E-01	9.567E-01	85.59	OK
	1764.49	15.30	1.129E+00	1.129E+00	1.129E+00	37.30	OK
PA-231	283.69	1.70	4.831E+00	-----	Line Not Found	-----	Absent
	301.36	5.35*	4.623E+00	6.486E-01	6.486E-01	131.60	OK
TH-232	105.21	1.10	7.155E+00	-----	Line Not Found	-----	Absent
	338.32	11.27	4.215E+00	8.694E-01	8.694E-01	48.80	OK
	835.71	1.61	2.116E+00	-----	Line Not Found	-----	Absent
	911.20	25.80*	1.981E+00	1.142E+00	1.142E+00	30.33	OK
TH-234	968.97	15.80	1.889E+00	6.924E-01	6.924E-01	63.27	OK
	63.29	3.70*	3.641E+00	3.627E-01	3.627E-01	547.22	OK
	92.59	4.23	6.635E+00	1.959E+00	1.959E+00	56.66	OK
U-234	609.32	45.49*	2.682E+00	7.268E-01	7.268E-01	26.22	OK
	1120.29	14.92	1.684E+00	9.567E-01	9.567E-01	85.59	OK
	1764.49	15.30	1.129E+00	1.129E+00	1.129E+00	37.30	OK
U-235	89.96	3.47	6.461E+00	1.402E+00	1.402E+00	56.04	OK
	93.35	5.60	6.635E+00	1.480E+00	1.480E+00	56.66	OK
	143.76	10.96*	7.247E+00	-----	Line Not Found	-----	Absent
	163.33	5.08	6.922E+00	-----	Line Not Found	-----	Absent
	185.72	57.20	6.470E+00	1.271E-01	1.271E-01	72.41	OK
U-238	205.31	5.01	6.095E+00	-----	Line Not Found	-----	Absent
	63.29	3.70*	3.641E+00	3.627E-01	3.627E-01	547.22	OK
	92.59	4.23	6.635E+00	1.959E+00	1.959E+00	56.66	OK
AM-243	43.53	5.90	7.707E-01	-----	Line Not Found	-----	Absent
	74.66	67.20*	5.107E+00	1.992E-01	1.992E-01	48.63	OK
ANH-511	511.00	100.00*	3.064E+00	7.983E-04	7.983E-04	182.15	OK

Flag: "*" = Keyline


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*****
*                               GEL Laboratories LLC                               *
*                               2040 Savage Road                               *
*                               Charleston, SC 29407                          *
*****
*                               DETECTOR AND SAMPLE DATA                       *
*
* Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]R405245007.CNF;1
* Acquisition date   : 3-OCT-2016 04:35:17 Sensitivity      : 3.000
* Detector ID       : GAM29 Energy tolerance: 1.500
* Elapsed live time : 0 01:00:00.00 Abundance limit : 75.000
* Elapsed real time : 0 01:00:01.44 Half life ratio : *****
* Sample date       : 15-DEC-2015 12:17:00 Analyst initials: MXR1
* Sample ID         : R405245007 Sample Quantity : 1.2652E+02 GRAM
* Batch Number      : 1596387 Wet Weight : 0.00000
* Wet wt corr       : 1.00000 Dry Weight : 0.00000
* Nuclide Library   : SOLID.NLB;6
*****
*                               CALIBRATION INFORMATION                          *
*
* Eff. Cal. date    : 25-JUN-2016 09:55:57 Eff. Geometry   : CAN
* Eff. File         : DKA100:[CANBERRA.GAMMA]EFF_GAM29_CAN.CNF;10
*****

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Combined Activity-MDA Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM)	Cnt uncert (1.96-sigma)	MDA (pCi/GRAM)
K-40	1.315E+01	1.533E+00	6.263E-01
CD-109	2.149E+00	1.674E+00	1.475E+00
SN-126	1.385E-01	1.079E-01	1.243E-01
BA-137M	1.647E-01	7.688E-02	7.161E-02
CS-137	1.740E-01	8.122E-02	7.565E-02
TL-208	3.242E-01	7.835E-02	6.103E-02
PB-210	8.454E+00	6.546E+00	5.389E+00
BI-211	1.012E-01	1.024E+00	3.674E-01
PB-212	7.221E-01	1.370E-01	1.131E-01
BI-214	7.271E-01	1.868E-01	1.207E-01
PB-214	8.800E-01	1.898E-01	3.130E-01
RN-222	7.271E-01	1.868E-01	1.207E-01
RA-224	1.682E-01	1.147E+00	1.368E+00
RA-226	7.271E-01	1.868E-01	1.207E-01
AC-228	1.142E+00	3.396E-01	1.990E-01
RA-228	1.142E+00	3.396E-01	1.990E-01
TH-228	7.221E-01	1.370E-01	1.131E-01
TH-230	7.268E-01	1.867E-01	1.207E-01
PA-231	6.486E-01	8.365E-01	7.562E-01
TH-232	1.142E+00	3.396E-01	1.990E-01
TH-234	3.627E-01	1.945E+00	2.137E+00
U-234	7.268E-01	1.867E-01	1.207E-01
U-235	9.382E-04	1.875E-01	3.345E-01
U-238	3.627E-01	1.945E+00	2.137E+00
AM-243	1.992E-01	9.493E-02	8.325E-02
ANH-511	7.983E-04	6.401E-02	4.250E-02

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/GRAM)	K.L.	Cnt Uncert (1.96-sigma)	MDA (pCi/GRAM)	
BE-7	2.844E+00		1.027E+01	2.080E+01	NOT IDENT.
NA-22	1.911E-02		4.536E-02	8.754E-02	NOT IDENT.
NA-24	0.000E+00		1.960E+41	0.000E+00	SHORT HLIF
AL-26	1.419E-02		2.670E-02	6.789E-02	NOT IDENT.

SC-46	1.539E-02	3.942E-01	7.530E-01	FAIL ABUN
V-48	0.000E+00	1.066E+04	0.000E+00	SHORT HLIF
CR-51	0.000E+00	3.357E+02	0.000E+00	SHORT HLIF
MN-54	2.750E-02	6.173E-02	1.259E-01	NOT IDENT.
CO-56	1.496E-01	3.405E-01	6.886E-01	FAIL ABUN
MN-56	0.000E+00	1.960E+41	0.000E+00	SHORT HLIF
CO-57	-1.336E-02	4.823E-02	8.606E-02	NOT IDENT.
CO-58	5.866E-02	4.429E-01	8.978E-01	NOT IDENT.
FE-59	1.494E+00	4.330E+00	9.374E+00	NOT IDENT.
CO-60	-1.082E-02	3.991E-02	7.207E-02	NOT IDENT.
ZN-65	7.578E-03	1.753E-01	3.022E-01	NOT IDENT.
GE-68	1.038E+00	1.636E+00	3.755E+00	NOT IDENT.
AS-73	2.238E+00	7.462E+00	1.453E+01	NOT IDENT.
AS-74	0.000E+00	4.379E+03	0.000E+00	SHORT HLIF
SE-75	-2.532E-02	1.922E-01	3.390E-01	NOT IDENT.
BR-77	0.000E+00	3.064E+36	0.000E+00	SHORT HLIF
SR-82	0.000E+00	5.642E+02	0.000E+00	SHORT HLIF
RB-83	-9.645E-02	6.192E-01	1.062E+00	NOT IDENT.
KR-85	8.031E+00	6.466E+00	1.422E+01	NOT IDENT.
SR-85	7.838E-01	6.333E-01	1.392E+00	NOT IDENT.
RB-86	0.000E+00	1.633E+04	0.000E+00	SHORT HLIF
Y-88	-5.384E-02	2.669E-01	5.267E-01	NOT IDENT.
Y-91	2.864E+02	5.246E+02	9.951E+02	NOT IDENT.
NB-94	-9.021E-03	2.547E-02	4.715E-02	NOT IDENT.
NB-95	-2.114E-01	8.058E-01	1.478E+00	NOT IDENT.
NB-95M	7.705E-01	2.395E+00	4.067E+00	NOT IDENT.
ZR-95	-4.164E-01	1.274E+00	2.341E+00	NOT IDENT.
NB-97	0.000E+00	1.058E+41	0.000E+00	SHORT HLIF
ZR-97	0.000E+00	1.960E+41	0.000E+00	SHORT HLIF
MO-99	0.000E+00	2.517E+31	0.000E+00	SHORT HLIF
TC-99M	0.000E+00	1.960E+41	0.000E+00	SHORT HLIF
RH-101	-3.203E-03	3.519E-02	5.880E-02	NOT IDENT.
RH-102	-2.377E-02	4.801E-02	8.744E-02	NOT IDENT.
RU-103	2.039E+00	4.658E+00	9.598E+00	FAIL ABUN
RH-106	1.499E-01	4.927E-01	9.892E-01	NOT IDENT.
RU-106	1.499E-01	4.927E-01	9.892E-01	NOT IDENT.
AG-108M	3.944E-03	2.763E-02	5.458E-02	NOT IDENT.
AG-110M	1.203E-01	1.400E-01	2.095E-01	FAIL ABUN
SN-113	-1.558E-01	2.038E-01	3.661E-01	NOT IDENT.
CD-115	0.000E+00	3.316E+38	0.000E+00	SHORT HLIF
SN-117M	0.000E+00	6.815E+04	0.000E+00	SHORT HLIF
TE-123M	-3.122E-02	1.335E-01	2.358E-01	NOT IDENT.
SB-124	-4.386E-01	1.858E+00	3.761E+00	NOT IDENT.
SB-125	-8.428E-02	1.003E-01	1.773E-01	FAIL ABUN
TE-125M	2.564E+02	2.582E+02	5.075E+02	NOT IDENT.
I-126	0.000E+00	6.290E+05	0.000E+00	SHORT HLIF
SB-126	0.000E+00	7.296E+05	0.000E+00	SHORT HLIF
SB-127	0.000E+00	5.054E+21	0.000E+00	SHORT HLIF
I-131	0.000E+00	2.474E+09	0.000E+00	SHORT HLIF
I-132	0.000E+00	6.140E+40	0.000E+00	SHORT HLIF
TE-132	0.000E+00	9.306E+25	0.000E+00	SHORT HLIF
BA-133	7.536E-03	4.327E-02	7.800E-02	NOT IDENT.
I-133	0.000E+00	1.960E+41	0.000E+00	SHORT HLIF
CS-134	2.247E-02	5.406E-02	1.079E-01	NOT IDENT.
CS-135	6.219E-03	1.458E-01	2.411E-01	NOT IDENT.
I-135	0.000E+00	1.960E+41	0.000E+00	SHORT HLIF
CS-136	0.000E+00	1.524E+05	0.000E+00	SHORT HLIF
CE-139	3.591E-02	1.037E-01	1.934E-01	NOT IDENT.
BA-140	0.000E+00	9.682E+05	0.000E+00	SHORT HLIF
LA-140	0.000E+00	2.964E+05	0.000E+00	SHORT HLIF
CE-141	-9.569E+00	1.945E+01	3.382E+01	NOT IDENT.
CE-143	0.000E+00	1.960E+41	0.000E+00	SHORT HLIF
CE-144	-1.167E-01	3.449E-01	6.104E-01	NOT IDENT.
PM-144	1.222E-02	5.330E-02	1.056E-01	NOT IDENT.
PR-144	1.058E+00	4.613E+00	9.138E+00	NOT IDENT.
PM-146	1.193E-02	4.367E-02	8.728E-02	NOT IDENT.
ND-147	0.000E+00	1.957E+07	0.000E+00	SHORT HLIF
PM-147	2.843E+02	8.157E+02	1.535E+03	NOT IDENT.
PM-149	0.000E+00	4.687E+39	0.000E+00	SHORT HLIF
EU-150	2.654E-02	2.728E-02	4.735E-02	FAIL ABUN
EU-152	-5.804E-02	8.370E-02	1.530E-01	NOT IDENT.
GD-153	1.235E-02	1.577E-01	2.939E-01	NOT IDENT.
EU-154	4.941E-02	1.121E-01	2.171E-01	NOT IDENT.
EU-155	7.790E-02	1.129E-01	2.170E-01	FAIL ABUN
TB-160	-9.389E-02	1.764E+00	3.031E+00	FAIL ABUN
HO-166M	2.543E-03	5.259E-02	1.026E-01	NOT IDENT.
TM-171	-5.438E+00	1.886E+01	3.507E+01	FAIL ABUN
HF-172	-2.132E-02	2.480E-01	4.142E-01	FAIL ABUN

LU-172	-3.585E-02	6.940E-02	1.199E-01	FAIL ABUN
LU-176	9.202E-03	2.512E-02	4.651E-02	FAIL ABUN
HF-181	5.144E-01	3.488E+00	6.971E+00	NOT IDENT.
TA-182	8.766E-02	8.137E-01	1.578E+00	FAIL ABUN
RE-183	2.304E-01	2.747E+00	5.202E+00	FAIL ABUN
RE-184	-1.563E+01	2.594E+01	4.456E+01	NOT IDENT.
W-188	7.409E+01	1.185E+02	2.090E+02	FAIL ABUN
IR-192	-6.484E-02	4.067E-01	7.120E-01	FAIL ABUN
HG-203	-7.166E-01	2.233E+00	3.818E+00	NOT IDENT.
BI-207	-3.030E-02	4.137E-02	6.770E-02	FAIL ABUN
PB-211	-3.806E-01	7.174E-01	1.316E+00	NOT IDENT.
BI-212	0.000E+00	9.610E-01	1.272E+00	FAIL ABUN
RN-219	3.989E-02	4.234E-01	8.220E-01	FAIL ABUN
RA-223	-2.549E-03	6.051E-01	1.071E+00	FAIL ABUN
AC-227	-7.370E-02	2.373E-01	3.735E-01	FAIL ABUN
TH-227	-7.370E-02	2.373E-01	3.735E-01	FAIL ABUN
TH-229	2.674E-01	4.719E-01	8.894E-01	FAIL ABUN
TH-231	-2.549E-03	6.051E-01	1.071E+00	FAIL ABUN
PA-233	-5.143E-02	6.763E-02	1.077E-01	FAIL ABUN
PA-234	-1.517E-01	2.721E-01	4.706E-01	FAIL ABUN
PA-234M	7.961E+00	4.489E+00	9.439E+00	FAIL ABUN
NP-237	-5.143E-02	6.763E-02	1.077E-01	FAIL ABUN
NP-238	0.000E+00	3.992E+00	0.000E+00	SHORT HLIF
NP-239	-1.200E-02	2.290E-01	4.190E-01	FAIL ABUN
PU-239	1.634E+02	5.439E+02	5.986E+02	FAIL ABUN
AM-241	-9.037E-02	1.391E-01	2.488E-01	NOT IDENT.
CM-243	-3.328E-02	9.787E-02	1.753E-01	FAIL ABUN
BK-247	4.563E-03	6.873E-02	1.242E-01	NOT IDENT.
CM-247	1.239E-02	3.695E-02	7.362E-02	NOT IDENT.
CF-249	4.764E-03	3.469E-02	6.893E-02	NOT IDENT.
CF-251	-3.102E-02	1.201E-01	2.108E-01	NOT IDENT.

Nuclide Line Activity Report

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
K-40	1460.82	318	10.66*	1.347E+00	1.315E+01	1.315E+01	11.90
CD-109	88.03	85	3.70*	6.278E+00	2.162E+00	3.355E+00	48.99
SN-126	64.28	8	9.60	3.641E+00	1.398E-01	1.398E-01	547.22
	86.94	85	8.90	6.278E+00	8.987E-01	8.987E-01	48.99
	87.57	85	37.00*	6.278E+00	2.162E-01	2.162E-01	48.99
BA-137M	661.66	62	89.90*	2.522E+00	1.617E-01	1.647E-01	47.63
CS-137	661.66	62	85.10*	2.522E+00	1.708E-01	1.740E-01	47.63
TL-208	277.37	-----	6.60	4.914E+00	-----	Line Not Found	-----
	583.19	129	85.00*	2.773E+00	3.242E-01	3.242E-01	24.66
	860.56	22	12.50	2.068E+00	4.970E-01	4.970E-01	93.10
PB-210	46.54	67	4.25*	1.128E+00	8.245E+00	8.454E+00	79.01
BI-211	72.87	-----	1.23	4.875E+00	-----	Line Not Found	-----
	351.06	216	12.92*	4.087E+00	2.424E+00	2.424E+00	22.01
PB-212	74.82	157	10.28	5.107E+00	1.778E+00	1.778E+00	34.08
	77.11	233	17.10	5.363E+00	1.506E+00	1.506E+00	22.83
	238.63	292	43.60*	5.497E+00	7.221E-01	7.221E-01	19.36
	300.09	27	3.30	4.623E+00	1.051E+00	1.051E+00	131.60
BI-214	609.32	149	45.49*	2.682E+00	7.268E-01	7.271E-01	26.22
	1120.29	41	14.92	1.684E+00	9.567E-01	9.570E-01	85.59
	1764.49	33	15.30	1.129E+00	1.129E+00	1.129E+00	37.30
PB-214	74.82	157	5.80	5.107E+00	3.151E+00	3.152E+00	34.08
	77.11	233	9.70	5.363E+00	2.655E+00	2.656E+00	22.83
	87.09	85	3.41	6.278E+00	2.345E+00	2.346E+00	48.99
	242.00	62	7.25	5.443E+00	9.381E-01	9.385E-01	61.42
	295.22	123	18.42	4.687E+00	8.430E-01	8.433E-01	38.68
	351.93	216	35.60*	4.087E+00	8.797E-01	8.800E-01	22.01
RN-222	609.32	149	45.49*	2.682E+00	7.268E-01	7.271E-01	26.22
	1120.29	41	14.92	1.684E+00	9.567E-01	9.570E-01	85.59
	1764.49	33	15.30	1.129E+00	1.129E+00	1.129E+00	37.30
RA-224	240.99	62	4.10*	5.443E+00	1.659E+00	1.659E+00	61.42
RA-226	609.32	149	45.49*	2.682E+00	7.268E-01	7.271E-01	26.22
	1120.29	41	14.92	1.684E+00	9.567E-01	9.570E-01	85.59
	1764.49	33	15.30	1.129E+00	1.129E+00	1.129E+00	37.30
AC-228	105.21	-----	1.10	7.155E+00	-----	Line Not Found	-----
	338.32	70	11.27	4.215E+00	8.694E-01	8.694E-01	48.80
	794.95	-----	4.25	2.197E+00	-----	Line Not Found	-----
	835.71	-----	1.61	2.116E+00	-----	Line Not Found	-----
	911.20	98	25.80*	1.981E+00	1.142E+00	1.142E+00	30.33
	968.97	35	15.80	1.889E+00	6.924E-01	6.924E-01	63.27
RA-228	105.21	-----	1.10	7.155E+00	-----	Line Not Found	-----
	338.32	70	11.27	4.215E+00	8.694E-01	8.694E-01	48.80
	794.95	-----	4.25	2.197E+00	-----	Line Not Found	-----
	835.71	-----	1.61	2.116E+00	-----	Line Not Found	-----
	911.20	98	25.80*	1.981E+00	1.142E+00	1.142E+00	30.33
	968.97	35	15.80	1.889E+00	6.924E-01	6.924E-01	63.27
TH-228	74.82	157	10.28	5.107E+00	1.778E+00	1.778E+00	34.08
	77.11	233	17.10	5.363E+00	1.506E+00	1.506E+00	22.83

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
	238.63	292	43.60*	5.497E+00	7.221E-01	7.221E-01	19.36
	300.09	27	3.30	4.623E+00	1.051E+00	1.051E+00	131.60
TH-230	609.32	149	45.49*	2.682E+00	7.268E-01	7.268E-01	26.22
	1120.29	41	14.92	1.684E+00	9.567E-01	9.567E-01	85.59
	1764.49	33	15.30	1.129E+00	1.129E+00	1.129E+00	37.30
PA-231	283.69	-----	1.70	4.831E+00	-----	Line Not Found	-----
	301.36	27	5.35*	4.623E+00	6.486E-01	6.486E-01	131.60
TH-232	105.21	-----	1.10	7.155E+00	-----	Line Not Found	-----
	338.32	70	11.27	4.215E+00	8.694E-01	8.694E-01	48.80
	835.71	-----	1.61	2.116E+00	-----	Line Not Found	-----
	911.20	98	25.80*	1.981E+00	1.142E+00	1.142E+00	30.33
	968.97	35	15.80	1.889E+00	6.924E-01	6.924E-01	63.27
TH-234	63.29	8	3.70*	3.641E+00	3.627E-01	3.627E-01	547.22
	92.59	93	4.23	6.635E+00	1.959E+00	1.959E+00	56.66
U-234	609.32	149	45.49*	2.682E+00	7.268E-01	7.268E-01	26.22
	1120.29	41	14.92	1.684E+00	9.567E-01	9.567E-01	85.59
	1764.49	33	15.30	1.129E+00	1.129E+00	1.129E+00	37.30
U-235	89.96	53	3.47	6.461E+00	1.402E+00	1.402E+00	56.04
	93.35	93	5.60	6.635E+00	1.480E+00	1.480E+00	56.66
	143.76	-----	10.96*	7.247E+00	-----	Line Not Found	-----
	163.33	-----	5.08	6.922E+00	-----	Line Not Found	-----
	185.72	79	57.20	6.470E+00	1.271E-01	1.271E-01	72.41
	205.31	-----	5.01	6.095E+00	-----	Line Not Found	-----
U-238	63.29	8	3.70*	3.641E+00	3.627E-01	3.627E-01	547.22
	92.59	93	4.23	6.635E+00	1.959E+00	1.959E+00	56.66
AM-243	43.53	-----	5.90	7.707E-01	-----	Line Not Found	-----
	74.66	157	67.20*	5.107E+00	2.720E-01	2.720E-01	34.08
ANH-511	511.00	0	100.00*	3.064E+00	7.983E-04	7.983E-04	8182.15

Flag: "*" = Keyline

Total number of lines in spectrum 54
 Number of unidentified lines 16
 Number of lines tentatively identified by NID 38 70.37%

Nuclide Type :

Nuclide	Hlife	Decay	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
K-40	1.25E+09Y	1.00	1.315E+01	1.315E+01	0.156E+01	11.90	
CD-109	461.40D	1.55	2.162E+00	3.355E+00	1.644E+00	48.99	
SN-126	2.30E+05Y	1.00	2.162E-01	2.162E-01	1.059E-01	48.99	
BA-137M	30.08Y	1.02	1.617E-01	1.647E-01	0.784E-01	47.63	
CS-137	30.08Y	1.02	1.708E-01	1.740E-01	0.829E-01	47.63	
TL-208	1.41E+10Y	1.00	3.242E-01	3.242E-01	0.800E-01	24.66	
PB-210	22.20Y	1.03	8.245E+00	8.454E+00	6.679E+00	79.01	
BI-211	7.04E+08Y	1.00	2.424E+00	2.424E+00	0.534E+00	22.01	
PB-212	1.41E+10Y	1.00	7.221E-01	7.221E-01	1.398E-01	19.36	
BI-214	1600.00Y	1.00	7.268E-01	7.271E-01	1.906E-01	26.22	
PB-214	1600.00Y	1.00	8.797E-01	8.800E-01	1.937E-01	22.01	
RN-222	1600.00Y	1.00	7.268E-01	7.271E-01	1.906E-01	26.22	
RA-224	1.41E+10Y	1.00	1.659E+00	1.659E+00	1.019E+00	61.42	
RA-226	1600.00Y	1.00	7.268E-01	7.271E-01	1.906E-01	26.22	
AC-228	1.41E+10Y	1.00	1.142E+00	1.142E+00	0.347E+00	30.33	
RA-228	1.41E+10Y	1.00	1.142E+00	1.142E+00	0.347E+00	30.33	
TH-228	1.41E+10Y	1.00	7.221E-01	7.221E-01	1.398E-01	19.36	
TH-230	7.54E+04Y	1.00	7.268E-01	7.268E-01	1.906E-01	26.22	
PA-231	7.04E+08Y	1.00	6.486E-01	6.486E-01	8.535E-01	131.60	
TH-232	1.41E+10Y	1.00	1.142E+00	1.142E+00	0.347E+00	30.33	
TH-234	4.47E+09Y	1.00	3.627E-01	3.627E-01	19.85E-01	547.22	
U-234	2.45E+05Y	1.00	7.268E-01	7.268E-01	1.906E-01	26.22	
U-235	7.04E+08Y	1.00	1.271E-01	1.271E-01	0.920E-01	72.41	K
U-238	4.47E+09Y	1.00	3.627E-01	3.627E-01	19.85E-01	547.22	
AM-243	7370.00Y	1.00	2.720E-01	2.720E-01	0.927E-01	34.08	
ANH-511	1.00E+09Y	1.00	7.983E-04	7.983E-04	653.2E-04	8182.15	
Total Activity :			3.967E+01	4.108E+01			

Grand Total Activity : 3.967E+01 4.108E+01

Flags: "K" = Keyline not found "M" = Manually accepted
 "E" = Manually edited "A" = Nuclide specific abn. limit

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
1	67.42	44	100	1.09	134.80	124	14	1.08E-02	82.7	4.18E+00	T
0	99.13	23	154	1.35	198.12	193	9	5.73E-03	****	6.94E+00	T
0	129.34	13	134	1.59	258.47	253	8	3.23E-03	****	7.38E+00	T
0	153.20	11	92	1.33	306.12	305	6	2.80E-03	****	7.10E+00	T
0	209.50	48	104	1.12	418.56	415	9	1.25E-02	84.4	6.01E+00	T
0	258.67	21	53	1.67	516.78	513	7	5.41E-03	****	5.18E+00	
0	270.26	42	80	1.20	539.94	535	10	1.11E-02	86.8	5.01E+00	T
0	330.08	98	98	7.04	659.46	649	20	2.60E-02	56.0	4.30E+00	T
0	464.01	20	49	0.65	927.07	920	10	5.34E-03	****	3.30E+00	T
5	516.93	14	23	1.84	1032.83	1013	25	3.93E-03	****	3.04E+00	
0	540.89	29	37	6.78	1080.72	1072	17	7.84E-03	****	2.94E+00	
0	638.53	17	18	3.10	1275.88	1271	10	4.61E-03	****	2.59E+00	
0	668.71	20	7	1.70	1336.20	1333	7	5.56E-03	62.6	2.50E+00	T
0	677.84	12	5	1.16	1354.46	1351	7	3.33E-03	85.3	2.48E+00	T
0	680.98	9	5	0.76	1360.73	1358	6	2.56E-03	98.9	2.47E+00	
0	727.93	48	22	3.41	1454.59	1448	15	1.36E-02	53.4	2.35E+00	T
0	844.31	19	4	1.07	1687.29	1683	9	5.31E-03	60.2	2.10E+00	
0	883.46	13	15	0.63	1765.58	1761	9	3.75E-03	****	2.03E+00	T
0	1001.44	21	3	1.42	2001.54	1996	11	5.92E-03	57.5	1.84E+00	T
0	1011.73	9	9	1.03	2022.12	2018	7	2.48E-03	****	1.83E+00	
0	1107.69	14	5	3.23	2214.07	2209	10	3.89E-03	80.2	1.70E+00	
0	1175.01	12	14	2.51	2348.76	2341	12	3.33E-03	****	1.62E+00	
0	1181.49	6	11	0.86	2361.72	2356	8	1.77E-03	****	1.61E+00	
0	1201.49	8	9	1.52	2401.75	2397	9	2.22E-03	****	1.59E+00	
0	1239.76	14	29	2.65	2478.33	2471	11	4.16E-03	****	1.55E+00	T
0	1280.36	12	9	0.52	2559.56	2553	13	3.42E-03	****	1.51E+00	
0	1378.36	7	8	2.84	2755.69	2749	11	2.18E-03	****	1.42E+00	
0	1508.40	11	0	0.96	3016.00	3012	9	3.33E-03	57.7	1.31E+00	
0	1629.16	12	0	0.98	3257.77	3251	12	3.61E-03	55.5	1.22E+00	
0	1729.76	8	0	1.42	3459.22	3453	10	2.50E-03	66.7	1.15E+00	

Flags: "T" = Tentatively associated

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*****
*                               GEL Laboratories LLC                               *
*                               2040 Savage Road                               *
*                               Charleston, SC 29407                           *
*****
*                               DETECTOR AND SAMPLE DATA                       *
*
* Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]R405245007.CNF;1
* Acquisition date   : 3-OCT-2016 04:35:17 Sensitivity      : 3.000
* Detector ID       : GAM29 Energy tolerance: 1.500
* Elapsed live time : 0 01:00:00.00 Abundance limit : 75.000
* Elapsed real time : 0 01:00:01.44 Half life ratio : *****
* Sample date       : 15-DEC-2015 12:17:00 Nuclide Library : SOLID
* Sample ID        : R405245007 Analyst initials: MXR1
* Batch Number     : 1596387 Sample Quantity : 1.2652E+02 GRAM
* Wet wt corr      : 1.00000 Wet Weight : 0.00000
*                               Dry Weight : 0.00000
*****
*                               CALIBRATION INFORMATION                         *
*
* Eff. Cal. date    : 25-JUN-2016 09:55:57 Eff. Geometry   : CAN
* Eff. File         : DKA100:[CANBERRA.GAMMA]EFF_GAM29_CAN.CNF;10
*****

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Combined Critical Level Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Lc (pCi/GRAM)
K-40	2.574E-01
CD-109	6.823E-01
SN-126	5.861E-02
BA-137M	3.217E-02
CS-137	3.398E-02
TL-208	2.708E-02
PB-210	2.517E+00
BI-211	1.683E-01
PB-212	5.312E-02
BI-214	5.372E-02
PB-214	1.509E-01
RN-222	5.372E-02
RA-224	6.477E-01
RA-226	5.372E-02
AC-228	8.371E-02
RA-228	8.371E-02
TH-228	5.312E-02
TH-230	5.370E-02
PA-231	3.449E-01
TH-232	8.371E-02
TH-234	1.006E+00
U-234	5.370E-02
U-235	1.569E-01
U-238	1.006E+00
AM-243	3.919E-02
ANH-511	1.860E-02

---- Non-Identified Nuclides ----

Nuclide	Lc (pCi/GRAM)	
BE-7	9.306E+00	NOT IDENT.
NA-22	3.721E-02	NOT IDENT.
NA-24	0.000E+00	SHORT HLIF
AL-26	2.667E-02	NOT IDENT.
SC-46	3.315E-01	FAIL ABUN

V-48	0.000E+00	SHORT HLIF
CR-51	0.000E+00	SHORT HLIF
MN-54	5.567E-02	NOT IDENT.
CO-56	2.909E-01	FAIL ABUN
MN-56	0.000E+00	SHORT HLIF
CO-57	4.027E-02	NOT IDENT.
CO-58	3.831E-01	NOT IDENT.
FE-59	3.892E+00	NOT IDENT.
CO-60	2.992E-02	NOT IDENT.
ZN-65	1.295E-01	NOT IDENT.
GE-68	1.573E+00	NOT IDENT.
AS-73	6.783E+00	NOT IDENT.
AS-74	0.000E+00	SHORT HLIF
SE-75	1.547E-01	NOT IDENT.
BR-77	0.000E+00	SHORT HLIF
SR-82	0.000E+00	SHORT HLIF
RB-83	4.682E-01	NOT IDENT.
KR-85	6.462E+00	NOT IDENT.
SR-85	6.327E-01	NOT IDENT.
RB-86	0.000E+00	SHORT HLIF
Y-88	2.136E-01	NOT IDENT.
Y-91	4.352E+02	NOT IDENT.
NB-94	2.021E-02	NOT IDENT.
NB-95	6.537E-01	NOT IDENT.
NB-95M	1.892E+00	NOT IDENT.
ZR-95	1.015E+00	NOT IDENT.
NB-97	0.000E+00	SHORT HLIF
ZR-97	0.000E+00	SHORT HLIF
MO-99	0.000E+00	SHORT HLIF
TC-99M	0.000E+00	SHORT HLIF
RH-101	2.746E-02	NOT IDENT.
RH-102	3.729E-02	NOT IDENT.
RU-103	4.298E+00	FAIL ABUN
RH-106	4.413E-01	NOT IDENT.
RU-106	4.413E-01	NOT IDENT.
AG-108M	2.470E-02	NOT IDENT.
AG-110M	9.240E-02	FAIL ABUN
SN-113	1.636E-01	NOT IDENT.
CD-115	0.000E+00	SHORT HLIF
SN-117M	0.000E+00	SHORT HLIF
TE-123M	1.102E-01	NOT IDENT.
SB-124	1.465E+00	NOT IDENT.
SB-125	7.913E-02	FAIL ABUN
TE-125M	2.393E+02	NOT IDENT.
I-126	0.000E+00	SHORT HLIF
SB-126	0.000E+00	SHORT HLIF
SB-127	0.000E+00	SHORT HLIF
I-131	0.000E+00	SHORT HLIF
I-132	0.000E+00	SHORT HLIF
TE-132	0.000E+00	SHORT HLIF
BA-133	3.558E-02	NOT IDENT.
I-133	0.000E+00	SHORT HLIF
CS-134	4.831E-02	NOT IDENT.
CS-135	1.104E-01	NOT IDENT.
I-135	0.000E+00	SHORT HLIF
CS-136	0.000E+00	SHORT HLIF
CE-139	9.015E-02	NOT IDENT.
BA-140	0.000E+00	SHORT HLIF
LA-140	0.000E+00	SHORT HLIF
CE-141	1.570E+01	NOT IDENT.
CE-143	0.000E+00	SHORT HLIF
CE-144	2.846E-01	NOT IDENT.
PM-144	4.694E-02	NOT IDENT.
PR-144	4.062E+00	NOT IDENT.
PM-146	3.952E-02	NOT IDENT.
ND-147	0.000E+00	SHORT HLIF
PM-147	7.189E+02	NOT IDENT.
PM-149	0.000E+00	SHORT HLIF
EU-150	2.165E-02	FAIL ABUN
EU-152	6.881E-02	NOT IDENT.
GD-153	1.373E-01	NOT IDENT.
EU-154	9.240E-02	NOT IDENT.
EU-155	1.024E-01	FAIL ABUN
TB-160	1.297E+00	FAIL ABUN
HO-166M	4.506E-02	NOT IDENT.
TM-171	1.632E+01	FAIL ABUN
HF-172	1.938E-01	FAIL ABUN
LU-172	4.993E-02	FAIL ABUN

LU-176	2.133E-02	FAIL ABUN
HF-181	3.108E+00	NOT IDENT.
TA-182	6.776E-01	FAIL ABUN
RE-183	2.444E+00	FAIL ABUN
RE-184	1.901E+01	NOT IDENT.
W-188	9.666E+01	FAIL ABUN
IR-192	3.212E-01	FAIL ABUN
HG-203	1.749E+00	NOT IDENT.
BI-207	2.760E-02	FAIL ABUN
PB-211	5.990E-01	NOT IDENT.
BI-212	5.844E-01	FAIL ABUN
RN-219	3.775E-01	FAIL ABUN
RA-223	4.886E-01	FAIL ABUN
AC-227	1.702E-01	FAIL ABUN
TH-227	1.702E-01	FAIL ABUN
TH-229	4.153E-01	FAIL ABUN
TH-231	4.886E-01	FAIL ABUN
PA-233	4.913E-02	FAIL ABUN
PA-234	2.004E-01	FAIL ABUN
PA-234M	4.200E+00	FAIL ABUN
NP-237	4.913E-02	FAIL ABUN
NP-238	0.000E+00	SHORT HLIF
NP-239	1.954E-01	FAIL ABUN
PU-239	2.816E+02	FAIL ABUN
AM-241	1.168E-01	NOT IDENT.
CM-243	8.194E-02	FAIL ABUN
BK-247	5.675E-02	NOT IDENT.
CM-247	3.374E-02	NOT IDENT.
CF-249	3.120E-02	NOT IDENT.
CF-251	9.825E-02	NOT IDENT.

```

*****
*                               GEL Laboratories LLC                               *
*                               2040 Savage Road                               *
*                               Charleston, SC 29407                          *
*****
*                               DETECTOR AND SAMPLE DATA                       *
*
* Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]R405245007.CNF;1
* Acquisition date   : 3-OCT-2016 04:35:17 Sensitivity      : 3.000
* Detector ID       : GAM29 Energy tolerance: 1.500
* Elapsed live time: 0 01:00:00.00 Abundance limit : 75.000
* Elapsed real time: 0 01:00:01.44 Half life ratio : *****
* Sample date      : 15-DEC-2015 12:17:00 Nuclide Library : SOLID
* Sample ID       : R405245007 Analyst initials: MXR1
* Batch Number    : 1596387 Sample Quantity : 1.2652E+02 GRAM
*                               Quantity Err(%) : 1.5808E-03 %
* Wet wt corr     : 1.00000 Wet Weight      : 0.00000
*                               Dry Weight     : 0.00000
*****
*                               CALIBRATION INFORMATION                         *
*
* Eff. Cal. date    : 25-JUN-2016 09:55:57 Eff. Geometry   : CAN
* Eff. File        : DKA100:[CANBERRA.GAMMA]EFF_GAM29_CAN.CNF;10
*****

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Combined Activity-MDA Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM)	Act Error (1.96-sigma)	TPU (1.96-sigma)
K-40	1.315E+01	1.680E+00	1.680E+00
CD-109	2.149E+00	1.690E+00	1.690E+00
SN-126	1.385E-01	1.086E-01	1.086E-01
BA-137M	1.647E-01	7.721E-02	7.721E-02
CS-137	1.740E-01	8.156E-02	8.156E-02
TL-208	3.242E-01	7.956E-02	7.956E-02
PB-210	8.454E+00	6.590E+00	6.590E+00
BI-211	1.012E-01	1.034E+00	1.034E+00
PB-212	7.221E-01	1.423E-01	1.423E-01
BI-214	7.271E-01	1.894E-01	1.894E-01
PB-214	8.800E-01	1.933E-01	1.933E-01
RN-222	7.271E-01	1.894E-01	1.894E-01
RA-224	1.682E-01	1.152E+00	1.152E+00
RA-226	7.271E-01	1.894E-01	1.894E-01
AC-228	1.142E+00	3.446E-01	3.446E-01
RA-228	1.142E+00	3.446E-01	3.446E-01
TH-228	7.221E-01	1.423E-01	1.423E-01
TH-230	7.268E-01	1.893E-01	1.893E-01
PA-231	6.486E-01	8.478E-01	8.478E-01
TH-232	1.142E+00	3.446E-01	3.446E-01
TH-234	3.627E-01	1.947E+00	1.947E+00
U-234	7.268E-01	1.893E-01	1.893E-01
U-235	9.382E-04	1.875E-01	1.875E-01
U-238	3.627E-01	1.947E+00	1.947E+00
AM-243	1.992E-01	9.617E-02	9.617E-02
ANH-511	7.983E-04	6.401E-02	6.401E-02

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/GRAM)	K.L Act error (1.96-sigma)	TPU (1.96-sigma)	
BE-7	2.844E+00	1.027E+01	1.035E+01	NOT IDENT.
NA-22	1.911E-02	4.536E-02	4.617E-02	NOT IDENT.
NA-24	1.000E+41	1.300E+42	0.000E+00	SHORT HLIF
AL-26	1.419E-02	2.671E-02	2.747E-02	NOT IDENT.

SC-46	1.539E-02	3.942E-01	3.942E-01	FAIL ABUN
V-48	-4.341E+03	1.066E+04	1.084E+04	SHORT HLIF
CR-51	3.162E+02	3.360E+02	3.650E+02	SHORT HLIF
MN-54	2.750E-02	6.174E-02	6.298E-02	NOT IDENT.
CO-56	1.496E-01	3.406E-01	3.472E-01	FAIL ABUN
MN-56	1.000E+41	2.299E+41	0.000E+00	SHORT HLIF
CO-57	-1.336E-02	4.823E-02	4.861E-02	NOT IDENT.
CO-58	5.866E-02	4.429E-01	4.437E-01	NOT IDENT.
FE-59	1.494E+00	4.331E+00	4.383E+00	NOT IDENT.
CO-60	-1.082E-02	3.991E-02	4.021E-02	NOT IDENT.
ZN-65	7.578E-03	1.753E-01	1.753E-01	NOT IDENT.
GE-68	1.038E+00	1.637E+00	1.702E+00	NOT IDENT.
AS-73	2.238E+00	7.476E+00	7.544E+00	NOT IDENT.
AS-74	-2.488E+03	4.384E+03	4.525E+03	SHORT HLIF
SE-75	-2.532E-02	1.922E-01	1.926E-01	NOT IDENT.
BR-77	1.614E+37	1.364E+38	0.000E+00	SHORT HLIF
SR-82	-3.250E+01	5.642E+02	5.644E+02	SHORT HLIF
RB-83	-9.645E-02	6.194E-01	6.209E-01	NOT IDENT.
KR-85	8.031E+00	6.474E+00	7.417E+00	NOT IDENT.
SR-85	7.838E-01	6.341E-01	7.259E-01	NOT IDENT.
RB-86	8.635E+03	1.633E+04	1.679E+04	SHORT HLIF
Y-88	-5.384E-02	2.670E-01	2.681E-01	NOT IDENT.
Y-91	2.864E+02	5.247E+02	5.403E+02	NOT IDENT.
NB-94	-9.021E-03	2.547E-02	2.579E-02	NOT IDENT.
NB-95	-2.114E-01	8.059E-01	8.115E-01	NOT IDENT.
NB-95M	7.705E-01	2.395E+00	2.420E+00	NOT IDENT.
ZR-95	-4.164E-01	1.274E+00	1.288E+00	NOT IDENT.
NB-97	1.000E+41	1.059E+41	0.000E+00	SHORT HLIF
ZR-97	1.000E+41	2.439E+41	0.000E+00	SHORT HLIF
MO-99	-1.259E+31	2.519E+31	0.000E+00	SHORT HLIF
TC-99M	-1.000E+41	2.350E+41	0.000E+00	SHORT HLIF
RH-101	-3.203E-03	3.519E-02	3.522E-02	NOT IDENT.
RH-102	-2.377E-02	4.805E-02	4.923E-02	NOT IDENT.
RU-103	2.039E+00	4.660E+00	4.749E+00	FAIL ABUN
RH-106	1.499E-01	4.928E-01	4.974E-01	NOT IDENT.
RU-106	1.499E-01	4.928E-01	4.974E-01	NOT IDENT.
AG-108M	3.944E-03	2.763E-02	2.769E-02	NOT IDENT.
AG-110M	1.203E-01	1.402E-01	1.503E-01	FAIL ABUN
SN-113	-1.558E-01	2.039E-01	2.156E-01	NOT IDENT.
CD-115	3.763E+37	3.316E+38	0.000E+00	SHORT HLIF
SN-117M	8.756E+03	6.816E+04	6.827E+04	SHORT HLIF
TE-123M	-3.122E-02	1.335E-01	1.342E-01	NOT IDENT.
SB-124	-4.386E-01	1.858E+00	1.868E+00	NOT IDENT.
SB-125	-8.428E-02	1.004E-01	1.073E-01	FAIL ABUN
TE-125M	2.564E+02	2.587E+02	2.833E+02	NOT IDENT.
I-126	3.543E+04	6.290E+05	6.292E+05	SHORT HLIF
SB-126	-4.653E+05	7.346E+05	7.639E+05	SHORT HLIF
SB-127	3.325E+21	6.742E+21	0.000E+00	SHORT HLIF
I-131	-2.205E+09	2.476E+09	2.668E+09	SHORT HLIF
I-132	1.000E+41	1.805E+42	0.000E+00	SHORT HLIF
TE-132	8.062E+24	9.312E+25	0.000E+00	SHORT HLIF
BA-133	7.536E-03	4.328E-02	4.341E-02	NOT IDENT.
I-133	-1.000E+41	1.150E+42	0.000E+00	SHORT HLIF
CS-134	2.247E-02	5.407E-02	5.501E-02	NOT IDENT.
CS-135	6.219E-03	1.458E-01	1.458E-01	NOT IDENT.
I-135	-1.000E+41	2.864E+43	0.000E+00	SHORT HLIF
CS-136	8.459E+03	1.524E+05	1.525E+05	SHORT HLIF
CE-139	3.591E-02	1.039E-01	1.052E-01	NOT IDENT.
BA-140	-3.940E+05	9.683E+05	9.845E+05	SHORT HLIF
LA-140	-8.729E+04	2.964E+05	2.990E+05	SHORT HLIF
CE-141	-9.569E+00	1.945E+01	1.992E+01	NOT IDENT.
CE-143	1.000E+41	3.707E+41	0.000E+00	SHORT HLIF
CE-144	-1.167E-01	3.449E-01	3.489E-01	NOT IDENT.
PM-144	1.222E-02	5.331E-02	5.359E-02	NOT IDENT.
PR-144	1.058E+00	4.613E+00	4.638E+00	NOT IDENT.
PM-146	1.193E-02	4.368E-02	4.401E-02	NOT IDENT.
ND-147	1.014E+07	1.958E+07	2.010E+07	SHORT HLIF
PM-147	2.843E+02	8.159E+02	8.259E+02	NOT IDENT.
PM-149	4.823E+38	4.688E+39	0.000E+00	SHORT HLIF
EU-150	2.654E-02	2.730E-02	2.981E-02	FAIL ABUN
EU-152	-5.804E-02	8.376E-02	8.775E-02	NOT IDENT.
GD-153	1.235E-02	1.577E-01	1.578E-01	NOT IDENT.
EU-154	4.941E-02	1.121E-01	1.143E-01	NOT IDENT.
EU-155	7.790E-02	1.130E-01	1.183E-01	FAIL ABUN
TB-160	-9.389E-02	1.764E+00	1.765E+00	FAIL ABUN
HO-166M	2.543E-03	5.259E-02	5.260E-02	NOT IDENT.
TM-171	-5.438E+00	1.886E+01	1.902E+01	FAIL ABUN
HF-172	-2.132E-02	2.480E-01	2.482E-01	FAIL ABUN

LU-172	-3.585E-02	6.950E-02	7.135E-02	FAIL ABUN
LU-176	9.202E-03	2.512E-02	2.546E-02	FAIL ABUN
HF-181	5.144E-01	3.488E+00	3.496E+00	NOT IDENT.
TA-182	8.766E-02	8.137E-01	8.146E-01	FAIL ABUN
RE-183	2.304E-01	2.747E+00	2.749E+00	FAIL ABUN
RE-184	-1.563E+01	2.619E+01	2.712E+01	NOT IDENT.
W-188	7.409E+01	1.188E+02	1.234E+02	FAIL ABUN
IR-192	-6.484E-02	4.067E-01	4.078E-01	FAIL ABUN
HG-203	-7.166E-01	2.233E+00	2.256E+00	NOT IDENT.
BI-207	-3.030E-02	4.139E-02	4.358E-02	FAIL ABUN
PB-211	-3.806E-01	7.177E-01	7.379E-01	NOT IDENT.
BI-212	1.837E+00	9.655E-01	1.272E+00	FAIL ABUN
RN-219	3.989E-02	4.234E-01	4.238E-01	FAIL ABUN
RA-223	-2.549E-03	6.051E-01	6.051E-01	FAIL ABUN
AC-227	-7.370E-02	2.375E-01	2.398E-01	FAIL ABUN
TH-227	-7.370E-02	2.375E-01	2.398E-01	FAIL ABUN
TH-229	2.674E-01	4.720E-01	4.872E-01	FAIL ABUN
TH-231	-2.549E-03	6.051E-01	6.051E-01	FAIL ABUN
PA-233	-5.143E-02	6.768E-02	7.154E-02	FAIL ABUN
PA-234	-1.517E-01	3.227E-01	3.299E-01	FAIL ABUN
PA-234M	7.961E+00	4.502E+00	5.758E+00	FAIL ABUN
NP-237	-5.143E-02	6.768E-02	7.154E-02	FAIL ABUN
NP-238	-2.273E+39	3.992E+40	0.000E+00	SHORT HLIF
NP-239	-1.200E-02	2.290E-01	2.291E-01	FAIL ABUN
PU-239	1.634E+02	5.440E+02	5.490E+02	FAIL ABUN
AM-241	-9.037E-02	1.392E-01	1.451E-01	NOT IDENT.
CM-243	-3.328E-02	9.792E-02	9.906E-02	FAIL ABUN
BK-247	4.563E-03	6.873E-02	6.876E-02	NOT IDENT.
CM-247	1.239E-02	3.701E-02	3.743E-02	NOT IDENT.
CF-249	4.764E-03	3.469E-02	3.476E-02	NOT IDENT.
CF-251	-3.102E-02	1.202E-01	1.210E-01	NOT IDENT.

 * GEL Laboratories LLC *
 * 2040 Savage Road *
 * Charleston, SC 29407 *
 * GAMMA SPECTROSCOPY BACKGROUND REPORT *

ENERGY	MDA COUNTS	ENERGY	MDA COUNTS	ENERGY	MDA COUNTS
43.53	76.0217	87.09	90.0471	136.47	69.5029
45.60	66.8087	87.57	90.1075	140.51	0.0000
46.54	66.9380	88.03	51.2302	143.76	67.8409
49.72	0.0000	88.34	51.2524	144.24	64.5898
51.35	59.8572	88.47	51.2615	145.44	66.8602
51.87	60.8834	89.96	69.8589	152.43	73.5809
52.39	66.7482	1093.63	69.9237	153.25	0.0000
52.97	66.8219	91.11	0.0000	323.87	64.1269
53.44	60.0961	92.59	70.1087	156.02	0.0000
54.07	66.9604	93.35	70.1800	158.56	0.0000
57.36	0.0000	94.56	80.6309	159.00	74.4201
57.53	77.1533	94.65	80.6404	162.33	62.3984
57.98	78.1931	94.67	80.6428	162.66	0.0000
59.27	90.1287	94.87	91.0051	163.33	71.3789
59.32	94.0558	97.43	65.3711	165.86	55.8968
59.54	94.0924	98.43	65.4561	176.31	60.9445
60.96	86.4662	98.44	65.4571	176.60	0.0000
61.17	86.4978	99.53	65.5489	177.52	68.9182
62.93	85.7740	100.11	58.3093	181.07	0.0000
63.29	85.8270	102.03	57.0603	181.52	80.1211
63.58	85.8691	103.18	77.3524	184.41	62.1365
64.28	85.9707	103.37	77.3705	143.76	62.5858
66.73	86.3223	105.21	70.2132	193.51	53.8374
67.24	86.3947	105.31	74.4143	197.03	68.9310
125.81	86.4570	106.12	72.3902	198.01	41.3921
67.75	86.4663	106.47	94.4632	201.83	56.5157
69.67	85.0742	109.28	66.3516	203.43	63.5182
70.83	77.2413	111.00	93.9297	205.31	66.3135
72.81	93.5135	111.76	0.0000	210.85	51.1174
72.87	93.5220	114.06	75.2059	215.65	48.9784
74.66	86.4134	116.30	0.0000	222.11	53.9112
74.82	86.4344	116.74	64.8167	227.09	70.5844
74.97	86.4540	119.76	72.5068	227.38	68.2466
77.11	86.7362	121.12	65.1439	228.16	0.0000
78.74	72.7938	121.22	65.1508	228.18	55.3370
79.69	82.3454	121.78	74.8108	116.74	55.3370
80.12	79.6960	122.06	78.0420	235.69	52.0942
80.19	0.0000	122.92	78.1178	235.96	52.1043
80.57	66.2320	123.07	77.0603	238.63	80.6826
81.00	73.0366	265.00	68.5449	238.98	0.0000
81.07	73.0443	125.81	73.0023	240.99	104.5913
81.75	79.2092	127.23	68.8154	242.00	65.0209
83.79	84.1961	127.91	68.8672	244.70	46.0795
84.00	74.7125	129.30	68.9717	252.40	0.0000
85.43	87.1152	131.20	70.5541	252.80	40.7516
86.55	115.8824	133.02	70.3310	254.15	0.0000
86.79	115.9213	133.52	71.4513	256.23	41.6501
86.94	90.0283	136.00	62.9561	260.90	0.0000

ENERGY	MDA COUNTS	ENERGY	MDA COUNTS	ENERGY	MDA COUNTS
264.66	38.6689	355.39	0.0000	584.27	20.8175
264.80	38.6729	356.01	33.2228	595.83	0.0000
265.00	36.2604	364.49	0.0000	427.87	24.7580
268.22	38.7627	366.42	0.0000	602.52	0.0000
269.46	40.0073	372.51	30.9448	604.72	21.4590
270.03	40.0224	375.05	26.6829	607.14	27.2058
271.23	40.0546	377.52	31.0276	609.32	21.9733
273.65	0.0000	356.01	31.1316	610.33	21.9818
276.40	46.2823	388.16	28.6011	614.28	18.6645
277.37	43.8739	388.63	0.0000	618.01	19.1699
277.60	43.8805	391.69	34.7323	620.36	16.3090
278.00	46.3311	264.66	34.0203	621.93	19.1984
279.20	46.3670	401.81	41.0227	630.19	0.0000
279.54	53.7002	402.40	34.9235	631.29	16.3747
279.70	53.7056	404.85	43.7083	633.25	12.7236
280.46	32.9722	410.95	22.7981	634.78	0.0000
283.69	41.6077	413.71	37.7571	635.95	13.0259
284.31	0.0000	414.70	0.0000	636.99	0.0000
285.41	41.6544	423.72	0.0000	645.85	30.9870
285.90	0.0000	427.09	33.5871	657.76	14.5874
287.50	38.0301	427.87	35.3687	657.90	0.0000
290.67	37.6969	433.94	28.3776	661.66	26.2936
293.27	0.0000	439.40	28.4525	664.57	0.0000
351.93	49.3115	453.88	26.8567	666.33	0.0000
295.96	49.3347	463.37	26.9751	666.50	0.0000
879.38	44.4749	468.07	22.7078	667.71	0.0000
299.98	51.1079	473.00	0.0000	677.62	7.3450
300.09	51.1117	475.06	20.7913	685.70	0.0000
300.13	51.1129	476.78	20.8077	695.00	0.0000
301.36	36.3014	477.60	20.8152	696.49	18.7294
302.85	39.6377	482.18	20.8583	696.51	18.7294
256.23	44.6385	487.02	0.0000	697.00	0.0000
304.85	0.0000	492.35	0.0000	697.30	20.7069
306.78	34.7676	497.08	19.1701	697.49	16.7634
308.46	41.0184	505.52	20.6149	702.65	15.8053
311.90	48.5774	507.63	0.0000	706.68	9.8918
316.51	31.2263	511.00	16.5308	711.68	16.8444
319.41	0.0000	514.00	16.5520	720.70	0.0000
320.08	0.0000	514.00	16.5520	721.93	0.0000
321.04	34.2334	520.40	20.7468	722.78	11.9346
323.87	36.3819	520.69	0.0000	722.91	16.4107
325.23	31.3889	522.65	0.0000	723.31	16.4127
328.76	0.0000	527.90	0.0000	724.19	17.9099
333.37	28.5948	528.26	24.0534	727.33	19.9211
333.97	20.1914	529.59	23.1405	733.00	20.9556
334.37	25.2454	529.87	0.0000	735.93	12.9852
338.28	38.7966	531.02	0.0000	333.97	13.9909
338.32	38.7975	537.26	0.0000	739.50	0.0000
311.90	25.3339	546.56	0.0000	747.24	14.0359
340.48	25.3339	552.55	15.8849	748.06	13.0365
340.55	0.0000	563.25	18.7687	752.31	16.0671
344.28	37.2369	569.33	16.9329	753.82	0.0000
345.93	33.0364	946.00	17.8751	756.73	18.1018
351.06	39.9278	569.70	17.8759	756.80	18.1018
351.93	39.9479	583.19	20.8085	884.68	20.1595

ENERGY	MDA COUNTS	ENERGY	MDA COUNTS	ENERGY	MDA COUNTS
765.81	23.1975	1274.44	12.9336	1620.50	3.6975
766.42	21.1837	1001.03	7.5540	1621.92	1.0567
766.84	21.1871	1002.74	8.0972	1678.03	0.0000
772.60	0.0000	1004.73	6.4812	1690.97	5.6155
776.52	0.0000	507.63	0.0000	1750.46	0.0000
739.50	0.0000	1025.87	0.0000	1764.49	1.8954
778.90	19.2428	1028.54	0.0000	1063.66	3.7944
783.70	0.0000	1037.84	10.8944	1771.35	1.8976
785.37	15.2222	1038.76	0.0000	1791.20	0.0000
792.07	21.3555	631.29	8.7344	1808.65	1.9094
794.95	17.3037	1048.07	0.0000	1810.72	0.0000
795.86	19.3448	1049.04	13.1094	1836.06	7.6719
810.06	9.2032	1050.41	9.8357		
810.29	9.2040	1063.66	13.1582		
344.28	10.2271	1077.00	0.0000		
810.76	10.2283	1077.34	4.4007		
815.77	0.0000	1085.87	16.5381		
1048.07	0.0000	1093.63	13.2549		
832.01	21.6178	1099.45	5.5310		
834.85	14.4238	1112.07	11.6501		
835.71	11.3361	1112.84	15.9809		
836.80	0.0000	1115.54	11.6595		
846.75	0.0000	1120.29	12.2291		
846.77	6.2036	1120.55	12.2300		
856.80	0.0000	1221.41	12.2318		
860.56	10.3813	1129.67	9.3598		
871.09	13.5374	1131.51	0.0000		
873.19	8.3356	1147.95	0.0000		
875.33	0.0000	1173.23	9.0052		
879.38	12.5259	1177.95	10.1418		
880.51	14.0960	1189.05	13.5566		
883.24	14.6295	1204.77	10.2041		
884.68	18.8174	1221.41	11.3802		
889.28	17.7955	1231.02	12.5451		
894.76	12.5811	1235.36	0.0000		
898.04	16.7904	1238.28	18.2773		
900.72	10.5017	1260.41	0.0000		
903.28	16.8151	1271.87	10.3564		
911.20	9.4797	1274.44	6.9082		
912.08	9.4819	1274.54	6.9087		
923.98	0.0000	1291.59	5.7784		
926.50	9.5200	1298.22	0.0000		
929.11	9.5270	1312.11	0.0000		
937.49	11.6709	1332.49	10.4912		
944.13	0.0000	1362.66	0.0000		
946.00	17.0150	1365.19	3.5210		
949.00	13.8363	1368.63	0.0000		
667.71	0.0000	1384.29	5.3020		
962.31	25.6357	1408.01	2.6636		
964.08	16.0297	1457.56	0.0000		
966.17	24.0582	1460.82	7.1777		
911.20	16.0510	1489.16	2.7063		
968.97	16.0510	1505.03	1.4478		
983.53	0.0000	1584.12	10.1010		
984.45	0.0000	1596.21	0.0000		


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*                               GEL Laboratories LLC                               *
*                               2040 Savage Road                                 *
*                               Charleston, SC 29407                            *
*****
Configuration   : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]R405245008.CNF;1
Background file  : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]BKG_GAM30.CNF;300
Background date  : 2-OCT-2016 11:01:47.
Sample date     : 15-DEC-2015 12:20:00 Acquisition date : 3-OCT-2016 04:35:39.
Sample ID      : R405245008 Sample quantity   : 1.53247E+02 GRAM
Detector name   : GAM30 Detector geometry: CAN
Elapsed live time: 0 01:00:00.00 Elapsed real time: 0 01:00:01.40 0.0%
Energy tolerance: 1.50000 keV Analyst Initials : MXR1
Abundance limit : 75.00000 Sensitivity   : 3.00000
Batch ID       : 1596387 Detector SN#    :
Matrix Spike ID : LCS ID           : 1556
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BACKGROUND CORRECTED SAMPLE PEAK REPORT

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	63.49*	26	110	1.57	126.70	124	7	7.25E-03	71.8	
2	4	74.71	142	121	1.30	149.15	146	14	3.96E-02	14.5	3.25E+00
3	4	77.16*	190	136	1.10	154.05	146	14	5.29E-02	12.6	
4	5	87.38	122	109	1.62	174.49	171	20	3.38E-02	17.5	1.35E+00
5	5	89.93	68	133	1.63	179.58	171	20	1.89E-02	36.7	
6	5	92.88*	96	128	1.64	185.49	171	20	2.67E-02	26.7	
7	0	128.40	40	105	2.19	256.53	253	9	1.12E-02	48.1	
8	0	153.68	28	91	0.70	307.10	303	7	7.79E-03	59.8	
9	0	186.17*	111	101	1.13	372.08	367	11	3.07E-02	20.6	
10	0	198.23*	27	88	1.09	396.19	392	10	7.46E-03	70.5	
11	0	205.49	15	68	0.44	410.71	407	7	4.19E-03	95.1	
12	0	209.30	51	64	0.97	418.34	415	7	1.42E-02	29.3	
13	3	238.65*	318	48	1.17	477.05	470	22	8.85E-02	6.8	1.07E+00
14	3	240.95	46	38	0.93	481.64	470	22	1.28E-02	31.5	
15	3	242.24	85	56	1.45	484.21	470	22	2.37E-02	20.9	
16	0	266.29	18	38	1.20	532.33	530	6	5.06E-03	58.2	
17	0	269.81	34	46	2.05	539.36	536	7	9.31E-03	37.6	
18	0	295.39*	136	37	1.05	590.52	587	9	3.79E-02	12.0	
19	3	328.04	24	37	1.68	655.84	652	19	6.79E-03	48.3	1.26E+00
20	3	333.13*	14	38	1.69	666.03	652	19	3.78E-03	94.7	
21	0	338.35*	92	47	1.00	676.46	671	11	2.54E-02	18.2	
22	0	352.07*	250	46	1.25	703.91	697	13	6.95E-02	8.5	
23	0	446.57	16	17	0.97	892.93	888	8	4.36E-03	53.0	
24	0	450.03	14	33	1.61	899.85	896	10	3.84E-03	80.0	
25	0	466.47	53	87	9.54	932.73	921	26	1.48E-02	50.9	
26	5	492.17	36	4	1.81	984.16	981	14	1.01E-02	18.6	1.99E-01
27	5	495.38	22	5	2.23	990.58	981	14	6.14E-03	30.1	
28	0	499.55	18	18	1.18	998.91	995	11	5.11E-03	49.1	
29	0	511.44*	45	51	1.88	1022.71	1016	16	1.26E-02	44.3	
30	0	567.32*	13	11	1.56	1134.48	1131	7	3.49E-03	57.7	
31	0	583.43*	113	30	1.25	1166.70	1162	10	3.14E-02	13.4	
32	0	609.37*	152	32	1.25	1218.59	1212	14	4.22E-02	11.5	
33	0	614.86	7	20	1.41	1229.57	1225	8	1.94E-03	116.9	
34	0	641.50	27	11	2.29	1282.88	1277	14	7.50E-03	32.0	

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
35	0	662.03	83	30	1.66	1323.94	1318	12	2.32E-02	17.1	
36	0	701.54	20	19	4.72	1402.97	1395	13	5.52E-03	50.9	
37	0	728.46	35	28	1.67	1456.83	1449	14	9.84E-03	35.8	
38	0	768.73	25	38	2.82	1537.40	1529	19	6.94E-03	62.4	
39	0	821.13	15	4	0.67	1642.22	1638	8	4.24E-03	34.0	
40	0	835.83	7	10	0.92	1671.65	1666	8	1.99E-03	85.1	
41	0	855.60	17	10	0.89	1711.20	1704	13	4.84E-03	44.0	
42	0	860.70	36	9	1.61	1721.40	1717	9	9.93E-03	22.6	
43	0	870.81	12	9	0.55	1741.63	1734	10	3.33E-03	56.5	
44	0	911.52	100	15	1.93	1823.06	1817	12	2.78E-02	12.6	
45	0	922.00*	15	3	3.15	1844.03	1838	12	4.13E-03	36.3	
46	0	935.22	8	18	1.18	1870.48	1863	11	2.22E-03	111.1	
47	0	965.17*	19	7	1.23	1930.40	1924	10	5.23E-03	37.0	
48	0	969.22*	57	17	1.46	1938.50	1934	13	1.58E-02	20.1	
49	0	1082.13	11	15	3.92	2164.42	2156	13	3.03E-03	81.4	
50	0	1085.82	10	1	1.32	2171.79	2169	6	2.70E-03	37.4	
51	0	1120.85*	38	14	1.00	2241.88	2235	15	1.04E-02	28.2	
52	0	1222.18	8	19	2.48	2444.63	2438	12	2.15E-03	116.3	
53	0	1272.81	15	5	4.23	2545.95	2540	11	4.14E-03	39.8	
54	0	1289.24	5	14	0.64	2578.83	2571	13	1.25E-03	172.5	
55	0	1299.15	9	5	0.76	2598.65	2592	9	2.36E-03	56.6	
56	0	1461.17*	358	0	1.69	2922.86	2915	14	9.93E-02	5.3	
57	0	1730.00	11	2	1.46	3460.84	3456	8	3.01E-03	38.0	
58	0	1764.69*	31	0	2.15	3530.26	3524	12	8.60E-03	19.5	

Flag: "*" = Peak area was modified by background subtraction

```

Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]R405245008.CNF;1
Analyses by       : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.4,INTERF V2.4
Sample title      : MXR1
Sample date       : 15-DEC-2015 12:20:00 Acquisition date : 3-OCT-2016 04:35:39
Sample ID        : R405245008 Sample quantity   : 153.25 GRAM
Sample type      : SOLID Sample geometry   :
Detector name    : GAMMA30 Detector geometry: CAN
Elapsed live time: 0 01:00:00.00 Elapsed real time: 0 01:00:01.40 0.0%
Energy tolerance : 1.50 keV Half life ratio  : 10.00
Errors propagated: No Systematic Error   : 0.00 %
Efficiency type  : Empirical Efficiencies at  : Peak Energy
Abundance limit  : 75.00
    
```

Interference Report

Interfering		Interfered	
Nuclide	Line	Nuclide	Line
PB-214	87.09	SN-126	86.94
PB-214	87.09	SN-126	87.57
PB-214	87.09	CD-109	88.03
PB-214	74.82	AM-243	74.66
PB-214	74.82	TH-228	74.82
PB-214	74.82	PB-212	74.82
PB-214	351.93	BI-211	351.06

Nuclide Type:

Nuclide	Energy	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error	Status
K-40	1460.82	10.66*	1.307E+00	1.215E+01	1.215E+01	10.67	OK
MN-54	834.85	99.98*	2.109E+00	1.708E-02	3.272E-02	170.22	OK
NB-94	702.65	99.81*	2.428E+00	4.209E-02	4.209E-02	101.83	OK
	871.09	99.89	2.038E+00	2.956E-02	2.956E-02	113.04	OK
RH-101	127.23	68.00*	7.332E+00	4.911E-02	5.811E-02	96.13	OK
	198.01	73.00	6.055E+00	3.534E-02	4.182E-02	141.07	OK
	325.23	11.80	4.299E+00	-----	Line Not Found	-----	Absent
CD-109	88.03	3.70*	6.561E+00	2.265E+00	3.516E+00	49.11	OK
SN-126	64.28	9.60	3.911E+00	4.476E-01	4.476E-01	143.59	OK
	86.94	8.90	6.561E+00	9.416E-01	9.416E-01	49.11	OK
	87.57	37.00*	6.561E+00	2.265E-01	2.265E-01	49.11	OK
BA-137M	661.66	89.90*	2.540E+00	1.886E-01	1.922E-01	34.16	OK
CS-137	661.66	85.10*	2.540E+00	1.993E-01	2.030E-01	34.16	OK
TL-208	277.37	6.60	4.820E+00	-----	Line Not Found	-----	Absent
	583.19	85.00*	2.799E+00	2.485E-01	2.485E-01	26.79	OK
	860.56	12.50	2.058E+00	6.977E-01	6.977E-01	45.20	OK
BI-211	72.87	1.23	5.213E+00	-----	Line Not Found	-----	Absent
	351.06	12.92*	4.059E+00	2.077E-03	2.077E-03****	-----	OK
PB-212	74.82	10.28	5.429E+00	1.083E+00	1.083E+00	44.47	OK
	77.11	17.10	5.697E+00	1.238E+00	1.238E+00	25.15	OK
	238.63	43.60*	5.357E+00	7.797E-01	7.797E-01	13.69	OK
	300.09	3.30	4.556E+00	-----	Line Not Found	-----	Absent
BI-214	609.32	45.49*	2.708E+00	6.430E-01	6.432E-01	23.00	OK
	1120.29	14.92	1.645E+00	7.457E-01	7.460E-01	56.45	OK
	1764.49	15.30	1.122E+00	8.354E-01	8.357E-01	38.95	OK
PB-214	74.82	5.80	5.442E+00	-----	Line Not Found	-----	<<INT Reject
	77.11	9.70	5.697E+00	2.182E+00	2.182E+00	25.15	OK
	87.09	3.41	6.542E+00	-----	Line Not Found	-----	<<INT Reject
	242.00	7.25	5.302E+00	1.266E+00	1.266E+00	41.89	OK
	295.22	18.42	4.608E+00	8.999E-01	9.002E-01	24.01	OK
	351.93	35.60*	4.060E+00	-----	Line Not Found	-----	<<INT Reject
RN-222	609.32	45.49*	2.708E+00	6.430E-01	6.432E-01	23.00	OK
	1120.29	14.92	1.645E+00	7.457E-01	7.460E-01	56.45	OK
	1764.49	15.30	1.122E+00	8.354E-01	8.357E-01	38.95	OK
RA-224	240.99	4.10*	5.321E+00	1.205E+00	1.205E+00	62.94	OK
RA-226	609.32	45.49*	2.708E+00	6.430E-01	6.432E-01	23.00	OK
	1120.29	14.92	1.645E+00	7.457E-01	7.460E-01	56.45	OK
	1764.49	15.30	1.122E+00	8.354E-01	8.357E-01	38.95	OK
AC-228	105.21	1.10	7.278E+00	-----	Line Not Found	-----	Absent
	338.32	11.27	4.178E+00	1.075E+00	1.075E+00	36.31	OK
	794.95	4.25	2.197E+00	-----	Line Not Found	-----	Absent
	835.71	1.61	2.109E+00	1.061E+00	1.061E+00	170.22	OK
	911.20	25.80*	1.962E+00	9.867E-01	9.867E-01	25.27	OK
	968.97	15.80	1.863E+00	9.599E-01	9.599E-01	40.12	OK
RA-228	105.21	1.10	7.278E+00	-----	Line Not Found	-----	Absent
	338.32	11.27	4.178E+00	1.075E+00	1.075E+00	36.31	OK
	794.95	4.25	2.197E+00	-----	Line Not Found	-----	Absent
	835.71	1.61	2.109E+00	1.061E+00	1.061E+00	170.22	OK
	911.20	25.80*	1.962E+00	9.867E-01	9.867E-01	25.27	OK

Nuclide Type:

Nuclide	Energy	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error	Status
TH-228	968.97	15.80	1.863E+00	9.599E-01	9.599E-01	40.12	OK
	74.82	10.28	5.429E+00	1.083E+00	1.083E+00	44.47	OK
	77.11	17.10	5.697E+00	1.238E+00	1.238E+00	25.15	OK
	238.63	43.60*	5.357E+00	7.797E-01	7.797E-01	13.69	OK
TH-230	300.09	3.30	4.556E+00	----- Line	Not Found	-----	Absent
	609.32	45.49*	2.708E+00	6.430E-01	6.430E-01	23.00	OK
	1120.29	14.92	1.645E+00	7.457E-01	7.457E-01	56.45	OK
	1764.49	15.30	1.122E+00	8.354E-01	8.354E-01	38.95	OK
TH-232	105.21	1.10	7.278E+00	----- Line	Not Found	-----	Absent
	338.32	11.27	4.178E+00	1.075E+00	1.075E+00	36.31	OK
	835.71	1.61	2.109E+00	1.061E+00	1.061E+00	170.22	OK
	911.20	25.80*	1.962E+00	9.867E-01	9.867E-01	25.27	OK
TH-234	968.97	15.80	1.863E+00	9.599E-01	9.599E-01	40.12	OK
	63.29	3.70*	3.911E+00	1.161E+00	1.161E+00	143.59	OK
	92.59	4.23	6.875E+00	2.063E+00	2.063E+00	53.47	OK
U-234	609.32	45.49*	2.708E+00	6.430E-01	6.430E-01	23.00	OK
	1120.29	14.92	1.645E+00	7.457E-01	7.457E-01	56.45	OK
	1764.49	15.30	1.122E+00	8.354E-01	8.354E-01	38.95	OK
U-235	89.96	3.47	6.718E+00	1.826E+00	1.826E+00	73.46	OK
	93.35	5.60	6.875E+00	1.558E+00	1.558E+00	53.47	OK
	143.76	10.96*	7.121E+00	----- Line	Not Found	-----	Absent
	163.33	5.08	6.750E+00	----- Line	Not Found	-----	Absent
U-238	185.72	57.20	6.289E+00	1.798E-01	1.798E-01	41.28	OK
	205.31	5.01	5.919E+00	2.949E-01	2.949E-01	190.14	OK
	63.29	3.70*	3.911E+00	1.161E+00	1.161E+00	143.59	OK
AM-243	92.59	4.23	6.875E+00	2.063E+00	2.063E+00	53.47	OK
	43.53	5.90	8.765E-01	----- Line	Not Found	-----	Absent
ANH-511	74.66	67.20*	5.429E+00	1.657E-01	1.657E-01	44.47	OK
	511.00	100.00*	3.089E+00	7.775E-02	7.775E-02	88.62	OK

Flag: "*" = Keyline

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*****
*                               GEL Laboratories LLC                               *
*                               2040 Savage Road                               *
*                               Charleston, SC 29407                          *
*****
*                               DETECTOR AND SAMPLE DATA                       *
*
* Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]R405245008.CNF;1
* Acquisition date   : 3-OCT-2016 04:35:39 Sensitivity      : 3.000
* Detector ID       : GAM30 Energy tolerance: 1.500
* Elapsed live time : 0 01:00:00.00 Abundance limit : 75.000
* Elapsed real time : 0 01:00:01.40 Half life ratio : *****
* Sample date       : 15-DEC-2015 12:20:00 Analyst initials: MXR1
* Sample ID         : R405245008 Sample Quantity : 1.5325E+02 GRAM
* Batch Number      : 1596387 Wet Weight : 0.00000
* Wet wt corr       : 1.00000 Dry Weight : 0.00000
* Nuclide Library   : SOLID.NLB;6
*****
*                               CALIBRATION INFORMATION                          *
*
* Eff. Cal. date    : 11-MAR-2016 05:58:49 Eff. Geometry   : CAN
* Eff. File         : DKA100:[CANBERRA.GAMMA]EFF_GAM30_CAN.CNF;7
*****

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Combined Activity-MDA Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM)	Cnt uncert (1.96-sigma)	MDA (pCi/GRAM)
K-40	1.215E+01	1.270E+00	3.705E-01
MN-54	3.272E-02	5.458E-02	7.373E-02
NB-94	4.209E-02	4.201E-02	3.708E-02
RH-101	5.811E-02	5.474E-02	4.419E-02
CD-109	3.516E+00	1.692E+00	1.426E+00
SN-126	2.265E-01	1.090E-01	9.227E-02
BA-137M	1.922E-01	6.432E-02	4.640E-02
CS-137	2.030E-01	6.795E-02	4.901E-02
TL-208	2.485E-01	6.525E-02	5.420E-02
BI-211	2.077E-03	6.950E-01	2.561E-01
PB-212	7.797E-01	1.046E-01	7.143E-02
BI-214	6.432E-01	1.450E-01	9.089E-02
PB-214	9.531E-01	1.587E-01	2.729E-01
RN-222	6.432E-01	1.450E-01	9.089E-02
RA-224	1.205E+00	7.432E-01	7.652E-01
RA-226	6.432E-01	1.450E-01	9.089E-02
AC-228	9.867E-01	2.444E-01	1.616E-01
RA-228	9.867E-01	2.444E-01	1.616E-01
TH-228	7.797E-01	1.046E-01	7.143E-02
TH-230	6.430E-01	1.449E-01	9.086E-02
TH-232	9.867E-01	2.444E-01	1.616E-01
TH-234	1.161E+00	1.634E+00	1.594E+00
U-234	6.430E-01	1.449E-01	9.085E-02
U-235	3.623E-02	1.490E-01	2.855E-01
U-238	1.161E+00	1.634E+00	1.594E+00
AM-243	1.657E-01	7.221E-02	6.542E-02
ANH-511	7.775E-02	6.753E-02	4.201E-02

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/GRAM)	K.L.	Cnt Uncert (1.96-sigma)	MDA (pCi/GRAM)	
BE-7	-3.910E+00		8.235E+00	1.549E+01	NOT IDENT.
NA-22	2.047E-02		3.501E-02	7.466E-02	NOT IDENT.
NA-24	0.000E+00		1.960E+41	0.000E+00	SHORT HLIF

AL-26	-8.719E-03	2.125E-02	4.149E-02	NOT IDENT.
SC-46	4.351E-02	2.631E-01	5.348E-01	FAIL ABUN
V-48	0.000E+00	8.330E+03	0.000E+00	SHORT HLIF
CR-51	0.000E+00	2.635E+02	0.000E+00	SHORT HLIF
CO-56	9.365E-02	3.160E-01	6.569E-01	NOT IDENT.
MN-56	0.000E+00	1.960E+41	0.000E+00	SHORT HLIF
CO-57	-1.007E-02	3.789E-02	7.049E-02	NOT IDENT.
CO-58	-4.636E-02	4.034E-01	7.803E-01	NOT IDENT.
FE-59	-1.699E+00	5.572E+00	9.989E+00	NOT IDENT.
CO-60	-2.156E-02	2.915E-02	5.178E-02	NOT IDENT.
ZN-65	3.968E-02	1.349E-01	2.526E-01	NOT IDENT.
GE-68	1.282E-01	1.908E+00	3.483E+00	NOT IDENT.
AS-73	3.426E+00	5.666E+00	1.184E+01	NOT IDENT.
AS-74	0.000E+00	3.627E+03	0.000E+00	SHORT HLIF
SE-75	1.405E-01	1.446E-01	2.885E-01	NOT IDENT.
BR-77	0.000E+00	2.337E+36	0.000E+00	SHORT HLIF
SR-82	0.000E+00	4.454E+02	0.000E+00	SHORT HLIF
RB-83	2.836E-01	4.446E-01	9.637E-01	NOT IDENT.
KR-85	5.739E+00	5.947E+00	1.273E+01	NOT IDENT.
SR-85	5.600E-01	5.825E-01	1.246E+00	NOT IDENT.
RB-86	0.000E+00	1.793E+04	0.000E+00	SHORT HLIF
Y-88	-2.717E-02	1.228E-01	2.827E-01	NOT IDENT.
Y-91	8.980E+01	3.834E+02	7.663E+02	NOT IDENT.
NB-95	1.502E-01	6.558E-01	1.196E+00	NOT IDENT.
NB-95M	-5.338E-01	1.988E+00	3.286E+00	NOT IDENT.
ZR-95	4.441E-02	1.099E+00	2.152E+00	NOT IDENT.
NB-97	0.000E+00	1.835E+41	0.000E+00	SHORT HLIF
ZR-97	0.000E+00	1.960E+41	0.000E+00	SHORT HLIF
MO-99	0.000E+00	2.014E+31	0.000E+00	SHORT HLIF
TC-99M	0.000E+00	1.688E+41	0.000E+00	SHORT HLIF
RH-102	-3.449E-02	4.743E-02	8.346E-02	NOT IDENT.
RU-103	2.905E+00	2.635E+00	5.942E+00	FAIL ABUN
RH-106	-1.830E-01	3.254E-01	5.937E-01	NOT IDENT.
RU-106	-1.830E-01	3.254E-01	5.937E-01	NOT IDENT.
AG-108M	1.677E-03	1.889E-02	3.868E-02	FAIL ABUN
AG-110M	3.085E-02	6.544E-02	1.428E-01	NOT IDENT.
SN-113	1.159E-01	1.663E-01	3.576E-01	NOT IDENT.
CD-115	0.000E+00	2.668E+38	0.000E+00	SHORT HLIF
SN-117M	0.000E+00	5.498E+04	0.000E+00	SHORT HLIF
TE-123M	4.559E-02	1.018E-01	1.989E-01	NOT IDENT.
SB-124	1.834E-01	1.077E+00	2.664E+00	NOT IDENT.
SB-125	-4.942E-02	8.336E-02	1.550E-01	NOT IDENT.
TE-125M	-7.246E+01	1.849E+02	3.369E+02	NOT IDENT.
I-126	0.000E+00	4.635E+05	0.000E+00	SHORT HLIF
SB-126	0.000E+00	5.674E+05	0.000E+00	SHORT HLIF
SB-127	0.000E+00	4.648E+21	0.000E+00	SHORT HLIF
I-131	0.000E+00	1.850E+09	0.000E+00	SHORT HLIF
I-132	0.000E+00	1.473E+41	0.000E+00	SHORT HLIF
TE-132	0.000E+00	7.413E+25	0.000E+00	SHORT HLIF
BA-133	1.862E-02	3.032E-02	6.054E-02	NOT IDENT.
I-133	0.000E+00	1.960E+41	0.000E+00	SHORT HLIF
CS-134	4.428E-02	4.583E-02	9.800E-02	NOT IDENT.
CS-135	9.437E-02	1.350E-01	2.255E-01	NOT IDENT.
I-135	0.000E+00	1.960E+41	0.000E+00	SHORT HLIF
CS-136	0.000E+00	1.893E+05	0.000E+00	SHORT HLIF
CE-139	-8.007E-02	8.755E-02	1.497E-01	NOT IDENT.
BA-140	0.000E+00	6.285E+05	0.000E+00	SHORT HLIF
LA-140	0.000E+00	1.924E+05	0.000E+00	SHORT HLIF
CE-141	-5.936E+00	1.752E+01	3.198E+01	NOT IDENT.
CE-143	0.000E+00	1.960E+41	0.000E+00	SHORT HLIF
CE-144	7.252E-02	2.833E-01	5.492E-01	NOT IDENT.
PM-144	-3.216E-02	4.882E-02	7.745E-02	NOT IDENT.
PR-144	-2.783E+00	4.225E+00	6.703E+00	NOT IDENT.
PM-146	1.021E-03	3.583E-02	6.482E-02	NOT IDENT.
ND-147	0.000E+00	1.653E+07	0.000E+00	SHORT HLIF
PM-147	4.447E+02	6.281E+02	1.271E+03	NOT IDENT.
PM-149	0.000E+00	3.970E+39	0.000E+00	SHORT HLIF
EU-150	1.887E-02	3.503E-02	3.598E-02	FAIL ABUN
EU-152	2.827E-02	7.040E-02	1.472E-01	FAIL ABUN
GD-153	-4.664E-02	1.289E-01	2.388E-01	NOT IDENT.
EU-154	5.241E-02	8.661E-02	1.852E-01	NOT IDENT.
EU-155	6.361E-02	8.243E-02	1.678E-01	FAIL ABUN
TB-160	-3.478E-02	1.089E+00	2.189E+00	FAIL ABUN
HO-166M	1.352E-02	4.048E-02	8.421E-02	NOT IDENT.
TM-171	-6.732E+00	1.388E+01	2.671E+01	NOT IDENT.
HF-172	-7.864E-02	1.798E-01	3.018E-01	FAIL ABUN
LU-172	-2.036E-02	6.756E-02	1.216E-01	FAIL ABUN
LU-176	-1.822E-02	1.967E-02	3.139E-02	FAIL ABUN

HF-181	-6.783E-01	2.835E+00	5.505E+00	NOT IDENT.
TA-182	5.347E-01	1.219E+00	1.556E+00	FAIL ABUN
RE-183	5.669E-01	1.723E+00	3.542E+00	NOT IDENT.
RE-184	1.103E+01	2.154E+01	4.517E+01	NOT IDENT.
W-188	5.016E+01	7.594E+01	1.523E+02	FAIL ABUN
IR-192	-2.441E-01	3.176E-01	5.934E-01	FAIL ABUN
HG-203	-3.068E-02	1.886E+00	3.430E+00	NOT IDENT.
BI-207	1.634E-02	3.859E-02	8.016E-02	FAIL ABUN
PB-210	6.192E-01	2.030E+00	4.191E+00	NOT IDENT.
PB-211	-6.223E-01	5.380E-01	9.360E-01	NOT IDENT.
BI-212	0.000E+00	8.089E-01	1.076E+00	FAIL ABUN
RN-219	1.924E-01	2.769E-01	5.975E-01	FAIL ABUN
RA-223	2.142E-01	4.675E-01	9.051E-01	FAIL ABUN
AC-227	-2.918E-02	1.850E-01	3.346E-01	FAIL ABUN
TH-227	-2.918E-02	1.850E-01	3.346E-01	FAIL ABUN
TH-229	4.778E-01	4.062E-01	8.276E-01	FAIL ABUN
PA-231	2.423E-01	3.508E-01	6.941E-01	NOT IDENT.
TH-231	2.142E-01	4.675E-01	9.051E-01	FAIL ABUN
PA-233	9.276E-03	4.407E-02	9.096E-02	NOT IDENT.
PA-234	-1.176E-01	2.065E-01	3.591E-01	NOT IDENT.
PA-234M	-2.237E+00	3.336E+00	5.617E+00	NOT IDENT.
NP-237	9.276E-03	4.407E-02	9.096E-02	NOT IDENT.
NP-238	0.000E+00	3.502E+00	0.000E+00	SHORT HLIF
NP-239	-6.840E-02	1.685E-01	3.121E-01	NOT IDENT.
PU-239	0.000E+00	4.986E+02	5.107E+02	FAIL ABUN
AM-241	-4.540E-02	9.022E-02	1.720E-01	NOT IDENT.
CM-243	-4.864E-02	7.603E-02	1.384E-01	NOT IDENT.
BK-247	6.926E-02	7.897E-02	1.096E-01	FAIL ABUN
CM-247	1.714E-02	2.577E-02	5.532E-02	NOT IDENT.
CF-249	-1.530E-02	2.665E-02	5.022E-02	FAIL ABUN
CF-251	-1.160E-01	9.376E-02	1.534E-01	NOT IDENT.

Nuclide Line Activity Report

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
K-40	1460.82	346	10.66*	1.307E+00	1.215E+01	1.215E+01	10.67
MN-54	834.85	7	99.98*	2.109E+00	1.708E-02	3.272E-02	170.22
NB-94	702.65	21	99.81*	2.428E+00	4.209E-02	4.209E-02	101.83
	871.09	12	99.89	2.038E+00	2.956E-02	2.956E-02	113.04
RH-101	127.23	50	68.00*	7.332E+00	4.911E-02	5.811E-02	96.13
	198.01	32	73.00	6.055E+00	3.534E-02	4.182E-02	141.07
	325.23	-----	11.80	4.299E+00	-----	Line Not Found	-----
CD-109	88.03	156	3.70*	6.561E+00	3.142E+00	4.878E+00	34.91
SN-126	64.28	34	9.60	3.911E+00	4.476E-01	4.476E-01	143.59
	86.94	156	8.90	6.561E+00	1.306E+00	1.306E+00	34.91
	87.57	156	37.00*	6.561E+00	3.142E-01	3.142E-01	34.91
BA-137M	661.66	88	89.90*	2.540E+00	1.886E-01	1.922E-01	34.16
CS-137	661.66	88	85.10*	2.540E+00	1.993E-01	2.030E-01	34.16
TL-208	277.37	-----	6.60	4.820E+00	-----	Line Not Found	-----
	583.19	121	85.00*	2.799E+00	2.485E-01	2.485E-01	26.79
	860.56	37	12.50	2.058E+00	6.977E-01	6.977E-01	45.20
BI-211	72.87	-----	1.23	5.213E+00	-----	Line Not Found	-----
	351.06	281	12.92*	4.059E+00	2.625E+00	2.625E+00	16.99
PB-212	74.82	185	10.28	5.429E+00	1.620E+00	1.620E+00	28.90
	77.11	246	17.10	5.697E+00	1.238E+00	1.238E+00	25.15
	238.63	372	43.60*	5.357E+00	7.797E-01	7.797E-01	13.69
	300.09	-----	3.30	4.556E+00	-----	Line Not Found	-----
BI-214	609.32	162	45.49*	2.708E+00	6.430E-01	6.432E-01	23.00
	1120.29	37	14.92	1.645E+00	7.457E-01	7.460E-01	56.45
	1764.49	29	15.30	1.122E+00	8.354E-01	8.357E-01	38.95
PB-214	74.82	185	5.80	5.429E+00	2.871E+00	2.872E+00	28.90
	77.11	246	9.70	5.697E+00	2.182E+00	2.182E+00	25.15
	87.09	156	3.41	6.561E+00	3.409E+00	3.411E+00	34.91
	242.00	99	7.25	5.302E+00	1.266E+00	1.266E+00	41.89
	295.22	156	18.42	4.608E+00	8.999E-01	9.002E-01	24.01
RN-222	351.93	281	35.60*	4.059E+00	9.528E-01	9.531E-01	16.99
	609.32	162	45.49*	2.708E+00	6.430E-01	6.432E-01	23.00
	1120.29	37	14.92	1.645E+00	7.457E-01	7.460E-01	56.45
	1764.49	29	15.30	1.122E+00	8.354E-01	8.357E-01	38.95
RA-224	240.99	54	4.10*	5.321E+00	1.205E+00	1.205E+00	62.94
RA-226	609.32	162	45.49*	2.708E+00	6.430E-01	6.432E-01	23.00
	1120.29	37	14.92	1.645E+00	7.457E-01	7.460E-01	56.45
	1764.49	29	15.30	1.122E+00	8.354E-01	8.357E-01	38.95
AC-228	105.21	-----	1.10	7.278E+00	-----	Line Not Found	-----
	338.32	103	11.27	4.178E+00	1.075E+00	1.075E+00	36.31
	794.95	-----	4.25	2.197E+00	-----	Line Not Found	-----
	835.71	7	1.61	2.109E+00	1.061E+00	1.061E+00	170.22
	911.20	102	25.80*	1.962E+00	9.867E-01	9.867E-01	25.27
	968.97	58	15.80	1.863E+00	9.599E-01	9.599E-01	40.12
RA-228	105.21	-----	1.10	7.278E+00	-----	Line Not Found	-----
	338.32	103	11.27	4.178E+00	1.075E+00	1.075E+00	36.31
	794.95	-----	4.25	2.197E+00	-----	Line Not Found	-----

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
	835.71	7	1.61	2.109E+00	1.061E+00	1.061E+00	170.22
	911.20	102	25.80*	1.962E+00	9.867E-01	9.867E-01	25.27
	968.97	58	15.80	1.863E+00	9.599E-01	9.599E-01	40.12
TH-228	74.82	185	10.28	5.429E+00	1.620E+00	1.620E+00	28.90
	77.11	246	17.10	5.697E+00	1.238E+00	1.238E+00	25.15
	238.63	372	43.60*	5.357E+00	7.797E-01	7.797E-01	13.69
	300.09	-----	3.30	4.556E+00	-----	Line Not Found	-----
TH-230	609.32	162	45.49*	2.708E+00	6.430E-01	6.430E-01	23.00
	1120.29	37	14.92	1.645E+00	7.457E-01	7.457E-01	56.45
	1764.49	29	15.30	1.122E+00	8.354E-01	8.354E-01	38.95
TH-232	105.21	-----	1.10	7.278E+00	-----	Line Not Found	-----
	338.32	103	11.27	4.178E+00	1.075E+00	1.075E+00	36.31
	835.71	7	1.61	2.109E+00	1.061E+00	1.061E+00	170.22
	911.20	102	25.80*	1.962E+00	9.867E-01	9.867E-01	25.27
	968.97	58	15.80	1.863E+00	9.599E-01	9.599E-01	40.12
TH-234	63.29	34	3.70*	3.911E+00	1.161E+00	1.161E+00	143.59
	92.59	122	4.23	6.875E+00	2.063E+00	2.063E+00	53.47
U-234	609.32	162	45.49*	2.708E+00	6.430E-01	6.430E-01	23.00
	1120.29	37	14.92	1.645E+00	7.457E-01	7.457E-01	56.45
	1764.49	29	15.30	1.122E+00	8.354E-01	8.354E-01	38.95
U-235	89.96	87	3.47	6.718E+00	1.826E+00	1.826E+00	73.46
	93.35	122	5.60	6.875E+00	1.558E+00	1.558E+00	53.47
	143.76	-----	10.96*	7.121E+00	-----	Line Not Found	-----
	163.33	-----	5.08	6.750E+00	-----	Line Not Found	-----
	185.72	132	57.20	6.289E+00	1.798E-01	1.798E-01	41.28
	205.31	18	5.01	5.919E+00	2.949E-01	2.949E-01	190.14
U-238	63.29	34	3.70*	3.911E+00	1.161E+00	1.161E+00	143.59
	92.59	122	4.23	6.875E+00	2.063E+00	2.063E+00	53.47
AM-243	43.53	-----	5.90	8.765E-01	-----	Line Not Found	-----
	74.66	185	67.20*	5.429E+00	2.478E-01	2.479E-01	28.90
ANH-511	511.00	49	100.00*	3.089E+00	7.775E-02	7.775E-02	88.62

Flag: "*" = Keyline

Total number of lines in spectrum 58
 Number of unidentified lines 15
 Number of lines tentatively identified by NID 43 74.14%

Nuclide Type :

Nuclide	Hlife	Decay	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
K-40	1.25E+09Y	1.00	1.215E+01	1.215E+01	0.130E+01	10.67	
MN-54	312.05D	1.92	1.708E-02	3.272E-02	5.569E-02	170.22	
NB-94	20300.00Y	1.00	4.209E-02	4.209E-02	4.287E-02	101.83	
RH-101	3.30Y	1.18	4.911E-02	5.811E-02	5.586E-02	96.13	
CD-109	461.40D	1.55	3.142E+00	4.878E+00	1.703E+00	34.91	
SN-126	2.30E+05Y	1.00	3.142E-01	3.142E-01	1.097E-01	34.91	
BA-137M	30.08Y	1.02	1.886E-01	1.922E-01	0.656E-01	34.16	
CS-137	30.08Y	1.02	1.993E-01	2.030E-01	0.693E-01	34.16	
TL-208	1.41E+10Y	1.00	2.485E-01	2.485E-01	0.666E-01	26.79	
BI-211	7.04E+08Y	1.00	2.625E+00	2.625E+00	0.446E+00	16.99	
PB-212	1.41E+10Y	1.00	7.797E-01	7.797E-01	1.067E-01	13.69	
BI-214	1600.00Y	1.00	6.430E-01	6.432E-01	1.479E-01	23.00	
PB-214	1600.00Y	1.00	9.528E-01	9.531E-01	1.620E-01	16.99	
RN-222	1600.00Y	1.00	6.430E-01	6.432E-01	1.479E-01	23.00	
RA-224	1.41E+10Y	1.00	1.205E+00	1.205E+00	0.758E+00	62.94	
RA-226	1600.00Y	1.00	6.430E-01	6.432E-01	1.479E-01	23.00	
AC-228	1.41E+10Y	1.00	9.867E-01	9.867E-01	2.494E-01	25.27	
RA-228	1.41E+10Y	1.00	9.867E-01	9.867E-01	2.494E-01	25.27	
TH-228	1.41E+10Y	1.00	7.797E-01	7.797E-01	1.067E-01	13.69	
TH-230	7.54E+04Y	1.00	6.430E-01	6.430E-01	1.479E-01	23.00	
TH-232	1.41E+10Y	1.00	9.867E-01	9.867E-01	2.494E-01	25.27	
TH-234	4.47E+09Y	1.00	1.161E+00	1.161E+00	1.668E+00	143.59	
U-234	2.45E+05Y	1.00	6.430E-01	6.430E-01	1.479E-01	23.00	
U-235	7.04E+08Y	1.00	1.798E-01	1.798E-01	0.742E-01	41.28	K
U-238	4.47E+09Y	1.00	1.161E+00	1.161E+00	1.668E+00	143.59	
AM-243	7370.00Y	1.00	2.478E-01	2.479E-01	0.716E-01	28.90	
ANH-511	1.00E+09Y	1.00	7.775E-02	7.775E-02	6.890E-02	88.62	
Total Activity :			3.170E+01	3.346E+01			

Grand Total Activity : 3.170E+01 3.346E+01

Flags: "K" = Keyline not found "M" = Manually accepted
 "E" = Manually edited "A" = Nuclide specific abn. limit

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
0	153.68	34	111	0.70	307.10	303	7	7.79E-03	****	6.94E+00	T
0	209.30	60	75	0.97	418.34	415	7	1.42E-02	58.7	5.85E+00	
0	266.29	21	44	1.20	532.33	530	6	5.06E-03	****	4.96E+00	T
0	269.81	39	52	2.05	539.36	536	7	9.31E-03	75.2	4.92E+00	T
3	328.04	28	42	1.68	655.84	652	19	6.79E-03	96.5	4.27E+00	T
3	333.13	15	43	1.69	666.03	652	19	3.78E-03	****	4.23E+00	T
0	446.57	17	19	0.97	892.93	888	8	4.36E-03	****	3.41E+00	
0	450.03	15	36	1.61	899.85	896	10	3.84E-03	****	3.39E+00	
0	466.47	58	95	9.54	932.73	921	26	1.48E-02	****	3.31E+00	
5	492.17	40	4	1.81	984.16	981	14	1.01E-02	37.3	3.18E+00	T
5	495.38	24	5	2.23	990.58	981	14	6.14E-03	60.2	3.16E+00	
0	499.55	20	19	1.18	998.91	995	11	5.11E-03	98.1	3.14E+00	
0	567.32	13	11	1.56	1134.48	1131	7	3.49E-03	****	2.86E+00	
0	614.86	7	21	1.41	1229.57	1225	8	1.94E-03	****	2.69E+00	T
0	641.50	29	12	2.29	1282.88	1277	14	7.50E-03	64.1	2.60E+00	
0	728.46	37	29	1.67	1456.83	1449	14	9.84E-03	71.6	2.36E+00	T
0	768.73	26	39	2.82	1537.40	1529	19	6.94E-03	****	2.26E+00	
0	821.13	16	4	0.67	1642.22	1638	8	4.24E-03	68.1	2.14E+00	
0	855.60	18	10	0.89	1711.20	1704	13	4.84E-03	87.9	2.07E+00	T
0	922.00	15	3	3.15	1844.03	1838	12	4.13E-03	72.6	1.94E+00	
0	935.22	8	18	1.18	1870.48	1863	11	2.22E-03	****	1.92E+00	
0	965.17	19	7	1.23	1930.40	1924	10	5.23E-03	74.1	1.87E+00	T
0	1082.13	11	15	3.92	2164.42	2156	13	3.03E-03	****	1.70E+00	
0	1085.82	10	1	1.32	2171.79	2169	6	2.70E-03	74.8	1.69E+00	T
0	1222.18	8	19	2.48	2444.63	2438	12	2.15E-03	****	1.53E+00	T
0	1272.81	15	5	4.23	2545.95	2540	11	4.14E-03	79.6	1.47E+00	T
0	1289.24	4	13	0.64	2578.83	2571	13	1.25E-03	****	1.46E+00	
0	1299.15	8	4	0.76	2598.65	2592	9	2.36E-03	****	1.45E+00	T
0	1730.00	10	2	1.46	3460.84	3456	8	3.01E-03	76.0	1.14E+00	

Flags: "T" = Tentatively associated

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*****
*                               GEL Laboratories LLC                               *
*                               2040 Savage Road                               *
*                               Charleston, SC 29407                          *
*****
*                               DETECTOR AND SAMPLE DATA                       *
*
* Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]R405245008.CNF;1
* Acquisition date   : 3-OCT-2016 04:35:39 Sensitivity      : 3.000
* Detector ID       : GAM30 Energy tolerance: 1.500
* Elapsed live time : 0 01:00:00.00 Abundance limit : 75.000
* Elapsed real time : 0 01:00:01.40 Half life ratio : *****
* Sample date       : 15-DEC-2015 12:20:00 Nuclide Library : SOLID
* Sample ID         : R405245008 Analyst initials: MXR1
* Batch Number      : 1596387 Sample Quantity : 1.5325E+02 GRAM
* Wet wt corr       : 1.00000 Wet Weight : 0.00000
*                               Dry Weight : 0.00000
*****
*                               CALIBRATION INFORMATION                         *
*
* Eff. Cal. date    : 11-MAR-2016 05:58:49 Eff. Geometry   : CAN
* Eff. File         : DKA100:[CANBERRA.GAMMA]EFF_GAM30_CAN.CNF;7
*****

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Combined Critical Level Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Lc (pCi/GRAM)
K-40	1.373E-01
MN-54	3.072E-02
NB-94	1.573E-02
RH-101	2.042E-02
CD-109	6.678E-01
SN-126	4.320E-02
BA-137M	2.016E-02
CS-137	2.130E-02
TL-208	2.423E-02
BI-211	1.149E-01
PB-212	3.273E-02
BI-214	3.991E-02
PB-214	1.317E-01
RN-222	3.991E-02
RA-224	3.507E-01
RA-226	3.991E-02
AC-228	6.745E-02
RA-228	6.745E-02
TH-228	3.273E-02
TH-230	3.989E-02
TH-232	6.745E-02
TH-234	7.469E-01
U-234	3.989E-02
U-235	1.338E-01
U-238	7.469E-01
AM-243	3.075E-02
ANH-511	1.879E-02

---- Non-Identified Nuclides ----

Nuclide	Lc (pCi/GRAM)	
BE-7	6.829E+00	NOT IDENT.
NA-22	3.169E-02	NOT IDENT.
NA-24	0.000E+00	SHORT HLIF
AL-26	1.470E-02	NOT IDENT.

SC-46	2.294E-01	FAIL ABUN
V-48	0.000E+00	SHORT HLIF
CR-51	0.000E+00	SHORT HLIF
CO-56	2.836E-01	NOT IDENT.
MN-56	0.000E+00	SHORT HLIF
CO-57	3.288E-02	NOT IDENT.
CO-58	3.350E-01	NOT IDENT.
FE-59	4.316E+00	NOT IDENT.
CO-60	2.063E-02	NOT IDENT.
ZN-65	1.078E-01	NOT IDENT.
GE-68	1.482E+00	NOT IDENT.
AS-73	5.537E+00	NOT IDENT.
AS-74	0.000E+00	SHORT HLIF
SE-75	1.313E-01	NOT IDENT.
BR-77	0.000E+00	SHORT HLIF
SR-82	0.000E+00	SHORT HLIF
RB-83	4.294E-01	NOT IDENT.
KR-85	5.824E+00	NOT IDENT.
SR-85	5.703E-01	NOT IDENT.
RB-86	0.000E+00	SHORT HLIF
Y-88	1.002E-01	NOT IDENT.
Y-91	3.296E+02	NOT IDENT.
NB-95	5.266E-01	NOT IDENT.
NB-95M	1.519E+00	NOT IDENT.
ZR-95	9.461E-01	NOT IDENT.
NB-97	0.000E+00	SHORT HLIF
ZR-97	0.000E+00	SHORT HLIF
MO-99	0.000E+00	SHORT HLIF
TC-99M	0.000E+00	SHORT HLIF
RH-102	3.638E-02	NOT IDENT.
RU-103	2.552E+00	FAIL ABUN
RH-106	2.524E-01	NOT IDENT.
RU-106	2.524E-01	NOT IDENT.
AG-108M	1.716E-02	FAIL ABUN
AG-110M	6.101E-02	NOT IDENT.
SN-113	1.624E-01	NOT IDENT.
CD-115	0.000E+00	SHORT HLIF
SN-117M	0.000E+00	SHORT HLIF
TE-123M	9.276E-02	NOT IDENT.
SB-124	9.813E-01	NOT IDENT.
SB-125	6.947E-02	NOT IDENT.
TE-125M	1.562E+02	NOT IDENT.
I-126	0.000E+00	SHORT HLIF
SB-126	0.000E+00	SHORT HLIF
SB-127	0.000E+00	SHORT HLIF
I-131	0.000E+00	SHORT HLIF
I-132	0.000E+00	SHORT HLIF
TE-132	0.000E+00	SHORT HLIF
BA-133	2.736E-02	NOT IDENT.
I-133	0.000E+00	SHORT HLIF
CS-134	4.428E-02	NOT IDENT.
CS-135	1.039E-01	NOT IDENT.
I-135	0.000E+00	SHORT HLIF
CS-136	0.000E+00	SHORT HLIF
CE-139	6.914E-02	NOT IDENT.
BA-140	0.000E+00	SHORT HLIF
LA-140	0.000E+00	SHORT HLIF
CE-141	1.494E+01	NOT IDENT.
CE-143	0.000E+00	SHORT HLIF
CE-144	2.568E-01	NOT IDENT.
PM-144	3.383E-02	NOT IDENT.
PR-144	2.928E+00	NOT IDENT.
PM-146	2.895E-02	NOT IDENT.
ND-147	0.000E+00	SHORT HLIF
PM-147	5.942E+02	NOT IDENT.
PM-149	0.000E+00	SHORT HLIF
EU-150	1.626E-02	FAIL ABUN
EU-152	6.702E-02	FAIL ABUN
GD-153	1.113E-01	NOT IDENT.
EU-154	7.871E-02	NOT IDENT.
EU-155	7.872E-02	FAIL ABUN
TB-160	9.108E-01	FAIL ABUN
HO-166M	3.687E-02	NOT IDENT.
TM-171	1.239E+01	NOT IDENT.
HF-172	1.394E-01	FAIL ABUN
LU-172	5.227E-02	FAIL ABUN
LU-176	1.404E-02	FAIL ABUN
HF-181	2.436E+00	NOT IDENT.

TA-182	6.822E-01	FAIL ABUN
RE-183	1.645E+00	NOT IDENT.
RE-184	1.982E+01	NOT IDENT.
W-188	6.939E+01	FAIL ABUN
IR-192	2.669E-01	FAIL ABUN
HG-203	1.577E+00	NOT IDENT.
BI-207	3.476E-02	FAIL ABUN
PB-210	1.956E+00	NOT IDENT.
PB-211	4.183E-01	NOT IDENT.
BI-212	4.950E-01	FAIL ABUN
RN-219	2.705E-01	FAIL ABUN
RA-223	4.123E-01	FAIL ABUN
AC-227	1.529E-01	FAIL ABUN
TH-227	1.529E-01	FAIL ABUN
TH-229	3.880E-01	FAIL ABUN
PA-231	3.186E-01	NOT IDENT.
TH-231	4.123E-01	FAIL ABUN
PA-233	4.142E-02	NOT IDENT.
PA-234	1.500E-01	NOT IDENT.
PA-234M	2.366E+00	NOT IDENT.
NP-237	4.142E-02	NOT IDENT.
NP-238	0.000E+00	SHORT HLIF
NP-239	1.439E-01	NOT IDENT.
PU-239	2.401E+02	FAIL ABUN
AM-241	7.992E-02	NOT IDENT.
CM-243	6.441E-02	NOT IDENT.
BK-247	5.015E-02	FAIL ABUN
CM-247	2.506E-02	NOT IDENT.
CF-249	2.234E-02	FAIL ABUN
CF-251	7.040E-02	NOT IDENT.

```

*****
*                               GEL Laboratories LLC                               *
*                               2040 Savage Road                               *
*                               Charleston, SC 29407                          *
*****
*                               DETECTOR AND SAMPLE DATA                       *
*
* Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]R405245008.CNF;1
* Acquisition date   : 3-OCT-2016 04:35:39 Sensitivity      : 3.000
* Detector ID       : GAM30 Energy tolerance: 1.500
* Elapsed live time : 0 01:00:00.00 Abundance limit : 75.000
* Elapsed real time : 0 01:00:01.40 Half life ratio : *****
* Sample date       : 15-DEC-2015 12:20:00 Nuclide Library : SOLID
* Sample ID        : R405245008 Analyst initials: MXR1
* Batch Number     : 1596387 Sample Quantity : 1.5325E+02 GRAM
*                               Quantity Err(%) : 1.3051E-03 %
* Wet wt corr      : 1.00000 Wet Weight      : 0.00000
*                               Dry Weight     : 0.00000
*****
*                               CALIBRATION INFORMATION                          *
*
* Eff. Cal. date    : 11-MAR-2016 05:58:49 Eff. Geometry   : CAN
* Eff. File         : DKA100:[CANBERRA.GAMMA]EFF_GAM30_CAN.CNF;7
*****

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Combined Activity-MDA Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM)	Act Error (1.96-sigma)	TPU (1.96-sigma)
K-40	1.215E+01	1.669E+00	1.669E+00
MN-54	3.272E-02	5.471E-02	5.471E-02
NB-94	4.209E-02	4.217E-02	4.217E-02
RH-101	5.811E-02	5.583E-02	5.583E-02
CD-109	3.510E+00	1.737E+00	1.737E+00
SN-126	2.261E-01	1.112E-01	1.112E-01
BA-137M	1.922E-01	6.607E-02	6.607E-02
CS-137	2.030E-01	6.979E-02	6.979E-02
TL-208	2.485E-01	6.835E-02	6.835E-02
PB-212	7.797E-01	1.225E-01	1.225E-01
BI-214	6.432E-01	1.541E-01	1.541E-01
PB-214	9.531E-01	1.771E-01	1.771E-01
RN-222	6.432E-01	1.541E-01	1.541E-01
RA-224	1.205E+00	7.498E-01	7.498E-01
RA-226	6.432E-01	1.541E-01	1.541E-01
AC-228	9.867E-01	2.805E-01	2.805E-01
RA-228	9.867E-01	2.805E-01	2.805E-01
TH-228	7.797E-01	1.225E-01	1.225E-01
TH-230	6.430E-01	1.540E-01	1.540E-01
TH-232	9.867E-01	2.805E-01	2.805E-01
TH-234	1.161E+00	1.655E+00	1.655E+00
U-234	6.430E-01	1.540E-01	1.540E-01
U-235	3.623E-02	1.490E-01	1.490E-01
U-238	1.161E+00	1.655E+00	1.655E+00
AM-243	1.654E-01	7.418E-02	7.418E-02
ANH-511	7.775E-02	6.783E-02	6.783E-02

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/GRAM)	K.L Act error (1.96-sigma)	TPU (1.96-sigma)	
BE-7	-3.910E+00	8.241E+00	8.428E+00	NOT IDENT.
NA-22	2.047E-02	3.506E-02	3.626E-02	NOT IDENT.
NA-24	1.000E+41	8.310E+41	0.000E+00	SHORT HLIF
AL-26	-8.719E-03	2.126E-02	2.162E-02	NOT IDENT.

SC-46	4.351E-02	2.631E-01	2.639E-01	FAIL ABUN
V-48	-3.699E+03	8.350E+03	8.515E+03	SHORT HLIF
CR-51	-1.356E+01	2.635E+02	2.636E+02	SHORT HLIF
CO-56	9.365E-02	3.162E-01	3.190E-01	NOT IDENT.
MN-56	1.000E+41	3.250E+41	0.000E+00	SHORT HLIF
CO-57	-1.007E-02	3.790E-02	3.817E-02	NOT IDENT.
CO-58	-4.636E-02	4.034E-01	4.040E-01	NOT IDENT.
FE-59	-1.699E+00	5.582E+00	5.635E+00	NOT IDENT.
CO-60	-2.156E-02	2.920E-02	3.078E-02	NOT IDENT.
ZN-65	3.968E-02	1.351E-01	1.363E-01	NOT IDENT.
GE-68	1.282E-01	1.908E+00	1.909E+00	NOT IDENT.
AS-73	3.426E+00	5.710E+00	5.915E+00	NOT IDENT.
AS-74	1.077E+03	3.629E+03	3.662E+03	SHORT HLIF
SE-75	1.405E-01	1.451E-01	1.583E-01	NOT IDENT.
BR-77	1.742E+37	1.472E+38	0.000E+00	SHORT HLIF
SR-82	1.069E+02	4.456E+02	4.482E+02	SHORT HLIF
RB-83	2.836E-01	4.467E-01	4.646E-01	NOT IDENT.
KR-85	5.739E+00	5.966E+00	6.502E+00	NOT IDENT.
SR-85	5.600E-01	5.844E-01	6.366E-01	NOT IDENT.
RB-86	1.207E+03	1.793E+04	1.793E+04	SHORT HLIF
Y-88	-2.717E-02	1.228E-01	1.234E-01	NOT IDENT.
Y-91	8.980E+01	3.835E+02	3.857E+02	NOT IDENT.
NB-95	1.502E-01	6.560E-01	6.595E-01	NOT IDENT.
NB-95M	-5.338E-01	1.989E+00	2.003E+00	NOT IDENT.
ZR-95	4.441E-02	1.099E+00	1.099E+00	NOT IDENT.
NB-97	-1.000E+41	1.837E+41	0.000E+00	SHORT HLIF
ZR-97	1.000E+41	7.018E+41	0.000E+00	SHORT HLIF
MO-99	-2.581E+30	2.015E+31	0.000E+00	SHORT HLIF
TC-99M	1.000E+41	1.692E+41	0.000E+00	SHORT HLIF
RH-102	-3.449E-02	4.757E-02	5.005E-02	NOT IDENT.
RU-103	2.905E+00	2.647E+00	2.953E+00	FAIL ABUN
RH-106	-1.830E-01	3.259E-01	3.362E-01	NOT IDENT.
RU-106	-1.830E-01	3.259E-01	3.362E-01	NOT IDENT.
AG-108M	1.677E-03	1.889E-02	1.890E-02	FAIL ABUN
AG-110M	3.085E-02	6.556E-02	6.702E-02	NOT IDENT.
SN-113	1.159E-01	1.666E-01	1.746E-01	NOT IDENT.
CD-115	1.009E+38	2.674E+38	0.000E+00	SHORT HLIF
SN-117M	1.497E+04	5.501E+04	5.542E+04	SHORT HLIF
TE-123M	4.559E-02	1.019E-01	1.039E-01	NOT IDENT.
SB-124	1.834E-01	1.077E+00	1.080E+00	NOT IDENT.
SB-125	-4.942E-02	8.345E-02	8.638E-02	NOT IDENT.
TE-125M	-7.246E+01	1.850E+02	1.878E+02	NOT IDENT.
I-126	1.735E+05	4.642E+05	4.707E+05	SHORT HLIF
SB-126	1.149E+05	5.679E+05	5.702E+05	SHORT HLIF
SB-127	-4.990E+20	4.697E+21	0.000E+00	SHORT HLIF
I-131	3.013E+08	1.850E+09	1.855E+09	SHORT HLIF
I-132	1.000E+41	1.810E+42	0.000E+00	SHORT HLIF
TE-132	-6.238E+25	7.824E+25	0.000E+00	SHORT HLIF
BA-133	1.862E-02	3.036E-02	3.150E-02	NOT IDENT.
I-133	1.000E+41	3.955E+42	0.000E+00	SHORT HLIF
CS-134	4.428E-02	4.608E-02	5.022E-02	NOT IDENT.
CS-135	9.437E-02	1.353E-01	1.418E-01	NOT IDENT.
I-135	-1.000E+41	2.020E+42	0.000E+00	SHORT HLIF
CS-136	-2.097E+05	1.940E+05	2.159E+05	SHORT HLIF
CE-139	-8.007E-02	8.911E-02	9.615E-02	NOT IDENT.
BA-140	-3.339E+05	6.291E+05	6.469E+05	SHORT HLIF
LA-140	-3.947E+04	1.924E+05	1.932E+05	SHORT HLIF
CE-141	-5.936E+00	1.753E+01	1.773E+01	NOT IDENT.
CE-143	1.000E+41	1.142E+42	0.000E+00	SHORT HLIF
CE-144	7.252E-02	2.833E-01	2.852E-01	NOT IDENT.
PM-144	-3.216E-02	4.892E-02	5.102E-02	NOT IDENT.
PR-144	-2.783E+00	4.232E+00	4.414E+00	NOT IDENT.
PM-146	1.021E-03	3.583E-02	3.584E-02	NOT IDENT.
ND-147	-1.077E+07	1.655E+07	1.725E+07	SHORT HLIF
PM-147	4.447E+02	6.289E+02	6.601E+02	NOT IDENT.
PM-149	-2.528E+39	4.011E+39	0.000E+00	SHORT HLIF
EU-150	1.887E-02	3.507E-02	3.608E-02	FAIL ABUN
EU-152	2.827E-02	7.044E-02	7.159E-02	FAIL ABUN
GD-153	-4.664E-02	1.289E-01	1.306E-01	NOT IDENT.
EU-154	5.241E-02	8.674E-02	8.990E-02	NOT IDENT.
EU-155	6.361E-02	8.261E-02	8.744E-02	FAIL ABUN
TB-160	-3.478E-02	1.089E+00	1.089E+00	FAIL ABUN
HO-166M	1.352E-02	4.050E-02	4.096E-02	NOT IDENT.
TM-171	-6.732E+00	1.389E+01	1.422E+01	NOT IDENT.
HF-172	-7.864E-02	1.803E-01	1.838E-01	FAIL ABUN
LU-172	-2.036E-02	6.770E-02	6.832E-02	FAIL ABUN
LU-176	-1.822E-02	1.973E-02	2.137E-02	FAIL ABUN
HF-181	-6.783E-01	2.836E+00	2.852E+00	NOT IDENT.

TA-182	5.347E-01	1.220E+00	1.243E+00	FAIL ABUN
RE-183	5.669E-01	1.725E+00	1.744E+00	NOT IDENT.
RE-184	1.103E+01	2.174E+01	2.230E+01	NOT IDENT.
W-188	5.016E+01	7.622E+01	7.951E+01	FAIL ABUN
IR-192	-2.441E-01	3.183E-01	3.367E-01	FAIL ABUN
HG-203	-3.068E-02	1.886E+00	1.886E+00	NOT IDENT.
BI-207	1.634E-02	3.870E-02	3.940E-02	FAIL ABUN
PB-210	6.192E-01	2.031E+00	2.050E+00	NOT IDENT.
BI-211	2.625E+00	4.898E-01	1.281E+00	FAIL ABUN
PB-211	-6.223E-01	5.407E-01	6.091E-01	NOT IDENT.
BI-212	1.152E+00	8.164E-01	9.677E-01	FAIL ABUN
RN-219	1.924E-01	2.783E-01	2.915E-01	FAIL ABUN
RA-223	2.142E-01	4.679E-01	4.778E-01	FAIL ABUN
AC-227	-2.918E-02	1.851E-01	1.855E-01	FAIL ABUN
TH-227	-2.918E-02	1.851E-01	1.855E-01	FAIL ABUN
TH-229	4.778E-01	4.077E-01	4.611E-01	FAIL ABUN
PA-231	2.423E-01	3.550E-01	3.714E-01	NOT IDENT.
TH-231	2.142E-01	4.679E-01	4.778E-01	FAIL ABUN
PA-233	9.276E-03	4.408E-02	4.428E-02	NOT IDENT.
PA-234	-1.176E-01	2.470E-01	2.527E-01	NOT IDENT.
PA-234M	-2.237E+00	3.356E+00	3.504E+00	NOT IDENT.
NP-237	9.276E-03	4.408E-02	4.428E-02	NOT IDENT.
NP-238	2.516E+39	3.502E+40	0.000E+00	SHORT HLIF
NP-239	-6.840E-02	1.686E-01	1.714E-01	NOT IDENT.
PU-239	5.293E+02	4.999E+02	5.539E+02	FAIL ABUN
AM-241	-4.540E-02	9.029E-02	9.258E-02	NOT IDENT.
CM-243	-4.864E-02	7.620E-02	7.929E-02	NOT IDENT.
BK-247	6.926E-02	8.033E-02	8.618E-02	FAIL ABUN
CM-247	1.714E-02	2.596E-02	2.708E-02	NOT IDENT.
CF-249	-1.530E-02	2.670E-02	2.758E-02	FAIL ABUN
CF-251	-1.160E-01	9.486E-02	1.083E-01	NOT IDENT.

 * GEL Laboratories LLC *
 * 2040 Savage Road *
 * Charleston, SC 29407 *
 * GAMMA SPECTROSCOPY BACKGROUND REPORT *

ENERGY	MDA COUNTS	ENERGY	MDA COUNTS	ENERGY	MDA COUNTS
43.53	48.1902	87.09	72.4828	136.47	58.0729
45.60	53.0822	87.57	72.5367	140.51	0.0000
46.54	53.1977	88.03	72.5883	143.76	61.8123
49.72	0.0000	88.34	72.6229	144.24	59.6762
51.35	58.4877	88.47	72.6378	145.44	74.9665
51.87	63.2754	89.96	72.8036	152.43	68.6105
52.39	65.2368	1093.63	72.8789	153.25	0.0000
52.97	54.9045	91.11	0.0000	323.87	54.1164
53.44	56.8542	92.59	73.0937	156.02	0.0000
54.07	52.1856	93.35	73.1766	158.56	0.0000
57.36	0.0000	94.56	63.8050	159.00	54.0252
57.53	56.3807	94.65	63.8137	162.33	65.2767
57.98	50.6927	94.67	63.8156	162.66	0.0000
59.27	80.5502	94.87	69.2669	163.33	50.9463
59.32	80.5582	97.43	67.4819	165.86	68.8456
59.54	68.1204	98.43	71.6748	176.31	52.7387
60.96	65.4242	98.44	71.6759	176.60	0.0000
61.17	65.4509	99.53	56.4049	177.52	68.5291
62.93	74.3649	100.11	56.4515	181.07	0.0000
63.29	74.4160	102.03	71.0136	181.52	48.1191
63.58	74.4569	103.18	70.0975	184.41	52.7763
64.28	74.5556	103.37	75.2718	143.76	55.4839
66.73	62.2515	105.21	58.9239	193.51	49.0462
67.24	76.5894	105.31	58.9322	197.03	49.2043
125.81	82.8217	106.12	72.4535	198.01	49.2483
67.75	82.8321	106.47	78.7014	201.83	50.5675
69.67	86.0543	109.28	60.2911	203.43	55.2429
70.83	91.1318	111.00	70.8492	205.31	49.1869
72.81	93.0885	111.76	0.0000	210.85	50.9710
72.87	93.0979	114.06	57.5362	215.65	44.2031
74.66	81.8779	116.30	0.0000	222.11	61.9905
74.82	81.9001	116.74	55.6376	227.09	50.5028
74.97	81.9210	119.76	61.1219	227.38	48.1657
77.11	82.2192	121.12	52.7817	228.16	0.0000
78.74	82.4434	121.22	52.7885	228.18	63.4798
79.69	82.2409	121.78	65.5037	116.74	63.4798
80.12	78.3168	122.06	70.8113	235.69	52.0412
80.19	0.0000	122.92	55.0171	235.96	52.0526
80.57	82.3601	123.07	58.2021	238.63	40.3086
81.00	83.7469	265.00	65.6593	238.98	0.0000
81.07	83.7565	125.81	59.4611	240.99	40.3843
81.75	85.1803	127.23	49.6371	242.00	40.4165
83.79	74.7772	127.91	55.3559	244.70	38.1201
84.00	73.4665	129.30	55.4492	252.40	0.0000
85.43	96.3926	131.20	64.1254	252.80	39.5591
86.55	72.4219	133.02	61.0513	254.15	0.0000
86.79	72.4488	133.52	60.0161	256.23	40.8647
86.94	72.4658	136.00	56.9659	260.90	0.0000

ENERGY	MDA COUNTS	ENERGY	MDA COUNTS	ENERGY	MDA COUNTS
264.66	19.3530	355.39	0.0000	584.27	24.0112
264.80	19.3550	356.01	20.5693	595.83	0.0000
265.00	19.3579	364.49	0.0000	427.87	19.3400
268.22	31.5312	366.42	0.0000	602.52	0.0000
269.46	42.0797	372.51	32.0227	604.72	14.5294
270.03	42.0977	375.05	26.8696	607.14	20.3617
271.23	32.4113	377.52	29.5120	609.32	17.4683
273.65	0.0000	356.01	22.6506	610.33	17.4756
276.40	42.7000	388.16	29.6926	614.28	18.9620
277.37	37.8456	388.63	0.0000	618.01	8.7649
277.60	35.4101	391.69	22.7511	620.36	13.6468
278.00	37.8636	264.66	28.1419	621.93	16.5822
279.20	44.0079	401.81	21.1201	630.19	0.0000
279.54	44.0189	402.40	22.0072	631.29	24.4761
279.70	35.4632	404.85	41.4291	633.25	10.7780
280.46	36.7062	410.95	25.6482	634.78	0.0000
283.69	28.2060	413.71	21.2578	635.95	14.7125
284.31	0.0000	414.70	0.0000	636.99	0.0000
285.41	41.7467	423.72	0.0000	645.85	16.2469
285.90	0.0000	427.09	28.5475	657.76	19.2897
287.50	33.2004	427.87	33.9141	657.90	0.0000
290.67	24.6478	433.94	19.6971	661.66	14.8602
293.27	0.0000	439.40	21.5488	664.57	0.0000
351.93	27.1979	453.88	23.0663	666.33	0.0000
295.96	27.2120	463.37	19.9952	666.50	0.0000
879.38	31.3907	468.07	20.0418	667.71	0.0000
299.98	36.3820	473.00	0.0000	677.62	14.9506
300.09	36.3847	475.06	15.0830	685.70	0.0000
300.13	35.9721	476.78	25.6171	695.00	0.0000
301.36	29.7949	477.60	24.7121	696.49	21.0786
302.85	42.2520	482.18	22.9324	696.51	21.0786
256.23	34.8351	487.02	0.0000	697.00	0.0000
304.85	0.0000	492.35	0.0000	697.30	22.5906
306.78	39.8721	497.08	2.7716	697.49	19.5801
308.46	28.6903	505.52	14.8408	702.65	10.5628
311.90	31.6736	507.63	0.0000	706.68	10.8809
316.51	38.4578	511.00	24.1780	711.68	13.1211
319.41	0.0000	514.00	24.2110	720.70	0.0000
320.08	0.0000	514.00	24.2110	721.93	0.0000
321.04	43.6031	520.40	14.9434	722.78	15.2002
323.87	27.7216	520.69	0.0000	722.91	18.2410
325.23	35.3136	522.65	0.0000	723.31	18.2439
328.76	0.0000	527.90	0.0000	724.19	18.2498
333.37	26.6230	528.26	17.8086	727.33	14.2096
333.97	26.6326	529.59	16.8816	733.00	3.0511
334.37	17.7598	529.87	0.0000	735.93	17.3078
338.28	19.0750	531.02	0.0000	333.97	8.1491
338.32	19.0755	537.26	0.0000	739.50	0.0000
311.90	24.1947	546.56	0.0000	747.24	10.2214
340.48	24.1947	552.55	18.9494	748.06	9.2018
340.55	0.0000	563.25	14.2786	752.31	14.3350
344.28	28.9324	569.33	15.7474	753.82	0.0000
345.93	31.6872	946.00	14.3170	756.73	17.4337
351.06	25.6348	569.70	14.3182	756.80	19.4855
351.93	25.6482	583.19	24.0000	884.68	10.7948

ENERGY	MDA COUNTS	ENERGY	MDA COUNTS	ENERGY	MDA COUNTS
765.81	15.4309	1274.44	14.3595	1620.50	0.9555
766.42	14.4050	1001.03	16.5906	1621.92	2.8674
766.84	14.4073	1002.74	8.8525	1678.03	0.0000
772.60	0.0000	1004.73	13.2861	1690.97	1.9364
776.52	0.0000	507.63	0.0000	1750.46	0.0000
739.50	0.0000	1025.87	0.0000	1764.49	0.9811
778.90	7.2333	1028.54	0.0000	1063.66	4.9106
783.70	0.0000	1037.84	8.9382	1771.35	0.9823
785.37	12.4268	1038.76	0.0000	1791.20	0.0000
792.07	21.7955	631.29	6.7197	1808.65	3.9551
794.95	13.5057	1048.07	0.0000	1810.72	0.0000
795.86	16.6276	1049.04	13.4482	1836.06	1.9869
810.06	10.4411	1050.41	12.3320		
810.29	9.3977	1063.66	10.1257		
344.28	8.3538	1077.00	0.0000		
810.76	13.5761	1077.34	8.4686		
815.77	0.0000	1085.87	10.1851		
1048.07	0.0000	1093.63	15.8753		
832.01	12.6187	1099.45	17.0349		
834.85	8.4202	1112.07	14.8112		
835.71	11.0546	1112.84	9.1165		
836.80	0.0000	1115.54	8.5529		
846.75	0.0000	1120.29	7.9924		
846.77	10.5652	1120.55	7.9929		
856.80	0.0000	1221.41	7.9941		
860.56	12.7334	1129.67	11.4445		
871.09	12.7754	1131.51	0.0000		
873.19	15.9796	1147.95	0.0000		
875.33	0.0000	1173.23	10.4128		
879.38	8.5387	1177.95	12.7420		
880.51	9.6094	1189.05	11.6146		
883.24	12.8232	1204.77	10.4934		
884.68	7.4836	1221.41	14.9248		
889.28	10.7060	1231.02	14.0791		
894.76	10.7239	1235.36	0.0000		
898.04	13.9548	1238.28	12.3406		
900.72	16.1145	1260.41	0.0000		
903.28	11.8267	1271.87	7.1069		
911.20	8.6217	1274.44	5.6891		
912.08	8.6240	1274.54	5.6891		
923.98	0.0000	1291.59	8.5670		
926.50	6.4958	1298.22	0.0000		
929.11	6.5007	1312.11	0.0000		
937.49	17.9213	1332.49	10.8076		
944.13	0.0000	1362.66	0.0000		
946.00	14.1547	1365.19	6.3502		
949.00	3.2694	1368.63	0.0000		
667.71	0.0000	1384.29	1.8219		
962.31	9.8459	1408.01	2.7468		
964.08	11.4929	1457.56	0.0000		
966.17	6.5713	1460.82	2.7773		
911.20	4.9323	1489.16	4.6558		
968.97	4.9323	1505.03	8.4073		
983.53	0.0000	1584.12	5.6931		
984.45	0.0000	1596.21	0.0000		

```

*****
*                               GEL Laboratories LLC                               *
*                               2040 Savage Road                                 *
*                               Charleston, SC 29407                            *
*****
Configuration   : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]R405245009.CNF;1
Background file : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]BKG_GAM32.CNF;277
Background date : 2-OCT-2016 11:01:57.
Sample date     : 15-DEC-2015 12:31:00 Acquisition date : 3-OCT-2016 04:36:09.
Sample ID      : R405245009 Sample quantity   : 1.39119E+02 GRAM
Detector name  : GAM32 Detector geometry: CAN
Elapsed live time: 0 01:00:00.00 Elapsed real time: 0 01:00:00.52 0.0%
Energy tolerance : 1.50000 keV Analyst Initials : MXR1
Abundance limit : 75.00000 Sensitivity : 3.00000
Batch ID      : 1596387 Detector SN# :
Matrix Spike ID : LCS ID : 1556
*****
    
```

BACKGROUND CORRECTED SAMPLE PEAK REPORT

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	62.96*	41	100	2.53	127.13	124	9	1.13E-02	48.2	
2	1	75.35	91	147	1.29	151.91	146	14	2.51E-02	25.8	8.19E-01
3	1	77.51	102	118	1.17	156.23	146	14	2.83E-02	21.0	
4	0	87.47	31	143	1.03	176.14	174	7	8.61E-03	66.0	
5	2	90.31	27	61	1.18	181.84	180	17	7.45E-03	40.5	1.02E+00
6	2	93.13*	48	119	1.15	187.47	180	17	1.32E-02	42.9	
7	0	130.17	21	91	1.62	261.56	256	8	5.73E-03	85.1	
8	0	186.20*	82	104	1.39	373.61	368	11	2.29E-02	27.4	
9	0	238.91*	270	171	1.11	479.04	473	11	7.49E-02	11.3	
10	0	242.26	73	65	1.59	485.74	483	7	2.02E-02	22.1	
11	0	248.18	12	69	0.45	497.59	492	9	3.42E-03	125.4	
12	0	270.49	42	64	0.72	542.21	536	12	1.17E-02	41.4	
13	0	295.42*	100	58	1.09	592.06	586	10	2.78E-02	17.8	
14	0	300.57	36	37	1.98	602.36	598	9	1.01E-02	34.6	
15	0	338.80	80	39	1.52	678.82	674	11	2.21E-02	18.8	
16	0	352.25*	201	45	1.75	705.73	698	14	5.59E-02	10.1	
17	0	464.93	20	38	2.11	931.08	923	10	5.67E-03	60.3	
18	0	476.46	18	33	3.32	954.16	945	14	4.92E-03	74.3	
19	0	583.51*	110	32	1.38	1168.25	1160	16	3.06E-02	15.1	
20	0	590.97	12	11	1.27	1183.19	1177	9	3.27E-03	59.0	
21	0	609.73*	120	28	1.32	1220.70	1213	16	3.34E-02	13.7	
22	0	647.93	17	7	1.29	1297.11	1293	8	4.75E-03	37.0	
23	0	661.84	91	26	1.23	1324.92	1319	13	2.53E-02	15.6	
24	0	680.85*	14	14	1.44	1362.94	1357	11	3.89E-03	59.6	
25	0	728.93*	32	19	1.34	1459.11	1451	16	8.86E-03	36.6	
26	0	769.32	16	1	1.03	1539.90	1538	5	4.47E-03	26.8	
27	0	837.69	15	14	1.41	1676.64	1669	15	4.24E-03	60.5	
28	0	861.25*	12	8	0.75	1723.75	1720	8	3.29E-03	52.7	
29	0	893.50	9	10	0.52	1788.25	1781	11	2.56E-03	76.2	
30	0	912.02*	58	37	1.68	1825.30	1819	12	1.62E-02	25.3	
31	0	935.85	21	19	5.09	1872.95	1861	19	5.83E-03	54.3	
32	0	989.09	20	0	4.16	1979.45	1974	12	5.56E-03	22.4	
33	0	1120.99*	23	11	0.74	2243.26	2238	11	6.31E-03	36.1	
34	0	1461.21*	280	7	2.00	2923.71	2918	13	7.78E-02	6.3	

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
35	0	1539.57	7	0	0.73	3080.43	3077	6	1.94E-03	37.8	
36	0	1621.95	10	0	0.98	3245.20	3240	9	2.78E-03	31.6	
37	0	1764.67*	31	0	2.12	3530.65	3525	11	8.62E-03	18.9	

Flag: "*" = Peak area was modified by background subtraction

```

Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]R405245009.CNF;1
Analyses by       : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.4,INTERF V2.4
Sample title      : MXR1
Sample date       : 15-DEC-2015 12:31:00 Acquisition date : 3-OCT-2016 04:36:09
Sample ID        : R405245009 Sample quantity  : 139.12 GRAM
Sample type       : SOLID Sample geometry   :
Detector name    : GAMMA32 Detector geometry: CAN
Elapsed live time: 0 01:00:00.00 Elapsed real time: 0 01:00:00.52 0.0%
Energy tolerance : 1.50 keV Half life ratio  : 10.00
Errors propagated: No Systematic Error  : 0.00 %
Efficiency type  : Linear Efficiencies at  : Peak Energy
Abundance limit  : 75.00
    
```

Interference Report

Interfering		Interfered	
Nuclide	Line	Nuclide	Line
PB-214	242.00	RA-224	240.99
PB-214	87.09	SN-126	86.94
PB-214	87.09	SN-126	87.57
PB-214	87.09	CD-109	88.03
PB-214	74.82	AM-243	74.66
PB-214	74.82	TH-228	74.82
PB-214	74.82	PB-212	74.82
PB-214	351.93	BI-211	351.06

Nuclide Type:

Nuclide	Energy	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error	Status
BE-7	477.60	10.44*	2.742E+00	3.520E-01	1.593E+01	148.62	OK
K-40	1460.82	10.66*	1.119E+00	1.214E+01	1.214E+01	12.66	OK
CD-109	88.03	3.70*	4.574E+00	4.569E-01	7.091E-01	347.08	OK
SN-126	64.28	9.60	2.071E+00	1.352E+00	1.352E+00	96.47	OK
	86.94	8.90	4.574E+00	1.899E-01	1.899E-01	347.08	OK
	87.57	37.00*	4.574E+00	4.569E-02	4.569E-02	347.08	OK
BA-137M	661.66	89.90*	2.105E+00	2.661E-01	2.711E-01	31.20	OK
CS-137	661.66	85.10*	2.105E+00	2.812E-01	2.864E-01	31.20	OK
TL-208	277.37	6.60	4.277E+00	----- Line	Not Found	-----	Absent
	583.19	85.00*	2.327E+00	3.120E-01	3.120E-01	30.16	OK
	860.56	12.50	1.713E+00	2.998E-01	2.998E-01	105.30	OK
BI-211	72.87	1.23	3.214E+00	----- Line	Not Found	-----	Absent
	351.06	12.92*	3.521E+00	4.026E-01	4.026E-01	232.30	OK
PB-212	74.82	10.28	3.478E+00	1.210E+00	1.210E+00	71.77	OK
	77.11	17.10	3.697E+00	1.052E+00	1.052E+00	41.92	OK
	238.63	43.60*	4.789E+00	7.757E-01	7.757E-01	22.67	OK
	300.09	3.30	4.011E+00	1.626E+00	1.626E+00	69.15	OK
BI-214	609.32	45.49*	2.246E+00	6.550E-01	6.552E-01	27.44	OK
	1120.29	14.92	1.392E+00	5.783E-01	5.785E-01	72.11	OK
	1764.49	15.30	9.462E-01	1.089E+00	1.090E+00	37.89	OK
PB-214	74.82	5.80	3.423E+00	----- Line	Not Found	-----	<<INT Reject
	77.11	9.70	3.697E+00	1.854E+00	1.855E+00	41.92	OK
	87.09	3.41	4.545E+00	----- Line	Not Found	-----	<<INT Reject
	242.00	7.25	4.745E+00	----- Line	Not Found	-----	<<INT Reject
	295.22	18.42	4.067E+00	7.895E-01	7.898E-01	35.68	OK
	351.93	35.60*	3.524E+00	----- Line	Not Found	-----	<<INT Reject
RN-222	609.32	45.49*	2.246E+00	6.550E-01	6.552E-01	27.44	OK
	1120.29	14.92	1.392E+00	5.783E-01	5.785E-01	72.11	OK
	1764.49	15.30	9.462E-01	1.089E+00	1.090E+00	37.89	OK
RA-224	240.99	4.10*	4.741E+00	8.469E-01	8.469E-01	130.88	OK
RA-226	609.32	45.49*	2.246E+00	6.550E-01	6.552E-01	27.44	OK
	1120.29	14.92	1.392E+00	5.783E-01	5.785E-01	72.11	OK
	1764.49	15.30	9.462E-01	1.089E+00	1.090E+00	37.89	OK
TH-228	74.82	10.28	3.478E+00	1.210E+00	1.210E+00	71.77	OK
	77.11	17.10	3.697E+00	1.052E+00	1.052E+00	41.92	OK
	238.63	43.60*	4.789E+00	7.757E-01	7.757E-01	22.67	OK
	300.09	3.30	4.011E+00	1.626E+00	1.626E+00	69.15	OK
TH-230	609.32	45.49*	2.246E+00	6.550E-01	6.550E-01	27.44	OK
	1120.29	14.92	1.392E+00	5.783E-01	5.783E-01	72.11	OK
	1764.49	15.30	9.462E-01	1.089E+00	1.089E+00	37.89	OK
PA-231	283.69	1.70	4.201E+00	----- Line	Not Found	-----	Absent
	301.36	5.35*	4.011E+00	1.003E+00	1.003E+00	69.15	OK
TH-234	63.29	3.70*	2.071E+00	3.508E+00	3.508E+00	96.47	OK
	92.59	4.23	4.971E+00	1.459E+00	1.459E+00	85.87	OK
U-234	609.32	45.49*	2.246E+00	6.550E-01	6.550E-01	27.44	OK
	1120.29	14.92	1.392E+00	5.783E-01	5.783E-01	72.11	OK
	1764.49	15.30	9.462E-01	1.089E+00	1.089E+00	37.89	OK
U-235	89.96	3.47	4.783E+00	1.042E+00	1.042E+00	80.99	OK
	93.35	5.60	4.971E+00	1.102E+00	1.102E+00	85.87	OK

Nuclide Type:

Nuclide	Energy	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error	Status
	143.76	10.96*	6.095E+00	-----	Line Not Found	-----	Absent
	163.33	5.08	5.924E+00	-----	Line Not Found	-----	Absent
	185.72	57.20	5.602E+00	1.574E-01	1.574E-01	54.78	OK
	205.31	5.01	5.302E+00	-----	Line Not Found	-----	Absent
U-238	63.29	3.70*	2.071E+00	3.508E+00	3.508E+00	96.47	OK
	92.59	4.23	4.971E+00	1.459E+00	1.459E+00	85.87	OK
AM-243	43.53	5.90	1.701E-01	-----	Line Not Found	-----	Absent
	74.66	67.20*	3.478E+00	1.851E-01	1.851E-01	71.77	OK

Flag: "*" = Keyline

```

*****
*
*           GEL Laboratories LLC
*           2040 Savage Road
*           Charleston, SC 29407
*****
*
*           DETECTOR AND SAMPLE DATA
*
* Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]R405245009.CNF;1
* Acquisition date   : 3-OCT-2016 04:36:09 Sensitivity      : 3.000
* Detector ID        : GAM32 Energy tolerance: 1.500
* Elapsed live time  : 0 01:00:00.00 Abundance limit : 75.000
* Elapsed real time  : 0 01:00:00.52 Half life ratio  : *****
* Sample date        : 15-DEC-2015 12:31:00 Analyst initials: MXR1
* Sample ID          : R405245009 Sample Quantity : 1.3912E+02 GRAM
* Batch Number       : 1596387 Wet Weight      : 0.00000
* Wet wt corr        : 1.00000 Dry Weight       : 0.00000
* Nuclide Library    : SOLID.NLB;6
*****
*
*           CALIBRATION INFORMATION
*
* Eff. Cal. date     : 23-AUG-2016 07:56:33 Eff. Geometry   : CAN
* Eff. File          : DKA100:[CANBERRA.GAMMA]EFF_GAM32_CAN.CNF;11
*****

```

Combined Activity-MDA Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM)	Cnt uncert (1.96-sigma)	MDA (pCi/GRAM)
BE-7	1.593E+01	2.320E+01	2.254E+01
K-40	1.214E+01	1.506E+00	6.359E-01
CD-109	7.091E-01	2.412E+00	2.671E+00
SN-126	4.569E-02	1.554E-01	1.734E-01
BA-137M	2.711E-01	8.289E-02	5.983E-02
CS-137	2.864E-01	8.756E-02	6.320E-02
TL-208	3.120E-01	9.221E-02	5.926E-02
BI-211	4.026E-01	9.166E-01	3.383E-01
PB-212	7.757E-01	1.723E-01	1.245E-01
BI-214	6.552E-01	1.762E-01	1.151E-01
PB-214	9.360E-01	1.856E-01	3.073E-01
RN-222	6.552E-01	1.762E-01	1.151E-01
RA-224	8.469E-01	1.086E+00	1.112E+00
RA-226	6.552E-01	1.762E-01	1.151E-01
TH-228	7.757E-01	1.723E-01	1.245E-01
TH-230	6.550E-01	1.761E-01	1.150E-01
PA-231	1.003E+00	6.794E-01	8.047E-01
TH-234	3.508E+00	3.317E+00	3.189E+00
U-234	6.550E-01	1.761E-01	1.150E-01
U-235	1.278E-01	1.752E-01	3.622E-01
U-238	3.508E+00	3.317E+00	3.189E+00
AM-243	1.851E-01	1.302E-01	1.139E-01

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/GRAM)	K.L.	Cnt Uncert (1.96-sigma)	MDA (pCi/GRAM)	
NA-22	2.726E-02		4.208E-02	9.653E-02	NOT IDENT.
NA-24	0.000E+00		1.960E+41	0.000E+00	SHORT HLIF
AL-26	-7.971E-03		3.494E-02	6.916E-02	NOT IDENT.
SC-46	3.357E-01		4.104E-01	8.265E-01	FAIL ABUN
V-48	0.000E+00		8.869E+03	0.000E+00	SHORT HLIF
CR-51	0.000E+00		3.203E+02	0.000E+00	SHORT HLIF
MN-54	2.388E-03		6.494E-02	1.117E-01	NOT IDENT.
CO-56	-2.663E-01		4.683E-01	7.932E-01	NOT IDENT.

MN-56	0.000E+00	1.771E+41	0.000E+00	SHORT HLIF
CO-57	-2.271E-03	5.369E-02	9.577E-02	NOT IDENT.
CO-58	3.072E-03	5.371E-01	1.032E+00	NOT IDENT.
FE-59	-2.852E+00	5.919E+00	1.101E+01	NOT IDENT.
CO-60	1.087E-02	3.313E-02	7.484E-02	NOT IDENT.
ZN-65	5.159E-02	1.098E-01	2.474E-01	NOT IDENT.
GE-68	8.988E-01	2.396E+00	5.098E+00	NOT IDENT.
AS-73	-3.439E+00	1.441E+01	2.639E+01	NOT IDENT.
AS-74	0.000E+00	4.428E+03	0.000E+00	SHORT HLIF
SE-75	-2.089E-02	1.929E-01	3.552E-01	NOT IDENT.
BR-77	0.000E+00	3.842E+36	0.000E+00	SHORT HLIF
SR-82	0.000E+00	5.537E+02	0.000E+00	SHORT HLIF
RB-83	1.804E-02	5.658E-01	1.107E+00	NOT IDENT.
KR-85	-2.830E+01	1.095E+01	1.493E+01	NOT IDENT.
SR-85	-2.776E+00	1.073E+00	1.462E+00	NOT IDENT.
RB-86	0.000E+00	2.375E+04	0.000E+00	SHORT HLIF
Y-88	-2.870E-02	1.481E-01	3.262E-01	NOT IDENT.
Y-91	1.081E+02	5.702E+02	1.147E+03	NOT IDENT.
NB-94	-3.100E-02	3.104E-02	4.743E-02	NOT IDENT.
NB-95	5.086E-01	8.389E-01	1.608E+00	NOT IDENT.
NB-95M	2.394E+00	2.423E+00	4.624E+00	NOT IDENT.
ZR-95	1.230E+00	1.256E+00	2.822E+00	NOT IDENT.
NB-97	0.000E+00	9.780E+40	0.000E+00	SHORT HLIF
ZR-97	0.000E+00	6.087E+40	0.000E+00	SHORT HLIF
MO-99	0.000E+00	3.267E+31	0.000E+00	SHORT HLIF
TC-99M	0.000E+00	1.960E+41	0.000E+00	SHORT HLIF
RH-101	1.074E-02	3.946E-02	6.696E-02	NOT IDENT.
RH-102	-4.306E-02	6.404E-02	1.091E-01	FAIL ABUN
RU-103	-1.116E+00	4.919E+00	9.197E+00	FAIL ABUN
RH-106	-8.046E-02	4.323E-01	8.168E-01	NOT IDENT.
RU-106	-8.046E-02	4.323E-01	8.168E-01	NOT IDENT.
AG-108M	-2.460E-03	2.976E-02	5.643E-02	NOT IDENT.
AG-110M	3.590E-03	9.854E-02	1.900E-01	NOT IDENT.
SN-113	1.917E-02	2.158E-01	4.213E-01	NOT IDENT.
CD-115	0.000E+00	2.916E+38	0.000E+00	SHORT HLIF
SN-117M	0.000E+00	6.746E+04	0.000E+00	SHORT HLIF
TE-123M	1.029E-01	1.266E-01	2.622E-01	NOT IDENT.
SB-124	-1.464E-01	2.070E+00	4.284E+00	NOT IDENT.
SB-125	7.467E-02	1.023E-01	2.144E-01	NOT IDENT.
TE-125M	9.634E+01	2.909E+02	5.390E+02	NOT IDENT.
I-126	0.000E+00	6.584E+05	0.000E+00	SHORT HLIF
SB-126	0.000E+00	7.638E+05	0.000E+00	SHORT HLIF
SB-127	0.000E+00	6.515E+21	0.000E+00	SHORT HLIF
I-131	0.000E+00	2.692E+09	0.000E+00	SHORT HLIF
I-132	0.000E+00	1.960E+41	0.000E+00	SHORT HLIF
TE-132	0.000E+00	8.294E+25	0.000E+00	SHORT HLIF
BA-133	-3.108E-03	4.507E-02	7.716E-02	NOT IDENT.
I-133	0.000E+00	1.960E+41	0.000E+00	SHORT HLIF
CS-134	2.865E-03	5.395E-02	1.024E-01	NOT IDENT.
CS-135	-1.598E-02	1.575E-01	2.699E-01	NOT IDENT.
I-135	0.000E+00	1.960E+41	0.000E+00	SHORT HLIF
CS-136	0.000E+00	2.402E+05	0.000E+00	SHORT HLIF
CE-139	-2.330E-02	1.119E-01	2.153E-01	NOT IDENT.
BA-140	0.000E+00	9.048E+05	0.000E+00	SHORT HLIF
LA-140	0.000E+00	2.098E+05	0.000E+00	SHORT HLIF
CE-141	1.068E+00	2.013E+01	3.982E+01	NOT IDENT.
CE-143	0.000E+00	1.522E+41	0.000E+00	SHORT HLIF
CE-144	1.100E-01	3.555E-01	6.580E-01	NOT IDENT.
PM-144	-1.103E-02	6.246E-02	1.142E-01	FAIL ABUN
PR-144	-9.873E-01	5.400E+00	9.865E+00	NOT IDENT.
PM-146	4.710E-03	4.180E-02	8.209E-02	NOT IDENT.
ND-147	0.000E+00	1.988E+07	0.000E+00	SHORT HLIF
PM-147	2.399E+02	9.339E+02	1.714E+03	NOT IDENT.
PM-149	0.000E+00	4.536E+39	0.000E+00	SHORT HLIF
EU-150	-6.151E-03	2.936E-02	4.913E-02	FAIL ABUN
EU-152	1.512E-02	8.901E-02	1.690E-01	NOT IDENT.
GD-153	7.509E-02	2.154E-01	3.727E-01	NOT IDENT.
EU-154	8.372E-02	1.017E-01	2.405E-01	NOT IDENT.
EU-155	1.717E-01	1.336E-01	2.646E-01	FAIL ABUN
TB-160	5.577E-02	1.736E+00	3.348E+00	FAIL ABUN
HO-166M	-1.553E-02	5.126E-02	9.367E-02	NOT IDENT.
TM-171	-3.239E+01	3.893E+01	6.707E+01	NOT IDENT.
HF-172	-2.922E-02	2.696E-01	4.384E-01	FAIL ABUN
LU-172	1.815E-03	5.625E-02	1.204E-01	FAIL ABUN
LU-176	1.709E-02	2.428E-02	5.010E-02	FAIL ABUN
HF-181	-2.315E+00	3.646E+00	6.404E+00	NOT IDENT.
TA-182	6.416E-01	8.935E-01	1.970E+00	FAIL ABUN
RE-183	5.889E-01	4.234E+00	7.997E+00	NOT IDENT.

RE-184	-6.637E+00	2.181E+01	3.983E+01	FAIL ABUN
W-188	3.910E+01	1.002E+02	1.857E+02	FAIL ABUN
IR-192	-4.607E-02	4.508E-01	8.594E-01	FAIL ABUN
HG-203	8.268E-01	2.023E+00	4.083E+00	NOT IDENT.
BI-207	-1.226E-02	4.759E-02	9.283E-02	FAIL ABUN
PB-210	-1.255E+00	8.573E+00	1.590E+01	NOT IDENT.
PB-211	-4.274E-03	7.059E-01	1.350E+00	NOT IDENT.
BI-212	8.229E-01	5.425E-01	1.225E+00	FAIL ABUN
RN-219	6.176E-02	3.967E-01	7.736E-01	FAIL ABUN
RA-223	3.619E-01	5.686E-01	1.171E+00	FAIL ABUN
AC-227	-1.774E-02	2.245E-01	4.325E-01	FAIL ABUN
TH-227	-1.774E-02	2.245E-01	4.325E-01	FAIL ABUN
AC-228	0.000E+00	3.703E-01	5.950E-01	FAIL ABUN
RA-228	0.000E+00	3.703E-01	5.950E-01	FAIL ABUN
TH-229	1.101E-01	4.582E-01	9.090E-01	FAIL ABUN
TH-231	3.619E-01	5.686E-01	1.171E+00	FAIL ABUN
TH-232	0.000E+00	3.703E-01	5.950E-01	FAIL ABUN
PA-233	3.504E-02	5.833E-02	1.196E-01	FAIL ABUN
PA-234	-1.849E-01	2.482E-01	4.442E-01	FAIL ABUN
PA-234M	-1.640E+00	3.307E+00	6.338E+00	NOT IDENT.
NP-237	3.504E-02	5.833E-02	1.196E-01	FAIL ABUN
NP-238	0.000E+00	4.437E+40	0.000E+00	SHORT HLIF
NP-239	1.512E-01	2.572E-01	4.901E-01	NOT IDENT.
PU-239	3.370E+02	5.622E+02	6.677E+02	FAIL ABUN
AM-241	1.975E-02	2.272E-01	3.923E-01	NOT IDENT.
CM-243	-1.577E-01	1.269E-01	2.031E-01	NOT IDENT.
BK-247	5.209E-03	7.533E-02	1.330E-01	NOT IDENT.
CM-247	-1.545E-02	3.669E-02	6.689E-02	NOT IDENT.
CF-249	2.531E-02	3.452E-02	7.282E-02	NOT IDENT.
CF-251	-9.790E-02	1.164E-01	2.129E-01	NOT IDENT.
ANH-511	-7.453E-03	5.072E-02	1.061E-01	NOT IDENT.

Nuclide Line Activity Report

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
BE-7	477.60	19	10.44*	2.742E+00	3.520E-01	1.593E+01	148.62
K-40	1460.82	268	10.66*	1.119E+00	1.214E+01	1.214E+01	12.66
CD-109	88.03	37	3.70*	4.574E+00	1.184E+00	1.839E+00	132.06
SN-126	64.28	50	9.60	2.071E+00	1.352E+00	1.352E+00	96.47
	86.94	37	8.90	4.574E+00	4.924E-01	4.924E-01	132.06
	87.57	37	37.00*	4.574E+00	1.184E-01	1.184E-01	132.06
BA-137M	661.66	93	89.90*	2.105E+00	2.661E-01	2.711E-01	31.20
CS-137	661.66	93	85.10*	2.105E+00	2.812E-01	2.864E-01	31.20
TL-208	277.37	-----	6.60	4.277E+00	-----	Line Not Found	-----
	583.19	114	85.00*	2.327E+00	3.120E-01	3.120E-01	30.16
	860.56	12	12.50	1.713E+00	2.998E-01	2.998E-01	105.30
BI-211	72.87	-----	1.23	3.214E+00	-----	Line Not Found	-----
	351.06	217	12.92*	3.521E+00	2.578E+00	2.578E+00	20.24
PB-212	74.82	110	10.28	3.478E+00	1.655E+00	1.655E+00	51.57
	77.11	123	17.10	3.697E+00	1.052E+00	1.052E+00	41.92
	238.63	300	43.60*	4.789E+00	7.757E-01	7.757E-01	22.67
	300.09	40	3.30	4.011E+00	1.626E+00	1.626E+00	69.15
BI-214	609.32	124	45.49*	2.246E+00	6.550E-01	6.552E-01	27.44
	1120.29	22	14.92	1.392E+00	5.783E-01	5.785E-01	72.11
	1764.49	29	15.30	9.462E-01	1.089E+00	1.090E+00	37.89
PB-214	74.82	110	5.80	3.478E+00	2.934E+00	2.935E+00	51.57
	77.11	123	9.70	3.697E+00	1.854E+00	1.855E+00	41.92
	87.09	37	3.41	4.574E+00	1.285E+00	1.286E+00	132.06
	242.00	81	7.25	4.741E+00	1.268E+00	1.269E+00	44.14
	295.22	110	18.42	4.067E+00	7.895E-01	7.898E-01	35.68
	351.93	217	35.60*	3.521E+00	9.356E-01	9.360E-01	20.24
RN-222	609.32	124	45.49*	2.246E+00	6.550E-01	6.552E-01	27.44
	1120.29	22	14.92	1.392E+00	5.783E-01	5.785E-01	72.11
	1764.49	29	15.30	9.462E-01	1.089E+00	1.090E+00	37.89
RA-224	240.99	81	4.10*	4.741E+00	2.243E+00	2.243E+00	44.14
RA-226	609.32	124	45.49*	2.246E+00	6.550E-01	6.552E-01	27.44
	1120.29	22	14.92	1.392E+00	5.783E-01	5.785E-01	72.11
	1764.49	29	15.30	9.462E-01	1.089E+00	1.090E+00	37.89
TH-228	74.82	110	10.28	3.478E+00	1.655E+00	1.655E+00	51.57
	77.11	123	17.10	3.697E+00	1.052E+00	1.052E+00	41.92
	238.63	300	43.60*	4.789E+00	7.757E-01	7.757E-01	22.67
	300.09	40	3.30	4.011E+00	1.626E+00	1.626E+00	69.15
TH-230	609.32	124	45.49*	2.246E+00	6.550E-01	6.550E-01	27.44
	1120.29	22	14.92	1.392E+00	5.783E-01	5.783E-01	72.11
	1764.49	29	15.30	9.462E-01	1.089E+00	1.089E+00	37.89
PA-231	283.69	-----	1.70	4.201E+00	-----	Line Not Found	-----
	301.36	40	5.35*	4.011E+00	1.003E+00	1.003E+00	69.15
TH-234	63.29	50	3.70*	2.071E+00	3.508E+00	3.508E+00	96.47
	92.59	57	4.23	4.971E+00	1.459E+00	1.459E+00	85.87
U-234	609.32	124	45.49*	2.246E+00	6.550E-01	6.550E-01	27.44
	1120.29	22	14.92	1.392E+00	5.783E-01	5.783E-01	72.11
	1764.49	29	15.30	9.462E-01	1.089E+00	1.089E+00	37.89

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
U-235	89.96	32	3.47	4.783E+00	1.042E+00	1.042E+00	80.99
	93.35	57	5.60	4.971E+00	1.102E+00	1.102E+00	85.87
	143.76	-----	10.96*	6.095E+00	-----	Line Not Found	-----
	163.33	-----	5.08	5.924E+00	-----	Line Not Found	-----
	185.72	93	57.20	5.602E+00	1.574E-01	1.574E-01	54.78
U-238	205.31	-----	5.01	5.302E+00	-----	Line Not Found	-----
U-238	63.29	50	3.70*	2.071E+00	3.508E+00	3.508E+00	96.47
	92.59	57	4.23	4.971E+00	1.459E+00	1.459E+00	85.87
AM-243	43.53	-----	5.90	1.701E-01	-----	Line Not Found	-----
	74.66	110	67.20*	3.478E+00	2.532E-01	2.532E-01	51.57

Flag: "*" = Keyline

Total number of lines in spectrum 37
 Number of unidentified lines 10
 Number of lines tentatively identified by NID 27 72.97%

Nuclide Type :

Nuclide	Hlife	Decay	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
BE-7	53.22D	45.2	3.520E-01	1.593E+01	2.367E+01	148.62	
K-40	1.25E+09Y	1.00	1.214E+01	1.214E+01	0.154E+01	12.66	
CD-109	461.40D	1.55	1.184E+00	1.839E+00	2.428E+00	132.06	
SN-126	2.30E+05Y	1.00	1.184E-01	1.184E-01	1.564E-01	132.06	
BA-137M	30.08Y	1.02	2.661E-01	2.711E-01	0.846E-01	31.20	
CS-137	30.08Y	1.02	2.812E-01	2.864E-01	0.894E-01	31.20	
TL-208	1.41E+10Y	1.00	3.120E-01	3.120E-01	0.941E-01	30.16	
BI-211	7.04E+08Y	1.00	2.578E+00	2.578E+00	0.522E+00	20.24	
PB-212	1.41E+10Y	1.00	7.757E-01	7.757E-01	1.758E-01	22.67	
BI-214	1600.00Y	1.00	6.550E-01	6.552E-01	1.798E-01	27.44	
PB-214	1600.00Y	1.00	9.356E-01	9.360E-01	1.894E-01	20.24	
RN-222	1600.00Y	1.00	6.550E-01	6.552E-01	1.798E-01	27.44	
RA-224	1.41E+10Y	1.00	2.243E+00	2.243E+00	0.990E+00	44.14	
RA-226	1600.00Y	1.00	6.550E-01	6.552E-01	1.798E-01	27.44	
TH-228	1.41E+10Y	1.00	7.757E-01	7.757E-01	1.758E-01	22.67	
TH-230	7.54E+04Y	1.00	6.550E-01	6.550E-01	1.797E-01	27.44	
PA-231	7.04E+08Y	1.00	1.003E+00	1.003E+00	0.693E+00	69.15	
TH-234	4.47E+09Y	1.00	3.508E+00	3.508E+00	3.385E+00	96.47	
U-234	2.45E+05Y	1.00	6.550E-01	6.550E-01	1.797E-01	27.44	
U-235	7.04E+08Y	1.00	1.574E-01	1.574E-01	0.862E-01	54.78	K
U-238	4.47E+09Y	1.00	3.508E+00	3.508E+00	3.385E+00	96.47	
AM-243	7370.00Y	1.00	2.532E-01	2.532E-01	1.306E-01	51.57	
Total Activity :			3.367E+01	4.991E+01			

Grand Total Activity : 3.367E+01 4.991E+01

Flags: "K" = Keyline not found "M" = Manually accepted
 "E" = Manually edited "A" = Nuclide specific abn. limit

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
0	130.17	24	106	1.62	261.56	256	8	5.73E-03	****	6.09E+00	T
0	248.18	14	76	0.45	497.59	492	9	3.42E-03	****	4.66E+00	
0	270.49	46	70	0.72	542.21	536	12	1.17E-02	82.8	4.36E+00	T
0	338.80	86	42	1.52	678.82	674	11	2.21E-02	37.6	3.64E+00	T
0	464.93	22	40	2.11	931.08	923	10	5.67E-03	****	2.80E+00	
0	590.97	12	12	1.27	1183.19	1177	9	3.27E-03	****	2.30E+00	
0	647.93	18	7	1.29	1297.11	1293	8	4.75E-03	74.0	2.14E+00	
0	680.85	14	14	1.44	1362.94	1357	11	3.89E-03	****	2.06E+00	
0	728.93	32	19	1.34	1459.11	1451	16	8.86E-03	73.3	1.95E+00	
0	769.32	16	1	1.03	1539.90	1538	5	4.47E-03	53.6	1.87E+00	
0	837.69	15	14	1.41	1676.64	1669	15	4.24E-03	****	1.75E+00	T
0	893.50	9	10	0.52	1788.25	1781	11	2.56E-03	****	1.66E+00	T
0	912.02	58	37	1.68	1825.30	1819	12	1.62E-02	50.7	1.64E+00	T
0	935.85	21	19	5.09	1872.95	1861	19	5.83E-03	****	1.60E+00	
0	989.09	20	0	4.16	1979.45	1974	12	5.56E-03	44.7	1.54E+00	
0	1539.57	7	0	0.73	3080.43	3077	6	1.94E-03	75.6	1.07E+00	
0	1621.95	9	0	0.98	3245.20	3240	9	2.78E-03	63.2	1.02E+00	T

Flags: "T" = Tentatively associated

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*****
*                               GEL Laboratories LLC                               *
*                               2040 Savage Road                               *
*                               Charleston, SC 29407                          *
*****
*                               DETECTOR AND SAMPLE DATA                       *
*
* Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]R405245009.CNF;1
* Acquisition date   : 3-OCT-2016 04:36:09 Sensitivity      : 3.000
* Detector ID        : GAM32 Energy tolerance: 1.500
* Elapsed live time  : 0 01:00:00.00 Abundance limit : 75.000
* Elapsed real time  : 0 01:00:00.52 Half life ratio : *****
* Sample date        : 15-DEC-2015 12:31:00 Nuclide Library : SOLID
* Sample ID          : R405245009 Analyst initials: MXR1
* Batch Number       : 1596387 Sample Quantity : 1.3912E+02 GRAM
* Wet wt corr        : 1.00000 Wet Weight : 0.00000
*                               Dry Weight : 0.00000
*****
*                               CALIBRATION INFORMATION                         *
*
* Eff. Cal. date     : 23-AUG-2016 07:56:33 Eff. Geometry : CAN
* Eff. File          : DKA100:[CANBERRA.GAMMA]EFF_GAM32_CAN.CNF;11
*****

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Combined Critical Level Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Lc (pCi/GRAM)
BE-7	1.009E+01
K-40	2.566E-01
CD-109	1.266E+00
SN-126	8.217E-02
BA-137M	2.591E-02
CS-137	2.738E-02
TL-208	2.586E-02
BI-211	1.527E-01
PB-212	5.865E-02
BI-214	5.025E-02
PB-214	1.477E-01
RN-222	5.025E-02
RA-224	5.171E-01
RA-226	5.025E-02
TH-228	5.865E-02
TH-230	5.023E-02
PA-231	3.672E-01
TH-234	1.496E+00
U-234	5.023E-02
U-235	1.697E-01
U-238	1.496E+00
AM-243	5.357E-02

---- Non-Identified Nuclides ----

Nuclide	Lc (pCi/GRAM)	
NA-22	4.102E-02	NOT IDENT.
NA-24	0.000E+00	SHORT HLIF
AL-26	2.668E-02	NOT IDENT.
SC-46	3.635E-01	FAIL ABUN
V-48	0.000E+00	SHORT HLIF
CR-51	0.000E+00	SHORT HLIF
MN-54	4.777E-02	NOT IDENT.
CO-56	3.376E-01	NOT IDENT.
MN-56	0.000E+00	SHORT HLIF

CO-57	4.476E-02	NOT IDENT.
CO-58	4.435E-01	NOT IDENT.
FE-59	4.626E+00	NOT IDENT.
CO-60	3.068E-02	NOT IDENT.
ZN-65	9.981E-02	NOT IDENT.
GE-68	2.213E+00	NOT IDENT.
AS-73	1.222E+01	NOT IDENT.
AS-74	0.000E+00	SHORT HLIF
SE-75	1.619E-01	NOT IDENT.
BR-77	0.000E+00	SHORT HLIF
SR-82	0.000E+00	SHORT HLIF
RB-83	4.852E-01	NOT IDENT.
KR-85	6.761E+00	NOT IDENT.
SR-85	6.621E-01	NOT IDENT.
RB-86	0.000E+00	SHORT HLIF
Y-88	1.090E-01	NOT IDENT.
Y-91	5.045E+02	NOT IDENT.
NB-94	2.001E-02	NOT IDENT.
NB-95	7.102E-01	NOT IDENT.
NB-95M	2.162E+00	NOT IDENT.
ZR-95	1.240E+00	NOT IDENT.
NB-97	0.000E+00	SHORT HLIF
ZR-97	0.000E+00	SHORT HLIF
MO-99	0.000E+00	SHORT HLIF
TC-99M	0.000E+00	SHORT HLIF
RH-101	3.129E-02	NOT IDENT.
RH-102	4.749E-02	FAIL ABUN
RU-103	4.055E+00	FAIL ABUN
RH-106	3.499E-01	NOT IDENT.
RU-106	3.499E-01	NOT IDENT.
AG-108M	2.542E-02	NOT IDENT.
AG-110M	8.135E-02	NOT IDENT.
SN-113	1.898E-01	NOT IDENT.
CD-115	0.000E+00	SHORT HLIF
SN-117M	0.000E+00	SHORT HLIF
TE-123M	1.228E-01	NOT IDENT.
SB-124	1.688E+00	NOT IDENT.
SB-125	9.696E-02	NOT IDENT.
TE-125M	2.526E+02	NOT IDENT.
I-126	0.000E+00	SHORT HLIF
SB-126	0.000E+00	SHORT HLIF
SB-127	0.000E+00	SHORT HLIF
I-131	0.000E+00	SHORT HLIF
I-132	0.000E+00	SHORT HLIF
TE-132	0.000E+00	SHORT HLIF
BA-133	3.493E-02	NOT IDENT.
I-133	0.000E+00	SHORT HLIF
CS-134	4.499E-02	NOT IDENT.
CS-135	1.242E-01	NOT IDENT.
I-135	0.000E+00	SHORT HLIF
CS-136	0.000E+00	SHORT HLIF
CE-139	1.006E-01	NOT IDENT.
BA-140	0.000E+00	SHORT HLIF
LA-140	0.000E+00	SHORT HLIF
CE-141	1.858E+01	NOT IDENT.
CE-143	0.000E+00	SHORT HLIF
CE-144	3.060E-01	NOT IDENT.
PM-144	5.065E-02	FAIL ABUN
PR-144	4.374E+00	NOT IDENT.
PM-146	3.659E-02	NOT IDENT.
ND-147	0.000E+00	SHORT HLIF
PM-147	8.017E+02	NOT IDENT.
PM-149	0.000E+00	SHORT HLIF
EU-150	2.240E-02	FAIL ABUN
EU-152	7.628E-02	NOT IDENT.
GD-153	1.746E-01	NOT IDENT.
EU-154	1.024E-01	NOT IDENT.
EU-155	1.250E-01	FAIL ABUN
TB-160	1.433E+00	FAIL ABUN
HO-166M	3.993E-02	NOT IDENT.
TM-171	3.097E+01	NOT IDENT.
HF-172	2.042E-01	FAIL ABUN
LU-172	4.910E-02	FAIL ABUN
LU-176	2.301E-02	FAIL ABUN
HF-181	2.792E+00	NOT IDENT.
TA-182	8.618E-01	FAIL ABUN
RE-183	3.721E+00	NOT IDENT.
RE-184	1.629E+01	FAIL ABUN

W-188	8.450E+01	FAIL ABUN
IR-192	3.928E-01	FAIL ABUN
HG-203	1.872E+00	NOT IDENT.
BI-207	3.950E-02	FAIL ABUN
PB-210	7.410E+00	NOT IDENT.
PB-211	6.119E-01	NOT IDENT.
BI-212	5.555E-01	FAIL ABUN
RN-219	3.509E-01	FAIL ABUN
RA-223	5.355E-01	FAIL ABUN
AC-227	1.988E-01	FAIL ABUN
TH-227	1.988E-01	FAIL ABUN
AC-228	2.802E-01	FAIL ABUN
RA-228	2.802E-01	FAIL ABUN
TH-229	4.232E-01	FAIL ABUN
TH-231	5.355E-01	FAIL ABUN
TH-232	2.802E-01	FAIL ABUN
PA-233	5.478E-02	FAIL ABUN
PA-234	1.834E-01	FAIL ABUN
PA-234M	2.592E+00	NOT IDENT.
NP-237	5.478E-02	FAIL ABUN
NP-238	0.000E+00	SHORT HLIF
NP-239	2.288E-01	NOT IDENT.
PU-239	3.140E+02	FAIL ABUN
AM-241	1.832E-01	NOT IDENT.
CM-243	9.478E-02	NOT IDENT.
BK-247	6.084E-02	NOT IDENT.
CM-247	3.014E-02	NOT IDENT.
CF-249	3.291E-02	NOT IDENT.
CF-251	9.876E-02	NOT IDENT.
ANH-511	5.017E-02	NOT IDENT.

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*                                     *
*                               GEL Laboratories LLC                          *
*                               2040 Savage Road                            *
*                               Charleston, SC 29407                       *
*                               *****                                    *
*                               *                                           *
*                               *                                           *
*                               *           DETECTOR AND SAMPLE DATA       *
*                               *                                           *
* Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]R405245009.CNF;1 *
* Acquisition date   : 3-OCT-2016 04:36:09 Sensitivity      : 3.000         *
* Detector ID       : GAM32 Energy tolerance: 1.500         *
* Elapsed live time: 0 01:00:00.00 Abundance limit : 75.000     *
* Elapsed real time: 0 01:00:00.52 Half life ratio : *****      *
* Sample date      : 15-DEC-2015 12:31:00 Nuclide Library : SOLID      *
* Sample ID       : R405245009 Analyst initials: MXR1         *
* Batch Number    : 1596387 Sample Quantity : 1.3912E+02 GRAM      *
*                               Quantity Err(%) : 1.4376E-03 %      *
* Wet wt corr     : 1.00000 Wet Weight      : 0.00000         *
*                               Dry Weight    : 0.00000         *
*                               *****                                    *
*                               *                                           *
*                               *           CALIBRATION INFORMATION          *
*                               *                                           *
* Eff. Cal. date   : 23-AUG-2016 07:56:33 Eff. Geometry   : CAN         *
* Eff. File       : DKA100:[CANBERRA.GAMMA]EFF_GAM32_CAN.CNF;11         *
*                               *****                                    *

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Combined Activity-MDA Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM)	Act Error (1.96-sigma)	TPU (1.96-sigma)
BE-7	1.593E+01	2.321E+01	2.321E+01
K-40	1.214E+01	1.634E+00	1.634E+00
CD-109	7.091E-01	2.417E+00	2.417E+00
SN-126	4.569E-02	1.557E-01	1.557E-01
BA-137M	2.711E-01	8.371E-02	8.371E-02
CS-137	2.864E-01	8.842E-02	8.842E-02
TL-208	3.120E-01	9.316E-02	9.316E-02
BI-211	4.026E-01	9.265E-01	9.265E-01
PB-212	7.757E-01	1.772E-01	1.772E-01
BI-214	6.552E-01	1.784E-01	1.784E-01
PB-214	9.360E-01	1.897E-01	1.897E-01
RN-222	6.552E-01	1.784E-01	1.784E-01
RA-224	8.469E-01	1.091E+00	1.091E+00
RA-226	6.552E-01	1.784E-01	1.784E-01
TH-228	7.757E-01	1.772E-01	1.772E-01
TH-230	6.550E-01	1.784E-01	1.784E-01
PA-231	1.003E+00	7.124E-01	7.124E-01
TH-234	3.508E+00	3.407E+00	3.407E+00
U-234	6.550E-01	1.784E-01	1.784E-01
U-235	1.278E-01	1.754E-01	1.754E-01
U-238	3.508E+00	3.407E+00	3.407E+00
AM-243	1.851E-01	1.310E-01	1.310E-01

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/GRAM)	K.L Act error (1.96-sigma)	TPU (1.96-sigma)	
NA-22	2.726E-02	4.209E-02	4.385E-02	NOT IDENT.
NA-24	1.000E+41	7.998E+41	0.000E+00	SHORT HLIF
AL-26	-7.971E-03	3.495E-02	3.513E-02	NOT IDENT.
SC-46	3.357E-01	4.106E-01	4.376E-01	FAIL ABUN
V-48	9.835E+03	8.878E+03	9.923E+03	SHORT HLIF
CR-51	1.544E+02	3.203E+02	3.278E+02	SHORT HLIF
MN-54	2.388E-03	6.494E-02	6.495E-02	NOT IDENT.
CO-56	-2.663E-01	4.685E-01	4.836E-01	NOT IDENT.

MN-56	-1.000E+41	1.772E+41	0.000E+00	SHORT HLIF
CO-57	-2.271E-03	5.369E-02	5.370E-02	NOT IDENT.
CO-58	3.072E-03	5.371E-01	5.371E-01	NOT IDENT.
FE-59	-2.852E+00	5.923E+00	6.061E+00	NOT IDENT.
CO-60	1.087E-02	3.313E-02	3.349E-02	NOT IDENT.
ZN-65	5.159E-02	1.098E-01	1.122E-01	NOT IDENT.
GE-68	8.988E-01	2.396E+00	2.430E+00	NOT IDENT.
AS-73	-3.439E+00	1.442E+01	1.451E+01	NOT IDENT.
AS-74	-2.688E+03	4.434E+03	4.597E+03	SHORT HLIF
SE-75	-2.089E-02	1.929E-01	1.931E-01	NOT IDENT.
BR-77	1.730E+37	1.462E+38	0.000E+00	SHORT HLIF
SR-82	4.688E+00	5.537E+02	5.537E+02	SHORT HLIF
RB-83	1.804E-02	5.658E-01	5.659E-01	NOT IDENT.
KR-85	-2.830E+01	1.101E+01	1.685E+01	NOT IDENT.
SR-85	-2.776E+00	1.079E+00	1.652E+00	NOT IDENT.
RB-86	2.786E+03	2.375E+04	2.378E+04	SHORT HLIF
Y-88	-2.870E-02	1.481E-01	1.487E-01	NOT IDENT.
Y-91	1.081E+02	5.702E+02	5.723E+02	NOT IDENT.
NB-94	-3.100E-02	3.107E-02	3.407E-02	NOT IDENT.
NB-95	5.086E-01	8.392E-01	8.700E-01	NOT IDENT.
NB-95M	2.394E+00	2.430E+00	2.659E+00	NOT IDENT.
ZR-95	1.230E+00	1.257E+00	1.374E+00	NOT IDENT.
NB-97	1.000E+41	9.789E+40	0.000E+00	SHORT HLIF
ZR-97	-1.000E+41	6.100E+40	0.000E+00	SHORT HLIF
MO-99	-2.443E+31	3.272E+31	0.000E+00	SHORT HLIF
TC-99M	-1.000E+41	8.175E+41	0.000E+00	SHORT HLIF
RH-101	1.074E-02	3.950E-02	3.980E-02	NOT IDENT.
RH-102	-4.306E-02	6.414E-02	6.701E-02	FAIL ABUN
RU-103	-1.116E+00	4.919E+00	4.945E+00	FAIL ABUN
RH-106	-8.046E-02	4.323E-01	4.338E-01	NOT IDENT.
RU-106	-8.046E-02	4.323E-01	4.338E-01	NOT IDENT.
AG-108M	-2.460E-03	2.976E-02	2.978E-02	NOT IDENT.
AG-110M	3.590E-03	9.854E-02	9.856E-02	NOT IDENT.
SN-113	1.917E-02	2.158E-01	2.160E-01	NOT IDENT.
CD-115	2.609E+38	2.953E+38	0.000E+00	SHORT HLIF
SN-117M	4.473E+04	6.766E+04	7.060E+04	SHORT HLIF
TE-123M	1.029E-01	1.267E-01	1.349E-01	NOT IDENT.
SB-124	-1.464E-01	2.070E+00	2.071E+00	NOT IDENT.
SB-125	7.467E-02	1.024E-01	1.078E-01	NOT IDENT.
TE-125M	9.634E+01	2.909E+02	2.941E+02	NOT IDENT.
I-126	2.302E+05	6.591E+05	6.672E+05	SHORT HLIF
SB-126	4.040E+05	7.675E+05	7.888E+05	SHORT HLIF
SB-127	9.444E+20	6.637E+21	0.000E+00	SHORT HLIF
I-131	-6.762E+08	2.693E+09	2.710E+09	SHORT HLIF
I-132	1.000E+41	1.904E+42	0.000E+00	SHORT HLIF
TE-132	4.067E+25	8.450E+25	0.000E+00	SHORT HLIF
BA-133	-3.108E-03	4.507E-02	4.509E-02	NOT IDENT.
I-133	-1.000E+41	7.605E+41	0.000E+00	SHORT HLIF
CS-134	2.865E-03	5.395E-02	5.397E-02	NOT IDENT.
CS-135	-1.598E-02	1.575E-01	1.577E-01	NOT IDENT.
I-135	-1.000E+41	7.211E+41	0.000E+00	SHORT HLIF
CS-136	1.096E+05	2.405E+05	2.455E+05	SHORT HLIF
CE-139	-2.330E-02	1.120E-01	1.125E-01	NOT IDENT.
BA-140	-4.455E+05	9.049E+05	9.270E+05	SHORT HLIF
LA-140	-1.184E+04	2.098E+05	2.098E+05	SHORT HLIF
CE-141	1.068E+00	2.013E+01	2.014E+01	NOT IDENT.
CE-143	1.000E+41	1.525E+41	0.000E+00	SHORT HLIF
CE-144	1.100E-01	3.555E-01	3.589E-01	NOT IDENT.
PM-144	-1.103E-02	6.246E-02	6.266E-02	FAIL ABUN
PR-144	-9.873E-01	5.400E+00	5.419E+00	NOT IDENT.
PM-146	4.710E-03	4.181E-02	4.186E-02	NOT IDENT.
ND-147	-1.067E+07	1.989E+07	2.046E+07	SHORT HLIF
PM-147	2.399E+02	9.340E+02	9.402E+02	NOT IDENT.
PM-149	2.694E+39	4.573E+39	0.000E+00	SHORT HLIF
EU-150	-6.151E-03	2.937E-02	2.950E-02	FAIL ABUN
EU-152	1.512E-02	8.901E-02	8.927E-02	NOT IDENT.
GD-153	7.509E-02	2.155E-01	2.181E-01	NOT IDENT.
EU-154	8.372E-02	1.017E-01	1.085E-01	NOT IDENT.
EU-155	1.717E-01	1.342E-01	1.549E-01	FAIL ABUN
TB-160	5.577E-02	1.736E+00	1.736E+00	FAIL ABUN
HO-166M	-1.553E-02	5.126E-02	5.174E-02	NOT IDENT.
TM-171	-3.239E+01	3.904E+01	4.168E+01	NOT IDENT.
HF-172	-2.922E-02	2.696E-01	2.699E-01	FAIL ABUN
LU-172	1.815E-03	5.625E-02	5.625E-02	FAIL ABUN
LU-176	1.709E-02	2.429E-02	2.548E-02	FAIL ABUN
HF-181	-2.315E+00	3.647E+00	3.794E+00	NOT IDENT.
TA-182	6.416E-01	8.938E-01	9.395E-01	FAIL ABUN
RE-183	5.889E-01	4.235E+00	4.243E+00	NOT IDENT.

RE-184	-6.637E+00	2.187E+01	2.207E+01	FAIL ABUN
W-188	3.910E+01	1.003E+02	1.019E+02	FAIL ABUN
IR-192	-4.607E-02	4.508E-01	4.512E-01	FAIL ABUN
HG-203	8.268E-01	2.024E+00	2.058E+00	NOT IDENT.
BI-207	-1.226E-02	4.759E-02	4.791E-02	FAIL ABUN
PB-210	-1.255E+00	8.574E+00	8.593E+00	NOT IDENT.
PB-211	-4.274E-03	7.059E-01	7.059E-01	NOT IDENT.
BI-212	8.229E-01	5.441E-01	6.585E-01	FAIL ABUN
RN-219	6.176E-02	3.968E-01	3.978E-01	FAIL ABUN
RA-223	3.619E-01	5.690E-01	5.920E-01	FAIL ABUN
AC-227	-1.774E-02	2.246E-01	2.247E-01	FAIL ABUN
TH-227	-1.774E-02	2.246E-01	2.247E-01	FAIL ABUN
AC-228	7.458E-01	3.723E-01	5.016E-01	FAIL ABUN
RA-228	7.458E-01	3.723E-01	5.016E-01	FAIL ABUN
TH-229	1.101E-01	4.582E-01	4.609E-01	FAIL ABUN
TH-231	3.619E-01	5.690E-01	5.920E-01	FAIL ABUN
TH-232	7.458E-01	3.723E-01	5.016E-01	FAIL ABUN
PA-233	3.504E-02	5.836E-02	6.046E-02	FAIL ABUN
PA-234	-1.849E-01	3.262E-01	3.366E-01	FAIL ABUN
PA-234M	-1.640E+00	3.307E+00	3.389E+00	NOT IDENT.
NP-237	3.504E-02	5.836E-02	6.046E-02	FAIL ABUN
NP-238	1.398E+40	4.438E+40	0.000E+00	SHORT HLIF
NP-239	1.512E-01	2.575E-01	2.664E-01	NOT IDENT.
PU-239	3.370E+02	5.624E+02	5.826E+02	FAIL ABUN
AM-241	1.975E-02	2.272E-01	2.274E-01	NOT IDENT.
CM-243	-1.577E-01	1.278E-01	1.462E-01	NOT IDENT.
BK-247	5.209E-03	7.533E-02	7.537E-02	NOT IDENT.
CM-247	-1.545E-02	3.678E-02	3.743E-02	NOT IDENT.
CF-249	2.531E-02	3.458E-02	3.641E-02	NOT IDENT.
CF-251	-9.790E-02	1.169E-01	1.250E-01	NOT IDENT.
ANH-511	-7.453E-03	5.072E-02	5.083E-02	NOT IDENT.

 * GEL Laboratories LLC *
 * 2040 Savage Road *
 * Charleston, SC 29407 *
 * GAMMA SPECTROSCOPY BACKGROUND REPORT *

ENERGY	MDA COUNTS	ENERGY	MDA COUNTS	ENERGY	MDA COUNTS
74.66	61.2999	105.31	95.0122	131.20	63.1200
879.38	50.3431	86.79	95.0403	133.02	64.8921
46.54	59.3921	86.94	99.8109	133.52	52.4372
228.16	0.0000	87.09	99.8288	136.00	61.7352
52.39	57.6248	87.57	109.4002	136.47	61.7623
1093.63	71.2453	88.03	109.4613	739.50	0.0000
52.39	66.7792	306.78	109.5020	140.51	0.0000
125.81	55.5136	88.47	99.9961	143.76	57.9717
53.44	57.8238	143.76	100.1749	144.24	68.9239
54.07	40.8586	90.64	92.2994	145.44	63.9487
293.27	0.0000	531.02	0.0000	152.43	78.7327
482.18	67.3322	92.59	92.5124	1048.07	0.0000
57.98	57.1011	93.35	92.5944	154.21	66.9833
59.27	56.4521	94.56	92.7254	158.56	0.0000
59.32	64.0855	311.90	92.7349	159.00	55.3370
59.54	64.1072	946.00	92.7372	162.33	68.2959
60.96	58.1270	94.87	92.7585	537.26	0.0000
61.17	58.1454	97.43	64.1593	163.33	69.2073
62.93	75.9413	98.43	75.4728	165.86	72.7754
63.29	75.9816	98.44	75.4738	427.87	71.6608
290.67	76.0140	103.37	85.2133	176.60	0.0000
87.57	76.0921	116.74	85.2133	177.52	73.4567
66.73	84.8465	100.11	74.8113	181.07	0.0000
67.24	49.4014	102.03	82.2265	181.52	76.7200
67.68	67.9694	103.18	88.3845	184.41	63.8579
1221.41	67.9761	103.37	98.0909	185.72	70.4441
97.43	84.8125	911.20	64.3119	193.51	55.9857
279.20	66.7177	105.31	64.3192	197.03	56.1309
1063.66	96.4587	106.12	75.3071	198.01	56.1712
72.87	90.2427	106.47	85.0562	201.83	58.9671
351.06	90.2427	109.28	65.8121	203.43	67.8465
74.66	84.2217	111.00	85.4674	205.31	54.7028
238.63	84.2399	111.76	0.0000	210.85	57.5746
351.93	84.2399	114.06	61.2431	215.65	51.5459
238.63	84.2399	116.30	0.0000	222.11	49.0963
74.97	84.2569	116.74	52.8137	227.09	55.5303
77.11	84.4958	119.76	67.7589	227.38	48.3745
78.74	87.8116	264.66	64.1502	228.16	0.0000
256.23	81.6393	121.22	64.1566	228.18	47.5040
133.52	91.1094	344.28	71.5991	235.69	47.2892
364.49	0.0000	122.06	69.1494	235.96	47.2972
711.68	84.8749	122.92	54.3776	238.63	87.9904
356.01	86.4936	1274.44	54.3857	238.98	0.0000
323.87	86.5015	123.68	44.5240	240.99	59.6534
81.75	87.3635	125.81	64.4466	242.00	85.0154
83.79	91.1385	127.23	61.2255	244.70	54.3591
265.00	96.2923	127.91	71.2010	685.70	0.0000
193.51	101.2077	129.30	62.1765	388.16	38.2454

ENERGY	MDA COUNTS	ENERGY	MDA COUNTS	ENERGY	MDA COUNTS
507.63	0.0000	345.93	33.0941	569.50	25.2979
256.23	44.7145	351.06	28.8513	569.70	22.1373
527.90	0.0000	351.93	28.8641	583.19	15.8887
264.66	37.4241	355.39	0.0000	584.27	15.8948
264.80	37.1522	356.01	31.8150	595.83	0.0000
265.00	37.1563	364.49	0.0000	600.60	28.7732
268.22	46.8797	366.42	0.0000	602.52	0.0000
269.46	41.3956	372.51	18.4658	604.72	16.0077
270.03	41.4093	375.05	16.5421	607.14	12.8169
401.81	41.4386	377.52	24.3551	609.32	16.0333
273.65	0.0000	383.85	22.4740	610.33	16.0388
276.40	34.1764	388.16	19.5821	614.28	20.8782
583.19	32.3475	666.33	0.0000	618.01	22.5125
277.60	35.1248	391.69	26.4792	884.68	10.7288
402.40	31.4344	400.66	21.6652	621.93	13.9548
279.20	34.2321	401.81	29.5587	630.19	0.0000
279.54	44.4180	402.40	34.4944	631.29	23.6901
279.70	44.4219	404.85	31.5729	633.25	18.3177
280.46	39.8121	410.95	30.6708	634.78	0.0000
301.36	29.6836	413.71	22.7838	635.95	19.4128
284.31	0.0000	720.70	0.0000	636.99	0.0000
285.41	31.5699	423.72	0.0000	1690.97	17.8528
285.90	0.0000	427.09	21.9226	657.76	4.8880
287.50	39.0443	427.87	19.9365	657.90	0.0000
290.67	27.9395	433.94	28.9841	661.66	14.1383
293.27	0.0000	439.40	30.0543	664.57	0.0000
295.22	34.7342	453.88	21.1675	666.33	0.0000
316.51	44.8369	463.37	20.2393	666.50	0.0000
298.58	30.8704	468.07	18.2509	667.71	0.0000
299.98	40.4437	473.00	0.0000	677.62	19.6765
300.09	40.4464	631.29	21.3533	685.70	0.0000
300.13	40.4473	696.49	21.3683	695.00	0.0000
311.90	40.4473	477.60	24.4292	696.49	23.0918
301.36	36.5395	482.18	23.4544	696.51	23.0918
302.85	36.5696	487.02	0.0000	697.00	0.0000
304.50	32.3795	492.35	0.0000	697.30	25.2976
304.85	0.0000	497.08	21.5422	697.49	26.3994
306.78	31.0107	505.52	29.8472	702.65	19.8311
308.46	40.4446	507.63	0.0000	706.68	13.2368
311.90	30.1549	511.00	36.0994	711.68	14.3621
316.51	39.6766	514.00	86.7378	720.70	0.0000
319.41	0.0000	514.00	86.7378	721.93	0.0000
320.08	0.0000	520.40	16.5625	722.78	13.3022
321.04	30.3027	520.69	0.0000	722.91	14.9656
323.87	28.4515	667.71	0.0000	723.31	19.9563
325.23	37.9622	527.90	0.0000	756.73	16.6345
1596.21	0.0000	528.26	12.4590	727.33	8.8802
333.37	34.3118	529.59	18.6973	733.00	11.6749
333.97	40.0424	529.87	0.0000	735.93	6.6772
334.37	35.7597	531.02	0.0000	737.46	17.8145
338.28	32.4872	537.26	0.0000	739.50	0.0000
338.32	32.4879	1260.41	0.0000	747.24	18.9825
340.48	31.5673	552.55	22.0006	748.06	15.6366
340.55	0.0000	795.86	19.9826	752.31	14.5377
344.28	26.4528	569.33	25.2969	753.82	0.0000

ENERGY	MDA COUNTS	ENERGY	MDA COUNTS	ENERGY	MDA COUNTS
756.73	7.8383	968.97	15.9972	1505.03	4.9615
756.80	7.8385	983.53	0.0000	1584.12	7.0414
763.94	22.4422	984.45	0.0000	1596.21	0.0000
765.81	11.7886	996.26	2.6838	1620.50	1.6192
1001.03	5.0532	1001.03	8.0607	1621.92	3.2393
766.84	10.1074	1002.74	8.0640	1678.03	0.0000
772.60	0.0000	1004.73	9.8607	1690.97	5.1187
776.52	0.0000	1021.30	0.0000	1750.46	0.0000
777.92	0.0000	1025.87	0.0000	1764.49	1.0357
778.90	9.0156	1028.54	0.0000	1770.23	5.1831
783.70	0.0000	1037.84	15.3575	1771.35	4.1472
785.37	11.2903	1038.76	0.0000	1791.20	0.0000
903.28	21.4925	1046.59	19.0095	1808.65	5.2136
794.95	7.9248	1048.07	0.0000	1810.72	0.0000
795.86	16.9861	1049.04	9.9634	1836.06	2.0941
801.95	13.6123	1050.41	9.9667		
810.06	15.9169	1063.66	9.9969		
810.29	15.9180	1077.00	0.0000		
810.45	12.5075	1077.34	10.9395		
810.76	12.5084	1085.87	11.8741		
815.77	0.0000	1093.63	6.4048		
818.51	0.0000	1099.45	13.7421		
832.01	6.8628	1112.07	9.1870		
834.85	10.3022	1112.84	11.0266		
835.71	11.4498	1115.54	2.9422		
836.80	0.0000	1120.29	9.2035		
846.75	0.0000	1120.55	9.2041		
846.77	17.2260	1121.30	9.2059		
856.80	0.0000	1808.65	10.1447		
860.56	19.0190	1131.51	0.0000		
871.09	16.1824	1147.95	0.0000		
873.19	10.4088	1332.49	15.8254		
875.33	0.0000	1177.95	9.3188		
879.38	11.5841	1189.05	8.4062		
880.51	11.5873	1204.77	15.9313		
883.24	9.2767	1221.41	9.4031		
884.68	11.5999	1231.02	6.5954		
889.28	8.7106	1235.36	0.0000		
894.76	10.4674	1238.28	16.9849		
1836.06	4.1906	1260.41	0.0000		
900.72	8.1538	1271.87	12.3502		
903.28	9.3249	1274.44	4.7525		
911.20	17.5195	1274.54	5.7030		
912.08	17.5238	1291.59	12.3986		
984.45	0.0000	1298.22	0.0000		
926.50	8.2077	1312.11	0.0000		
929.11	4.2239	1332.49	4.8068		
937.49	5.6438	1362.66	0.0000		
983.53	0.0000	1365.19	5.8041		
946.00	14.1392	1368.63	0.0000		
949.00	7.9593	1384.29	3.8833		
954.55	0.0000	1408.01	5.8506		
962.31	19.5199	1457.56	0.0000		
964.08	12.4273	1460.82	5.9073		
966.17	29.3080	1489.16	0.9896		

```

*****
*                               GEL Laboratories LLC                               *
*                               2040 Savage Road                               *
*                               Charleston, SC 29407                          *
*****
Configuration : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]R405245010.CNF;1
Background file : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]BKG_GAM39.CNF;134
Background date : 2-OCT-2016 11:02:13.
Sample date      : 15-DEC-2015 12:35:00 Acquisition date : 3-OCT-2016 04:36:41.
Sample ID       : R405245010 Sample quantity : 1.42421E+02 GRAM
Detector name   : GAM39 Detector geometry: CAN
Elapsed live time: 0 01:00:00.00 Elapsed real time: 0 01:00:06.98 0.2%
Energy tolerance : 1.50000 keV Analyst Initials : MXR1
Abundance limit : 75.00000 Sensitivity : 3.00000
Batch ID        : 1596387 Detector SN# :
Matrix Spike ID : LCS ID : 1556
*****
    
```

BACKGROUND CORRECTED SAMPLE PEAK REPORT

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	46.78*	56	76	1.54	93.40	91	6	1.57E-02	29.8	
2	0	49.54	29	88	0.91	98.92	97	6	8.10E-03	53.7	
3	0	63.16*	32	216	1.06	126.17	121	10	8.77E-03	93.1	
4	2	72.80	31	93	1.24	145.44	143	18	8.53E-03	48.8	2.32E+00
5	2	74.73*	167	123	1.20	149.30	143	18	4.65E-02	13.9	
6	2	77.04*	280	128	1.28	153.92	143	18	7.78E-02	9.9	
7	0	83.93*	29	88	1.08	167.71	166	5	7.97E-03	55.0	
8	4	87.39	81	156	1.70	174.63	171	20	2.24E-02	28.9	2.40E+00
9	4	92.62*	93	176	1.54	185.08	171	20	2.57E-02	29.9	
10	0	135.32	19	73	0.53	270.48	267	6	5.28E-03	74.8	
11	0	186.50*	61	114	1.21	372.85	367	12	1.71E-02	38.6	
12	5	238.71*	301	45	1.29	477.27	469	24	8.35E-02	7.2	1.80E+00
13	5	242.10	83	55	2.21	484.04	469	24	2.31E-02	30.5	
14	5	245.01	21	18	1.11	489.86	469	24	5.76E-03	40.0	
15	0	269.78	46	44	1.47	539.41	535	9	1.28E-02	30.1	
16	0	295.48*	92	99	1.65	590.82	585	14	2.55E-02	25.5	
17	0	339.17*	55	93	1.32	678.19	671	15	1.53E-02	41.7	
18	0	345.83	9	38	0.82	691.51	687	8	2.42E-03	127.3	
19	0	352.01*	190	39	1.61	703.88	699	13	5.27E-02	9.8	
20	0	373.54	23	24	3.31	746.93	741	10	6.45E-03	45.0	
21	0	464.09	21	25	1.50	928.04	922	10	5.93E-03	48.8	
22	0	511.65*	21	43	2.50	1023.18	1016	21	5.77E-03	97.4	
23	0	569.43*	6	23	0.80	1138.73	1133	9	1.69E-03	149.7	
24	0	583.22*	63	36	1.72	1166.32	1160	12	1.75E-02	23.8	
25	0	609.30*	124	25	1.64	1218.49	1213	13	3.45E-02	12.6	
26	0	656.55	10	20	0.64	1312.99	1307	9	2.81E-03	82.9	
27	0	661.54	89	14	1.99	1322.98	1316	14	2.47E-02	13.8	
28	4	709.52	10	7	1.66	1418.95	1417	14	2.86E-03	40.1	1.34E+00
29	4	712.69	14	11	2.51	1425.28	1417	14	3.97E-03	55.0	
30	0	728.90	53	16	5.34	1457.71	1446	23	1.48E-02	24.3	
31	0	786.54	25	18	1.63	1572.99	1565	16	6.91E-03	44.6	
32	0	860.21	22	9	0.91	1720.35	1715	12	5.98E-03	35.4	
33	0	911.75*	59	22	1.52	1823.44	1818	14	1.65E-02	23.4	
34	0	917.45	10	1	1.69	1834.85	1832	6	2.69E-03	37.6	

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
35	0	948.96	5	16	0.89	1897.88	1890	10	1.51E-03	155.2	
36	3	969.63*	30	27	2.46	1939.22	1933	17	8.47E-03	39.5	1.85E+00
37	3	972.92	16	4	2.13	1945.80	1933	17	4.40E-03	51.1	
38	0	998.39	4	7	0.81	1996.75	1991	7	1.17E-03	114.1	
39	0	1009.76	20	0	0.54	2019.50	2014	12	5.56E-03	22.4	
40	0	1025.22*	8	14	0.79	2050.42	2040	14	2.24E-03	106.0	
41	0	1028.62	10	4	0.54	2057.21	2054	7	2.64E-03	46.0	
42	0	1069.85	17	3	4.39	2139.70	2134	11	4.80E-03	30.4	
43	0	1121.09	33	24	1.87	2242.20	2234	19	9.05E-03	40.0	
44	0	1239.08	14	22	1.54	2478.21	2470	14	3.97E-03	73.1	
45	0	1283.25	7	3	1.06	2566.57	2563	6	2.00E-03	52.9	
46	0	1311.41	4	7	1.32	2622.89	2617	8	1.11E-03	129.9	
47	0	1460.96*	234	0	1.87	2922.06	2915	15	6.50E-02	6.7	
48	0	1764.78*	29	4	1.42	3529.83	3523	15	8.07E-03	24.2	

Flag: "*" = Peak area was modified by background subtraction

```

Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]R405245010.CNF;1
Analyses by       : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.4,INTERF V2.4
Sample title      : MXR1
Sample date       : 15-DEC-2015 12:35:00 Acquisition date : 3-OCT-2016 04:36:41
Sample ID        : R405245010 Sample quantity  : 142.42 GRAM
Sample type      : SOLID Sample geometry   :
Detector name    : GAMMA39 Detector geometry: CAN
Elapsed live time: 0 01:00:00.00 Elapsed real time: 0 01:00:06.98 0.2%
Energy tolerance : 1.50 keV Half life ratio  : 10.00
Errors propagated: No Systematic Error  : 0.00 %
Efficiency type  : Linear Efficiencies at  : Peak Energy
Abundance limit  : 75.00
    
```

Interference Report

Interfering		Interfered	
Nuclide	Line	Nuclide	Line
PB-214	242.00	RA-224	240.99
PB-214	87.09	SN-126	86.94
PB-214	87.09	SN-126	87.57
PB-214	87.09	CD-109	88.03
PB-214	87.09	TH-229	88.47
PB-214	74.82	AM-243	74.66
PB-214	74.82	TH-228	74.82
PB-214	74.82	PB-212	74.82
PB-214	351.93	BI-211	351.06

Nuclide Type:

Nuclide	Energy	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error	Status
K-40	1460.82	10.66*	8.983E-01	1.236E+01	1.236E+01	13.38	OK
CD-109	88.03	3.70*	6.753E+00	1.310E+00	2.033E+00	96.33	OK
SN-126	64.28	9.60	6.932E+00	3.118E-01	3.118E-01	186.15	OK
	86.94	8.90	6.753E+00	5.444E-01	5.444E-01	96.33	OK
	87.57	37.00*	6.753E+00	1.310E-01	1.310E-01	96.33	OK
BA-137M	661.66	89.90*	1.758E+00	3.066E-01	3.123E-01	27.69	OK
CS-137	661.66	85.10*	1.758E+00	3.238E-01	3.299E-01	27.69	OK
TL-208	277.37	6.60	3.709E+00	-----	Line Not Found	-----	Absent
	583.19	85.00*	1.953E+00	2.085E-01	2.085E-01	47.55	OK
	860.56	12.50	1.417E+00	6.458E-01	6.458E-01	70.79	OK
PB-210	46.54	4.25*	6.846E+00	1.304E+00	1.337E+00	59.54	OK
BI-211	72.87	1.23	6.824E+00	2.380E+00	2.380E+00	97.58	OK
	351.06	12.92*	3.013E+00	5.164E-01	5.164E-01	249.10	OK
PB-212	74.82	10.28	6.812E+00	1.085E+00	1.085E+00	45.42	OK
	77.11	17.10	6.800E+00	1.560E+00	1.560E+00	19.83	OK
	238.63	43.60*	4.210E+00	9.716E-01	9.716E-01	14.44	OK
	300.09	3.30	3.465E+00	-----	Line Not Found	-----	Absent
BI-214	609.32	45.49*	1.883E+00	7.959E-01	7.962E-01	25.23	OK
	1120.29	14.92	1.136E+00	9.977E-01	9.981E-01	79.98	OK
	1764.49	15.30	7.484E-01	1.261E+00	1.261E+00	48.47	OK
PB-214	74.82	5.80	6.812E+00	-----	Line Not Found	-----	<<INT Reject
	77.11	9.70	6.800E+00	2.750E+00	2.751E+00	19.83	OK
	87.09	3.41	6.755E+00	-----	Line Not Found	-----	<<INT Reject
	242.00	7.25	4.163E+00	-----	Line Not Found	-----	<<INT Reject
	295.22	18.42	3.512E+00	8.285E-01	8.288E-01	50.97	OK
	351.93	35.60*	3.014E+00	-----	Line Not Found	-----	<<INT Reject
RN-222	609.32	45.49*	1.883E+00	7.959E-01	7.962E-01	25.23	OK
	1120.29	14.92	1.136E+00	9.977E-01	9.981E-01	79.98	OK
	1764.49	15.30	7.484E-01	1.261E+00	1.261E+00	48.47	OK
RA-224	240.99	4.10*	4.161E+00	1.424E+00	1.424E+00	134.26	OK
RA-226	609.32	45.49*	1.883E+00	7.959E-01	7.962E-01	25.23	OK
	1120.29	14.92	1.136E+00	9.977E-01	9.981E-01	79.98	OK
	1764.49	15.30	7.484E-01	1.261E+00	1.261E+00	48.47	OK
AC-228	105.21	1.10	6.612E+00	-----	Line Not Found	-----	Absent
	338.32	11.27	3.113E+00	9.020E-01	9.020E-01	83.48	OK
	794.95	4.25	1.512E+00	-----	Line Not Found	-----	Absent
	835.71	1.61	1.451E+00	-----	Line Not Found	-----	Absent
	911.20	25.80*	1.350E+00	8.992E-01	8.992E-01	46.87	OK
	968.97	15.80	1.283E+00	7.905E-01	7.905E-01	78.97	OK
RA-228	105.21	1.10	6.612E+00	-----	Line Not Found	-----	Absent
	338.32	11.27	3.113E+00	9.020E-01	9.020E-01	83.48	OK
	794.95	4.25	1.512E+00	-----	Line Not Found	-----	Absent
	835.71	1.61	1.451E+00	-----	Line Not Found	-----	Absent
	911.20	25.80*	1.350E+00	8.992E-01	8.992E-01	46.87	OK
	968.97	15.80	1.283E+00	7.905E-01	7.905E-01	78.97	OK
TH-228	74.82	10.28	6.812E+00	1.085E+00	1.085E+00	45.42	OK
	77.11	17.10	6.800E+00	1.560E+00	1.560E+00	19.83	OK
	238.63	43.60*	4.210E+00	9.716E-01	9.716E-01	14.44	OK
	300.09	3.30	3.465E+00	-----	Line Not Found	-----	Absent

Nuclide Type:

Nuclide	Energy	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error	Status
TH-229	85.43	14.70	6.769E+00	1.855E-01	1.855E-01	109.93	OK
	88.47	24.00	6.753E+00	2.019E-01	2.019E-01	96.33	OK
	193.51	4.41*	4.960E+00	-----	Line Not Found	-----	Absent
	210.85	2.80	4.650E+00	-----	Line Not Found	-----	Absent
TH-230	609.32	45.49*	1.883E+00	7.959E-01	7.959E-01	25.23	OK
	1120.29	14.92	1.136E+00	9.977E-01	9.977E-01	79.98	OK
	1764.49	15.30	7.484E-01	1.261E+00	1.261E+00	48.47	OK
TH-232	105.21	1.10	6.612E+00	-----	Line Not Found	-----	Absent
	338.32	11.27	3.113E+00	9.020E-01	9.020E-01	83.48	OK
	835.71	1.61	1.451E+00	-----	Line Not Found	-----	Absent
	911.20	25.80*	1.350E+00	8.992E-01	8.992E-01	46.87	OK
TH-234	968.97	15.80	1.283E+00	7.905E-01	7.905E-01	78.97	OK
	63.29	3.70*	6.932E+00	8.089E-01	8.089E-01	186.15	OK
U-234	92.59	4.23	6.724E+00	2.079E+00	2.079E+00	59.80	OK
	609.32	45.49*	1.883E+00	7.959E-01	7.959E-01	25.23	OK
	1120.29	14.92	1.136E+00	9.977E-01	9.977E-01	79.98	OK
U-238	1764.49	15.30	7.484E-01	1.261E+00	1.261E+00	48.47	OK
	63.29	3.70*	6.932E+00	8.089E-01	8.089E-01	186.15	OK
	92.59	4.23	6.724E+00	2.079E+00	2.079E+00	59.80	OK
AM-243	43.53	5.90	6.236E+00	-----	Line Not Found	-----	Absent
	74.66	67.20*	6.812E+00	1.660E-01	1.660E-01	45.42	OK
ANH-511	511.00	100.00*	2.180E+00	5.304E-02	5.304E-02	194.87	OK

Flag: "*" = Keyline

```

*****
*
*               GEL Laboratories LLC
*               2040 Savage Road
*               Charleston, SC 29407
*****
*
*               DETECTOR AND SAMPLE DATA
*
* Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]R405245010.CNF;1
* Acquisition date   : 3-OCT-2016 04:36:41 Sensitivity      : 3.000
* Detector ID       : GAM39 Energy tolerance: 1.500
* Elapsed live time : 0 01:00:00.00 Abundance limit : 75.000
* Elapsed real time : 0 01:00:06.98 Half life ratio  : *****
* Sample date       : 15-DEC-2015 12:35:00 Analyst initials: MXR1
* Sample ID         : R405245010 Sample Quantity : 1.4242E+02 GRAM
* Batch Number      : 1596387 Wet Weight : 0.00000
* Wet wt corr       : 1.00000 Dry Weight : 0.00000
* Nuclide Library   : SOLID.NLB;6
*****
*
*               CALIBRATION INFORMATION
*
* Eff. Cal. date    : 27-JUL-2016 13:04:01 Eff. Geometry   : CAN
* Eff. File         : DKA100:[CANBERRA.GAMMA]EFF_GAM39_CAN.CNF;4
*****

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Combined Activity-MDA Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM)	Cnt uncert (1.96-sigma)	MDA (pCi/GRAM)
K-40	1.236E+01	1.622E+00	6.722E-01
CD-109	2.033E+00	1.919E+00	1.635E+00
SN-126	1.310E-01	1.236E-01	1.053E-01
BA-137M	3.123E-01	8.473E-02	7.225E-02
CS-137	3.299E-01	8.951E-02	7.633E-02
TL-208	2.085E-01	9.713E-02	7.203E-02
PB-210	1.337E+00	7.804E-01	8.744E-01
BI-211	5.164E-01	1.261E+00	4.023E-01
PB-212	9.716E-01	1.375E-01	9.343E-02
BI-214	7.962E-01	1.969E-01	1.362E-01
PB-214	1.016E+00	1.952E-01	3.554E-01
RN-222	7.962E-01	1.969E-01	1.362E-01
RA-224	1.424E+00	1.873E+00	1.002E+00
RA-226	7.962E-01	1.969E-01	1.362E-01
AC-228	8.992E-01	4.130E-01	3.521E-01
RA-228	8.992E-01	4.130E-01	3.521E-01
TH-228	9.716E-01	1.375E-01	9.343E-02
TH-229	-3.357E-01	4.928E-01	9.107E-01
TH-230	7.959E-01	1.968E-01	1.362E-01
TH-232	8.992E-01	4.130E-01	3.521E-01
TH-234	8.089E-01	1.476E+00	1.133E+00
U-234	7.959E-01	1.968E-01	1.362E-01
U-238	8.089E-01	1.476E+00	1.133E+00
AM-243	1.660E-01	7.388E-02	6.221E-02
ANH-511	5.304E-02	1.013E-01	6.491E-02

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/GRAM)	K.L. Cnt Uncert (1.96-sigma)	MDA (pCi/GRAM)	
BE-7	-2.659E-01	1.444E+01	2.721E+01	NOT IDENT.
NA-22	2.376E-02	6.601E-02	1.365E-01	NOT IDENT.
NA-24	0.000E+00	1.960E+41	0.000E+00	SHORT HLIF
AL-26	1.726E-02	3.072E-02	8.241E-02	NOT IDENT.
SC-46	-3.753E-01	3.491E-01	5.662E-01	FAIL ABUN

V-48	0.000E+00	1.187E+04	0.000E+00	SHORT HLIF
CR-51	0.000E+00	3.772E+02	0.000E+00	SHORT HLIF
MN-54	5.205E-03	6.949E-02	1.427E-01	NOT IDENT.
CO-56	8.486E-02	5.644E-01	1.152E+00	FAIL ABUN
MN-56	0.000E+00	1.960E+41	0.000E+00	SHORT HLIF
CO-57	1.664E-02	4.453E-02	8.366E-02	FAIL ABUN
CO-58	-6.510E-02	6.188E-01	1.241E+00	NOT IDENT.
FE-59	2.245E+00	8.150E+00	1.675E+01	NOT IDENT.
CO-60	1.896E-02	5.428E-02	1.145E-01	NOT IDENT.
ZN-65	7.579E-04	2.433E-01	4.241E-01	NOT IDENT.
GE-68	4.505E-01	2.922E+00	5.970E+00	NOT IDENT.
AS-73	-1.928E+00	2.855E+00	4.613E+00	NOT IDENT.
AS-74	0.000E+00	5.752E+03	0.000E+00	SHORT HLIF
SE-75	1.959E-01	2.232E-01	4.535E-01	FAIL ABUN
BR-77	0.000E+00	3.065E+36	0.000E+00	SHORT HLIF
SR-82	0.000E+00	6.145E+02	0.000E+00	SHORT HLIF
RB-83	2.993E-01	8.004E-01	1.467E+00	NOT IDENT.
KR-85	2.655E-01	8.398E+00	1.597E+01	NOT IDENT.
SR-85	2.671E-02	8.231E-01	1.566E+00	NOT IDENT.
RB-86	0.000E+00	2.758E+04	0.000E+00	SHORT HLIF
Y-88	-1.399E-01	1.976E-01	2.949E-01	NOT IDENT.
Y-91	-5.847E+02	6.436E+02	1.062E+03	NOT IDENT.
NB-94	2.375E-02	3.749E-02	7.769E-02	NOT IDENT.
NB-95	6.289E-01	1.004E+00	2.049E+00	NOT IDENT.
NB-95M	-5.176E-02	2.399E+00	4.192E+00	NOT IDENT.
ZR-95	7.320E-01	1.697E+00	3.420E+00	NOT IDENT.
NB-97	0.000E+00	1.625E+41	0.000E+00	SHORT HLIF
ZR-97	0.000E+00	1.960E+41	0.000E+00	SHORT HLIF
MO-99	0.000E+00	3.569E+31	0.000E+00	SHORT HLIF
TC-99M	0.000E+00	1.840E+41	0.000E+00	SHORT HLIF
RH-101	-1.655E-02	3.729E-02	6.406E-02	NOT IDENT.
RH-102	9.056E-02	7.272E-02	1.622E-01	NOT IDENT.
RU-103	7.915E-01	6.392E+00	1.235E+01	FAIL ABUN
RH-106	-2.803E-01	5.651E-01	9.913E-01	NOT IDENT.
RU-106	-2.803E-01	5.651E-01	9.913E-01	NOT IDENT.
AG-108M	2.456E-02	3.280E-02	6.854E-02	NOT IDENT.
AG-110M	1.353E-01	1.161E-01	2.734E-01	FAIL ABUN
SN-113	-1.597E-01	2.636E-01	4.690E-01	NOT IDENT.
CD-115	0.000E+00	3.874E+38	0.000E+00	SHORT HLIF
SN-117M	0.000E+00	6.964E+04	0.000E+00	SHORT HLIF
TE-123M	9.339E-02	1.247E-01	2.596E-01	NOT IDENT.
SB-124	1.578E+00	2.329E+00	5.815E+00	NOT IDENT.
SB-125	9.192E-02	9.939E-02	2.198E-01	FAIL ABUN
TE-125M	2.568E+02	2.486E+02	4.894E+02	NOT IDENT.
I-126	0.000E+00	6.809E+05	0.000E+00	SHORT HLIF
SB-126	0.000E+00	1.013E+06	0.000E+00	SHORT HLIF
SB-127	0.000E+00	6.875E+21	0.000E+00	SHORT HLIF
I-131	0.000E+00	3.346E+09	0.000E+00	SHORT HLIF
I-132	0.000E+00	1.960E+41	0.000E+00	SHORT HLIF
TE-132	0.000E+00	8.056E+25	0.000E+00	SHORT HLIF
BA-133	6.415E-03	5.219E-02	9.158E-02	NOT IDENT.
I-133	0.000E+00	1.788E+41	0.000E+00	SHORT HLIF
CS-134	-4.108E-04	6.857E-02	1.355E-01	FAIL ABUN
CS-135	6.722E-02	1.648E-01	3.021E-01	NOT IDENT.
I-135	0.000E+00	1.960E+41	0.000E+00	SHORT HLIF
CS-136	0.000E+00	2.438E+05	0.000E+00	SHORT HLIF
CE-139	4.640E-02	1.104E-01	2.236E-01	NOT IDENT.
BA-140	0.000E+00	1.086E+06	0.000E+00	SHORT HLIF
LA-140	0.000E+00	1.959E+05	0.000E+00	SHORT HLIF
CE-141	-7.910E+00	2.234E+01	4.302E+01	NOT IDENT.
CE-143	0.000E+00	8.752E+40	0.000E+00	SHORT HLIF
CE-144	-1.524E-01	3.712E-01	6.390E-01	NOT IDENT.
PM-144	-1.919E-02	7.792E-02	1.394E-01	NOT IDENT.
PR-144	1.581E+00	6.224E+00	1.206E+01	NOT IDENT.
PM-146	-2.063E-02	4.868E-02	8.833E-02	NOT IDENT.
ND-147	0.000E+00	2.954E+07	0.000E+00	SHORT HLIF
PM-147	4.996E+01	7.505E+02	1.374E+03	NOT IDENT.
PM-149	0.000E+00	5.053E+39	0.000E+00	SHORT HLIF
EU-150	1.169E-02	3.197E-02	5.793E-02	FAIL ABUN
EU-152	8.427E-02	1.347E-01	2.131E-01	FAIL ABUN
GD-153	-1.630E-01	1.919E-01	2.917E-01	NOT IDENT.
EU-154	6.480E-02	1.636E-01	3.397E-01	NOT IDENT.
EU-155	2.543E-02	1.040E-01	1.924E-01	FAIL ABUN
TB-160	4.781E-01	1.877E+00	4.011E+00	FAIL ABUN
HO-166M	8.648E-02	9.315E-02	1.338E-01	FAIL ABUN
TM-171	2.135E+00	5.933E+00	1.063E+01	NOT IDENT.
HF-172	1.431E-01	2.372E-01	4.498E-01	FAIL ABUN
LU-172	3.190E-02	9.279E-02	1.960E-01	FAIL ABUN

LU-176	1.896E-02	2.814E-02	5.625E-02	FAIL ABUN
HF-181	2.934E-01	4.941E+00	9.460E+00	FAIL ABUN
TA-182	4.146E-01	1.153E+00	2.379E+00	FAIL ABUN
RE-183	8.348E-01	1.000E+00	1.984E+00	NOT IDENT.
RE-184	-5.391E-01	3.014E+01	6.101E+01	NOT IDENT.
W-188	-1.740E+01	1.253E+02	2.138E+02	FAIL ABUN
IR-192	-5.687E-01	4.783E-01	8.008E-01	FAIL ABUN
HG-203	-2.884E-01	2.545E+00	4.851E+00	FAIL ABUN
BI-207	3.734E-02	5.726E-02	1.221E-01	FAIL ABUN
PB-211	1.592E-01	7.647E-01	1.505E+00	NOT IDENT.
BI-212	1.017E+00	6.763E-01	1.503E+00	FAIL ABUN
RN-219	-5.459E-02	4.470E-01	8.445E-01	FAIL ABUN
RA-223	-2.404E-02	7.101E-01	1.358E+00	FAIL ABUN
AC-227	-5.393E-02	2.419E-01	4.611E-01	NOT IDENT.
TH-227	-5.393E-02	2.419E-01	4.611E-01	NOT IDENT.
PA-231	4.035E-01	5.419E-01	1.026E+00	NOT IDENT.
TH-231	-2.404E-02	7.101E-01	1.358E+00	FAIL ABUN
PA-233	-1.411E-02	7.038E-02	1.328E-01	FAIL ABUN
PA-234	2.013E-01	4.275E-01	8.118E-01	FAIL ABUN
PA-234M	-3.466E+00	5.030E+00	7.949E+00	NOT IDENT.
U-235	-3.661E-02	1.930E-01	3.758E-01	FAIL ABUN
NP-237	-1.411E-02	7.038E-02	1.328E-01	FAIL ABUN
NP-238	0.000E+00	4.939E+40	0.000E+00	SHORT HLIF
NP-239	2.433E-01	2.721E-01	5.232E-01	NOT IDENT.
PU-239	1.755E+02	3.388E+02	6.329E+02	NOT IDENT.
AM-241	-2.320E-02	6.113E-02	1.006E-01	NOT IDENT.
CM-243	2.088E-02	9.693E-02	1.788E-01	NOT IDENT.
BK-247	4.546E-02	8.789E-02	1.631E-01	FAIL ABUN
CM-247	-2.342E-02	4.219E-02	7.538E-02	NOT IDENT.
CF-249	3.872E-02	4.366E-02	9.195E-02	NOT IDENT.
CF-251	-4.147E-02	1.153E-01	2.204E-01	NOT IDENT.

Nuclide Line Activity Report

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
K-40	1460.82	225	10.66*	8.983E-01	1.236E+01	1.236E+01	13.38
CD-109	88.03	98	3.70*	6.753E+00	2.073E+00	3.218E+00	57.88
SN-126	64.28	39	9.60	6.932E+00	3.118E-01	3.118E-01	186.15
	86.94	98	8.90	6.753E+00	8.618E-01	8.618E-01	57.88
	87.57	98	37.00*	6.753E+00	2.073E-01	2.073E-01	57.88
BA-137M	661.66	92	89.90*	1.758E+00	3.066E-01	3.123E-01	27.69
CS-137	661.66	92	85.10*	1.758E+00	3.238E-01	3.299E-01	27.69
TL-208	277.37	-----	6.60	3.709E+00	-----	Line Not Found	-----
	583.19	66	85.00*	1.953E+00	2.085E-01	2.085E-01	47.55
	860.56	22	12.50	1.417E+00	6.458E-01	6.458E-01	70.79
PB-210	46.54	72	4.25*	6.846E+00	1.304E+00	1.337E+00	59.54
BI-211	72.87	38	1.23	6.824E+00	2.380E+00	2.380E+00	97.58
	351.06	207	12.92*	3.013E+00	2.799E+00	2.799E+00	19.60
PB-212	74.82	206	10.28	6.812E+00	1.552E+00	1.552E+00	27.79
	77.11	344	17.10	6.800E+00	1.560E+00	1.560E+00	19.83
	238.63	338	43.60*	4.210E+00	9.716E-01	9.716E-01	14.44
	300.09	-----	3.30	3.465E+00	-----	Line Not Found	-----
BI-214	609.32	129	45.49*	1.883E+00	7.959E-01	7.962E-01	25.23
	1120.29	32	14.92	1.136E+00	9.977E-01	9.981E-01	79.98
	1764.49	27	15.30	7.484E-01	1.261E+00	1.261E+00	48.47
PB-214	74.82	206	5.80	6.812E+00	2.752E+00	2.753E+00	27.79
	77.11	344	9.70	6.800E+00	2.750E+00	2.751E+00	19.83
	87.09	98	3.41	6.753E+00	2.249E+00	2.250E+00	57.88
	242.00	94	7.25	4.161E+00	1.634E+00	1.634E+00	60.91
	295.22	102	18.42	3.512E+00	8.285E-01	8.288E-01	50.97
	351.93	207	35.60*	3.013E+00	1.016E+00	1.016E+00	19.60
RN-222	609.32	129	45.49*	1.883E+00	7.959E-01	7.962E-01	25.23
	1120.29	32	14.92	1.136E+00	9.977E-01	9.981E-01	79.98
	1764.49	27	15.30	7.484E-01	1.261E+00	1.261E+00	48.47
RA-224	240.99	94	4.10*	4.161E+00	2.889E+00	2.889E+00	60.91
RA-226	609.32	129	45.49*	1.883E+00	7.959E-01	7.962E-01	25.23
	1120.29	32	14.92	1.136E+00	9.977E-01	9.981E-01	79.98
	1764.49	27	15.30	7.484E-01	1.261E+00	1.261E+00	48.47
AC-228	105.21	-----	1.10	6.612E+00	-----	Line Not Found	-----
	338.32	60	11.27	3.113E+00	9.020E-01	9.020E-01	83.48
	794.95	-----	4.25	1.512E+00	-----	Line Not Found	-----
	835.71	-----	1.61	1.451E+00	-----	Line Not Found	-----
	911.20	59	25.80*	1.350E+00	8.992E-01	8.992E-01	46.87
	968.97	30	15.80	1.283E+00	7.905E-01	7.905E-01	78.97
RA-228	105.21	-----	1.10	6.612E+00	-----	Line Not Found	-----
	338.32	60	11.27	3.113E+00	9.020E-01	9.020E-01	83.48
	794.95	-----	4.25	1.512E+00	-----	Line Not Found	-----
	835.71	-----	1.61	1.451E+00	-----	Line Not Found	-----
	911.20	59	25.80*	1.350E+00	8.992E-01	8.992E-01	46.87
	968.97	30	15.80	1.283E+00	7.905E-01	7.905E-01	78.97
TH-228	74.82	206	10.28	6.812E+00	1.552E+00	1.552E+00	27.79
	77.11	344	17.10	6.800E+00	1.560E+00	1.560E+00	19.83

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
	238.63	338	43.60*	4.210E+00	9.716E-01	9.716E-01	14.44
	300.09	-----	3.30	3.465E+00	-----	Line Not Found	-----
TH-229	85.43	35	14.70	6.769E+00	1.855E-01	1.855E-01	109.93
	88.47	98	24.00	6.753E+00	3.196E-01	3.196E-01	57.88
	193.51	-----	4.41*	4.960E+00	-----	Line Not Found	-----
	210.85	-----	2.80	4.650E+00	-----	Line Not Found	-----
TH-230	609.32	129	45.49*	1.883E+00	7.959E-01	7.959E-01	25.23
	1120.29	32	14.92	1.136E+00	9.977E-01	9.977E-01	79.98
	1764.49	27	15.30	7.484E-01	1.261E+00	1.261E+00	48.47
TH-232	105.21	-----	1.10	6.612E+00	-----	Line Not Found	-----
	338.32	60	11.27	3.113E+00	9.020E-01	9.020E-01	83.48
	835.71	-----	1.61	1.451E+00	-----	Line Not Found	-----
	911.20	59	25.80*	1.350E+00	8.992E-01	8.992E-01	46.87
	968.97	30	15.80	1.283E+00	7.905E-01	7.905E-01	78.97
TH-234	63.29	39	3.70*	6.932E+00	8.089E-01	8.089E-01	186.15
	92.59	112	4.23	6.724E+00	2.079E+00	2.079E+00	59.80
U-234	609.32	129	45.49*	1.883E+00	7.959E-01	7.959E-01	25.23
	1120.29	32	14.92	1.136E+00	9.977E-01	9.977E-01	79.98
	1764.49	27	15.30	7.484E-01	1.261E+00	1.261E+00	48.47
U-238	63.29	39	3.70*	6.932E+00	8.089E-01	8.089E-01	186.15
	92.59	112	4.23	6.724E+00	2.079E+00	2.079E+00	59.80
AM-243	43.53	-----	5.90	6.236E+00	-----	Line Not Found	-----
	74.66	206	67.20*	6.812E+00	2.375E-01	2.375E-01	27.79
ANH-511	511.00	22	100.00*	2.180E+00	5.304E-02	5.304E-02	194.87

Flag: "*" = Keyline

Total number of lines in spectrum 48
 Number of unidentified lines 8
 Number of lines tentatively identified by NID 40 83.33%

Nuclide Type :

Nuclide	Hlife	Decay	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
K-40	1.25E+09Y	1.00	1.236E+01	1.236E+01	0.165E+01	13.38	
CD-109	461.40D	1.55	2.073E+00	3.218E+00	1.863E+00	57.88	
SN-126	2.30E+05Y	1.00	2.073E-01	2.073E-01	1.200E-01	57.88	
BA-137M	30.08Y	1.02	3.066E-01	3.123E-01	0.865E-01	27.69	
CS-137	30.08Y	1.02	3.238E-01	3.299E-01	0.913E-01	27.69	
TL-208	1.41E+10Y	1.00	2.085E-01	2.085E-01	0.991E-01	47.55	
PB-210	22.20Y	1.03	1.304E+00	1.337E+00	0.796E+00	59.54	
BI-211	7.04E+08Y	1.00	2.799E+00	2.799E+00	0.549E+00	19.60	
PB-212	1.41E+10Y	1.00	9.716E-01	9.716E-01	1.403E-01	14.44	
BI-214	1600.00Y	1.00	7.959E-01	7.962E-01	2.009E-01	25.23	
PB-214	1600.00Y	1.00	1.016E+00	1.016E+00	0.199E+00	19.60	
RN-222	1600.00Y	1.00	7.959E-01	7.962E-01	2.009E-01	25.23	
RA-224	1.41E+10Y	1.00	2.889E+00	2.889E+00	1.760E+00	60.91	
RA-226	1600.00Y	1.00	7.959E-01	7.962E-01	2.009E-01	25.23	
AC-228	1.41E+10Y	1.00	8.992E-01	8.992E-01	4.214E-01	46.87	
RA-228	1.41E+10Y	1.00	8.992E-01	8.992E-01	4.214E-01	46.87	
TH-228	1.41E+10Y	1.00	9.716E-01	9.716E-01	1.403E-01	14.44	
TH-229	7340.00Y	1.00	3.196E-01	3.196E-01	1.850E-01	57.88	K
TH-230	7.54E+04Y	1.00	7.959E-01	7.959E-01	2.008E-01	25.23	
TH-232	1.41E+10Y	1.00	8.992E-01	8.992E-01	4.214E-01	46.87	
TH-234	4.47E+09Y	1.00	8.089E-01	8.089E-01	15.06E-01	186.15	
U-234	2.45E+05Y	1.00	7.959E-01	7.959E-01	2.008E-01	25.23	
U-238	4.47E+09Y	1.00	8.089E-01	8.089E-01	15.06E-01	186.15	
AM-243	7370.00Y	1.00	2.375E-01	2.375E-01	0.660E-01	27.79	
ANH-511	1.00E+09Y	1.00	5.304E-02	5.304E-02	10.34E-02	194.87	
Total Activity :			3.434E+01	3.553E+01			

Grand Total Activity : 3.434E+01 3.553E+01

Flags: "K" = Keyline not found "M" = Manually accepted
 "E" = Manually edited "A" = Nuclide specific abn. limit

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
0	49.54	37	111	0.91	98.92	97	6	8.10E-03	****	7.05E+00	T
0	135.32	22	86	0.53	270.48	267	6	5.28E-03	****	6.13E+00	T
0	186.50	71	130	1.21	372.85	367	12	1.71E-02	77.2	5.09E+00	T
5	245.01	23	20	1.11	489.86	469	24	5.76E-03	80.0	4.12E+00	T
0	269.78	51	49	1.47	539.41	535	9	1.28E-02	60.2	3.80E+00	T
0	345.83	10	42	0.82	691.51	687	8	2.42E-03	****	3.06E+00	T
0	373.54	25	26	3.31	746.93	741	10	6.45E-03	90.1	2.86E+00	T
0	464.09	23	26	1.50	928.04	922	10	5.93E-03	97.6	2.37E+00	T
0	569.43	6	24	0.80	1138.73	1133	9	1.69E-03	****	1.99E+00	T
0	656.55	10	21	0.64	1312.99	1307	9	2.81E-03	****	1.77E+00	T
4	709.52	11	7	1.66	1418.95	1417	14	2.86E-03	80.2	1.66E+00	
4	712.69	15	11	2.51	1425.28	1417	14	3.97E-03	****	1.65E+00	T
0	728.90	55	16	5.34	1457.71	1446	23	1.48E-02	48.5	1.62E+00	
0	786.54	25	18	1.63	1572.99	1565	16	6.91E-03	89.1	1.52E+00	T
0	917.45	10	1	1.69	1834.85	1832	6	2.69E-03	75.2	1.34E+00	
0	948.96	5	16	0.89	1897.88	1890	10	1.51E-03	****	1.31E+00	T
3	972.92	16	4	2.13	1945.80	1933	17	4.40E-03	****	1.28E+00	
0	998.39	4	7	0.81	1996.75	1991	7	1.17E-03	****	1.25E+00	
0	1009.76	20	0	0.54	2019.50	2014	12	5.56E-03	44.7	1.24E+00	
0	1025.22	8	13	0.79	2050.42	2040	14	2.24E-03	****	1.22E+00	T
0	1028.62	9	3	0.54	2057.21	2054	7	2.64E-03	92.1	1.22E+00	T
0	1069.85	17	3	4.39	2139.70	2134	11	4.80E-03	60.8	1.18E+00	
0	1239.08	14	21	1.54	2478.21	2470	14	3.97E-03	****	1.04E+00	T
0	1283.25	7	3	1.06	2566.57	2563	6	2.00E-03	****	1.01E+00	
0	1311.41	4	7	1.32	2622.89	2617	8	1.11E-03	****	9.91E-01	T

Flags: "T" = Tentatively associated

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*****
*
*               GEL Laboratories LLC
*               2040 Savage Road
*               Charleston, SC 29407
*
*****
*
*               DETECTOR AND SAMPLE DATA
*
* Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]R405245010.CNF;1
* Acquisition date   : 3-OCT-2016 04:36:41 Sensitivity      : 3.000
* Detector ID        : GAM39 Energy tolerance: 1.500
* Elapsed live time  : 0 01:00:00.00 Abundance limit : 75.000
* Elapsed real time  : 0 01:00:06.98 Half life ratio  : *****
* Sample date        : 15-DEC-2015 12:35:00 Nuclide Library : SOLID
* Sample ID          : R405245010 Analyst initials: MXR1
* Batch Number       : 1596387 Sample Quantity : 1.4242E+02 GRAM
* Wet wt corr        : 1.00000 Wet Weight      : 0.00000
*                               Dry Weight       : 0.00000
*****
*
*               CALIBRATION INFORMATION
*
* Eff. Cal. date     : 27-JUL-2016 13:04:01 Eff. Geometry  : CAN
* Eff. File          : DKA100:[CANBERRA.GAMMA]EFF_GAM39_CAN.CNF;4
*****

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Combined Critical Level Report

NOTE: Not all "Identified Nuclides" are valid.
 Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Lc (pCi/GRAM)
K-40	2.614E-01
CD-109	7.707E-01
SN-126	4.962E-02
BA-137M	3.144E-02
CS-137	3.321E-02
TL-208	3.162E-02
PB-210	4.102E-01
BI-211	1.823E-01
PB-212	4.268E-02
BI-214	5.961E-02
PB-214	1.709E-01
RN-222	5.961E-02
RA-224	4.578E-01
RA-226	5.961E-02
AC-228	1.553E-01
RA-228	1.553E-01
TH-228	4.268E-02
TH-229	4.213E-01
TH-230	5.958E-02
TH-232	1.553E-01
TH-234	5.369E-01
U-234	5.958E-02
U-238	5.369E-01
AM-243	2.945E-02
ANH-511	2.911E-02

---- Non-Identified Nuclides ----

Nuclide	Lc (pCi/GRAM)	
BE-7	1.223E+01	NOT IDENT.
NA-22	5.953E-02	NOT IDENT.
NA-24	0.000E+00	SHORT HLIF
AL-26	3.142E-02	NOT IDENT.
SC-46	2.240E-01	FAIL ABUN
V-48	0.000E+00	SHORT HLIF

CR-51	0.000E+00	SHORT HLIF
MN-54	6.180E-02	NOT IDENT.
CO-56	5.065E-01	FAIL ABUN
MN-56	0.000E+00	SHORT HLIF
CO-57	3.893E-02	FAIL ABUN
CO-58	5.347E-01	NOT IDENT.
FE-59	7.321E+00	NOT IDENT.
CO-60	4.908E-02	NOT IDENT.
ZN-65	1.835E-01	NOT IDENT.
GE-68	2.583E+00	NOT IDENT.
AS-73	2.176E+00	NOT IDENT.
AS-74	0.000E+00	SHORT HLIF
SE-75	2.091E-01	FAIL ABUN
BR-77	0.000E+00	SHORT HLIF
SR-82	0.000E+00	SHORT HLIF
RB-83	6.539E-01	NOT IDENT.
KR-85	7.170E+00	NOT IDENT.
SR-85	7.029E-01	NOT IDENT.
RB-86	0.000E+00	SHORT HLIF
Y-88	8.040E-02	NOT IDENT.
Y-91	4.479E+02	NOT IDENT.
NB-94	3.450E-02	NOT IDENT.
NB-95	9.138E-01	NOT IDENT.
NB-95M	1.929E+00	NOT IDENT.
ZR-95	1.509E+00	NOT IDENT.
NB-97	0.000E+00	SHORT HLIF
ZR-97	0.000E+00	SHORT HLIF
MO-99	0.000E+00	SHORT HLIF
TC-99M	0.000E+00	SHORT HLIF
RH-101	2.995E-02	NOT IDENT.
RH-102	7.287E-02	NOT IDENT.
RU-103	5.543E+00	FAIL ABUN
RH-106	4.272E-01	NOT IDENT.
RU-106	4.272E-01	NOT IDENT.
AG-108M	3.104E-02	NOT IDENT.
AG-110M	1.205E-01	FAIL ABUN
SN-113	2.105E-01	NOT IDENT.
CD-115	0.000E+00	SHORT HLIF
SN-117M	0.000E+00	SHORT HLIF
TE-123M	1.212E-01	NOT IDENT.
SB-124	2.349E+00	NOT IDENT.
SB-125	9.804E-02	FAIL ABUN
TE-125M	2.302E+02	NOT IDENT.
I-126	0.000E+00	SHORT HLIF
SB-126	0.000E+00	SHORT HLIF
SB-127	0.000E+00	SHORT HLIF
I-131	0.000E+00	SHORT HLIF
I-132	0.000E+00	SHORT HLIF
TE-132	0.000E+00	SHORT HLIF
BA-133	4.160E-02	NOT IDENT.
I-133	0.000E+00	SHORT HLIF
CS-134	6.039E-02	FAIL ABUN
CS-135	1.390E-01	NOT IDENT.
I-135	0.000E+00	SHORT HLIF
CS-136	0.000E+00	SHORT HLIF
CE-139	1.044E-01	NOT IDENT.
BA-140	0.000E+00	SHORT HLIF
LA-140	0.000E+00	SHORT HLIF
CE-141	2.017E+01	NOT IDENT.
CE-143	0.000E+00	SHORT HLIF
CE-144	2.972E-01	NOT IDENT.
PM-144	6.212E-02	NOT IDENT.
PR-144	5.376E+00	NOT IDENT.
PM-146	3.900E-02	NOT IDENT.
ND-147	0.000E+00	SHORT HLIF
PM-147	6.360E+02	NOT IDENT.
PM-149	0.000E+00	SHORT HLIF
EU-150	2.650E-02	FAIL ABUN
EU-152	9.718E-02	FAIL ABUN
GD-153	1.368E-01	NOT IDENT.
EU-154	1.483E-01	NOT IDENT.
EU-155	9.016E-02	FAIL ABUN
TB-160	1.720E+00	FAIL ABUN
HO-166M	5.881E-02	FAIL ABUN
TM-171	5.008E+00	NOT IDENT.
HF-172	2.107E-01	FAIL ABUN
LU-172	8.476E-02	FAIL ABUN
LU-176	2.581E-02	FAIL ABUN

HF-181	4.255E+00	FAIL ABUN
TA-182	1.041E+00	FAIL ABUN
RE-183	9.350E-01	NOT IDENT.
RE-184	2.621E+01	NOT IDENT.
W-188	9.746E+01	FAIL ABUN
IR-192	3.583E-01	FAIL ABUN
HG-203	2.234E+00	FAIL ABUN
BI-207	5.280E-02	FAIL ABUN
PB-211	6.797E-01	NOT IDENT.
BI-212	6.848E-01	FAIL ABUN
RN-219	3.808E-01	FAIL ABUN
RA-223	6.218E-01	FAIL ABUN
AC-227	2.109E-01	NOT IDENT.
TH-227	2.109E-01	NOT IDENT.
PA-231	4.730E-01	NOT IDENT.
TH-231	6.218E-01	FAIL ABUN
PA-233	6.067E-02	FAIL ABUN
PA-234	3.600E-01	FAIL ABUN
PA-234M	3.287E+00	NOT IDENT.
U-235	1.764E-01	FAIL ABUN
NP-237	6.067E-02	FAIL ABUN
NP-238	0.000E+00	SHORT HLIF
NP-239	2.470E-01	NOT IDENT.
PU-239	2.975E+02	NOT IDENT.
AM-241	4.729E-02	NOT IDENT.
CM-243	8.389E-02	NOT IDENT.
BK-247	7.514E-02	FAIL ABUN
CM-247	3.389E-02	NOT IDENT.
CF-249	4.195E-02	NOT IDENT.
CF-251	1.020E-01	NOT IDENT.

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*****
*                               GEL Laboratories LLC                               *
*                               2040 Savage Road                               *
*                               Charleston, SC 29407                          *
*****
*                               DETECTOR AND SAMPLE DATA                       *
*
* Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]R405245010.CNF;1
* Acquisition date   : 3-OCT-2016 04:36:41 Sensitivity      : 3.000
* Detector ID       : GAM39 Energy tolerance: 1.500
* Elapsed live time: 0 01:00:00.00 Abundance limit : 75.000
* Elapsed real time: 0 01:00:06.98 Half life ratio : *****
* Sample date       : 15-DEC-2015 12:35:00 Nuclide Library : SOLID
* Sample ID         : R405245010 Analyst initials: MXR1
* Batch Number      : 1596387 Sample Quantity : 1.4242E+02 GRAM
*                               Quantity Err(%) : 1.4043E-03 %
* Wet wt corr       : 1.00000 Wet Weight      : 0.00000
*                               Dry Weight      : 0.00000
*****
*                               CALIBRATION INFORMATION                         *
*
* Eff. Cal. date    : 27-JUL-2016 13:04:01 Eff. Geometry   : CAN
* Eff. File         : DKA100:[CANBERRA.GAMMA]EFF_GAM39_CAN.CNF;4
*****

```

Combined Activity-MDA Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM)	Act Error (1.96-sigma)	TPU (1.96-sigma)
K-40	1.236E+01	1.746E+00	1.746E+00
CD-109	2.033E+00	1.932E+00	1.932E+00
SN-126	1.310E-01	1.243E-01	1.243E-01
BA-137M	3.123E-01	8.579E-02	8.579E-02
CS-137	3.299E-01	9.062E-02	9.062E-02
TL-208	2.085E-01	9.754E-02	9.754E-02
PB-210	1.337E+00	7.879E-01	7.879E-01
BI-211	5.164E-01	1.269E+00	1.269E+00
PB-212	9.716E-01	1.469E-01	1.469E-01
BI-214	7.962E-01	1.998E-01	1.998E-01
PB-214	1.016E+00	1.998E-01	1.998E-01
RN-222	7.962E-01	1.998E-01	1.998E-01
RA-224	1.424E+00	1.877E+00	1.877E+00
RA-226	7.962E-01	1.998E-01	1.998E-01
AC-228	8.992E-01	4.155E-01	4.155E-01
RA-228	8.992E-01	4.155E-01	4.155E-01
TH-228	9.716E-01	1.469E-01	1.469E-01
TH-229	-3.357E-01	4.930E-01	4.930E-01
TH-230	7.959E-01	1.998E-01	1.998E-01
TH-232	8.992E-01	4.155E-01	4.155E-01
TH-234	8.089E-01	1.487E+00	1.487E+00
U-234	7.959E-01	1.997E-01	1.997E-01
U-238	8.089E-01	1.487E+00	1.487E+00
AM-243	1.660E-01	7.513E-02	7.513E-02
ANH-511	5.304E-02	1.013E-01	1.013E-01

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/GRAM)	K.L Act error (1.96-sigma)	TPU (1.96-sigma)	
BE-7	-2.659E-01	1.444E+01	1.444E+01	NOT IDENT.
NA-22	2.376E-02	6.602E-02	6.688E-02	NOT IDENT.
NA-24	-1.000E+41	3.291E+41	0.000E+00	SHORT HLIF
AL-26	1.726E-02	3.074E-02	3.171E-02	NOT IDENT.
SC-46	-3.753E-01	3.494E-01	3.883E-01	FAIL ABUN

V-48	2.359E+03	1.187E+04	1.192E+04	SHORT HLIF
CR-51	1.085E+02	3.773E+02	3.804E+02	SHORT HLIF
MN-54	5.205E-03	6.949E-02	6.953E-02	NOT IDENT.
CO-56	8.486E-02	5.645E-01	5.658E-01	FAIL ABUN
MN-56	1.000E+41	6.500E+41	0.000E+00	SHORT HLIF
CO-57	1.664E-02	4.454E-02	4.516E-02	FAIL ABUN
CO-58	-6.510E-02	6.188E-01	6.195E-01	NOT IDENT.
FE-59	2.245E+00	8.152E+00	8.215E+00	NOT IDENT.
CO-60	1.896E-02	5.429E-02	5.495E-02	NOT IDENT.
ZN-65	7.579E-04	2.433E-01	2.433E-01	NOT IDENT.
GE-68	4.505E-01	2.922E+00	2.929E+00	NOT IDENT.
AS-73	-1.928E+00	2.882E+00	3.010E+00	NOT IDENT.
AS-74	-1.007E+03	5.752E+03	5.770E+03	SHORT HLIF
SE-75	1.959E-01	2.234E-01	2.402E-01	FAIL ABUN
BR-77	2.165E+37	1.829E+38	0.000E+00	SHORT HLIF
SR-82	2.512E+02	6.147E+02	6.250E+02	SHORT HLIF
RB-83	2.993E-01	8.015E-01	8.128E-01	NOT IDENT.
KR-85	2.655E-01	8.398E+00	8.399E+00	NOT IDENT.
SR-85	2.671E-02	8.231E-01	8.232E-01	NOT IDENT.
RB-86	1.514E+04	1.759E+04	2.842E+04	SHORT HLIF
Y-88	-1.399E-01	1.978E-01	2.076E-01	NOT IDENT.
Y-91	-5.847E+02	6.440E+02	6.958E+02	NOT IDENT.
NB-94	2.375E-02	3.750E-02	3.900E-02	NOT IDENT.
NB-95	6.289E-01	1.004E+00	1.044E+00	NOT IDENT.
NB-95M	-5.176E-02	2.399E+00	2.399E+00	NOT IDENT.
ZR-95	7.320E-01	1.698E+00	1.729E+00	NOT IDENT.
NB-97	1.000E+41	1.626E+41	0.000E+00	SHORT HLIF
ZR-97	1.000E+41	6.768E+41	0.000E+00	SHORT HLIF
MO-99	-2.124E+31	3.572E+31	0.000E+00	SHORT HLIF
TC-99M	-1.000E+41	1.843E+41	0.000E+00	SHORT HLIF
RH-101	-1.655E-02	3.741E-02	3.815E-02	NOT IDENT.
RH-102	9.056E-02	7.310E-02	8.373E-02	NOT IDENT.
RU-103	7.915E-01	6.392E+00	6.402E+00	FAIL ABUN
RH-106	-2.803E-01	5.654E-01	5.794E-01	NOT IDENT.
RU-106	-2.803E-01	5.654E-01	5.794E-01	NOT IDENT.
AG-108M	2.456E-02	3.282E-02	3.464E-02	NOT IDENT.
AG-110M	1.353E-01	1.163E-01	1.313E-01	FAIL ABUN
SN-113	-1.597E-01	2.637E-01	2.733E-01	NOT IDENT.
CD-115	1.331E+38	3.881E+38	0.000E+00	SHORT HLIF
SN-117M	3.866E+04	6.979E+04	7.193E+04	SHORT HLIF
TE-123M	9.339E-02	1.248E-01	1.317E-01	NOT IDENT.
SB-124	1.578E+00	2.331E+00	2.437E+00	NOT IDENT.
SB-125	9.192E-02	9.946E-02	1.077E-01	FAIL ABUN
TE-125M	2.568E+02	2.490E+02	2.746E+02	NOT IDENT.
I-126	3.962E+05	6.829E+05	7.059E+05	SHORT HLIF
SB-126	-1.386E+05	1.014E+06	1.016E+06	SHORT HLIF
SB-127	-1.909E+21	7.337E+21	0.000E+00	SHORT HLIF
I-131	-2.660E+09	3.348E+09	3.556E+09	SHORT HLIF
I-132	-1.000E+41	1.820E+42	0.000E+00	SHORT HLIF
TE-132	5.302E+25	8.327E+25	0.000E+00	SHORT HLIF
BA-133	6.415E-03	5.219E-02	5.227E-02	NOT IDENT.
I-133	-1.000E+41	2.513E+41	0.000E+00	SHORT HLIF
CS-134	-4.108E-04	6.857E-02	6.857E-02	FAIL ABUN
CS-135	6.722E-02	1.649E-01	1.676E-01	NOT IDENT.
I-135	1.000E+41	7.396E+41	0.000E+00	SHORT HLIF
CS-136	-6.396E+04	2.439E+05	2.456E+05	SHORT HLIF
CE-139	4.640E-02	1.108E-01	1.128E-01	NOT IDENT.
BA-140	-6.938E+04	1.086E+06	1.087E+06	SHORT HLIF
LA-140	6.498E+04	1.959E+05	1.981E+05	SHORT HLIF
CE-141	-7.910E+00	2.234E+01	2.262E+01	NOT IDENT.
CE-143	1.000E+41	8.809E+40	0.000E+00	SHORT HLIF
CE-144	-1.524E-01	3.713E-01	3.776E-01	NOT IDENT.
PM-144	-1.919E-02	7.793E-02	7.840E-02	NOT IDENT.
PR-144	1.581E+00	6.224E+00	6.265E+00	NOT IDENT.
PM-146	-2.063E-02	4.870E-02	4.959E-02	NOT IDENT.
ND-147	-2.062E+07	2.956E+07	3.099E+07	SHORT HLIF
PM-147	4.996E+01	7.505E+02	7.509E+02	NOT IDENT.
PM-149	-2.614E+39	5.085E+39	0.000E+00	SHORT HLIF
EU-150	1.169E-02	3.197E-02	3.240E-02	FAIL ABUN
EU-152	8.427E-02	1.348E-01	1.400E-01	FAIL ABUN
GD-153	-1.630E-01	1.922E-01	2.057E-01	NOT IDENT.
EU-154	6.480E-02	1.636E-01	1.662E-01	NOT IDENT.
EU-155	2.543E-02	1.040E-01	1.046E-01	FAIL ABUN
TB-160	4.781E-01	1.878E+00	1.890E+00	FAIL ABUN
HO-166M	8.648E-02	9.327E-02	1.011E-01	FAIL ABUN
TM-171	2.135E+00	5.936E+00	6.014E+00	NOT IDENT.
HF-172	1.431E-01	2.383E-01	2.469E-01	FAIL ABUN
LU-172	3.190E-02	9.285E-02	9.396E-02	FAIL ABUN

LU-176	1.896E-02	2.815E-02	2.942E-02	FAIL ABUN
HF-181	2.934E-01	4.941E+00	4.943E+00	FAIL ABUN
TA-182	4.146E-01	1.153E+00	1.168E+00	FAIL ABUN
RE-183	8.348E-01	1.009E+00	1.076E+00	NOT IDENT.
RE-184	-5.391E-01	3.014E+01	3.014E+01	NOT IDENT.
W-188	-1.740E+01	1.253E+02	1.256E+02	FAIL ABUN
IR-192	-5.687E-01	4.790E-01	5.433E-01	FAIL ABUN
HG-203	-2.884E-01	2.545E+00	2.549E+00	FAIL ABUN
BI-207	3.734E-02	5.728E-02	5.970E-02	FAIL ABUN
PB-211	1.592E-01	7.647E-01	7.681E-01	NOT IDENT.
BI-212	1.017E+00	6.783E-01	8.187E-01	FAIL ABUN
RN-219	-5.459E-02	4.470E-01	4.477E-01	FAIL ABUN
RA-223	-2.404E-02	7.101E-01	7.101E-01	FAIL ABUN
AC-227	-5.393E-02	2.421E-01	2.433E-01	NOT IDENT.
TH-227	-5.393E-02	2.421E-01	2.433E-01	NOT IDENT.
PA-231	4.035E-01	5.487E-01	5.781E-01	NOT IDENT.
TH-231	-2.404E-02	7.101E-01	7.101E-01	FAIL ABUN
PA-233	-1.411E-02	7.038E-02	7.067E-02	FAIL ABUN
PA-234	2.013E-01	4.855E-01	4.939E-01	FAIL ABUN
PA-234M	-3.466E+00	5.032E+00	5.269E+00	NOT IDENT.
U-235	-3.661E-02	1.930E-01	1.937E-01	FAIL ABUN
NP-237	-1.411E-02	7.038E-02	7.067E-02	FAIL ABUN
NP-238	-1.229E+40	4.939E+40	0.000E+00	SHORT HLIF
NP-239	2.433E-01	2.728E-01	2.941E-01	NOT IDENT.
PU-239	1.755E+02	3.389E+02	3.480E+02	NOT IDENT.
AM-241	-2.320E-02	6.116E-02	6.205E-02	NOT IDENT.
CM-243	2.088E-02	9.695E-02	9.740E-02	NOT IDENT.
BK-247	4.546E-02	8.837E-02	9.071E-02	FAIL ABUN
CM-247	-2.342E-02	4.237E-02	4.367E-02	NOT IDENT.
CF-249	3.872E-02	4.378E-02	4.713E-02	NOT IDENT.
CF-251	-4.147E-02	1.154E-01	1.169E-01	NOT IDENT.

 * GEL Laboratories LLC *
 * 2040 Savage Road *
 * Charleston, SC 29407 *
 * GAMMA SPECTROSCOPY BACKGROUND REPORT *

ENERGY	MDA COUNTS	ENERGY	MDA COUNTS	ENERGY	MDA COUNTS
43.53	80.5991	87.09	89.8737	136.47	76.5106
45.60	92.7203	87.57	89.9328	140.51	0.0000
46.54	76.6776	88.03	89.9902	143.76	71.6081
49.72	0.0000	88.34	90.0285	144.24	71.6427
51.35	92.2908	88.47	90.0442	145.44	71.7291
51.87	80.4619	89.96	90.2274	152.43	68.8258
52.39	68.6090	1093.63	90.3103	153.25	0.0000
52.97	83.6152	91.11	0.0000	323.87	51.0693
53.44	103.1164	92.59	90.5469	156.02	0.0000
54.07	94.2597	93.35	90.6379	158.56	0.0000
57.36	0.0000	94.56	84.4121	159.00	50.4480
57.53	85.8204	94.65	79.6432	162.33	54.0368
57.98	67.8069	94.67	79.6458	162.66	0.0000
59.27	92.1252	94.87	79.6666	163.33	59.2379
59.32	92.1332	97.43	102.3132	165.86	57.6558
59.54	92.1686	98.43	75.6330	176.31	56.4631
60.96	86.3370	98.44	75.6339	176.60	0.0000
61.17	77.2766	99.53	61.3127	177.52	59.1320
62.93	109.4238	100.11	73.3888	181.07	0.0000
63.29	109.4905	102.03	94.0687	181.52	54.9750
63.58	109.5438	103.18	71.2567	184.41	65.6097
64.28	120.3347	103.37	71.2738	143.76	56.0495
66.73	85.6452	105.21	67.8035	193.51	65.2333
67.24	139.2891	105.31	67.8121	197.03	60.1184
125.81	136.7076	106.12	76.3640	198.01	53.9732
67.75	140.1699	106.47	76.3967	201.83	57.6909
69.67	113.7107	109.28	58.4055	203.43	58.6544
70.83	95.4452	111.00	92.6650	205.31	46.2818
72.81	105.3916	111.76	0.0000	210.85	59.8941
72.87	105.4013	114.06	74.6446	215.65	49.3508
74.66	105.6909	116.30	0.0000	222.11	47.7919
74.82	105.7165	116.74	71.1946	227.09	43.4453
74.97	105.7402	119.76	68.9767	227.38	38.9281
77.11	106.0810	121.12	50.5784	228.16	0.0000
78.74	106.3379	121.22	50.5840	228.18	34.4222
79.69	98.2946	121.78	51.8505	116.74	34.4222
80.12	98.3561	122.06	51.8668	235.69	45.0880
80.19	0.0000	122.92	61.8053	235.96	37.3527
80.57	92.1719	123.07	53.1615	238.63	37.4253
81.00	75.0342	265.00	58.1461	238.98	0.0000
81.07	75.0415	125.81	59.5228	240.99	37.4887
81.75	63.3785	127.23	80.7288	242.00	37.5158
83.79	105.1540	127.91	77.0601	244.70	37.5879
84.00	105.1850	129.30	68.4624	252.40	0.0000
85.43	92.0257	131.20	69.8496	252.80	40.5683
86.55	89.8064	133.02	69.9855	254.15	0.0000
86.79	89.8360	133.52	68.7718	256.23	42.5129
86.94	89.8551	136.00	66.4441	260.90	0.0000

ENERGY	MDA COUNTS	ENERGY	MDA COUNTS	ENERGY	MDA COUNTS
264.66	31.2313	355.39	0.0000	584.27	14.7195
264.80	35.6969	356.01	30.9463	595.83	0.0000
265.00	36.2594	364.49	0.0000	427.87	26.3320
268.22	36.3372	366.42	0.0000	602.52	0.0000
269.46	37.2998	372.51	23.7891	604.72	21.4281
270.03	37.3136	375.05	29.7766	607.14	19.7974
271.23	29.4082	377.52	23.8521	609.32	16.5112
273.65	0.0000	356.01	24.9288	610.33	16.5179
276.40	44.9648	388.16	22.9855	614.28	18.1966
277.37	37.4943	388.63	0.0000	618.01	16.5649
277.60	36.5625	391.69	35.0420	620.36	15.4743
278.00	36.5720	264.66	30.1733	621.93	18.8013
279.20	47.8623	401.81	30.1910	630.19	0.0000
279.54	49.7500	402.40	35.2336	631.29	11.0974
279.70	49.7554	404.85	26.2058	633.25	22.2111
280.46	49.7802	410.95	34.3735	634.78	0.0000
283.69	37.6481	413.71	17.2103	635.95	18.8974
284.31	0.0000	414.70	0.0000	636.99	0.0000
285.41	31.0939	423.72	0.0000	645.85	21.1964
285.90	0.0000	427.09	23.4371	657.76	3.3611
287.50	31.1356	427.87	12.2327	657.90	0.0000
290.67	38.2885	433.94	20.4472	661.66	15.1458
293.27	0.0000	439.40	22.5505	664.57	0.0000
351.93	45.5088	453.88	24.7676	666.33	0.0000
295.96	45.5303	463.37	17.6205	666.50	0.0000
879.38	48.4548	468.07	21.8130	667.71	0.0000
299.98	38.5117	473.00	0.0000	677.62	21.4353
300.09	38.5142	475.06	26.0498	685.70	0.0000
300.13	38.5150	476.78	25.0269	695.00	0.0000
301.36	32.8344	477.60	25.0361	696.49	26.1165
302.85	48.5824	482.18	26.1327	696.51	19.3035
256.23	39.0956	487.02	0.0000	697.00	0.0000
304.85	0.0000	492.35	0.0000	697.30	14.7657
306.78	28.6462	497.08	24.1993	697.49	14.7662
308.46	42.0575	505.52	19.0078	702.65	13.6543
311.90	41.1873	507.63	0.0000	706.68	22.2184
316.51	43.2220	511.00	25.4028	711.68	14.8371
319.41	0.0000	514.00	25.4355	720.70	0.0000
320.08	0.0000	514.00	25.4355	721.93	0.0000
321.04	40.4491	520.40	17.5339	722.78	12.0283
323.87	40.5166	520.69	0.0000	722.91	12.0287
325.23	42.4791	522.65	0.0000	723.31	13.7490
328.76	0.0000	527.90	0.0000	724.19	10.3147
333.37	29.1003	528.26	22.3894	727.33	9.1781
333.97	32.0211	529.59	21.3354	733.00	13.7925
334.37	45.1311	529.87	0.0000	735.93	6.9031
338.28	33.5594	531.02	0.0000	333.97	9.6691
338.32	33.5602	537.26	0.0000	739.50	0.0000
311.90	33.6009	546.56	0.0000	747.24	10.3923
340.48	33.6009	552.55	25.8428	748.06	19.6355
340.55	0.0000	563.25	7.7862	752.31	8.0963
344.28	23.4248	569.33	19.5125	753.82	0.0000
345.93	24.9122	946.00	19.5132	756.73	13.8989
351.06	31.3516	569.70	26.0195	756.80	13.8994
351.93	31.3665	583.19	17.4382	884.68	22.0569

ENERGY	MDA COUNTS	ENERGY	MDA COUNTS	ENERGY	MDA COUNTS
765.81	15.1005	1274.44	13.4002	1620.50	1.0632
766.42	15.1037	1001.03	10.4351	1621.92	4.2539
766.84	18.5918	1002.74	6.5249	1678.03	0.0000
772.60	0.0000	1004.73	7.4609	1690.97	2.1528
776.52	0.0000	507.63	0.0000	1750.46	0.0000
739.50	0.0000	1025.87	0.0000	1764.49	1.0899
778.90	10.4974	1028.54	0.0000	1063.66	3.4912
783.70	0.0000	1037.84	5.6429	1771.35	5.4559
785.37	14.0249	1038.76	0.0000	1791.20	0.0000
792.07	22.4859	631.29	6.5980	1808.65	1.0979
794.95	17.5830	1048.07	0.0000	1810.72	0.0000
795.86	22.8643	1049.04	10.3749	1836.06	3.3083
810.06	14.1313	1050.41	11.3218		
810.29	14.1323	1063.66	7.5728		
344.28	14.1333	1077.00	0.0000		
810.76	14.1348	1077.34	12.3470		
815.77	0.0000	1085.87	18.0839		
1048.07	0.0000	1093.63	10.4891		
832.01	10.6688	1099.45	13.3685		
834.85	13.3475	1112.07	15.3242		
835.71	15.1308	1112.84	9.8532		
836.80	0.0000	1115.54	13.8032		
846.75	0.0000	1120.29	12.4755		
846.77	16.0730	1120.55	12.4763		
856.80	0.0000	1221.41	12.4787		
860.56	10.7585	1129.67	10.9919		
871.09	14.3887	1131.51	0.0000		
873.19	11.6979	1147.95	0.0000		
875.33	0.0000	1173.23	13.6027		
879.38	9.9157	1177.95	8.7539		
880.51	18.0341	1189.05	9.7510		
883.24	14.4385	1204.77	18.5930		
884.68	7.2224	1221.41	12.7691		
889.28	13.5594	1231.02	12.3742		
894.76	10.8644	1235.36	0.0000		
898.04	12.6866	1238.28	14.7885		
900.72	11.7896	1260.41	0.0000		
903.28	12.7054	1271.87	13.9043		
911.20	18.9186	1274.44	11.9246		
912.08	18.9230	1274.54	11.9246		
923.98	0.0000	1291.59	8.9758		
926.50	15.5276	1298.22	0.0000		
929.11	8.2263	1312.11	0.0000		
937.49	19.2389	1332.49	9.0538		
944.13	0.0000	1362.66	0.0000		
946.00	14.6919	1365.19	5.0638		
949.00	5.8816	1368.63	0.0000		
667.71	0.0000	1384.29	3.0500		
962.31	15.6786	1408.01	3.0646		
964.08	19.1928	1457.56	0.0000		
966.17	25.1124	1460.82	4.1287		
911.20	13.8588	1489.16	10.3778		
968.97	13.8588	1505.03	7.2867		
983.53	0.0000	1584.12	6.3376		
984.45	0.0000	1596.21	0.0000		

```

*****
*                               GEL Laboratories LLC                               *
*                               2040 Savage Road                               *
*                               Charleston, SC 29407                          *
*****
Configuration   : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]R405245011.CNF;1
Background file : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]BKG_GAM08.CNF;320
Background date : 2-OCT-2016 11:00:23.
Sample date     : 15-DEC-2015 12:53:00 Acquisition date : 3-OCT-2016 04:45:57.
Sample ID      : R405245011 Sample quantity   : 1.34661E+02 GRAM
Detector name  : GAM08 Detector geometry: CAN
Elapsed live time: 0 01:00:00.00 Elapsed real time: 0 01:00:00.63 0.0%
Energy tolerance : 1.50000 keV Analyst Initials : MXR1
Abundance limit : 75.00000 Sensitivity : 3.00000
Batch ID      : 1596387 Detector SN# :
Matrix Spike ID : LCS ID : 1556
*****

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BACKGROUND CORRECTED SAMPLE PEAK REPORT

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	30.20*	13	138	1.40	60.62	58	10	3.74E-03	169.4	
2	0	63.99*	28	180	1.68	128.22	122	11	7.78E-03	97.0	
3	1	74.77*	76	158	1.18	149.80	145	13	2.12E-02	29.1	2.12E+00
4	1	76.97*	115	149	1.17	154.20	145	13	3.19E-02	20.3	
5	0	86.96*	24	180	0.98	174.19	170	9	6.67E-03	104.2	
6	0	93.05*	30	182	1.00	186.38	181	9	8.47E-03	86.7	
7	0	105.94	24	130	1.40	212.17	207	10	6.78E-03	90.2	
8	0	117.30	30	64	0.80	234.91	232	7	8.20E-03	48.8	
9	0	128.15	14	89	1.56	256.61	255	8	3.81E-03	121.8	
10	0	143.80*	34	115	1.52	287.92	282	11	9.42E-03	65.5	
11	0	185.68*	78	76	1.13	371.71	368	9	2.17E-02	24.8	
12	0	210.21	10	108	0.73	420.80	414	8	2.78E-03	182.8	
13	3	238.61*	313	49	1.37	477.62	470	28	8.68E-02	7.0	1.40E+00
14	3	241.91	84	63	1.79	484.23	470	28	2.34E-02	24.2	
15	0	295.42*	92	50	1.27	591.29	587	8	2.54E-02	17.4	
16	0	338.69*	86	45	1.45	677.86	671	13	2.40E-02	19.7	
17	0	351.84*	163	68	1.23	704.18	699	12	4.53E-02	12.9	
18	0	463.12	43	33	1.92	926.82	921	12	1.20E-02	31.4	
19	0	511.20*	47	32	1.87	1023.02	1014	19	1.31E-02	38.6	
20	0	583.17*	99	30	1.42	1167.02	1160	15	2.74E-02	15.9	
21	0	609.24*	126	38	1.44	1219.17	1212	15	3.49E-02	14.1	
22	0	661.99	91	39	1.69	1324.71	1318	11	2.52E-02	16.9	
23	0	681.17	8	15	1.34	1363.10	1355	11	2.28E-03	100.9	
24	0	727.15*	30	18	0.89	1455.08	1448	14	8.21E-03	36.9	
25	0	734.16	19	9	1.34	1469.11	1462	12	5.37E-03	38.4	
26	0	911.20*	75	4	1.65	1823.30	1818	13	2.09E-02	13.1	
27	0	969.48*	56	14	2.12	1939.91	1932	20	1.55E-02	21.9	
28	0	990.07	6	15	3.31	1981.10	1973	14	1.71E-03	136.2	
29	0	1120.43*	19	16	1.66	2241.89	2236	13	5.29E-03	50.4	
30	0	1166.61	14	3	2.84	2334.28	2327	15	3.86E-03	40.1	
31	0	1172.34	6	2	0.48	2345.73	2341	8	1.70E-03	56.6	
32	3	1235.58	11	5	1.88	2472.24	2470	13	2.93E-03	36.4	3.05E-01
33	3	1238.09	23	9	2.32	2477.27	2470	13	6.45E-03	35.0	
34	0	1288.00	7	8	1.00	2577.13	2570	11	1.96E-03	86.9	

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
35	0	1460.93	245	15	2.06	2923.05	2915	15	6.80E-02	7.3	
36	0	1560.44	8	0	3.30	3122.13	3116	11	2.22E-03	35.4	

Flag: "*" = Peak area was modified by background subtraction

```

Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]R405245011.CNF;1
Analyses by       : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.4,INTERF V2.4
Sample title      : MXR1
Sample date       : 15-DEC-2015 12:53:00 Acquisition date : 3-OCT-2016 04:45:57
Sample ID         : R405245011 Sample quantity   : 134.66 GRAM
Sample type       : SOLID Sample geometry    :
Detector name     : GAMMA8 Detector geometry: CAN
Elapsed live time: 0 01:00:00.00 Elapsed real time: 0 01:00:00.63 0.0%
Energy tolerance  : 1.50 keV Half life ratio   : 10.00
Errors propagated: No Systematic Error   : 0.00 %
Efficiency type   : Linear Efficiencies at    : Peak Energy
Abundance limit   : 75.00
    
```

Interference Report

Interfering		Interfered	
Nuclide	Line	Nuclide	Line
PB-214	87.09	EU-155	86.55
PB-214	87.09	SN-126	86.94
PB-214	87.09	SN-126	87.57
PB-214	87.09	CD-109	88.03
PB-214	242.00	RA-224	240.99
PB-214	74.82	AM-243	74.66
PB-214	74.82	TH-228	74.82
PB-214	74.82	PB-212	74.82
PB-214	351.93	BI-211	351.06

Nuclide Type:

Nuclide	Energy	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error	Status
K-40	1460.82	10.66*	9.670E-01	1.264E+01	1.264E+01	14.54	OK
CD-109	88.03	3.70*	4.279E+00	2.106E-01	3.268E-01	990.75	OK
SN-126	64.28	9.60	2.216E+00	8.784E-01	8.784E-01	194.00	OK
	86.94	8.90	4.279E+00	8.754E-02	8.754E-02	990.75	OK
	87.57	37.00*	4.279E+00	2.106E-02	2.106E-02	990.75	OK
BA-137M	661.66	89.90*	1.814E+00	3.158E-01	3.217E-01	33.79	OK
CS-137	661.66	85.10*	1.814E+00	3.336E-01	3.398E-01	33.79	OK
EU-155	86.55	30.70	4.279E+00	2.538E-02	2.852E-02	990.75	OK
	105.31	21.10*	5.159E+00	1.449E-01	1.629E-01	180.40	OK
TL-208	277.37	6.60	3.710E+00	----- Line	Not Found	-----	Absent
	583.19	85.00*	2.007E+00	3.312E-01	3.312E-01	31.90	OK
	860.56	12.50	1.478E+00	----- Line	Not Found	-----	Absent
BI-211	72.87	1.23	3.135E+00	----- Line	Not Found	-----	Absent
	351.06	12.92*	3.046E+00	1.246E-01	1.246E-01	829.07	OK
PB-212	74.82	10.28	3.314E+00	9.993E-01	9.993E-01	87.79	OK
	77.11	17.10	3.512E+00	1.263E+00	1.263E+00	40.63	OK
	238.63	43.60*	4.174E+00	1.049E+00	1.049E+00	14.02	OK
	300.09	3.30	3.479E+00	----- Line	Not Found	-----	Absent
BI-214	609.32	45.49*	1.938E+00	8.132E-01	8.134E-01	28.23	OK
	1120.29	14.92	1.202E+00	5.780E-01	5.782E-01	100.70	OK
	1764.49	15.30	8.180E-01	----- Line	Not Found	-----	Absent
PB-214	74.82	5.80	3.318E+00	----- Line	Not Found	-----	<<INT Reject
	77.11	9.70	3.512E+00	2.227E+00	2.227E+00	40.63	OK
	87.09	3.41	4.288E+00	----- Line	Not Found	-----	<<INT Reject
	242.00	7.25	4.130E+00	----- Line	Not Found	-----	<<INT Reject
	295.22	18.42	3.524E+00	8.489E-01	8.492E-01	34.78	OK
	351.93	35.60*	3.046E+00	----- Line	Not Found	-----	<<INT Reject
RN-222	609.32	45.49*	1.938E+00	8.132E-01	8.134E-01	28.23	OK
	1120.29	14.92	1.202E+00	5.780E-01	5.782E-01	100.70	OK
	1764.49	15.30	8.180E-01	----- Line	Not Found	-----	Absent
RA-224	240.99	4.10*	4.131E+00	1.528E+00	1.528E+00	101.81	OK
RA-226	609.32	45.49*	1.938E+00	8.132E-01	8.134E-01	28.23	OK
	1120.29	14.92	1.202E+00	5.780E-01	5.782E-01	100.70	OK
	1764.49	15.30	8.180E-01	----- Line	Not Found	-----	Absent
AC-228	105.21	1.10	5.159E+00	2.779E+00	2.779E+00	180.40	OK
	338.32	11.27	3.145E+00	1.453E+00	1.453E+00	39.44	OK
	794.95	4.25	1.572E+00	----- Line	Not Found	-----	Absent
	835.71	1.61	1.512E+00	----- Line	Not Found	-----	Absent
	911.20	25.80*	1.414E+00	1.140E+00	1.140E+00	26.14	OK
	968.97	15.80	1.347E+00	1.445E+00	1.445E+00	43.78	OK
RA-228	105.21	1.10	5.159E+00	2.779E+00	2.779E+00	180.40	OK
	338.32	11.27	3.145E+00	1.453E+00	1.453E+00	39.44	OK
	794.95	4.25	1.572E+00	----- Line	Not Found	-----	Absent
	835.71	1.61	1.512E+00	----- Line	Not Found	-----	Absent
	911.20	25.80*	1.414E+00	1.140E+00	1.140E+00	26.14	OK
	968.97	15.80	1.347E+00	1.445E+00	1.445E+00	43.78	OK
TH-228	74.82	10.28	3.314E+00	9.993E-01	9.993E-01	87.79	OK
	77.11	17.10	3.512E+00	1.263E+00	1.263E+00	40.63	OK
	238.63	43.60*	4.174E+00	1.049E+00	1.049E+00	14.02	OK

Nuclide Type:

Nuclide	Energy	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error	Status
	300.09	3.30	3.479E+00	----- Line	Not Found	-----	Absent
TH-230	609.32	45.49*	1.938E+00	8.132E-01	8.132E-01	28.23	OK
	1120.29	14.92	1.202E+00	5.780E-01	5.780E-01	100.70	OK
	1764.49	15.30	8.180E-01	----- Line	Not Found	-----	Absent
TH-232	105.21	1.10	5.159E+00	2.779E+00	2.779E+00	180.40	OK
	338.32	11.27	3.145E+00	1.453E+00	1.453E+00	39.44	OK
	835.71	1.61	1.512E+00	----- Line	Not Found	-----	Absent
	911.20	25.80*	1.414E+00	1.140E+00	1.140E+00	26.14	OK
	968.97	15.80	1.347E+00	1.445E+00	1.445E+00	43.78	OK
TH-234	63.29	3.70*	2.216E+00	2.279E+00	2.279E+00	194.00	OK
	92.59	4.23	4.640E+00	1.012E+00	1.012E+00	173.37	OK
U-234	609.32	45.49*	1.938E+00	8.132E-01	8.132E-01	28.23	OK
	1120.29	14.92	1.202E+00	5.780E-01	5.780E-01	100.70	OK
	1764.49	15.30	8.180E-01	----- Line	Not Found	-----	Absent
U-235	89.96	3.47	4.467E+00	----- Line	Not Found	-----	Absent
	93.35	5.60	4.640E+00	7.645E-01	7.645E-01	173.37	OK
	143.76	10.96*	5.443E+00	3.595E-01	3.595E-01	130.91	OK
	163.33	5.08	5.246E+00	----- Line	Not Found	-----	Absent
	185.72	57.20	4.933E+00	1.721E-01	1.721E-01	49.68	OK
	205.31	5.01	4.641E+00	----- Line	Not Found	-----	Absent
U-238	63.29	3.70*	2.216E+00	2.279E+00	2.279E+00	194.00	OK
	92.59	4.23	4.640E+00	1.012E+00	1.012E+00	173.37	OK
AM-243	43.53	5.90	2.327E-01	----- Line	Not Found	-----	Absent
	74.66	67.20*	3.314E+00	1.529E-01	1.529E-01	87.79	OK
ANH-511	511.00	100.00*	2.232E+00	1.225E-01	1.225E-01	77.20	OK

Flag: "*" = Keyline

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*****
*                                     GEL Laboratories LLC                       *
*                                     2040 Savage Road                          *
*                                     Charleston, SC 29407                       *
*****
*                                     DETECTOR AND SAMPLE DATA                  *
*
* Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]R405245011.CNF;1
* Acquisition date   : 3-OCT-2016 04:45:57 Sensitivity      : 3.000
* Detector ID       : GAM08 Energy tolerance: 1.500
* Elapsed live time : 0 01:00:00.00 Abundance limit : 75.000
* Elapsed real time : 0 01:00:00.63 Half life ratio : *****
* Sample date       : 15-DEC-2015 12:53:00 Analyst initials: MXR1
* Sample ID         : R405245011 Sample Quantity : 1.3466E+02 GRAM
* Batch Number      : 1596387 Wet Weight : 0.00000
* Wet wt corr       : 1.00000 Dry Weight : 0.00000
* Nuclide Library   : SOLID.NLB;6
*****
*                                     CALIBRATION INFORMATION                    *
*
* Eff. Cal. date    : 21-JUL-2016 06:09:19 Eff. Geometry   : CAN
* Eff. File         : DKA100:[CANBERRA.GAMMA]EFF_GAM08_CAN.CNF;14
*****

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Combined Activity-MDA Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM)	Cnt uncert (1.96-sigma)	MDA (pCi/GRAM)
K-40	1.264E+01	1.801E+00	8.505E-01
CD-109	3.268E-01	3.173E+00	2.838E+00
SN-126	2.106E-02	2.044E-01	1.831E-01
BA-137M	3.217E-01	1.065E-01	9.083E-02
CS-137	3.398E-01	1.125E-01	9.595E-02
EU-155	1.629E-01	2.879E-01	2.397E-01
TL-208	3.312E-01	1.035E-01	7.035E-02
BI-211	1.246E-01	1.012E+00	4.464E-01
PB-212	1.049E+00	1.442E-01	1.092E-01
BI-214	8.134E-01	2.250E-01	1.565E-01
PB-214	8.944E-01	2.264E-01	3.620E-01
RN-222	8.134E-01	2.250E-01	1.565E-01
RA-224	1.528E+00	1.524E+00	1.170E+00
RA-226	8.134E-01	2.250E-01	1.565E-01
AC-228	1.140E+00	2.920E-01	2.528E-01
RA-228	1.140E+00	2.920E-01	2.528E-01
TH-228	1.049E+00	1.442E-01	1.092E-01
TH-230	8.132E-01	2.249E-01	1.565E-01
TH-232	1.140E+00	2.920E-01	2.528E-01
TH-234	2.279E+00	4.333E+00	3.044E+00
U-234	8.132E-01	2.249E-01	1.564E-01
U-235	3.595E-01	4.612E-01	3.495E-01
U-238	2.279E+00	4.333E+00	3.044E+00
AM-243	1.529E-01	1.315E-01	1.345E-01
ANH-511	1.225E-01	9.268E-02	4.960E-02

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/GRAM)	K.L. Cnt Uncert (1.96-sigma)	MDA (pCi/GRAM)	
BE-7	-1.330E+00	1.339E+01	2.512E+01	NOT IDENT.
NA-22	-4.432E-02	6.096E-02	1.013E-01	NOT IDENT.
NA-24	0.000E+00	1.336E+41	0.000E+00	SHORT HLIF
AL-26	1.886E-02	2.930E-02	8.094E-02	NOT IDENT.
SC-46	2.636E-01	4.071E-01	9.025E-01	FAIL ABUN

V-48	0.000E+00	1.363E+04	0.000E+00	SHORT HLIF
CR-51	0.000E+00	4.268E+02	0.000E+00	SHORT HLIF
MN-54	8.086E-02	7.036E-02	1.639E-01	NOT IDENT.
CO-56	3.830E-02	5.338E-01	1.074E+00	FAIL ABUN
MN-56	0.000E+00	1.960E+41	0.000E+00	SHORT HLIF
CO-57	8.816E-03	6.114E-02	1.118E-01	NOT IDENT.
CO-58	-8.355E-02	6.033E-01	1.192E+00	NOT IDENT.
FE-59	-3.504E+00	6.768E+00	1.211E+01	NOT IDENT.
CO-60	1.727E-02	4.713E-02	1.018E-01	FAIL ABUN
ZN-65	-3.176E-05	2.086E-01	3.646E-01	NOT IDENT.
GE-68	-2.089E+00	3.026E+00	5.196E+00	NOT IDENT.
AS-73	2.129E+00	1.479E+01	2.825E+01	NOT IDENT.
AS-74	0.000E+00	5.112E+03	0.000E+00	SHORT HLIF
SE-75	-1.073E-01	2.257E-01	4.173E-01	NOT IDENT.
BR-77	0.000E+00	3.207E+36	0.000E+00	SHORT HLIF
SR-82	0.000E+00	6.100E+02	0.000E+00	SHORT HLIF
RB-83	-1.315E-01	7.615E-01	1.406E+00	NOT IDENT.
KR-85	1.102E+01	8.017E+00	1.782E+01	NOT IDENT.
SR-85	1.077E+00	7.852E-01	1.745E+00	NOT IDENT.
RB-86	0.000E+00	2.735E+04	0.000E+00	SHORT HLIF
Y-88	4.602E-02	2.413E-01	5.645E-01	NOT IDENT.
Y-91	7.625E+00	5.774E+02	1.131E+03	NOT IDENT.
NB-94	1.393E-02	3.426E-02	7.282E-02	NOT IDENT.
NB-95	-1.565E-01	1.035E+00	1.990E+00	NOT IDENT.
NB-95M	3.007E-01	2.872E+00	5.029E+00	NOT IDENT.
ZR-95	7.957E-01	1.721E+00	3.613E+00	NOT IDENT.
NB-97	0.000E+00	1.960E+41	0.000E+00	SHORT HLIF
ZR-97	0.000E+00	1.247E+41	0.000E+00	SHORT HLIF
MO-99	0.000E+00	3.184E+31	0.000E+00	SHORT HLIF
TC-99M	0.000E+00	1.835E+41	0.000E+00	SHORT HLIF
RH-101	2.777E-02	6.627E-02	6.666E-02	FAIL ABUN
RH-102	7.343E-02	7.262E-02	1.573E-01	NOT IDENT.
RU-103	-3.574E-01	5.327E+00	1.019E+01	FAIL ABUN
RH-106	-3.463E-01	6.066E-01	1.031E+00	NOT IDENT.
RU-106	-3.463E-01	6.066E-01	1.031E+00	NOT IDENT.
AG-108M	3.395E-02	3.119E-02	6.814E-02	NOT IDENT.
AG-110M	7.868E-02	1.082E-01	2.442E-01	NOT IDENT.
SN-113	-8.900E-02	2.811E-01	5.141E-01	NOT IDENT.
CD-115	0.000E+00	3.562E+38	0.000E+00	SHORT HLIF
SN-117M	0.000E+00	8.922E+04	0.000E+00	SHORT HLIF
TE-123M	1.445E-02	1.540E-01	2.773E-01	NOT IDENT.
SB-124	1.202E+00	1.360E+00	4.310E+00	NOT IDENT.
SB-125	9.768E-02	1.210E-01	2.539E-01	FAIL ABUN
TE-125M	-4.586E+01	3.318E+02	5.479E+02	NOT IDENT.
I-126	0.000E+00	9.824E+05	0.000E+00	SHORT HLIF
SB-126	0.000E+00	7.982E+05	0.000E+00	SHORT HLIF
SB-127	0.000E+00	6.321E+21	0.000E+00	SHORT HLIF
I-131	0.000E+00	3.350E+09	0.000E+00	SHORT HLIF
I-132	0.000E+00	1.960E+41	0.000E+00	SHORT HLIF
TE-132	0.000E+00	9.724E+25	0.000E+00	SHORT HLIF
BA-133	-3.252E-02	5.774E-02	9.021E-02	NOT IDENT.
I-133	0.000E+00	1.960E+41	0.000E+00	SHORT HLIF
CS-134	3.421E-02	5.578E-02	1.215E-01	NOT IDENT.
CS-135	-6.406E-02	1.522E-01	2.828E-01	NOT IDENT.
I-135	0.000E+00	1.960E+41	0.000E+00	SHORT HLIF
CS-136	0.000E+00	2.924E+05	0.000E+00	SHORT HLIF
CE-139	8.620E-03	1.300E-01	2.329E-01	NOT IDENT.
BA-140	0.000E+00	1.070E+06	0.000E+00	SHORT HLIF
LA-140	0.000E+00	2.502E+05	0.000E+00	SHORT HLIF
CE-141	1.307E+01	2.434E+01	4.311E+01	NOT IDENT.
CE-143	0.000E+00	1.095E+41	0.000E+00	SHORT HLIF
CE-144	-7.755E-02	4.497E-01	7.864E-01	NOT IDENT.
PM-144	4.964E-03	5.599E-02	1.153E-01	NOT IDENT.
PR-144	4.296E-01	4.846E+00	9.979E+00	NOT IDENT.
PM-146	4.815E-02	5.826E-02	1.200E-01	NOT IDENT.
ND-147	0.000E+00	1.954E+07	0.000E+00	SHORT HLIF
PM-147	4.691E+02	1.107E+03	1.934E+03	NOT IDENT.
PM-149	0.000E+00	5.560E+39	0.000E+00	SHORT HLIF
EU-150	1.063E-03	2.835E-02	4.971E-02	FAIL ABUN
EU-152	1.170E-02	1.045E-01	1.959E-01	NOT IDENT.
GD-153	4.474E-02	2.049E-01	3.848E-01	NOT IDENT.
EU-154	-1.122E-01	1.494E-01	2.466E-01	NOT IDENT.
TB-160	-1.259E+00	1.840E+00	3.255E+00	FAIL ABUN
HO-166M	-2.834E-03	6.056E-02	1.219E-01	FAIL ABUN
TM-171	-6.785E+00	3.711E+01	6.920E+01	NOT IDENT.
HF-172	-2.480E-01	2.936E-01	4.393E-01	FAIL ABUN
LU-172	1.984E-02	8.757E-02	1.850E-01	FAIL ABUN
LU-176	7.158E-03	2.943E-02	5.781E-02	FAIL ABUN

HF-181	-2.444E+00	4.463E+00	7.821E+00	NOT IDENT.
TA-182	6.995E-01	1.166E+00	2.445E+00	FAIL ABUN
RE-183	-9.270E-01	4.306E+00	8.004E+00	NOT IDENT.
RE-184	-2.450E+01	3.041E+01	5.210E+01	NOT IDENT.
W-188	-2.303E+01	1.305E+02	2.207E+02	FAIL ABUN
IR-192	3.943E-01	5.591E-01	1.135E+00	FAIL ABUN
HG-203	-2.502E+00	2.633E+00	4.582E+00	NOT IDENT.
BI-207	-1.114E-02	6.555E-02	1.239E-01	FAIL ABUN
PB-210	-1.649E+00	6.727E+00	1.265E+01	NOT IDENT.
PB-211	3.165E-01	8.197E-01	1.626E+00	NOT IDENT.
BI-212	1.480E+00	1.070E+00	1.568E+00	FAIL ABUN
RN-219	-2.221E-01	4.547E-01	8.143E-01	NOT IDENT.
RA-223	-9.873E-03	6.912E-01	1.290E+00	FAIL ABUN
AC-227	2.809E-01	2.651E-01	5.592E-01	NOT IDENT.
TH-227	2.809E-01	2.651E-01	5.592E-01	NOT IDENT.
TH-229	-5.536E-02	5.361E-01	1.037E+00	FAIL ABUN
PA-231	9.694E-03	5.179E-01	9.950E-01	NOT IDENT.
TH-231	-9.873E-03	6.912E-01	1.290E+00	FAIL ABUN
PA-233	2.849E-02	7.125E-02	1.421E-01	NOT IDENT.
PA-234	-8.599E-02	3.127E-01	5.964E-01	FAIL ABUN
PA-234M	-1.644E+00	5.129E+00	1.003E+01	NOT IDENT.
NP-237	2.849E-02	7.125E-02	1.421E-01	NOT IDENT.
NP-238	0.000E+00	4.612E+00	0.000E+00	SHORT HLIF
NP-239	4.421E-01	4.225E-01	5.632E-01	FAIL ABUN
PU-239	2.529E+02	6.035E+02	7.063E+02	FAIL ABUN
AM-241	1.417E-01	2.217E-01	4.115E-01	NOT IDENT.
CM-243	1.966E-02	1.340E-01	2.297E-01	NOT IDENT.
BK-247	-6.146E-02	8.287E-02	1.488E-01	FAIL ABUN
CM-247	-3.382E-02	4.227E-02	7.239E-02	NOT IDENT.
CF-249	5.843E-03	4.813E-02	9.244E-02	NOT IDENT.
CF-251	9.295E-02	1.312E-01	2.700E-01	NOT IDENT.

Nuclide Line Activity Report

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
K-40	1460.82	234	10.66*	9.670E-01	1.264E+01	1.264E+01	14.54
CD-109	88.03	28	3.70*	4.279E+00	9.929E-01	1.541E+00	208.30
SN-126	64.28	34	9.60	2.216E+00	8.784E-01	8.784E-01	194.00
	86.94	28	8.90	4.279E+00	4.128E-01	4.128E-01	208.30
	87.57	28	37.00*	4.279E+00	9.929E-02	9.929E-02	208.30
BA-137M	661.66	92	89.90*	1.814E+00	3.158E-01	3.217E-01	33.79
CS-137	661.66	92	85.10*	1.814E+00	3.336E-01	3.398E-01	33.79
EU-155	86.55	28	30.70	4.279E+00	1.197E-01	1.345E-01	208.30
	105.31	28	21.10*	5.159E+00	1.449E-01	1.629E-01	180.40
TL-208	277.37	-----	6.60	3.710E+00	-----	Line Not Found	-----
	583.19	101	85.00*	2.007E+00	3.312E-01	3.312E-01	31.90
	860.56	-----	12.50	1.478E+00	-----	Line Not Found	-----
BI-211	72.87	-----	1.23	3.135E+00	-----	Line Not Found	-----
	351.06	174	12.92*	3.046E+00	2.464E+00	2.464E+00	25.83
PB-212	74.82	90	10.28	3.314E+00	1.478E+00	1.478E+00	58.27
	77.11	136	17.10	3.512E+00	1.263E+00	1.263E+00	40.63
	238.63	342	43.60*	4.174E+00	1.049E+00	1.049E+00	14.02
	300.09	-----	3.30	3.479E+00	-----	Line Not Found	-----
BI-214	609.32	129	45.49*	1.938E+00	8.132E-01	8.134E-01	28.23
	1120.29	19	14.92	1.202E+00	5.780E-01	5.782E-01	100.70
	1764.49	-----	15.30	8.180E-01	-----	Line Not Found	-----
PB-214	74.82	90	5.80	3.314E+00	2.620E+00	2.621E+00	58.27
	77.11	136	9.70	3.512E+00	2.227E+00	2.227E+00	40.63
	87.09	28	3.41	4.279E+00	1.077E+00	1.078E+00	208.30
	242.00	92	7.25	4.131E+00	1.713E+00	1.713E+00	48.37
	295.22	99	18.42	3.524E+00	8.489E-01	8.492E-01	34.78
RN-222	351.93	174	35.60*	3.046E+00	8.941E-01	8.944E-01	25.83
	609.32	129	45.49*	1.938E+00	8.132E-01	8.134E-01	28.23
	1120.29	19	14.92	1.202E+00	5.780E-01	5.782E-01	100.70
	1764.49	-----	15.30	8.180E-01	-----	Line Not Found	-----
RA-224	240.99	92	4.10*	4.131E+00	3.029E+00	3.029E+00	48.37
RA-226	609.32	129	45.49*	1.938E+00	8.132E-01	8.134E-01	28.23
	1120.29	19	14.92	1.202E+00	5.780E-01	5.782E-01	100.70
	1764.49	-----	15.30	8.180E-01	-----	Line Not Found	-----
AC-228	105.21	28	1.10	5.159E+00	2.779E+00	2.779E+00	180.40
	338.32	92	11.27	3.145E+00	1.453E+00	1.453E+00	39.44
	794.95	-----	4.25	1.572E+00	-----	Line Not Found	-----
	835.71	-----	1.61	1.512E+00	-----	Line Not Found	-----
	911.20	75	25.80*	1.414E+00	1.140E+00	1.140E+00	26.14
	968.97	55	15.80	1.347E+00	1.445E+00	1.445E+00	43.78
RA-228	105.21	28	1.10	5.159E+00	2.779E+00	2.779E+00	180.40
	338.32	92	11.27	3.145E+00	1.453E+00	1.453E+00	39.44
	794.95	-----	4.25	1.572E+00	-----	Line Not Found	-----
	835.71	-----	1.61	1.512E+00	-----	Line Not Found	-----
	911.20	75	25.80*	1.414E+00	1.140E+00	1.140E+00	26.14
	968.97	55	15.80	1.347E+00	1.445E+00	1.445E+00	43.78
TH-228	74.82	90	10.28	3.314E+00	1.478E+00	1.478E+00	58.27

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
	77.11	136	17.10	3.512E+00	1.263E+00	1.263E+00	40.63
	238.63	342	43.60*	4.174E+00	1.049E+00	1.049E+00	14.02
	300.09	-----	3.30	3.479E+00	-----	Line Not Found	-----
TH-230	609.32	129	45.49*	1.938E+00	8.132E-01	8.132E-01	28.23
	1120.29	19	14.92	1.202E+00	5.780E-01	5.780E-01	100.70
	1764.49	-----	15.30	8.180E-01	-----	Line Not Found	-----
TH-232	105.21	28	1.10	5.159E+00	2.779E+00	2.779E+00	180.40
	338.32	92	11.27	3.145E+00	1.453E+00	1.453E+00	39.44
	835.71	-----	1.61	1.512E+00	-----	Line Not Found	-----
	911.20	75	25.80*	1.414E+00	1.140E+00	1.140E+00	26.14
	968.97	55	15.80	1.347E+00	1.445E+00	1.445E+00	43.78
TH-234	63.29	34	3.70*	2.216E+00	2.279E+00	2.279E+00	194.00
	92.59	36	4.23	4.640E+00	1.012E+00	1.012E+00	173.37
U-234	609.32	129	45.49*	1.938E+00	8.132E-01	8.132E-01	28.23
	1120.29	19	14.92	1.202E+00	5.780E-01	5.780E-01	100.70
	1764.49	-----	15.30	8.180E-01	-----	Line Not Found	-----
U-235	89.96	-----	3.47	4.467E+00	-----	Line Not Found	-----
	93.35	36	5.60	4.640E+00	7.645E-01	7.645E-01	173.37
	143.76	38	10.96*	5.443E+00	3.595E-01	3.595E-01	130.91
	163.33	-----	5.08	5.246E+00	-----	Line Not Found	-----
	185.72	87	57.20	4.933E+00	1.721E-01	1.721E-01	49.68
	205.31	-----	5.01	4.641E+00	-----	Line Not Found	-----
U-238	63.29	34	3.70*	2.216E+00	2.279E+00	2.279E+00	194.00
	92.59	36	4.23	4.640E+00	1.012E+00	1.012E+00	173.37
AM-243	43.53	-----	5.90	2.327E-01	-----	Line Not Found	-----
	74.66	90	67.20*	3.314E+00	2.261E-01	2.262E-01	58.27
ANH-511	511.00	49	100.00*	2.232E+00	1.225E-01	1.225E-01	77.20

Flag: "*" = Keyline

Total number of lines in spectrum 36
 Number of unidentified lines 6
 Number of lines tentatively identified by NID 30 83.33%

Nuclide Type :

Nuclide	Hlife	Decay	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
K-40	1.25E+09Y	1.00	1.264E+01	1.264E+01	0.184E+01	14.54	
CD-109	461.40D	1.55	9.929E-01	1.541E+00	3.210E+00	208.30	
SN-126	2.30E+05Y	1.00	9.929E-02	9.929E-02	20.68E-02	208.30	
BA-137M	30.08Y	1.02	3.158E-01	3.217E-01	1.087E-01	33.79	
CS-137	30.08Y	1.02	3.336E-01	3.398E-01	1.148E-01	33.79	
EU-155	4.75Y	1.12	1.449E-01	1.629E-01	2.938E-01	180.40	
TL-208	1.41E+10Y	1.00	3.312E-01	3.312E-01	1.056E-01	31.90	
BI-211	7.04E+08Y	1.00	2.464E+00	2.464E+00	0.636E+00	25.83	
PB-212	1.41E+10Y	1.00	1.049E+00	1.049E+00	0.147E+00	14.02	
BI-214	1600.00Y	1.00	8.132E-01	8.134E-01	2.296E-01	28.23	
PB-214	1600.00Y	1.00	8.941E-01	8.944E-01	2.310E-01	25.83	
RN-222	1600.00Y	1.00	8.132E-01	8.134E-01	2.296E-01	28.23	
RA-224	1.41E+10Y	1.00	3.029E+00	3.029E+00	1.465E+00	48.37	
RA-226	1600.00Y	1.00	8.132E-01	8.134E-01	2.296E-01	28.23	
AC-228	1.41E+10Y	1.00	1.140E+00	1.140E+00	0.298E+00	26.14	
RA-228	1.41E+10Y	1.00	1.140E+00	1.140E+00	0.298E+00	26.14	
TH-228	1.41E+10Y	1.00	1.049E+00	1.049E+00	0.147E+00	14.02	
TH-230	7.54E+04Y	1.00	8.132E-01	8.132E-01	2.295E-01	28.23	
TH-232	1.41E+10Y	1.00	1.140E+00	1.140E+00	0.298E+00	26.14	
TH-234	4.47E+09Y	1.00	2.279E+00	2.279E+00	4.422E+00	194.00	
U-234	2.45E+05Y	1.00	8.132E-01	8.132E-01	2.295E-01	28.23	
U-235	7.04E+08Y	1.00	3.595E-01	3.595E-01	4.706E-01	130.91	
U-238	4.47E+09Y	1.00	2.279E+00	2.279E+00	4.422E+00	194.00	
AM-243	7370.00Y	1.00	2.261E-01	2.262E-01	1.318E-01	58.27	
ANH-511	1.00E+09Y	1.00	1.225E-01	1.225E-01	0.946E-01	77.20	
Total Activity :			3.609E+01	3.667E+01			

Grand Total Activity : 3.609E+01 3.667E+01

Flags: "K" = Keyline not found "M" = Manually accepted
 "E" = Manually edited "A" = Nuclide specific abn. limit

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
0	30.20	17	173	1.40	60.62	58	10	3.74E-03	****	2.27E-05	
0	117.30	34	74	0.80	234.91	232	7	8.20E-03	97.5	5.40E+00	T
0	128.15	16	102	1.56	256.61	255	8	3.81E-03	****	5.48E+00	T
0	210.21	11	119	0.73	420.80	414	8	2.78E-03	****	4.57E+00	T
0	463.12	45	34	1.92	926.82	921	12	1.20E-02	62.7	2.42E+00	T
0	681.17	8	15	1.34	1363.10	1355	11	2.28E-03	****	1.77E+00	
0	727.15	30	18	0.89	1455.08	1448	14	8.21E-03	73.8	1.69E+00	T
0	734.16	19	9	1.34	1469.11	1462	12	5.37E-03	76.8	1.67E+00	T
0	990.07	6	15	3.31	1981.10	1973	14	1.71E-03	****	1.33E+00	
0	1166.61	14	3	2.84	2334.28	2327	15	3.86E-03	80.3	1.16E+00	
0	1172.34	6	2	0.48	2345.73	2341	8	1.70E-03	****	1.16E+00	T
3	1235.58	10	4	1.88	2472.24	2470	13	2.93E-03	72.7	1.11E+00	T
3	1238.09	22	8	2.32	2477.27	2470	13	6.45E-03	70.0	1.11E+00	T
0	1288.00	7	8	1.00	2577.13	2570	11	1.96E-03	****	1.07E+00	
0	1560.44	8	0	3.30	3122.13	3116	11	2.22E-03	70.7	9.14E-01	

Flags: "T" = Tentatively associated

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*****
*
*               GEL Laboratories LLC
*               2040 Savage Road
*               Charleston, SC 29407
*
*****
*
*               DETECTOR AND SAMPLE DATA
*
* Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]R405245011.CNF;1
* Acquisition date   : 3-OCT-2016 04:45:57 Sensitivity      : 3.000
* Detector ID       : GAM08 Energy tolerance: 1.500
* Elapsed live time : 0 01:00:00.00 Abundance limit : 75.000
* Elapsed real time : 0 01:00:00.63 Half life ratio  : *****
* Sample date       : 15-DEC-2015 12:53:00 Nuclide Library : SOLID
* Sample ID        : R405245011 Analyst initials: MXR1
* Batch Number     : 1596387 Sample Quantity : 1.3466E+02 GRAM
* Wet wt corr      : 1.00000 Wet Weight      : 0.00000
*                               Dry Weight      : 0.00000
*****
*
*               CALIBRATION INFORMATION
*
* Eff. Cal. date    : 21-JUL-2016 06:09:19 Eff. Geometry   : CAN
* Eff. File         : DKA100:[CANBERRA.GAMMA]EFF_GAM08_CAN.CNF;14
*****

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Combined Critical Level Report

NOTE: Not all "Identified Nuclides" are valid.
 Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Lc (pCi/GRAM)
K-40	3.520E-01
CD-109	1.343E+00
SN-126	8.662E-02
BA-137M	4.064E-02
CS-137	4.293E-02
EU-155	1.117E-01
TL-208	3.068E-02
BI-211	2.036E-01
PB-212	5.031E-02
BI-214	6.956E-02
PB-214	1.739E-01
RN-222	6.956E-02
RA-224	5.395E-01
RA-226	6.956E-02
AC-228	1.055E-01
RA-228	1.055E-01
TH-228	5.031E-02
TH-230	6.954E-02
TH-232	1.055E-01
TH-234	1.422E+00
U-234	6.954E-02
U-235	1.616E-01
U-238	1.422E+00
AM-243	6.369E-02
ANH-511	2.136E-02

---- Non-Identified Nuclides ----

Nuclide	Lc (pCi/GRAM)	
BE-7	1.115E+01	NOT IDENT.
NA-22	4.200E-02	NOT IDENT.
NA-24	0.000E+00	SHORT HLIF
AL-26	3.104E-02	NOT IDENT.
SC-46	3.918E-01	FAIL ABUN
V-48	0.000E+00	SHORT HLIF

CR-51	0.000E+00	SHORT HLIF
MN-54	7.232E-02	NOT IDENT.
CO-56	4.667E-01	FAIL ABUN
MN-56	0.000E+00	SHORT HLIF
CO-57	5.234E-02	NOT IDENT.
CO-58	5.094E-01	NOT IDENT.
FE-59	5.002E+00	NOT IDENT.
CO-60	4.288E-02	FAIL ABUN
ZN-65	1.537E-01	NOT IDENT.
GE-68	2.196E+00	NOT IDENT.
AS-73	1.322E+01	NOT IDENT.
AS-74	0.000E+00	SHORT HLIF
SE-75	1.900E-01	NOT IDENT.
BR-77	0.000E+00	SHORT HLIF
SR-82	0.000E+00	SHORT HLIF
RB-83	6.213E-01	NOT IDENT.
KR-85	8.070E+00	NOT IDENT.
SR-85	7.901E-01	NOT IDENT.
RB-86	0.000E+00	SHORT HLIF
Y-88	2.177E-01	NOT IDENT.
Y-91	4.833E+02	NOT IDENT.
NB-94	3.199E-02	NOT IDENT.
NB-95	8.826E-01	NOT IDENT.
NB-95M	2.338E+00	NOT IDENT.
ZR-95	1.602E+00	NOT IDENT.
NB-97	0.000E+00	SHORT HLIF
ZR-97	0.000E+00	SHORT HLIF
MO-99	0.000E+00	SHORT HLIF
TC-99M	0.000E+00	SHORT HLIF
RH-101	3.084E-02	FAIL ABUN
RH-102	7.026E-02	NOT IDENT.
RU-103	4.448E+00	FAIL ABUN
RH-106	4.456E-01	NOT IDENT.
RU-106	4.456E-01	NOT IDENT.
AG-108M	3.074E-02	NOT IDENT.
AG-110M	1.058E-01	NOT IDENT.
SN-113	2.322E-01	NOT IDENT.
CD-115	0.000E+00	SHORT HLIF
SN-117M	0.000E+00	SHORT HLIF
TE-123M	1.290E-01	NOT IDENT.
SB-124	1.613E+00	NOT IDENT.
SB-125	1.147E-01	FAIL ABUN
TE-125M	2.549E+02	NOT IDENT.
I-126	0.000E+00	SHORT HLIF
SB-126	0.000E+00	SHORT HLIF
SB-127	0.000E+00	SHORT HLIF
I-131	0.000E+00	SHORT HLIF
I-132	0.000E+00	SHORT HLIF
TE-132	0.000E+00	SHORT HLIF
BA-133	4.075E-02	NOT IDENT.
I-133	0.000E+00	SHORT HLIF
CS-134	5.330E-02	NOT IDENT.
CS-135	1.287E-01	NOT IDENT.
I-135	0.000E+00	SHORT HLIF
CS-136	0.000E+00	SHORT HLIF
CE-139	1.083E-01	NOT IDENT.
BA-140	0.000E+00	SHORT HLIF
LA-140	0.000E+00	SHORT HLIF
CE-141	2.002E+01	NOT IDENT.
CE-143	0.000E+00	SHORT HLIF
CE-144	3.670E-01	NOT IDENT.
PM-144	4.994E-02	NOT IDENT.
PR-144	4.322E+00	NOT IDENT.
PM-146	5.467E-02	NOT IDENT.
ND-147	0.000E+00	SHORT HLIF
PM-147	9.044E+02	NOT IDENT.
PM-149	0.000E+00	SHORT HLIF
EU-150	2.229E-02	FAIL ABUN
EU-152	8.816E-02	NOT IDENT.
GD-153	1.794E-01	NOT IDENT.
EU-154	1.020E-01	NOT IDENT.
TB-160	1.339E+00	FAIL ABUN
HO-166M	5.270E-02	FAIL ABUN
TM-171	3.223E+01	NOT IDENT.
HF-172	2.025E-01	FAIL ABUN
LU-172	7.927E-02	FAIL ABUN
LU-176	2.648E-02	FAIL ABUN
HF-181	3.422E+00	NOT IDENT.

TA-182	1.076E+00	FAIL ABUN
RE-183	3.731E+00	NOT IDENT.
RE-184	2.172E+01	NOT IDENT.
W-188	1.004E+02	FAIL ABUN
IR-192	5.238E-01	FAIL ABUN
HG-203	2.090E+00	NOT IDENT.
BI-207	5.369E-02	FAIL ABUN
PB-210	5.876E+00	NOT IDENT.
PB-211	7.377E-01	NOT IDENT.
BI-212	7.160E-01	FAIL ABUN
RN-219	3.643E-01	NOT IDENT.
RA-223	5.857E-01	FAIL ABUN
AC-227	2.590E-01	NOT IDENT.
TH-227	2.590E-01	NOT IDENT.
TH-229	4.819E-01	FAIL ABUN
PA-231	4.558E-01	NOT IDENT.
TH-231	5.857E-01	FAIL ABUN
PA-233	6.511E-02	NOT IDENT.
PA-234	2.520E-01	FAIL ABUN
PA-234M	4.327E+00	NOT IDENT.
NP-237	6.511E-02	NOT IDENT.
NP-238	0.000E+00	SHORT HLIF
NP-239	2.633E-01	FAIL ABUN
PU-239	3.305E+02	FAIL ABUN
AM-241	1.929E-01	NOT IDENT.
CM-243	1.073E-01	NOT IDENT.
BK-247	6.768E-02	FAIL ABUN
CM-247	3.226E-02	NOT IDENT.
CF-249	4.205E-02	NOT IDENT.
CF-251	1.261E-01	NOT IDENT.

```

*****
*
*           GEL Laboratories LLC
*           2040 Savage Road
*           Charleston, SC 29407
*****
*
*           DETECTOR AND SAMPLE DATA
*
* Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]R405245011.CNF;1
* Acquisition date   : 3-OCT-2016 04:45:57 Sensitivity      : 3.000
* Detector ID        : GAM08 Energy tolerance: 1.500
* Elapsed live time  : 0 01:00:00.00 Abundance limit : 75.000
* Elapsed real time  : 0 01:00:00.63 Half life ratio  : *****
* Sample date        : 15-DEC-2015 12:53:00 Nuclide Library : SOLID
* Sample ID          : R405245011 Analyst initials: MXR1
* Batch Number       : 1596387 Sample Quantity : 1.3466E+02 GRAM
*                    : Quantity Err(%) : 1.4852E-03 %
* Wet wt corr        : 1.00000 Wet Weight      : 0.00000
*                    : Dry Weight       : 0.00000
*****
*
*           CALIBRATION INFORMATION
*
* Eff. Cal. date     : 21-JUL-2016 06:09:19 Eff. Geometry  : CAN
* Eff. File          : DKA100:[CANBERRA.GAMMA]EFF_GAM08_CAN.CNF;14
*****

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Combined Activity-MDA Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM)	Act Error (1.96-sigma)	TPU (1.96-sigma)
K-40	1.264E+01	1.918E+00	1.918E+00
CD-109	3.268E-01	3.177E+00	3.177E+00
SN-126	2.106E-02	2.047E-01	2.047E-01
BA-137M	3.217E-01	1.074E-01	1.074E-01
CS-137	3.398E-01	1.135E-01	1.135E-01
EU-155	1.629E-01	2.881E-01	2.881E-01
TL-208	3.312E-01	1.045E-01	1.045E-01
BI-211	1.246E-01	1.022E+00	1.022E+00
PB-212	1.049E+00	1.545E-01	1.545E-01
BI-214	8.134E-01	2.277E-01	2.277E-01
PB-214	8.944E-01	2.294E-01	2.294E-01
RN-222	8.134E-01	2.277E-01	2.277E-01
RA-224	1.528E+00	1.530E+00	1.530E+00
RA-226	8.134E-01	2.277E-01	2.277E-01
AC-228	1.140E+00	2.978E-01	2.978E-01
RA-228	1.140E+00	2.978E-01	2.978E-01
TH-228	1.049E+00	1.545E-01	1.545E-01
TH-230	8.132E-01	2.276E-01	2.276E-01
TH-232	1.140E+00	2.978E-01	2.978E-01
TH-234	2.279E+00	4.362E+00	4.362E+00
U-234	8.132E-01	2.276E-01	2.276E-01
U-235	3.595E-01	4.615E-01	4.615E-01
U-238	2.279E+00	4.362E+00	4.362E+00
AM-243	1.529E-01	1.322E-01	1.322E-01
ANH-511	1.225E-01	9.282E-02	9.282E-02

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/GRAM)	K.L Act error (1.96-sigma)	TPU (1.96-sigma)	
BE-7	-1.330E+00	1.339E+01	1.340E+01	NOT IDENT.
NA-22	-4.432E-02	6.098E-02	6.417E-02	NOT IDENT.
NA-24	-1.000E+41	1.402E+41	0.000E+00	SHORT HLIF
AL-26	1.886E-02	2.933E-02	3.054E-02	NOT IDENT.
SC-46	2.636E-01	4.073E-01	4.242E-01	FAIL ABUN

V-48	-9.229E+03	1.363E+04	1.425E+04	SHORT HLIF
CR-51	-5.497E+01	4.268E+02	4.275E+02	SHORT HLIF
MN-54	8.086E-02	7.044E-02	7.931E-02	NOT IDENT.
CO-56	3.830E-02	5.338E-01	5.341E-01	FAIL ABUN
MN-56	1.000E+41	1.560E+42	0.000E+00	SHORT HLIF
CO-57	8.816E-03	6.114E-02	6.127E-02	NOT IDENT.
CO-58	-8.355E-02	6.033E-01	6.045E-01	NOT IDENT.
FE-59	-3.504E+00	6.773E+00	6.955E+00	NOT IDENT.
CO-60	1.727E-02	4.714E-02	4.778E-02	FAIL ABUN
ZN-65	-3.176E-05	2.086E-01	2.086E-01	NOT IDENT.
GE-68	-2.089E+00	3.027E+00	3.171E+00	NOT IDENT.
AS-73	2.129E+00	1.480E+01	1.483E+01	NOT IDENT.
AS-74	3.144E+03	5.119E+03	5.312E+03	SHORT HLIF
SE-75	-1.073E-01	2.258E-01	2.309E-01	NOT IDENT.
BR-77	2.334E+37	1.972E+38	0.000E+00	SHORT HLIF
SR-82	1.998E+02	6.101E+02	6.167E+02	SHORT HLIF
RB-83	-1.315E-01	7.617E-01	7.640E-01	NOT IDENT.
KR-85	1.102E+01	8.030E+00	9.443E+00	NOT IDENT.
SR-85	1.077E+00	7.864E-01	9.242E-01	NOT IDENT.
RB-86	-1.403E+04	2.735E+04	2.808E+04	SHORT HLIF
Y-88	4.602E-02	2.413E-01	2.422E-01	NOT IDENT.
Y-91	7.625E+00	5.774E+02	5.774E+02	NOT IDENT.
NB-94	1.393E-02	3.427E-02	3.484E-02	NOT IDENT.
NB-95	-1.565E-01	1.035E+00	1.037E+00	NOT IDENT.
NB-95M	3.007E-01	2.872E+00	2.875E+00	NOT IDENT.
ZR-95	7.957E-01	1.721E+00	1.758E+00	NOT IDENT.
NB-97	1.000E+41	1.066E+42	0.000E+00	SHORT HLIF
ZR-97	1.000E+41	1.247E+41	0.000E+00	SHORT HLIF
MO-99	-1.191E+31	3.185E+31	0.000E+00	SHORT HLIF
TC-99M	-1.000E+41	1.838E+41	0.000E+00	SHORT HLIF
RH-101	2.777E-02	6.646E-02	6.763E-02	FAIL ABUN
RH-102	7.343E-02	7.287E-02	8.004E-02	NOT IDENT.
RU-103	-3.574E-01	5.327E+00	5.329E+00	FAIL ABUN
RH-106	-3.463E-01	6.070E-01	6.268E-01	NOT IDENT.
RU-106	-3.463E-01	6.070E-01	6.268E-01	NOT IDENT.
AG-108M	3.395E-02	3.122E-02	3.477E-02	NOT IDENT.
AG-110M	7.868E-02	1.083E-01	1.140E-01	NOT IDENT.
SN-113	-8.900E-02	2.811E-01	2.840E-01	NOT IDENT.
CD-115	-7.267E+37	3.565E+38	0.000E+00	SHORT HLIF
SN-117M	-5.532E+04	8.945E+04	9.286E+04	SHORT HLIF
TE-123M	1.445E-02	1.541E-01	1.542E-01	NOT IDENT.
SB-124	1.202E+00	1.362E+00	1.466E+00	NOT IDENT.
SB-125	9.768E-02	1.210E-01	1.288E-01	FAIL ABUN
TE-125M	-4.586E+01	3.318E+02	3.325E+02	NOT IDENT.
I-126	7.514E+03	9.824E+05	9.824E+05	SHORT HLIF
SB-126	5.545E+05	8.047E+05	8.427E+05	SHORT HLIF
SB-127	-1.126E+20	6.323E+21	0.000E+00	SHORT HLIF
I-131	5.774E+08	3.350E+09	3.360E+09	SHORT HLIF
I-132	-1.000E+41	2.173E+42	0.000E+00	SHORT HLIF
TE-132	6.515E+25	1.006E+26	0.000E+00	SHORT HLIF
BA-133	-3.252E-02	5.776E-02	5.959E-02	NOT IDENT.
I-133	1.000E+41	3.046E+41	0.000E+00	SHORT HLIF
CS-134	3.421E-02	5.579E-02	5.789E-02	NOT IDENT.
CS-135	-6.406E-02	1.522E-01	1.550E-01	NOT IDENT.
I-135	1.000E+41	7.036E+41	0.000E+00	SHORT HLIF
CS-136	-2.724E+05	2.939E+05	3.185E+05	SHORT HLIF
CE-139	8.620E-03	1.300E-01	1.301E-01	NOT IDENT.
BA-140	4.535E+05	1.070E+06	1.089E+06	SHORT HLIF
LA-140	-6.687E+04	2.502E+05	2.520E+05	SHORT HLIF
CE-141	1.307E+01	2.434E+01	2.505E+01	NOT IDENT.
CE-143	1.000E+41	1.099E+41	0.000E+00	SHORT HLIF
CE-144	-7.755E-02	4.498E-01	4.511E-01	NOT IDENT.
PM-144	4.964E-03	5.599E-02	5.604E-02	NOT IDENT.
PR-144	4.296E-01	4.846E+00	4.850E+00	NOT IDENT.
PM-146	4.815E-02	5.836E-02	6.227E-02	NOT IDENT.
ND-147	3.766E+05	1.954E+07	1.954E+07	SHORT HLIF
PM-147	4.691E+02	1.108E+03	1.128E+03	NOT IDENT.
PM-149	-7.116E+39	5.769E+39	0.000E+00	SHORT HLIF
EU-150	1.063E-03	2.835E-02	2.835E-02	FAIL ABUN
EU-152	1.170E-02	1.045E-01	1.047E-01	NOT IDENT.
GD-153	4.474E-02	2.050E-01	2.060E-01	NOT IDENT.
EU-154	-1.122E-01	1.494E-01	1.577E-01	NOT IDENT.
TB-160	-1.259E+00	1.842E+00	1.927E+00	FAIL ABUN
HO-166M	-2.834E-03	6.056E-02	6.057E-02	FAIL ABUN
TM-171	-6.785E+00	3.711E+01	3.724E+01	NOT IDENT.
HF-172	-2.480E-01	2.964E-01	3.168E-01	FAIL ABUN
LU-172	1.984E-02	8.759E-02	8.804E-02	FAIL ABUN
LU-176	7.158E-03	2.943E-02	2.961E-02	FAIL ABUN

HF-181	-2.444E+00	4.464E+00	4.598E+00	NOT IDENT.
TA-182	6.995E-01	1.166E+00	1.208E+00	FAIL ABUN
RE-183	-9.270E-01	4.309E+00	4.329E+00	NOT IDENT.
RE-184	-2.450E+01	3.095E+01	3.286E+01	NOT IDENT.
W-188	-2.303E+01	1.305E+02	1.309E+02	FAIL ABUN
IR-192	3.943E-01	5.594E-01	5.869E-01	FAIL ABUN
HG-203	-2.502E+00	2.635E+00	2.866E+00	NOT IDENT.
BI-207	-1.114E-02	6.555E-02	6.574E-02	FAIL ABUN
PB-210	-1.649E+00	6.729E+00	6.770E+00	NOT IDENT.
PB-211	3.165E-01	8.199E-01	8.322E-01	NOT IDENT.
BI-212	1.480E+00	1.073E+00	1.263E+00	FAIL ABUN
RN-219	-2.221E-01	4.556E-01	4.665E-01	NOT IDENT.
RA-223	-9.873E-03	6.912E-01	6.912E-01	FAIL ABUN
AC-227	2.809E-01	2.677E-01	2.962E-01	NOT IDENT.
TH-227	2.809E-01	2.677E-01	2.962E-01	NOT IDENT.
TH-229	-5.536E-02	5.361E-01	5.367E-01	FAIL ABUN
PA-231	9.694E-03	5.179E-01	5.179E-01	NOT IDENT.
TH-231	-9.873E-03	6.912E-01	6.912E-01	FAIL ABUN
PA-233	2.849E-02	7.126E-02	7.241E-02	NOT IDENT.
PA-234	-8.599E-02	3.278E-01	3.301E-01	FAIL ABUN
PA-234M	-1.644E+00	5.130E+00	5.183E+00	NOT IDENT.
NP-237	2.849E-02	7.126E-02	7.241E-02	NOT IDENT.
NP-238	-5.357E+39	4.612E+40	0.000E+00	SHORT HLIF
NP-239	4.421E-01	4.241E-01	4.686E-01	FAIL ABUN
PU-239	2.529E+02	6.036E+02	6.143E+02	FAIL ABUN
AM-241	1.417E-01	2.220E-01	2.310E-01	NOT IDENT.
CM-243	1.966E-02	1.340E-01	1.343E-01	NOT IDENT.
BK-247	-6.146E-02	8.379E-02	8.825E-02	FAIL ABUN
CM-247	-3.382E-02	4.265E-02	4.529E-02	NOT IDENT.
CF-249	5.843E-03	4.814E-02	4.821E-02	NOT IDENT.
CF-251	9.295E-02	1.317E-01	1.382E-01	NOT IDENT.

 * GEL Laboratories LLC *
 * 2040 Savage Road *
 * Charleston, SC 29407 *
 * GAMMA SPECTROSCOPY BACKGROUND REPORT *

ENERGY	MDA COUNTS	ENERGY	MDA COUNTS	ENERGY	MDA COUNTS
43.53	66.6529	87.09	102.4304	136.47	77.5446
45.60	62.0535	87.57	102.5234	140.51	0.0000
46.54	63.2245	88.03	103.7161	143.76	50.6101
49.72	0.0000	88.34	103.7764	144.24	50.6428
51.35	67.1196	88.47	103.8015	145.44	45.0881
51.87	76.3782	89.96	104.0905	152.43	85.3221
52.39	61.1868	1093.63	86.4819	153.25	0.0000
52.97	57.1948	91.11	0.0000	323.87	75.7441
53.44	62.3780	92.59	89.0167	156.02	0.0000
54.07	59.4074	93.35	89.1400	158.56	0.0000
57.36	0.0000	94.56	80.4012	159.00	57.7696
57.53	74.3975	94.65	80.4139	162.33	58.0106
57.98	68.2737	94.67	80.4172	162.66	0.0000
59.27	59.4966	94.87	80.4457	163.33	53.1391
59.32	59.5040	97.43	58.3643	165.86	57.0234
59.54	59.5357	98.43	76.4564	176.31	66.1074
60.96	80.5798	98.44	76.4580	176.60	0.0000
61.17	73.6702	99.53	52.9464	177.52	51.9549
62.93	66.9990	100.11	63.1483	181.07	0.0000
63.29	67.0555	102.03	79.9502	181.52	51.7749
63.58	67.1008	103.18	72.5488	184.41	45.6108
64.28	67.2101	103.37	63.5007	143.76	50.7538
66.73	59.1394	105.21	62.5602	193.51	59.7269
67.24	77.5334	105.31	62.5707	197.03	60.8127
125.81	80.4323	106.12	62.6551	198.01	65.1641
67.75	69.1540	106.47	62.6916	201.83	58.5433
69.67	82.9143	109.28	56.4925	203.43	56.9182
70.83	90.9395	111.00	64.3052	205.31	44.0694
72.81	89.9005	111.76	0.0000	210.85	66.4854
72.87	89.9120	114.06	63.0815	215.65	66.3755
74.66	106.3703	116.30	0.0000	222.11	58.8956
74.82	106.4058	116.74	57.1670	227.09	56.5345
74.97	106.4390	119.76	65.1956	227.38	61.8524
77.11	106.9126	121.12	59.1087	228.16	0.0000
78.74	88.1268	121.22	59.1179	228.18	45.0987
79.69	95.5336	121.78	66.5638	116.74	45.0987
80.12	89.8207	122.06	68.9286	235.69	56.1139
80.19	0.0000	122.92	66.6786	235.96	46.3284
80.57	88.4520	123.07	59.6730	238.63	46.4453
81.00	101.2263	265.00	64.4124	238.98	0.0000
81.07	101.2405	125.81	67.3581	240.99	46.5484
81.75	87.2058	127.23	48.6617	242.00	46.5923
83.79	94.8518	127.91	45.5680	244.70	46.7092
84.00	94.8908	129.30	51.9579	252.40	0.0000
85.43	98.0805	131.20	67.8891	252.80	42.5316
86.55	102.3254	133.02	74.3975	254.15	0.0000
86.79	102.3715	133.52	66.5308	256.23	33.5854
86.94	102.4013	136.00	61.9952	260.90	0.0000

ENERGY	MDA COUNTS	ENERGY	MDA COUNTS	ENERGY	MDA COUNTS
264.66	42.9820	355.39	0.0000	584.27	15.6782
264.80	44.8160	356.01	39.7733	595.83	0.0000
265.00	46.6535	364.49	0.0000	427.87	20.3145
268.22	41.2802	366.42	0.0000	602.52	0.0000
269.46	41.3242	372.51	38.7382	604.72	18.6578
270.03	37.6701	375.05	35.8206	607.14	21.5087
271.23	45.0662	377.52	35.8799	609.32	21.5304
273.65	0.0000	356.01	29.0254	610.33	21.5412
276.40	58.1986	388.16	32.1191	614.28	20.4441
277.37	37.9062	388.63	0.0000	618.01	18.2038
277.60	38.8384	391.69	34.2054	620.36	14.8070
278.00	29.6009	264.66	20.2380	621.93	20.5166
279.20	45.3723	401.81	31.3923	630.19	0.0000
279.54	45.3852	402.40	34.4427	631.29	11.4465
279.70	53.7284	404.85	26.3798	633.25	13.7480
280.46	46.3470	410.95	25.4634	634.78	0.0000
283.69	26.0244	413.71	15.3046	635.95	17.2058
284.31	0.0000	414.70	0.0000	636.99	0.0000
285.41	39.0922	423.72	0.0000	645.85	11.5214
285.90	0.0000	427.09	26.7485	657.76	19.1104
287.50	22.3770	427.87	18.5270	657.90	0.0000
290.67	37.8592	433.94	14.4631	661.66	24.3641
293.27	0.0000	439.40	20.7292	664.57	0.0000
351.93	47.8509	453.88	22.9981	666.33	0.0000
295.96	46.4707	463.37	28.3804	666.50	0.0000
879.38	43.7461	468.07	25.2949	667.71	0.0000
299.98	34.8478	473.00	0.0000	677.62	26.6343
300.09	34.8508	475.06	27.5118	685.70	0.0000
300.13	32.9677	476.78	24.3608	695.00	0.0000
301.36	39.6006	477.60	22.2527	696.49	13.2472
302.85	41.5347	482.18	23.3719	696.51	13.2477
256.23	30.2467	487.02	0.0000	697.00	0.0000
304.85	0.0000	492.35	0.0000	697.30	12.3683
306.78	35.9822	497.08	14.9955	697.49	12.3692
308.46	38.8738	505.52	25.8242	702.65	13.2816
311.90	33.2739	507.63	0.0000	706.68	15.9642
316.51	35.3003	511.00	12.9501	711.68	14.2197
319.41	0.0000	514.00	12.9707	720.70	0.0000
320.08	0.0000	514.00	12.9707	721.93	0.0000
321.04	33.5075	520.40	21.6911	722.78	17.1410
323.87	30.7012	520.69	0.0000	722.91	17.1422
325.23	38.4155	522.65	0.0000	723.31	11.4301
328.76	0.0000	527.90	0.0000	724.19	10.0047
333.37	34.7838	528.26	15.2458	727.33	12.8795
333.97	24.6492	529.59	8.7181	733.00	10.0403
334.37	24.6564	529.87	0.0000	735.93	8.6162
338.28	29.0912	531.02	0.0000	333.97	4.3107
338.32	29.0918	537.26	0.0000	739.50	0.0000
311.90	26.2238	546.56	0.0000	747.24	16.2285
340.48	26.2238	552.55	13.2310	748.06	18.0371
340.55	0.0000	563.25	22.1696	752.31	18.9710
344.28	25.7114	569.33	21.1237	753.82	0.0000
345.93	30.2274	946.00	21.1261	756.73	15.3839
351.06	36.2096	569.70	17.7917	756.80	15.3845
351.93	36.2322	583.19	15.6702	884.68	18.1500

ENERGY	MDA COUNTS	ENERGY	MDA COUNTS	ENERGY	MDA COUNTS
765.81	22.7036	1274.44	10.1209	1620.50	5.5362
766.42	20.8922	1001.03	11.8253	1621.92	5.5377
766.84	22.7127	1002.74	10.8456	1678.03	0.0000
772.60	0.0000	1004.73	14.7986	1690.97	0.0000
776.52	0.0000	507.63	0.0000	1750.46	0.0000
739.50	0.0000	1025.87	0.0000	1764.49	0.0000
778.90	13.6913	1028.54	0.0000	1063.66	9.5103
783.70	0.0000	1037.84	12.9564	1771.35	2.8538
785.37	14.6396	1038.76	0.0000	1791.20	0.0000
792.07	18.3466	631.29	9.9933	1808.65	0.9581
794.95	14.6929	1048.07	0.0000	1810.72	0.0000
795.86	11.0237	1049.04	20.0012	1836.06	2.8894
810.06	12.0058	1050.41	12.0059		
810.29	14.7773	1063.66	16.0713		
344.28	14.7783	1077.00	0.0000		
810.76	12.9323	1077.34	17.1442		
815.77	0.0000	1085.87	8.0884		
1048.07	0.0000	1093.63	8.1064		
832.01	13.9645	1099.45	12.1802		
834.85	7.4556	1112.07	10.1874		
835.71	15.8477	1112.84	9.1708		
836.80	0.0000	1115.54	9.7898		
846.75	0.0000	1120.29	13.2745		
846.77	14.0392	1120.55	13.2753		
856.80	0.0000	1221.41	13.2785		
860.56	9.4055	1129.67	10.2386		
871.09	14.1605	1131.51	0.0000		
873.19	9.4473	1147.95	0.0000		
875.33	0.0000	1173.23	6.6328		
879.38	13.2545	1177.95	11.4149		
880.51	16.1009	1189.05	9.3675		
883.24	5.6882	1204.77	11.4982		
884.68	7.5879	1221.41	11.5492		
889.28	8.5501	1231.02	9.8244		
894.76	10.4696	1235.36	0.0000		
898.04	13.3399	1238.28	6.3278		
900.72	10.4911	1260.41	0.0000		
903.28	16.2275	1271.87	6.3831		
911.20	8.6141	1274.44	14.9041		
912.08	8.6166	1274.54	14.9041		
923.98	0.0000	1291.59	10.2645		
926.50	7.6963	1298.22	0.0000		
929.11	11.5543	1312.11	0.0000		
937.49	12.5521	1332.49	5.4013		
944.13	0.0000	1362.66	0.0000		
946.00	12.5874	1365.19	7.6225		
949.00	11.6305	1368.63	0.0000		
667.71	0.0000	1384.29	7.6575		
962.31	14.2764	1408.01	6.6006		
964.08	12.4664	1457.56	0.0000		
966.17	14.0344	1460.82	7.7960		
911.20	14.6324	1489.16	5.6046		
968.97	14.6324	1505.03	5.6244		
983.53	0.0000	1584.12	10.9875		
984.45	0.0000	1596.21	0.0000		

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*****
*                               GEL Laboratories LLC                               *
*                               2040 Savage Road                                 *
*                               Charleston, SC 29407                            *
*****
Configuration   : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]R405245012.CNF;1
Background file  : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]BKG_GAM09.CNF;335
Background date  : 2-OCT-2016 11:00:29.
Sample date     : 15-DEC-2015 12:56:00 Acquisition date : 3-OCT-2016 04:46:21.
Sample ID      : R405245012 Sample quantity   : 1.32296E+02 GRAM
Detector name   : GAM09 Detector geometry: CAN
Elapsed live time: 0 01:00:00.00 Elapsed real time: 0 01:00:00.50 0.0%
Energy tolerance : 1.50000 keV Analyst Initials : MXR1
Abundance limit : 75.00000 Sensitivity    : 3.00000
Batch ID       : 1596387 Detector SN#    :
Matrix Spike ID : LCS ID           : 1556
*****
    
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BACKGROUND CORRECTED SAMPLE PEAK REPORT

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	53.28	25	68	1.04	106.22	104	6	7.01E-03	55.3	
2	0	63.46*	26	53	0.95	126.59	124	5	7.10E-03	50.5	
3	2	75.03	104	76	0.91	149.73	146	14	2.89E-02	15.8	7.86E-01
4	2	77.23	182	75	0.89	154.15	146	14	5.06E-02	10.3	
5	4	87.25	74	86	1.28	174.19	171	21	2.04E-02	22.7	1.70E+00
6	4	90.02	44	83	1.00	179.73	171	21	1.21E-02	36.9	
7	4	92.58*	61	94	1.23	184.85	171	21	1.71E-02	33.2	
8	4	94.65	24	66	0.89	189.00	171	21	6.77E-03	59.5	
9	0	122.62	32	58	0.59	244.96	241	7	8.99E-03	42.7	
10	0	125.64	22	53	1.19	251.00	249	5	5.97E-03	55.0	
11	0	129.05	32	73	1.26	257.82	255	6	8.81E-03	46.3	
12	0	134.94	30	72	1.42	269.62	267	7	8.35E-03	50.5	
13	0	154.41	33	85	1.54	308.58	304	8	9.21E-03	51.3	
14	0	185.94*	88	107	1.11	371.65	366	11	2.46E-02	26.5	
15	0	209.03	49	70	1.13	417.86	413	9	1.36E-02	33.8	
16	2	238.65*	362	73	1.11	477.13	472	16	1.01E-01	6.5	2.35E+00
17	2	241.86	97	71	1.33	483.54	472	16	2.68E-02	19.0	
18	0	295.26*	116	54	1.10	590.39	586	9	3.21E-02	15.0	
19	0	299.97	33	28	2.26	599.82	596	8	9.06E-03	33.7	
20	0	328.69	16	67	0.58	657.28	650	10	4.41E-03	99.9	
21	0	338.21*	85	49	1.01	676.32	672	9	2.35E-02	18.8	
22	2	348.66	19	9	1.33	697.24	696	20	5.28E-03	24.0	2.38E+00
23	2	351.85*	214	38	1.26	703.62	696	20	5.93E-02	8.5	
24	0	427.55	40	23	4.13	855.07	849	12	1.10E-02	29.3	
25	0	437.49	15	31	0.90	874.97	872	9	4.05E-03	72.5	
26	0	464.58	23	59	1.76	929.18	921	13	6.43E-03	72.6	
27	0	470.16	10	26	1.50	940.35	934	9	2.69E-03	101.8	
28	0	511.50*	69	26	2.27	1023.07	1015	20	1.91E-02	25.5	
29	0	543.26	11	18	1.34	1086.60	1083	8	2.95E-03	76.0	
30	0	582.92*	112	19	1.28	1165.96	1160	11	3.11E-02	12.4	
31	0	609.33*	141	31	1.36	1218.82	1213	14	3.91E-02	12.0	
32	0	661.41	248	8	1.14	1323.02	1318	11	6.88E-02	6.7	
33	0	665.88	12	10	1.32	1331.96	1328	8	3.39E-03	53.1	
34	0	726.76	48	3	1.28	1453.78	1448	10	1.34E-02	15.7	

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
35	0	744.22	10	2	1.47	1488.70	1485	8	2.73E-03	40.7	
36	0	768.03	20	15	2.41	1536.36	1532	9	5.45E-03	42.8	
37	0	785.46	18	9	1.48	1571.22	1567	9	5.00E-03	38.2	
38	0	794.58	34	3	3.57	1589.48	1583	13	9.41E-03	20.3	
39	0	819.46	19	0	0.67	1639.26	1634	11	5.28E-03	22.9	
40	0	894.11	22	2	1.22	1788.64	1784	9	6.05E-03	24.7	
41	0	911.21*	76	22	1.37	1822.85	1815	16	2.11E-02	18.7	
42	0	939.05	6	7	0.86	1878.55	1874	7	1.78E-03	78.2	
43	1	964.62	27	4	1.82	1929.72	1923	21	7.48E-03	26.1	8.02E-01
44	1	968.42	55	2	1.82	1937.33	1923	21	1.54E-02	15.1	
45	0	1017.49	22	5	1.30	2035.51	2032	8	6.19E-03	28.0	
46	0	1069.26	15	3	1.00	2139.11	2133	11	4.23E-03	33.2	
47	0	1111.42	11	2	1.07	2223.47	2220	7	3.16E-03	35.2	
48	0	1114.90	8	6	1.31	2230.44	2227	8	2.13E-03	66.4	
49	0	1119.93	26	7	2.21	2240.50	2235	10	7.17E-03	27.9	
50	0	1154.06	13	13	0.70	2308.79	2303	11	3.72E-03	59.6	
51	0	1168.28	13	10	0.61	2337.26	2331	13	3.53E-03	58.2	
52	0	1353.77	6	1	1.34	2708.41	2705	6	1.55E-03	54.6	
53	0	1377.03	24	0	1.10	2754.96	2749	12	6.67E-03	20.4	
54	0	1408.02	8	3	0.93	2816.98	2814	6	2.35E-03	46.6	
55	0	1460.27*	314	10	2.23	2921.52	2915	13	8.73E-02	6.1	
56	0	1763.74*	24	0	0.73	3528.81	3521	14	6.55E-03	22.6	

Flag: "*" = Peak area was modified by background subtraction

```

Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]R405245012.CNF;1
Analyses by       : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.4,INTERF V2.4
Sample title      : MXR1
Sample date       : 15-DEC-2015 12:56:00 Acquisition date : 3-OCT-2016 04:46:21
Sample ID         : R405245012 Sample quantity   : 132.30 GRAM
Sample type       : SOLID Sample geometry    :
Detector name     : GAMMA9 Detector geometry: CAN
Elapsed live time: 0 01:00:00.00 Elapsed real time: 0 01:00:00.50 0.0%
Energy tolerance  : 1.50 keV Half life ratio   : 10.00
Errors propagated: No Systematic Error   : 0.00 %
Efficiency type   : Linear Efficiencies at    : Peak Energy
Abundance limit   : 75.00
    
```

Interference Report

Interfering		Interfered	
Nuclide	Line	Nuclide	Line
PB-214	242.00	RA-224	240.99
PB-214	87.09	SN-126	86.94
PB-214	87.09	SN-126	87.57
PB-214	87.09	CD-109	88.03
PB-214	74.82	AM-243	74.66
PB-214	74.82	TH-228	74.82
PB-214	74.82	PB-212	74.82
HF-172	52.97	AS-73	53.44
HF-172	52.97	HF-172	54.07
HF-172	54.07	AS-73	53.44
HF-172	62.93	TH-234	63.29
HF-172	62.93	U-238	63.29
HF-172	62.93	SN-126	64.28
HF-172	122.92	PM-147	121.22
HF-172	122.92	CO-57	122.06
PB-214	351.93	BI-211	351.06

Nuclide Type:

Nuclide	Energy	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error	Status
K-40	1460.82	10.66*	1.146E+00	1.392E+01	1.392E+01	12.14	OK
CO-57	122.06	85.60*	6.295E+00	3.613E-02	7.623E-02	91.68	OK
	136.47	10.68	6.345E+00	-----	Line Not Found	-----	Absent
ZN-65	1115.54	50.60*	1.434E+00	5.845E-02	1.342E-01	132.81	OK
CD-109	88.03	3.70*	4.861E+00	1.843E+00	2.861E+00	67.84	OK
SN-126	64.28	9.60	2.287E+00	6.912E-01	6.912E-01	114.87	OK
	86.94	8.90	4.861E+00	7.662E-01	7.662E-01	67.84	OK
	87.57	37.00*	4.861E+00	1.843E-01	1.843E-01	67.84	OK
BA-137M	661.66	89.90*	2.157E+00	7.327E-01	7.464E-01	13.49	OK
CS-137	661.66	85.10*	2.157E+00	7.740E-01	7.885E-01	13.49	OK
CE-144	80.12	1.36	4.226E+00	-----	Line Not Found	-----	Absent
	133.52	11.09*	6.348E+00	2.734E-01	5.573E-01	101.01	OK
PM-147	121.22	0.00*	6.295E+00	1.085E+03	1.341E+03	91.68	OK
HF-172	52.97	36.00	9.935E-01	-----	Line Not Found	-----	<<INT Reject
	54.07	63.00	1.028E+00	1.414E-01	1.903E-01	223.64	OK
	61.17	20.30	1.994E+00	-----	Line Not Found	-----	Absent
	62.93	4.50	2.219E+00	-----	Line Not Found	-----	<<INT Reject
	67.68	5.99	2.822E+00	-----	Line Not Found	-----	Absent
	81.75	4.50	4.383E+00	-----	Line Not Found	-----	Absent
	114.06	2.60	6.157E+00	-----	Line Not Found	-----	Absent
	122.92	1.14	6.298E+00	-----	Line Not Found	-----	<<INT Reject
	125.81	11.30*	6.322E+00	1.936E-01	2.605E-01	109.92	OK
	127.91	1.46	6.341E+00	2.199E+00	2.960E+00	92.54	OK
TL-208	277.37	6.60	4.352E+00	-----	Line Not Found	-----	Absent
	583.19	85.00*	2.383E+00	3.201E-01	3.201E-01	24.75	OK
	860.56	12.50	1.758E+00	-----	Line Not Found	-----	Absent
BI-211	72.87	1.23	3.448E+00	-----	Line Not Found	-----	Absent
	351.06	12.92*	3.589E+00	2.263E-01	2.263E-01	394.29	OK
BI-212	727.33	6.67*	2.005E+00	2.055E+00	2.055E+00	31.40	OK
	785.37	1.10	1.887E+00	4.916E+00	4.916E+00	76.38	OK
	1620.50	1.47	1.045E+00	-----	Line Not Found	-----	Absent
PB-212	74.82	10.28	3.692E+00	1.302E+00	1.302E+00	45.69	OK
	77.11	17.10	3.931E+00	1.799E+00	1.799E+00	20.57	OK
	238.63	43.60*	4.882E+00	1.048E+00	1.048E+00	13.02	OK
	300.09	3.30	4.088E+00	1.467E+00	1.467E+00	67.49	OK
BI-214	609.32	45.49*	2.301E+00	7.766E-01	7.769E-01	23.93	OK
	1120.29	14.92	1.429E+00	6.686E-01	6.689E-01	55.73	OK
	1764.49	15.30	9.660E-01	8.510E-01	8.513E-01	45.11	OK
PB-214	74.82	5.80	3.669E+00	-----	Line Not Found	-----	<<INT Reject
	77.11	9.70	3.931E+00	3.172E+00	3.173E+00	20.57	OK
	87.09	3.41	4.849E+00	-----	Line Not Found	-----	<<INT Reject
	242.00	7.25	4.832E+00	-----	Line Not Found	-----	<<INT Reject
	295.22	18.42	4.140E+00	9.212E-01	9.215E-01	29.90	OK
	351.93	35.60*	3.588E+00	-----	Line Not Found	-----	<<INT Reject
RN-222	609.32	45.49*	2.301E+00	7.766E-01	7.769E-01	23.93	OK
	1120.29	14.92	1.429E+00	6.686E-01	6.689E-01	55.73	OK
	1764.49	15.30	9.660E-01	8.510E-01	8.513E-01	45.11	OK
RA-224	240.99	4.10*	4.834E+00	1.371E+00	1.371E+00	90.49	OK
RA-226	609.32	45.49*	2.301E+00	7.766E-01	7.769E-01	23.93	OK

Nuclide Type:

Nuclide	Energy	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error	Status
	1120.29	14.92	1.429E+00	6.686E-01	6.689E-01	55.73	OK
	1764.49	15.30	9.660E-01	8.510E-01	8.513E-01	45.11	OK
AC-228	105.21	1.10	5.896E+00	----- Line	Not Found	-----	Absent
	338.32	11.27	3.707E+00	1.218E+00	1.218E+00	37.61	OK
	794.95	4.25	1.870E+00	2.415E+00	2.415E+00	40.70	OK
	835.71	1.61	1.799E+00	----- Line	Not Found	-----	Absent
	911.20	25.80*	1.682E+00	9.814E-01	9.814E-01	37.46	OK
	968.97	15.80	1.604E+00	1.218E+00	1.218E+00	30.18	OK
RA-228	105.21	1.10	5.896E+00	----- Line	Not Found	-----	Absent
	338.32	11.27	3.707E+00	1.218E+00	1.218E+00	37.61	OK
	794.95	4.25	1.870E+00	2.415E+00	2.415E+00	40.70	OK
	835.71	1.61	1.799E+00	----- Line	Not Found	-----	Absent
	911.20	25.80*	1.682E+00	9.814E-01	9.814E-01	37.46	OK
	968.97	15.80	1.604E+00	1.218E+00	1.218E+00	30.18	OK
TH-228	74.82	10.28	3.692E+00	1.302E+00	1.302E+00	45.69	OK
	77.11	17.10	3.931E+00	1.799E+00	1.799E+00	20.57	OK
	238.63	43.60*	4.088E+00	1.048E+00	1.048E+00	13.02	OK
	300.09	3.30	4.088E+00	1.467E+00	1.467E+00	67.49	OK
TH-230	609.32	45.49*	2.301E+00	7.766E-01	7.767E-01	23.93	OK
	1120.29	14.92	1.429E+00	6.686E-01	6.686E-01	55.73	OK
	1764.49	15.30	9.660E-01	8.510E-01	8.510E-01	45.11	OK
PA-231	283.69	1.70	4.275E+00	----- Line	Not Found	-----	Absent
	301.36	5.35*	4.088E+00	9.047E-01	9.047E-01	67.49	OK
TH-232	105.21	1.10	5.896E+00	----- Line	Not Found	-----	Absent
	338.32	11.27	3.707E+00	1.218E+00	1.218E+00	37.61	OK
	835.71	1.61	1.799E+00	----- Line	Not Found	-----	Absent
	911.20	25.80*	1.682E+00	9.814E-01	9.814E-01	37.46	OK
	968.97	15.80	1.604E+00	1.218E+00	1.218E+00	30.18	OK
TH-234	63.29	3.70*	2.287E+00	1.794E+00	1.794E+00	114.87	OK
	92.59	4.23	5.249E+00	1.816E+00	1.816E+00	66.35	OK
U-234	609.32	45.49*	2.301E+00	7.766E-01	7.766E-01	23.93	OK
	1120.29	14.92	1.429E+00	6.686E-01	6.686E-01	55.73	OK
	1764.49	15.30	9.660E-01	8.510E-01	8.510E-01	45.11	OK
U-235	89.96	3.47	5.072E+00	1.624E+00	1.624E+00	73.79	OK
	93.35	5.60	5.249E+00	1.372E+00	1.372E+00	66.35	OK
	143.76	10.96*	6.311E+00	----- Line	Not Found	-----	Absent
	163.33	5.08	6.096E+00	----- Line	Not Found	-----	Absent
	185.72	57.20	5.741E+00	1.689E-01	1.689E-01	53.10	OK
	205.31	5.01	5.415E+00	----- Line	Not Found	-----	Absent
U-238	63.29	3.70*	2.287E+00	1.794E+00	1.794E+00	114.87	OK
	92.59	4.23	5.249E+00	1.816E+00	1.816E+00	66.35	OK
AM-243	43.53	5.90	1.969E-01	----- Line	Not Found	-----	Absent
	74.66	67.20*	3.692E+00	1.991E-01	1.991E-01	45.69	OK
ANH-511	511.00	100.00*	2.644E+00	1.519E-01	1.519E-01	51.05	OK

Flag: "*" = Keyline

```

*****
*                               GEL Laboratories LLC                               *
*                               2040 Savage Road                               *
*                               Charleston, SC 29407                          *
*****
*                               DETECTOR AND SAMPLE DATA                       *
*
* Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]R405245012.CNF;1
* Acquisition date   : 3-OCT-2016 04:46:21 Sensitivity      : 3.000
* Detector ID        : GAM09 Energy tolerance: 1.500
* Elapsed live time  : 0 01:00:00.00 Abundance limit : 75.000
* Elapsed real time  : 0 01:00:00.50 Half life ratio  : *****
* Sample date        : 15-DEC-2015 12:56:00 Analyst initials: MXR1
* Sample ID          : R405245012 Sample Quantity : 1.3230E+02 GRAM
* Batch Number       : 1596387 Wet Weight : 0.00000
* Wet wt corr        : 1.00000 Dry Weight : 0.00000
* Nuclide Library    : SOLID.NLB;6
*****
*                               CALIBRATION INFORMATION                          *
*
* Eff. Cal. date     : 3-JUN-2016 07:32:22 Eff. Geometry   : CAN
* Eff. File          : DKA100:[CANBERRA.GAMMA]EFF_GAM09_CAN.CNF;16
*****

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Combined Activity-MDA Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM)	Cnt uncert (1.96-sigma)	MDA (pCi/GRAM)
K-40	1.392E+01	1.656E+00	7.249E-01
CO-57	7.623E-02	6.850E-02	6.902E-02
ZN-65	1.342E-01	1.747E-01	3.206E-01
CD-109	2.861E+00	1.902E+00	1.974E+00
SN-126	1.843E-01	1.225E-01	1.281E-01
BA-137M	7.464E-01	9.867E-02	6.209E-02
CS-137	7.885E-01	1.042E-01	6.559E-02
CE-144	5.573E-01	5.517E-01	6.693E-01
PM-147	1.341E+03	1.205E+03	1.195E+03
HF-172	2.605E-01	2.806E-01	3.489E-01
TL-208	3.201E-01	7.763E-02	6.802E-02
BI-211	2.263E-01	8.744E-01	3.739E-01
BI-212	2.055E+00	6.325E-01	7.675E-01
PB-212	1.048E+00	1.337E-01	1.068E-01
BI-214	7.769E-01	1.822E-01	1.296E-01
PB-214	1.004E+00	1.669E-01	3.332E-01
RN-222	7.769E-01	1.822E-01	1.296E-01
RA-224	1.371E+00	1.216E+00	1.146E+00
RA-226	7.769E-01	1.822E-01	1.296E-01
AC-228	9.814E-01	3.603E-01	1.788E-01
RA-228	9.814E-01	3.603E-01	1.788E-01
TH-228	1.048E+00	1.337E-01	1.068E-01
TH-230	7.767E-01	1.822E-01	1.296E-01
PA-231	9.047E-01	5.984E-01	6.739E-01
TH-232	9.814E-01	3.603E-01	1.788E-01
TH-234	1.794E+00	2.019E+00	2.737E+00
U-234	7.766E-01	1.822E-01	1.296E-01
U-235	1.187E-01	1.663E-01	3.344E-01
U-238	1.794E+00	2.019E+00	2.737E+00
AM-243	1.991E-01	8.916E-02	9.394E-02
ANH-511	1.519E-01	7.600E-02	4.690E-02

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/GRAM)	K.L. Cnt Uncert (1.96-sigma)	MDA (pCi/GRAM)
---------	-------------------------------------	---------------------------------	--------------------

BE-7	-4.246E-01	1.017E+01	2.023E+01	NOT IDENT.
NA-22	-1.932E-02	4.686E-02	8.846E-02	NOT IDENT.
NA-24	0.000E+00	1.668E+41	0.000E+00	SHORT HLIF
AL-26	-1.835E-02	3.154E-02	5.588E-02	NOT IDENT.
SC-46	2.285E-02	4.010E-01	7.063E-01	FAIL ABUN
V-48	0.000E+00	1.230E+04	0.000E+00	SHORT HLIF
CR-51	0.000E+00	3.348E+02	0.000E+00	SHORT HLIF
MN-54	-2.640E-02	5.768E-02	1.033E-01	NOT IDENT.
CO-56	1.014E-01	4.045E-01	8.338E-01	NOT IDENT.
MN-56	0.000E+00	1.960E+41	0.000E+00	SHORT HLIF
CO-58	2.654E-01	3.896E-01	9.174E-01	NOT IDENT.
FE-59	4.556E-01	5.883E+00	1.155E+01	NOT IDENT.
CO-60	-6.267E-03	3.842E-02	7.711E-02	NOT IDENT.
GE-68	-3.057E+00	2.575E+00	3.794E+00	NOT IDENT.
AS-73	1.082E+01	2.371E+01	2.744E+01	FAIL ABUN
AS-74	0.000E+00	4.537E+03	0.000E+00	SHORT HLIF
SE-75	2.963E-02	1.928E-01	3.625E-01	FAIL ABUN
BR-77	0.000E+00	2.974E+36	0.000E+00	SHORT HLIF
SR-82	0.000E+00	5.527E+02	0.000E+00	SHORT HLIF
RB-83	4.316E-01	6.675E-01	1.406E+00	NOT IDENT.
KR-85	4.866E+00	6.507E+00	1.399E+01	NOT IDENT.
SR-85	4.734E-01	6.371E-01	1.369E+00	NOT IDENT.
RB-86	0.000E+00	2.322E+04	0.000E+00	SHORT HLIF
Y-88	-4.635E-02	1.853E-01	3.821E-01	NOT IDENT.
Y-91	-5.755E+01	4.462E+02	8.940E+02	NOT IDENT.
NB-94	-8.791E-05	2.855E-02	5.619E-02	NOT IDENT.
NB-95	1.172E-02	9.423E-01	1.619E+00	NOT IDENT.
NB-95M	1.402E+00	2.334E+00	4.240E+00	NOT IDENT.
ZR-95	2.865E-01	1.141E+00	2.383E+00	NOT IDENT.
NB-97	0.000E+00	1.960E+41	0.000E+00	SHORT HLIF
ZR-97	0.000E+00	1.960E+41	0.000E+00	SHORT HLIF
MO-99	0.000E+00	2.598E+31	0.000E+00	SHORT HLIF
TC-99M	0.000E+00	1.656E+41	0.000E+00	SHORT HLIF
RH-101	8.417E-03	3.424E-02	5.629E-02	NOT IDENT.
RH-102	2.724E-02	5.616E-02	1.189E-01	FAIL ABUN
RU-103	6.090E-01	4.364E+00	8.962E+00	FAIL ABUN
RH-106	-1.405E-01	5.266E-01	9.899E-01	NOT IDENT.
RU-106	-1.405E-01	5.266E-01	9.899E-01	NOT IDENT.
AG-108M	2.457E-03	2.746E-02	5.053E-02	NOT IDENT.
AG-110M	1.905E-04	1.078E-01	2.074E-01	NOT IDENT.
SN-113	-7.982E-03	2.148E-01	4.269E-01	NOT IDENT.
CD-115	0.000E+00	3.368E+38	0.000E+00	SHORT HLIF
SN-117M	0.000E+00	5.737E+04	0.000E+00	SHORT HLIF
TE-123M	-4.284E-03	1.084E-01	2.056E-01	NOT IDENT.
SB-124	1.060E+00	1.528E+00	4.172E+00	NOT IDENT.
SB-125	0.000E+00	1.810E-01	2.016E-01	FAIL ABUN
TE-125M	-5.316E+01	2.369E+02	4.503E+02	NOT IDENT.
I-126	0.000E+00	6.728E+05	0.000E+00	SHORT HLIF
SB-126	0.000E+00	8.817E+05	0.000E+00	SHORT HLIF
SB-127	0.000E+00	6.026E+21	0.000E+00	SHORT HLIF
I-131	0.000E+00	2.796E+09	0.000E+00	SHORT HLIF
I-132	0.000E+00	1.960E+41	0.000E+00	SHORT HLIF
TE-132	0.000E+00	8.209E+25	0.000E+00	SHORT HLIF
BA-133	1.898E-02	4.834E-02	9.054E-02	NOT IDENT.
I-133	0.000E+00	1.960E+41	0.000E+00	SHORT HLIF
CS-134	0.000E+00	6.265E-02	1.074E-01	FAIL ABUN
CS-135	-9.288E-02	1.469E-01	2.496E-01	NOT IDENT.
I-135	0.000E+00	1.960E+41	0.000E+00	SHORT HLIF
CS-136	0.000E+00	2.128E+05	0.000E+00	SHORT HLIF
CE-139	8.757E-02	1.009E-01	2.045E-01	NOT IDENT.
BA-140	0.000E+00	8.537E+05	0.000E+00	SHORT HLIF
LA-140	0.000E+00	2.481E+05	0.000E+00	SHORT HLIF
CE-141	-3.711E+00	1.892E+01	3.536E+01	NOT IDENT.
CE-143	0.000E+00	1.960E+41	0.000E+00	SHORT HLIF
PM-144	5.472E-03	5.564E-02	1.096E-01	NOT IDENT.
PR-144	5.236E-01	4.823E+00	9.514E+00	NOT IDENT.
PM-146	1.326E-02	4.723E-02	9.562E-02	NOT IDENT.
ND-147	0.000E+00	1.929E+07	0.000E+00	SHORT HLIF
PM-149	0.000E+00	5.189E+39	0.000E+00	SHORT HLIF
EU-150	1.351E-02	2.788E-02	5.010E-02	FAIL ABUN
EU-152	3.668E-02	9.586E-02	1.827E-01	FAIL ABUN
GD-153	-1.041E-01	1.788E-01	3.048E-01	NOT IDENT.
EU-154	-5.023E-02	1.147E-01	2.155E-01	FAIL ABUN
EU-155	3.595E-03	1.028E-01	1.999E-01	FAIL ABUN
TB-160	-1.069E+00	2.128E+00	3.713E+00	FAIL ABUN
HO-166M	2.060E-02	5.341E-02	1.113E-01	NOT IDENT.
TM-171	4.733E+01	5.127E+01	6.134E+01	FAIL ABUN

LU-172	3.675E-02	6.692E-02	1.470E-01	FAIL ABUN
LU-176	6.443E-03	2.092E-02	4.056E-02	FAIL ABUN
HF-181	-4.031E-01	3.383E+00	6.698E+00	NOT IDENT.
TA-182	1.015E+00	9.632E-01	2.189E+00	FAIL ABUN
RE-183	-3.628E-02	3.562E+00	7.172E+00	NOT IDENT.
RE-184	-9.147E+00	2.818E+01	5.108E+01	FAIL ABUN
W-188	5.274E+01	1.149E+02	2.058E+02	FAIL ABUN
IR-192	2.434E-01	4.075E-01	8.082E-01	FAIL ABUN
HG-203	-5.044E-01	2.340E+00	4.160E+00	NOT IDENT.
BI-207	1.715E-02	4.119E-02	8.725E-02	FAIL ABUN
PB-210	-1.050E+00	6.371E+00	1.270E+01	NOT IDENT.
PB-211	-2.266E-01	6.673E-01	1.277E+00	FAIL ABUN
RN-219	3.369E-01	3.751E-01	8.120E-01	NOT IDENT.
RA-223	1.021E-01	6.830E-01	1.165E+00	FAIL ABUN
AC-227	-2.948E-02	2.364E-01	4.282E-01	FAIL ABUN
TH-227	-2.948E-02	2.364E-01	4.282E-01	FAIL ABUN
TH-229	1.114E-01	4.731E-01	8.976E-01	FAIL ABUN
TH-231	1.021E-01	6.830E-01	1.165E+00	FAIL ABUN
PA-233	1.835E-02	6.483E-02	1.215E-01	FAIL ABUN
PA-234	-6.456E-02	2.728E-01	5.055E-01	FAIL ABUN
PA-234M	2.749E-01	5.435E+00	1.062E+01	NOT IDENT.
NP-237	1.835E-02	6.483E-02	1.215E-01	FAIL ABUN
NP-238	0.000E+00	4.857E+40	0.000E+00	SHORT HLIF
NP-239	-5.676E-02	2.073E-01	3.928E-01	NOT IDENT.
PU-239	5.088E+02	4.615E+02	6.359E+02	FAIL ABUN
AM-241	-1.357E-02	1.679E-01	3.356E-01	NOT IDENT.
CM-243	5.228E-02	9.018E-02	1.843E-01	NOT IDENT.
BK-247	9.436E-03	7.072E-02	1.324E-01	FAIL ABUN
CM-247	3.715E-02	3.424E-02	7.539E-02	NOT IDENT.
CF-249	-5.018E-03	4.382E-02	7.710E-02	NOT IDENT.
CF-251	4.004E-02	1.046E-01	2.042E-01	NOT IDENT.

Nuclide Line Activity Report

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
K-40	1460.82	300	10.66*	1.146E+00	1.392E+01	1.392E+01	12.14
CO-57	122.06	37	85.60*	6.295E+00	3.870E-02	8.164E-02	85.40
	136.47	-----	10.68	6.345E+00	-----	Line Not Found	-----
ZN-65	1115.54	7	50.60*	1.434E+00	5.845E-02	1.342E-01	132.81
AS-73	53.44	30	10.30*	1.028E+00	1.617E+00	2.023E+01	110.52
CD-109	88.03	85	3.70*	4.861E+00	2.692E+00	4.178E+00	45.48
SN-126	64.28	30	9.60	2.287E+00	7.814E-01	7.814E-01	101.06
	86.94	85	8.90	4.861E+00	1.119E+00	1.119E+00	45.48
	87.57	85	37.00*	4.861E+00	2.692E-01	2.692E-01	45.48
BA-137M	661.66	250	89.90*	2.157E+00	7.327E-01	7.464E-01	13.49
CS-137	661.66	250	85.10*	2.157E+00	7.740E-01	7.885E-01	13.49
CE-144	80.12	-----	1.36	4.226E+00	-----	Line Not Found	-----
	133.52	34	11.09*	6.348E+00	2.734E-01	5.573E-01	101.01
PM-147	121.22	37	0.00*	6.295E+00	1.162E+03	1.436E+03	85.40
HF-172	52.97	30	36.00	1.028E+00	4.627E-01	6.228E-01	110.52
	54.07	30	63.00	1.028E+00	2.644E-01	3.559E-01	110.52
	61.17	-----	20.30	1.994E+00	-----	Line Not Found	-----
	62.93	30	4.50	2.287E+00	1.667E+00	2.244E+00	101.06
	67.68	-----	5.99	2.822E+00	-----	Line Not Found	-----
	81.75	-----	4.50	4.383E+00	-----	Line Not Found	-----
	114.06	-----	2.60	6.157E+00	-----	Line Not Found	-----
	122.92	37	1.14	6.295E+00	2.906E+00	3.911E+00	85.40
	125.81	24	11.30*	6.322E+00	1.936E-01	2.605E-01	109.92
	127.91	36	1.46	6.341E+00	2.199E+00	2.960E+00	92.54
TL-208	277.37	-----	6.60	4.352E+00	-----	Line Not Found	-----
	583.19	114	85.00*	2.383E+00	3.201E-01	3.201E-01	24.75
	860.56	-----	12.50	1.758E+00	-----	Line Not Found	-----
BI-211	72.87	-----	1.23	3.448E+00	-----	Line Not Found	-----
	351.06	226	12.92*	3.589E+00	2.765E+00	2.765E+00	16.97
BI-212	727.33	48	6.67*	2.005E+00	2.055E+00	2.055E+00	31.40
	785.37	18	1.10	1.887E+00	4.916E+00	4.916E+00	76.38
	1620.50	-----	1.47	1.045E+00	-----	Line Not Found	-----
PB-212	74.82	122	10.28	3.692E+00	1.821E+00	1.821E+00	31.52
	77.11	213	17.10	3.931E+00	1.799E+00	1.799E+00	20.57
	238.63	393	43.60*	4.882E+00	1.048E+00	1.048E+00	13.02
	300.09	35	3.30	4.088E+00	1.467E+00	1.467E+00	67.49
BI-214	609.32	143	45.49*	2.301E+00	7.766E-01	7.769E-01	23.93
	1120.29	25	14.92	1.429E+00	6.686E-01	6.689E-01	55.73
	1764.49	22	15.30	9.660E-01	8.510E-01	8.513E-01	45.11
PB-214	74.82	122	5.80	3.692E+00	3.228E+00	3.229E+00	31.52
	77.11	213	9.70	3.931E+00	3.172E+00	3.173E+00	20.57
	87.09	85	3.41	4.861E+00	2.921E+00	2.922E+00	45.48
	242.00	105	7.25	4.834E+00	1.696E+00	1.697E+00	38.03
	295.22	124	18.42	4.140E+00	9.212E-01	9.215E-01	29.90
	351.93	226	35.60*	3.589E+00	1.003E+00	1.004E+00	16.97
RN-222	609.32	143	45.49*	2.301E+00	7.766E-01	7.769E-01	23.93
	1120.29	25	14.92	1.429E+00	6.686E-01	6.689E-01	55.73

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
	1764.49	22	15.30	9.660E-01	8.510E-01	8.513E-01	45.11
RA-224	240.99	105	4.10*	4.834E+00	3.000E+00	3.000E+00	38.03
RA-226	609.32	143	45.49*	2.301E+00	7.766E-01	7.769E-01	23.93
	1120.29	25	14.92	1.429E+00	6.686E-01	6.689E-01	55.73
	1764.49	22	15.30	9.660E-01	8.510E-01	8.513E-01	45.11
AC-228	105.21	-----	1.10	5.896E+00	-----	Line Not Found	-----
	338.32	90	11.27	3.707E+00	1.218E+00	1.218E+00	37.61
	794.95	34	4.25	1.870E+00	2.415E+00	2.415E+00	40.70
	835.71	-----	1.61	1.799E+00	-----	Line Not Found	-----
	911.20	75	25.80*	1.682E+00	9.814E-01	9.814E-01	37.46
	968.97	54	15.80	1.604E+00	1.218E+00	1.218E+00	30.18
RA-228	105.21	-----	1.10	5.896E+00	-----	Line Not Found	-----
	338.32	90	11.27	3.707E+00	1.218E+00	1.218E+00	37.61
	794.95	34	4.25	1.870E+00	2.415E+00	2.415E+00	40.70
	835.71	-----	1.61	1.799E+00	-----	Line Not Found	-----
	911.20	75	25.80*	1.682E+00	9.814E-01	9.814E-01	37.46
	968.97	54	15.80	1.604E+00	1.218E+00	1.218E+00	30.18
TH-228	74.82	122	10.28	3.692E+00	1.821E+00	1.821E+00	31.52
	77.11	213	17.10	3.931E+00	1.799E+00	1.799E+00	20.57
	238.63	393	43.60*	4.882E+00	1.048E+00	1.048E+00	13.02
	300.09	35	3.30	4.088E+00	1.467E+00	1.467E+00	67.49
TH-230	609.32	143	45.49*	2.301E+00	7.766E-01	7.767E-01	23.93
	1120.29	25	14.92	1.429E+00	6.686E-01	6.686E-01	55.73
	1764.49	22	15.30	9.660E-01	8.510E-01	8.510E-01	45.11
PA-231	283.69	-----	1.70	4.275E+00	-----	Line Not Found	-----
	301.36	35	5.35*	4.088E+00	9.047E-01	9.047E-01	67.49
TH-232	105.21	-----	1.10	5.896E+00	-----	Line Not Found	-----
	338.32	90	11.27	3.707E+00	1.218E+00	1.218E+00	37.61
	835.71	-----	1.61	1.799E+00	-----	Line Not Found	-----
	911.20	75	25.80*	1.682E+00	9.814E-01	9.814E-01	37.46
	968.97	54	15.80	1.604E+00	1.218E+00	1.218E+00	30.18
TH-234	63.29	30	3.70*	2.287E+00	2.028E+00	2.028E+00	101.06
	92.59	71	4.23	5.249E+00	1.816E+00	1.816E+00	66.35
U-234	609.32	143	45.49*	2.301E+00	7.766E-01	7.766E-01	23.93
	1120.29	25	14.92	1.429E+00	6.686E-01	6.686E-01	55.73
	1764.49	22	15.30	9.660E-01	8.510E-01	8.510E-01	45.11
U-235	89.96	50	3.47	5.072E+00	1.624E+00	1.624E+00	73.79
	93.35	71	5.60	5.249E+00	1.372E+00	1.372E+00	66.35
	143.76	-----	10.96*	6.311E+00	-----	Line Not Found	-----
	163.33	-----	5.08	6.096E+00	-----	Line Not Found	-----
	185.72	98	57.20	5.741E+00	1.689E-01	1.689E-01	53.10
	205.31	-----	5.01	5.415E+00	-----	Line Not Found	-----
U-238	63.29	30	3.70*	2.287E+00	2.028E+00	2.028E+00	101.06
	92.59	71	4.23	5.249E+00	1.816E+00	1.816E+00	66.35
AM-243	43.53	-----	5.90	1.969E-01	-----	Line Not Found	-----
	74.66	122	67.20*	3.692E+00	2.786E-01	2.786E-01	31.52
ANH-511	511.00	71	100.00*	2.644E+00	1.519E-01	1.519E-01	51.05

Flag: "*" = Keyline

Total number of lines in spectrum 56
 Number of unidentified lines 13
 Number of lines tentatively identified by NID 43 76.79%

Nuclide Type :

Nuclide	Hlife	Decay	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
K-40	1.25E+09Y	1.00	1.392E+01	1.392E+01	0.169E+01	12.14	
CO-57	271.74D	2.11	3.870E-02	8.164E-02	6.972E-02	85.40	
ZN-65	244.06D	2.30	5.845E-02	1.342E-01	1.782E-01	132.81	
AS-73	80.30D	12.5	1.617E+00	2.023E+01	2.236E+01	110.52	
CD-109	461.40D	1.55	2.692E+00	4.178E+00	1.900E+00	45.48	
SN-126	2.30E+05Y	1.00	2.692E-01	2.692E-01	1.224E-01	45.48	
BA-137M	30.08Y	1.02	7.327E-01	7.464E-01	1.007E-01	13.49	
CS-137	30.08Y	1.02	7.740E-01	7.885E-01	1.064E-01	13.49	
CE-144	284.91D	2.04	2.734E-01	5.573E-01	5.629E-01	101.01	
PM-147	2.62Y	1.24	1.162E+03	1.436E+03	1.227E+03	85.40	
HF-172	1.87Y	1.35	1.936E-01	2.605E-01	2.863E-01	109.92	
TL-208	1.41E+10Y	1.00	3.201E-01	3.201E-01	0.792E-01	24.75	
BI-211	7.04E+08Y	1.00	2.765E+00	2.765E+00	0.469E+00	16.97	
BI-212	1.41E+10Y	1.00	2.055E+00	2.055E+00	0.645E+00	31.40	
PB-212	1.41E+10Y	1.00	1.048E+00	1.048E+00	0.136E+00	13.02	
BI-214	1600.00Y	1.00	7.766E-01	7.769E-01	1.859E-01	23.93	
PB-214	1600.00Y	1.00	1.003E+00	1.004E+00	0.170E+00	16.97	
RN-222	1600.00Y	1.00	7.766E-01	7.769E-01	1.859E-01	23.93	
RA-224	1.41E+10Y	1.00	3.000E+00	3.000E+00	1.141E+00	38.03	
RA-226	1600.00Y	1.00	7.766E-01	7.769E-01	1.859E-01	23.93	
AC-228	1.41E+10Y	1.00	9.814E-01	9.814E-01	3.677E-01	37.46	
RA-228	1.41E+10Y	1.00	9.814E-01	9.814E-01	3.677E-01	37.46	
TH-228	1.41E+10Y	1.00	1.048E+00	1.048E+00	0.136E+00	13.02	
TH-230	7.54E+04Y	1.00	7.766E-01	7.767E-01	1.859E-01	23.93	
PA-231	7.04E+08Y	1.00	9.047E-01	9.047E-01	6.106E-01	67.49	
TH-232	1.41E+10Y	1.00	9.814E-01	9.814E-01	3.677E-01	37.46	
TH-234	4.47E+09Y	1.00	2.028E+00	2.028E+00	2.049E+00	101.06	
U-234	2.45E+05Y	1.00	7.766E-01	7.766E-01	1.859E-01	23.93	
U-235	7.04E+08Y	1.00	1.689E-01	1.689E-01	0.897E-01	53.10	K
U-238	4.47E+09Y	1.00	2.028E+00	2.028E+00	2.049E+00	101.06	
AM-243	7370.00Y	1.00	2.786E-01	2.786E-01	0.878E-01	31.52	
ANH-511	1.00E+09Y	1.00	1.519E-01	1.519E-01	0.775E-01	51.05	

Total Activity : 1.206E+03 1.501E+03

Grand Total Activity : 1.206E+03 1.501E+03

Flags: "K" = Keyline not found "M" = Manually accepted
 "E" = Manually edited "A" = Nuclide specific abn. limit

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
4	94.65	28	76	0.89	189.00	171	21	6.77E-03	****	5.38E+00	T
0	154.41	37	95	1.54	308.58	304	8	9.21E-03	****	6.21E+00	T
0	209.03	54	77	1.13	417.86	413	9	1.36E-02	67.6	5.35E+00	
0	328.69	17	71	0.58	657.28	650	10	4.41E-03	****	3.80E+00	T
2	348.66	20	10	1.33	697.24	696	20	5.28E-03	47.9	3.62E+00	
0	427.55	41	24	4.13	855.07	849	12	1.10E-02	58.5	3.06E+00	T
0	437.49	15	33	0.90	874.97	872	9	4.05E-03	****	3.00E+00	
0	464.58	24	61	1.76	929.18	921	13	6.43E-03	****	2.86E+00	T
0	470.16	10	27	1.50	940.35	934	9	2.69E-03	****	2.83E+00	
0	543.26	11	19	1.34	1086.60	1083	8	2.95E-03	****	2.52E+00	
0	665.88	12	10	1.32	1331.96	1328	8	3.39E-03	****	2.15E+00	T
0	744.22	10	2	1.47	1488.70	1485	8	2.73E-03	81.4	1.97E+00	
0	768.03	20	15	2.41	1536.36	1532	9	5.45E-03	85.5	1.92E+00	T
0	819.46	19	0	0.67	1639.26	1634	11	5.28E-03	45.9	1.83E+00	T
0	894.11	22	2	1.22	1788.64	1784	9	6.05E-03	49.5	1.71E+00	T
0	939.05	6	6	0.86	1878.55	1874	7	1.78E-03	****	1.64E+00	
1	964.62	27	4	1.82	1929.72	1923	21	7.48E-03	52.3	1.61E+00	T
0	1017.49	22	5	1.30	2035.51	2032	8	6.19E-03	56.1	1.54E+00	
0	1069.26	15	3	1.00	2139.11	2133	11	4.23E-03	66.4	1.48E+00	
0	1111.42	11	2	1.07	2223.47	2220	7	3.16E-03	70.4	1.44E+00	T
0	1154.06	13	12	0.70	2308.79	2303	11	3.72E-03	****	1.40E+00	
0	1168.28	12	10	0.61	2337.26	2331	13	3.53E-03	****	1.38E+00	
0	1353.77	5	1	1.34	2708.41	2705	6	1.55E-03	****	1.22E+00	
0	1377.03	23	0	1.10	2754.96	2749	12	6.67E-03	40.8	1.21E+00	
0	1408.02	8	2	0.93	2816.98	2814	6	2.35E-03	93.1	1.18E+00	T

Flags: "T" = Tentatively associated


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*****
*                               GEL Laboratories LLC                               *
*                               2040 Savage Road                               *
*                               Charleston, SC 29407                          *
*****
*                               DETECTOR AND SAMPLE DATA                       *
*
* Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]R405245012.CNF;1
* Acquisition date   : 3-OCT-2016 04:46:21 Sensitivity      : 3.000
* Detector ID        : GAM09 Energy tolerance: 1.500
* Elapsed live time  : 0 01:00:00.00 Abundance limit : 75.000
* Elapsed real time  : 0 01:00:00.50 Half life ratio  : *****
* Sample date        : 15-DEC-2015 12:56:00 Nuclide Library : SOLID
* Sample ID          : R405245012 Analyst initials: MXR1
* Batch Number       : 1596387 Sample Quantity : 1.3230E+02 GRAM
* Wet wt corr        : 1.00000 Wet Weight : 0.00000
*                               Dry Weight : 0.00000
*****
*                               CALIBRATION INFORMATION                         *
*
* Eff. Cal. date     : 3-JUN-2016 07:32:22 Eff. Geometry   : CAN
* Eff. File          : DKA100:[CANBERRA.GAMMA]EFF_GAM09_CAN.CNF;16
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Combined Critical Level Report

NOTE: Not all "Identified Nuclides" are valid.
 Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Lc (pCi/GRAM)
K-40	2.996E-01
CO-57	3.138E-02
ZN-65	1.359E-01
CD-109	9.188E-01
SN-126	5.960E-02
BA-137M	2.696E-02
CS-137	2.848E-02
CE-144	3.116E-01
PM-147	5.423E+02
HF-172	1.594E-01
TL-208	3.016E-02
BI-211	1.700E-01
BI-212	3.256E-01
PB-212	4.972E-02
BI-214	5.736E-02
PB-214	1.605E-01
RN-222	5.736E-02
RA-224	5.332E-01
RA-226	5.736E-02
AC-228	7.153E-02
RA-228	7.153E-02
TH-228	4.972E-02
TH-230	5.735E-02
PA-231	3.008E-01
TH-232	7.153E-02
TH-234	1.273E+00
U-234	5.735E-02
U-235	1.557E-01
U-238	1.273E+00
AM-243	4.369E-02
ANH-511	2.050E-02

---- Non-Identified Nuclides ----

Nuclide	Lc (pCi/GRAM)
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BE-7	8.905E+00	NOT IDENT.
NA-22	3.682E-02	NOT IDENT.
NA-24	0.000E+00	SHORT HLIF
AL-26	1.980E-02	NOT IDENT.
SC-46	3.023E-01	FAIL ABUN
V-48	0.000E+00	SHORT HLIF
CR-51	0.000E+00	SHORT HLIF
MN-54	4.338E-02	NOT IDENT.
CO-56	3.567E-01	NOT IDENT.
MN-56	0.000E+00	SHORT HLIF
CO-58	3.845E-01	NOT IDENT.
FE-59	4.878E+00	NOT IDENT.
CO-60	3.166E-02	NOT IDENT.
GE-68	1.553E+00	NOT IDENT.
AS-73	1.278E+01	FAIL ABUN
AS-74	0.000E+00	SHORT HLIF
SE-75	1.651E-01	FAIL ABUN
BR-77	0.000E+00	SHORT HLIF
SR-82	0.000E+00	SHORT HLIF
RB-83	6.332E-01	NOT IDENT.
KR-85	6.276E+00	NOT IDENT.
SR-85	6.142E-01	NOT IDENT.
RB-86	0.000E+00	SHORT HLIF
Y-88	1.354E-01	NOT IDENT.
Y-91	3.765E+02	NOT IDENT.
NB-94	2.431E-02	NOT IDENT.
NB-95	7.133E-01	NOT IDENT.
NB-95M	1.966E+00	NOT IDENT.
ZR-95	1.017E+00	NOT IDENT.
NB-97	0.000E+00	SHORT HLIF
ZR-97	0.000E+00	SHORT HLIF
MO-99	0.000E+00	SHORT HLIF
TC-99M	0.000E+00	SHORT HLIF
RH-101	2.596E-02	NOT IDENT.
RH-102	5.225E-02	FAIL ABUN
RU-103	3.924E+00	FAIL ABUN
RH-106	4.352E-01	NOT IDENT.
RU-106	4.352E-01	NOT IDENT.
AG-108M	2.240E-02	NOT IDENT.
AG-110M	8.979E-02	NOT IDENT.
SN-113	1.920E-01	NOT IDENT.
CD-115	0.000E+00	SHORT HLIF
SN-117M	0.000E+00	SHORT HLIF
TE-123M	9.439E-02	NOT IDENT.
SB-124	1.620E+00	NOT IDENT.
SB-125	9.031E-02	FAIL ABUN
TE-125M	2.083E+02	NOT IDENT.
I-126	0.000E+00	SHORT HLIF
SB-126	0.000E+00	SHORT HLIF
SB-127	0.000E+00	SHORT HLIF
I-131	0.000E+00	SHORT HLIF
I-132	0.000E+00	SHORT HLIF
TE-132	0.000E+00	SHORT HLIF
BA-133	4.152E-02	NOT IDENT.
I-133	0.000E+00	SHORT HLIF
CS-134	4.734E-02	FAIL ABUN
CS-135	1.138E-01	NOT IDENT.
I-135	0.000E+00	SHORT HLIF
CS-136	0.000E+00	SHORT HLIF
CE-139	9.513E-02	NOT IDENT.
BA-140	0.000E+00	SHORT HLIF
LA-140	0.000E+00	SHORT HLIF
CE-141	1.634E+01	NOT IDENT.
CE-143	0.000E+00	SHORT HLIF
PM-144	4.822E-02	NOT IDENT.
PR-144	4.187E+00	NOT IDENT.
PM-146	4.325E-02	NOT IDENT.
ND-147	0.000E+00	SHORT HLIF
PM-149	0.000E+00	SHORT HLIF
EU-150	2.283E-02	FAIL ABUN
EU-152	8.295E-02	FAIL ABUN
GD-153	1.408E-01	NOT IDENT.
EU-154	8.950E-02	FAIL ABUN
EU-155	9.274E-02	FAIL ABUN
TB-160	1.611E+00	FAIL ABUN
HO-166M	4.860E-02	NOT IDENT.
TM-171	2.820E+01	FAIL ABUN
LU-172	6.218E-02	FAIL ABUN

LU-176	1.819E-02	FAIL ABUN
HF-181	2.930E+00	NOT IDENT.
TA-182	9.687E-01	FAIL ABUN
RE-183	3.317E+00	NOT IDENT.
RE-184	2.184E+01	FAIL ABUN
W-188	9.435E+01	FAIL ABUN
IR-192	3.662E-01	FAIL ABUN
HG-203	1.907E+00	NOT IDENT.
BI-207	3.656E-02	FAIL ABUN
PB-210	5.845E+00	NOT IDENT.
PB-211	5.739E-01	FAIL ABUN
RN-219	3.691E-01	NOT IDENT.
RA-223	5.311E-01	FAIL ABUN
AC-227	1.962E-01	FAIL ABUN
TH-227	1.962E-01	FAIL ABUN
TH-229	4.169E-01	FAIL ABUN
TH-231	5.311E-01	FAIL ABUN
PA-233	5.560E-02	FAIL ABUN
PA-234	2.133E-01	FAIL ABUN
PA-234M	4.723E+00	NOT IDENT.
NP-237	5.560E-02	FAIL ABUN
NP-238	0.000E+00	SHORT HLIF
NP-239	1.802E-01	NOT IDENT.
PU-239	2.981E+02	FAIL ABUN
AM-241	1.552E-01	NOT IDENT.
CM-243	8.544E-02	NOT IDENT.
BK-247	6.039E-02	FAIL ABUN
CM-247	3.431E-02	NOT IDENT.
CF-249	3.496E-02	NOT IDENT.
CF-251	9.432E-02	NOT IDENT.

 * GEL Laboratories LLC *
 * 2040 Savage Road *
 * Charleston, SC 29407 *

DETECTOR AND SAMPLE DATA

* Configuration : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]R405245012.CNF;1 *
 * Acquisition date : 3-OCT-2016 04:46:21 Sensitivity : 3.000 *
 * Detector ID : GAM09 Energy tolerance: 1.500 *
 * Elapsed live time: 0 01:00:00.00 Abundance limit : 75.000 *
 * Elapsed real time: 0 01:00:00.50 Half life ratio : ***** *
 * Sample date : 15-DEC-2015 12:56:00 Nuclide Library : SOLID *
 * Sample ID : R405245012 Analyst initials: MXR1 *
 * Batch Number : 1596387 Sample Quantity : 1.3230E+02 GRAM *
 * Quantity Err(%) : 1.5118E-03 % *
 * Wet wt corr : 1.00000 Wet Weight : 0.00000 *
 * Dry Weight : 0.00000 *

CALIBRATION INFORMATION

* Eff. Cal. date : 3-JUN-2016 07:32:22 Eff. Geometry : CAN *
 * Eff. File : DKA100:[CANBERRA.GAMMA]EFF_GAM09_CAN.CNF;16 *

Combined Activity-MDA Report

NOTE: Not all "Identified Nuclides" are valid.
 Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM)	Act Error (1.96-sigma)	TPU (1.96-sigma)
K-40	1.392E+01	1.808E+00	1.808E+00
CO-57	7.625E-02	6.860E-02	6.860E-02
ZN-65	1.342E-01	1.747E-01	1.747E-01
CD-109	2.861E+00	1.923E+00	1.923E+00
SN-126	1.843E-01	1.235E-01	1.235E-01
BA-137M	7.464E-01	1.037E-01	1.037E-01
CS-137	7.885E-01	1.096E-01	1.096E-01
CE-144	5.573E-01	5.525E-01	5.525E-01
PM-147	1.341E+03	1.207E+03	1.207E+03
HF-172	2.605E-01	2.838E-01	2.838E-01
TL-208	3.201E-01	7.881E-02	7.881E-02
BI-211	2.263E-01	8.880E-01	8.880E-01
BI-212	2.055E+00	6.409E-01	6.409E-01
PB-212	1.048E+00	1.447E-01	1.447E-01
BI-214	7.769E-01	1.852E-01	1.852E-01
PB-214	1.004E+00	1.720E-01	1.720E-01
RN-222	7.769E-01	1.852E-01	1.852E-01
RA-224	1.371E+00	1.223E+00	1.223E+00
RA-226	7.769E-01	1.852E-01	1.852E-01
AC-228	9.814E-01	3.638E-01	3.638E-01
RA-228	9.814E-01	3.638E-01	3.638E-01
TH-228	1.048E+00	1.447E-01	1.447E-01
TH-230	7.767E-01	1.852E-01	1.852E-01
PA-231	9.047E-01	6.287E-01	6.287E-01
TH-232	9.814E-01	3.638E-01	3.638E-01
TH-234	1.794E+00	2.059E+00	2.059E+00
U-234	7.766E-01	1.852E-01	1.852E-01
U-235	1.187E-01	1.664E-01	1.664E-01
U-238	1.794E+00	2.059E+00	2.059E+00
AM-243	1.991E-01	9.057E-02	9.057E-02
ANH-511	1.519E-01	7.625E-02	7.625E-02

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/GRAM)	K.L Act error (1.96-sigma)	TPU (1.96-sigma)
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BE-7	-4.246E-01	1.017E+01	1.017E+01	NOT IDENT.
NA-22	-1.932E-02	4.687E-02	4.767E-02	NOT IDENT.
NA-24	-1.000E+41	1.722E+41	0.000E+00	SHORT HLIF
AL-26	-1.835E-02	3.157E-02	3.263E-02	NOT IDENT.
SC-46	2.285E-02	4.010E-01	4.012E-01	FAIL ABUN
V-48	2.367E+02	1.230E+04	1.230E+04	SHORT HLIF
CR-51	8.983E+01	3.349E+02	3.373E+02	SHORT HLIF
MN-54	-2.640E-02	5.769E-02	5.890E-02	NOT IDENT.
CO-56	1.014E-01	4.045E-01	4.071E-01	NOT IDENT.
MN-56	1.000E+41	3.687E+41	0.000E+00	SHORT HLIF
CO-58	2.654E-01	3.897E-01	4.077E-01	NOT IDENT.
FE-59	4.556E-01	5.883E+00	5.887E+00	NOT IDENT.
CO-60	-6.267E-03	3.842E-02	3.852E-02	NOT IDENT.
GE-68	-3.057E+00	2.578E+00	2.923E+00	NOT IDENT.
AS-73	1.086E+01	2.396E+01	2.445E+01	FAIL ABUN
AS-74	2.705E+03	4.542E+03	4.703E+03	SHORT HLIF
SE-75	2.963E-02	1.928E-01	1.933E-01	FAIL ABUN
BR-77	2.330E+37	1.968E+38	0.000E+00	SHORT HLIF
SR-82	-1.325E+02	5.528E+02	5.560E+02	SHORT HLIF
RB-83	4.316E-01	6.701E-01	6.978E-01	NOT IDENT.
KR-85	4.866E+00	6.510E+00	6.870E+00	NOT IDENT.
SR-85	4.734E-01	6.374E-01	6.722E-01	NOT IDENT.
RB-86	-1.615E+04	2.323E+04	2.435E+04	SHORT HLIF
Y-88	-4.635E-02	1.853E-01	1.865E-01	NOT IDENT.
Y-91	-5.755E+01	4.462E+02	4.470E+02	NOT IDENT.
NB-94	-8.791E-05	2.855E-02	2.855E-02	NOT IDENT.
NB-95	1.172E-02	9.423E-01	9.423E-01	NOT IDENT.
NB-95M	1.402E+00	2.336E+00	2.420E+00	NOT IDENT.
ZR-95	2.865E-01	1.141E+00	1.148E+00	NOT IDENT.
NB-97	-1.000E+41	4.144E+41	0.000E+00	SHORT HLIF
ZR-97	-1.000E+41	2.544E+41	0.000E+00	SHORT HLIF
MO-99	1.896E+31	2.601E+31	0.000E+00	SHORT HLIF
TC-99M	1.000E+41	1.659E+41	0.000E+00	SHORT HLIF
RH-101	8.417E-03	3.428E-02	3.449E-02	NOT IDENT.
RH-102	2.724E-02	5.620E-02	5.753E-02	FAIL ABUN
RU-103	6.090E-01	4.364E+00	4.372E+00	FAIL ABUN
RH-106	-1.405E-01	5.267E-01	5.305E-01	NOT IDENT.
RU-106	-1.405E-01	5.267E-01	5.305E-01	NOT IDENT.
AG-108M	2.457E-03	2.746E-02	2.748E-02	NOT IDENT.
AG-110M	1.905E-04	1.078E-01	1.078E-01	NOT IDENT.
SN-113	-7.982E-03	2.148E-01	2.148E-01	NOT IDENT.
CD-115	-1.570E+37	3.368E+38	0.000E+00	SHORT HLIF
SN-117M	7.138E+03	5.738E+04	5.747E+04	SHORT HLIF
TE-123M	-4.284E-03	1.084E-01	1.084E-01	NOT IDENT.
SB-124	1.060E+00	1.529E+00	1.602E+00	NOT IDENT.
SB-125	3.157E-01	1.814E-01	2.306E-01	FAIL ABUN
TE-125M	-5.316E+01	2.369E+02	2.381E+02	NOT IDENT.
I-126	6.465E+05	6.783E+05	7.383E+05	SHORT HLIF
SB-126	-1.815E+05	8.823E+05	8.861E+05	SHORT HLIF
SB-127	2.634E+21	6.987E+21	0.000E+00	SHORT HLIF
I-131	1.662E+09	2.797E+09	2.896E+09	SHORT HLIF
I-132	1.000E+41	2.093E+42	0.000E+00	SHORT HLIF
TE-132	4.788E+25	8.426E+25	0.000E+00	SHORT HLIF
BA-133	1.898E-02	4.834E-02	4.910E-02	NOT IDENT.
I-133	-1.000E+41	4.311E+41	0.000E+00	SHORT HLIF
CS-134	1.571E-01	6.301E-02	9.479E-02	FAIL ABUN
CS-135	-9.288E-02	1.471E-01	1.529E-01	NOT IDENT.
I-135	1.000E+41	1.188E+42	0.000E+00	SHORT HLIF
CS-136	-4.293E+03	2.128E+05	2.128E+05	SHORT HLIF
CE-139	8.757E-02	1.024E-01	1.098E-01	NOT IDENT.
BA-140	-1.932E+05	8.538E+05	8.582E+05	SHORT HLIF
LA-140	-9.831E+04	2.481E+05	2.521E+05	SHORT HLIF
CE-141	-3.711E+00	1.892E+01	1.899E+01	NOT IDENT.
CE-143	-1.000E+41	5.630E+41	0.000E+00	SHORT HLIF
PM-144	5.472E-03	5.564E-02	5.569E-02	NOT IDENT.
PR-144	5.236E-01	4.823E+00	4.829E+00	NOT IDENT.
PM-146	1.326E-02	4.724E-02	4.762E-02	NOT IDENT.
ND-147	7.518E+06	1.929E+07	1.959E+07	SHORT HLIF
PM-149	1.079E+39	5.194E+39	0.000E+00	SHORT HLIF
EU-150	1.351E-02	2.789E-02	2.855E-02	FAIL ABUN
EU-152	3.668E-02	9.588E-02	9.730E-02	FAIL ABUN
GD-153	-1.041E-01	1.789E-01	1.849E-01	NOT IDENT.
EU-154	-5.023E-02	1.147E-01	1.169E-01	FAIL ABUN
EU-155	3.595E-03	1.028E-01	1.028E-01	FAIL ABUN
TB-160	-1.069E+00	2.129E+00	2.183E+00	FAIL ABUN
HO-166M	2.060E-02	5.342E-02	5.422E-02	NOT IDENT.
TM-171	4.733E+01	5.144E+01	5.569E+01	FAIL ABUN

LU-172	3.675E-02	6.703E-02	6.905E-02	FAIL ABUN
LU-176	6.443E-03	2.092E-02	2.112E-02	FAIL ABUN
HF-181	-4.031E-01	3.383E+00	3.388E+00	NOT IDENT.
TA-182	1.015E+00	9.639E-01	1.067E+00	FAIL ABUN
RE-183	-3.628E-02	3.562E+00	3.562E+00	NOT IDENT.
RE-184	-9.147E+00	2.826E+01	2.856E+01	FAIL ABUN
W-188	5.274E+01	1.150E+02	1.175E+02	FAIL ABUN
IR-192	2.434E-01	4.076E-01	4.221E-01	FAIL ABUN
HG-203	-5.044E-01	2.341E+00	2.352E+00	NOT IDENT.
BI-207	1.715E-02	4.120E-02	4.192E-02	FAIL ABUN
PB-210	-1.050E+00	6.372E+00	6.389E+00	NOT IDENT.
PB-211	-2.266E-01	6.674E-01	6.751E-01	FAIL ABUN
RN-219	3.369E-01	3.774E-01	4.068E-01	NOT IDENT.
RA-223	1.021E-01	6.830E-01	6.846E-01	FAIL ABUN
AC-227	-2.948E-02	2.364E-01	2.368E-01	FAIL ABUN
TH-227	-2.948E-02	2.364E-01	2.368E-01	FAIL ABUN
TH-229	1.114E-01	4.732E-01	4.758E-01	FAIL ABUN
TH-231	1.021E-01	6.830E-01	6.846E-01	FAIL ABUN
PA-233	1.835E-02	6.484E-02	6.537E-02	FAIL ABUN
PA-234	-6.456E-02	2.826E-01	2.841E-01	FAIL ABUN
PA-234M	2.749E-01	5.435E+00	5.437E+00	NOT IDENT.
NP-237	1.835E-02	6.484E-02	6.537E-02	FAIL ABUN
NP-238	-2.647E+40	4.858E+40	0.000E+00	SHORT HLIF
NP-239	-5.676E-02	2.074E-01	2.089E-01	NOT IDENT.
PU-239	5.088E+02	4.620E+02	5.158E+02	FAIL ABUN
AM-241	-1.357E-02	1.679E-01	1.680E-01	NOT IDENT.
CM-243	5.228E-02	9.031E-02	9.333E-02	NOT IDENT.
BK-247	9.436E-03	7.074E-02	7.087E-02	FAIL ABUN
CM-247	3.715E-02	3.481E-02	3.863E-02	NOT IDENT.
CF-249	-5.018E-03	4.382E-02	4.388E-02	NOT IDENT.
CF-251	4.004E-02	1.047E-01	1.063E-01	NOT IDENT.

 * GEL Laboratories LLC *
 * 2040 Savage Road *
 * Charleston, SC 29407 *
 * GAMMA SPECTROSCOPY BACKGROUND REPORT *

ENERGY	MDA COUNTS	ENERGY	MDA COUNTS	ENERGY	MDA COUNTS
43.53	36.4763	87.09	60.3487	136.47	40.9297
45.60	44.5556	87.57	60.4129	140.51	0.0000
46.54	38.4244	88.03	60.4734	143.76	40.7561
49.72	0.0000	88.34	60.5145	144.24	42.7284
51.35	45.6696	88.47	60.5319	145.44	53.5095
51.87	52.1273	89.96	60.7282	152.43	51.1280
52.39	49.0154	1093.63	60.8172	153.25	0.0000
52.97	43.2327	91.11	0.0000	323.87	51.2621
53.44	43.2953	92.59	61.0704	156.02	0.0000
54.07	43.3790	93.35	61.1683	158.56	0.0000
57.36	0.0000	94.56	61.3236	159.00	42.6864
57.53	49.5115	94.65	61.3347	162.33	42.8898
57.98	51.2017	94.67	61.3373	162.66	0.0000
59.27	52.2087	94.87	61.3631	163.33	60.9302
59.32	52.2163	97.43	57.2173	165.86	42.1013
59.54	52.2490	98.43	54.6465	176.31	54.9072
60.96	46.9954	98.44	54.6474	176.60	0.0000
61.17	51.3974	99.53	49.3809	177.52	41.7564
62.93	58.5182	100.11	51.2362	181.07	0.0000
63.29	58.5761	102.03	55.9439	181.52	53.2386
63.58	58.6226	103.18	47.9314	184.41	40.0789
64.28	48.5319	103.37	43.4257	143.76	40.1467
66.73	59.9546	105.21	59.9248	193.51	51.9798
67.24	62.5368	105.31	54.4876	197.03	57.4271
125.81	55.9311	106.12	53.6632	198.01	53.3151
67.75	57.6107	106.47	57.3398	201.83	47.2618
69.67	52.0254	109.28	55.8169	203.43	47.3531
70.83	63.9621	111.00	57.8330	205.31	44.9987
72.81	50.7491	111.76	0.0000	210.85	52.3707
72.87	50.7568	114.06	48.0053	215.65	42.6996
74.66	59.4791	116.30	0.0000	222.11	37.6377
74.82	59.5026	116.74	46.3837	227.09	60.5553
74.97	59.5245	119.76	36.0636	227.38	56.2482
77.11	59.8337	121.12	32.4103	228.16	0.0000
78.74	60.0665	121.22	32.4159	228.18	38.9756
79.69	52.7476	121.78	33.6956	116.74	38.9756
80.12	51.6531	122.06	33.7121	235.69	42.2061
80.19	0.0000	122.92	33.7625	235.96	43.6743
80.57	56.3033	123.07	39.3997	238.63	60.2234
81.00	57.5099	265.00	33.8069	238.98	0.0000
81.07	64.4219	125.81	37.7005	240.99	60.3745
81.75	64.5233	127.23	41.5706	242.00	60.4391
83.79	59.0367	127.91	39.7268	244.70	44.0802
84.00	59.0647	129.30	54.3563	252.40	0.0000
85.43	67.3882	131.20	43.1156	252.80	35.5605
86.55	60.2766	133.02	53.4203	254.15	0.0000
86.79	60.3087	133.52	61.1016	256.23	42.3754
86.94	60.3287	136.00	47.2892	260.90	0.0000

ENERGY	MDA COUNTS	ENERGY	MDA COUNTS	ENERGY	MDA COUNTS
264.66	32.6117	355.39	0.0000	584.27	16.9116
264.80	33.7408	356.01	34.1105	595.83	0.0000
265.00	33.7473	364.49	0.0000	427.87	17.0566
268.22	47.3961	366.42	0.0000	602.52	0.0000
269.46	42.9344	372.51	19.7407	604.72	11.3955
270.03	39.5662	375.05	32.1406	607.14	18.5407
271.23	35.0850	377.52	28.4847	609.32	19.9891
273.65	0.0000	356.01	18.6644	610.33	19.9994
276.40	44.3594	388.16	33.7030	614.28	17.1768
277.37	30.7384	388.63	0.0000	618.01	22.9463
277.60	30.7450	391.69	27.5329	620.36	16.2723
278.00	36.4521	264.66	29.3910	621.93	21.0753
279.20	44.4772	401.81	21.0103	630.19	0.0000
279.54	35.3651	402.40	19.3379	631.29	12.5118
279.70	33.0879	404.85	31.1630	633.25	21.1943
280.46	37.6789	410.95	27.9136	634.78	0.0000
283.69	28.6316	413.71	20.3398	635.95	10.6115
284.31	0.0000	414.70	0.0000	636.99	0.0000
285.41	41.2954	423.72	0.0000	645.85	22.2953
285.90	0.0000	427.09	23.0944	657.76	17.5496
287.50	28.7331	427.87	23.1064	657.90	0.0000
290.67	32.2750	433.94	19.3346	661.66	14.6521
293.27	0.0000	439.40	24.5797	664.57	0.0000
351.93	26.2360	453.88	26.1200	666.33	0.0000
295.96	26.2533	463.37	21.0239	666.50	0.0000
879.38	25.5416	468.07	22.4043	667.71	0.0000
299.98	30.9985	473.00	0.0000	677.62	10.8263
300.09	31.0010	475.06	24.7096	685.70	0.0000
300.13	31.0026	476.78	19.4353	695.00	0.0000
301.36	23.2776	477.60	16.7935	696.49	16.8789
302.85	13.9849	482.18	17.7279	696.51	16.8789
256.23	30.3450	487.02	0.0000	697.00	0.0000
304.85	0.0000	492.35	0.0000	697.30	14.8987
306.78	21.0504	497.08	15.2060	697.49	14.8999
308.46	26.9377	505.52	12.1366	702.65	13.9390
311.90	34.0667	507.63	0.0000	706.68	11.9697
316.51	22.4088	511.00	16.2345	711.68	11.9971
319.41	0.0000	514.00	16.2634	720.70	0.0000
320.08	0.0000	514.00	16.2634	721.93	0.0000
321.04	34.3348	520.40	19.0449	722.78	13.5637
323.87	33.2303	520.69	0.0000	722.91	13.5643
325.23	34.8530	522.65	0.0000	723.31	13.5670
328.76	0.0000	527.90	0.0000	724.19	12.0640
333.37	33.4952	528.26	20.0422	727.33	10.5709
333.97	27.1283	529.59	19.1458	733.00	18.1670
334.37	39.9078	529.87	0.0000	735.93	18.1904
338.28	33.6302	531.02	0.0000	333.97	20.2246
338.32	33.6311	537.26	0.0000	739.50	0.0000
311.90	27.2729	546.56	0.0000	747.24	6.0933
340.48	27.2729	552.55	12.9302	748.06	3.0477
340.55	0.0000	563.25	23.2249	752.31	7.1245
344.28	26.5527	569.33	19.5739	753.82	0.0000
345.93	38.6729	946.00	19.5756	756.73	9.1772
351.06	33.9772	569.70	16.7805	756.80	9.1776
351.93	34.0011	583.19	20.6581	884.68	9.2058

ENERGY	MDA COUNTS	ENERGY	MDA COUNTS	ENERGY	MDA COUNTS
765.81	18.4255	1274.44	15.6395	1620.50	0.0000
766.42	19.9666	1001.03	15.6651	1621.92	3.9790
766.84	16.8975	1002.74	15.6742	1678.03	0.0000
772.60	0.0000	1004.73	16.8048	1690.97	1.0100
776.52	0.0000	507.63	0.0000	1750.46	0.0000
739.50	0.0000	1025.87	0.0000	1764.49	2.0519
778.90	10.2934	1028.54	0.0000	1063.66	0.0000
783.70	0.0000	1037.84	15.8594	1771.35	1.0274
785.37	11.3531	1038.76	0.0000	1791.20	0.0000
792.07	1.5524	631.29	9.0885	1808.65	3.1062
794.95	14.5064	1048.07	0.0000	1810.72	0.0000
795.86	14.5121	1049.04	17.0544	1836.06	3.1234
810.06	6.2556	1050.41	11.3745		
810.29	6.2561	1063.66	3.4270		
344.28	6.2566	1077.00	0.0000		
810.76	4.1715	1077.34	17.2107		
815.77	0.0000	1085.87	10.3542		
1048.07	0.0000	1093.63	5.7666		
832.01	11.5698	1099.45	9.2435		
834.85	13.6887	1112.07	0.0000		
835.71	8.4268	1112.84	0.0000		
836.80	0.0000	1115.54	10.4509		
846.75	0.0000	1120.29	8.7219		
846.77	9.5211	1120.55	8.7225		
856.80	0.0000	1221.41	17.4487		
860.56	9.5724	1129.67	13.9951		
871.09	12.8145	1131.51	0.0000		
873.19	10.6873	1147.95	0.0000		
875.33	0.0000	1173.23	7.0903		
879.38	20.3537	1177.95	9.7626		
880.51	11.7887	1189.05	12.4662		
883.24	17.1647	1204.77	10.7344		
884.68	13.9543	1221.41	8.9880		
889.28	11.2900	1231.02	17.1248		
894.76	9.6969	1235.36	0.0000		
898.04	12.9453	1238.28	10.8376		
900.72	15.1177	1260.41	0.0000		
903.28	15.1319	1271.87	10.9402		
911.20	5.4201	1274.44	11.8606		
912.08	5.4220	1274.54	11.8606		
923.98	0.0000	1291.59	4.5834		
926.50	11.9910	1298.22	0.0000		
929.11	9.8199	1312.11	0.0000		
937.49	9.8496	1332.49	8.3414		
944.13	0.0000	1362.66	0.0000		
946.00	12.0751	1365.19	3.7395		
949.00	6.5935	1368.63	0.0000		
667.71	0.0000	1384.29	0.9395		
962.31	8.2806	1408.01	5.6711		
964.08	6.6287	1457.56	0.0000		
966.17	6.6335	1460.82	7.6621		
911.20	6.6399	1489.16	4.8221		
968.97	6.6399	1505.03	9.6814		
983.53	0.0000	1584.12	6.9039		
984.45	0.0000	1596.21	0.0000		

```

*****
*                               GEL Laboratories LLC                               *
*                               2040 Savage Road                                   *
*                               Charleston, SC 29407                             *
*****
Configuration   : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]R405245013.CNF;1
Background file : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]BKG_GAM19.CNF;561
Background date : 2-OCT-2016 11:01:07.
Sample date     : 15-DEC-2015 11:04:00 Acquisition date : 3-OCT-2016 04:46:48.
Sample ID      : R405245013 Sample quantity   : 1.36095E+02 GRAM
Detector name  : GAM19 Detector geometry: CAN
Elapsed live time: 0 01:00:00.00 Elapsed real time: 0 01:00:00.74 0.0%
Energy tolerance : 1.50000 keV Analyst Initials : MXR1
Abundance limit : 75.00000 Sensitivity : 3.00000
Batch ID      : 1596387 Detector SN# :
Matrix Spike ID : LCS ID : 1556
*****
    
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BACKGROUND CORRECTED SAMPLE PEAK REPORT

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	46.17*	26	89	0.73	93.12	90	7	7.35E-03	63.9	
2	0	61.41	37	247	3.94	123.59	120	13	1.03E-02	88.2	
3	3	74.72*	121	160	1.21	150.24	147	13	3.37E-02	19.4	2.48E+00
4	3	76.93*	211	160	1.33	154.67	147	13	5.85E-02	13.0	
5	0	83.92	38	198	0.98	168.64	163	10	1.07E-02	70.5	
6	0	87.11	69	128	1.25	175.02	172	6	1.91E-02	28.6	
7	0	92.96*	75	186	1.29	186.74	183	10	2.07E-02	37.5	
8	0	108.15	36	86	0.94	217.13	214	7	1.00E-02	45.8	
9	0	128.25	38	98	1.36	257.35	254	7	1.07E-02	45.6	
10	0	169.23	21	57	1.33	339.34	336	6	5.79E-03	61.8	
11	0	185.98*	75	118	0.89	372.85	368	8	2.09E-02	28.6	
12	0	209.96	56	110	1.11	420.83	416	10	1.57E-02	37.5	
13	3	238.49*	422	62	1.53	477.91	471	20	1.17E-01	5.9	5.75E+00
14	3	241.56	69	80	1.89	484.06	471	20	1.92E-02	37.6	
15	0	270.47	64	51	2.24	541.90	538	9	1.77E-02	23.9	
16	0	295.29*	116	92	1.17	591.57	585	12	3.23E-02	19.3	
17	0	302.05	74	83	6.44	605.09	597	17	2.05E-02	30.8	
18	0	328.16	27	60	2.12	657.34	652	9	7.37E-03	56.3	
19	0	338.11	68	73	1.27	677.25	673	9	1.90E-02	25.5	
20	0	351.85*	189	50	1.36	704.72	700	10	5.25E-02	10.3	
21	3	415.91	18	10	1.38	832.91	831	12	5.02E-03	32.8	2.81E+00
22	3	419.18	24	20	1.90	839.44	831	12	6.55E-03	37.1	
23	0	463.30	10	34	1.23	927.72	926	6	2.85E-03	97.7	
24	0	510.36*	39	62	2.55	1021.89	1013	19	1.07E-02	57.8	
25	0	545.61	15	53	4.65	1092.41	1079	19	4.21E-03	117.3	
26	0	551.59	44	28	5.29	1104.38	1097	16	1.23E-02	30.6	
27	0	569.74*	6	33	1.51	1140.69	1136	14	1.78E-03	271.6	
28	0	583.26*	102	60	1.37	1167.75	1160	16	2.82E-02	19.9	
29	0	609.19*	151	32	1.22	1219.64	1213	13	4.20E-02	11.5	
30	0	618.51	22	36	2.37	1238.28	1229	16	6.11E-03	69.6	
31	0	663.92	32	54	6.86	1329.14	1323	17	8.97E-03	59.9	
32	0	728.53	16	48	1.98	1458.42	1449	15	4.33E-03	100.7	
33	0	786.07	12	17	1.33	1573.55	1566	10	3.21E-03	73.8	
34	0	795.26	14	31	1.41	1591.93	1586	14	3.98E-03	87.1	

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
35	0	809.29	4	22	0.62	1620.00	1611	11	1.11E-03	232.5	
36	0	815.04	18	18	3.78	1631.50	1624	14	5.02E-03	54.5	
37	0	911.16*	86	16	1.63	1823.84	1815	16	2.38E-02	15.5	
38	0	952.18	10	17	4.66	1905.90	1897	14	2.70E-03	96.6	
39	0	969.22	48	15	1.70	1939.99	1935	11	1.35E-02	21.5	
40	0	1063.66*	24	18	1.90	2128.96	2121	18	6.61E-03	65.5	
41	0	1120.11	31	22	1.04	2241.92	2238	11	8.74E-03	32.7	
42	0	1196.65	23	7	0.96	2395.06	2387	16	6.30E-03	34.7	
43	0	1210.97	14	27	6.38	2423.70	2407	22	4.00E-03	96.2	
44	0	1238.91	36	13	4.27	2479.62	2470	18	1.01E-02	28.8	
45	0	1377.92	13	12	1.56	2757.77	2750	12	3.61E-03	60.1	
46	0	1460.66	320	7	1.79	2923.32	2917	13	8.87E-02	5.8	
47	0	1764.19*	33	0	2.05	3530.65	3525	11	9.12E-03	18.7	

Flag: "*" = Peak area was modified by background subtraction

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Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]R405245013.CNF;1
Analyses by       : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.4,INTERF V2.4
Sample title      : MXR1
Sample date       : 15-DEC-2015 11:04:00 Acquisition date : 3-OCT-2016 04:46:48
Sample ID         : R405245013           Sample quantity  : 136.10 GRAM
Sample type       : SOLID                 Sample geometry   :
Detector name     : GAMMA19              Detector geometry: CAN
Elapsed live time: 0 01:00:00.00         Elapsed real time: 0 01:00:00.74   0.0%
Energy tolerance  : 1.50 keV             Half life ratio   : 10.00
Errors propagated: No                    Systematic Error  : 0.00 %
Efficiency type   : Linear                Efficiencies at   : Peak Energy
Abundance limit   : 75.00
    
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Interference Report

Interfering		Interfered	
Nuclide	Line	Nuclide	Line
PB-214	242.00	RA-224	240.99
PB-214	87.09	SN-126	86.94
PB-214	87.09	SN-126	87.57
PB-214	87.09	CD-109	88.03
PB-214	74.82	AM-243	74.66
PB-214	74.82	TH-228	74.82
PB-214	74.82	PB-212	74.82
PB-214	74.82	BI-207	74.97
PB-214	351.93	BI-211	351.06

Nuclide Type:

Nuclide	Energy	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error	Status
K-40	1460.82	10.66*	1.161E+00	1.362E+01	1.362E+01	11.66	OK
CO-58	810.76	99.45*	1.849E+00	1.204E-02	2.110E-01	465.03	OK
CD-109	88.03	3.70*	5.479E+00	1.384E+00	2.149E+00	94.43	OK
TE-125M	109.28	0.27*	6.331E+00	1.354E+01	4.644E+02	91.56	OK
SN-126	64.28	9.60	3.426E+00	-----	Line Not Found	-----	Absent
	86.94	8.90	5.479E+00	5.754E-01	5.754E-01	94.43	OK
	87.57	37.00*	5.479E+00	1.384E-01	1.384E-01	94.43	OK
BI-207	72.81	21.40	4.355E+00	-----	Line Not Found	-----	Absent
	74.97	35.70	4.535E+00	3.481E-01	3.540E-01	57.46	OK
	569.70	97.76	2.437E+00	1.529E-02	1.555E-02	543.18	OK
	1063.66	74.60*	1.496E+00	1.154E-01	1.174E-01	131.01	OK
	1770.23	6.87	9.833E-01	-----	Line Not Found	-----	Absent
TL-208	277.37	6.60	4.415E+00	-----	Line Not Found	-----	Absent
	583.19	85.00*	2.392E+00	2.839E-01	2.839E-01	39.85	OK
	860.56	12.50	1.763E+00	-----	Line Not Found	-----	Absent
PB-210	46.54	4.25*	8.614E-01	4.914E+00	5.038E+00	127.72	OK
BI-212	727.33	6.67*	2.006E+00	6.507E-01	6.507E-01	201.39	OK
	785.37	1.10	1.891E+00	3.081E+00	3.081E+00	147.67	OK
	1620.50	1.47	1.063E+00	-----	Line Not Found	-----	Absent
PB-212	74.82	10.28	4.535E+00	1.209E+00	1.209E+00	57.46	OK
	77.11	17.10	4.732E+00	1.712E+00	1.712E+00	26.03	OK
	238.63	43.60*	4.962E+00	1.184E+00	1.184E+00	11.79	OK
	300.09	3.30	4.142E+00	-----	Line Not Found	-----	Absent
BI-214	609.32	45.49*	2.310E+00	8.145E-01	8.148E-01	22.97	OK
	1120.29	14.92	1.437E+00	7.910E-01	7.913E-01	65.43	OK
	1764.49	15.30	9.863E-01	1.129E+00	1.129E+00	37.33	OK
PB-214	74.82	5.80	4.544E+00	-----	Line Not Found	-----	<<INT Reject
	77.11	9.70	4.732E+00	3.018E+00	3.019E+00	26.03	OK
	87.09	3.41	5.478E+00	-----	Line Not Found	-----	<<INT Reject
	242.00	7.25	4.908E+00	-----	Line Not Found	-----	<<INT Reject
	295.22	18.42	4.197E+00	8.991E-01	8.994E-01	38.65	OK
	351.93	35.60*	3.630E+00	8.637E-01	8.640E-01	20.51	OK
RN-222	609.32	45.49*	2.310E+00	8.145E-01	8.148E-01	22.97	OK
	1120.29	14.92	1.437E+00	7.910E-01	7.913E-01	65.43	OK
	1764.49	15.30	9.863E-01	1.129E+00	1.129E+00	37.33	OK
RA-224	240.99	4.10*	4.915E+00	4.899E-01	4.899E-01	343.10	OK
RA-226	609.32	45.49*	2.310E+00	8.145E-01	8.148E-01	22.97	OK
	1120.29	14.92	1.437E+00	7.910E-01	7.913E-01	65.43	OK
	1764.49	15.30	9.863E-01	1.129E+00	1.129E+00	37.33	OK
AC-228	105.21	1.10	6.259E+00	-----	Line Not Found	-----	Absent
	338.32	11.27	3.752E+00	9.555E-01	9.555E-01	51.01	OK
	794.95	4.25	1.874E+00	9.958E-01	9.958E-01	174.13	OK
	835.71	1.61	1.803E+00	-----	Line Not Found	-----	Absent
	911.20	25.80*	1.687E+00	1.078E+00	1.078E+00	30.96	OK
	968.97	15.80	1.608E+00	1.040E+00	1.040E+00	42.97	OK
RA-228	105.21	1.10	6.259E+00	-----	Line Not Found	-----	Absent
	338.32	11.27	3.752E+00	9.555E-01	9.555E-01	51.01	OK
	794.95	4.25	1.874E+00	9.958E-01	9.958E-01	174.13	OK
	835.71	1.61	1.803E+00	-----	Line Not Found	-----	Absent

Nuclide Type:

Nuclide	Energy	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error	Status
	911.20	25.80*	1.687E+00	1.078E+00	1.078E+00	30.96	OK
	968.97	15.80	1.608E+00	1.040E+00	1.040E+00	42.97	OK
TH-228	74.82	10.28	4.535E+00	1.209E+00	1.209E+00	57.46	OK
	77.11	17.10	4.732E+00	1.712E+00	1.712E+00	26.03	OK
	238.63	43.60*	4.962E+00	1.184E+00	1.184E+00	11.79	OK
	300.09	3.30	4.142E+00	-----	Line Not Found	-----	Absent
TH-230	609.32	45.49*	2.310E+00	8.145E-01	8.145E-01	22.97	OK
	1120.29	14.92	1.437E+00	7.910E-01	7.910E-01	65.43	OK
	1764.49	15.30	9.863E-01	1.129E+00	1.129E+00	37.33	OK
PA-231	283.69	1.70	4.336E+00	-----	Line Not Found	-----	Absent
	301.36	5.35*	4.120E+00	2.000E+00	2.000E+00	61.66	OK
TH-232	105.21	1.10	6.259E+00	-----	Line Not Found	-----	Absent
	338.32	11.27	3.752E+00	9.555E-01	9.555E-01	51.01	OK
	835.71	1.61	1.803E+00	-----	Line Not Found	-----	Absent
	911.20	25.80*	1.687E+00	1.078E+00	1.078E+00	30.96	OK
	968.97	15.80	1.608E+00	1.040E+00	1.040E+00	42.97	OK
U-234	609.32	45.49*	2.310E+00	8.145E-01	8.145E-01	22.97	OK
	1120.29	14.92	1.437E+00	7.910E-01	7.910E-01	65.43	OK
	1764.49	15.30	9.863E-01	1.129E+00	1.129E+00	37.33	OK
AM-243	43.53	5.90	5.190E-01	-----	Line Not Found	-----	Absent
	74.66	67.20*	4.535E+00	1.849E-01	1.849E-01	57.46	OK
ANH-511	511.00	100.00*	2.665E+00	8.292E-02	8.292E-02	115.62	OK

Flag: "*" = Keyline

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*****
*                               GEL Laboratories LLC                               *
*                               2040 Savage Road                               *
*                               Charleston, SC 29407                          *
*****
*                               DETECTOR AND SAMPLE DATA                       *
*
* Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]R405245013.CNF;1
* Acquisition date   : 3-OCT-2016 04:46:48 Sensitivity      : 3.000
* Detector ID       : GAM19 Energy tolerance: 1.500
* Elapsed live time : 0 01:00:00.00 Abundance limit : 75.000
* Elapsed real time : 0 01:00:00.74 Half life ratio : *****
* Sample date       : 15-DEC-2015 11:04:00 Analyst initials: MXR1
* Sample ID         : R405245013 Sample Quantity : 1.3610E+02 GRAM
* Batch Number      : 1596387 Wet Weight : 0.00000
* Wet wt corr       : 1.00000 Dry Weight : 0.00000
* Nuclide Library   : SOLID.NLB;6
*****
*                               CALIBRATION INFORMATION                          *
*
* Eff. Cal. date    : 15-JUN-2016 10:35:16 Eff. Geometry   : CAN
* Eff. File         : DKA100:[CANBERRA.GAMMA]EFF_GAM19_CAN.CNF;17
*****

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Combined Activity-MDA Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM)	Cnt uncert (1.96-sigma)	MDA (pCi/GRAM)
K-40	1.362E+01	1.556E+00	6.062E-01
CO-58	2.110E-01	9.617E-01	1.100E+00
CD-109	2.149E+00	1.988E+00	2.365E+00
TE-125M	4.644E+02	4.167E+02	4.982E+02
SN-126	1.384E-01	1.281E-01	1.588E-01
BI-207	1.174E-01	1.507E-01	1.135E-01
TL-208	2.839E-01	1.108E-01	6.412E-02
PB-210	5.038E+00	6.307E+00	5.515E+00
BI-212	6.507E-01	1.284E+00	1.036E+00
PB-212	1.184E+00	1.368E-01	9.661E-02
BI-214	8.148E-01	1.834E-01	1.369E-01
PB-214	8.640E-01	1.737E-01	1.440E-01
RN-222	8.148E-01	1.834E-01	1.369E-01
RA-224	4.899E-01	1.647E+00	1.036E+00
RA-226	8.148E-01	1.834E-01	1.369E-01
AC-228	1.078E+00	3.270E-01	2.527E-01
RA-228	1.078E+00	3.270E-01	2.527E-01
TH-228	1.184E+00	1.368E-01	9.661E-02
TH-230	8.145E-01	1.833E-01	1.368E-01
PA-231	2.000E+00	1.208E+00	6.890E-01
TH-232	1.078E+00	3.270E-01	2.527E-01
U-234	8.145E-01	1.833E-01	1.368E-01
AM-243	1.849E-01	1.041E-01	1.034E-01
ANH-511	8.292E-02	9.395E-02	5.751E-02

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/GRAM)	K.L. Cnt Uncert (1.96-sigma)	MDA (pCi/GRAM)	
BE-7	-1.611E+00	1.284E+01	2.358E+01	NOT IDENT.
NA-22	-7.674E-03	3.141E-02	6.220E-02	NOT IDENT.
NA-24	0.000E+00	1.960E+41	0.000E+00	SHORT HLIF
AL-26	-8.582E-03	2.214E-02	4.575E-02	NOT IDENT.
SC-46	1.079E-01	3.422E-01	7.226E-01	FAIL ABUN
V-48	0.000E+00	1.224E+04	0.000E+00	SHORT HLIF

CR-51	0.000E+00	4.282E+02	0.000E+00	SHORT HLIF
MN-54	3.093E-02	7.381E-02	1.511E-01	NOT IDENT.
CO-56	2.480E-01	4.544E-01	9.720E-01	FAIL ABUN
MN-56	0.000E+00	1.856E+41	0.000E+00	SHORT HLIF
CO-57	3.473E-02	5.070E-02	1.031E-01	NOT IDENT.
FE-59	-1.243E+00	6.901E+00	1.302E+01	NOT IDENT.
CO-60	-7.556E-03	4.086E-02	7.803E-02	NOT IDENT.
ZN-65	-6.258E-02	1.868E-01	2.956E-01	NOT IDENT.
GE-68	2.608E+00	2.178E+00	5.206E+00	NOT IDENT.
AS-73	-6.535E-01	7.699E+00	1.418E+01	NOT IDENT.
AS-74	0.000E+00	5.739E+03	0.000E+00	SHORT HLIF
SE-75	-1.800E-01	2.208E-01	3.880E-01	NOT IDENT.
BR-77	0.000E+00	3.111E+36	0.000E+00	SHORT HLIF
SR-82	0.000E+00	7.532E+02	0.000E+00	SHORT HLIF
RB-83	-1.429E-01	7.184E-01	1.302E+00	FAIL ABUN
KR-85	-1.549E+00	8.898E+00	1.422E+01	NOT IDENT.
SR-85	-1.522E-01	8.726E-01	1.395E+00	NOT IDENT.
RB-86	0.000E+00	1.982E+04	0.000E+00	SHORT HLIF
Y-88	-1.167E-01	2.153E-01	4.008E-01	NOT IDENT.
Y-91	-2.761E+02	5.925E+02	1.049E+03	NOT IDENT.
NB-94	-3.633E-03	3.142E-02	6.152E-02	NOT IDENT.
NB-95	-2.993E-01	9.413E-01	1.759E+00	NOT IDENT.
NB-95M	-5.508E-01	2.462E+00	4.097E+00	NOT IDENT.
ZR-95	9.471E-01	1.706E+00	3.517E+00	NOT IDENT.
NB-97	0.000E+00	1.960E+41	0.000E+00	SHORT HLIF
ZR-97	0.000E+00	7.793E+40	0.000E+00	SHORT HLIF
MO-99	0.000E+00	2.977E+31	0.000E+00	SHORT HLIF
TC-99M	0.000E+00	1.960E+41	0.000E+00	SHORT HLIF
RH-101	6.494E-02	5.807E-02	7.235E-02	FAIL ABUN
RH-102	-3.704E-02	7.075E-02	1.202E-01	NOT IDENT.
RU-103	-1.862E+00	6.567E+00	1.170E+01	FAIL ABUN
RH-106	-1.765E-01	5.725E-01	8.879E-01	NOT IDENT.
RU-106	-1.765E-01	5.725E-01	8.879E-01	NOT IDENT.
AG-108M	2.374E-02	3.461E-02	6.881E-02	NOT IDENT.
AG-110M	-3.029E-02	1.129E-01	2.131E-01	NOT IDENT.
SN-113	6.323E-02	2.295E-01	4.473E-01	NOT IDENT.
CD-115	0.000E+00	3.743E+38	0.000E+00	SHORT HLIF
SN-117M	0.000E+00	7.459E+04	0.000E+00	SHORT HLIF
TE-123M	1.309E-02	1.375E-01	2.666E-01	NOT IDENT.
SB-124	-3.819E-01	1.773E+00	3.714E+00	NOT IDENT.
SB-125	5.360E-02	1.153E-01	2.274E-01	FAIL ABUN
I-126	0.000E+00	6.639E+05	0.000E+00	SHORT HLIF
SB-126	0.000E+00	9.308E+05	0.000E+00	SHORT HLIF
SB-127	0.000E+00	6.705E+21	0.000E+00	SHORT HLIF
I-131	0.000E+00	3.321E+09	0.000E+00	SHORT HLIF
I-132	0.000E+00	1.960E+41	0.000E+00	SHORT HLIF
TE-132	0.000E+00	8.881E+25	0.000E+00	SHORT HLIF
BA-133	2.025E-02	5.027E-02	8.911E-02	FAIL ABUN
I-133	0.000E+00	1.960E+41	0.000E+00	SHORT HLIF
CS-134	6.477E-02	1.105E-01	1.283E-01	FAIL ABUN
CS-135	-2.828E-02	1.771E-01	2.942E-01	NOT IDENT.
I-135	0.000E+00	1.960E+41	0.000E+00	SHORT HLIF
CS-136	0.000E+00	2.524E+05	0.000E+00	SHORT HLIF
BA-137M	0.000E+00	5.054E-02	1.102E-01	NOT IDENT.
CS-137	0.000E+00	5.339E-02	1.164E-01	NOT IDENT.
CE-139	-2.430E-03	1.210E-01	2.099E-01	NOT IDENT.
BA-140	0.000E+00	1.053E+06	0.000E+00	SHORT HLIF
LA-140	0.000E+00	2.915E+05	0.000E+00	SHORT HLIF
CE-141	5.602E+00	2.235E+01	4.388E+01	NOT IDENT.
CE-143	0.000E+00	1.101E+41	0.000E+00	SHORT HLIF
CE-144	-9.145E-02	3.862E-01	7.381E-01	NOT IDENT.
PM-144	-1.497E-02	6.151E-02	1.184E-01	FAIL ABUN
PR-144	-1.263E+00	5.328E+00	1.026E+01	NOT IDENT.
PM-146	6.939E-03	4.580E-02	8.791E-02	NOT IDENT.
ND-147	0.000E+00	2.245E+07	0.000E+00	SHORT HLIF
PM-147	-4.029E+01	8.947E+02	1.741E+03	NOT IDENT.
PM-149	0.000E+00	5.951E+39	0.000E+00	SHORT HLIF
EU-150	1.774E-02	3.270E-02	5.840E-02	FAIL ABUN
EU-152	-2.646E-02	1.070E-01	1.958E-01	FAIL ABUN
GD-153	6.049E-03	2.129E-01	3.530E-01	NOT IDENT.
EU-154	-1.629E-02	7.811E-02	1.561E-01	NOT IDENT.
EU-155	5.927E-02	1.334E-01	2.278E-01	FAIL ABUN
TB-160	-7.928E-01	2.108E+00	3.898E+00	FAIL ABUN
HO-166M	2.147E-03	6.533E-02	1.287E-01	FAIL ABUN
TM-171	-3.765E+00	2.081E+01	3.790E+01	NOT IDENT.
HF-172	2.343E-02	2.614E-01	4.639E-01	FAIL ABUN
LU-172	1.259E-02	8.594E-02	1.710E-01	FAIL ABUN
LU-176	-2.969E-03	2.804E-02	4.695E-02	FAIL ABUN

HF-181	1.900E-02	4.525E+00	8.428E+00	NOT IDENT.
TA-182	6.860E-01	9.752E-01	2.074E+00	FAIL ABUN
RE-183	1.865E+00	2.884E+00	5.222E+00	NOT IDENT.
RE-184	1.937E+01	2.706E+01	5.713E+01	NOT IDENT.
W-188	-5.483E+01	1.360E+02	2.173E+02	NOT IDENT.
IR-192	-1.690E-01	5.273E-01	9.592E-01	FAIL ABUN
HG-203	-6.756E-01	2.524E+00	4.640E+00	NOT IDENT.
BI-211	0.000E+00	4.784E-01	8.498E-01	FAIL ABUN
PB-211	1.088E-01	8.622E-01	1.614E+00	NOT IDENT.
RN-219	1.717E-01	4.731E-01	9.094E-01	FAIL ABUN
RA-223	-5.957E-01	8.043E-01	1.221E+00	FAIL ABUN
AC-227	2.755E-01	2.498E-01	5.158E-01	NOT IDENT.
TH-227	2.755E-01	2.498E-01	5.158E-01	NOT IDENT.
TH-229	-4.613E-02	5.176E-01	9.813E-01	FAIL ABUN
TH-231	-5.957E-01	8.043E-01	1.221E+00	FAIL ABUN
PA-233	-6.571E-02	6.202E-02	1.042E-01	NOT IDENT.
PA-234	-2.264E-01	3.256E-01	4.702E-01	FAIL ABUN
PA-234M	1.319E+00	4.645E+00	9.639E+00	NOT IDENT.
TH-234	3.201E-01	1.416E+00	2.650E+00	FAIL ABUN
U-235	1.365E-01	2.026E-01	3.984E-01	FAIL ABUN
NP-237	-6.571E-02	6.202E-02	1.042E-01	NOT IDENT.
NP-238	0.000E+00	5.386E+00	0.000E+00	SHORT HLIF
U-238	3.201E-01	1.416E+00	2.650E+00	FAIL ABUN
NP-239	-2.922E-01	2.429E-01	4.370E-01	NOT IDENT.
PU-239	5.914E+02	5.289E+02	6.991E+02	FAIL ABUN
AM-241	6.989E-02	1.530E-01	2.693E-01	NOT IDENT.
CM-243	9.628E-02	1.140E-01	2.168E-01	NOT IDENT.
BK-247	-4.885E-02	7.917E-02	1.419E-01	FAIL ABUN
CM-247	2.083E-02	4.448E-02	8.607E-02	NOT IDENT.
CF-249	3.145E-02	3.774E-02	7.821E-02	NOT IDENT.
CF-251	1.150E-02	1.141E-01	2.218E-01	NOT IDENT.

Nuclide Line Activity Report

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
K-40	1460.82	305	10.66*	1.161E+00	1.362E+01	1.362E+01	11.66
CO-58	810.76	4	99.45*	1.849E+00	1.204E-02	2.110E-01	465.03
CD-109	88.03	81	3.70*	5.479E+00	2.213E+00	3.435E+00	57.27
TE-125M	109.28	42	0.27*	6.331E+00	1.354E+01	4.644E+02	91.56
SN-126	64.28	-----	9.60	3.426E+00	-----	Line Not Found	-----
	86.94	81	8.90	5.479E+00	9.199E-01	9.199E-01	57.27
	87.57	81	37.00*	5.479E+00	2.213E-01	2.213E-01	57.27
BI-207	72.81	-----	21.40	4.355E+00	-----	Line Not Found	-----
	74.97	145	35.70	4.535E+00	4.941E-01	5.025E-01	38.83
	569.70	7	97.76	2.437E+00	1.529E-02	1.555E-02	543.18
	1063.66	23	74.60*	1.496E+00	1.154E-01	1.174E-01	131.01
	1770.23	-----	6.87	9.833E-01	-----	Line Not Found	-----
TL-208	277.37	-----	6.60	4.415E+00	-----	Line Not Found	-----
	583.19	105	85.00*	2.392E+00	2.839E-01	2.839E-01	39.85
	860.56	-----	12.50	1.763E+00	-----	Line Not Found	-----
PB-210	46.54	33	4.25*	8.614E-01	4.914E+00	5.038E+00	127.72
BI-211	72.87	-----	1.23	4.361E+00	-----	Line Not Found	-----
	351.06	202	12.92*	3.630E+00	2.380E+00	2.380E+00	20.51
BI-212	727.33	16	6.67*	2.006E+00	6.507E-01	6.507E-01	201.39
	785.37	12	1.10	1.891E+00	3.081E+00	3.081E+00	147.67
	1620.50	-----	1.47	1.063E+00	-----	Line Not Found	-----
PB-212	74.82	145	10.28	4.535E+00	1.716E+00	1.716E+00	38.83
	77.11	251	17.10	4.732E+00	1.712E+00	1.712E+00	26.03
	238.63	464	43.60*	4.962E+00	1.184E+00	1.184E+00	11.79
	300.09	-----	3.30	4.142E+00	-----	Line Not Found	-----
BI-214	609.32	155	45.49*	2.310E+00	8.145E-01	8.148E-01	22.97
	1120.29	31	14.92	1.437E+00	7.910E-01	7.913E-01	65.43
	1764.49	31	15.30	9.863E-01	1.129E+00	1.129E+00	37.33
PB-214	74.82	145	5.80	4.535E+00	3.041E+00	3.042E+00	38.83
	77.11	251	9.70	4.732E+00	3.018E+00	3.019E+00	26.03
	87.09	81	3.41	5.479E+00	2.401E+00	2.402E+00	57.27
	242.00	76	7.25	4.915E+00	1.176E+00	1.177E+00	75.23
	295.22	126	18.42	4.197E+00	8.991E-01	8.994E-01	38.65
	351.93	202	35.60*	3.630E+00	8.637E-01	8.640E-01	20.51
RN-222	609.32	155	45.49*	2.310E+00	8.145E-01	8.148E-01	22.97
	1120.29	31	14.92	1.437E+00	7.910E-01	7.913E-01	65.43
	1764.49	31	15.30	9.863E-01	1.129E+00	1.129E+00	37.33
RA-224	240.99	76	4.10*	4.915E+00	2.080E+00	2.080E+00	75.23
RA-226	609.32	155	45.49*	2.310E+00	8.145E-01	8.148E-01	22.97
	1120.29	31	14.92	1.437E+00	7.910E-01	7.913E-01	65.43
	1764.49	31	15.30	9.863E-01	1.129E+00	1.129E+00	37.33
AC-228	105.21	-----	1.10	6.259E+00	-----	Line Not Found	-----
	338.32	73	11.27	3.752E+00	9.555E-01	9.555E-01	51.01
	794.95	14	4.25	1.874E+00	9.958E-01	9.958E-01	174.13
	835.71	-----	1.61	1.803E+00	-----	Line Not Found	-----
	911.20	85	25.80*	1.687E+00	1.078E+00	1.078E+00	30.96
	968.97	48	15.80	1.608E+00	1.040E+00	1.040E+00	42.97

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
RA-228	105.21	-----	1.10	6.259E+00	-----	Line Not Found	-----
	338.32	73	11.27	3.752E+00	9.555E-01	9.555E-01	51.01
	794.95	14	4.25	1.874E+00	9.958E-01	9.958E-01	174.13
	835.71	-----	1.61	1.803E+00	-----	Line Not Found	-----
	911.20	85	25.80*	1.687E+00	1.078E+00	1.078E+00	30.96
TH-228	968.97	48	15.80	1.608E+00	1.040E+00	1.040E+00	42.97
	74.82	145	10.28	4.535E+00	1.716E+00	1.716E+00	38.83
	77.11	251	17.10	4.732E+00	1.712E+00	1.712E+00	26.03
	238.63	464	43.60*	4.962E+00	1.184E+00	1.184E+00	11.79
TH-230	300.09	-----	3.30	4.142E+00	-----	Line Not Found	-----
	609.32	155	45.49*	2.310E+00	8.145E-01	8.145E-01	22.97
	1120.29	31	14.92	1.437E+00	7.910E-01	7.910E-01	65.43
	1764.49	31	15.30	9.863E-01	1.129E+00	1.129E+00	37.33
PA-231	283.69	-----	1.70	4.336E+00	-----	Line Not Found	-----
	301.36	80	5.35*	4.120E+00	2.000E+00	2.000E+00	61.66
TH-232	105.21	-----	1.10	6.259E+00	-----	Line Not Found	-----
	338.32	73	11.27	3.752E+00	9.555E-01	9.555E-01	51.01
	835.71	-----	1.61	1.803E+00	-----	Line Not Found	-----
	911.20	85	25.80*	1.687E+00	1.078E+00	1.078E+00	30.96
U-234	968.97	48	15.80	1.608E+00	1.040E+00	1.040E+00	42.97
	609.32	155	45.49*	2.310E+00	8.145E-01	8.145E-01	22.97
	1120.29	31	14.92	1.437E+00	7.910E-01	7.910E-01	65.43
	1764.49	31	15.30	9.863E-01	1.129E+00	1.129E+00	37.33
AM-243	43.53	-----	5.90	5.190E-01	-----	Line Not Found	-----
	74.66	145	67.20*	4.535E+00	2.625E-01	2.625E-01	38.83
ANH-511	511.00	40	100.00*	2.665E+00	8.292E-02	8.292E-02	115.62

Flag: "*" = Keyline

Total number of lines in spectrum 47
 Number of unidentified lines 6
 Number of lines tentatively identified by NID 41 87.23%

Nuclide Type :

Nuclide	Hlife	Decay	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
K-40	1.25E+09Y	1.00	1.362E+01	1.362E+01	0.159E+01	11.66	
CO-58	70.86D	17.5	1.204E-02	2.110E-01	9.814E-01	465.03	
CD-109	461.40D	1.55	2.213E+00	3.435E+00	1.967E+00	57.27	
TE-125M	57.40D	34.3	1.354E+01	4.644E+02	4.252E+02	91.56	
SN-126	2.30E+05Y	1.00	2.213E-01	2.213E-01	1.267E-01	57.27	
BI-207	32.90Y	1.02	1.154E-01	1.174E-01	1.538E-01	131.01	
TL-208	1.41E+10Y	1.00	2.839E-01	2.839E-01	1.131E-01	39.85	
PB-210	22.20Y	1.03	4.914E+00	5.038E+00	6.435E+00	127.72	
BI-211	7.04E+08Y	1.00	2.380E+00	2.380E+00	0.488E+00	20.51	
BI-212	1.41E+10Y	1.00	6.507E-01	6.507E-01	13.10E-01	201.39	
PB-212	1.41E+10Y	1.00	1.184E+00	1.184E+00	0.140E+00	11.79	
BI-214	1600.00Y	1.00	8.145E-01	8.148E-01	1.871E-01	22.97	
PB-214	1600.00Y	1.00	8.637E-01	8.640E-01	1.772E-01	20.51	
RN-222	1600.00Y	1.00	8.145E-01	8.148E-01	1.871E-01	22.97	
RA-224	1.41E+10Y	1.00	2.080E+00	2.080E+00	1.565E+00	75.23	
RA-226	1600.00Y	1.00	8.145E-01	8.148E-01	1.871E-01	22.97	
AC-228	1.41E+10Y	1.00	1.078E+00	1.078E+00	0.334E+00	30.96	
RA-228	1.41E+10Y	1.00	1.078E+00	1.078E+00	0.334E+00	30.96	
TH-228	1.41E+10Y	1.00	1.184E+00	1.184E+00	0.140E+00	11.79	
TH-230	7.54E+04Y	1.00	8.145E-01	8.145E-01	1.871E-01	22.97	
PA-231	7.04E+08Y	1.00	2.000E+00	2.000E+00	1.233E+00	61.66	
TH-232	1.41E+10Y	1.00	1.078E+00	1.078E+00	0.334E+00	30.96	
U-234	2.45E+05Y	1.00	8.145E-01	8.145E-01	1.871E-01	22.97	
AM-243	7370.00Y	1.00	2.625E-01	2.625E-01	1.019E-01	38.83	
ANH-511	1.00E+09Y	1.00	8.292E-02	8.292E-02	9.587E-02	115.62	
Total Activity :			5.291E+01	5.053E+02			

Grand Total Activity : 5.291E+01 5.053E+02

Flags: "K" = Keyline not found "M" = Manually accepted
 "E" = Manually edited "A" = Nuclide specific abn. limit

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
0	61.41	45	299	3.94	123.59	120	13	1.03E-02	****	3.07E+00	T
0	83.92	46	234	0.98	168.64	163	10	1.07E-02	****	5.27E+00	T
0	92.96	88	219	1.29	186.74	183	10	2.07E-02	75.1	5.80E+00	T
0	128.25	44	112	1.36	257.35	254	7	1.07E-02	91.3	6.54E+00	T
0	169.23	24	64	1.33	339.34	336	6	5.79E-03	****	6.12E+00	
0	185.98	84	132	0.89	372.85	368	8	2.09E-02	57.3	5.84E+00	T
0	209.96	63	122	1.11	420.83	416	10	1.57E-02	75.0	5.43E+00	T
0	270.47	69	56	2.24	541.90	538	9	1.77E-02	47.9	4.50E+00	T
0	328.16	29	65	2.12	657.34	652	9	7.37E-03	****	3.85E+00	T
3	415.91	19	11	1.38	832.91	831	12	5.02E-03	65.5	3.16E+00	T
3	419.18	25	21	1.90	839.44	831	12	6.55E-03	74.2	3.13E+00	
0	463.30	11	35	1.23	927.72	926	6	2.85E-03	****	2.88E+00	T
0	545.61	16	55	4.65	1092.41	1079	19	4.21E-03	****	2.52E+00	T
0	551.59	46	29	5.29	1104.38	1097	16	1.23E-02	61.1	2.50E+00	T
0	618.51	23	37	2.37	1238.28	1229	16	6.11E-03	****	2.28E+00	T
0	663.92	33	55	6.86	1329.14	1323	17	8.97E-03	****	2.16E+00	T
0	815.04	18	18	3.78	1631.50	1624	14	5.02E-03	****	1.84E+00	T
0	952.18	10	17	4.66	1905.90	1897	14	2.70E-03	****	1.63E+00	
0	1196.65	22	7	0.96	2395.06	2387	16	6.30E-03	69.5	1.36E+00	
0	1210.97	14	26	6.38	2423.70	2407	22	4.00E-03	****	1.35E+00	
0	1238.91	35	12	4.27	2479.62	2470	18	1.01E-02	57.5	1.33E+00	T
0	1377.92	12	12	1.56	2757.77	2750	12	3.61E-03	****	1.22E+00	

Flags: "T" = Tentatively associated

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*****
*                               GEL Laboratories LLC                               *
*                               2040 Savage Road                               *
*                               Charleston, SC 29407                          *
*****
*                               DETECTOR AND SAMPLE DATA                       *
*
* Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]R405245013.CNF;1
* Acquisition date   : 3-OCT-2016 04:46:48 Sensitivity      : 3.000
* Detector ID       : GAM19 Energy tolerance: 1.500
* Elapsed live time : 0 01:00:00.00 Abundance limit : 75.000
* Elapsed real time : 0 01:00:00.74 Half life ratio : *****
* Sample date       : 15-DEC-2015 11:04:00 Nuclide Library : SOLID
* Sample ID         : R405245013 Analyst initials: MXR1
* Batch Number      : 1596387 Sample Quantity : 1.3610E+02 GRAM
* Wet wt corr       : 1.00000 Wet Weight : 0.00000
*                               Dry Weight : 0.00000
*****
*                               CALIBRATION INFORMATION                          *
*
* Eff. Cal. date    : 15-JUN-2016 10:35:16 Eff. Geometry   : CAN
* Eff. File         : DKA100:[CANBERRA.GAMMA]EFF_GAM19_CAN.CNF;17
*****

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Combined Critical Level Report

NOTE: Not all "Identified Nuclides" are valid.
 Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Lc (pCi/GRAM)
K-40	2.427E-01
CO-58	4.781E-01
CD-109	1.123E+00
TE-125M	2.335E+02
SN-126	7.559E-02
BI-207	4.991E-02
TL-208	2.832E-02
PB-210	2.548E+00
BI-212	4.618E-01
PB-212	4.474E-02
BI-214	6.121E-02
PB-214	6.610E-02
RN-222	6.121E-02
RA-224	4.797E-01
RA-226	6.121E-02
AC-228	1.091E-01
RA-228	1.091E-01
TH-228	4.474E-02
TH-230	6.119E-02
PA-231	3.097E-01
TH-232	1.091E-01
U-234	6.119E-02
AM-243	4.913E-02
ANH-511	2.590E-02

---- Non-Identified Nuclides ----

Nuclide	Lc (pCi/GRAM)	
BE-7	1.061E+01	NOT IDENT.
NA-22	2.394E-02	NOT IDENT.
NA-24	0.000E+00	SHORT HLIF
AL-26	1.513E-02	NOT IDENT.
SC-46	3.119E-01	FAIL ABUN
V-48	0.000E+00	SHORT HLIF
CR-51	0.000E+00	SHORT HLIF

MN-54	6.756E-02	NOT IDENT.
CO-56	4.275E-01	FAIL ABUN
MN-56	0.000E+00	SHORT HLIF
CO-57	4.860E-02	NOT IDENT.
FE-59	5.641E+00	NOT IDENT.
CO-60	3.237E-02	NOT IDENT.
ZN-65	1.242E-01	NOT IDENT.
GE-68	2.270E+00	NOT IDENT.
AS-73	6.597E+00	NOT IDENT.
AS-74	0.000E+00	SHORT HLIF
SE-75	1.785E-01	NOT IDENT.
BR-77	0.000E+00	SHORT HLIF
SR-82	0.000E+00	SHORT HLIF
RB-83	5.829E-01	FAIL ABUN
KR-85	6.415E+00	NOT IDENT.
SR-85	6.291E-01	NOT IDENT.
RB-86	0.000E+00	SHORT HLIF
Y-88	1.475E-01	NOT IDENT.
Y-91	4.563E+02	NOT IDENT.
NB-94	2.709E-02	NOT IDENT.
NB-95	7.864E-01	NOT IDENT.
NB-95M	1.901E+00	NOT IDENT.
ZR-95	1.589E+00	NOT IDENT.
NB-97	0.000E+00	SHORT HLIF
ZR-97	0.000E+00	SHORT HLIF
MO-99	0.000E+00	SHORT HLIF
TC-99M	0.000E+00	SHORT HLIF
RH-101	3.410E-02	FAIL ABUN
RH-102	5.312E-02	NOT IDENT.
RU-103	5.311E+00	FAIL ABUN
RH-106	3.859E-01	NOT IDENT.
RU-106	3.859E-01	NOT IDENT.
AG-108M	3.164E-02	NOT IDENT.
AG-110M	9.299E-02	NOT IDENT.
SN-113	2.030E-01	NOT IDENT.
CD-115	0.000E+00	SHORT HLIF
SN-117M	0.000E+00	SHORT HLIF
TE-123M	1.252E-01	NOT IDENT.
SB-124	1.412E+00	NOT IDENT.
SB-125	1.036E-01	FAIL ABUN
I-126	0.000E+00	SHORT HLIF
SB-126	0.000E+00	SHORT HLIF
SB-127	0.000E+00	SHORT HLIF
I-131	0.000E+00	SHORT HLIF
I-132	0.000E+00	SHORT HLIF
TE-132	0.000E+00	SHORT HLIF
BA-133	4.094E-02	FAIL ABUN
I-133	0.000E+00	SHORT HLIF
CS-134	5.801E-02	FAIL ABUN
CS-135	1.365E-01	NOT IDENT.
I-135	0.000E+00	SHORT HLIF
CS-136	0.000E+00	SHORT HLIF
BA-137M	5.114E-02	NOT IDENT.
CS-137	5.403E-02	NOT IDENT.
CE-139	9.810E-02	NOT IDENT.
BA-140	0.000E+00	SHORT HLIF
LA-140	0.000E+00	SHORT HLIF
CE-141	2.066E+01	NOT IDENT.
CE-143	0.000E+00	SHORT HLIF
CE-144	3.472E-01	NOT IDENT.
PM-144	5.279E-02	FAIL ABUN
PR-144	4.576E+00	NOT IDENT.
PM-146	3.954E-02	NOT IDENT.
ND-147	0.000E+00	SHORT HLIF
PM-147	8.188E+02	NOT IDENT.
PM-149	0.000E+00	SHORT HLIF
EU-150	2.707E-02	FAIL ABUN
EU-152	8.977E-02	FAIL ABUN
GD-153	1.661E-01	NOT IDENT.
EU-154	6.044E-02	NOT IDENT.
EU-155	1.073E-01	FAIL ABUN
TB-160	1.710E+00	FAIL ABUN
HO-166M	5.750E-02	FAIL ABUN
TM-171	1.770E+01	NOT IDENT.
HF-172	2.178E-01	FAIL ABUN
LU-172	7.457E-02	FAIL ABUN
LU-176	2.146E-02	FAIL ABUN
HF-181	3.807E+00	NOT IDENT.

TA-182	9.154E-01	FAIL ABUN
RE-183	2.451E+00	NOT IDENT.
RE-184	2.497E+01	NOT IDENT.
W-188	1.004E+02	NOT IDENT.
IR-192	4.431E-01	FAIL ABUN
HG-203	2.153E+00	NOT IDENT.
BI-211	4.087E-01	FAIL ABUN
PB-211	7.445E-01	NOT IDENT.
RN-219	4.191E-01	FAIL ABUN
RA-223	5.610E-01	FAIL ABUN
AC-227	2.407E-01	NOT IDENT.
TH-227	2.407E-01	NOT IDENT.
TH-229	4.600E-01	FAIL ABUN
TH-231	5.610E-01	FAIL ABUN
PA-233	4.716E-02	NOT IDENT.
PA-234	1.968E-01	FAIL ABUN
PA-234M	4.249E+00	NOT IDENT.
TH-234	1.261E+00	FAIL ABUN
U-235	1.883E-01	FAIL ABUN
NP-237	4.716E-02	NOT IDENT.
NP-238	0.000E+00	SHORT HLIF
U-238	1.261E+00	FAIL ABUN
NP-239	2.033E-01	NOT IDENT.
PU-239	3.307E+02	FAIL ABUN
AM-241	1.268E-01	NOT IDENT.
CM-243	1.023E-01	NOT IDENT.
BK-247	6.533E-02	FAIL ABUN
CM-247	3.977E-02	NOT IDENT.
CF-249	3.564E-02	NOT IDENT.
CF-251	1.034E-01	NOT IDENT.


```

*****
*
*           GEL Laboratories LLC
*           2040 Savage Road
*           Charleston, SC 29407
*****
*
*           DETECTOR AND SAMPLE DATA
*
* Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]R405245013.CNF;1
* Acquisition date   : 3-OCT-2016 04:46:48 Sensitivity      : 3.000
* Detector ID        : GAM19 Energy tolerance: 1.500
* Elapsed live time  : 0 01:00:00.00 Abundance limit : 75.000
* Elapsed real time  : 0 01:00:00.74 Half life ratio  : *****
* Sample date        : 15-DEC-2015 11:04:00 Nuclide Library : SOLID
* Sample ID          : R405245013 Analyst initials: MXR1
* Batch Number       : 1596387 Sample Quantity : 1.3610E+02 GRAM
*                   : Quantity Err(%) : 1.4696E-03 %
* Wet wt corr        : 1.00000 Wet Weight      : 0.00000
*                   : Dry Weight       : 0.00000
*****
*
*           CALIBRATION INFORMATION
*
* Eff. Cal. date     : 15-JUN-2016 10:35:16 Eff. Geometry  : CAN
* Eff. File          : DKA100:[CANBERRA.GAMMA]EFF_GAM19_CAN.CNF;17
*****

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Combined Activity-MDA Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM)	Act Error (1.96-sigma)	TPU (1.96-sigma)
K-40	1.362E+01	1.712E+00	1.712E+00
CO-58	2.110E-01	9.618E-01	9.618E-01
CD-109	2.149E+00	2.003E+00	2.003E+00
TE-125M	4.644E+02	4.176E+02	4.176E+02
SN-126	1.384E-01	1.288E-01	1.288E-01
BI-207	1.174E-01	1.508E-01	1.508E-01
TL-208	2.839E-01	1.115E-01	1.115E-01
PB-210	5.038E+00	6.326E+00	6.326E+00
BI-212	6.507E-01	1.285E+00	1.285E+00
PB-212	1.184E+00	1.505E-01	1.505E-01
BI-214	8.148E-01	1.867E-01	1.867E-01
PB-214	8.640E-01	1.774E-01	1.774E-01
RN-222	8.148E-01	1.867E-01	1.867E-01
RA-224	4.899E-01	1.651E+00	1.651E+00
RA-226	8.148E-01	1.867E-01	1.867E-01
AC-228	1.078E+00	3.316E-01	3.316E-01
RA-228	1.078E+00	3.316E-01	3.316E-01
TH-228	1.184E+00	1.505E-01	1.505E-01
TH-230	8.145E-01	1.867E-01	1.867E-01
PA-231	2.000E+00	1.282E+00	1.282E+00
TH-232	1.078E+00	3.316E-01	3.316E-01
U-234	8.145E-01	1.867E-01	1.867E-01
AM-243	1.849E-01	1.052E-01	1.052E-01
ANH-511	8.292E-02	9.401E-02	9.401E-02

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/GRAM)	K.L Act error (1.96-sigma)	TPU (1.96-sigma)	
BE-7	-1.611E+00	1.284E+01	1.286E+01	NOT IDENT.
NA-22	-7.674E-03	3.141E-02	3.160E-02	NOT IDENT.
NA-24	-1.000E+41	2.818E+41	0.000E+00	SHORT HLIF
AL-26	-8.582E-03	2.214E-02	2.248E-02	NOT IDENT.
SC-46	1.079E-01	3.422E-01	3.457E-01	FAIL ABUN
V-48	-1.217E+04	1.225E+04	1.342E+04	SHORT HLIF

CR-51	3.290E+02	4.284E+02	4.534E+02	SHORT HLIF
MN-54	3.093E-02	7.383E-02	7.513E-02	NOT IDENT.
CO-56	2.480E-01	4.546E-01	4.681E-01	FAIL ABUN
MN-56	1.000E+41	1.856E+41	0.000E+00	SHORT HLIF
CO-57	3.473E-02	5.073E-02	5.309E-02	NOT IDENT.
FE-59	-1.243E+00	6.901E+00	6.924E+00	NOT IDENT.
CO-60	-7.556E-03	4.086E-02	4.100E-02	NOT IDENT.
ZN-65	-6.258E-02	1.868E-01	1.889E-01	NOT IDENT.
GE-68	2.608E+00	2.180E+00	2.477E+00	NOT IDENT.
AS-73	-6.535E-01	7.701E+00	7.706E+00	NOT IDENT.
AS-74	-2.933E+02	5.740E+03	5.741E+03	SHORT HLIF
SE-75	-1.800E-01	2.210E-01	2.354E-01	NOT IDENT.
BR-77	2.692E+37	2.275E+38	0.000E+00	SHORT HLIF
SR-82	-8.498E+02	7.543E+02	8.460E+02	SHORT HLIF
RB-83	-1.429E-01	7.187E-01	7.216E-01	FAIL ABUN
KR-85	-1.549E+00	8.898E+00	8.925E+00	NOT IDENT.
SR-85	-1.522E-01	8.726E-01	8.753E-01	NOT IDENT.
RB-86	2.143E+04	1.984E+04	2.207E+04	SHORT HLIF
Y-88	-1.167E-01	2.155E-01	2.218E-01	NOT IDENT.
Y-91	-2.761E+02	5.926E+02	6.055E+02	NOT IDENT.
NB-94	-3.633E-03	3.142E-02	3.146E-02	NOT IDENT.
NB-95	-2.993E-01	9.414E-01	9.510E-01	NOT IDENT.
NB-95M	-5.508E-01	2.462E+00	2.475E+00	NOT IDENT.
ZR-95	9.471E-01	1.706E+00	1.759E+00	NOT IDENT.
NB-97	-1.000E+41	4.230E+41	0.000E+00	SHORT HLIF
ZR-97	1.000E+41	7.804E+40	0.000E+00	SHORT HLIF
MO-99	-1.442E+31	2.978E+31	0.000E+00	SHORT HLIF
TC-99M	1.000E+41	5.689E+42	0.000E+00	SHORT HLIF
RH-101	6.494E-02	5.925E-02	6.609E-02	FAIL ABUN
RH-102	-3.704E-02	7.082E-02	7.276E-02	NOT IDENT.
RU-103	-1.862E+00	6.568E+00	6.621E+00	FAIL ABUN
RH-106	-1.765E-01	5.726E-01	5.781E-01	NOT IDENT.
RU-106	-1.765E-01	5.726E-01	5.781E-01	NOT IDENT.
AG-108M	2.374E-02	3.463E-02	3.624E-02	NOT IDENT.
AG-110M	-3.029E-02	1.129E-01	1.138E-01	NOT IDENT.
SN-113	6.323E-02	2.296E-01	2.313E-01	NOT IDENT.
CD-115	-1.788E+38	3.757E+38	0.000E+00	SHORT HLIF
SN-117M	-1.469E+04	7.461E+04	7.490E+04	SHORT HLIF
TE-123M	1.309E-02	1.375E-01	1.376E-01	NOT IDENT.
SB-124	-3.819E-01	1.773E+00	1.781E+00	NOT IDENT.
SB-125	5.360E-02	1.153E-01	1.178E-01	FAIL ABUN
I-126	3.901E+05	6.659E+05	6.888E+05	SHORT HLIF
SB-126	-7.610E+05	9.413E+05	1.002E+06	SHORT HLIF
SB-127	-5.786E+21	1.026E+22	0.000E+00	SHORT HLIF
I-131	-1.468E+09	3.322E+09	3.387E+09	SHORT HLIF
I-132	1.000E+41	1.827E+42	0.000E+00	SHORT HLIF
TE-132	-1.595E+25	8.904E+25	0.000E+00	SHORT HLIF
BA-133	2.025E-02	5.028E-02	5.110E-02	FAIL ABUN
I-133	1.000E+41	3.441E+41	0.000E+00	SHORT HLIF
CS-134	6.477E-02	1.106E-01	1.144E-01	FAIL ABUN
CS-135	-2.828E-02	1.772E-01	1.776E-01	NOT IDENT.
I-135	1.000E+41	8.680E+41	0.000E+00	SHORT HLIF
CS-136	-7.288E+04	2.526E+05	2.547E+05	SHORT HLIF
BA-137M	1.127E-01	5.077E-02	7.181E-02	NOT IDENT.
CS-137	1.190E-01	5.363E-02	7.586E-02	NOT IDENT.
CE-139	-2.430E-03	1.210E-01	1.210E-01	NOT IDENT.
BA-140	4.322E+05	1.053E+06	1.071E+06	SHORT HLIF
LA-140	-1.188E+05	2.916E+05	2.965E+05	SHORT HLIF
CE-141	5.602E+00	2.235E+01	2.249E+01	NOT IDENT.
CE-143	1.000E+41	1.105E+41	0.000E+00	SHORT HLIF
CE-144	-9.145E-02	3.862E-01	3.884E-01	NOT IDENT.
PM-144	-1.497E-02	6.151E-02	6.188E-02	FAIL ABUN
PR-144	-1.263E+00	5.328E+00	5.358E+00	NOT IDENT.
PM-146	6.939E-03	4.581E-02	4.591E-02	NOT IDENT.
ND-147	1.854E+07	2.247E+07	2.398E+07	SHORT HLIF
PM-147	-4.029E+01	8.947E+02	8.949E+02	NOT IDENT.
PM-149	2.012E+39	5.966E+39	0.000E+00	SHORT HLIF
EU-150	1.774E-02	3.271E-02	3.367E-02	FAIL ABUN
EU-152	-2.646E-02	1.070E-01	1.077E-01	FAIL ABUN
GD-153	6.049E-03	2.129E-01	2.129E-01	NOT IDENT.
EU-154	-1.629E-02	7.811E-02	7.846E-02	NOT IDENT.
EU-155	5.927E-02	1.335E-01	1.361E-01	FAIL ABUN
TB-160	-7.928E-01	2.109E+00	2.139E+00	FAIL ABUN
HO-166M	2.147E-03	6.533E-02	6.534E-02	FAIL ABUN
TM-171	-3.765E+00	2.082E+01	2.089E+01	NOT IDENT.
HF-172	2.343E-02	2.614E-01	2.616E-01	FAIL ABUN
LU-172	1.259E-02	8.595E-02	8.614E-02	FAIL ABUN
LU-176	-2.969E-03	2.804E-02	2.807E-02	FAIL ABUN

HF-181	1.900E-02	4.525E+00	4.525E+00	NOT IDENT.
TA-182	6.860E-01	9.755E-01	1.023E+00	FAIL ABUN
RE-183	1.865E+00	2.899E+00	3.018E+00	NOT IDENT.
RE-184	1.937E+01	2.744E+01	2.880E+01	NOT IDENT.
W-188	-5.483E+01	1.362E+02	1.384E+02	NOT IDENT.
IR-192	-1.690E-01	5.274E-01	5.329E-01	FAIL ABUN
HG-203	-6.756E-01	2.524E+00	2.543E+00	NOT IDENT.
BI-211	2.380E+00	4.901E-01	1.179E+00	FAIL ABUN
PB-211	1.088E-01	8.622E-01	8.636E-01	NOT IDENT.
RN-219	1.717E-01	4.736E-01	4.799E-01	FAIL ABUN
RA-223	-5.957E-01	8.051E-01	8.487E-01	FAIL ABUN
AC-227	2.755E-01	2.525E-01	2.814E-01	NOT IDENT.
TH-227	2.755E-01	2.525E-01	2.814E-01	NOT IDENT.
TH-229	-4.613E-02	5.176E-01	5.180E-01	FAIL ABUN
TH-231	-5.957E-01	8.051E-01	8.487E-01	FAIL ABUN
PA-233	-6.571E-02	6.210E-02	6.880E-02	NOT IDENT.
PA-234	-2.264E-01	4.160E-01	4.283E-01	FAIL ABUN
PA-234M	1.319E+00	4.645E+00	4.683E+00	NOT IDENT.
TH-234	3.201E-01	1.418E+00	1.425E+00	FAIL ABUN
U-235	1.365E-01	2.027E-01	2.119E-01	FAIL ABUN
NP-237	-6.571E-02	6.210E-02	6.880E-02	NOT IDENT.
NP-238	-3.009E+40	5.387E+40	0.000E+00	SHORT HLIF
U-238	3.201E-01	1.418E+00	1.425E+00	FAIL ABUN
NP-239	-2.922E-01	2.441E-01	2.773E-01	NOT IDENT.
PU-239	5.914E+02	5.295E+02	5.929E+02	FAIL ABUN
AM-241	6.989E-02	1.531E-01	1.563E-01	NOT IDENT.
CM-243	9.628E-02	1.144E-01	1.223E-01	NOT IDENT.
BK-247	-4.885E-02	7.978E-02	8.277E-02	FAIL ABUN
CM-247	2.083E-02	4.462E-02	4.559E-02	NOT IDENT.
CF-249	3.145E-02	3.782E-02	4.039E-02	NOT IDENT.
CF-251	1.150E-02	1.141E-01	1.142E-01	NOT IDENT.

 * GEL Laboratories LLC *
 * 2040 Savage Road *
 * Charleston, SC 29407 *
 * GAMMA SPECTROSCOPY BACKGROUND REPORT *

ENERGY	MDA COUNTS	ENERGY	MDA COUNTS	ENERGY	MDA COUNTS
43.53	68.5676	87.09	125.8018	136.47	85.0358
45.60	49.4184	87.57	129.1195	140.51	0.0000
46.54	49.5206	88.03	119.5168	143.76	77.0593
49.72	0.0000	88.34	117.9552	144.24	68.4363
51.35	80.7268	88.47	117.9782	145.44	80.6674
51.87	72.8457	89.96	114.1860	152.43	80.3886
52.39	70.6440	1093.63	128.0801	153.25	0.0000
52.97	61.6010	91.11	0.0000	323.87	87.5397
53.44	61.6593	92.59	97.5488	156.02	0.0000
54.07	64.0237	93.35	97.6544	158.56	0.0000
57.36	0.0000	94.56	97.8223	159.00	78.2915
57.53	78.2714	94.65	79.8982	162.33	78.5531
57.98	61.4421	94.67	79.9007	162.66	0.0000
59.27	81.6103	94.87	79.9231	163.33	79.5145
59.32	81.6180	97.43	76.9349	165.86	69.0839
59.54	75.4893	98.43	78.6802	176.31	67.0967
60.96	100.7909	98.44	78.6816	176.60	0.0000
61.17	100.8304	99.53	75.1051	177.52	61.7992
62.93	101.1561	100.11	88.7190	181.07	0.0000
63.29	101.2223	102.03	98.8330	181.52	80.9079
63.58	101.2754	103.18	70.5268	184.41	78.4189
64.28	101.4029	103.37	70.5446	143.76	67.6834
66.73	127.9882	105.21	74.4388	193.51	77.2448
67.24	99.9824	105.31	74.4484	197.03	76.5728
125.81	131.3278	106.12	96.0584	198.01	83.9375
67.75	123.5251	106.47	96.1020	201.83	77.8069
69.67	110.6002	109.28	74.8343	203.43	82.4973
70.83	122.6074	111.00	81.6657	205.31	77.1205
72.81	116.7060	111.76	0.0000	210.85	70.1019
72.87	116.7180	114.06	71.9431	215.65	72.2339
74.66	121.0176	116.30	0.0000	222.11	67.0283
74.82	121.0487	116.74	87.2909	227.09	57.9490
74.97	121.0783	119.76	74.9770	227.38	60.7676
77.11	121.4985	121.12	84.3821	228.16	0.0000
78.74	90.7632	121.22	84.3923	228.18	60.8059
79.69	90.8994	121.78	74.3154	116.74	60.8059
80.12	90.9609	122.06	74.3404	235.69	60.6938
80.19	0.0000	122.92	78.6452	235.96	62.1180
80.57	91.0247	123.07	76.9673	238.63	52.8145
81.00	91.0855	265.00	85.3181	238.98	0.0000
81.07	91.0954	125.81	76.3687	240.99	52.9102
81.75	107.1902	127.23	73.9454	242.00	52.9506
83.79	110.7352	127.91	88.4652	244.70	59.6912
84.00	110.7710	129.30	85.6250	252.40	0.0000
85.43	72.3981	131.20	78.1274	252.80	50.5210
86.55	72.5198	133.02	92.4071	254.15	0.0000
86.79	117.6849	133.52	89.8915	256.23	43.0032
86.94	117.7116	136.00	82.4160	260.90	0.0000

ENERGY	MDA COUNTS	ENERGY	MDA COUNTS	ENERGY	MDA COUNTS
264.66	60.5724	355.39	0.0000	584.27	19.3484
264.80	65.3866	356.01	35.1752	595.83	0.0000
265.00	57.7014	364.49	0.0000	427.87	34.3689
268.22	59.2803	366.42	0.0000	602.52	0.0000
269.46	63.6730	372.51	48.3741	604.72	20.6550
270.03	54.0472	375.05	41.2280	607.14	20.6748
271.23	54.0928	377.52	41.2850	609.32	24.1411
273.65	0.0000	356.01	35.2161	610.33	24.1505
276.40	59.1359	388.16	22.8406	614.28	17.2772
277.37	50.4448	388.63	0.0000	618.01	24.2240
277.60	50.4533	391.69	28.0854	620.36	17.3181
278.00	47.5555	264.66	40.7646	621.93	19.0620
279.20	56.3362	401.81	39.7434	630.19	0.0000
279.54	64.1215	402.40	40.8027	631.29	26.6667
279.70	64.1295	404.85	45.0462	633.25	22.0461
280.46	65.1353	410.95	42.0378	634.78	0.0000
283.69	51.6381	413.71	31.5741	635.95	22.0685
284.31	0.0000	414.70	0.0000	636.99	0.0000
285.41	55.6003	423.72	0.0000	645.85	20.9861
285.90	0.0000	427.09	27.5541	657.76	23.4220
287.50	48.8413	427.87	27.5647	657.90	0.0000
290.67	52.8618	433.94	31.9037	661.66	16.8885
293.27	0.0000	439.40	28.7919	664.57	0.0000
351.93	51.5494	453.88	24.7028	666.33	0.0000
295.96	51.5739	463.37	29.1324	666.50	0.0000
879.38	35.4265	468.07	32.4426	667.71	0.0000
299.98	26.5941	473.00	0.0000	677.62	23.0039
300.09	26.5963	475.06	27.1255	685.70	0.0000
300.13	26.5968	476.78	29.3192	695.00	0.0000
301.36	26.6182	477.60	29.3307	696.49	23.1610
302.85	26.6440	482.18	29.3939	696.51	23.1610
256.23	26.6726	487.02	0.0000	697.00	0.0000
304.85	0.0000	492.35	0.0000	697.30	17.8210
306.78	40.0682	497.08	37.2698	697.49	16.0400
308.46	35.6543	505.52	31.3615	702.65	19.6407
311.90	48.6371	507.63	0.0000	706.68	23.2443
316.51	55.7471	511.00	27.5777	711.68	23.2856
319.41	0.0000	514.00	31.4803	720.70	0.0000
320.08	0.0000	514.00	31.4803	721.93	0.0000
321.04	41.9299	520.40	27.6937	722.78	18.7008
323.87	60.0049	520.69	0.0000	722.91	18.7015
325.23	43.5407	522.65	0.0000	723.31	18.7040
328.76	0.0000	527.90	0.0000	724.19	20.1489
333.37	49.7941	528.26	22.2314	727.33	22.5121
333.97	42.2649	529.59	24.4689	733.00	17.3232
334.37	39.2555	529.87	0.0000	735.93	11.7412
338.28	55.4912	531.02	0.0000	333.97	19.8798
338.32	55.4935	537.26	0.0000	739.50	0.0000
311.90	42.4315	546.56	0.0000	747.24	11.7864
340.48	42.4315	552.55	21.9034	748.06	11.7896
340.55	0.0000	563.25	40.6187	752.31	23.6125
344.28	45.5658	569.33	23.7549	753.82	0.0000
345.93	40.5428	946.00	23.7566	756.73	21.8291
351.06	41.6823	569.70	23.7583	756.80	19.1005
351.93	41.7032	583.19	19.3394	884.68	20.0583

ENERGY	MDA COUNTS	ENERGY	MDA COUNTS	ENERGY	MDA COUNTS
765.81	28.2811	1274.44	11.7301	1620.50	3.3697
766.42	22.8119	1001.03	10.7667	1621.92	3.3706
766.84	18.2520	1002.74	9.7922	1678.03	0.0000
772.60	0.0000	1004.73	17.6358	1690.97	4.5510
776.52	0.0000	507.63	0.0000	1750.46	0.0000
739.50	0.0000	1025.87	0.0000	1764.49	4.6104
778.90	12.2164	1028.54	0.0000	1063.66	0.0000
783.70	0.0000	1037.84	12.8500	1771.35	0.9231
785.37	8.8146	1038.76	0.0000	1791.20	0.0000
792.07	11.7785	631.29	14.8608	1808.65	2.7872
794.95	19.3421	1048.07	0.0000	1810.72	0.0000
795.86	19.3472	1049.04	14.8700	1836.06	5.6001
810.06	14.8081	1050.41	9.9170		
810.29	14.8091	1063.66	17.9121		
344.28	14.8101	1077.00	0.0000		
810.76	14.8115	1077.34	4.9930		
815.77	0.0000	1085.87	12.0095		
1048.07	0.0000	1093.63	14.0385		
832.01	25.1625	1099.45	16.0684		
834.85	18.6554	1112.07	15.1117		
835.71	25.1914	1112.84	11.0839		
836.80	0.0000	1115.54	12.9063		
846.75	0.0000	1120.29	18.1703		
846.77	12.1704	1120.55	18.1714		
856.80	0.0000	1221.41	18.1758		
860.56	11.2819	1129.67	10.1184		
871.09	19.8061	1131.51	0.0000		
873.19	16.9876	1147.95	0.0000		
875.33	0.0000	1173.23	10.2258		
879.38	21.7464	1177.95	11.2612		
880.51	20.8083	1189.05	9.5800		
883.24	12.3057	1204.77	20.6055		
884.68	18.9398	1221.41	11.3766		
889.28	10.4313	1231.02	13.2680		
894.76	14.2474	1235.36	0.0000		
898.04	17.1134	1238.28	12.4592		
900.72	19.9817	1260.41	0.0000		
903.28	8.8873	1271.87	5.2313		
911.20	13.3617	1274.44	5.2344		
912.08	13.3651	1274.54	5.2344		
923.98	0.0000	1291.59	7.3559		
926.50	15.3384	1298.22	0.0000		
929.11	15.3501	1312.11	0.0000		
937.49	24.0417	1332.49	9.5427		
944.13	0.0000	1362.66	0.0000		
946.00	16.9662	1365.19	6.4069		
949.00	7.7185	1368.63	0.0000		
667.71	0.0000	1384.29	11.7929		
962.31	23.2419	1408.01	5.3873		
964.08	15.5024	1457.56	0.0000		
966.17	24.8180	1460.82	5.4456		
911.20	22.3149	1489.16	3.2858		
968.97	22.3149	1505.03	1.0988		
983.53	0.0000	1584.12	13.3872		
984.45	0.0000	1596.21	0.0000		

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*****
*                               GEL Laboratories LLC                               *
*                               2040 Savage Road                               *
*                               Charleston, SC 29407                          *
*****
Configuration   : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]R405245014.CNF;1
Background file : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]BKG_GAM20.CNF;515
Background date : 2-OCT-2016 11:01:13.
Sample date     : 15-DEC-2015 11:08:00 Acquisition date : 3-OCT-2016 04:47:25.
Sample ID      : R405245014 Sample quantity   : 1.54135E+02 GRAM
Detector name  : GAM20 Detector geometry: CAN
Elapsed live time: 0 01:00:00.00 Elapsed real time: 0 01:00:15.40 0.4%
Energy tolerance : 1.50000 keV Analyst Initials : MXR1
Abundance limit : 75.00000 Sensitivity : 3.00000
Batch ID       : 1596387 Detector SN# :
Matrix Spike ID : LCS ID : 1556
*****
    
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BACKGROUND CORRECTED SAMPLE PEAK REPORT

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	3	26.73*	16	6	1.36	53.68	51	22	4.54E-03	70.5	3.85E+00
2	3	28.06*	30	17	1.37	56.32	51	22	8.29E-03	51.9	
3	3	30.06*	34	36	1.37	60.32	51	22	9.54E-03	47.1	
4	3	31.78*	19	55	1.38	63.75	51	22	5.17E-03	87.2	
5	0	42.92	33	62	1.34	86.02	84	5	9.06E-03	40.5	
6	0	46.97*	38	142	1.55	94.12	90	10	1.07E-02	61.6	
7	0	57.93	36	88	1.29	116.02	113	7	9.91E-03	46.7	
8	0	63.98*	40	227	1.04	128.12	123	10	1.12E-02	73.3	
9	2	74.93	196	179	1.22	150.00	146	14	5.46E-02	13.1	1.66E+00
10	2	77.14	246	141	0.95	154.42	146	14	6.83E-02	10.1	
11	6	84.14*	78	181	1.98	168.39	164	28	2.17E-02	30.1	1.74E+00
12	6	87.26	116	159	1.30	174.65	164	28	3.22E-02	20.5	
13	6	90.01*	71	108	0.97	180.13	164	28	1.97E-02	26.6	
14	6	92.91*	117	124	1.37	185.94	164	28	3.24E-02	21.4	
15	0	151.08	44	69	1.27	302.20	299	7	1.24E-02	34.3	
16	0	170.22	13	99	0.92	340.46	334	8	3.55E-03	139.9	
17	0	186.05*	47	171	1.01	372.10	366	12	1.31E-02	59.2	
18	0	209.04	41	97	1.13	418.05	414	9	1.14E-02	46.0	
19	4	238.59*	404	57	1.13	477.13	472	15	1.12E-01	6.0	1.28E+00
20	4	241.53	91	71	1.39	483.01	472	15	2.52E-02	19.6	
21	0	270.35	41	60	1.72	540.63	536	8	1.13E-02	36.9	
22	0	295.21*	148	86	1.26	590.32	586	10	4.11E-02	14.6	
23	0	300.61	14	62	1.46	601.12	596	8	3.76E-03	104.4	
24	0	329.31	61	81	0.86	658.51	652	14	1.68E-02	34.5	
25	0	338.97*	82	89	1.18	677.82	671	14	2.29E-02	27.4	
26	2	351.81*	265	20	1.24	703.48	698	15	7.37E-02	6.8	2.36E+00
27	2	354.77*	15	17	1.71	709.41	698	15	4.16E-03	77.7	
28	0	462.75	41	25	1.50	925.34	921	9	1.14E-02	26.9	
29	0	490.71	10	27	0.87	981.25	976	8	2.70E-03	97.2	
30	0	510.66*	55	41	2.08	1021.15	1013	15	1.54E-02	33.2	
31	0	541.32	15	23	0.96	1082.48	1079	8	4.19E-03	60.0	
32	0	583.02*	149	25	1.50	1165.87	1158	14	4.15E-02	10.9	
33	0	609.47*	182	27	1.31	1218.78	1213	14	5.06E-02	9.8	
34	0	662.09*	60	25	1.41	1324.05	1318	10	1.68E-02	20.5	

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
35	0	727.66	31	38	2.03	1455.23	1446	15	8.47E-03	47.4	
36	0	732.73	10	18	0.80	1465.37	1461	7	2.64E-03	79.9	
37	0	768.15	24	33	1.30	1536.24	1529	12	6.69E-03	51.9	
38	0	787.21	21	14	1.63	1574.37	1568	12	5.87E-03	42.4	
39	0	794.42	41	18	3.39	1588.81	1580	18	1.14E-02	28.8	
40	0	862.45	13	30	1.47	1724.95	1717	14	3.60E-03	99.3	
41	0	889.92	8	5	2.97	1779.90	1772	10	2.16E-03	65.0	
42	0	911.40*	72	22	1.37	1822.90	1817	11	1.99E-02	17.6	
43	0	924.18	5	12	3.57	1848.48	1841	9	1.52E-03	132.4	
44	1	965.06	43	5	1.94	1930.30	1921	27	1.20E-02	16.1	1.65E+00
45	1	969.09	82	2	1.88	1938.35	1921	27	2.27E-02	11.2	
46	0	1001.50*	20	6	2.18	2003.24	1998	12	5.66E-03	34.4	
47	0	1057.29	12	5	1.17	2114.90	2111	7	3.30E-03	43.1	
48	0	1120.58	50	3	1.65	2241.62	2236	12	1.39E-02	15.8	
49	4	1155.74	20	11	1.85	2312.00	2306	16	5.44E-03	40.0	2.42E+00
50	4	1158.68	13	8	2.26	2317.89	2306	16	3.56E-03	45.5	
51	0	1164.73	15	12	4.40	2330.00	2323	12	4.17E-03	52.9	
52	0	1238.30	16	5	1.45	2477.30	2475	6	4.47E-03	32.7	
53	0	1281.08	10	14	1.24	2562.98	2557	11	2.82E-03	77.5	
54	0	1316.37*	4	5	0.92	2633.64	2626	10	1.08E-03	131.8	
55	0	1353.87	8	11	0.59	2708.75	2701	9	2.14E-03	86.3	
56	0	1377.43	11	7	3.03	2755.92	2751	9	3.17E-03	50.5	
57	0	1460.95*	393	15	1.99	2923.21	2916	15	1.09E-01	5.5	
58	0	1568.64	4	7	0.83	3138.95	3131	9	1.19E-03	119.8	
59	0	1588.36	9	2	0.63	3178.46	3174	8	2.51E-03	42.8	
60	0	1764.80	34	2	1.90	3532.02	3527	11	9.33E-03	19.6	

Flag: "*" = Peak area was modified by background subtraction


```

Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]R405245014.CNF;1
Analyses by       : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.4,INTERF V2.4
Sample title      : MXR1
Sample date       : 15-DEC-2015 11:08:00 Acquisition date : 3-OCT-2016 04:47:25
Sample ID        : R405245014 Sample quantity   : 154.13 GRAM
Sample type       : SOLID Sample geometry    :
Detector name    : GAMMA20 Detector geometry: CAN
Elapsed live time: 0 01:00:00.00 Elapsed real time: 0 01:00:15.40 0.4%
Energy tolerance : 1.50 keV Half life ratio   : 10.00
Errors propagated: No Systematic Error   : 0.00 %
Efficiency type  : Linear Efficiencies at   : Peak Energy
Abundance limit  : 75.00
    
```

Interference Report

Interfering		Interfered	
Nuclide	Line	Nuclide	Line
PB-214	242.00	RA-224	240.99
PB-214	87.09	SN-126	86.94
PB-214	87.09	SN-126	87.57
PB-214	87.09	CD-109	88.03
PB-214	87.09	TH-229	88.47
PB-214	74.82	AM-243	74.66
PB-214	74.82	TH-228	74.82
PB-214	74.82	PB-212	74.82
PB-214	351.93	BI-211	351.06

Nuclide Type:

Nuclide	Energy	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error	Status
K-40	1460.82	10.66*	1.312E+00	1.325E+01	1.325E+01	11.03	OK
SC-46	889.28	99.98*	1.959E+00	1.976E-02	2.226E-01	129.99	OK
	1120.55	99.99	1.635E+00	1.481E-01	1.669E+00	31.57	OK
CD-109	88.03	3.70*	6.845E+00	1.984E+00	3.079E+00	60.60	OK
SN-126	64.28	9.60	4.873E+00	5.550E-01	5.550E-01	146.68	OK
	86.94	8.90	6.845E+00	8.247E-01	8.247E-01	60.60	OK
	87.57	37.00*	6.845E+00	1.984E-01	1.984E-01	60.60	OK
BA-137M	661.66	89.90*	2.463E+00	1.404E-01	1.430E-01	40.97	OK
CS-137	661.66	85.10*	2.463E+00	1.483E-01	1.511E-01	40.97	OK
TL-208	277.37	6.60	4.947E+00	----- Line	Not Found	-----	Absent
	583.19	85.00*	2.720E+00	3.366E-01	3.366E-01	21.88	OK
	860.56	12.50	2.011E+00	----- Line	Not Found	-----	Absent
PB-210	46.54	4.25*	2.044E+00	2.917E+00	2.991E+00	123.18	OK
BI-211	72.87	1.23	5.823E+00	----- Line	Not Found	-----	Absent
	351.06	12.92*	4.084E+00	1.344E-01	1.344E-01	634.96	OK
PB-212	74.82	10.28	6.006E+00	1.478E+00	1.478E+00	37.22	OK
	77.11	17.10	6.187E+00	1.469E+00	1.469E+00	20.12	OK
	238.63	43.60*	5.553E+00	9.503E-01	9.503E-01	12.01	OK
	300.09	3.30	4.640E+00	4.932E-01	4.932E-01	208.80	OK
BI-214	609.32	45.49*	2.627E+00	7.914E-01	7.917E-01	19.52	OK
	1120.29	14.92	1.635E+00	9.926E-01	9.930E-01	31.57	OK
	1764.49	15.30	1.106E+00	9.146E-01	9.149E-01	39.29	OK
PB-214	74.82	5.80	5.996E+00	----- Line	Not Found	-----	<<INT Reject
	77.11	9.70	6.187E+00	2.590E+00	2.591E+00	20.12	OK
	87.09	3.41	6.836E+00	----- Line	Not Found	-----	<<INT Reject
	242.00	7.25	5.495E+00	----- Line	Not Found	-----	<<INT Reject
	295.22	18.42	4.708E+00	9.522E-01	9.525E-01	29.20	OK
	351.93	35.60*	4.083E+00	----- Line	Not Found	-----	<<INT Reject
RN-222	609.32	45.49*	2.627E+00	7.914E-01	7.917E-01	19.52	OK
	1120.29	14.92	1.635E+00	9.926E-01	9.930E-01	31.57	OK
	1764.49	15.30	1.106E+00	9.146E-01	9.149E-01	39.29	OK
RA-224	240.99	4.10*	5.503E+00	6.082E-01	6.082E-01	168.44	OK
RA-226	609.32	45.49*	2.627E+00	7.914E-01	7.917E-01	19.52	OK
	1120.29	14.92	1.635E+00	9.926E-01	9.930E-01	31.57	OK
	1764.49	15.30	1.106E+00	9.146E-01	9.149E-01	39.29	OK
AC-228	105.21	1.10	7.453E+00	----- Line	Not Found	-----	Absent
	338.32	11.27	4.210E+00	9.554E-01	9.554E-01	54.85	OK
	794.95	4.25	2.139E+00	2.280E+00	2.280E+00	57.58	OK
	835.71	1.61	2.057E+00	----- Line	Not Found	-----	Absent
	911.20	25.80*	1.923E+00	7.181E-01	7.181E-01	35.17	OK
	968.97	15.80	1.834E+00	1.394E+00	1.394E+00	22.34	OK
RA-228	105.21	1.10	7.453E+00	----- Line	Not Found	-----	Absent
	338.32	11.27	4.210E+00	9.554E-01	9.554E-01	54.85	OK
	794.95	4.25	2.139E+00	2.280E+00	2.280E+00	57.58	OK
	835.71	1.61	2.057E+00	----- Line	Not Found	-----	Absent
	911.20	25.80*	1.923E+00	7.181E-01	7.181E-01	35.17	OK
	968.97	15.80	1.834E+00	1.394E+00	1.394E+00	22.34	OK
TH-228	74.82	10.28	6.006E+00	1.478E+00	1.478E+00	37.22	OK
	77.11	17.10	6.187E+00	1.469E+00	1.469E+00	20.12	OK

Nuclide Type:

Nuclide	Energy	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error	Status
	238.63	43.60*	5.553E+00	9.503E-01	9.503E-01	12.01	OK
	300.09	3.30	4.640E+00	4.932E-01	4.932E-01	208.80	OK
TH-229	85.43	14.70	6.670E+00	5.003E-01	5.004E-01	60.20	OK
	88.47	24.00	6.845E+00	3.058E-01	3.058E-01	60.60	OK
	193.51	4.41*	6.409E+00	-----	Line Not Found	-----	Absent
	210.85	2.80	6.063E+00	-----	Line Not Found	-----	Absent
TH-230	609.32	45.49*	2.627E+00	7.914E-01	7.914E-01	19.52	OK
	1120.29	14.92	1.635E+00	9.927E-01	9.927E-01	31.57	OK
	1764.49	15.30	1.106E+00	9.146E-01	9.146E-01	39.29	OK
PA-231	283.69	1.70	4.860E+00	-----	Line Not Found	-----	Absent
	301.36	5.35*	4.640E+00	3.042E-01	3.042E-01	208.80	OK
TH-232	105.21	1.10	7.453E+00	-----	Line Not Found	-----	Absent
	338.32	11.27	4.210E+00	9.554E-01	9.554E-01	54.85	OK
	835.71	1.61	2.057E+00	-----	Line Not Found	-----	Absent
	911.20	25.80*	1.923E+00	7.181E-01	7.181E-01	35.17	OK
	968.97	15.80	1.834E+00	1.394E+00	1.394E+00	22.34	OK
TH-234	63.29	3.70*	4.873E+00	1.440E+00	1.440E+00	146.68	OK
	92.59	4.23	7.105E+00	2.411E+00	2.411E+00	42.70	OK
U-234	609.32	45.49*	2.627E+00	7.914E-01	7.914E-01	19.52	OK
	1120.29	14.92	1.635E+00	9.927E-01	9.927E-01	31.57	OK
	1764.49	15.30	1.106E+00	9.146E-01	9.146E-01	39.29	OK
U-235	89.96	3.47	6.980E+00	1.823E+00	1.823E+00	53.22	OK
	93.35	5.60	7.105E+00	1.821E+00	1.821E+00	42.70	OK
	143.76	10.96*	7.370E+00	-----	Line Not Found	-----	Absent
	163.33	5.08	7.024E+00	-----	Line Not Found	-----	Absent
	185.72	57.20	6.562E+00	7.333E-02	7.333E-02	118.40	OK
	205.31	5.01	6.171E+00	-----	Line Not Found	-----	Absent
U-238	63.29	3.70*	4.873E+00	1.440E+00	1.440E+00	146.68	OK
	92.59	4.23	7.105E+00	2.411E+00	2.411E+00	42.70	OK
AM-243	43.53	5.90	1.188E+00	3.091E+00	3.091E+00	81.01	OK
	74.66	67.20*	6.006E+00	2.261E-01	2.261E-01	37.22	OK
ANH-511	511.00	100.00*	3.021E+00	9.698E-02	9.698E-02	66.34	OK

Flag: "*" = Keyline

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*****
*                               GEL Laboratories LLC                               *
*                               2040 Savage Road                               *
*                               Charleston, SC 29407                          *
*****
*                               DETECTOR AND SAMPLE DATA                       *
*
* Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]R405245014.CNF;1
* Acquisition date   : 3-OCT-2016 04:47:25 Sensitivity      : 3.000
* Detector ID       : GAM20 Energy tolerance: 1.500
* Elapsed live time: 0 01:00:00.00 Abundance limit : 75.000
* Elapsed real time: 0 01:00:15.40 Half life ratio : *****
* Sample date       : 15-DEC-2015 11:08:00 Analyst initials: MXR1
* Sample ID         : R405245014 Sample Quantity : 1.5413E+02 GRAM
* Batch Number      : 1596387 Wet Weight : 0.00000
* Wet wt corr       : 1.00000 Dry Weight : 0.00000
* Nuclide Library   : SOLID.NLB;6
*****
*                               CALIBRATION INFORMATION                         *
*
* Eff. Cal. date    : 30-JUN-2016 06:52:39 Eff. Geometry   : CAN
* Eff. File         : DKA100:[CANBERRA.GAMMA]EFF_GAM20_CAN.CNF;15
*****

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Combined Activity-MDA Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM)	Cnt uncert (1.96-sigma)	MDA (pCi/GRAM)
K-40	1.325E+01	1.432E+00	5.809E-01
SC-46	2.226E-01	2.835E-01	5.059E-01
CD-109	3.079E+00	1.829E+00	1.526E+00
SN-126	1.984E-01	1.178E-01	9.864E-02
BA-137M	1.430E-01	5.741E-02	4.931E-02
CS-137	1.511E-01	6.065E-02	5.209E-02
TL-208	3.366E-01	7.218E-02	5.217E-02
PB-210	2.991E+00	3.610E+00	2.560E+00
BI-211	1.344E-01	8.360E-01	2.944E-01
PB-212	9.503E-01	1.118E-01	7.261E-02
BI-214	7.917E-01	1.515E-01	9.175E-02
PB-214	1.001E+00	1.336E-01	2.815E-01
RN-222	7.917E-01	1.515E-01	9.175E-02
RA-224	6.082E-01	1.004E+00	7.782E-01
RA-226	7.917E-01	1.515E-01	9.175E-02
AC-228	7.181E-01	2.475E-01	1.691E-01
RA-228	7.181E-01	2.475E-01	1.691E-01
TH-228	9.503E-01	1.118E-01	7.261E-02
TH-229	-2.266E-01	3.844E-01	7.315E-01
TH-230	7.914E-01	1.514E-01	9.172E-02
PA-231	3.042E-01	6.225E-01	7.122E-01
TH-232	7.181E-01	2.475E-01	1.691E-01
TH-234	1.440E+00	2.070E+00	1.569E+00
U-234	7.914E-01	1.514E-01	9.172E-02
U-235	-5.506E-02	1.582E-01	2.813E-01
U-238	1.440E+00	2.070E+00	1.569E+00
AM-243	2.261E-01	8.248E-02	6.946E-02
ANH-511	9.698E-02	6.305E-02	4.128E-02

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/GRAM)	K.L. Cnt Uncert (1.96-sigma)	MDA (pCi/GRAM)	
BE-7	-3.933E+00	8.818E+00	1.621E+01	NOT IDENT.
NA-22	1.832E-02	4.201E-02	8.486E-02	NOT IDENT.

NA-24	0.000E+00	1.675E+41	0.000E+00	SHORT HLIF
AL-26	-2.120E-02	2.528E-02	3.878E-02	NOT IDENT.
V-48	0.000E+00	8.674E+03	0.000E+00	SHORT HLIF
CR-51	0.000E+00	2.831E+02	0.000E+00	SHORT HLIF
MN-54	2.880E-02	5.104E-02	1.062E-01	NOT IDENT.
CO-56	2.136E-02	3.547E-01	6.880E-01	FAIL ABUN
MN-56	0.000E+00	1.960E+41	0.000E+00	SHORT HLIF
CO-57	-4.406E-03	3.819E-02	6.973E-02	NOT IDENT.
CO-58	-4.540E-01	5.000E-01	8.002E-01	NOT IDENT.
FE-59	2.053E+00	5.198E+00	1.101E+01	NOT IDENT.
CO-60	-8.137E-03	3.818E-02	7.322E-02	NOT IDENT.
ZN-65	1.280E-01	1.474E-01	3.092E-01	NOT IDENT.
GE-68	8.738E-01	1.739E+00	3.837E+00	NOT IDENT.
AS-73	-3.753E-01	4.442E+00	8.482E+00	NOT IDENT.
AS-74	0.000E+00	3.081E+03	0.000E+00	SHORT HLIF
SE-75	-1.110E-01	1.588E-01	2.941E-01	NOT IDENT.
BR-77	0.000E+00	2.541E+36	0.000E+00	SHORT HLIF
SR-82	0.000E+00	4.717E+02	0.000E+00	SHORT HLIF
RB-83	2.903E-01	5.011E-01	1.047E+00	NOT IDENT.
KR-85	6.028E+00	5.855E+00	1.185E+01	NOT IDENT.
SR-85	5.900E-01	5.741E-01	1.162E+00	NOT IDENT.
RB-86	0.000E+00	1.655E+04	0.000E+00	SHORT HLIF
Y-88	4.607E-02	1.157E-01	3.135E-01	NOT IDENT.
Y-91	-7.005E+01	4.233E+02	8.185E+02	NOT IDENT.
NB-94	8.724E-04	2.889E-02	5.477E-02	NOT IDENT.
NB-95	1.549E-01	7.443E-01	1.307E+00	NOT IDENT.
NB-95M	-6.112E-01	1.747E+00	2.997E+00	NOT IDENT.
ZR-95	1.064E-01	1.130E+00	2.195E+00	NOT IDENT.
NB-97	0.000E+00	1.960E+41	0.000E+00	SHORT HLIF
ZR-97	0.000E+00	1.939E+41	0.000E+00	SHORT HLIF
MO-99	0.000E+00	2.318E+31	0.000E+00	SHORT HLIF
TC-99M	0.000E+00	1.960E+41	0.000E+00	SHORT HLIF
RH-101	3.548E-03	3.135E-02	5.766E-02	NOT IDENT.
RH-102	-8.877E-03	4.126E-02	7.831E-02	FAIL ABUN
RU-103	-2.973E-01	3.454E+00	6.768E+00	FAIL ABUN
RH-106	1.981E-01	3.763E-01	7.907E-01	NOT IDENT.
RU-106	1.981E-01	3.763E-01	7.907E-01	NOT IDENT.
AG-108M	8.354E-03	2.083E-02	4.301E-02	NOT IDENT.
AG-110M	-9.344E-02	1.000E-01	1.277E-01	NOT IDENT.
SN-113	-9.822E-02	1.793E-01	3.287E-01	NOT IDENT.
CD-115	0.000E+00	3.040E+38	0.000E+00	SHORT HLIF
SN-117M	0.000E+00	5.497E+04	0.000E+00	SHORT HLIF
TE-123M	2.892E-03	1.075E-01	1.956E-01	NOT IDENT.
SB-124	2.321E-01	1.540E+00	3.407E+00	NOT IDENT.
SB-125	-4.652E-02	8.540E-02	1.556E-01	FAIL ABUN
TE-125M	1.127E+02	2.253E+02	4.307E+02	NOT IDENT.
I-126	0.000E+00	5.847E+05	0.000E+00	SHORT HLIF
SB-126	0.000E+00	6.854E+05	0.000E+00	SHORT HLIF
SB-127	0.000E+00	5.325E+21	0.000E+00	SHORT HLIF
I-131	0.000E+00	2.282E+09	0.000E+00	SHORT HLIF
I-132	0.000E+00	1.960E+41	0.000E+00	SHORT HLIF
TE-132	0.000E+00	6.968E+25	0.000E+00	SHORT HLIF
BA-133	3.444E-02	5.244E-02	6.603E-02	FAIL ABUN
I-133	0.000E+00	1.960E+41	0.000E+00	SHORT HLIF
CS-134	0.000E+00	8.368E-02	1.038E-01	FAIL ABUN
CS-135	7.581E-02	1.268E-01	2.389E-01	NOT IDENT.
I-135	0.000E+00	1.960E+41	0.000E+00	SHORT HLIF
CS-136	0.000E+00	1.674E+05	0.000E+00	SHORT HLIF
CE-139	6.095E-03	1.009E-01	1.688E-01	NOT IDENT.
BA-140	0.000E+00	8.201E+05	0.000E+00	SHORT HLIF
LA-140	0.000E+00	2.182E+05	0.000E+00	SHORT HLIF
CE-141	-5.901E+00	1.759E+01	3.121E+01	NOT IDENT.
CE-143	0.000E+00	5.877E+40	0.000E+00	SHORT HLIF
CE-144	-2.462E-02	3.056E-01	5.548E-01	NOT IDENT.
PM-144	4.100E-03	4.712E-02	9.079E-02	NOT IDENT.
PR-144	3.800E-01	4.082E+00	7.870E+00	NOT IDENT.
PM-146	-2.816E-03	3.722E-02	7.154E-02	NOT IDENT.
ND-147	0.000E+00	1.800E+07	0.000E+00	SHORT HLIF
PM-147	2.628E+02	6.577E+02	1.258E+03	NOT IDENT.
PM-149	0.000E+00	4.122E+39	0.000E+00	SHORT HLIF
EU-150	1.305E-02	2.442E-02	3.877E-02	FAIL ABUN
EU-152	9.722E-04	7.590E-02	1.349E-01	FAIL ABUN
GD-153	-1.173E-01	1.602E-01	2.554E-01	NOT IDENT.
EU-154	4.801E-02	9.895E-02	2.084E-01	NOT IDENT.
EU-155	-7.910E-03	9.470E-02	1.737E-01	FAIL ABUN
TB-160	6.049E-02	1.625E+00	3.083E+00	FAIL ABUN
HO-166M	2.627E-02	4.858E-02	9.978E-02	NOT IDENT.
TM-171	4.654E+00	1.143E+01	2.260E+01	NOT IDENT.

HF-172	-1.600E-02	2.042E-01	3.712E-01	FAIL ABUN
LU-172	2.362E-02	5.394E-02	1.193E-01	FAIL ABUN
LU-176	-7.322E-03	1.973E-02	3.740E-02	FAIL ABUN
HF-181	-1.220E+00	3.012E+00	5.569E+00	FAIL ABUN
TA-182	8.490E-02	8.367E-01	1.658E+00	FAIL ABUN
RE-183	3.022E+00	2.765E+00	3.317E+00	FAIL ABUN
RE-184	-2.013E+01	2.363E+01	3.765E+01	NOT IDENT.
W-188	-1.063E+02	9.535E+01	1.443E+02	FAIL ABUN
IR-192	-1.279E-01	3.214E-01	6.094E-01	FAIL ABUN
HG-203	7.390E-01	1.809E+00	3.666E+00	NOT IDENT.
BI-207	-1.803E-04	3.745E-02	7.616E-02	FAIL ABUN
PB-211	3.833E-01	5.032E-01	1.072E+00	NOT IDENT.
BI-212	1.017E+00	9.441E-01	1.139E+00	FAIL ABUN
RN-219	-1.313E-01	2.956E-01	5.488E-01	FAIL ABUN
RA-223	1.331E-01	5.032E-01	9.211E-01	FAIL ABUN
AC-227	-1.080E-01	1.824E-01	3.419E-01	FAIL ABUN
TH-227	-1.080E-01	1.824E-01	3.419E-01	FAIL ABUN
TH-231	1.331E-01	5.032E-01	9.211E-01	FAIL ABUN
PA-233	8.258E-03	4.608E-02	9.245E-02	FAIL ABUN
PA-234	-1.137E-01	2.307E-01	4.344E-01	FAIL ABUN
PA-234M	6.675E+00	4.501E+00	8.495E+00	FAIL ABUN
NP-237	8.258E-03	4.608E-02	9.245E-02	FAIL ABUN
NP-238	0.000E+00	3.223E+40	0.000E+00	SHORT HLIF
NP-239	-3.309E-03	2.008E-01	3.701E-01	NOT IDENT.
PU-239	-1.032E+02	2.974E+02	5.263E+02	NOT IDENT.
AM-241	-3.443E-02	1.058E-01	1.567E-01	NOT IDENT.
CM-243	-1.479E-02	8.110E-02	1.482E-01	NOT IDENT.
BK-247	-5.213E-02	6.318E-02	1.091E-01	FAIL ABUN
CM-247	-1.954E-02	2.707E-02	4.844E-02	NOT IDENT.
CF-249	1.460E-02	3.114E-02	6.361E-02	NOT IDENT.
CF-251	-1.569E-02	8.892E-02	1.757E-01	NOT IDENT.

Nuclide Line Activity Report

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
K-40	1460.82	380	10.66*	1.312E+00	1.325E+01	1.325E+01	11.03
SC-46	889.28	8	99.98*	1.959E+00	1.976E-02	2.226E-01	129.99
	1120.55	50	99.99	1.635E+00	1.481E-01	1.669E+00	31.57
CD-109	88.03	149	3.70*	6.845E+00	2.861E+00	4.442E+00	41.05
SN-126	64.28	53	9.60	4.873E+00	5.550E-01	5.550E-01	146.68
	86.94	149	8.90	6.845E+00	1.190E+00	1.190E+00	41.05
	87.57	149	37.00*	6.845E+00	2.861E-01	2.861E-01	41.05
BA-137M	661.66	64	89.90*	2.463E+00	1.404E-01	1.430E-01	40.97
CS-137	661.66	64	85.10*	2.463E+00	1.483E-01	1.511E-01	40.97
TL-208	277.37	-----	6.60	4.947E+00	-----	Line Not Found	-----
	583.19	160	85.00*	2.720E+00	3.366E-01	3.366E-01	21.88
	860.56	-----	12.50	2.011E+00	-----	Line Not Found	-----
PB-210	46.54	52	4.25*	2.044E+00	2.917E+00	2.991E+00	123.18
BI-211	72.87	-----	1.23	5.823E+00	-----	Line Not Found	-----
	351.06	299	12.92*	4.084E+00	2.758E+00	2.758E+00	13.62
PB-212	74.82	255	10.28	6.006E+00	2.015E+00	2.015E+00	26.17
	77.11	319	17.10	6.187E+00	1.469E+00	1.469E+00	20.12
	238.63	472	43.60*	5.553E+00	9.503E-01	9.503E-01	12.01
	300.09	16	3.30	4.640E+00	4.932E-01	4.932E-01	208.80
BI-214	609.32	194	45.49*	2.627E+00	7.914E-01	7.917E-01	19.52
	1120.29	50	14.92	1.635E+00	9.926E-01	9.930E-01	31.57
	1764.49	32	15.30	1.106E+00	9.146E-01	9.149E-01	39.29
PB-214	74.82	255	5.80	6.006E+00	3.572E+00	3.573E+00	26.17
	77.11	319	9.70	6.187E+00	2.590E+00	2.591E+00	20.12
	87.09	149	3.41	6.845E+00	3.105E+00	3.106E+00	41.05
	242.00	106	7.25	5.503E+00	1.296E+00	1.297E+00	39.22
	295.22	170	18.42	4.708E+00	9.522E-01	9.525E-01	29.20
	351.93	299	35.60*	4.084E+00	1.001E+00	1.001E+00	13.62
RN-222	609.32	194	45.49*	2.627E+00	7.914E-01	7.917E-01	19.52
	1120.29	50	14.92	1.635E+00	9.926E-01	9.930E-01	31.57
	1764.49	32	15.30	1.106E+00	9.146E-01	9.149E-01	39.29
RA-224	240.99	106	4.10*	5.503E+00	2.292E+00	2.292E+00	39.22
RA-226	609.32	194	45.49*	2.627E+00	7.914E-01	7.917E-01	19.52
	1120.29	50	14.92	1.635E+00	9.926E-01	9.930E-01	31.57
	1764.49	32	15.30	1.106E+00	9.146E-01	9.149E-01	39.29
AC-228	105.21	-----	1.10	7.453E+00	-----	Line Not Found	-----
	338.32	93	11.27	4.210E+00	9.554E-01	9.554E-01	54.85
	794.95	43	4.25	2.139E+00	2.280E+00	2.280E+00	57.58
	835.71	-----	1.61	2.057E+00	-----	Line Not Found	-----
	911.20	73	25.80*	1.923E+00	7.181E-01	7.181E-01	35.17
	968.97	83	15.80	1.834E+00	1.394E+00	1.394E+00	22.34
RA-228	105.21	-----	1.10	7.453E+00	-----	Line Not Found	-----
	338.32	93	11.27	4.210E+00	9.554E-01	9.554E-01	54.85
	794.95	43	4.25	2.139E+00	2.280E+00	2.280E+00	57.58
	835.71	-----	1.61	2.057E+00	-----	Line Not Found	-----
	911.20	73	25.80*	1.923E+00	7.181E-01	7.181E-01	35.17
	968.97	83	15.80	1.834E+00	1.394E+00	1.394E+00	22.34

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
TH-228	74.82	255	10.28	6.006E+00	2.015E+00	2.015E+00	26.17
	77.11	319	17.10	6.187E+00	1.469E+00	1.469E+00	20.12
	238.63	472	43.60*	5.553E+00	9.503E-01	9.503E-01	12.01
	300.09	16	3.30	4.640E+00	4.932E-01	4.932E-01	208.80
TH-229	85.43	101	14.70	6.670E+00	5.003E-01	5.004E-01	60.20
	88.47	149	24.00	6.845E+00	4.411E-01	4.411E-01	41.05
	193.51	-----	4.41*	6.409E+00	-----	Line Not Found	-----
	210.85	-----	2.80	6.063E+00	-----	Line Not Found	-----
TH-230	609.32	194	45.49*	2.627E+00	7.914E-01	7.914E-01	19.52
	1120.29	50	14.92	1.635E+00	9.927E-01	9.927E-01	31.57
	1764.49	32	15.30	1.106E+00	9.146E-01	9.146E-01	39.29
PA-231	283.69	-----	1.70	4.860E+00	-----	Line Not Found	-----
	301.36	16	5.35*	4.640E+00	3.042E-01	3.042E-01	208.80
TH-232	105.21	-----	1.10	7.453E+00	-----	Line Not Found	-----
	338.32	93	11.27	4.210E+00	9.554E-01	9.554E-01	54.85
	835.71	-----	1.61	2.057E+00	-----	Line Not Found	-----
	911.20	73	25.80*	1.923E+00	7.181E-01	7.181E-01	35.17
TH-234	968.97	83	15.80	1.834E+00	1.394E+00	1.394E+00	22.34
	63.29	53	3.70*	4.873E+00	1.440E+00	1.440E+00	146.68
	92.59	149	4.23	7.105E+00	2.411E+00	2.411E+00	42.70
U-234	609.32	194	45.49*	2.627E+00	7.914E-01	7.914E-01	19.52
	1120.29	50	14.92	1.635E+00	9.927E-01	9.927E-01	31.57
	1764.49	32	15.30	1.106E+00	9.146E-01	9.146E-01	39.29
U-235	89.96	91	3.47	6.980E+00	1.823E+00	1.823E+00	53.22
	93.35	149	5.60	7.105E+00	1.821E+00	1.821E+00	42.70
	143.76	-----	10.96*	7.370E+00	-----	Line Not Found	-----
	163.33	-----	5.08	7.024E+00	-----	Line Not Found	-----
	185.72	57	57.20	6.562E+00	7.333E-02	7.333E-02	118.40
U-238	205.31	-----	5.01	6.171E+00	-----	Line Not Found	-----
	63.29	53	3.70*	4.873E+00	1.440E+00	1.440E+00	146.68
	92.59	149	4.23	7.105E+00	2.411E+00	2.411E+00	42.70
AM-243	43.53	44	5.90	1.188E+00	3.091E+00	3.091E+00	81.01
	74.66	255	67.20*	6.006E+00	3.083E-01	3.083E-01	26.17
ANH-511	511.00	60	100.00*	3.021E+00	9.698E-02	9.698E-02	66.34

Flag: "*" = Keyline

Total number of lines in spectrum 60
 Number of unidentified lines 20
 Number of lines tentatively identified by NID 40 66.67%

Nuclide Type :

Nuclide	Hlife	Decay	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
K-40	1.25E+09Y	1.00	1.325E+01	1.325E+01	0.146E+01	11.03	
SC-46	83.79D	11.3	1.976E-02	2.226E-01	2.893E-01	129.99	
CD-109	461.40D	1.55	2.861E+00	4.442E+00	1.823E+00	41.05	
SN-126	2.30E+05Y	1.00	2.861E-01	2.861E-01	1.174E-01	41.05	
BA-137M	30.08Y	1.02	1.404E-01	1.430E-01	0.586E-01	40.97	
CS-137	30.08Y	1.02	1.483E-01	1.511E-01	0.619E-01	40.97	
TL-208	1.41E+10Y	1.00	3.366E-01	3.366E-01	0.737E-01	21.88	
PB-210	22.20Y	1.03	2.917E+00	2.991E+00	3.684E+00	123.18	
BI-211	7.04E+08Y	1.00	2.758E+00	2.758E+00	0.376E+00	13.62	
PB-212	1.41E+10Y	1.00	9.503E-01	9.503E-01	1.141E-01	12.01	
BI-214	1600.00Y	1.00	7.914E-01	7.917E-01	1.546E-01	19.52	
PB-214	1600.00Y	1.00	1.001E+00	1.001E+00	0.136E+00	13.62	
RN-222	1600.00Y	1.00	7.914E-01	7.917E-01	1.546E-01	19.52	
RA-224	1.41E+10Y	1.00	2.292E+00	2.292E+00	0.899E+00	39.22	
RA-226	1600.00Y	1.00	7.914E-01	7.917E-01	1.546E-01	19.52	
AC-228	1.41E+10Y	1.00	7.181E-01	7.181E-01	2.525E-01	35.17	
RA-228	1.41E+10Y	1.00	7.181E-01	7.181E-01	2.525E-01	35.17	
TH-228	1.41E+10Y	1.00	9.503E-01	9.503E-01	1.141E-01	12.01	
TH-229	7340.00Y	1.00	4.411E-01	4.411E-01	1.811E-01	41.05	K
TH-230	7.54E+04Y	1.00	7.914E-01	7.914E-01	1.545E-01	19.52	
PA-231	7.04E+08Y	1.00	3.042E-01	3.042E-01	6.352E-01	208.80	
TH-232	1.41E+10Y	1.00	7.181E-01	7.181E-01	2.525E-01	35.17	
TH-234	4.47E+09Y	1.00	1.440E+00	1.440E+00	2.112E+00	146.68	
U-234	2.45E+05Y	1.00	7.914E-01	7.914E-01	1.545E-01	19.52	
U-235	7.04E+08Y	1.00	7.333E-02	7.333E-02	8.682E-02	118.40	K
U-238	4.47E+09Y	1.00	1.440E+00	1.440E+00	2.112E+00	146.68	
AM-243	7370.00Y	1.00	3.083E-01	3.083E-01	0.807E-01	26.17	
ANH-511	1.00E+09Y	1.00	9.698E-02	9.698E-02	6.434E-02	66.34	
Total Activity :			3.812E+01	3.999E+01			

Grand Total Activity : 3.812E+01 3.999E+01

Flags: "K" = Keyline not found "M" = Manually accepted
 "E" = Manually edited "A" = Nuclide specific abn. limit

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
3	26.73	23	8	1.36	53.68	51	22	4.54E-03	****	1.62E-07	
3	28.06	42	24	1.37	56.32	51	22	8.29E-03	****	8.18E-06	
3	30.06	48	50	1.37	60.32	51	22	9.54E-03	94.1	4.93E-04	
3	31.78	26	77	1.38	63.75	51	22	5.17E-03	****	5.25E-03	
0	57.93	47	117	1.29	116.02	113	7	9.91E-03	93.4	4.04E+00	T
0	151.08	54	84	1.27	302.20	299	7	1.24E-02	68.5	7.25E+00	T
0	170.22	15	120	0.92	340.46	334	8	3.55E-03	****	6.89E+00	
0	209.04	49	115	1.13	418.05	414	9	1.14E-02	91.9	6.10E+00	
0	270.35	47	70	1.72	540.63	536	8	1.13E-02	73.9	5.05E+00	T
0	329.31	69	92	0.86	658.51	652	14	1.68E-02	68.9	4.31E+00	T
2	354.77	17	19	1.71	709.41	698	15	4.16E-03	****	4.06E+00	T
0	462.75	45	27	1.50	925.34	921	9	1.14E-02	53.8	3.27E+00	T
0	490.71	11	30	0.87	981.25	976	8	2.70E-03	****	3.12E+00	
0	541.32	16	25	0.96	1082.48	1079	8	4.19E-03	****	2.88E+00	
0	727.66	32	39	2.03	1455.23	1446	15	8.47E-03	94.7	2.29E+00	T
0	732.73	10	18	0.80	1465.37	1461	7	2.64E-03	****	2.28E+00	T
0	768.15	25	34	1.30	1536.24	1529	12	6.69E-03	****	2.20E+00	T
0	787.21	22	14	1.63	1574.37	1568	12	5.87E-03	84.7	2.15E+00	
0	862.45	13	31	1.47	1724.95	1717	14	3.60E-03	****	2.01E+00	
0	924.18	6	12	3.57	1848.48	1841	9	1.52E-03	****	1.90E+00	T
1	965.06	44	5	1.94	1930.30	1921	27	1.20E-02	32.2	1.84E+00	T
0	1001.50	21	6	2.18	2003.24	1998	12	5.66E-03	68.8	1.79E+00	T
0	1057.29	12	5	1.17	2114.90	2111	7	3.30E-03	86.1	1.71E+00	
4	1155.74	19	11	1.85	2312.00	2306	16	5.44E-03	80.0	1.60E+00	
4	1158.68	13	8	2.26	2317.89	2306	16	3.56E-03	90.9	1.59E+00	
0	1164.73	15	12	4.40	2330.00	2323	12	4.17E-03	****	1.59E+00	
0	1238.30	16	5	1.45	2477.30	2475	6	4.47E-03	65.5	1.51E+00	T
0	1281.08	10	14	1.24	2562.98	2557	11	2.82E-03	****	1.47E+00	
0	1316.37	4	5	0.92	2633.64	2626	10	1.08E-03	****	1.43E+00	
0	1353.87	8	11	0.59	2708.75	2701	9	2.14E-03	****	1.40E+00	
0	1377.43	11	6	3.03	2755.92	2751	9	3.17E-03	****	1.38E+00	
0	1568.64	4	6	0.83	3138.95	3131	9	1.19E-03	****	1.23E+00	
0	1588.36	9	2	0.63	3178.46	3174	8	2.51E-03	85.6	1.22E+00	

Flags: "T" = Tentatively associated

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*****
*
*               GEL Laboratories LLC
*               2040 Savage Road
*               Charleston, SC 29407
*
*****
*
*               DETECTOR AND SAMPLE DATA
*
* Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]R405245014.CNF;1
* Acquisition date   : 3-OCT-2016 04:47:25 Sensitivity      : 3.000
* Detector ID       : GAM20 Energy tolerance: 1.500
* Elapsed live time : 0 01:00:00.00 Abundance limit : 75.000
* Elapsed real time : 0 01:00:15.40 Half life ratio  : *****
* Sample date       : 15-DEC-2015 11:08:00 Nuclide Library : SOLID
* Sample ID        : R405245014 Analyst initials: MXR1
* Batch Number     : 1596387 Sample Quantity  : 1.5413E+02 GRAM
* Wet wt corr      : 1.00000 Wet Weight      : 0.00000
*                  Dry Weight      : 0.00000
*****
*
*               CALIBRATION INFORMATION
*
* Eff. Cal. date    : 30-JUN-2016 06:52:39 Eff. Geometry   : CAN
* Eff. File        : DKA100:[CANBERRA.GAMMA]EFF_GAM20_CAN.CNF;15
*****

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Combined Critical Level Report

NOTE: Not all "Identified Nuclides" are valid.
 Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Lc (pCi/GRAM)
K-40	2.430E-01
SC-46	2.143E-01
CD-109	7.200E-01
SN-126	4.653E-02
BA-137M	2.154E-02
CS-137	2.275E-02
TL-208	2.315E-02
PB-210	1.191E+00
BI-211	1.342E-01
PB-212	3.344E-02
BI-214	4.020E-02
PB-214	1.361E-01
RN-222	4.020E-02
RA-224	3.584E-01
RA-226	4.020E-02
AC-228	7.099E-02
RA-228	7.099E-02
TH-228	3.344E-02
TH-229	3.411E-01
TH-230	4.019E-02
PA-231	3.283E-01
TH-232	7.099E-02
TH-234	7.445E-01
U-234	4.019E-02
U-235	1.320E-01
U-238	7.445E-01
AM-243	3.296E-02
ANH-511	1.839E-02

---- Non-Identified Nuclides ----

Nuclide	Lc (pCi/GRAM)	
BE-7	7.177E+00	NOT IDENT.
NA-22	3.683E-02	NOT IDENT.
NA-24	0.000E+00	SHORT HLIF

AL-26	1.326E-02	NOT IDENT.
V-48	0.000E+00	SHORT HLIF
CR-51	0.000E+00	SHORT HLIF
MN-54	4.686E-02	NOT IDENT.
CO-56	2.982E-01	FAIL ABUN
MN-56	0.000E+00	SHORT HLIF
CO-57	3.257E-02	NOT IDENT.
CO-58	3.437E-01	NOT IDENT.
FE-59	4.824E+00	NOT IDENT.
CO-60	3.140E-02	NOT IDENT.
ZN-65	1.361E-01	NOT IDENT.
GE-68	1.658E+00	NOT IDENT.
AS-73	3.977E+00	NOT IDENT.
AS-74	0.000E+00	SHORT HLIF
SE-75	1.346E-01	NOT IDENT.
BR-77	0.000E+00	SHORT HLIF
SR-82	0.000E+00	SHORT HLIF
RB-83	4.701E-01	NOT IDENT.
KR-85	5.377E+00	NOT IDENT.
SR-85	5.271E-01	NOT IDENT.
RB-86	0.000E+00	SHORT HLIF
Y-88	1.149E-01	NOT IDENT.
Y-91	3.560E+02	NOT IDENT.
NB-94	2.451E-02	NOT IDENT.
NB-95	5.807E-01	NOT IDENT.
NB-95M	1.380E+00	NOT IDENT.
ZR-95	9.645E-01	NOT IDENT.
NB-97	0.000E+00	SHORT HLIF
ZR-97	0.000E+00	SHORT HLIF
MO-99	0.000E+00	SHORT HLIF
TC-99M	0.000E+00	SHORT HLIF
RH-101	2.721E-02	NOT IDENT.
RH-102	3.366E-02	FAIL ABUN
RU-103	2.958E+00	FAIL ABUN
RH-106	3.498E-01	NOT IDENT.
RU-106	3.498E-01	NOT IDENT.
AG-108M	1.931E-02	NOT IDENT.
AG-110M	5.326E-02	NOT IDENT.
SN-113	1.479E-01	NOT IDENT.
CD-115	0.000E+00	SHORT HLIF
SN-117M	0.000E+00	SHORT HLIF
TE-123M	9.138E-02	NOT IDENT.
SB-124	1.352E+00	NOT IDENT.
SB-125	6.975E-02	FAIL ABUN
TE-125M	2.034E+02	NOT IDENT.
I-126	0.000E+00	SHORT HLIF
SB-126	0.000E+00	SHORT HLIF
SB-127	0.000E+00	SHORT HLIF
I-131	0.000E+00	SHORT HLIF
I-132	0.000E+00	SHORT HLIF
TE-132	0.000E+00	SHORT HLIF
BA-133	3.013E-02	FAIL ABUN
I-133	0.000E+00	SHORT HLIF
CS-134	4.708E-02	FAIL ABUN
CS-135	1.110E-01	NOT IDENT.
I-135	0.000E+00	SHORT HLIF
CS-136	0.000E+00	SHORT HLIF
CE-139	7.895E-02	NOT IDENT.
BA-140	0.000E+00	SHORT HLIF
LA-140	0.000E+00	SHORT HLIF
CE-141	1.459E+01	NOT IDENT.
CE-143	0.000E+00	SHORT HLIF
CE-144	2.602E-01	NOT IDENT.
PM-144	4.038E-02	NOT IDENT.
PR-144	3.501E+00	NOT IDENT.
PM-146	3.227E-02	NOT IDENT.
ND-147	0.000E+00	SHORT HLIF
PM-147	5.890E+02	NOT IDENT.
PM-149	0.000E+00	SHORT HLIF
EU-150	1.768E-02	FAIL ABUN
EU-152	6.099E-02	FAIL ABUN
GD-153	1.199E-01	NOT IDENT.
EU-154	9.041E-02	NOT IDENT.
EU-155	8.181E-02	FAIL ABUN
TB-160	1.355E+00	FAIL ABUN
HO-166M	4.453E-02	NOT IDENT.
TM-171	1.065E+01	NOT IDENT.
HF-172	1.745E-01	FAIL ABUN

LU-172	5.107E-02	FAIL ABUN
LU-176	1.709E-02	FAIL ABUN
HF-181	2.463E+00	FAIL ABUN
TA-182	7.338E-01	FAIL ABUN
RE-183	1.565E+00	FAIL ABUN
RE-184	1.601E+01	NOT IDENT.
W-188	6.553E+01	FAIL ABUN
IR-192	2.755E-01	FAIL ABUN
HG-203	1.699E+00	NOT IDENT.
BI-207	3.273E-02	FAIL ABUN
PB-211	4.865E-01	NOT IDENT.
BI-212	5.255E-01	FAIL ABUN
RN-219	2.461E-01	FAIL ABUN
RA-223	4.211E-01	FAIL ABUN
AC-227	1.571E-01	FAIL ABUN
TH-227	1.571E-01	FAIL ABUN
TH-231	4.211E-01	FAIL ABUN
PA-233	4.225E-02	FAIL ABUN
PA-234	1.873E-01	FAIL ABUN
PA-234M	3.802E+00	FAIL ABUN
NP-237	4.225E-02	FAIL ABUN
NP-238	0.000E+00	SHORT HLIF
NP-239	1.733E-01	NOT IDENT.
PU-239	2.484E+02	NOT IDENT.
AM-241	7.370E-02	NOT IDENT.
CM-243	6.947E-02	NOT IDENT.
BK-247	5.004E-02	FAIL ABUN
CM-247	2.162E-02	NOT IDENT.
CF-249	2.905E-02	NOT IDENT.
CF-251	8.184E-02	NOT IDENT.

```

*****
*                               GEL Laboratories LLC                               *
*                               2040 Savage Road                               *
*                               Charleston, SC 29407                          *
*****
*                               DETECTOR AND SAMPLE DATA                       *
*
* Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]R405245014.CNF;1
* Acquisition date   : 3-OCT-2016 04:47:25 Sensitivity      : 3.000
* Detector ID       : GAM20 Energy tolerance: 1.500
* Elapsed live time : 0 01:00:00.00 Abundance limit : 75.000
* Elapsed real time : 0 01:00:15.40 Half life ratio : *****
* Sample date       : 15-DEC-2015 11:08:00 Nuclide Library : SOLID
* Sample ID         : R405245014 Analyst initials: MXR1
* Batch Number      : 1596387 Sample Quantity : 1.5413E+02 GRAM
*                               Quantity Err(%) : 1.2976E-03 %
* Wet wt corr       : 1.00000 Wet Weight      : 0.00000
*                               Dry Weight      : 0.00000
*****
*                               CALIBRATION INFORMATION                          *
*
* Eff. Cal. date    : 30-JUN-2016 06:52:39 Eff. Geometry   : CAN
* Eff. File         : DKA100:[CANBERRA.GAMMA]EFF_GAM20_CAN.CNF;15
*****

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Combined Activity-MDA Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM)	Act Error (1.96-sigma)	TPU (1.96-sigma)
K-40	1.325E+01	1.590E+00	1.590E+00
SC-46	2.226E-01	2.837E-01	2.837E-01
CD-109	3.079E+00	1.854E+00	1.854E+00
SN-126	1.984E-01	1.189E-01	1.189E-01
BA-137M	1.430E-01	5.774E-02	5.774E-02
CS-137	1.511E-01	6.100E-02	6.100E-02
TL-208	3.366E-01	7.358E-02	7.358E-02
PB-210	2.991E+00	3.618E+00	3.618E+00
BI-211	1.344E-01	8.512E-01	8.512E-01
PB-212	9.503E-01	1.226E-01	1.226E-01
BI-214	7.917E-01	1.552E-01	1.552E-01
PB-214	1.001E+00	1.399E-01	1.399E-01
RN-222	7.917E-01	1.552E-01	1.552E-01
RA-224	6.082E-01	1.011E+00	1.011E+00
RA-226	7.917E-01	1.552E-01	1.552E-01
AC-228	7.181E-01	2.502E-01	2.502E-01
RA-228	7.181E-01	2.502E-01	2.502E-01
TH-228	9.503E-01	1.226E-01	1.226E-01
TH-229	-2.266E-01	3.846E-01	3.846E-01
TH-230	7.914E-01	1.552E-01	1.552E-01
PA-231	3.042E-01	6.259E-01	6.259E-01
TH-232	7.181E-01	2.502E-01	2.502E-01
TH-234	1.440E+00	2.094E+00	2.094E+00
U-234	7.914E-01	1.552E-01	1.552E-01
U-235	-5.506E-02	1.582E-01	1.582E-01
U-238	1.440E+00	2.094E+00	2.094E+00
AM-243	2.261E-01	8.428E-02	8.428E-02
ANH-511	9.698E-02	6.317E-02	6.317E-02

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/GRAM)	K.L Act error (1.96-sigma)	TPU (1.96-sigma)	
BE-7	-3.933E+00	8.820E+00	8.996E+00	NOT IDENT.
NA-22	1.832E-02	4.202E-02	4.282E-02	NOT IDENT.

NA-24	1.000E+41	1.728E+41	0.000E+00	SHORT HLIF
AL-26	-2.120E-02	2.532E-02	2.706E-02	NOT IDENT.
V-48	-4.581E+03	8.676E+03	8.919E+03	SHORT HLIF
CR-51	2.696E+02	2.834E+02	3.083E+02	SHORT HLIF
MN-54	2.880E-02	5.106E-02	5.268E-02	NOT IDENT.
CO-56	2.136E-02	3.547E-01	3.549E-01	FAIL ABUN
MN-56	1.000E+41	1.770E+42	0.000E+00	SHORT HLIF
CO-57	-4.406E-03	3.820E-02	3.825E-02	NOT IDENT.
CO-58	-4.540E-01	5.004E-01	5.406E-01	NOT IDENT.
FE-59	2.053E+00	5.200E+00	5.282E+00	NOT IDENT.
CO-60	-8.137E-03	3.818E-02	3.835E-02	NOT IDENT.
ZN-65	1.280E-01	1.475E-01	1.584E-01	NOT IDENT.
GE-68	8.738E-01	1.740E+00	1.784E+00	NOT IDENT.
AS-73	-3.753E-01	4.443E+00	4.446E+00	NOT IDENT.
AS-74	-2.748E+02	3.081E+03	3.083E+03	SHORT HLIF
SE-75	-1.110E-01	1.589E-01	1.666E-01	NOT IDENT.
BR-77	2.160E+37	1.825E+38	0.000E+00	SHORT HLIF
SR-82	4.648E+02	4.722E+02	5.166E+02	SHORT HLIF
RB-83	2.903E-01	5.027E-01	5.195E-01	NOT IDENT.
KR-85	6.028E+00	5.860E+00	6.460E+00	NOT IDENT.
SR-85	5.900E-01	5.746E-01	6.331E-01	NOT IDENT.
RB-86	2.867E+03	1.655E+04	1.660E+04	SHORT HLIF
Y-88	4.607E-02	1.157E-01	1.176E-01	NOT IDENT.
Y-91	-7.005E+01	4.233E+02	4.244E+02	NOT IDENT.
NB-94	8.724E-04	2.889E-02	2.889E-02	NOT IDENT.
NB-95	1.549E-01	7.444E-01	7.476E-01	NOT IDENT.
NB-95M	-6.112E-01	1.748E+00	1.769E+00	NOT IDENT.
ZR-95	1.064E-01	1.130E+00	1.131E+00	NOT IDENT.
NB-97	-1.000E+41	2.701E+41	0.000E+00	SHORT HLIF
ZR-97	1.000E+41	1.940E+41	0.000E+00	SHORT HLIF
MO-99	-2.446E+30	2.318E+31	0.000E+00	SHORT HLIF
TC-99M	-1.000E+41	3.087E+41	0.000E+00	SHORT HLIF
RH-101	3.548E-03	3.135E-02	3.139E-02	NOT IDENT.
RH-102	-8.877E-03	4.126E-02	4.146E-02	FAIL ABUN
RU-103	-2.973E-01	3.454E+00	3.456E+00	FAIL ABUN
RH-106	1.981E-01	3.765E-01	3.870E-01	NOT IDENT.
RU-106	1.981E-01	3.765E-01	3.870E-01	NOT IDENT.
AG-108M	8.354E-03	2.083E-02	2.117E-02	NOT IDENT.
AG-110M	-9.344E-02	1.001E-01	1.086E-01	NOT IDENT.
SN-113	-9.822E-02	1.794E-01	1.847E-01	NOT IDENT.
CD-115	-2.748E+38	3.079E+38	0.000E+00	SHORT HLIF
SN-117M	2.416E+04	5.504E+04	5.611E+04	SHORT HLIF
TE-123M	2.892E-03	1.075E-01	1.075E-01	NOT IDENT.
SB-124	2.321E-01	1.540E+00	1.543E+00	NOT IDENT.
SB-125	-4.652E-02	8.542E-02	8.796E-02	FAIL ABUN
TE-125M	1.127E+02	2.254E+02	2.310E+02	NOT IDENT.
I-126	2.512E+05	5.857E+05	5.965E+05	SHORT HLIF
SB-126	1.802E+05	6.862E+05	6.910E+05	SHORT HLIF
SB-127	-3.124E+21	6.778E+21	0.000E+00	SHORT HLIF
I-131	1.935E+09	2.284E+09	2.445E+09	SHORT HLIF
I-132	1.000E+41	1.822E+42	0.000E+00	SHORT HLIF
TE-132	6.798E+24	6.973E+25	0.000E+00	SHORT HLIF
BA-133	3.444E-02	5.246E-02	5.471E-02	FAIL ABUN
I-133	1.000E+41	3.218E+41	0.000E+00	SHORT HLIF
CS-134	1.483E-01	8.392E-02	1.073E-01	FAIL ABUN
CS-135	7.581E-02	1.269E-01	1.314E-01	NOT IDENT.
I-135	1.000E+41	1.422E+42	0.000E+00	SHORT HLIF
CS-136	-5.276E+03	1.674E+05	1.675E+05	SHORT HLIF
CE-139	6.095E-03	1.009E-01	1.009E-01	NOT IDENT.
BA-140	4.345E+04	8.201E+05	8.204E+05	SHORT HLIF
LA-140	-1.967E+05	2.184E+05	2.357E+05	SHORT HLIF
CE-141	-5.901E+00	1.759E+01	1.779E+01	NOT IDENT.
CE-143	1.000E+41	5.961E+40	0.000E+00	SHORT HLIF
CE-144	-2.462E-02	3.056E-01	3.058E-01	NOT IDENT.
PM-144	4.100E-03	4.713E-02	4.716E-02	NOT IDENT.
PR-144	3.800E-01	4.082E+00	4.086E+00	NOT IDENT.
PM-146	-2.816E-03	3.723E-02	3.725E-02	NOT IDENT.
ND-147	1.787E+07	1.803E+07	1.974E+07	SHORT HLIF
PM-147	2.628E+02	6.579E+02	6.684E+02	NOT IDENT.
PM-149	-1.189E+39	4.130E+39	0.000E+00	SHORT HLIF
EU-150	1.305E-02	2.443E-02	2.512E-02	FAIL ABUN
EU-152	9.722E-04	7.590E-02	7.590E-02	FAIL ABUN
GD-153	-1.173E-01	1.604E-01	1.688E-01	NOT IDENT.
EU-154	4.801E-02	9.897E-02	1.013E-01	NOT IDENT.
EU-155	-7.910E-03	9.470E-02	9.477E-02	FAIL ABUN
TB-160	6.049E-02	1.625E+00	1.626E+00	FAIL ABUN
HO-166M	2.627E-02	4.860E-02	5.002E-02	NOT IDENT.
TM-171	4.654E+00	1.143E+01	1.162E+01	NOT IDENT.

HF-172	-1.600E-02	2.042E-01	2.043E-01	FAIL	ABUN
LU-172	2.362E-02	5.399E-02	5.503E-02	FAIL	ABUN
LU-176	-7.322E-03	1.973E-02	2.001E-02	FAIL	ABUN
HF-181	-1.220E+00	3.012E+00	3.062E+00	FAIL	ABUN
TA-182	8.490E-02	8.367E-01	8.376E-01	FAIL	ABUN
RE-183	3.022E+00	2.804E+00	3.118E+00	FAIL	ABUN
RE-184	-2.013E+01	2.410E+01	2.575E+01	NOT	IDENT.
W-188	-1.063E+02	9.609E+01	1.074E+02	FAIL	ABUN
IR-192	-1.279E-01	3.214E-01	3.266E-01	FAIL	ABUN
HG-203	7.390E-01	1.809E+00	1.839E+00	NOT	IDENT.
BI-207	-1.803E-04	3.745E-02	3.745E-02	FAIL	ABUN
PB-211	3.833E-01	5.036E-01	5.324E-01	NOT	IDENT.
BI-212	1.017E+00	9.455E-01	1.051E+00	FAIL	ABUN
RN-219	-1.313E-01	2.961E-01	3.019E-01	FAIL	ABUN
RA-223	1.331E-01	5.033E-01	5.069E-01	FAIL	ABUN
AC-227	-1.080E-01	1.830E-01	1.893E-01	FAIL	ABUN
TH-227	-1.080E-01	1.830E-01	1.893E-01	FAIL	ABUN
TH-231	1.331E-01	5.033E-01	5.069E-01	FAIL	ABUN
PA-233	8.258E-03	4.608E-02	4.623E-02	FAIL	ABUN
PA-234	-1.137E-01	2.648E-01	2.697E-01	FAIL	ABUN
PA-234M	6.675E+00	4.510E+00	5.422E+00	FAIL	ABUN
NP-237	8.258E-03	4.608E-02	4.623E-02	FAIL	ABUN
NP-238	1.848E+39	3.223E+40	0.000E+00	SHORT	HLIF
NP-239	-3.309E-03	2.008E-01	2.008E-01	NOT	IDENT.
PU-239	-1.032E+02	2.974E+02	3.010E+02	NOT	IDENT.
AM-241	-3.443E-02	1.059E-01	1.070E-01	NOT	IDENT.
CM-243	-1.479E-02	8.111E-02	8.138E-02	NOT	IDENT.
BK-247	-5.213E-02	6.404E-02	6.822E-02	FAIL	ABUN
CM-247	-1.954E-02	2.727E-02	2.866E-02	NOT	IDENT.
CF-249	1.460E-02	3.117E-02	3.185E-02	NOT	IDENT.
CF-251	-1.569E-02	8.894E-02	8.922E-02	NOT	IDENT.

 * GEL Laboratories LLC *
 * 2040 Savage Road *
 * Charleston, SC 29407 *
 * GAMMA SPECTROSCOPY BACKGROUND REPORT *

ENERGY	MDA COUNTS	ENERGY	MDA COUNTS	ENERGY	MDA COUNTS
43.53	70.1585	87.09	92.4462	136.47	74.9334
45.60	49.1026	87.57	92.5056	140.51	0.0000
46.54	59.8882	88.03	92.5630	143.76	80.3499
49.72	0.0000	88.34	92.6014	144.24	70.6432
51.35	70.5128	88.47	92.6171	145.44	73.1653
51.87	65.8992	89.96	92.8003	152.43	63.8360
52.39	77.8568	1093.63	92.8832	153.25	0.0000
52.97	74.6917	91.11	0.0000	323.87	39.3496
53.44	78.0057	92.59	93.1192	156.02	0.0000
54.07	81.3480	93.35	93.2107	158.56	0.0000
57.36	0.0000	94.56	69.1521	159.00	62.9936
57.53	82.9371	94.65	69.1603	162.33	66.9018
57.98	83.0012	94.67	69.1621	162.66	0.0000
59.27	94.1301	94.87	69.1795	163.33	60.7625
59.32	94.1380	97.43	95.6231	165.86	67.9438
59.54	94.1731	98.43	66.0163	176.31	70.2410
60.96	79.0313	98.44	66.0171	176.60	0.0000
61.17	79.0590	99.53	77.7039	177.52	66.1291
62.93	113.4275	100.11	74.2778	181.07	0.0000
63.29	113.4945	102.03	79.1064	181.52	68.0339
63.58	113.5482	103.18	83.8768	184.41	63.1470
64.28	113.6772	103.37	79.2351	143.76	63.2164
66.73	106.3682	105.21	89.9207	193.51	77.1941
67.24	107.9316	105.31	89.9312	197.03	77.4126
125.81	103.5680	106.12	95.8635	198.01	66.4052
67.75	103.5794	106.47	92.3949	201.83	73.4382
69.67	120.2146	109.28	83.3134	203.43	61.5601
70.83	121.9148	111.00	112.8743	205.31	51.3757
72.81	102.8950	111.76	0.0000	210.85	65.7842
72.87	102.9041	114.06	89.6725	215.65	62.1409
74.66	115.5151	116.30	0.0000	222.11	61.5732
74.82	115.5426	116.74	73.3757	227.09	61.7985
74.97	115.5677	119.76	71.2473	227.38	61.8115
77.11	115.9300	121.12	61.8397	228.16	0.0000
78.74	93.2630	121.22	61.8464	228.18	59.2344
79.69	117.4896	121.78	77.3556	116.74	59.2344
80.12	94.9531	122.06	70.2363	235.69	52.5482
80.19	0.0000	122.92	85.7922	235.96	52.5580
80.57	117.6356	123.07	84.6148	238.63	45.6365
81.00	115.4434	265.00	63.2048	238.98	0.0000
81.07	115.4550	125.81	84.8645	240.99	45.7121
81.75	117.8307	127.23	90.9777	242.00	47.5038
83.79	92.0322	127.91	75.4703	244.70	50.2368
84.00	92.0588	129.30	104.3732	252.40	0.0000
85.43	92.2392	131.20	93.7616	252.80	46.0850
86.55	92.3789	133.02	81.8955	254.15	0.0000
86.79	92.4085	133.52	78.3231	256.23	54.1866
86.94	92.4277	136.00	83.3536	260.90	0.0000

ENERGY	MDA COUNTS	ENERGY	MDA COUNTS	ENERGY	MDA COUNTS
264.66	51.8108	355.39	0.0000	584.27	23.4943
264.80	51.8156	356.01	16.9728	595.83	0.0000
265.00	57.8984	364.49	0.0000	427.87	19.9610
268.22	44.3206	366.42	0.0000	602.52	0.0000
269.46	41.2205	372.51	32.3398	604.72	28.4084
270.03	41.2355	375.05	23.8108	607.14	28.4337
271.23	45.7529	377.52	43.8681	609.32	16.8633
273.65	0.0000	356.01	34.4429	610.33	16.8698
276.40	53.1062	388.16	29.7241	614.28	17.4218
277.37	51.3373	388.63	0.0000	618.01	22.2031
277.60	47.7423	391.69	35.5404	620.36	14.8152
278.00	48.6552	264.66	28.9453	621.93	13.7644
279.20	45.9874	401.81	31.8580	630.19	0.0000
279.54	51.4081	402.40	33.7987	631.29	14.8733
279.70	50.5119	404.85	21.2704	633.25	13.8204
280.46	56.8528	410.95	36.8496	634.78	0.0000
283.69	36.1702	413.71	24.2757	635.95	13.8337
284.31	0.0000	414.70	0.0000	636.99	0.0000
285.41	51.5983	423.72	0.0000	645.85	14.9502
285.90	0.0000	427.09	25.4086	657.76	24.1278
287.50	29.9116	427.87	33.2384	657.90	0.0000
290.67	55.8545	433.94	20.5886	661.66	16.1066
293.27	0.0000	439.40	24.5722	664.57	0.0000
351.93	58.7418	453.88	29.6832	666.33	0.0000
295.96	58.7694	463.37	37.2627	666.50	0.0000
879.38	38.3291	468.07	28.8767	667.71	0.0000
299.98	42.4717	473.00	0.0000	677.62	17.2747
300.09	42.4746	475.06	21.9740	685.70	0.0000
300.13	42.4755	476.78	34.9850	695.00	0.0000
301.36	46.6203	477.60	25.9979	696.49	20.6444
302.85	43.9170	482.18	25.0478	696.51	20.6444
256.23	39.5648	487.02	0.0000	697.00	0.0000
304.85	0.0000	492.35	0.0000	697.30	22.8235
306.78	44.0205	497.08	17.1418	697.49	23.9121
308.46	39.4744	505.52	27.3224	702.65	23.9524
311.90	34.9555	507.63	0.0000	706.68	20.7140
316.51	35.9722	511.00	22.3138	711.68	16.3800
319.41	0.0000	514.00	16.7565	720.70	0.0000
320.08	0.0000	514.00	16.7565	721.93	0.0000
321.04	42.5401	520.40	18.3281	722.78	18.0831
323.87	33.3464	520.69	0.0000	722.91	18.0838
325.23	30.5911	522.65	0.0000	723.31	16.4423
328.76	0.0000	527.90	0.0000	724.19	16.4471
333.37	25.1444	528.26	30.6445	727.33	18.1100
333.97	25.1532	529.59	18.3970	733.00	16.4935
334.37	44.7266	529.87	0.0000	735.93	13.2075
338.28	37.3535	531.02	0.0000	333.97	11.0116
338.32	37.3543	537.26	0.0000	739.50	0.0000
311.90	37.3991	546.56	0.0000	747.24	14.3595
340.48	37.3991	552.55	22.6920	748.06	12.1534
340.55	0.0000	563.25	19.6803	752.31	8.8506
344.28	29.5133	569.33	15.5737	753.82	0.0000
345.93	28.1335	946.00	16.6126	756.73	16.6180
351.06	35.7356	569.70	16.6139	756.80	16.6187
351.93	35.7526	583.19	20.8748	884.68	13.3247

ENERGY	MDA COUNTS	ENERGY	MDA COUNTS	ENERGY	MDA COUNTS
765.81	18.3315	1274.44	12.8013	1620.50	4.0537
766.42	18.8912	1001.03	10.6805	1621.92	5.0684
766.84	18.8933	1002.74	10.6853	1678.03	0.0000
772.60	0.0000	1004.73	8.5523	1690.97	4.1033
776.52	0.0000	507.63	0.0000	1750.46	0.0000
739.50	0.0000	1025.87	0.0000	1764.49	2.0769
778.90	22.3104	1028.54	0.0000	1063.66	4.1577
783.70	0.0000	1037.84	11.6781	1771.35	2.0793
785.37	16.7657	1038.76	0.0000	1791.20	0.0000
792.07	10.0800	631.29	11.7035	1808.65	6.2758
794.95	10.0887	1048.07	0.0000	1810.72	0.0000
795.86	10.0917	1049.04	9.0076	1836.06	1.0505
810.06	21.3951	1050.41	9.9117		
810.29	21.3966	1063.66	12.6559		
344.28	19.1451	1077.00	0.0000		
810.76	23.6523	1077.34	9.0698		
815.77	0.0000	1085.87	10.9065		
1048.07	0.0000	1093.63	8.1947		
832.01	18.1341	1099.45	12.7653		
834.85	12.4775	1112.07	19.2043		
835.71	11.3460	1112.84	17.3788		
836.80	0.0000	1115.54	8.7867		
846.75	0.0000	1120.29	13.7439		
846.77	13.6587	1120.55	13.7448		
856.80	0.0000	1221.41	13.7476		
860.56	15.9984	1129.67	7.3462		
871.09	8.0231	1131.51	0.0000		
873.19	16.0559	1147.95	0.0000		
875.33	0.0000	1173.23	15.7673		
879.38	17.2327	1177.95	11.1416		
880.51	18.3874	1189.05	15.8234		
883.24	12.0757	1204.77	16.8124		
884.68	20.7100	1221.41	18.7488		
889.28	10.3682	1231.02	15.9697		
894.76	16.1528	1235.36	0.0000		
898.04	9.2386	1238.28	16.9354		
900.72	18.4909	1260.41	0.0000		
903.28	20.8169	1271.87	19.9016		
911.20	9.2718	1274.44	9.7527		
912.08	10.4333	1274.54	10.1139		
923.98	0.0000	1291.59	12.3708		
926.50	10.4744	1298.22	0.0000		
929.11	15.1402	1312.11	0.0000		
937.49	14.8823	1332.49	14.3958		
944.13	0.0000	1362.66	0.0000		
946.00	18.4256	1365.19	4.8303		
949.00	14.9279	1368.63	0.0000		
667.71	0.0000	1384.29	3.8789		
962.31	8.8120	1408.01	4.8715		
964.08	8.8159	1457.56	0.0000		
966.17	8.8208	1460.82	8.8583		
911.20	8.8272	1489.16	5.9374		
968.97	8.8272	1505.03	7.9399		
983.53	0.0000	1584.12	4.8331		
984.45	0.0000	1596.21	0.0000		

```

*****
*                               GEL Laboratories LLC                               *
*                               2040 Savage Road                                   *
*                               Charleston, SC 29407                             *
*****
Configuration   : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]R405245015.CNF;1
Background file : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]BKG_GAM28.CNF;265
Background date : 2-OCT-2016 11:01:35.
Sample date     : 15-DEC-2015 14:02:00 Acquisition date : 3-OCT-2016 04:47:45.
Sample ID      : R405245015 Sample quantity   : 1.20577E+02 GRAM
Detector name  : GAM28 Detector geometry: CAN
Elapsed live time: 0 01:00:00.00 Elapsed real time: 0 01:00:00.43 0.0%
Energy tolerance : 1.50000 keV Analyst Initials : MXR1
Abundance limit : 75.00000 Sensitivity : 3.00000
Batch ID       : 1596387 Detector SN# :
Matrix Spike ID : LCS ID : 1556
*****
    
```

BACKGROUND CORRECTED SAMPLE PEAK REPORT

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	4	74.81*	145	177	1.49	149.72	145	15	4.04E-02	19.4	1.35E+00
2	4	77.19	224	174	1.31	154.48	145	15	6.23E-02	12.2	
3	0	87.12	33	155	0.95	174.34	173	6	9.20E-03	61.5	
4	3	90.05	55	114	1.23	180.21	178	15	1.53E-02	30.3	1.40E+00
5	3	92.86*	87	166	1.52	185.84	178	15	2.42E-02	31.5	
6	0	128.53	37	155	2.26	257.23	252	12	1.02E-02	70.2	
7	0	133.01	42	68	2.03	266.19	263	7	1.15E-02	36.5	
8	0	162.68*	17	97	0.88	325.59	322	8	4.84E-03	103.4	
9	0	186.01*	119	120	1.25	372.27	366	12	3.29E-02	21.5	
10	0	209.42	34	76	0.61	419.12	415	8	9.33E-03	48.2	
11	2	238.85*	400	91	1.36	478.03	473	17	1.11E-01	6.6	1.29E+00
12	2	242.07	84	107	1.63	484.48	473	17	2.32E-02	27.3	
13	0	252.99	33	45	2.30	506.34	503	7	9.24E-03	37.4	
14	0	272.11	58	140	0.66	544.60	537	16	1.60E-02	47.9	
15	0	295.54	184	84	1.40	591.50	585	13	5.11E-02	12.7	
16	0	302.85	52	108	4.73	606.13	598	19	1.44E-02	50.3	
17	0	328.79	22	62	0.79	658.05	652	10	6.16E-03	69.9	
18	0	338.40	97	61	1.02	677.28	673	10	2.68E-02	18.2	
19	0	352.31*	228	84	1.37	705.12	698	14	6.32E-02	11.0	
20	0	412.44	28	60	3.77	825.48	814	16	7.81E-03	64.4	
21	0	463.75	26	32	1.86	928.17	923	9	7.21E-03	44.6	
22	0	511.24*	56	80	2.29	1023.23	1014	20	1.54E-02	45.6	
23	0	573.84	11	22	0.80	1148.52	1144	7	3.08E-03	76.9	
24	0	583.33*	146	39	1.65	1167.51	1160	17	4.06E-02	12.9	
25	0	609.85*	187	41	1.50	1220.59	1213	15	5.20E-02	10.7	
26	0	616.91	14	20	0.98	1234.71	1229	9	3.84E-03	64.5	
27	0	662.46*	94	65	1.51	1325.89	1319	16	2.62E-02	21.9	
28	0	717.59	17	16	5.03	1436.23	1428	13	4.76E-03	54.1	
29	0	728.28	40	19	1.93	1457.63	1451	13	1.11E-02	27.7	
30	0	741.84	14	13	1.08	1484.76	1480	8	3.80E-03	54.3	
31	0	757.99	9	12	1.38	1517.08	1512	8	2.44E-03	79.7	
32	0	795.48	32	12	1.05	1592.13	1586	12	8.89E-03	28.0	
33	0	823.27	4	16	0.99	1647.74	1642	9	1.06E-03	194.7	
34	0	862.19	34	26	0.74	1725.64	1719	14	9.55E-03	36.6	

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
35	0	911.85*	95	14	1.52	1825.04	1818	14	2.65E-02	13.4	
36	0	969.85	45	26	2.58	1941.13	1934	12	1.24E-02	27.6	
37	0	1002.02*	5	5	1.14	2005.51	2002	7	1.25E-03	113.9	
38	0	1121.91*	40	18	1.53	2245.47	2238	16	1.10E-02	30.0	
39	0	1165.75	7	13	0.62	2333.22	2328	9	2.03E-03	97.2	
40	0	1274.19	12	9	0.63	2550.25	2543	12	3.29E-03	58.5	
41	0	1377.98	19	0	2.50	2758.00	2750	15	5.28E-03	22.9	
42	0	1384.86	17	4	2.45	2771.76	2765	14	4.79E-03	33.5	
43	0	1461.61*	394	7	2.10	2925.38	2917	15	1.10E-01	5.3	
44	0	1501.25	6	3	0.64	3004.72	2995	13	1.57E-03	78.1	
45	0	1765.66*	15	4	0.71	3533.94	3526	13	4.09E-03	39.2	

Flag: "*" = Peak area was modified by background subtraction

```

Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]R405245015.CNF;1
Analyses by       : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.4,INTERF V2.4
Sample title      : MXR1
Sample date       : 15-DEC-2015 14:02:00 Acquisition date : 3-OCT-2016 04:47:45
Sample ID         : R405245015           Sample quantity  : 120.58 GRAM
Sample type       : SOLID                 Sample geometry   :
Detector name    : GAMMA28               Detector geometry: CAN
Elapsed live time: 0 01:00:00.00         Elapsed real time: 0 01:00:00.43 0.0%
Energy tolerance : 1.50 keV              Half life ratio  : 10.00
Errors propagated: No                     Systematic Error : 0.00 %
Efficiency type  : Linear                 Efficiencies at  : Peak Energy
Abundance limit  : 75.00
    
```

Interference Report

Interfering		Interfered	
Nuclide	Line	Nuclide	Line
PB-214	242.00	RA-224	240.99
PB-214	87.09	SN-126	86.94
PB-214	87.09	SN-126	87.57
PB-214	87.09	CD-109	88.03
PB-214	74.82	AM-243	74.66
PB-214	74.82	TH-228	74.82
PB-214	74.82	PB-212	74.82
PB-214	351.93	BI-211	351.06

Nuclide Type:

Nuclide	Energy	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error	Status
NA-22	1274.54	99.94*	1.388E+00	5.065E-02	6.270E-02	117.10	OK
K-40	1460.82	10.66*	1.237E+00	1.762E+01	1.762E+01	10.56	OK
BA-137M	661.66	89.90*	2.304E+00	2.806E-01	2.859E-01	43.76	OK
CS-137	661.66	85.10*	2.304E+00	2.965E-01	3.020E-01	43.76	OK
CE-144	80.12	1.36	4.852E+00	----- Line	Not Found	-----	Absent
	133.52	11.09*	6.653E+00	3.755E-01	7.652E-01	72.97	OK
TL-208	277.37	6.60	4.566E+00	----- Line	Not Found	-----	Absent
	583.19	85.00*	2.540E+00	4.191E-01	4.191E-01	25.81	OK
	860.56	12.50	1.888E+00	----- Line	Not Found	-----	Absent
PB-212	74.82	10.28	4.343E+00	1.412E+00	1.412E+00	62.97	OK
	77.11	17.10	4.580E+00	1.962E+00	1.962E+00	24.48	OK
	238.63	43.60*	5.102E+00	1.165E+00	1.165E+00	13.16	OK
	300.09	3.30	4.295E+00	----- Line	Not Found	-----	Absent
BI-214	609.32	45.49*	2.455E+00	1.036E+00	1.036E+00	21.37	OK
	1120.29	14.92	1.540E+00	----- Line	Not Found	-----	Absent
	1764.49	15.30	1.044E+00	5.371E-01	5.373E-01	78.31	OK
PB-214	74.82	5.80	4.343E+00	----- Line	Not Found	-----	<<INT Reject
	77.11	9.70	4.580E+00	3.459E+00	3.460E+00	24.48	OK
	87.09	3.41	5.411E+00	1.223E+00	1.223E+00	123.00	OK
	242.00	7.25	5.054E+00	----- Line	Not Found	-----	<<INT Reject
	295.22	18.42	4.347E+00	1.472E+00	1.473E+00	25.34	OK
	351.93	35.60*	3.782E+00	1.074E+00	1.075E+00	21.94	OK
RN-222	609.32	45.49*	2.455E+00	1.036E+00	1.036E+00	21.37	OK
	1120.29	14.92	1.540E+00	----- Line	Not Found	-----	Absent
	1764.49	15.30	1.044E+00	5.371E-01	5.373E-01	78.31	OK
RA-224	240.99	4.10*	5.053E+00	1.236E-02	1.236E-02	*****	OK
RA-226	609.32	45.49*	2.455E+00	1.036E+00	1.036E+00	21.37	OK
	1120.29	14.92	1.540E+00	----- Line	Not Found	-----	Absent
	1764.49	15.30	1.044E+00	5.371E-01	5.373E-01	78.31	OK
AC-228	105.21	1.10	6.315E+00	----- Line	Not Found	-----	Absent
	338.32	11.27	3.906E+00	1.398E+00	1.398E+00	36.32	OK
	794.95	4.25	2.004E+00	2.288E+00	2.288E+00	55.90	OK
	835.71	1.61	1.930E+00	----- Line	Not Found	-----	Absent
	911.20	25.80*	1.806E+00	1.239E+00	1.239E+00	26.76	OK
	968.97	15.80	1.723E+00	9.876E-01	9.876E-01	55.29	OK
RA-228	105.21	1.10	6.315E+00	----- Line	Not Found	-----	Absent
	338.32	11.27	3.906E+00	1.398E+00	1.398E+00	36.32	OK
	794.95	4.25	2.004E+00	2.288E+00	2.288E+00	55.90	OK
	835.71	1.61	1.930E+00	----- Line	Not Found	-----	Absent
	911.20	25.80*	1.806E+00	1.239E+00	1.239E+00	26.76	OK
	968.97	15.80	1.723E+00	9.876E-01	9.876E-01	55.29	OK
TH-228	74.82	10.28	4.343E+00	1.412E+00	1.412E+00	62.97	OK
	77.11	17.10	4.580E+00	1.962E+00	1.962E+00	24.48	OK
	238.63	43.60*	5.102E+00	1.165E+00	1.165E+00	13.16	OK
	300.09	3.30	4.295E+00	----- Line	Not Found	-----	Absent
TH-230	609.32	45.49*	2.455E+00	1.036E+00	1.036E+00	21.37	OK
	1120.29	14.92	1.540E+00	----- Line	Not Found	-----	Absent
	1764.49	15.30	1.044E+00	5.371E-01	5.371E-01	78.31	OK
PA-231	283.69	1.70	4.487E+00	----- Line	Not Found	-----	Absent

Nuclide Type:

Nuclide	Energy	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error	Status
	301.36	5.35*	4.264E+00	1.454E+00	1.454E+00	100.66	OK
TH-232	105.21	1.10	6.315E+00	-----	Line Not Found	-----	Absent
	338.32	11.27	3.906E+00	1.398E+00	1.398E+00	36.32	OK
	835.71	1.61	1.930E+00	-----	Line Not Found	-----	Absent
	911.20	25.80*	1.806E+00	1.239E+00	1.239E+00	26.76	OK
	968.97	15.80	1.723E+00	9.876E-01	9.876E-01	55.29	OK
U-234	609.32	45.49*	2.455E+00	1.036E+00	1.036E+00	21.37	OK
	1120.29	14.92	1.540E+00	-----	Line Not Found	-----	Absent
	1764.49	15.30	1.044E+00	5.371E-01	5.371E-01	78.31	OK
U-235	89.96	3.47	5.608E+00	1.920E+00	1.920E+00	60.67	OK
	93.35	5.60	5.777E+00	1.829E+00	1.829E+00	62.91	OK
	143.76	10.96*	6.593E+00	-----	Line Not Found	-----	Absent
	163.33	5.08	6.362E+00	3.560E-01	3.560E-01	206.89	OK
	185.72	57.20	5.980E+00	2.274E-01	2.274E-01	42.93	OK
	205.31	5.01	5.647E+00	-----	Line Not Found	-----	Absent
PU-239	129.30	0.01*	6.656E+00	5.828E+02	5.828E+02	140.31	OK
	375.05	0.00	3.598E+00	-----	Line Not Found	-----	Absent
	413.71	0.00	3.335E+00	3.624E+03	3.624E+03	128.89	OK
AM-243	43.53	5.90	4.883E-01	-----	Line Not Found	-----	Absent
	74.66	67.20*	4.343E+00	2.161E-01	2.161E-01	62.97	OK
ANH-511	511.00	100.00*	2.815E+00	1.231E-01	1.231E-01	91.25	OK

Flag: "*" = Keyline


```

*****
*
*           GEL Laboratories LLC
*           2040 Savage Road
*           Charleston, SC 29407
*****
*
*           DETECTOR AND SAMPLE DATA
*
* Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]R405245015.CNF;1
* Acquisition date   : 3-OCT-2016 04:47:45 Sensitivity      : 3.000
* Detector ID        : GAM28 Energy tolerance: 1.500
* Elapsed live time  : 0 01:00:00.00 Abundance limit : 75.000
* Elapsed real time  : 0 01:00:00.43 Half life ratio  : *****
* Sample date        : 15-DEC-2015 14:02:00 Analyst initials: MXR1
* Sample ID          : R405245015 Sample Quantity : 1.2058E+02 GRAM
* Batch Number       : 1596387 Wet Weight      : 0.00000
* Wet wt corr        : 1.00000 Dry Weight       : 0.00000
* Nuclide Library    : SOLID.NLB;6
*****
*
*           CALIBRATION INFORMATION
*
* Eff. Cal. date     : 1-AUG-2016 10:02:35 Eff. Geometry   : CAN
* Eff. File          : DKA100:[CANBERRA.GAMMA]EFF_GAM28_CAN.CNF;10
*****

```

Combined Activity-MDA Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM)	Cnt uncert (1.96-sigma)	MDA (pCi/GRAM)
NA-22	6.270E-02	7.195E-02	1.140E-01
K-40	1.762E+01	1.824E+00	6.323E-01
BA-137M	2.859E-01	1.226E-01	8.148E-02
CS-137	3.020E-01	1.295E-01	8.608E-02
CE-144	7.652E-01	5.472E-01	7.482E-01
TL-208	4.191E-01	1.060E-01	6.453E-02
PB-212	1.165E+00	1.502E-01	1.143E-01
BI-214	1.036E+00	2.169E-01	1.621E-01
PB-214	1.075E+00	2.310E-01	1.400E-01
RN-222	1.036E+00	2.169E-01	1.621E-01
RA-224	1.236E-02	1.541E+00	1.225E+00
RA-226	1.036E+00	2.169E-01	1.621E-01
AC-228	1.239E+00	3.249E-01	2.835E-01
RA-228	1.239E+00	3.249E-01	2.835E-01
TH-228	1.165E+00	1.502E-01	1.143E-01
TH-230	1.036E+00	2.169E-01	1.621E-01
PA-231	1.454E+00	1.434E+00	8.831E-01
TH-232	1.239E+00	3.249E-01	2.835E-01
U-234	1.036E+00	2.169E-01	1.621E-01
U-235	7.778E-02	2.186E-01	3.951E-01
PU-239	5.828E+02	8.014E+02	6.568E+02
AM-243	2.161E-01	1.333E-01	1.073E-01
ANH-511	1.231E-01	1.101E-01	6.468E-02

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/GRAM)	K.L.	Cnt Uncert (1.96-sigma)	MDA (pCi/GRAM)	
BE-7	8.015E+00		1.474E+01	2.883E+01	NOT IDENT.
NA-24	0.000E+00		1.070E+41	0.000E+00	SHORT HLIF
AL-26	-2.122E-02		2.737E-02	4.586E-02	NOT IDENT.
SC-46	-1.906E-01		4.223E-01	7.754E-01	FAIL ABUN
V-48	0.000E+00		1.113E+04	0.000E+00	SHORT HLIF
CR-51	0.000E+00		4.024E+02	0.000E+00	SHORT HLIF
MN-54	-1.348E-02		7.397E-02	1.412E-01	NOT IDENT.

CO-56	-7.289E-03	4.776E-01	9.447E-01	NOT IDENT.
MN-56	0.000E+00	1.960E+41	0.000E+00	SHORT HLIF
CO-57	5.433E-02	5.876E-02	1.109E-01	NOT IDENT.
CO-58	1.838E-01	6.171E-01	1.268E+00	NOT IDENT.
FE-59	-3.296E+00	6.968E+00	1.254E+01	NOT IDENT.
CO-60	-1.924E-03	4.835E-02	9.367E-02	NOT IDENT.
ZN-65	-1.435E-01	2.600E-01	3.868E-01	NOT IDENT.
GE-68	1.055E+00	2.856E+00	5.950E+00	NOT IDENT.
AS-73	6.554E+00	1.100E+01	2.079E+01	NOT IDENT.
AS-74	0.000E+00	5.620E+03	0.000E+00	SHORT HLIF
SE-75	9.495E-02	2.262E-01	4.439E-01	NOT IDENT.
BR-77	0.000E+00	3.297E+36	0.000E+00	SHORT HLIF
SR-82	0.000E+00	6.915E+02	0.000E+00	SHORT HLIF
RB-83	-4.905E-01	7.735E-01	1.315E+00	NOT IDENT.
KR-85	1.159E+01	9.875E+00	2.000E+01	NOT IDENT.
SR-85	1.132E+00	9.669E-01	1.957E+00	NOT IDENT.
RB-86	0.000E+00	2.730E+04	0.000E+00	SHORT HLIF
Y-88	-3.103E-02	1.739E-01	3.862E-01	NOT IDENT.
Y-91	-1.077E+02	6.558E+02	1.214E+03	NOT IDENT.
NB-94	3.457E-06	4.000E-02	7.288E-02	NOT IDENT.
NB-95	-9.379E-02	9.539E-01	1.838E+00	NOT IDENT.
NB-95M	-1.938E+00	2.865E+00	4.519E+00	NOT IDENT.
ZR-95	1.127E+00	1.761E+00	3.183E+00	FAIL ABUN
NB-97	0.000E+00	1.960E+41	0.000E+00	SHORT HLIF
ZR-97	0.000E+00	1.012E+41	0.000E+00	SHORT HLIF
MO-99	0.000E+00	3.777E+31	0.000E+00	SHORT HLIF
TC-99M	0.000E+00	1.188E+41	0.000E+00	SHORT HLIF
RH-101	6.400E-02	8.800E-02	7.272E-02	FAIL ABUN
RH-102	-4.638E-02	7.164E-02	1.194E-01	NOT IDENT.
RU-103	-8.249E-01	6.139E+00	1.123E+01	FAIL ABUN
RH-106	8.765E-02	5.683E-01	1.081E+00	NOT IDENT.
RU-106	8.765E-02	5.683E-01	1.081E+00	NOT IDENT.
AG-108M	1.722E-02	3.196E-02	6.362E-02	NOT IDENT.
CD-109	1.749E+00	2.109E+00	2.940E+00	FAIL ABUN
AG-110M	-9.495E-02	1.268E-01	2.214E-01	FAIL ABUN
SN-113	-2.802E-02	3.018E-01	5.530E-01	NOT IDENT.
CD-115	0.000E+00	4.033E+38	0.000E+00	SHORT HLIF
SN-117M	0.000E+00	9.010E+04	0.000E+00	SHORT HLIF
TE-123M	4.813E-02	1.648E-01	2.717E-01	NOT IDENT.
SB-124	1.541E+00	1.782E+00	4.750E+00	NOT IDENT.
SB-125	6.109E-02	1.248E-01	2.452E-01	FAIL ABUN
TE-125M	2.086E+01	3.046E+02	5.418E+02	NOT IDENT.
I-126	0.000E+00	9.626E+05	0.000E+00	SHORT HLIF
SB-126	0.000E+00	8.258E+05	0.000E+00	SHORT HLIF
SN-126	1.127E-01	1.359E-01	1.942E-01	FAIL ABUN
SB-127	0.000E+00	6.991E+21	0.000E+00	SHORT HLIF
I-131	0.000E+00	3.158E+09	0.000E+00	SHORT HLIF
I-132	0.000E+00	1.960E+41	0.000E+00	SHORT HLIF
TE-132	0.000E+00	8.945E+25	0.000E+00	SHORT HLIF
BA-133	2.370E-04	4.924E-02	8.337E-02	FAIL ABUN
I-133	0.000E+00	1.743E+41	0.000E+00	SHORT HLIF
CS-134	0.000E+00	8.153E-02	1.434E-01	FAIL ABUN
CS-135	1.079E-01	1.586E-01	2.939E-01	NOT IDENT.
I-135	0.000E+00	1.577E+41	0.000E+00	SHORT HLIF
CS-136	0.000E+00	2.422E+05	0.000E+00	SHORT HLIF
CE-139	-1.682E-02	1.305E-01	2.232E-01	NOT IDENT.
BA-140	0.000E+00	1.029E+06	0.000E+00	SHORT HLIF
LA-140	0.000E+00	3.028E+05	0.000E+00	SHORT HLIF
CE-141	-6.045E+00	2.604E+01	4.433E+01	NOT IDENT.
CE-143	0.000E+00	1.960E+41	0.000E+00	SHORT HLIF
PM-144	-1.604E-03	6.935E-02	1.261E-01	FAIL ABUN
PR-144	-1.388E-01	6.001E+00	1.091E+01	NOT IDENT.
PM-146	-5.862E-03	4.877E-02	9.017E-02	NOT IDENT.
ND-147	0.000E+00	2.320E+07	0.000E+00	SHORT HLIF
PM-147	-5.112E+01	1.078E+03	1.882E+03	NOT IDENT.
PM-149	0.000E+00	5.488E+39	0.000E+00	SHORT HLIF
EU-150	-2.183E-02	3.377E-02	5.184E-02	FAIL ABUN
EU-152	-6.864E-02	1.087E-01	1.909E-01	NOT IDENT.
GD-153	1.374E-01	2.074E-01	3.680E-01	NOT IDENT.
EU-154	1.543E-01	1.770E-01	2.804E-01	FAIL ABUN
EU-155	5.039E-02	1.368E-01	2.486E-01	FAIL ABUN
TB-160	-7.208E-01	2.073E+00	3.868E+00	FAIL ABUN
HO-166M	-6.233E-02	8.565E-02	1.181E-01	FAIL ABUN
TM-171	-1.015E+01	2.811E+01	4.930E+01	NOT IDENT.
HF-172	3.311E-02	2.846E-01	4.672E-01	FAIL ABUN
LU-172	-1.773E-02	8.600E-02	1.627E-01	FAIL ABUN
LU-176	-1.814E-02	2.949E-02	4.581E-02	FAIL ABUN
HF-181	4.091E+00	4.601E+00	9.469E+00	FAIL ABUN

TA-182	-7.514E-01	1.119E+00	1.911E+00	FAIL ABUN
RE-183	-1.248E+00	3.469E+00	6.138E+00	FAIL ABUN
RE-184	6.169E+00	3.170E+01	6.357E+01	NOT IDENT.
W-188	-3.359E+01	1.319E+02	2.177E+02	NOT IDENT.
IR-192	7.621E-02	4.840E-01	9.282E-01	FAIL ABUN
HG-203	4.018E-01	2.576E+00	4.906E+00	NOT IDENT.
BI-207	3.847E-02	5.124E-02	1.129E-01	FAIL ABUN
PB-210	2.961E-01	4.785E+00	8.729E+00	NOT IDENT.
BI-211	0.000E+00	6.364E-01	8.898E-01	FAIL ABUN
PB-211	-3.267E-01	8.928E-01	1.409E+00	NOT IDENT.
BI-212	0.000E+00	9.282E-01	1.444E+00	FAIL ABUN
RN-219	1.195E-01	4.688E-01	8.955E-01	FAIL ABUN
RA-223	5.606E-01	7.084E-01	1.324E+00	FAIL ABUN
AC-227	-1.459E-02	2.803E-01	4.751E-01	NOT IDENT.
TH-227	-1.459E-02	2.803E-01	4.751E-01	NOT IDENT.
TH-229	-2.047E-01	5.282E-01	9.779E-01	FAIL ABUN
TH-231	5.606E-01	7.084E-01	1.324E+00	FAIL ABUN
PA-233	1.671E-02	6.563E-02	1.272E-01	NOT IDENT.
PA-234	-1.253E-01	2.660E-01	4.904E-01	NOT IDENT.
PA-234M	1.920E+00	4.286E+00	9.529E+00	FAIL ABUN
TH-234	4.254E-01	1.750E+00	3.205E+00	FAIL ABUN
NP-237	1.671E-02	6.563E-02	1.272E-01	NOT IDENT.
NP-238	0.000E+00	4.889E+00	0.000E+00	SHORT HLIF
U-238	4.254E-01	1.750E+00	3.205E+00	FAIL ABUN
NP-239	-1.326E-01	2.887E-01	4.885E-01	NOT IDENT.
AM-241	-8.516E-02	1.851E-01	3.235E-01	NOT IDENT.
CM-243	-8.433E-02	1.228E-01	2.048E-01	NOT IDENT.
BK-247	-2.954E-02	8.317E-02	1.524E-01	NOT IDENT.
CM-247	2.007E-02	4.232E-02	8.274E-02	NOT IDENT.
CF-249	-8.284E-03	4.738E-02	8.658E-02	FAIL ABUN
CF-251	1.311E-02	1.302E-01	2.506E-01	NOT IDENT.

Nuclide Line Activity Report

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
NA-22	1274.54	11	99.94*	1.388E+00	5.065E-02	6.270E-02	117.10
K-40	1460.82	373	10.66*	1.237E+00	1.762E+01	1.762E+01	10.56
CD-109	88.03	36	3.70*	5.411E+00	1.127E+00	1.749E+00	123.00
SN-126	64.28	-----	9.60	3.124E+00	-----	Line Not Found	-----
	86.94	36	8.90	5.411E+00	4.686E-01	4.686E-01	123.00
	87.57	36	37.00*	5.411E+00	1.127E-01	1.127E-01	123.00
BA-137M	661.66	93	89.90*	2.304E+00	2.806E-01	2.859E-01	43.76
CS-137	661.66	93	85.10*	2.304E+00	2.965E-01	3.020E-01	43.76
CE-144	80.12	-----	1.36	4.852E+00	-----	Line Not Found	-----
	133.52	44	11.09*	6.653E+00	3.755E-01	7.652E-01	72.97
TL-208	277.37	-----	6.60	4.566E+00	-----	Line Not Found	-----
	583.19	145	85.00*	2.540E+00	4.191E-01	4.191E-01	25.81
	860.56	-----	12.50	1.888E+00	-----	Line Not Found	-----
BI-211	72.87	-----	1.23	4.138E+00	-----	Line Not Found	-----
	351.06	232	12.92*	3.782E+00	2.960E+00	2.960E+00	21.94
PB-212	74.82	160	10.28	4.343E+00	2.235E+00	2.235E+00	38.73
	77.11	247	17.10	4.580E+00	1.962E+00	1.962E+00	24.48
	238.63	416	43.60*	5.102E+00	1.165E+00	1.165E+00	13.16
	300.09	-----	3.30	4.295E+00	-----	Line Not Found	-----
BI-214	609.32	186	45.49*	2.455E+00	1.036E+00	1.036E+00	21.37
	1120.29	-----	14.92	1.540E+00	-----	Line Not Found	-----
	1764.49	14	15.30	1.044E+00	5.371E-01	5.373E-01	78.31
PB-214	74.82	160	5.80	4.343E+00	3.961E+00	3.963E+00	38.73
	77.11	247	9.70	4.580E+00	3.459E+00	3.460E+00	24.48
	87.09	36	3.41	5.411E+00	1.223E+00	1.223E+00	123.00
	242.00	87	7.25	5.053E+00	1.479E+00	1.480E+00	54.58
	295.22	189	18.42	4.347E+00	1.472E+00	1.473E+00	25.34
	351.93	232	35.60*	3.782E+00	1.074E+00	1.075E+00	21.94
RN-222	609.32	186	45.49*	2.455E+00	1.036E+00	1.036E+00	21.37
	1120.29	-----	14.92	1.540E+00	-----	Line Not Found	-----
	1764.49	14	15.30	1.044E+00	5.371E-01	5.373E-01	78.31
RA-224	240.99	87	4.10*	5.053E+00	2.616E+00	2.616E+00	54.58
RA-226	609.32	186	45.49*	2.455E+00	1.036E+00	1.036E+00	21.37
	1120.29	-----	14.92	1.540E+00	-----	Line Not Found	-----
	1764.49	14	15.30	1.044E+00	5.371E-01	5.373E-01	78.31
AC-228	105.21	-----	1.10	6.315E+00	-----	Line Not Found	-----
	338.32	99	11.27	3.906E+00	1.398E+00	1.398E+00	36.32
	794.95	31	4.25	2.004E+00	2.288E+00	2.288E+00	55.90
	835.71	-----	1.61	1.930E+00	-----	Line Not Found	-----
	911.20	93	25.80*	1.806E+00	1.239E+00	1.239E+00	26.76
	968.97	43	15.80	1.723E+00	9.876E-01	9.876E-01	55.29
RA-228	105.21	-----	1.10	6.315E+00	-----	Line Not Found	-----
	338.32	99	11.27	3.906E+00	1.398E+00	1.398E+00	36.32
	794.95	31	4.25	2.004E+00	2.288E+00	2.288E+00	55.90
	835.71	-----	1.61	1.930E+00	-----	Line Not Found	-----
	911.20	93	25.80*	1.806E+00	1.239E+00	1.239E+00	26.76
	968.97	43	15.80	1.723E+00	9.876E-01	9.876E-01	55.29

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
TH-228	74.82	160	10.28	4.343E+00	2.235E+00	2.235E+00	38.73
	77.11	247	17.10	4.580E+00	1.962E+00	1.962E+00	24.48
	238.63	416	43.60*	5.102E+00	1.165E+00	1.165E+00	13.16
	300.09	-----	3.30	4.295E+00	-----	Line Not Found	-----
TH-230	609.32	186	45.49*	2.455E+00	1.036E+00	1.036E+00	21.37
	1120.29	-----	14.92	1.540E+00	-----	Line Not Found	-----
	1764.49	14	15.30	1.044E+00	5.371E-01	5.371E-01	78.31
PA-231	283.69	-----	1.70	4.487E+00	-----	Line Not Found	-----
	301.36	53	5.35*	4.264E+00	1.454E+00	1.454E+00	100.66
TH-232	105.21	-----	1.10	6.315E+00	-----	Line Not Found	-----
	338.32	99	11.27	3.906E+00	1.398E+00	1.398E+00	36.32
	835.71	-----	1.61	1.930E+00	-----	Line Not Found	-----
	911.20	93	25.80*	1.806E+00	1.239E+00	1.239E+00	26.76
U-234	968.97	43	15.80	1.723E+00	9.876E-01	9.876E-01	55.29
	609.32	186	45.49*	2.455E+00	1.036E+00	1.036E+00	21.37
	1120.29	-----	14.92	1.540E+00	-----	Line Not Found	-----
U-235	1764.49	14	15.30	1.044E+00	5.371E-01	5.371E-01	78.31
	89.96	60	3.47	5.608E+00	1.920E+00	1.920E+00	60.67
	93.35	95	5.60	5.777E+00	1.829E+00	1.829E+00	62.91
	143.76	-----	10.96*	6.593E+00	-----	Line Not Found	-----
	163.33	18	5.08	6.362E+00	3.560E-01	3.560E-01	206.89
PU-239	185.72	125	57.20	5.980E+00	2.274E-01	2.274E-01	42.93
	205.31	-----	5.01	5.647E+00	-----	Line Not Found	-----
	129.30	39	0.01*	6.656E+00	5.828E+02	5.828E+02	140.31
	375.05	-----	0.00	3.598E+00	-----	Line Not Found	-----
AM-243	413.71	28	0.00	3.335E+00	3.624E+03	3.624E+03	128.89
	43.53	-----	5.90	4.883E-01	-----	Line Not Found	-----
ANH-511	74.66	160	67.20*	4.343E+00	3.419E-01	3.419E-01	38.73
	511.00	56	100.00*	2.815E+00	1.231E-01	1.231E-01	91.25

Flag: "*" = Keyline

Total number of lines in spectrum 45
 Number of unidentified lines 8
 Number of lines tentatively identified by NID 37 82.22%

Nuclide Type :

Nuclide	Hlife	Decay	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
NA-22	2.60Y	1.24	5.065E-02	6.270E-02	7.342E-02	117.10	
K-40	1.25E+09Y	1.00	1.762E+01	1.762E+01	0.186E+01	10.56	
CD-109	461.40D	1.55	1.127E+00	1.749E+00	2.152E+00	123.00	
SN-126	2.30E+05Y	1.00	1.127E-01	1.127E-01	1.386E-01	123.00	
BA-137M	30.08Y	1.02	2.806E-01	2.859E-01	1.251E-01	43.76	
CS-137	30.08Y	1.02	2.965E-01	3.020E-01	1.322E-01	43.76	
CE-144	284.91D	2.04	3.755E-01	7.652E-01	5.583E-01	72.97	
TL-208	1.41E+10Y	1.00	4.191E-01	4.191E-01	1.082E-01	25.81	
BI-211	7.04E+08Y	1.00	2.960E+00	2.960E+00	0.649E+00	21.94	
PB-212	1.41E+10Y	1.00	1.165E+00	1.165E+00	0.153E+00	13.16	
BI-214	1600.00Y	1.00	1.036E+00	1.036E+00	0.221E+00	21.37	
PB-214	1600.00Y	1.00	1.074E+00	1.075E+00	0.236E+00	21.94	
RN-222	1600.00Y	1.00	1.036E+00	1.036E+00	0.221E+00	21.37	
RA-224	1.41E+10Y	1.00	2.616E+00	2.616E+00	1.428E+00	54.58	
RA-226	1600.00Y	1.00	1.036E+00	1.036E+00	0.221E+00	21.37	
AC-228	1.41E+10Y	1.00	1.239E+00	1.239E+00	0.332E+00	26.76	
RA-228	1.41E+10Y	1.00	1.239E+00	1.239E+00	0.332E+00	26.76	
TH-228	1.41E+10Y	1.00	1.165E+00	1.165E+00	0.153E+00	13.16	
TH-230	7.54E+04Y	1.00	1.036E+00	1.036E+00	0.221E+00	21.37	
PA-231	7.04E+08Y	1.00	1.454E+00	1.454E+00	1.463E+00	100.66	
TH-232	1.41E+10Y	1.00	1.239E+00	1.239E+00	0.332E+00	26.76	
U-234	2.45E+05Y	1.00	1.036E+00	1.036E+00	0.221E+00	21.37	
U-235	7.04E+08Y	1.00	2.274E-01	2.274E-01	0.976E-01	42.93	K
PU-239	24110.00Y	1.00	5.828E+02	5.828E+02	8.178E+02	140.31	
AM-243	7370.00Y	1.00	3.419E-01	3.419E-01	1.324E-01	38.73	
ANH-511	1.00E+09Y	1.00	1.231E-01	1.231E-01	1.124E-01	91.25	
Total Activity :			6.231E+02	6.242E+02			

Grand Total Activity : 6.231E+02 6.242E+02

Flags: "K" = Keyline not found "M" = Manually accepted
 "E" = Manually edited "A" = Nuclide specific abn. limit

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
0	209.42	35	80	0.61	419.12	415	8	9.33E-03	96.4	5.58E+00	T
0	252.99	35	46	2.30	506.34	503	7	9.24E-03	74.8	4.89E+00	T
0	272.11	59	145	0.66	544.60	537	16	1.60E-02	95.7	4.63E+00	T
0	328.79	23	63	0.79	658.05	652	10	6.16E-03	****	4.00E+00	T
0	463.75	26	32	1.86	928.17	923	9	7.21E-03	89.2	3.04E+00	T
0	573.84	11	22	0.80	1148.52	1144	7	3.08E-03	****	2.57E+00	
0	616.91	14	20	0.98	1234.71	1229	9	3.84E-03	****	2.43E+00	T
0	717.59	17	16	5.03	1436.23	1428	13	4.76E-03	****	2.17E+00	
0	728.28	39	19	1.93	1457.63	1451	13	1.11E-02	55.4	2.14E+00	T
0	741.84	13	13	1.08	1484.76	1480	8	3.80E-03	****	2.11E+00	
0	757.99	9	12	1.38	1517.08	1512	8	2.44E-03	****	2.08E+00	T
0	823.27	4	16	0.99	1647.74	1642	9	1.06E-03	****	1.95E+00	
0	862.19	33	25	0.74	1725.64	1719	14	9.55E-03	73.2	1.89E+00	
0	1002.02	4	5	1.14	2005.51	2002	7	1.25E-03	****	1.68E+00	T
0	1121.91	38	18	1.53	2245.47	2238	16	1.10E-02	59.9	1.54E+00	T
0	1165.75	7	12	0.62	2333.22	2328	9	2.03E-03	****	1.49E+00	
0	1377.98	18	0	2.50	2758.00	2750	15	5.28E-03	45.9	1.30E+00	
0	1384.86	16	4	2.45	2771.76	2765	14	4.79E-03	66.9	1.30E+00	T
0	1501.25	5	3	0.64	3004.72	2995	13	1.57E-03	****	1.21E+00	

Flags: "T" = Tentatively associated

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*****
*                               GEL Laboratories LLC                               *
*                               2040 Savage Road                               *
*                               Charleston, SC 29407                          *
*****
*                               DETECTOR AND SAMPLE DATA                       *
*
* Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]R405245015.CNF;1
* Acquisition date   : 3-OCT-2016 04:47:45 Sensitivity      : 3.000
* Detector ID       : GAM28 Energy tolerance: 1.500
* Elapsed live time : 0 01:00:00.00 Abundance limit : 75.000
* Elapsed real time : 0 01:00:00.43 Half life ratio : *****
* Sample date       : 15-DEC-2015 14:02:00 Nuclide Library : SOLID
* Sample ID        : R405245015 Analyst initials: MXR1
* Batch Number     : 1596387 Sample Quantity : 1.2058E+02 GRAM
* Wet wt corr      : 1.00000 Wet Weight : 0.00000
*                               Dry Weight : 0.00000
*****
*                               CALIBRATION INFORMATION                         *
*
* Eff. Cal. date    : 1-AUG-2016 10:02:35 Eff. Geometry   : CAN
* Eff. File         : DKA100:[CANBERRA.GAMMA]EFF_GAM28_CAN.CNF;10
*****

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Combined Critical Level Report

NOTE: Not all "Identified Nuclides" are valid.
 Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Lc (pCi/GRAM)
NA-22	4.951E-02
K-40	2.525E-01
BA-137M	3.659E-02
CS-137	3.865E-02
CE-144	3.504E-01
TL-208	2.834E-02
PB-212	5.333E-02
BI-214	7.349E-02
PB-214	6.369E-02
RN-222	7.349E-02
RA-224	5.717E-01
RA-226	7.349E-02
AC-228	1.237E-01
RA-228	1.237E-01
TH-228	5.333E-02
TH-230	7.347E-02
PA-231	4.043E-01
TH-232	1.237E-01
U-234	7.347E-02
U-235	1.857E-01
PU-239	3.079E+02
AM-243	5.066E-02
ANH-511	2.933E-02

---- Non-Identified Nuclides ----

Nuclide	Lc (pCi/GRAM)	
BE-7	1.318E+01	NOT IDENT.
NA-24	0.000E+00	SHORT HLIF
AL-26	1.470E-02	NOT IDENT.
SC-46	3.361E-01	FAIL ABUN
V-48	0.000E+00	SHORT HLIF
CR-51	0.000E+00	SHORT HLIF
MN-54	6.223E-02	NOT IDENT.
CO-56	4.113E-01	NOT IDENT.

MN-56	0.000E+00	SHORT HLIF
CO-57	5.228E-02	NOT IDENT.
CO-58	5.586E-01	NOT IDENT.
FE-59	5.362E+00	NOT IDENT.
CO-60	3.986E-02	NOT IDENT.
ZN-65	1.687E-01	NOT IDENT.
GE-68	2.627E+00	NOT IDENT.
AS-73	9.767E+00	NOT IDENT.
AS-74	0.000E+00	SHORT HLIF
SE-75	2.053E-01	NOT IDENT.
BR-77	0.000E+00	SHORT HLIF
SR-82	0.000E+00	SHORT HLIF
RB-83	5.860E-01	NOT IDENT.
KR-85	9.264E+00	NOT IDENT.
SR-85	9.069E-01	NOT IDENT.
RB-86	0.000E+00	SHORT HLIF
Y-88	1.368E-01	NOT IDENT.
Y-91	5.358E+02	NOT IDENT.
NB-94	3.260E-02	NOT IDENT.
NB-95	8.214E-01	NOT IDENT.
NB-95M	2.101E+00	NOT IDENT.
ZR-95	1.414E+00	FAIL ABUN
NB-97	0.000E+00	SHORT HLIF
ZR-97	0.000E+00	SHORT HLIF
MO-99	0.000E+00	SHORT HLIF
TC-99M	0.000E+00	SHORT HLIF
RH-101	3.411E-02	FAIL ABUN
RH-102	5.236E-02	NOT IDENT.
RU-103	5.044E+00	FAIL ABUN
RH-106	4.798E-01	NOT IDENT.
RU-106	4.798E-01	NOT IDENT.
AG-108M	2.888E-02	NOT IDENT.
CD-109	1.404E+00	FAIL ABUN
AG-110M	9.655E-02	FAIL ABUN
SN-113	2.546E-01	NOT IDENT.
CD-115	0.000E+00	SHORT HLIF
SN-117M	0.000E+00	SHORT HLIF
TE-123M	1.271E-01	NOT IDENT.
SB-124	1.904E+00	NOT IDENT.
SB-125	1.118E-01	FAIL ABUN
TE-125M	2.539E+02	NOT IDENT.
I-126	0.000E+00	SHORT HLIF
SB-126	0.000E+00	SHORT HLIF
SN-126	9.283E-02	FAIL ABUN
SB-127	0.000E+00	SHORT HLIF
I-131	0.000E+00	SHORT HLIF
I-132	0.000E+00	SHORT HLIF
TE-132	0.000E+00	SHORT HLIF
BA-133	3.783E-02	FAIL ABUN
I-133	0.000E+00	SHORT HLIF
CS-134	6.527E-02	FAIL ABUN
CS-135	1.355E-01	NOT IDENT.
I-135	0.000E+00	SHORT HLIF
CS-136	0.000E+00	SHORT HLIF
CE-139	1.042E-01	NOT IDENT.
BA-140	0.000E+00	SHORT HLIF
LA-140	0.000E+00	SHORT HLIF
CE-141	2.078E+01	NOT IDENT.
CE-143	0.000E+00	SHORT HLIF
PM-144	5.635E-02	FAIL ABUN
PR-144	4.876E+00	NOT IDENT.
PM-146	4.041E-02	NOT IDENT.
ND-147	0.000E+00	SHORT HLIF
PM-147	8.846E+02	NOT IDENT.
PM-149	0.000E+00	SHORT HLIF
EU-150	2.364E-02	FAIL ABUN
EU-152	8.679E-02	NOT IDENT.
GD-153	1.725E-01	NOT IDENT.
EU-154	1.218E-01	FAIL ABUN
EU-155	1.171E-01	FAIL ABUN
TB-160	1.685E+00	FAIL ABUN
HO-166M	5.187E-02	FAIL ABUN
TM-171	2.305E+01	NOT IDENT.
HF-172	2.182E-01	FAIL ABUN
LU-172	6.990E-02	FAIL ABUN
LU-176	2.075E-02	FAIL ABUN
HF-181	4.307E+00	FAIL ABUN
TA-182	8.282E-01	FAIL ABUN

RE-183	2.869E+00	FAIL ABUN
RE-184	2.804E+01	NOT IDENT.
W-188	1.000E+02	NOT IDENT.
IR-192	4.251E-01	FAIL ABUN
HG-203	2.274E+00	NOT IDENT.
BI-207	4.929E-02	FAIL ABUN
PB-210	4.104E+00	NOT IDENT.
BI-211	4.277E-01	FAIL ABUN
PB-211	6.381E-01	NOT IDENT.
BI-212	6.630E-01	FAIL ABUN
RN-219	4.099E-01	FAIL ABUN
RA-223	6.093E-01	FAIL ABUN
AC-227	2.190E-01	NOT IDENT.
TH-227	2.190E-01	NOT IDENT.
TH-229	4.558E-01	FAIL ABUN
TH-231	6.093E-01	FAIL ABUN
PA-233	5.828E-02	NOT IDENT.
PA-234	2.052E-01	NOT IDENT.
PA-234M	4.168E+00	FAIL ABUN
TH-234	1.525E+00	FAIL ABUN
NP-237	5.828E-02	NOT IDENT.
NP-238	0.000E+00	SHORT HLIF
U-238	1.525E+00	FAIL ABUN
NP-239	2.278E-01	NOT IDENT.
AM-241	1.521E-01	NOT IDENT.
CM-243	9.566E-02	NOT IDENT.
BK-247	7.020E-02	NOT IDENT.
CM-247	3.790E-02	NOT IDENT.
CF-249	3.960E-02	FAIL ABUN
CF-251	1.172E-01	NOT IDENT.

 * GEL Laboratories LLC *
 * 2040 Savage Road *
 * Charleston, SC 29407 *

DETECTOR AND SAMPLE DATA

* Configuration : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]R405245015.CNF;1 *
 * Acquisition date : 3-OCT-2016 04:47:45 Sensitivity : 3.000 *
 * Detector ID : GAM28 Energy tolerance: 1.500 *
 * Elapsed live time: 0 01:00:00.00 Abundance limit : 75.000 *
 * Elapsed real time: 0 01:00:00.43 Half life ratio : ***** *
 * Sample date : 15-DEC-2015 14:02:00 Nuclide Library : SOLID *
 * Sample ID : R405245015 Analyst initials: MXR1 *
 * Batch Number : 1596387 Sample Quantity : 1.2058E+02 GRAM *
 * Quantity Err(%) : 1.6587E-03 % *
 * Wet wt corr : 1.00000 Wet Weight : 0.00000 *
 * Dry Weight : 0.00000 *

CALIBRATION INFORMATION

* Eff. Cal. date : 1-AUG-2016 10:02:35 Eff. Geometry : CAN *
 * Eff. File : DKA100:[CANBERRA.GAMMA]EFF_GAM28_CAN.CNF;10 *

Combined Activity-MDA Report

NOTE: Not all "Identified Nuclides" are valid.
 Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM)	Act Error (1.96-sigma)	TPU (1.96-sigma)
NA-22	6.270E-02	7.198E-02	7.198E-02
K-40	1.762E+01	2.045E+00	2.045E+00
BA-137M	2.859E-01	1.232E-01	1.232E-01
CS-137	3.020E-01	1.302E-01	1.302E-01
CE-144	7.652E-01	5.488E-01	5.488E-01
TL-208	4.191E-01	1.075E-01	1.075E-01
PB-212	1.165E+00	1.626E-01	1.626E-01
BI-214	1.036E+00	2.215E-01	2.215E-01
PB-214	1.075E+00	2.354E-01	2.354E-01
RN-222	1.036E+00	2.215E-01	2.215E-01
RA-224	1.236E-02	1.551E+00	1.551E+00
RA-226	1.036E+00	2.215E-01	2.215E-01
AC-228	1.239E+00	3.311E-01	3.311E-01
RA-228	1.239E+00	3.311E-01	3.311E-01
TH-228	1.165E+00	1.626E-01	1.626E-01
TH-230	1.036E+00	2.214E-01	2.214E-01
PA-231	1.454E+00	1.467E+00	1.467E+00
TH-232	1.239E+00	3.311E-01	3.311E-01
U-234	1.036E+00	2.214E-01	2.214E-01
U-235	7.778E-02	2.186E-01	2.186E-01
PU-239	5.828E+02	8.019E+02	8.019E+02
AM-243	2.161E-01	1.350E-01	1.350E-01
ANH-511	1.231E-01	1.102E-01	1.102E-01

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/GRAM)	K.L Act error (1.96-sigma)	TPU (1.96-sigma)	
BE-7	8.015E+00	1.474E+01	1.518E+01	NOT IDENT.
NA-24	1.000E+41	1.151E+41	0.000E+00	SHORT HLIF
AL-26	-2.122E-02	2.740E-02	2.902E-02	NOT IDENT.
SC-46	-1.906E-01	4.224E-01	4.311E-01	FAIL ABUN
V-48	2.602E+03	1.113E+04	1.119E+04	SHORT HLIF
CR-51	-4.900E+02	4.030E+02	4.595E+02	SHORT HLIF
MN-54	-1.348E-02	7.398E-02	7.423E-02	NOT IDENT.

CO-56	-7.289E-03	4.776E-01	4.776E-01	NOT IDENT.
MN-56	-1.000E+41	6.552E+42	0.000E+00	SHORT HLIF
CO-57	5.433E-02	5.881E-02	6.371E-02	NOT IDENT.
CO-58	1.838E-01	6.171E-01	6.226E-01	NOT IDENT.
FE-59	-3.296E+00	6.972E+00	7.129E+00	NOT IDENT.
CO-60	-1.924E-03	4.835E-02	4.836E-02	NOT IDENT.
ZN-65	-1.435E-01	2.601E-01	2.680E-01	NOT IDENT.
GE-68	1.055E+00	2.857E+00	2.896E+00	NOT IDENT.
AS-73	6.554E+00	1.108E+01	1.147E+01	NOT IDENT.
AS-74	3.747E+03	5.629E+03	5.877E+03	SHORT HLIF
SE-75	9.495E-02	2.263E-01	2.303E-01	NOT IDENT.
BR-77	2.557E+37	2.160E+38	0.000E+00	SHORT HLIF
SR-82	-3.595E+02	6.917E+02	7.104E+02	SHORT HLIF
RB-83	-4.905E-01	7.764E-01	8.073E-01	NOT IDENT.
KR-85	1.159E+01	9.886E+00	1.118E+01	NOT IDENT.
SR-85	1.132E+00	9.680E-01	1.094E+00	NOT IDENT.
RB-86	3.648E+03	2.730E+04	2.735E+04	SHORT HLIF
Y-88	-3.103E-02	1.739E-01	1.745E-01	NOT IDENT.
Y-91	-1.077E+02	6.558E+02	6.576E+02	NOT IDENT.
NB-94	3.457E-06	4.000E-02	4.000E-02	NOT IDENT.
NB-95	-9.379E-02	9.539E-01	9.549E-01	NOT IDENT.
NB-95M	-1.938E+00	2.869E+00	2.999E+00	NOT IDENT.
ZR-95	1.127E+00	1.761E+00	1.833E+00	FAIL ABUN
NB-97	1.000E+41	3.822E+41	0.000E+00	SHORT HLIF
ZR-97	1.000E+41	1.013E+41	0.000E+00	SHORT HLIF
MO-99	1.163E+31	3.778E+31	0.000E+00	SHORT HLIF
TC-99M	-1.000E+41	1.192E+41	0.000E+00	SHORT HLIF
RH-101	6.400E-02	8.876E-02	9.333E-02	FAIL ABUN
RH-102	-4.638E-02	7.174E-02	7.473E-02	NOT IDENT.
RU-103	-8.249E-01	6.139E+00	6.150E+00	FAIL ABUN
RH-106	8.765E-02	5.684E-01	5.697E-01	NOT IDENT.
RU-106	8.765E-02	5.684E-01	5.697E-01	NOT IDENT.
AG-108M	1.722E-02	3.196E-02	3.289E-02	NOT IDENT.
CD-109	1.749E+00	2.114E+00	2.256E+00	FAIL ABUN
AG-110M	-9.495E-02	1.269E-01	1.339E-01	FAIL ABUN
SN-113	-2.802E-02	3.018E-01	3.020E-01	NOT IDENT.
CD-115	-2.194E+38	4.051E+38	0.000E+00	SHORT HLIF
SN-117M	-1.448E+04	9.012E+04	9.036E+04	SHORT HLIF
TE-123M	4.813E-02	1.648E-01	1.662E-01	NOT IDENT.
SB-124	1.541E+00	1.784E+00	1.915E+00	NOT IDENT.
SB-125	6.109E-02	1.248E-01	1.278E-01	FAIL ABUN
TE-125M	2.086E+01	3.046E+02	3.048E+02	NOT IDENT.
I-126	-1.023E+05	9.627E+05	9.638E+05	SHORT HLIF
SB-126	-3.259E+05	8.280E+05	8.409E+05	SHORT HLIF
SN-126	1.127E-01	1.360E-01	1.452E-01	FAIL ABUN
SB-127	-1.671E+21	7.342E+21	0.000E+00	SHORT HLIF
I-131	-5.321E+08	3.158E+09	3.167E+09	SHORT HLIF
I-132	1.000E+41	2.028E+42	0.000E+00	SHORT HLIF
TE-132	-3.656E+25	9.062E+25	0.000E+00	SHORT HLIF
BA-133	2.370E-04	4.924E-02	4.924E-02	FAIL ABUN
I-133	1.000E+41	2.481E+41	0.000E+00	SHORT HLIF
CS-134	1.488E-01	8.178E-02	1.058E-01	FAIL ABUN
CS-135	1.079E-01	1.588E-01	1.660E-01	NOT IDENT.
I-135	1.000E+41	6.797E+41	0.000E+00	SHORT HLIF
CS-136	-2.972E+05	2.444E+05	2.787E+05	SHORT HLIF
CE-139	-1.682E-02	1.305E-01	1.307E-01	NOT IDENT.
BA-140	6.050E+04	1.029E+06	1.030E+06	SHORT HLIF
LA-140	-1.182E+05	3.028E+05	3.075E+05	SHORT HLIF
CE-141	-6.045E+00	2.604E+01	2.618E+01	NOT IDENT.
CE-143	1.000E+41	2.529E+41	0.000E+00	SHORT HLIF
PM-144	-1.604E-03	6.935E-02	6.935E-02	FAIL ABUN
PR-144	-1.388E-01	6.001E+00	6.001E+00	NOT IDENT.
PM-146	-5.862E-03	4.877E-02	4.884E-02	NOT IDENT.
ND-147	1.136E+07	2.321E+07	2.377E+07	SHORT HLIF
PM-147	-5.112E+01	1.078E+03	1.078E+03	NOT IDENT.
PM-149	-1.673E+39	5.500E+39	0.000E+00	SHORT HLIF
EU-150	-2.183E-02	3.379E-02	3.519E-02	FAIL ABUN
EU-152	-6.864E-02	1.088E-01	1.131E-01	NOT IDENT.
GD-153	1.374E-01	2.075E-01	2.166E-01	NOT IDENT.
EU-154	1.543E-01	1.771E-01	1.903E-01	FAIL ABUN
EU-155	5.039E-02	1.368E-01	1.387E-01	FAIL ABUN
TB-160	-7.208E-01	2.073E+00	2.099E+00	FAIL ABUN
HO-166M	-6.233E-02	8.571E-02	9.020E-02	FAIL ABUN
TM-171	-1.015E+01	2.812E+01	2.849E+01	NOT IDENT.
HF-172	3.311E-02	2.846E-01	2.850E-01	FAIL ABUN
LU-172	-1.773E-02	8.602E-02	8.639E-02	FAIL ABUN
LU-176	-1.814E-02	2.950E-02	3.061E-02	FAIL ABUN
HF-181	4.091E+00	4.605E+00	4.960E+00	FAIL ABUN

TA-182	-7.514E-01	1.119E+00	1.169E+00	FAIL ABUN
RE-183	-1.248E+00	3.474E+00	3.520E+00	FAIL ABUN
RE-184	6.169E+00	3.174E+01	3.186E+01	NOT IDENT.
W-188	-3.359E+01	1.320E+02	1.328E+02	NOT IDENT.
IR-192	7.621E-02	4.840E-01	4.852E-01	FAIL ABUN
HG-203	4.018E-01	2.576E+00	2.583E+00	NOT IDENT.
BI-207	3.847E-02	5.126E-02	5.411E-02	FAIL ABUN
PB-210	2.961E-01	4.785E+00	4.787E+00	NOT IDENT.
BI-211	2.960E+00	6.502E-01	1.484E+00	FAIL ABUN
PB-211	-3.267E-01	8.929E-01	9.050E-01	NOT IDENT.
BI-212	1.709E+00	9.323E-01	1.210E+00	FAIL ABUN
RN-219	1.195E-01	4.690E-01	4.721E-01	FAIL ABUN
RA-223	5.606E-01	7.092E-01	7.529E-01	FAIL ABUN
AC-227	-1.459E-02	2.803E-01	2.804E-01	NOT IDENT.
TH-227	-1.459E-02	2.803E-01	2.804E-01	NOT IDENT.
TH-229	-2.047E-01	5.283E-01	5.363E-01	FAIL ABUN
TH-231	5.606E-01	7.092E-01	7.529E-01	FAIL ABUN
PA-233	1.671E-02	6.564E-02	6.607E-02	NOT IDENT.
PA-234	-1.253E-01	3.022E-01	3.074E-01	NOT IDENT.
PA-234M	1.920E+00	4.287E+00	4.374E+00	FAIL ABUN
TH-234	4.254E-01	1.752E+00	1.763E+00	FAIL ABUN
NP-237	1.671E-02	6.564E-02	6.607E-02	NOT IDENT.
NP-238	2.456E+40	4.890E+40	0.000E+00	SHORT HLIF
U-238	4.254E-01	1.752E+00	1.763E+00	FAIL ABUN
NP-239	-1.326E-01	2.889E-01	2.950E-01	NOT IDENT.
AM-241	-8.516E-02	1.852E-01	1.891E-01	NOT IDENT.
CM-243	-8.433E-02	1.231E-01	1.288E-01	NOT IDENT.
BK-247	-2.954E-02	8.338E-02	8.444E-02	NOT IDENT.
CM-247	2.007E-02	4.246E-02	4.341E-02	NOT IDENT.
CF-249	-8.284E-03	4.739E-02	4.753E-02	FAIL ABUN
CF-251	1.311E-02	1.302E-01	1.304E-01	NOT IDENT.

 * GEL Laboratories LLC *
 * 2040 Savage Road *
 * Charleston, SC 29407 *
 * GAMMA SPECTROSCOPY BACKGROUND REPORT *

ENERGY	MDA COUNTS	ENERGY	MDA COUNTS	ENERGY	MDA COUNTS
43.53	66.6899	879.38	118.0664	482.18	62.9878
45.60	63.8882	87.57	122.6371	133.52	72.7222
46.54	76.6296	87.09	122.6676	264.66	64.8372
49.72	0.0000	87.57	136.4026	122.06	68.1184
51.35	67.9370	88.03	136.5033	140.51	0.0000
51.87	70.1419	88.34	104.7052	143.76	65.0288
52.39	74.4794	193.51	104.7269	144.24	66.2929
52.97	71.3792	89.96	100.4113	145.44	81.1374
53.44	62.9216	90.64	91.3812	152.43	76.8293
125.81	58.7367	91.11	0.0000	153.25	0.0000
57.36	0.0000	63.29	91.6608	154.21	80.7065
57.53	64.5531	143.76	91.7688	156.02	0.0000
57.98	77.5366	94.56	91.9403	158.56	0.0000
1093.63	84.2235	94.65	91.9525	159.00	63.2421
57.98	95.0311	94.67	91.9556	162.33	71.8215
59.54	95.0741	94.87	91.9836	162.66	0.0000
60.96	84.5148	97.43	53.8661	163.33	71.8994
61.17	99.7266	311.90	82.0764	165.86	69.1587
62.93	127.2747	946.00	82.0775	176.31	73.7257
63.29	105.5937	99.53	69.4743	1048.07	0.0000
63.58	96.9404	1221.41	67.2160	177.52	67.8768
64.28	88.3484	265.00	74.3789	739.50	0.0000
66.73	121.6459	103.18	94.2934	181.52	71.5577
67.24	98.7280	103.37	85.0044	711.68	63.2196
67.68	91.1257	116.74	85.0044	185.72	63.3009
67.75	91.1371	105.21	77.0570	193.51	71.5367
69.67	93.6717	105.31	77.0678	197.03	70.9109
70.83	89.8233	106.12	67.8046	127.23	70.9759
72.81	107.8841	106.47	79.5350	306.78	74.7041
279.20	112.3293	109.28	72.8048	203.43	64.3751
72.87	112.3293	111.00	81.2184	205.31	58.8222
74.66	96.7519	228.16	0.0000	210.85	64.3738
74.82	96.7791	114.06	73.2858	215.65	65.0895
1063.66	96.8050	116.30	0.0000	222.11	66.3437
238.63	97.1714	116.74	74.7370	290.67	58.6329
351.93	97.1714	119.76	61.9353	177.52	58.6476
78.74	97.0735	121.12	83.5234	228.16	0.0000
79.69	85.2652	121.22	83.5341	228.18	57.7981
80.12	86.8248	121.78	68.0706	235.69	75.1671
80.19	0.0000	122.06	65.7061	256.23	68.4706
80.57	86.8914	122.92	70.5630	238.63	64.5857
81.00	83.9561	123.07	74.1657	238.98	0.0000
81.07	83.9664	123.68	79.8106	240.99	64.7109
81.75	96.0716	125.81	64.0230	242.00	64.7644
323.87	101.6716	127.23	75.3621	344.28	59.4983
84.00	102.8374	127.91	75.4272	252.40	0.0000
85.43	99.6815	129.30	75.5584	252.80	40.8311
86.55	118.0204	131.20	29.0061	254.15	0.0000

ENERGY	MDA COUNTS	ENERGY	MDA COUNTS	ENERGY	MDA COUNTS
256.23	47.7653	351.93	34.0465	583.19	17.5358
260.90	0.0000	507.63	0.0000	584.27	17.5436
264.66	43.0422	356.01	32.1823	595.83	0.0000
264.80	46.7106	364.49	0.0000	600.60	26.5000
265.00	52.2141	366.42	0.0000	602.52	0.0000
268.22	34.4353	372.51	25.6128	604.72	31.5233
269.46	50.5532	129.30	46.3708	607.14	36.5369
270.03	50.5744	377.52	34.5827	609.32	31.5836
271.23	50.6203	383.85	40.6630	497.08	31.5975
273.65	0.0000	388.16	41.7599	433.94	13.3262
356.01	41.5778	388.63	0.0000	696.49	16.6833
277.37	45.7688	391.69	46.8279	620.36	20.0391
277.60	62.4216	400.66	37.0550	621.93	18.9382
278.00	47.1775	401.81	35.0748	667.71	0.0000
279.20	50.9224	402.40	32.0794	631.29	25.7206
279.54	56.4925	404.85	37.6450	453.88	21.2644
279.70	57.4249	410.95	34.2490	595.83	0.0000
280.46	50.9706	413.71	34.8060	635.95	20.1672
283.69	40.8731	414.70	0.0000	636.99	0.0000
364.49	0.0000	423.72	0.0000	645.85	24.7473
285.41	43.7144	404.85	32.5228	884.68	22.0391
285.90	0.0000	427.87	28.4694	657.90	0.0000
402.40	40.9859	433.94	24.4824	661.66	26.0350
290.67	43.4140	333.97	30.6927	664.57	0.0000
293.27	0.0000	453.88	26.8040	666.33	0.0000
295.22	39.3408	463.37	23.8278	720.70	0.0000
295.96	39.3613	468.07	27.4162	667.71	0.0000
298.58	33.8005	685.70	0.0000	677.62	21.6410
299.98	39.4733	475.06	40.6448	685.70	0.0000
300.09	39.4758	476.78	31.2921	695.00	0.0000
300.13	39.4767	477.60	29.2179	696.49	24.0916
301.36	39.5109	482.18	20.9176	696.51	24.0916
302.85	39.5519	1596.21	0.0000	697.00	0.0000
304.50	39.5980	527.90	0.0000	697.30	18.3613
537.26	0.0000	497.08	28.4469	697.49	17.2150
306.78	42.4933	505.52	14.2817	702.65	24.1479
316.51	48.2151	507.63	0.0000	706.68	24.1838
311.90	36.0092	511.00	31.8204	711.68	29.4211
316.51	37.0735	514.00	31.8652	720.70	0.0000
531.02	0.0000	514.00	31.8652	721.93	0.0000
320.08	0.0000	520.40	31.9617	1690.97	9.2682
427.87	44.8141	238.98	0.0000	722.91	9.2686
323.87	30.0920	522.65	0.0000	1274.44	12.1667
325.23	48.7640	527.90	0.0000	724.19	12.1705
328.76	0.0000	528.26	29.9414	727.33	13.9253
388.16	37.4901	520.40	18.1898	733.00	10.4656
333.97	49.0452	529.87	0.0000	735.93	16.2969
334.37	41.8433	531.02	0.0000	737.46	17.4707
338.28	39.5386	537.26	0.0000	739.50	0.0000
911.20	39.5394	546.56	0.0000	747.24	16.6557
340.48	36.2144	552.55	18.3814	748.06	16.6604
340.55	0.0000	563.25	13.0376	752.31	17.5641
344.28	44.5307	795.86	17.9744	753.82	0.0000
345.93	38.3754	569.50	19.6099	756.73	19.7025
351.06	34.0280	569.70	19.6121	756.80	19.7032

ENERGY	MDA COUNTS	ENERGY	MDA COUNTS	ENERGY	MDA COUNTS
763.94	17.6367	984.45	0.0000	1596.21	0.0000
765.81	22.9428	996.26	13.0166	1620.50	3.2944
766.42	25.5954	1001.03	6.0826	1621.92	5.4922
766.84	22.0680	1002.74	15.2139	1678.03	0.0000
772.60	0.0000	1004.73	15.2227	1690.97	1.1130
776.52	0.0000	1021.30	0.0000	1750.46	0.0000
777.92	0.0000	1025.87	0.0000	1764.49	2.7076
778.90	15.0695	1028.54	0.0000	1770.23	8.1312
783.70	0.0000	846.77	10.5629	1771.35	3.6146
727.33	20.4338	1038.76	0.0000	1791.20	0.0000
792.07	15.6723	1046.59	11.5518	1808.65	4.5486
794.95	11.5876	1048.07	0.0000	846.75	0.0000
795.86	11.5912	1049.04	20.2284	1836.06	2.7423
801.95	17.3587	621.93	8.6726		
810.06	15.2309	1063.66	8.7039		
810.29	15.2319	1077.00	0.0000		
810.45	15.2325	1077.34	11.6484		
810.76	15.2345	1085.87	16.5403		
815.77	0.0000	1093.63	14.6246		
818.51	0.0000	1099.45	16.5995		
832.01	11.7325	1112.07	12.7366		
834.85	20.7764	1112.84	15.6787		
835.71	21.6863	1115.54	23.5342		
1260.41	0.0000	609.32	12.7635		
846.75	0.0000	889.28	12.7643		
846.77	15.4166	1121.30	12.7667		
856.80	0.0000	1129.67	12.3727		
860.56	15.4856	1131.51	0.0000		
702.65	18.2794	1147.95	0.0000		
873.19	18.2916	1173.23	7.9619		
529.87	0.0000	1177.95	10.9604		
879.38	19.2440	1189.05	17.9846		
880.51	12.8340	1204.77	21.0641		
883.24	14.6797	1221.41	22.1571		
884.68	24.7835	1231.02	18.1714		
889.28	19.3036	1235.36	0.0000		
903.28	9.2081	1238.28	16.1807		
898.04	21.2003	1260.41	0.0000		
900.72	12.9152	1271.87	9.7863		
903.28	16.6185	1274.44	14.6883		
911.20	15.7336	1274.54	14.6892		
912.08	15.7378	1099.45	13.3134		
923.98	0.0000	1298.22	0.0000		
926.50	21.3856	1312.11	0.0000		
929.11	13.9581	1332.49	11.3719		
937.49	13.9938	1362.66	0.0000		
944.13	0.0000	1365.19	6.2487		
946.00	13.0938	1368.63	0.0000		
949.00	19.6587	1384.29	3.3469		
954.55	0.0000	1408.01	8.4106		
962.31	16.1112	1457.56	0.0000		
964.08	21.0629	1460.82	5.3165		
966.17	21.0759	696.51	1.0696		
968.97	17.8914	1505.03	3.4340		
983.53	0.0000	1584.12	6.5424		


```

*****
*                               GEL Laboratories LLC                               *
*                               2040 Savage Road                                 *
*                               Charleston, SC 29407                            *
*****
Configuration   : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]R405245016.CNF;1
Background file  : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]BKG_GAM36.CNF;52
Background date  : 2-OCT-2016 11:02:08.
Sample date     : 15-DEC-2015 14:06:00 Acquisition date : 3-OCT-2016 04:48:08.
Sample ID      : R405245016 Sample quantity   : 1.25408E+02 GRAM
Detector name   : GAM36 Detector geometry: CAN
Elapsed live time: 0 01:00:00.00 Elapsed real time: 0 01:00:00.35 0.0%
Energy tolerance : 1.50000 keV Analyst Initials : MXR1
Abundance limit : 75.00000 Sensitivity    : 3.00000
Batch ID       : 1596387 Detector SN#    :
Matrix Spike ID : LCS ID           : 1556
*****
    
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BACKGROUND CORRECTED SAMPLE PEAK REPORT

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	54.00	17	86	1.22	107.97	106	7	4.72E-03	93.0	
2	2	74.69*	93	101	1.04	149.36	144	15	2.58E-02	21.1	3.17E+00
3	2	77.03*	156	109	1.04	154.02	144	15	4.33E-02	13.6	
4	0	84.27*	23	93	0.79	168.52	166	6	6.48E-03	70.1	
5	0	87.11	77	81	1.24	174.20	172	6	2.13E-02	21.9	
6	4	89.88	52	52	0.92	179.73	178	16	1.43E-02	24.3	1.25E+00
7	4	92.88*	58	102	1.31	185.74	178	16	1.61E-02	35.3	
8	0	105.69	34	89	1.10	211.36	208	9	9.55E-03	52.1	
9	0	129.44	28	111	1.08	258.86	256	9	7.71E-03	70.8	
10	0	185.91*	92	95	1.29	371.81	365	14	2.55E-02	25.5	
11	6	209.28	40	48	1.29	418.55	414	12	1.11E-02	35.4	1.81E+00
12	6	211.42	14	34	1.35	422.82	414	12	3.92E-03	73.4	
13	4	238.70*	286	38	1.04	477.38	472	20	7.94E-02	6.9	1.53E+00
14	4	241.52	85	39	1.62	483.03	472	20	2.36E-02	23.3	
15	2	295.22*	115	23	1.41	590.43	584	20	3.20E-02	12.4	2.07E+00
16	2	300.26	27	27	1.37	600.51	584	20	7.42E-03	37.0	
17	0	312.57	16	15	1.16	625.13	623	5	4.44E-03	44.1	
18	0	328.29*	22	48	0.75	656.55	654	8	6.01E-03	61.1	
19	0	338.71	35	60	0.86	677.40	672	10	9.72E-03	44.7	
20	4	351.99*	162	33	1.52	703.97	697	17	4.50E-02	9.6	6.78E+00
21	4	354.27	16	25	1.49	708.52	697	17	4.46E-03	88.7	
22	1	460.15	17	18	1.46	920.26	912	23	4.65E-03	49.1	8.54E-01
23	1	462.89	21	14	1.46	925.73	912	23	5.92E-03	41.6	
24	0	487.73	9	13	0.57	975.42	969	9	2.37E-03	84.7	
25	0	510.87*	19	40	1.08	1021.68	1016	13	5.38E-03	81.5	
26	0	583.07*	80	22	1.33	1166.06	1160	11	2.22E-02	16.3	
27	0	609.46*	104	15	1.23	1218.85	1214	10	2.90E-02	12.5	
28	0	662.00	17	14	0.87	1323.90	1318	11	4.70E-03	49.0	
29	0	727.39	13	15	1.30	1454.65	1449	10	3.61E-03	62.3	
30	0	757.19	12	12	2.46	1514.24	1509	10	3.25E-03	63.5	
31	0	761.30	9	3	0.83	1522.46	1519	6	2.55E-03	44.3	
32	0	802.59	19	3	0.61	1605.01	1599	11	5.33E-03	28.3	
33	0	861.23	15	11	0.95	1722.25	1716	12	4.07E-03	53.7	
34	0	911.21*	51	11	1.33	1822.18	1816	11	1.40E-02	19.5	

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
35	0	920.49	11	5	1.08	1840.75	1835	12	2.93E-03	55.2	
36	0	934.50	16	2	0.76	1868.76	1864	9	4.39E-03	30.4	
37	1	964.76	22	9	1.84	1929.24	1923	23	6.01E-03	38.3	2.29E+00
38	1	969.09	36	16	1.85	1937.92	1923	23	1.01E-02	24.4	
39	0	1031.82	16	5	1.86	2063.32	2059	9	4.31E-03	35.4	
40	0	1121.17*	18	14	1.50	2241.95	2237	13	5.07E-03	48.0	
41	0	1149.84	10	4	0.80	2299.26	2295	7	2.64E-03	46.0	
42	0	1174.31	16	0	1.03	2348.19	2345	8	4.44E-03	25.0	
43	0	1237.79	23	3	2.55	2475.08	2468	14	6.27E-03	27.4	
44	0	1461.11*	196	0	1.76	2921.48	2916	12	5.44E-02	7.2	
45	0	1764.96*	14	0	1.47	3528.78	3523	11	3.82E-03	31.2	

Flag: "*" = Peak area was modified by background subtraction

```

Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]R405245016.CNF;1
Analyses by       : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.4,INTERF V2.4
Sample title      : MXR1
Sample date       : 15-DEC-2015 14:06:00 Acquisition date : 3-OCT-2016 04:48:08
Sample ID        : R405245016 Sample quantity   : 125.41 GRAM
Sample type      : SOLID Sample geometry    :
Detector name    : GAMMA36 Detector geometry: CAN
Elapsed live time: 0 01:00:00.00 Elapsed real time: 0 01:00:00.35 0.0%
Energy tolerance : 1.50 keV Half life ratio  : 10.00
Errors propagated: No Systematic Error   : 0.00 %
Efficiency type  : Linear Efficiencies at  : Peak Energy
Abundance limit  : 75.00
    
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Interference Report

Interfering		Interfered	
Nuclide	Line	Nuclide	Line
PB-214	87.09	EU-155	86.55
PB-214	87.09	SN-126	86.94
PB-214	87.09	SN-126	87.57
PB-214	87.09	CD-109	88.03
PB-214	87.09	TH-229	88.47
PB-214	242.00	RA-224	240.99
PB-214	74.82	AM-243	74.66
PB-214	74.82	TH-228	74.82
PB-214	74.82	PB-212	74.82
PB-214	351.93	BI-211	351.06

Nuclide Type:

Nuclide	Energy	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error	Status
K-40	1460.82	10.66*	6.546E-01	1.595E+01	1.595E+01	14.45	OK
AS-73	53.44	10.30*	1.564E+00	7.267E-01	9.086E+00	186.02	OK
CD-109	88.03	3.70*	4.288E+00	1.976E+00	3.067E+00	73.58	OK
SN-126	64.28	9.60	2.567E+00	-----	Line Not Found	-----	Absent
	86.94	8.90	4.288E+00	8.215E-01	8.215E-01	73.58	OK
	87.57	37.00*	4.288E+00	1.976E-01	1.976E-01	73.58	OK
BA-137M	661.66	89.90*	1.334E+00	8.434E-02	8.591E-02	97.96	OK
CS-137	661.66	85.10*	1.334E+00	8.910E-02	9.076E-02	97.96	OK
EU-155	86.55	30.70	4.288E+00	2.382E-01	2.677E-01	73.58	OK
	105.31	21.10*	4.943E+00	2.188E-01	2.460E-01	104.18	OK
TL-208	277.37	6.60	3.041E+00	-----	Line Not Found	-----	Absent
	583.19	85.00*	1.496E+00	3.785E-01	3.785E-01	32.56	OK
	860.56	12.50	1.057E+00	6.519E-01	6.519E-01	107.47	OK
PB-212	74.82	10.28	3.472E+00	9.916E-01	9.916E-01	77.64	OK
	77.11	17.10	3.649E+00	1.689E+00	1.689E+00	27.12	OK
	238.63	43.60*	3.499E+00	1.189E+00	1.189E+00	13.77	OK
	300.09	3.30	2.818E+00	1.800E+00	1.800E+00	74.08	OK
BI-214	609.32	45.49*	1.437E+00	9.587E-01	9.590E-01	24.90	OK
	1120.29	14.92	8.366E-01	8.456E-01	8.459E-01	95.99	OK
	1764.49	15.30	5.417E-01	9.309E-01	9.312E-01	62.50	OK
PB-214	74.82	5.80	3.482E+00	-----	Line Not Found	-----	<<INT Reject
	77.11	9.70	3.649E+00	2.978E+00	2.979E+00	27.12	OK
	87.09	3.41	4.287E+00	-----	Line Not Found	-----	<<INT Reject
	242.00	7.25	3.455E+00	-----	Line Not Found	-----	<<INT Reject
	295.22	18.42	2.864E+00	1.368E+00	1.369E+00	24.70	OK
	351.93	35.60*	2.414E+00	1.169E+00	1.169E+00	19.29	OK
RN-222	609.32	45.49*	1.437E+00	9.587E-01	9.590E-01	24.90	OK
	1120.29	14.92	8.366E-01	8.456E-01	8.459E-01	95.99	OK
	1764.49	15.30	5.417E-01	9.309E-01	9.312E-01	62.50	OK
RA-224	240.99	4.10*	3.461E+00	1.384E+00	1.384E+00	135.16	OK
RA-226	609.32	45.49*	1.437E+00	9.587E-01	9.590E-01	24.90	OK
	1120.29	14.92	8.366E-01	8.456E-01	8.459E-01	95.99	OK
	1764.49	15.30	5.417E-01	9.309E-01	9.312E-01	62.50	OK
AC-228	105.21	1.10	4.943E+00	4.198E+00	4.198E+00	104.18	OK
	338.32	11.27	2.506E+00	7.705E-01	7.705E-01	89.44	OK
	794.95	4.25	1.134E+00	-----	Line Not Found	-----	Absent
	835.71	1.61	1.085E+00	-----	Line Not Found	-----	Absent
	911.20	25.80*	1.006E+00	1.141E+00	1.141E+00	39.08	OK
	968.97	15.80	9.525E-01	1.412E+00	1.412E+00	48.75	OK
RA-228	105.21	1.10	4.943E+00	4.198E+00	4.198E+00	104.18	OK
	338.32	11.27	2.506E+00	7.705E-01	7.705E-01	89.44	OK
	794.95	4.25	1.134E+00	-----	Line Not Found	-----	Absent
	835.71	1.61	1.085E+00	-----	Line Not Found	-----	Absent
	911.20	25.80*	1.006E+00	1.141E+00	1.141E+00	39.08	OK
	968.97	15.80	9.525E-01	1.412E+00	1.412E+00	48.75	OK
TH-228	74.82	10.28	3.472E+00	9.916E-01	9.916E-01	77.64	OK
	77.11	17.10	3.649E+00	1.689E+00	1.689E+00	27.12	OK
	238.63	43.60*	3.499E+00	1.189E+00	1.189E+00	13.77	OK
	300.09	3.30	2.818E+00	1.800E+00	1.800E+00	74.08	OK

Nuclide Type:

Nuclide	Energy	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error	Status
TH-229	85.43	14.70	4.130E+00	2.586E-01	2.586E-01	140.29	OK
	88.47	24.00	4.288E+00	3.046E-01	3.047E-01	73.58	OK
	193.51	4.41*	4.174E+00	-----	Line Not Found	-----	Absent
TH-230	210.85	2.80	3.889E+00	8.273E-01	8.274E-01	146.71	OK
	609.32	45.49*	1.437E+00	9.587E-01	9.587E-01	24.90	OK
	1120.29	14.92	8.366E-01	8.456E-01	8.456E-01	95.99	OK
PA-231	1764.49	15.30	5.417E-01	9.309E-01	9.309E-01	62.50	OK
	283.69	1.70	2.976E+00	-----	Line Not Found	-----	Absent
	301.36	5.35*	2.818E+00	1.110E+00	1.110E+00	74.08	OK
TH-232	105.21	1.10	4.943E+00	4.198E+00	4.198E+00	104.18	OK
	338.32	11.27	2.506E+00	7.705E-01	7.705E-01	89.44	OK
	835.71	1.61	1.085E+00	-----	Line Not Found	-----	Absent
PA-233	911.20	25.80*	1.006E+00	1.141E+00	1.141E+00	39.08	OK
	968.97	15.80	9.525E-01	1.412E+00	1.412E+00	48.75	OK
	300.13	6.63	2.818E+00	8.957E-01	8.957E-01	74.08	OK
U-234	311.90	38.50*	2.710E+00	9.579E-02	9.579E-02	88.17	OK
	340.48	4.45	2.493E+00	-----	Line Not Found	-----	Absent
	609.32	45.49*	1.437E+00	9.587E-01	9.587E-01	24.90	OK
U-235	1120.29	14.92	8.366E-01	8.456E-01	8.456E-01	95.99	OK
	1764.49	15.30	5.417E-01	9.309E-01	9.309E-01	62.50	OK
	89.96	3.47	4.426E+00	2.247E+00	2.247E+00	48.65	OK
AM-243	93.35	5.60	4.559E+00	1.516E+00	1.516E+00	70.56	OK
	143.76	10.96*	4.954E+00	-----	Line Not Found	-----	Absent
	163.33	5.08	4.674E+00	-----	Line Not Found	-----	Absent
ANH-511	185.72	57.20	4.300E+00	2.405E-01	2.405E-01	50.93	OK
	205.31	5.01	3.984E+00	-----	Line Not Found	-----	Absent
	43.53	5.90	5.957E-01	-----	Line Not Found	-----	Absent
	74.66	67.20*	3.472E+00	1.517E-01	1.517E-01	77.64	OK
	511.00	100.00*	1.690E+00	6.949E-02	6.949E-02	162.95	OK

Flag: "*" = Keyline

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*****
*                               GEL Laboratories LLC                               *
*                               2040 Savage Road                               *
*                               Charleston, SC 29407                          *
*****
*                               DETECTOR AND SAMPLE DATA                       *
*
* Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]R405245016.CNF;1
* Acquisition date   : 3-OCT-2016 04:48:08 Sensitivity      : 3.000
* Detector ID       : GAM36 Energy tolerance: 1.500
* Elapsed live time : 0 01:00:00.00 Abundance limit : 75.000
* Elapsed real time : 0 01:00:00.35 Half life ratio : *****
* Sample date       : 15-DEC-2015 14:06:00 Analyst initials: MXR1
* Sample ID         : R405245016 Sample Quantity : 1.2541E+02 GRAM
* Batch Number      : 1596387 Wet Weight : 0.00000
* Wet wt corr       : 1.00000 Dry Weight : 0.00000
* Nuclide Library   : SOLID.NLB;6
*****
*                               CALIBRATION INFORMATION                         *
*
* Eff. Cal. date    : 1-JUN-2016 09:39:12 Eff. Geometry   : CAN
* Eff. File         : DKA100:[CANBERRA.GAMMA]EFF_GAM36_CAN.CNF;7
*****

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Combined Activity-MDA Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM)	Cnt uncert (1.96-sigma)	MDA (pCi/GRAM)
K-40	1.595E+01	2.258E+00	1.017E+00
AS-73	9.086E+00	1.656E+01	1.635E+01
CD-109	3.067E+00	2.212E+00	2.061E+00
SN-126	1.976E-01	1.425E-01	1.334E-01
BA-137M	8.591E-02	8.248E-02	8.896E-02
CS-137	9.076E-02	8.713E-02	9.397E-02
EU-155	2.460E-01	2.511E-01	2.159E-01
TL-208	3.785E-01	1.208E-01	1.095E-01
PB-212	1.189E+00	1.604E-01	1.072E-01
BI-214	9.590E-01	2.340E-01	1.775E-01
PB-214	1.169E+00	2.210E-01	1.406E-01
RN-222	9.590E-01	2.340E-01	1.775E-01
RA-224	1.384E+00	1.833E+00	1.152E+00
RA-226	9.590E-01	2.340E-01	1.775E-01
AC-228	1.141E+00	4.369E-01	3.619E-01
RA-228	1.141E+00	4.369E-01	3.619E-01
TH-228	1.189E+00	1.604E-01	1.072E-01
TH-229	8.490E-02	6.283E-01	1.177E+00
TH-230	9.587E-01	2.340E-01	1.774E-01
PA-231	1.110E+00	8.059E-01	9.973E-01
TH-232	1.141E+00	4.369E-01	3.619E-01
PA-233	9.579E-02	8.277E-02	1.392E-01
U-234	9.587E-01	2.340E-01	1.774E-01
U-235	9.463E-02	2.339E-01	4.437E-01
AM-243	1.517E-01	1.154E-01	1.076E-01
ANH-511	6.949E-02	1.110E-01	7.354E-02

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/GRAM)	K.L.	Cnt Uncert (1.96-sigma)	MDA (pCi/GRAM)	
BE-7	-1.622E+01		1.437E+01	2.364E+01	NOT IDENT.
NA-22	-1.656E-02		7.382E-02	1.465E-01	NOT IDENT.
NA-24	0.000E+00		1.960E+41	0.000E+00	SHORT HLIF
AL-26	-4.814E-02		5.672E-02	8.333E-02	NOT IDENT.

SC-46	4.749E-02	5.584E-01	1.121E+00	FAIL ABUN
V-48	0.000E+00	1.787E+04	0.000E+00	SHORT HLIF
CR-51	0.000E+00	4.690E+02	0.000E+00	SHORT HLIF
MN-54	6.456E-02	9.595E-02	2.110E-01	NOT IDENT.
CO-56	4.372E-01	6.585E-01	1.467E+00	FAIL ABUN
MN-56	0.000E+00	1.479E+41	0.000E+00	SHORT HLIF
CO-57	3.170E-02	5.435E-02	1.091E-01	NOT IDENT.
CO-58	-1.006E-01	6.956E-01	1.372E+00	NOT IDENT.
FE-59	-9.855E-03	8.435E+00	1.788E+01	NOT IDENT.
CO-60	2.155E-02	6.161E-02	1.399E-01	FAIL ABUN
ZN-65	1.244E-01	2.582E-01	5.578E-01	NOT IDENT.
GE-68	-1.022E+00	4.002E+00	7.285E+00	NOT IDENT.
AS-74	0.000E+00	7.228E+03	0.000E+00	SHORT HLIF
SE-75	-1.183E-01	2.554E-01	4.425E-01	NOT IDENT.
BR-77	0.000E+00	3.518E+36	0.000E+00	SHORT HLIF
SR-82	0.000E+00	9.068E+02	0.000E+00	SHORT HLIF
RB-83	-1.390E-01	7.774E-01	1.548E+00	NOT IDENT.
KR-85	4.339E+00	1.124E+01	2.127E+01	NOT IDENT.
SR-85	4.240E-01	1.101E+00	2.083E+00	NOT IDENT.
RB-86	0.000E+00	3.855E+04	0.000E+00	SHORT HLIF
Y-88	1.474E-01	3.804E-01	9.308E-01	NOT IDENT.
Y-91	-1.846E+02	7.203E+02	1.422E+03	NOT IDENT.
NB-94	3.776E-02	4.164E-02	9.629E-02	NOT IDENT.
NB-95	-1.149E+00	1.317E+00	2.154E+00	NOT IDENT.
NB-95M	-4.748E-01	3.154E+00	5.226E+00	NOT IDENT.
ZR-95	2.560E+00	3.185E+00	4.897E+00	FAIL ABUN
NB-97	0.000E+00	7.987E+40	0.000E+00	SHORT HLIF
ZR-97	0.000E+00	1.610E+41	0.000E+00	SHORT HLIF
MO-99	0.000E+00	4.111E+31	0.000E+00	SHORT HLIF
TC-99M	0.000E+00	1.960E+41	0.000E+00	SHORT HLIF
RH-101	2.198E-02	4.015E-02	7.544E-02	NOT IDENT.
RH-102	-3.285E-02	8.402E-02	1.564E-01	NOT IDENT.
RU-103	-8.661E-02	6.145E+00	1.253E+01	FAIL ABUN
RH-106	-2.049E-01	7.138E-01	1.366E+00	NOT IDENT.
RU-106	-2.049E-01	7.138E-01	1.366E+00	NOT IDENT.
AG-108M	-2.088E-02	3.473E-02	6.429E-02	NOT IDENT.
AG-110M	1.246E-01	1.068E-01	2.872E-01	NOT IDENT.
SN-113	-1.086E-01	2.773E-01	5.330E-01	NOT IDENT.
CD-115	0.000E+00	4.890E+38	0.000E+00	SHORT HLIF
SN-117M	0.000E+00	8.319E+04	0.000E+00	SHORT HLIF
TE-123M	9.929E-02	1.517E-01	3.027E-01	NOT IDENT.
SB-124	-1.026E+00	3.270E+00	6.478E+00	NOT IDENT.
SB-125	9.450E-03	1.513E-01	3.035E-01	FAIL ABUN
TE-125M	1.960E+02	2.944E+02	5.652E+02	NOT IDENT.
I-126	0.000E+00	9.344E+05	0.000E+00	SHORT HLIF
SB-126	0.000E+00	1.019E+06	0.000E+00	SHORT HLIF
SB-127	0.000E+00	8.371E+21	0.000E+00	SHORT HLIF
I-131	0.000E+00	3.588E+09	0.000E+00	SHORT HLIF
I-132	0.000E+00	1.960E+41	0.000E+00	SHORT HLIF
TE-132	0.000E+00	1.000E+26	0.000E+00	SHORT HLIF
BA-133	3.188E-02	5.419E-02	1.035E-01	NOT IDENT.
I-133	0.000E+00	1.960E+41	0.000E+00	SHORT HLIF
CS-134	3.119E-02	7.628E-02	1.602E-01	FAIL ABUN
CS-135	-1.682E-01	2.132E-01	3.512E-01	NOT IDENT.
I-135	0.000E+00	1.103E+41	0.000E+00	SHORT HLIF
CS-136	0.000E+00	2.607E+05	0.000E+00	SHORT HLIF
CE-139	-6.559E-02	1.284E-01	2.286E-01	NOT IDENT.
BA-140	0.000E+00	1.249E+06	0.000E+00	SHORT HLIF
LA-140	0.000E+00	6.438E+05	0.000E+00	SHORT HLIF
CE-141	-1.875E+01	2.783E+01	4.798E+01	NOT IDENT.
CE-143	0.000E+00	1.960E+41	0.000E+00	SHORT HLIF
CE-144	-2.456E-01	4.908E-01	8.126E-01	NOT IDENT.
PM-144	2.271E-02	8.065E-02	1.665E-01	NOT IDENT.
PR-144	2.023E+00	6.990E+00	1.444E+01	NOT IDENT.
PM-146	2.104E-02	6.474E-02	1.241E-01	NOT IDENT.
ND-147	0.000E+00	2.758E+07	0.000E+00	SHORT HLIF
PM-147	6.761E+02	9.676E+02	1.957E+03	NOT IDENT.
PM-149	0.000E+00	6.154E+39	0.000E+00	SHORT HLIF
EU-150	1.822E-02	3.712E-02	6.793E-02	FAIL ABUN
EU-152	-1.004E-01	1.229E-01	1.939E-01	FAIL ABUN
GD-153	-3.213E-01	2.345E-01	3.635E-01	NOT IDENT.
EU-154	-3.583E-02	1.829E-01	3.649E-01	FAIL ABUN
TB-160	2.044E+00	2.258E+00	5.484E+00	FAIL ABUN
HO-166M	-8.298E-02	7.573E-02	1.150E-01	NOT IDENT.
TM-171	6.870E-02	2.209E+01	4.154E+01	NOT IDENT.
HF-172	3.447E-02	2.651E-01	5.108E-01	FAIL ABUN
LU-172	8.646E-02	1.341E-01	2.900E-01	FAIL ABUN
LU-176	6.935E-03	3.106E-02	5.930E-02	FAIL ABUN

HF-181	-3.692E+00	6.169E+00	9.781E+00	NOT IDENT.
TA-182	4.910E-01	1.487E+00	3.178E+00	FAIL ABUN
RE-183	-6.672E-01	3.291E+00	5.982E+00	NOT IDENT.
RE-184	1.388E+01	4.069E+01	8.560E+01	NOT IDENT.
W-188	-7.042E+01	1.511E+02	2.348E+02	NOT IDENT.
IR-192	4.802E-02	6.324E-01	1.164E+00	FAIL ABUN
HG-203	9.392E-01	3.083E+00	5.832E+00	NOT IDENT.
BI-207	5.229E-02	5.937E-02	1.476E-01	FAIL ABUN
PB-210	-4.857E-02	2.992E+00	6.008E+00	NOT IDENT.
BI-211	0.000E+00	6.089E-01	1.033E+00	FAIL ABUN
PB-211	-5.749E-01	8.548E-01	1.578E+00	NOT IDENT.
BI-212	9.436E-01	1.151E+00	1.780E+00	FAIL ABUN
RN-219	2.147E-01	5.369E-01	1.120E+00	NOT IDENT.
RA-223	2.641E-01	8.304E-01	1.582E+00	FAIL ABUN
AC-227	-7.475E-03	2.845E-01	5.259E-01	FAIL ABUN
TH-227	-7.475E-03	2.845E-01	5.259E-01	FAIL ABUN
TH-231	2.641E-01	8.304E-01	1.582E+00	FAIL ABUN
PA-234	8.287E-03	4.630E-01	9.035E-01	NOT IDENT.
PA-234M	4.205E+00	8.877E+00	1.809E+01	NOT IDENT.
TH-234	8.009E-01	1.425E+00	2.916E+00	FAIL ABUN
NP-237	9.579E-02	8.277E-02	1.676E-01	FAIL ABUN
NP-238	0.000E+00	7.738E+40	0.000E+00	SHORT HLIF
U-238	8.009E-01	1.425E+00	2.916E+00	FAIL ABUN
NP-239	-3.862E-02	2.554E-01	4.855E-01	FAIL ABUN
PU-239	5.692E+02	7.902E+02	8.147E+02	FAIL ABUN
AM-241	4.282E-02	1.441E-01	2.938E-01	NOT IDENT.
CM-243	-3.757E-02	1.130E-01	1.958E-01	NOT IDENT.
BK-247	-7.021E-02	9.667E-02	1.606E-01	FAIL ABUN
CM-247	1.333E-02	4.534E-02	9.462E-02	NOT IDENT.
CF-249	-1.871E-02	4.950E-02	9.496E-02	NOT IDENT.
CF-251	-1.602E-02	1.480E-01	2.728E-01	NOT IDENT.

Nuclide Line Activity Report

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
K-40	1460.82	186	10.66*	6.546E-01	1.595E+01	1.595E+01	14.45
AS-73	53.44	20	10.30*	1.564E+00	7.267E-01	9.086E+00	186.02
CD-109	88.03	86	3.70*	4.288E+00	3.237E+00	5.024E+00	43.87
SN-126	64.28	-----	9.60	2.567E+00	-----	Line Not Found	-----
	86.94	86	8.90	4.288E+00	1.346E+00	1.346E+00	43.87
	87.57	86	37.00*	4.288E+00	3.237E-01	3.237E-01	43.87
BA-137M	661.66	17	89.90*	1.334E+00	8.434E-02	8.591E-02	97.96
CS-137	661.66	17	85.10*	1.334E+00	8.910E-02	9.076E-02	97.96
EU-155	86.55	86	30.70	4.288E+00	3.901E-01	4.385E-01	43.87
	105.31	38	21.10*	4.943E+00	2.188E-01	2.460E-01	104.18
TL-208	277.37	-----	6.60	3.041E+00	-----	Line Not Found	-----
	583.19	80	85.00*	1.496E+00	3.785E-01	3.785E-01	32.56
	860.56	14	12.50	1.057E+00	6.519E-01	6.519E-01	107.47
BI-211	72.87	-----	1.23	3.327E+00	-----	Line Not Found	-----
	351.06	168	12.92*	2.414E+00	3.221E+00	3.221E+00	19.29
PB-212	74.82	105	10.28	3.472E+00	1.764E+00	1.764E+00	42.30
	77.11	176	17.10	3.649E+00	1.689E+00	1.689E+00	27.12
	238.63	303	43.60*	3.499E+00	1.189E+00	1.189E+00	13.77
	300.09	28	3.30	2.818E+00	1.800E+00	1.800E+00	74.08
BI-214	609.32	105	45.49*	1.437E+00	9.587E-01	9.590E-01	24.90
	1120.29	18	14.92	8.366E-01	8.456E-01	8.459E-01	95.99
	1764.49	13	15.30	5.417E-01	9.309E-01	9.312E-01	62.50
PB-214	74.82	105	5.80	3.472E+00	3.126E+00	3.127E+00	42.30
	77.11	176	9.70	3.649E+00	2.978E+00	2.979E+00	27.12
	87.09	86	3.41	4.288E+00	3.512E+00	3.514E+00	43.87
	242.00	90	7.25	3.461E+00	2.151E+00	2.152E+00	46.60
	295.22	121	18.42	2.864E+00	1.368E+00	1.369E+00	24.70
	351.93	168	35.60*	2.414E+00	1.169E+00	1.169E+00	19.29
RN-222	609.32	105	45.49*	1.437E+00	9.587E-01	9.590E-01	24.90
	1120.29	18	14.92	8.366E-01	8.456E-01	8.459E-01	95.99
	1764.49	13	15.30	5.417E-01	9.309E-01	9.312E-01	62.50
RA-224	240.99	90	4.10*	3.461E+00	3.803E+00	3.803E+00	46.60
RA-226	609.32	105	45.49*	1.437E+00	9.587E-01	9.590E-01	24.90
	1120.29	18	14.92	8.366E-01	8.456E-01	8.459E-01	95.99
	1764.49	13	15.30	5.417E-01	9.309E-01	9.312E-01	62.50
AC-228	105.21	38	1.10	4.943E+00	4.198E+00	4.198E+00	104.18
	338.32	36	11.27	2.506E+00	7.705E-01	7.705E-01	89.44
	794.95	-----	4.25	1.134E+00	-----	Line Not Found	-----
	835.71	-----	1.61	1.085E+00	-----	Line Not Found	-----
	911.20	49	25.80*	1.006E+00	1.141E+00	1.141E+00	39.08
	968.97	35	15.80	9.525E-01	1.412E+00	1.412E+00	48.75
RA-228	105.21	38	1.10	4.943E+00	4.198E+00	4.198E+00	104.18
	338.32	36	11.27	2.506E+00	7.705E-01	7.705E-01	89.44
	794.95	-----	4.25	1.134E+00	-----	Line Not Found	-----
	835.71	-----	1.61	1.085E+00	-----	Line Not Found	-----
	911.20	49	25.80*	1.006E+00	1.141E+00	1.141E+00	39.08
	968.97	35	15.80	9.525E-01	1.412E+00	1.412E+00	48.75

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
TH-228	74.82	105	10.28	3.472E+00	1.764E+00	1.764E+00	42.30
	77.11	176	17.10	3.649E+00	1.689E+00	1.689E+00	27.12
	238.63	303	43.60*	3.499E+00	1.189E+00	1.189E+00	13.77
	300.09	28	3.30	2.818E+00	1.800E+00	1.800E+00	74.08
TH-229	85.43	26	14.70	4.130E+00	2.586E-01	2.586E-01	140.29
	88.47	86	24.00	4.288E+00	4.990E-01	4.991E-01	43.87
	193.51	-----	4.41*	4.174E+00	-----	Line Not Found	-----
	210.85	15	2.80	3.889E+00	8.273E-01	8.274E-01	146.71
TH-230	609.32	105	45.49*	1.437E+00	9.587E-01	9.587E-01	24.90
	1120.29	18	14.92	8.366E-01	8.456E-01	8.456E-01	95.99
	1764.49	13	15.30	5.417E-01	9.309E-01	9.309E-01	62.50
PA-231	283.69	-----	1.70	2.976E+00	-----	Line Not Found	-----
	301.36	28	5.35*	2.818E+00	1.110E+00	1.110E+00	74.08
TH-232	105.21	38	1.10	4.943E+00	4.198E+00	4.198E+00	104.18
	338.32	36	11.27	2.506E+00	7.705E-01	7.705E-01	89.44
	835.71	-----	1.61	1.085E+00	-----	Line Not Found	-----
	911.20	49	25.80*	1.006E+00	1.141E+00	1.141E+00	39.08
PA-233	968.97	35	15.80	9.525E-01	1.412E+00	1.412E+00	48.75
	300.13	28	6.63	2.818E+00	8.957E-01	8.957E-01	74.08
	311.90	17	38.50*	2.710E+00	9.579E-02	9.579E-02	88.17
	340.48	-----	4.45	2.493E+00	-----	Line Not Found	-----
U-234	609.32	105	45.49*	1.437E+00	9.587E-01	9.587E-01	24.90
	1120.29	18	14.92	8.366E-01	8.456E-01	8.456E-01	95.99
	1764.49	13	15.30	5.417E-01	9.309E-01	9.309E-01	62.50
U-235	89.96	58	3.47	4.426E+00	2.247E+00	2.247E+00	48.65
	93.35	65	5.60	4.559E+00	1.516E+00	1.516E+00	70.56
	143.76	-----	10.96*	4.954E+00	-----	Line Not Found	-----
	163.33	-----	5.08	4.674E+00	-----	Line Not Found	-----
	185.72	99	57.20	4.300E+00	2.405E-01	2.405E-01	50.93
AM-243	205.31	-----	5.01	3.984E+00	-----	Line Not Found	-----
	43.53	-----	5.90	5.957E-01	-----	Line Not Found	-----
ANH-511	74.66	105	67.20*	3.472E+00	2.698E-01	2.698E-01	42.30
	511.00	20	100.00*	1.690E+00	6.949E-02	6.949E-02	162.95

Flag: "*" = Keyline

Total number of lines in spectrum 45
 Number of unidentified lines 7
 Number of lines tentatively identified by NID 38 84.44%

Nuclide Type :

Nuclide	Hlife	Decay	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
K-40	1.25E+09Y	1.00	1.595E+01	1.595E+01	0.230E+01	14.45	
AS-73	80.30D	12.5	7.267E-01	9.086E+00	16.90E+00	186.02	
CD-109	461.40D	1.55	3.237E+00	5.024E+00	2.204E+00	43.87	
SN-126	2.30E+05Y	1.00	3.237E-01	3.237E-01	1.420E-01	43.87	
BA-137M	30.08Y	1.02	8.434E-02	8.591E-02	8.416E-02	97.96	
CS-137	30.08Y	1.02	8.910E-02	9.076E-02	8.891E-02	97.96	
EU-155	4.75Y	1.12	2.188E-01	2.460E-01	2.562E-01	104.18	
TL-208	1.41E+10Y	1.00	3.785E-01	3.785E-01	1.233E-01	32.56	
BI-211	7.04E+08Y	1.00	3.221E+00	3.221E+00	0.621E+00	19.29	
PB-212	1.41E+10Y	1.00	1.189E+00	1.189E+00	0.164E+00	13.77	
BI-214	1600.00Y	1.00	9.587E-01	9.590E-01	2.388E-01	24.90	
PB-214	1600.00Y	1.00	1.169E+00	1.169E+00	0.226E+00	19.29	
RN-222	1600.00Y	1.00	9.587E-01	9.590E-01	2.388E-01	24.90	
RA-224	1.41E+10Y	1.00	3.803E+00	3.803E+00	1.772E+00	46.60	
RA-226	1600.00Y	1.00	9.587E-01	9.590E-01	2.388E-01	24.90	
AC-228	1.41E+10Y	1.00	1.141E+00	1.141E+00	0.446E+00	39.08	
RA-228	1.41E+10Y	1.00	1.141E+00	1.141E+00	0.446E+00	39.08	
TH-228	1.41E+10Y	1.00	1.189E+00	1.189E+00	0.164E+00	13.77	
TH-229	7340.00Y	1.00	4.990E-01	4.991E-01	2.190E-01	43.87	K
TH-230	7.54E+04Y	1.00	9.587E-01	9.587E-01	2.387E-01	24.90	
PA-231	7.04E+08Y	1.00	1.110E+00	1.110E+00	0.822E+00	74.08	
TH-232	1.41E+10Y	1.00	1.141E+00	1.141E+00	0.446E+00	39.08	
PA-233	2.14E+06Y	1.00	9.579E-02	9.579E-02	8.446E-02	88.17	
U-234	2.45E+05Y	1.00	9.587E-01	9.587E-01	2.387E-01	24.90	
U-235	7.04E+08Y	1.00	2.405E-01	2.405E-01	1.225E-01	50.93	K
AM-243	7370.00Y	1.00	2.698E-01	2.698E-01	1.141E-01	42.30	
ANH-511	1.00E+09Y	1.00	6.949E-02	6.949E-02	11.32E-02	162.95	
Total Activity :			4.208E+01	5.225E+01			

Grand Total Activity : 4.208E+01 5.225E+01

Flags: "K" = Keyline not found "M" = Manually accepted
 "E" = Manually edited "A" = Nuclide specific abn. limit

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
0	129.44	30	122	1.08	258.86	256	9	7.71E-03	****	5.08E+00	T
6	209.28	43	52	1.29	418.55	414	12	1.11E-02	70.7	3.92E+00	
0	328.29	23	50	0.75	656.55	654	8	6.01E-03	****	2.58E+00	T
4	354.27	17	26	1.49	708.52	697	17	4.46E-03	****	2.40E+00	T
1	460.15	17	18	1.46	920.26	912	23	4.65E-03	98.2	1.86E+00	
1	462.89	22	14	1.46	925.73	912	23	5.92E-03	83.1	1.85E+00	T
0	487.73	9	14	0.57	975.42	969	9	2.37E-03	****	1.77E+00	T
0	727.39	13	15	1.30	1454.65	1449	10	3.61E-03	****	1.23E+00	T
0	757.19	12	12	2.46	1514.24	1509	10	3.25E-03	****	1.18E+00	T
0	761.30	9	3	0.83	1522.46	1519	6	2.55E-03	88.6	1.18E+00	
0	802.59	19	3	0.61	1605.01	1599	11	5.33E-03	56.7	1.12E+00	T
0	920.49	10	5	1.08	1840.75	1835	12	2.93E-03	****	9.97E-01	
0	934.50	15	2	0.76	1868.76	1864	9	4.39E-03	60.8	9.83E-01	
1	964.76	21	9	1.84	1929.24	1923	23	6.01E-03	76.6	9.56E-01	T
0	1031.82	15	4	1.86	2063.32	2059	9	4.31E-03	70.8	9.01E-01	
0	1149.84	9	3	0.80	2299.26	2295	7	2.64E-03	92.1	8.18E-01	
0	1174.31	15	0	1.03	2348.19	2345	8	4.44E-03	50.0	8.02E-01	T
0	1237.79	22	3	2.55	2475.08	2468	14	6.27E-03	54.8	7.65E-01	T

Flags: "T" = Tentatively associated

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*****
*                               GEL Laboratories LLC                               *
*                               2040 Savage Road                               *
*                               Charleston, SC 29407                          *
*****
*                               DETECTOR AND SAMPLE DATA                       *
*                               *                                               *
* Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]R405245016.CNF;1   *
* Acquisition date   : 3-OCT-2016 04:48:08 Sensitivity      : 3.000           *
* Detector ID       : GAM36 Energy tolerance: 1.500         *
* Elapsed live time : 0 01:00:00.00 Abundance limit : 75.000   *
* Elapsed real time : 0 01:00:00.35 Half life ratio : ***** *
* Sample date       : 15-DEC-2015 14:06:00 Nuclide Library : SOLID          *
* Sample ID        : R405245016 Analyst initials: MXR1        *
* Batch Number     : 1596387 Sample Quantity : 1.2541E+02 GRAM *
* Wet wt corr      : 1.00000 Wet Weight      : 0.00000         *
*                               Dry Weight     : 0.00000         *
*****
*                               CALIBRATION INFORMATION                         *
*                               *                                               *
* Eff. Cal. date    : 1-JUN-2016 09:39:12 Eff. Geometry   : CAN           *
* Eff. File         : DKA100:[CANBERRA.GAMMA]EFF_GAM36_CAN.CNF;7             *
*****

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Combined Critical Level Report

NOTE: Not all "Identified Nuclides" are valid.
 Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Lc (pCi/GRAM)
K-40	3.925E-01
AS-73	7.499E+00
CD-109	9.493E-01
SN-126	6.147E-02
BA-137M	3.754E-02
CS-137	3.966E-02
EU-155	9.893E-02
TL-208	4.830E-02
PB-212	4.820E-02
BI-214	7.622E-02
PB-214	6.071E-02
RN-222	7.622E-02
RA-224	5.177E-01
RA-226	7.622E-02
AC-228	1.496E-01
RA-228	1.496E-01
TH-228	4.820E-02
TH-229	5.433E-01
TH-230	7.620E-02
PA-231	4.437E-01
TH-232	1.496E-01
PA-233	6.169E-02
U-234	7.620E-02
U-235	2.065E-01
AM-243	5.020E-02
ANH-511	3.192E-02

---- Non-Identified Nuclides ----

Nuclide	Lc (pCi/GRAM)	
BE-7	9.845E+00	NOT IDENT.
NA-22	5.978E-02	NOT IDENT.
NA-24	0.000E+00	SHORT HLIF
AL-26	2.634E-02	NOT IDENT.
SC-46	4.713E-01	FAIL ABUN

V-48	0.000E+00	SHORT HLIF
CR-51	0.000E+00	SHORT HLIF
MN-54	9.114E-02	NOT IDENT.
CO-56	6.287E-01	FAIL ABUN
MN-56	0.000E+00	SHORT HLIF
CO-57	5.050E-02	NOT IDENT.
CO-58	5.570E-01	NOT IDENT.
FE-59	7.333E+00	NOT IDENT.
CO-60	5.736E-02	FAIL ABUN
ZN-65	2.351E-01	NOT IDENT.
GE-68	3.028E+00	NOT IDENT.
AS-74	0.000E+00	SHORT HLIF
SE-75	1.973E-01	NOT IDENT.
BR-77	0.000E+00	SHORT HLIF
SR-82	0.000E+00	SHORT HLIF
RB-83	6.587E-01	NOT IDENT.
KR-85	9.453E+00	NOT IDENT.
SR-85	9.256E-01	NOT IDENT.
RB-86	0.000E+00	SHORT HLIF
Y-88	3.606E-01	NOT IDENT.
Y-91	5.836E+02	NOT IDENT.
NB-94	4.168E-02	NOT IDENT.
NB-95	9.114E-01	NOT IDENT.
NB-95M	2.389E+00	NOT IDENT.
ZR-95	2.148E+00	FAIL ABUN
NB-97	0.000E+00	SHORT HLIF
ZR-97	0.000E+00	SHORT HLIF
MO-99	0.000E+00	SHORT HLIF
TC-99M	0.000E+00	SHORT HLIF
RH-101	3.487E-02	NOT IDENT.
RH-102	6.603E-02	NOT IDENT.
RU-103	5.351E+00	FAIL ABUN
RH-106	5.821E-01	NOT IDENT.
RU-106	5.821E-01	NOT IDENT.
AG-108M	2.753E-02	NOT IDENT.
AG-110M	1.192E-01	NOT IDENT.
SN-113	2.326E-01	NOT IDENT.
CD-115	0.000E+00	SHORT HLIF
SN-117M	0.000E+00	SHORT HLIF
TE-123M	1.399E-01	NOT IDENT.
SB-124	2.368E+00	NOT IDENT.
SB-125	1.349E-01	FAIL ABUN
TE-125M	2.614E+02	NOT IDENT.
I-126	0.000E+00	SHORT HLIF
SB-126	0.000E+00	SHORT HLIF
SB-127	0.000E+00	SHORT HLIF
I-131	0.000E+00	SHORT HLIF
I-132	0.000E+00	SHORT HLIF
TE-132	0.000E+00	SHORT HLIF
BA-133	4.587E-02	NOT IDENT.
I-133	0.000E+00	SHORT HLIF
CS-134	6.912E-02	FAIL ABUN
CS-135	1.591E-01	NOT IDENT.
I-135	0.000E+00	SHORT HLIF
CS-136	0.000E+00	SHORT HLIF
CE-139	1.045E-01	NOT IDENT.
BA-140	0.000E+00	SHORT HLIF
LA-140	0.000E+00	SHORT HLIF
CE-141	2.220E+01	NOT IDENT.
CE-143	0.000E+00	SHORT HLIF
CE-144	3.760E-01	NOT IDENT.
PM-144	7.200E-02	NOT IDENT.
PR-144	6.249E+00	NOT IDENT.
PM-146	5.468E-02	NOT IDENT.
ND-147	0.000E+00	SHORT HLIF
PM-147	9.077E+02	NOT IDENT.
PM-149	0.000E+00	SHORT HLIF
EU-150	3.054E-02	FAIL ABUN
EU-152	8.385E-02	FAIL ABUN
GD-153	1.676E-01	NOT IDENT.
EU-154	1.493E-01	FAIL ABUN
TB-160	2.311E+00	FAIL ABUN
HO-166M	4.540E-02	NOT IDENT.
TM-171	1.906E+01	NOT IDENT.
HF-172	2.359E-01	FAIL ABUN
LU-172	1.247E-01	FAIL ABUN
LU-176	2.646E-02	FAIL ABUN
HF-181	4.207E+00	NOT IDENT.

TA-182	1.361E+00	FAIL ABUN
RE-183	2.763E+00	NOT IDENT.
RE-184	3.631E+01	NOT IDENT.
W-188	1.045E+02	NOT IDENT.
IR-192	5.239E-01	FAIL ABUN
HG-203	2.656E+00	NOT IDENT.
BI-207	6.120E-02	FAIL ABUN
PB-210	2.766E+00	NOT IDENT.
BI-211	4.903E-01	FAIL ABUN
PB-211	6.859E-01	NOT IDENT.
BI-212	7.904E-01	FAIL ABUN
RN-219	5.012E-01	NOT IDENT.
RA-223	7.122E-01	FAIL ABUN
AC-227	2.364E-01	FAIL ABUN
TH-227	2.364E-01	FAIL ABUN
TH-231	7.122E-01	FAIL ABUN
PA-234	3.821E-01	NOT IDENT.
PA-234M	8.001E+00	NOT IDENT.
TH-234	1.366E+00	FAIL ABUN
NP-237	7.590E-02	FAIL ABUN
NP-238	0.000E+00	SHORT HLIF
U-238	1.366E+00	FAIL ABUN
NP-239	2.221E-01	FAIL ABUN
PU-239	3.814E+02	FAIL ABUN
AM-241	1.358E-01	NOT IDENT.
CM-243	8.955E-02	NOT IDENT.
BK-247	7.164E-02	FAIL ABUN
CM-247	4.193E-02	NOT IDENT.
CF-249	4.179E-02	NOT IDENT.
CF-251	1.256E-01	NOT IDENT.

```

*****
*                               GEL Laboratories LLC                               *
*                               2040 Savage Road                               *
*                               Charleston, SC 29407                          *
*****
*                               DETECTOR AND SAMPLE DATA                       *
*
* Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]R405245016.CNF;1
* Acquisition date   : 3-OCT-2016 04:48:08 Sensitivity      : 3.000
* Detector ID       : GAM36 Energy tolerance: 1.500
* Elapsed live time : 0 01:00:00.00 Abundance limit : 75.000
* Elapsed real time : 0 01:00:00.35 Half life ratio : *****
* Sample date       : 15-DEC-2015 14:06:00 Nuclide Library : SOLID
* Sample ID         : R405245016 Analyst initials: MXR1
* Batch Number      : 1596387 Sample Quantity : 1.2541E+02 GRAM
*                               Quantity Err(%) : 1.5948E-03 %
* Wet wt corr       : 1.00000 Wet Weight      : 0.00000
*                               Dry Weight      : 0.00000
*****
*                               CALIBRATION INFORMATION                          *
*
* Eff. Cal. date    : 1-JUN-2016 09:39:12 Eff. Geometry   : CAN
* Eff. File         : DKA100:[CANBERRA.GAMMA]EFF_GAM36_CAN.CNF;7
*****

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Combined Activity-MDA Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM)	Act Error (1.96-sigma)	TPU (1.96-sigma)
K-40	1.595E+01	2.407E+00	2.407E+00
AS-73	9.086E+00	1.667E+01	1.667E+01
CD-109	3.067E+00	2.239E+00	2.239E+00
SN-126	1.976E-01	1.439E-01	1.439E-01
BA-137M	8.591E-02	8.256E-02	8.256E-02
CS-137	9.076E-02	8.722E-02	8.722E-02
EU-155	2.460E-01	2.517E-01	2.517E-01
TL-208	3.785E-01	1.219E-01	1.219E-01
PB-212	1.189E+00	1.723E-01	1.723E-01
BI-214	9.590E-01	2.376E-01	2.376E-01
PB-214	1.169E+00	2.263E-01	2.263E-01
RN-222	9.590E-01	2.376E-01	2.376E-01
RA-224	1.384E+00	1.841E+00	1.841E+00
RA-226	9.590E-01	2.376E-01	2.376E-01
AC-228	1.141E+00	4.408E-01	4.408E-01
RA-228	1.141E+00	4.408E-01	4.408E-01
TH-228	1.189E+00	1.723E-01	1.723E-01
TH-229	8.490E-02	6.284E-01	6.284E-01
TH-230	9.587E-01	2.376E-01	2.376E-01
PA-231	1.110E+00	8.400E-01	8.400E-01
TH-232	1.141E+00	4.408E-01	4.408E-01
PA-233	9.579E-02	8.290E-02	8.290E-02
U-234	9.587E-01	2.376E-01	2.376E-01
U-235	9.463E-02	2.339E-01	2.339E-01
AM-243	1.517E-01	1.168E-01	1.168E-01
ANH-511	6.949E-02	1.110E-01	1.110E-01

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/GRAM)	K.L Act error (1.96-sigma)	TPU (1.96-sigma)	
BE-7	-1.622E+01	1.438E+01	1.613E+01	NOT IDENT.
NA-22	-1.656E-02	7.382E-02	7.420E-02	NOT IDENT.
NA-24	-1.000E+41	3.694E+41	0.000E+00	SHORT HLIF
AL-26	-4.814E-02	5.680E-02	6.081E-02	NOT IDENT.

SC-46	4.749E-02	5.584E-01	5.588E-01	FAIL ABUN
V-48	-5.155E+03	1.787E+04	1.802E+04	SHORT HLIF
CR-51	-6.238E+01	4.690E+02	4.698E+02	SHORT HLIF
MN-54	6.456E-02	9.599E-02	1.003E-01	NOT IDENT.
CO-56	4.372E-01	6.587E-01	6.876E-01	FAIL ABUN
MN-56	1.000E+41	1.480E+41	0.000E+00	SHORT HLIF
CO-57	3.170E-02	5.437E-02	5.621E-02	NOT IDENT.
CO-58	-1.006E-01	6.956E-01	6.971E-01	NOT IDENT.
FE-59	-9.855E-03	8.435E+00	8.435E+00	NOT IDENT.
CO-60	2.155E-02	6.161E-02	6.237E-02	FAIL ABUN
ZN-65	1.244E-01	2.582E-01	2.642E-01	NOT IDENT.
GE-68	-1.022E+00	4.002E+00	4.029E+00	NOT IDENT.
AS-74	-2.880E+03	7.232E+03	7.348E+03	SHORT HLIF
SE-75	-1.183E-01	2.554E-01	2.609E-01	NOT IDENT.
BR-77	2.606E+37	2.201E+38	0.000E+00	SHORT HLIF
SR-82	-5.119E+02	9.072E+02	9.360E+02	SHORT HLIF
RB-83	-1.390E-01	7.777E-01	7.802E-01	NOT IDENT.
KR-85	4.339E+00	1.124E+01	1.141E+01	NOT IDENT.
SR-85	4.240E-01	1.101E+00	1.117E+00	NOT IDENT.
RB-86	-1.547E+04	3.855E+04	3.918E+04	SHORT HLIF
Y-88	1.474E-01	3.805E-01	3.862E-01	NOT IDENT.
Y-91	-1.846E+02	7.203E+02	7.251E+02	NOT IDENT.
NB-94	3.776E-02	4.167E-02	4.501E-02	NOT IDENT.
NB-95	-1.149E+00	1.318E+00	1.416E+00	NOT IDENT.
NB-95M	-4.748E-01	3.154E+00	3.161E+00	NOT IDENT.
ZR-95	2.560E+00	3.187E+00	3.389E+00	FAIL ABUN
NB-97	1.000E+41	7.998E+40	0.000E+00	SHORT HLIF
ZR-97	1.000E+41	1.610E+41	0.000E+00	SHORT HLIF
MO-99	-1.391E+31	4.113E+31	0.000E+00	SHORT HLIF
TC-99M	1.000E+41	4.238E+41	0.000E+00	SHORT HLIF
RH-101	2.198E-02	4.035E-02	4.155E-02	NOT IDENT.
RH-102	-3.285E-02	8.407E-02	8.536E-02	NOT IDENT.
RU-103	-8.661E-02	6.145E+00	6.145E+00	FAIL ABUN
RH-106	-2.049E-01	7.139E-01	7.199E-01	NOT IDENT.
RU-106	-2.049E-01	7.139E-01	7.199E-01	NOT IDENT.
AG-108M	-2.088E-02	3.474E-02	3.599E-02	NOT IDENT.
AG-110M	1.246E-01	1.070E-01	1.209E-01	NOT IDENT.
SN-113	-1.086E-01	2.773E-01	2.816E-01	NOT IDENT.
CD-115	-7.602E+37	4.892E+38	0.000E+00	SHORT HLIF
SN-117M	8.094E+03	8.320E+04	8.328E+04	SHORT HLIF
TE-123M	9.929E-02	1.518E-01	1.582E-01	NOT IDENT.
SB-124	-1.026E+00	3.270E+00	3.303E+00	NOT IDENT.
SB-125	9.450E-03	1.513E-01	1.514E-01	FAIL ABUN
TE-125M	1.960E+02	2.946E+02	3.076E+02	NOT IDENT.
I-126	-8.095E+04	9.344E+05	9.351E+05	SHORT HLIF
SB-126	-2.854E+05	1.020E+06	1.028E+06	SHORT HLIF
SB-127	-3.826E+21	9.820E+21	0.000E+00	SHORT HLIF
I-131	-2.452E+09	3.590E+09	3.756E+09	SHORT HLIF
I-132	1.000E+41	1.848E+42	0.000E+00	SHORT HLIF
TE-132	6.699E+25	1.035E+26	0.000E+00	SHORT HLIF
BA-133	3.188E-02	5.421E-02	5.608E-02	NOT IDENT.
I-133	1.000E+41	2.849E+41	0.000E+00	SHORT HLIF
CS-134	3.119E-02	7.629E-02	7.757E-02	FAIL ABUN
CS-135	-1.682E-01	2.135E-01	2.266E-01	NOT IDENT.
I-135	-1.000E+41	6.703E+41	0.000E+00	SHORT HLIF
CS-136	3.223E+05	2.630E+05	3.005E+05	SHORT HLIF
CE-139	-6.559E-02	1.290E-01	1.324E-01	NOT IDENT.
BA-140	-4.474E+05	1.249E+06	1.265E+06	SHORT HLIF
LA-140	-5.938E+05	6.445E+05	6.978E+05	SHORT HLIF
CE-141	-1.875E+01	2.784E+01	2.910E+01	NOT IDENT.
CE-143	1.000E+41	6.062E+41	0.000E+00	SHORT HLIF
CE-144	-2.456E-01	4.910E-01	5.034E-01	NOT IDENT.
PM-144	2.271E-02	8.066E-02	8.131E-02	NOT IDENT.
PR-144	2.023E+00	6.991E+00	7.050E+00	NOT IDENT.
PM-146	2.104E-02	6.475E-02	6.545E-02	NOT IDENT.
ND-147	9.460E+06	2.758E+07	2.791E+07	SHORT HLIF
PM-147	6.761E+02	9.681E+02	1.015E+03	NOT IDENT.
PM-149	6.804E+39	6.327E+39	0.000E+00	SHORT HLIF
EU-150	1.822E-02	3.713E-02	3.803E-02	FAIL ABUN
EU-152	-1.004E-01	1.230E-01	1.311E-01	FAIL ABUN
GD-153	-3.213E-01	2.352E-01	2.763E-01	NOT IDENT.
EU-154	-3.583E-02	1.829E-01	1.836E-01	FAIL ABUN
TB-160	2.044E+00	2.261E+00	2.442E+00	FAIL ABUN
HO-166M	-8.298E-02	7.587E-02	8.459E-02	NOT IDENT.
TM-171	6.870E-02	2.209E+01	2.209E+01	NOT IDENT.
HF-172	3.447E-02	2.651E-01	2.656E-01	FAIL ABUN
LU-172	8.646E-02	1.343E-01	1.399E-01	FAIL ABUN
LU-176	6.935E-03	3.106E-02	3.122E-02	FAIL ABUN

HF-181	-3.692E+00	6.171E+00	6.391E+00	NOT IDENT.
TA-182	4.910E-01	1.487E+00	1.504E+00	FAIL ABUN
RE-183	-6.672E-01	3.293E+00	3.306E+00	NOT IDENT.
RE-184	1.388E+01	4.082E+01	4.130E+01	NOT IDENT.
W-188	-7.042E+01	1.513E+02	1.546E+02	NOT IDENT.
IR-192	4.802E-02	6.324E-01	6.328E-01	FAIL ABUN
HG-203	9.392E-01	3.083E+00	3.112E+00	NOT IDENT.
BI-207	5.229E-02	5.941E-02	6.392E-02	FAIL ABUN
PB-210	-4.857E-02	2.992E+00	2.992E+00	NOT IDENT.
BI-211	3.221E+00	6.255E-01	1.581E+00	FAIL ABUN
PB-211	-5.749E-01	8.553E-01	8.937E-01	NOT IDENT.
BI-212	9.436E-01	1.152E+00	1.228E+00	FAIL ABUN
RN-219	2.147E-01	5.376E-01	5.462E-01	NOT IDENT.
RA-223	2.641E-01	8.306E-01	8.391E-01	FAIL ABUN
AC-227	-7.475E-03	2.845E-01	2.846E-01	FAIL ABUN
TH-227	-7.475E-03	2.845E-01	2.846E-01	FAIL ABUN
TH-231	2.641E-01	8.306E-01	8.391E-01	FAIL ABUN
PA-234	8.287E-03	4.631E-01	4.631E-01	NOT IDENT.
PA-234M	4.205E+00	8.879E+00	9.079E+00	NOT IDENT.
TH-234	8.009E-01	1.436E+00	1.481E+00	FAIL ABUN
NP-237	9.579E-02	8.290E-02	9.347E-02	FAIL ABUN
NP-238	-2.158E+40	7.739E+40	0.000E+00	SHORT HLIF
U-238	8.009E-01	1.436E+00	1.481E+00	FAIL ABUN
NP-239	-3.862E-02	2.554E-01	2.560E-01	FAIL ABUN
PU-239	5.692E+02	7.906E+02	8.312E+02	FAIL ABUN
AM-241	4.282E-02	1.442E-01	1.455E-01	NOT IDENT.
CM-243	-3.757E-02	1.131E-01	1.143E-01	NOT IDENT.
BK-247	-7.021E-02	9.770E-02	1.027E-01	FAIL ABUN
CM-247	1.333E-02	4.540E-02	4.580E-02	NOT IDENT.
CF-249	-1.871E-02	4.952E-02	5.023E-02	NOT IDENT.
CF-251	-1.602E-02	1.480E-01	1.482E-01	NOT IDENT.

 * GEL Laboratories LLC *
 * 2040 Savage Road *
 * Charleston, SC 29407 *
 * GAMMA SPECTROSCOPY BACKGROUND REPORT *

ENERGY	MDA COUNTS	ENERGY	MDA COUNTS	ENERGY	MDA COUNTS
43.53	23.4484	87.09	45.8392	136.47	55.1405
45.60	40.9384	87.57	45.8880	140.51	0.0000
46.54	38.7005	88.03	45.9344	143.76	50.8884
49.72	0.0000	88.34	45.9658	144.24	47.9884
51.35	39.5837	88.47	45.9789	145.44	64.7583
51.87	48.2217	89.96	52.0428	152.43	61.4816
52.39	41.8604	1093.63	52.1195	153.25	0.0000
52.97	33.3340	91.11	0.0000	323.87	51.7017
53.44	40.9208	92.59	52.3377	156.02	0.0000
54.07	46.1253	93.35	52.4223	158.56	0.0000
57.36	0.0000	94.56	52.5562	159.00	38.0481
57.53	50.1513	94.65	52.5660	162.33	50.3029
57.98	53.4923	94.67	52.5682	162.66	0.0000
59.27	43.5574	94.87	52.5902	163.33	31.2323
59.32	43.5637	97.43	69.6922	165.86	47.5214
59.54	44.4139	98.43	48.1620	176.31	48.2077
60.96	64.4140	98.44	48.1632	176.60	0.0000
61.17	61.9735	99.53	51.5884	177.52	47.2585
62.93	54.8061	100.11	44.3999	181.07	0.0000
63.29	52.3669	102.03	38.8099	181.52	34.4269
63.58	47.4175	103.18	44.9763	184.41	42.5052
64.28	63.3450	103.37	44.9933	143.76	42.5772
66.73	45.3071	105.21	40.2738	193.51	46.1478
67.24	56.2905	105.31	40.2819	197.03	44.2430
125.81	63.0850	106.12	40.3450	198.01	55.8984
67.75	63.0964	106.47	40.3725	201.83	40.2654
69.67	59.1869	109.28	38.1300	203.43	33.9736
70.83	55.4056	111.00	60.1569	205.31	29.7940
72.81	64.7762	111.76	0.0000	210.85	37.4882
72.87	64.7860	114.06	55.8458	215.65	39.8522
74.66	65.0753	116.30	0.0000	222.11	30.3819
74.82	65.1009	116.74	41.1540	227.09	39.2811
74.97	65.1252	119.76	43.2580	227.38	30.5618
77.11	65.4656	121.12	50.9035	228.16	0.0000
78.74	64.5688	121.22	41.4843	228.18	31.6816
79.69	64.7147	121.78	43.4124	116.74	31.6816
80.12	62.4666	122.06	41.5454	235.69	41.1216
80.19	0.0000	122.92	50.1185	235.96	42.6026
80.57	55.5845	123.07	50.1315	238.63	26.5192
81.00	71.2896	265.00	54.9193	238.98	0.0000
81.07	71.3008	125.81	46.5680	240.99	26.5858
81.75	56.8990	127.23	39.3768	242.00	26.6144
83.79	58.3333	127.91	52.1394	244.70	19.2762
84.00	58.3613	129.30	46.8444	252.40	0.0000
85.43	50.9389	131.20	46.9940	252.80	30.2798
86.55	51.0668	133.02	52.5863	254.15	0.0000
86.79	45.8083	133.52	62.8989	256.23	27.0095
86.94	45.8237	136.00	45.4323	260.90	0.0000

ENERGY	MDA COUNTS	ENERGY	MDA COUNTS	ENERGY	MDA COUNTS
264.66	29.5087	355.39	0.0000	584.27	21.3556
264.80	29.5126	356.01	13.1191	595.83	0.0000
265.00	34.0594	364.49	0.0000	427.87	14.3597
268.22	45.5566	366.42	0.0000	602.52	0.0000
269.46	34.2096	372.51	24.9146	604.72	7.1951
270.03	41.0735	375.05	18.7221	607.14	12.9672
271.23	25.1300	377.52	16.6728	609.32	12.5012
273.65	0.0000	356.01	18.4269	610.33	12.5075
276.40	36.7354	388.16	22.6868	614.28	9.2551
277.37	35.6205	388.63	0.0000	618.01	10.6249
277.60	32.1802	391.69	20.2183	620.36	6.7693
278.00	32.1930	264.66	23.7418	621.93	12.5816
279.20	29.9276	401.81	19.5186	630.19	0.0000
279.54	31.0886	402.40	16.9796	631.29	13.6132
279.70	32.2451	404.85	20.4111	633.25	8.7598
280.46	27.6584	410.95	20.4995	634.78	0.0000
283.69	26.5867	413.71	25.6738	635.95	13.6445
284.31	0.0000	414.70	0.0000	636.99	0.0000
285.41	20.8405	423.72	0.0000	645.85	13.7112
285.90	0.0000	427.09	19.0025	657.76	2.9552
287.50	31.3217	427.87	20.7412	657.90	0.0000
290.67	29.4749	433.94	18.2233	661.66	9.8690
293.27	0.0000	439.40	20.0319	664.57	0.0000
351.93	26.8717	453.88	14.5083	666.33	0.0000
295.96	26.8893	463.37	13.2703	666.50	0.0000
879.38	26.9531	468.07	17.3033	667.71	0.0000
299.98	26.9875	473.00	0.0000	677.62	9.9443
300.09	26.9903	475.06	12.4779	685.70	0.0000
300.13	26.9910	476.78	16.0602	695.00	0.0000
301.36	21.9297	477.60	19.6390	696.49	11.0354
302.85	25.0964	482.18	20.1425	696.51	11.0354
256.23	24.7401	487.02	0.0000	697.00	0.0000
304.85	0.0000	492.35	0.0000	697.30	13.0465
306.78	20.0687	497.08	11.7445	697.49	13.0476
308.46	26.0095	505.52	10.8962	702.65	6.0361
311.90	20.5542	507.63	0.0000	706.68	14.1105
316.51	26.1921	511.00	14.5757	711.68	14.1424
319.41	0.0000	514.00	16.4268	720.70	0.0000
320.08	0.0000	514.00	16.4268	721.93	0.0000
321.04	26.2942	520.40	10.9922	722.78	4.5685
323.87	22.7637	520.69	0.0000	722.91	12.1831
325.23	30.3864	522.65	0.0000	723.31	12.1855
328.76	0.0000	527.90	0.0000	724.19	10.6666
333.37	24.1528	528.26	12.8829	727.33	11.1902
333.97	19.3320	529.59	10.1299	733.00	15.2972
334.37	19.3384	529.87	0.0000	735.93	7.1481
338.28	25.4637	531.02	0.0000	333.97	12.2622
338.32	25.4643	537.26	0.0000	739.50	0.0000
311.90	37.2515	546.56	0.0000	747.24	13.3407
340.48	37.2515	552.55	14.9271	748.06	10.2657
340.55	0.0000	563.25	15.0150	752.31	9.2560
344.28	24.3695	569.33	14.1235	753.82	0.0000
345.93	15.8612	946.00	16.9497	756.73	9.2739
351.06	13.4764	569.70	16.0094	756.80	9.2739
351.93	13.4858	583.19	18.9722	884.68	9.3025

ENERGY	MDA COUNTS	ENERGY	MDA COUNTS	ENERGY	MDA COUNTS
765.81	19.6541	1274.44	6.7751	1620.50	1.0057
766.42	16.5553	1001.03	12.4412	1621.92	2.0120
766.84	10.3487	1002.74	10.1851	1678.03	0.0000
772.60	0.0000	1004.73	14.7218	1690.97	4.0859
776.52	0.0000	507.63	0.0000	1750.46	0.0000
739.50	0.0000	1025.87	0.0000	1764.49	0.0000
778.90	7.2811	1028.54	0.0000	1063.66	2.0778
783.70	0.0000	1037.84	5.7255	1771.35	2.3751
785.37	3.1289	1038.76	0.0000	1791.20	0.0000
792.07	11.5049	631.29	9.1868	1808.65	5.2359
794.95	10.4712	1048.07	0.0000	1810.72	0.0000
795.86	9.4277	1049.04	5.7463	1836.06	2.1061
810.06	3.1609	1050.41	3.4495		
810.29	5.2686	1063.66	2.3096		
344.28	6.3228	1077.00	0.0000		
810.76	7.3774	1077.34	10.4385		
815.77	0.0000	1085.87	9.3040		
1048.07	0.0000	1093.63	6.9951		
832.01	14.8813	1099.45	7.0083		
834.85	7.4492	1112.07	11.4329		
835.71	9.5808	1112.84	12.3158		
836.80	0.0000	1115.54	5.8695		
846.75	0.0000	1120.29	8.8171		
846.77	6.4150	1120.55	8.8177		
856.80	0.0000	1221.41	8.8202		
860.56	7.5244	1129.67	8.8428		
871.09	6.4756	1131.51	0.0000		
873.19	7.5608	1147.95	0.0000		
875.33	0.0000	1173.23	5.7344		
879.38	3.2480	1177.95	5.7426		
880.51	7.5819	1189.05	10.8025		
883.24	8.6742	1204.77	9.0436		
884.68	1.0848	1221.41	9.0875		
889.28	8.6940	1231.02	3.6450		
894.76	8.7119	1235.36	0.0000		
898.04	9.8126	1238.28	6.3920		
900.72	8.7311	1260.41	0.0000		
903.28	7.6471	1271.87	4.6088		
911.20	7.6694	1274.44	8.3018		
912.08	3.2880	1274.54	8.3024		
923.98	0.0000	1291.59	3.7073		
926.50	5.2885	1298.22	0.0000		
929.11	3.9702	1312.11	0.0000		
937.49	6.6370	1332.49	4.6857		
944.13	0.0000	1362.66	0.0000		
946.00	9.9858	1365.19	3.7810		
949.00	5.5536	1368.63	0.0000		
667.71	0.0000	1384.29	4.7498		
962.31	11.7177	1408.01	6.6902		
964.08	8.9333	1457.56	0.0000		
966.17	8.9398	1460.82	3.8740		
911.20	8.9486	1489.16	2.9257		
968.97	8.9486	1505.03	3.9160		
983.53	0.0000	1584.12	0.9974		
984.45	0.0000	1596.21	0.0000		

```

*****
*                               GEL Laboratories LLC                               *
*                               2040 Savage Road                               *
*                               Charleston, SC 29407                          *
*****
Configuration   : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]R1203621685.CNF;1
Background file : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]BKG_GAM44.CNF;111
Background date : 2-OCT-2016 11:02:28.
Sample date     : 12-SEP-2016 00:00:00 Acquisition date : 3-OCT-2016 04:48:39.
Sample ID      : R1203621685 Sample quantity   : 1.55344E+02 GRAM
Detector name  : GAM44 Detector geometry: CAN
Elapsed live time: 0 01:00:00.00 Elapsed real time: 0 01:00:00.56 0.0%
Energy tolerance : 1.50000 keV Analyst Initials : MXR1
Abundance limit : 75.00000 Sensitivity : 3.00000
Batch ID       : 1596387 Detector SN# :
Matrix Spike ID : LCS ID : 1556
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BACKGROUND CORRECTED SAMPLE PEAK REPORT

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	59.87	10	23	1.08	120.19	116	6	2.79E-03	81.3	
2	0	63.86*	5	36	0.69	128.17	124	7	1.29E-03	233.9	
3	0	93.21*	17	60	1.80	186.90	180	14	4.78E-03	104.0	
4	0	110.65	6	29	0.48	221.79	219	6	1.65E-03	146.2	
5	0	158.74	13	15	1.30	318.00	316	5	3.61E-03	52.6	
6	0	185.79*	10	29	1.26	372.13	369	9	2.70E-03	117.5	
7	0	273.12	12	33	4.31	546.87	539	13	3.19E-03	106.4	
8	0	343.09	12	5	1.41	686.87	683	7	3.29E-03	43.2	
9	0	345.93	15	1	1.48	692.56	690	6	4.11E-03	28.9	
10	0	469.07	15	3	2.80	938.96	933	11	4.24E-03	33.1	
11	0	511.78*	13	22	1.97	1024.42	1017	18	3.57E-03	114.4	
12	0	698.41	12	6	3.37	1397.90	1391	11	3.43E-03	46.7	
13	0	818.88	12	3	1.51	1639.00	1633	11	3.43E-03	38.5	

Flag: "*" = Peak area was modified by background subtraction

Configuration : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]R1203621685.CNF;1
Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.4
Sample title : MXR1
Sample date : 12-SEP-2016 00:00:00 Acquisition date : 3-OCT-2016 04:48:39
Sample ID : R1203621685 Sample quantity : 155.34 GRAM
Sample type : SOLID Sample geometry :
Detector name : GAMMA44 Detector geometry: CAN
Elapsed live time: 0 01:00:00.00 Elapsed real time: 0 01:00:00.56 0.0%
Energy tolerance : 1.50 keV Half life ratio : 10.00
Errors propagated: No Systematic Error : 0.00 %
Efficiency type : Linear Efficiencies at : Peak Energy
Abundance limit : 75.00

Interference Report

No interference correction performed

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
SN-117M	156.02	-----	2.11	5.817E+00	-----	Line Not Found	-----
	158.56	16	86.40*	5.787E+00	1.535E-02	4.528E-02	105.19
TE-123M	159.00	16	84.00*	5.787E+00	1.579E-02	1.787E-02	105.19
TE-125M	109.28	8	0.27*	5.638E+00	2.383E+00	3.079E+00	292.42
TH-234	63.29	6	3.70*	2.111E+00	3.805E-01	3.805E-01	467.75
	92.59	22	4.23	4.869E+00	5.175E-01	5.175E-01	207.92
U-238	63.29	6	3.70*	2.111E+00	3.805E-01	3.805E-01	467.75
	92.59	22	4.23	4.869E+00	5.175E-01	5.175E-01	207.92
AM-241	59.54	13	35.90*	1.642E+00	1.098E-01	1.098E-01	162.66
ANH-511	511.00	14	100.00*	2.428E+00	2.782E-02	2.782E-02	228.88

Flag: "*" = Keyline


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*****
*
*           GEL Laboratories LLC
*           2040 Savage Road
*           Charleston, SC 29407
*****
*
*           DETECTOR AND SAMPLE DATA
*
* Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]R1203621685.CNF;1
* Acquisition date   : 3-OCT-2016 04:48:39 Sensitivity      : 3.000
* Detector ID        : GAM44 Energy tolerance: 1.500
* Elapsed live time  : 0 01:00:00.00 Abundance limit : 75.000
* Elapsed real time  : 0 01:00:00.56 Half life ratio  : *****
* Sample date        : 12-SEP-2016 00:00:00 Analyst initials: MXR1
* Sample ID          : R1203621685 Sample Quantity : 1.5534E+02 GRAM
* Batch Number       : 1596387 Wet Weight : 0.00000
* Wet wt corr        : 1.00000 Dry Weight : 0.00000
* Nuclide Library    : SOLID.NLB;6
*****
*
*           CALIBRATION INFORMATION
*
* Eff. Cal. date     : 6-SEP-2016 04:59:25 Eff. Geometry : CAN
* Eff. File          : DKA100:[CANBERRA.GAMMA]EFF_GAM44_CAN.CNF;3
*****

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Combined Activity-MDA Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM)	Cnt uncert (1.96-sigma)	MDA (pCi/GRAM)
SN-117M	4.528E-02	4.668E-02	6.980E-02
TE-123M	1.787E-02	1.842E-02	3.028E-02
TE-125M	3.079E+00	8.824E+00	1.122E+01
TH-234	3.805E-01	1.744E+00	1.728E+00
U-238	3.805E-01	1.744E+00	1.728E+00
AM-241	1.098E-01	1.751E-01	2.305E-01
ANH-511	2.782E-02	6.239E-02	3.580E-02

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/GRAM)	K.L. Cnt Uncert (1.96-sigma)	MDA (pCi/GRAM)	
BE-7	-1.073E-01	1.659E-01	3.027E-01	NOT IDENT.
NA-22	-1.072E-02	1.925E-02	3.556E-02	NOT IDENT.
NA-24	0.000E+00	3.623E+08	0.000E+00	SHORT HLIF
AL-26	-7.083E-03	2.099E-02	4.219E-02	NOT IDENT.
K-40	7.906E-02	2.638E-01	6.887E-01	NOT IDENT.
SC-46	5.955E-03	2.287E-02	5.356E-02	NOT IDENT.
V-48	1.004E-02	3.587E-02	9.315E-02	NOT IDENT.
CR-51	-1.811E-01	2.003E-01	3.604E-01	NOT IDENT.
MN-54	7.585E-04	2.161E-02	4.484E-02	NOT IDENT.
CO-56	0.000E+00	2.747E-02	5.552E-02	NOT IDENT.
MN-56	0.000E+00	1.960E+41	0.000E+00	SHORT HLIF
CO-57	4.404E-03	1.274E-02	2.693E-02	NOT IDENT.
CO-58	8.887E-03	2.688E-02	5.877E-02	NOT IDENT.
FE-59	-1.120E-02	4.404E-02	9.366E-02	NOT IDENT.
CO-60	-8.835E-03	2.105E-02	4.102E-02	NOT IDENT.
ZN-65	-1.326E-02	4.222E-02	8.636E-02	NOT IDENT.
GE-68	-1.927E-01	7.108E-01	1.456E+00	NOT IDENT.
AS-73	1.714E-01	7.999E-01	1.708E+00	NOT IDENT.
AS-74	-1.588E-02	6.178E-02	1.227E-01	NOT IDENT.
SE-75	2.122E-02	2.539E-02	5.550E-02	NOT IDENT.
BR-77	-1.578E+01	2.519E+01	4.850E+01	NOT IDENT.
SR-82	-6.920E-02	2.270E-01	4.331E-01	NOT IDENT.
RB-83	-8.101E-03	4.469E-02	8.953E-02	NOT IDENT.

KR-85	8.016E+00	5.519E+00	1.295E+01	NOT IDENT.
SR-85	4.519E-02	3.117E-02	7.310E-02	NOT IDENT.
RB-86	2.267E-01	5.096E-01	1.259E+00	NOT IDENT.
Y-88	-6.030E-03	1.182E-02	1.819E-02	NOT IDENT.
Y-91	6.078E+00	1.148E+01	2.817E+01	NOT IDENT.
NB-94	2.616E-02	2.193E-02	5.248E-02	NOT IDENT.
NB-95	1.254E-02	2.471E-02	5.699E-02	NOT IDENT.
NB-95M	1.116E-02	5.839E-02	1.177E-01	NOT IDENT.
ZR-95	1.684E-02	3.874E-02	9.179E-02	NOT IDENT.
NB-97	0.000E+00	1.960E+41	0.000E+00	SHORT HLIF
ZR-97	0.000E+00	4.669E+08	0.000E+00	SHORT HLIF
MO-99	1.683E+01	3.301E+01	7.647E+01	NOT IDENT.
TC-99M	0.000E+00	3.536E+23	0.000E+00	SHORT HLIF
RH-101	-6.940E-03	1.467E-02	2.748E-02	NOT IDENT.
RH-102	-2.700E-03	3.421E-02	6.922E-02	FAIL ABUN
RU-103	-1.790E-02	2.824E-02	5.117E-02	NOT IDENT.
RH-106	1.509E-02	2.200E-01	4.514E-01	NOT IDENT.
RU-106	1.509E-02	2.200E-01	4.514E-01	NOT IDENT.
AG-108M	9.582E-03	1.503E-02	3.574E-02	NOT IDENT.
CD-109	2.184E-01	3.295E-01	7.244E-01	NOT IDENT.
AG-110M	-4.466E-04	3.002E-02	6.550E-02	NOT IDENT.
SN-113	-1.211E-02	2.457E-02	4.728E-02	NOT IDENT.
CD-115	1.193E+01	3.072E+01	7.553E+01	NOT IDENT.
SB-124	2.607E-02	7.118E-02	1.733E-01	NOT IDENT.
SB-125	6.832E-03	4.799E-02	1.043E-01	NOT IDENT.
I-126	-8.678E-02	1.976E-01	3.631E-01	NOT IDENT.
SB-126	-5.294E-03	1.056E-01	2.199E-01	FAIL ABUN
SN-126	1.481E-02	3.255E-02	6.908E-02	FAIL ABUN
SB-127	6.589E-02	2.082E+00	4.437E+00	NOT IDENT.
I-131	8.310E-04	1.213E-01	2.512E-01	NOT IDENT.
I-132	0.000E+00	1.960E+41	0.000E+00	SHORT HLIF
TE-132	4.347E-01	1.393E+00	2.826E+00	FAIL ABUN
BA-133	-5.548E-03	2.467E-02	4.956E-02	NOT IDENT.
I-133	0.000E+00	4.063E+05	0.000E+00	SHORT HLIF
CS-134	1.271E-02	1.952E-02	4.921E-02	NOT IDENT.
CS-135	-1.314E-02	7.997E-02	1.493E-01	NOT IDENT.
I-135	0.000E+00	1.220E+22	0.000E+00	SHORT HLIF
CS-136	-2.324E-02	6.214E-02	1.285E-01	FAIL ABUN
BA-137M	-6.667E-03	2.097E-02	4.013E-02	NOT IDENT.
CS-137	-7.043E-03	2.216E-02	4.239E-02	NOT IDENT.
CE-139	-1.000E-02	1.609E-02	2.855E-02	NOT IDENT.
BA-140	5.864E-02	2.259E-01	4.908E-01	NOT IDENT.
LA-140	-2.045E-02	7.712E-02	1.576E-01	NOT IDENT.
CE-141	5.884E-03	3.336E-02	6.816E-02	NOT IDENT.
CE-143	0.000E+00	1.184E+03	0.000E+00	SHORT HLIF
CE-144	-1.813E-02	1.006E-01	1.955E-01	NOT IDENT.
PM-144	3.247E-03	2.172E-02	4.560E-02	NOT IDENT.
PR-144	2.518E-01	1.633E+00	3.430E+00	NOT IDENT.
PM-146	2.208E-02	2.147E-02	5.415E-02	NOT IDENT.
ND-147	-2.337E-04	4.697E-01	9.846E-01	NOT IDENT.
PM-147	-7.348E+01	3.763E+02	7.368E+02	NOT IDENT.
PM-149	-1.152E+02	3.029E+02	6.082E+02	NOT IDENT.
EU-150	-9.176E-03	1.324E-02	2.484E-02	NOT IDENT.
EU-152	7.182E-02	6.077E-02	1.107E-01	FAIL ABUN
GD-153	6.598E-04	4.513E-02	8.618E-02	NOT IDENT.
EU-154	-2.788E-02	5.538E-02	1.050E-01	NOT IDENT.
EU-155	-2.940E-02	4.851E-02	9.031E-02	NOT IDENT.
TB-160	1.043E-01	8.965E-02	2.326E-01	NOT IDENT.
HO-166M	-1.974E-02	3.562E-02	6.317E-02	FAIL ABUN
TM-171	-2.201E+00	1.725E+01	3.534E+01	NOT IDENT.
HF-172	-5.140E-02	8.765E-02	1.611E-01	FAIL ABUN
LU-172	-9.886E-03	2.287E-02	4.691E-02	FAIL ABUN
LU-176	-4.735E-03	1.320E-02	2.651E-02	NOT IDENT.
HF-181	2.688E-02	3.288E-02	7.542E-02	FAIL ABUN
TA-182	-1.201E-01	9.614E-02	1.150E-01	NOT IDENT.
RE-183	-8.348E-02	1.454E-01	2.591E-01	FAIL ABUN
RE-184	3.681E-03	9.074E-02	1.966E-01	NOT IDENT.
W-188	-8.627E-01	3.429E+00	7.087E+00	FAIL ABUN
IR-192	4.760E-03	1.794E-02	3.982E-02	FAIL ABUN
HG-203	4.643E-03	2.270E-02	4.877E-02	NOT IDENT.
BI-207	1.613E-02	3.325E-02	7.794E-02	NOT IDENT.
TL-208	4.725E-03	2.421E-02	5.144E-02	NOT IDENT.
PB-210	3.062E-02	3.459E+00	7.637E+00	NOT IDENT.
BI-211	-7.327E-02	1.262E-01	2.429E-01	NOT IDENT.
PB-211	-2.005E-01	3.285E-01	6.174E-01	NOT IDENT.
BI-212	-1.591E-01	2.450E-01	4.178E-01	NOT IDENT.
PB-212	-1.185E-02	2.714E-02	5.414E-02	NOT IDENT.
BI-214	3.962E-02	5.239E-02	1.172E-01	NOT IDENT.

PB-214	-5.405E-02	4.824E-02	8.476E-02	NOT IDENT.
RN-219	7.242E-02	2.101E-01	4.707E-01	NOT IDENT.
RN-222	3.962E-02	5.239E-02	1.172E-01	NOT IDENT.
RA-223	6.435E-02	3.080E-01	6.782E-01	FAIL ABUN
RA-224	-2.968E-01	2.982E-01	4.622E-01	NOT IDENT.
RA-226	3.962E-02	5.239E-02	1.172E-01	NOT IDENT.
AC-227	-8.820E-03	1.252E-01	2.400E-01	NOT IDENT.
TH-227	-8.820E-03	1.252E-01	2.400E-01	NOT IDENT.
AC-228	-5.481E-02	9.021E-02	1.728E-01	NOT IDENT.
RA-228	-5.481E-02	9.021E-02	1.728E-01	NOT IDENT.
TH-228	-1.185E-02	2.714E-02	5.414E-02	NOT IDENT.
TH-229	1.072E-01	2.576E-01	5.346E-01	NOT IDENT.
TH-230	3.962E-02	5.238E-02	1.172E-01	NOT IDENT.
PA-231	-2.374E-02	1.983E-01	4.222E-01	NOT IDENT.
TH-231	6.435E-02	3.080E-01	6.782E-01	NOT IDENT.
TH-232	-5.481E-02	9.021E-02	1.728E-01	NOT IDENT.
PA-233	-1.410E-02	2.734E-02	5.396E-02	NOT IDENT.
PA-234	2.167E-02	1.774E-01	3.974E-01	FAIL ABUN
PA-234M	-1.408E-01	2.061E+00	4.643E+00	NOT IDENT.
U-234	3.962E-02	5.238E-02	1.172E-01	NOT IDENT.
U-235	-7.152E-02	9.518E-02	1.673E-01	FAIL ABUN
NP-237	-1.410E-02	2.734E-02	5.396E-02	FAIL ABUN
NP-238	0.000E+00	6.348E+01	0.000E+00	SHORT HLIF
NP-239	-6.829E-02	1.409E-01	2.640E-01	NOT IDENT.
PU-239	2.426E+01	1.584E+02	3.261E+02	NOT IDENT.
AM-243	1.078E-02	2.767E-02	6.030E-02	NOT IDENT.
CM-243	3.064E-03	5.024E-02	1.043E-01	NOT IDENT.
BK-247	2.294E-02	4.359E-02	9.138E-02	NOT IDENT.
CM-247	1.252E-02	1.879E-02	4.440E-02	NOT IDENT.
CF-249	6.673E-03	2.288E-02	4.989E-02	NOT IDENT.
CF-251	-1.693E-02	5.894E-02	1.110E-01	NOT IDENT.

Nuclide Line Activity Report

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
SN-117M	156.02	-----	2.11	5.817E+00	-----	Line Not Found	-----
	158.56	16	86.40*	5.787E+00	1.535E-02	4.528E-02	105.19
TE-123M	159.00	16	84.00*	5.787E+00	1.579E-02	1.787E-02	105.19
TE-125M	109.28	8	0.27*	5.638E+00	2.383E+00	3.079E+00	292.42
TH-234	63.29	6	3.70*	2.111E+00	3.805E-01	3.805E-01	467.75
	92.59	22	4.23	4.869E+00	5.175E-01	5.175E-01	207.92
U-238	63.29	6	3.70*	2.111E+00	3.805E-01	3.805E-01	467.75
	92.59	22	4.23	4.869E+00	5.175E-01	5.175E-01	207.92
AM-241	59.54	13	35.90*	1.642E+00	1.098E-01	1.098E-01	162.66
ANH-511	511.00	14	100.00*	2.428E+00	2.782E-02	2.782E-02	228.88

Flag: "*" = Keyline

Total number of lines in spectrum 13
 Number of unidentified lines 0
 Number of lines tentatively identified by NID 13 100.00%

Nuclide Type :

Nuclide	Hlife	Decay	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
SN-117M	13.60D	2.95	1.535E-02	4.528E-02	4.763E-02	105.19	
TE-123M	119.20D	1.13	1.579E-02	1.787E-02	1.879E-02	105.19	
TE-125M	57.40D	1.29	2.383E+00	3.079E+00	9.004E+00	292.42	
TH-234	4.47E+09Y	1.00	3.805E-01	3.805E-01	17.80E-01	467.75	
U-238	4.47E+09Y	1.00	3.805E-01	3.805E-01	17.80E-01	467.75	
AM-241	432.60Y	1.00	1.098E-01	1.098E-01	1.786E-01	162.66	
ANH-511	1.00E+09Y	1.00	2.782E-02	2.782E-02	6.366E-02	228.88	
Total Activity :			3.313E+00	4.041E+00			

Grand Total Activity : 3.313E+00 4.041E+00

Flags: "K" = Keyline not found "M" = Manually accepted
 "E" = Manually edited "A" = Nuclide specific abn. limit

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
0	185.79	12	35	1.26	372.13	369	9	2.70E-03	****	5.41E+00	T
0	273.12	13	38	4.31	546.87	539	13	3.19E-03	****	4.13E+00	T
0	343.09	13	6	1.41	686.87	683	7	3.29E-03	86.3	3.41E+00	T
0	345.93	17	1	1.48	692.56	690	6	4.11E-03	57.8	3.39E+00	T
0	469.07	17	3	2.80	938.96	933	11	4.24E-03	66.2	2.61E+00	T
0	698.41	13	6	3.37	1397.90	1391	11	3.43E-03	93.3	1.88E+00	T
0	818.88	13	3	1.51	1639.00	1633	11	3.43E-03	77.0	1.66E+00	T

Flags: "T" = Tentatively associated

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*****
*
*               GEL Laboratories LLC
*               2040 Savage Road
*               Charleston, SC 29407
*****
*
*               DETECTOR AND SAMPLE DATA
*
* Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]R1203621685.CNF;1
* Acquisition date   : 3-OCT-2016 04:48:39 Sensitivity      : 3.000
* Detector ID        : GAM44 Energy tolerance: 1.500
* Elapsed live time  : 0 01:00:00.00 Abundance limit : 75.000
* Elapsed real time  : 0 01:00:00.56 Half life ratio  : *****
* Sample date        : 12-SEP-2016 00:00:00 Nuclide Library : SOLID
* Sample ID          : R1203621685 Analyst initials: MXR1
* Batch Number       : 1596387 Sample Quantity : 1.5534E+02 GRAM
* Wet wt corr        : 1.00000 Wet Weight      : 0.00000
*                   Dry Weight      : 0.00000
*****
*
*               CALIBRATION INFORMATION
*
* Eff. Cal. date     : 6-SEP-2016 04:59:25 Eff. Geometry   : CAN
* Eff. File          : DKA100:[CANBERRA.GAMMA]EFF_GAM44_CAN.CNF;3
*****

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Combined Critical Level Report

NOTE: Not all "Identified Nuclides" are valid.
 Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Lc (pCi/GRAM)
SN-117M	3.079E-02
TE-123M	1.352E-02
TE-125M	5.009E+00
TH-234	7.698E-01
U-238	7.698E-01
AM-241	1.029E-01
ANH-511	1.511E-02

---- Non-Identified Nuclides ----

Nuclide	Lc (pCi/GRAM)	
BE-7	1.180E-01	NOT IDENT.
NA-22	1.197E-02	NOT IDENT.
NA-24	0.000E+00	SHORT HLIF
AL-26	1.334E-02	NOT IDENT.
K-40	2.844E-01	NOT IDENT.
SC-46	2.165E-02	NOT IDENT.
V-48	3.487E-02	NOT IDENT.
CR-51	1.476E-01	NOT IDENT.
MN-54	1.812E-02	NOT IDENT.
CO-56	2.274E-02	NOT IDENT.
MN-56	0.000E+00	SHORT HLIF
CO-57	1.199E-02	NOT IDENT.
CO-58	2.442E-02	NOT IDENT.
FE-59	3.431E-02	NOT IDENT.
CO-60	1.453E-02	NOT IDENT.
ZN-65	3.239E-02	NOT IDENT.
GE-68	5.641E-01	NOT IDENT.
AS-73	7.640E-01	NOT IDENT.
AS-74	4.911E-02	NOT IDENT.
SE-75	2.463E-02	NOT IDENT.
BR-77	2.107E+01	NOT IDENT.
SR-82	1.706E-01	NOT IDENT.
RB-83	3.731E-02	NOT IDENT.
KR-85	5.827E+00	NOT IDENT.

SR-85	3.290E-02	NOT IDENT.
RB-86	5.024E-01	NOT IDENT.
Y-88	0.000E+00	NOT IDENT.
Y-91	1.138E+01	NOT IDENT.
NB-94	2.265E-02	NOT IDENT.
NB-95	2.366E-02	NOT IDENT.
NB-95M	5.130E-02	NOT IDENT.
ZR-95	3.710E-02	NOT IDENT.
NB-97	0.000E+00	SHORT HLIF
ZR-97	0.000E+00	SHORT HLIF
MO-99	3.173E+01	NOT IDENT.
TC-99M	0.000E+00	SHORT HLIF
RH-101	1.197E-02	NOT IDENT.
RH-102	2.865E-02	FAIL ABUN
RU-103	2.122E-02	NOT IDENT.
RH-106	1.915E-01	NOT IDENT.
RU-106	1.915E-01	NOT IDENT.
AG-108M	1.517E-02	NOT IDENT.
CD-109	3.185E-01	NOT IDENT.
AG-110M	2.649E-02	NOT IDENT.
SN-113	1.972E-02	NOT IDENT.
CD-115	3.008E+01	NOT IDENT.
SB-124	6.715E-02	NOT IDENT.
SB-125	4.394E-02	NOT IDENT.
I-126	1.489E-01	NOT IDENT.
SB-126	8.756E-02	FAIL ABUN
SN-126	3.027E-02	FAIL ABUN
SB-127	1.782E+00	NOT IDENT.
I-131	1.094E-01	NOT IDENT.
I-132	0.000E+00	SHORT HLIF
TE-132	1.249E+00	FAIL ABUN
BA-133	2.143E-02	NOT IDENT.
I-133	0.000E+00	SHORT HLIF
CS-134	1.989E-02	NOT IDENT.
CS-135	6.436E-02	NOT IDENT.
I-135	0.000E+00	SHORT HLIF
CS-136	4.551E-02	FAIL ABUN
BA-137M	1.625E-02	NOT IDENT.
CS-137	1.716E-02	NOT IDENT.
CE-139	1.257E-02	NOT IDENT.
BA-140	2.077E-01	NOT IDENT.
LA-140	5.584E-02	NOT IDENT.
CE-141	3.023E-02	NOT IDENT.
CE-143	0.000E+00	SHORT HLIF
CE-144	8.658E-02	NOT IDENT.
PM-144	1.907E-02	NOT IDENT.
PR-144	1.435E+00	NOT IDENT.
PM-146	2.316E-02	NOT IDENT.
ND-147	4.085E-01	NOT IDENT.
PM-147	3.257E+02	NOT IDENT.
PM-149	2.609E+02	NOT IDENT.
EU-150	1.037E-02	NOT IDENT.
EU-152	4.774E-02	FAIL ABUN
GD-153	3.803E-02	NOT IDENT.
EU-154	3.609E-02	NOT IDENT.
EU-155	3.899E-02	NOT IDENT.
TB-160	9.891E-02	NOT IDENT.
HO-166M	2.488E-02	FAIL ABUN
TM-171	1.577E+01	NOT IDENT.
HF-172	6.978E-02	FAIL ABUN
LU-172	1.524E-02	FAIL ABUN
LU-176	1.130E-02	NOT IDENT.
HF-181	3.304E-02	FAIL ABUN
TA-182	3.420E-02	NOT IDENT.
RE-183	1.115E-01	FAIL ABUN
RE-184	8.097E-02	NOT IDENT.
W-188	3.005E+00	FAIL ABUN
IR-192	1.714E-02	FAIL ABUN
HG-203	2.153E-02	NOT IDENT.
BI-207	3.233E-02	NOT IDENT.
TL-208	2.207E-02	NOT IDENT.
PB-210	3.297E+00	NOT IDENT.
BI-211	1.056E-01	NOT IDENT.
PB-211	2.477E-01	NOT IDENT.
BI-212	1.536E-01	NOT IDENT.
PB-212	2.361E-02	NOT IDENT.
BI-214	5.154E-02	NOT IDENT.
PB-214	3.662E-02	NOT IDENT.

RN-219	2.007E-01	NOT IDENT.
RN-222	5.154E-02	NOT IDENT.
RA-223	2.911E-01	FAIL ABUN
RA-224	1.941E-01	NOT IDENT.
RA-226	5.154E-02	NOT IDENT.
AC-227	1.033E-01	NOT IDENT.
TH-227	1.033E-01	NOT IDENT.
AC-228	6.941E-02	NOT IDENT.
RA-228	6.941E-02	NOT IDENT.
TH-228	2.361E-02	NOT IDENT.
TH-229	2.375E-01	NOT IDENT.
TH-230	5.154E-02	NOT IDENT.
PA-231	1.774E-01	NOT IDENT.
TH-231	2.911E-01	NOT IDENT.
TH-232	6.941E-02	NOT IDENT.
PA-233	2.215E-02	NOT IDENT.
PA-234	1.610E-01	FAIL ABUN
PA-234M	1.759E+00	NOT IDENT.
U-234	5.154E-02	NOT IDENT.
U-235	7.288E-02	FAIL ABUN
NP-237	2.215E-02	FAIL ABUN
NP-238	0.000E+00	SHORT HLIF
NP-239	1.167E-01	NOT IDENT.
PU-239	1.443E+02	NOT IDENT.
AM-243	2.697E-02	NOT IDENT.
CM-243	4.586E-02	NOT IDENT.
BK-247	4.026E-02	NOT IDENT.
CM-247	1.902E-02	NOT IDENT.
CF-249	2.158E-02	NOT IDENT.
CF-251	4.825E-02	NOT IDENT.

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*****
*
*           GEL Laboratories LLC
*           2040 Savage Road
*           Charleston, SC 29407
*****
*
*           DETECTOR AND SAMPLE DATA
*
* Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]R1203621685.CNF;1
* Acquisition date   : 3-OCT-2016 04:48:39 Sensitivity      : 3.000
* Detector ID        : GAM44 Energy tolerance: 1.500
* Elapsed live time  : 0 01:00:00.00 Abundance limit : 75.000
* Elapsed real time  : 0 01:00:00.56 Half life ratio  : *****
* Sample date        : 12-SEP-2016 00:00:00 Nuclide Library : SOLID
* Sample ID          : R1203621685 Analyst initials: MXR1
* Batch Number       : 1596387 Sample Quantity : 1.5534E+02 GRAM
*                   : Quantity Err(%) : 1.2875E-03 %
* Wet wt corr        : 1.00000 Wet Weight      : 0.00000
*                   : Dry Weight       : 0.00000
*****
*
*           CALIBRATION INFORMATION
*
* Eff. Cal. date     : 6-SEP-2016 04:59:25 Eff. Geometry   : CAN
* Eff. File          : DKA100:[CANBERRA.GAMMA]EFF_GAM44_CAN.CNF;3
*****

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Combined Activity-MDA Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM)	Act Error (1.96-sigma)	TPU (1.96-sigma)
SN-117M	4.528E-02	4.672E-02	4.672E-02
TE-123M	1.787E-02	1.843E-02	1.843E-02
TE-125M	3.079E+00	8.826E+00	8.826E+00
TH-234	3.805E-01	1.746E+00	1.746E+00
U-238	3.805E-01	1.746E+00	1.746E+00
AM-241	1.098E-01	1.753E-01	1.753E-01
ANH-511	2.782E-02	6.240E-02	6.240E-02

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/GRAM)	K.L Act error (1.96-sigma)	TPU (1.96-sigma)	
BE-7	-1.073E-01	1.660E-01	1.729E-01	NOT IDENT.
NA-22	-1.072E-02	1.925E-02	1.985E-02	NOT IDENT.
NA-24	1.023E+07	3.623E+08	3.623E+08	SHORT HLIF
AL-26	-7.083E-03	2.099E-02	2.123E-02	NOT IDENT.
K-40	7.906E-02	2.638E-01	2.662E-01	NOT IDENT.
SC-46	5.955E-03	2.287E-02	2.303E-02	NOT IDENT.
V-48	1.004E-02	3.587E-02	3.616E-02	NOT IDENT.
CR-51	-1.811E-01	2.005E-01	2.165E-01	NOT IDENT.
MN-54	7.585E-04	2.161E-02	2.161E-02	NOT IDENT.
CO-56	0.000E+00	2.747E-02	0.000E+00	NOT IDENT.
MN-56	0.000E+00	7.571E+41	0.000E+00	SHORT HLIF
CO-57	4.404E-03	1.274E-02	1.290E-02	NOT IDENT.
CO-58	8.887E-03	2.688E-02	2.718E-02	NOT IDENT.
FE-59	-1.120E-02	4.405E-02	4.434E-02	NOT IDENT.
CO-60	-8.835E-03	2.106E-02	2.143E-02	NOT IDENT.
ZN-65	-1.326E-02	4.223E-02	4.265E-02	NOT IDENT.
GE-68	-1.927E-01	7.109E-01	7.162E-01	NOT IDENT.
AS-73	1.714E-01	8.007E-01	8.044E-01	NOT IDENT.
AS-74	-1.588E-02	6.179E-02	6.220E-02	NOT IDENT.
SE-75	2.122E-02	2.541E-02	2.715E-02	NOT IDENT.
BR-77	-1.578E+01	2.699E+01	2.791E+01	NOT IDENT.
SR-82	-6.920E-02	2.270E-01	2.292E-01	NOT IDENT.
RB-83	-8.101E-03	4.470E-02	4.485E-02	NOT IDENT.

KR-85	8.016E+00	5.528E+00	6.605E+00	NOT IDENT.
SR-85	4.519E-02	3.122E-02	3.728E-02	NOT IDENT.
RB-86	2.267E-01	5.097E-01	5.199E-01	NOT IDENT.
Y-88	-6.030E-03	1.182E-02	1.213E-02	NOT IDENT.
Y-91	6.078E+00	1.148E+01	1.180E+01	NOT IDENT.
NB-94	2.616E-02	2.196E-02	2.493E-02	NOT IDENT.
NB-95	1.254E-02	2.471E-02	2.535E-02	NOT IDENT.
NB-95M	1.116E-02	5.839E-02	5.861E-02	NOT IDENT.
ZR-95	1.684E-02	3.875E-02	3.948E-02	NOT IDENT.
NB-97	1.000E+41	2.493E+41	0.000E+00	SHORT HLIF
ZR-97	-1.719E+08	4.669E+08	4.733E+08	SHORT HLIF
MO-99	1.683E+01	3.302E+01	3.388E+01	NOT IDENT.
TC-99M	1.248E+23	3.538E+23	0.000E+00	SHORT HLIF
RH-101	-6.940E-03	1.473E-02	1.506E-02	NOT IDENT.
RH-102	-2.700E-03	3.421E-02	3.424E-02	FAIL ABUN
RU-103	-1.790E-02	2.825E-02	2.938E-02	NOT IDENT.
RH-106	1.509E-02	2.200E-01	2.201E-01	NOT IDENT.
RU-106	1.509E-02	2.200E-01	2.201E-01	NOT IDENT.
AG-108M	9.582E-03	1.504E-02	1.565E-02	NOT IDENT.
CD-109	2.184E-01	3.299E-01	3.443E-01	NOT IDENT.
AG-110M	-4.466E-04	3.002E-02	3.002E-02	NOT IDENT.
SN-113	-1.211E-02	2.458E-02	2.518E-02	NOT IDENT.
CD-115	1.193E+01	3.073E+01	3.119E+01	NOT IDENT.
SB-124	2.607E-02	7.120E-02	7.216E-02	NOT IDENT.
SB-125	6.832E-03	4.799E-02	4.809E-02	NOT IDENT.
I-126	-8.678E-02	1.977E-01	2.015E-01	NOT IDENT.
SB-126	-5.294E-03	1.056E-01	1.056E-01	FAIL ABUN
SN-126	1.481E-02	3.256E-02	3.324E-02	FAIL ABUN
SB-127	6.589E-02	2.082E+00	2.082E+00	NOT IDENT.
I-131	8.310E-04	1.213E-01	1.213E-01	NOT IDENT.
I-132	1.000E+41	3.675E+41	0.000E+00	SHORT HLIF
TE-132	4.347E-01	1.393E+00	1.407E+00	FAIL ABUN
BA-133	-5.548E-03	2.467E-02	2.479E-02	NOT IDENT.
I-133	1.107E+05	4.066E+05	4.096E+05	SHORT HLIF
CS-134	1.271E-02	1.952E-02	2.035E-02	NOT IDENT.
CS-135	-1.314E-02	7.997E-02	8.019E-02	NOT IDENT.
I-135	7.823E+21	1.278E+22	0.000E+00	SHORT HLIF
CS-136	-2.324E-02	6.217E-02	6.304E-02	FAIL ABUN
BA-137M	-6.667E-03	2.098E-02	2.119E-02	NOT IDENT.
CS-137	-7.043E-03	2.216E-02	2.239E-02	NOT IDENT.
CE-139	-1.000E-02	1.622E-02	1.683E-02	NOT IDENT.
BA-140	5.864E-02	2.259E-01	2.275E-01	NOT IDENT.
LA-140	-2.045E-02	7.713E-02	7.767E-02	NOT IDENT.
CE-141	5.884E-03	3.336E-02	3.346E-02	NOT IDENT.
CE-143	-5.253E+02	1.185E+03	1.208E+03	SHORT HLIF
CE-144	-1.813E-02	1.006E-01	1.009E-01	NOT IDENT.
PM-144	3.247E-03	2.172E-02	2.177E-02	NOT IDENT.
PR-144	2.518E-01	1.633E+00	1.637E+00	NOT IDENT.
PM-146	2.208E-02	2.152E-02	2.371E-02	NOT IDENT.
ND-147	-2.337E-04	4.697E-01	4.697E-01	NOT IDENT.
PM-147	-7.348E+01	3.764E+02	3.778E+02	NOT IDENT.
PM-149	-1.152E+02	3.033E+02	3.077E+02	NOT IDENT.
EU-150	-9.176E-03	1.324E-02	1.388E-02	NOT IDENT.
EU-152	7.182E-02	6.090E-02	6.897E-02	FAIL ABUN
GD-153	6.598E-04	4.513E-02	4.514E-02	NOT IDENT.
EU-154	-2.788E-02	5.539E-02	5.680E-02	NOT IDENT.
EU-155	-2.940E-02	4.856E-02	5.033E-02	NOT IDENT.
TB-160	1.043E-01	8.985E-02	1.014E-01	NOT IDENT.
HO-166M	-1.974E-02	3.564E-02	3.673E-02	FAIL ABUN
TM-171	-2.201E+00	1.726E+01	1.728E+01	NOT IDENT.
HF-172	-5.140E-02	8.805E-02	9.104E-02	FAIL ABUN
LU-172	-9.886E-03	2.289E-02	2.332E-02	FAIL ABUN
LU-176	-4.735E-03	1.320E-02	1.337E-02	NOT IDENT.
HF-181	2.688E-02	3.290E-02	3.506E-02	FAIL ABUN
TA-182	-1.201E-01	9.625E-02	1.104E-01	NOT IDENT.
RE-183	-8.348E-02	1.457E-01	1.504E-01	FAIL ABUN
RE-184	3.681E-03	9.074E-02	9.076E-02	NOT IDENT.
W-188	-8.627E-01	3.430E+00	3.452E+00	FAIL ABUN
IR-192	4.760E-03	1.794E-02	1.807E-02	FAIL ABUN
HG-203	4.643E-03	2.270E-02	2.280E-02	NOT IDENT.
BI-207	1.613E-02	3.326E-02	3.405E-02	NOT IDENT.
TL-208	4.725E-03	2.421E-02	2.430E-02	NOT IDENT.
PB-210	3.062E-02	3.459E+00	3.459E+00	NOT IDENT.
BI-211	-7.327E-02	1.263E-01	1.305E-01	NOT IDENT.
PB-211	-2.005E-01	3.286E-01	3.408E-01	NOT IDENT.
BI-212	-1.591E-01	2.452E-01	2.554E-01	NOT IDENT.
PB-212	-1.185E-02	2.715E-02	2.767E-02	NOT IDENT.
BI-214	3.962E-02	5.241E-02	5.537E-02	NOT IDENT.

PB-214	-5.405E-02	4.829E-02	5.409E-02	NOT IDENT.
RN-219	7.242E-02	2.103E-01	2.128E-01	NOT IDENT.
RN-222	3.962E-02	5.241E-02	5.537E-02	NOT IDENT.
RA-223	6.435E-02	3.081E-01	3.094E-01	FAIL ABUN
RA-224	-2.968E-01	2.987E-01	3.272E-01	NOT IDENT.
RA-226	3.962E-02	5.241E-02	5.537E-02	NOT IDENT.
AC-227	-8.820E-03	1.252E-01	1.252E-01	NOT IDENT.
TH-227	-8.820E-03	1.252E-01	1.252E-01	NOT IDENT.
AC-228	-5.481E-02	9.025E-02	9.357E-02	NOT IDENT.
RA-228	-5.481E-02	9.025E-02	9.357E-02	NOT IDENT.
TH-228	-1.185E-02	2.715E-02	2.767E-02	NOT IDENT.
TH-229	1.072E-01	2.577E-01	2.622E-01	NOT IDENT.
TH-230	3.962E-02	5.241E-02	5.537E-02	NOT IDENT.
PA-231	-2.374E-02	1.984E-01	1.987E-01	NOT IDENT.
TH-231	6.435E-02	3.081E-01	3.094E-01	NOT IDENT.
TH-232	-5.481E-02	9.025E-02	9.357E-02	NOT IDENT.
PA-233	-1.410E-02	2.735E-02	2.808E-02	NOT IDENT.
PA-234	2.167E-02	1.791E-01	1.794E-01	FAIL ABUN
PA-234M	-1.408E-01	2.061E+00	2.062E+00	NOT IDENT.
U-234	3.962E-02	5.241E-02	5.537E-02	NOT IDENT.
U-235	-7.152E-02	9.524E-02	1.006E-01	FAIL ABUN
NP-237	-1.410E-02	2.735E-02	2.808E-02	FAIL ABUN
NP-238	3.788E+00	6.348E+01	6.350E+01	SHORT HLIF
NP-239	-6.829E-02	1.410E-01	1.443E-01	NOT IDENT.
PU-239	2.426E+01	1.584E+02	1.588E+02	NOT IDENT.
AM-243	1.078E-02	2.768E-02	2.810E-02	NOT IDENT.
CM-243	3.064E-03	5.024E-02	5.026E-02	NOT IDENT.
BK-247	2.294E-02	4.383E-02	4.504E-02	NOT IDENT.
CM-247	1.252E-02	1.890E-02	1.973E-02	NOT IDENT.
CF-249	6.673E-03	2.289E-02	2.308E-02	NOT IDENT.
CF-251	-1.693E-02	5.897E-02	5.946E-02	NOT IDENT.

 * GEL Laboratories LLC *
 * 2040 Savage Road *
 * Charleston, SC 29407 *
 * GAMMA SPECTROSCOPY BACKGROUND REPORT *

ENERGY	MDA COUNTS	ENERGY	MDA COUNTS	ENERGY	MDA COUNTS
43.53	14.9948	87.09	15.7644	136.47	17.1838
45.60	16.8701	87.57	11.8350	140.51	19.4485
46.54	13.3577	88.03	10.5299	143.76	24.9692
49.72	17.9833	88.34	10.5365	144.24	20.6412
51.35	18.0699	88.47	10.5393	145.44	18.5004
51.87	16.2875	89.96	18.4993	152.43	23.0806
52.39	21.7493	90.64	16.8706	153.25	19.8059
52.97	22.6933	91.11	16.8864	154.21	22.0355
53.44	18.1789	92.59	16.9359	156.02	20.6178
54.07	17.3008	93.35	16.9612	158.56	18.8420
57.36	0.0000	94.56	17.0013	159.00	23.2892
57.53	14.7090	94.65	17.0043	162.33	16.7095
57.98	19.6358	94.67	17.0049	162.66	23.4036
59.27	23.0903	94.87	17.0115	163.33	23.4244
59.32	23.0933	97.43	18.7713	165.86	26.8601
59.54	23.1068	98.43	20.1503	176.31	11.3425
60.96	27.8317	98.44	20.1507	176.60	11.3466
61.17	27.8469	99.53	20.1921	177.52	18.1755
62.93	22.3788	100.11	24.2567	181.07	14.8327
63.29	22.3993	102.03	13.1860	181.52	12.5576
63.58	22.4158	103.18	17.2795	184.41	21.3851
64.28	19.9604	103.37	17.2856	185.72	11.4746
66.73	12.5515	105.21	20.4041	193.51	16.2138
67.24	14.1380	105.31	20.4077	197.03	23.2578
67.68	18.8710	106.12	17.3718	198.01	15.1346
67.75	18.8741	106.47	17.3827	201.83	23.3862
69.67	19.9097	109.28	23.2927	203.43	12.8858
70.83	13.3097	111.00	24.7372	205.31	21.1303
72.81	21.0122	111.76	20.6415	210.85	20.0796
72.87	21.0152	114.06	27.9762	215.65	16.6231
74.66	19.1833	116.30	29.1228	222.11	8.3692
74.82	19.1904	116.74	26.0218	227.09	19.2300
74.97	19.1969	119.76	26.1528	227.38	13.2246
77.11	18.3251	121.12	22.0174	228.16	15.6418
78.74	21.2952	121.22	22.0211	228.18	14.4390
79.69	16.4896	121.78	14.6941	235.69	13.3381
80.12	23.3013	122.06	17.8510	235.96	14.5545
80.19	23.3047	122.92	22.0819	238.63	9.7292
80.57	20.4085	123.07	18.9321	238.98	10.9492
81.00	18.4821	123.68	18.9507	240.99	20.7234
81.07	15.5662	125.81	21.1284	242.00	9.7621
81.75	25.3319	127.23	21.1758	244.70	15.9058
83.79	21.5278	127.91	16.9590	252.40	14.7929
84.00	18.6005	129.30	18.0581	252.80	11.0989
85.43	18.6562	131.20	21.3080	254.15	0.0000
86.55	13.7786	133.02	18.1624	256.23	13.6100
86.79	13.7853	133.52	22.4532	260.90	9.9421
86.94	13.7897	136.00	22.5378	264.66	11.2242

ENERGY	MDA COUNTS	ENERGY	MDA COUNTS	ENERGY	MDA COUNTS
264.80	12.4731	364.49	15.3423	600.60	8.3102
265.00	12.4753	366.42	16.2675	602.52	0.0000
268.22	15.0150	372.51	8.1696	604.72	11.4498
269.46	11.2742	375.05	8.1846	607.14	13.5475
270.03	13.7866	377.52	7.2879	609.32	6.2595
271.23	14.2203	383.85	12.8111	610.33	8.3499
273.65	14.2514	388.16	11.0142	614.28	5.2289
276.40	12.6062	388.63	11.0176	618.01	7.3335
277.37	20.1875	391.69	12.8812	620.36	4.1953
277.60	20.1914	400.66	13.8864	621.93	8.3971
278.00	20.1987	401.81	8.3383	630.19	0.0000
279.20	16.8506	402.40	6.4880	631.29	8.4349
279.54	16.8555	404.85	10.2122	633.25	8.4427
279.70	16.0150	410.95	14.9150	634.78	10.5611
280.46	14.3389	413.71	11.2068	635.95	11.6235
283.69	15.2260	414.70	12.1486	636.99	6.3433
284.31	13.5417	423.72	6.5804	645.85	7.4312
285.41	15.2490	427.09	8.4791	657.76	3.2024
285.90	16.1031	427.87	8.4833	657.90	0.0000
287.50	15.2772	433.94	5.6776	661.66	8.5550
290.67	12.7661	439.40	8.5459	664.57	0.0000
293.27	0.0000	453.88	3.8327	666.33	10.7166
295.22	12.8162	463.37	10.4084	666.50	8.5739
295.96	9.4046	468.07	3.8660	667.71	0.0000
298.58	11.9962	473.00	7.2702	677.62	7.5400
299.98	12.8683	475.06	1.9411	685.70	5.4053
300.09	12.8696	476.78	9.7154	695.00	9.7694
300.13	12.8699	477.60	8.7480	696.49	7.6033
301.36	10.3066	482.18	8.7719	696.51	7.6036
302.85	12.8995	487.02	11.7290	697.00	7.6050
304.50	11.1952	492.35	13.7261	697.30	7.6061
304.85	8.6141	497.08	13.7636	697.49	7.6067
306.78	14.6678	505.52	16.2996	702.65	3.2673
308.46	10.3682	507.63	0.0000	706.68	7.6372
311.90	11.2642	511.00	9.9093	711.68	8.7471
316.51	10.4370	514.00	9.9259	720.70	5.4883
319.41	12.2050	514.00	9.9259	721.93	0.0000
320.08	14.8283	520.40	9.9613	722.78	1.0986
321.04	12.2209	520.69	9.9630	722.91	3.2960
323.87	10.4990	522.65	0.0000	723.31	3.2966
325.23	11.3864	527.90	3.0007	724.19	5.4964
328.76	10.5398	528.26	3.0013	727.33	6.6045
333.37	16.7487	529.59	6.0071	733.00	5.5170
333.97	14.9926	529.87	0.0000	735.93	9.9426
334.37	15.8796	531.02	8.0156	737.46	4.4219
338.28	15.9280	537.26	8.0430	739.50	4.4256
338.32	15.9283	546.56	0.0000	747.24	4.4399
340.48	10.6367	552.55	8.1087	748.06	1.1104
340.55	10.6372	563.25	12.2314	752.31	5.5615
344.28	2.6669	569.33	5.1125	753.82	1.1130
345.93	6.6757	569.50	5.1129	756.73	3.3430
351.06	14.2969	569.70	5.1135	756.80	3.3431
351.93	19.6707	583.19	5.1489	763.94	7.8234
355.39	0.0000	584.27	11.3339	765.81	4.4740
356.01	16.1433	595.83	7.2544	766.42	4.4749

ENERGY	MDA COUNTS	ENERGY	MDA COUNTS	ENERGY	MDA COUNTS
766.84	4.4757	1002.74	1.8284	1678.03	0.0000
772.60	0.0000	1004.73	3.6593	1690.97	2.1854
776.52	6.7400	1021.30	0.0000	1750.46	0.0000
777.92	5.6197	1025.87	0.0000	1764.49	2.2188
778.90	7.8707	1028.54	0.0000	1770.23	3.3322
783.70	9.0124	1037.84	3.6985	1771.35	0.0000
785.37	5.6366	1038.76	0.0000	1791.20	0.0000
792.07	5.6517	1046.59	3.7085	1808.65	2.2385
794.95	2.2632	1048.07	3.7104	1810.72	0.0000
795.86	2.2640	1049.04	3.7114	1836.06	0.9002
801.95	6.8083	1050.41	3.7131		
810.06	3.4149	1063.66	4.6606		
810.29	3.4153	1077.00	2.8079		
810.45	5.6923	1077.34	5.6162		
810.76	5.6932	1085.87	1.8770		
815.77	5.1337	1093.63	2.8222		
818.51	5.7102	1099.45	3.7695		
832.01	8.0356	1112.07	1.8920		
834.85	5.7458	1112.84	4.7308		
835.71	5.7479	1115.54	4.7348		
836.80	0.0000	1120.29	4.7415		
846.75	0.0000	1120.55	5.6902		
846.77	6.9263	1121.30	2.8456		
856.80	5.7935	1129.67	1.9019		
860.56	5.8016	1131.51	0.0000		
871.09	4.6592	1147.95	0.0000		
873.19	2.3314	1173.23	5.7784		
875.33	0.0000	1177.95	10.6079		
879.38	2.6288	1189.05	1.9348		
880.51	6.1363	1204.77	2.9150		
883.24	9.6522	1221.41	7.8096		
884.68	6.1455	1231.02	0.9788		
889.28	4.3970	1235.36	3.9197		
894.76	5.2868	1238.28	0.0000		
898.04	9.7036	1260.41	0.0000		
900.72	7.9470	1271.87	1.9794		
903.28	7.0703	1274.44	3.9614		
911.20	7.0903	1274.54	3.9614		
912.08	7.0925	1291.59	1.9897		
923.98	0.0000	1298.22	0.0000		
926.50	3.5642	1312.11	5.0012		
929.11	4.4592	1332.49	4.0222		
937.49	3.5778	1362.66	0.0000		
944.13	3.5859	1365.19	3.0417		
946.00	5.3824	1368.63	0.0000		
949.00	5.3879	1384.29	2.0376		
954.55	0.0000	1408.01	2.0496		
962.31	5.4122	1457.56	0.0000		
964.08	3.6104	1460.82	0.0000		
966.17	3.6129	1489.16	2.0898		
968.97	4.5204	1505.03	1.0488		
983.53	1.8170	1584.12	4.2712		
984.45	0.0000	1596.21	3.2119		
996.26	3.6492	1620.50	3.2291		
1001.03	3.6549	1621.92	4.3069		

```

*****
*                               GEL Laboratories LLC                               *
*                               2040 Savage Road                               *
*                               Charleston, SC 29407                          *
*****
Configuration : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]R1203621686.CNF;1
Background file : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]BKG_GAM05.CNF;477
Background date : 2-OCT-2016 11:00:07.
Sample date      : 15-DEC-2015 10:14:00 Acquisition date : 3-OCT-2016 05:34:41.
Sample ID       : R1203621686 Sample quantity : 1.55344E+02 GRAM
Detector name   : GAM05 Detector geometry: CAN
Elapsed live time: 0 01:00:00.00 Elapsed real time: 0 01:00:00.56 0.0%
Energy tolerance : 1.50000 keV Analyst Initials : MXR1
Abundance limit : 75.00000 Sensitivity : 3.00000
Batch ID        : 1596387 Detector SN# :
Matrix Spike ID : LCS ID : 1556
*****

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BACKGROUND CORRECTED SAMPLE PEAK REPORT

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	39.41	39	104	1.66	80.65	78	8	1.08E-02	47.9	
2	0	46.10*	122	153	0.83	94.01	89	9	3.39E-02	21.5	
3	0	52.64*	23	124	1.36	107.09	104	8	6.50E-03	86.9	
4	0	62.67*	18	264	0.97	127.13	124	10	4.90E-03	177.5	
5	2	74.46*	165	152	0.83	150.71	147	12	4.58E-02	13.5	2.99E+00
6	2	76.74*	325	117	0.74	155.26	147	12	9.02E-02	7.3	
7	4	83.94*	59	131	1.15	169.66	166	13	1.65E-02	33.8	4.23E+00
8	4	86.80*	106	110	1.06	175.37	166	13	2.94E-02	18.0	
9	0	89.66	60	118	0.98	181.08	178	6	1.67E-02	31.3	
10	0	92.75*	122	149	1.18	187.26	184	10	3.38E-02	22.5	
11	0	98.79*	38	102	0.97	199.34	195	9	1.07E-02	50.6	
12	0	128.42	26	82	1.79	258.54	256	7	7.35E-03	59.7	
13	0	185.70*	94	85	1.42	373.02	367	11	2.60E-02	22.8	
14	0	209.00	57	88	1.30	419.59	415	10	1.59E-02	33.3	
15	3	238.36*	370	68	0.98	478.27	473	17	1.03E-01	6.3	3.57E+00
16	3	241.54	110	62	1.50	484.64	473	17	3.04E-02	18.6	
17	0	294.85*	168	36	1.28	591.18	585	12	4.66E-02	10.7	
18	0	300.50	10	32	0.81	602.46	598	6	2.89E-03	90.9	
19	0	320.44	39	70	6.79	642.32	633	16	1.10E-02	50.5	
20	3	338.07*	48	57	1.63	677.56	672	23	1.33E-02	33.6	6.11E-01
21	3	341.31	20	53	1.66	684.03	672	23	5.50E-03	75.3	
22	0	351.70*	249	56	1.02	704.80	700	9	6.92E-02	8.5	
23	0	463.29	12	24	1.08	927.83	923	7	3.23E-03	76.5	
24	0	510.89*	49	41	1.85	1022.97	1015	17	1.37E-02	38.6	
25	0	583.01*	89	33	1.16	1167.10	1161	12	2.46E-02	17.1	
26	0	609.20*	173	27	1.26	1219.46	1213	12	4.80E-02	9.9	
27	0	661.10	37	21	1.10	1323.19	1317	12	1.03E-02	29.8	
28	0	672.89	12	16	0.97	1346.74	1342	8	3.32E-03	66.9	
29	0	728.30	31	18	1.36	1457.50	1452	12	8.61E-03	32.7	
30	0	755.76	17	5	1.05	1512.38	1507	10	4.72E-03	34.6	
31	0	769.47	40	12	3.41	1539.79	1533	17	1.12E-02	25.7	
32	0	786.00	20	6	2.13	1572.82	1568	9	5.49E-03	32.5	
33	0	790.90	4	9	0.50	1582.61	1579	8	1.09E-03	137.3	
34	0	857.31	10	6	1.45	1715.35	1711	7	2.71E-03	54.5	

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
35	0	861.68*	7	15	3.38	1724.08	1717	10	2.00E-03	109.9	
36	0	880.47	7	24	4.25	1761.64	1752	11	1.84E-03	150.5	
37	0	911.91*	100	17	1.97	1824.49	1818	17	2.78E-02	13.8	
38	0	956.16	21	6	4.85	1912.92	1907	12	5.76E-03	32.3	
39	0	969.04	53	4	1.97	1938.66	1934	9	1.46E-02	15.6	
40	0	1120.22*	52	9	1.94	2240.85	2235	13	1.46E-02	18.8	
41	0	1239.18	10	13	0.77	2478.61	2473	8	2.66E-03	74.5	
42	0	1252.83	17	2	1.48	2505.90	2501	9	4.64E-03	29.4	
43	0	1346.09	10	5	1.08	2692.32	2686	9	2.64E-03	51.7	
44	0	1378.33	16	5	3.53	2756.75	2752	10	4.44E-03	36.2	
45	0	1461.01*	365	0	2.37	2922.00	2914	15	1.01E-01	5.3	
46	0	1510.47	10	6	1.91	3020.87	3015	10	2.65E-03	61.8	
47	0	1764.84	42	3	1.77	3529.33	3523	12	1.17E-02	17.4	

Flag: "*" = Peak area was modified by background subtraction

```

Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]R1203621686.CNF;1
Analyses by       : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.4,INTERF V2.4
Sample title      : MXR1
Sample date       : 15-DEC-2015 10:14:00 Acquisition date : 3-OCT-2016 05:34:41
Sample ID         : R1203621686 Sample quantity   : 155.34 GRAM
Sample type       : SOLID Sample geometry    :
Detector name     : GAMMA5 Detector geometry: CAN
Elapsed live time: 0 01:00:00.00 Elapsed real time: 0 01:00:00.56 0.0%
Energy tolerance  : 1.50 keV Half life ratio   : 10.00
Errors propagated: No Systematic Error   : 0.00 %
Efficiency type   : Linear Efficiencies at   : Peak Energy
Abundance limit   : 75.00
    
```

Interference Report

Interfering		Interfered	
Nuclide	Line	Nuclide	Line
PB-214	242.00	RA-224	240.99
PB-214	87.09	TH-229	85.43
PB-214	87.09	SN-126	86.94
PB-214	87.09	SN-126	87.57
PB-214	87.09	CD-109	88.03
PB-214	74.82	AM-243	74.66
PB-214	74.82	TH-228	74.82
PB-214	74.82	PB-212	74.82
HF-172	52.97	TM-171	51.35
HF-172	52.97	TM-171	52.39
HF-172	52.97	AS-73	53.44
HF-172	52.97	HF-172	54.07
PB-214	351.93	BI-211	351.06

Nuclide Type:

Nuclide	Energy	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error	Status
K-40	1460.82	10.66*	1.244E+00	1.289E+01	1.289E+01	10.55	OK
CD-109	88.03	3.70*	8.913E+00	1.003E+00	1.557E+00	74.94	OK
SN-126	64.28	9.60	9.093E+00	-----	Line Not Found	-----	Absent
	86.94	8.90	8.913E+00	4.170E-01	4.170E-01	74.94	OK
	87.57	37.00*	8.913E+00	1.003E-01	1.003E-01	74.94	OK
BA-137M	661.66	89.90*	2.418E+00	8.692E-02	8.855E-02	59.56	OK
CS-137	661.66	85.10*	2.418E+00	9.183E-02	9.354E-02	59.56	OK
TL-208	277.37	6.60	4.923E+00	-----	Line Not Found	-----	Absent
	583.19	85.00*	2.674E+00	2.020E-01	2.020E-01	34.12	OK
	860.56	12.50	1.957E+00	1.466E-01	1.466E-01	219.85	OK
PB-210	46.54	4.25*	9.664E+00	1.956E+00	2.005E+00	43.04	OK
BI-212	727.33	6.67*	2.239E+00	1.051E+00	1.051E+00	65.48	OK
	785.37	1.10	2.106E+00	4.283E+00	4.283E+00	64.93	OK
	1620.50	1.47	1.126E+00	-----	Line Not Found	-----	Absent
PB-212	74.82	10.28	8.980E+00	5.173E-01	5.173E-01	64.02	OK
	77.11	17.10	8.967E+00	1.335E+00	1.335E+00	14.70	OK
	238.63	43.60*	5.564E+00	8.658E-01	8.658E-01	12.52	OK
	300.09	3.30	4.608E+00	3.794E-01	3.794E-01	181.80	OK
BI-214	609.32	45.49*	2.581E+00	7.590E-01	7.593E-01	19.78	OK
	1120.29	14.92	1.576E+00	1.075E+00	1.076E+00	37.59	OK
	1764.49	15.30	1.032E+00	1.221E+00	1.221E+00	34.85	OK
PB-214	74.82	5.80	8.977E+00	-----	Line Not Found	-----	<<INT Reject
	77.11	9.70	8.967E+00	2.353E+00	2.354E+00	14.70	OK
	87.09	3.41	8.912E+00	-----	Line Not Found	-----	<<INT Reject
	242.00	7.25	5.497E+00	-----	Line Not Found	-----	<<INT Reject
	295.22	18.42	4.681E+00	1.083E+00	1.084E+00	21.31	OK
	351.93	35.60*	4.043E+00	9.454E-01	9.457E-01	16.95	OK
RN-222	609.32	45.49*	2.581E+00	7.590E-01	7.593E-01	19.78	OK
	1120.29	14.92	1.576E+00	1.075E+00	1.076E+00	37.59	OK
	1764.49	15.30	1.032E+00	1.221E+00	1.221E+00	34.85	OK
RA-224	240.99	4.10*	5.505E+00	8.375E-01	8.375E-01	131.42	OK
RA-226	609.32	45.49*	2.581E+00	7.590E-01	7.593E-01	19.78	OK
	1120.29	14.92	1.576E+00	1.075E+00	1.076E+00	37.59	OK
	1764.49	15.30	1.032E+00	1.221E+00	1.221E+00	34.85	OK
AC-228	105.21	1.10	8.704E+00	-----	Line Not Found	-----	Absent
	338.32	11.27	4.178E+00	5.569E-01	5.569E-01	67.24	OK
	794.95	4.25	2.087E+00	-----	Line Not Found	-----	Absent
	835.71	1.61	2.005E+00	-----	Line Not Found	-----	Absent
	911.20	25.80*	1.869E+00	1.026E+00	1.026E+00	27.65	OK
	968.97	15.80	1.779E+00	9.170E-01	9.170E-01	31.19	OK
RA-228	105.21	1.10	8.704E+00	-----	Line Not Found	-----	Absent
	338.32	11.27	4.178E+00	5.569E-01	5.569E-01	67.24	OK
	794.95	4.25	2.087E+00	-----	Line Not Found	-----	Absent
	835.71	1.61	2.005E+00	-----	Line Not Found	-----	Absent
	911.20	25.80*	1.869E+00	1.026E+00	1.026E+00	27.65	OK
	968.97	15.80	1.779E+00	9.170E-01	9.170E-01	31.19	OK
TH-228	74.82	10.28	8.980E+00	5.173E-01	5.173E-01	64.02	OK
	77.11	17.10	8.967E+00	1.335E+00	1.335E+00	14.70	OK
	238.63	43.60*	5.564E+00	8.658E-01	8.658E-01	12.52	OK

Nuclide Type:

Nuclide	Energy	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error	Status
	300.09	3.30	4.608E+00	3.794E-01	3.794E-01	181.80	OK
TH-229	85.43	14.70	8.913E+00	2.524E-01	2.525E-01	74.94	OK
	88.47	24.00	8.893E+00	1.749E-01	1.749E-01	62.68	OK
	193.51	4.41*	6.511E+00	-----	Line Not Found	-----	Absent
	210.85	2.80	6.116E+00	-----	Line Not Found	-----	Absent
TH-230	609.32	45.49*	2.581E+00	7.590E-01	7.590E-01	19.78	OK
	1120.29	14.92	1.576E+00	1.075E+00	1.075E+00	37.59	OK
	1764.49	15.30	1.032E+00	1.221E+00	1.221E+00	34.85	OK
PA-231	283.69	1.70	4.833E+00	-----	Line Not Found	-----	Absent
	301.36	5.35*	4.608E+00	2.340E-01	2.340E-01	181.80	OK
TH-232	105.21	1.10	8.704E+00	-----	Line Not Found	-----	Absent
	338.32	11.27	4.178E+00	5.569E-01	5.569E-01	67.24	OK
	835.71	1.61	2.005E+00	-----	Line Not Found	-----	Absent
	911.20	25.80*	1.869E+00	1.026E+00	1.026E+00	27.65	OK
	968.97	15.80	1.779E+00	9.170E-01	9.170E-01	31.19	OK
TH-234	63.29	3.70*	9.128E+00	3.352E-01	3.352E-01	355.04	OK
	92.59	4.23	8.866E+00	2.011E+00	2.011E+00	44.95	OK
U-234	609.32	45.49*	2.581E+00	7.590E-01	7.590E-01	19.78	OK
	1120.29	14.92	1.576E+00	1.075E+00	1.075E+00	37.59	OK
	1764.49	15.30	1.032E+00	1.221E+00	1.221E+00	34.85	OK
U-235	89.96	3.47	8.893E+00	1.209E+00	1.209E+00	62.68	OK
	93.35	5.60	8.866E+00	1.519E+00	1.519E+00	44.95	OK
	143.76	10.96*	7.808E+00	-----	Line Not Found	-----	Absent
	163.33	5.08	7.279E+00	-----	Line Not Found	-----	Absent
	185.72	57.20	6.701E+00	1.420E-01	1.420E-01	45.51	OK
	205.31	5.01	6.238E+00	-----	Line Not Found	-----	Absent
U-238	63.29	3.70*	9.128E+00	3.352E-01	3.352E-01	355.04	OK
	92.59	4.23	8.866E+00	2.011E+00	2.011E+00	44.95	OK
AM-243	43.53	5.90	9.491E+00	-----	Line Not Found	-----	Absent
	74.66	67.20*	8.980E+00	7.913E-02	7.914E-02	64.02	OK
ANH-511	511.00	100.00*	2.974E+00	8.709E-02	8.709E-02	77.30	OK

Flag: "*" = Keyline

```

*****
*                               GEL Laboratories LLC                               *
*                               2040 Savage Road                               *
*                               Charleston, SC 29407                          *
*****
*                               DETECTOR AND SAMPLE DATA                       *
*
* Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]R1203621686.CNF;1
* Acquisition date   : 3-OCT-2016 05:34:41 Sensitivity      : 3.000
* Detector ID        : GAM05 Energy tolerance: 1.500
* Elapsed live time  : 0 01:00:00.00 Abundance limit : 75.000
* Elapsed real time  : 0 01:00:00.56 Half life ratio : *****
* Sample date        : 15-DEC-2015 10:14:00 Analyst initials: MXR1
* Sample ID          : R1203621686 Sample Quantity : 1.5534E+02 GRAM
* Batch Number       : 1596387 Wet Weight : 0.00000
* Wet wt corr        : 1.00000 Dry Weight : 0.00000
* Nuclide Library    : SOLID.NLB;6
*****
*                               CALIBRATION INFORMATION                         *
*
* Eff. Cal. date     : 4-SEP-2016 08:00:28 Eff. Geometry   : CAN
* Eff. File          : DKA100:[CANBERRA.GAMMA]EFF_GAM05_CAN.CNF;20
*****

```

Combined Activity-MDA Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM)	Cnt uncert (1.96-sigma)	MDA (pCi/GRAM)
K-40	1.289E+01	1.332E+00	4.454E-01
CD-109	1.557E+00	1.144E+00	5.953E-01
SN-126	1.003E-01	7.366E-02	3.832E-02
BA-137M	8.855E-02	5.168E-02	4.447E-02
CS-137	9.354E-02	5.459E-02	4.698E-02
TL-208	2.020E-01	6.754E-02	5.359E-02
PB-210	2.005E+00	8.459E-01	4.884E-01
BI-212	1.051E+00	6.744E-01	7.068E-01
PB-212	8.658E-01	1.062E-01	6.822E-02
BI-214	7.593E-01	1.472E-01	9.773E-02
PB-214	9.457E-01	1.571E-01	1.045E-01
RN-222	7.593E-01	1.472E-01	9.773E-02
RA-224	8.375E-01	1.079E+00	7.319E-01
RA-226	7.593E-01	1.472E-01	9.773E-02
AC-228	1.026E+00	2.781E-01	2.185E-01
RA-228	1.026E+00	2.781E-01	2.185E-01
TH-228	8.658E-01	1.062E-01	6.822E-02
TH-229	1.358E-01	3.445E-01	6.776E-01
TH-230	7.590E-01	1.471E-01	9.770E-02
PA-231	2.340E-01	4.170E-01	5.432E-01
TH-232	1.026E+00	2.781E-01	2.185E-01
TH-234	3.352E-01	1.166E+00	7.202E-01
U-234	7.590E-01	1.471E-01	9.770E-02
U-235	-2.770E-02	1.276E-01	2.400E-01
U-238	3.352E-01	1.166E+00	7.202E-01
AM-243	7.914E-02	4.965E-02	4.354E-02
ANH-511	8.709E-02	6.597E-02	4.343E-02

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/GRAM)	K.L.	Cnt Uncert (1.96-sigma)	MDA (pCi/GRAM)	
BE-7	3.988E-01		8.952E+00	1.790E+01	NOT IDENT.
NA-22	-3.609E-03		3.566E-02	7.125E-02	NOT IDENT.
NA-24	0.000E+00		1.462E+41	0.000E+00	SHORT HLIF

AL-26	9.098E-03	1.942E-02	5.196E-02	NOT IDENT.
SC-46	1.127E-01	2.071E-01	4.751E-01	FAIL ABUN
V-48	0.000E+00	7.578E+03	0.000E+00	SHORT HLIF
CR-51	0.000E+00	7.571E+02	0.000E+00	SHORT HLIF
MN-54	8.188E-03	5.329E-02	1.044E-01	NOT IDENT.
CO-56	-9.034E-02	3.795E-01	7.217E-01	FAIL ABUN
MN-56	0.000E+00	1.960E+41	0.000E+00	SHORT HLIF
CO-57	-3.925E-03	2.749E-02	5.380E-02	NOT IDENT.
CO-58	8.916E-02	3.898E-01	8.020E-01	NOT IDENT.
FE-59	2.019E-01	4.847E+00	9.907E+00	NOT IDENT.
CO-60	-2.293E-02	3.401E-02	5.901E-02	NOT IDENT.
ZN-65	6.988E-02	1.508E-01	2.955E-01	NOT IDENT.
GE-68	-2.853E-01	1.834E+00	3.641E+00	NOT IDENT.
AS-73	1.953E+00	3.326E+00	2.838E+00	FAIL ABUN
AS-74	0.000E+00	3.933E+03	0.000E+00	SHORT HLIF
SE-75	-9.053E-02	1.643E-01	2.863E-01	NOT IDENT.
BR-77	0.000E+00	2.464E+36	0.000E+00	SHORT HLIF
SR-82	0.000E+00	5.740E+02	0.000E+00	SHORT HLIF
RB-83	6.640E-02	5.816E-01	1.148E+00	NOT IDENT.
KR-85	-3.191E+00	6.047E+00	9.741E+00	NOT IDENT.
SR-85	-3.146E-01	5.933E-01	9.553E-01	NOT IDENT.
RB-86	0.000E+00	1.710E+04	0.000E+00	SHORT HLIF
Y-88	2.529E-02	1.517E-01	3.560E-01	NOT IDENT.
Y-91	9.192E+01	4.600E+02	9.276E+02	NOT IDENT.
NB-94	4.434E-02	3.008E-02	6.691E-02	NOT IDENT.
NB-95	-1.377E-01	6.271E-01	1.036E+00	NOT IDENT.
NB-95M	-1.221E-02	1.850E+00	3.178E+00	NOT IDENT.
ZR-95	1.726E+00	1.169E+00	2.174E+00	FAIL ABUN
NB-97	0.000E+00	1.394E+41	0.000E+00	SHORT HLIF
ZR-97	0.000E+00	1.960E+41	0.000E+00	SHORT HLIF
MO-99	0.000E+00	2.472E+31	0.000E+00	SHORT HLIF
TC-99M	0.000E+00	1.960E+41	0.000E+00	SHORT HLIF
RH-101	3.376E-02	3.947E-02	3.991E-02	FAIL ABUN
RH-102	5.036E-02	4.610E-02	1.045E-01	NOT IDENT.
RU-103	-8.974E-01	3.566E+00	6.932E+00	FAIL ABUN
RH-106	-4.685E-03	3.439E-01	6.859E-01	NOT IDENT.
RU-106	-4.685E-03	3.439E-01	6.859E-01	NOT IDENT.
AG-108M	1.603E-02	2.164E-02	4.677E-02	NOT IDENT.
AG-110M	1.894E-02	5.339E-02	1.199E-01	NOT IDENT.
SN-113	-3.205E-03	1.573E-01	3.180E-01	NOT IDENT.
CD-115	0.000E+00	2.498E+38	0.000E+00	SHORT HLIF
SN-117M	0.000E+00	4.745E+04	0.000E+00	SHORT HLIF
TE-123M	1.978E-02	8.872E-02	1.744E-01	NOT IDENT.
SB-124	-1.210E+00	1.408E+00	2.028E+00	NOT IDENT.
SB-125	5.869E-02	7.914E-02	1.713E-01	FAIL ABUN
TE-125M	1.514E+02	1.510E+02	3.223E+02	NOT IDENT.
I-126	0.000E+00	4.503E+05	0.000E+00	SHORT HLIF
SB-126	0.000E+00	6.329E+05	0.000E+00	SHORT HLIF
SB-127	0.000E+00	5.125E+21	0.000E+00	SHORT HLIF
I-131	0.000E+00	1.842E+09	0.000E+00	SHORT HLIF
I-132	0.000E+00	1.960E+41	0.000E+00	SHORT HLIF
TE-132	0.000E+00	6.512E+25	0.000E+00	SHORT HLIF
BA-133	-1.909E-02	2.775E-02	4.941E-02	NOT IDENT.
I-133	0.000E+00	1.960E+41	0.000E+00	SHORT HLIF
CS-134	5.236E-02	4.345E-02	9.489E-02	NOT IDENT.
CS-135	-1.086E-01	1.200E-01	1.996E-01	NOT IDENT.
I-135	0.000E+00	1.960E+41	0.000E+00	SHORT HLIF
CS-136	0.000E+00	1.525E+05	0.000E+00	SHORT HLIF
CE-139	-1.524E-02	6.992E-02	1.325E-01	NOT IDENT.
BA-140	0.000E+00	6.109E+05	0.000E+00	SHORT HLIF
LA-140	0.000E+00	1.508E+05	0.000E+00	SHORT HLIF
CE-141	-9.598E+00	1.384E+01	2.527E+01	NOT IDENT.
CE-143	0.000E+00	7.488E+40	0.000E+00	SHORT HLIF
CE-144	7.153E-02	2.331E-01	4.669E-01	NOT IDENT.
PM-144	-1.607E-02	4.059E-02	7.436E-02	NOT IDENT.
PR-144	-1.366E+00	3.517E+00	6.452E+00	NOT IDENT.
PM-146	2.813E-02	3.576E-02	7.692E-02	NOT IDENT.
ND-147	0.000E+00	1.508E+07	0.000E+00	SHORT HLIF
PM-147	-3.021E+02	5.126E+02	9.615E+02	NOT IDENT.
PM-149	0.000E+00	3.715E+39	0.000E+00	SHORT HLIF
EU-150	5.497E-03	2.051E-02	3.634E-02	FAIL ABUN
EU-152	-5.663E-03	6.425E-02	1.299E-01	NOT IDENT.
GD-153	0.000E+00	2.144E-01	1.703E-01	FAIL ABUN
EU-154	-6.787E-03	8.821E-02	1.769E-01	FAIL ABUN
EU-155	2.229E-02	6.301E-02	1.288E-01	FAIL ABUN
TB-160	9.383E-01	2.768E+00	3.352E+00	FAIL ABUN
HO-166M	-1.979E-02	4.696E-02	8.583E-02	FAIL ABUN
TM-171	4.564E+00	7.774E+00	6.665E+00	FAIL ABUN

HF-172	9.668E-02	1.481E-01	2.893E-01	FAIL ABUN
LU-172	5.628E-02	7.085E-02	1.558E-01	FAIL ABUN
LU-176	-2.232E-02	1.850E-02	2.839E-02	FAIL ABUN
HF-181	-1.465E+00	2.529E+00	4.700E+00	NOT IDENT.
TA-182	2.280E-01	6.891E-01	1.456E+00	FAIL ABUN
RE-183	3.058E-01	6.300E-01	1.340E+00	NOT IDENT.
RE-184	-1.459E+01	2.036E+01	3.351E+01	FAIL ABUN
W-188	-6.536E+00	7.543E+01	1.286E+02	FAIL ABUN
IR-192	-9.560E-02	4.014E-01	6.524E-01	FAIL ABUN
HG-203	3.994E-01	1.840E+00	3.468E+00	NOT IDENT.
BI-207	2.863E-02	3.885E-02	8.737E-02	FAIL ABUN
BI-211	0.000E+00	4.328E-01	7.758E-01	FAIL ABUN
PB-211	4.632E-01	5.047E-01	1.108E+00	NOT IDENT.
RN-219	-2.499E-01	2.510E-01	4.457E-01	NOT IDENT.
RA-223	-1.449E-01	4.531E-01	7.302E-01	FAIL ABUN
AC-227	1.403E-01	1.602E-01	3.322E-01	FAIL ABUN
TH-227	1.403E-01	1.602E-01	3.322E-01	FAIL ABUN
TH-231	-1.449E-01	4.531E-01	7.302E-01	FAIL ABUN
PA-233	-2.934E-02	4.617E-02	7.807E-02	FAIL ABUN
PA-234	-2.000E-02	2.029E-01	3.874E-01	FAIL ABUN
PA-234M	-3.902E+00	3.365E+00	5.674E+00	NOT IDENT.
NP-237	-2.934E-02	4.617E-02	7.807E-02	FAIL ABUN
NP-238	0.000E+00	3.692E+40	0.000E+00	SHORT HLIF
NP-239	2.232E-02	1.402E-01	2.824E-01	FAIL ABUN
PU-239	3.074E+02	3.595E+02	4.023E+02	FAIL ABUN
AM-241	-1.419E-03	3.646E-02	6.979E-02	NOT IDENT.
CM-243	3.451E-03	5.620E-02	1.127E-01	FAIL ABUN
BK-247	-3.985E-02	6.181E-02	1.064E-01	FAIL ABUN
CM-247	-2.297E-02	2.529E-02	4.558E-02	NOT IDENT.
CF-249	-5.124E-03	2.832E-02	5.594E-02	NOT IDENT.
CF-251	7.974E-03	8.483E-02	1.634E-01	NOT IDENT.

Nuclide Line Activity Report

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
K-40	1460.82	354	10.66*	1.244E+00	1.289E+01	1.289E+01	10.55
AS-73	53.44	32	10.30*	9.492E+00	1.559E-01	1.953E+00	173.78
CD-109	88.03	137	3.70*	8.913E+00	2.001E+00	3.107E+00	36.02
SN-126	64.28	-----	9.60	9.093E+00	-----	Line Not Found	-----
	86.94	137	8.90	8.913E+00	8.320E-01	8.320E-01	36.02
	87.57	137	37.00*	8.913E+00	2.001E-01	2.001E-01	36.02
BA-137M	661.66	39	89.90*	2.418E+00	8.692E-02	8.855E-02	59.56
CS-137	661.66	39	85.10*	2.418E+00	9.183E-02	9.354E-02	59.56
TM-171	51.35	32	0.27	9.492E+00	5.949E+00	7.946E+00	173.78
	52.39	32	0.47*	9.492E+00	3.417E+00	4.564E+00	173.78
	66.73	-----	0.14	9.052E+00	-----	Line Not Found	-----
HF-172	52.97	32	36.00	9.492E+00	4.462E-02	6.005E-02	173.78
	54.07	32	63.00	9.492E+00	2.549E-02	3.432E-02	173.78
	61.17	23	20.30	9.128E+00	6.110E-02	8.224E-02	355.04
	62.93	23	4.50	9.128E+00	2.756E-01	3.710E-01	355.04
	67.68	-----	5.99	9.039E+00	-----	Line Not Found	-----
	81.75	-----	4.50	8.942E+00	-----	Line Not Found	-----
	114.06	-----	2.60	8.540E+00	-----	Line Not Found	-----
	122.92	-----	1.14	8.344E+00	-----	Line Not Found	-----
	125.81	-----	11.30*	8.274E+00	-----	Line Not Found	-----
	127.91	33	1.46	8.210E+00	1.329E+00	1.788E+00	119.31
TL-208	277.37	-----	6.60	4.923E+00	-----	Line Not Found	-----
	583.19	95	85.00*	2.674E+00	2.020E-01	2.020E-01	34.12
	860.56	7	12.50	1.957E+00	1.466E-01	1.466E-01	219.85
PB-210	46.54	166	4.25*	9.664E+00	1.956E+00	2.005E+00	43.04
BI-211	72.87	-----	1.23	8.990E+00	-----	Line Not Found	-----
	351.06	282	12.92*	4.043E+00	2.605E+00	2.605E+00	16.95
BI-212	727.33	32	6.67*	2.239E+00	1.051E+00	1.051E+00	65.48
	785.37	21	1.10	2.106E+00	4.283E+00	4.283E+00	64.93
	1620.50	-----	1.47	1.126E+00	-----	Line Not Found	-----
PB-212	74.82	216	10.28	8.980E+00	1.128E+00	1.128E+00	26.98
	77.11	424	17.10	8.967E+00	1.335E+00	1.335E+00	14.70
	238.63	435	43.60*	5.564E+00	8.658E-01	8.658E-01	12.52
	300.09	12	3.30	4.608E+00	3.794E-01	3.794E-01	181.80
BI-214	609.32	184	45.49*	2.581E+00	7.590E-01	7.593E-01	19.78
	1120.29	52	14.92	1.576E+00	1.075E+00	1.076E+00	37.59
	1764.49	40	15.30	1.032E+00	1.221E+00	1.221E+00	34.85
PB-214	74.82	216	5.80	8.980E+00	2.000E+00	2.001E+00	26.98
	77.11	424	9.70	8.967E+00	2.353E+00	2.354E+00	14.70
	87.09	137	3.41	8.913E+00	2.171E+00	2.172E+00	36.02
	242.00	129	7.25	5.505E+00	1.557E+00	1.557E+00	37.13
	295.22	193	18.42	4.681E+00	1.083E+00	1.084E+00	21.31
	351.93	282	35.60*	4.043E+00	9.454E-01	9.457E-01	16.95
RN-222	609.32	184	45.49*	2.581E+00	7.590E-01	7.593E-01	19.78
	1120.29	52	14.92	1.576E+00	1.075E+00	1.076E+00	37.59
	1764.49	40	15.30	1.032E+00	1.221E+00	1.221E+00	34.85
RA-224	240.99	129	4.10*	5.505E+00	2.753E+00	2.753E+00	37.13

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
RA-226	609.32	184	45.49*	2.581E+00	7.590E-01	7.593E-01	19.78
	1120.29	52	14.92	1.576E+00	1.075E+00	1.076E+00	37.59
	1764.49	40	15.30	1.032E+00	1.221E+00	1.221E+00	34.85
AC-228	105.21	-----	1.10	8.704E+00	-----	Line Not Found	-----
	338.32	54	11.27	4.178E+00	5.569E-01	5.569E-01	67.24
	794.95	-----	4.25	2.087E+00	-----	Line Not Found	-----
	835.71	-----	1.61	2.005E+00	-----	Line Not Found	-----
	911.20	102	25.80*	1.869E+00	1.026E+00	1.026E+00	27.65
	968.97	53	15.80	1.779E+00	9.170E-01	9.170E-01	31.19
RA-228	105.21	-----	1.10	8.704E+00	-----	Line Not Found	-----
	338.32	54	11.27	4.178E+00	5.569E-01	5.569E-01	67.24
	794.95	-----	4.25	2.087E+00	-----	Line Not Found	-----
	835.71	-----	1.61	2.005E+00	-----	Line Not Found	-----
	911.20	102	25.80*	1.869E+00	1.026E+00	1.026E+00	27.65
	968.97	53	15.80	1.779E+00	9.170E-01	9.170E-01	31.19
TH-228	74.82	216	10.28	8.980E+00	1.128E+00	1.128E+00	26.98
	77.11	424	17.10	8.967E+00	1.335E+00	1.335E+00	14.70
	238.63	435	43.60*	5.564E+00	8.658E-01	8.658E-01	12.52
	300.09	12	3.30	4.608E+00	3.794E-01	3.794E-01	181.80
TH-229	85.43	137	14.70	8.913E+00	5.037E-01	5.038E-01	36.02
	88.47	77	24.00	8.893E+00	1.749E-01	1.749E-01	62.68
	193.51	-----	4.41*	6.511E+00	-----	Line Not Found	-----
	210.85	-----	2.80	6.116E+00	-----	Line Not Found	-----
TH-230	609.32	184	45.49*	2.581E+00	7.590E-01	7.590E-01	19.78
	1120.29	52	14.92	1.576E+00	1.075E+00	1.075E+00	37.59
	1764.49	40	15.30	1.032E+00	1.221E+00	1.221E+00	34.85
PA-231	283.69	-----	1.70	4.833E+00	-----	Line Not Found	-----
	301.36	12	5.35*	4.608E+00	2.340E-01	2.340E-01	181.80
TH-232	105.21	-----	1.10	8.704E+00	-----	Line Not Found	-----
	338.32	54	11.27	4.178E+00	5.569E-01	5.569E-01	67.24
	835.71	-----	1.61	2.005E+00	-----	Line Not Found	-----
	911.20	102	25.80*	1.869E+00	1.026E+00	1.026E+00	27.65
	968.97	53	15.80	1.779E+00	9.170E-01	9.170E-01	31.19
TH-234	63.29	23	3.70*	9.128E+00	3.352E-01	3.352E-01	355.04
	92.59	156	4.23	8.866E+00	2.011E+00	2.011E+00	44.95
U-234	609.32	184	45.49*	2.581E+00	7.590E-01	7.590E-01	19.78
	1120.29	52	14.92	1.576E+00	1.075E+00	1.075E+00	37.59
	1764.49	40	15.30	1.032E+00	1.221E+00	1.221E+00	34.85
U-235	89.96	77	3.47	8.893E+00	1.209E+00	1.209E+00	62.68
	93.35	156	5.60	8.866E+00	1.519E+00	1.519E+00	44.95
	143.76	-----	10.96*	7.808E+00	-----	Line Not Found	-----
	163.33	-----	5.08	7.279E+00	-----	Line Not Found	-----
	185.72	113	57.20	6.701E+00	1.420E-01	1.420E-01	45.51
	205.31	-----	5.01	6.238E+00	-----	Line Not Found	-----
U-238	63.29	23	3.70*	9.128E+00	3.352E-01	3.352E-01	355.04
	92.59	156	4.23	8.866E+00	2.011E+00	2.011E+00	44.95
AM-243	43.53	-----	5.90	9.491E+00	-----	Line Not Found	-----
	74.66	216	67.20*	8.980E+00	1.726E-01	1.726E-01	26.98
ANH-511	511.00	54	100.00*	2.974E+00	8.709E-02	8.709E-02	77.30

Flag: "*" = Keyline

Total number of lines in spectrum 47
 Number of unidentified lines 9
 Number of lines tentatively identified by NID 38 80.85%

Nuclide Type :

Nuclide	Hlife	Decay	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
K-40	1.25E+09Y	1.00	1.289E+01	1.289E+01	0.136E+01	10.55	
AS-73	80.30D	12.5	1.559E-01	1.953E+00	3.394E+00	173.78	
CD-109	461.40D	1.55	2.001E+00	3.107E+00	1.119E+00	36.02	
SN-126	2.30E+05Y	1.00	2.001E-01	2.001E-01	0.721E-01	36.02	
BA-137M	30.08Y	1.02	8.692E-02	8.855E-02	5.273E-02	59.56	
CS-137	30.08Y	1.02	9.183E-02	9.354E-02	5.571E-02	59.56	
TM-171	1.92Y	1.34	3.417E+00	4.564E+00	7.932E+00	173.78	
HF-172	1.87Y	1.35	2.549E-02	3.432E-02	5.964E-02	173.78	K
TL-208	1.41E+10Y	1.00	2.020E-01	2.020E-01	0.689E-01	34.12	
PB-210	22.20Y	1.03	1.956E+00	2.005E+00	0.863E+00	43.04	
BI-211	7.04E+08Y	1.00	2.605E+00	2.605E+00	0.442E+00	16.95	
BI-212	1.41E+10Y	1.00	1.051E+00	1.051E+00	0.688E+00	65.48	
PB-212	1.41E+10Y	1.00	8.658E-01	8.658E-01	1.084E-01	12.52	
BI-214	1600.00Y	1.00	7.590E-01	7.593E-01	1.502E-01	19.78	
PB-214	1600.00Y	1.00	9.454E-01	9.457E-01	1.603E-01	16.95	
RN-222	1600.00Y	1.00	7.590E-01	7.593E-01	1.502E-01	19.78	
RA-224	1.41E+10Y	1.00	2.753E+00	2.753E+00	1.022E+00	37.13	
RA-226	1600.00Y	1.00	7.590E-01	7.593E-01	1.502E-01	19.78	
AC-228	1.41E+10Y	1.00	1.026E+00	1.026E+00	0.284E+00	27.65	
RA-228	1.41E+10Y	1.00	1.026E+00	1.026E+00	0.284E+00	27.65	
TH-228	1.41E+10Y	1.00	8.658E-01	8.658E-01	1.084E-01	12.52	
TH-229	7340.00Y	1.00	1.749E-01	1.749E-01	1.096E-01	62.68	K
TH-230	7.54E+04Y	1.00	7.590E-01	7.590E-01	1.501E-01	19.78	
PA-231	7.04E+08Y	1.00	2.340E-01	2.340E-01	4.255E-01	181.80	
TH-232	1.41E+10Y	1.00	1.026E+00	1.026E+00	0.284E+00	27.65	
TH-234	4.47E+09Y	1.00	3.352E-01	3.352E-01	11.90E-01	355.04	
U-234	2.45E+05Y	1.00	7.590E-01	7.590E-01	1.501E-01	19.78	
U-235	7.04E+08Y	1.00	1.420E-01	1.420E-01	0.646E-01	45.51	K
U-238	4.47E+09Y	1.00	3.352E-01	3.352E-01	11.90E-01	355.04	
AM-243	7370.00Y	1.00	1.726E-01	1.726E-01	0.466E-01	26.98	
ANH-511	1.00E+09Y	1.00	8.709E-02	8.709E-02	6.732E-02	77.30	
Total Activity :			3.847E+01	4.258E+01			

Grand Total Activity : 3.847E+01 4.258E+01

Flags: "K" = Keyline not found "M" = Manually accepted
 "E" = Manually edited "A" = Nuclide specific abn. limit

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
0	39.41	54	144	1.66	80.65	78	8	1.08E-02	95.7	8.32E+00	
4	83.94	77	170	1.15	169.66	166	13	1.65E-02	67.7	8.93E+00	T
0	98.79	49	130	0.97	199.34	195	9	1.07E-02	****	8.80E+00	T
0	209.00	68	104	1.30	419.59	415	10	1.59E-02	66.6	6.16E+00	
0	320.44	45	79	6.79	642.32	633	16	1.10E-02	****	4.37E+00	T
3	341.31	22	60	1.66	684.03	672	23	5.50E-03	****	4.15E+00	T
0	463.29	13	27	1.08	927.83	923	7	3.23E-03	****	3.22E+00	T
0	672.89	13	17	0.97	1346.74	1342	8	3.32E-03	****	2.38E+00	
0	755.76	18	5	1.05	1512.38	1507	10	4.72E-03	69.1	2.17E+00	T
0	769.47	42	12	3.41	1539.79	1533	17	1.12E-02	51.3	2.14E+00	
0	790.90	4	9	0.50	1582.61	1579	8	1.09E-03	****	2.10E+00	T
0	857.31	10	6	1.45	1715.35	1711	7	2.71E-03	****	1.96E+00	T
0	880.47	7	25	4.25	1761.64	1752	11	1.84E-03	****	1.92E+00	T
0	956.16	21	6	4.85	1912.92	1907	12	5.76E-03	64.7	1.80E+00	
0	1239.18	9	13	0.77	2478.61	2473	8	2.66E-03	****	1.44E+00	T
0	1252.83	16	2	1.48	2505.90	2501	9	4.64E-03	58.7	1.43E+00	
0	1346.09	9	4	1.08	2692.32	2686	9	2.64E-03	****	1.34E+00	
0	1378.33	16	5	3.53	2756.75	2752	10	4.44E-03	72.3	1.31E+00	
0	1510.47	9	6	1.91	3020.87	3015	10	2.65E-03	****	1.21E+00	

Flags: "T" = Tentatively associated

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*****
*                               GEL Laboratories LLC                               *
*                               2040 Savage Road                               *
*                               Charleston, SC 29407                          *
*****
*                               DETECTOR AND SAMPLE DATA                       *
*
* Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]R1203621686.CNF;1
* Acquisition date   : 3-OCT-2016 05:34:41 Sensitivity      : 3.000
* Detector ID       : GAM05 Energy tolerance: 1.500
* Elapsed live time : 0 01:00:00.00 Abundance limit : 75.000
* Elapsed real time : 0 01:00:00.56 Half life ratio : *****
* Sample date       : 15-DEC-2015 10:14:00 Nuclide Library : SOLID
* Sample ID         : R1203621686 Analyst initials: MXR1
* Batch Number      : 1596387 Sample Quantity : 1.5534E+02 GRAM
* Wet wt corr       : 1.00000 Wet Weight : 0.00000
*                               Dry Weight : 0.00000
*****
*                               CALIBRATION INFORMATION                         *
*
* Eff. Cal. date    : 4-SEP-2016 08:00:28 Eff. Geometry    : CAN
* Eff. File         : DKA100:[CANBERRA.GAMMA]EFF_GAM05_CAN.CNF;20
*****

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Combined Critical Level Report

NOTE: Not all "Identified Nuclides" are valid.
 Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Lc (pCi/GRAM)
K-40	1.730E-01
CD-109	2.643E-01
SN-126	1.701E-02
BA-137M	1.908E-02
CS-137	2.016E-02
TL-208	2.383E-02
PB-210	2.263E-01
BI-212	3.085E-01
PB-212	3.127E-02
BI-214	4.313E-02
PB-214	4.750E-02
RN-222	4.313E-02
RA-224	3.355E-01
RA-226	4.313E-02
AC-228	9.545E-02
RA-228	9.545E-02
TH-228	3.127E-02
TH-229	3.147E-01
TH-230	4.311E-02
PA-231	2.437E-01
TH-232	9.545E-02
TH-234	3.391E-01
U-234	4.311E-02
U-235	1.119E-01
U-238	3.391E-01
AM-243	2.060E-02
ANH-511	1.944E-02

---- Non-Identified Nuclides ----

Nuclide	Lc (pCi/GRAM)	
BE-7	8.014E+00	NOT IDENT.
NA-22	2.981E-02	NOT IDENT.
NA-24	0.000E+00	SHORT HLIF
AL-26	1.945E-02	NOT IDENT.

SC-46	1.981E-01	FAIL ABUN
V-48	0.000E+00	SHORT HLIF
CR-51	0.000E+00	SHORT HLIF
MN-54	4.582E-02	NOT IDENT.
CO-56	3.142E-01	FAIL ABUN
MN-56	0.000E+00	SHORT HLIF
CO-57	2.483E-02	NOT IDENT.
CO-58	3.436E-01	NOT IDENT.
FE-59	4.252E+00	NOT IDENT.
CO-60	2.408E-02	NOT IDENT.
ZN-65	1.287E-01	NOT IDENT.
GE-68	1.553E+00	NOT IDENT.
AS-73	1.327E+00	FAIL ABUN
AS-74	0.000E+00	SHORT HLIF
SE-75	1.307E-01	NOT IDENT.
BR-77	0.000E+00	SHORT HLIF
SR-82	0.000E+00	SHORT HLIF
RB-83	5.201E-01	NOT IDENT.
KR-85	4.315E+00	NOT IDENT.
SR-85	4.232E-01	NOT IDENT.
RB-86	0.000E+00	SHORT HLIF
Y-88	1.333E-01	NOT IDENT.
Y-91	4.087E+02	NOT IDENT.
NB-94	3.054E-02	NOT IDENT.
NB-95	4.437E-01	NOT IDENT.
NB-95M	1.471E+00	NOT IDENT.
ZR-95	9.519E-01	FAIL ABUN
NB-97	0.000E+00	SHORT HLIF
ZR-97	0.000E+00	SHORT HLIF
MO-99	0.000E+00	SHORT HLIF
TC-99M	0.000E+00	SHORT HLIF
RH-101	1.848E-02	FAIL ABUN
RH-102	4.671E-02	NOT IDENT.
RU-103	3.035E+00	FAIL ABUN
RH-106	2.968E-01	NOT IDENT.
RU-106	2.968E-01	NOT IDENT.
AG-108M	2.118E-02	NOT IDENT.
AG-110M	4.912E-02	NOT IDENT.
SN-113	1.424E-01	NOT IDENT.
CD-115	0.000E+00	SHORT HLIF
SN-117M	0.000E+00	SHORT HLIF
TE-123M	8.108E-02	NOT IDENT.
SB-124	6.410E-01	NOT IDENT.
SB-125	7.754E-02	FAIL ABUN
TE-125M	1.508E+02	NOT IDENT.
I-126	0.000E+00	SHORT HLIF
SB-126	0.000E+00	SHORT HLIF
SB-127	0.000E+00	SHORT HLIF
I-131	0.000E+00	SHORT HLIF
I-132	0.000E+00	SHORT HLIF
TE-132	0.000E+00	SHORT HLIF
BA-133	2.180E-02	NOT IDENT.
I-133	0.000E+00	SHORT HLIF
CS-134	4.254E-02	NOT IDENT.
CS-135	9.133E-02	NOT IDENT.
I-135	0.000E+00	SHORT HLIF
CS-136	0.000E+00	SHORT HLIF
CE-139	6.096E-02	NOT IDENT.
BA-140	0.000E+00	SHORT HLIF
LA-140	0.000E+00	SHORT HLIF
CE-141	1.168E+01	NOT IDENT.
CE-143	0.000E+00	SHORT HLIF
CE-144	2.176E-01	NOT IDENT.
PM-144	3.209E-02	NOT IDENT.
PR-144	2.786E+00	NOT IDENT.
PM-146	3.494E-02	NOT IDENT.
ND-147	0.000E+00	SHORT HLIF
PM-147	4.445E+02	NOT IDENT.
PM-149	0.000E+00	SHORT HLIF
EU-150	1.646E-02	FAIL ABUN
EU-152	5.846E-02	NOT IDENT.
GD-153	7.873E-02	FAIL ABUN
EU-154	7.417E-02	FAIL ABUN
EU-155	6.008E-02	FAIL ABUN
TB-160	1.485E+00	FAIL ABUN
HO-166M	3.747E-02	FAIL ABUN
TM-171	3.119E+00	FAIL ABUN
HF-172	1.346E-01	FAIL ABUN

LU-172	6.912E-02	FAIL ABUN
LU-176	1.258E-02	FAIL ABUN
HF-181	2.026E+00	NOT IDENT.
TA-182	6.291E-01	FAIL ABUN
RE-183	6.296E-01	NOT IDENT.
RE-184	1.388E+01	FAIL ABUN
W-188	5.768E+01	FAIL ABUN
IR-192	2.969E-01	FAIL ABUN
HG-203	1.600E+00	NOT IDENT.
BI-207	3.819E-02	FAIL ABUN
BI-211	3.750E-01	FAIL ABUN
PB-211	5.040E-01	NOT IDENT.
RN-219	1.943E-01	NOT IDENT.
RA-223	3.255E-01	FAIL ABUN
AC-227	1.523E-01	FAIL ABUN
TH-227	1.523E-01	FAIL ABUN
TH-231	3.255E-01	FAIL ABUN
PA-233	3.505E-02	FAIL ABUN
PA-234	1.631E-01	FAIL ABUN
PA-234M	2.379E+00	NOT IDENT.
NP-237	3.505E-02	FAIL ABUN
NP-238	0.000E+00	SHORT HLIF
NP-239	1.308E-01	FAIL ABUN
PU-239	1.876E+02	FAIL ABUN
AM-241	3.274E-02	NOT IDENT.
CM-243	5.243E-02	FAIL ABUN
BK-247	4.871E-02	FAIL ABUN
CM-247	2.017E-02	NOT IDENT.
CF-249	2.519E-02	NOT IDENT.
CF-251	7.588E-02	NOT IDENT.

```

*****
*
*           GEL Laboratories LLC
*           2040 Savage Road
*           Charleston, SC 29407
*****
*
*           DETECTOR AND SAMPLE DATA
*
* Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]R1203621686.CNF;1
* Acquisition date   : 3-OCT-2016 05:34:41 Sensitivity      : 3.000
* Detector ID        : GAM05 Energy tolerance: 1.500
* Elapsed live time  : 0 01:00:00.00 Abundance limit : 75.000
* Elapsed real time  : 0 01:00:00.56 Half life ratio  : *****
* Sample date        : 15-DEC-2015 10:14:00 Nuclide Library : SOLID
* Sample ID          : R1203621686 Analyst initials: MXR1
* Batch Number       : 1596387 Sample Quantity : 1.5534E+02 GRAM
*                   : Quantity Err(%) : 1.2875E-03 %
* Wet wt corr        : 1.00000 Wet Weight      : 0.00000
*                   : Dry Weight       : 0.00000
*****
*
*           CALIBRATION INFORMATION
*
* Eff. Cal. date     : 4-SEP-2016 08:00:28 Eff. Geometry   : CAN
* Eff. File          : DKA100:[CANBERRA.GAMMA]EFF_GAM05_CAN.CNF;20
*****

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Combined Activity-MDA Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM)	Act Error (1.96-sigma)	TPU (1.96-sigma)
K-40	1.289E+01	1.492E+00	1.492E+00
CD-109	1.557E+00	1.167E+00	1.167E+00
SN-126	1.003E-01	7.496E-02	7.496E-02
BA-137M	8.855E-02	5.182E-02	5.182E-02
CS-137	9.354E-02	5.474E-02	5.474E-02
TL-208	2.020E-01	6.808E-02	6.808E-02
PB-210	2.005E+00	8.659E-01	8.659E-01
BI-212	1.051E+00	6.765E-01	6.765E-01
PB-212	8.658E-01	1.157E-01	1.157E-01
BI-214	7.593E-01	1.507E-01	1.507E-01
PB-214	9.457E-01	1.620E-01	1.620E-01
RN-222	7.593E-01	1.507E-01	1.507E-01
RA-224	8.375E-01	1.087E+00	1.087E+00
RA-226	7.593E-01	1.507E-01	1.507E-01
AC-228	1.026E+00	2.830E-01	2.830E-01
RA-228	1.026E+00	2.830E-01	2.830E-01
TH-228	8.658E-01	1.157E-01	1.157E-01
TH-229	1.358E-01	3.445E-01	3.445E-01
TH-230	7.590E-01	1.507E-01	1.507E-01
PA-231	2.340E-01	4.200E-01	4.200E-01
TH-232	1.026E+00	2.830E-01	2.830E-01
TH-234	3.352E-01	1.169E+00	1.169E+00
U-234	7.590E-01	1.507E-01	1.507E-01
U-235	-2.770E-02	1.277E-01	1.277E-01
U-238	3.352E-01	1.169E+00	1.169E+00
AM-243	7.914E-02	5.127E-02	5.127E-02
ANH-511	8.709E-02	6.607E-02	6.607E-02

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/GRAM)	K.L Act error (1.96-sigma)	TPU (1.96-sigma)	
BE-7	3.988E-01	8.952E+00	8.953E+00	NOT IDENT.
NA-22	-3.609E-03	3.566E-02	3.569E-02	NOT IDENT.
NA-24	-1.000E+41	1.523E+41	0.000E+00	SHORT HLIF

AL-26	9.098E-03	1.943E-02	1.986E-02	NOT IDENT.
SC-46	1.127E-01	2.071E-01	2.133E-01	FAIL ABUN
V-48	-4.832E+03	7.580E+03	7.887E+03	SHORT HLIF
CR-51	7.654E+02	7.579E+02	8.327E+02	SHORT HLIF
MN-54	8.188E-03	5.329E-02	5.342E-02	NOT IDENT.
CO-56	-9.034E-02	3.795E-01	3.817E-01	FAIL ABUN
MN-56	-1.000E+41	4.267E+41	0.000E+00	SHORT HLIF
CO-57	-3.925E-03	2.749E-02	2.755E-02	NOT IDENT.
CO-58	8.916E-02	3.898E-01	3.919E-01	NOT IDENT.
FE-59	2.019E-01	4.847E+00	4.848E+00	NOT IDENT.
CO-60	-2.293E-02	3.402E-02	3.555E-02	NOT IDENT.
ZN-65	6.988E-02	1.508E-01	1.541E-01	NOT IDENT.
GE-68	-2.853E-01	1.834E+00	1.838E+00	NOT IDENT.
AS-73	1.953E+00	3.350E+00	3.464E+00	FAIL ABUN
AS-74	6.422E+02	3.934E+03	3.944E+03	SHORT HLIF
SE-75	-9.053E-02	1.644E-01	1.694E-01	NOT IDENT.
BR-77	2.009E+37	1.698E+38	0.000E+00	SHORT HLIF
SR-82	-4.247E+02	5.744E+02	6.054E+02	SHORT HLIF
RB-83	6.640E-02	5.817E-01	5.825E-01	NOT IDENT.
KR-85	-3.191E+00	6.049E+00	6.217E+00	NOT IDENT.
SR-85	-3.146E-01	5.934E-01	6.102E-01	NOT IDENT.
RB-86	-4.740E+02	1.710E+04	1.710E+04	SHORT HLIF
Y-88	2.529E-02	1.517E-01	1.521E-01	NOT IDENT.
Y-91	9.192E+01	4.600E+02	4.618E+02	NOT IDENT.
NB-94	4.434E-02	3.014E-02	3.617E-02	NOT IDENT.
NB-95	-1.377E-01	6.271E-01	6.302E-01	NOT IDENT.
NB-95M	-1.221E-02	1.850E+00	1.850E+00	NOT IDENT.
ZR-95	1.726E+00	1.171E+00	1.406E+00	FAIL ABUN
NB-97	-1.000E+41	1.394E+41	0.000E+00	SHORT HLIF
ZR-97	1.000E+41	3.326E+41	0.000E+00	SHORT HLIF
MO-99	-9.070E+30	2.473E+31	0.000E+00	SHORT HLIF
TC-99M	1.000E+41	9.462E+42	0.000E+00	SHORT HLIF
RH-101	3.376E-02	3.994E-02	4.274E-02	FAIL ABUN
RH-102	5.036E-02	4.629E-02	5.156E-02	NOT IDENT.
RU-103	-8.974E-01	3.567E+00	3.589E+00	FAIL ABUN
RH-106	-4.685E-03	3.439E-01	3.439E-01	NOT IDENT.
RU-106	-4.685E-03	3.439E-01	3.439E-01	NOT IDENT.
AG-108M	1.603E-02	2.165E-02	2.283E-02	NOT IDENT.
AG-110M	1.894E-02	5.340E-02	5.408E-02	NOT IDENT.
SN-113	-3.205E-03	1.573E-01	1.573E-01	NOT IDENT.
CD-115	2.072E+38	2.525E+38	0.000E+00	SHORT HLIF
SN-117M	-4.133E+03	4.746E+04	4.749E+04	SHORT HLIF
TE-123M	1.978E-02	8.872E-02	8.917E-02	NOT IDENT.
SB-124	-1.210E+00	1.409E+00	1.511E+00	NOT IDENT.
SB-125	5.869E-02	7.918E-02	8.348E-02	FAIL ABUN
TE-125M	1.514E+02	1.513E+02	1.660E+02	NOT IDENT.
I-126	-1.687E+04	4.503E+05	4.503E+05	SHORT HLIF
SB-126	6.313E+03	6.329E+05	6.329E+05	SHORT HLIF
SB-127	-3.334E+20	5.145E+21	0.000E+00	SHORT HLIF
I-131	-1.499E+09	1.843E+09	1.963E+09	SHORT HLIF
I-132	-1.000E+41	2.421E+42	0.000E+00	SHORT HLIF
TE-132	-2.609E+24	6.513E+25	0.000E+00	SHORT HLIF
BA-133	-1.909E-02	2.776E-02	2.907E-02	NOT IDENT.
I-133	0.000E+00	1.136E+42	0.000E+00	SHORT HLIF
CS-134	5.236E-02	4.351E-02	4.950E-02	NOT IDENT.
CS-135	-1.086E-01	1.202E-01	1.298E-01	NOT IDENT.
I-135	1.000E+41	9.526E+42	0.000E+00	SHORT HLIF
CS-136	-8.466E+03	1.525E+05	1.526E+05	SHORT HLIF
CE-139	-1.524E-02	6.998E-02	7.032E-02	NOT IDENT.
BA-140	-3.223E+05	6.111E+05	6.281E+05	SHORT HLIF
LA-140	-1.539E+05	1.510E+05	1.662E+05	SHORT HLIF
CE-141	-9.598E+00	1.385E+01	1.451E+01	NOT IDENT.
CE-143	1.000E+41	7.554E+40	0.000E+00	SHORT HLIF
CE-144	7.153E-02	2.332E-01	2.354E-01	NOT IDENT.
PM-144	-1.607E-02	4.060E-02	4.124E-02	NOT IDENT.
PR-144	-1.366E+00	3.518E+00	3.571E+00	NOT IDENT.
PM-146	2.813E-02	3.581E-02	3.799E-02	NOT IDENT.
ND-147	-2.558E+06	1.508E+07	1.513E+07	SHORT HLIF
PM-147	-3.021E+02	5.128E+02	5.305E+02	NOT IDENT.
PM-149	-2.727E+39	3.762E+39	0.000E+00	SHORT HLIF
EU-150	5.497E-03	2.051E-02	2.066E-02	FAIL ABUN
EU-152	-5.663E-03	6.425E-02	6.430E-02	NOT IDENT.
GD-153	2.160E-01	2.147E-01	2.358E-01	FAIL ABUN
EU-154	-6.787E-03	8.821E-02	8.826E-02	FAIL ABUN
EU-155	2.229E-02	6.303E-02	6.382E-02	FAIL ABUN
TB-160	9.383E-01	2.768E+00	2.801E+00	FAIL ABUN
HO-166M	-1.979E-02	4.697E-02	4.781E-02	FAIL ABUN
TM-171	4.564E+00	7.784E+00	8.051E+00	FAIL ABUN

HF-172	9.668E-02	1.490E-01	1.552E-01	FAIL ABUN
LU-172	5.628E-02	7.108E-02	7.547E-02	FAIL ABUN
LU-176	-2.232E-02	1.853E-02	2.108E-02	FAIL ABUN
HF-181	-1.465E+00	2.530E+00	2.614E+00	NOT IDENT.
TA-182	2.280E-01	6.891E-01	6.967E-01	FAIL ABUN
RE-183	3.058E-01	6.318E-01	6.466E-01	NOT IDENT.
RE-184	-1.459E+01	2.064E+01	2.166E+01	FAIL ABUN
W-188	-6.536E+00	7.543E+01	7.549E+01	FAIL ABUN
IR-192	-9.560E-02	4.014E-01	4.037E-01	FAIL ABUN
HG-203	3.994E-01	1.841E+00	1.849E+00	NOT IDENT.
BI-207	2.863E-02	3.887E-02	4.096E-02	FAIL ABUN
BI-211	2.605E+00	4.482E-01	1.257E+00	FAIL ABUN
PB-211	4.632E-01	5.053E-01	5.467E-01	NOT IDENT.
RN-219	-2.499E-01	2.530E-01	2.769E-01	NOT IDENT.
RA-223	-1.449E-01	4.532E-01	4.578E-01	FAIL ABUN
AC-227	1.403E-01	1.613E-01	1.733E-01	FAIL ABUN
TH-227	1.403E-01	1.613E-01	1.733E-01	FAIL ABUN
TH-231	-1.449E-01	4.532E-01	4.578E-01	FAIL ABUN
PA-233	-2.934E-02	4.619E-02	4.805E-02	FAIL ABUN
PA-234	-2.000E-02	2.042E-01	2.044E-01	FAIL ABUN
PA-234M	-3.902E+00	3.370E+00	3.801E+00	NOT IDENT.
NP-237	-2.934E-02	4.619E-02	4.805E-02	FAIL ABUN
NP-238	-1.163E+40	3.693E+40	0.000E+00	SHORT HLIF
NP-239	2.232E-02	1.402E-01	1.406E-01	FAIL ABUN
PU-239	3.074E+02	3.597E+02	3.855E+02	FAIL ABUN
AM-241	-1.419E-03	3.646E-02	3.646E-02	NOT IDENT.
CM-243	3.451E-03	5.620E-02	5.622E-02	FAIL ABUN
BK-247	-3.985E-02	6.233E-02	6.487E-02	FAIL ABUN
CM-247	-2.297E-02	2.558E-02	2.760E-02	NOT IDENT.
CF-249	-5.124E-03	2.833E-02	2.842E-02	NOT IDENT.
CF-251	7.974E-03	8.483E-02	8.491E-02	NOT IDENT.

 * GEL Laboratories LLC *
 * 2040 Savage Road *
 * Charleston, SC 29407 *
 * GAMMA SPECTROSCOPY BACKGROUND REPORT *

ENERGY	MDA COUNTS	ENERGY	MDA COUNTS	ENERGY	MDA COUNTS
43.53	53.7281	87.09	76.1071	136.47	58.3932
45.60	53.3932	87.57	21.1009	140.51	0.0000
46.54	53.5864	88.03	21.1247	143.76	64.0697
49.72	0.0000	88.34	21.1406	144.24	56.2303
51.35	57.9720	88.47	21.1474	145.44	64.2532
51.87	57.0234	89.96	93.7391	152.43	71.0065
52.39	57.1284	1093.63	77.9487	153.25	0.0000
52.97	57.2445	91.11	0.0000	323.87	62.1854
53.44	57.3385	92.59	55.1738	156.02	0.0000
54.07	59.5920	93.35	55.2727	158.56	0.0000
57.36	0.0000	94.56	55.4292	159.00	53.5693
57.53	63.7909	94.65	55.4411	162.33	54.8668
57.98	68.7373	94.67	55.4434	162.66	0.0000
59.27	83.3736	94.87	55.4690	163.33	54.9525
59.32	83.3873	97.43	53.9969	165.86	49.0386
59.54	78.0278	98.43	54.1193	176.31	50.8520
60.96	72.9398	98.44	54.1205	176.60	0.0000
61.17	83.8819	99.53	54.2537	177.52	55.1002
62.93	86.2630	100.11	55.5314	181.07	0.0000
63.29	86.3593	102.03	53.3435	181.52	50.1921
63.58	86.4366	103.18	59.2514	184.41	48.2994
64.28	86.6223	103.37	58.3638	143.76	48.3893
66.73	95.2995	105.21	58.5972	193.51	48.9157
67.24	91.0046	105.31	57.6941	197.03	41.6708
125.81	93.3456	106.12	58.7119	198.01	51.3545
67.75	89.1963	106.47	58.7559	201.83	54.8427
69.67	82.9927	109.28	49.8707	203.43	57.1139
70.83	99.8108	111.00	70.4406	205.31	48.9732
72.81	87.9658	111.76	0.0000	210.85	42.0716
72.87	87.9809	114.06	61.5568	215.65	58.0197
74.66	102.8720	116.30	0.0000	222.11	39.7271
74.82	102.9172	116.74	49.6996	227.09	54.4027
74.97	102.9597	119.76	49.0539	227.38	53.3108
77.11	103.5606	121.12	62.4264	228.16	0.0000
78.74	90.5457	121.22	62.4385	228.18	46.6924
79.69	75.8358	121.78	54.9295	116.74	46.6924
80.12	93.1759	122.06	51.1692	235.69	52.3455
80.19	0.0000	122.92	55.0507	235.96	52.3626
80.57	100.1955	123.07	59.8138	238.63	40.5198
81.00	88.7782	265.00	53.2297	238.98	0.0000
81.07	88.7947	125.81	45.8108	240.99	40.6307
81.75	70.4673	127.23	61.2439	242.00	40.6785
83.79	75.4816	127.91	50.7825	244.70	36.2705
84.00	75.5219	129.30	50.9135	252.40	0.0000
85.43	75.7943	131.20	60.4109	252.80	25.1646
86.55	76.0059	133.02	58.0325	254.15	0.0000
86.79	76.0509	133.52	56.1486	256.23	26.4084
86.94	76.0793	136.00	52.5103	260.90	0.0000

ENERGY	MDA COUNTS	ENERGY	MDA COUNTS	ENERGY	MDA COUNTS
264.66	47.5089	355.39	0.0000	584.27	22.1768
264.80	47.5164	356.01	28.3117	595.83	0.0000
265.00	52.1631	364.49	0.0000	427.87	17.9048
268.22	56.9957	366.42	0.0000	602.52	0.0000
269.46	37.2705	372.51	26.4823	604.72	16.4496
270.03	31.4659	375.05	23.1136	607.14	13.4769
271.23	46.6748	377.52	25.7330	609.32	18.9900
273.65	0.0000	356.01	23.2778	610.33	19.5008
276.40	38.7152	388.16	30.2782	614.28	16.8369
277.37	46.9751	388.63	0.0000	618.01	16.0671
277.60	46.9861	391.69	25.1579	620.36	15.0824
278.00	31.7288	264.66	21.8399	621.93	14.0889
279.20	43.5344	401.81	27.9798	630.19	0.0000
279.54	40.0181	402.40	32.3660	631.29	9.1022
279.70	40.0243	404.85	21.0337	633.25	15.1862
280.46	38.8778	410.95	27.2947	634.78	0.0000
283.69	26.0042	413.71	13.2346	635.95	20.2775
284.31	0.0000	414.70	0.0000	636.99	0.0000
285.41	29.6021	423.72	0.0000	645.85	21.4016
285.90	0.0000	427.09	22.2778	657.76	21.5341
287.50	23.7311	427.87	20.5073	657.90	0.0000
290.67	26.9810	433.94	20.5981	661.66	12.3296
293.27	0.0000	439.40	22.4772	664.57	0.0000
351.93	27.1027	453.88	21.7998	666.33	0.0000
295.96	27.1228	463.37	17.8290	666.50	0.0000
879.38	23.9929	468.07	18.3447	667.71	0.0000
299.98	36.8397	473.00	0.0000	677.62	30.0384
300.09	36.8434	475.06	31.3334	685.70	0.0000
300.13	36.8453	476.78	18.4530	695.00	0.0000
301.36	25.6621	477.60	24.0015	696.49	17.7734
302.85	41.7612	482.18	19.4453	696.51	17.7740
256.23	36.1963	487.02	0.0000	697.00	0.0000
304.85	0.0000	492.35	0.0000	697.30	16.7350
306.78	39.9035	497.08	19.6358	697.49	16.7363
308.46	31.4891	505.52	23.9732	702.65	15.7300
311.90	36.4526	507.63	0.0000	706.68	22.0647
316.51	39.0508	511.00	24.5284	711.68	18.9580
319.41	0.0000	514.00	28.3557	720.70	0.0000
320.08	0.0000	514.00	28.3557	721.93	0.0000
321.04	26.9602	520.40	29.4182	722.78	12.7056
323.87	27.8498	520.69	0.0000	722.91	11.1182
325.23	21.3234	522.65	0.0000	723.31	12.7090
328.76	0.0000	527.90	0.0000	724.19	15.8929
333.37	34.6992	528.26	12.3970	727.33	15.9161
333.97	26.4518	529.59	20.0421	733.00	12.7671
334.37	29.7686	529.87	0.0000	735.93	15.9808
338.28	29.8726	531.02	0.0000	333.97	17.0579
338.32	29.8733	537.26	0.0000	739.50	0.0000
311.90	29.9304	546.56	0.0000	747.24	13.9225
340.48	29.9304	552.55	14.5154	748.06	17.1419
340.55	0.0000	563.25	24.3449	752.31	4.8307
344.28	28.3617	569.33	17.5906	753.82	0.0000
345.93	36.3385	946.00	17.5928	756.73	16.1346
351.06	33.5628	569.70	20.5266	756.80	16.1353
351.93	33.5881	583.19	21.6715	884.68	14.5690

ENERGY	MDA COUNTS	ENERGY	MDA COUNTS	ENERGY	MDA COUNTS
765.81	14.5811	1274.44	9.7764	1620.50	2.1292
766.42	12.9644	1001.03	17.8058	1621.92	3.1948
766.84	12.9668	1002.74	19.5984	1678.03	0.0000
772.60	0.0000	1004.73	8.9145	1690.97	5.4105
776.52	0.0000	507.63	0.0000	1750.46	0.0000
739.50	0.0000	1025.87	0.0000	1764.49	4.3999
778.90	11.9507	1028.54	0.0000	1063.66	4.4053
783.70	0.0000	1037.84	16.2345	1771.35	2.2032
785.37	6.5374	1038.76	0.0000	1791.20	0.0000
792.07	31.1440	631.29	9.9513	1808.65	1.1105
794.95	16.4124	1048.07	0.0000	1810.72	0.0000
795.86	10.5082	1049.04	9.0546	1836.06	2.2340
810.06	11.0136	1050.41	11.7765		
810.29	8.8115	1063.66	9.0997		
344.28	8.8122	1077.00	0.0000		
810.76	9.9152	1077.34	12.7994		
815.77	0.0000	1085.87	16.5037		
1048.07	0.0000	1093.63	11.9503		
832.01	11.1165	1099.45	11.9733		
834.85	15.5819	1112.07	18.4973		
835.71	14.4742	1112.84	14.8008		
836.80	0.0000	1115.54	10.3701		
846.75	0.0000	1120.29	9.2731		
846.77	13.4224	1120.55	9.2743		
856.80	0.0000	1221.41	9.2761		
860.56	8.4369	1129.67	11.1621		
871.09	14.6864	1131.51	0.0000		
873.19	13.5684	1147.95	0.0000		
875.33	0.0000	1173.23	13.2036		
879.38	11.9018	1177.95	11.3342		
880.51	11.9073	1189.05	18.0085		
883.24	10.2173	1204.77	16.1907		
884.68	4.5436	1221.41	10.5294		
889.28	4.5521	1231.02	13.4403		
894.76	5.7023	1235.36	0.0000		
898.04	15.9875	1238.28	19.2419		
900.72	6.8589	1260.41	0.0000		
903.28	14.8757	1271.87	12.6318		
911.20	16.0701	1274.44	9.7241		
912.08	16.0753	1274.54	9.7241		
923.98	0.0000	1291.59	9.7723		
926.50	9.2373	1298.22	0.0000		
929.11	5.7790	1312.11	0.0000		
937.49	17.3926	1332.49	11.8638		
944.13	0.0000	1362.66	0.0000		
946.00	10.4692	1365.19	5.9861		
949.00	10.4810	1368.63	0.0000		
667.71	0.0000	1384.29	9.1691		
962.31	18.0571	1408.01	4.0371		
964.08	8.4322	1457.56	0.0000		
966.17	23.9096	1460.82	4.0935		
911.20	13.1992	1489.16	6.1853		
968.97	13.1992	1505.03	3.3121		
983.53	0.0000	1584.12	8.4429		
984.45	0.0000	1596.21	0.0000		

```

*****
*                               GEL Laboratories LLC                               *
*                               2040 Savage Road                               *
*                               Charleston, SC 29407                          *
*****
Configuration   : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]R1203621687.CNF;1
Background file  : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]BKG_GAM11.CNF;517
Background date  : 2-OCT-2016 11:00:34.
Sample date      : 12-SEP-2016 00:00:00 Acquisition date : 3-OCT-2016 04:53:57.
Sample ID        : R1203621687 Sample quantity   : 1.15000E+02 GRAM
Detector name    : GAM11 Detector geometry: CAN
Elapsed live time: 0 00:15:00.00 Elapsed real time: 0 00:15:06.51 0.7%
Energy tolerance : 1.50000 keV Analyst Initials  : MXR1
Abundance limit  : 75.00000 Sensitivity    : 3.00000
Batch ID         : 1596387 Detector SN#     :
Matrix Spike ID  : LCS ID           : 1556
*****
    
```

BACKGROUND CORRECTED SAMPLE PEAK REPORT

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	46.42*	11776	6823	0.83	92.71	88	10	1.31E+01	1.6	
2	0	59.46	24098	4611	0.82	118.83	114	10	2.68E+01	0.8	
3	0	88.00	3273	1523	0.82	175.93	171	9	3.64E+00	2.8	
4	0	121.78	205	1070	1.13	243.55	240	9	2.28E-01	29.6	
5	0	129.70	99	827	1.30	259.40	256	8	1.10E-01	51.0	
6	0	157.09	40	466	1.19	314.21	312	5	4.45E-02	82.5	
7	0	160.06	52	588	1.34	320.16	318	6	5.79E-02	74.6	
8	0	214.22	67	518	1.03	428.56	427	5	7.43E-02	52.6	
9	0	259.51	116	641	2.32	519.19	515	8	1.28E-01	39.1	
10	0	325.09	57	400	1.35	650.43	648	6	6.36E-02	56.8	
11	0	332.46	106	611	1.62	665.18	661	9	1.18E-01	42.9	
12	0	338.69*	37	360	0.86	677.64	676	5	4.12E-02	78.5	
13	0	363.40	92	596	1.29	727.08	722	9	1.02E-01	49.2	
14	0	416.58	77	512	1.99	833.51	831	7	8.55E-02	49.9	
15	0	431.82	42	604	1.34	864.01	860	8	4.72E-02	101.4	
16	0	625.68	45	492	0.49	1251.90	1246	14	5.03E-02	104.8	
17	0	636.02	48	182	1.80	1272.60	1270	6	5.36E-02	46.3	
18	0	661.65*	14981	525	1.40	1323.88	1317	15	1.66E+01	0.9	
19	0	744.80	53	182	0.76	1490.23	1487	7	5.89E-02	44.5	
20	0	756.15	55	318	3.32	1512.95	1508	11	6.15E-02	63.7	
21	0	858.21	40	426	0.66	1717.13	1714	11	4.45E-02	101.0	
22	0	909.43	35	293	1.44	1819.60	1818	7	3.85E-02	83.3	
23	0	948.19	37	443	1.65	1897.13	1895	9	4.09E-02	104.0	
24	0	1098.69	36	323	1.32	2198.19	2191	10	3.99E-02	95.7	
25	0	1115.98	90	414	3.14	2232.78	2227	13	1.01E-01	47.7	
26	0	1164.48	45	255	4.18	2329.81	2322	14	4.96E-02	77.4	
27	0	1173.28	9309	293	1.78	2347.40	2339	17	1.03E+01	1.1	
28	0	1244.74	22	29	0.71	2490.34	2486	8	2.46E-02	47.6	
29	0	1267.54	21	86	4.77	2535.94	2523	17	2.35E-02	104.1	
30	0	1332.58*	8566	102	1.78	2666.03	2657	19	9.52E+00	1.1	
31	0	1403.68	15	24	1.44	2808.22	2802	13	1.62E-02	72.9	
32	0	1539.25*	8	15	1.02	3079.35	3075	8	8.64E-03	95.5	
33	0	1681.35	15	10	3.83	3363.52	3357	11	1.68E-02	49.3	
34	0	1701.94	22	4	4.57	3404.69	3396	15	2.45E-02	28.7	

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
35	0	1743.31	16	19	4.05	3487.42	3479	15	1.79E-02	63.6	
36	0	1748.34	6	7	0.60	3497.47	3493	8	6.75E-03	88.6	
37	0	1759.92	16	9	2.89	3520.63	3514	12	1.78E-02	45.0	
38	0	1799.64	29	22	5.73	3600.07	3586	22	3.22E-02	45.2	
39	0	1878.07	10	8	2.75	3756.87	3749	11	1.08E-02	65.6	
40	0	1932.51	17	6	1.33	3865.74	3861	12	1.84E-02	38.7	
41	0	1961.35	18	11	1.35	3923.40	3916	15	2.02E-02	46.3	

Flag: "*" = Peak area was modified by background subtraction

Configuration : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]R1203621687.CNF;1
Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.4
Sample title : MXR1
Sample date : 12-SEP-2016 00:00:00 Acquisition date : 3-OCT-2016 04:53:57
Sample ID : R1203621687 Sample quantity : 115.00 GRAM
Sample type : SOLID Sample geometry :
Detector name : GAMMA11 Detector geometry: CAN
Elapsed live time: 0 00:15:00.00 Elapsed real time: 0 00:15:06.51 0.7%
Energy tolerance : 1.50 keV Half life ratio : 10.00
Errors propagated: No Systematic Error : 0.00 %
Efficiency type : Linear Efficiencies at : Peak Energy
Abundance limit : 75.00

Interference Report

No interference correction performed

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
CO-57	122.06	215	85.60*	7.218E+00	9.084E-01	9.589E-01	59.24
	136.47	-----	10.68	7.146E+00	-----	Line Not Found	-----
CO-60	1173.23	8867	99.85	1.491E+00	1.556E+02	1.567E+02	2.24
	1332.49	8112	99.98*	1.340E+00	1.581E+02	1.593E+02	2.24
ZN-65	1115.54	86	50.60*	1.553E+00	2.871E+00	3.049E+00	95.50
CD-109	88.03	3475	3.70*	6.300E+00	3.893E+02	4.019E+02	5.54
SN-117M	156.02	42	2.11	6.846E+00	7.508E+00	2.213E+01	165.09
	158.56	42	86.40*	6.846E+00	1.834E-01	5.404E-01	165.09
TE-123M	159.00	54	84.00*	6.792E+00	2.472E-01	2.796E-01	149.20
SN-126	64.28	-----	9.60	4.012E+00	-----	Line Not Found	-----
	86.94	3475	8.90	6.300E+00	1.619E+02	1.619E+02	5.54
I-131	87.57	3475	37.00*	6.300E+00	3.893E+01	3.893E+01	5.54
	80.19	-----	2.62	5.729E+00	-----	Line Not Found	-----
	284.31	-----	6.12	4.622E+00	-----	Line Not Found	-----
	364.49	92	81.50*	3.783E+00	7.811E-01	4.873E+00	98.39
BA-137M	636.99	47	7.16	2.412E+00	7.129E+00	4.448E+01	92.58
CS-137	661.66	14632	89.90*	2.339E+00	1.817E+02	1.819E+02	1.77
PM-147	661.66	14632	85.10*	2.339E+00	1.920E+02	1.922E+02	1.77
PM-147	121.22	215	0.00*	7.218E+00	2.728E+04	2.771E+04	59.24
PB-210	46.54	12822	4.25*	1.357E+00	5.805E+03	5.816E+03	3.22
AM-241	59.54	25987	35.90*	3.351E+00	5.641E+02	5.642E+02	1.68

Flag: "*" = Keyline

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*****
*
*           GEL Laboratories LLC
*           2040 Savage Road
*           Charleston, SC 29407
*****
*
*           DETECTOR AND SAMPLE DATA
*
* Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]R1203621687.CNF;1
* Acquisition date   : 3-OCT-2016 04:53:57 Sensitivity      : 3.000
* Detector ID        : GAM11 Energy tolerance: 1.500
* Elapsed live time  : 0 00:15:00.00 Abundance limit : 75.000
* Elapsed real time  : 0 00:15:06.51 Half life ratio  : *****
* Sample date        : 12-SEP-2016 00:00:00 Analyst initials: MXR1
* Sample ID          : R1203621687 Sample Quantity : 1.1500E+02 GRAM
* Batch Number       : 1596387 Wet Weight : 0.00000
* Wet wt corr        : 1.00000 Dry Weight : 0.00000
* Nuclide Library    : SOLID.NLB;6
*****
*
*           CALIBRATION INFORMATION
*
* Eff. Cal. date     : 2-AUG-2016 10:31:39 Eff. Geometry   : CAN
* Eff. File          : DKA100:[CANBERRA.GAMMA]EFF_GAM11_CAN.CNF;14
*****

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Combined Activity-MDA Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM)	Cnt uncert (1.96-sigma)	MDA (pCi/GRAM)
CO-57	9.589E-01	5.567E-01	4.869E-01
CO-60	1.593E+02	3.489E+00	6.590E-01
ZN-65	3.049E+00	2.854E+00	2.578E+00
CD-109	4.019E+02	2.182E+01	1.456E+01
SN-117M	5.404E-01	8.744E-01	1.288E+00
TE-123M	2.796E-01	4.089E-01	5.094E-01
SN-126	3.893E+01	2.114E+00	1.416E+00
I-131	4.873E+00	4.698E+00	5.174E+00
BA-137M	1.819E+02	3.150E+00	9.321E-01
CS-137	1.922E+02	3.327E+00	9.847E-01
PM-147	2.771E+04	1.609E+04	1.406E+04
PB-210	5.816E+03	1.837E+02	1.060E+02
AM-241	5.642E+02	9.291E+00	4.241E+00

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/GRAM)	K.L.	Cnt Uncert (1.96-sigma)	MDA (pCi/GRAM)	
BE-7	-5.060E+00		6.214E+00	1.071E+01	NOT IDENT.
NA-22	-2.058E-01		3.140E-01	5.436E-01	NOT IDENT.
NA-24	0.000E+00		4.441E+09	0.000E+00	SHORT HLIF
AL-26	4.050E-02		2.467E-01	4.875E-01	NOT IDENT.
K-40	-1.797E+00		2.120E+00	3.570E+00	NOT IDENT.
SC-46	-5.656E-01		7.801E-01	1.273E+00	NOT IDENT.
V-48	3.691E-01		1.884E+00	3.171E+00	NOT IDENT.
CR-51	1.301E+00		5.494E+00	1.009E+01	NOT IDENT.
MN-54	9.503E-04		6.214E-01	1.057E+00	NOT IDENT.
CO-56	1.054E-01		7.580E-01	1.293E+00	NOT IDENT.
MN-56	0.000E+00		1.960E+41	0.000E+00	SHORT HLIF
CO-58	9.301E-02		7.061E-01	1.212E+00	NOT IDENT.
FE-59	1.401E+00		2.628E+00	3.203E+00	FAIL ABUN
GE-68	-1.009E+01		2.235E+01	3.918E+01	NOT IDENT.
AS-73	-1.329E+01		1.584E+01	2.829E+01	NOT IDENT.
AS-74	6.248E-01		1.687E+00	3.005E+00	FAIL ABUN
SE-75	-2.325E-01		6.338E-01	1.042E+00	FAIL ABUN

BR-77	6.028E+02	6.541E+02	1.134E+03	NOT IDENT.
SR-82	-1.445E+00	6.366E+00	1.079E+01	NOT IDENT.
RB-83	-1.327E-01	1.111E+00	1.955E+00	NOT IDENT.
KR-85	3.573E+01	1.007E+02	1.802E+02	NOT IDENT.
SR-85	2.011E-01	5.688E-01	1.018E+00	NOT IDENT.
RB-86	-1.303E+01	1.760E+01	3.049E+01	NOT IDENT.
Y-88	-1.769E-01	3.122E-01	5.301E-01	NOT IDENT.
Y-91	-4.902E+01	2.326E+02	4.144E+02	NOT IDENT.
NB-94	4.528E-01	4.425E-01	8.076E-01	NOT IDENT.
NB-95	2.396E-02	6.744E-01	1.159E+00	NOT IDENT.
NB-95M	5.353E-01	1.535E+00	2.611E+00	NOT IDENT.
ZR-95	1.539E+00	1.922E+00	2.123E+00	FAIL ABUN
NB-97	0.000E+00	1.960E+41	0.000E+00	SHORT HLIF
ZR-97	0.000E+00	9.884E+09	0.000E+00	SHORT HLIF
MO-99	-6.687E+01	8.716E+02	1.497E+03	NOT IDENT.
TC-99M	0.000E+00	7.112E+24	0.000E+00	SHORT HLIF
RH-101	-1.531E-01	3.378E-01	5.379E-01	FAIL ABUN
RH-102	3.108E-01	8.541E-01	1.367E+00	NOT IDENT.
RU-103	-2.661E-01	7.080E-01	1.236E+00	NOT IDENT.
RH-106	-9.529E-01	5.383E+00	8.317E+00	NOT IDENT.
RU-106	-9.529E-01	5.383E+00	8.317E+00	NOT IDENT.
AG-108M	-3.621E-01	5.630E-01	8.772E-01	NOT IDENT.
AG-110M	-3.115E-01	9.865E-01	1.641E+00	NOT IDENT.
SN-113	2.708E-01	6.982E-01	1.268E+00	NOT IDENT.
CD-115	-4.282E+02	1.169E+03	2.034E+03	FAIL ABUN
SB-124	2.388E-01	6.625E-01	1.342E+00	NOT IDENT.
SB-125	9.771E-02	1.622E+00	2.609E+00	FAIL ABUN
TE-125M	5.411E+01	1.086E+02	1.945E+02	NOT IDENT.
I-126	-2.633E+00	4.783E+00	7.172E+00	NOT IDENT.
SB-126	2.130E+00	2.859E+00	5.126E+00	FAIL ABUN
SB-127	7.945E+00	5.652E+01	9.883E+01	NOT IDENT.
I-132	0.000E+00	1.960E+41	0.000E+00	SHORT HLIF
TE-132	4.795E+00	3.469E+01	5.864E+01	NOT IDENT.
BA-133	5.436E-01	5.928E-01	1.101E+00	NOT IDENT.
I-133	0.000E+00	1.145E+07	0.000E+00	SHORT HLIF
CS-134	-3.328E-01	6.847E-01	1.143E+00	NOT IDENT.
CS-135	6.401E-01	2.049E+00	3.452E+00	NOT IDENT.
I-135	0.000E+00	2.694E+23	0.000E+00	SHORT HLIF
CS-136	8.548E-01	2.616E+00	4.736E+00	NOT IDENT.
CE-139	-9.636E-02	3.096E-01	5.284E-01	NOT IDENT.
BA-140	2.714E-01	5.676E+00	1.002E+01	NOT IDENT.
LA-140	-1.005E-02	7.714E-01	1.481E+00	NOT IDENT.
CE-141	-2.030E-02	7.092E-01	1.232E+00	NOT IDENT.
CE-143	0.000E+00	3.383E+04	0.000E+00	SHORT HLIF
CE-144	1.440E-01	2.230E+00	3.613E+00	NOT IDENT.
PM-144	3.376E-01	4.488E-01	8.108E-01	NOT IDENT.
PR-144	2.513E+01	3.369E+01	6.083E+01	NOT IDENT.
PM-146	8.271E-01	7.488E-01	1.370E+00	NOT IDENT.
ND-147	5.758E+00	1.221E+01	2.196E+01	NOT IDENT.
PM-149	-3.194E+03	8.287E+03	1.354E+04	NOT IDENT.
EU-150	1.059E-01	3.888E-01	6.447E-01	NOT IDENT.
EU-152	-3.504E-02	1.314E+00	2.381E+00	FAIL ABUN
GD-153	-4.893E-01	8.762E-01	1.531E+00	NOT IDENT.
EU-154	-5.814E-01	8.869E-01	1.535E+00	FAIL ABUN
EU-155	-1.551E-01	1.078E+00	1.900E+00	FAIL ABUN
TB-160	-1.404E+00	2.773E+00	4.576E+00	FAIL ABUN
HO-166M	-1.601E-01	8.652E-01	1.485E+00	NOT IDENT.
TM-171	-1.324E+02	3.105E+02	5.584E+02	NOT IDENT.
HF-172	-4.376E-01	2.372E+00	3.361E+00	FAIL ABUN
LU-172	2.689E-01	1.313E+00	2.086E+00	FAIL ABUN
LU-176	6.929E-02	3.709E-01	6.169E-01	FAIL ABUN
HF-181	-1.505E-01	8.378E-01	1.473E+00	NOT IDENT.
TA-182	-1.445E+00	1.653E+00	2.806E+00	NOT IDENT.
RE-183	0.000E+00	1.200E+01	9.456E+00	FAIL ABUN
RE-184	-4.334E-01	2.785E+00	4.654E+00	NOT IDENT.
W-188	-4.589E+01	1.033E+02	1.682E+02	NOT IDENT.
IR-192	-1.076E-01	5.159E-01	8.427E-01	NOT IDENT.
HG-203	-5.270E-01	5.535E-01	8.862E-01	NOT IDENT.
BI-207	-1.280E-01	9.466E-01	1.681E+00	NOT IDENT.
TL-208	-2.539E-01	4.915E-01	8.452E-01	NOT IDENT.
BI-211	1.651E+00	2.732E+00	5.042E+00	NOT IDENT.
PB-211	9.303E+00	1.110E+01	2.037E+01	NOT IDENT.
BI-212	9.898E-01	7.401E+00	1.286E+01	NOT IDENT.
PB-212	7.264E-01	7.069E-01	1.231E+00	NOT IDENT.
BI-214	-4.295E-01	9.568E-01	1.644E+00	NOT IDENT.
PB-214	1.499E-01	1.008E+00	1.834E+00	FAIL ABUN
RN-219	-5.933E+00	6.185E+00	1.076E+01	NOT IDENT.
RN-222	-4.295E-01	9.568E-01	1.644E+00	NOT IDENT.

RA-223	9.104E+00	1.013E+01	1.435E+01	FAIL ABUN
RA-224	-5.099E+00	7.653E+00	1.254E+01	NOT IDENT.
RA-226	-4.295E-01	9.568E-01	1.644E+00	NOT IDENT.
AC-227	-9.465E-01	3.677E+00	5.590E+00	NOT IDENT.
TH-227	-9.465E-01	3.677E+00	5.590E+00	NOT IDENT.
AC-228	-1.062E+00	3.319E+00	4.868E+00	FAIL ABUN
RA-228	-1.062E+00	3.319E+00	4.868E+00	FAIL ABUN
TH-228	7.264E-01	7.069E-01	1.231E+00	NOT IDENT.
TH-229	3.690E+00	5.909E+00	1.028E+01	FAIL ABUN
TH-230	-4.295E-01	9.568E-01	1.644E+00	NOT IDENT.
PA-231	9.666E-01	6.527E+00	1.085E+01	NOT IDENT.
TH-231	9.104E+00	1.013E+01	1.435E+01	FAIL ABUN
TH-232	-1.062E+00	3.319E+00	4.868E+00	FAIL ABUN
PA-233	4.638E-01	9.382E-01	1.575E+00	NOT IDENT.
PA-234	-4.542E-01	7.143E+00	1.058E+01	FAIL ABUN
PA-234M	-2.103E+01	8.169E+01	1.451E+02	NOT IDENT.
TH-234	2.362E+00	1.280E+01	2.174E+01	NOT IDENT.
U-234	-4.295E-01	9.568E-01	1.644E+00	NOT IDENT.
U-235	3.699E-01	2.009E+00	3.517E+00	NOT IDENT.
NP-237	4.638E-01	9.382E-01	1.575E+00	NOT IDENT.
NP-238	0.000E+00	3.048E+03	0.000E+00	SHORT HLIF
U-238	2.362E+00	1.280E+01	2.174E+01	NOT IDENT.
NP-239	1.050E+00	2.717E+00	4.841E+00	NOT IDENT.
PU-239	5.971E+03	5.966E+03	6.240E+03	FAIL ABUN
AM-243	1.404E-01	5.286E-01	9.553E-01	NOT IDENT.
CM-243	2.186E-01	1.103E+00	1.964E+00	NOT IDENT.
BK-247	-8.523E-01	1.111E+00	1.800E+00	NOT IDENT.
CM-247	-2.964E-02	5.545E-01	9.926E-01	NOT IDENT.
CF-249	3.736E-02	5.843E-01	1.053E+00	FAIL ABUN
CF-251	5.917E-01	1.385E+00	2.411E+00	NOT IDENT.
ANH-511	-1.307E-01	4.433E-01	7.862E-01	NOT IDENT.

Nuclide Line Activity Report

Nuclide Type:

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	2-Sigma %Error
CO-57	122.06	215	85.60*	7.218E+00	9.084E-01	9.589E-01	59.24
	136.47	-----	10.68	7.146E+00	-----	Line Not Found	-----
CO-60	1173.23	8867	99.85	1.491E+00	1.556E+02	1.567E+02	2.24
	1332.49	8112	99.98*	1.340E+00	1.581E+02	1.593E+02	2.24
ZN-65	1115.54	86	50.60*	1.553E+00	2.871E+00	3.049E+00	95.50
CD-109	88.03	3475	3.70*	6.300E+00	3.893E+02	4.019E+02	5.54
SN-117M	156.02	42	2.11	6.846E+00	7.508E+00	2.213E+01	165.09
	158.56	42	86.40*	6.846E+00	1.834E-01	5.404E-01	165.09
TE-123M	159.00	54	84.00*	6.792E+00	2.472E-01	2.796E-01	149.20
SN-126	64.28	-----	9.60	4.012E+00	-----	Line Not Found	-----
	86.94	3475	8.90	6.300E+00	1.619E+02	1.619E+02	5.54
	87.57	3475	37.00*	6.300E+00	3.893E+01	3.893E+01	5.54
I-131	80.19	-----	2.62	5.729E+00	-----	Line Not Found	-----
	284.31	-----	6.12	4.622E+00	-----	Line Not Found	-----
	364.49	92	81.50*	3.783E+00	7.811E-01	4.873E+00	98.39
	636.99	47	7.16	2.412E+00	7.129E+00	4.448E+01	92.58
BA-137M	661.66	14632	89.90*	2.339E+00	1.817E+02	1.819E+02	1.77
CS-137	661.66	14632	85.10*	2.339E+00	1.920E+02	1.922E+02	1.77
PM-147	121.22	215	0.00*	7.218E+00	2.728E+04	2.771E+04	59.24
PB-210	46.54	12822	4.25*	1.357E+00	5.805E+03	5.816E+03	3.22
AM-241	59.54	25987	35.90*	3.351E+00	5.641E+02	5.642E+02	1.68

Flag: "*" = Keyline

Total number of lines in spectrum 41
 Number of unidentified lines 19
 Number of lines tentatively identified by NID 22 53.66%

Nuclide Type :

Nuclide	Hlife	Decay	Uncorrected pCi/GRAM	Decay Corr pCi/GRAM	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
CO-57	271.74D	1.06	9.084E-01	9.589E-01	5.681E-01	59.24	
CO-60	5.27Y	1.01	1.581E+02	1.593E+02	0.036E+02	2.24	
ZN-65	244.06D	1.06	2.871E+00	3.049E+00	2.912E+00	95.50	
CD-109	461.40D	1.03	3.893E+02	4.019E+02	0.223E+02	5.54	
SN-117M	13.60D	2.95	1.834E-01	5.404E-01	8.922E-01	165.09	
TE-123M	119.20D	1.13	2.472E-01	2.796E-01	4.172E-01	149.20	
SN-126	2.30E+05Y	1.00	3.893E+01	3.893E+01	0.216E+01	5.54	
I-131	8.03D	6.24	7.811E-01	4.873E+00	4.794E+00	98.39	
BA-137M	30.08Y	1.00	1.817E+02	1.819E+02	0.032E+02	1.77	
CS-137	30.08Y	1.00	1.920E+02	1.922E+02	0.034E+02	1.77	
PM-147	2.62Y	1.02	2.728E+04	2.771E+04	1.641E+04	59.24	
PB-210	22.20Y	1.00	5.805E+03	5.816E+03	0.187E+03	3.22	
AM-241	432.60Y	1.00	5.641E+02	5.642E+02	0.095E+02	1.68	
Total Activity :			3.462E+04	3.507E+04			

Grand Total Activity : 3.462E+04 3.507E+04

Flags: "K" = Keyline not found "M" = Manually accepted
 "E" = Manually edited "A" = Nuclide specific abn. limit

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
0	129.70	104	864	1.30	259.40	256	8	1.10E-01	****	7.20E+00	T
0	214.22	69	531	1.03	428.56	427	5	7.43E-02	****	5.73E+00	T
0	259.51	118	652	2.32	519.19	515	8	1.28E-01	78.2	4.97E+00	T
0	325.09	58	402	1.35	650.43	648	6	6.36E-02	****	4.14E+00	T
0	332.46	107	614	1.62	665.18	661	9	1.18E-01	85.9	4.07E+00	T
0	338.69	37	362	0.86	677.64	676	5	4.12E-02	****	4.01E+00	T
0	416.58	77	510	1.99	833.51	831	7	8.55E-02	99.8	3.38E+00	
0	431.82	42	600	1.34	864.01	860	8	4.72E-02	****	3.28E+00	
0	625.68	44	481	0.49	1251.90	1246	14	5.03E-02	****	2.44E+00	
0	744.80	52	177	0.76	1490.23	1487	7	5.89E-02	88.9	2.13E+00	
0	756.15	54	308	3.32	1512.95	1508	11	6.15E-02	****	2.11E+00	T
0	858.21	39	411	0.66	1717.13	1714	11	4.45E-02	****	1.91E+00	T
0	909.43	33	283	1.44	1819.60	1818	7	3.85E-02	****	1.83E+00	
0	948.19	35	426	1.65	1897.13	1895	9	4.09E-02	****	1.77E+00	T
0	1098.69	34	309	1.32	2198.19	2191	10	3.99E-02	****	1.57E+00	T
0	1164.48	43	243	4.18	2329.81	2322	14	4.96E-02	****	1.50E+00	
0	1244.74	21	27	0.71	2490.34	2486	8	2.46E-02	95.2	1.42E+00	
0	1267.54	20	81	4.77	2535.94	2523	17	2.35E-02	****	1.40E+00	
0	1403.68	14	23	1.44	2808.22	2802	13	1.62E-02	****	1.28E+00	
0	1539.25	7	14	1.02	3079.35	3075	8	8.64E-03	****	1.18E+00	
0	1681.35	14	9	3.83	3363.52	3357	11	1.68E-02	98.6	1.09E+00	
0	1701.94	21	4	4.57	3404.69	3396	15	2.45E-02	57.4	1.08E+00	
0	1743.31	15	18	4.05	3487.42	3479	15	1.79E-02	****	1.05E+00	
0	1748.34	6	6	0.60	3497.47	3493	8	6.75E-03	****	1.05E+00	
0	1759.92	15	8	2.89	3520.63	3514	12	1.78E-02	89.9	1.04E+00	
0	1799.64	27	21	5.73	3600.07	3586	22	3.22E-02	90.4	1.02E+00	
0	1878.07	9	8	2.75	3756.87	3749	11	1.08E-02	****	9.78E-01	
0	1932.51	15	6	1.33	3865.74	3861	12	1.84E-02	77.3	9.50E-01	
0	1961.35	17	10	1.35	3923.40	3916	15	2.02E-02	92.7	9.36E-01	

Flags: "T" = Tentatively associated

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*****
*
*           GEL Laboratories LLC
*           2040 Savage Road
*           Charleston, SC 29407
*****
*
*           DETECTOR AND SAMPLE DATA
*
* Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]R1203621687.CNF;1
* Acquisition date   : 3-OCT-2016 04:53:57 Sensitivity      : 3.000
* Detector ID        : GAM11 Energy tolerance: 1.500
* Elapsed live time  : 0 00:15:00.00 Abundance limit : 75.000
* Elapsed real time  : 0 00:15:06.51 Half life ratio  : *****
* Sample date        : 12-SEP-2016 00:00:00 Nuclide Library : SOLID
* Sample ID          : R1203621687 Analyst initials: MXR1
* Batch Number       : 1596387 Sample Quantity : 1.1500E+02 GRAM
* Wet wt corr        : 1.00000 Wet Weight      : 0.00000
* Dry Weight         : 0.00000
*****
*
*           CALIBRATION INFORMATION
*
* Eff. Cal. date     : 2-AUG-2016 10:31:39 Eff. Geometry   : CAN
* Eff. File          : DKA100:[CANBERRA.GAMMA]EFF_GAM11_CAN.CNF;14
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Combined Critical Level Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Lc (pCi/GRAM)
CO-57	2.374E-01
CO-60	3.032E-01
ZN-65	1.242E+00
CD-109	7.125E+00
SN-117M	6.266E-01
TE-123M	2.477E-01
SN-126	6.930E-01
I-131	2.516E+00
BA-137M	4.494E-01
CS-137	4.748E-01
PM-147	6.856E+03
PB-210	5.241E+01
AM-241	2.092E+00

---- Non-Identified Nuclides ----

Nuclide	Lc (pCi/GRAM)	
BE-7	5.207E+00	NOT IDENT.
NA-22	2.462E-01	NOT IDENT.
NA-24	0.000E+00	SHORT HLIF
AL-26	2.092E-01	NOT IDENT.
K-40	1.519E+00	NOT IDENT.
SC-46	6.142E-01	NOT IDENT.
V-48	1.535E+00	NOT IDENT.
CR-51	4.902E+00	NOT IDENT.
MN-54	5.096E-01	NOT IDENT.
CO-56	6.248E-01	NOT IDENT.
MN-56	0.000E+00	SHORT HLIF
CO-58	5.843E-01	NOT IDENT.
FE-59	1.547E+00	FAIL ABUN
GE-68	1.888E+01	NOT IDENT.
AS-73	1.398E+01	NOT IDENT.
AS-74	1.449E+00	FAIL ABUN
SE-75	5.074E-01	FAIL ABUN
BR-77	5.532E+02	NOT IDENT.

SR-82	5.197E+00	NOT IDENT.
RB-83	9.447E-01	NOT IDENT.
KR-85	8.726E+01	NOT IDENT.
SR-85	4.929E-01	NOT IDENT.
RB-86	1.469E+01	NOT IDENT.
Y-88	2.245E-01	NOT IDENT.
Y-91	1.954E+02	NOT IDENT.
NB-94	3.881E-01	NOT IDENT.
NB-95	5.584E-01	NOT IDENT.
NB-95M	1.272E+00	NOT IDENT.
ZR-95	1.023E+00	FAIL ABUN
NB-97	0.000E+00	SHORT HLIF
ZR-97	0.000E+00	SHORT HLIF
MO-99	7.200E+02	NOT IDENT.
TC-99M	0.000E+00	SHORT HLIF
RH-101	2.617E-01	FAIL ABUN
RH-102	6.573E-01	NOT IDENT.
RU-103	5.988E-01	NOT IDENT.
RH-106	4.009E+00	NOT IDENT.
RU-106	4.009E+00	NOT IDENT.
AG-108M	4.268E-01	NOT IDENT.
AG-110M	7.933E-01	NOT IDENT.
SN-113	6.169E-01	NOT IDENT.
CD-115	9.837E+02	FAIL ABUN
SB-124	5.840E-01	NOT IDENT.
SB-125	1.268E+00	FAIL ABUN
TE-125M	9.487E+01	NOT IDENT.
I-126	3.443E+00	NOT IDENT.
SB-126	2.466E+00	FAIL ABUN
SB-127	4.751E+01	NOT IDENT.
I-132	0.000E+00	SHORT HLIF
TE-132	2.860E+01	NOT IDENT.
BA-133	5.356E-01	NOT IDENT.
I-133	0.000E+00	SHORT HLIF
CS-134	5.510E-01	NOT IDENT.
CS-135	1.681E+00	NOT IDENT.
I-135	0.000E+00	SHORT HLIF
CS-136	2.287E+00	NOT IDENT.
CE-139	2.569E-01	NOT IDENT.
BA-140	4.846E+00	NOT IDENT.
LA-140	6.385E-01	NOT IDENT.
CE-141	5.995E-01	NOT IDENT.
CE-143	0.000E+00	SHORT HLIF
CE-144	1.760E+00	NOT IDENT.
PM-144	3.891E-01	NOT IDENT.
PR-144	2.919E+01	NOT IDENT.
PM-146	6.678E-01	NOT IDENT.
ND-147	1.061E+01	NOT IDENT.
PM-149	6.582E+03	NOT IDENT.
EU-150	3.133E-01	NOT IDENT.
EU-152	1.157E+00	FAIL ABUN
GD-153	7.465E-01	NOT IDENT.
EU-154	6.953E-01	FAIL ABUN
EU-155	9.258E-01	FAIL ABUN
TB-160	2.212E+00	FAIL ABUN
HO-166M	7.131E-01	NOT IDENT.
TM-171	2.759E+02	NOT IDENT.
HF-172	1.636E+00	FAIL ABUN
LU-172	1.007E+00	FAIL ABUN
LU-176	2.999E-01	FAIL ABUN
HF-181	7.159E-01	NOT IDENT.
TA-182	1.301E+00	NOT IDENT.
RE-183	4.689E+00	FAIL ABUN
RE-184	2.252E+00	NOT IDENT.
W-188	8.172E+01	NOT IDENT.
IR-192	4.092E-01	NOT IDENT.
HG-203	4.305E-01	NOT IDENT.
BI-207	8.115E-01	NOT IDENT.
TL-208	4.066E-01	NOT IDENT.
BI-211	2.451E+00	NOT IDENT.
PB-211	9.918E+00	NOT IDENT.
BI-212	6.189E+00	NOT IDENT.
PB-212	6.001E-01	NOT IDENT.
BI-214	7.909E-01	NOT IDENT.
PB-214	8.919E-01	FAIL ABUN
RN-219	5.226E+00	NOT IDENT.
RN-222	7.909E-01	NOT IDENT.
RA-223	6.965E+00	FAIL ABUN

RA-224	6.106E+00	NOT IDENT.
RA-226	7.909E-01	NOT IDENT.
AC-227	2.721E+00	NOT IDENT.
TH-227	2.721E+00	NOT IDENT.
AC-228	2.360E+00	FAIL ABUN
RA-228	2.360E+00	FAIL ABUN
TH-228	6.001E-01	NOT IDENT.
TH-229	5.012E+00	FAIL ABUN
TH-230	7.909E-01	NOT IDENT.
PA-231	5.275E+00	NOT IDENT.
TH-231	6.965E+00	FAIL ABUN
TH-232	2.360E+00	FAIL ABUN
PA-233	7.665E-01	NOT IDENT.
PA-234	5.124E+00	FAIL ABUN
PA-234M	7.008E+01	NOT IDENT.
TH-234	1.062E+01	NOT IDENT.
U-234	7.909E-01	NOT IDENT.
U-235	1.713E+00	NOT IDENT.
NP-237	7.665E-01	NOT IDENT.
NP-238	0.000E+00	SHORT HLIF
U-238	1.062E+01	NOT IDENT.
NP-239	2.359E+00	NOT IDENT.
PU-239	3.042E+03	FAIL ABUN
AM-243	4.676E-01	NOT IDENT.
CM-243	9.579E-01	NOT IDENT.
BK-247	8.761E-01	NOT IDENT.
CM-247	4.823E-01	NOT IDENT.
CF-249	5.115E-01	FAIL ABUN
CF-251	1.174E+00	NOT IDENT.
ANH-511	3.809E-01	NOT IDENT.

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*****
*                                     GEL Laboratories LLC                       *
*                                     2040 Savage Road                          *
*                                     Charleston, SC 29407                       *
*****
*                                     DETECTOR AND SAMPLE DATA                  *
*
* Configuration      : DKA100:[CANBERRA.GAMMA.ARCHIVE.GAMMA]R1203621687.CNF;1
* Acquisition date   : 3-OCT-2016 04:53:57 Sensitivity      : 3.000
* Detector ID       : GAM11 Energy tolerance: 1.500
* Elapsed live time : 0 00:15:00.00 Abundance limit : 75.000
* Elapsed real time : 0 00:15:06.51 Half life ratio : *****
* Sample date       : 12-SEP-2016 00:00:00 Nuclide Library : SOLID
* Sample ID         : R1203621687 Analyst initials: MXR1
* Batch Number      : 1596387 Sample Quantity : 1.1500E+02 GRAM
* Wet wt corr       : 1.00000 Quantity Err(%) : 1.7391E-03 %
* Wet Weight        : 0.00000
* Dry Weight        : 0.00000
*****
*                                     CALIBRATION INFORMATION                    *
*
* Eff. Cal. date    : 2-AUG-2016 10:31:39 Eff. Geometry   : CAN
* Eff. File         : DKA100:[CANBERRA.GAMMA]EFF_GAM11_CAN.CNF;14
*****

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Combined Activity-MDA Report

NOTE: Not all "Identified Nuclides" are valid.
Please refer to Certificate of Analysis.

---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM)	Act Error (1.96-sigma)	TPU (1.96-sigma)
CO-57	9.589E-01	5.585E-01	5.585E-01
CO-60	1.593E+02	6.820E+00	6.820E+00
ZN-65	3.049E+00	2.856E+00	2.856E+00
CD-109	4.019E+02	3.939E+01	3.939E+01
SN-117M	5.404E-01	8.747E-01	8.747E-01
TE-123M	2.796E-01	4.091E-01	4.091E-01
SN-126	3.893E+01	3.210E+00	3.210E+00
I-131	4.873E+00	4.704E+00	4.704E+00
BA-137M	1.819E+02	8.432E+00	8.432E+00
CS-137	1.922E+02	8.888E+00	8.888E+00
PM-147	2.771E+04	1.614E+04	1.614E+04
PB-210	5.816E+03	5.389E+02	5.389E+02
AM-241	5.642E+02	4.257E+01	4.257E+01

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/GRAM)	K.L Act error (1.96-sigma)	TPU (1.96-sigma)	
BE-7	-5.060E+00	6.218E+00	6.623E+00	NOT IDENT.
NA-22	-2.058E-01	3.141E-01	3.275E-01	NOT IDENT.
NA-24	2.494E+09	4.443E+09	4.583E+09	SHORT HLIF
AL-26	4.050E-02	2.467E-01	2.474E-01	NOT IDENT.
K-40	-1.797E+00	2.122E+00	2.271E+00	NOT IDENT.
SC-46	-5.656E-01	7.804E-01	8.210E-01	NOT IDENT.
V-48	3.691E-01	1.884E+00	1.892E+00	NOT IDENT.
CR-51	1.301E+00	5.494E+00	5.525E+00	NOT IDENT.
MN-54	9.503E-04	6.214E-01	6.214E-01	NOT IDENT.
CO-56	1.054E-01	7.580E-01	7.595E-01	NOT IDENT.
MN-56	1.000E+41	6.892E+41	0.000E+00	SHORT HLIF
CO-58	9.301E-02	7.061E-01	7.074E-01	NOT IDENT.
FE-59	1.401E+00	2.630E+00	2.705E+00	FAIL ABUN
GE-68	-1.009E+01	2.235E+01	2.281E+01	NOT IDENT.
AS-73	-1.329E+01	1.607E+01	1.715E+01	NOT IDENT.
AS-74	6.248E-01	1.688E+00	1.711E+00	FAIL ABUN
SE-75	-2.325E-01	6.339E-01	6.425E-01	FAIL ABUN

BR-77	6.028E+02	7.516E+02	7.992E+02	NOT IDENT.
SR-82	-1.445E+00	6.366E+00	6.399E+00	NOT IDENT.
RB-83	-1.327E-01	1.111E+00	1.113E+00	NOT IDENT.
KR-85	3.573E+01	1.007E+02	1.020E+02	NOT IDENT.
SR-85	2.011E-01	5.688E-01	5.760E-01	NOT IDENT.
RB-86	-1.303E+01	1.761E+01	1.856E+01	NOT IDENT.
Y-88	-1.769E-01	3.124E-01	3.225E-01	NOT IDENT.
Y-91	-4.902E+01	2.326E+02	2.336E+02	NOT IDENT.
NB-94	4.528E-01	4.429E-01	4.877E-01	NOT IDENT.
NB-95	2.396E-02	6.744E-01	6.745E-01	NOT IDENT.
NB-95M	5.353E-01	1.535E+00	1.554E+00	NOT IDENT.
ZR-95	1.539E+00	1.924E+00	2.045E+00	FAIL ABUN
NB-97	1.000E+41	3.743E+41	0.000E+00	SHORT HLIF
ZR-97	5.192E+09	9.886E+09	1.016E+10	SHORT HLIF
MO-99	-6.687E+01	8.716E+02	8.721E+02	NOT IDENT.
TC-99M	-3.672E+24	7.121E+24	0.000E+00	SHORT HLIF
RH-101	-1.531E-01	3.389E-01	3.458E-01	FAIL ABUN
RH-102	3.108E-01	8.545E-01	8.659E-01	NOT IDENT.
RU-103	-2.661E-01	7.081E-01	7.182E-01	NOT IDENT.
RH-106	-9.529E-01	5.384E+00	5.401E+00	NOT IDENT.
RU-106	-9.529E-01	5.384E+00	5.401E+00	NOT IDENT.
AG-108M	-3.621E-01	5.632E-01	5.863E-01	NOT IDENT.
AG-110M	-3.115E-01	9.867E-01	9.966E-01	NOT IDENT.
SN-113	2.708E-01	6.982E-01	7.088E-01	NOT IDENT.
CD-115	-4.282E+02	1.170E+03	1.185E+03	FAIL ABUN
SB-124	2.388E-01	6.627E-01	6.713E-01	NOT IDENT.
SB-125	9.771E-02	1.622E+00	1.623E+00	FAIL ABUN
TE-125M	5.411E+01	1.086E+02	1.113E+02	NOT IDENT.
I-126	-2.633E+00	4.785E+00	4.930E+00	NOT IDENT.
SB-126	2.130E+00	2.867E+00	3.023E+00	FAIL ABUN
SB-127	7.945E+00	5.653E+01	5.664E+01	NOT IDENT.
I-132	1.000E+41	1.836E+42	0.000E+00	SHORT HLIF
TE-132	4.795E+00	3.469E+01	3.476E+01	NOT IDENT.
BA-133	5.436E-01	5.932E-01	6.418E-01	NOT IDENT.
I-133	3.855E+06	1.146E+07	1.160E+07	SHORT HLIF
CS-134	-3.328E-01	6.848E-01	7.011E-01	NOT IDENT.
CS-135	6.401E-01	2.050E+00	2.070E+00	NOT IDENT.
I-135	-1.181E+23	2.754E+23	0.000E+00	SHORT HLIF
CS-136	8.548E-01	2.617E+00	2.645E+00	NOT IDENT.
CE-139	-9.636E-02	3.102E-01	3.132E-01	NOT IDENT.
BA-140	2.714E-01	5.676E+00	5.677E+00	NOT IDENT.
LA-140	-1.005E-02	7.714E-01	7.714E-01	NOT IDENT.
CE-141	-2.030E-02	7.092E-01	7.092E-01	NOT IDENT.
CE-143	2.243E+04	3.385E+04	3.533E+04	SHORT HLIF
CE-144	1.440E-01	2.230E+00	2.231E+00	NOT IDENT.
PM-144	3.376E-01	4.491E-01	4.741E-01	NOT IDENT.
PR-144	2.513E+01	3.370E+01	3.556E+01	NOT IDENT.
PM-146	8.271E-01	7.512E-01	8.386E-01	NOT IDENT.
ND-147	5.758E+00	1.221E+01	1.248E+01	NOT IDENT.
PM-149	-3.194E+03	8.298E+03	8.422E+03	NOT IDENT.
EU-150	1.059E-01	3.889E-01	3.918E-01	NOT IDENT.
EU-152	-3.504E-02	1.314E+00	1.314E+00	FAIL ABUN
GD-153	-4.893E-01	8.766E-01	9.039E-01	NOT IDENT.
EU-154	-5.814E-01	8.872E-01	9.251E-01	FAIL ABUN
EU-155	-1.551E-01	1.078E+00	1.080E+00	FAIL ABUN
TB-160	-1.404E+00	2.774E+00	2.846E+00	FAIL ABUN
HO-166M	-1.601E-01	8.652E-01	8.682E-01	NOT IDENT.
TM-171	-1.324E+02	3.107E+02	3.164E+02	NOT IDENT.
HF-172	-4.376E-01	2.373E+00	2.381E+00	FAIL ABUN
LU-172	2.689E-01	1.313E+00	1.319E+00	FAIL ABUN
LU-176	6.929E-02	3.709E-01	3.722E-01	FAIL ABUN
HF-181	-1.505E-01	8.378E-01	8.406E-01	NOT IDENT.
TA-182	-1.445E+00	1.654E+00	1.777E+00	NOT IDENT.
RE-183	7.284E+02	7.570E+01	3.370E+02	FAIL ABUN
RE-184	-4.334E-01	2.785E+00	2.792E+00	NOT IDENT.
W-188	-4.589E+01	1.034E+02	1.055E+02	NOT IDENT.
IR-192	-1.076E-01	5.159E-01	5.182E-01	NOT IDENT.
HG-203	-5.270E-01	5.541E-01	6.029E-01	NOT IDENT.
BI-207	-1.280E-01	9.466E-01	9.484E-01	NOT IDENT.
TL-208	-2.539E-01	4.916E-01	5.048E-01	NOT IDENT.
BI-211	1.651E+00	2.733E+00	2.833E+00	NOT IDENT.
PB-211	9.303E+00	1.111E+01	1.188E+01	NOT IDENT.
BI-212	9.898E-01	7.401E+00	7.415E+00	NOT IDENT.
PB-212	7.264E-01	7.079E-01	7.800E-01	NOT IDENT.
BI-214	-4.295E-01	9.570E-01	9.764E-01	NOT IDENT.
PB-214	1.499E-01	1.008E+00	1.010E+00	FAIL ABUN
RN-219	-5.933E+00	6.230E+00	6.779E+00	NOT IDENT.
RN-222	-4.295E-01	9.570E-01	9.764E-01	NOT IDENT.

RA-223	9.104E+00	1.015E+01	1.095E+01	FAIL ABUN
RA-224	-5.099E+00	7.658E+00	7.995E+00	NOT IDENT.
RA-226	-4.295E-01	9.570E-01	9.764E-01	NOT IDENT.
AC-227	-9.465E-01	3.679E+00	3.704E+00	NOT IDENT.
TH-227	-9.465E-01	3.679E+00	3.704E+00	NOT IDENT.
AC-228	-1.062E+00	3.319E+00	3.354E+00	FAIL ABUN
RA-228	-1.062E+00	3.319E+00	3.354E+00	FAIL ABUN
TH-228	7.264E-01	7.079E-01	7.800E-01	NOT IDENT.
TH-229	3.690E+00	5.912E+00	6.141E+00	FAIL ABUN
TH-230	-4.295E-01	9.570E-01	9.763E-01	NOT IDENT.
PA-231	9.666E-01	6.530E+00	6.544E+00	NOT IDENT.
TH-231	9.104E+00	1.015E+01	1.095E+01	FAIL ABUN
TH-232	-1.062E+00	3.319E+00	3.354E+00	FAIL ABUN
PA-233	4.638E-01	9.385E-01	9.615E-01	NOT IDENT.
PA-234	-4.542E-01	7.162E+00	7.165E+00	FAIL ABUN
PA-234M	-2.103E+01	8.169E+01	8.224E+01	NOT IDENT.
TH-234	2.362E+00	1.281E+01	1.285E+01	NOT IDENT.
U-234	-4.295E-01	9.570E-01	9.763E-01	NOT IDENT.
U-235	3.699E-01	2.009E+00	2.016E+00	NOT IDENT.
NP-237	4.638E-01	9.385E-01	9.615E-01	NOT IDENT.
NP-238	2.726E+03	3.050E+03	3.289E+03	SHORT HLIF
U-238	2.362E+00	1.281E+01	1.285E+01	NOT IDENT.
NP-239	1.050E+00	2.718E+00	2.759E+00	NOT IDENT.
PU-239	5.971E+03	5.972E+03	6.550E+03	FAIL ABUN
AM-243	1.404E-01	5.286E-01	5.324E-01	NOT IDENT.
CM-243	2.186E-01	1.103E+00	1.107E+00	NOT IDENT.
BK-247	-8.523E-01	1.124E+00	1.188E+00	NOT IDENT.
CM-247	-2.964E-02	5.545E-01	5.546E-01	NOT IDENT.
CF-249	3.736E-02	5.843E-01	5.845E-01	FAIL ABUN
CF-251	5.917E-01	1.386E+00	1.412E+00	NOT IDENT.
ANH-511	-1.307E-01	4.434E-01	4.473E-01	NOT IDENT.

 * GEL Laboratories LLC *
 * 2040 Savage Road *
 * Charleston, SC 29407 *
 * GAMMA SPECTROSCOPY BACKGROUND REPORT *

ENERGY	MDA COUNTS	ENERGY	MDA COUNTS	ENERGY	MDA COUNTS
43.53	2702.3931	87.09	669.3035	136.47	460.4278
45.60	2389.0461	87.57	669.9716	140.51	484.8883
46.54	2396.1536	88.03	670.6072	143.76	445.7536
49.72	2060.5361	88.34	671.0309	144.24	450.2180
51.35	2137.7312	88.47	671.2101	145.44	440.6143
51.87	2185.8535	89.96	548.4362	152.43	471.2664
52.39	2218.5422	90.64	528.9883	153.25	412.9630
52.97	2299.2927	91.11	510.5358	154.21	436.3124
53.44	2323.2012	92.59	572.2518	156.02	458.5038
54.07	2364.7126	93.35	533.1262	158.56	410.7107
57.36	0.0000	94.56	488.5938	159.00	410.9534
57.53	2643.6135	94.65	488.6797	162.33	445.4338
57.98	1631.4543	94.67	488.6992	162.66	445.6319
59.27	1637.1488	94.87	472.6579	163.33	420.4595
59.32	1637.3687	97.43	528.7451	165.86	416.8863
59.54	1638.3331	98.43	461.4917	176.31	433.3862
60.96	567.3392	98.44	461.5027	176.60	433.5449
61.17	567.6523	99.53	505.8140	177.52	425.3645
62.93	598.7089	100.11	498.6507	181.07	426.1647
63.29	581.4637	102.03	473.3419	181.52	427.4939
63.58	605.6458	103.18	503.4504	184.41	454.1849
64.28	599.5908	103.37	492.9544	185.72	522.8760
66.73	631.1188	105.21	495.5908	193.51	444.7971
67.24	659.7780	105.31	489.8371	197.03	439.9711
67.68	636.1986	106.12	476.9048	198.01	452.7080
67.75	662.4067	106.47	499.6523	201.83	470.3424
69.67	621.2048	109.28	485.4944	203.43	499.1844
70.83	647.4111	111.00	510.5818	205.31	468.8468
72.81	665.9266	111.76	471.8555	210.85	496.5912
72.87	666.0214	114.06	488.5765	215.65	518.8894
74.66	674.2770	116.30	449.7444	222.11	489.0038
74.82	644.3218	116.74	450.0796	227.09	461.7271
74.97	643.6318	119.76	442.0486	227.38	508.9741
77.11	703.8044	121.12	502.4290	228.16	503.6372
78.74	646.3539	121.22	502.5094	228.18	503.6505
79.69	695.8260	121.78	502.9728	235.69	453.1080
80.12	657.5864	122.06	503.2065	235.96	452.0741
80.19	657.6893	122.92	503.9150	238.63	439.3581
80.57	692.5389	123.07	504.0375	238.98	449.9755
81.00	740.5147	123.68	483.7681	240.99	499.8214
81.07	740.6243	125.81	457.8690	242.00	474.6677
81.75	664.5739	127.23	447.4523	244.70	463.0897
83.79	697.0492	127.91	415.5575	252.40	458.3524
84.00	652.5267	129.30	450.2736	252.80	449.1005
85.43	710.7059	131.20	465.1840	254.15	0.0000
86.55	668.5538	133.02	443.3817	256.23	462.0210
86.79	668.8852	133.52	457.3311	260.90	419.7343
86.94	669.0970	136.00	450.8765	264.66	464.9341

ENERGY	MDA COUNTS	ENERGY	MDA COUNTS	ENERGY	MDA COUNTS
264.80	464.9936	364.49	409.1471	600.60	231.6917
265.00	484.1694	366.42	378.6073	602.52	0.0000
268.22	429.4020	372.51	375.0820	604.72	232.1657
269.46	447.8572	375.05	394.0341	607.14	245.4194
270.03	467.2668	1093.63	392.9917	609.32	233.6953
271.23	432.9951	383.85	395.6379	610.33	232.8104
273.65	459.2090	388.16	386.3070	614.28	222.2529
276.40	431.4289	388.63	401.3626	618.01	242.7090
277.37	398.0383	391.69	397.8174	620.36	231.9493
277.60	404.1510	400.66	383.4559	621.93	245.6839
278.00	415.1663	401.81	436.9417	630.19	0.0000
279.20	437.3541	402.40	391.8937	631.29	193.8047
279.54	454.4175	404.85	402.3195	633.25	192.4689
279.70	454.4749	410.95	429.8402	634.78	192.6084
280.46	397.9366	413.71	415.4462	635.95	218.5137
283.69	419.7130	414.70	418.4026	636.99	232.2828
284.31	432.0824	423.72	428.0920	645.85	241.8931
285.41	416.7123	427.09	415.3313	657.76	286.6747
285.90	415.6749	427.87	401.7494	657.90	0.0000
287.50	419.9107	433.94	467.1526	661.66	239.5796
290.67	412.5358	439.40	481.4986	664.57	0.0000
293.27	0.0000	453.88	429.0571	666.33	217.0078
295.22	419.0669	463.37	441.7146	666.50	223.1818
295.96	399.7201	468.07	454.0791	667.71	0.0000
298.58	422.7458	473.00	522.2114	677.62	170.1697
299.98	403.5637	475.06	453.2109	685.70	199.7695
300.09	403.5938	476.78	463.9039	695.00	195.4050
300.13	403.6138	477.60	463.1971	696.49	160.1660
301.36	401.5706	482.18	410.3695	696.51	160.1723
302.85	399.6112	487.02	361.0269	697.00	179.9690
304.50	401.4099	492.35	328.3813	697.30	169.5927
304.85	401.5190	497.08	341.5163	697.49	169.6060
306.78	383.6118	505.52	329.9354	702.65	162.6904
308.46	405.2173	507.63	0.0000	706.68	183.8705
311.90	395.2000	511.00	312.9434	711.68	203.1174
316.51	377.9825	514.00	293.5223	720.70	180.7834
319.41	385.1316	514.00	293.5223	721.93	0.0000
320.08	369.4911	520.40	280.2786	722.78	228.2844
321.04	352.5930	520.69	279.3729	722.91	216.7292
323.87	381.5029	522.65	0.0000	723.31	211.5015
325.23	365.1695	527.90	299.6400	724.19	198.9514
328.76	335.1301	528.26	291.0736	727.33	210.8154
333.37	393.2487	529.59	269.2574	733.00	213.4332
333.97	378.2576	529.87	0.0000	735.93	215.8120
334.37	373.3144	531.02	254.1201	737.46	210.6602
338.28	402.3834	537.26	280.9621	739.50	216.1357
338.32	402.3930	546.56	0.0000	747.24	213.6525
340.48	353.4811	552.55	282.3088	748.06	218.5110
340.55	353.4981	563.25	228.2966	752.31	214.1023
344.28	392.7733	569.33	234.8926	753.82	228.6219
345.93	356.6683	569.50	233.9430	756.73	207.0249
351.06	370.0303	569.70	236.8992	756.80	207.0328
351.93	394.2210	583.19	233.6151	763.94	212.9922
355.39	0.0000	584.27	230.7913	765.81	229.2210
356.01	381.7066	595.83	226.1816	766.42	230.3534

ENERGY	MDA COUNTS	ENERGY	MDA COUNTS	ENERGY	MDA COUNTS
766.84	220.7442	1002.74	275.9134	1678.03	0.0000
772.60	0.0000	1004.73	266.4453	1690.97	11.5250
776.52	231.2982	1021.30	0.0000	1750.46	0.0000
777.92	196.9841	1025.87	0.0000	1764.49	8.5107
778.90	225.0560	1028.54	0.0000	1770.23	10.6506
783.70	234.1209	1037.84	250.6996	1771.35	10.6531
785.37	214.8465	1038.76	0.0000	1791.20	0.0000
792.07	216.5039	1046.59	245.1892	1808.65	10.7330
794.95	231.9291	1048.07	245.3071	1810.72	0.0000
795.86	258.0270	1049.04	240.0403	1836.06	16.1874
801.95	241.2588	1050.41	262.3743		
810.06	242.0266	1063.66	264.3657		
810.29	238.7827	1077.00	261.8804		
810.45	238.7916	1077.34	248.4445		
810.76	234.4651	1085.87	255.3989		
815.77	242.5686	1093.63	250.9576		
818.51	254.8627	1099.45	228.2822		
832.01	257.2800	1112.07	268.3223		
834.85	243.2565	1112.84	261.1230		
835.71	229.0235	1115.54	229.5746		
836.80	0.0000	1120.29	170.1070		
846.75	0.0000	1120.55	168.6645		
846.77	262.0443	1121.30	155.6202		
856.80	278.0157	1129.67	168.5822		
860.56	281.7423	1131.51	0.0000		
871.09	304.5923	1147.95	0.0000		
873.19	261.2791	1173.23	133.9542		
875.33	0.0000	1177.95	113.8532		
879.38	305.5254	1189.05	89.9310		
880.51	267.5816	1204.77	95.9150		
883.24	283.5338	1221.41	72.9727		
884.68	293.7799	1231.02	38.4600		
889.28	281.9154	1235.36	52.5957		
894.76	286.9684	1238.28	40.4175		
898.04	322.2388	1260.41	0.0000		
900.72	303.3802	1271.87	34.9065		
903.28	300.2674	1274.44	41.7656		
911.20	351.4856	1274.54	41.7656		
912.08	331.2167	1291.59	41.0027		
923.98	0.0000	1298.22	0.0000		
926.50	336.8903	1312.11	41.2258		
929.11	331.4956	1332.49	44.3351		
937.49	367.8840	1362.66	0.0000		
944.13	353.1491	1365.19	24.2981		
946.00	324.8438	1368.63	0.0000		
949.00	367.0443	1384.29	22.4609		
954.55	0.0000	1408.01	20.4331		
962.31	368.7239	1457.56	0.0000		
964.08	334.3567	1460.82	18.9061		
966.17	288.4420	1489.16	16.0273		
968.97	309.4933	1505.03	16.0869		
983.53	288.9600	1584.12	8.1899		
984.45	0.0000	1596.21	13.3444		
996.26	268.0432	1620.50	19.6077		
1001.03	281.0121	1621.92	15.4852		

Continuing Calibration Data

★ = Locked out

Review of Gamma Spectrometer QA results (Daily calibration & background checks)
 3-OCT-2016 09:29:18.00

Run Date	Detector	Parameter	Flag
3-OCT-2016	GAM01	Cal Check NLACTVITY-662	Investigate OK
3-OCT-2016	GAM02	Cal Check PSFWHM-59	Investigate OK
5-JUL-2016 18-SEP-2016	GAM03 GAM03	Cal Check may not have run since 3-OCT-2016 Bkg Check may not have run since 3-OCT-2016	★
3-OCT-2016	GAM05	Cal Check NLACTVITY-662	Investigate OK
3-OCT-2016	GAM05	Cal Check PSFWHM-59	Action Below, OK
3-OCT-2016	GAM06	Cal Check NLACTVITY-662	Investigate OK
3-OCT-2016	GAM06	Cal Check NLACTVITY-1332	Investigate OK
3-OCT-2016	GAM07	All Parameters Passed Weekly Background check completed on 3-OCT-2016 . No daily Bkg Check necessary.	
3-OCT-2016	GAM08	Cal Check NLACTVITY-662	Investigate OK
3-OCT-2016	GAM09	All Parameters Passed Weekly Background check completed on 3-OCT-2016 . No daily Bkg Check necessary.	
3-OCT-2016	GAM10	Cal Check NLACTVITY-662	Investigate OK
3-OCT-2016	GAM11	All Parameters Passed Weekly Background check completed on 3-OCT-2016 . No daily Bkg Check necessary.	
3-OCT-2016	GAM12	Cal Check PSFWHM-59	Investigate OK
----- 3-JUL-2016	GAM13 GAM13	Cal Check may not have run since 3-OCT-2016 Bkg Check may not have run since 3-OCT-2016	★
3-OCT-2016	GAM14	Cal Check PSFWHM-59	Action Belows were adjusted, OK
3-OCT-2016	GAM16	Cal Check NLACTVITY-1332	Investigate OK
10-AUG-2016	GAM17	Cal Check may not have run since 3-OCT-2016	★
3-OCT-2016	GAM18	Cal Check PSFWHM-1332	Investigate OK
3-OCT-2016	GAM18	Cal Check PSFWHM-59	Investigate OK
3-OCT-2016	GAM19	All Parameters Passed Weekly Background check completed on 3-OCT-2016 . No daily Bkg Check necessary.	
3-OCT-2016	GAM20	All Parameters Passed Weekly Background check completed on 3-OCT-2016 . No daily Bkg Check necessary.	

-----	GAM21	Cal Check may not have run since 3-OCT-2016			
25-SEP-2016	GAM21	Bkg Check may not have run since 3-OCT-2016			*
8-JUL-2016	GAM22	Cal Check may not have run since 3-OCT-2016			*
7-AUG-2016	GAM22	Bkg Check may not have run since 3-OCT-2016			
3-OCT-2016	GAM24	All Parameters Passed			
		Weekly Background check completed on 3-OCT-2016 .			
		No daily Bkg Check necessary.			
3-OCT-2016	GAM25	Cal Check	PSFWHM-662	Action	Below OK
3-OCT-2016	GAM26	All Parameters Passed			
3-OCT-2016	GAM27	Cal Check	PSFWHM-662	Investigate	OK
3-OCT-2016	GAM28	All Parameters Passed			
		Weekly Background check completed on 3-OCT-2016 .			
		No daily Bkg Check necessary.			
3-OCT-2016	GAM29	Cal Check	NLACTVITY-1332	Investigate	OK
3-OCT-2016	GAM30	Cal Check	NLACTVITY-59	Investigate	OK
3-OCT-2016	GAM31	Cal Check	PSFWHM-662	Investigate	OK
3-OCT-2016	GAM32	All Parameters Passed			
		Weekly Background check completed on 3-OCT-2016 .			
		No daily Bkg Check necessary.			
3-OCT-2016	GAM33	Cal Check	PSFWHM-662	Investigate	OK
3-OCT-2016	GAM36	Cal Check	PSFWHM-662	Investigate	OK
3-OCT-2016	GAM39	All Parameters Passed			
		Weekly Background check completed on 3-OCT-2016 .			
		No daily Bkg Check necessary.			
-----	GAM40	Cal Check may not have run since 3-OCT-2016			
26-JUN-2016	GAM40	Bkg Check may not have run since 3-OCT-2016			*
3-OCT-2016	GAM41	All Parameters Passed			
		Weekly Background check completed on 3-OCT-2016 .			
		No daily Bkg Check necessary.			
3-OCT-2016	GAM43	All Parameters Passed			
		Weekly Background check completed on 3-OCT-2016 .			
		No daily Bkg Check necessary.			
3-OCT-2016	GAM44	All Parameters Passed			
		Weekly Background check completed on 3-OCT-2016 .			
		No daily Bkg Check necessary.			
3-OCT-2016	WELL	Cal Check	PSFWHM-1332	Investigate	OK
3-OCT-2016	XRAY1	All Parameters Passed			
		Weekly Background check completed on 3-OCT-2016 .			
		No daily Bkg Check necessary.			

3-OCT-2016 XRAY2 All Parameters Passed
Weekly Background check completed on 3-OCT-2016 .
No daily Bkg Check necessary.

3-OCT-2016 XRAY3 All Parameters Passed
Weekly Background check completed on 3-OCT-2016 .
No daily Bkg Check necessary.

3-OCT-2016 XRAY4 All Parameters Passed
Weekly Background check completed on 3-OCT-2016 .
No daily Bkg Check necessary.

3-OCT-2016 XRAY5 All Parameters Passed
Weekly Background check completed on 3-OCT-2016 .
No daily Bkg Check necessary.

3-OCT-2016 XRAY6 All Parameters Passed
Weekly Background check completed on 3-OCT-2016 .
No daily Bkg Check necessary.

APPROVAL DATE: 10/3/16

APPROVAL TIME: 12:11

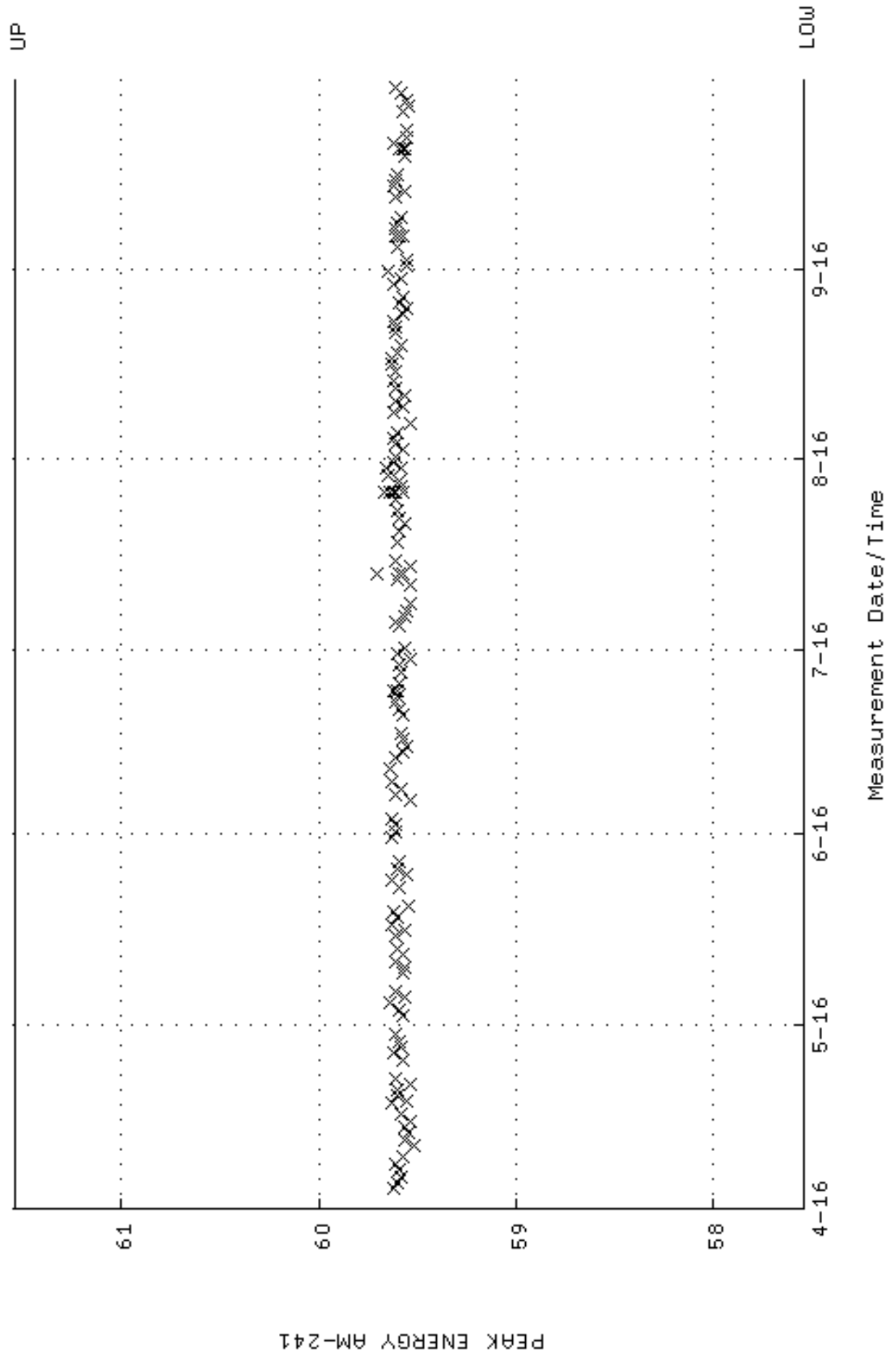
APPROVED BY: RF

PROCEDURE # GL-RAD-I-001

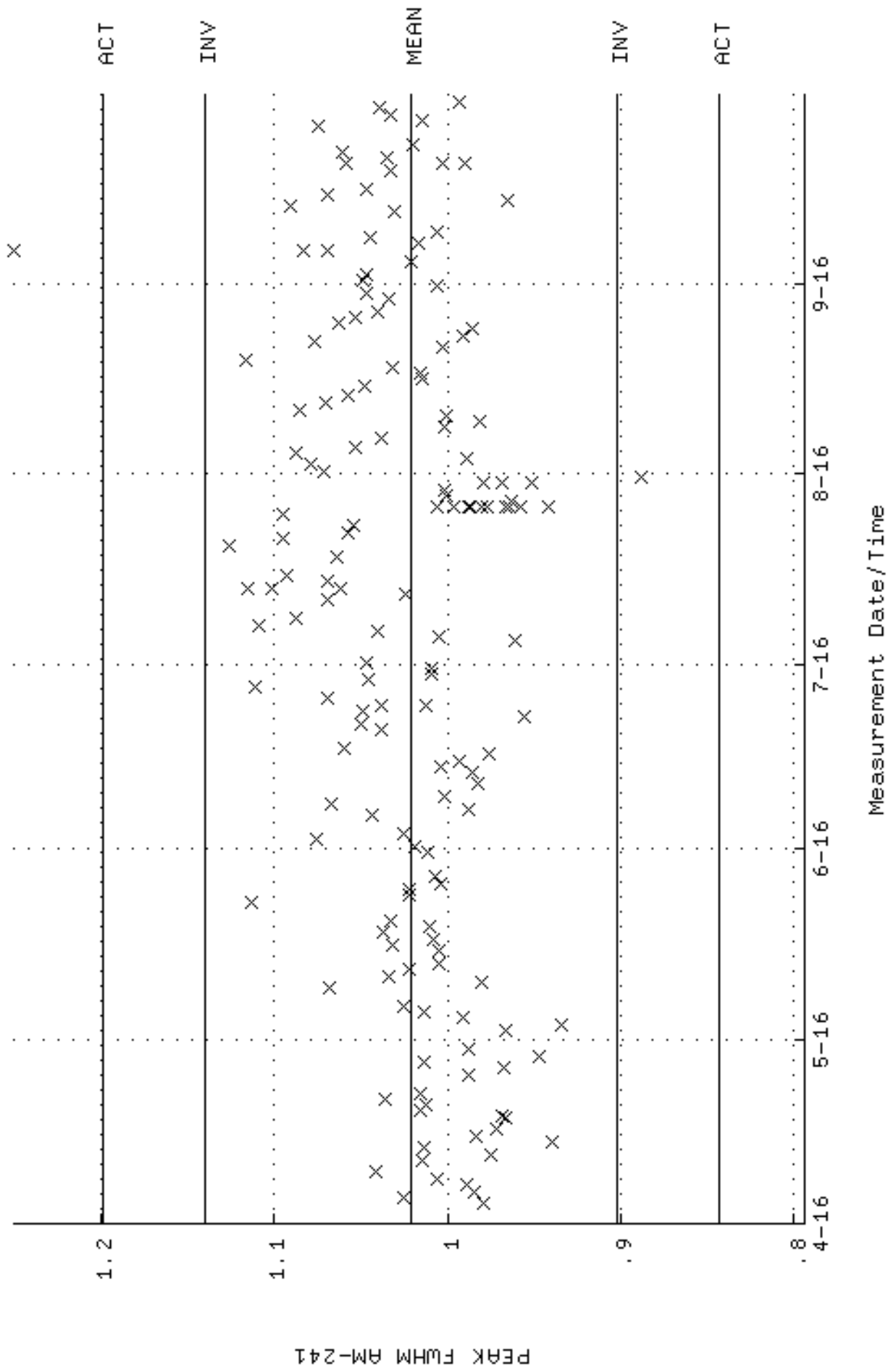
Report completed at 3-OCT-2016 09:33:35.49

Background and Efficiency Data

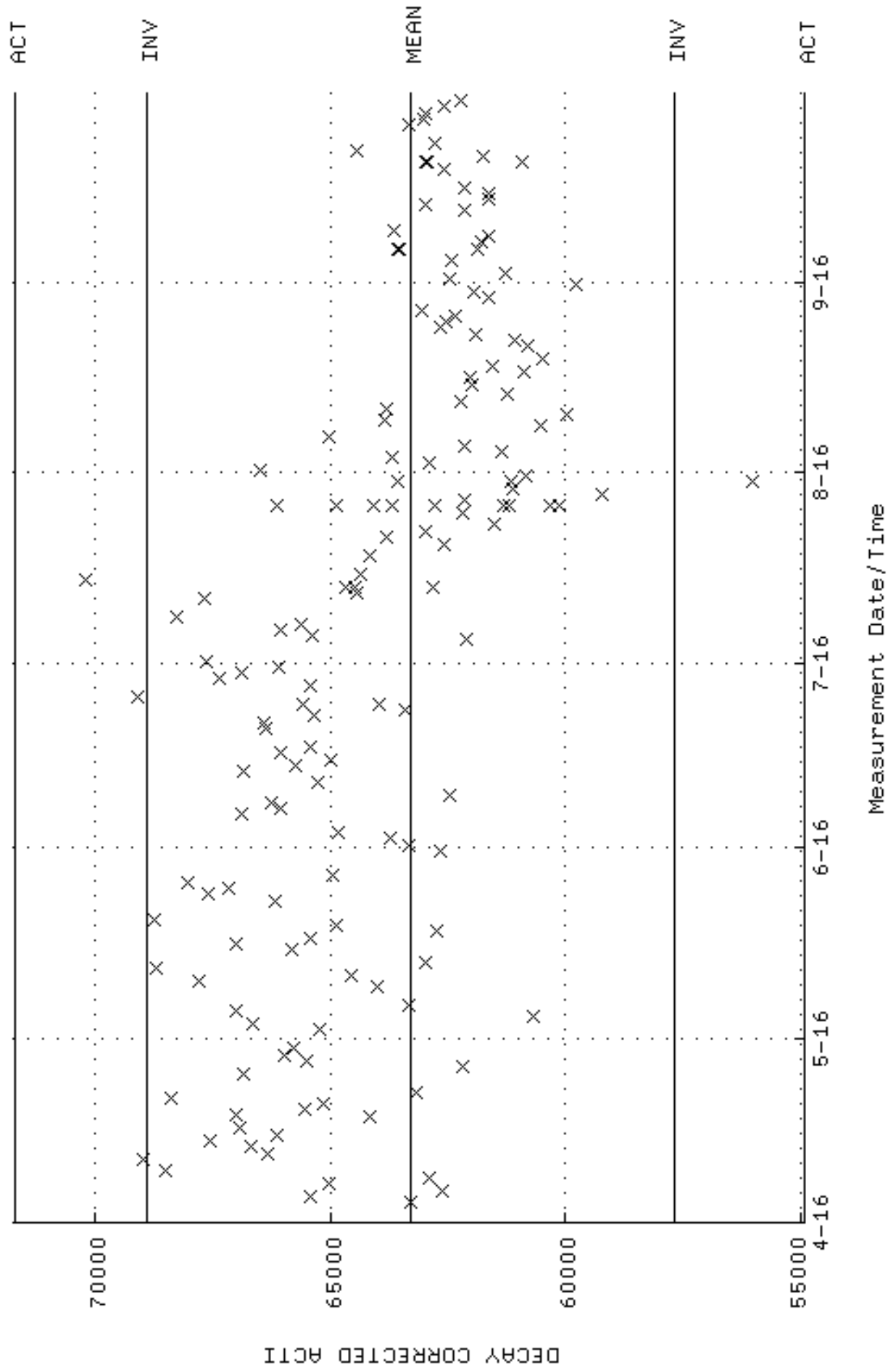
QA filename : DKA100:[CANBERRA,GAMMA,SCUSR,QA]QCC_GAM01_500MLMB.QAF;1
Parameter Name : PSENERGY-59 (PEAK ENERGY AM-241)
Start/End Dates : 4-APR-2016 06:13:18 through 1-OCT-2016 12:00:00
Lower/Upper Lmts: 57.5400 through 61.5400



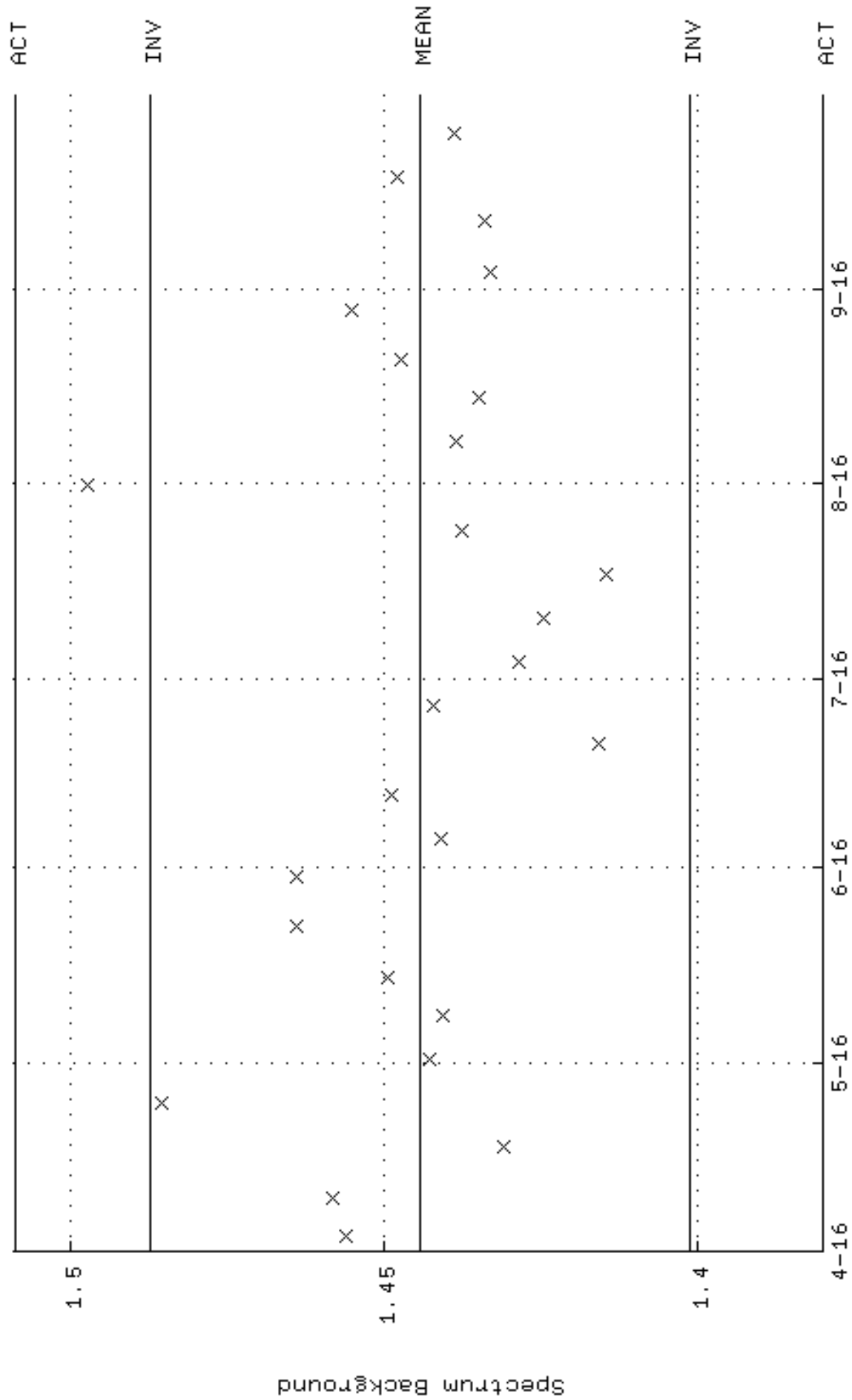
QA filename : DKA100:[CANSBERRA,GAMMA,SCUSR,QA]QCC_GAM01_500MLMB.QAF;1
 Parameter Name : PSFWM-59 (PEAK FWHM AM-241)
 Start/End Dates : 4-APR-2016 06:13:18 through 1-OCT-2016 12:00:00
 Mean +- Std Dev : 1.02147 +- 5.951646E-02 (5.83 %)



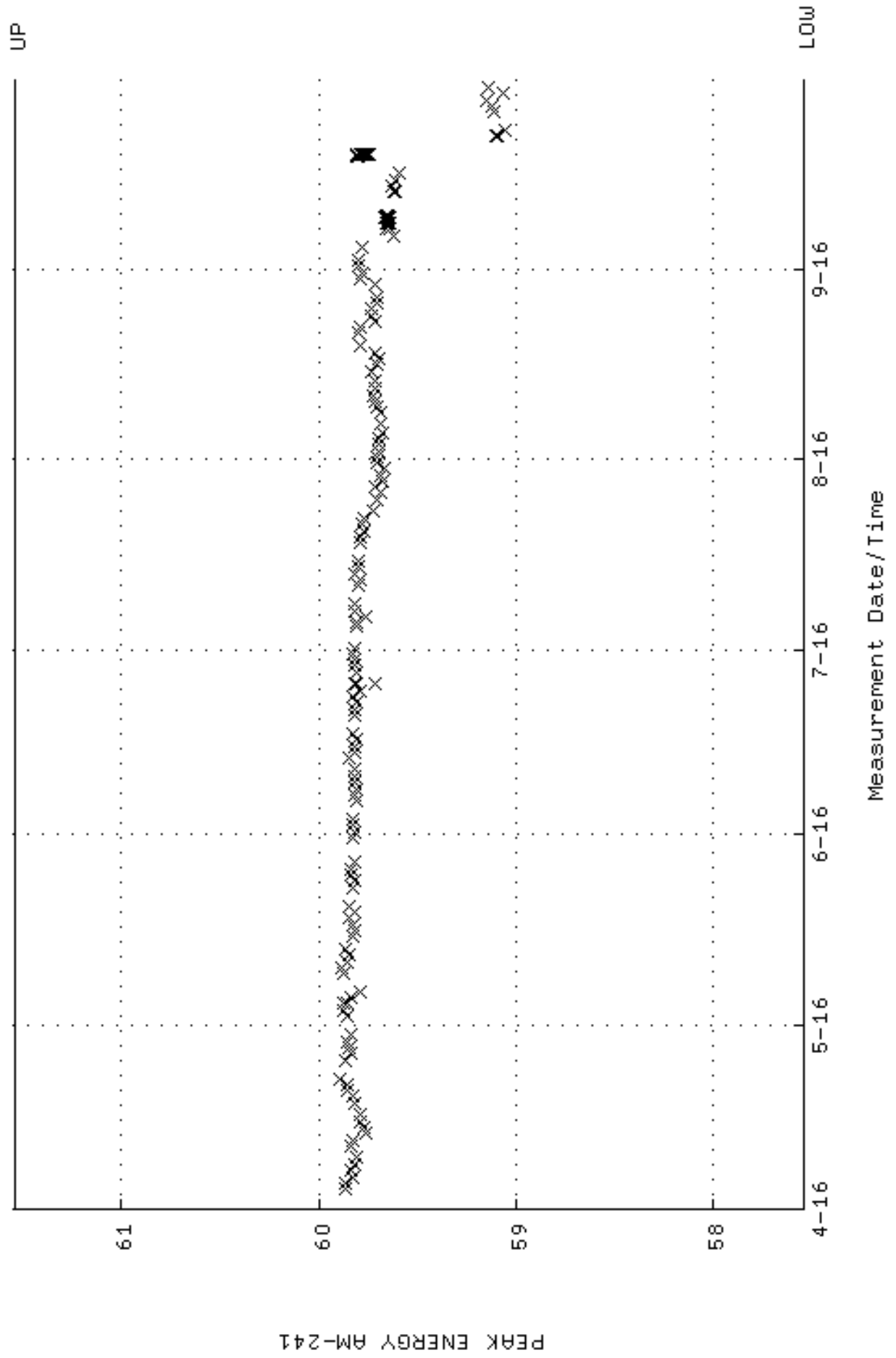
QA filename : DKA100:[CANBERRA,GAMMA,SCUSR,QA]QCC_GAM01_500MLMB.QAF;1
 Parameter Name : NACTIVITY-59 (DECAY CORRECTED ACTIVITY AM-241)
 Start/End Dates : 4-APR-2016 06:13:18 through 1-OCT-2016 12:00:00
 Mean +- Std Dev : 63306.3 +- 2800.78 (4.42 %)



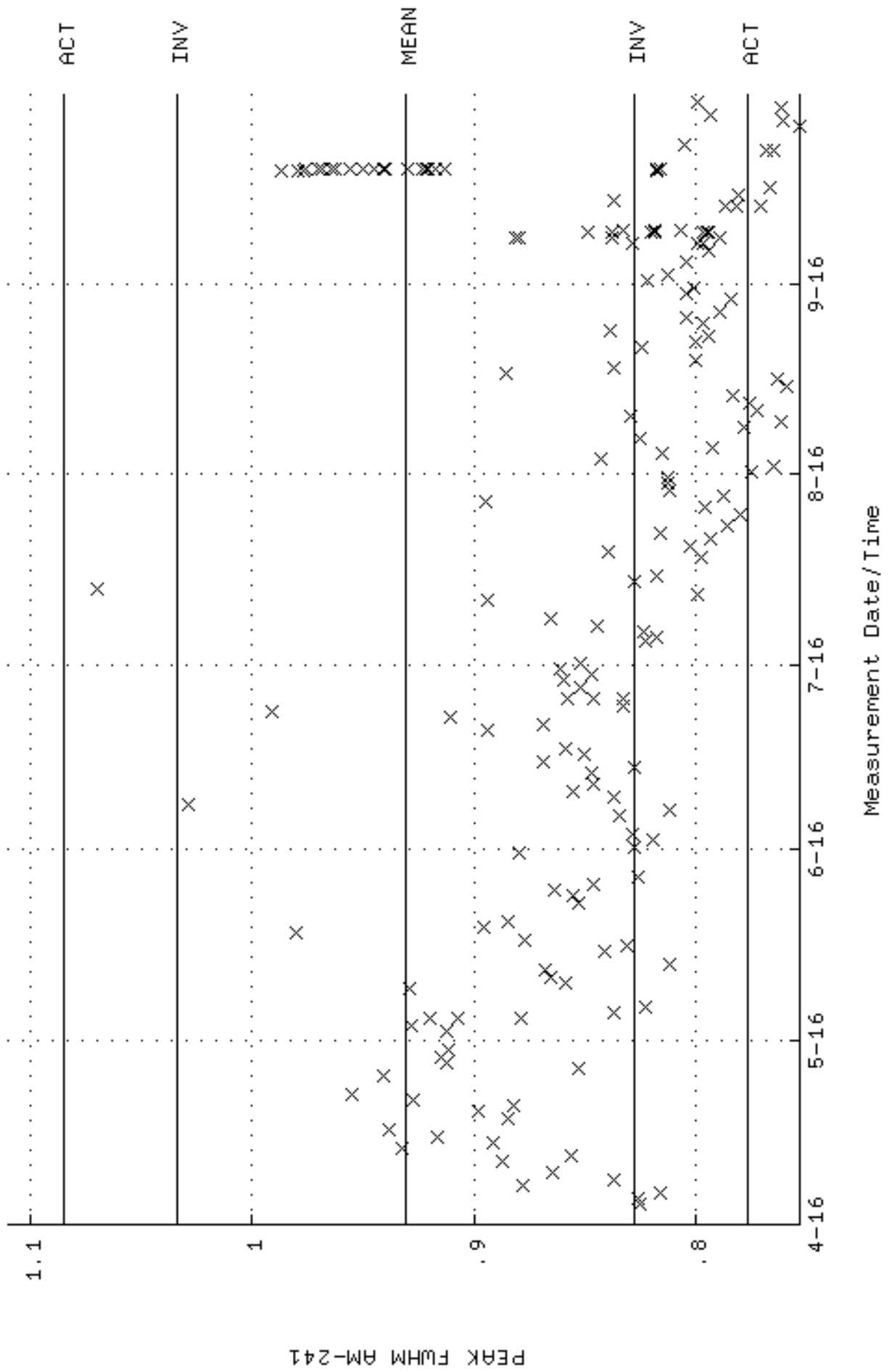
QA filename : DKA100:[CANBERRA,GAMMA,SCUSR,QA]LBC_GAM01.QAF;1
 Parameter Name : BACKRATE (Spectrum Background Rate)
 Start/End Dates : 3-APR-2016 12:17:38 through 1-OCT-2016 12:00:00
 Mean +- Std Dev : 1.44447 +- 2.145394E-02 (1.49 %)



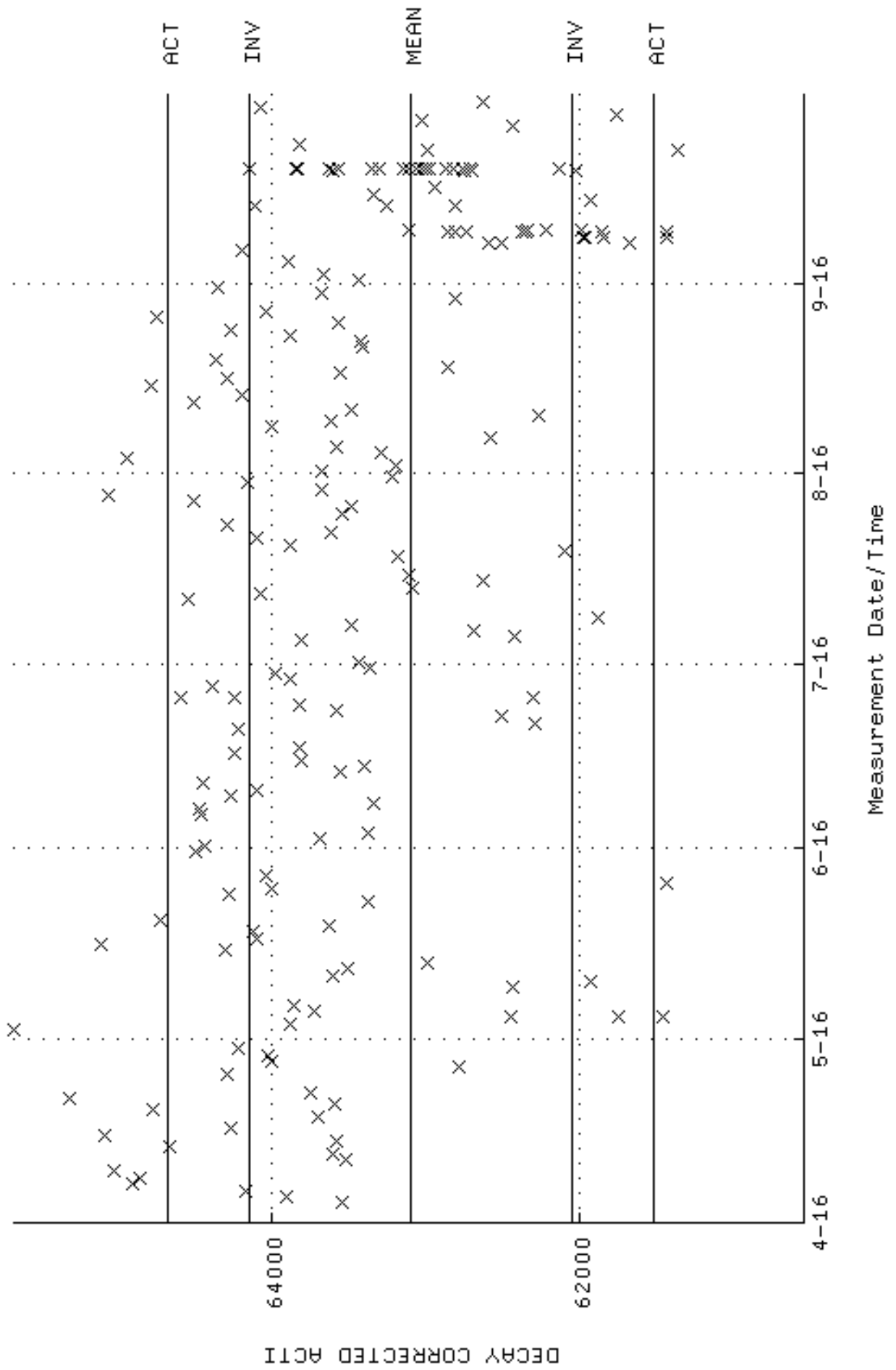
QA filename : DKA100:[CAMBERRA,GAMMA,SCUSR,QA]QCC_GAM05_CAN_QAF;1
Parameter Name : PSENERGY-59 (PEAK ENERGY AM-241)
Start/End Dates : 4-APR-2016 06:24:06 through 1-OCT-2016 12:00:00
Lower/Upper Lmts: 57.5400 through 61.5400



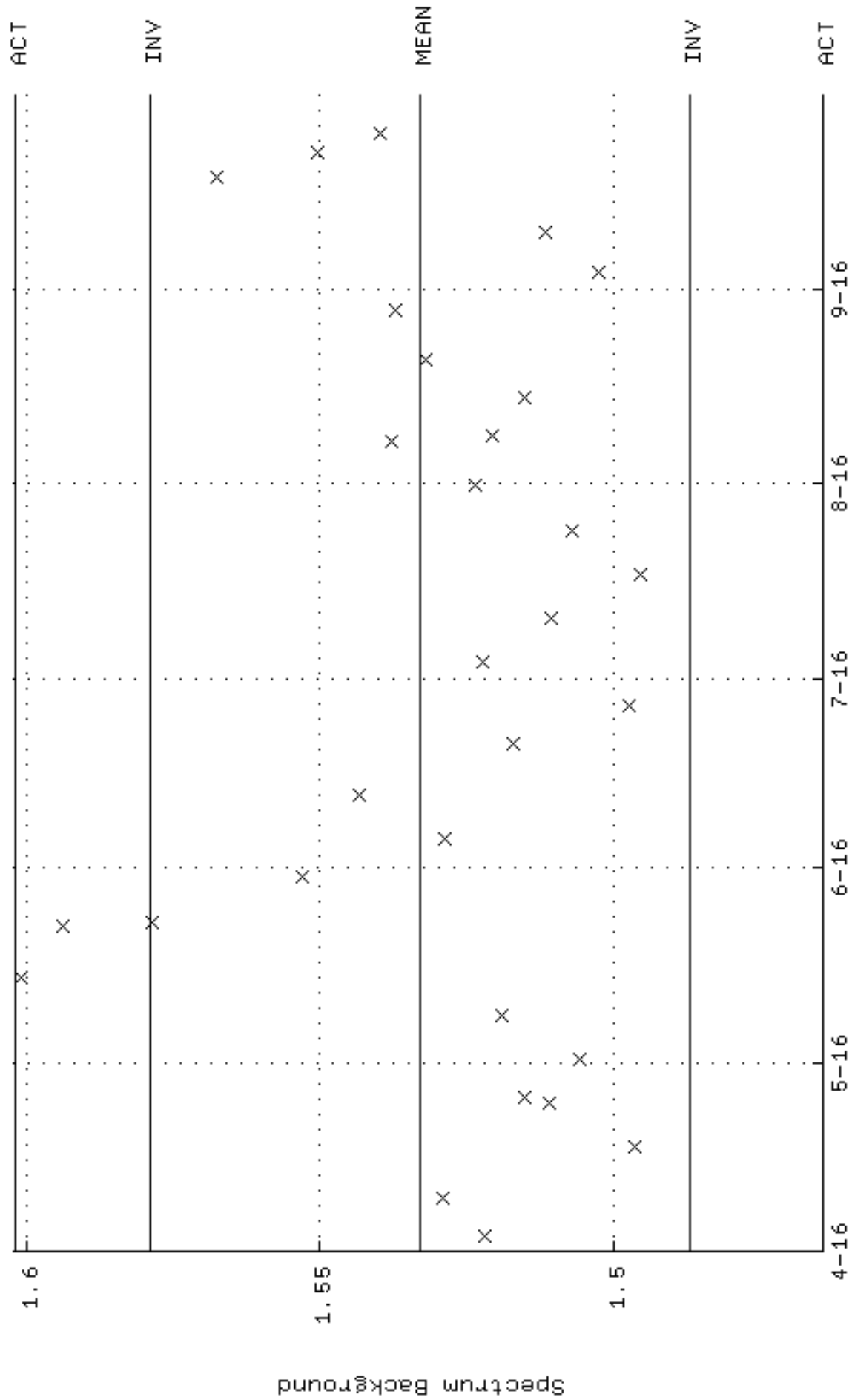
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 Parameter Name : PSFWM-59 (PEAK FWHM AM-241)
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 Mean +- Std Dev : 0.931135 +- 5.131084E-02 (5.51 %)



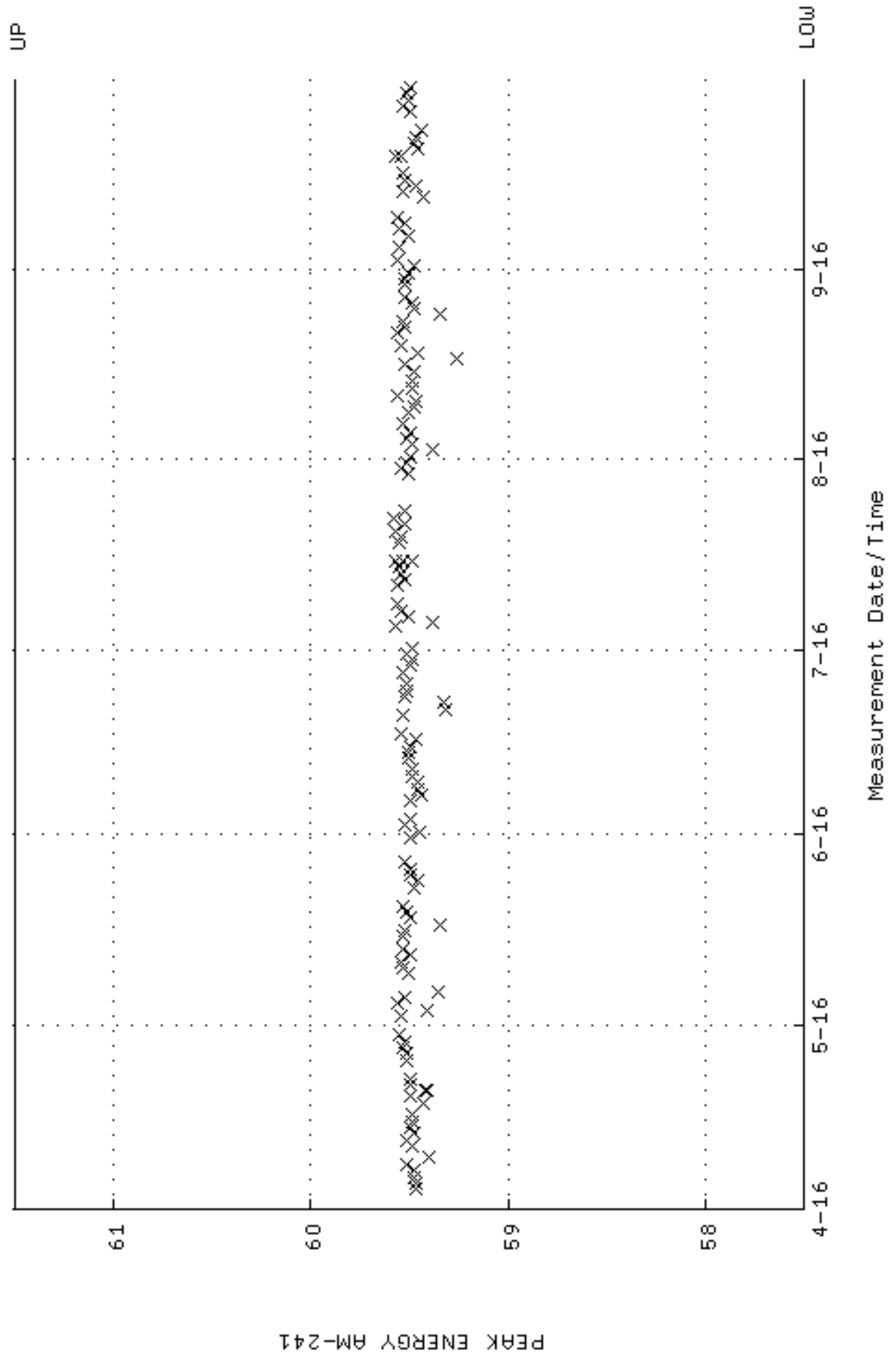
QA filename : DKA100:[CANBERRA,GAMMA,SCUSR,QA]QCC_GAM05_CAN_QAF;1
 Parameter Name : NACTIVITY-59 (DECAY CORRECTED ACTIVITY AM-241)
 Start/End Dates : 4-APR-2016 06:24:06 through 1-OCT-2016 12:00:00
 Mean +- Std Dev : 63104.2 +- 525.196 (0.83 %)



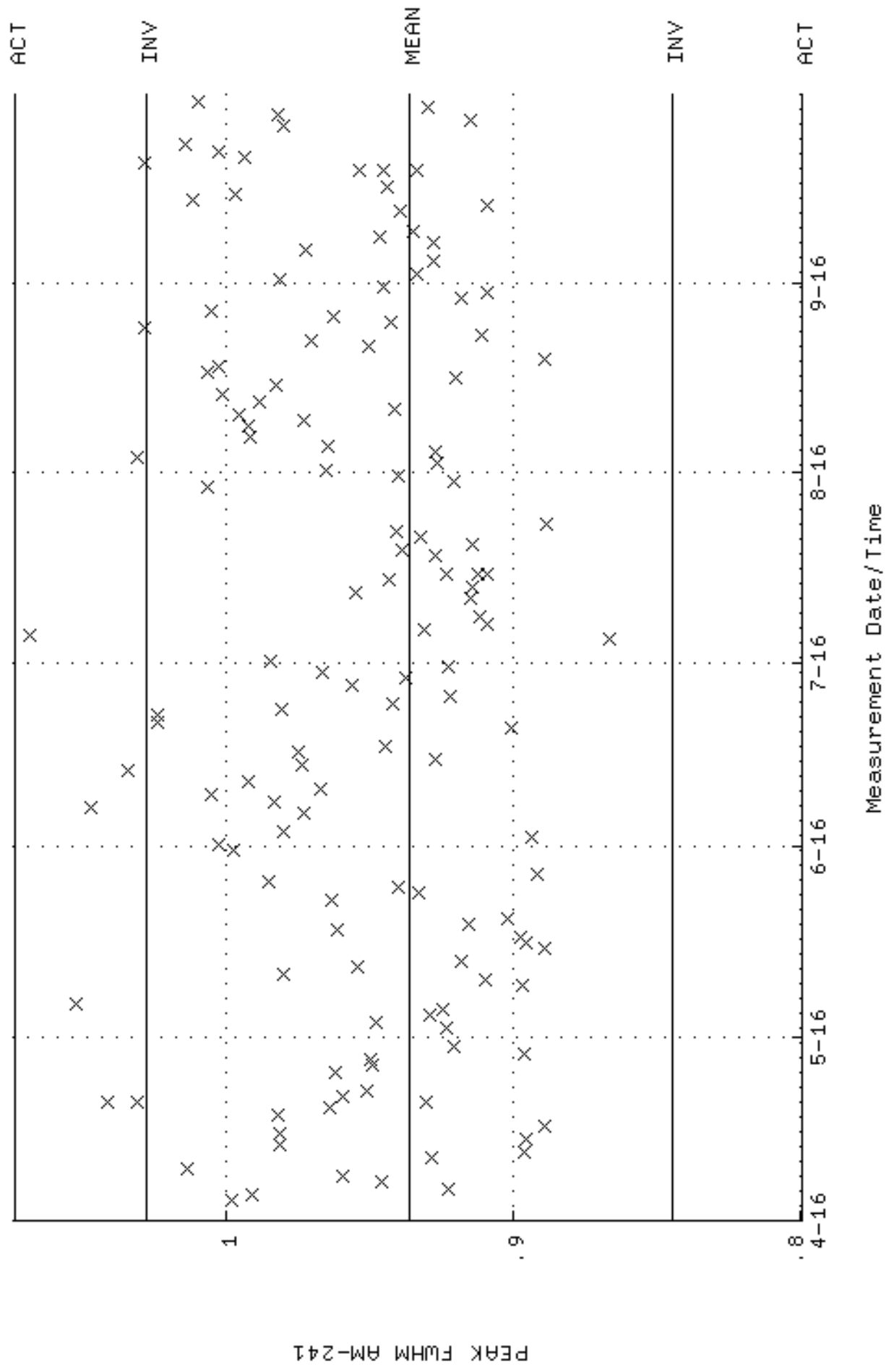
QA filename : DKA100:[CANSBERRA.GAMMA.SCUSR.QA]LBC_GAM05.QAF;1
 Parameter Name : BACKRATE (Spectrum Background Rate)
 Start/End Dates : 3-APR-2016 12:18:01 through 1-OCT-2016 12:00:00
 Mean +- Std Dev : 1.53310 +- 2.296009E-02 (1.50 %)



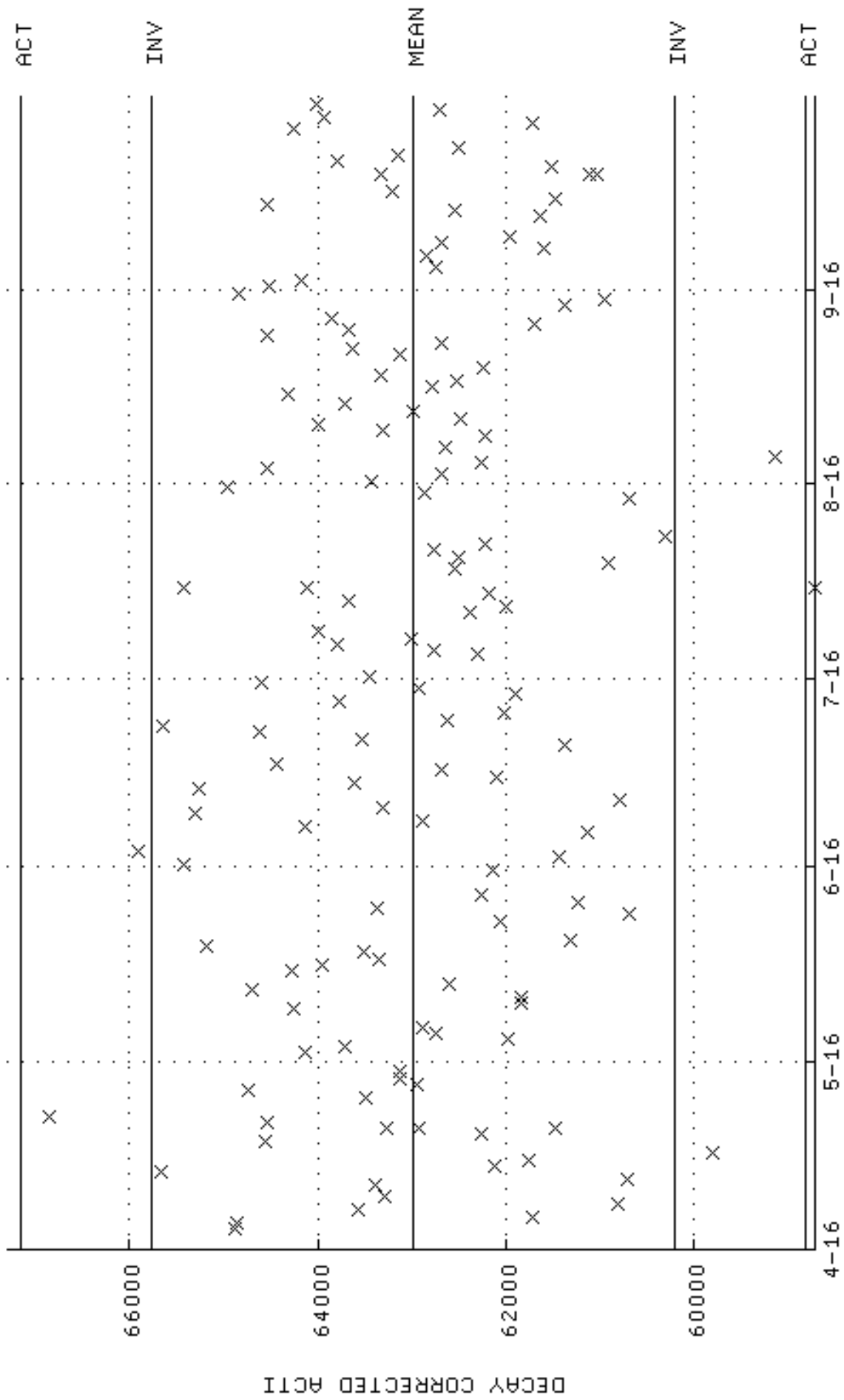
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Parameter Name : PSENERGY-59 (PEAK ENERGY AM-241)
Start/End Dates : 4-APR-2016 06:13:24 through 1-OCT-2016 12:00:00
Lower/Upper Lmts: 57.5000 through 61.5000



QA filename : DKA100:[CANTERRA,GAMMA,SCUSR,QA]QCC_GAM06_500MLMB.QAF;1
 Parameter Name : PSFWM-59 (PEAK FWHM AM-241)
 Start/End Dates : 4-APR-2016 06:13:24 through 1-OCT-2016 12:00:00
 Mean +- Std Dev : 0.936438 +- 4.566342E-02 (4.88 %)

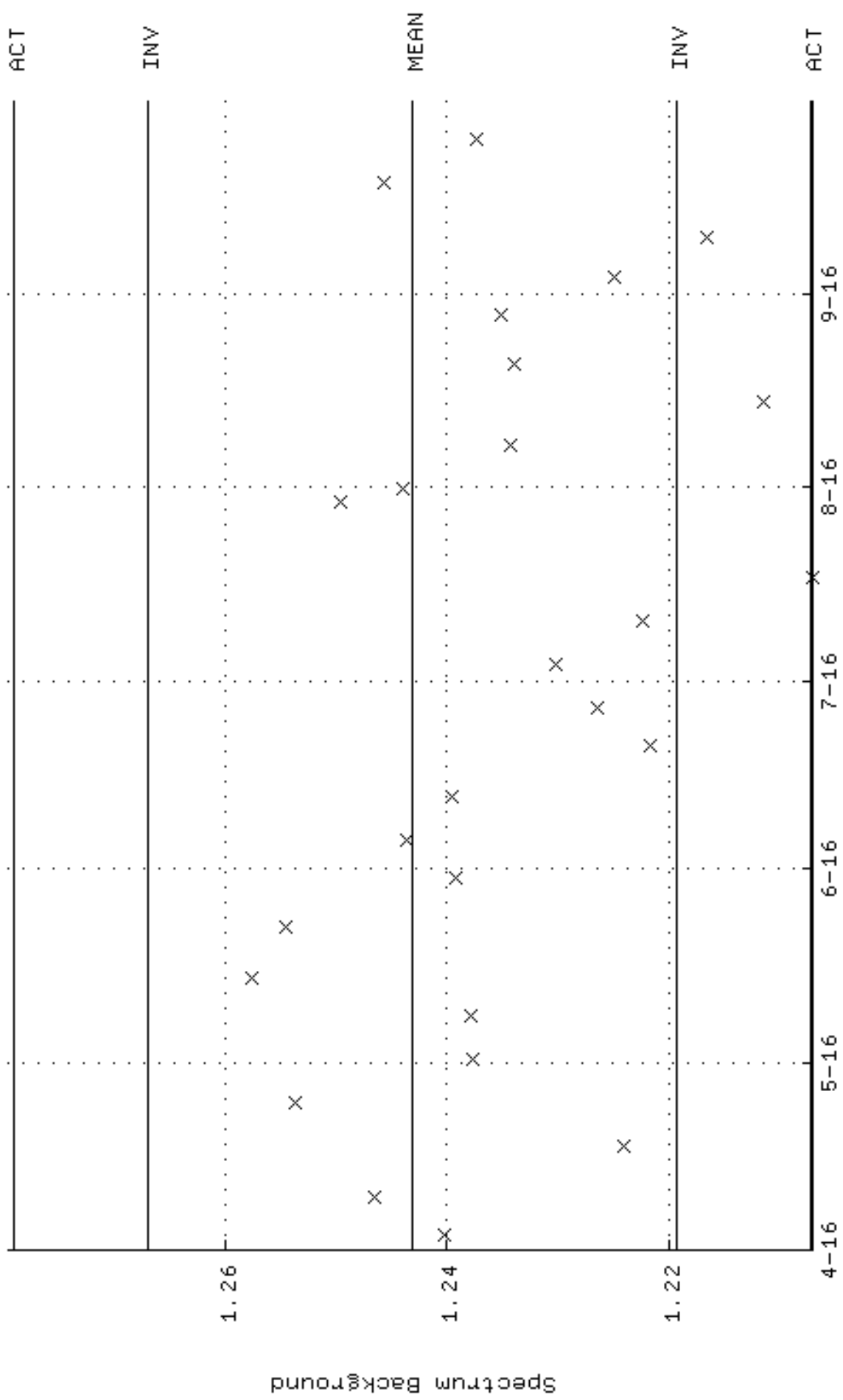


QA filename : DKA100:[CANBERRA,GAMMA,SCUSR,QA]QCC_GAM06_500MLMB.QAF;1
 Parameter Name : NACTIVITY-59 (DECAY CORRECTED ACTIVITY AM-241)
 Start/End Dates : 4-APR-2016 06:13:24 through 1-OCT-2016 12:00:00
 Mean +- Std Dev : 62995.7 +- 1389.67 (2.21 %)

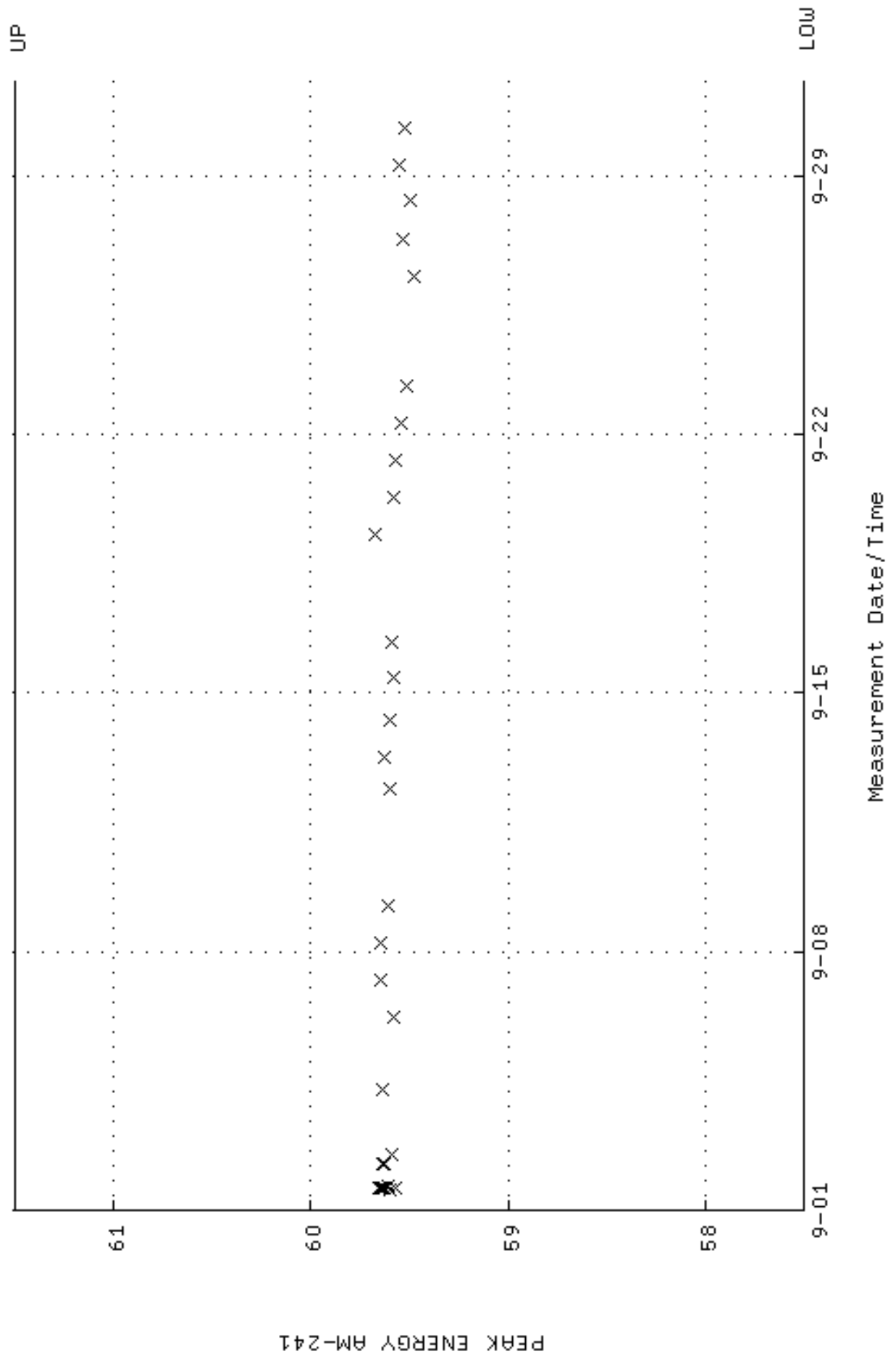


Measurement Date/Time

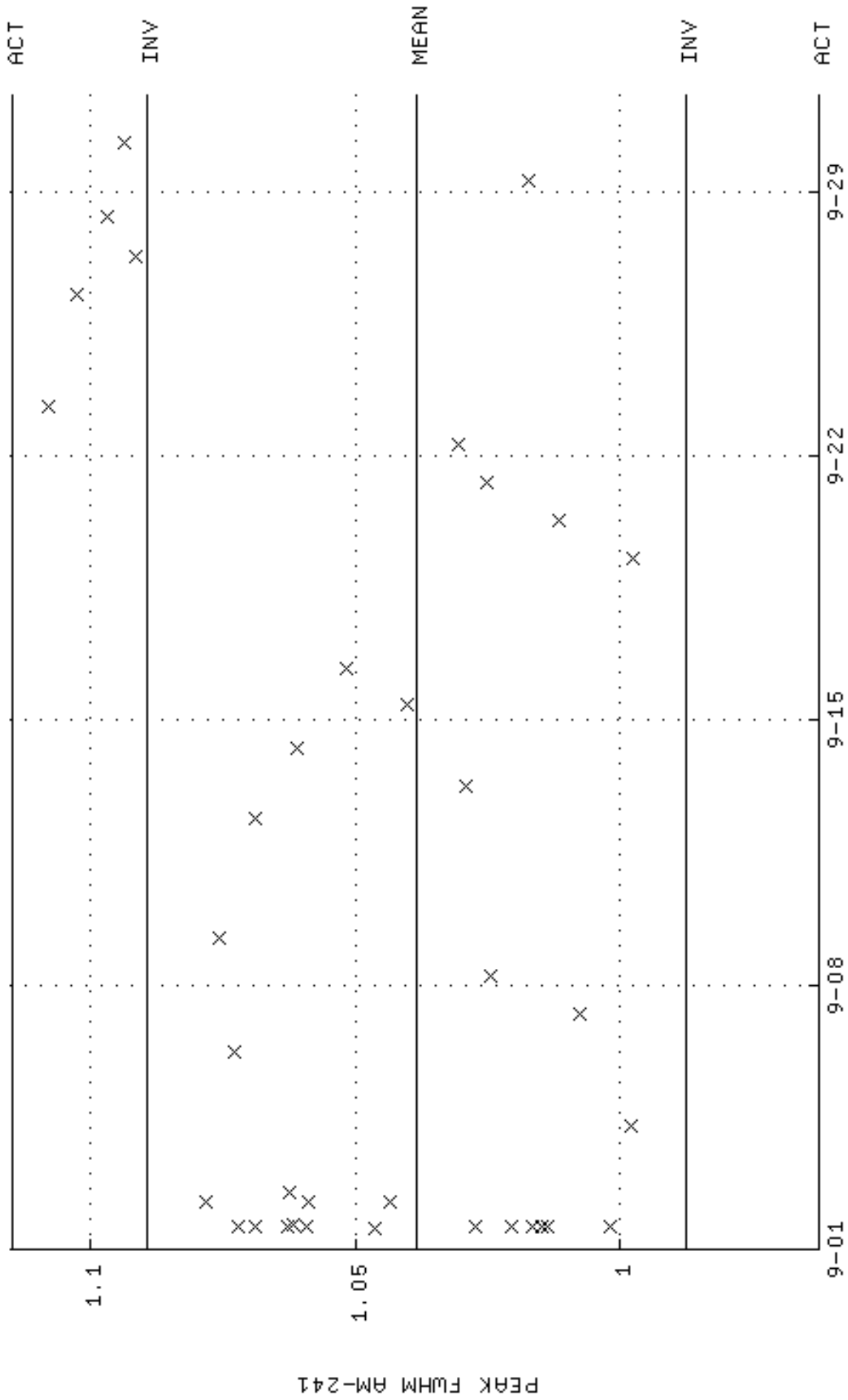
QA filename : DKA100:[CANSBERRA.GAMMA.SCUSR.QA]LBC_GAM06.QAF;1
 Parameter Name : BACKRATE (Spectrum Background Rate)
 Start/End Dates : 3-APR-2016 12:18:07 through 1-OCT-2016 12:00:00
 Mean +- Std Dev : 1.24317 +- 1.196123E-02 (0.96 %)



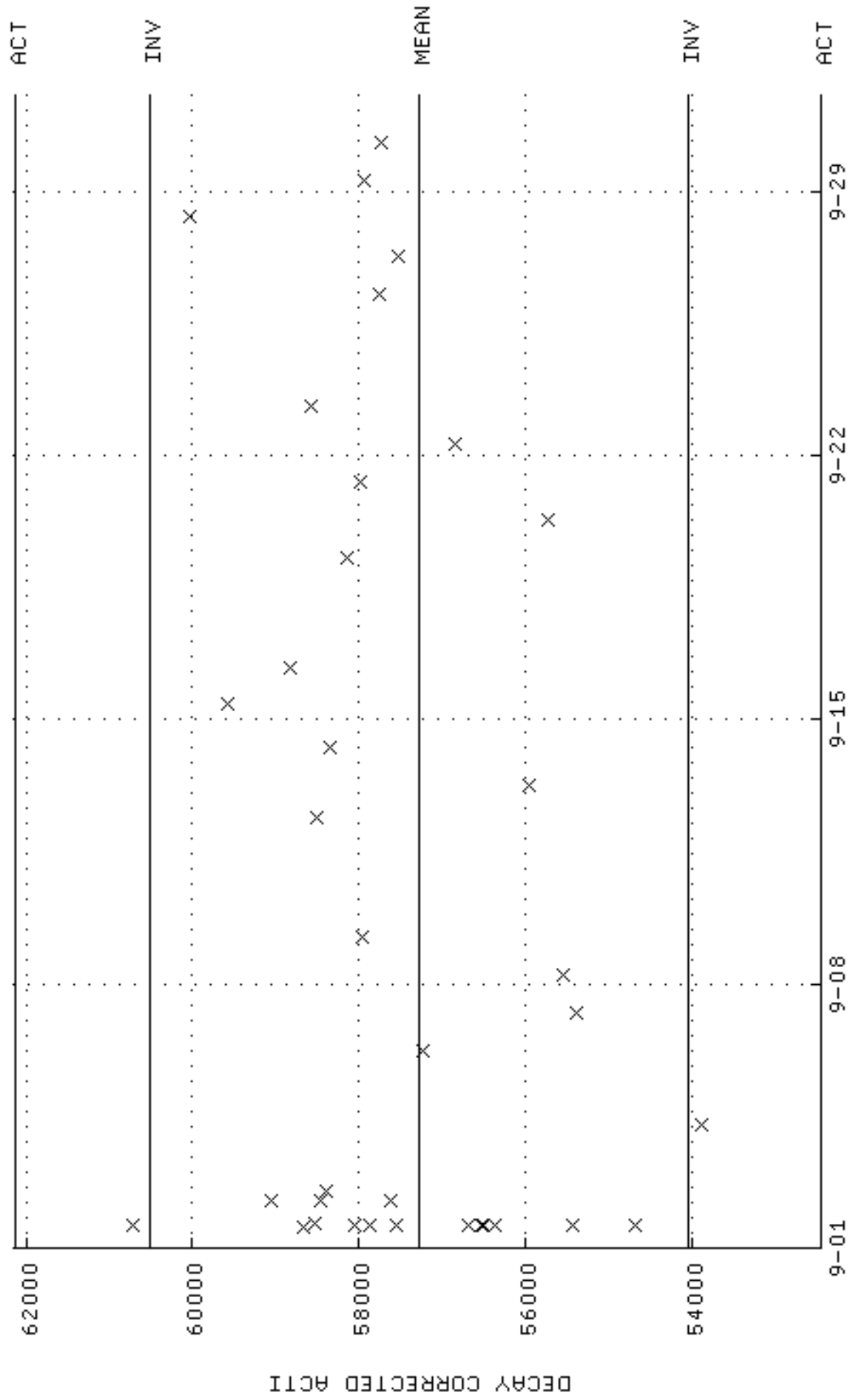
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 Parameter Name : PSENERGY-59 (PEAK ENERGY AM-241)
 Start/End Dates : 1-SEP-2016 13:47:02 through 1-OCT-2016 12:00:00
 Lower/Upper Lmts: 57.5000 through 61.5000



QA filename : DKA100:[CANBERRA,GAMMA,SCUSR,QA]QCC_GAM07_JAR.QAF;1
 Parameter Name : PSFWHM-59 (PEAK FWHM AM-241)
 Start/End Dates : 1-SEP-2016 13:47:02 through 1-OCT-2016 12:00:00
 Mean +- Std Dev : 1.03858 +- 2.533066E-02 (2.44 %)

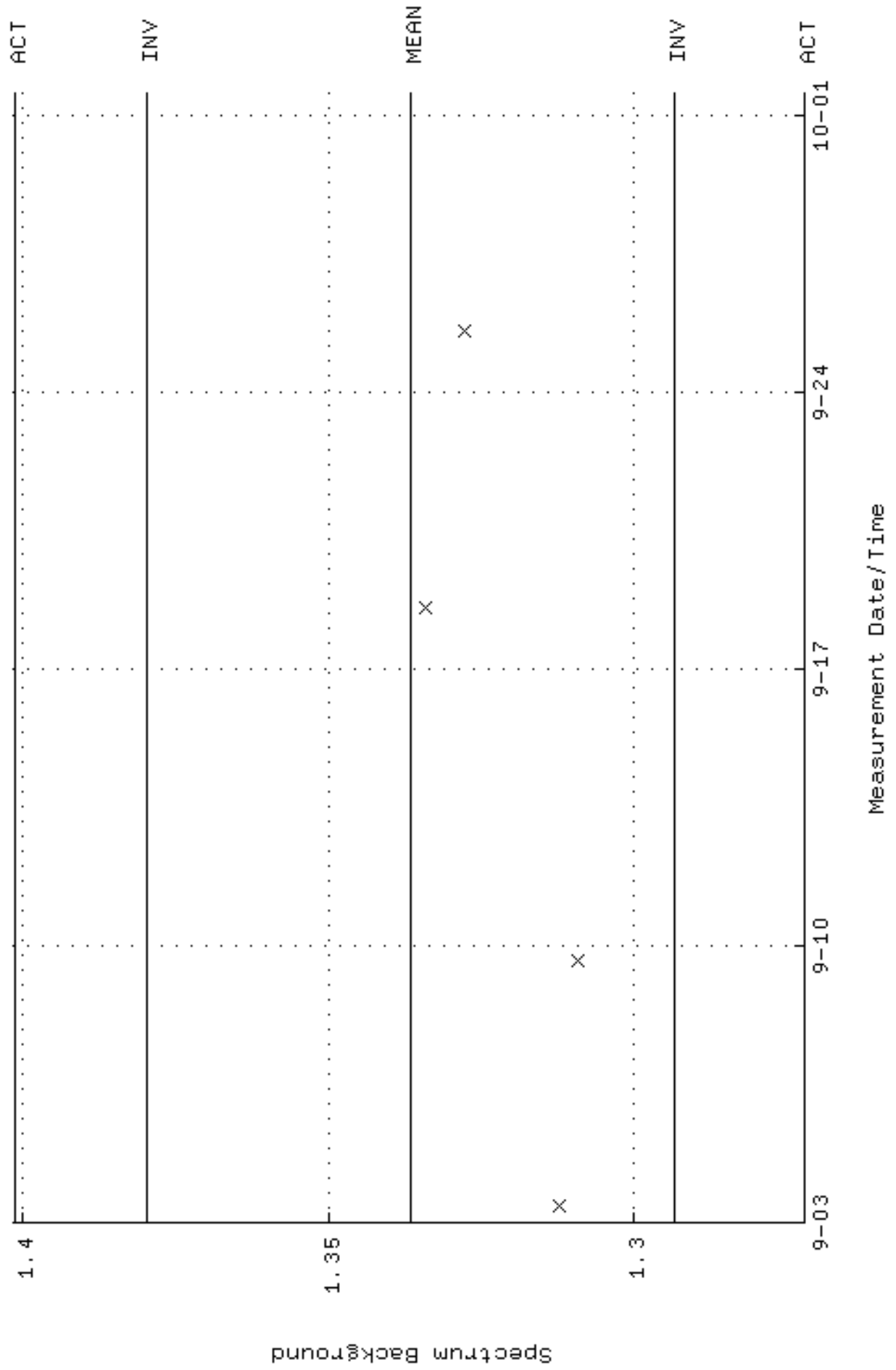


QA filename : DKA100:[CANSBERRA,GAMMA,SCUSR,QA]QCC_GAM07_JAR.QAF;1
 Parameter Name : NLAIVITY-59 (DECAY CORRECTED ACTIVITY AM-241)
 Start/End Dates : 1-SEP-2016 13:47:02 through 1-OCT-2016 12:00:00
 Mean +- Std Dev : 57291.8 +- 1611.56 (2.81 %)

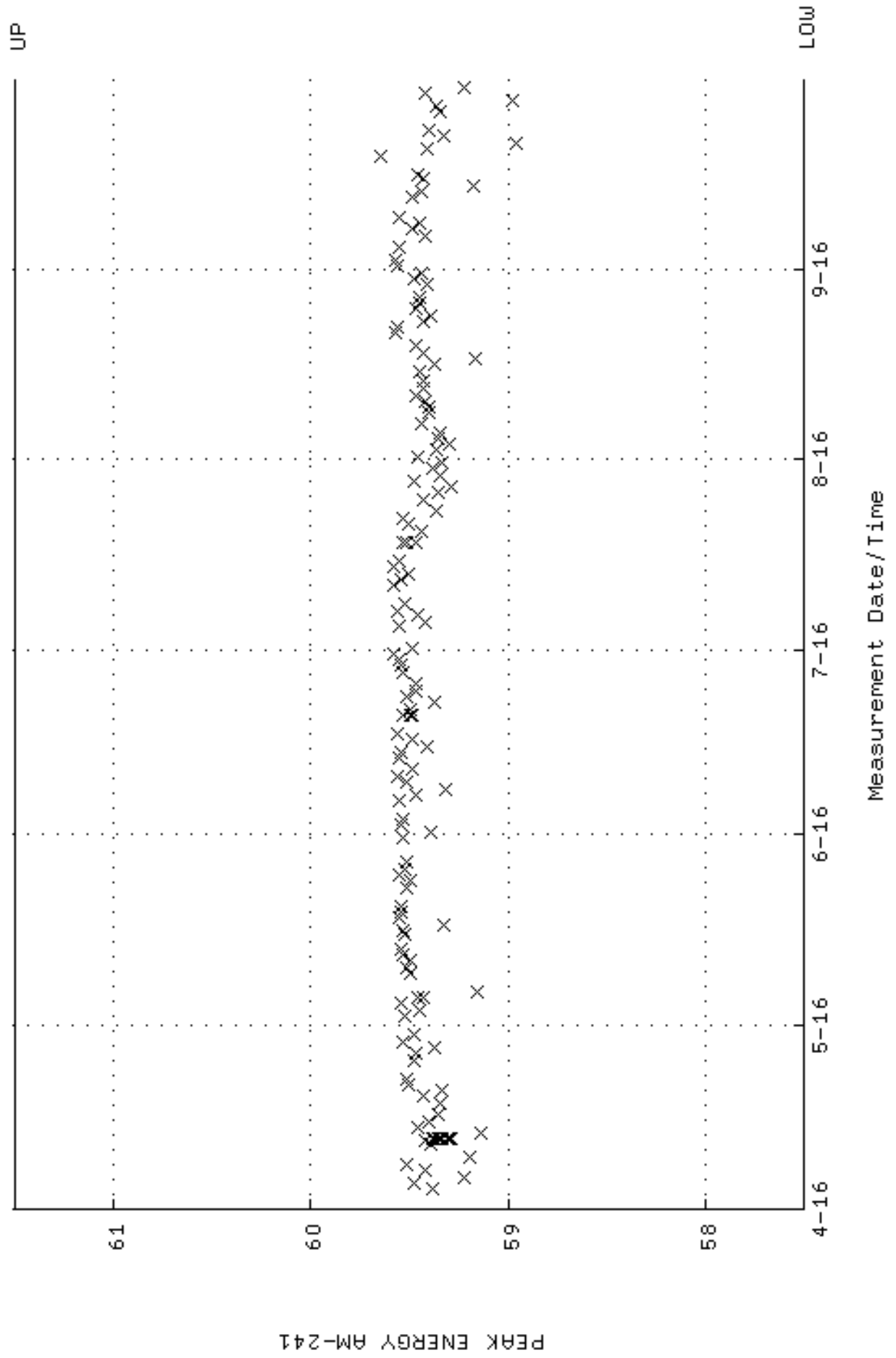


Measurement Date/Time

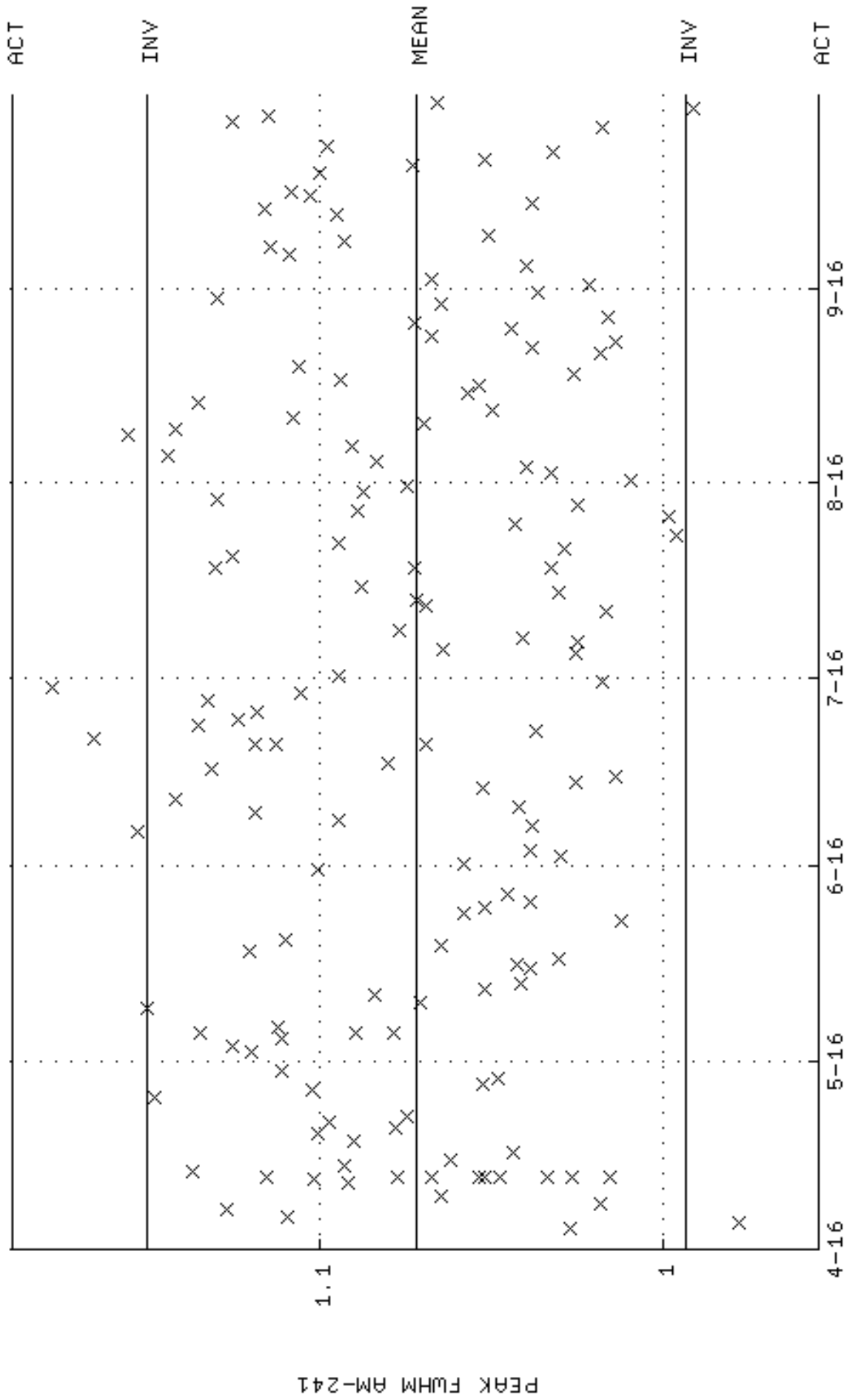
QA filename : DKA100:[CANSBERRA.GAMMA.SCUSR.QA]LBC_GAM07.QAF;1
 Parameter Name : BACKRATE (Spectrum Background Rate)
 Start/End Dates : 3-SEP-2016 10:23:03 through 1-OCT-2016 12:00:00
 Mean +- Std Dev : 1.33664 +- 2.151268E-02 (1.61 %)



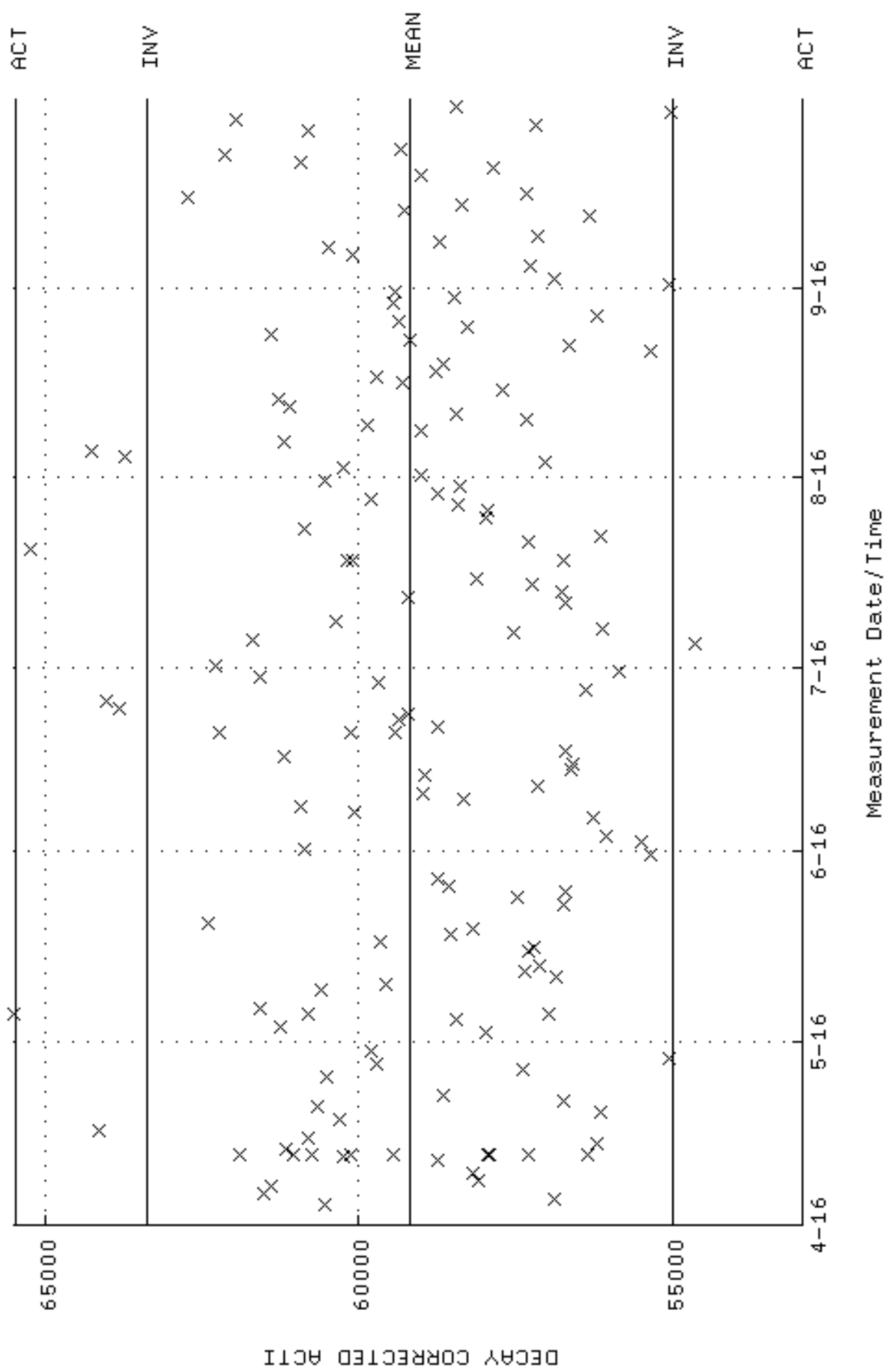
QA filename : DKA100:[CAMBERRA,GAMMA,SCUSR,QA]QCC_GAM08_JAR.QAF;1
Parameter Name : PSENERGY-59 (PEAK ENERGY AM-241)
Start/End Dates : 4-APR-2016 06:13:29 through 1-OCT-2016 12:00:00
Lower/Upper Lmts: 57.5000 through 61.5000



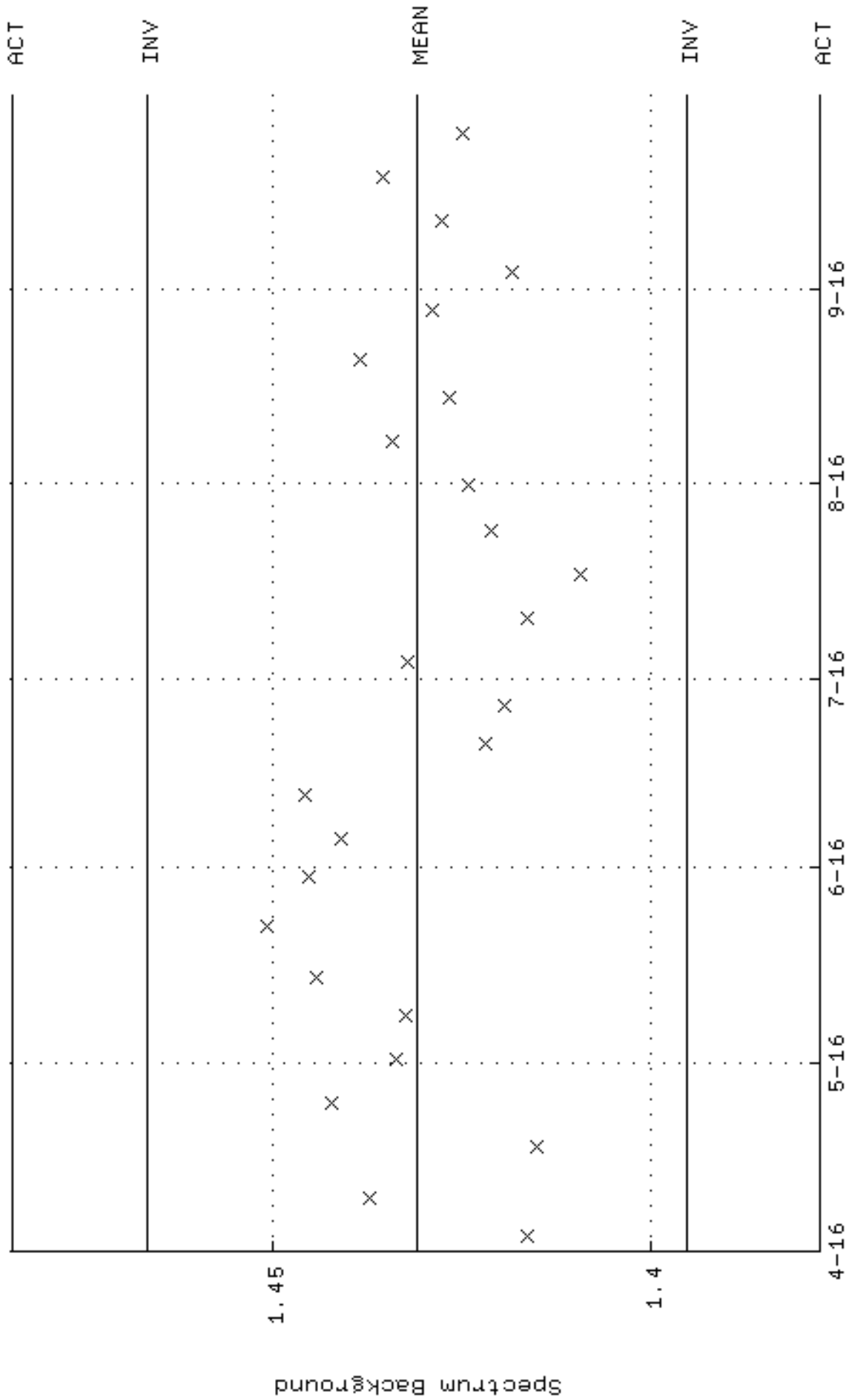
QA filename : DKA100:[CANBERRA,GAMMA,SCUSR,QA]QCC_GAM08_JAR.QAF;1
 Parameter Name : PSFWM-59 (PEAK FWHM AM-241)
 Start/End Dates : 4-APR-2016 06:13:29 through 1-OCT-2016 12:00:00
 Mean +- Std Dev : 1.07206 +- 3.912322E-02 (3.65 %)



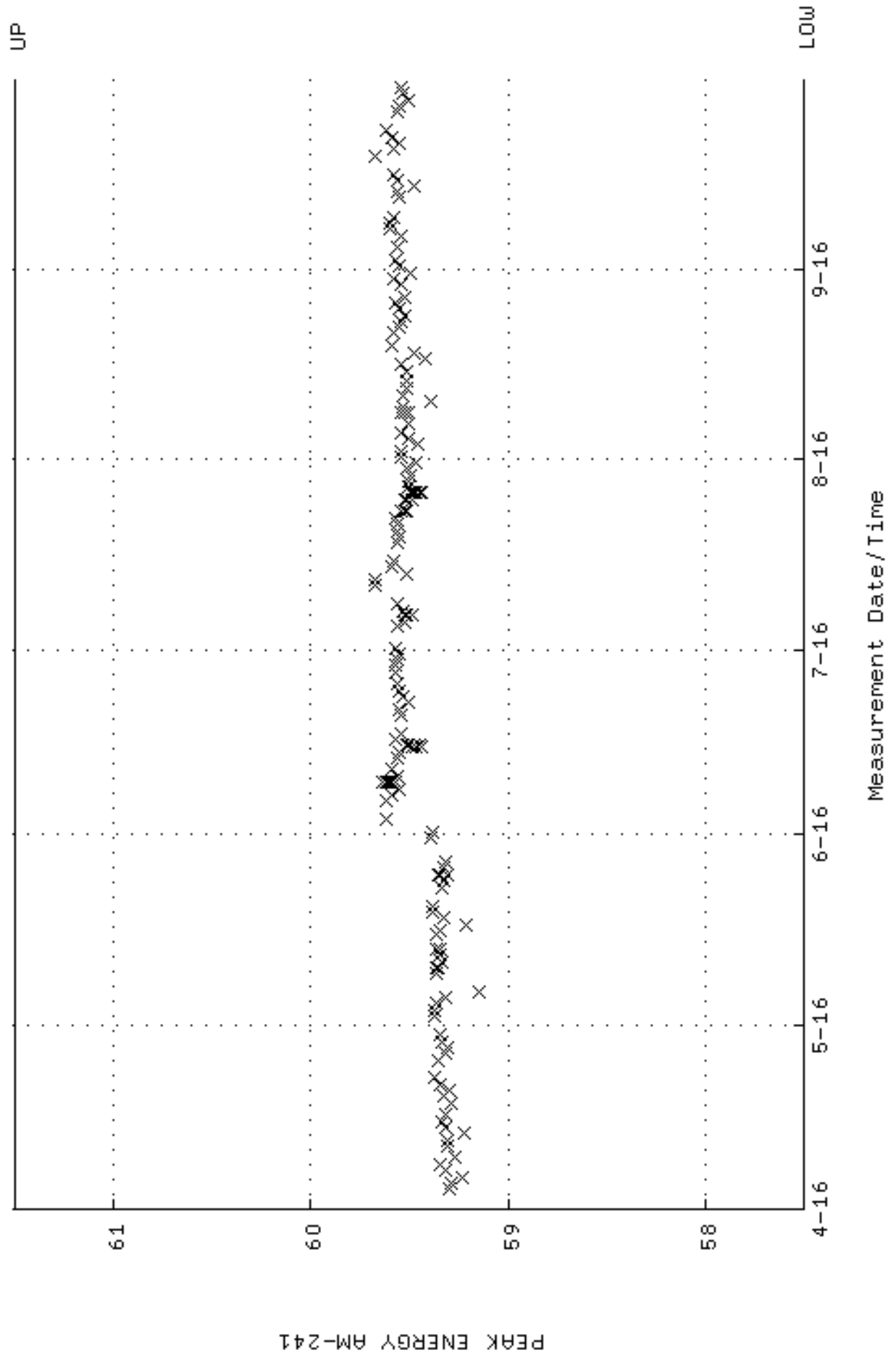
QA filename : DKA100:[CANBERRA,GAMMA,SCUSR,QA]QCC_GAM08_JAR.QAF;1
 Parameter Name : NACTIVITY-59 (DECAY CORRECTED ACTIVITY AM-241)
 Start/End Dates : 4-APR-2016 06:13:29 through 1-OCT-2016 12:00:00
 Mean +- Std Dev : 59199.1 +- 2092.11 (3.53 %)



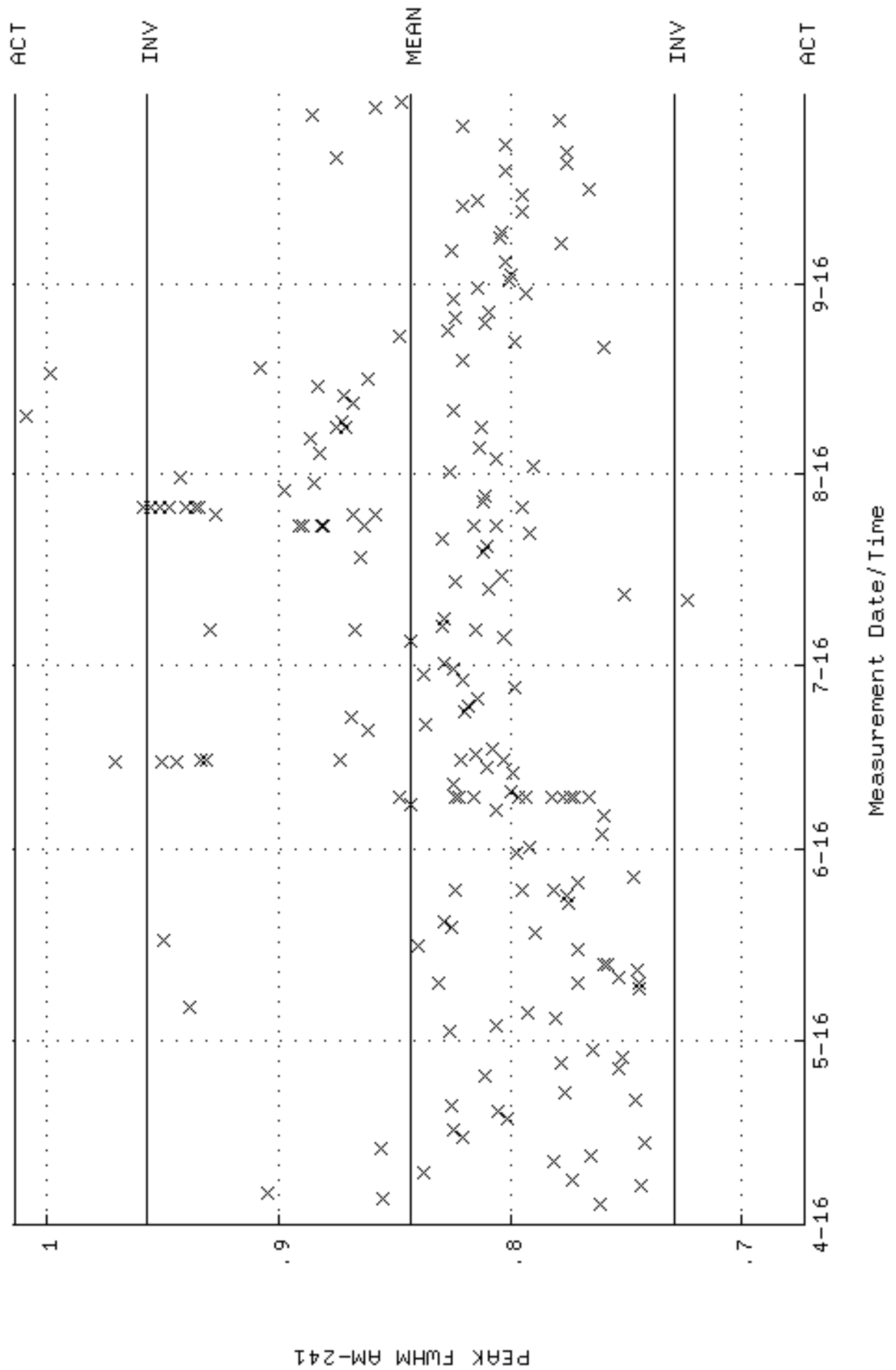
QA filename : DKA100:[CANTERRA.GAMMA.SCUSR.QA]LBC_GAM08.QAF;1
 Parameter Name : BACKRATE (Spectrum Background Rate)
 Start/End Dates : 3-APR-2016 12:18:12 through 1-OCT-2016 12:00:00
 Mean +- Std Dev : 1.43104 +- 1.778290E-02 (1.24 %)



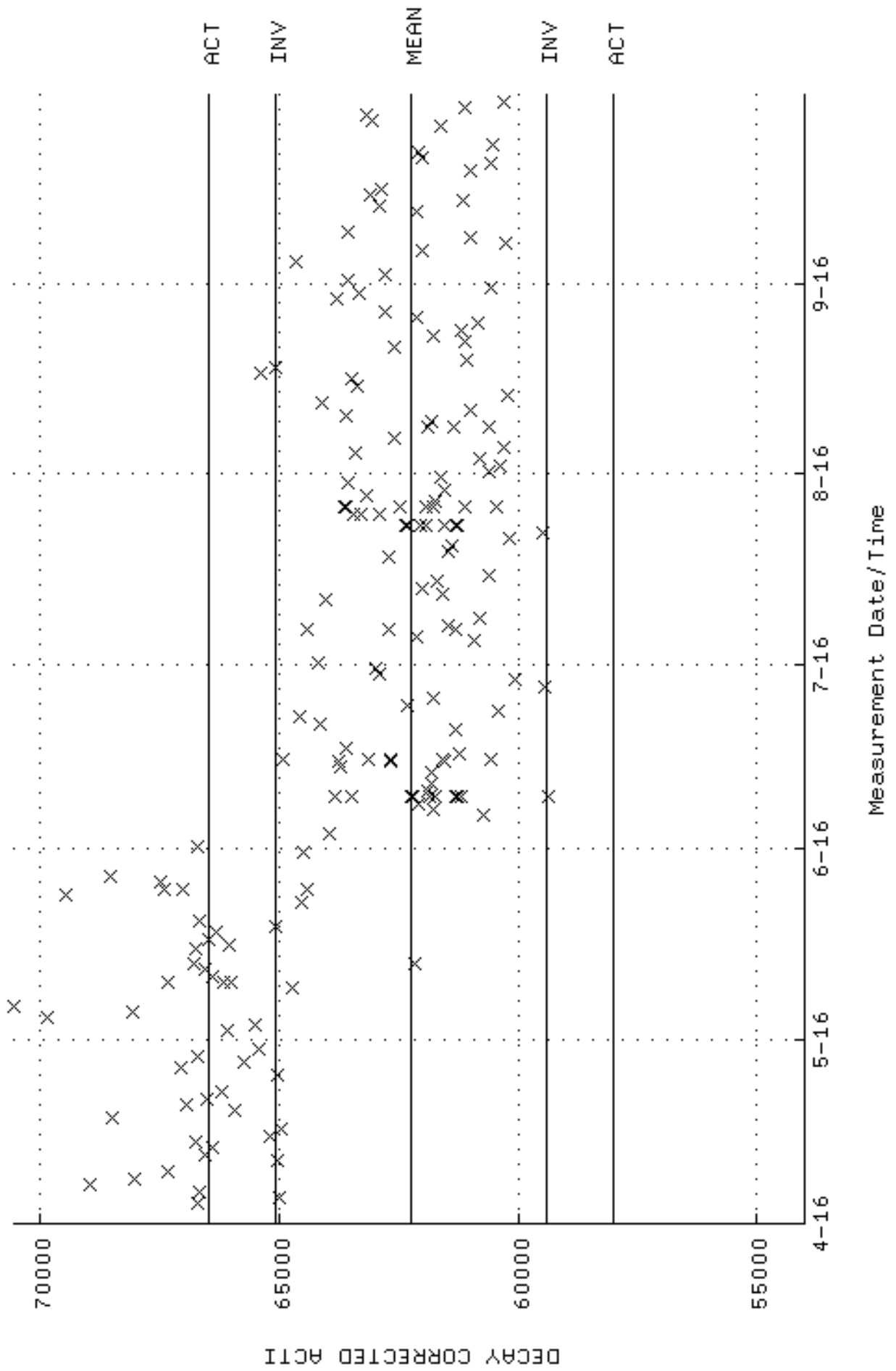
QA filename : DKA100:[CANSBERRA,GAMMA,SCUSR,QA]QCC_GAM09_500MLMB.QAF;1
Parameter Name : PSENERGY-59 (PEAK ENERGY AM-241)
Start/End Dates : 4-APR-2016 06:24:11 through 1-OCT-2016 12:00:00
Lower/Upper Lmts: 57.5000 through 61.5000



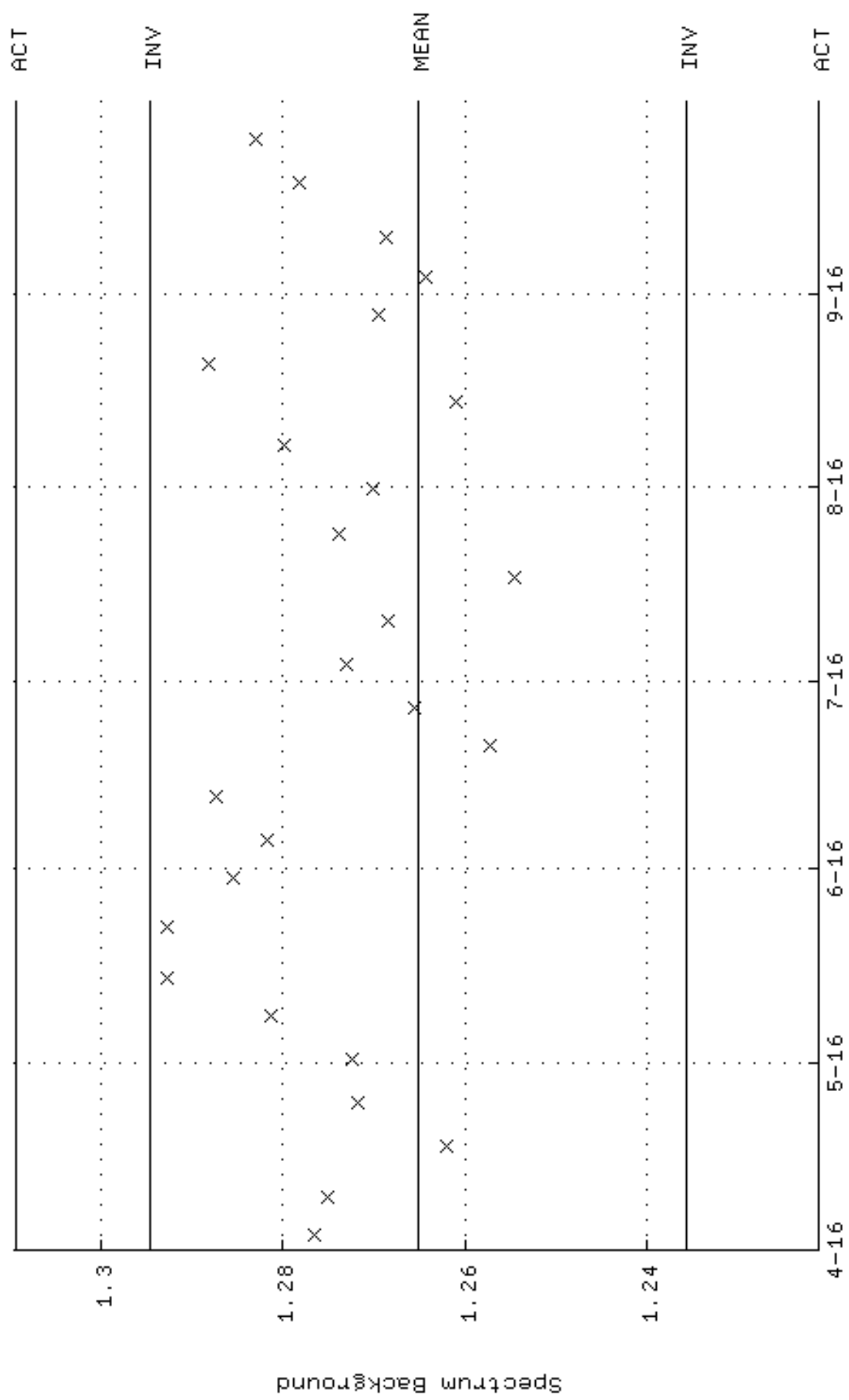
QA filename : DKA100:[CANBERRA,GAMMA,SCUSR,QA]QCC_GAM09_500MLMB.QAF;1
 Parameter Name : PSFWM-59 (PEAK FWHM AM-241)
 Start/End Dates : 4-APR-2016 06:24:11 through 1-OCT-2016 12:00:00
 Mean +- Std Dev : 0.843482 +- 5.677858E-02 (6.73 %)



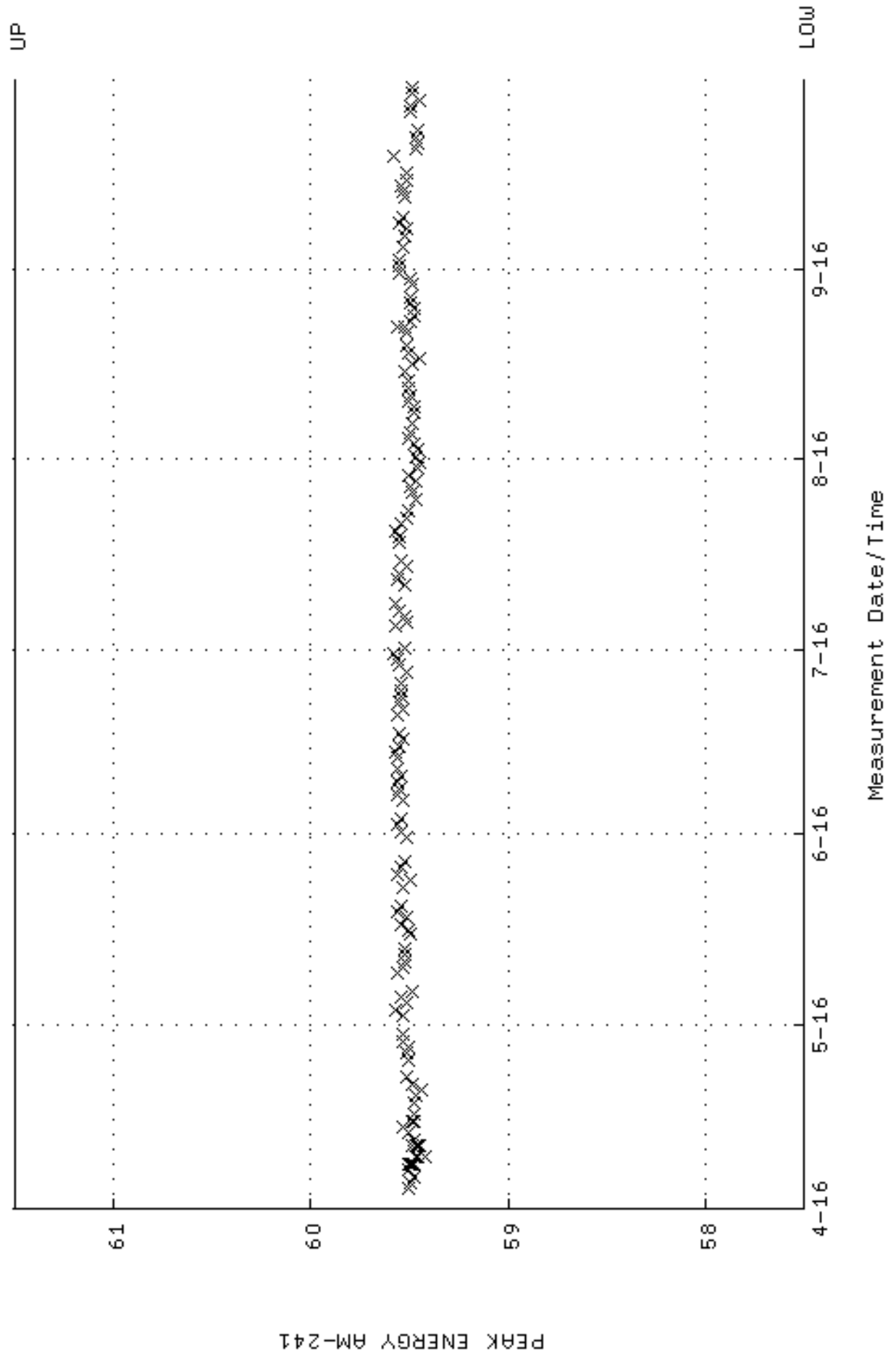
QA filename : DKA100:[CANBERRA,GAMMA,SCUSR,QA]QCC_GAM09_500MLMB.QAF;1
 Parameter Name : NACTIVITY-59 (DECAY CORRECTED ACTIVITY AM-241)
 Start/End Dates : 4-APR-2016 06:24:11 through 1-OCT-2016 12:00:00
 Mean +- Std Dev : 62249.4 +- 1409.24 (2.26 %)



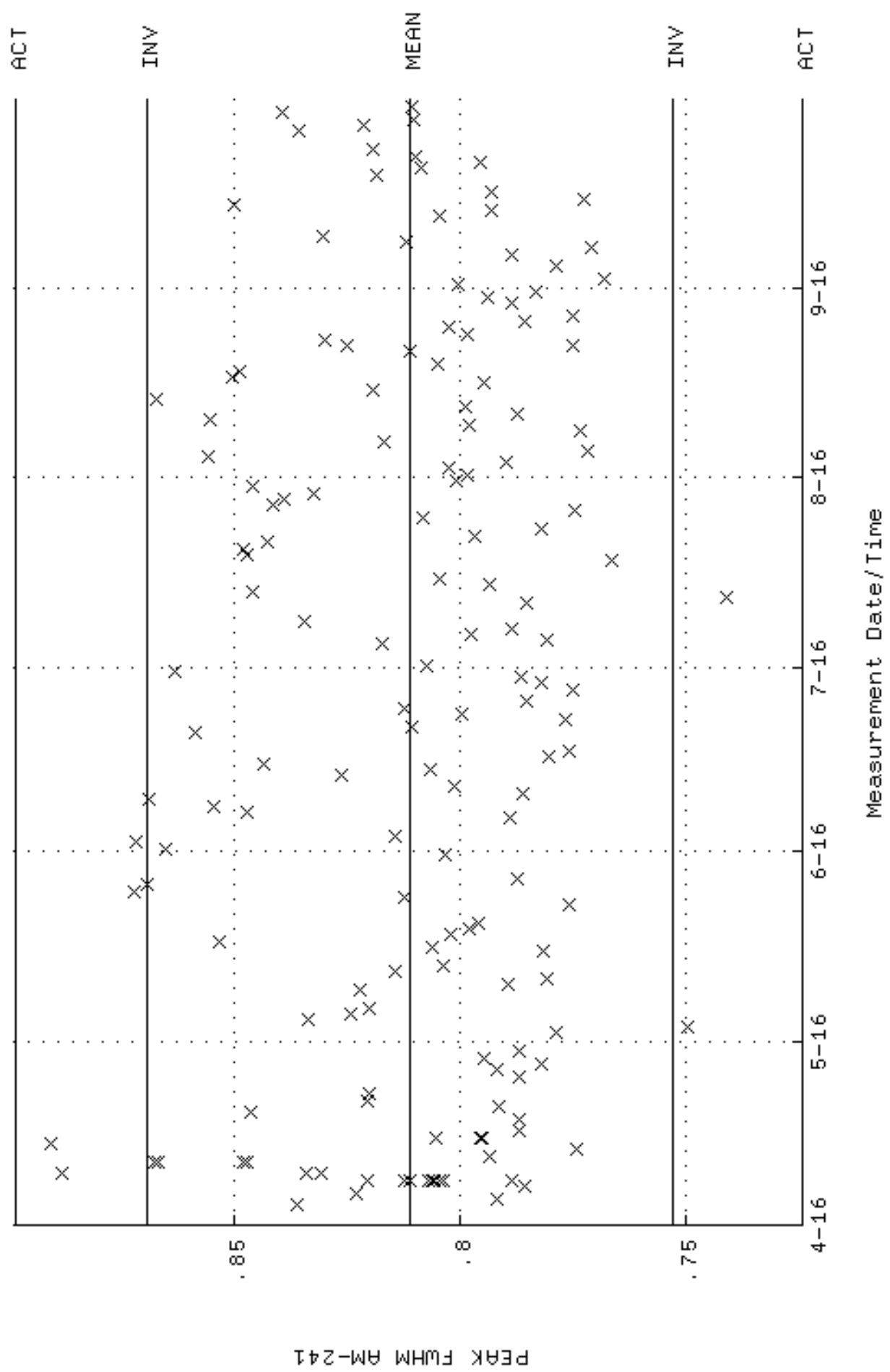
QA filename : DKA100:[CANSBERRA,GAMMA,SCUSR,QA]LBC_GAM09_QAF;1
 Parameter Name : BACKRATE (Spectrum Background Rate)
 Start/End Dates : 3-APR-2016 12:18:18 through 1-OCT-2016 12:00:00
 Mean +- Std Dev : 1.26523 +- 1.466291E-02 (1.16 %)



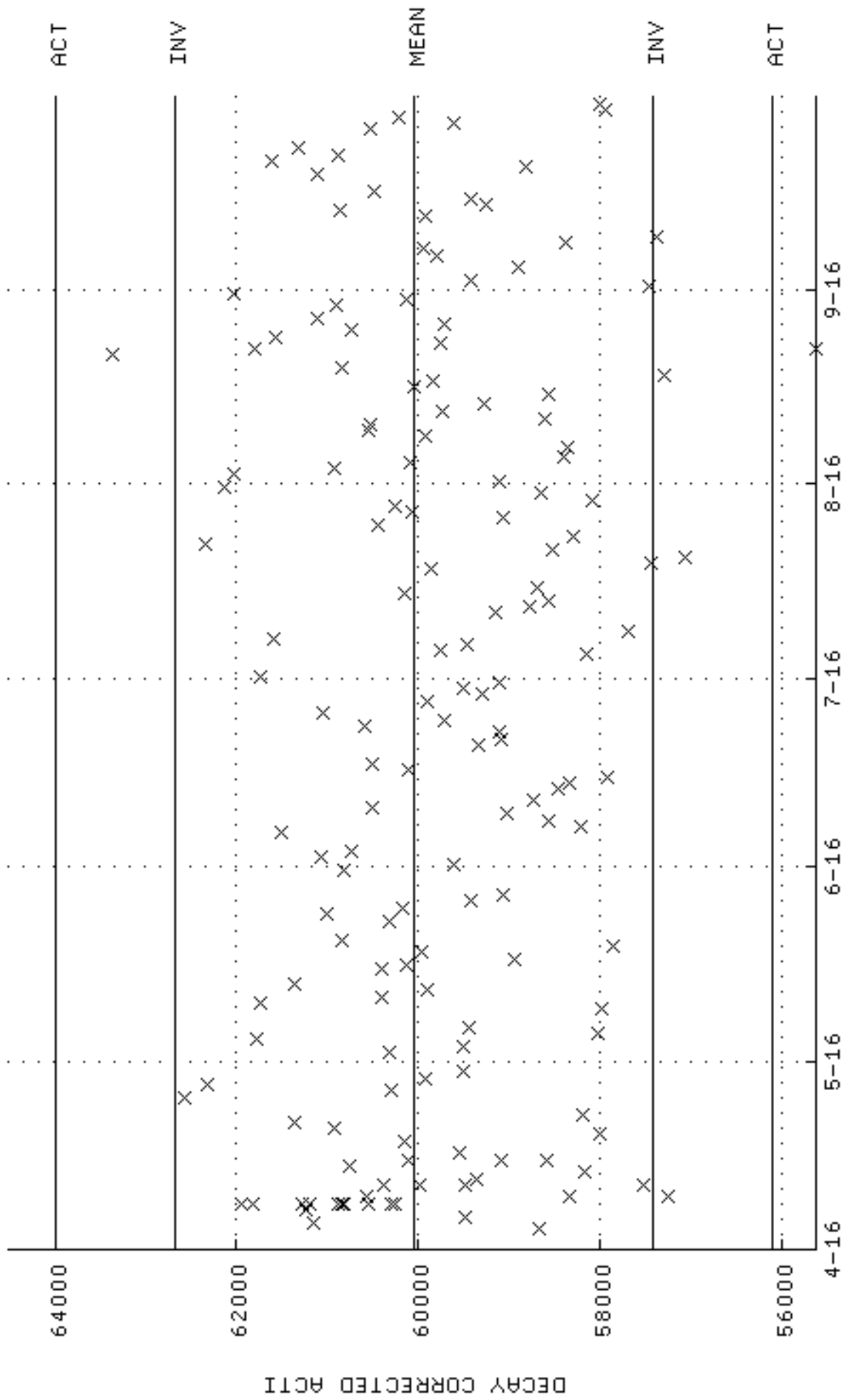
QA filename : DKA100:[CANTERRA.GAMMA.SCUSR.QA]QCC_GAM11_JAR.QAF;1
Parameter Name : PSENERGY-59 (PEAK ENERGY AM-241)
Start/End Dates : 4-APR-2016 06:24:16 through 1-OCT-2016 12:00:00
Lower/Upper Lmts: 57.5000 through 61.5000



QA filename : DKA100:[CANBERRA,GAMMA,SCUSR,QA]QCC_GAM11_JAR.QAF;1
 Parameter Name : PSFWM-59 (PEAK FWHM AM-241)
 Start/End Dates : 4-APR-2016 06:24:16 through 1-OCT-2016 12:00:00
 Mean +- Std Dev : 0.811280 +- 2.896658E-02 (3.57 %)

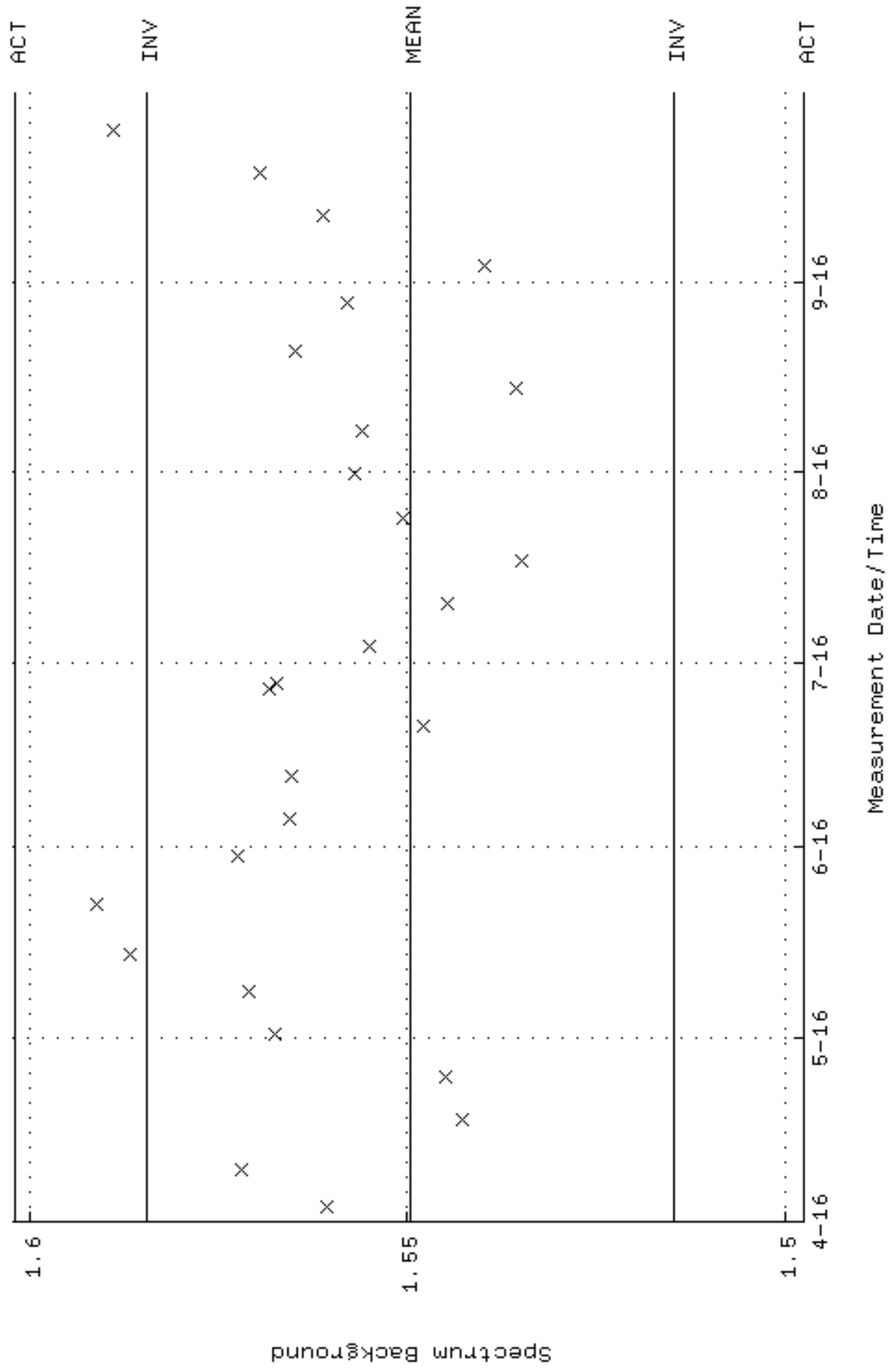


QA filename : DKA100:[CAMBERRA,GAMMA,SCUSR,QA]QCC_GAM11_JAR.QAF;1
 Parameter Name : NACTIVITY-59 (DECAY CORRECTED ACTIVITY AM-241)
 Start/End Dates : 4-APR-2016 06:24:16 through 1-OCT-2016 12:00:00
 Mean +- Std Dev : 60054.4 +- 1312.98 (2.19 %)

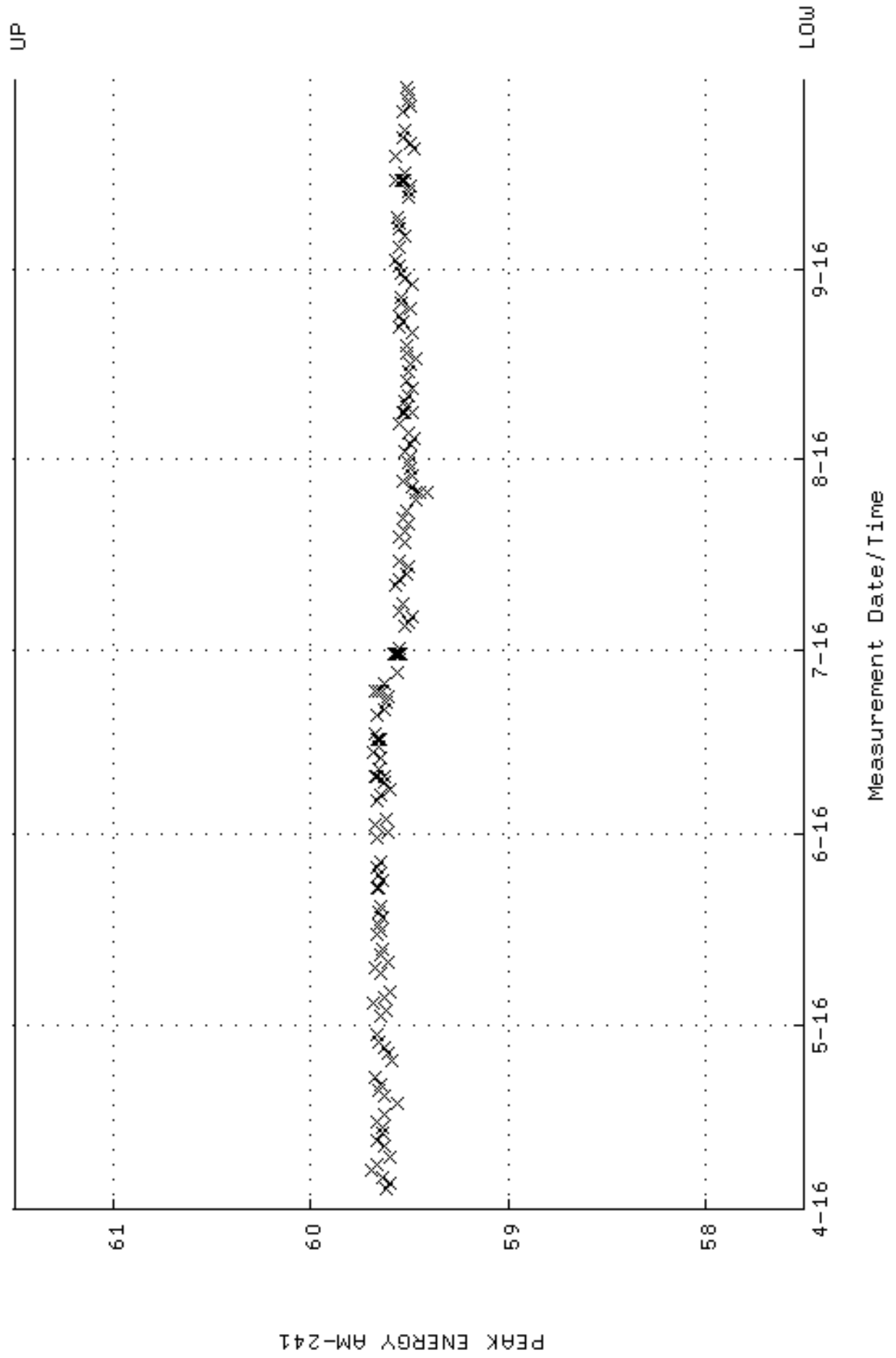


Measurement Date/Time

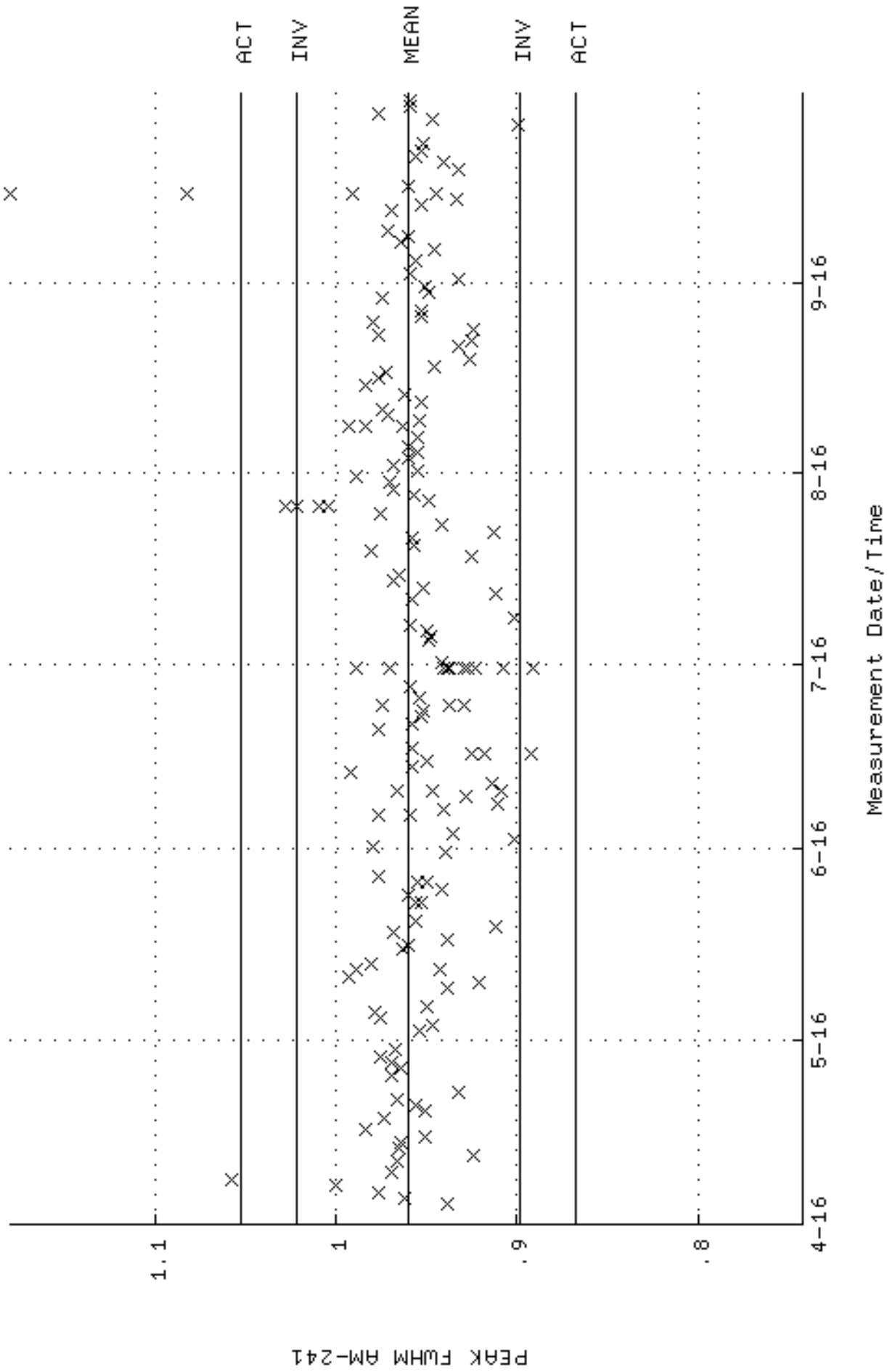
QA filename : DKA100:[CANTERRA,GAMMA,SCUSR,QA]LBC_GAM11.QAF;1
 Parameter Name : BACKRATE (Spectrum Background Rate)
 Start/End Dates : 3-APR-2016 12:18:24 through 1-OCT-2016 12:00:00
 Mean +- Std Dev : 1.54973 +- 1.740346E-02 (1.12 %)



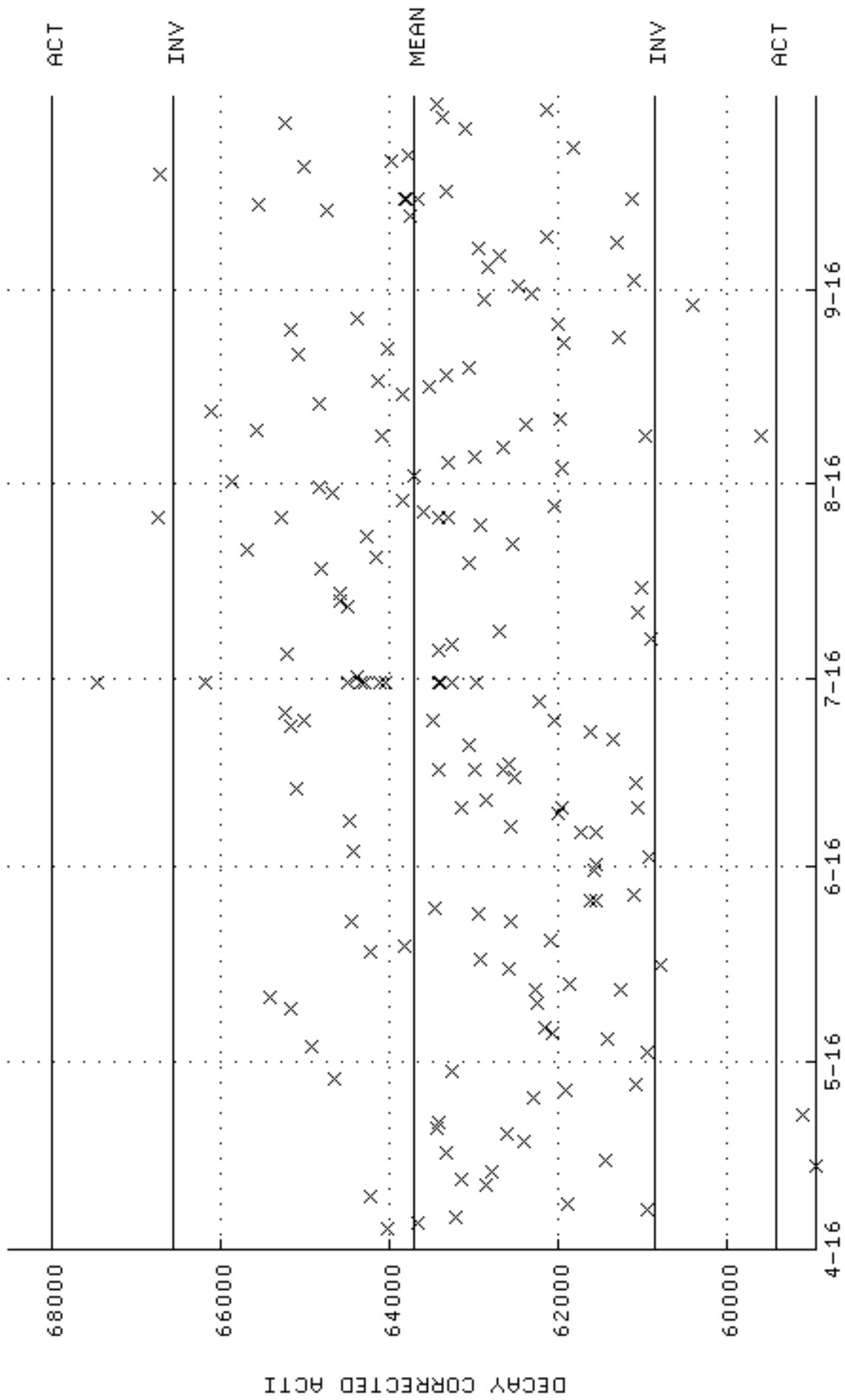
QA filename : DKA100:[CAMBERRA,GAMMA,SCUSR,QA]QCC_GAM18_CAN_QAF;1
Parameter Name : PSENERGY-59 (PEAK ENERGY AM-241)
Start/End Dates : 4-APR-2016 06:13:40 through 1-OCT-2016 12:00:00
Lower/Upper Lmts: 57.5000 through 61.5000



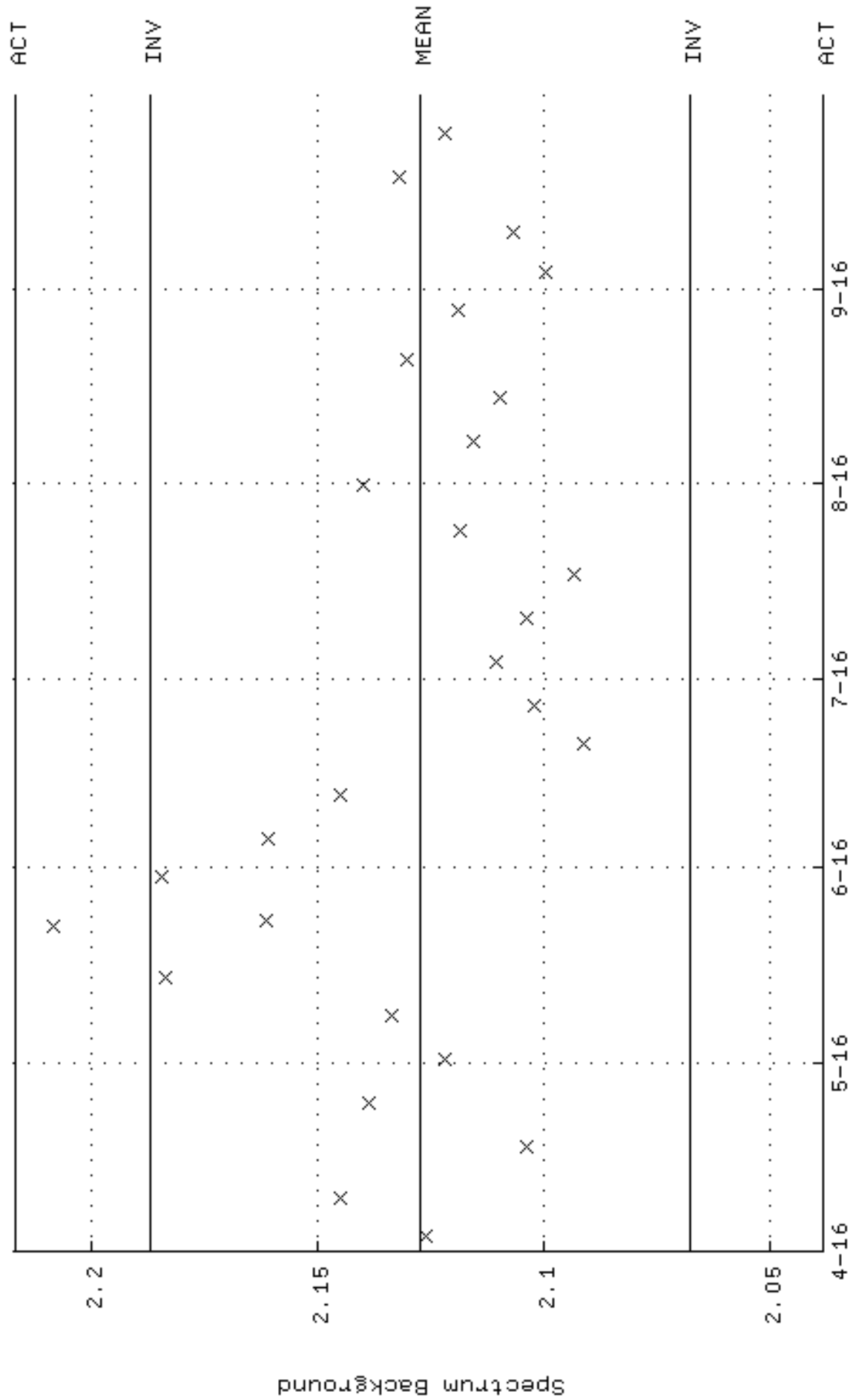
QA filename : DKA100:[CANSBERRA,GAMMA,SCUSR,QA]QCC_GAM18_CAN_QAF;1
 Parameter Name : PSFWM-59 (PEAK FWHM AM-241)
 Start/End Dates : 4-APR-2016 06:13:40 through 1-OCT-2016 12:00:00
 Mean +- Std Dev : 0.960465 +- 3.090899E-02 (3.22 %)



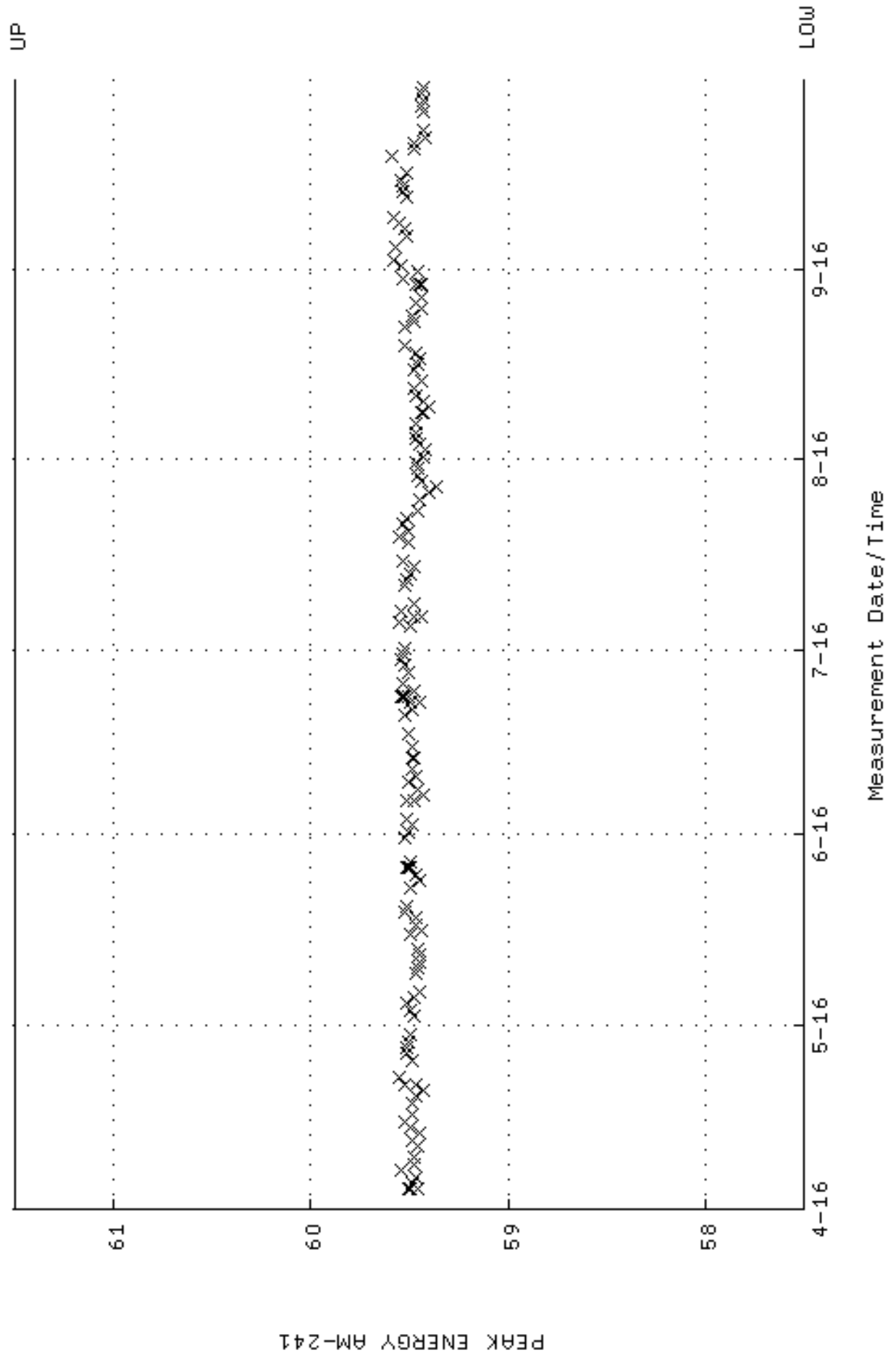
QA filename : DKA100:[CANSBERRA,GAMMA,SCUSR,QA]QCC_GAM18_CAN.QAF;1
 Parameter Name : NACTIVITY-59 (DECAY CORRECTED ACTIVITY AM-241)
 Start/End Dates : 4-APR-2016 06:13:40 through 1-OCT-2016 12:00:00
 Mean +- Std Dev : 63719.3 +- 1431.59 (2.25 %)



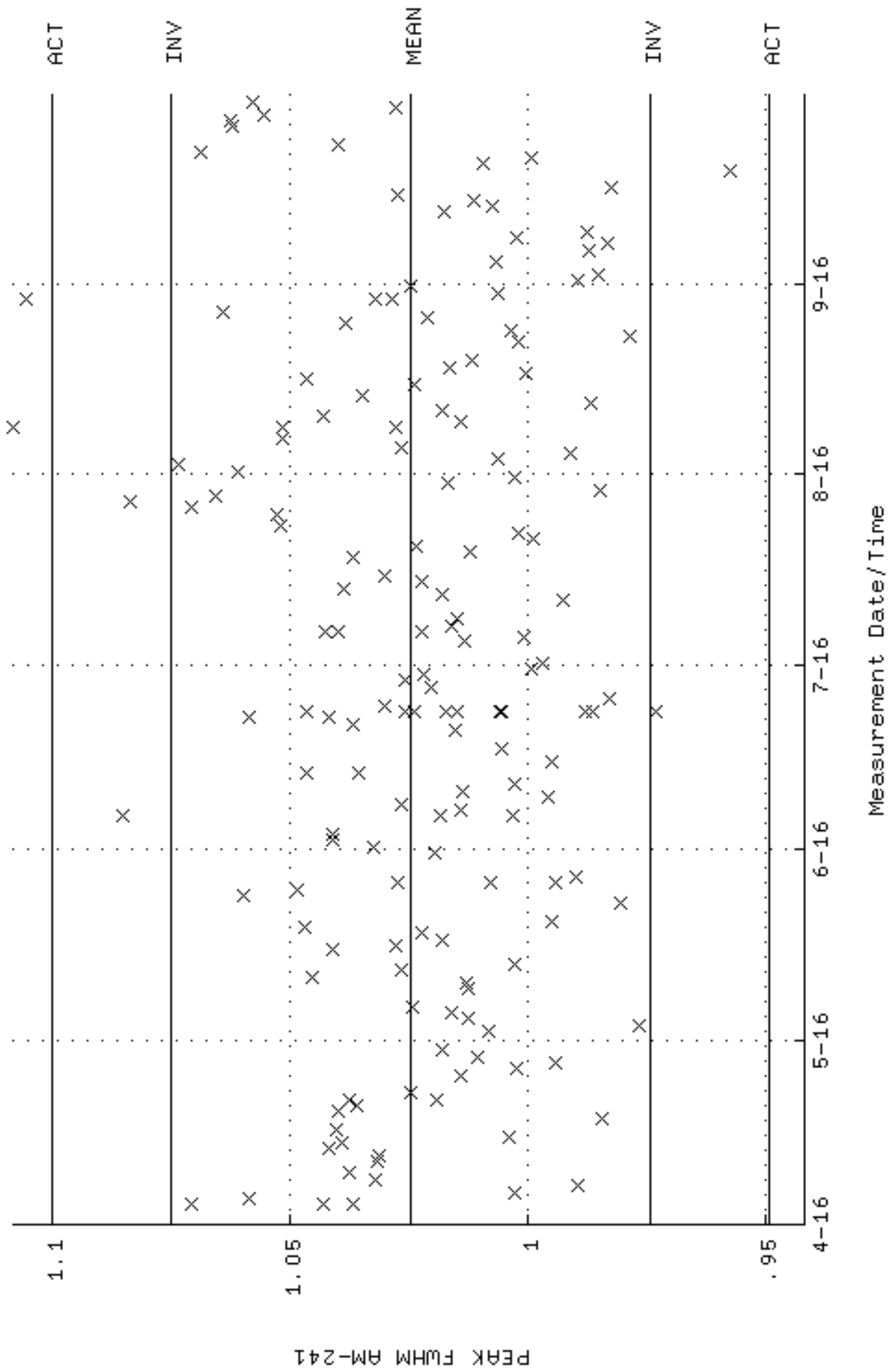
QA filename : DKA100:[CANSBERRA,GAMMA,SCUSR,QA]LBC_GAM18.QAF;1
 Parameter Name : BACKRATE (Spectrum Background Rate)
 Start/End Dates : 3-APR-2016 12:18:51 through 1-OCT-2016 12:00:00
 Mean +- Std Dev : 2.12760 +- 2.980382E-02 (1.40 %)



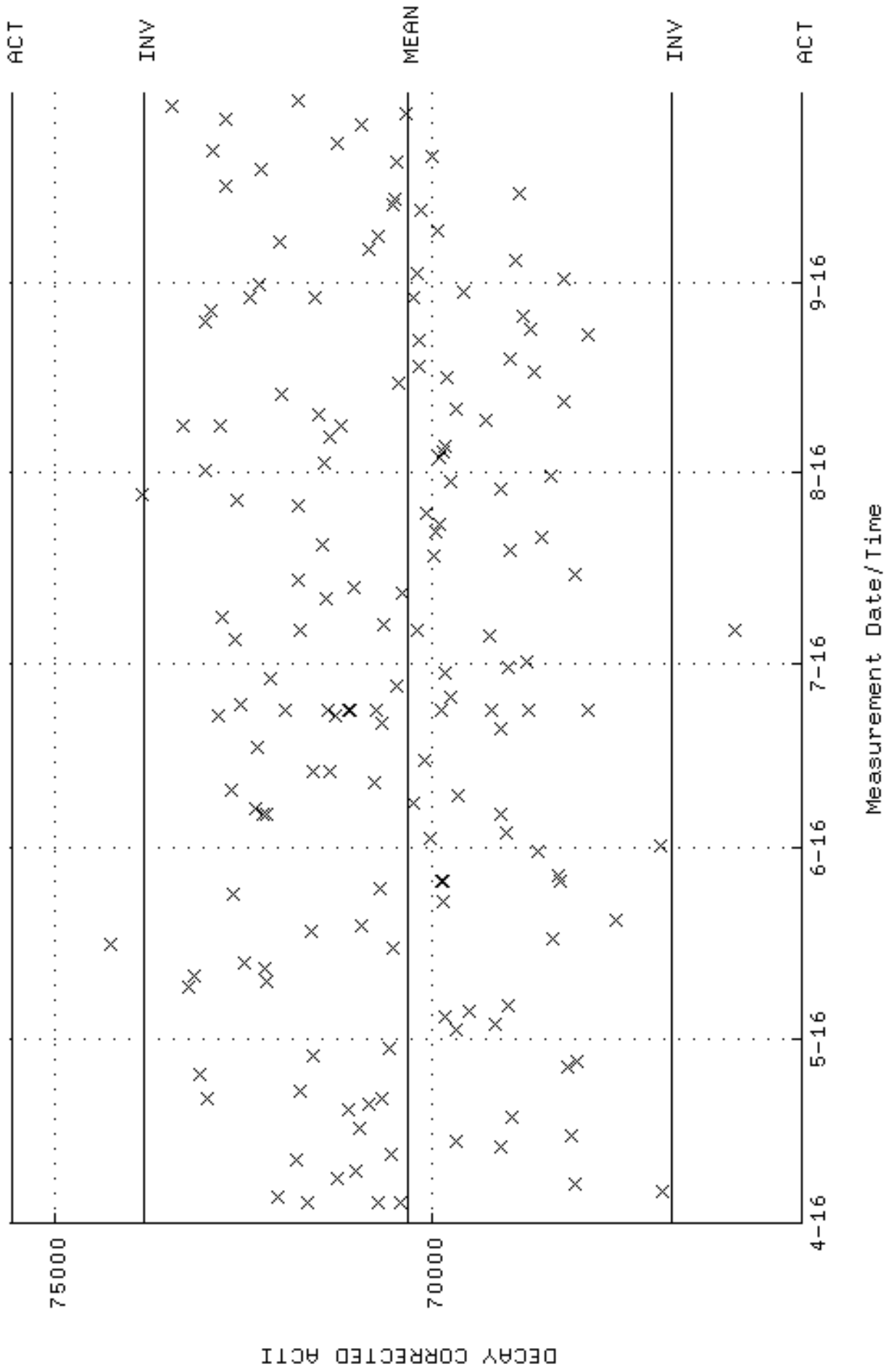
QA filename : DKA100:[CAMBERRA,GAMMA,SCUSR,QA]QCC_GAM19_CAN_QAF;1
Parameter Name : PSENERGY-59 (PEAK ENERGY AM-241)
Start/End Dates : 4-APR-2016 06:54:25 through 1-OCT-2016 12:00:00
Lower/Upper Lmts: 57.5000 through 61.5000



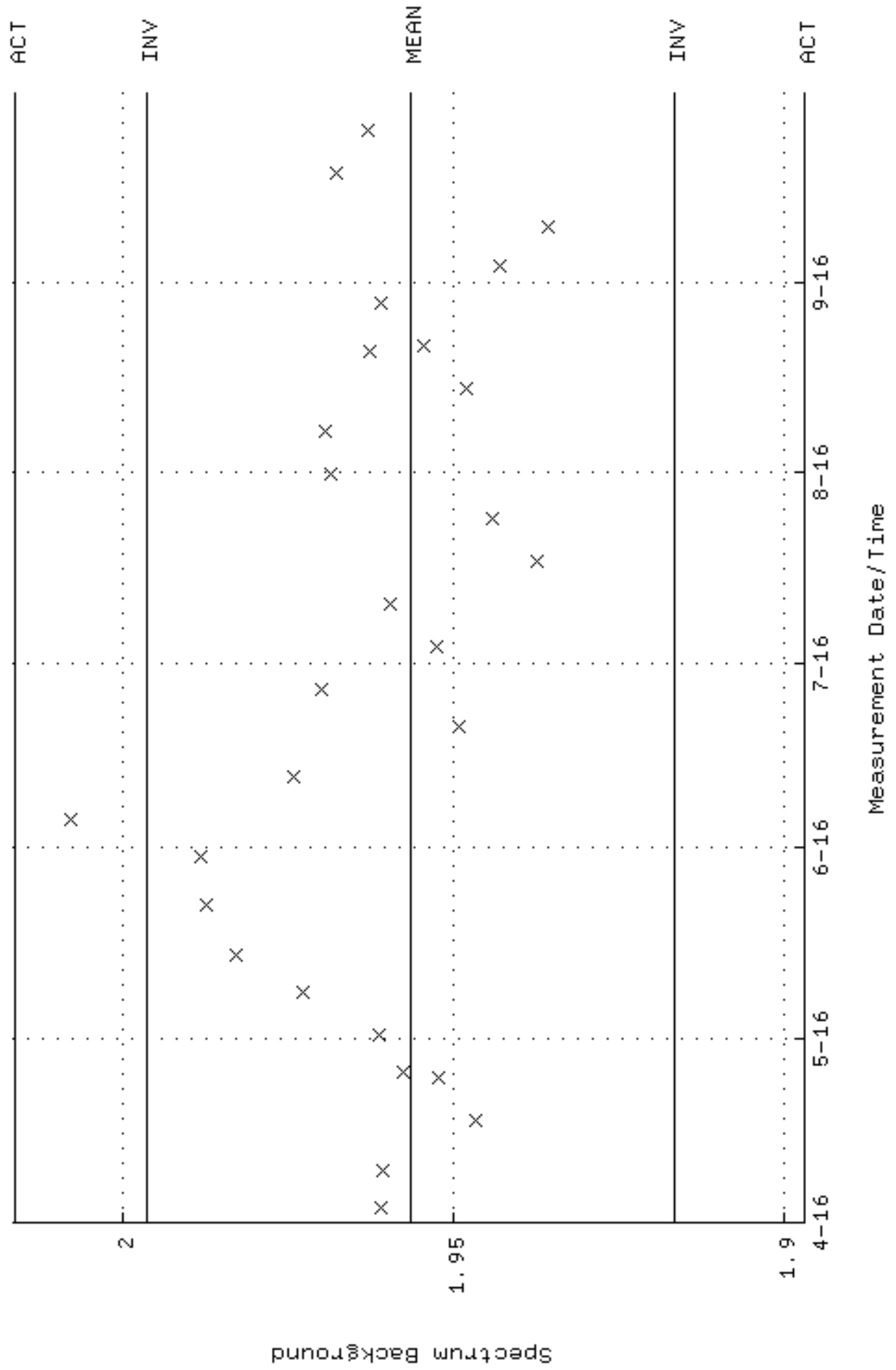
QA filename : DKA100:[CANTERRA,GAMMA,SCUSR,QA]QCC_GAM19_CAN.QAF;1
 Parameter Name : PSFWM-59 (PEAK FWHM AM-241)
 Start/End Dates : 4-APR-2016 06:54:25 through 1-OCT-2016 12:00:00
 Mean +- Std Dev : 1.02481 +- 2.522724E-02 (2.46 %)



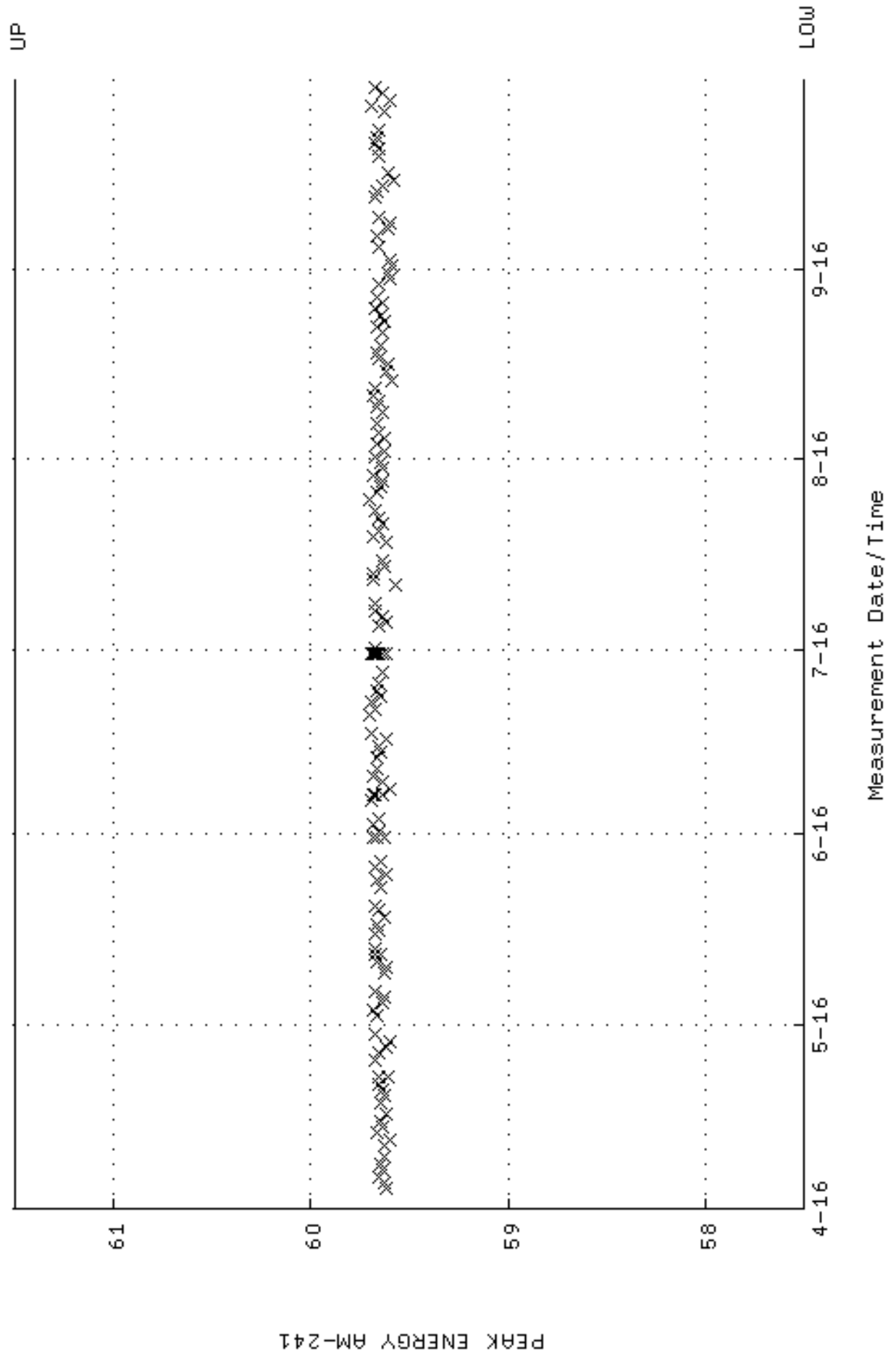
QA filename : DKA100:[CANBERRA,GAMMA,SCUSR,QA]QCC_GAM19_CAN.QAF;1
 Parameter Name : NACTIVITY-59 (DECAY CORRECTED ACTIVITY AM-241)
 Start/End Dates : 4-APR-2016 06:54:25 through 1-OCT-2016 12:00:00
 Mean +- Std Dev : 70341.0 +- 1743.47 (2.48 %)



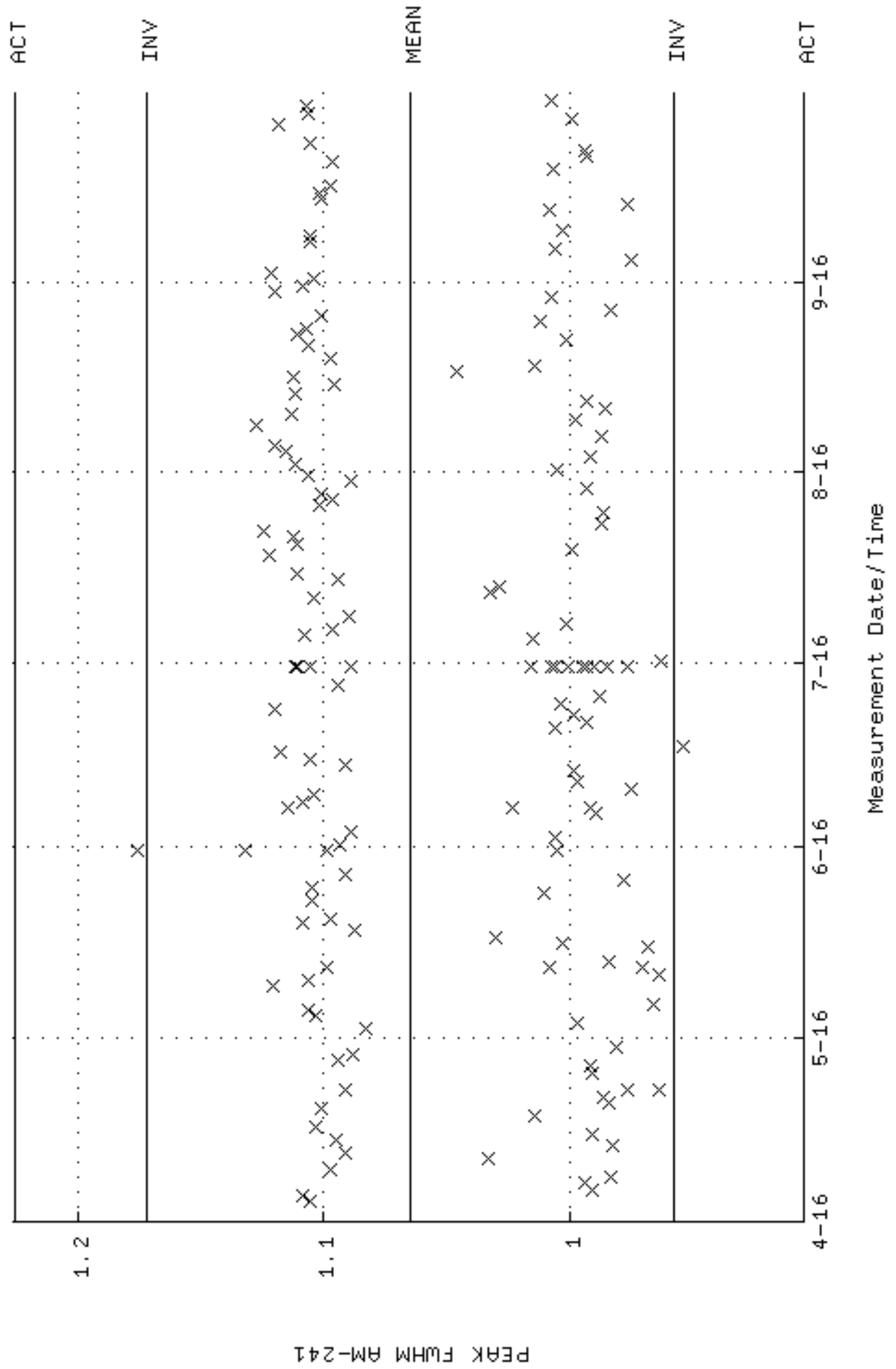
QA filename : DKA100:[CANSBERRA.GAMMA.SCUSR.QA]LBC_GAM19.QAF;1
 Parameter Name : BACKRATE (Spectrum Background Rate)
 Start/End Dates : 3-APR-2016 12:18:56 through 1-OCT-2016 12:00:00
 Mean +- Std Dev : 1.95658 +- 1.990679E-02 (1.02 %)



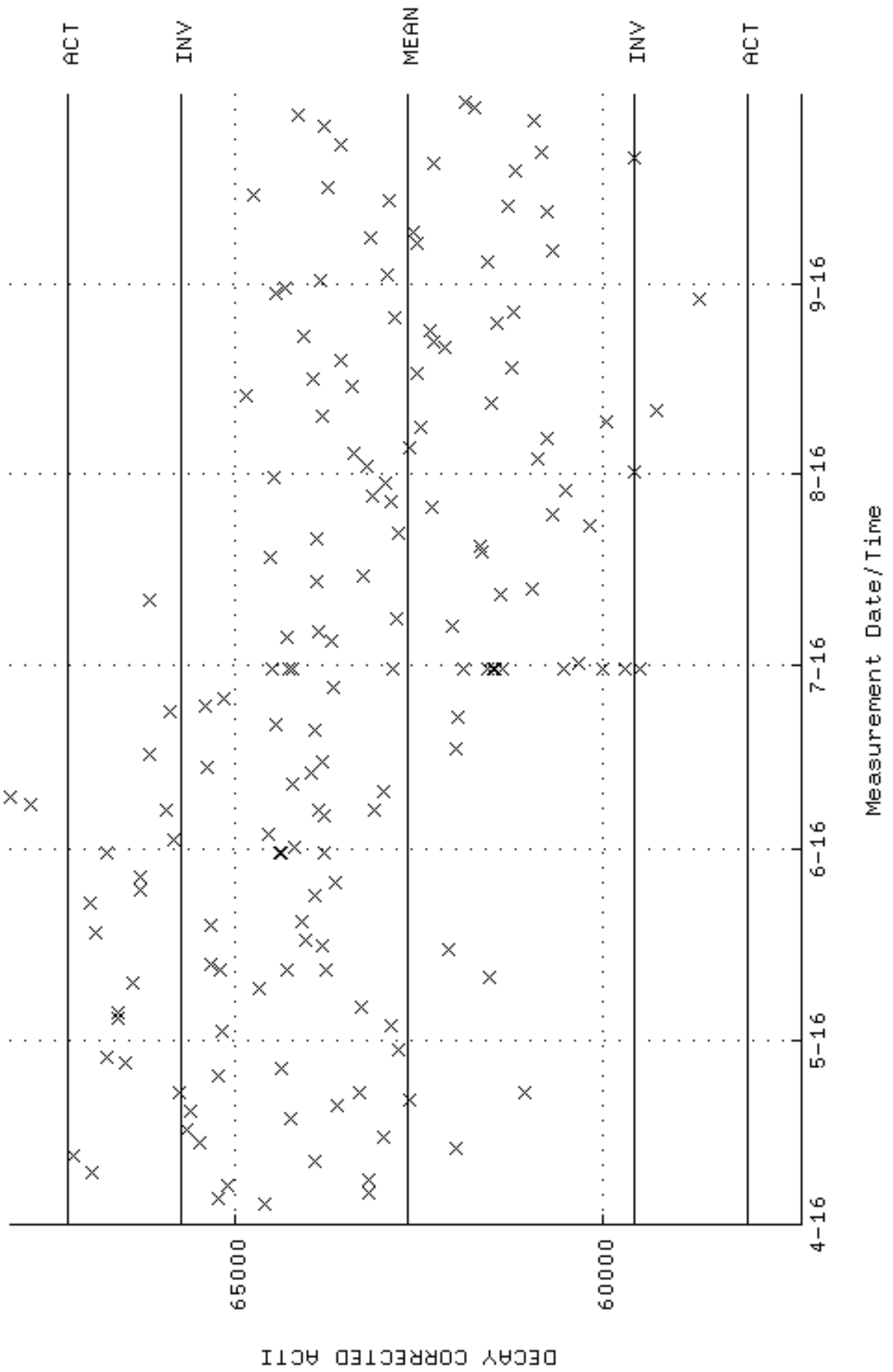
QA filename : DKA100:[CANSBERRA,GAMMA,SCUSR,QA]QCC_GAM20_500MLMB.QAF;1
Parameter Name : PSENERGY-59 (PEAK ENERGY AM-241)
Start/End Dates : 4-APR-2016 06:24:37 through 1-OCT-2016 12:00:00
Lower/Upper Lmts: 57.5000 through 61.5000



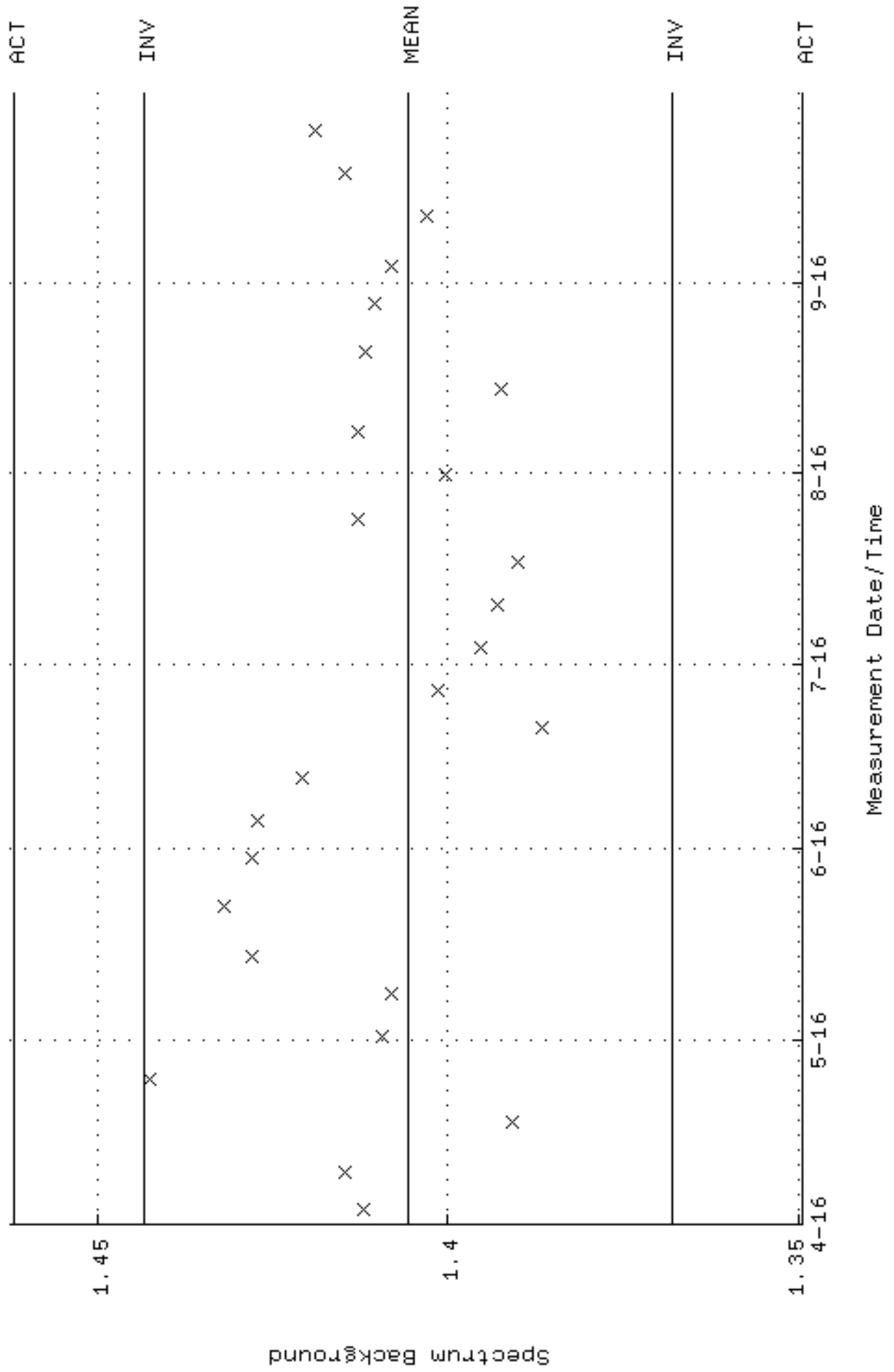
QA filename : DKA100:[CANBERRA,GAMMA,SCUSR,QA]QCC_GAM20_500MLMB.QAF;1
 Parameter Name : PSFWM-59 (PEAK FWHM AM-241)
 Start/End Dates : 4-APR-2016 06:24:37 through 1-OCT-2016 12:00:00
 Mean +- Std Dev : 1.06508 +- 5.344863E-02 (5.02 %)



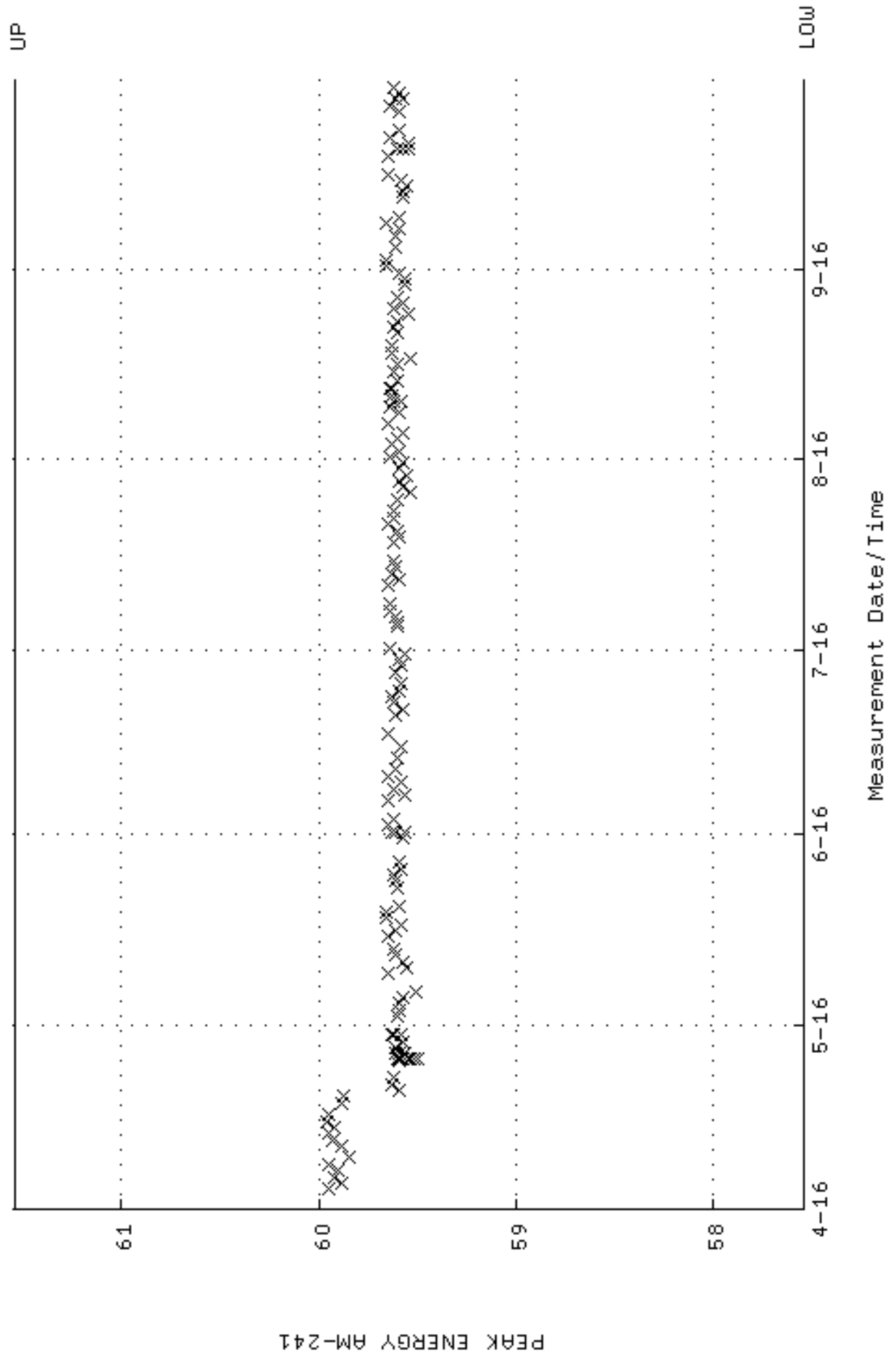
QA filename : DKA100:[CANBERRA,GAMMA,SCUSR,QA]QCC_GAM20_500MLMB.QAF;1
 Parameter Name : NACTIVITY-59 (DECAY CORRECTED ACTIVITY AM-241)
 Start/End Dates : 4-APR-2016 06:24:37 through 1-OCT-2016 12:00:00
 Mean +- Std Dev : 62671.1 +- 1539.86 (2.46 %)



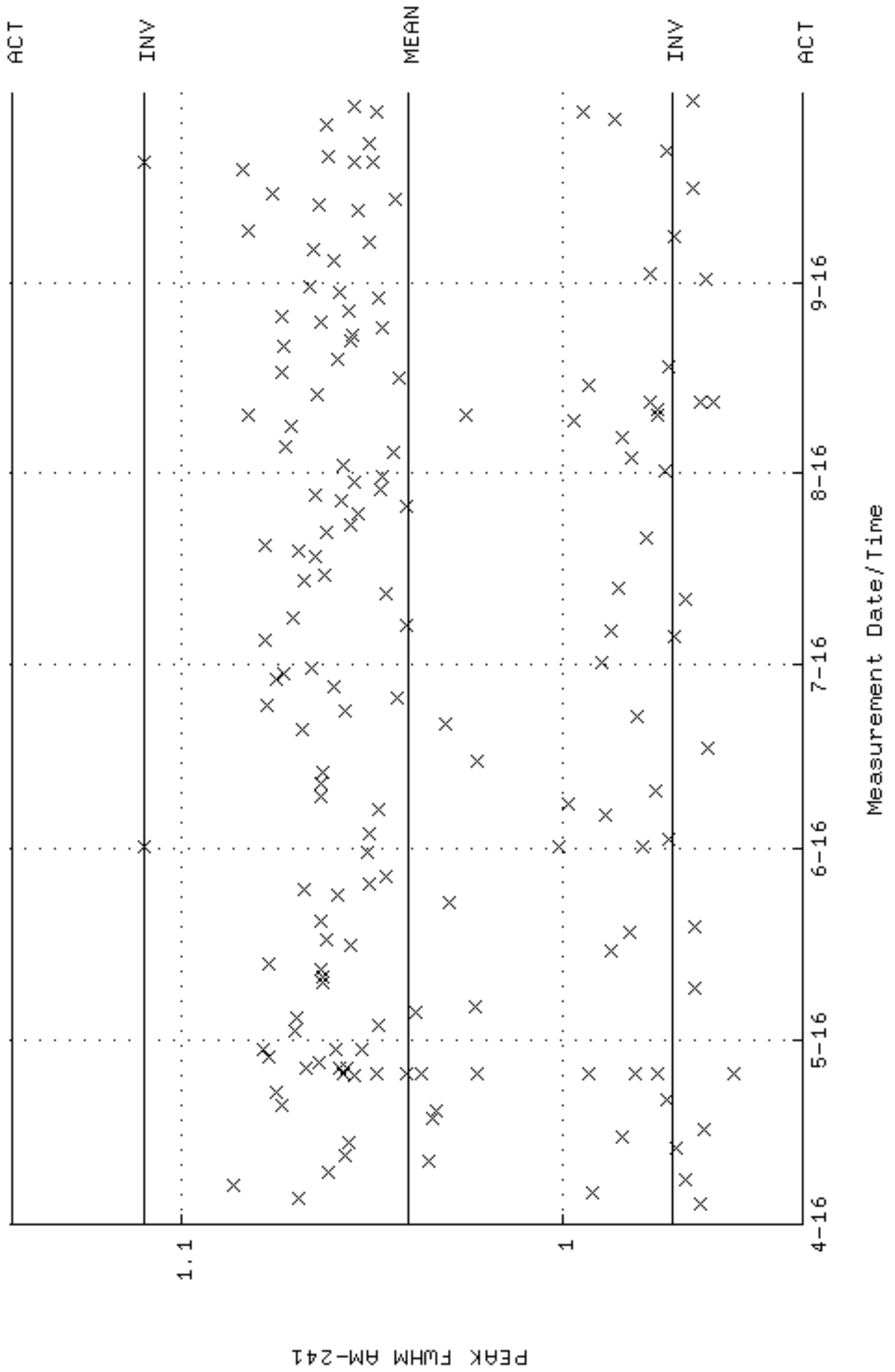
QA filename : DKA100:[CANSBERRA.GAMMA.SCUSR.QA]LBC_GAM20.QAF;1
 Parameter Name : BACKRATE (Spectrum Background Rate)
 Start/End Dates : 3-APR-2016 12:19:02 through 1-OCT-2016 12:00:00
 Mean +- Std Dev : 1.40579 +- 1.881187E-02 (1.34 %)



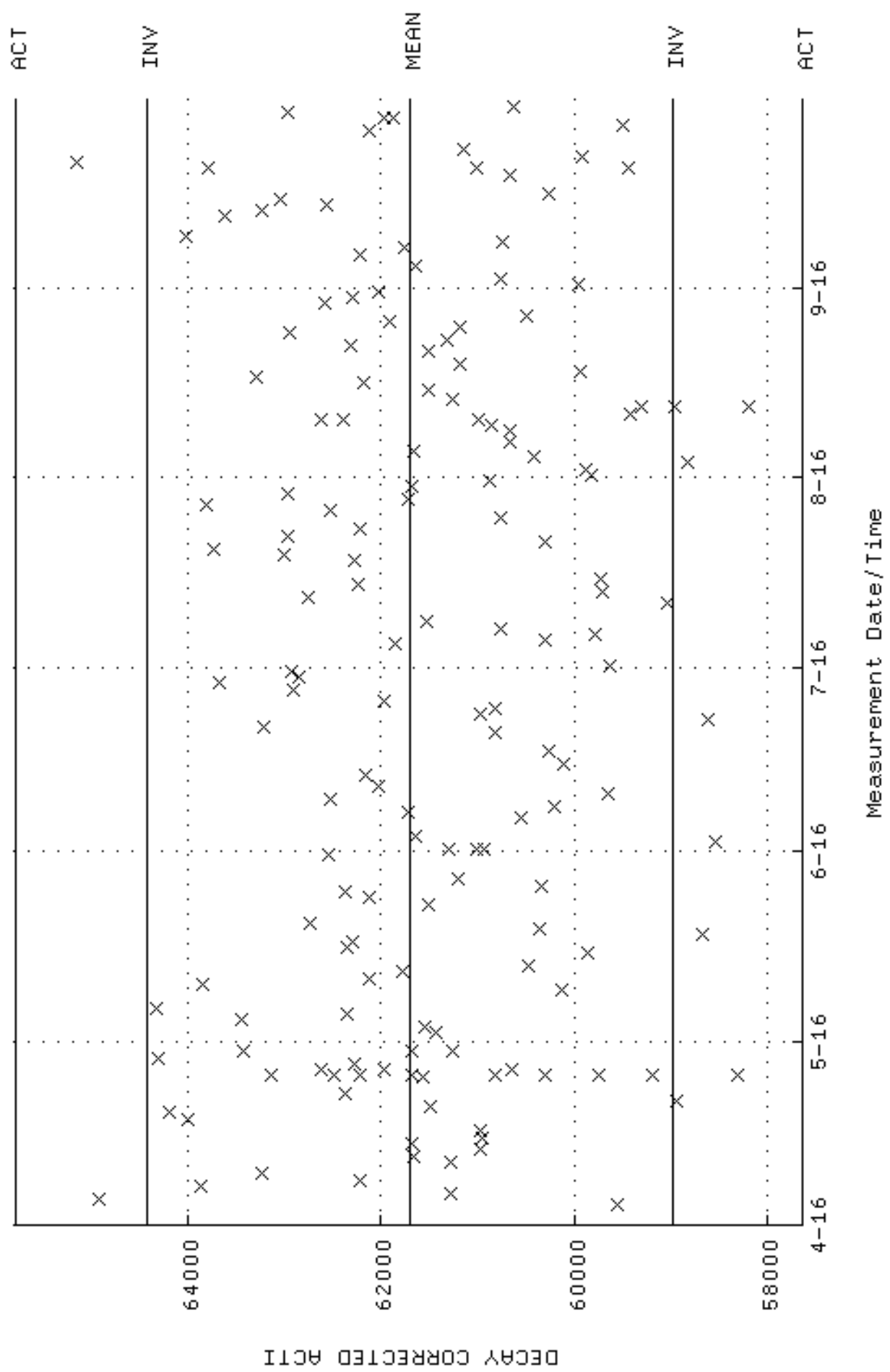
QA filename : DKA100:[CANSBERRA.GAMMA.SCUSR.QA]QCC_GAM24_JAR.QAF;1
Parameter Name : PSENERGY-59 (PEAK ENERGY AM-241)
Start/End Dates : 4-APR-2016 06:13:51 through 1-OCT-2016 12:00:00
Lower/Upper Lmts: 57.5400 through 61.5400



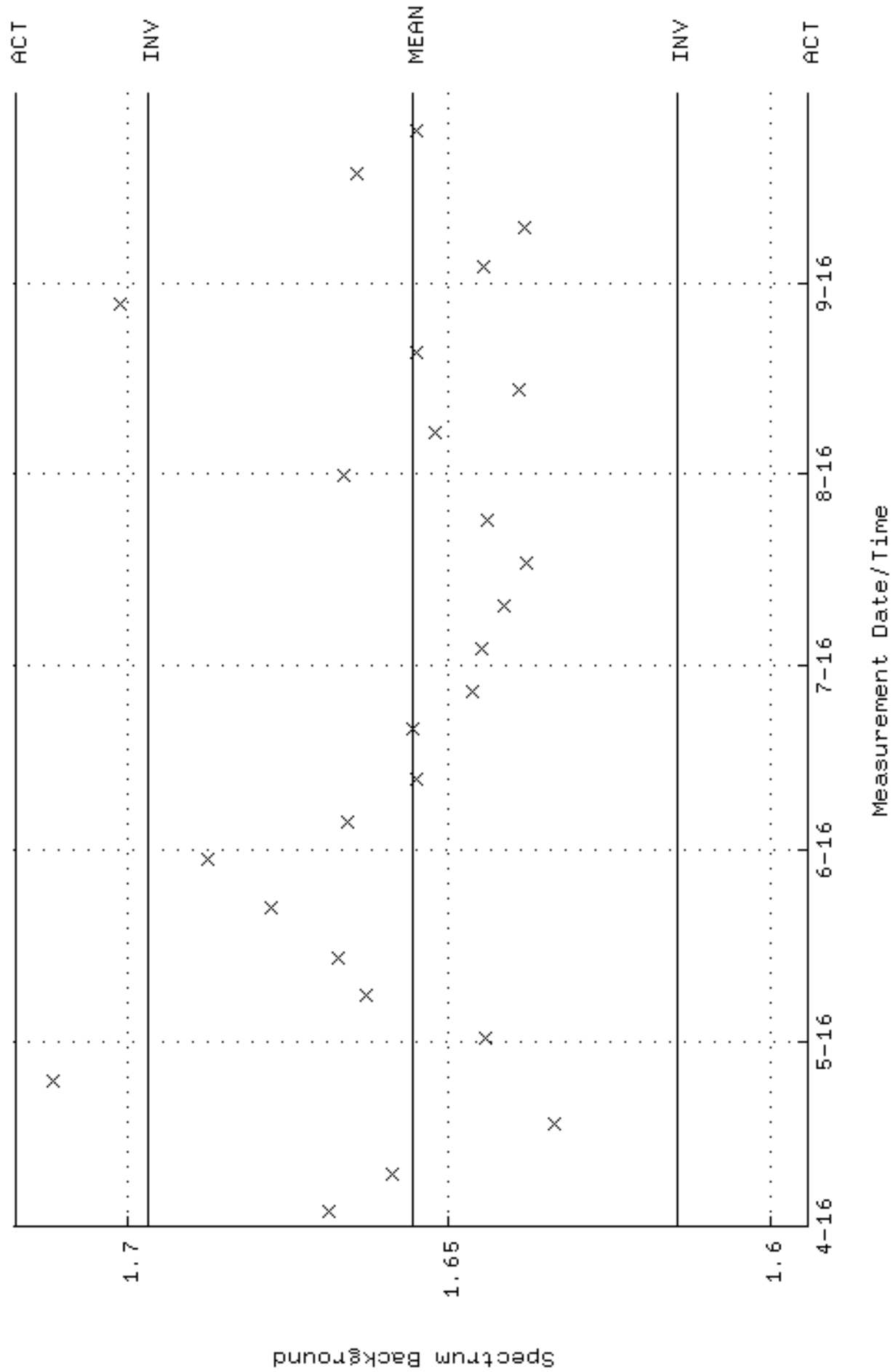
QA filename : DKA100:[CANBERRA,GAMMA,SCUSR,QA]QCC_GAM24_JAR.QAF;1
 Parameter Name : PSFWM-59 (PEAK FWHM AM-241)
 Start/End Dates : 4-APR-2016 06:13:51 through 1-OCT-2016 12:00:00
 Mean +- Std Dev : 1.04071 +- 3.445093E-02 (3.31 %)



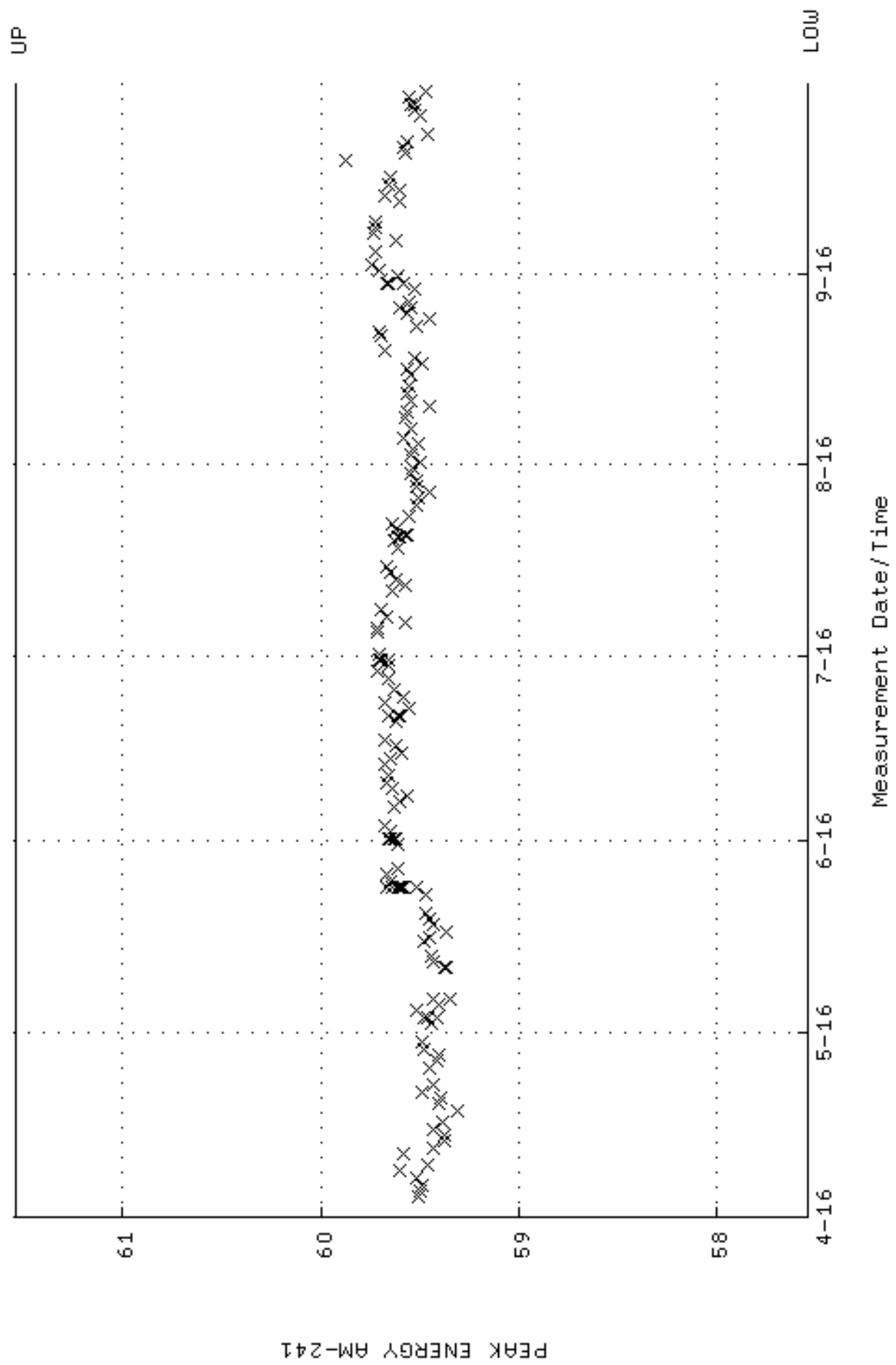
QA filename : DKA100:[CANBERRA,GAMMA,SCUSR,QA]QCC_GAM24_JAR.QAF;1
 Parameter Name : NACTIVITY-59 (DECAY CORRECTED ACTIVITY AM-241)
 Start/End Dates : 4-APR-2016 06:13:51 through 1-OCT-2016 12:00:00
 Mean +- Std Dev : 61710.4 +- 1354.76 (2.20 %)



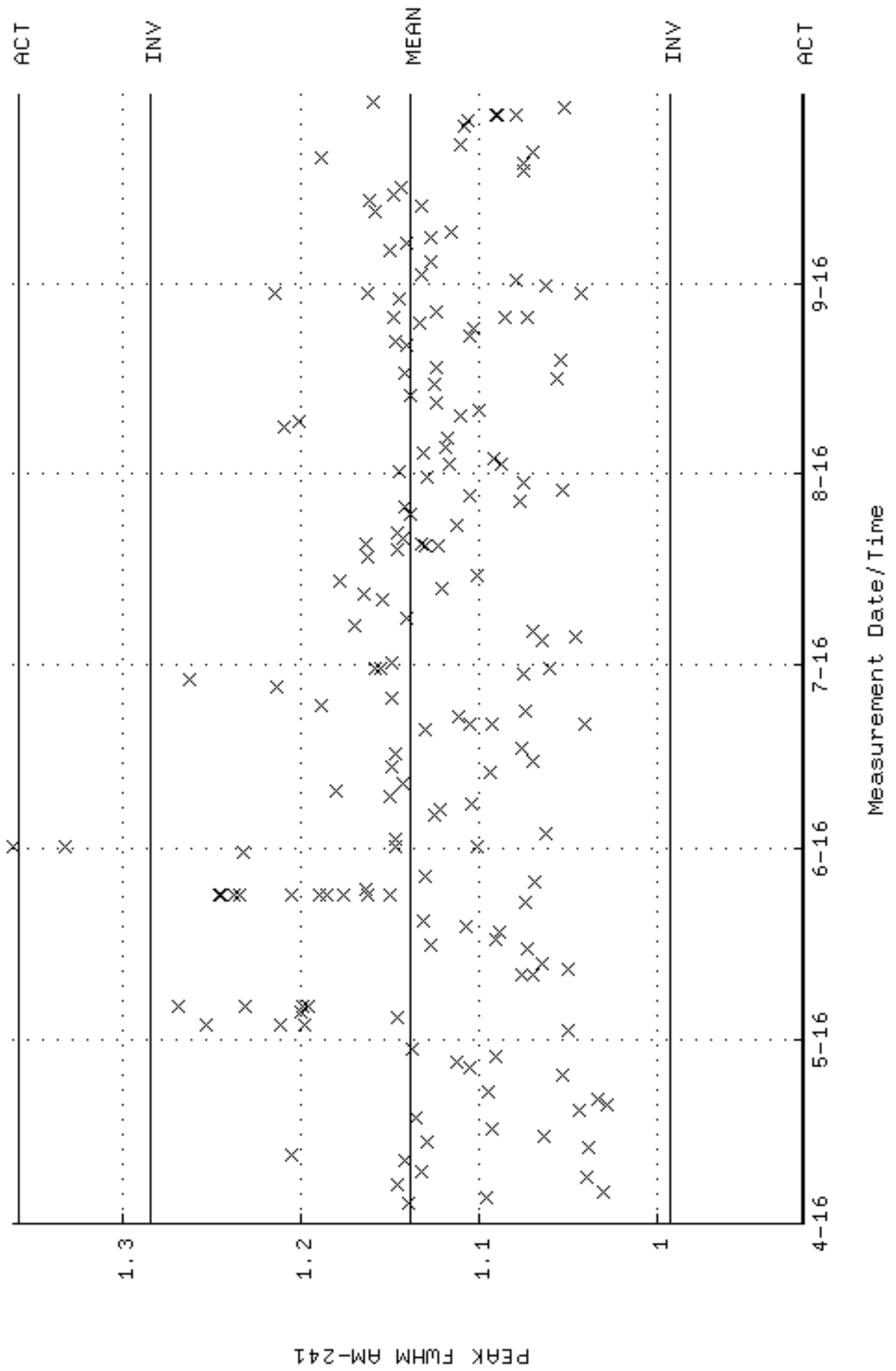
QA filename : DKA100:[CANTERRA.GAMMA.SCUSR.QA]LBC_GAM24.QAF;1
 Parameter Name : BACKRATE (Spectrum Background Rate)
 Start/End Dates : 3-APR-2016 12:19:22 through 1-OCT-2016 12:00:00
 Mean +- Std Dev : 1.65570 +- 2.053930E-02 (1.24 %)



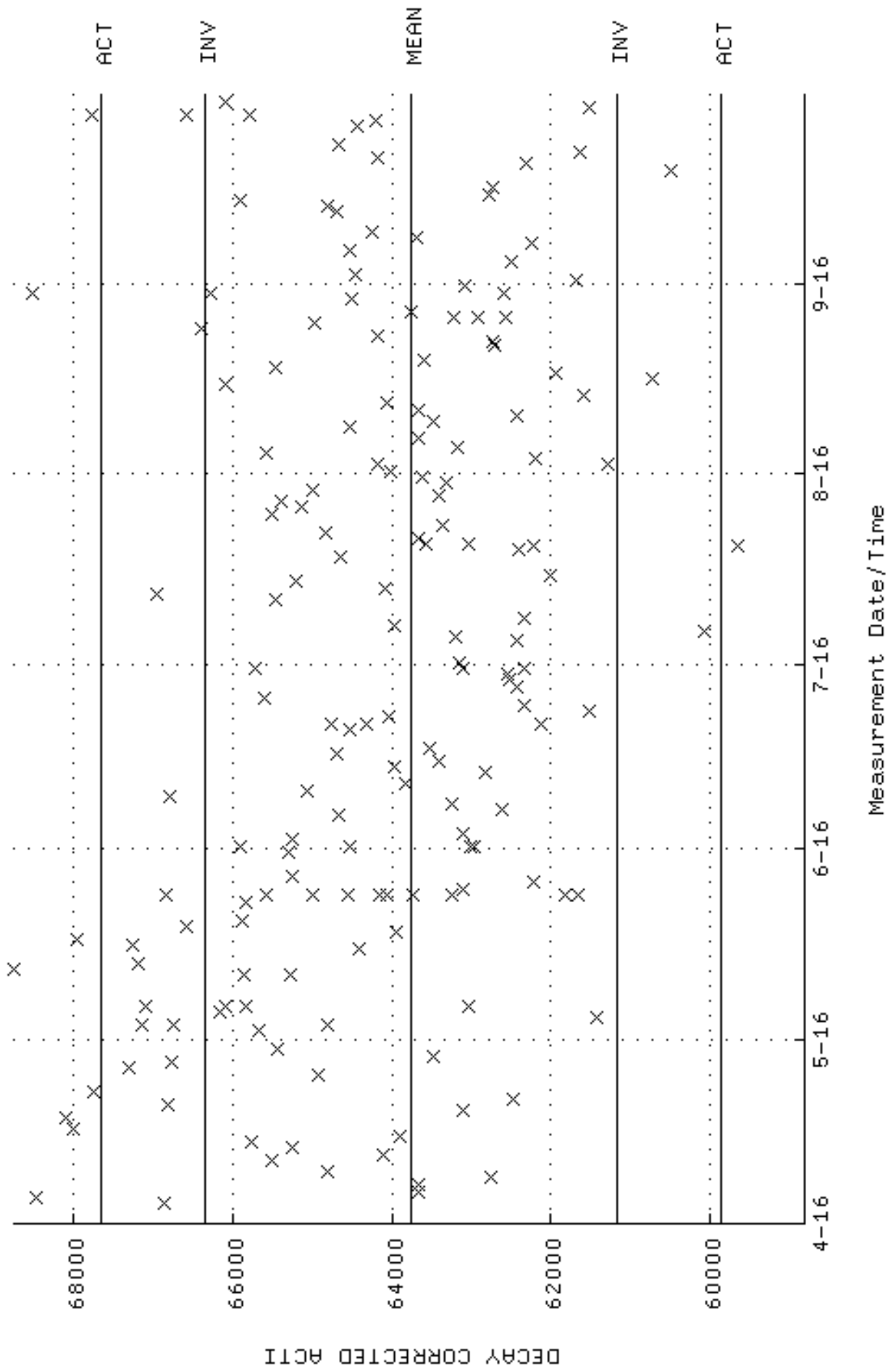
QA filename : DKA100:[CAMBERRA,GAMMA,SCUSR,QA]QCC_GAM28_JAR.QAF;1
 Parameter Name : PSENERGY-59 (PEAK ENERGY AM-241)
 Start/End Dates : 4-APR-2016 06:40:16 through 1-OCT-2016 12:00:00
 Lower/Upper Lmts: 57.5400 through 61.5400



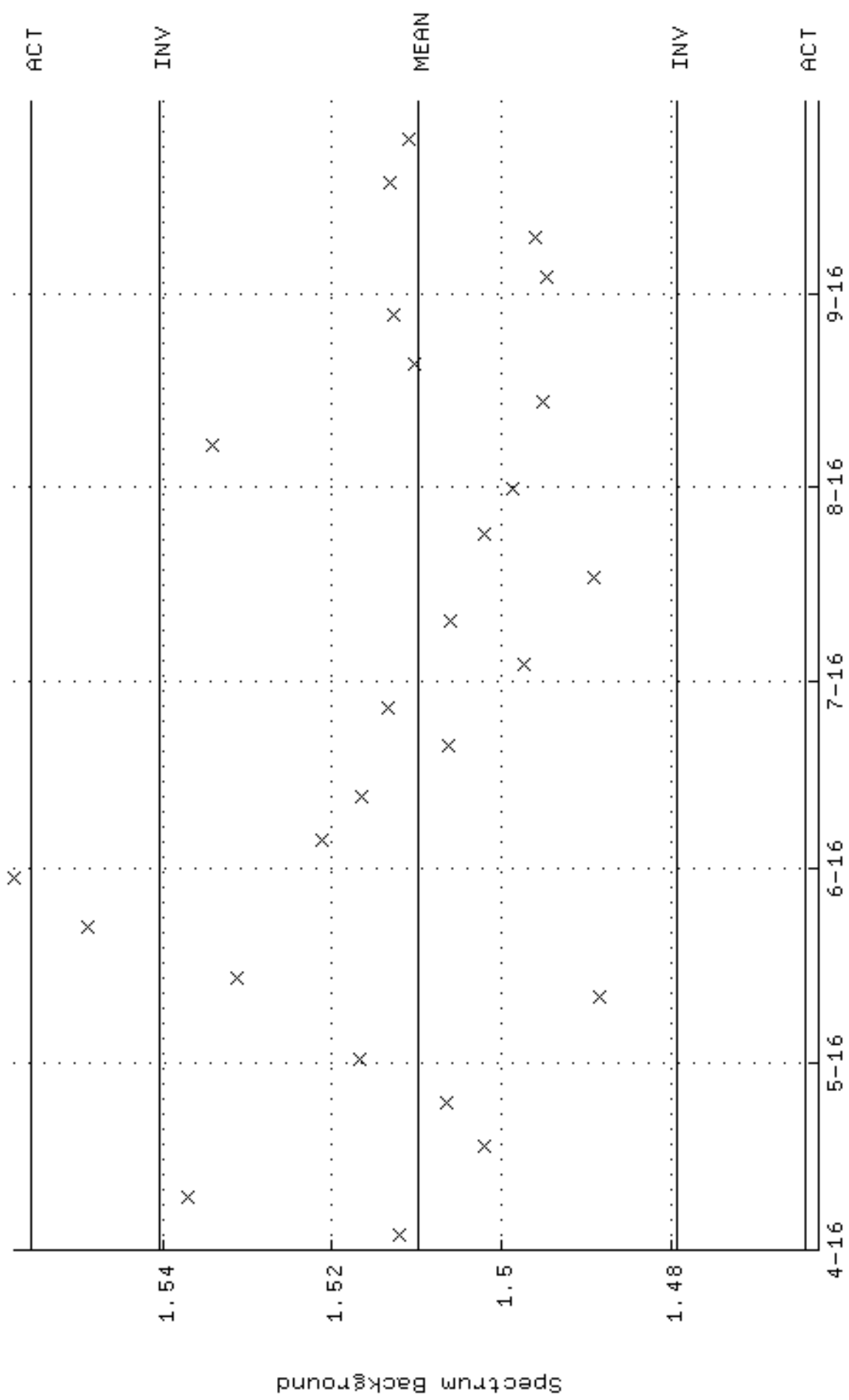
QA filename : DKA100:[CANBERRA,GAMMA,SCUSR,QA]QCC_GAM28_JAR.QAF;1
 Parameter Name : PSFWM-59 (PEAK FWHM AM-241)
 Start/End Dates : 4-APR-2016 06:40:16 through 1-OCT-2016 12:00:00
 Mean +- Std Dev : 1.13880 +- 7.316274E-02 (6.42 %)



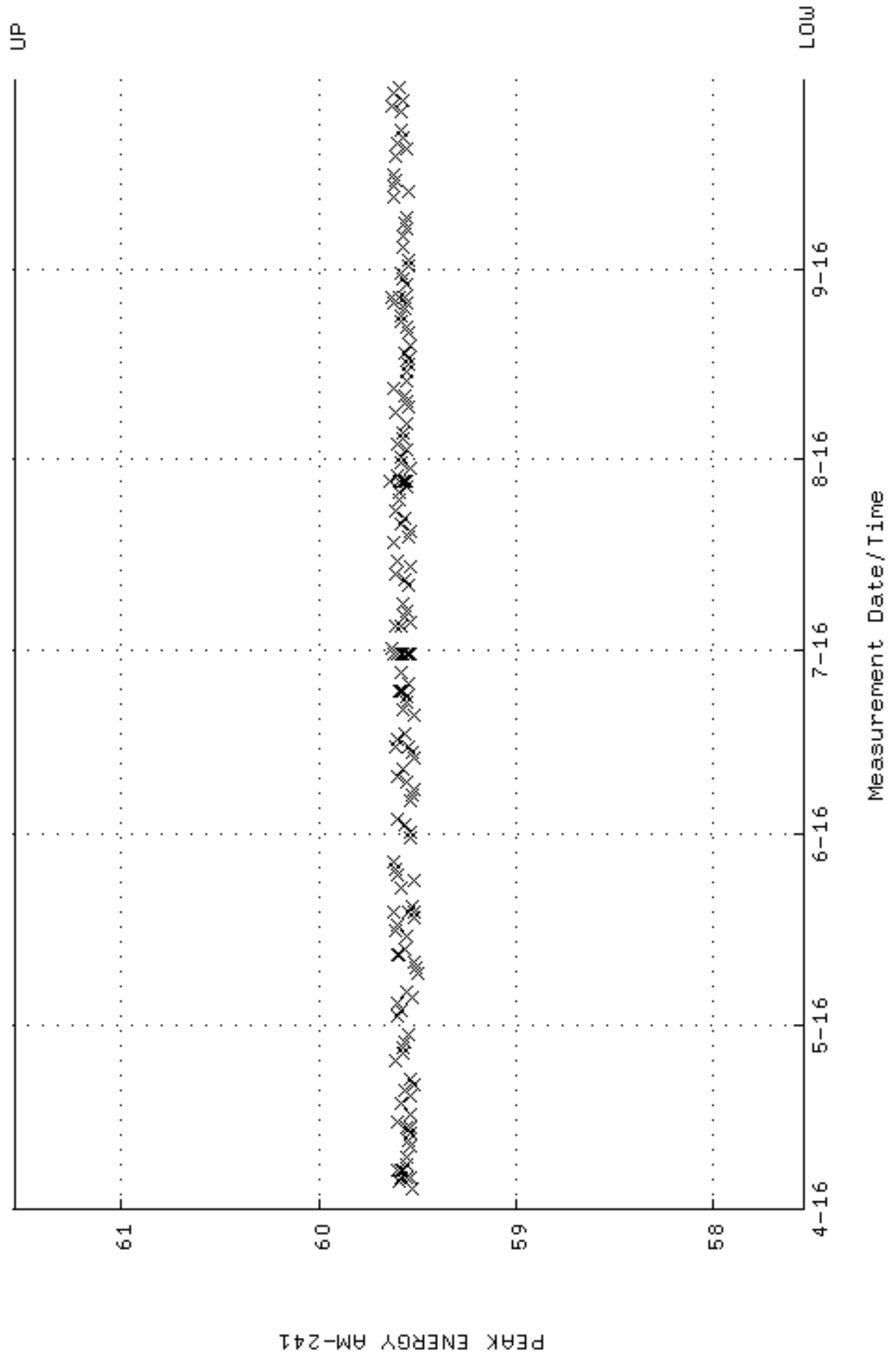
QA filename : DKA100:[CANSBERRA,GAMMA,SCUSR,QA]QCC_GAM28_JAR.QAF;1
 Parameter Name : NACTIVITY-59 (DECAY CORRECTED ACTIVITY AM-241)
 Start/End Dates : 4-APR-2016 06:40:16 through 1-OCT-2016 12:00:00
 Mean +- Std Dev : 63769.8 +- 1297.66 (2.03 %)



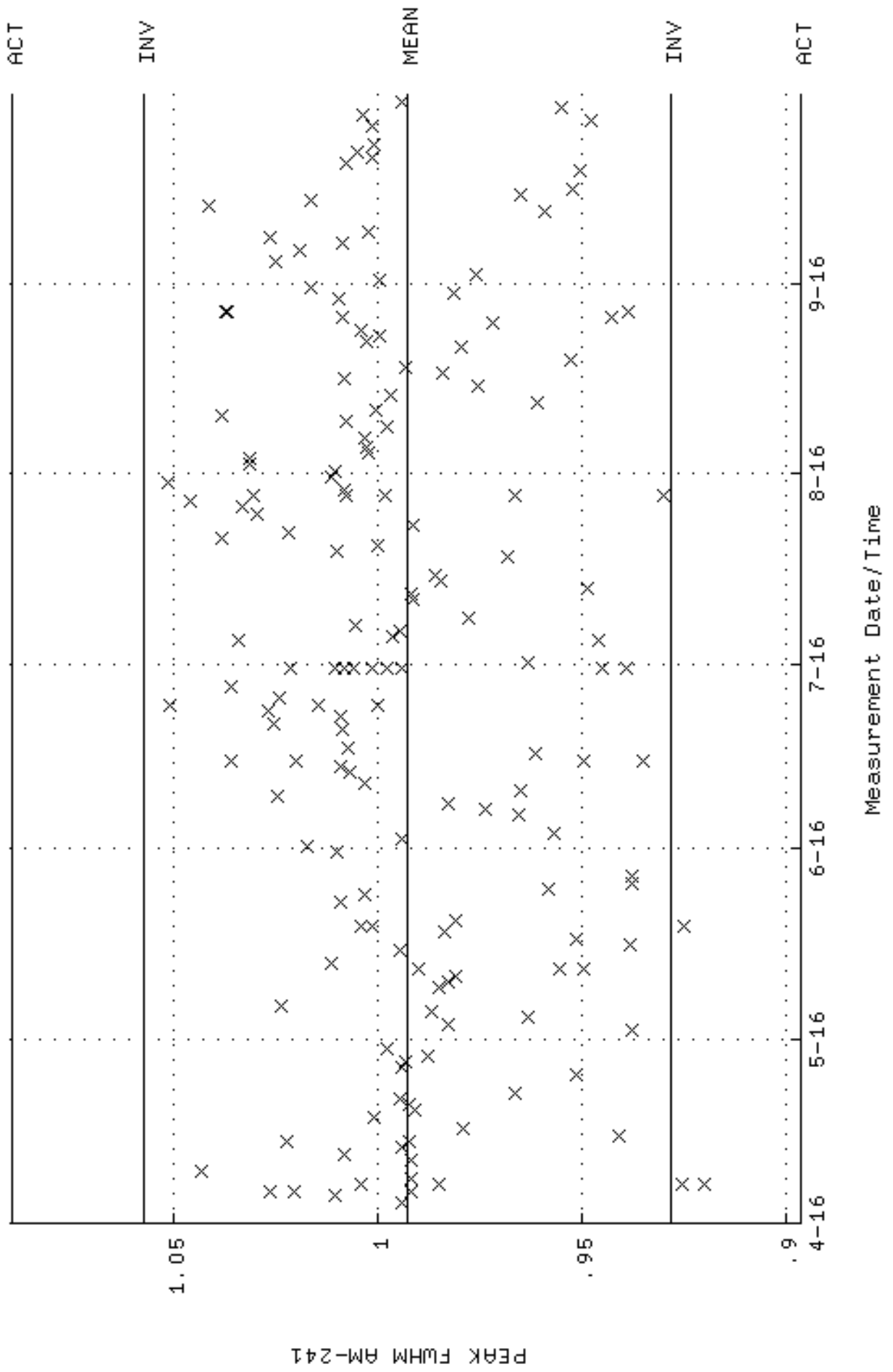
QA filename : DKA100:[CANSBERRA.GAMMA.SCUSR.QA]LBC_GAM28.QAF;1
 Parameter Name : BACKRATE (Spectrum Background Rate)
 Start/End Dates : 3-APR-2016 12:19:38 through 1-OCT-2016 12:00:00
 Mean +- Std Dev : 1.50994 +- 1.525503E-02 (1.01 %)



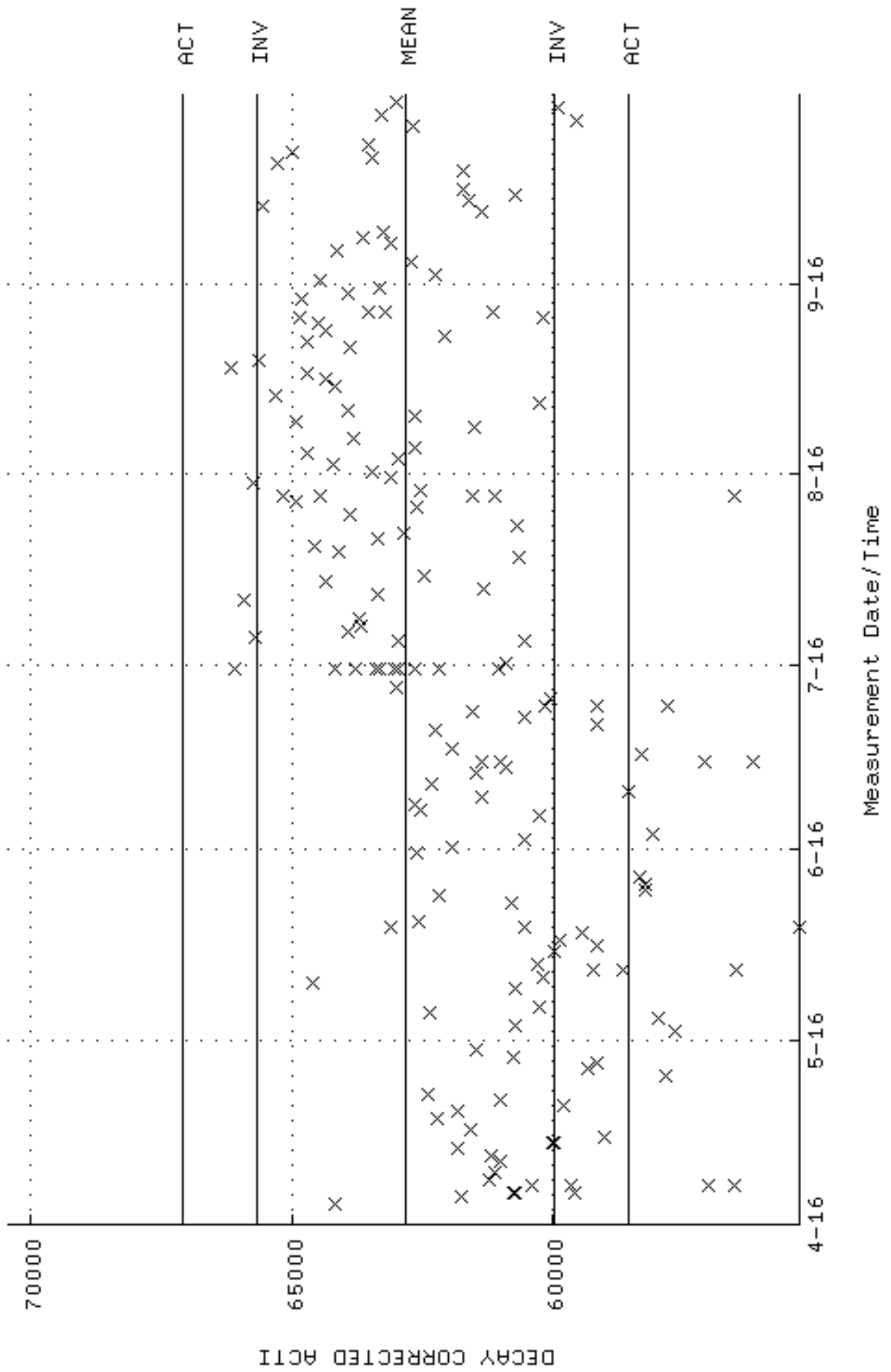
QA filename : DKA100:[CANSBERRA.GAMMA.SCUSR.QA]QCC_GAM29_CAN.QAF;1
Parameter Name : PSENERGY-59 (PEAK ENERGY AM-241)
Start/End Dates : 4-APR-2016 06:13:57 through 1-OCT-2016 12:00:00
Lower/Upper Lmts: 57.5400 through 61.5400



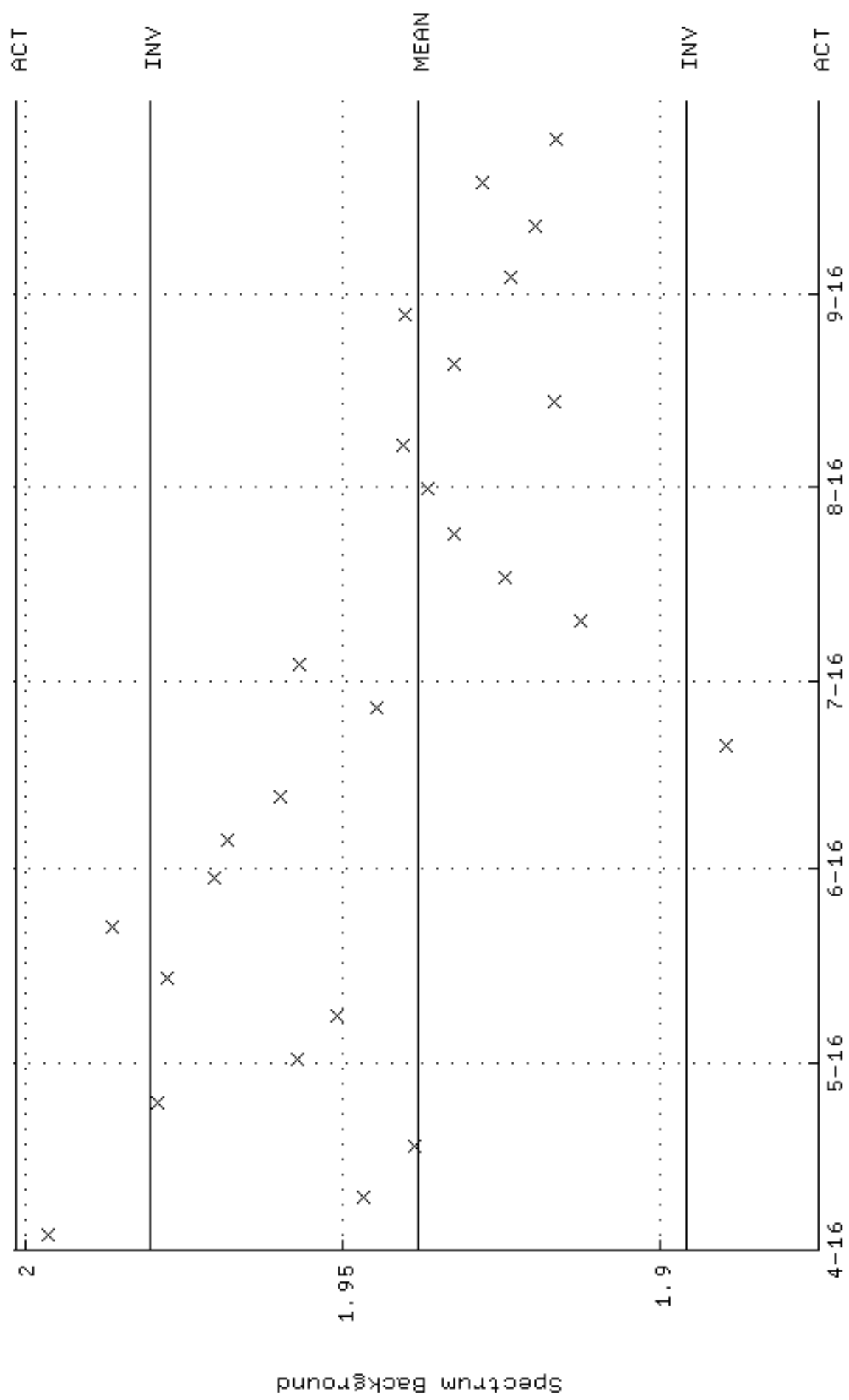
QA filename : DKA100:[CANSBERRA,GAMMA,SCUSR,QA]QCC_GAM29_CAN.QAF;1
 Parameter Name : PSFWM-59 (PEAK FWHM AM-241)
 Start/End Dates : 4-APR-2016 06:13:57 through 1-OCT-2016 12:00:00
 Mean +- Std Dev : 0.992983 +- 3.213267E-02 (3.24 %)



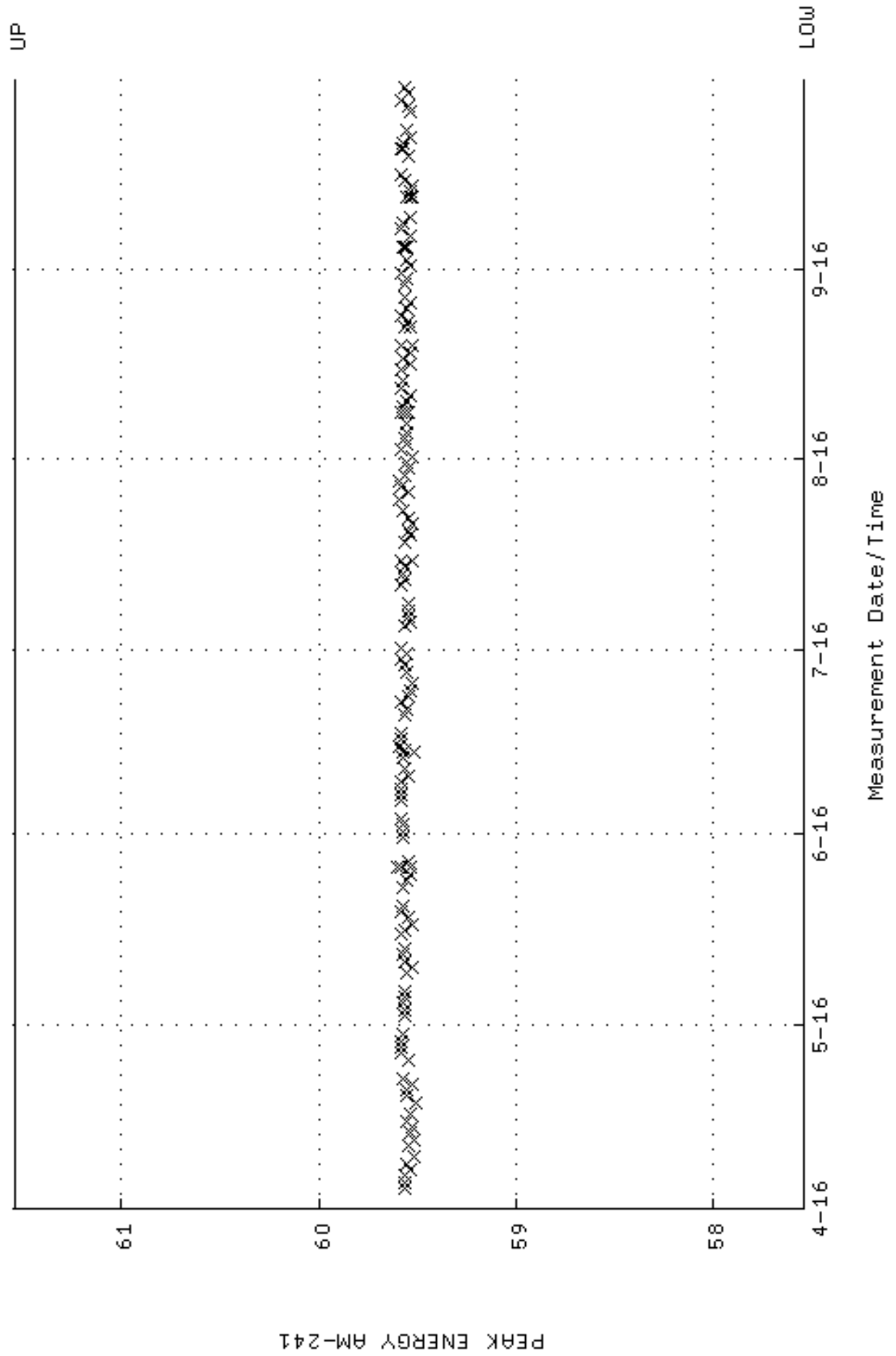
QA filename : DKA100:[CANSBERRA.GAMMA.SCUSR.QA]QCC_GAM29_CAN.QAF;1
 Parameter Name : NACTIVITY-59 (DECAY CORRECTED ACTIVITY AM-241)
 Start/End Dates : 4-APR-2016 06:13:57 through 1-OCT-2016 12:00:00
 Mean +- Std Dev : 62841.9 +- 1422.21 (2.26 %)



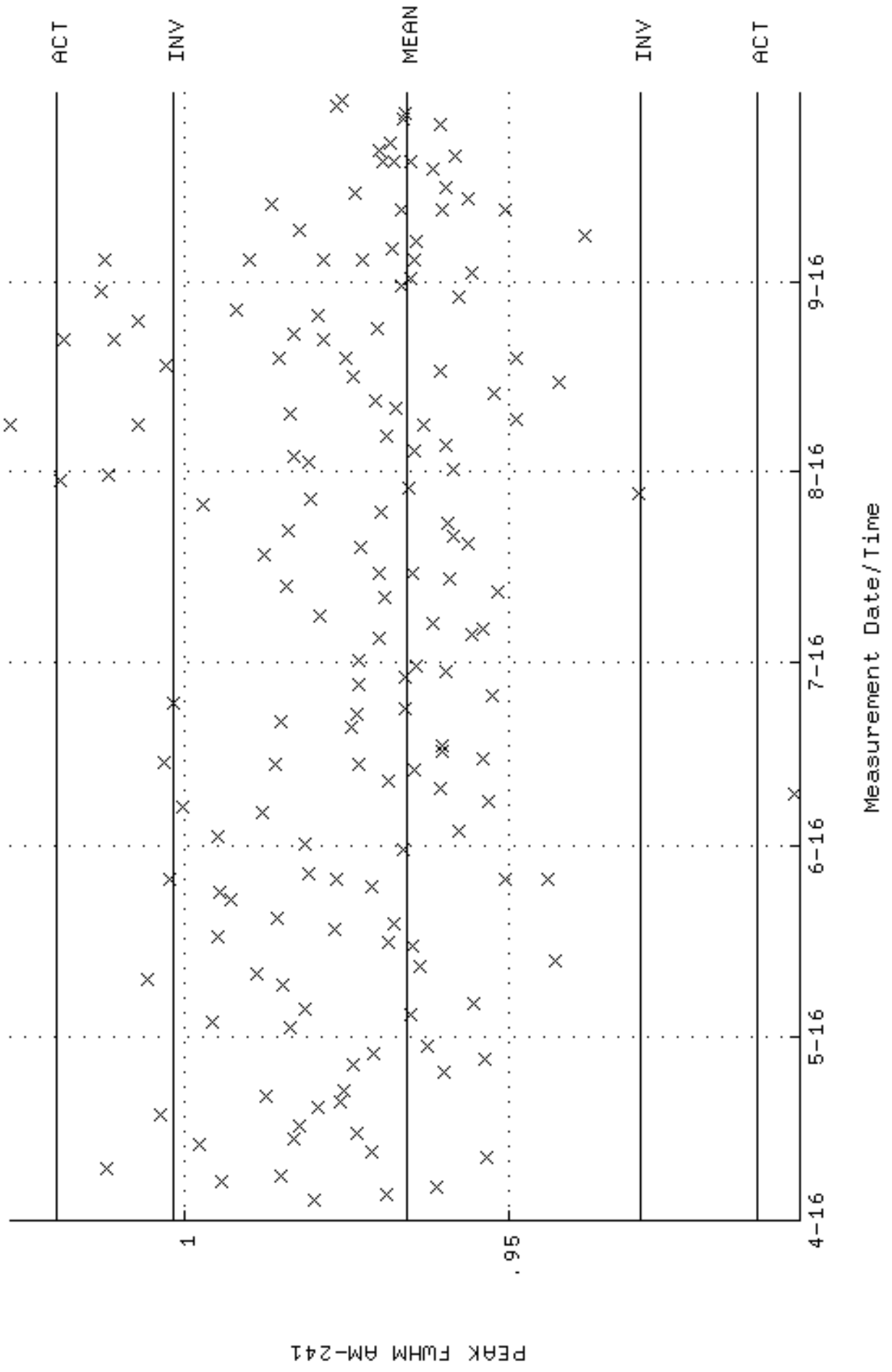
QA filename : DKA100:[CAMBERRA,GAMMA,SCUSR,QA]LBC_GAM29.QAF;1
 Parameter Name : BACKRATE (Spectrum Background Rate)
 Start/End Dates : 3-APR-2016 12:19:43 through 1-OCT-2016 12:00:00
 Mean +- Std Dev : 1.93820 +- 2.105615E-02 (1.09 %)



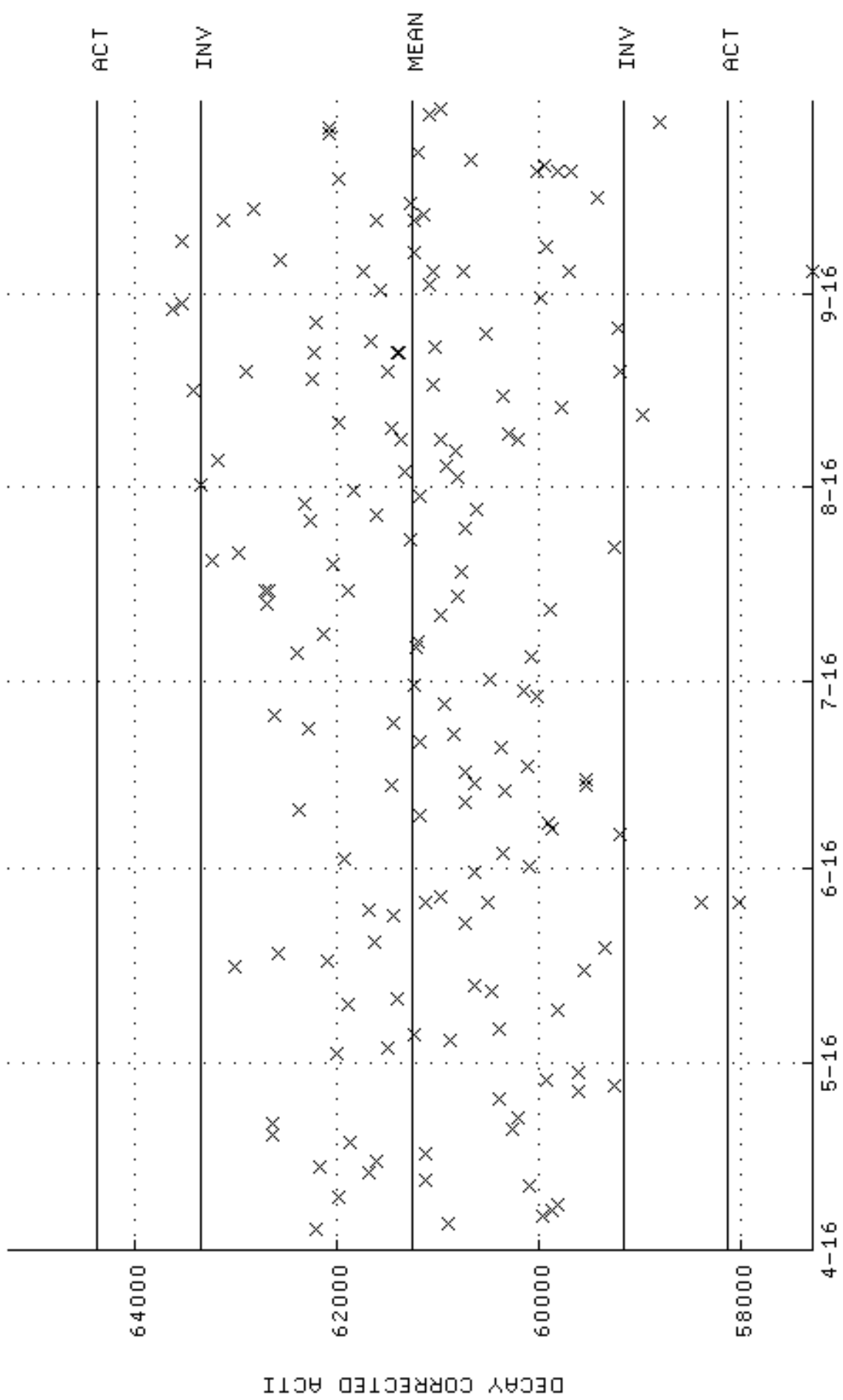
QA filename : DKA100:[CANSBERRA.GAMMA.SCUSR.QA]QCC_GAM30_CAN.QAF;1
Parameter Name : PSENERGY-59 (PEAK ENERGY AM-241)
Start/End Dates : 4-APR-2016 06:14:02 through 1-OCT-2016 12:00:00
Lower/Upper Lmts: 57.5400 through 61.5400



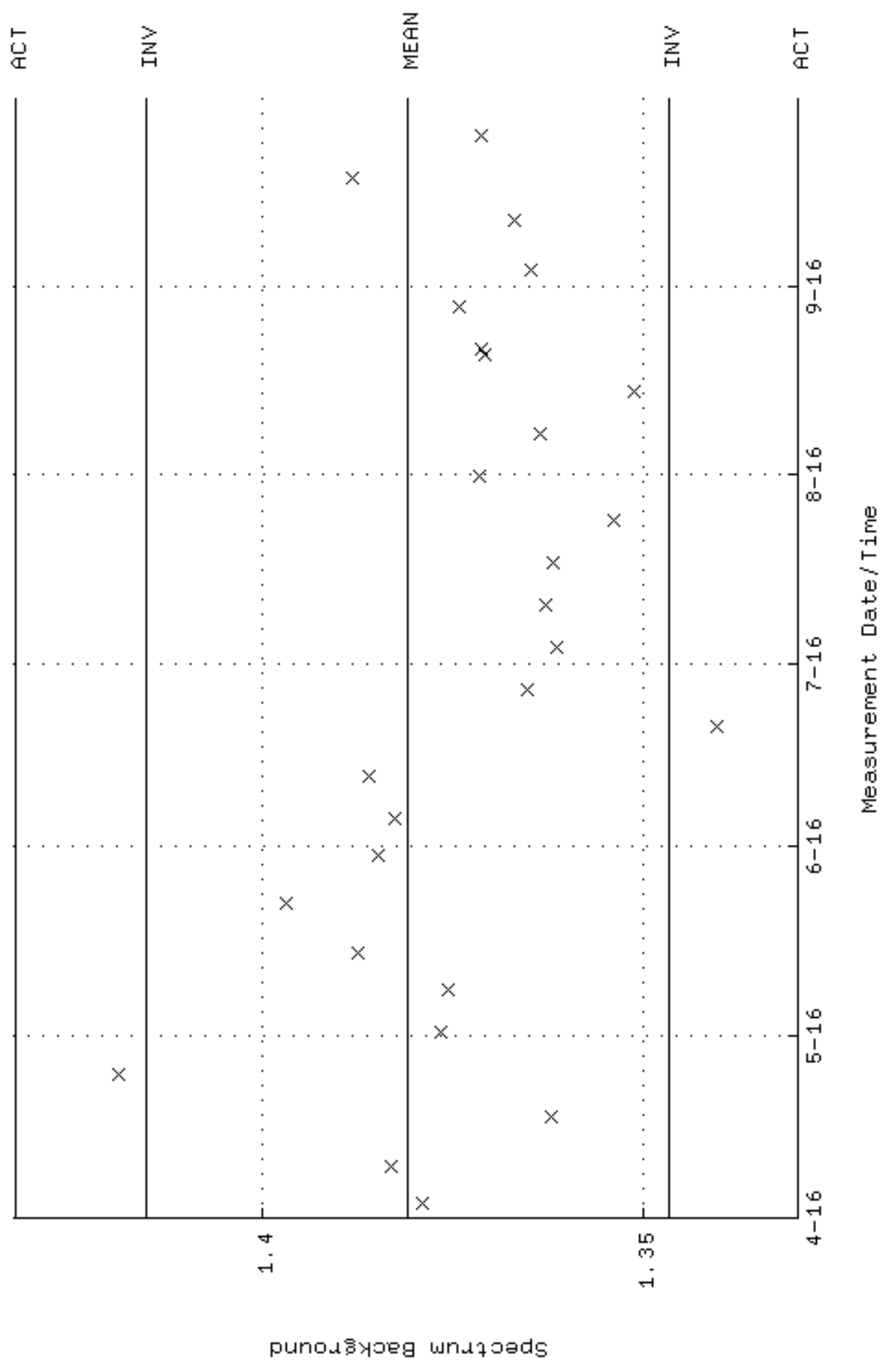
QA filename : DKA100:[CANTERRA,GAMMA,SCUSR,QA]QCC_GAM30_CAN_QAF;1
 Parameter Name : PSFWM-59 (PEAK FWHM AM-241)
 Start/End Dates : 4-APR-2016 06:14:02 through 1-OCT-2016 12:00:00
 Mean +- Std Dev : 0.965876 +- 1.796214E-02 (1.86 %)



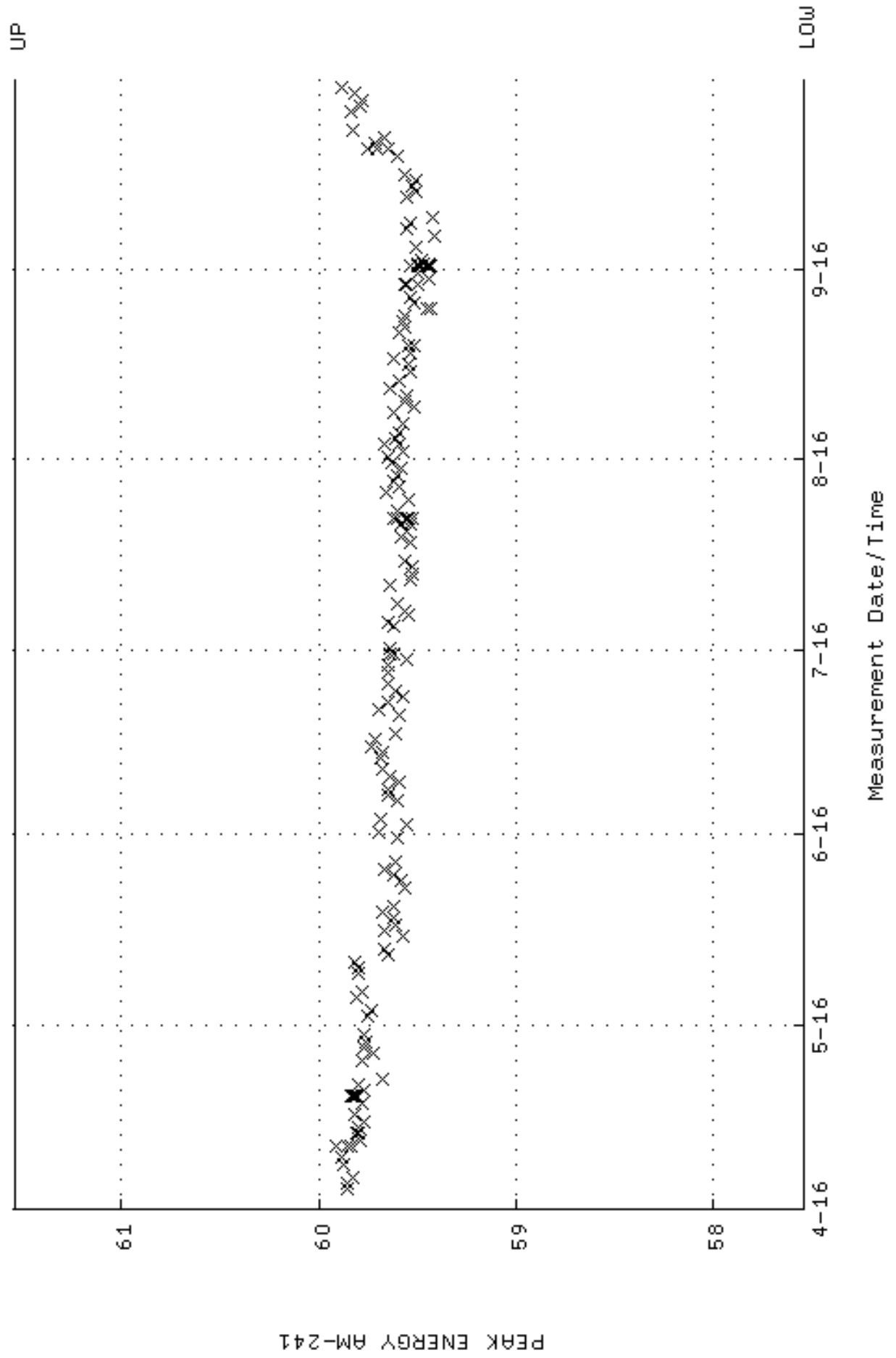
QA filename : DKA100:[CANBERRA,GAMMA,SCUSR,QA]QCC_GAM30_CAN_QAF;1
 Parameter Name : NACTIVITY-59 (DECAY CORRECTED ACTIVITY AM-241)
 Start/End Dates : 4-APR-2016 06:14:02 through 1-OCT-2016 12:00:00
 Mean +- Std Dev : 61266.4 +- 1042.70 (1.70 %)



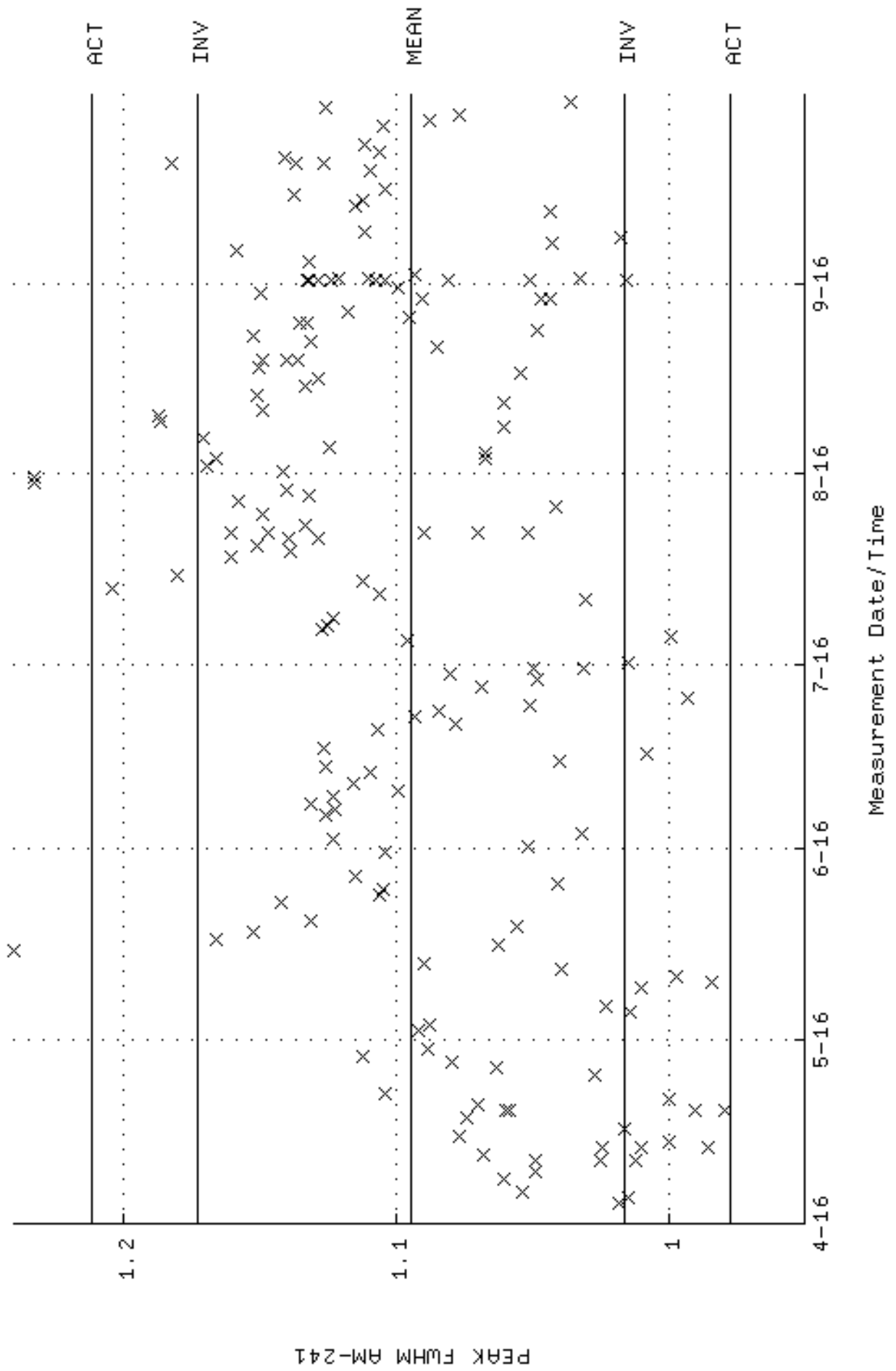
QA filename : DKA100:[CANBERRA,GAMMA,SCUSR,QA]LBC_GAM30.QAF;1
 Parameter Name : BACKRATE (Spectrum Background Rate)
 Start/End Dates : 3-APR-2016 12:19:48 through 1-OCT-2016 12:00:00
 Mean +- Std Dev : 1.38100 +- 1.713672E-02 (1.24 %)



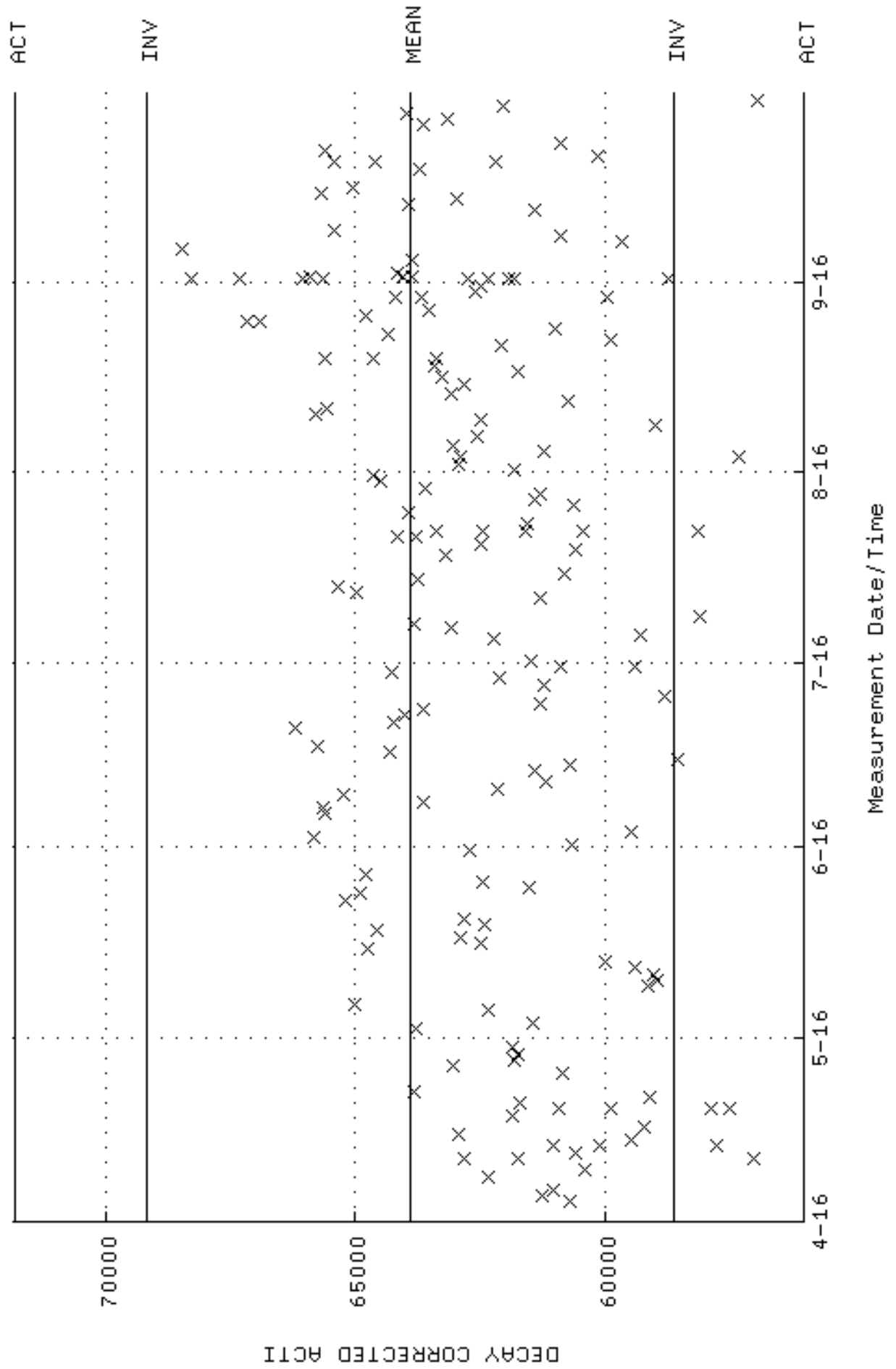
QA filename : DKA100:[CAMBERRA,GAMMA,SCUSR,QA]QCC_GAM32_CAN_QAF;1
Parameter Name : PSENERGY-59 (PEAK ENERGY AM-241)
Start/End Dates : 4-APR-2016 06:14:08 through 1-OCT-2016 12:00:00
Lower/Upper Lmts: 57.5400 through 61.5400



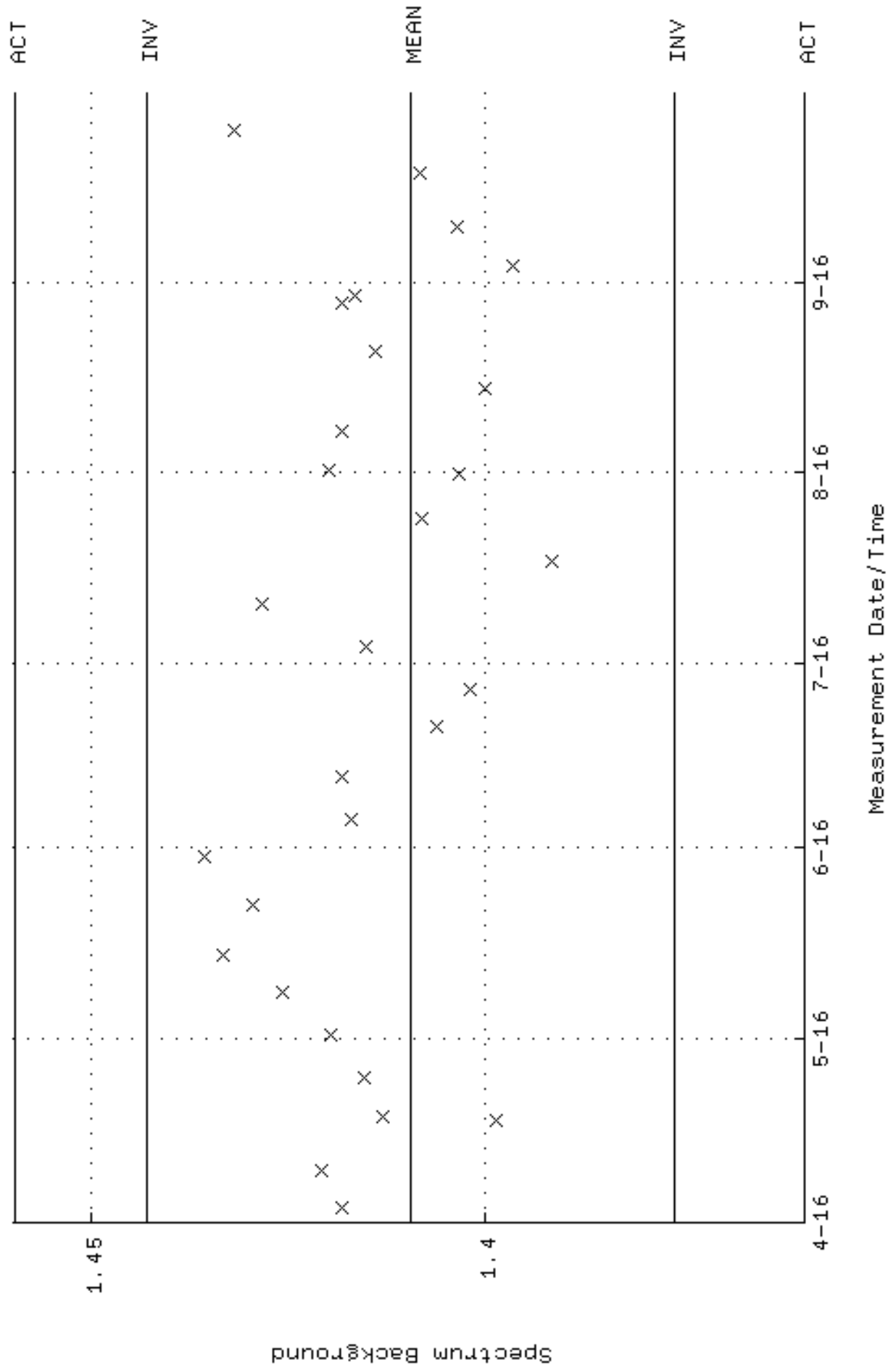
QA filename : DKA100:[CANNBERRA,GAMMA,SCUSR,QA]QCC_GAM32_CAN,QAF;1
 Parameter Name : PSFWM-59 (PEAK FWHM AM-241)
 Start/End Dates : 4-APR-2016 06:14:08 through 1-OCT-2016 12:00:00
 Mean +- Std Dev : 1.09494 +- 3.883722E-02 (3.55 %)



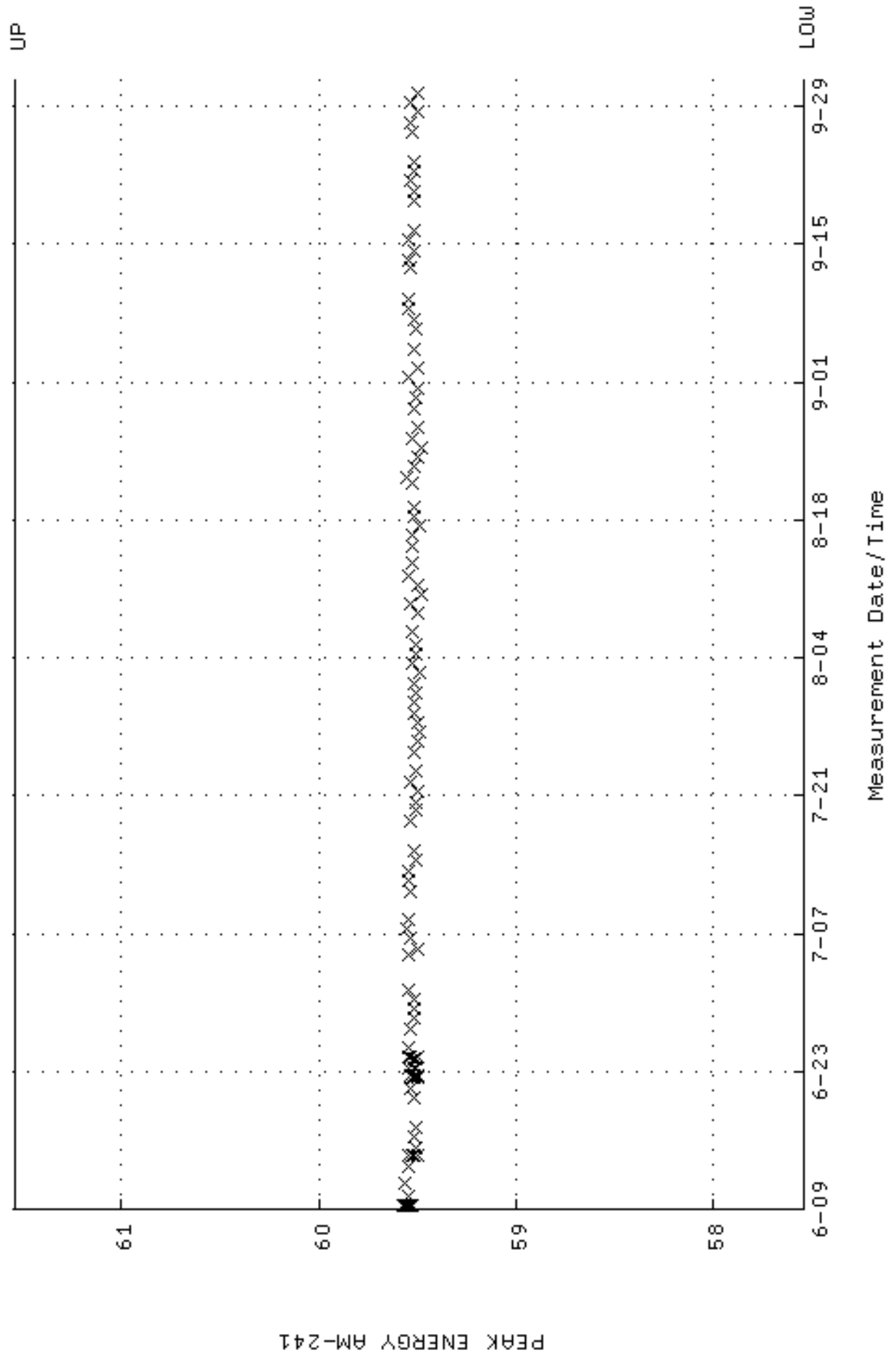
QA filename : DKA100:[CAMBERRA,GAMMA,SCUSR,QA]QCC_GAM32_CAN.QAF;1
 Parameter Name : NACTIVITY-59 (DECAY CORRECTED ACTIVITY AM-241)
 Start/End Dates : 4-APR-2016 06:14:08 through 1-OCT-2016 12:00:00
 Mean +- Std Dev : 63906.6 +- 2634.05 (4.12 %)



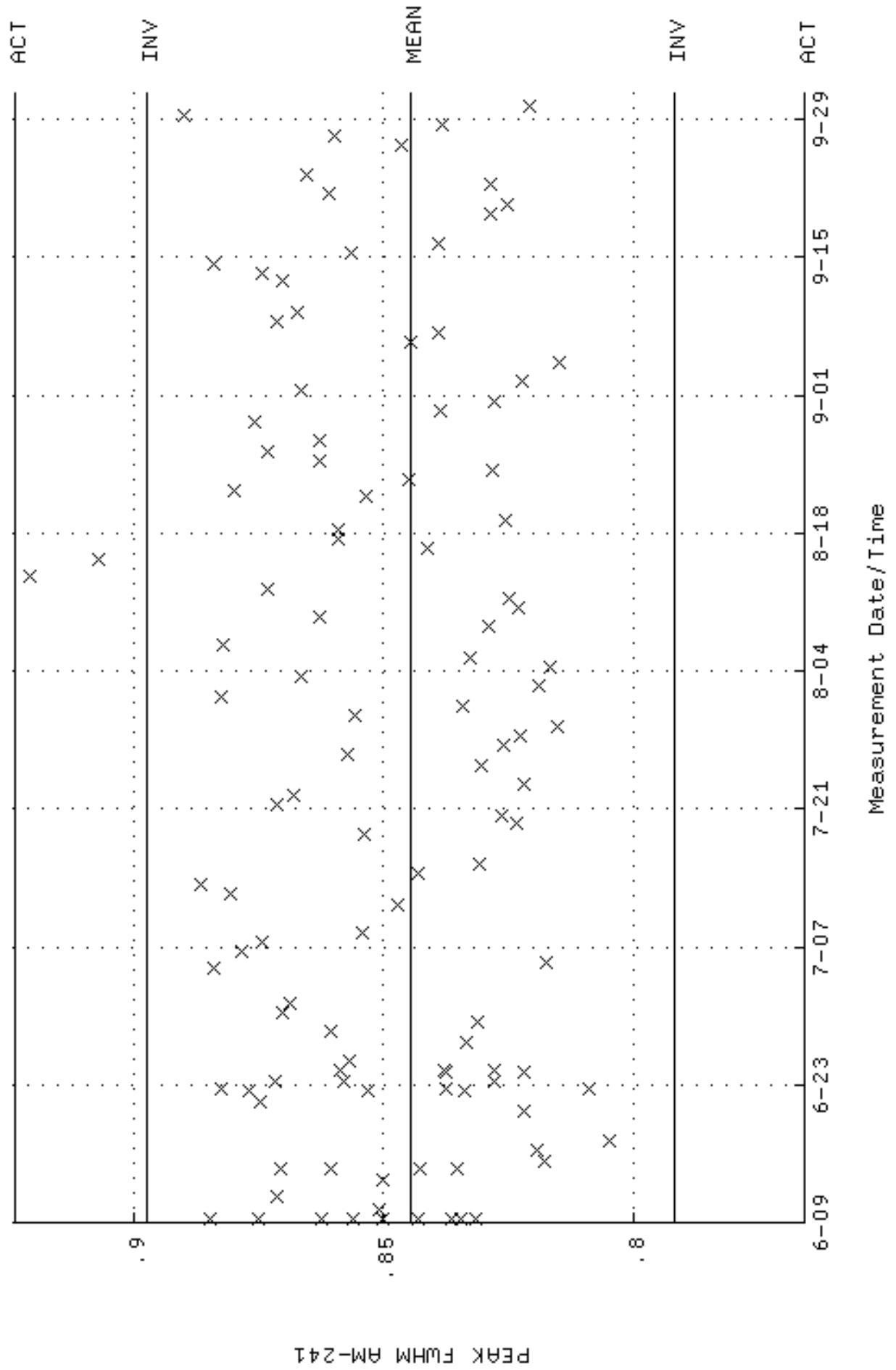
QA filename : DKA100:[CANTERRA.GAMMA.SCUSR.QA]LBC_GAM32.QAF;1
 Parameter Name : BACKRATE (Spectrum Background Rate)
 Start/End Dates : 3-APR-2016 12:19:59 through 1-OCT-2016 12:00:00
 Mean +- Std Dev : 1.40960 +- 1.667514E-02 (1.18 %)



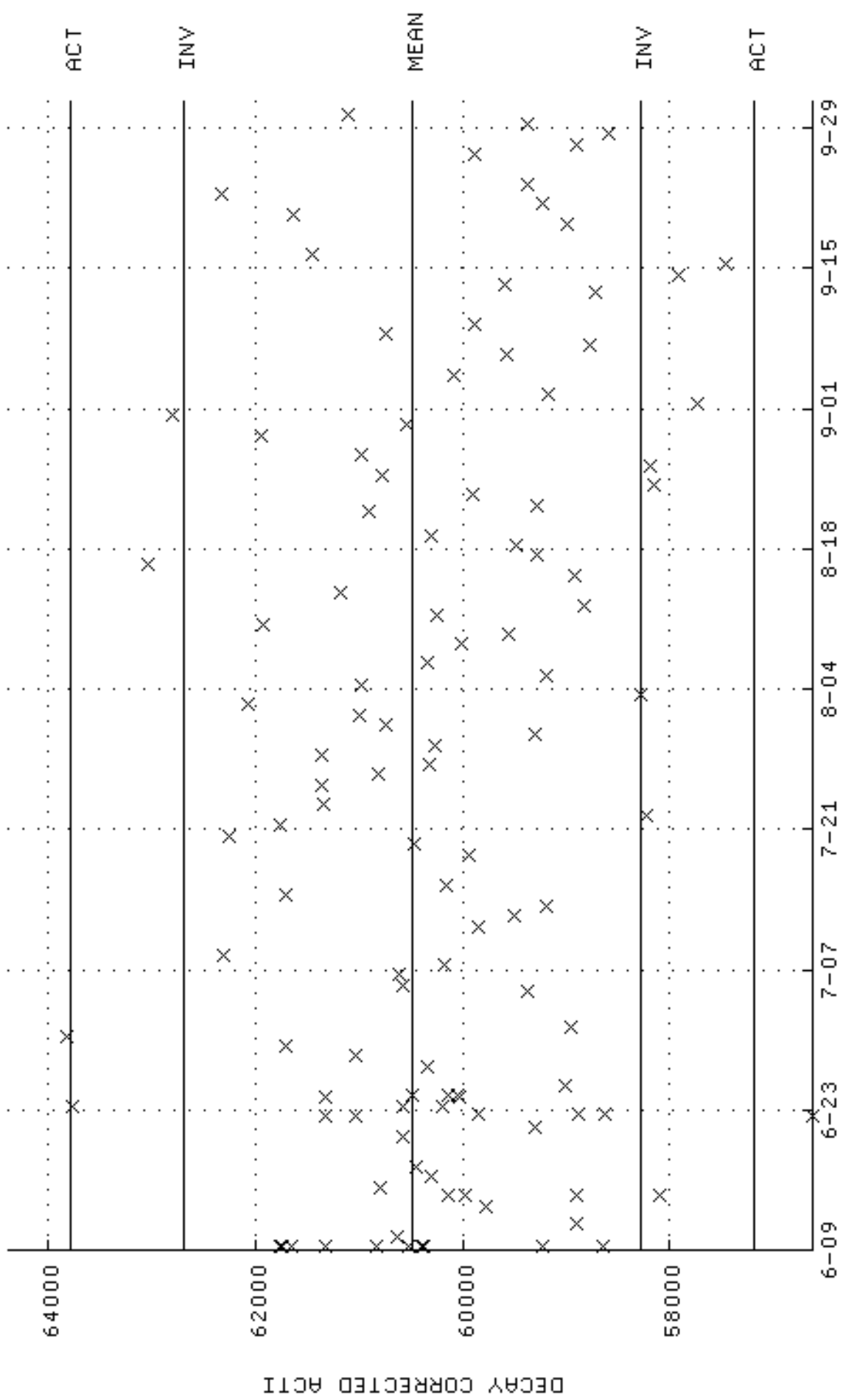
QA filename : DKA100:[CAMBERRA,GAMMA,SCUSR,QA]QCC_GAM36_CAN_QAF;1
Parameter Name : PSENERGY-59 (PEAK ENERGY AM-241)
Start/End Dates : 9-JUN-2016 07:47:51 through 1-OCT-2016 12:00:00
Lower/Upper Lmts: 57.5400 through 61.5400



QA filename : DKA100:[CANBERRA,GAMMA,SCUSR,QA]QCC_GAM36_CAN_QAF;1
 Parameter Name : PSFWM-59 (PEAK FWHM AM-241)
 Start/End Dates : 9-JUN-2016 07:47:51 through 1-OCT-2016 12:00:00
 Mean +- Std Dev : 0.844768 +- 2.631886E-02 (3.12 %)

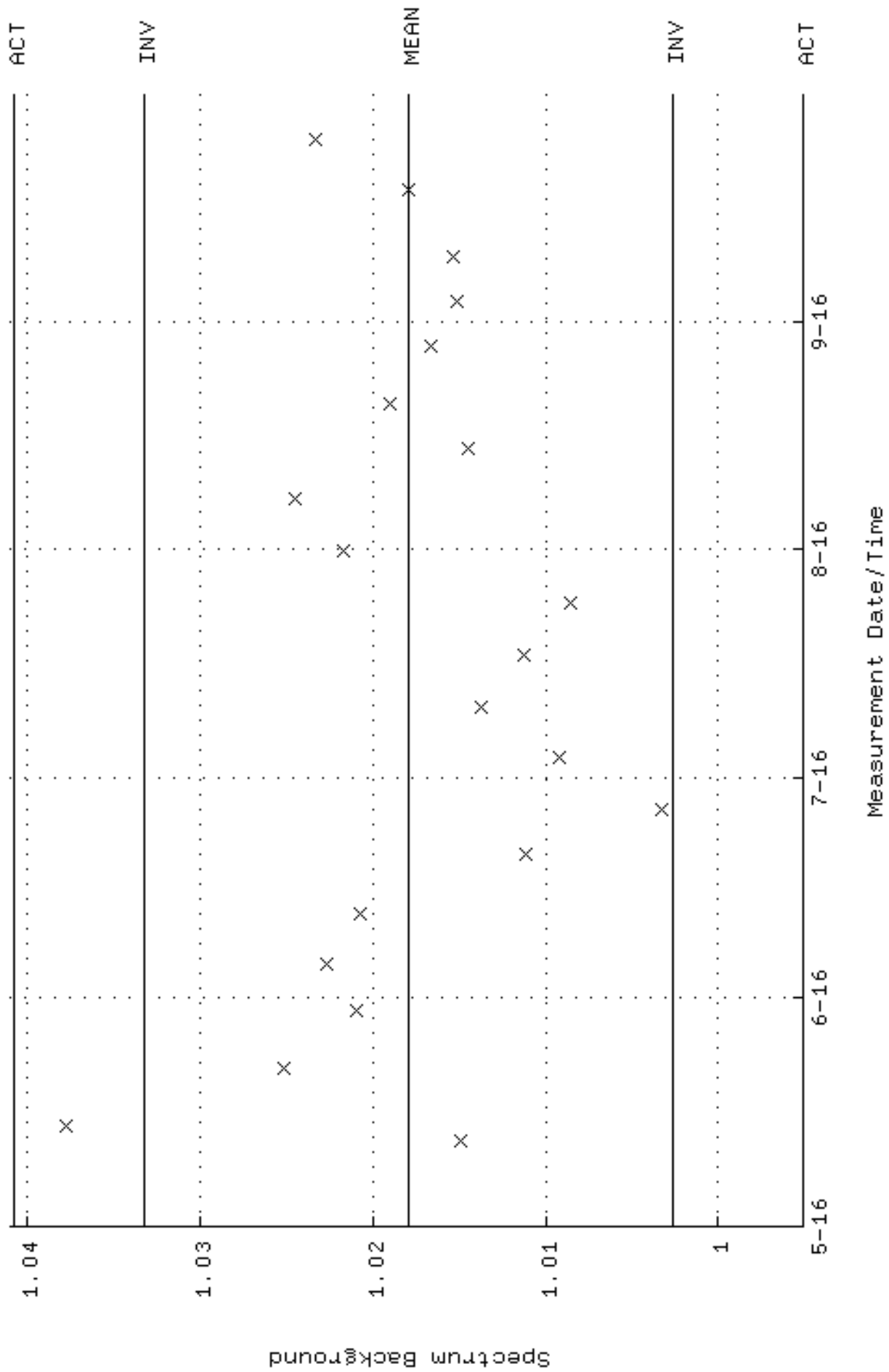


QA filename : DKA100:[CAMBERRA,GAMMA,SCUSR,QA]QCC_GAM36_CAN_QAF;1
 Parameter Name : NACTIVITY-59 (DECAY CORRECTED ACTIVITY AM-241)
 Start/End Dates : 9-JUN-2016 07:47:51 through 1-OCT-2016 12:00:00
 Mean +- Std Dev : 60493.6 +- 1102.76 (1.82 %)

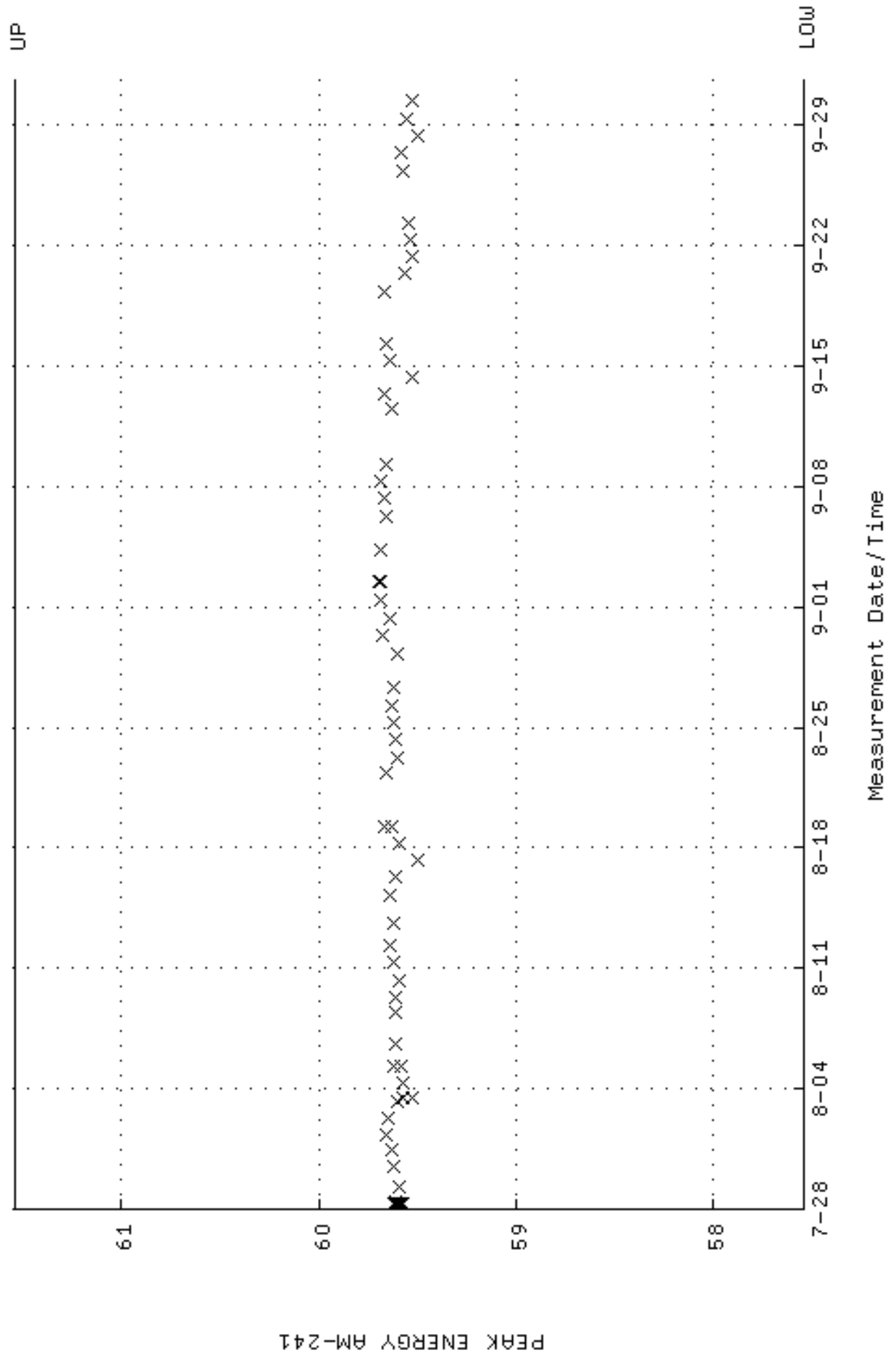


Measurement Date/Time

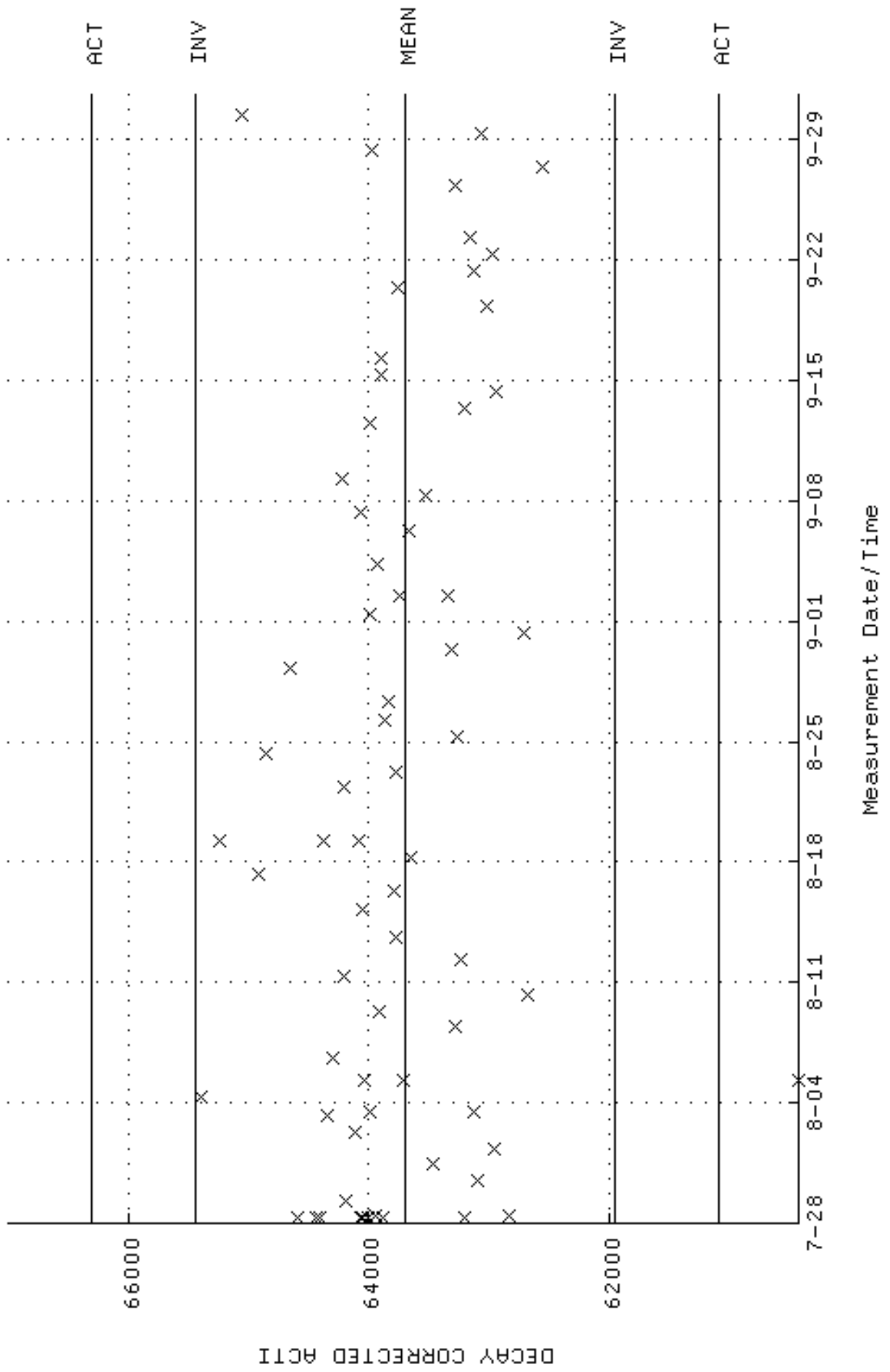
QA filename : DKA100:[CANBERRA.GAMMA.SCUSR.QA]LBC_GAM36.QAF;1
 Parameter Name : BACKRATE (Spectrum Background Rate)
 Start/End Dates : 12-MAY-2016 13:49:58 through 1-OCT-2016 12:00:00
 Mean +- Std Dev : 1.01797 +- 7.627347E-03 (0.75 %)



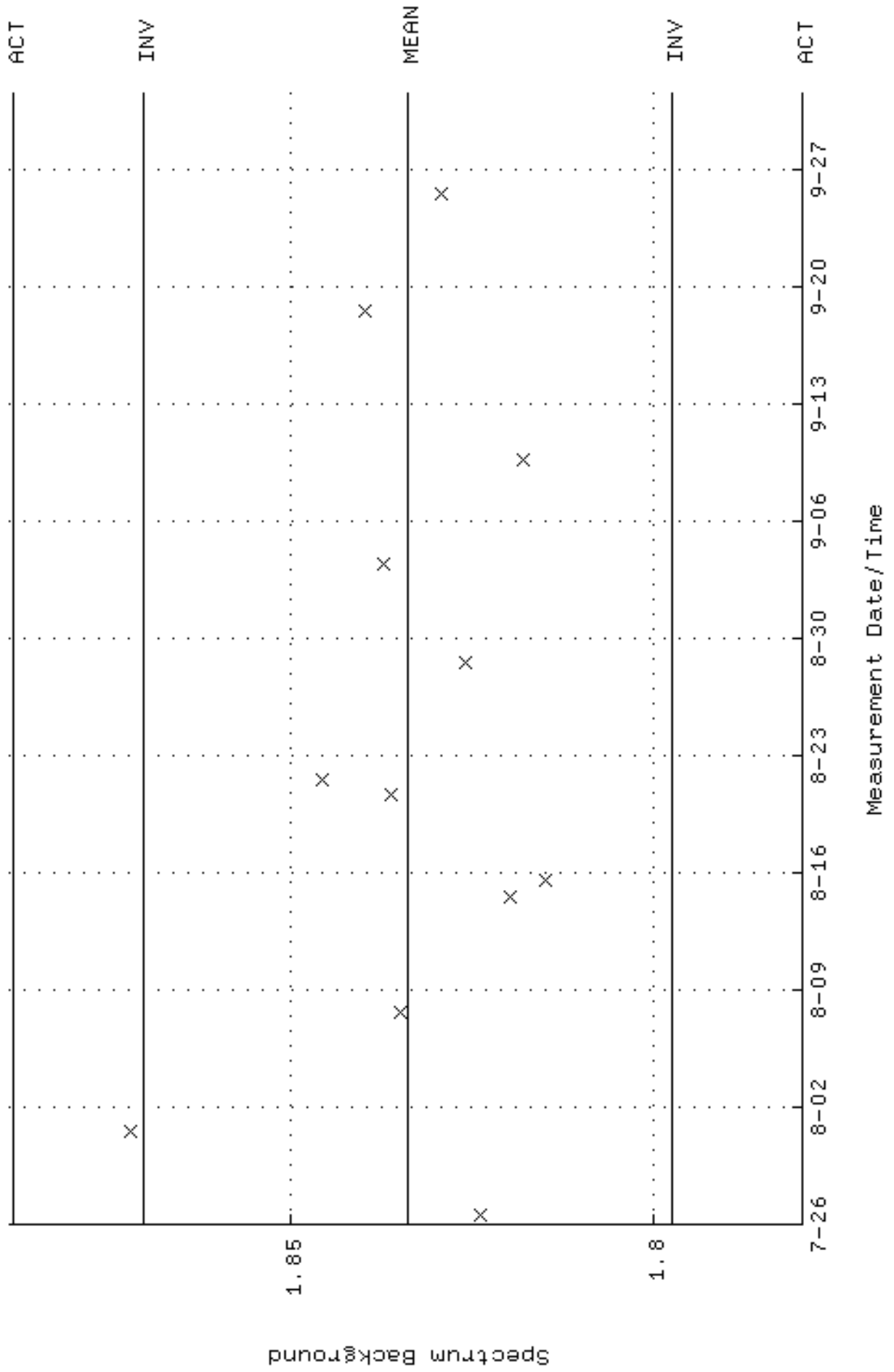
QA filename : DKA100:[CAMBERRA,GAMMA,SCUSR,QA]QCC_GAM39_CAN_QAF;1
 Parameter Name : PSENERGY-59 (PEAK ENERGY AM-241)
 Start/End Dates : 28-JUL-2016 07:23:30 through 1-OCT-2016 12:00:00
 Lower/Upper Lmts: 57.5400 through 61.5400



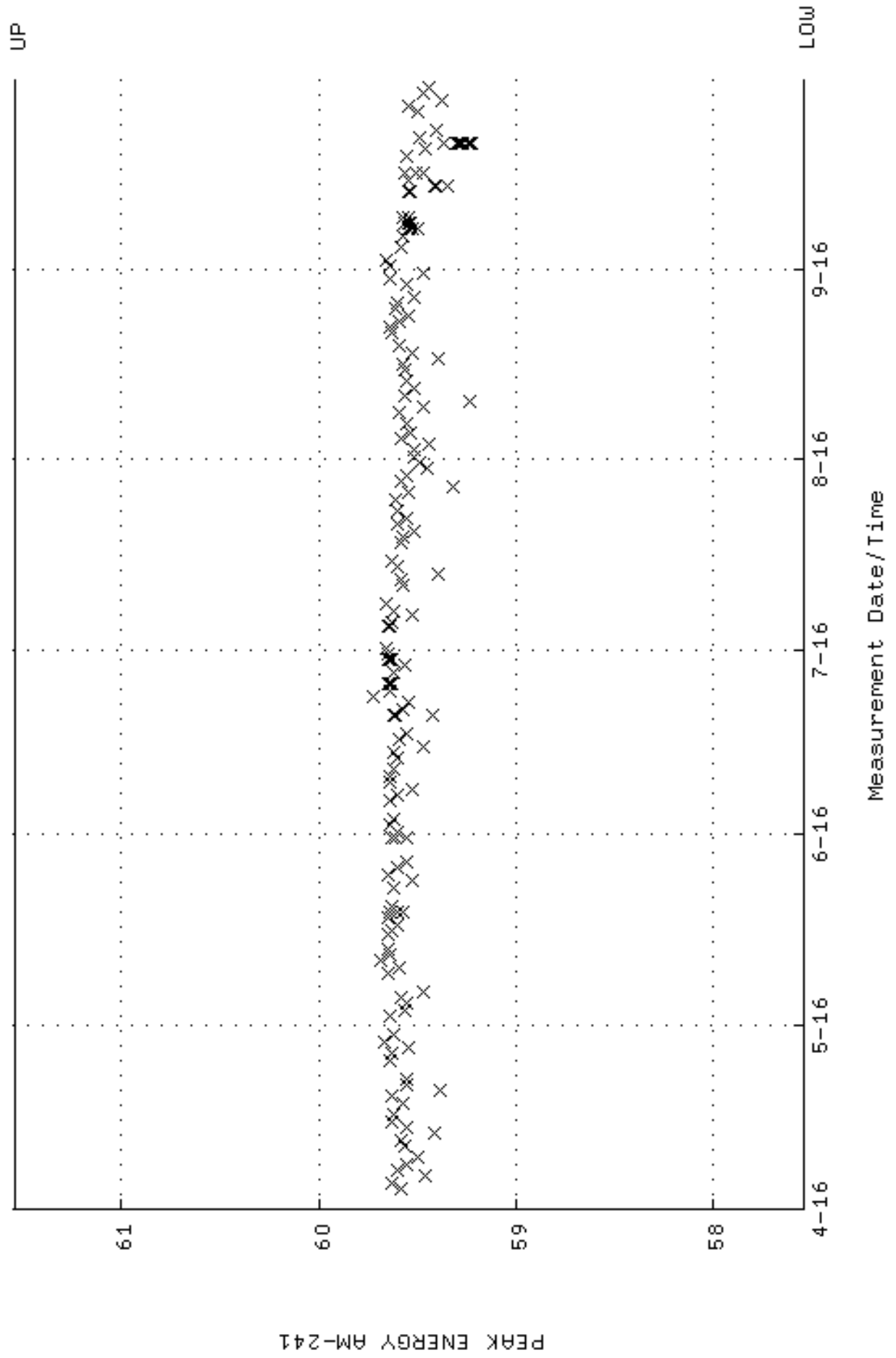
QA filename : DKA100:[CANBERRA,GAMMA,SCUSR,QA]QCC_GAM39_CAN_QAF;1
 Parameter Name : NACTIVITY-59 (DECAY CORRECTED ACTIVITY AM-241)
 Start/End Dates : 28-JUL-2016 07:23:30 through 1-OCT-2016 12:00:00
 Mean +- Std Dev : 63705.5 +- 872.341 (1.37 %)



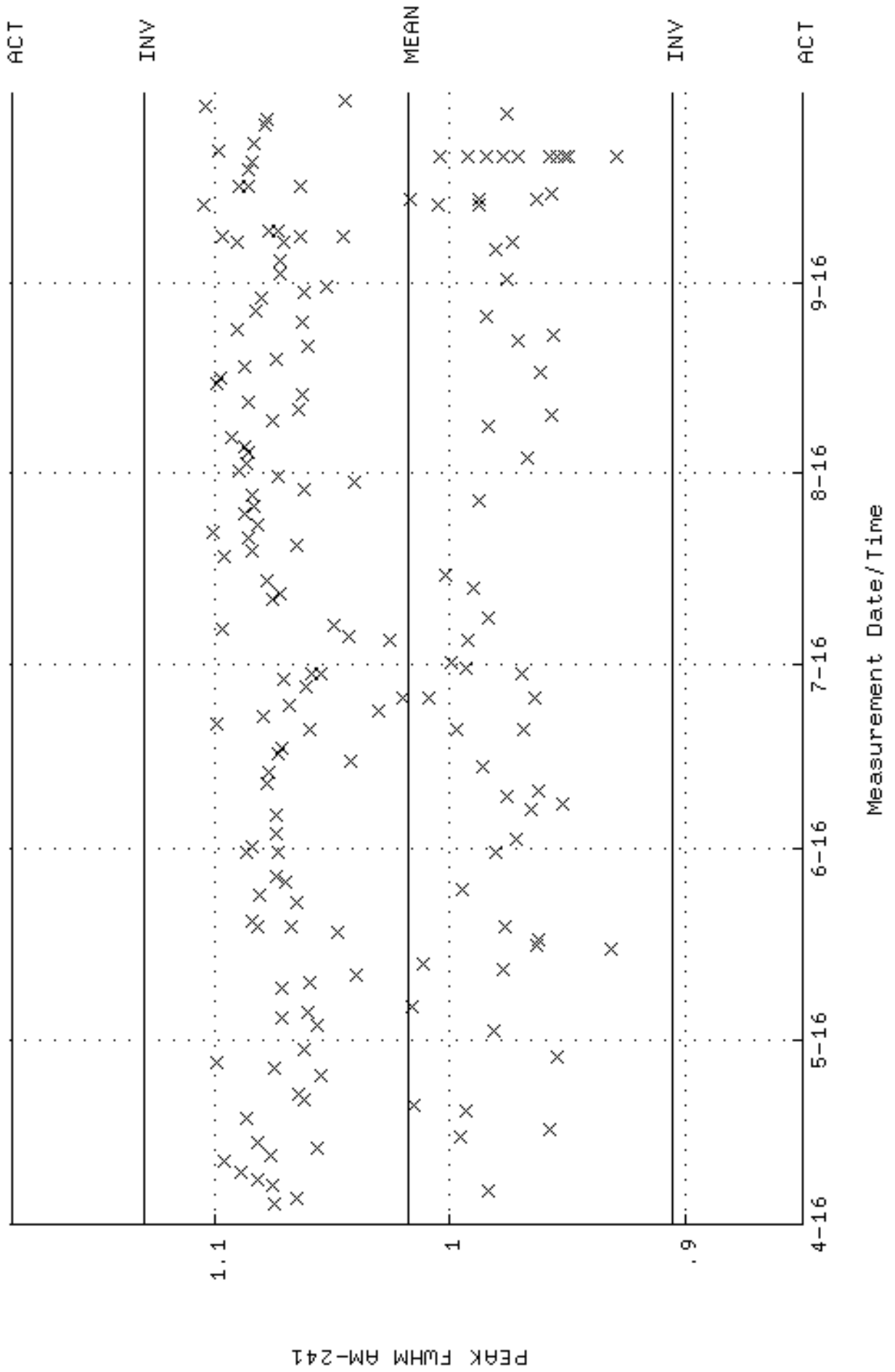
QA filename : DKA100:[CANBERRA,GAMMA,SCUSR,QA]LBC_GAM39.QAF;1
 Parameter Name : BACKRATE (Spectrum Background Rate)
 Start/End Dates : 26-JUL-2016 14:23:41 through 1-OCT-2016 12:00:00
 Mean +- Std Dev : 1.83408 +- 1.817269E-02 (0.99 %)



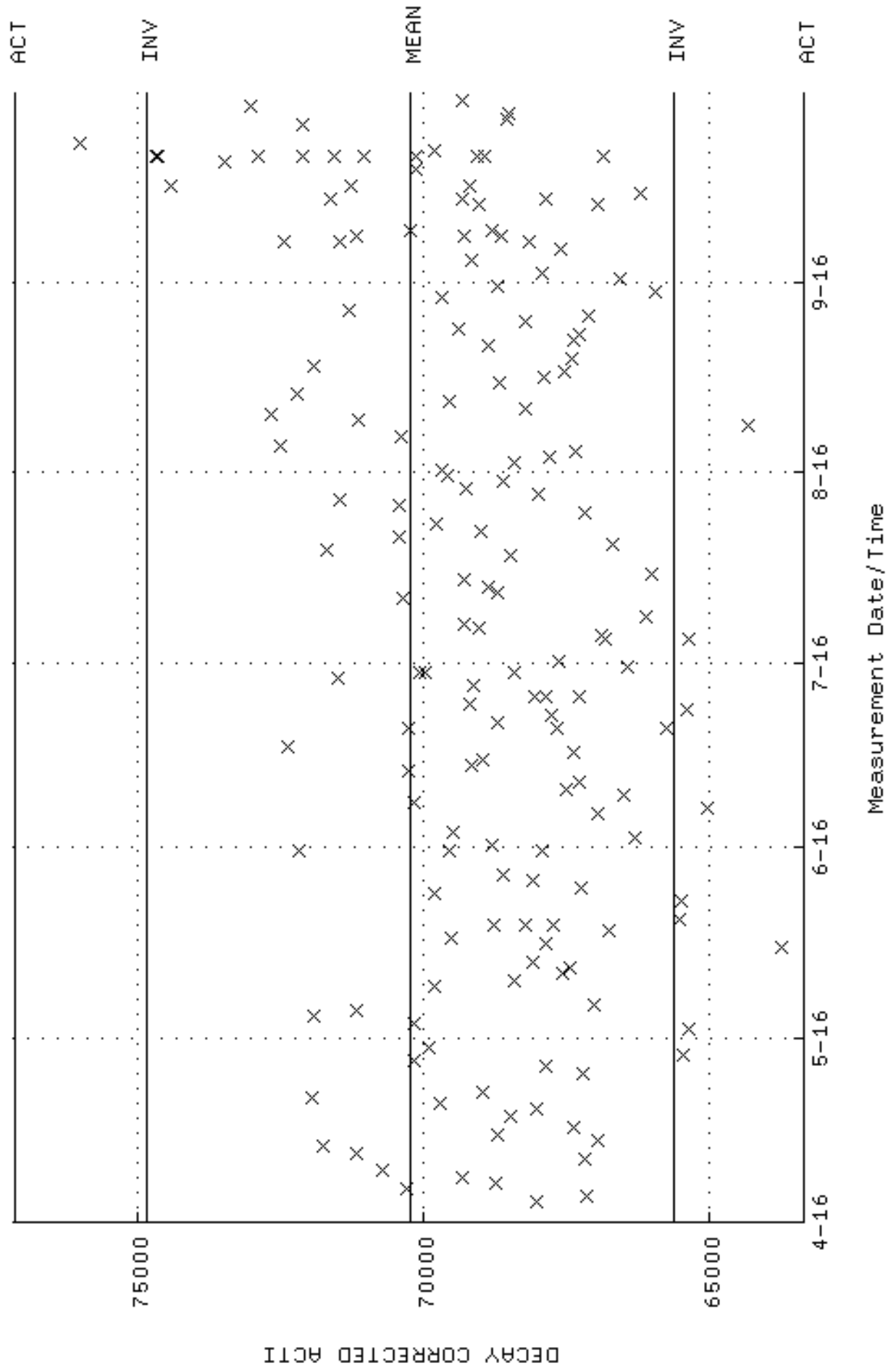
QA filename : DKA100:[CANSBERRA.GAMMA.SCUSR.QA]QCC_GAM44_CAN.QAF;1
Parameter Name : PSENERGY-59 (PEAK ENERGY AM-241)
Start/End Dates : 4-APR-2016 06:24:53 through 1-OCT-2016 12:00:00
Lower/Upper Lmts: 57.5400 through 61.5400



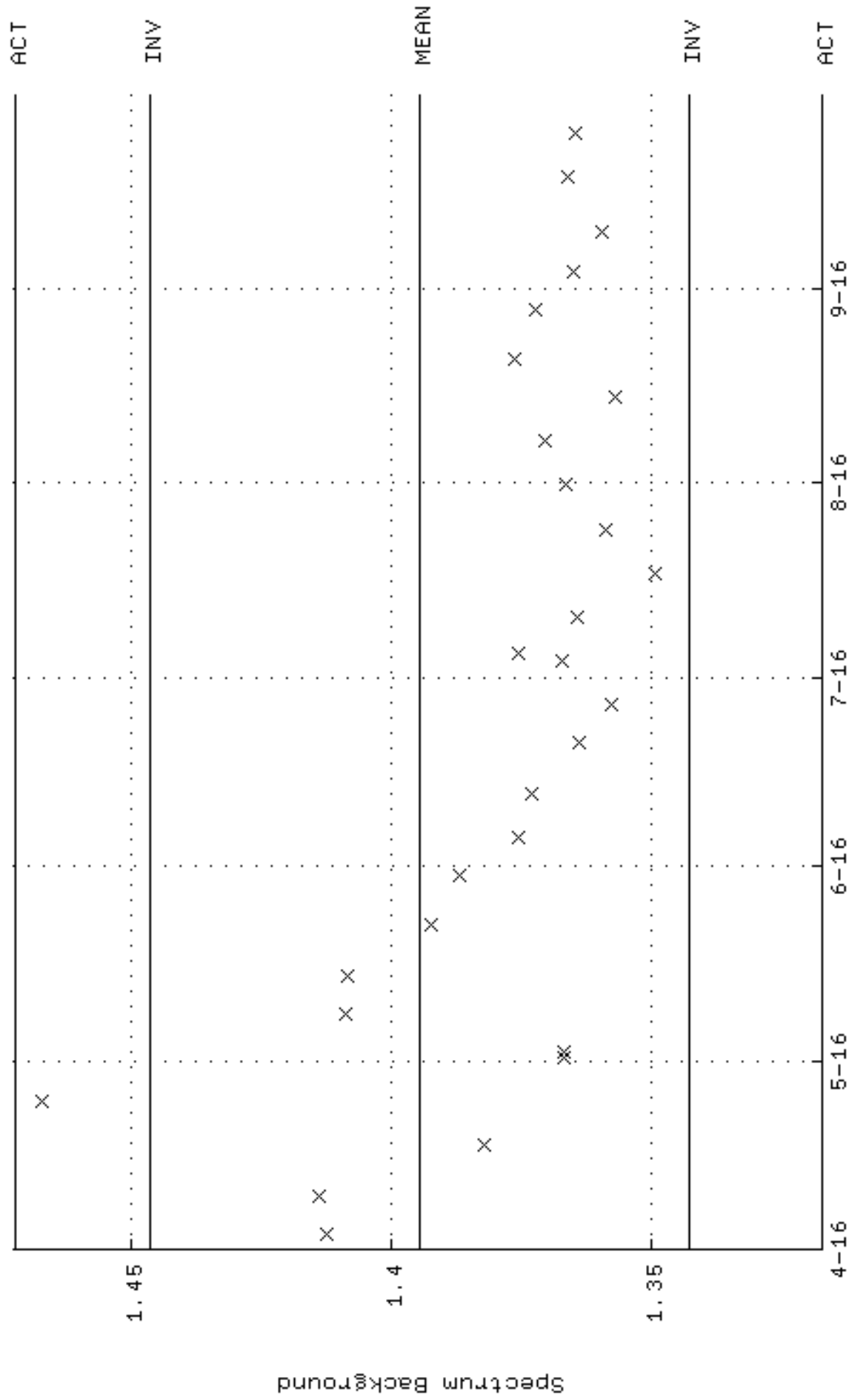
QA filename : DKA100:[CANTERRA,GAMMA,SCUSR,QA]QCC_GAM44_CAN.QAF;1
 Parameter Name : PSFWM-59 (PEAK FWHM AM-241)
 Start/End Dates : 4-APR-2016 06:24:53 through 1-OCT-2016 12:00:00
 Mean +- Std Dev : 1.01810 +- 5.609688E-02 (5.51 %)



QA filename : DKA100:[CANSBERRA.GAMMA.SCUSR.QA]QCC_GAM44_CAN.QAF;1
 Parameter Name : NACTIVITY-59 (DECAY CORRECTED ACTIVITY AM-241)
 Start/End Dates : 4-APR-2016 06:24:53 through 1-OCT-2016 12:00:00
 Mean +- Std Dev : 70239.6 +- 2304.17 (3.28 %)



QA filename : DKA100:[CANSBERRA.GAMMA.SCUSR.QA]LBC_GAM44.QAF;1
 Parameter Name : BACKRATE (Spectrum Background Rate)
 Start/End Dates : 3-APR-2016 12:20:21 through 1-OCT-2016 12:00:00
 Mean +- Std Dev : 1.39471 +- 2.580503E-02 (1.85 %)



Measurement Date/Time

RAD Standards Traceability

CERTIFICATE OF CALIBRATION
Standard Radionuclide Source

1556

84680-278

100 mL Solid in Aluminum Can

Customer: GEL Labs
P.O. No.: 489884RD, Item 3
Reference Date: 01-Apr-2011 12:00 PM EST **Grams of Master Source:** 0.0066498

This standard radionuclide source was prepared using aliquots measured gravimetrically from master radionuclide solutions. Calibration and purity were checked using a germanium gamma spectrometer system. At the time of calibration no interfering gamma-ray emitting impurities were detected. The gamma ray emission rates for the most intense gamma-ray lines are given. Eckert & Ziegler Analytics (EZA) maintains traceability to the National Institute of Standards and Technology through a Measurements Assurance Program as described in USNRC Regulatory Guide 4.15, Revision 1, February, 1979, and compliance with ANSI N42.22-1995, "Traceability of Radioactive Sources to NIST." EZA is accredited by the Health Physics Society (HPS) for the production of NIST-traceable sources, and this source was produced in accordance with the HPS accreditation requirements. Customers may report any concerns with the accreditation program to the HPS Secretariat, 1313 Dolley Madison Blvd., Ste. 402, McLean, VA 22101. Density of solid matrix 1.15 g/cc.

Nuclide	Gamma-Ray Energy (keV)	Half-Life, Days	Master Source* $\mu\text{ps}/\text{gram}$	This Source μps	Uncertainty, %			Calibration Method
					u_A	u_B	U	
Pb-210	46.5	8.120E+03	—	1.129E+03	0.1	2.1	4.1	4 π LS
Am-241	59.5	1.580E+05	—	7.538E+02	0.1	1.7	3.5	4 π LS
Cd-109	88.0	4.626E+02	1.659E+05	1.103E+03	0.6	2.3	4.8	HPGe
Co-57	122.1	2.718E+02	8.949E+04	5.951E+02	0.6	2.0	4.2	HPGe
Ce-139	165.9	1.376E+02	1.247E+05	8.292E+02	0.6	1.9	4.0	HPGe
Hg-203	279.2	4.661E+01	2.899E+05	1.928E+03	0.6	1.9	4.0	HPGe
Sn-113	391.7	1.151E+02	1.739E+05	1.156E+03	0.6	1.9	4.0	HPGe
Cs-137	661.7	1.098E+04	1.107E+05	7.361E+02	0.8	1.9	4.1	HPGe
Y-88	898.0	1.066E+02	4.246E+05	2.824E+03	0.6	1.9	4.0	HPGe
Zn-65	1115.6	2.441E+02	—	1.445E+03	0.1	1.7	3.5	IC
Co-60	1173.2	1.925E+03	2.118E+05	1.408E+03	0.7	1.9	4.0	HPGe
Co-60	1332.5	1.925E+03	2.118E+05	1.408E+03	0.7	1.9	4.0	HPGe
Y-88	1836.1	1.066E+02	4.495E+05	2.989E+03	0.7	1.9	4.0	HPGe

* Master Source refers to Analytics' 8-isotope mixture which is calibrated quarterly.

Calibration Methods: 4 π LS - 4 pi Liquid Scintillation Counting, HPGe - High Purity Germanium Gamma-Ray Spectrometer, IC - Ionization Chamber. **Uncertainty:** U - Relative expanded uncertainty, k = 2. See NIST Technical Note 1297, "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Results."

(Certificate continued on reverse side)



RC-S-060-101

This standard will expire one year after the reference date.

Source Prepared by: M. Williford
M. Williford, Radiochemist

QA Approved: J. D. McCorvey
J. D. McCorvey, QA Manager Alternate

Date: 6/27/11



Standard Logbook

Serial ID: 1556 Open/Reference Date: 01-APR-11 Aliquot : 1 mL
Name: Mixed Gamma LCS CAN Received: 01-APR-11 Density : Hand Calculated
Type: Source Material Expires: 01-APR-37 Lot Number : 84680-278
Employee: Maggie Stamps Verified: 14-JUL-11
Supplier: Eckert & Zeigler Analytics
Description: 84680-278
Comments: None

Analyte	Concentration	Analyte	Concentration
Americium-241	125983.3 dpm/mL	Cesium-137	51898.9 dpm/mL
Cobalt-60	84496.9 dpm/mL		

Verification for Mixed Gamma Standard 1556 CAN

Michael Hilton
7/14/2011

Isotope
Pb-210
Mixed Gamma N1
Mixed Gamma N2
Mixed Gamma N3

Result
pCi/L
722900
752300
692100

Isotopic Abundance:
Certificate Value (dps):
0.0425
1129

Mean Value (Counting) = 722433.33
Stdev = 30102.713
100.622
Pass
Rule 3 (Pass/Fail)

Certificate Value = 717965.0
Lower Limit = 662227.9072
Upper Limit = 782638.7594
Rule 1 Pass/Fail Pass
Two sigma = 60205.42611
10 % of Mean = 72243.33333
Rule 2 (Pass/Fail) Pass

Verification Rules

- Rule 1 = The certificate value (NOT including any uncertainty) shall lie within the 95% confidence interval determined from the mean and two sigma standard deviation of the three measurements
- Rule 2 = The two sigma value used for the 95% confidence interval shall not exceed 10% of the mean value of the three verification measurements.
- Rule 3 = The determined mean value shall be within 5% of the certificate value.

Handwritten:
11/20/11
11/20/11
H. Stamp

Verification for Mixed Gamma Standard 1556 CAN

Michael Hilton
7/14/2011

Isotope
Am-241
Mixed Gamma N1
Mixed Gamma N2
Mixed Gamma N3

Result
pCi/L
58390
60740
57770

Isotopic Abundance:
Certificate Value (dps):
0.359
753.8

Mean Value (Counting) = 58966.67
Sidev = 1566.727
pCi/L 103.9074
Pass
Rule 3 (Pass/Fail)

Certificate Value = 56749.2
Lower Limit = 55833.21277
Upper Limit = 62100.12057
Rule 1 Pass/Fail Pass
Two sigma = 3133.453898
10 % of Mean = 5896.666667
Rule 2 (Pass/Fail) Pass

Handwritten:
"1201"
"1201"
"1201"

Verification Rules

- Rule 1 = The certificate value (NOT including any uncertainty) shall lie within the 95% confidence interval determined from the mean and two sigma standard deviation of the three measurements
- Rule 2 = The two sigma value used for the 95% confidence interval shall not exceed 10% of the mean value of the three verification measurements.
- Rule 3 = The determined mean value shall be within 5% of the certificate value.

Verification for Mixed Gamma Standard 1556 CAN

Michael Hilton
7/14/2011

Isotope
Cd-109
Mixed Gamma N1
Mixed Gamma N2
Mixed Gamma N3

Result
pCi/L
818400
798000
764700

Isotopic Abundance:
Certificate Value (dps):
0.037
1103

Mean Value (Counting) = 793700.00 pCi/L 98.51091 Pass
Stdev = 27107.010 pCi/L Rule 3 (Pass/Fail)

Certificate Value = 805697.6 pCi/L
Lower Limit = 739485.9797 pCi/L
Upper Limit = 847914.0203 pCi/L
Rule 1 Pass/Fail Pass
Two sigma = 54214.02033
10 % of Mean = 79370
Rule 2 (Pass/Fail) Pass

*msh
7/20/11*
*M. Hilton
7/20/11*

Verification Rules

- Rule 1 = The certificate value (NOT including any uncertainty) shall lie within the 95% confidence interval determined from the mean and two sigma standard deviation of the three measurements
- Rule 2 = The two sigma value used for the 95% confidence interval shall not exceed 10% of the mean value of the three verification measurements.
- Rule 3 = The determined mean value shall be within 5% of the certificate value.

Verification for Mixed Gamma Standard 1556 CAN

Michael Hilton
7/14/2011

Isotope
Co-57
Mixed Gamma N1
Mixed Gamma N2
Mixed Gamma N3

Result
pCi/L
19090
18820
18830

Isotopic Abundance:
Certificate Value (dps):
0.856
595.1

Mean Value (Counting) = 18913.33 pCi/L 100.6592 Pass
Stdev = 153.080 pCi/L Rule 3 (Pass/Fail)

Certificate Value = 18789.5 pCi/L
Lower Limit = 18607.17433 pCi/L
Upper Limit = 19219.49233 pCi/L
Rule 1 Pass/Fail Pass
Two sigma = 306.1590001
10 % of Mean = 1891.333333
Rule 2 (Pass/Fail) Pass

*mg
7/20/11*

Verification Rules

- Rule 1 = The certificate value (NOT including any uncertainty) shall lie within the 95% confidence interval determined from the mean and two sigma standard deviation of the three measurements
- Rule 2 = The two sigma value used for the 95% confidence interval shall not exceed 10% of the mean value of the three verification measurements.
- Rule 3 = The determined mean value shall be within 5% of the certificate value.

*Mustamp
7/20/11*

Verification for Mixed Gamma Standard 1556 CAN

Michael Hilton
7/14/2011

Isotope	Result
Ce-139	pCi/L
Mixed Gamma N1	28740
Mixed Gamma N2	29410
Mixed Gamma N3	27560

Isotopic Abundance:
Certificate Value (dps): 0.8
829.2

Mean Value (Counting) = 101.9865 Pass
Stdev = 936.643 Rule 3 (Pass/Fail)

Certificate Value = 28013.5 pCi/L
Lower Limit = 26696.71412 pCi/L
Upper Limit = 30443.28588 pCi/L
Rule 1 Pass/Fail Pass
Two sigma = 1873.285883
10 % of Mean = 2857
Rule 2 (Pass/Fail) Pass

11/20/11
11/20/11

Stamp
7/20/11

Verification Rules

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- Rule 3 = The determined mean value shall be within 5% of the certificate value.

Verification for Mixed Gamma Standard 1556 CAN

Michael Hilton
7/14/2011

Isotope
Hg-203
Mixed Gamma N1
Mixed Gamma N2
Mixed Gamma N3

Result
pCi/L
66300
68180
64480

Isotopic Abundance:
Certificate Value (dps):
0.8156
1928

Mean Value (Counting) = 66320.00 pCi/L 103.8046 Pass
Stdev = 1850.081 pCi/L Rule 3 (Pass/Fail)

Certificate Value = 63889.3 pCi/L
Lower Limit = 62619.83784 pCi/L
Upper Limit = 70020.16216 pCi/L
Rule 1 Pass/Fail Pass
Two sigma = 3700.162159
10 % of Mean = 6632
Rule 2 (Pass/Fail) Pass

Handwritten:
11/20/11
1/20/11
V. Stanev

Verification Rules

- Rule 1 = The certificate value (NOT including any uncertainty) shall lie within the 95% confidence interval determined from the mean and two sigma standard deviation of the three measurements
- Rule 2 = The two sigma value used for the 95% confidence interval shall not exceed 10% of the mean value of the three verification measurements.
- Rule 3 = The determined mean value shall be within 5% of the certificate value.

CAN

1556

Verification for Mixed Gamma Standard

Michael Hilton
7/14/2011

Isotope	Result
Sn-113	pCi/L
Mixed Gamma N1	49560
Mixed Gamma N2	49620
Mixed Gamma N3	48300

Isotopic Abundance:
Certificate Value (dps):
0.6497
1156

Mean Value (Counting) = 49160.00 pCi/L 102.2277 Pass
 Sidev = 745.386 pCi/L Rule 3 (Pass/Fail)

Certificate Value = 48088.7 pCi/L
 Lower Limit = 47669.22839 pCi/L
 Upper Limit = 50650.77161 pCi/L
 Rule 1 Pass/Fail Pass
 Two sigma = 1490.771612
 10 % of Mean = 4916
 Rule 2 (Pass/Fail) Pass

Handwritten: maha 7/20/11

Handwritten: Hoffamp 7/20/11

Verification Rules

- Rule 1 = The certificate value (NOT including any uncertainty) shall lie within the 95% confidence interval determined from the mean and two sigma standard deviation of the three measurements
- Rule 2 = The two sigma value used for the 95% confidence interval shall not exceed 10% of the mean value of the three verification measurements.
- Rule 3 = The determined mean value shall be within 5% of the certificate value.

Verification for Mixed Gamma Standard 1556 CAN

Michael Hilton
7/14/2011

Isotope	Result	Isotopic Abundance:
Cs-137	pCi/L	0.851
Mixed Gamma N1	23710	736.1
Mixed Gamma N2	23950	
Mixed Gamma N3	24040	

Mean Value (Counting) = 102.2333 Pass
 Sidev = 170.587 Rule 3 (Pass/Fail)

Certificate Value =
 Lower Limit = 23377.9 pCi/L
 Upper Limit = 23558.82556 pCi/L
 Rule 1 Pass/Fail = 24241.17444 pCi/L
 Two sigma = 341.1744422
 10 % of Mean = 2390
 Rule 2 (Pass/Fail) = Pass

*exception taken due to full recovery of standard

msk
7/20/11

Verification Rules

- Rule 1 = The certificate value (NOT including any uncertainty) shall lie within the 95% confidence interval determined from the mean and two sigma standard deviation of the three measurements
- Rule 2 = The two sigma value used for the 95% confidence interval shall not exceed 10% of the mean value of the three verification measurements.
- Rule 3 = The determined mean value shall be within 5% of the certificate value.

Postamp
7/20/11

Verification for Mixed Gamma Standard 1556 CAN

Michael Hilton
7/14/2011

Isotope
Y-88 (898)
Mixed Gamma N1
Mixed Gamma N2
Mixed Gamma N3

Result
pCi/L
82690
81320
80940

Isotopic Abundance:
Certificate Value (dps):
0.937
2824

Mean Value (Counting) = 81650.00
Sidev = 920.489
pCi/L 100.2381
Pass
Rule 3 (Pass/Fail)

Certificate Value = 81456.1
Lower Limit = 79809.022
Upper Limit = 83490.978
Rule 1 Pass/Fail Pass
Two sigma = 1840.978001
10 % of Mean = 8165
Rule 2 (Pass/Fail) Pass

*mean
7/20/11*

*Hoffman
7/20/11*

Verification Rules

- Rule 1 = The certificate value (NOT including any uncertainty) shall lie within the 95% confidence interval determined from the mean and two sigma standard deviation of the three measurements
- Rule 2 = The two sigma value used for the 95% confidence interval shall not exceed 10% of the mean value of the three verification measurements.
- Rule 3 = The determined mean value shall be within 5% of the certificate value.

Verification for Mixed Gamma Standard 1556 CAN

Michael Hilton
7/14/2011

Isotope
Co-60 (1173)
Mixed Gamma N1
Mixed Gamma N2
Mixed Gamma N3

Result
pCi/L
38910
39750
38840

Isotopic Abundance:
Certificate Value (dps):
0.9985
1408

Mean Value (Counting) = 39166.67 pCi/L 102.7694 Pass
Stdev = 506.392 pCi/L Rule 3 (Pass/Fail)

Certificate Value = 38111.2 pCi/L
Lower Limit = 38153.88173 pCi/L
Upper Limit = 40179.45161 pCi/L
Rule 1 Pass/Fail Fail *exception taken due to full recovery of standard
Two sigma = 1012.784939
10 % of Mean = 3916.666667
Rule 2 (Pass/Fail) Pass

*msgr
7/20/11*

*W. J. Stampf
7/20/11*

Verification Rules

- Rule 1 = The certificate value (NOT including any uncertainty) shall lie within the 95% confidence interval determined from the mean and two sigma standard deviation of the three measurements
- Rule 2 = The two sigma value used for the 95% confidence interval shall not exceed 10% of the mean value of the three verification measurements.
- Rule 3 = The determined mean value shall be within 5% of the certificate value.

Verification for Mixed Gamma Standard 1556 CAN

Michael Hilton
7/14/2011

Isotope	Result
Co-60 (1332.50)	pCi/L
Mixed Gamma N1	38940
Mixed Gamma N2	40200
Mixed Gamma N3	39150

Isotopic Abundance:
Certificate Value (dps):
0.9998
1408

Mean Value (Counting) = 103.595 Pass
Stdev = Rule 3 (Pass/Fail)

Certificate Value = 38061.7 pCi/L
Lower Limit = 38079.88889 pCi/L
Upper Limit = 40780.11111 pCi/L
Rule 1 Pass/Fail Fall *exception taken due to full recovery of standard
Two sigma = 1350.111107
10 % of Mean = 3943
Rule 2 (Pass/Fail) Pass

Handwritten:
7/20/11
M. Hilton

Verification Rules

- Rule 1 = The certificate value (NOT including any uncertainty) shall lie within the 95% confidence interval determined from the mean and two sigma standard deviation of the three measurements
- Rule 2 = The two sigma value used for the 95% confidence interval shall not exceed 10% of the mean value of the three verification measurements.
- Rule 3 = The determined mean value shall be within 5% of the certificate value.

Verification for Mixed Gamma Standard 1556 CAN

Michael Hilton
7/14/2011

Isotope
Y-88 (1836.1)
Mixed Gamma N1
Mixed Gamma N2
Mixed Gamma N3

Result
pCi/L
82870
83080
84640

Isotopic Abundance:
Certificate Value (dps):
0.992
2989

Mean Value (Counting) = 83530.00 pCi/L 102.5723 Pass
Stdev = 967.006 pCi/L Rule 3 (Pass/Fail)

Certificate Value = 81435.3 pCi/L
Lower Limit = 81595.98862 pCi/L
Upper Limit = 85464.01138 pCi/L
Rule 1 Pass/Fail Fail
Two sigma = 1934.011375
10 % of Mean = 8353
Rule 2 (Pass/Fail) Pass

*exception taken due to full recovery of standard

*mgh
7/20/11*

*Hilton
7/20/11*

Verification Rules

- Rule 1 = The certificate value (NOT including any uncertainty) shall lie within the 95% confidence interval determined from the mean and two sigma standard deviation of the three measurements
- Rule 2 = The two sigma value used for the 95% confidence interval shall not exceed 10% of the mean value of the three verification measurements.
- Rule 3 = The determined mean value shall be within 5% of the certificate value.

Runlogs

Instrument Run Log

Instrument Type: GAMMA SPECTROMETER

Batch ID: 1596387

Sample ID	Sample Type	Analyst	Instrument	Run Date	Status	Geometry	Calibration Date
405245001	SAMPLE	MXR1	GAM01	OCT-03-16 04:32:47	DONE CAN		20-JUL-16 00:00
405245002	SAMPLE	MXR1	GAM05	OCT-03-16 04:33:24	DONE CAN		04-SEP-16 00:00
405245003	SAMPLE	MXR1	GAM06	OCT-03-16 04:33:45	DONE CAN		08-MAR-16 00:00
405245004	SAMPLE	MXR1	GAM07	OCT-03-16 04:34:09	DONE CAN		19-AUG-16 00:00
405245005	SAMPLE	MXR1	GAM18	OCT-03-16 04:34:32	DONE CAN		25-JUN-16 00:00
405245006	SAMPLE	MXR1	GAM24	OCT-03-16 04:34:54	DONE CAN		17-JUN-16 00:00
405245007	SAMPLE	MXR1	GAM29	OCT-03-16 04:35:17	DONE CAN		25-JUN-16 00:00
405245008	SAMPLE	MXR1	GAM30	OCT-03-16 04:35:39	DONE CAN		11-MAR-16 00:00
405245009	SAMPLE	MXR1	GAM32	OCT-03-16 04:36:09	DONE CAN		23-AUG-16 00:00
405245010	SAMPLE	MXR1	GAM39	OCT-03-16 04:36:41	DONE CAN		27-JUL-16 00:00
405245011	SAMPLE	MXR1	GAM08	OCT-03-16 04:45:57	DONE CAN		21-JUL-16 00:00
405245012	SAMPLE	MXR1	GAM09	OCT-03-16 04:46:21	DONE CAN		03-JUN-16 00:00
405245013	SAMPLE	MXR1	GAM19	OCT-03-16 04:46:48	DONE CAN		15-JUN-16 00:00
405245014	SAMPLE	MXR1	GAM20	OCT-03-16 04:47:25	DONE CAN		30-JUN-16 00:00
405245015	SAMPLE	MXR1	GAM28	OCT-03-16 04:47:45	DONE CAN		01-AUG-16 00:00
405245016	SAMPLE	MXR1	GAM36	OCT-03-16 04:48:08	DONE CAN		01-JUN-16 00:00
1203621685	MB	MXR1	GAM44	OCT-03-16 04:48:39	DONE CAN		06-SEP-16 00:00
1203621687	LCS	MXR1	GAM11	OCT-03-16 04:53:57	DONE CAN		02-AUG-16 00:00
1203621686	DUP	MXR1	GAM05	OCT-03-16 05:34:41	DONE CAN		04-SEP-16 00:00

Gas Flow Raw Data

Batch# 1597819 Product: GAB Date: 9/27/16

Criteria:	Yes	No	Comments
Sample Solids are less than or equal to 100 mg for GAB.	✓		
Samples have been blank corrected (if required). Blank correction reported included (if required).			NA
If activity less than 10x MDA/MDC, error is less than or equal to 150% of sample activity. If greater than 10* MDA/ MDC, error is 40% or less. If below the MDA/ MDC, error is okay.	✓		
Instrument source check is within limits. Instrument bkg check is within limits.	✓		
Method RDL/ LLD has been met.	✓		
If duplicate activities are: Less than 5* MDA/ MDC, then RPD is 100% or less, If greater 5* MDA/ MDC, then RPD 20% or less, If below the MDA/ MDC, the RPD is 0%, Or meets the client's required RER acceptance criteria.	✓		
Tracer yield is 15-125% . Carrier yield 25-125%. (Or meets the client's contract acceptance criteria).			NA
Method blank is less than the RDL/ LLD. (If rad samples. < 5% of lowest activity)	✓		
Sample was run within hold time.	✓		DER 1561775
Sample was correctly preserved if required.			NA
Smears Taken for Radioactive batches.			NA
Method Spike and LCS are within 75-125% (or meets the client's contract acceptance criteria).	✓		
No blank spaces on data forms. All line outs initialed and dated. No transcription errors are apparent.	✓		
Aux data is correct.			NA
Client Special requirements page has been checked.	✓		
Raw Data and/ or spectrum are included and properly stasured.	✓		
MS, LCS, and Duplicate RPD/RER values uploaded to LIMS and values verified	✓		
Hit notification complete (if necessary)			NA
Batch entered into Case Narrative.	✓		
Batch Data Exception Reports (DER) completed, if applicable.	✓		NO 4/27/16 NA DER 1561775
Batch Data Exception Reports (DER) second reviewed. Disposition verified to be completed.	✓		NA DER 1561775
Aliquot Correction completed if required.			NA
Review sample historical results if available (If REMP, results above MDC have been verified by historical results, recount or re-analysis.)	✓		

Primary Review Performed By: KDast 9/27/16

Secondary Review Performed By: [Signature]

MJWC
10/14

DATA EXCEPTION REPORT

Mo.Day Yr. 27-SEP-16	Division: Radiochemistry	Quality Criteria: Specifications	Type: Process
Instrument Type: GFPC	Test / Method: EPA 900.0/SW846 9310/SM 7110B Modified	Matrix Type: Solid	Client Code: MJWC
Batch ID: 1597819	Sample Numbers: See Below		
Potentially affected work order(s)(SDG): 405245			
Application Issues: Sample Analyzed out of Holding			
Specification and Requirements Exception Description:		DER Disposition:	
<p>1. Samples 405245001, 405245002, 405245003, 405245004, 405245005, 405245006, 405245007, 405245008, 405245009, 405245010, 405245011, 405245012, 405245013, 405245014, 405245015, 405245016, 1203625472, 1203625473, and 1203625474 were received within holding but analyzed out of holding.</p>		<p>1. Reporting results</p>	

Originator's Name:

Kenshalla Oston 27-SEP-16

Data Validator/Group Leader:

Nat Long 29-SEP-16

Logbook

The Determination of Gross Alpha And Gross Non-Volatile Beta in Soil, Filters, Solid Matrices And Direct Count Air Filters

Batch ID: 1597819 **Due Dates for Lab:** 30-SEP-2016 Hold: 12-JUN-2016 Package: 02-OCT-2016 SDG: 04-OCT-2016
Analyst: Jasmine Conley **Lab SOP:** GL-RAD-A-001B REV# 17
Instrument: BAL-16107662 **Method:** EPA 900.0/SW846 9310/SM 7110B Modified

Sample ID	Run Date	#	Dry or Wet	Intermediate Aliquot	Unadjusted Aliquot (g)	Aliquot (g)	Initial Weight (g)	Final Weight (g)	Residue Weight (mg)	Detector
405245001	22-SEP-2016 11:28	1	D		0.105	0.105	7.6221	7.6442	22.1	8D
405245002	22-SEP-2016 11:28	2	D		0.107	0.107	7.5641	7.587	22.9	4D
405245003	22-SEP-2016 11:28	3	D		0.109	0.109	7.5956	7.6179	22.3	1D
405245004	22-SEP-2016 11:28	4	D		0.102	0.102	7.5927	7.6165	23.8	9C
405245005	22-SEP-2016 11:28	5	D		0.109	0.109	7.5816	7.6079	26.3	3D
405245006	22-SEP-2016 11:28	6	D		0.102	0.102	7.608	7.635	27	1C
405245007	22-SEP-2016 11:28	7	D		0.102	0.102	7.5341	7.5563	22.2	2B
405245008	22-SEP-2016 11:28	8	D		0.107	0.107	7.6316	7.6549	23.3	5B
405245009	22-SEP-2016 11:28	9	D		0.103	0.103	7.587	7.6073	20.3	2A
405245010	22-SEP-2016 11:28	10	D		0.106	0.106	7.5933	7.6127	19.4	8A
405245011	22-SEP-2016 11:28	11	D		0.1	0.1	7.6801	7.7023	22.2	1B
405245012	22-SEP-2016 11:28	12	D		0.105	0.105	7.5712	7.5955	24.3	9D
405245013	22-SEP-2016 11:28	13	D		0.105	0.105	7.5865	7.6082	21.7	5D
405245014	22-SEP-2016 11:28	14	D		0.102	0.102	7.6477	7.6697	22	10B
405245015	22-SEP-2016 11:28	15	D		0.107	0.107	7.6067	7.6354	28.7	5C
405245016	22-SEP-2016 11:28	16	D		0.105	0.105	7.6566	7.6849	28.3	4A
1203625471 MB	22-SEP-2016 11:28	17	D		0.109	0.109	7.6225	7.6228	0.3	4B
1203625472 DUP (405245003)	22-SEP-2016 11:28	18	D		0.109	0.109	7.6357	7.6591	23.4	5B
1203625473 MS (405245003)	22-SEP-2016 11:28	19	D		0.099	0.099	7.6564	7.6775	21.1	1A
1203625474 MSD (405245003)	22-SEP-2016 11:28	20	D		0.102	0.102	7.5272	7.5482	21	8A 1C
1203625475 LCS	22-SEP-2016 11:28	21	D		0.109	0.109	7.6189	7.6195	0.6	9A

Type	Name	Serial Number	Spike Amount	Spike Units
RGNT	RGF-Hydrochloric Acid	2361975.18	5	mL
RGNT	RGF-Hydrofluoric Acid	2429436.1	10	mL
RGNT	RGF-1M Nitric Acid	2438701	5	mL

Spike Pipet ID: RAD-GFC-4497063
 Planchets Flamed: Yes

Logbook

The Determination of Gross Alpha And Gross Non-Volatile Beta in Soil, Filters, Solid Matrices And Direct Count Air Filters

Batch ID: 1597819 Lab SOP: GL-RAD-A-001B REV# 17
 Analyst: Jasmine Conley Method: EPA 900.0/SW846 9310/SM 7110B
 Instrument: BAL-16107662 Modified

Sample ID	#	Dry or Wet	Intermediate Aliquot	Unadjusted Aliquot (g)	Aliquot (g)	Initial Weight (g)	Final Weight (g)	Residue Weight (mg)	Detector
RGNT SPIKE		2454847.11		25					Spike Pipet ID: RAD-GFC-4497063
SPIKE		1243-O		.1					Planchets Flamed: Yes
SPIKE		1493-B		.1					

Gross Alpha/Beta Solid

Filename : GAB.XLS
 File type : Excel
 Version # : 1.3.10

Batch : 1597819
 Analyst : JAS02031
 Prep Date : 9/22/2016
 Alpha Method Uncertainty : 0.0928
 Beta Method Uncertainty : 0.0628

Procedure Code : GFCCGANBS
 Parmname1 : Alpha
 Parmname2 : Beta
 Required Alpha MDA : 4 pCi/g
 Required Beta MDA : 10 pCi/g

Geometry: 2 inch Planchett

Sample Characteristics				Count Raw Data				Count		
Pos.	Sample ID	Sample Aliquot G	Sample Residue Wt. (mg)	Sample Aliquot SIDev. G	Sample Date/Time	Detector ID	Counting Time (min.)	Gross Counts Alpha	Gross Counts Beta	Start Date/Time
1	405245001.1	0.1050	22.1	3.2300E-03	12/15/2015 10:14	8D	140	85	458	9/26/2016 13:58
2	405245002.1	0.1070	22.9	3.2302E-03	12/15/2015 10:19	4D	150	85	367	9/26/2016 13:59
3	405245003.1	0.1090	22.3	3.2304E-03	12/15/2015 10:18	1D	130	96	438	9/26/2016 13:59
4	405245004.1	0.1020	23.8	3.2297E-03	12/15/2015 10:21	9C	120	75	275	9/26/2016 13:59
5	405245005.1	0.1090	26.3	3.2304E-03	12/15/2015 11:42	3D	130	85	400	9/26/2016 13:59
6	405245006.1	0.1020	27	3.2297E-03	12/15/2015 11:46	1C	130	105	466	9/26/2016 13:59
7	405245007.1	0.1020	22.2	3.2297E-03	12/15/2015 12:17	2B	140	76	286	9/26/2016 13:59
8	405245008.1	0.1070	23.3	3.2302E-03	12/15/2015 12:20	3B	140	107	470	9/26/2016 13:59
9	405245009.1	0.1030	20.3	3.2298E-03	12/15/2015 12:31	2A	150	88	390	9/26/2016 13:59
10	405245010.1	0.1060	19.4	3.2301E-03	12/15/2015 12:35	8A	140	115	393	9/26/2016 13:59
11	405245011.1	0.1000	22.2	4.3713E-04	12/15/2015 12:53	1B	130	73	397	9/26/2016 13:59
12	405245012.1	0.1050	24.3	3.2300E-03	12/15/2015 12:56	9D	160	102	510	9/26/2016 14:04
13	405245013.1	0.1050	21.7	3.2300E-03	12/15/2015 11:04	5D	150	117	446	9/26/2016 13:59
14	405245014.1	0.1020	22	3.2297E-03	12/15/2015 11:08	10B	140	71	345	9/26/2016 14:04
15	405245015.1	0.1070	28.7	3.2302E-03	12/15/2015 14:02	5C	140	93	450	9/26/2016 13:59
16	405245016.1	0.1050	28.3	3.2300E-03	12/15/2015 14:06	4A	130	87	428	9/26/2016 14:00
17	1203625471.1	0.1090	0.3	3.2304E-03	9/22/2016 0:00	4B	60	5	77	9/26/2016 13:58
18	1203625472.1	0.1090	23.4	3.2304E-03	12/15/2015 10:18	5B	160	102	418	9/26/2016 13:58
19	1203625473.1	0.0990	21.1	4.3283E-04	12/15/2015 10:18	1A	60	343	3093	9/26/2016 13:58
20	1203625474.1	0.1020	21	3.2297E-03	12/15/2015 10:18	1C	60	375	2961	9/27/2016 10:14
21	1203625475.1	0.1090	0.6	3.2304E-03	9/22/2016 0:00	9A	60	494	3392	9/26/2016 13:58

Pipet, 0.1 ml Stdev : +/- 0.000200 ml
 Pipet, 0.5 ml Stdev : +/- 0.001000 ml
 Pipet, 1 ml Stdev : +/- 0.002000 ml

Analytical SOP: GL-RAD-A-001B
 Instrument SOP: GL-RAD-I-016

Pos.	Calibration Data				Alpha				Beta				Weekly Background					
	Counted on	Calibration Date	Calibration Due Date	Calibration Source Used	Detector Efficiency (cpm/dpm)	Det. Eff. Error (cpm/dpm)	X-Talk	Calibration Date	Calibration Due Date	Calibration Source Used	Calibration Source Used	Detector Efficiency (cpm/dpm)	Det. Eff. Error (cpm/dpm)	X-Talk	Alpha	Beta	CPM	Count Start Date/Time
1	PIC	12/1/2015	11/30/2016	Th230	0.1828	0.00794	0.06858	12/1/2015	11/30/2016	Sr90	0.4951	0.00609	0.00243	0.222	0.668		9/23/2016 18:14	500
2	PIC	12/1/2015	11/30/2016	Th230	0.1624	0.00813	0.06303	12/1/2015	11/30/2016	Sr90	0.4892	0.00773	0.01310	0.182	0.716		9/23/2016 18:18	500
3	PIC	12/1/2015	11/30/2016	Th230	0.1615	0.00996	0.06570	12/1/2015	11/30/2016	Sr90	0.4858	0.00692	0.00767	0.158	1.392		9/23/2016 18:17	500
4	PIC	12/1/2015	11/30/2016	Th230	0.1597	0.01265	0.08485	12/1/2015	11/30/2016	Sr90	0.4874	0.00584	0.00209	0.126	0.808		9/23/2016 18:14	500
5	PIC	12/1/2015	11/30/2016	Th230	0.1453	0.00657	0.07604	12/1/2015	11/30/2016	Sr90	0.4818	0.02297	0.00259	0.124	0.630		9/23/2016 18:17	500
6	PIC	12/1/2015	11/30/2016	Th230	0.1508	0.00967	0.06165	12/1/2015	11/30/2016	Sr90	0.4860	0.00847	0.01123	0.114	0.722		9/23/2016 18:17	500
7	PIC	12/1/2015	11/30/2016	Th230	0.1239	0.02011	0.32355	12/1/2015	11/30/2016	Sr90	0.4547	0.02111	0.00019	0.076	0.464		9/23/2016 18:17	500
8	PIC	12/1/2015	11/30/2016	Th230	0.1573	0.00853	0.06198	12/1/2015	11/30/2016	Sr90	0.4662	0.01614	0.01009	0.162	1.378		9/23/2016 18:17	500
9	PIC	12/1/2015	11/30/2016	Th230	0.1564	0.01946	0.15836	12/1/2015	11/30/2016	Sr90	0.4858	0.01914	0.00045	0.160	0.470		9/23/2016 18:17	500
10	PIC	12/1/2015	11/30/2016	Th230	0.1824	0.01473	0.08229	12/1/2015	11/30/2016	Sr90	0.4892	0.01579	0.00165	0.228	1.076		9/23/2016 18:14	500
11	PIC	12/1/2015	11/30/2016	Th230	0.1648	0.03247	0.10478	12/1/2015	11/30/2016	Sr90	0.4876	0.00711	0.00168	0.114	1.118		9/23/2016 18:17	500
12	PIC	12/1/2015	11/30/2016	Th230	0.1648	0.02427	0.07694	12/1/2015	11/30/2016	Sr90	0.4855	0.02610	0.00286	0.158	1.200		9/23/2016 18:15	500
13	PIC	12/1/2015	11/30/2016	Th230	0.1885	0.00639	0.06687	12/1/2015	11/30/2016	Sr90	0.4947	0.00925	0.00363	0.248	0.770		9/23/2016 18:18	500
14	PIC	12/1/2015	11/30/2016	Th230	0.1444	0.00844	0.19141	12/1/2015	11/30/2016	Sr90	0.4636	0.00652	0.00072	0.120	0.560		9/23/2016 18:15	500
15	PIC	12/1/2015	11/30/2016	Th230	0.1688	0.01161	0.06207	12/1/2015	11/30/2016	Sr90	0.4974	0.00657	0.00367	0.182	0.794		9/23/2016 18:18	500
16	PIC	12/1/2015	11/30/2016	Th230	0.1405	0.01036	0.07287	12/1/2015	11/30/2016	Sr90	0.4688	0.01123	0.00431	0.104	0.770		9/23/2016 18:18	500
17	PIC	12/1/2015	11/30/2016	Th230	0.2561	0.00704	0.11205	12/1/2015	11/30/2016	Sr90	0.4941	0.01519	0.00026	0.152	1.540		9/23/2016 18:18	500
18	PIC	12/1/2015	11/30/2016	Th230	0.1842	0.01152	0.05910	12/1/2015	11/30/2016	Sr90	0.4979	0.00426	0.00379	0.272	0.506		9/23/2016 18:18	500
19	PIC	12/1/2015	11/30/2016	Th230	0.1542	0.00667	0.10371	12/1/2015	11/30/2016	Sr90	0.4780	0.00738	0.00079	0.290	0.848		9/23/2016 18:17	500
20	PIC	12/1/2015	11/30/2016	Th230	0.1711	0.00967	0.05749	12/1/2015	11/30/2016	Sr90	0.4886	0.00847	0.01123	0.114	0.722		9/23/2016 18:17	500
21	PIC	12/1/2015	11/30/2016	Th230	0.2728	0.00726	0.10251	12/1/2015	11/30/2016	Sr90	0.5005	0.00758	0.00085	0.228	0.796		9/23/2016 18:14	500

Notes:

1 - Reference date for Spike Activity (dpm/ml) is the batch Prep Date

Alpha Spike S/N : 1493-B
 Spike Exp Date : 6/8/2017
 Spike Activity (dpm/ml): 266.08
 Spike Volume Added: 0.10
 Spike Nuclide: Th-230

Alpha LCS S/N : 1493-B
 LCS Exp Date : 6/8/2017
 LCS Activity (dpm/ml): 266.08
 LCS Volume Added: 0.10
 LCS Nuclide: Th-230

Alpha Results										2 SIGMA		2 SIGMA		2 SIGMA		2 SIGMA		2 SIGMA	
Pos.	Decision Level	Critical Level	Required MDA	MDA	Conc.	Sample Act. Error %	Net Count Rate CPM	Net Count Rate Error CPM	Counting Uncertainty pCi/G	Total Prop. Uncertainty pCi/G	Sample QC	Sample Type	RPD	RER	Nominal pCi/G	Recovery			
1	2.4636	1.7393	4	3.9815	8.8526	18.23%	0.3851	0.0691	3.1805	3.6243		SAMPLE							
2	2.3989	1.6937	4	3.9058	9.1411	17.01%	0.3847	0.0644	3.2700	3.7875		SAMPLE							
3	2.3338	1.6477	4	3.8860	14.1960	13.70%	0.5805	0.0774	3.8848	4.8190		SAMPLE							
4	2.3248	1.6413	4	3.9740	13.6661	15.20%	0.4990	0.0739	4.0049	4.8155		SAMPLE							
5	2.2970	1.6217	4	3.8996	14.8400	14.04%	0.5298	0.0726	4.0490	4.9708		SAMPLE							
6	2.2681	1.6013	4	3.8784	19.1357	12.03%	0.6937	0.0803	4.6065	6.0506		SAMPLE							
7	2.1866	1.5452	4	3.8539	16.6220	14.10%	0.4669	0.0635	4.4335	5.5053		SAMPLE							
8	2.3997	1.6942	4	3.9619	15.2117	13.01%	0.6023	0.0760	3.9888	5.0485		SAMPLE							
9	2.4255	1.7124	4	3.9839	11.8948	15.69%	0.4267	0.0650	3.5640	4.2606		SAMPLE							
10	2.4784	1.7498	4	3.9988	13.7174	13.82%	0.5934	0.0795	3.6311	4.5111		SAMPLE							
11	2.2698	1.6025	4	3.8812	12.9654	15.14%	0.4475	0.0674	3.8735	4.5639		SAMPLE							
12	2.1894	1.5458	4	3.5795	12.2427	14.23%	0.4795	0.0656	3.3453	4.1548		SAMPLE							
13	2.4587	1.7359	4	3.9270	11.8635	14.53%	0.5320	0.0755	3.3670	4.0920		SAMPLE							
14	2.3600	1.6662	4	3.9876	11.7842	16.38%	0.3871	0.0621	3.7249	4.3691		SAMPLE							
15	2.3707	1.6798	4	3.8820	11.7358	15.17%	0.4823	0.0715	3.4944	4.1928		SAMPLE							
16	2.2594	1.5952	4	3.8952	16.8302	13.35%	0.5652	0.0732	4.3811	5.5009		SAMPLE							
17	2.0029	1.4140	4	3.6349	-1.1135	60.00%	-0.0687	0.0411	1.3014	1.3024		MB							
18	2.4765	1.7485	4	3.9176	7.9789	18.68%	0.3655	0.0673	2.9594	3.3533	405245003.1	DUP	56.1%		121.0665	119.6%			
19	2.0588	3.5716	4	8.6186	158.9361	5.76%	5.4267	0.3096	17.9074	34.2631	405245003.1	MS	9.8%		117.5057	110.5%			
20	2.7735	1.9581	4	5.2054	144.0328	6.22%	6.1360	0.3231	16.3410	34.6690	405245003.1	MSD			109.9595	109.6%			
21	2.3019	1.6252	4	4.0076	120.5044	5.55%	8.0053	0.3711	11.0135	25.6922		LCS							

Notes:

1 - Reference date for Spike Activity (dpm/ml) is the batch Prep Date

Beta Spike SIN : 1243-O
 Spike Exp Date : 12/18/2016
 Spike Activity (dpm/ml): 483.29
 Spike Volume Added: 0.10
 Spike Nuclide: Sr-90

Beta LCS SIN : 1243-O
 LCS Exp Date : 12/18/2016
 LCS Activity (dpm/ml): 483.29
 LCS Volume Added: 0.10
 LCS Nuclide: Sr-90

Beta Results		Critical Level		Sample Act.		Sample Act. Error		Net Count		Net Count Error		2 SIGMA Counting		2 SIGMA Total Prop.		Sample QC		Sample Type		RPD RER		Nominal pCi/G		Recovery		
Pos.	Level pCi/G	Level pCi/G	MDA pCi/G	MDA pCi/G	Conc. pCi/G	% Error	Rate CPM	Rate CPM	CPM	Rate Error CPM	CPM	Uncertainty pCi/G	Uncertainty pCi/G	QC	Type	RER	RPD	MS	MSD	MSD	MSD	MSD	MSD	MSD	MSD	
1	1.7866	1.2688	10	2.7253	20.4651	7.30%	2.4034	0.1584	2.6909	0.1584	2.4034	3.9307	3.9307		SAMPLE											
2	1.6467	1.1626	10	2.5046	15.2068	8.30%	1.7307	0.1332	2.3423	0.1332	1.7307	3.1684	3.1684		SAMPLE											
3	2.3020	1.6253	10	3.4468	16.4056	9.09%	1.9772	0.1694	2.8244	0.1694	1.9772	3.6427	3.6427		SAMPLE											
4	1.9291	1.3620	10	2.9504	12.9623	10.22%	1.4837	0.1439	2.5560	0.1439	1.4837	3.1608	3.1608		SAMPLE											
5	1.6292	1.1502	10	2.5070	21.4506	7.46%	2.4469	0.1579	2.7691	0.1579	2.4469	4.1858	4.1858		SAMPLE											
6	1.7713	1.2505	10	2.7108	25.5619	6.79%	2.8626	0.1703	3.0342	0.1703	2.8626	4.7172	4.7172		SAMPLE											
7	1.4740	1.0407	10	2.2895	13.6286	8.76%	1.5789	0.1246	2.3716	0.1246	1.5789	3.2397	3.2397		SAMPLE											
8	2.3617	1.6673	10	3.5282	17.4442	8.94%	1.9791	0.1635	2.8940	0.1635	1.9791	3.8278	3.8278		SAMPLE											
9	1.3387	0.9451	10	2.0703	18.3382	7.33%	2.1300	0.1352	2.3851	0.1352	2.1300	3.6284	3.6284		SAMPLE											
10	2.0077	1.4174	10	3.0210	14.4518	9.27%	1.7311	0.1490	2.5372	0.1490	1.7311	3.2996	3.2996		SAMPLE											
11	2.2407	1.5820	10	3.3771	17.3404	8.33%	1.9358	0.1604	2.9043	0.1604	1.9358	3.6560	3.6560		SAMPLE											
12	2.0487	1.4464	10	3.0585	17.1304	8.53%	1.9875	0.1494	2.5878	0.1494	1.9875	3.6468	3.6468		SAMPLE											
13	1.6508	1.1655	10	2.5044	18.6566	7.37%	2.2033	0.1462	2.4845	0.1462	2.2033	3.6266	3.6266		SAMPLE											
14	1.5880	1.1212	10	2.4465	17.2140	7.88%	1.9043	0.1368	2.5545	0.1368	1.9043	3.5821	3.5821		SAMPLE											
15	1.6803	1.1863	10	2.5540	20.1370	7.17%	2.4203	0.1567	2.5992	0.1567	2.4203	3.8280	3.8280		SAMPLE											
16	1.8421	1.3006	10	2.8123	22.6372	7.26%	2.5223	0.1639	2.9401	0.1639	2.5223	4.3468	4.3468		SAMPLE											
17	3.3040	2.3327	10	5.0835	-2.2247	61.04%	-0.2567	0.1564	2.5643	0.1564	-0.2567	2.5643	2.5643		MB											
18	1.2494	0.8821	10	1.9198	17.1702	6.93%	2.1065	0.1317	2.1421	0.1317	2.1065	3.2050	3.2050	405245003.1	DUP		4.6%						439.7982	104.7%		
19	2.7904	1.9700	10	4.4160	476.9753	2.02%	50.7020	0.9278	17.3102	0.9278	50.7020	62.4055	62.4055	405245003.1	MS								426.8629	98.4%		
20	2.4447	1.7260	10	3.9039	436.2564	3.77%	48.6280	0.9077	16.0798	0.9077	48.6280	63.1053	63.1053	405245003.1	MSD		8.9%						399.4497	113.5%		
21	2.3449	1.6555	10	3.7238	453.2070	3.52%	55.7373	0.9715	15.7208	0.9715	55.7373	64.9367	64.9367		LCS											

SampleID	Instr	Time (min.)	Alpha Counts	Beta Counts	Count Start Time	Count End Time	Machine	Batch ID
405245001	8D	140	85	458	9/26/2016 13:58	9/26/2016 16:18	PIC	1597819
405245002	4D	150	85	367	9/26/2016 13:59	9/26/2016 16:29	PIC	1597819
405245003	1D	130	96	438	9/26/2016 13:59	9/26/2016 16:09	PIC	1597819
405245004	9C	120	75	275	9/26/2016 13:59	9/26/2016 15:59	PIC	1597819
405245005	3D	130	85	400	9/26/2016 13:59	9/26/2016 16:09	PIC	1597819
405245006	1C	130	105	466	9/26/2016 13:59	9/26/2016 16:09	PIC	1597819
405245007	2B	140	76	286	9/26/2016 13:59	9/26/2016 16:19	PIC	1597819
405245008	3B	140	107	470	9/26/2016 13:59	9/26/2016 16:19	PIC	1597819
405245009	2A	150	88	390	9/26/2016 13:59	9/26/2016 16:29	PIC	1597819
405245010	8A	140	115	393	9/26/2016 13:59	9/26/2016 16:19	PIC	1597819
405245011	1B	130	73	397	9/26/2016 13:59	9/26/2016 16:09	PIC	1597819
405245012	9D	160	102	510	9/26/2016 14:04	9/26/2016 16:44	PIC	1597819
405245013	5D	150	117	446	9/26/2016 13:59	9/26/2016 16:29	PIC	1597819
405245014	10B	140	71	345	9/26/2016 14:04	9/26/2016 16:24	PIC	1597819
405245015	5C	140	93	450	9/26/2016 13:59	9/26/2016 16:19	PIC	1597819
405245016	4A	130	87	428	9/26/2016 14:00	9/26/2016 16:10	PIC	1597819
1203625471	4B	60	5	77	9/26/2016 13:58	9/26/2016 14:58	PIC	1597819
1203625472	5B	160	102	418	9/26/2016 13:58	9/26/2016 16:38	PIC	1597819
1203625473	1A	60	343	3093	9/26/2016 13:58	9/26/2016 14:58	PIC	1597819
1203625474	1C	60	375	2961	9/27/2016 10:14	9/27/2016 11:14	PIC	1597819
1203625475	9A	60	494	3392	9/26/2016 13:58	9/26/2016 14:58	PIC	1597819

Continuing Calibration Data

Gas Flow Proportional Counter Checks for 26-Sep-2016

Detectors LB4100 A1 through J4 and PIC 1A through 14D

Short Name	Status	Parmname	Run Time	Count Time	CPM or dec	Low Limit	High Limit	Stdev
LB4100A3	Below	Alpha eff	26-Sep 09:40	5	8817	9142	11120	-3.99
LB4100B2	Above	Beta bkg	26-Sep 06:43	60	2.650	0.992	2.051	+6.39
LB4100B3	need 2nd	Beta bkg	26-Sep 06:43	60	1.767	0.965	1.943	+1.92
LB4100C1	need 2nd	Alpha bkg	26-Sep 07:20	60	0.267	0.149	0.367	+0.24
LB4100C3	Below	Alpha eff	26-Sep 11:05	5	5767	6624	9128	-5.05
LB4100C3	Above	Alpha XTalk	26-Sep 11:05	5	0.422	0.248	0.368	+5.68
LB4100C4	Above	Beta bkg	26-Sep 07:20	60	13.950	0.686	2.113	+52.75
LB4100E1	Above	Beta bkg	26-Sep 06:43	60	9.667	0.637	2.392	+27.87
LB4100E2	Above	Beta bkg	26-Sep 06:43	60	2.900	1.061	2.316	+5.79
LB4100E3	Above	Beta bkg	26-Sep 06:43	60	3.367	0.463	2.359	+6.19
LB4100E4	Above	Beta bkg	26-Sep 06:43	60	2.317	0.650	2.302	+3.05
LB4100F1	Below	Alpha eff	26-Sep 07:45	5	10513	10840	11730	-5.21
LB4100F1	Above	Alpha XTalk	26-Sep 07:45	5	0.266	0.224	0.265	+3.14
LB4100F2	Below	Beta eff	26-Sep 10:15	5	18371	18400	19480	-3.16
LB4100H2	Above	Beta bkg	26-Sep 08:02	60	1.750	0.650	1.491	+4.85
LB4100H4	Below	Alpha eff	26-Sep 07:52	5	10619	11490	13890	-5.18
LB4100H4	Above	Alpha XTalk	26-Sep 07:52	5	0.411	0.307	0.379	+5.68
LB4100H4	Below	Beta eff	26-Sep 07:45	5	34161	35210	36600	-7.53
LB4100I3	Above	Beta bkg	26-Sep 08:21	60	2.400	0.091	2.093	+3.92
LB4100I3	Below	Beta eff	26-Sep 07:59	5	17142	17160	17920	-3.14
LB4100I4	Below	Alpha eff	26-Sep 08:09	5	11615	12310	13620	-6.18
LB4100I4	Below	Alpha XTalk	26-Sep 08:09	5	0.187	0.189	0.219	-3.22
LB4100I4	Below	Beta bkg	26-Sep 06:44	60	0.883	0.958	1.734	-3.58
LB4100I4	need 2nd	Beta eff	26-Sep 07:59	5	20442	20380	21610	-2.70
PIC3A	Above	Alpha XTalk	26-Sep 11:15	5	0.267	0.240	0.267	+3.03
PIC3A	Below	Beta XTalk	26-Sep 06:38	5	9.65E-4	0.011	0.029	-6.55
PIC10A	Below	Alpha eff	26-Sep 11:14	5	8812	8854	10610	-3.14

PIC10D	Below	Alpha eff	26-Sep 10:10	5	11812	15350	16570	-20.40
PIC10D	Above	Alpha XTalk	26-Sep 10:10	5	0.771	0.303	0.427	+19.62
PIC10D	Below	Beta eff	26-Sep 07:11	5	31169	40190	43320	-20.29
PIC12B	Above	Alpha bkg	26-Sep 08:56	60	0.317	5.80E-4	0.380	+2.00
PIC12C	Above	Alpha bkg	26-Sep 07:21	60	0.683	0.010	0.413	+7.03

INSTRUMENTS NOT LISTED HAVE PASSED ALL QUALITY ASSURANCE PARAMETERS

The following detectors may not have properly transferred to the LIMS system

LB4100D1	Alpha bkg, Alpha eff, Alpha XTalk, Beta bkg, Beta eff, Beta XTalk
LB4100D2	Alpha bkg, Alpha eff, Alpha XTalk, Beta bkg, Beta eff, Beta XTalk
LB4100D3	Alpha bkg, Alpha eff, Alpha XTalk, Beta bkg, Beta eff, Beta XTalk
LB4100D4	Alpha bkg, Alpha eff, Alpha XTalk, Beta bkg, Beta eff, Beta XTalk
PIC6D	Alpha bkg, Alpha eff, Alpha XTalk, Beta bkg, Beta eff, Beta XTalk
PIC13C	Alpha bkg, Alpha eff, Alpha XTalk, Beta bkg, Beta eff, Beta XTalk

Reviewed by *RJSt*

Date 9/26/16

GEL Laboratories LLC

Gas Flow Proportional Counter Checks for 27-Sep-2016

Detectors LB4100 A1 through J4 and PIC 1A through 14D

Short Name	Status	Parmname	Run Time	Count Time	CPM or dec	Low Limit	High Limit	Stdev
LB4100A3	Below	Alpha eff	27-Sep 06:17	5	8876	9142	11120	-3.81
LB4100B2	need 2nd	Beta bkg	27-Sep 05:03	60	1.917	0.992	2.051	+2.24
LB4100B3	Above	Alpha bkg	27-Sep 05:03	60	0.383	0.121	0.383	+3.00
LB4100C3	Below	Alpha eff	27-Sep 06:46	5	5995	6624	9128	-4.51
LB4100C3	Above	Alpha XTalk	27-Sep 06:46	5	0.416	0.248	0.368	+5.36
LB4100C4	Above	Beta bkg	27-Sep 05:06	60	13.633	0.686	2.113	+51.42
LB4100E1	Above	Beta bkg	27-Sep 05:03	60	8.733	0.637	2.392	+24.68
LB4100E2	Above	Beta bkg	27-Sep 05:03	60	3.217	1.061	2.316	+7.31
LB4100E3	Above	Alpha bkg	27-Sep 05:03	60	0.350	-8.16E-2	0.346	+3.05
LB4100E3	Above	Beta bkg	27-Sep 05:03	60	3.983	0.463	2.359	+8.14
LB4100E4	Above	Beta bkg	27-Sep 05:03	60	2.417	0.650	2.302	+3.42
LB4100F1	Below	Alpha eff	27-Sep 06:59	5	10464	10840	11730	-5.53
LB4100F1	Above	Alpha XTalk	27-Sep 06:59	5	0.268	0.224	0.265	+3.42
LB4100H4	Below	Alpha eff	27-Sep 06:24	5	10622	11490	13890	-5.17
LB4100H4	Above	Alpha XTalk	27-Sep 06:24	5	0.418	0.307	0.379	+6.23
LB4100H4	Below	Beta eff	27-Sep 06:31	5	34394	35210	36600	-6.52
LB4100I3	Above	Beta bkg	27-Sep 05:03	60	2.450	0.091	2.093	+4.07
LB4100I3	Below	Beta eff	27-Sep 06:17	5	17122	17160	17920	-3.30
LB4100I4	Below	Alpha eff	27-Sep 06:10	5	11565	12310	13620	-6.41
LB4100I4	need 2nd	Alpha XTalk	27-Sep 06:10	5	0.191	0.189	0.219	-2.52
LB4100I4	Below	Beta bkg	27-Sep 05:03	60	0.767	0.958	1.734	-4.48
LB4100I4	Below	Beta eff	27-Sep 06:17	5	20345	20380	21610	-3.17
PIC3A	need 2nd	Alpha XTalk	27-Sep 05:09	5	0.265	0.240	0.267	+2.75
PIC3A	Below	Beta XTalk	27-Sep 05:03	5	0.001	0.011	0.029	-6.40
PIC3D	Above	Alpha bkg	27-Sep 06:30	60	0.317	-6.75E-2	0.338	+2.69
PIC5B	Above	Alpha bkg	27-Sep 06:38	60	0.383	0.107	0.374	+3.22
PIC5C	Above	Alpha bkg	27-Sep 06:39	60	0.350	-1.81E-2	0.382	+2.52
PIC7D	Above	Alpha bkg	27-Sep 07:40	60	0.383	-1.11E-2	0.349	+3.58

PIC10A	need 2nd	Alpha eff	27-Sep 05:27	5	8986	8854	10610	-2.55
PIC10A	Below	Beta eff	27-Sep 05:34	5	44152	44740	53240	-3.42
PIC10D	Below	Alpha eff	27-Sep 05:27	5	11828	15350	16570	-20.32
PIC10D	Above	Alpha XTalk	27-Sep 05:27	5	0.771	0.303	0.427	+19.62
PIC10D	Below	Beta eff	27-Sep 05:34	5	31335	40190	43320	-19.97
PIC11A	Above	Alpha bkg	27-Sep 07:01	60	0.383	0.029	0.365	+3.34
PIC12A	Above	Alpha bkg	27-Sep 07:02	60	0.333	0.067	0.379	+2.12
PIC12C	need 2nd	Alpha bkg	27-Sep 05:51	60	0.283	0.010	0.413	+1.07
PIC12C	need 2nd	Beta bkg	27-Sep 05:51	60	0.917	-3.86E-2	2.074	-0.29

INSTRUMENTS NOT LISTED HAVE PASSED ALL QUALITY ASSURANCE PARAMETERS

The following detectors may not have properly transferred to the LIMS system

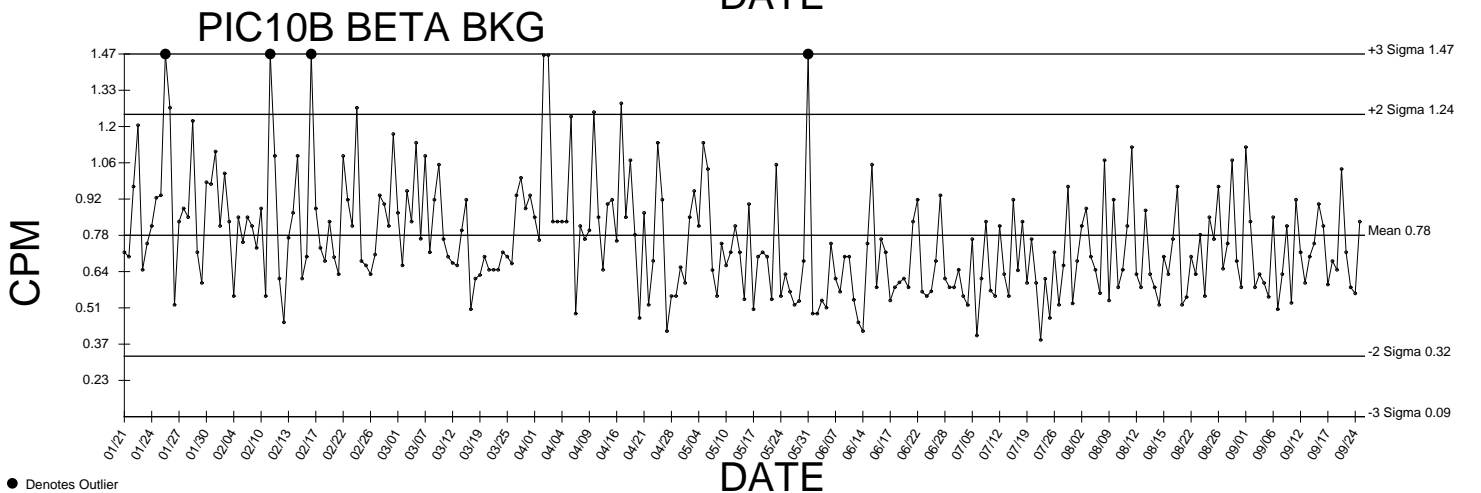
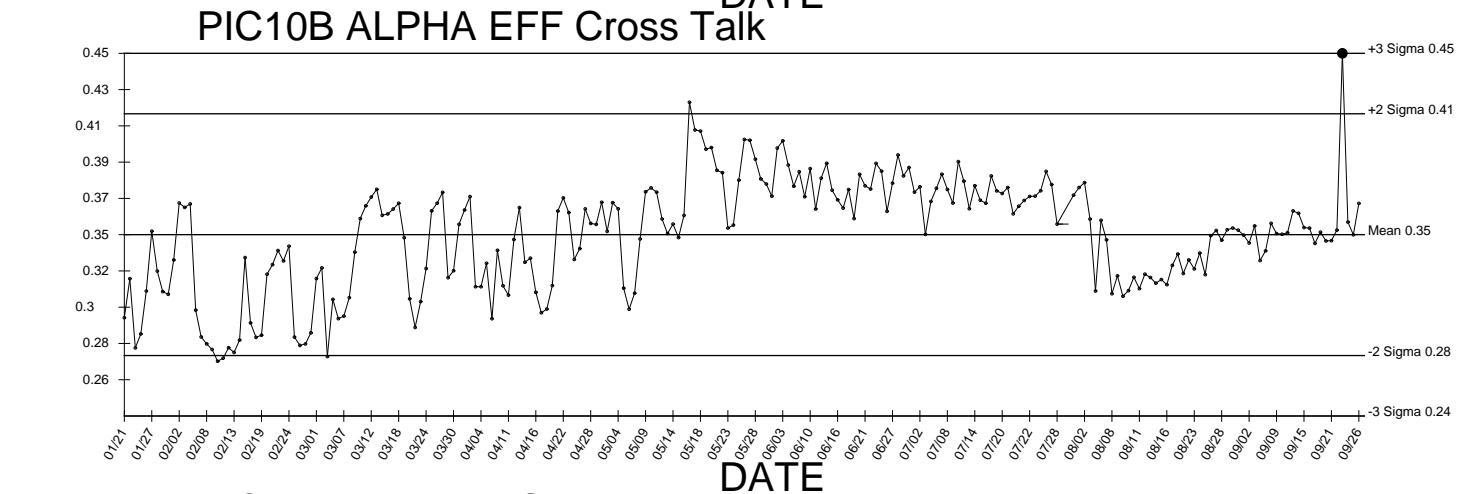
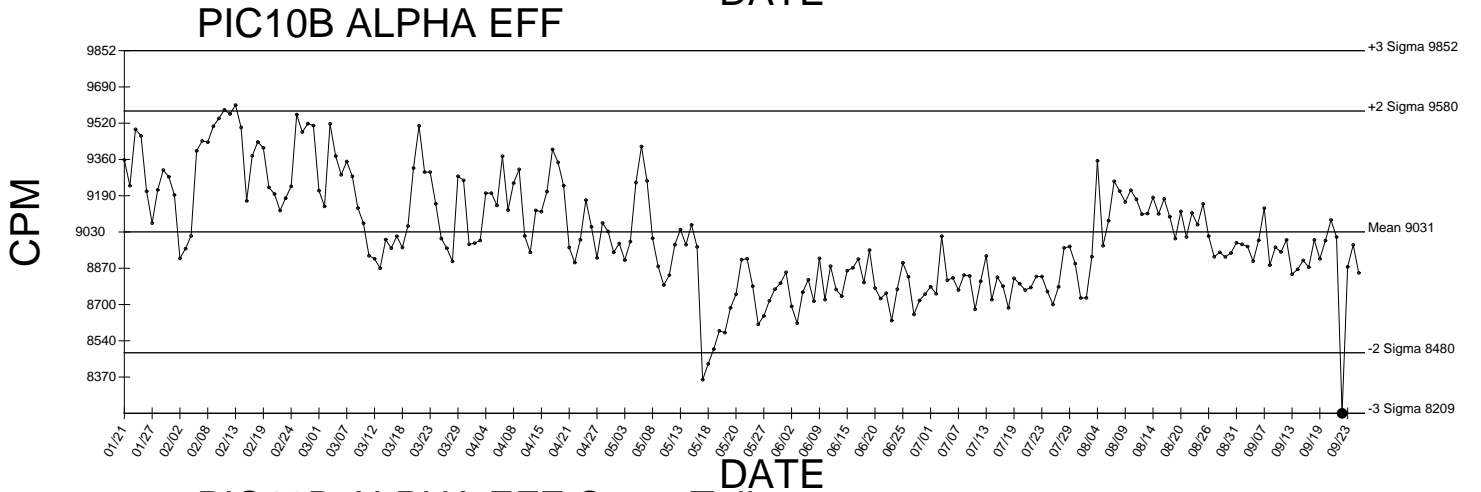
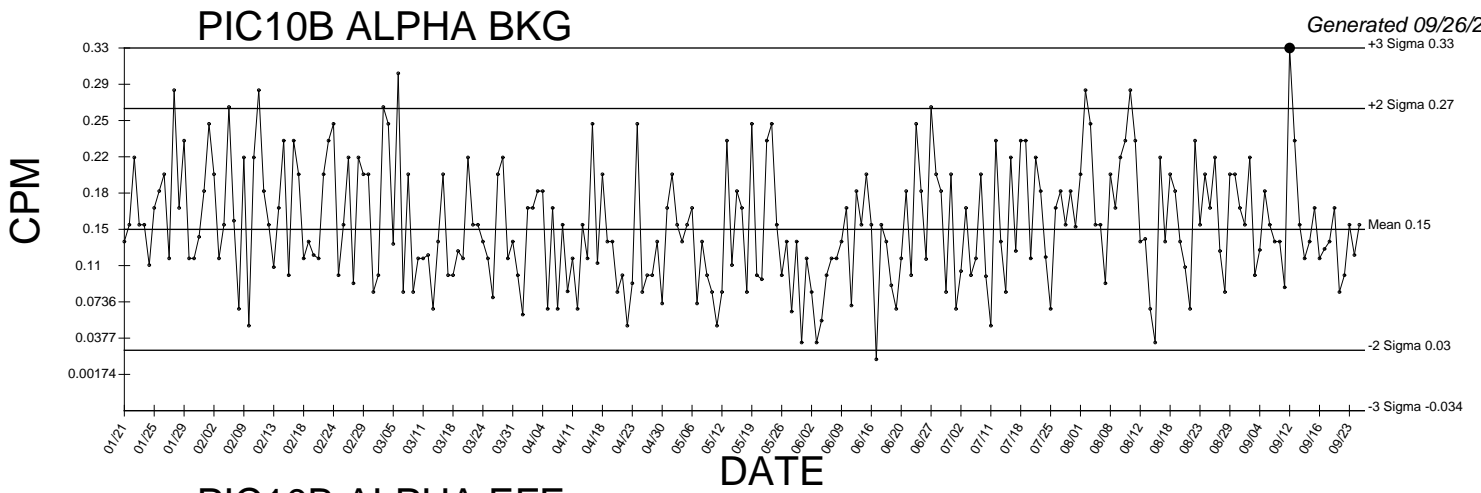
LB4100D1	Alpha bkg, Alpha eff, Alpha XTalk, Beta bkg, Beta eff, Beta XTalk
LB4100D2	Alpha bkg, Alpha eff, Alpha XTalk, Beta bkg, Beta eff, Beta XTalk
LB4100D3	Alpha bkg, Alpha eff, Alpha XTalk, Beta bkg, Beta eff, Beta XTalk
LB4100D4	Alpha bkg, Alpha eff, Alpha XTalk, Beta bkg, Beta eff, Beta XTalk
PIC6D	Alpha bkg, Alpha eff, Alpha XTalk, Beta bkg, Beta eff, Beta XTalk
PIC13C	Alpha bkg, Alpha eff, Alpha XTalk, Beta bkg, Beta eff, Beta XTalk

Reviewed by R. David Hannan

Date 9-27-16

GEL Laboratories LLC

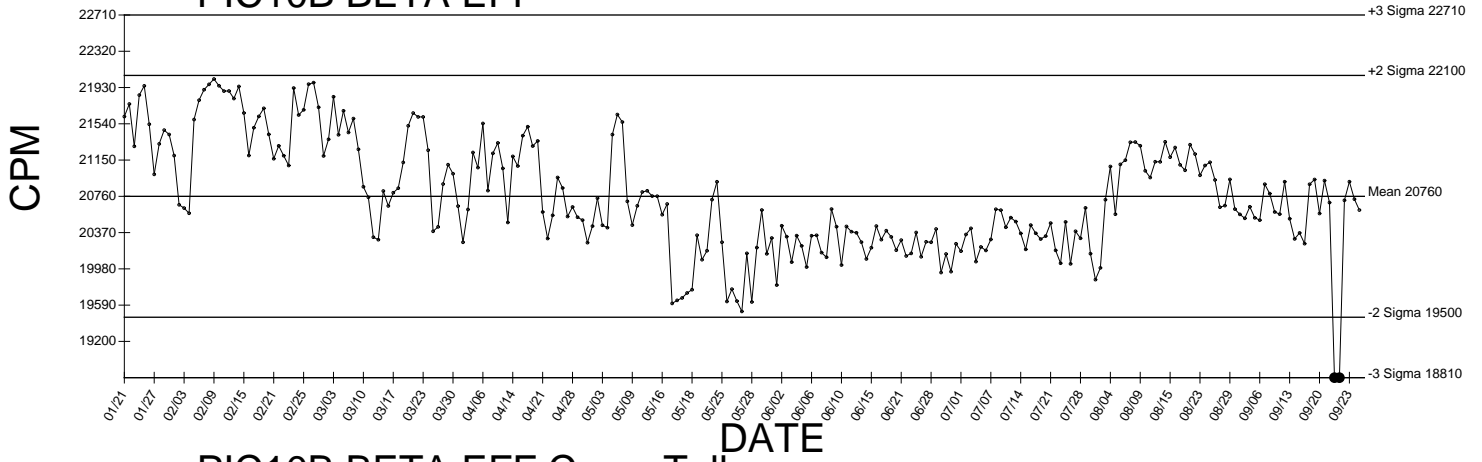
Background and Efficiency Data



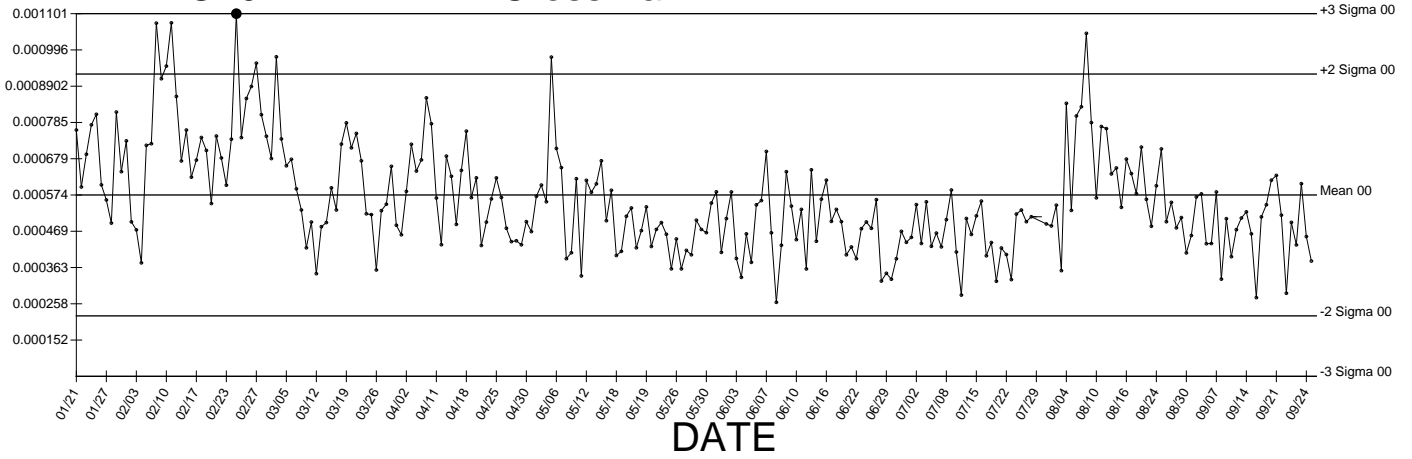
● Denotes Outlier

PIC10B BETA EFF

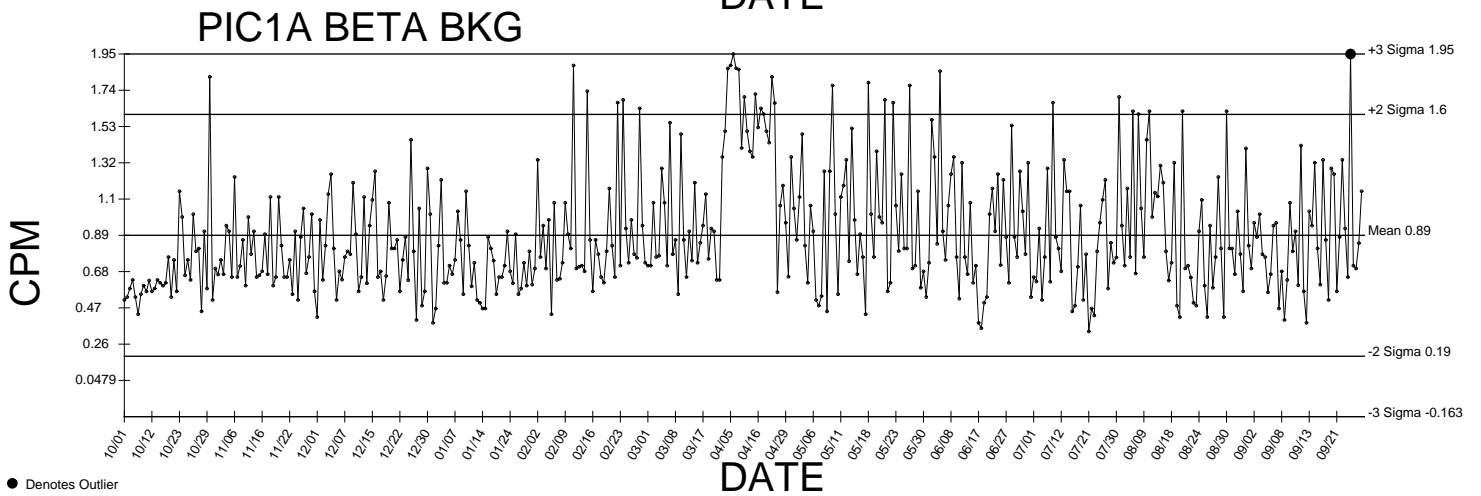
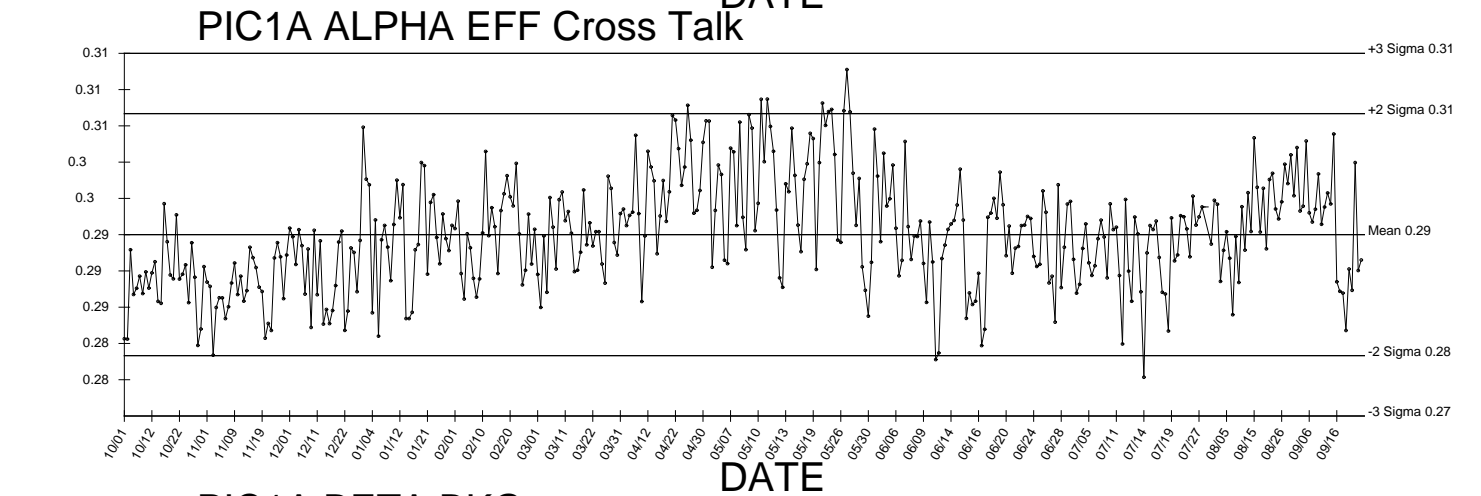
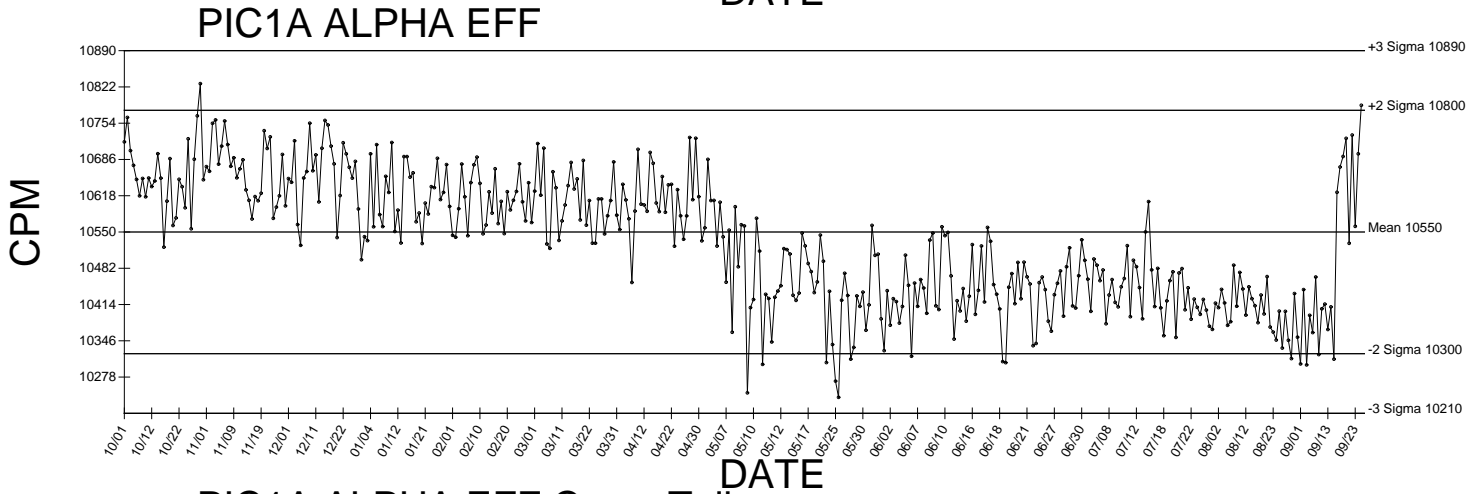
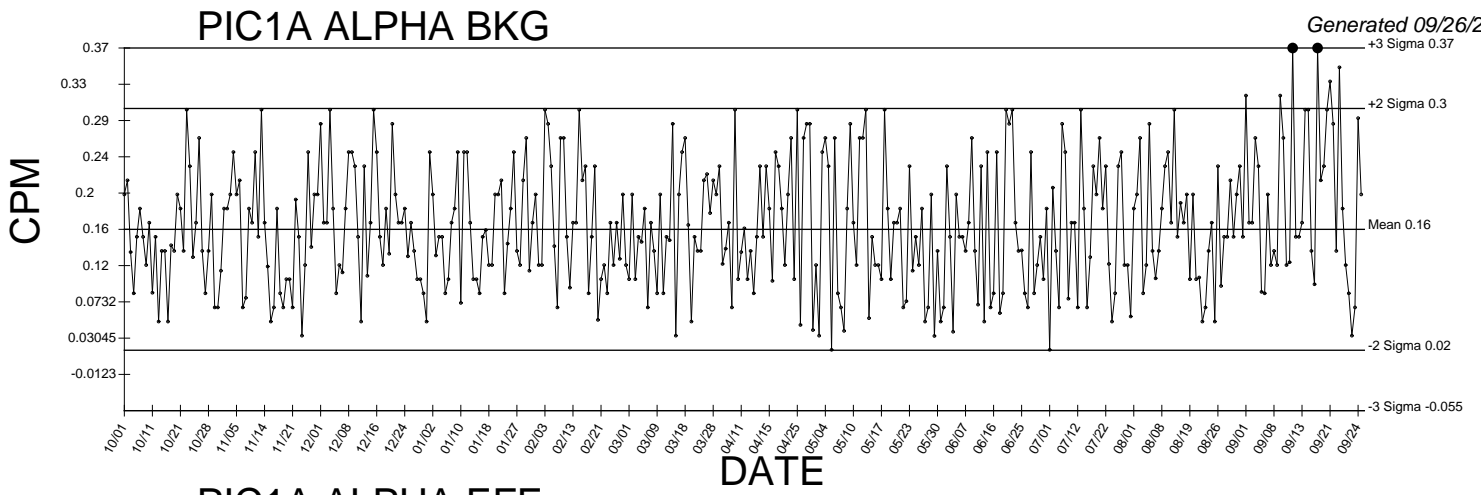
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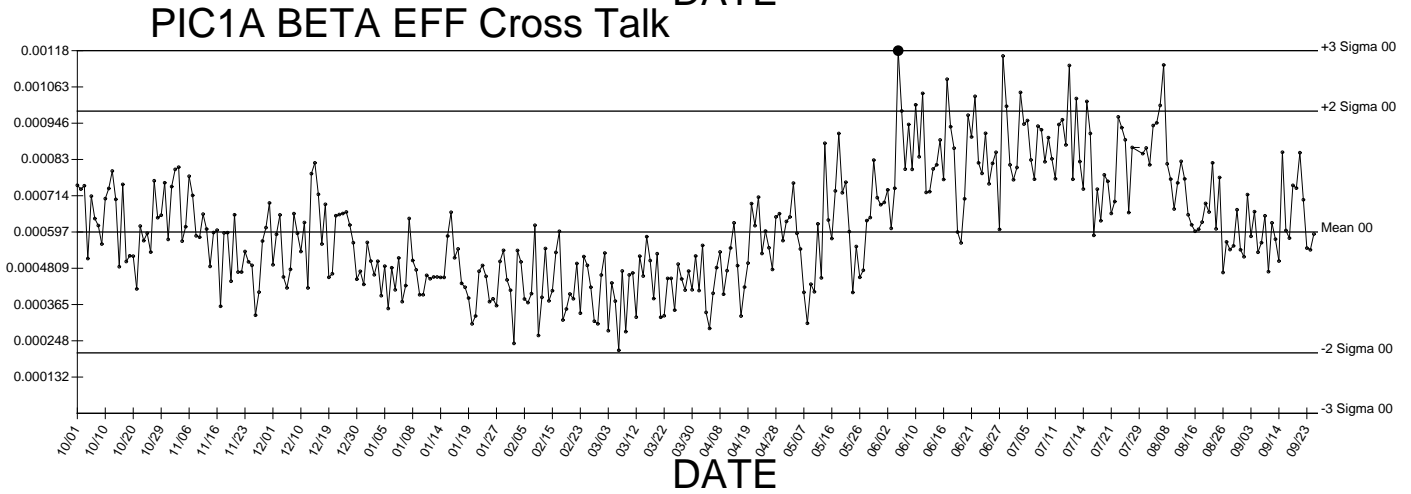
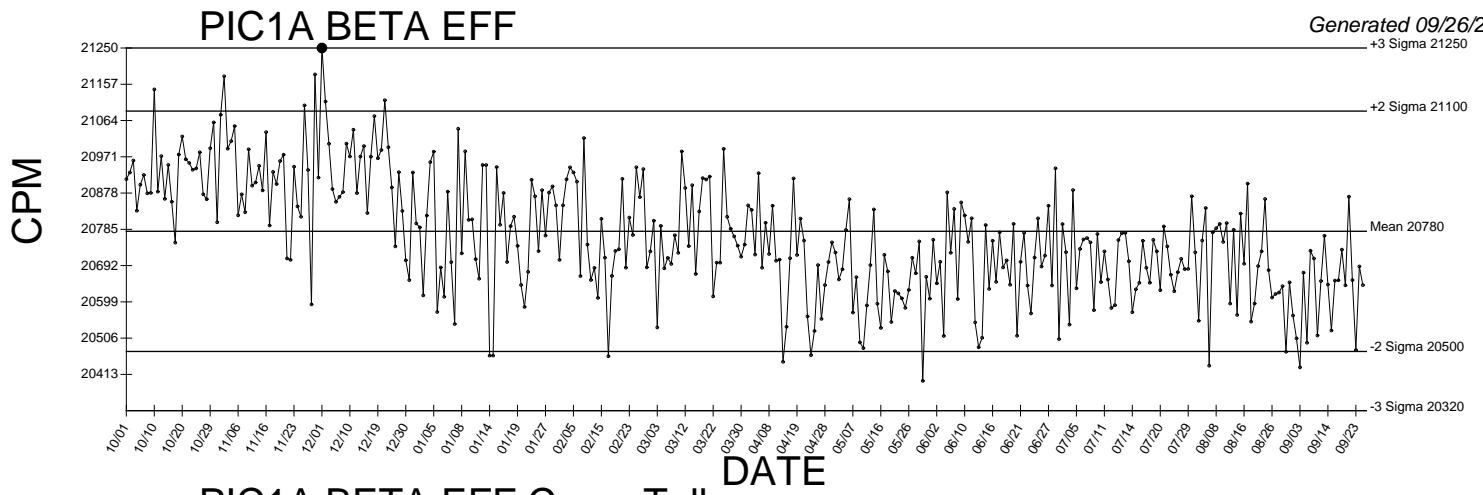
PIC10B BETA EFF Cross Talk



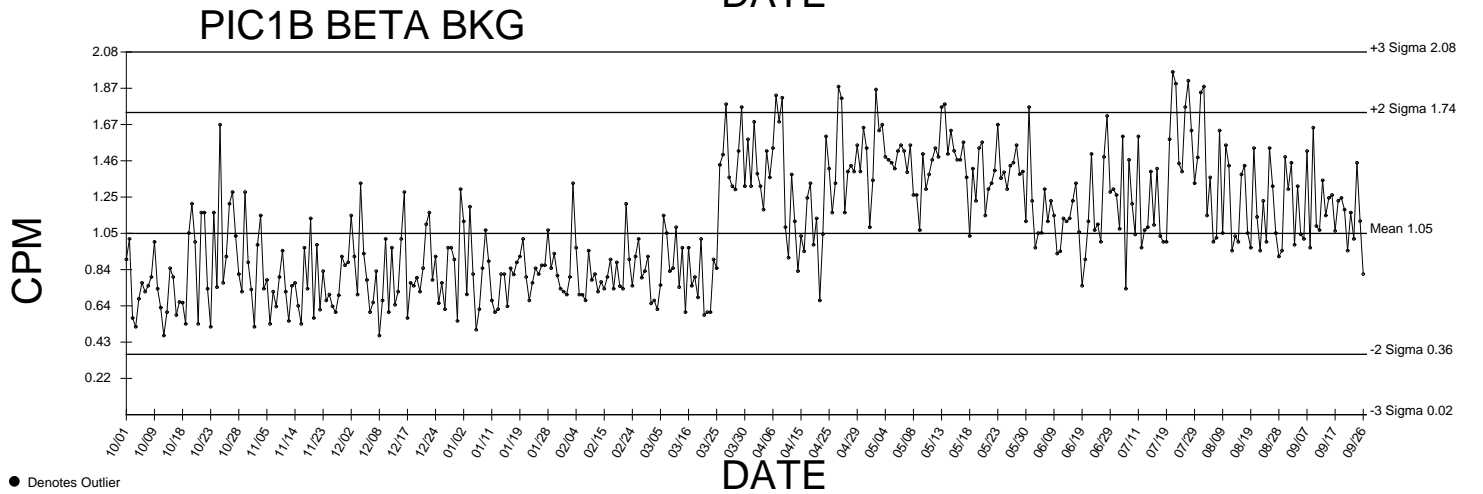
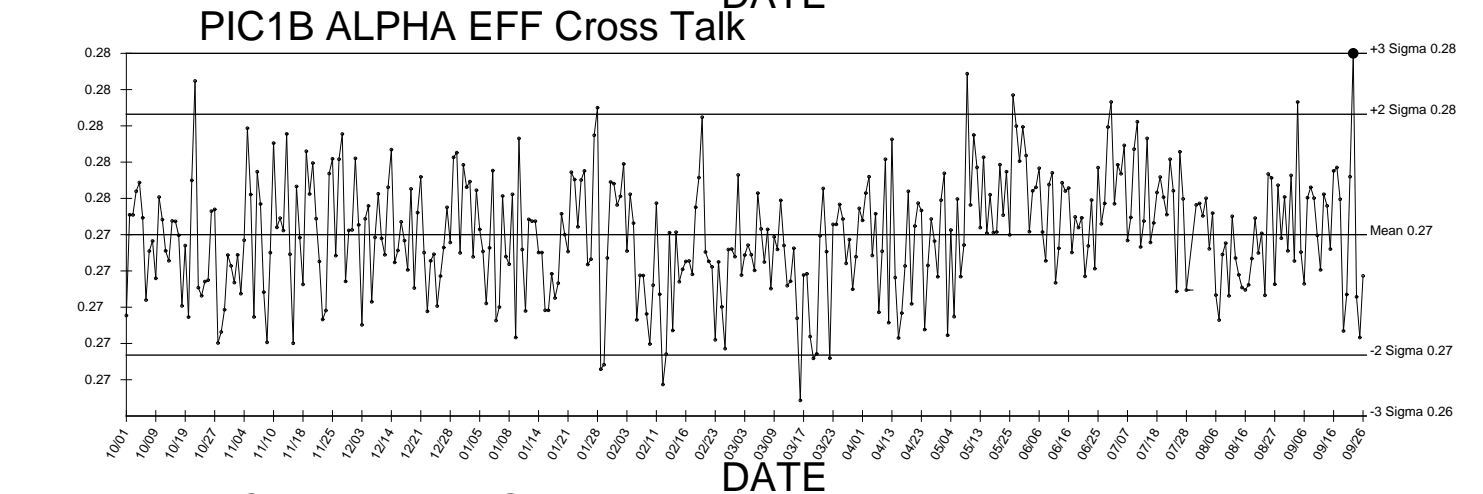
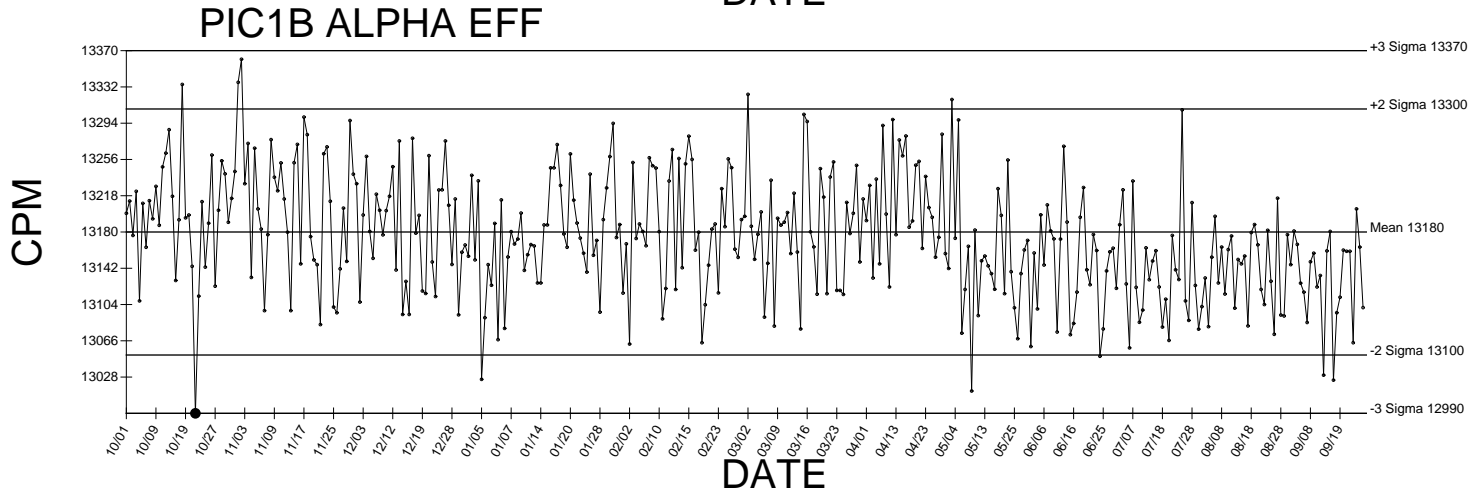
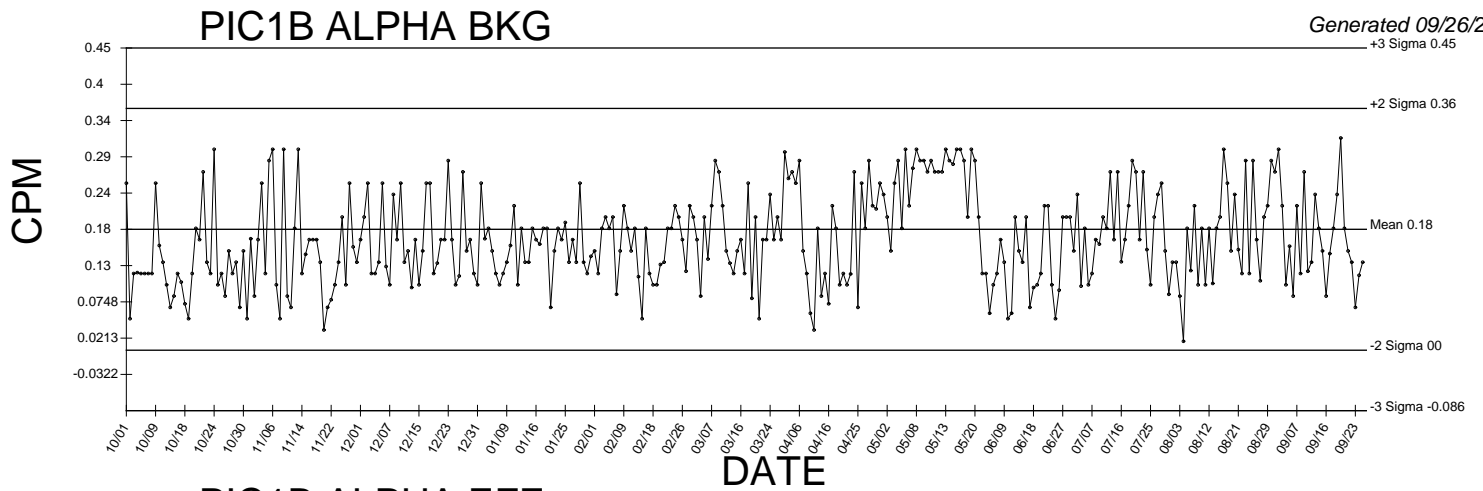
● Denotes Outlier



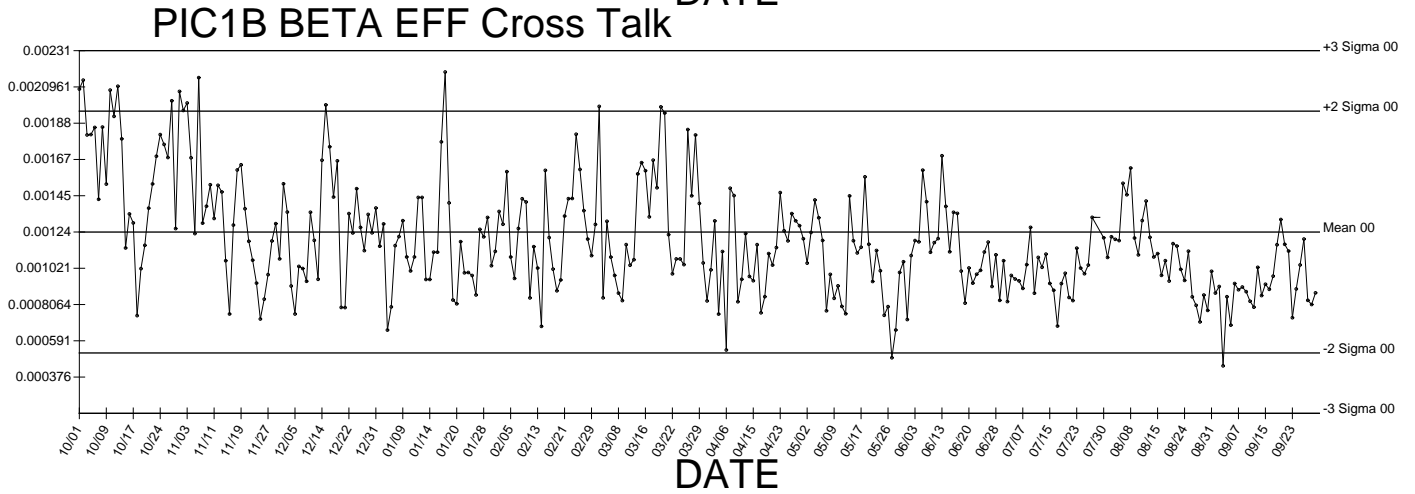
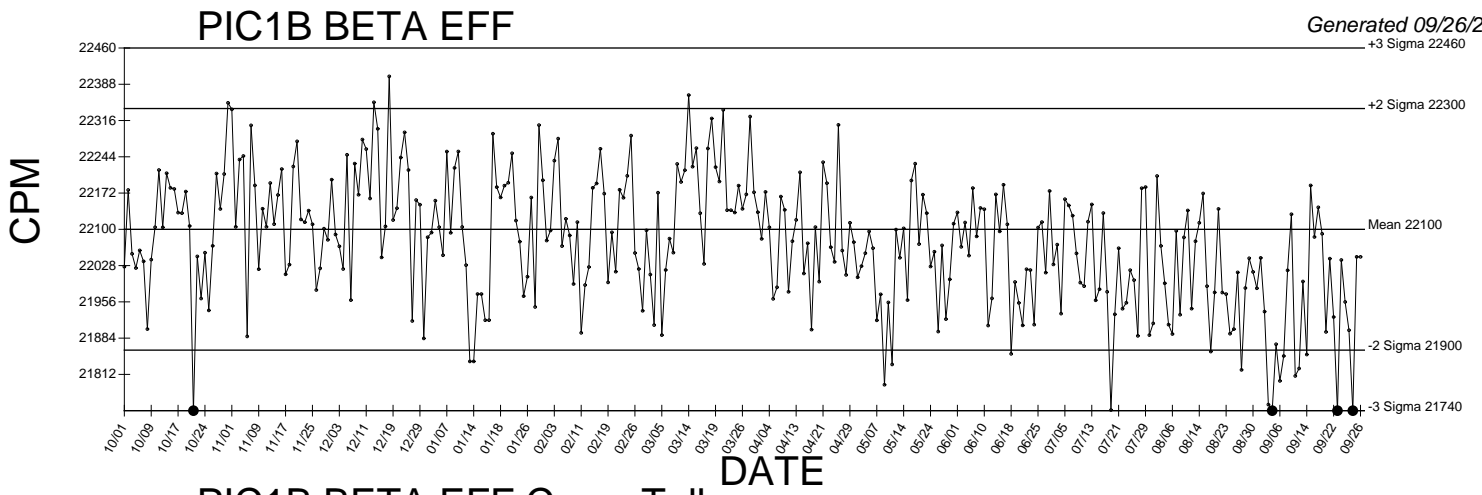
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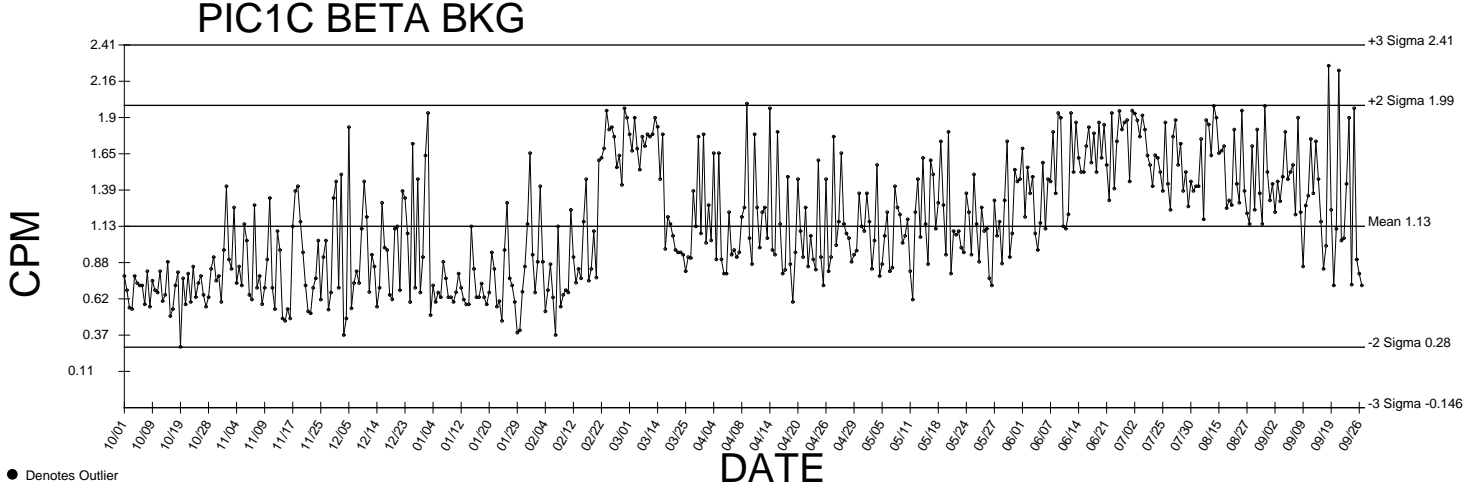
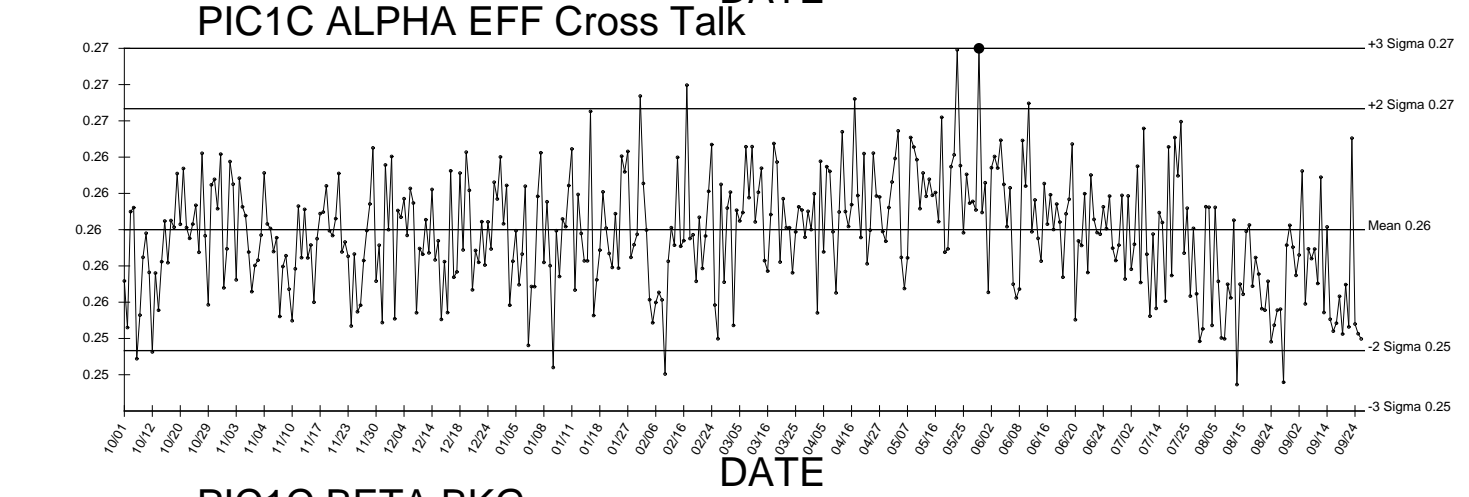
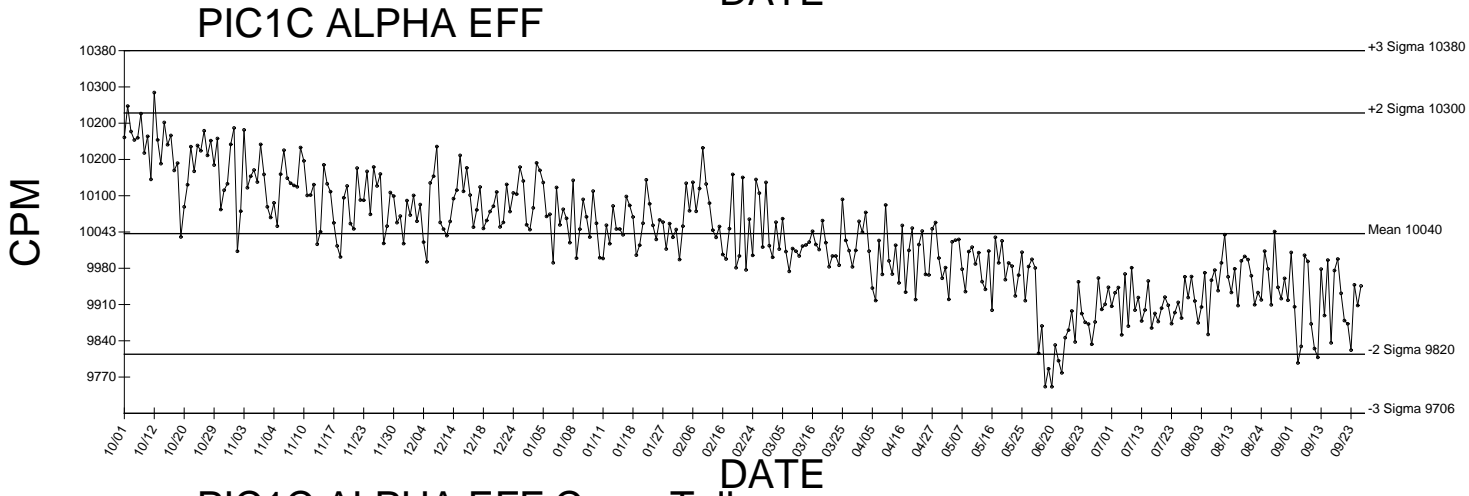
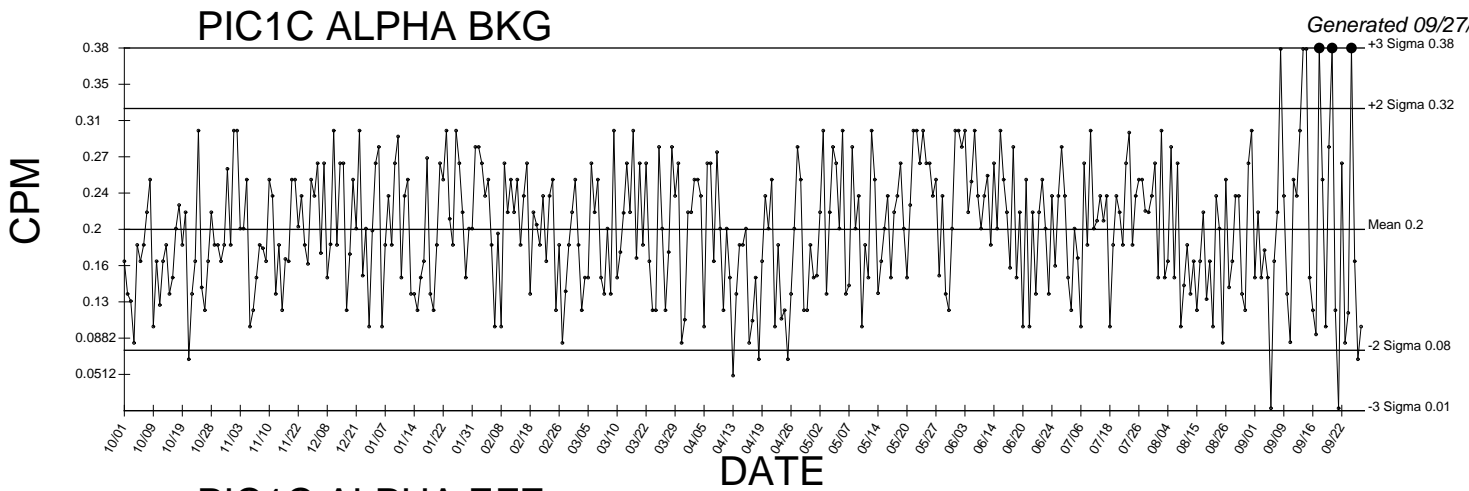
● Denotes Outlier



● Denotes Outlier



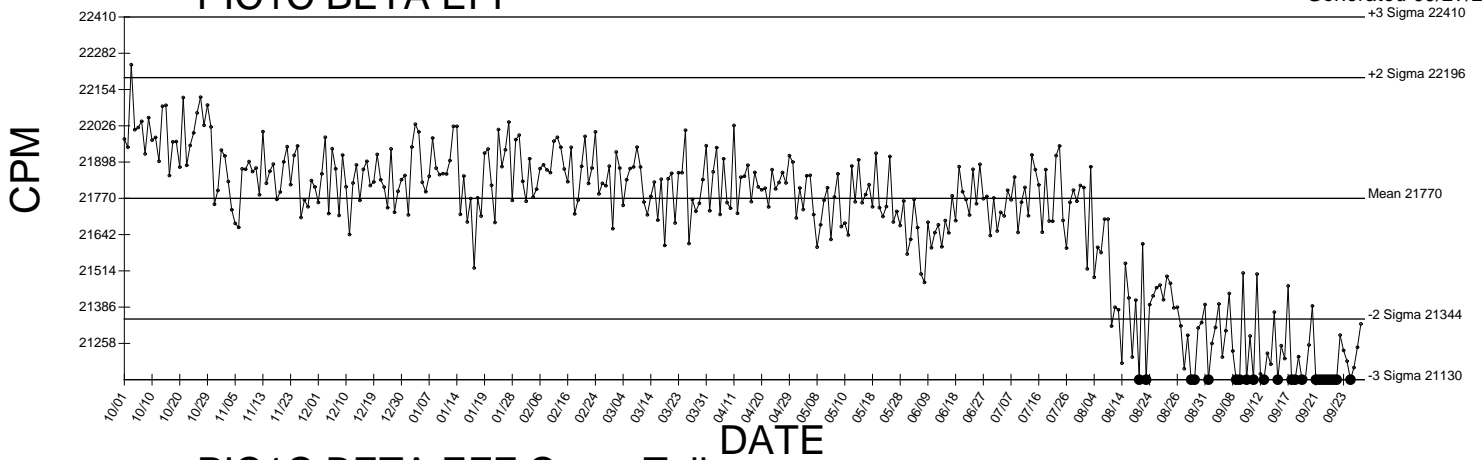
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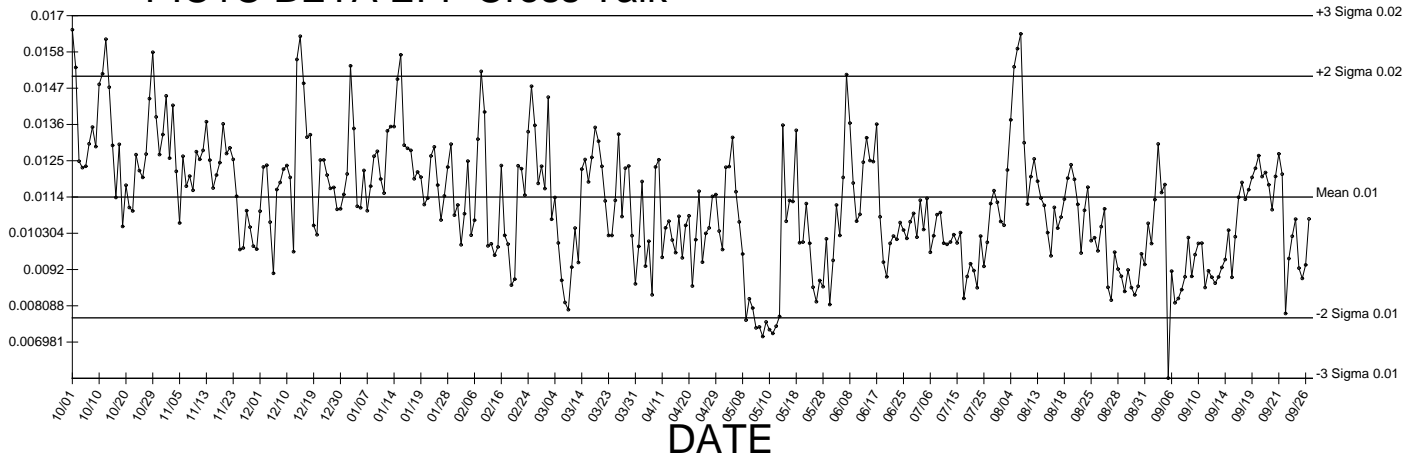
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PIC1C BETA EFF

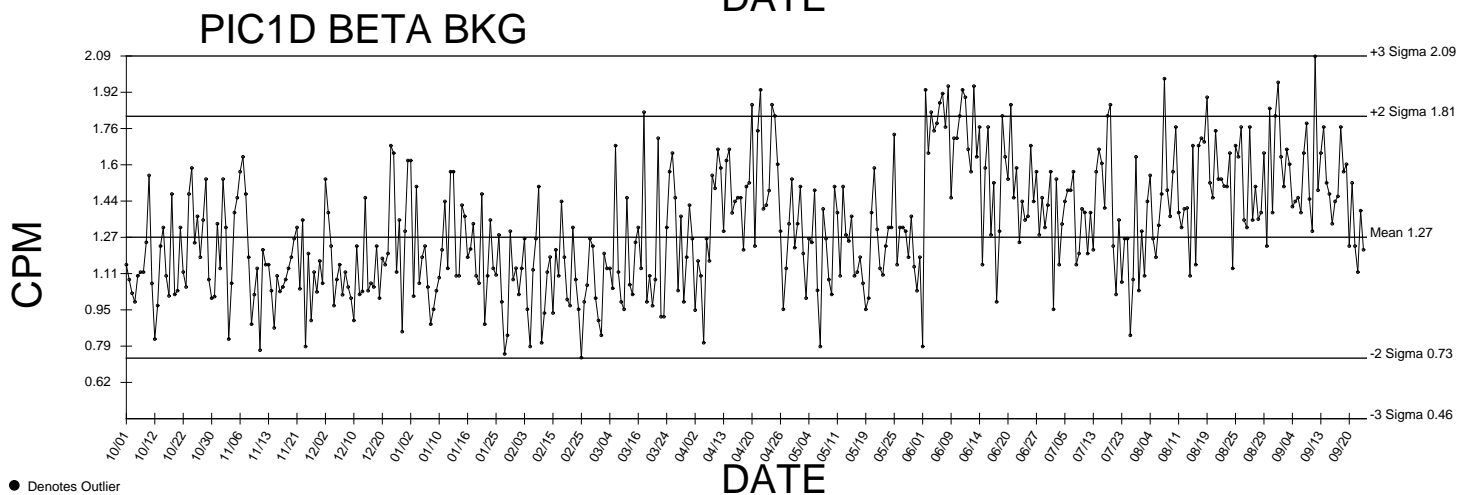
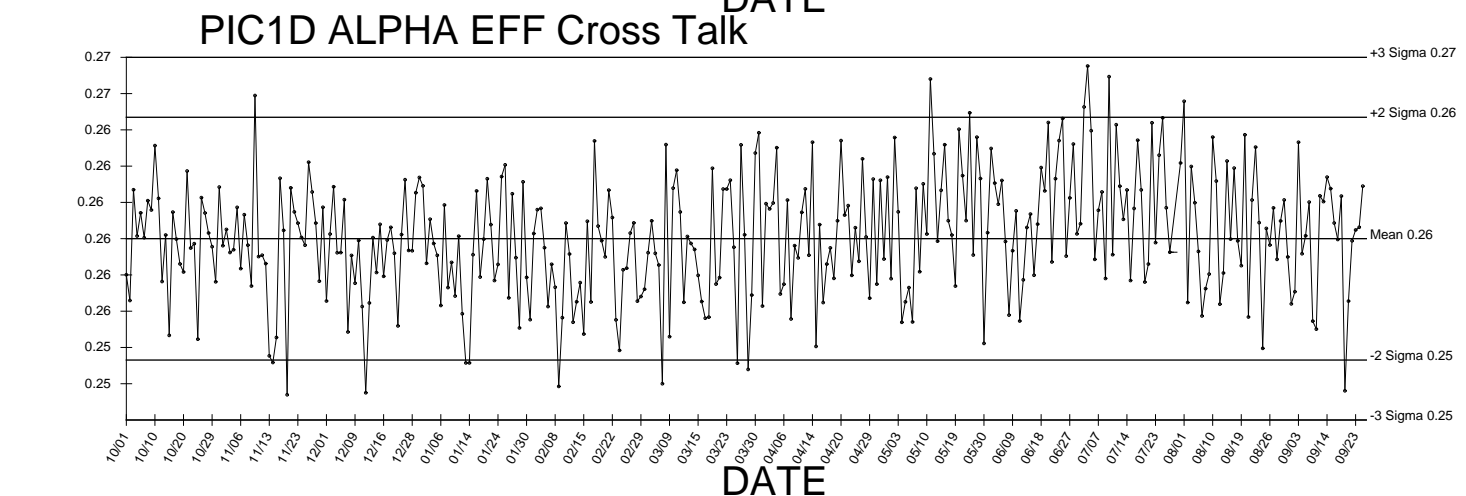
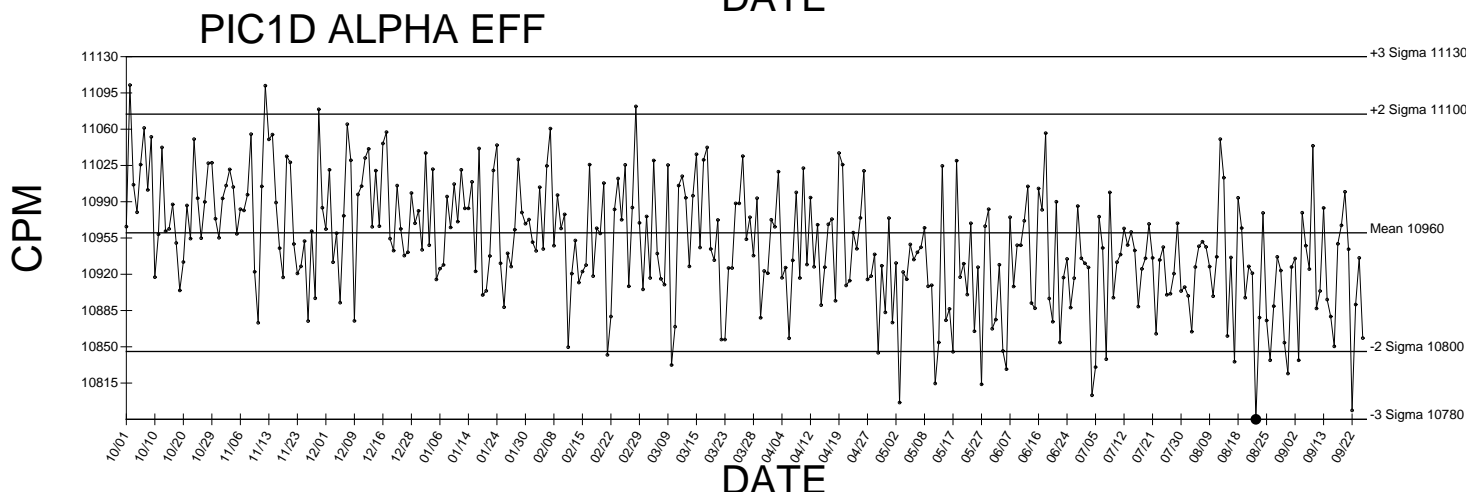
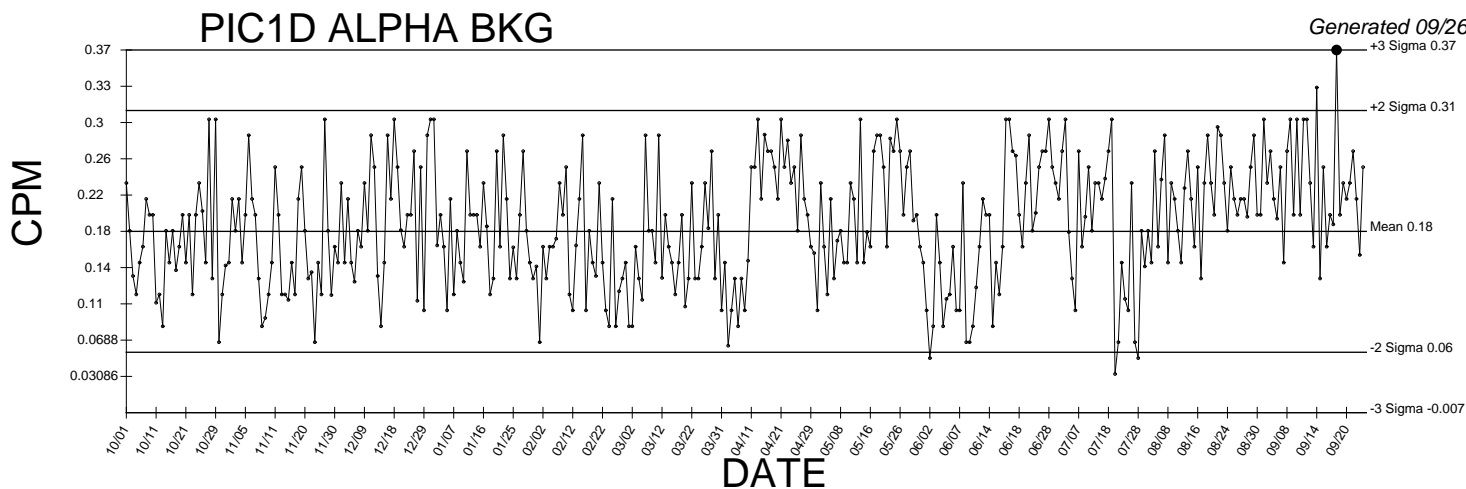
Generated 09/27/2016



PIC1C BETA EFF Cross Talk



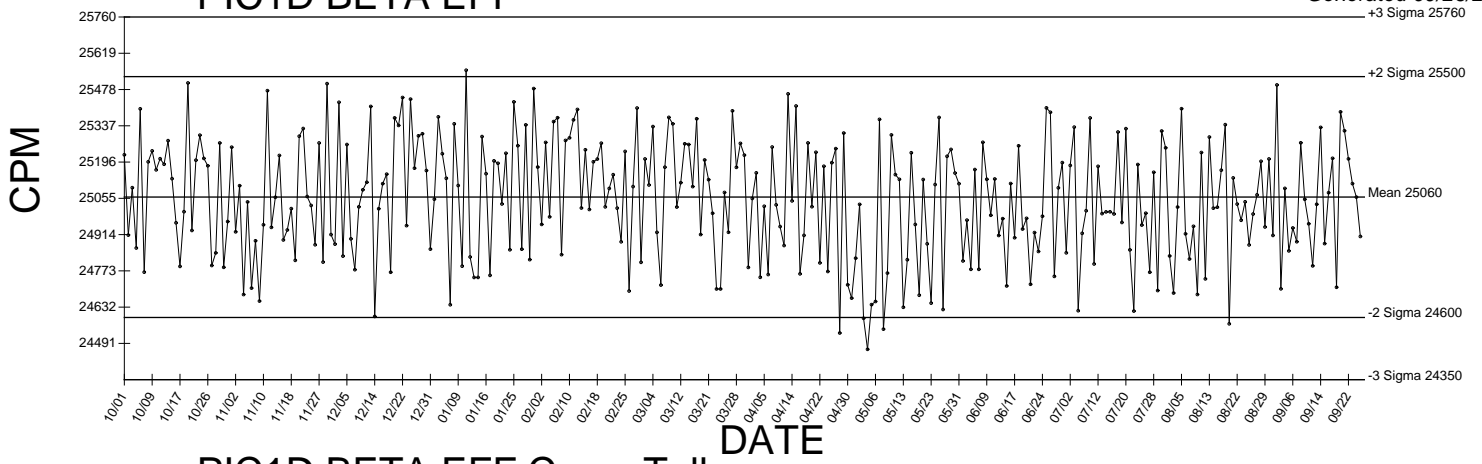
● Denotes Outlier



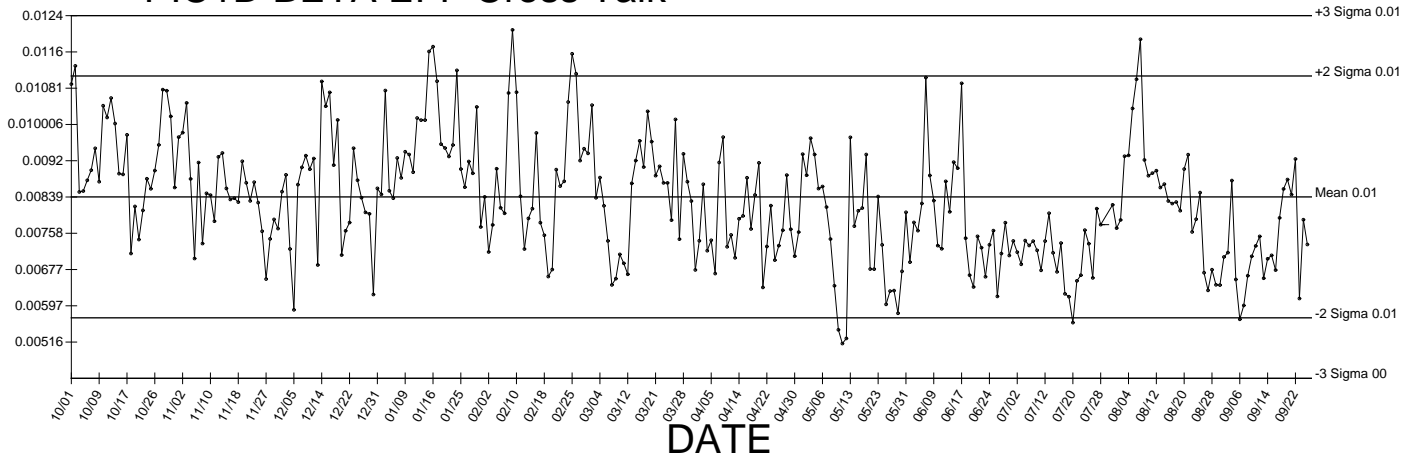
● Denotes Outlier

PIC1D BETA EFF

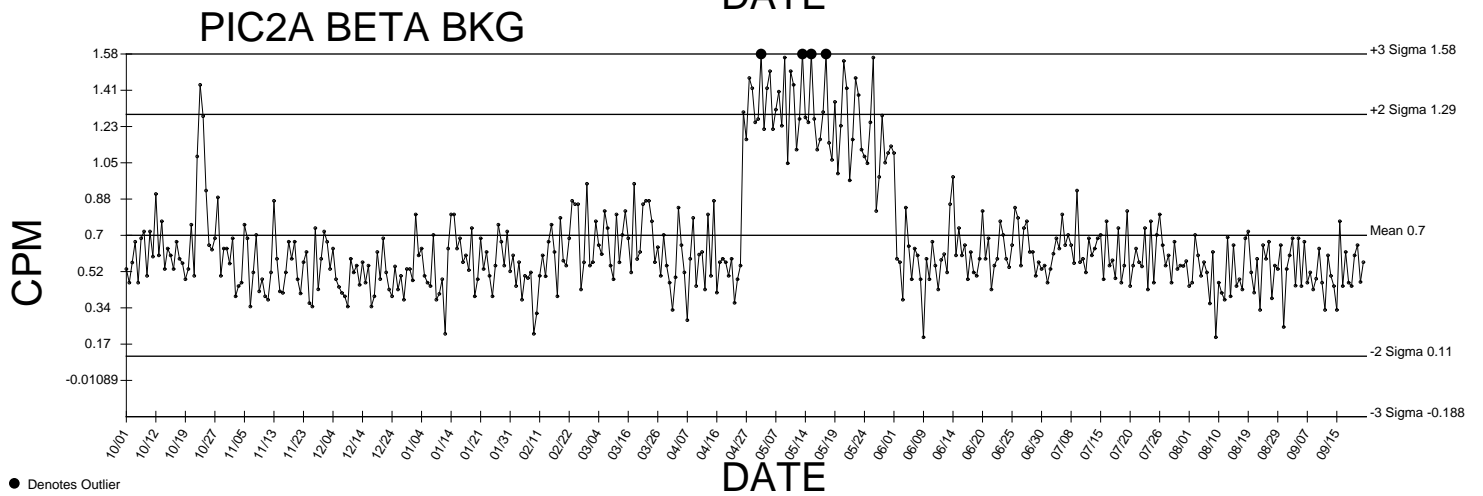
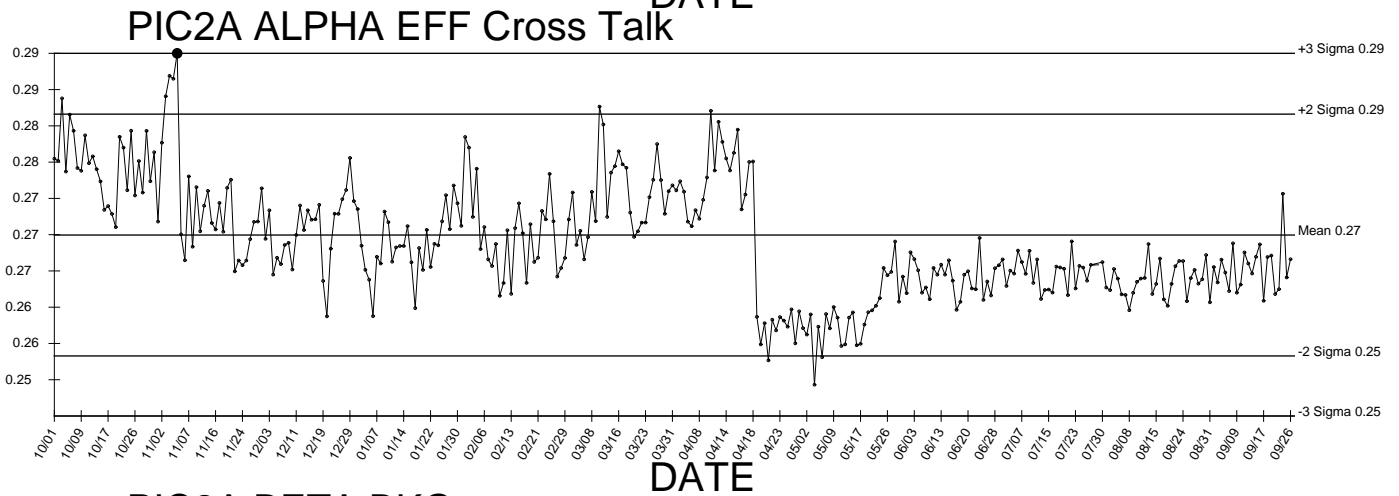
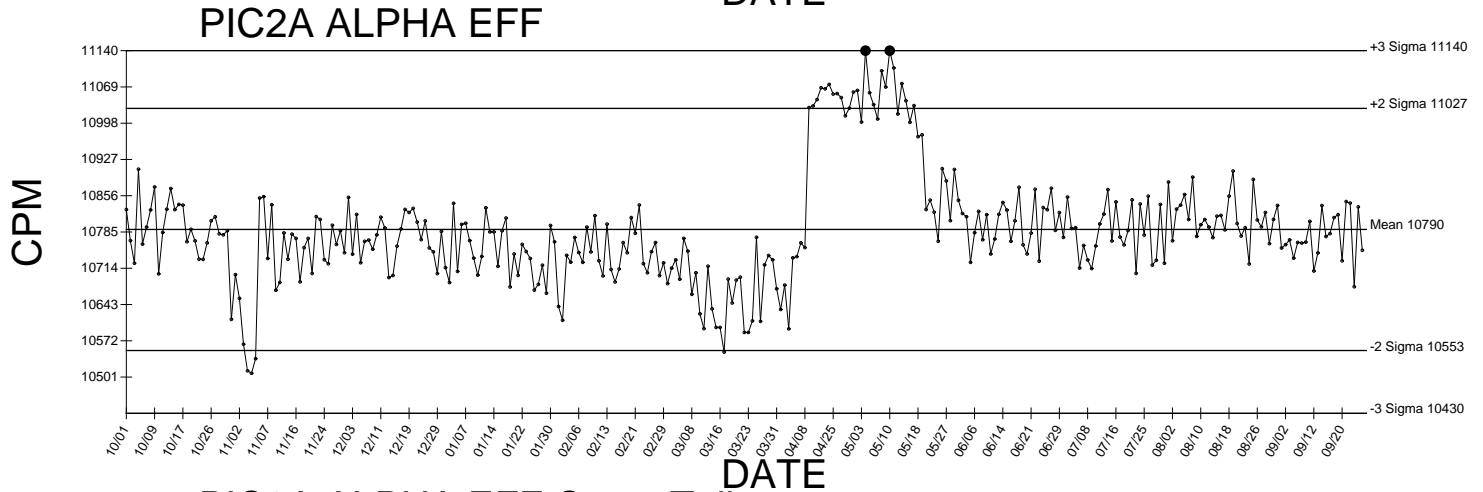
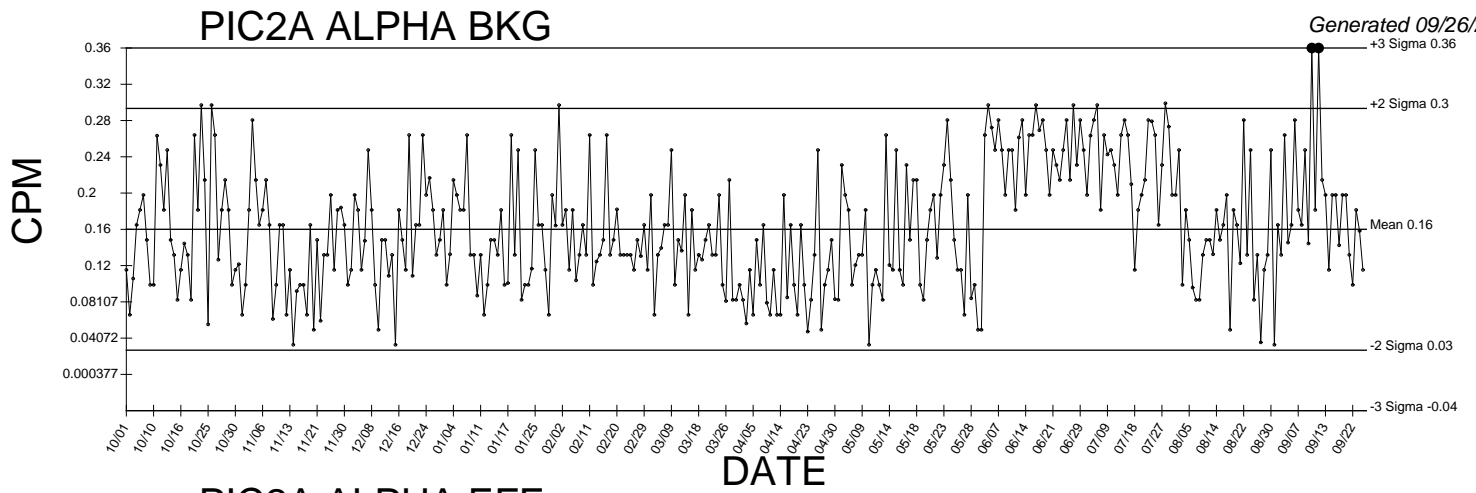
Generated 09/26/2016



PIC1D BETA EFF Cross Talk



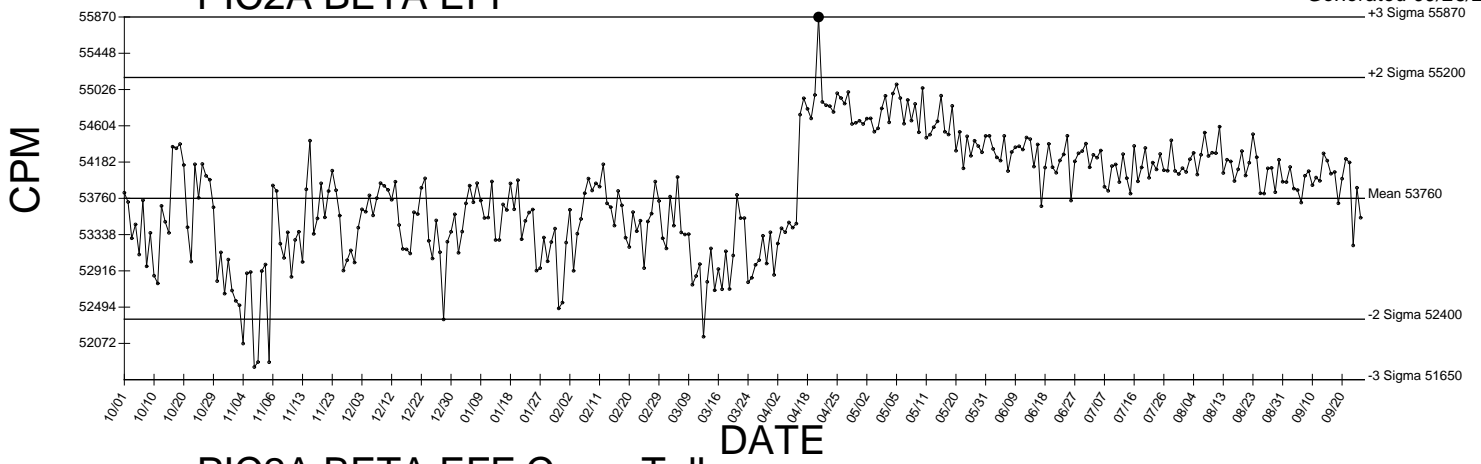
● Denotes Outlier



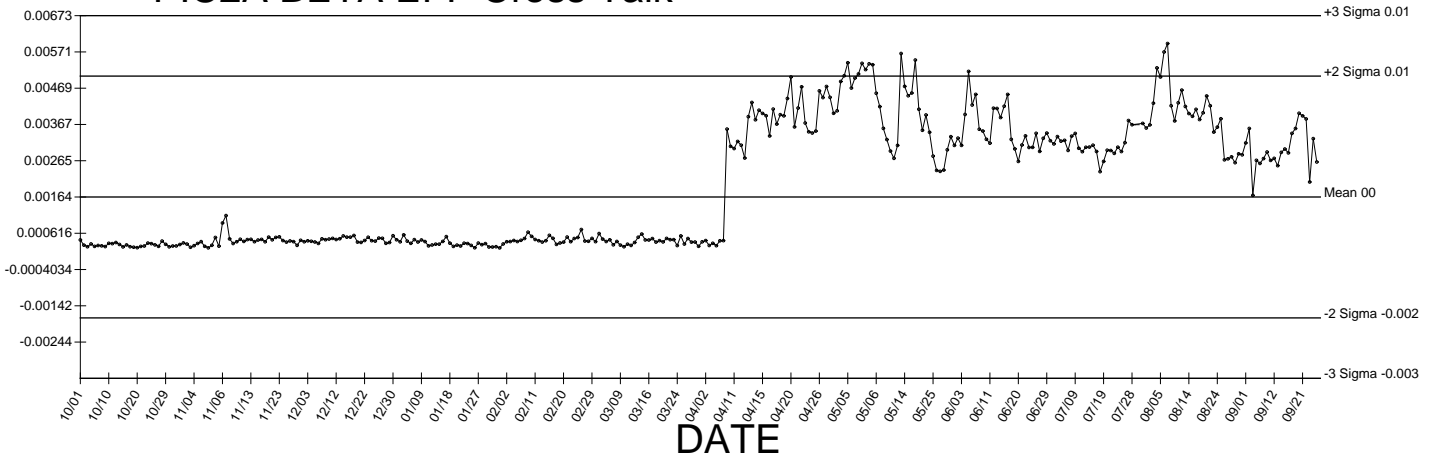
● Denotes Outlier

PIC2A BETA EFF

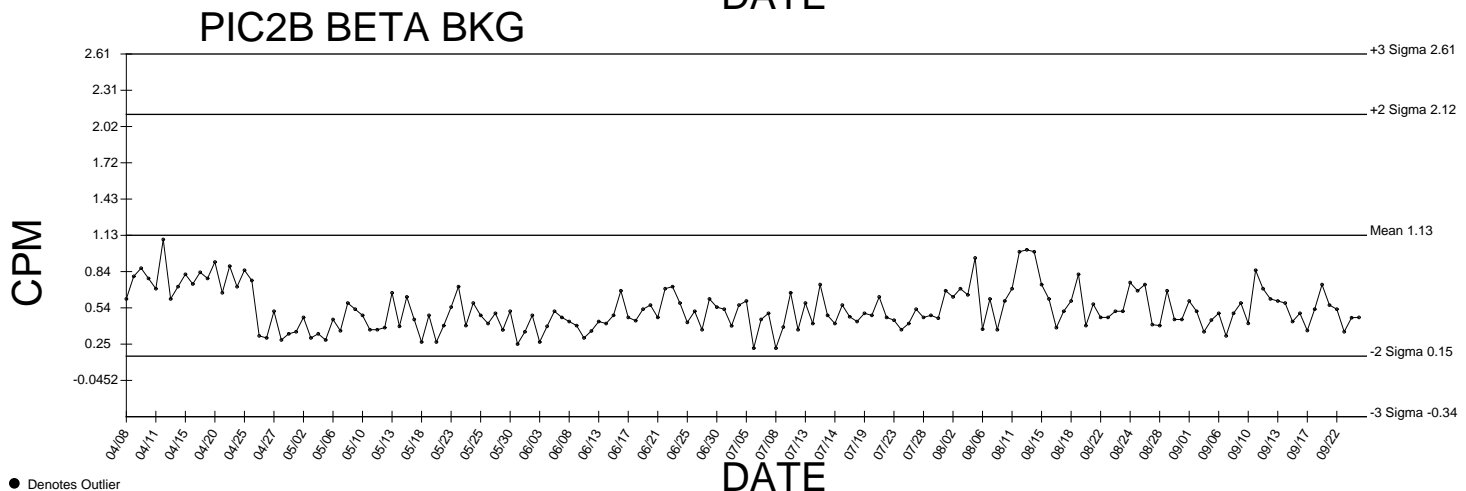
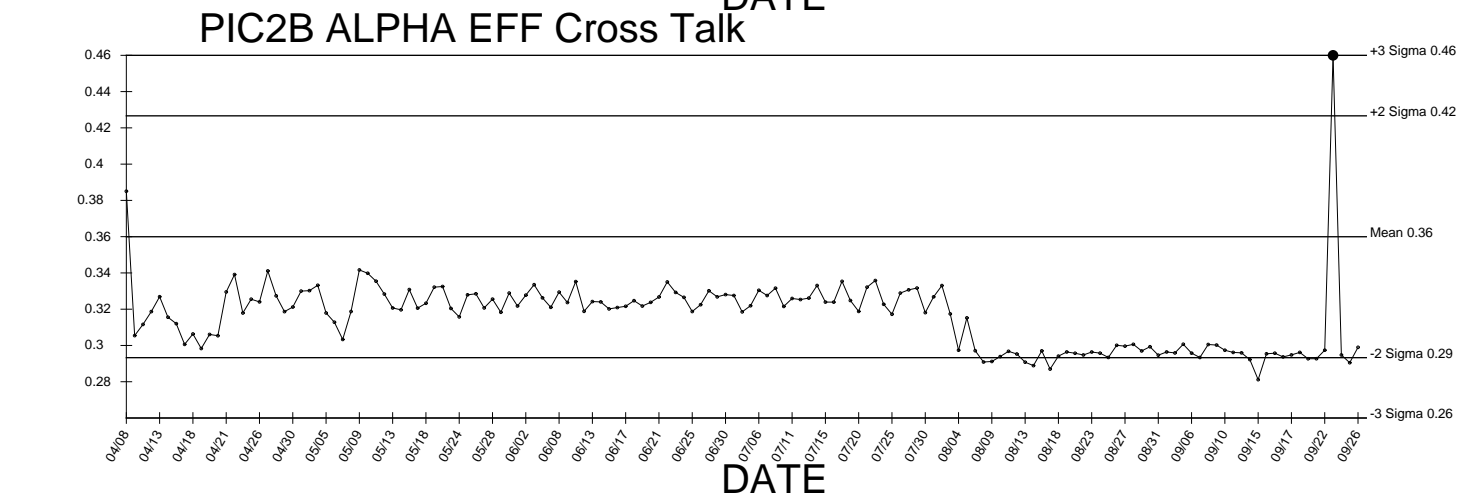
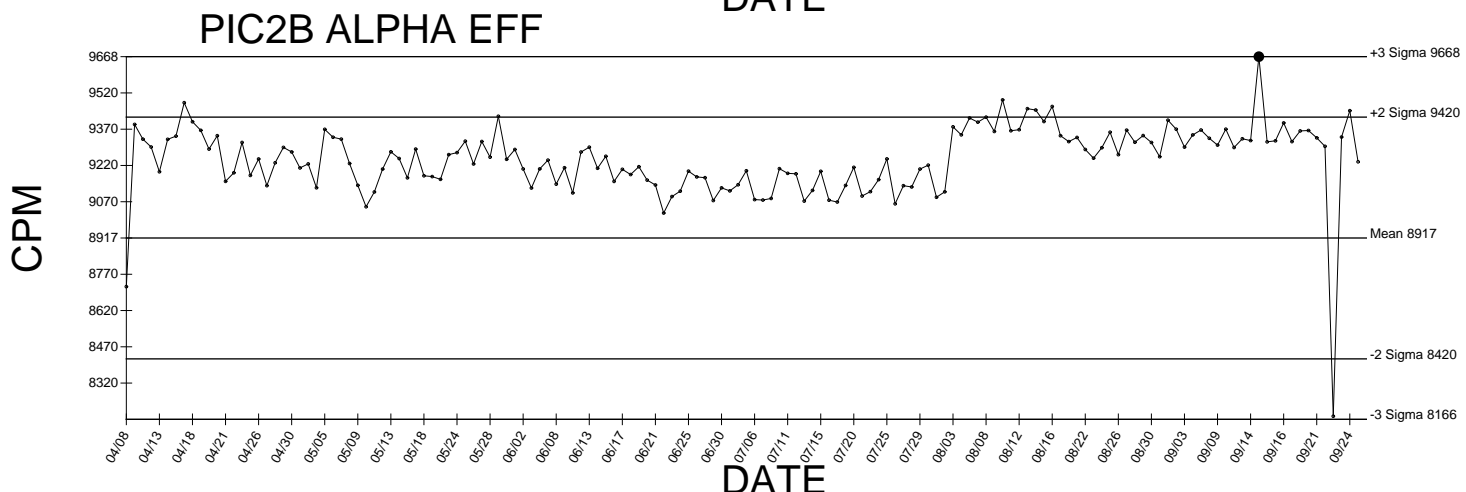
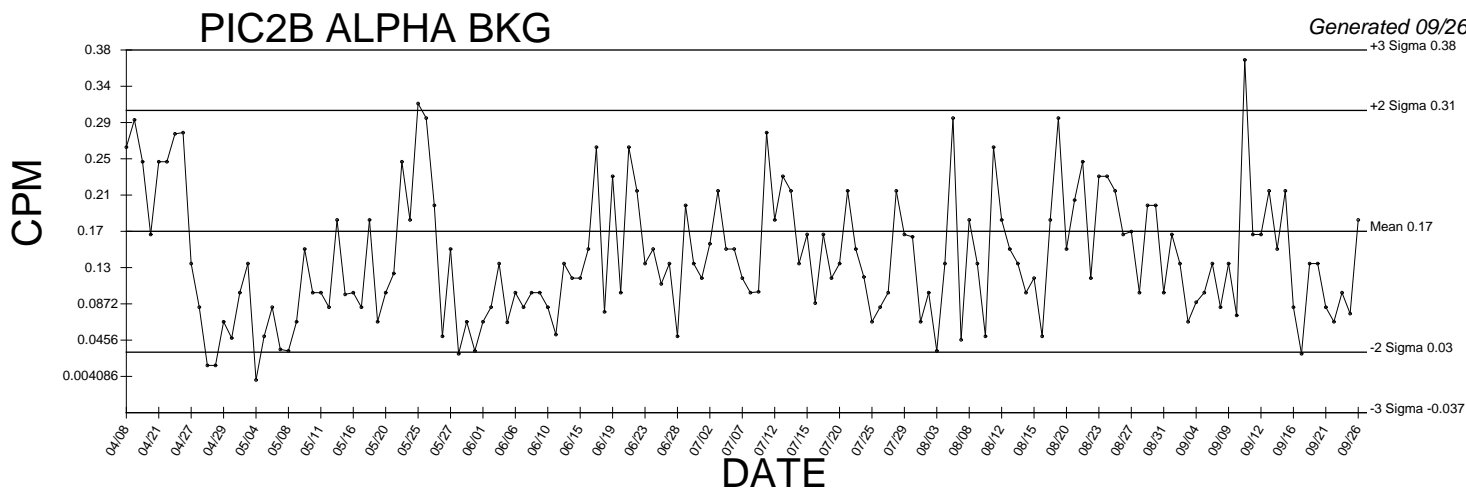
Generated 09/26/2016



PIC2A BETA EFF Cross Talk



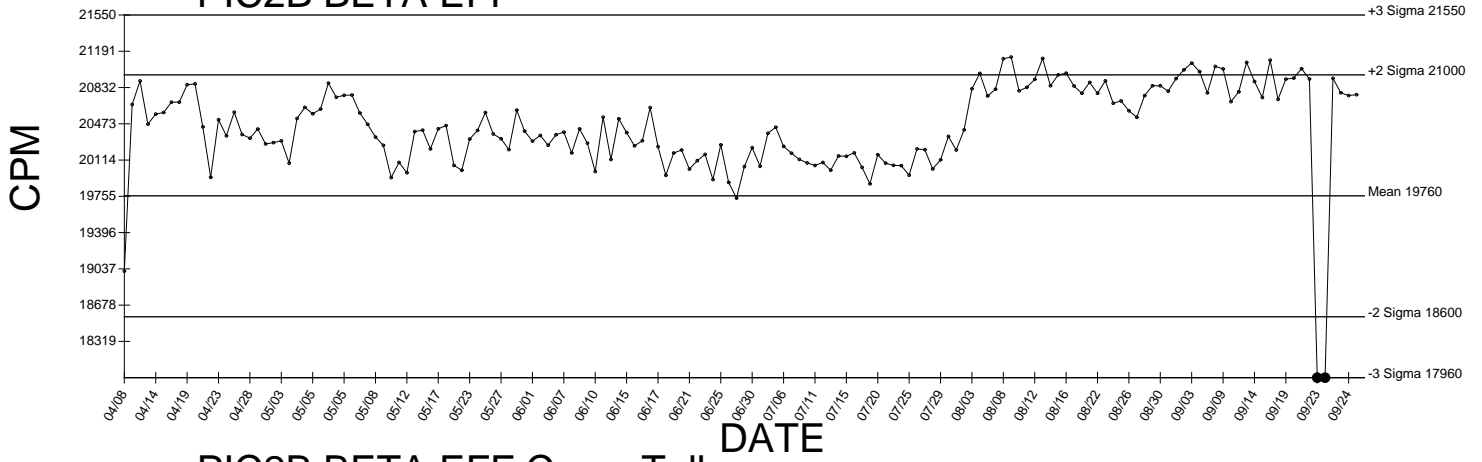
● Denotes Outlier



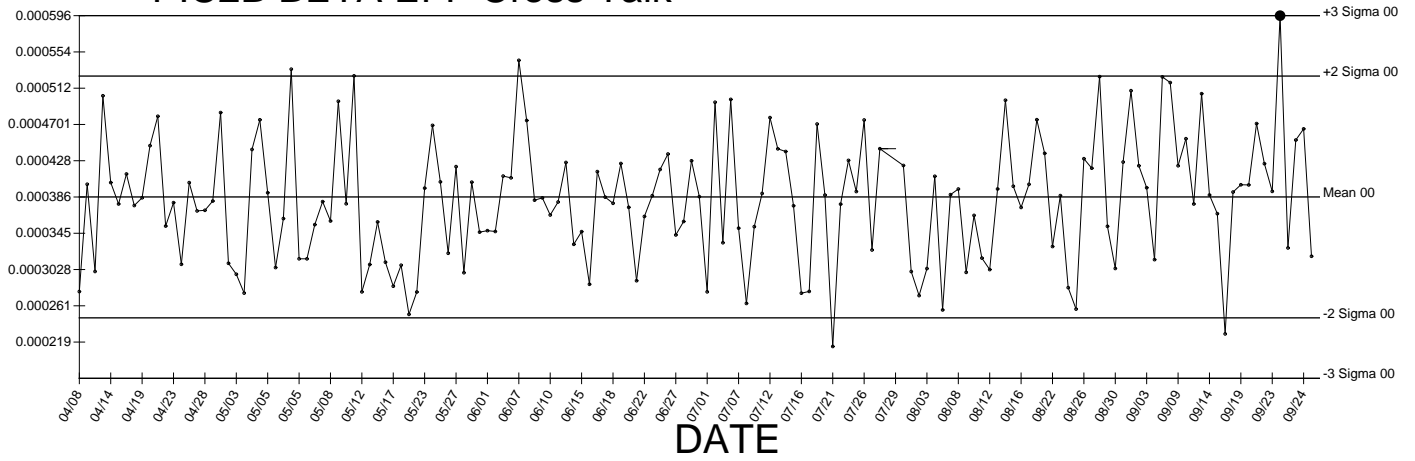
● Denotes Outlier

PIC2B BETA EFF

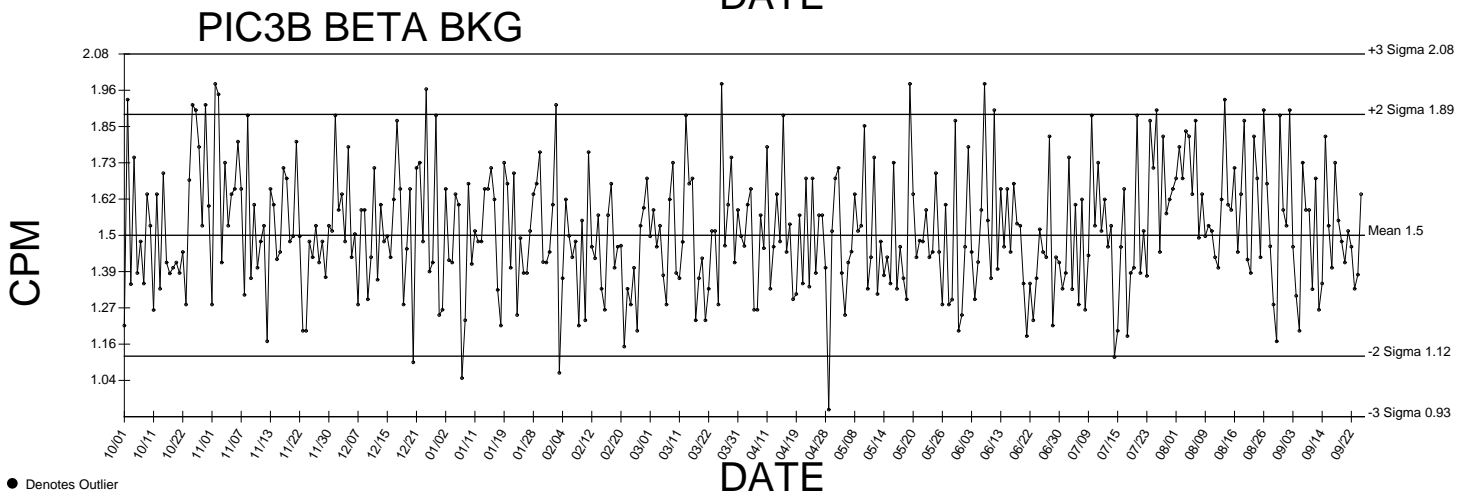
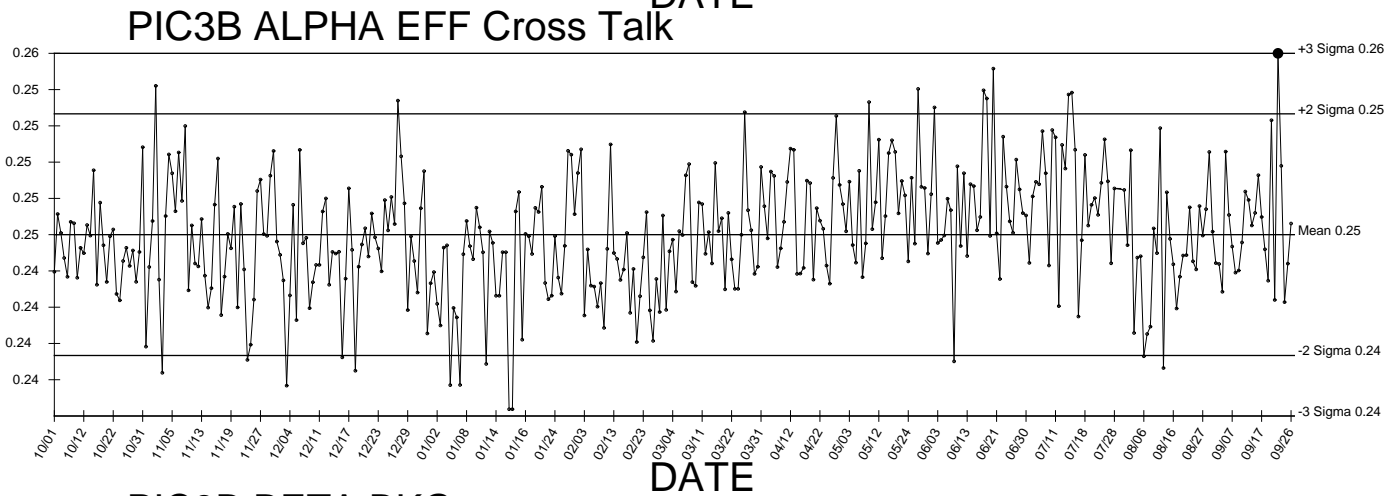
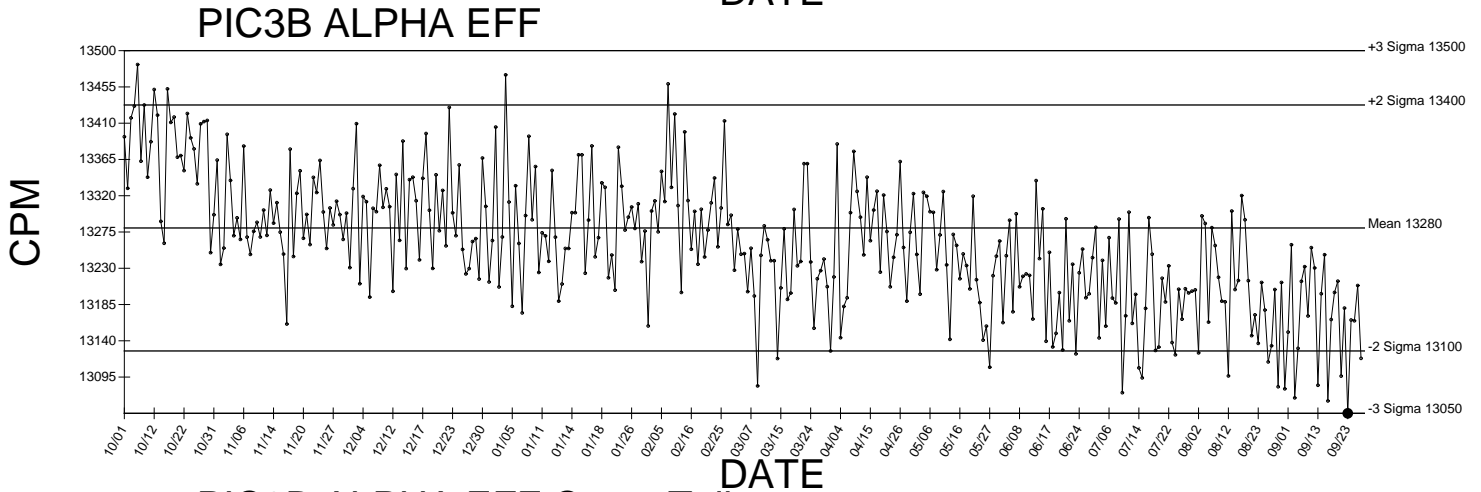
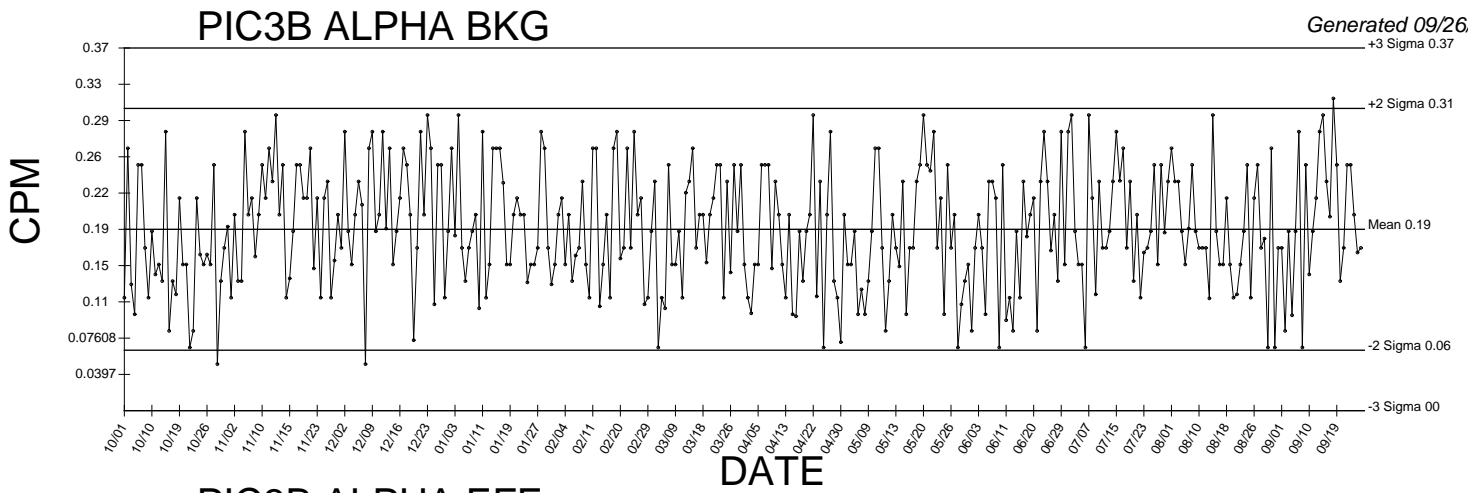
Generated 09/26/2016



PIC2B BETA EFF Cross Talk



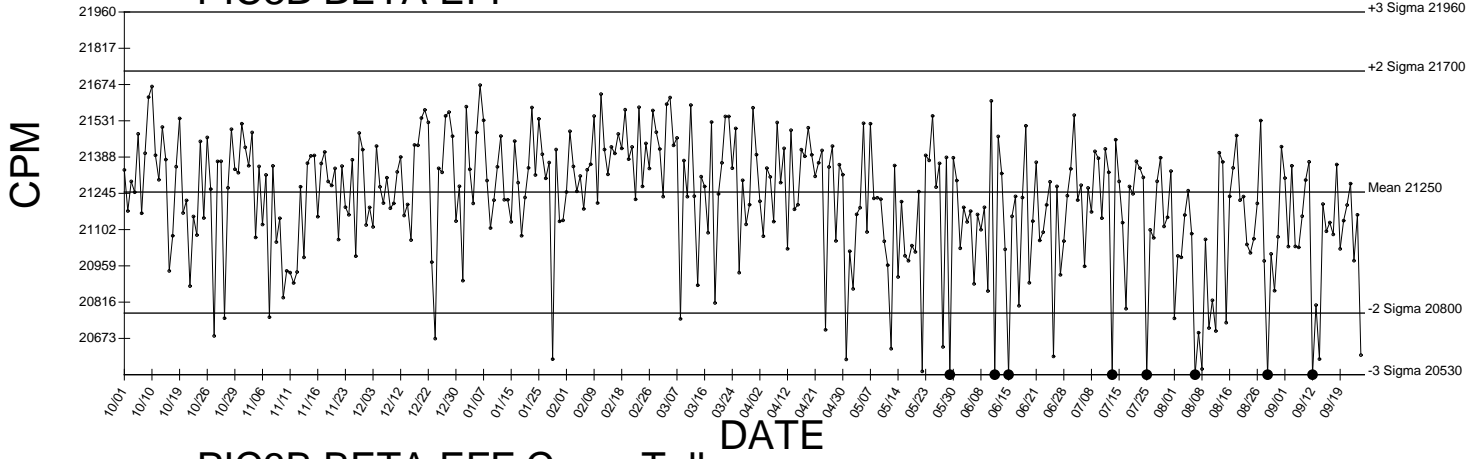
● Denotes Outlier



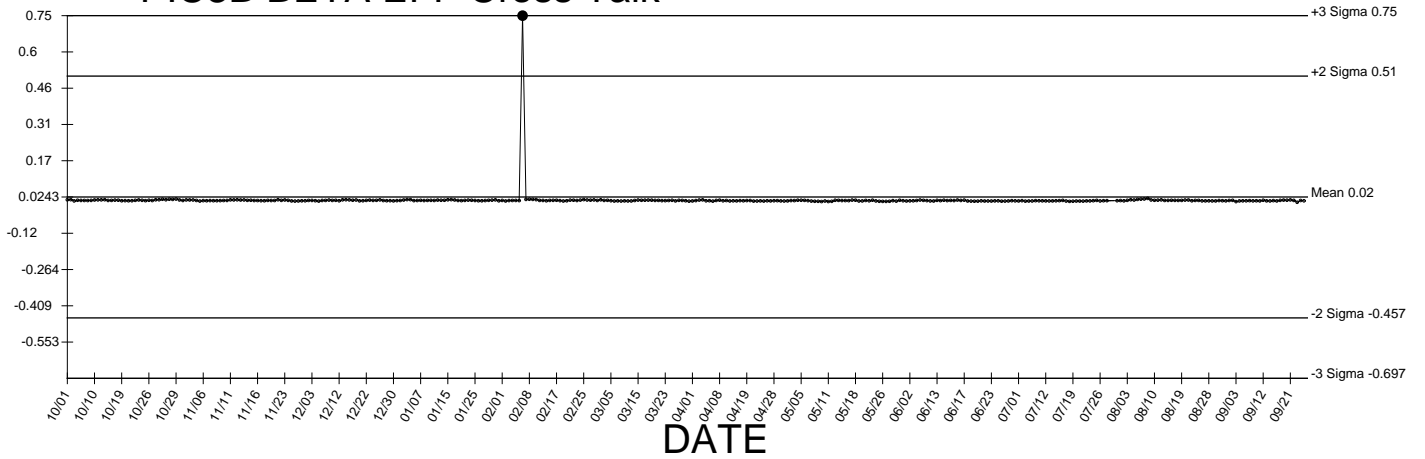
● Denotes Outlier

PIC3B BETA EFF

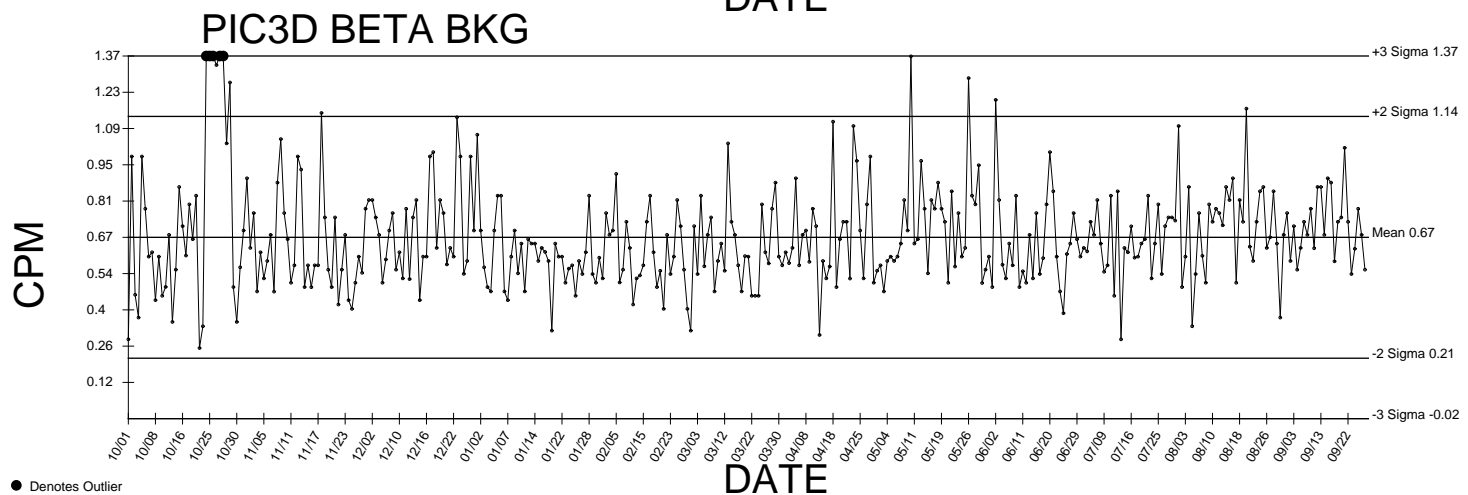
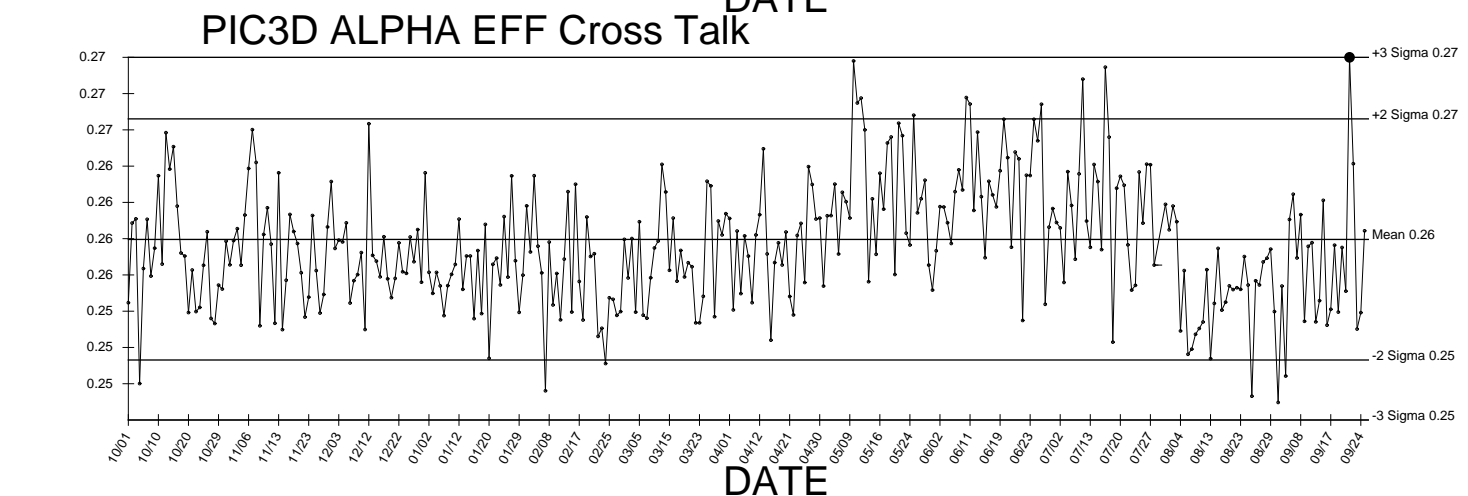
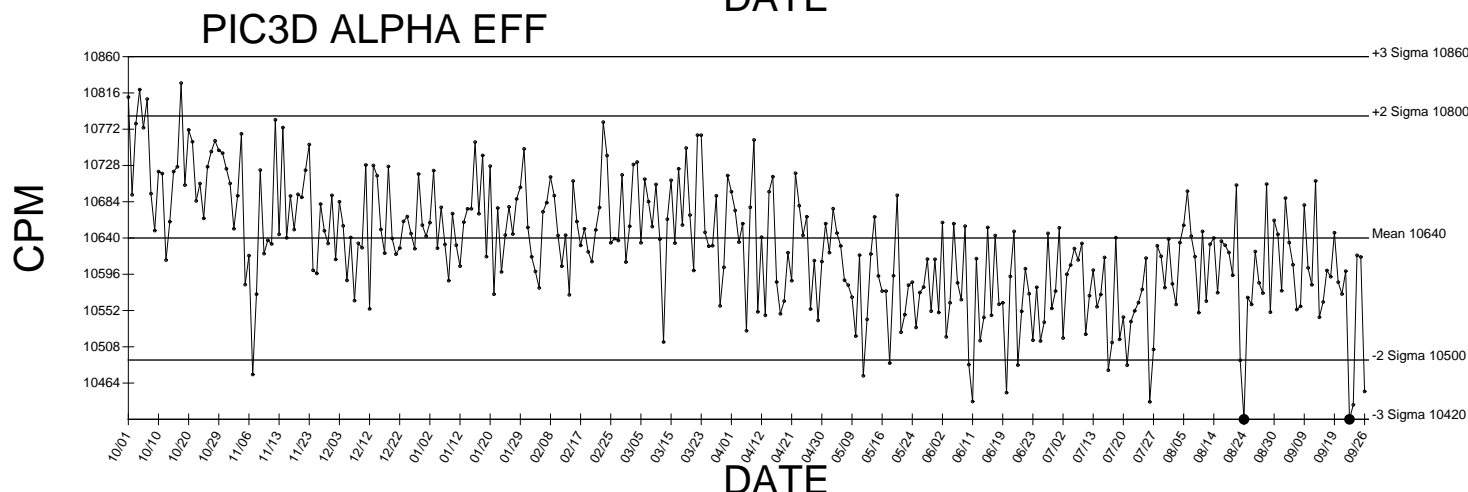
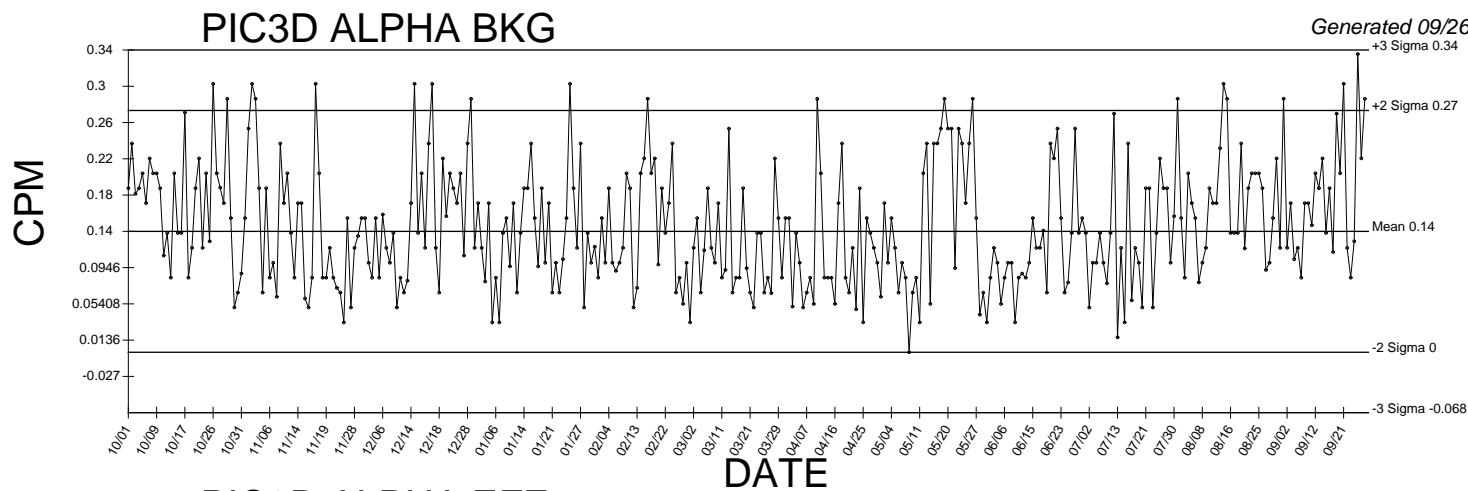
Generated 09/26/2016



PIC3B BETA EFF Cross Talk



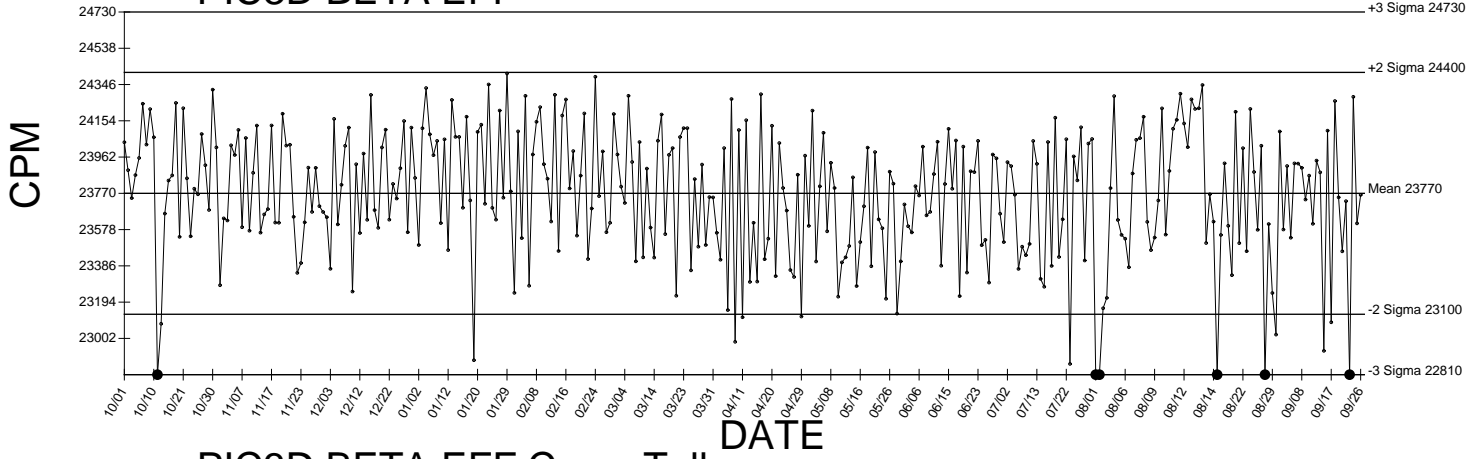
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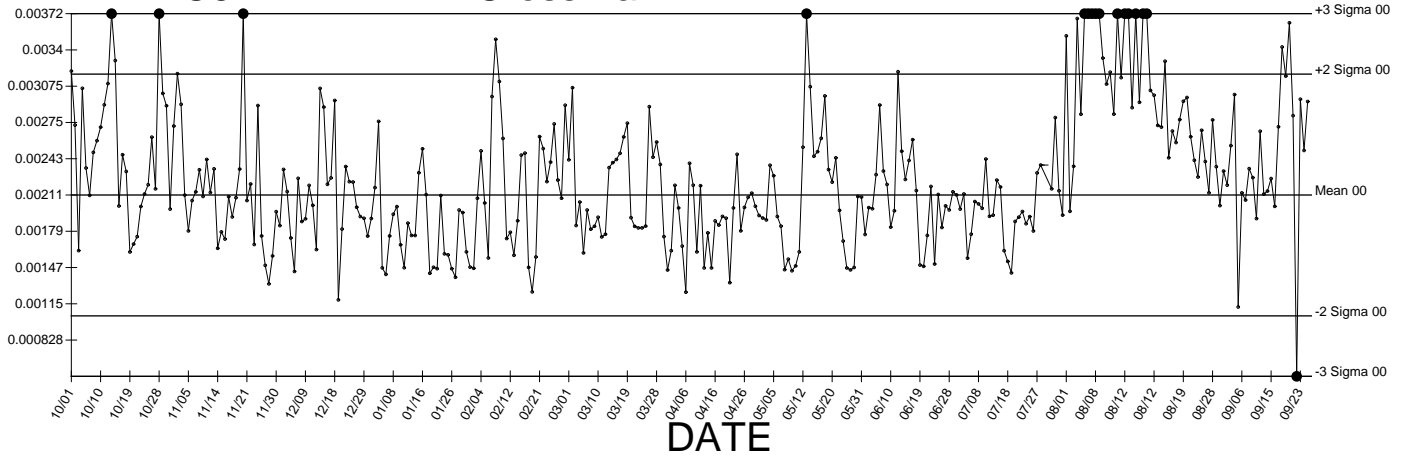
● Denotes Outlier

PIC3D BETA EFF

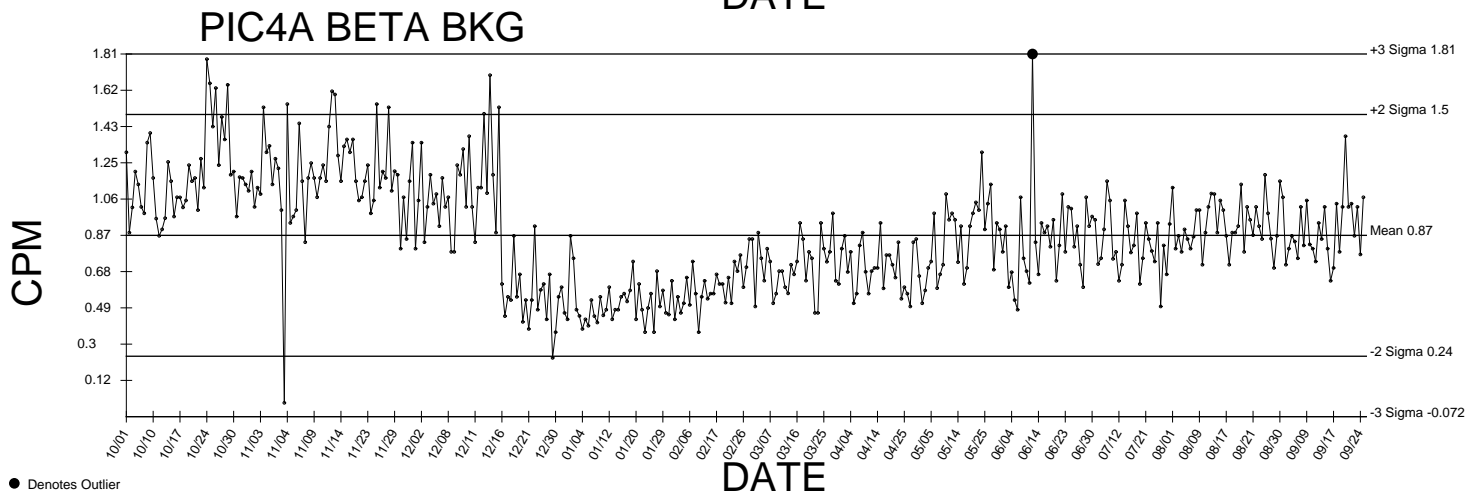
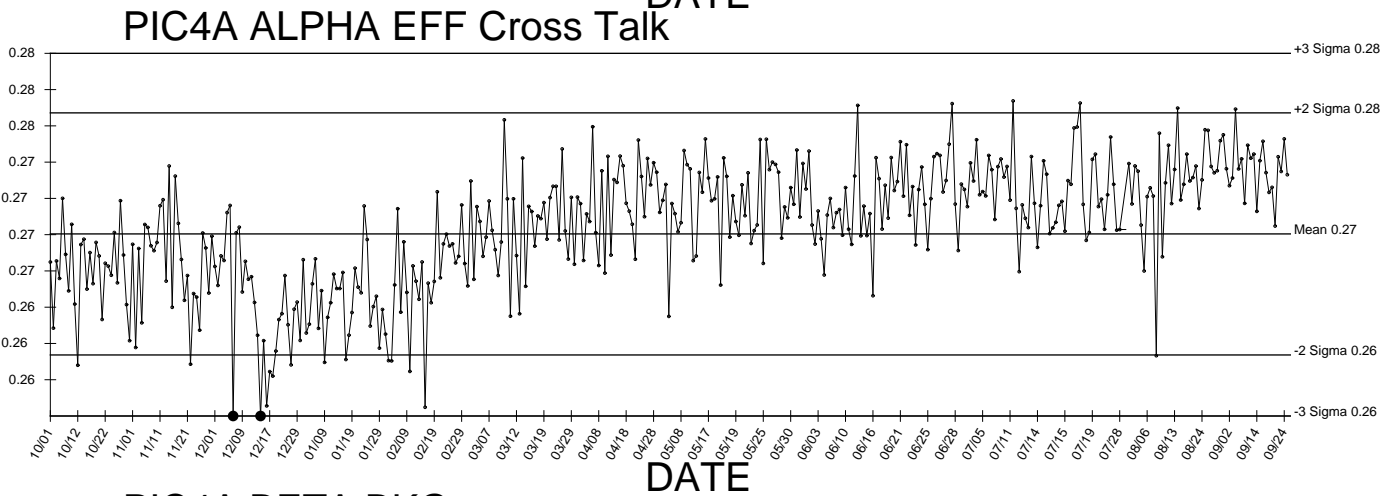
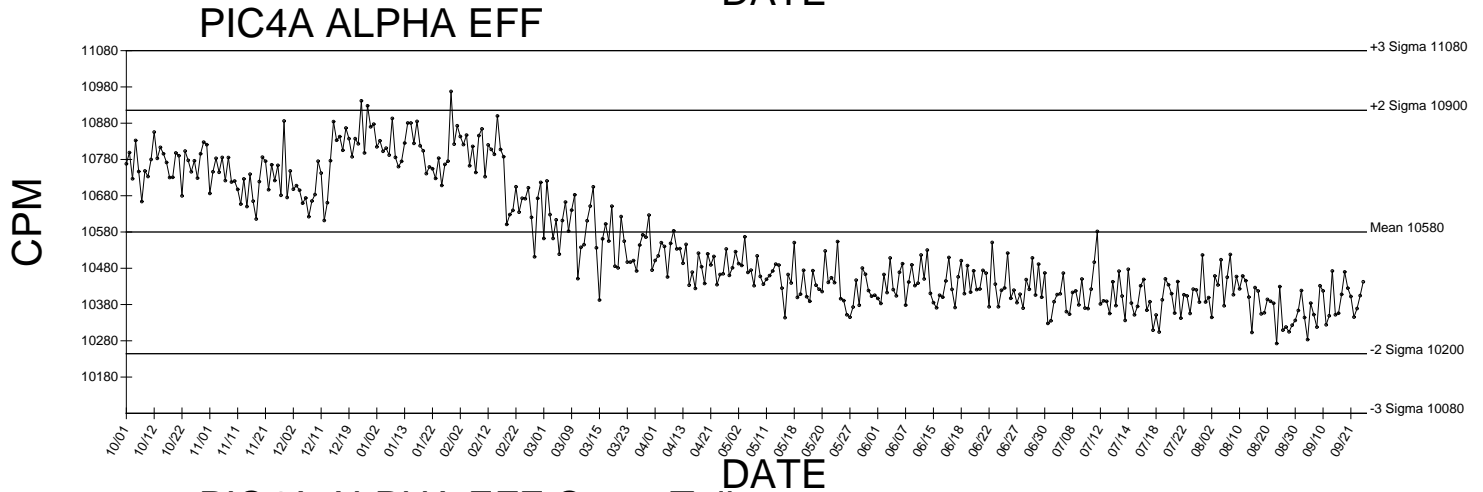
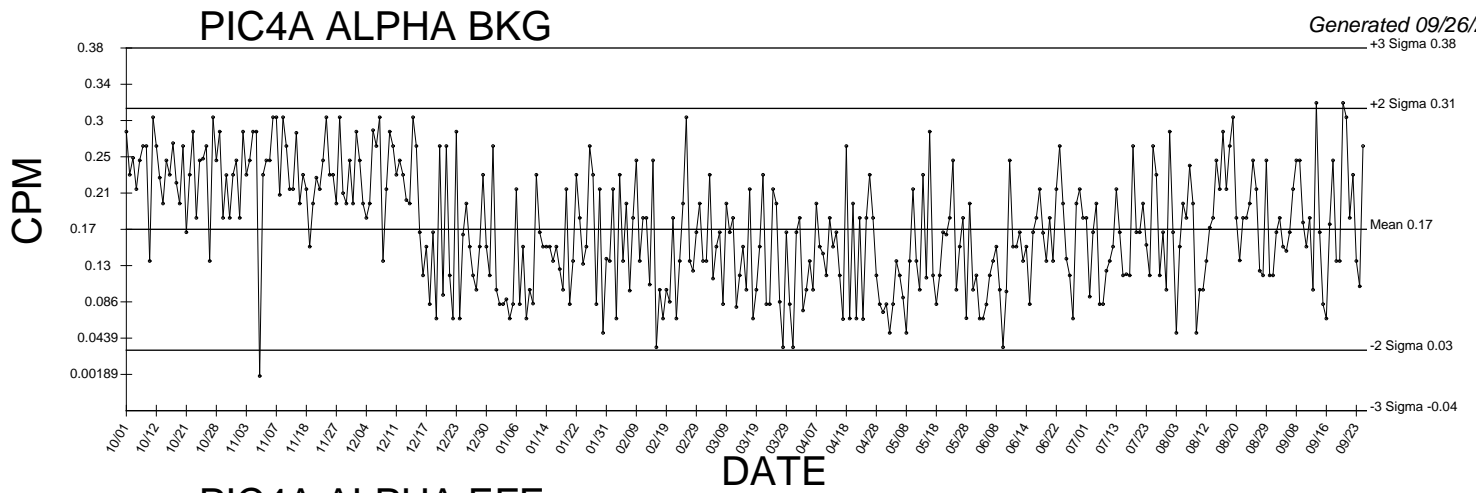
Generated 09/26/2016



PIC3D BETA EFF Cross Talk



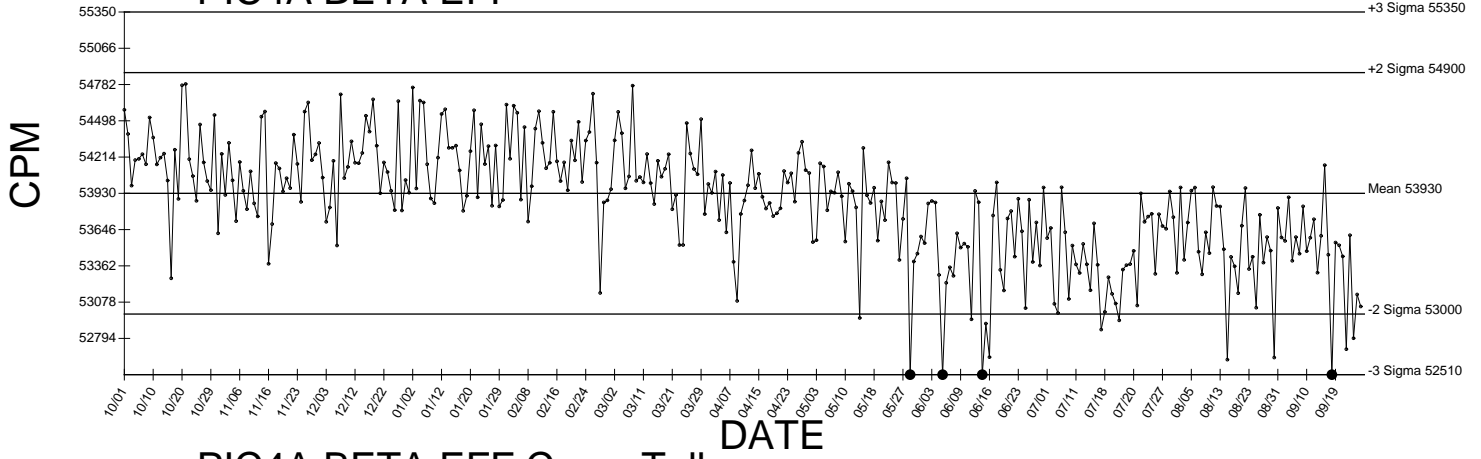
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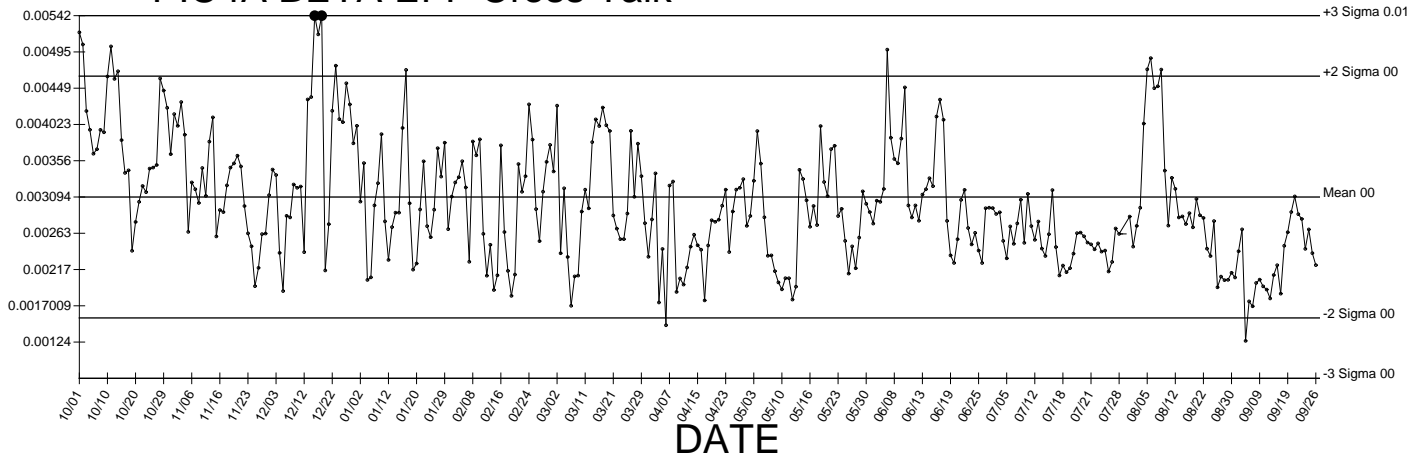
● Denotes Outlier

PIC4A BETA EFF

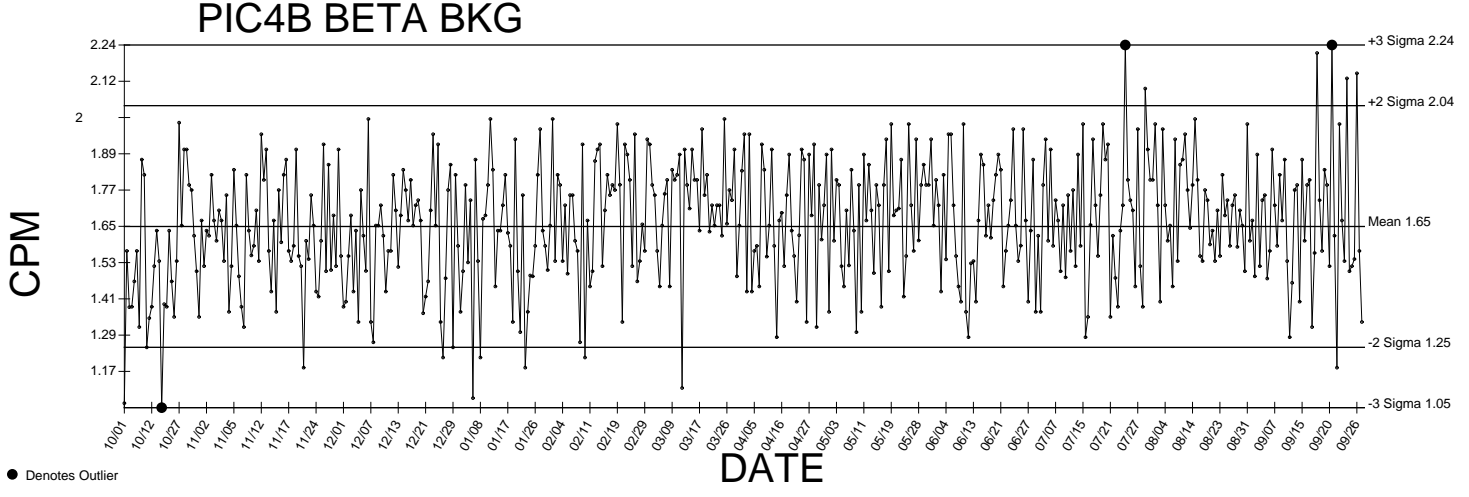
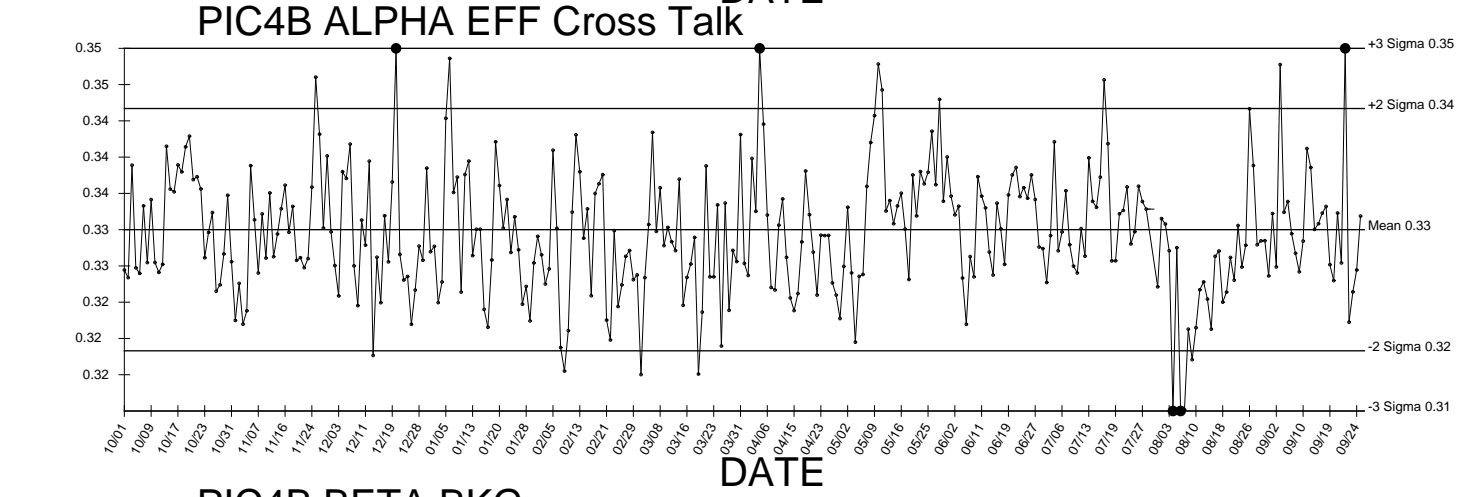
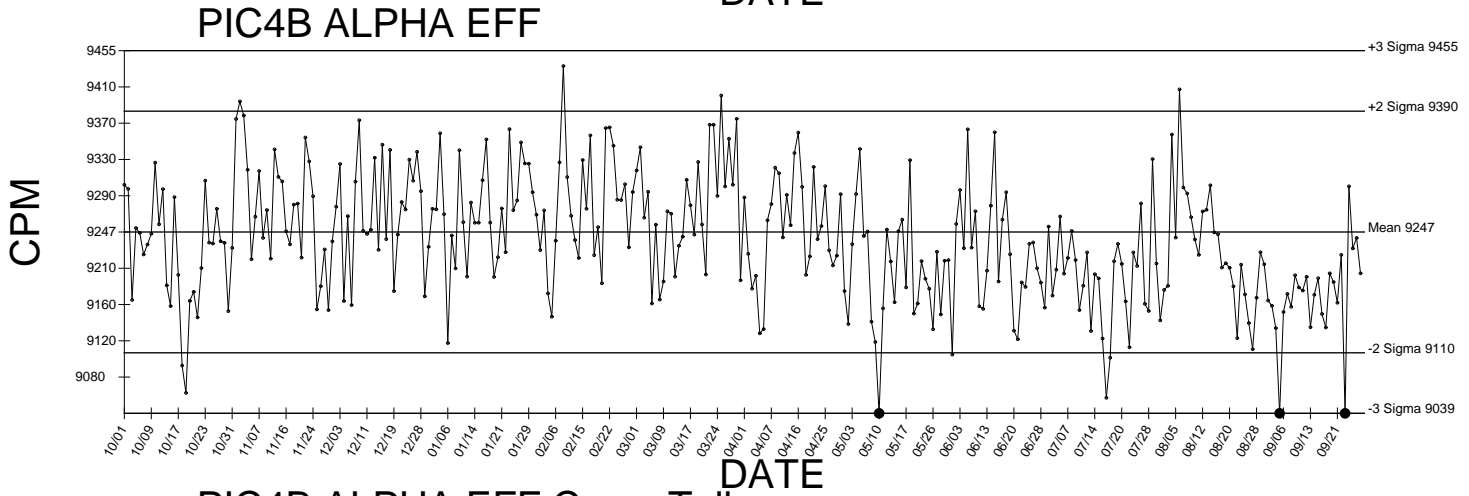
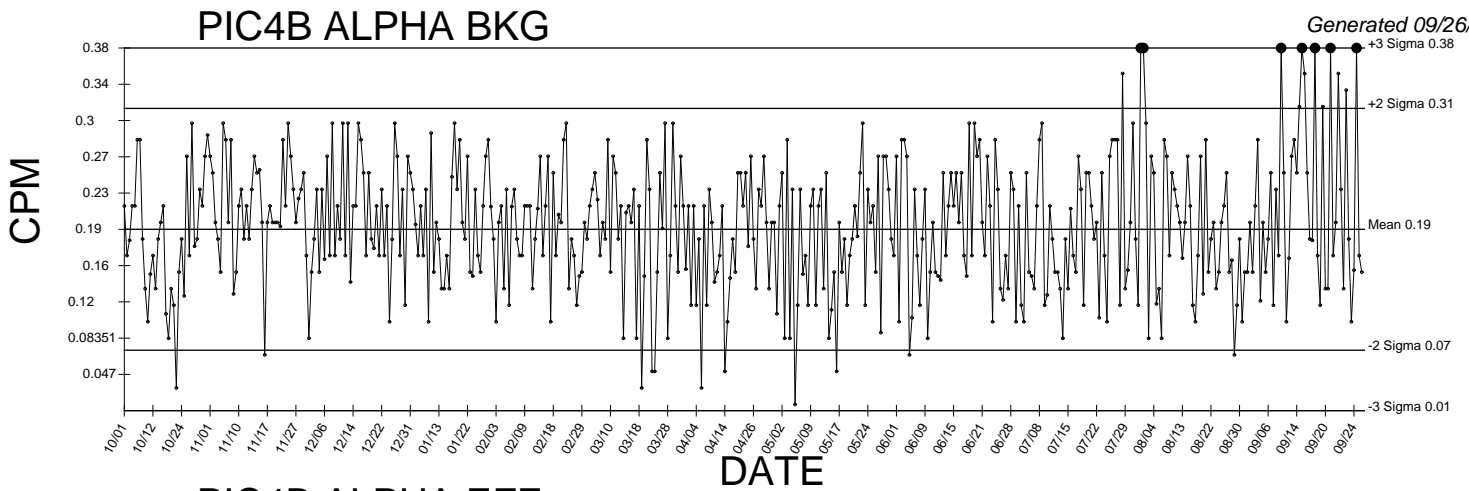
Generated 09/26/2016



PIC4A BETA EFF Cross Talk



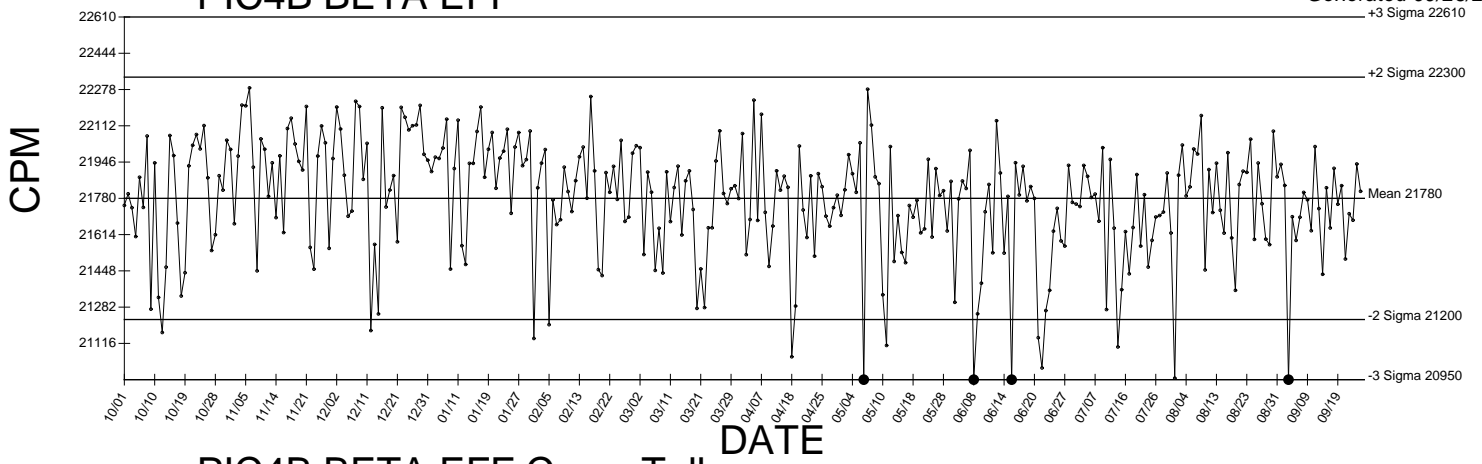
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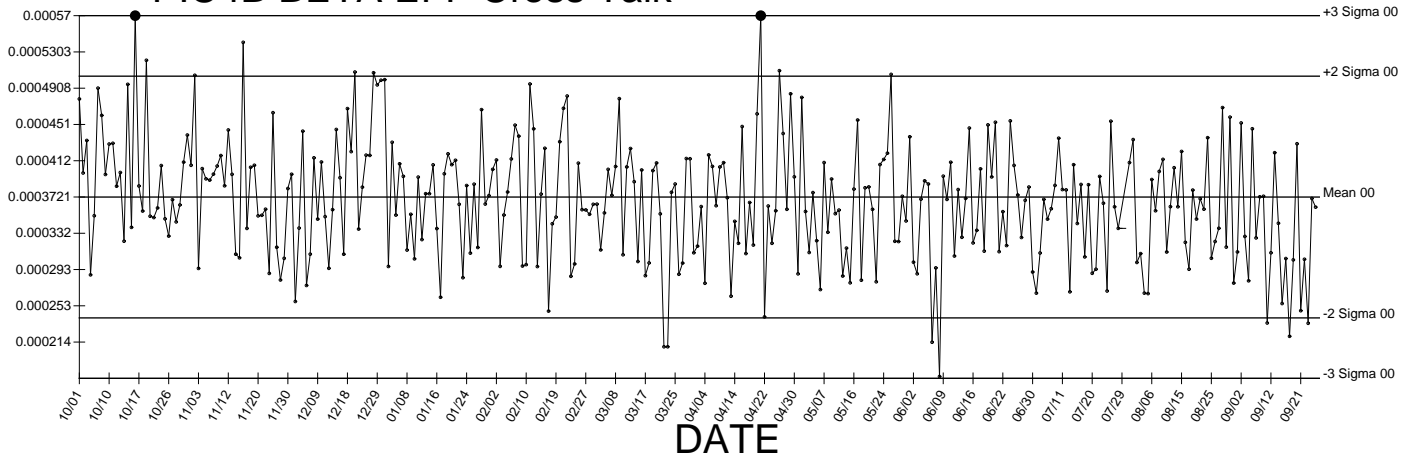
● Denotes Outlier

PIC4B BETA EFF

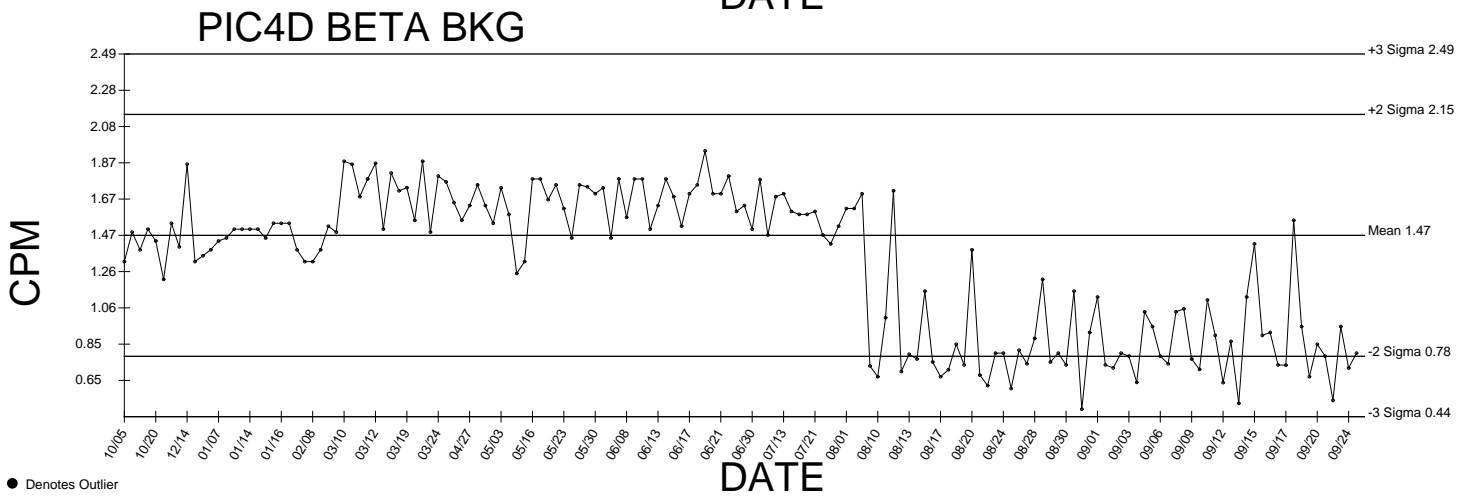
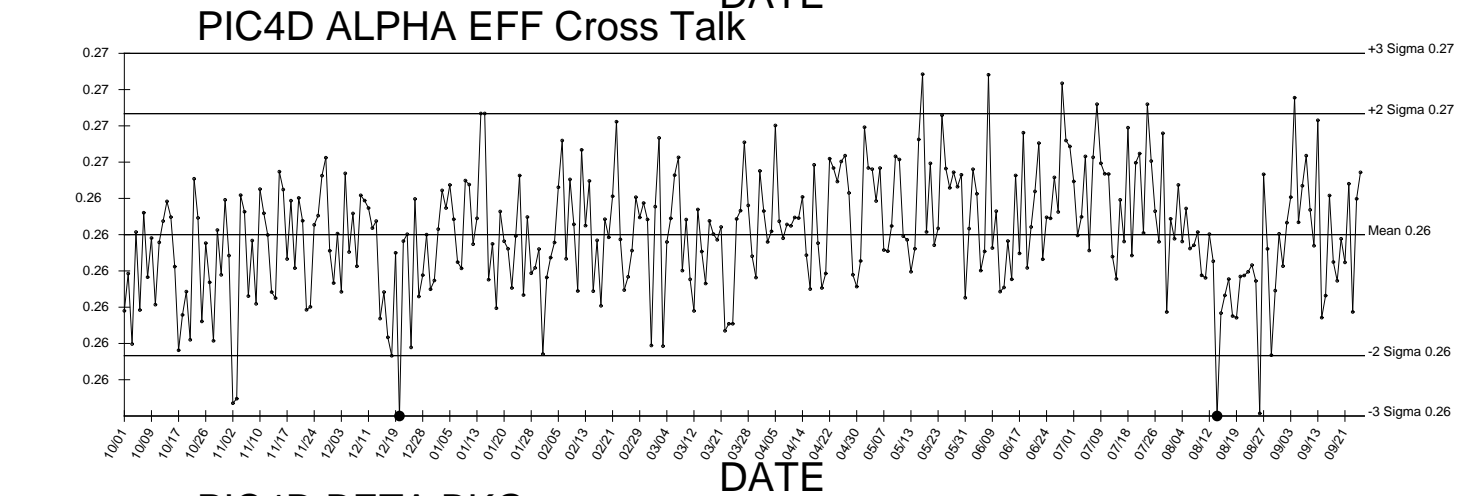
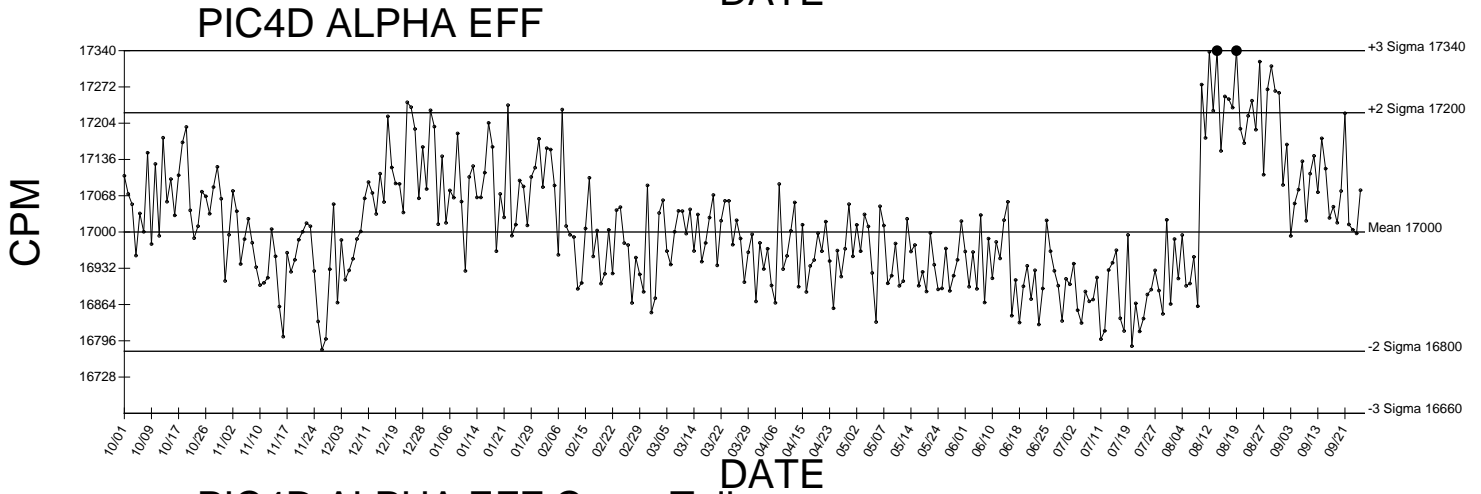
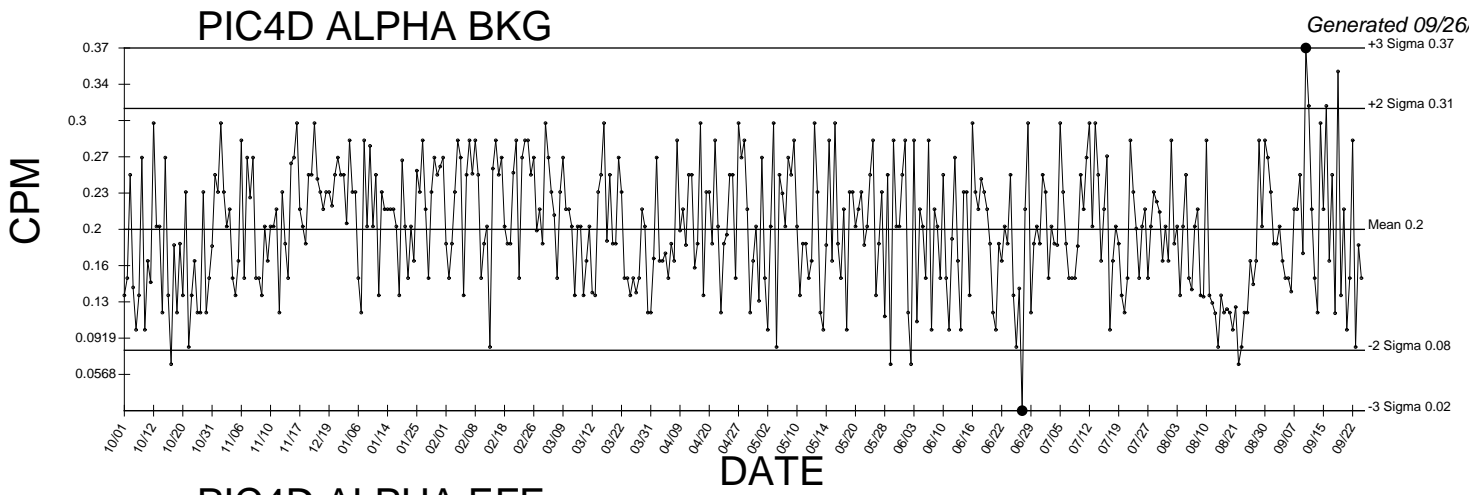
Generated 09/26/2016



PIC4B BETA EFF Cross Talk



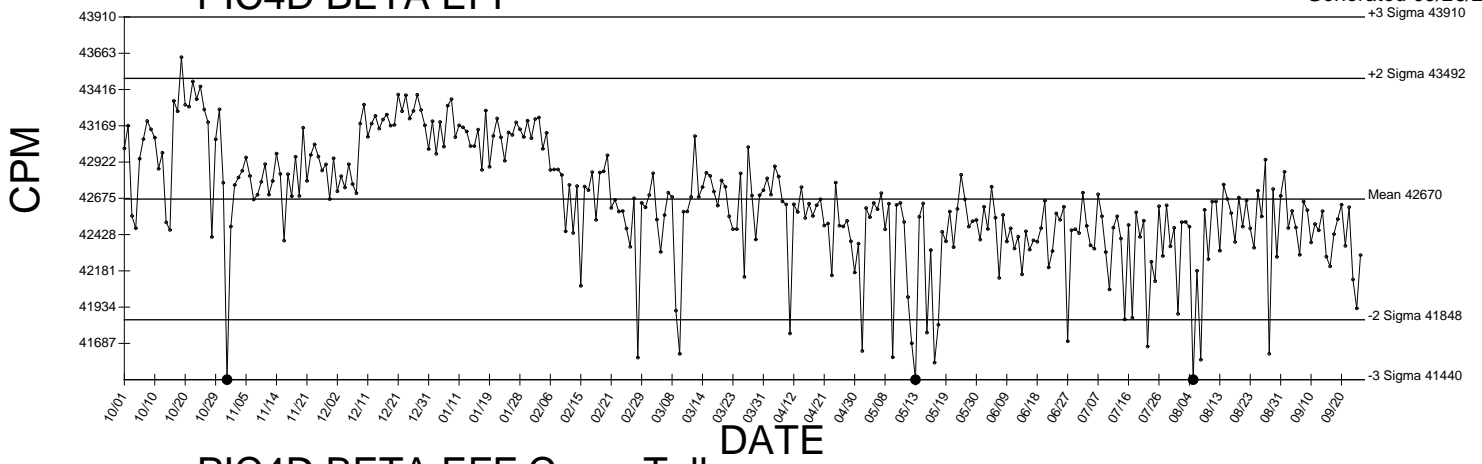
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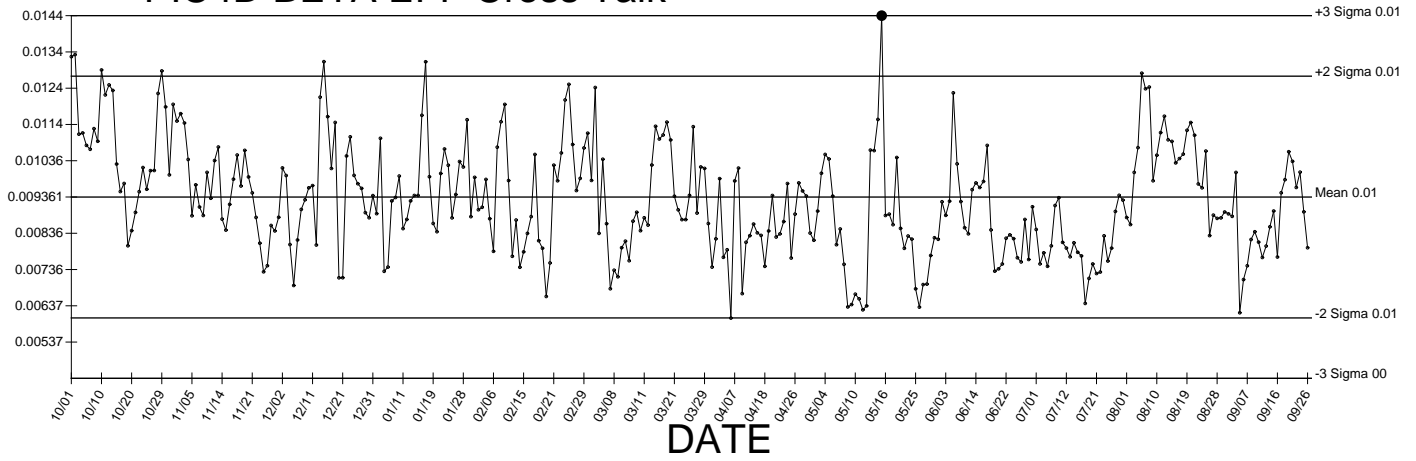
● Denotes Outlier

PIC4D BETA EFF

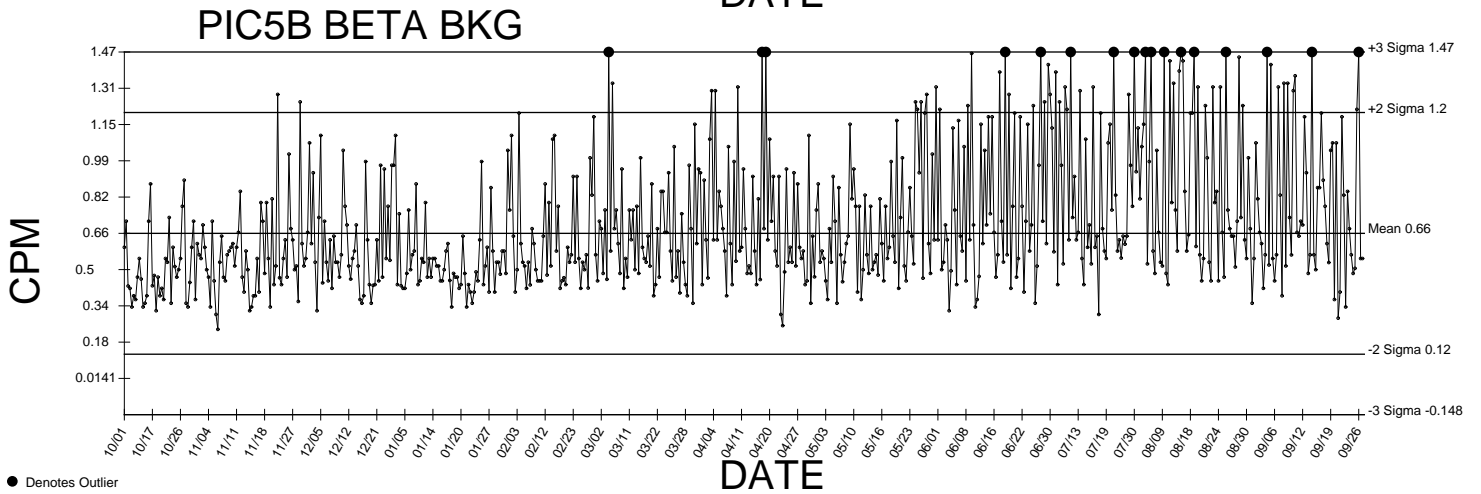
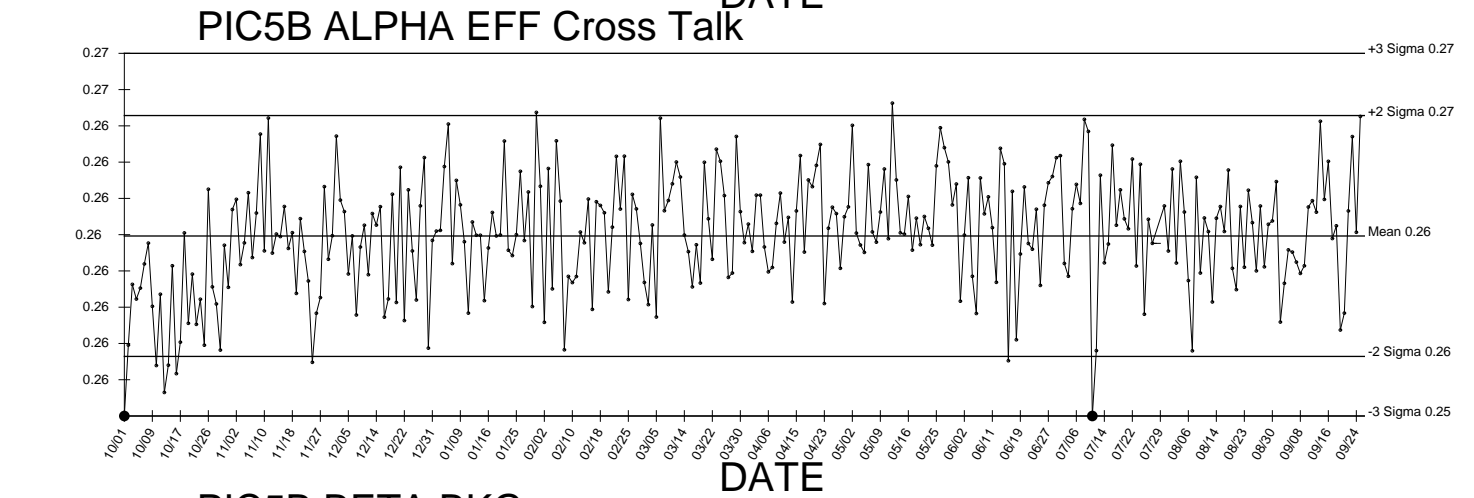
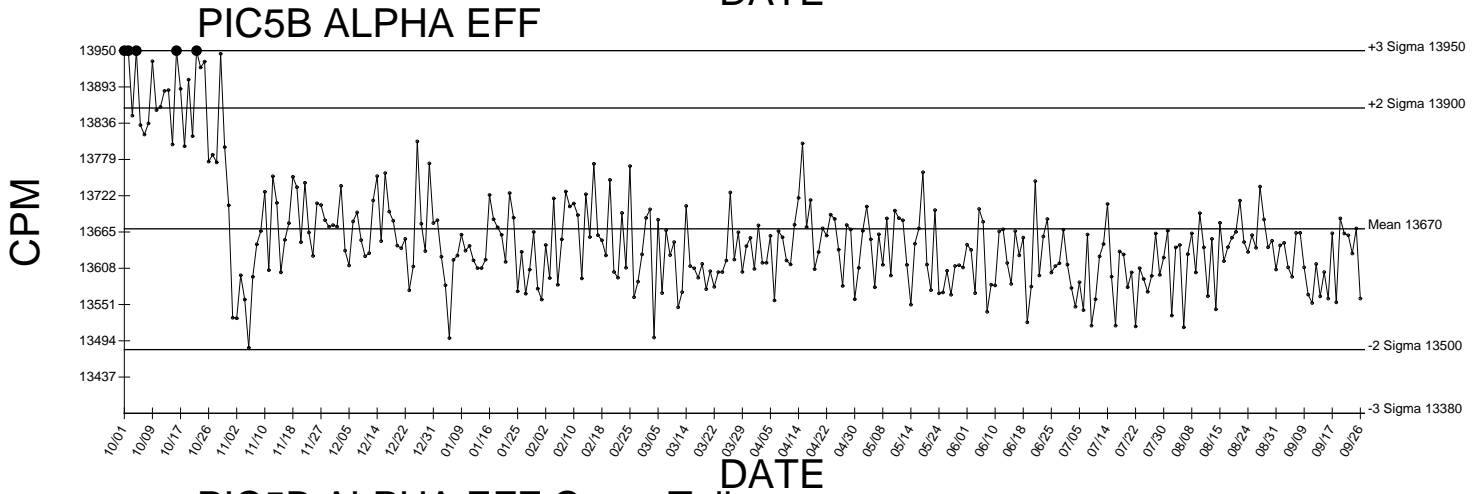
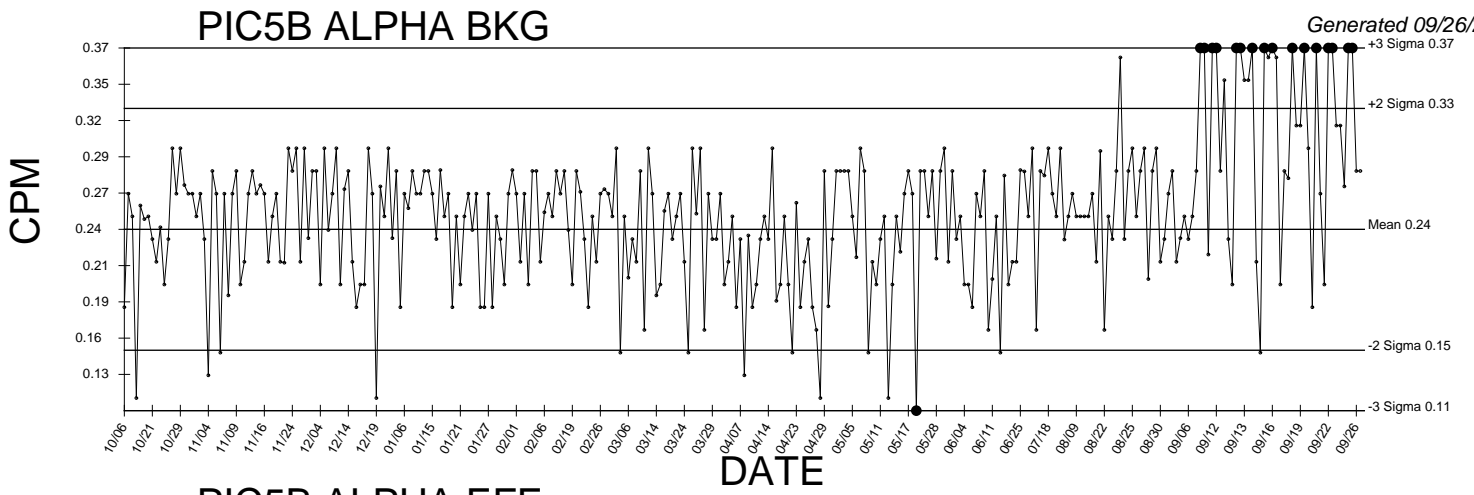
Generated 09/26/2016



PIC4D BETA EFF Cross Talk



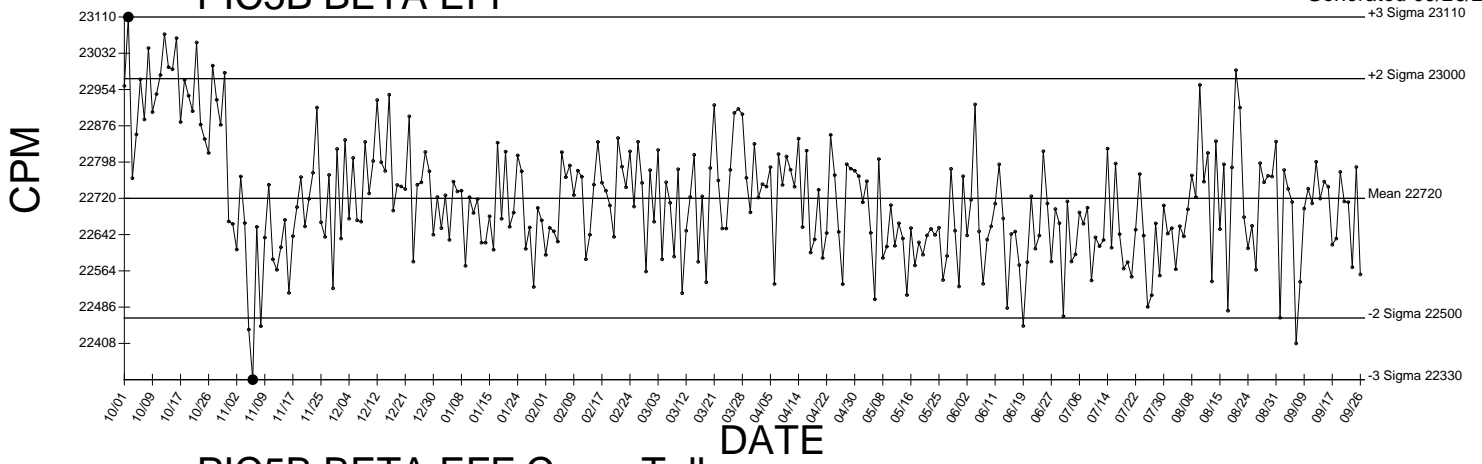
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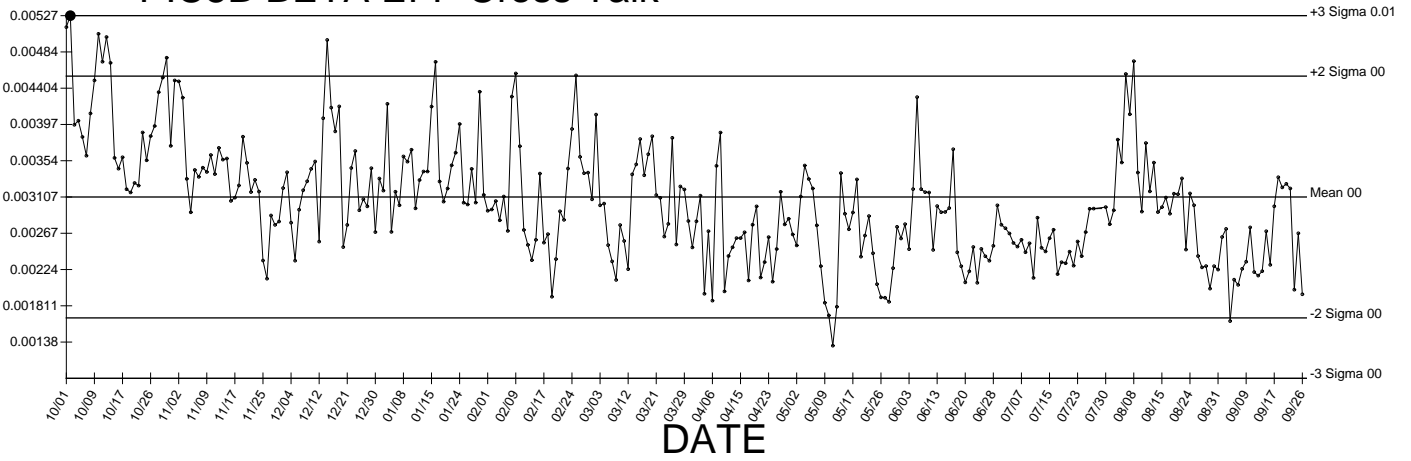
● Denotes Outlier

PIC5B BETA EFF

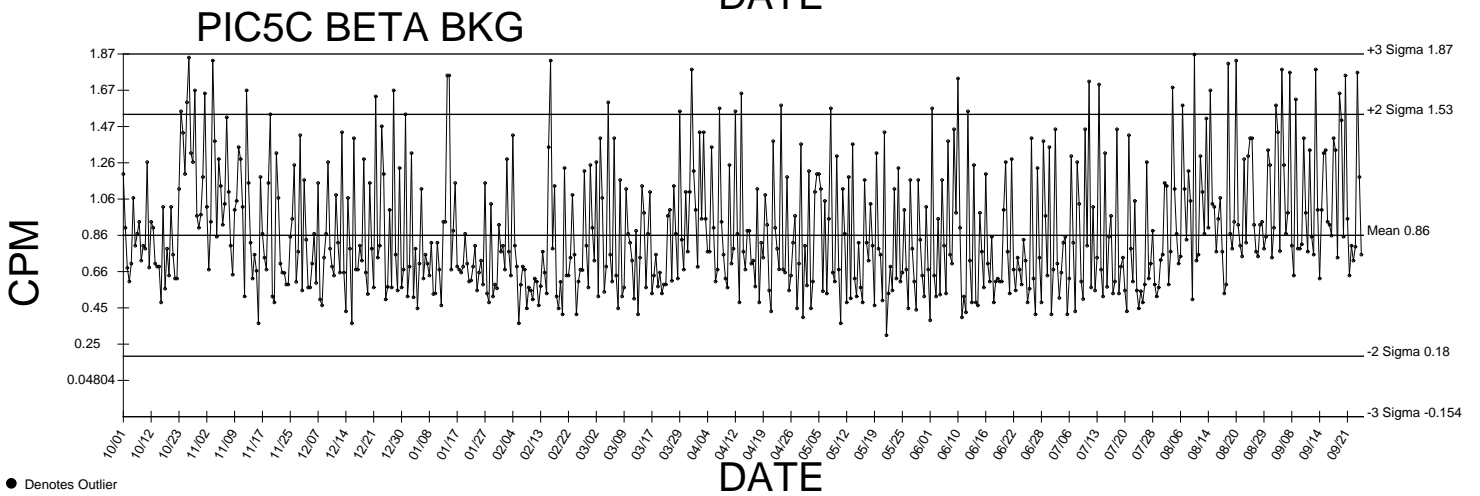
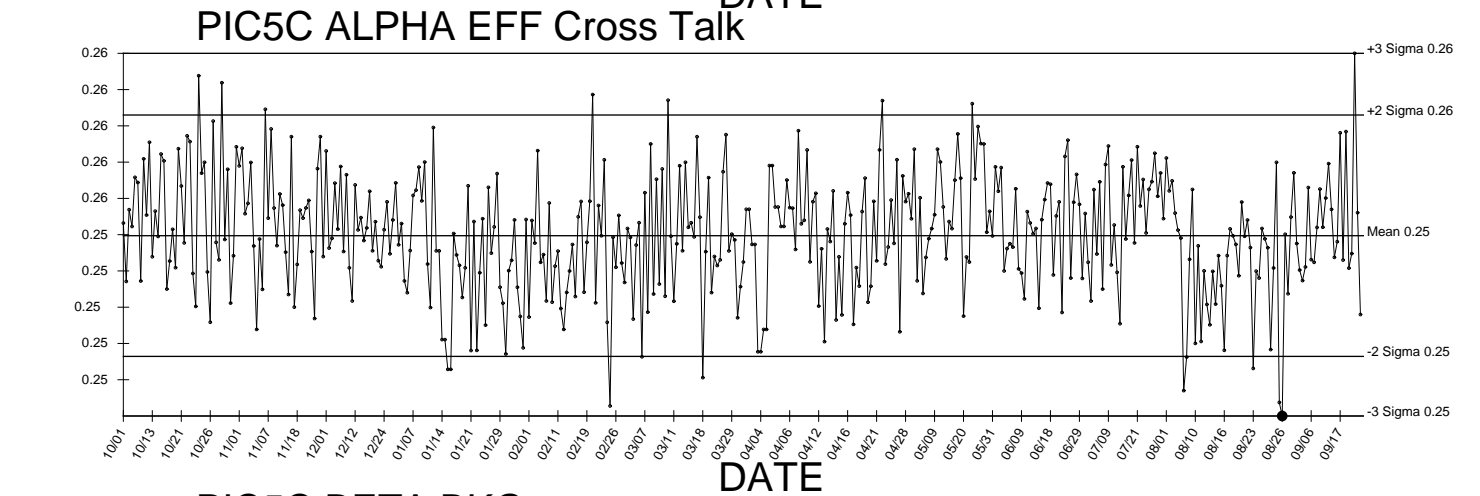
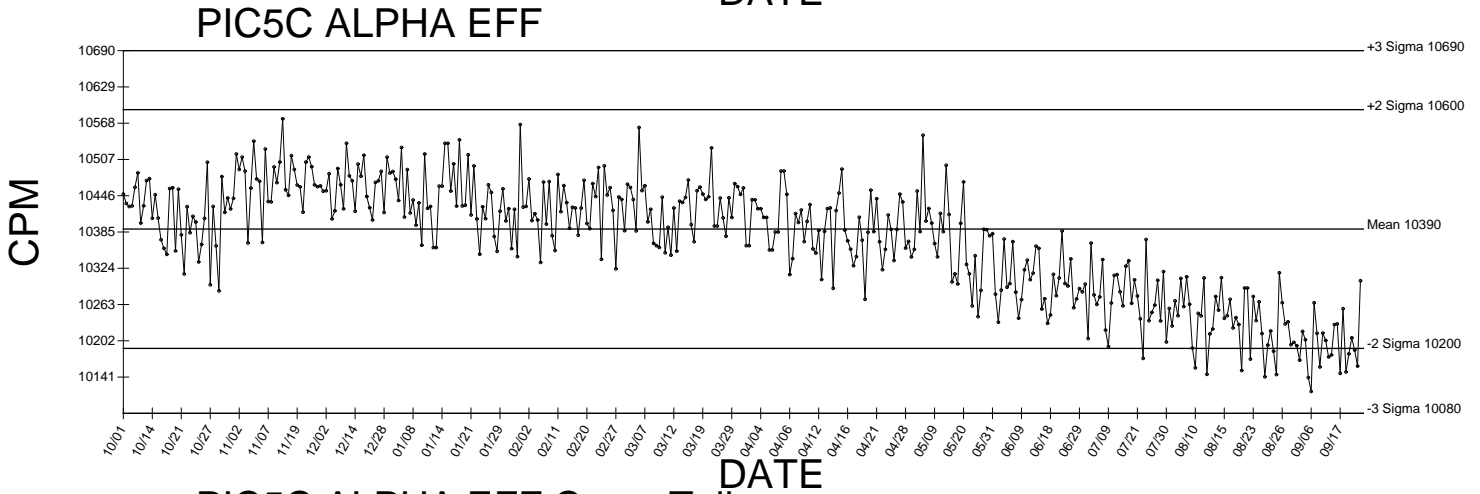
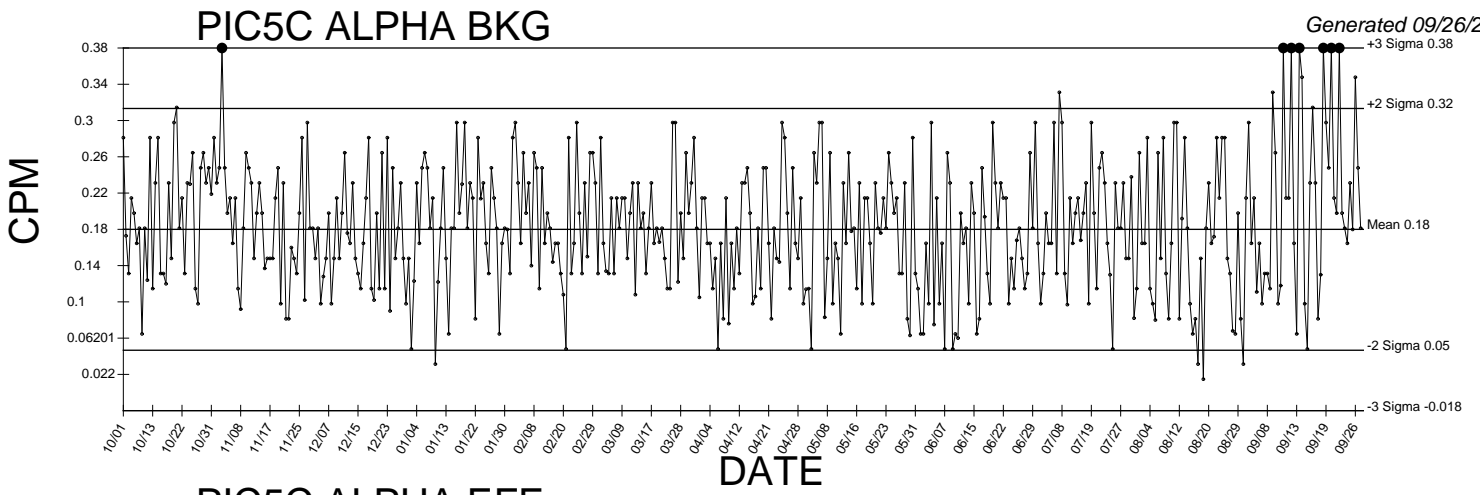
Generated 09/26/2016



PIC5B BETA EFF Cross Talk



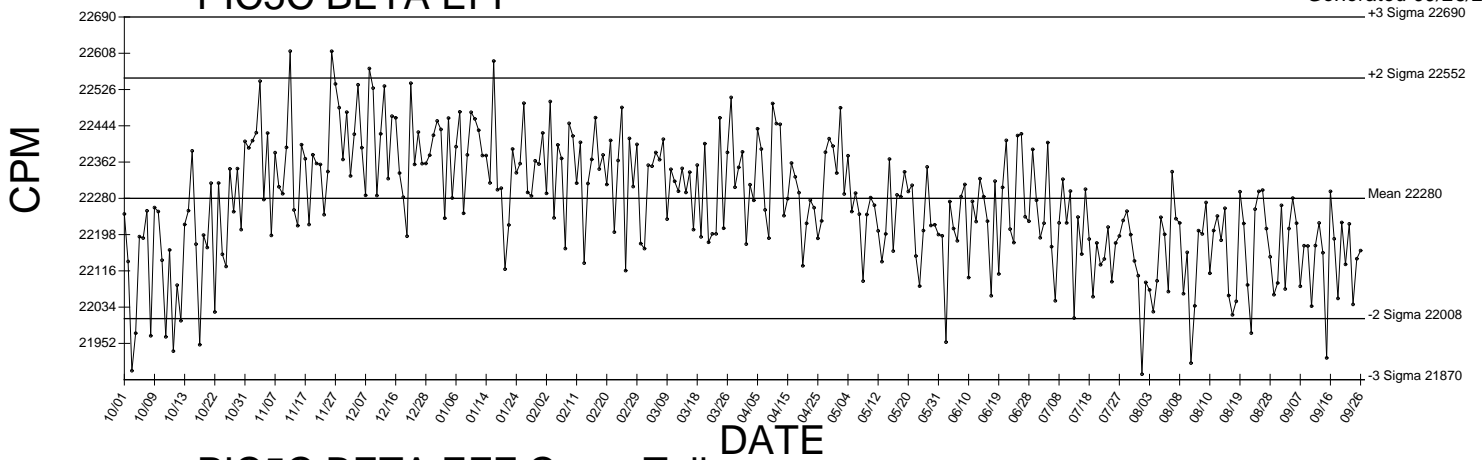
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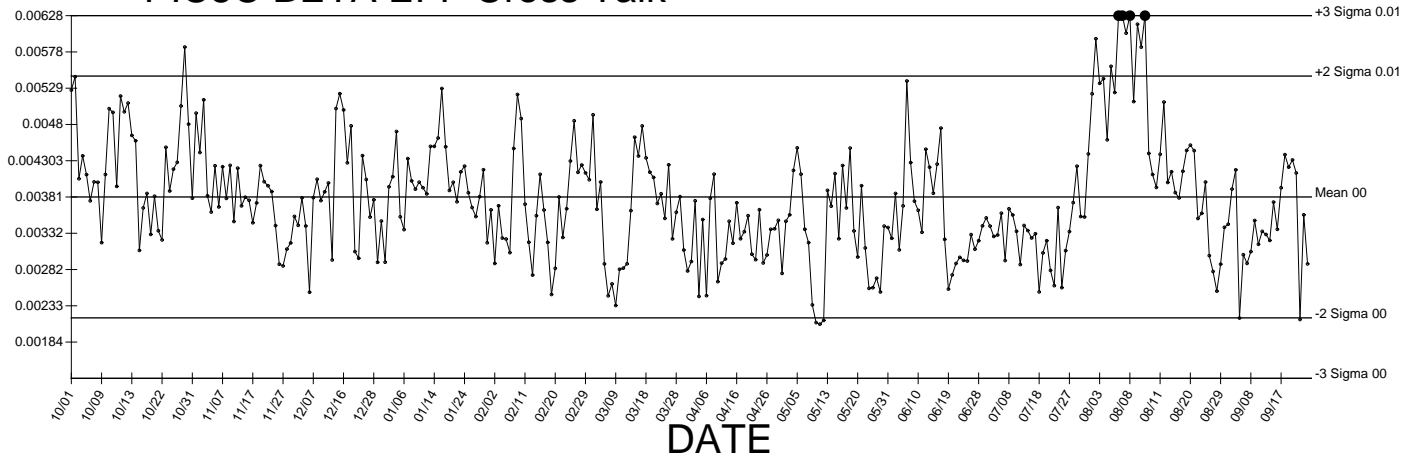
● Denotes Outlier

PIC5C BETA EFF

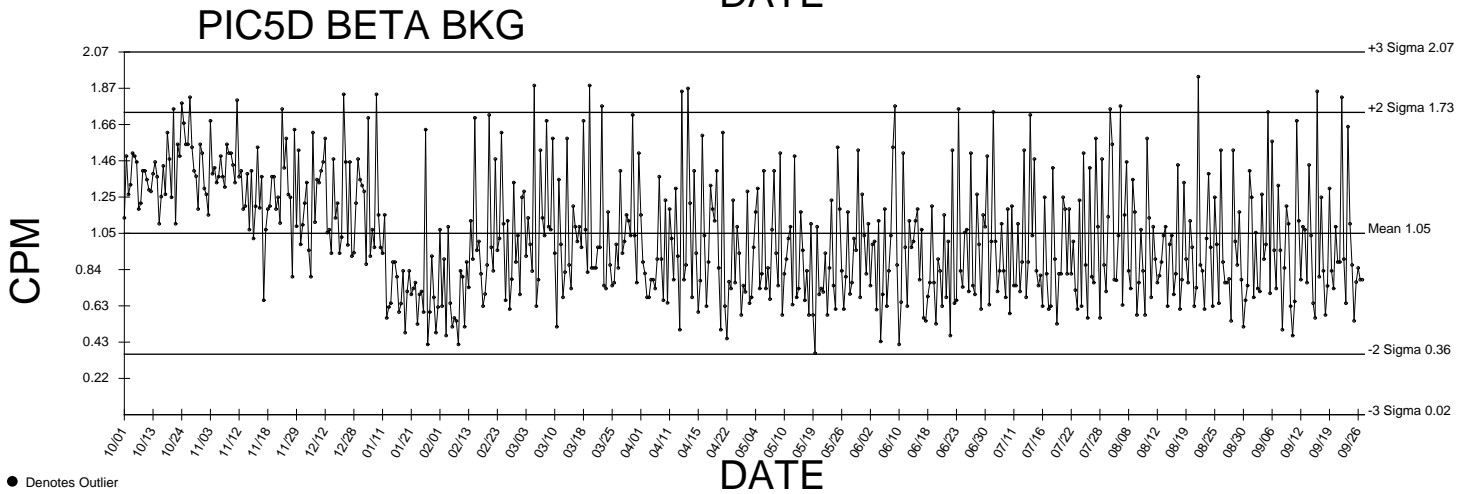
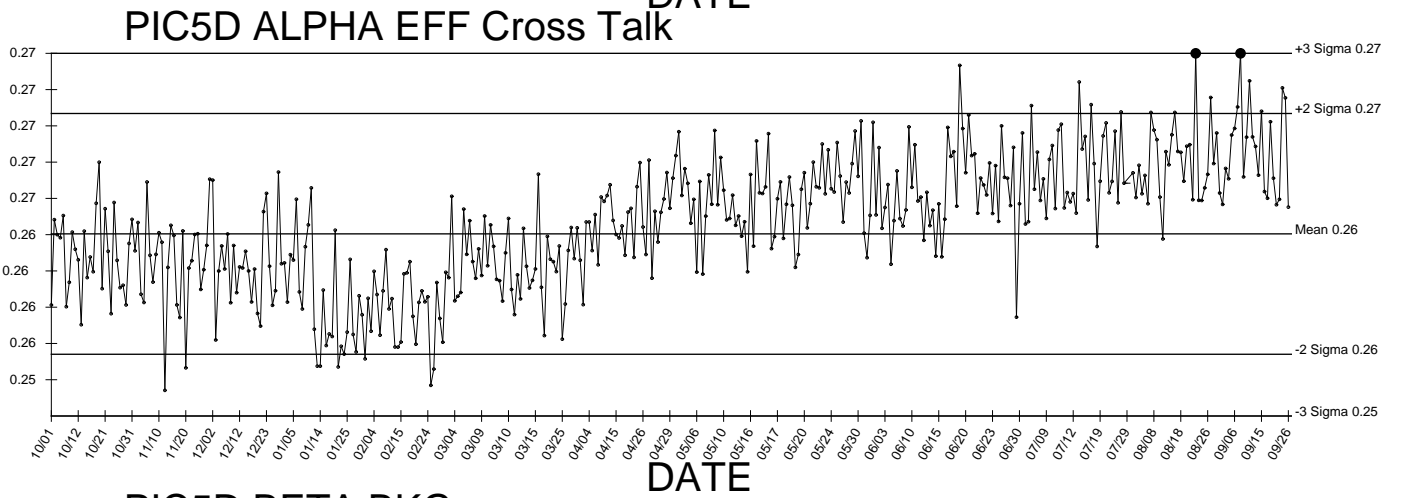
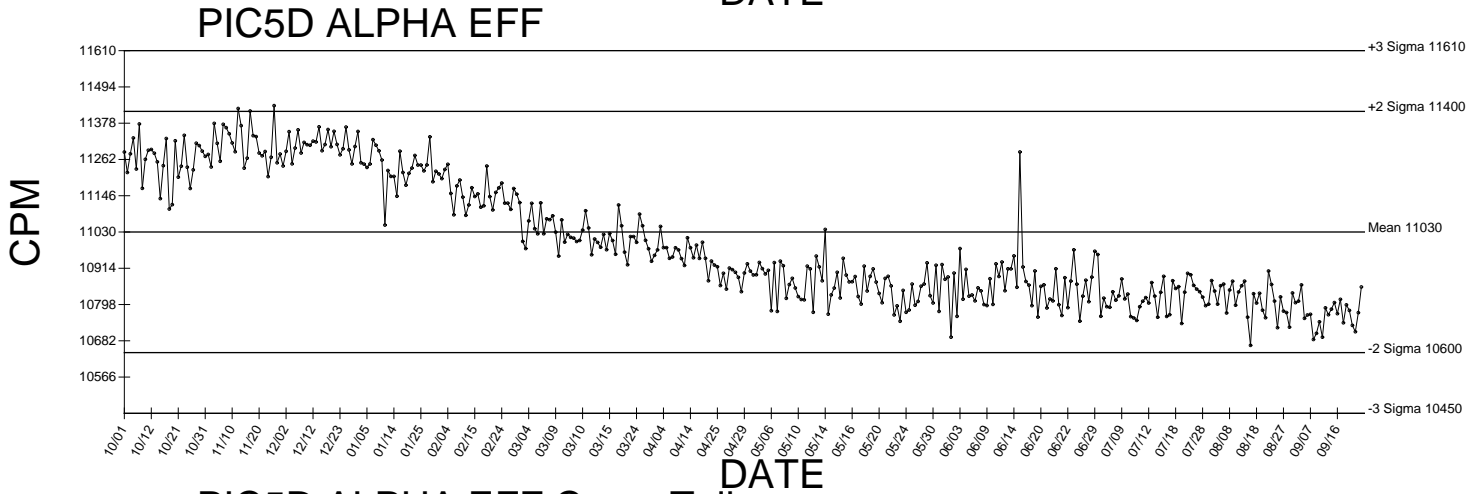
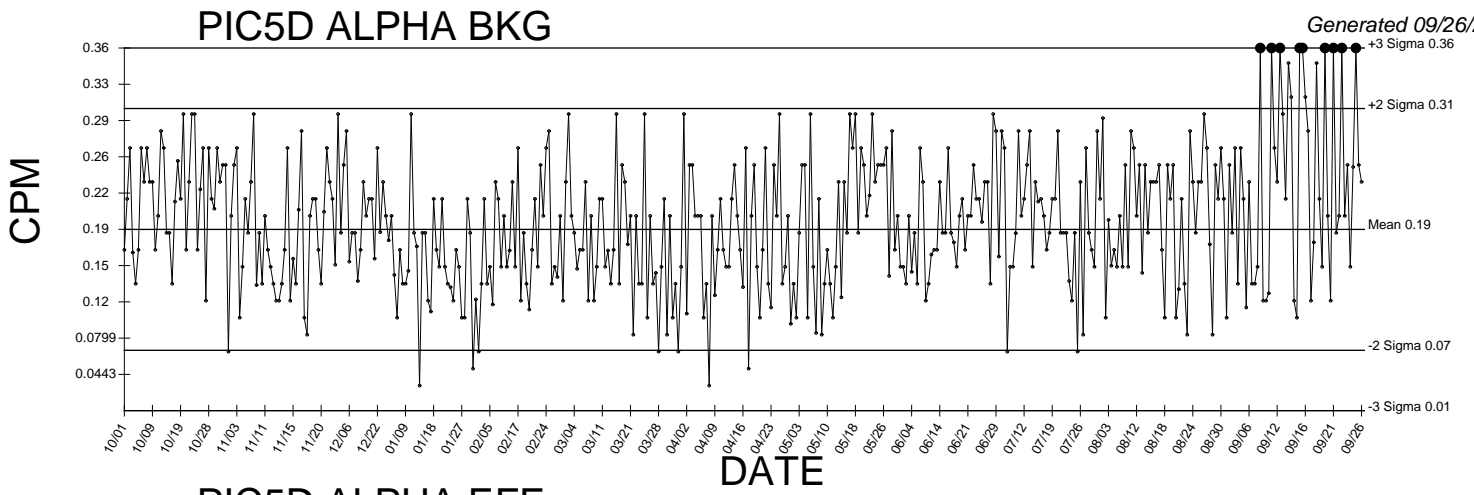
Generated 09/26/2016



PIC5C BETA EFF Cross Talk



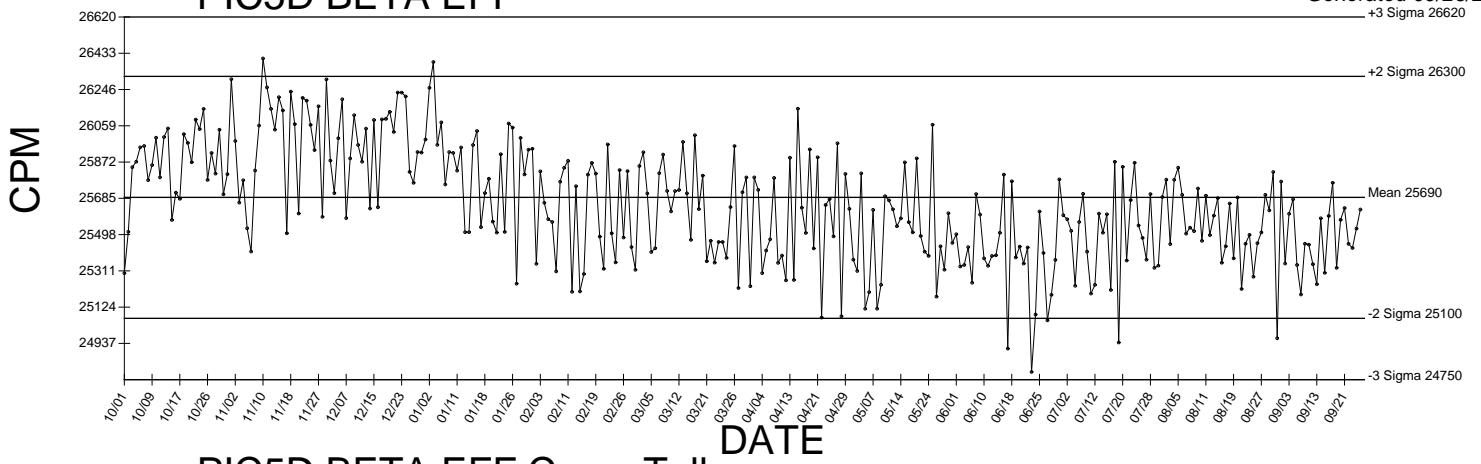
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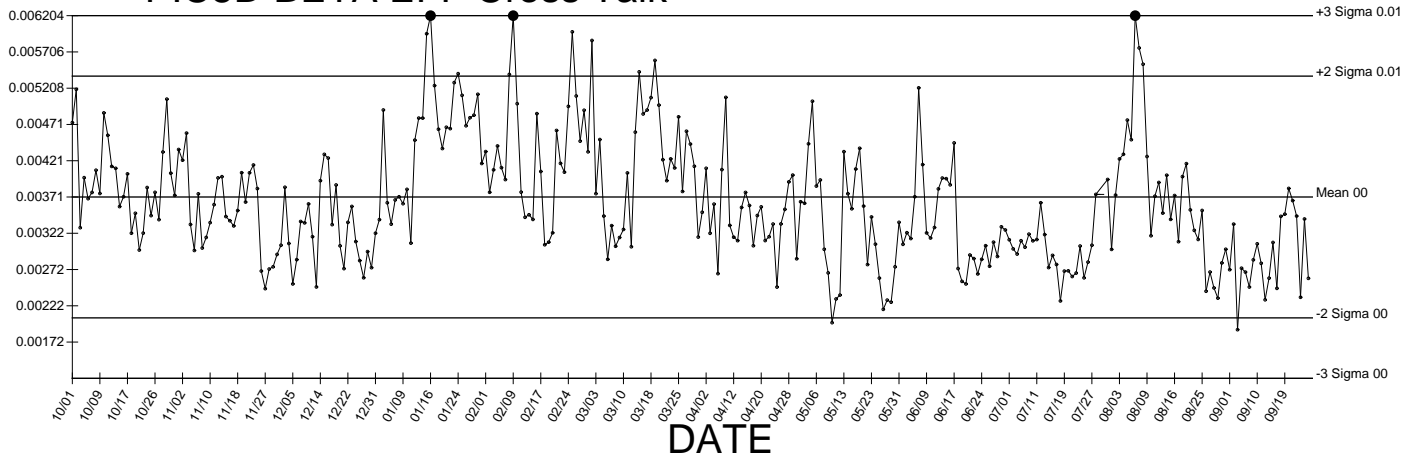
● Denotes Outlier

PIC5D BETA EFF

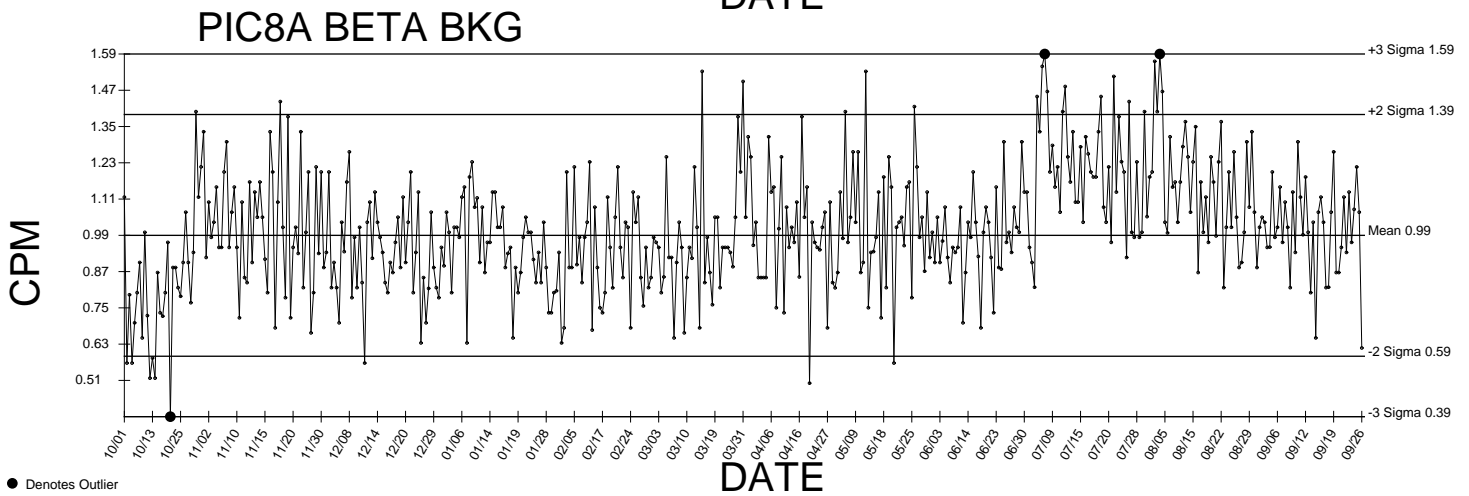
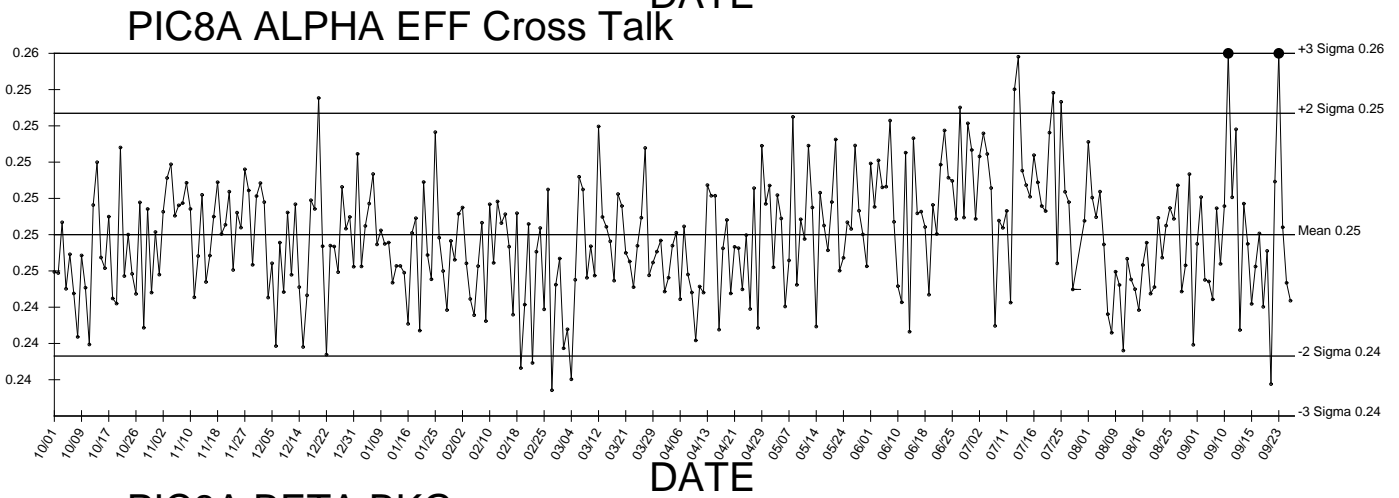
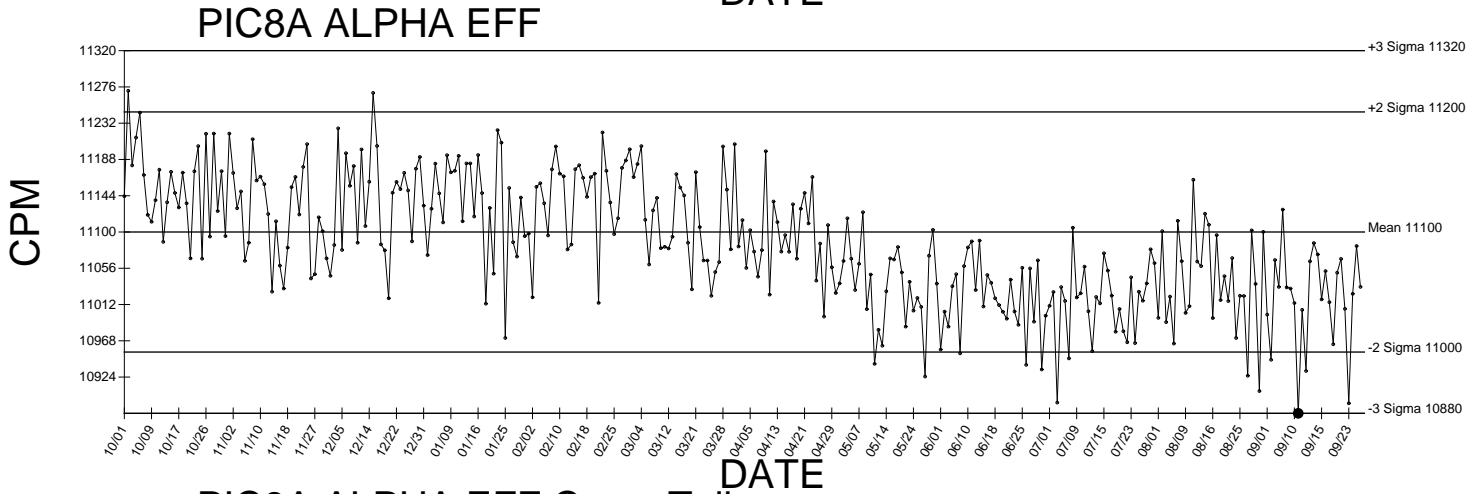
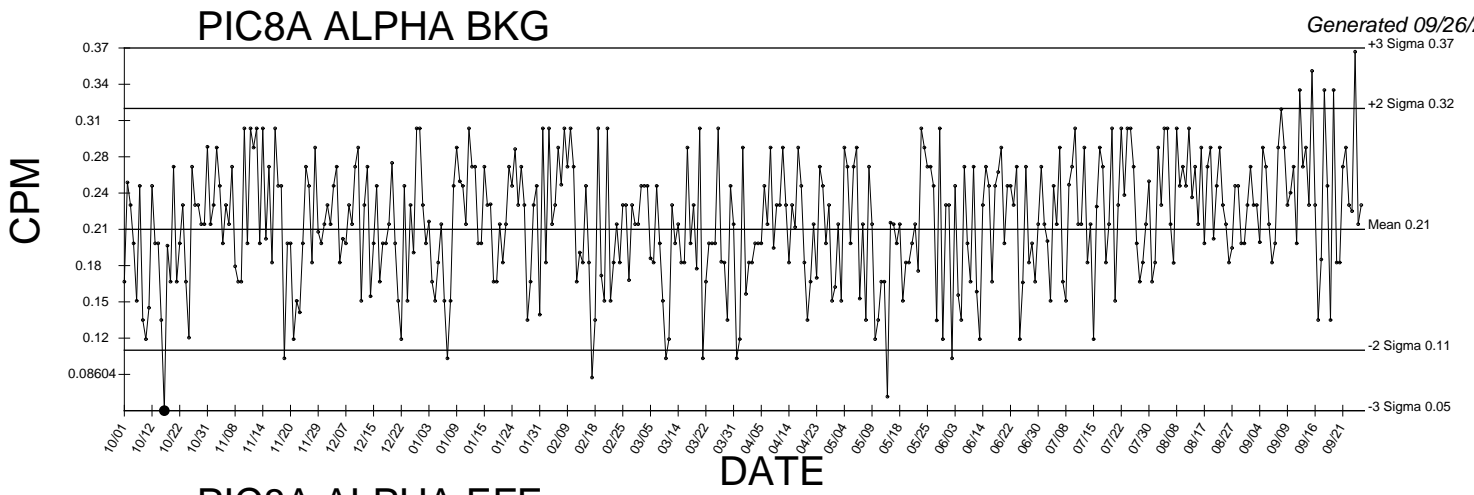
Generated 09/26/2016



PIC5D BETA EFF Cross Talk



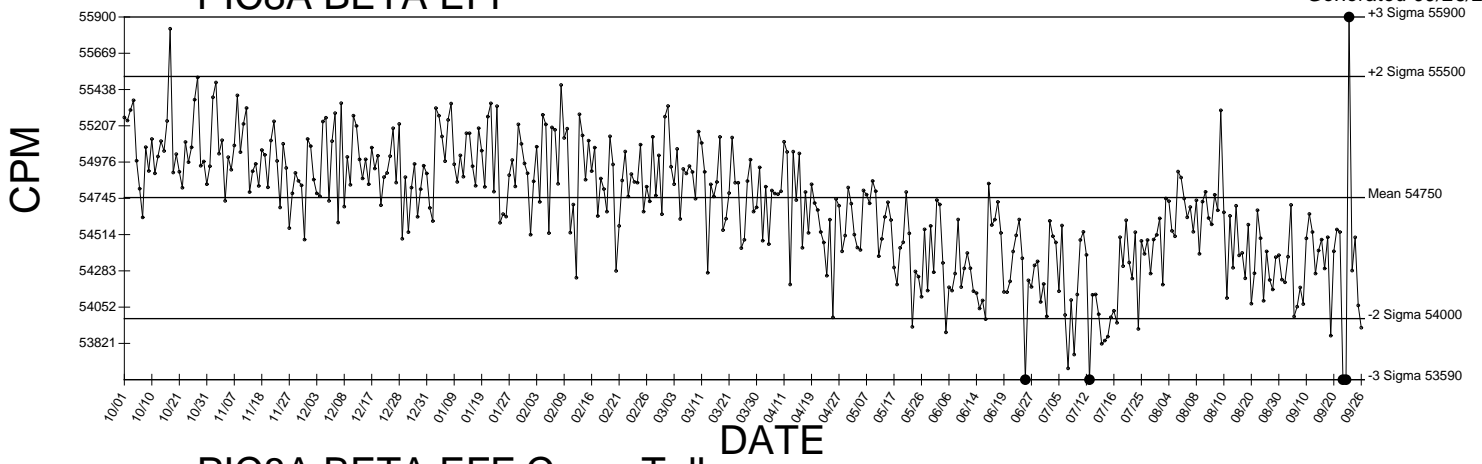
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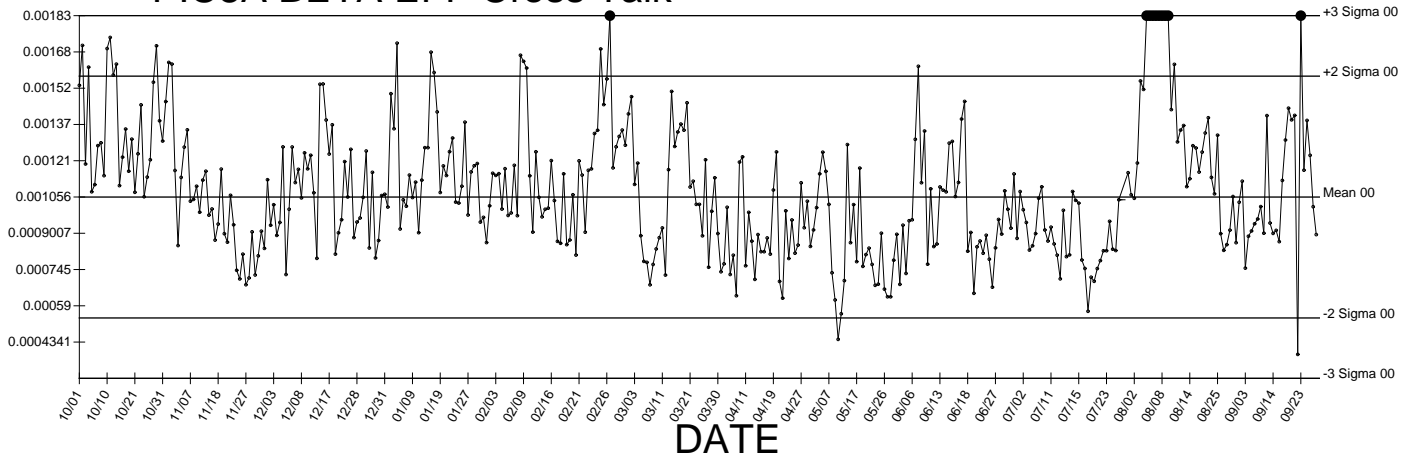
● Denotes Outlier

PIC8A BETA EFF

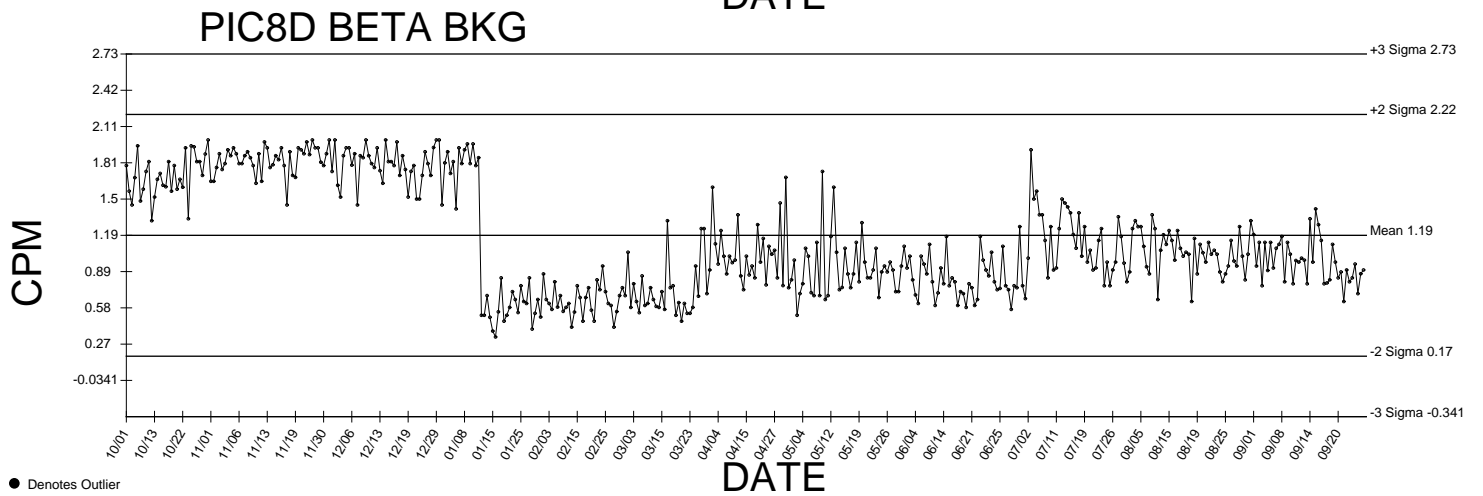
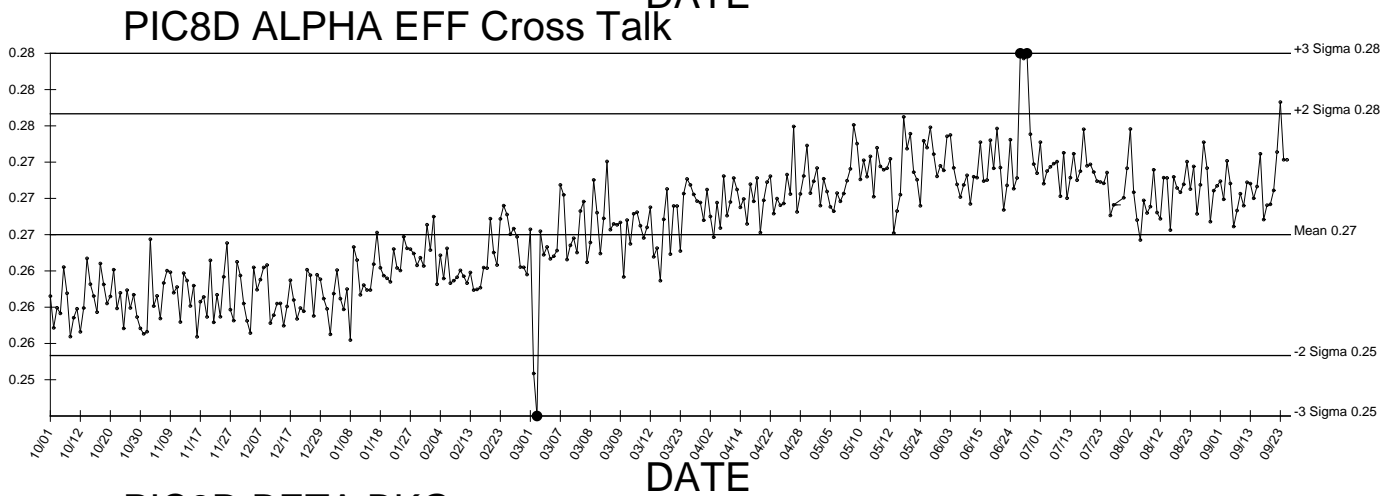
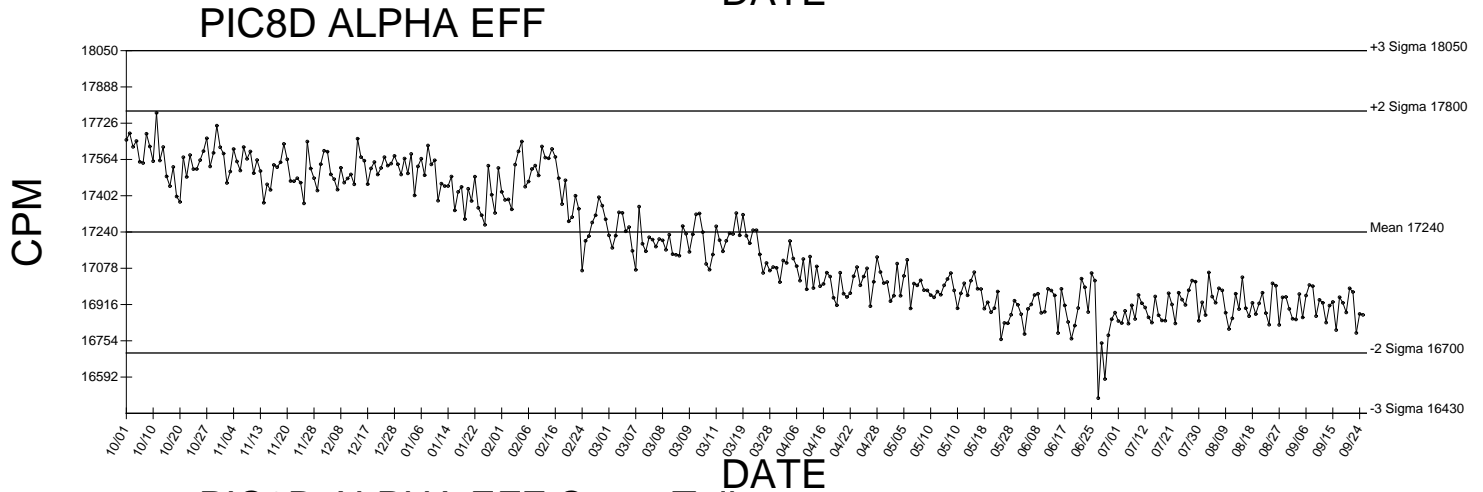
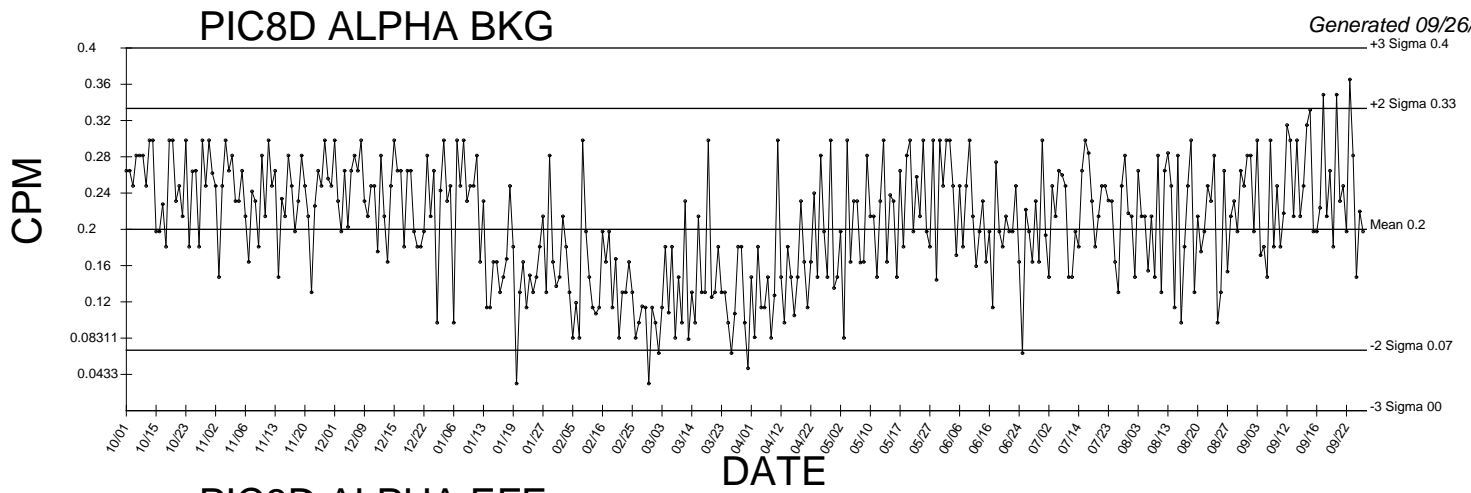
Generated 09/26/2016



PIC8A BETA EFF Cross Talk



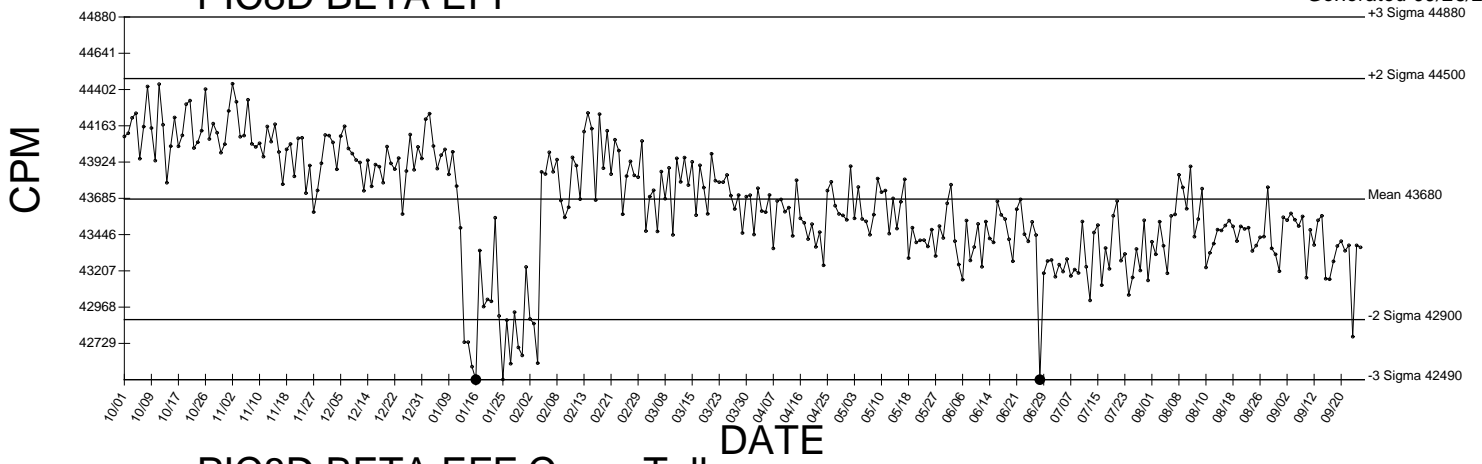
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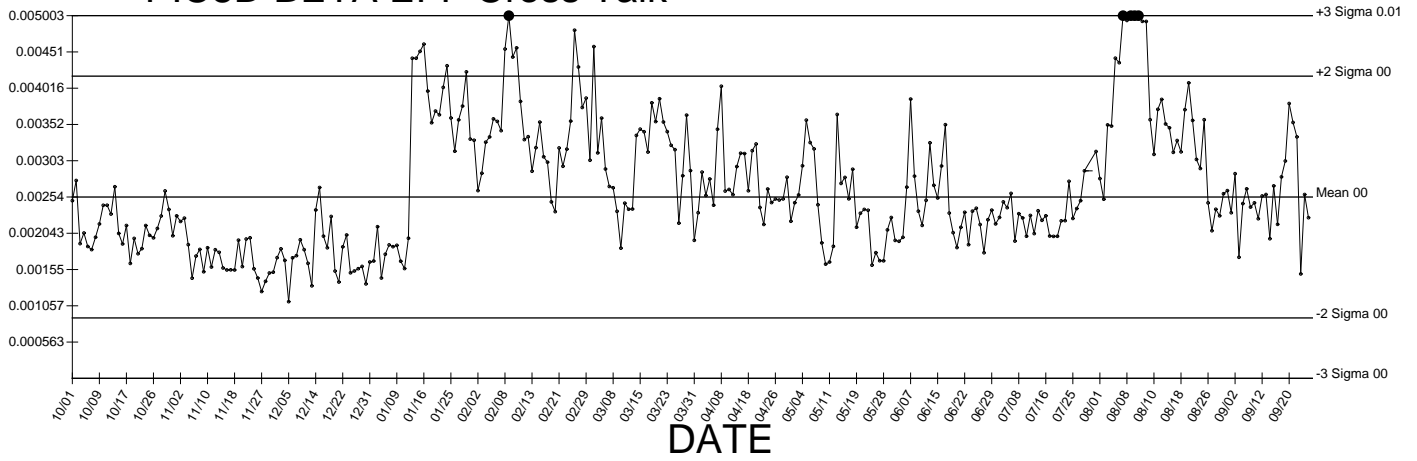
● Denotes Outlier

PIC8D BETA EFF

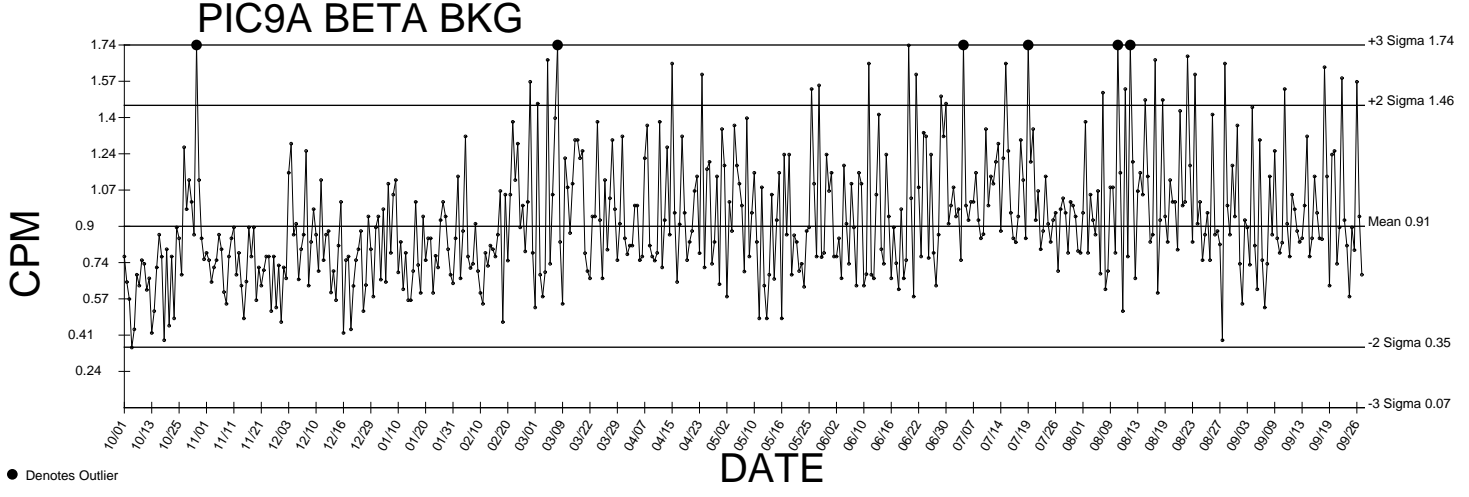
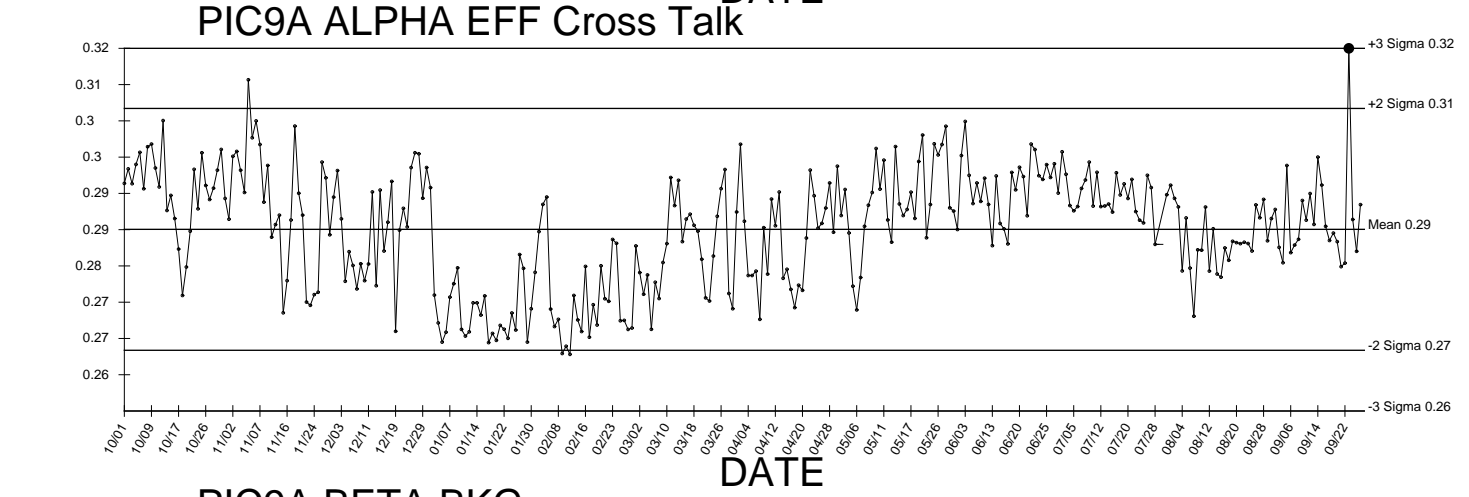
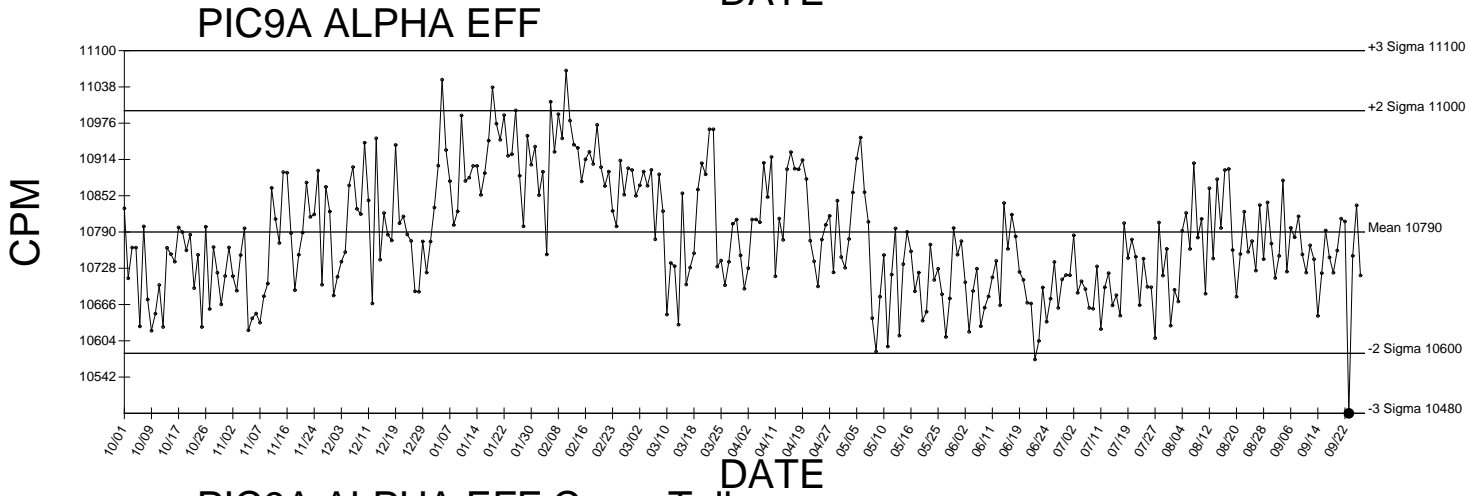
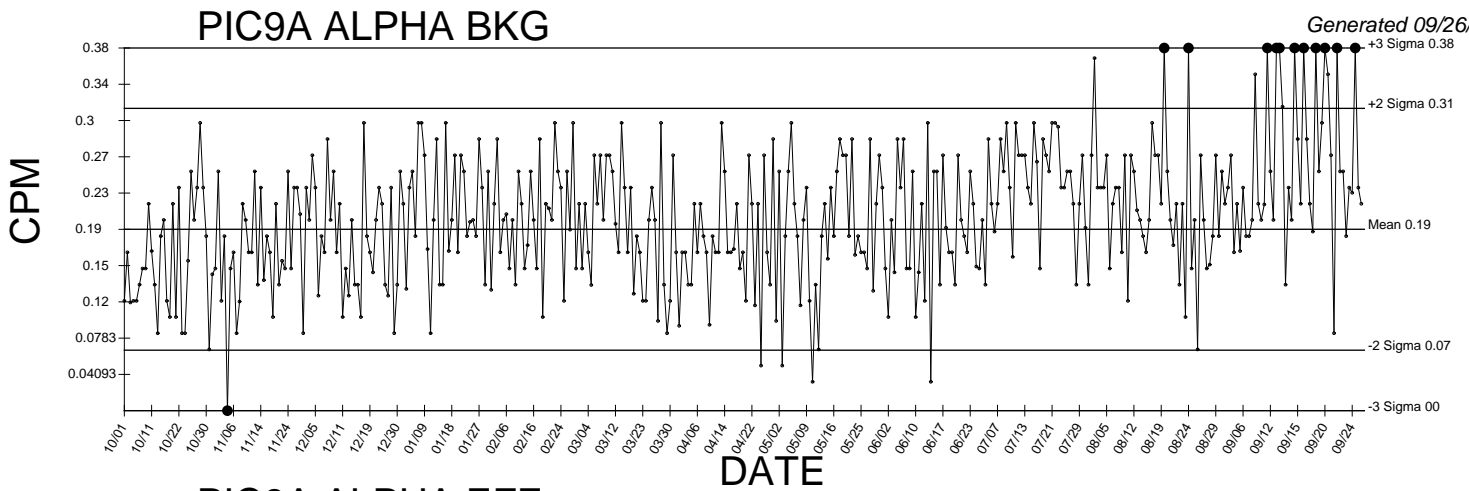
Generated 09/26/2016



PIC8D BETA EFF Cross Talk



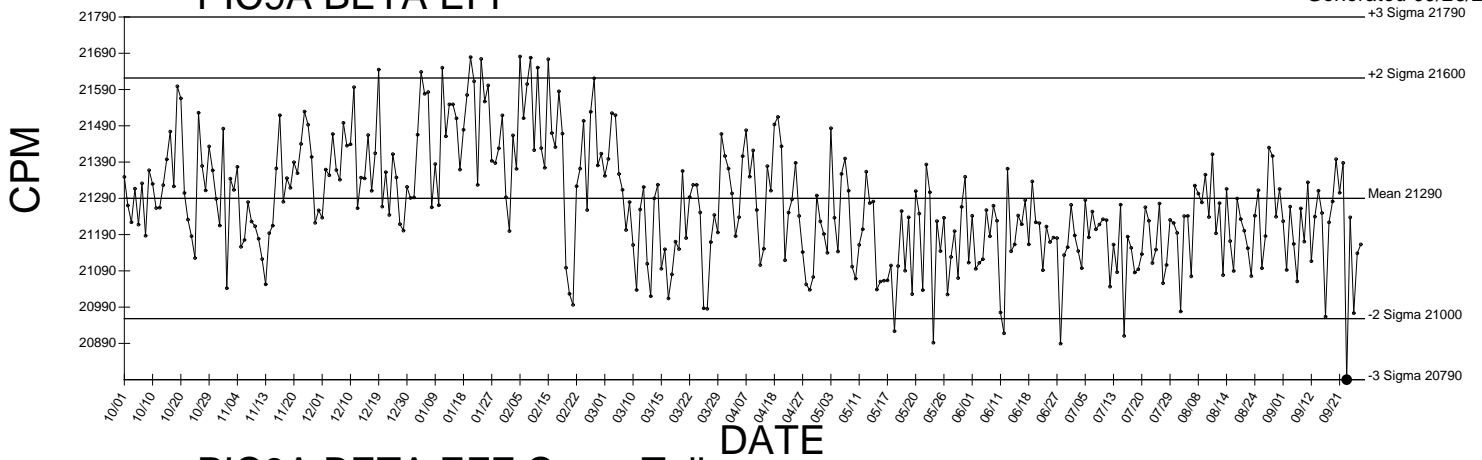
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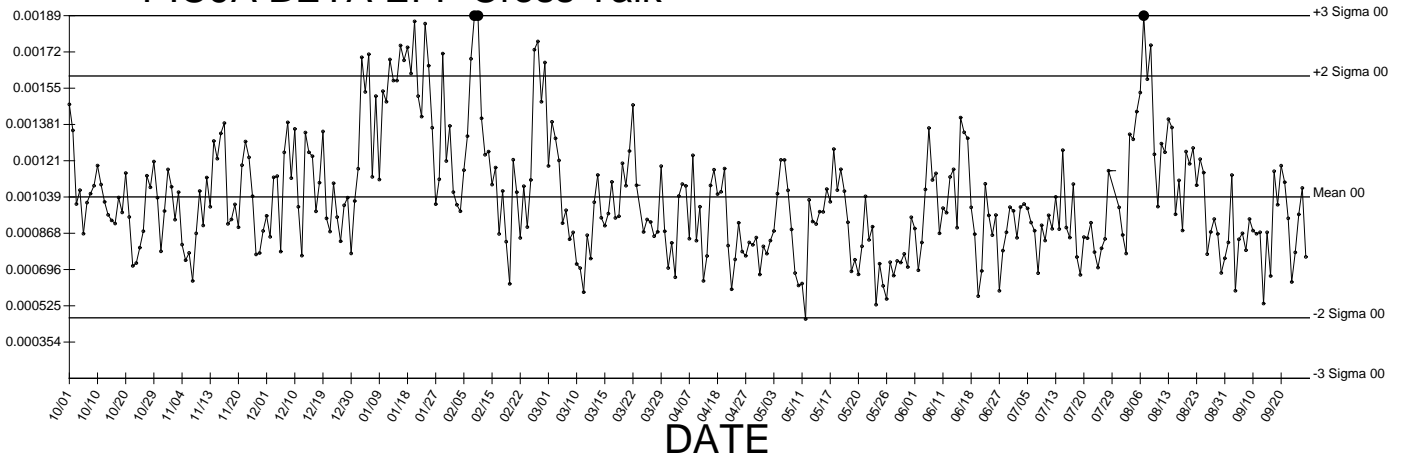
● Denotes Outlier

PIC9A BETA EFF

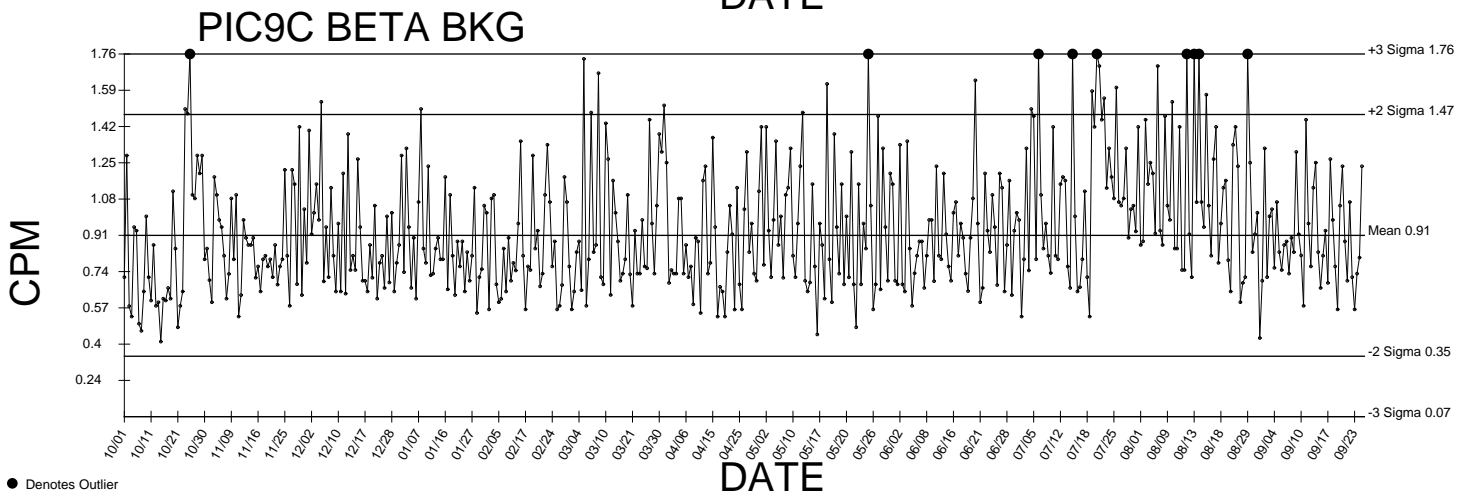
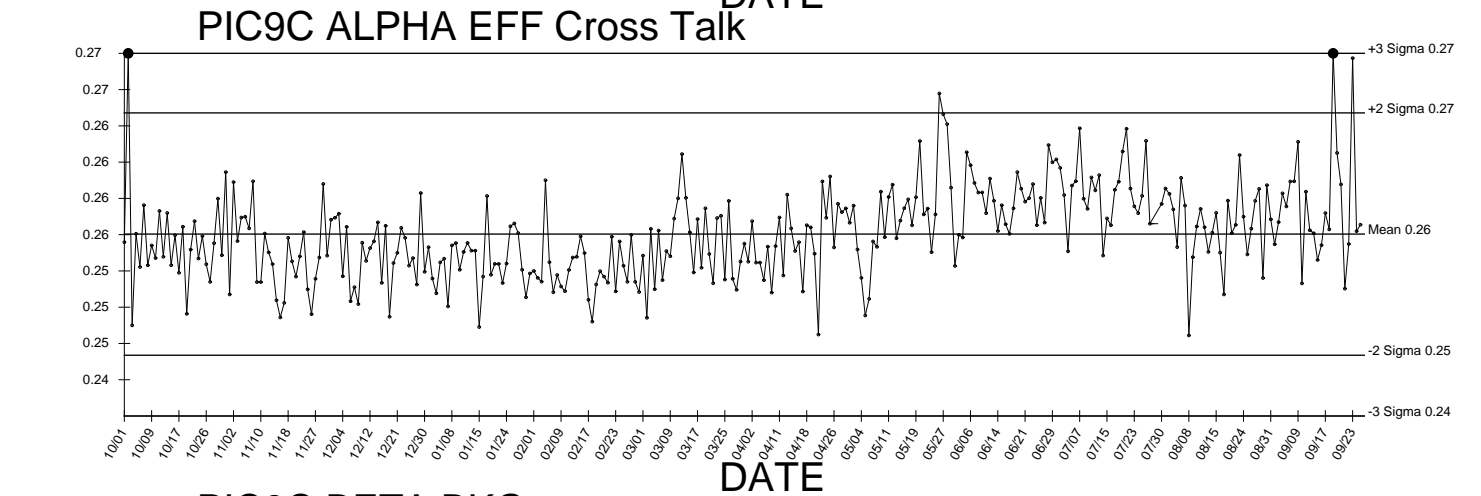
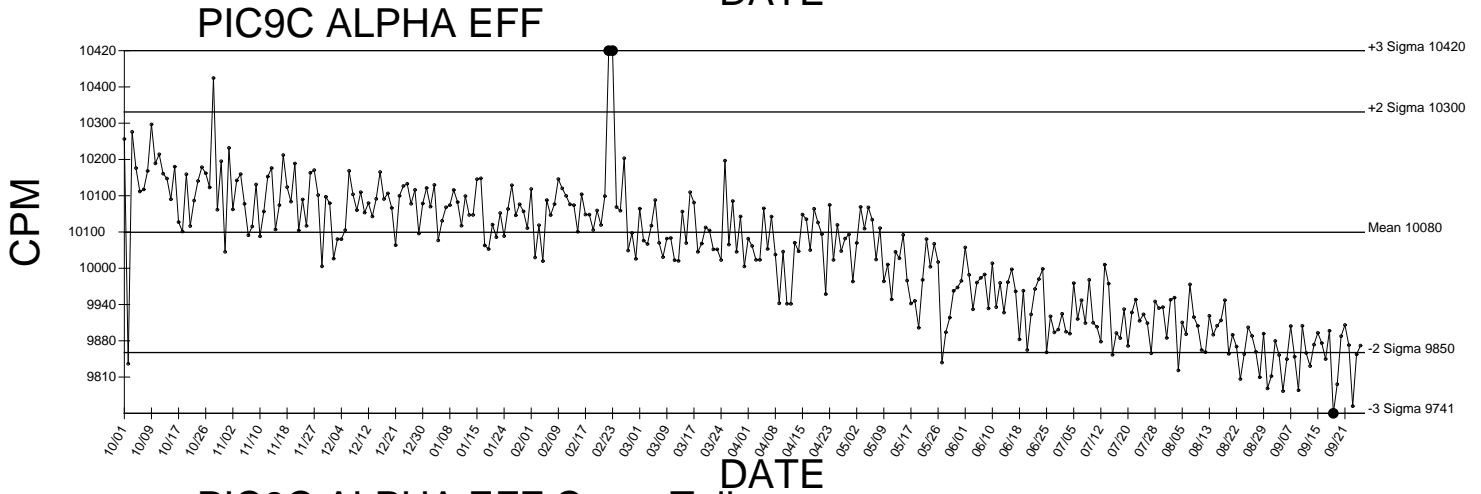
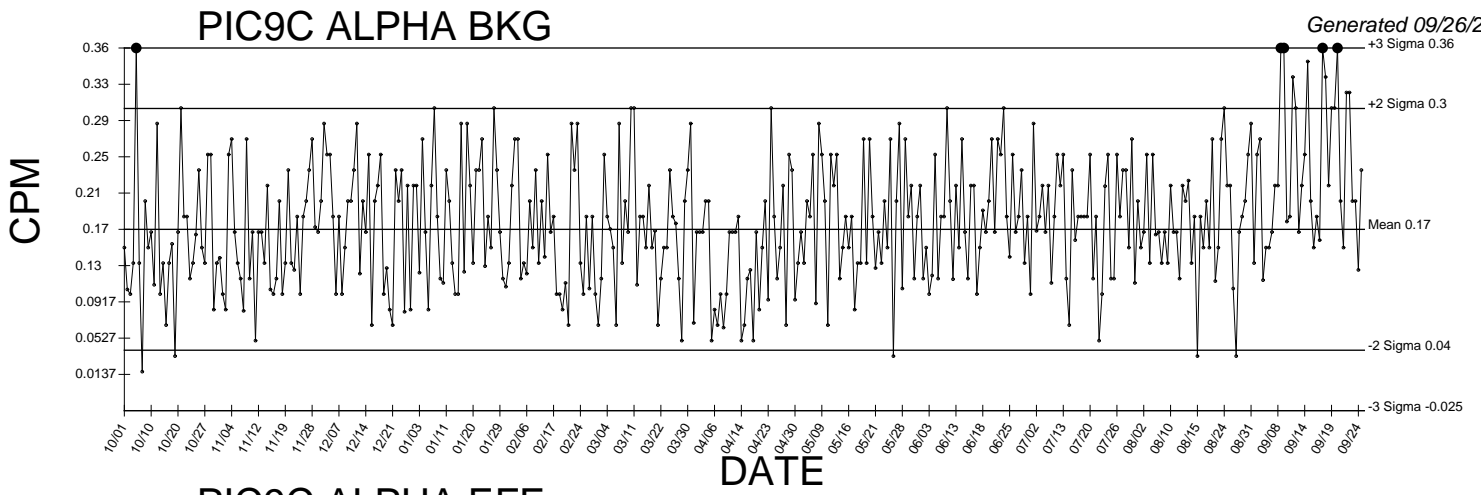
Generated 09/26/2016



PIC9A BETA EFF Cross Talk



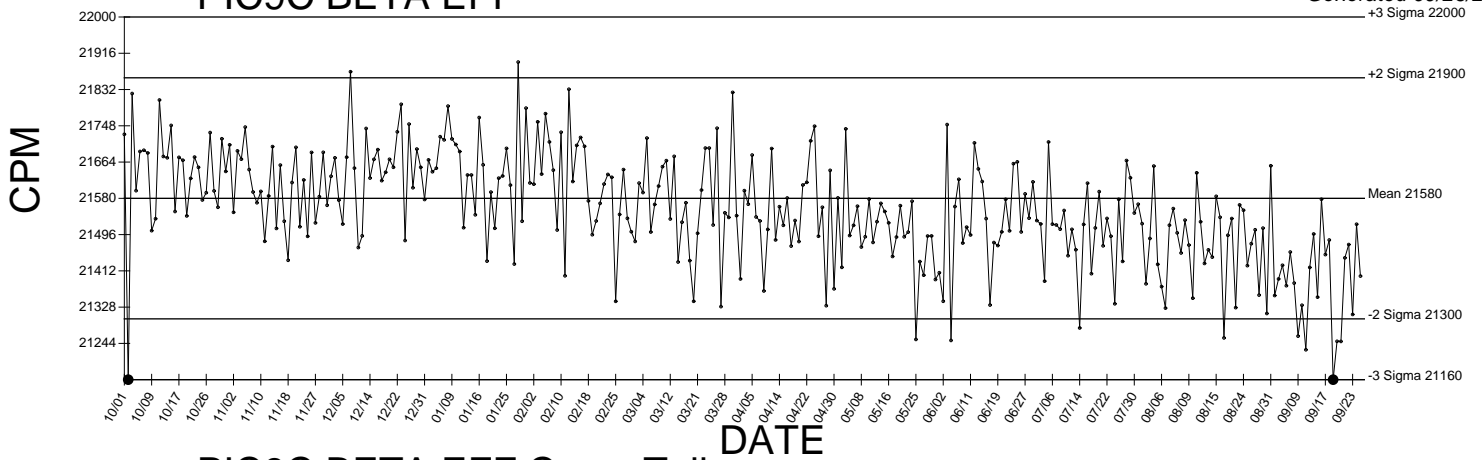
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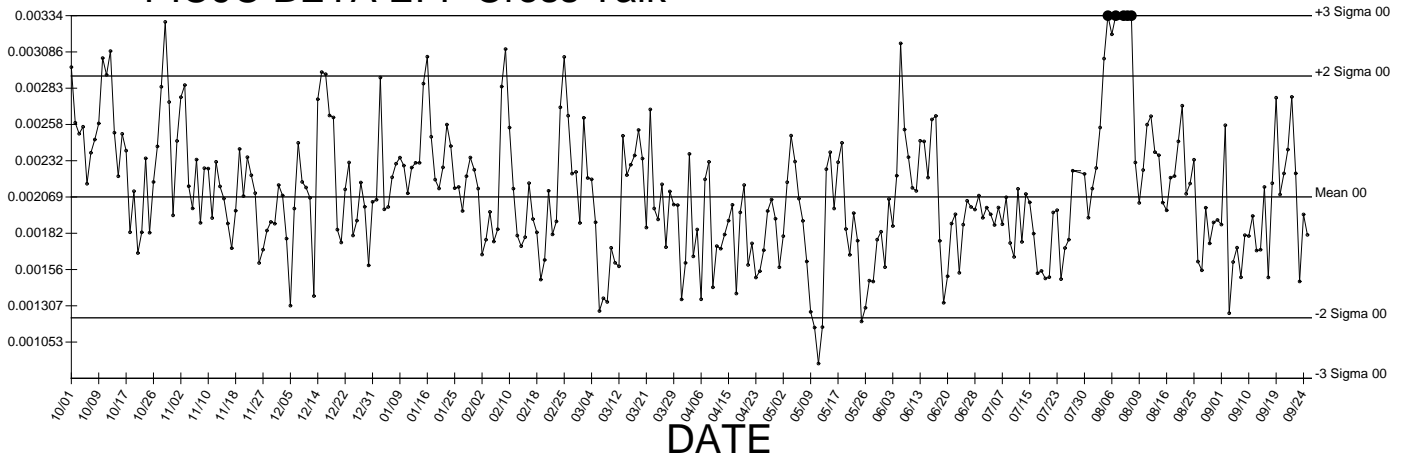
● Denotes Outlier

PIC9C BETA EFF

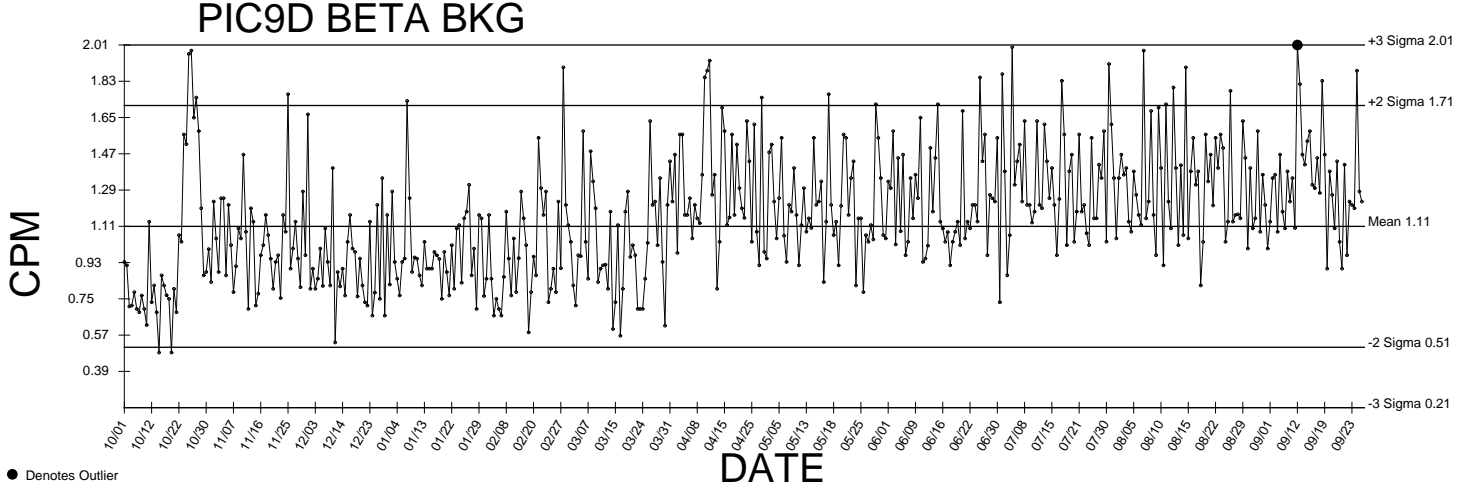
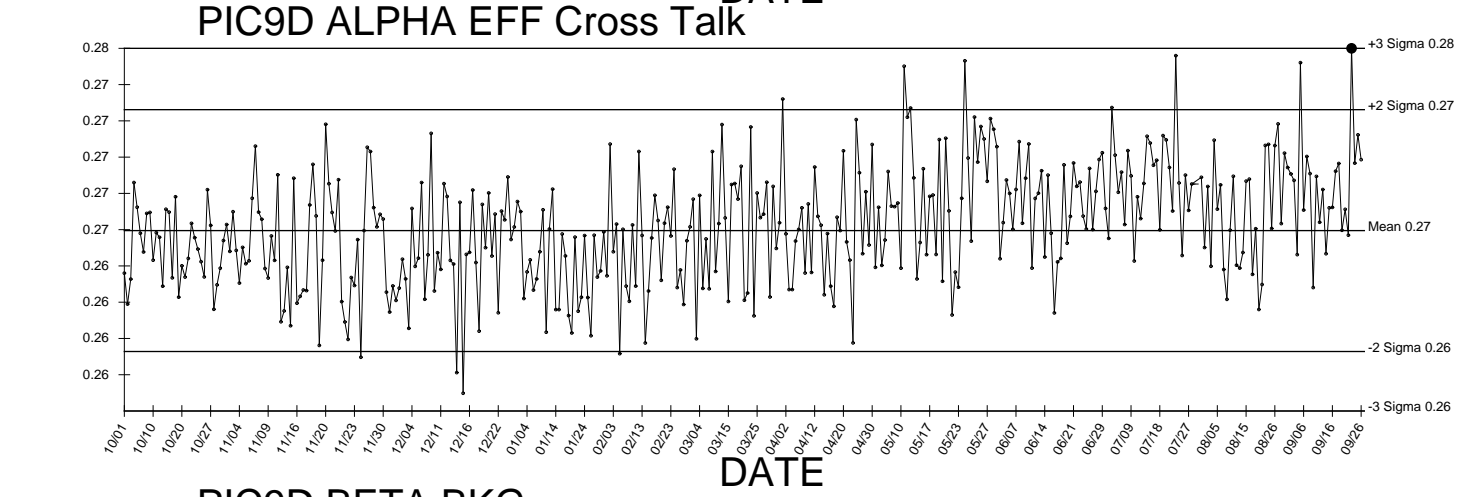
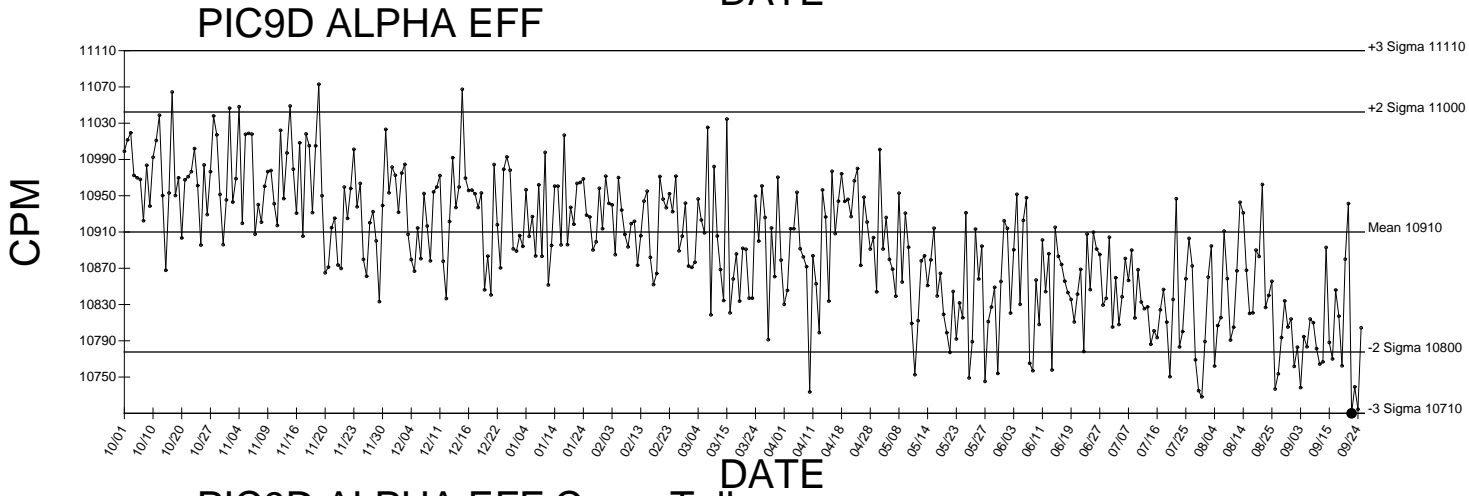
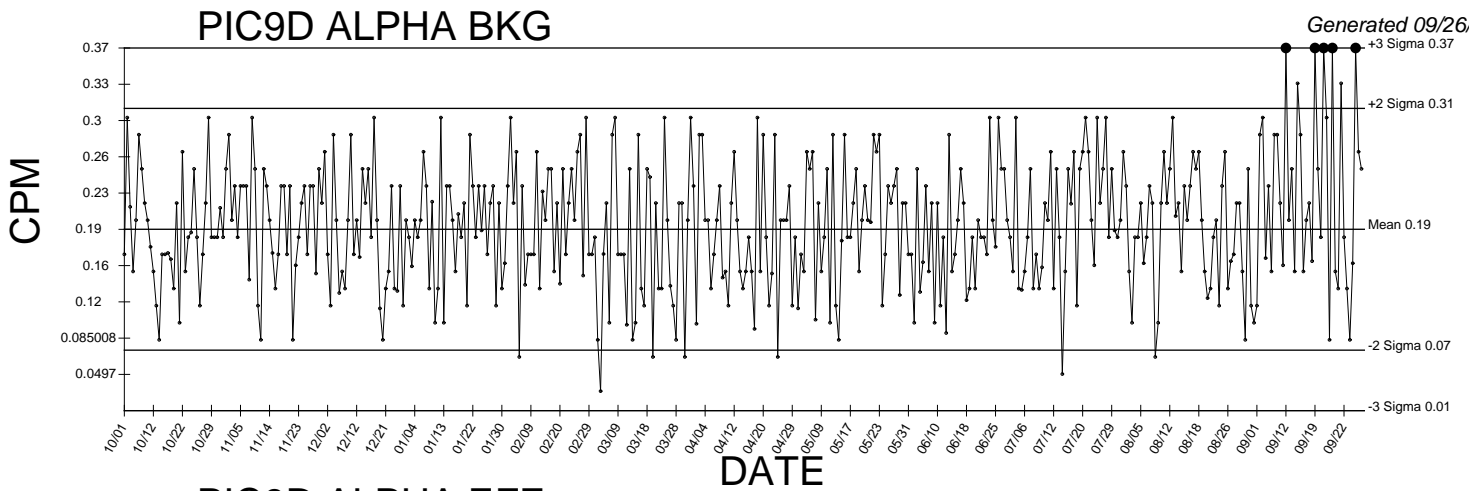
Generated 09/26/2016



PIC9C BETA EFF Cross Talk



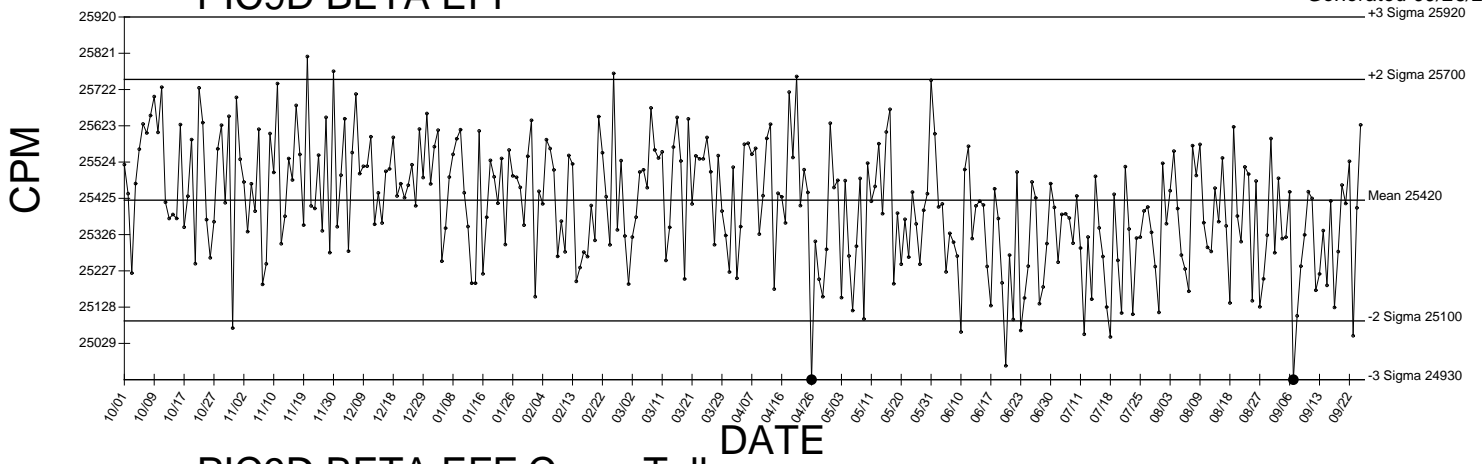
● Denotes Outlier



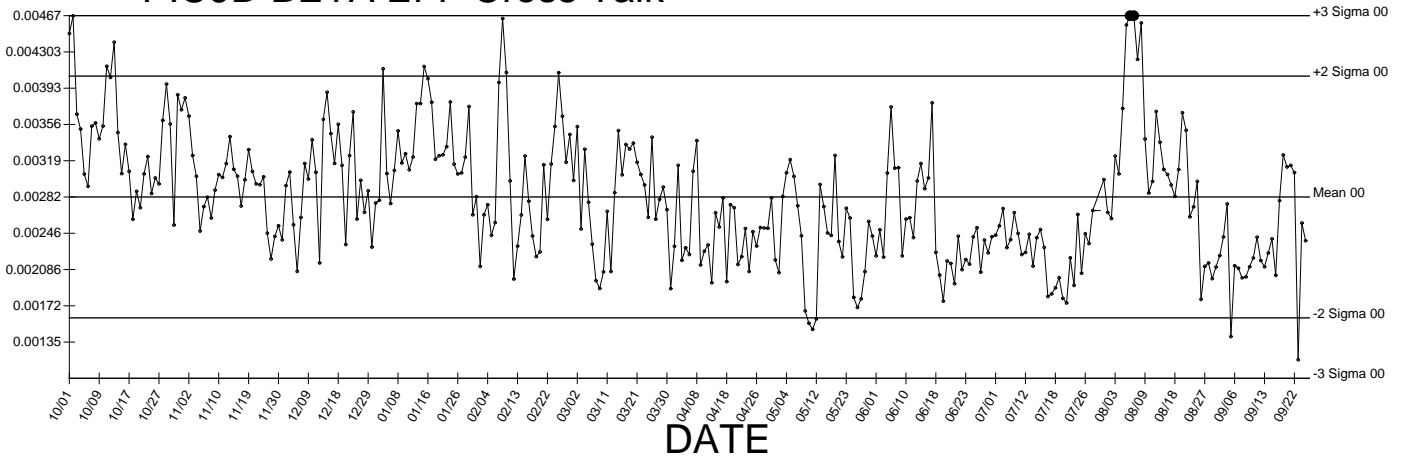
● Denotes Outlier

PIC9D BETA EFF

Generated 09/26/2016



PIC9D BETA EFF Cross Talk



● Denotes Outlier

RAD Standards Traceability



Eckert & Ziegler
 Analytics

1380 Seaboard Industrial Blvd.
 Atlanta, Georgia 30318
 Tel 404-352-8677
 Fax 404-352-2837
 www.analytiscinc.com

CERTIFICATE OF CALIBRATION
 Standard Radionuclide Source

1243

78352-278

Sr-90 10 mL Liquid in Flame Sealed Vial

Customer: General Engineering Labs/Charleston, SC
P.O. No.: 7312 RD, Item 3

This standard radionuclide source was prepared gravimetrically from a calibrated master solution. The master solution was calibrated by liquid scintillation counting.

Radionuclide purity and calibration were checked by germanium gamma-ray spectrometry and liquid scintillation counting. The nuclear decay rate and assay date for this source are given below.

ANALYTICS maintains traceability to the National Institute of Standards and Technology through Measurements Assurance Programs as described in USNRC Reg. Guide 4.15, Revision 1.

Isotope:	Sr-90
Activity (Bq):	3.856 E5
Half-Life:	28.79 years
Calibration Date:	October 1, 2008 12:00 EST
Relative Expanded Uncertainty (k=2):	1.7%

Comments:

Impurities: γ -impurities <0.1%
 10.41484 grams 0.1M HCl solution with 30 μ g/g Sr carrier.

NOTE: This source also contains Y-90 in secular equilibrium with Sr-90. The Y-90 activity is equal to the Sr-90 activity. Since Sr-90 and Y-90 both decay 100% by beta emission, the total beta emission rate for the source is twice the certified Sr-90 activity. The half-life for Y-90 is 64.08 hours.

Source Prepared By: W. Mao
 W. Mao, Radiochemist

QA Approved: D. M. Montgomery
 D. M. Montgomery, QA Manager

Date: 10/3/08

RECEIVED



Standard Traceability Log Rad

Source Material Info	
Parent Code:	1243
Prepared By:	Daniel Roy
Carrier Conc:	0.1M HCL
Reference Date:	10/01/2008
Ampoule Mass (g):	10.41484 g
Uncertainty:	+/- .85 %
LogBook No:	RC-S-048-124

A Solution Material Info			
Isotope:	Strontium-90		
Prepared By:	Daniel Roy		
Prep Date:	12/19/2008		
Verification Date:	09/27/2016		
Expiration Date:	09/27/2017		
Primary Code:	1243-A		
Dilution(mL):	100 mL		
Mass of Parent(g):	10.2164 g		
Density(g/mL):	0.9991	Balance ID:	38080204

Calculations Converting parent activity to dpm/mL|dpm/g

$(\text{Mass of parent(g)} * (\text{Parent Activity (Bq)}) * (\text{conversion dpm to Bq}) / (\text{Ampoule Mass(g)} * (\text{Dilution Vol})) = \text{Parent Activity (dpm/mL)}$
$(\text{Mass of parent(g)} * (\text{Parent Activity (Bq)}) * (\text{conversion dpm to Bq}) / \text{Density} / (\text{Ampoule Mass (g)} * (\text{Dilution Vol})) = \text{Parent Activity (dpm/g)}$
$(10.2164 \text{ g}) * (385600 \text{ Bq}) * (60 \text{ dpm/Bq}) / (10.41484 \text{ g} * 100 \text{ mL}) = 226951.7634 \text{ dpm/mL}$
$(10.2164 \text{ g}) * (385600 \text{ Bq}) * (60 \text{ dpm/Bq}) / (0.9991 \text{ g/mL}) / (10.41484 \text{ g} * 100 \text{ mL}) = 227146.2010 \text{ dpm/g}$

Secondary Standards

Prep Date	Preparer	Mass Primary	Dilution (mL)	Code	Conc dpm/mL	Verification Date	Expiration Date
01/21/2010	Bethany Fiem	2.2467	1000	1243-B	510.329369 dpm/mL	01/21/2010	01/21/2011
08/03/2010	Bethany Fiem	2.5604	1000	1243-C	581.5851 dpm/mL	08/03/2010	08/03/2011
01/12/2011	Bethany Fiem	2.4946	1000	1243-D	566.6389 dpm/mL	01/12/2011	01/12/2012
08/12/2011	Tim Chandler	3.3115	100	1243-G	18.7877 dpm/mL	03/26/2014	03/25/2015
08/17/2011	Tim Chandler	2.5541	100	1243-H	14.49064 dpm/mL	03/26/2014	03/25/2015
06/21/2011	Tim Chandler	.0235	100	1243-E	53.37936 dpm/mL	03/19/2014	06/20/2014
07/05/2011	Bethany Fiem	2.6072	1000	1243-F	592.2156 dpm/mL	07/05/2011	07/05/2012
01/31/2012	Gregory Ramsay	2.6792	1000	1243-I	608.5701 dpm/ml	01/31/2012	01/31/2013

08/29/2012	Bethany Fiem	2.6799	1000	1243-J	608.729104 dpm/mL	09/14/2012	09/11/2013
02/12/2013	Gregory Ramsay	2.6526	1000	1243-K	602.528 dpm/ml	01/15/2014	01/15/2015
12/04/2013	Gregory Ramsay	2.5347	1000	1243-L	575.747476 dpm/ml	12/04/2013	12/04/2014
08/11/2014	Gregory Ramsay	2.7006	1000	1243-M	613.431 dpm/mL	08/12/2014	08/12/2015
05/06/2015	Gregory Ramsay	2.5102	1000	1243-N	570.1824 dpm/mL	05/06/2015	05/06/2016
12/18/2015	Gregory Ramsay	2.5762	1000	1243-O	585.174 dpm/mL	12/18/2015	12/18/2016
08/30/2016	Christina Kimball	.068	250	1243-P	61.7838 dpm/mL	09/07/2016	09/07/2017
09/27/2016	Bethany Fiem	2.6337	1000	1243-Q	598.235 dpm/mL	09/27/2016	09/27/2017

GEL Laboratories LLC
Version 1.0 9/18/2000

Verification for Sr-90 Standard 1243-O

v1.0.2

Instrument	BLUE
Analyst	BXF1
Verification Prep Date	12/18/2015

Standard Information	
Isotope	Sr-90
Serial Number	1243-O
Isotope Half-life	28.9000 Y
Reference Date	10/1/2008
Ref. Act. (DPM/mL)	585.174
Amount of Std. (mL)	1.0
Standard Prep Date	12/18/2015

Std #	Count Date	Quench Number	Gross cpm	Bkg cpm
1	12/30/2015	88.50	1073.20	39.80
2	12/30/2015	90.20	1062.80	39.80
3	12/30/2015	89.60	1064.60	39.80

Std #	Net cpm	Calculated Avg. Eff.	Standard dpm/mL	Measured dpm
1	1033.40	2.017144	512.31	512.31
2	1023.00	2.017144	507.15	507.15
3	1024.80	2.017144	508.04	508.04

dpm/mL
509.17
2.755468033

Mean Value =
Stdev =

Certificate Value* = 491.8
Two sigma = 5.511
10 % of Mean = 50.917
Rule A (Pass/Fail) Pass
% Recovery 103.52%
Rule B (Pass/Fail) Pass
Expiration Date 12/18/2016

Verification Rules

Rule A = The two sigma value used for the 95% confidence interval shall not exceed 10% of the mean value of the three verification measurements.
Rule B = The determined mean value shall be within 5% of the certificate value.

* Certificate Value is decay corrected to Count Date.

The analyst prepared three standard verification sources for Sr-90 source 1243-O by transferring 1 mL portions of the standard into glass liquid scintillation vials. 10 mL of Ecocint Ultra liquid scintillation cocktail was added to each vial and the vials were shaken to mix. A Blank vial was prepared in a similar fashion using 10 mL of Ecocint Ultra liquid scintillation cocktail. The standard verification vials and background source were dark adapted for at least two hours and counted on LSCBLUE for Sr-90 source standard verification. The Sr-90 efficiency calibration which was used for verification calculations was performed on 12/18/2015 using Sr-90 source 1244-A.

Standard results for each verification source was calculated as follows:

$$\text{Source dpm/mL} = (A - B)/(C/D)$$

where:

- A = Ver. source cpm,
- B = BKG cpm,
- C = System efficiency (cpm/dpm), and
- D = volume used for standard verification.

RAD-M-001

Handwritten signature and date 12/30/15

Amanda Teh

CERTIFICATE OF CALIBRATION
Standard Radionuclide Source

1493

82898-278

5 mL Liquid in Flame Sealed Vial

Customer: GEL Labs, LLC
P.O. No.: 7344 RD, Item 1

This standard radionuclide source was prepared gravimetrically from a master solution, calibrated by Eckert & Ziegler Analytics. The master solution was calibrated by liquid scintillation counting. Radionuclide purity and calibration were checked by germanium gamma-ray spectrometry and liquid scintillation counting. The nuclear decay rate and reference date for this source are given below. Eckert & Ziegler Analytics (EZA) maintains traceability to the National Institute of Standards and Technology through a Measurements Assurance Program as described in USNRC Regulatory Guide 4.15, Revision 1, February, 1979, and compliance with ANSI N42.22-1995, "Traceability of Radioactive Sources to NIST." EZA is accredited by the Health Physics Society (HPS) for the production of NIST-traceable sources, and this source was produced in accordance with the HPS accreditation requirements. Customers may report any concerns with the accreditation program to the HPS Secretariat, 1313 Dolley Madison Blvd., Ste. 402, McLean, VA 22101.

Isotope	Half-Life, Days	Activity (Bq)	Uncertainty* , %			Reference Date (12:00 PM EST)
			u_A	u_B	U	
Th-230	2.753E+07	3.942E+04	0.1	0.9	1.8	07/29/2010

***Uncertainty:** U - Relative expanded uncertainty, k = 2. See NIST Technical Note 1297, "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Results."

Comments:

Impurities: γ -impurities < 0.1 %, α -impurities < 0.04 %. 5.10422 grams 0.5M HNO₃ solution.

Source Prepared by: W. Mao
W. Mao, Radiochemist

QA Approved: D. M. Montgomery
D. M. Montgomery, QA Manager Alternate

Date: 7-29-10

RECEIVED
8/3/10



RC-S-060-040



Standard Traceability Log Rad

Source Material Info	
Parent Code:	1493
Prepared By:	Gregory Ramsay
Carrier Conc:	0.5M HNO3
Reference Date:	07/29/2010
Ampoule Mass (g):	5.10422 g
Uncertainty:	+/- 1.8 %
LogBook No:	RC-S-060-040

A Solution Material Info			
Isotope:	Thorium-230		
Prepared By:	Bethany Fiem		
Prep Date:	06/24/2015		
Verification Date:	09/27/2016		
Expiration Date:	09/27/2017		
Primary Code:	1493-A		
Dilution(mL):	100 mL		
Mass of Parent(g):	5.0802 g		
Density(g/mL):	1.0011	Balance ID:	38080204

Calculations Converting parent activity to dpm/mL|dpm/g

$(\text{Mass of parent(g)} * (\text{Parm Activity (Bq)}) * (\text{conversion dpm to Bq}) / (\text{Ampoule Mass(g)} * (\text{Dilution Vol})) = \text{Parent Activity (dpm/mL)}$
$(\text{Mass of parent(g)} * (\text{Parm Activity (Bq)}) * (\text{conversion dpm to Bq}) / \text{Density} / (\text{Ampoule Mass (g)} * (\text{Dilution Vol})) = \text{Parent Activity (dpm/g)}$
$(5.0802 \text{ g}) * (39420 \text{ Bq}) * (60 \text{ dpm/Bq}) / (5.10422 \text{ g} * 100 \text{ mL}) = 23540.6958 \text{ dpm/mL}$
$(5.0802 \text{ g}) * (39420 \text{ Bq}) * (60 \text{ dpm/Bq}) / (1.0011 \text{ g/mL}) / (5.10422 \text{ g} * 100 \text{ mL}) = 23515.7691 \text{ dpm/g}$

Secondary Standards

Prep Date	Preparer	Mass Primary	Dilution (mL)	Code	Conc dpm/mL	Verification Date	Expiration Date
06/24/2015	Bethany Fiem	11.3156	1000	1493-B	266.095 dpm/mL	06/08/2016	06/08/2017
09/27/2016	Bethany Fiem	11.4091	1000	1493-C	268.294 dpm/mL	09/27/2016	09/27/2017

GEL Laboratories LLC
Version 1.0 9/18/2000

Verification for Th-230 Standard 1493-B

v1.0.2

Instrument	BLUE
Analyst	TC1
Verification Prep Date	6/8/2016

Standard Information	
Isotope	Th-230
Serial Number	1493-B
Isotope Half-life	7.5380E+04 Y
Reference Date	7/29/2010
Ref. Act. (DPM/mL)	266.095
Amount of Std. (mL)	1.0
Standard Prep Date	6/24/2015

Std #	Count Date	Quench Number	Gross cpm	Bkg cpm
1	6/8/2016	95.10	312.60	38.67
2	6/8/2016	95.30	306.40	38.67
3	6/8/2016	95.20	312.20	38.67

Std #	Net cpm	Calculated Avg. Eff.	Standard dpm/mL	Measured dpm
1	273.93	1.007294	271.95	271.95
2	267.73	1.007294	265.79	265.79
3	273.53	1.007294	271.55	271.55

dpm/mL
 Mean Value = 269.76
 Stdev = 3.444745088
 Certificate Value* = 266.1
 Two sigma = 6.889
 10 % of Mean = 26.976
 Rule A (Pass/Fail) Pass
 % Recovery 101.38%
 Rule B (Pass/Fail) Pass
 Expiration Date 6/8/2017

Verification Rules

- Rule A = The two sigma value used for the 95% confidence interval shall not exceed 10% of the mean value of the three verification measurements.
- Rule B = The determined mean value shall be within 5% of the certificate value.

* Certificate Value is decay corrected to Count Date.

The analyst prepared three standard verification sources for Th-230 source 1493-B by transferring 1 mL portions of the standard into glass liquid scintillation vials. 10 mL of Ecocint Ultra liquid scintillation cocktail was added to each vial and the vials were shaken to mix. A Blank vial was prepared in a similar fashion using 10 mL of Ecocint Ultra liquid scintillation cocktail. The standard verification vials and background source were dark adapted for at least two hours and counted on LSCBLUE for Th-230 source standard verification. The Th-230 efficiency calibration which was used for verification calculations was performed on 6/8/2016 using Th-230 source 1759-A.

Standard results for each verification source was calculated as follows:

$$\text{Source dpm/mL} = (A - B)/(C)(D)$$

where:

- A = Ver. source cpm,
- B = BKG cpm,
- C = System efficiency (cpm/dpm), and
- D = volume used for standard verification.

RAD-M-001

TC1
6-8-16

Runlogs

Instrument Run Log

Instrument Type: GFPC

Batch ID: 1597819

Sample ID	Sample Type	Analyst	Instrument	Run Date	Status	Geometry	Calibration Date
1203625471	MB	JXC9	PIC4B	SEP-26-16 13:58:44	DONE	2 inch Planchett	01-DEC-15 00:01
1203625475	LCS	JXC9	PIC9A	SEP-26-16 13:58:47	DONE	2 inch Planchett	01-DEC-15 00:01
1203625473	MS	JXC9	PIC1A	SEP-26-16 13:58:52	DONE	2 inch Planchett	01-DEC-15 00:01
1203625472	DUP	JXC9	PIC5B	SEP-26-16 13:58:54	DONE	2 inch Planchett	01-DEC-15 00:01
405245001	SAMPLE	JXC9	PIC8D	SEP-26-16 13:58:58	DONE	2 inch Planchett	01-DEC-15 00:01
405245002	SAMPLE	JXC9	PIC4D	SEP-26-16 13:59:01	DONE	2 inch Planchett	01-DEC-15 00:01
405245003	SAMPLE	JXC9	PIC1D	SEP-26-16 13:59:05	DONE	2 inch Planchett	01-DEC-15 00:01
405245004	SAMPLE	JXC9	PIC9C	SEP-26-16 13:59:09	DONE	2 inch Planchett	01-DEC-15 00:01
405245005	SAMPLE	JXC9	PIC3D	SEP-26-16 13:59:10	DONE	2 inch Planchett	01-DEC-15 00:01
405245006	SAMPLE	JXC9	PIC1C	SEP-26-16 13:59:15	DONE	2 inch Planchett	01-DEC-15 00:01
405245010	SAMPLE	JXC9	PIC8A	SEP-26-16 13:59:17	DONE	2 inch Planchett	01-DEC-15 00:01
405245007	SAMPLE	JXC9	PIC2B	SEP-26-16 13:59:19	DONE	2 inch Planchett	01-DEC-15 00:01
405245008	SAMPLE	JXC9	PIC3B	SEP-26-16 13:59:25	DONE	2 inch Planchett	01-DEC-15 00:01
405245009	SAMPLE	JXC9	PIC2A	SEP-26-16 13:59:30	DONE	2 inch Planchett	01-DEC-15 00:01
405245011	SAMPLE	JXC9	PIC1B	SEP-26-16 13:59:35	DONE	2 inch Planchett	01-DEC-15 00:01
405245013	SAMPLE	JXC9	PIC5D	SEP-26-16 13:59:41	DONE	2 inch Planchett	01-DEC-15 00:01
405245015	SAMPLE	JXC9	PIC5C	SEP-26-16 13:59:57	DONE	2 inch Planchett	01-DEC-15 00:01
405245016	SAMPLE	JXC9	PIC4A	SEP-26-16 14:00:01	DONE	2 inch Planchett	01-DEC-15 00:01
405245012	SAMPLE	JXC9	PIC9D	SEP-26-16 14:04:16	DONE	2 inch Planchett	01-DEC-15 00:01
405245014	SAMPLE	JXC9	PIC10B	SEP-26-16 14:04:25	DONE	2 inch Planchett	01-DEC-15 00:01
1203625474	MSD	JXC9	PIC1C	SEP-27-16 10:14:36	DONE	2 inch Planchett	01-DEC-15 00:01