

Environmental Sciences

Los Alamos NM

Chain of Custody/Analysis Request

COC/Lab Request #:

2015-1188

Page 1 of 1

Client Contact:

Lab Agreement #:

Site Name:

Los Alamos National Laboratory

Project Number:

Analysis Turnaround Time:

24 Hour - ☐ Other - ☐7 Days - ☐14 Days - ☐21 Days - ☐28 Days - ☒

Rad Screening Info:

Lab Reporting Limit Type:

Sample Quantitation
Limit

Field Sample ID

Sample
DateSample
TimeSample
Matrix

WSP-N15/O18-NO3

CAMO-15-95814

May 12 2015

15:12

W

2

CAMO-15-95762

May 12 2015

13:12

W

2

Special Instructions:

Relinquished by:

R. Greene

Print Name:

R. Greene

Date/Time:

5/13/15
13:00

Received by:

Print Name:

Date/Time:

Relinquished by:

Print Name:

Date/Time:

Received by:

Print Name:

Date/Time:

Relinquished by:

Print Name:

Date/Time:

Received by:

Print Name:

Date/Time:

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 9200

EVENT NAME: Mortandad/Sandia (Chromium, MDA C and General Surveillance) MY2015 Q3 Watershed Sampling

SAMPLE ID: CAMO-15-95762

WORK ORDER:

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
Date Collected (MM/DD/YYYY):	05/12/2015	OK	FIELD MATRIX:	WG	OK
TIME COLLECTED (HH:MM):	1312		MEDIA:	UA	↓
PRS ID:	9015 NA		SAMPLE TECH CODE:	UA	GSP
LOCATION ID:	R-62		FIELD PREP:	F	OK
LOCATION TYPE:	NA		FIELD QC TYPE:	FD	↓
TOP DEPTH:	NA		SAMPLE USAGE:	QC	↓
BOTTOM DEPTH:	NA	↓	EXCAVATED:		YES / NO / <u>NA</u>

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-All Metals	1 LITER POLY	1	HNO3 ICE	Y	NA
↓	WSP-CR52/53	1 LITER POLY	1	ICE	↓	↓
↓	WSP-GENINORG+PerChlorate	1 LITER POLY	1	ICE	↓	↓
↓	WSP-N15/O18-NO3	40 ML SEPTUM AMBER GLASS	2	ICE	↓	↓
↓	WSP-NH3+NO3/NO2	500 ML AMBER GLASS	1	H2SO4	↓	↓

SAMPLE COMMENTS: NA

LOCATION COMMENTS: NA

FIELD PARAMETERS:

Dissolved Oxygen	NA	mg/L	Flow (In gpm)	NA	GPM	Oxidation-Reduction Potential	NA	mV
pH	↓	SU	Specific Conductance	↓	uS/cm	Temperature	↓	deg C
Turbidity	↓	NTU						

COLLECTED BY (PRINT): A. Vigil

RELINQUISHED BY (Printed Name) Jonathan Romero (Signature) <i>Jonathan Romero</i>	Date/Time 5/12/15 1615	RECEIVED BY (Printed Name) J. Sherwood (Signature) <i>J. Sherwood</i>	Date/Time 5/12/15 1615
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 9200

EVENT NAME: Mortandad/Sandia (Chromium, MDA C and General Surveillance) MY2015 Q3 Watershed Sampling

SAMPLE ID: CAMO-15-95814

WORK ORDER: NA

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
Date Collected (MM/DD/YYYY):	05/12/2015	OK	FIELD MATRIX:	WG	OK
TIME COLLECTED (HH:MM):	1512		MEDIA:	UA	↓
PRS ID:	NA		SAMPLE TECH CODE:	UA	LSP
LOCATION ID:	R-62		FIELD PREP:	F	OK
LOCATION TYPE:	MON		FIELD QC TYPE:	REG	↓
TOP DEPTH:	NA		SAMPLE USAGE:	INV	↓
BOTTOM DEPTH:	NA	↓	EXCAVATED:		YES / NO / NA

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-All Metals	1 LITER POLY	1	HNO3 ICE	Y	NA
↓	WSP-CR52/53	1 LITER POLY	1	ICE	↓	↓
↓	WSP- GENINORG+PerChlorat	1 LITER POLY	1	ICE	↓	↓
↓	WSP-N15/O18- NO3	40 ML SEPTUM AMBER GLASS	2	ICE	↓	↓
↓	WSP- NH3+NO3/NO2	500 ML AMBER GLASS	1	H2SO4	↓	↓

SAMPLE COMMENTS: NA

LOCATION COMMENTS: NA

FIELD PARAMETERS:

Dissolved Oxygen	NA	mg/L	Flow (in gpm)	NA	GPM	Oxidation-Reduction Potential	NA	mV
pH	↓	SU	Specific Conductance	↓	uS/cm	Temperature	↓	deg C
Turbidity	↓	NTU						

COLLECTED BY (PRINT): A.V. Gil

RELINQUISHED BY (Printed Name) (Signature)	Date/Time 5/12/15 1615	RECEIVED BY (Printed Name) (Signature)	Date/Time 5/12/15 1615
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

Report Date: 04/30/2015

Field Sample ID	Lab Sample ID	Lab ID	Analytical Method	Analysis Date	Parameter Code
CAMO-15-95814	CAMO-15-95814	EES6	Generic:Oxygen Isotope Ratio	09/29/2015	O18O16-NO3
CAMO-15-95814	CAMO-15-95814	EES6	Generic:Nitrogen Isotope Ratio	09/29/2015	N15N14

Parameter Name	Lab Matrix	Lab Result	Lab Units	Report Result	Report Units	Lab Qualifier
Oxygen-18/Oxygen-16 Ratio from Nitrate	W	-1.7982	permil	-1.7982	permil	
Nitrogen-15/Nitrogen-14 Ratio	W	8.3173	permil	8.3173	permil	

Detected	Use Flag	Filename
Y	Y	2015-1188_1.txt
Y	Y	2015-1188_1.txt

Field Sample ID	Lab Sample ID	Lab ID	Analytical Method	Analysis Date	Parameter Code
CAMO-15-95762	CAMO-15-95762	EES6	Generic:Oxygen Isotope Ratio	09/29/2015	O18O16-NO3
CAMO-15-95762	CAMO-15-95762	EES6	Generic:Nitrogen Isotope Ratio	09/29/2015	N15N14

Parameter Name	Result Type	Lab Matrix	Lab Result	Lab Units	Report Result
Oxygen-18/Oxygen-16 Ratio from Nitrate	TRG	W	-2.1129	permil	-2.1129
Nitrogen-15/Nitrogen-14 Ratio	TRG	W	8.1285	permil	8.1285

Report Units	Lab Qualifier	Detected	Use Flag	Filename
permil		Y	Y	2015-1188_1.txt
permil		Y	Y	2015-1188_1.txt

Los Alamos National Laboratory

EES-14 Hydrology, Geochemistry, and Geology Laboratory

MS-D469, Building 494, Los Alamos, NM. 87545

REQUEST	LAB_SAMPLE_ID	LAB_RECEIPT_D	ANALYSIS_METHOD	ANALYTE_COD	RESULT	UNCERTAINTY	QC_TYPE	ANALYSIS_DATE
2015-1188	CAMO-15-95762	14-May-2015	Generic:Oxygen Isotope Ratio-2	O18O16-NO3	-2.11292	0.43362923147	INIT	29-Sep-2015
2015-1188	CAMO-15-95762	14-May-2015	Generic:Nitrogen Isotope Ratio	N15N14	8.128481	0.11729040221	INIT	29-Sep-2015
2015-1188	CAMO-15-95814	14-May-2015	Generic:Oxygen Isotope Ratio-2	O18O16NO3	-1.79820	0.43362923147	INIT	29-Sep-2015
2015-1188	CAMO-15-95814	14-May-2015	Generic:Nitrogen Isotope Ratio	N15N14	8.317280	0.11729040221	INIT	29-Sep-2015

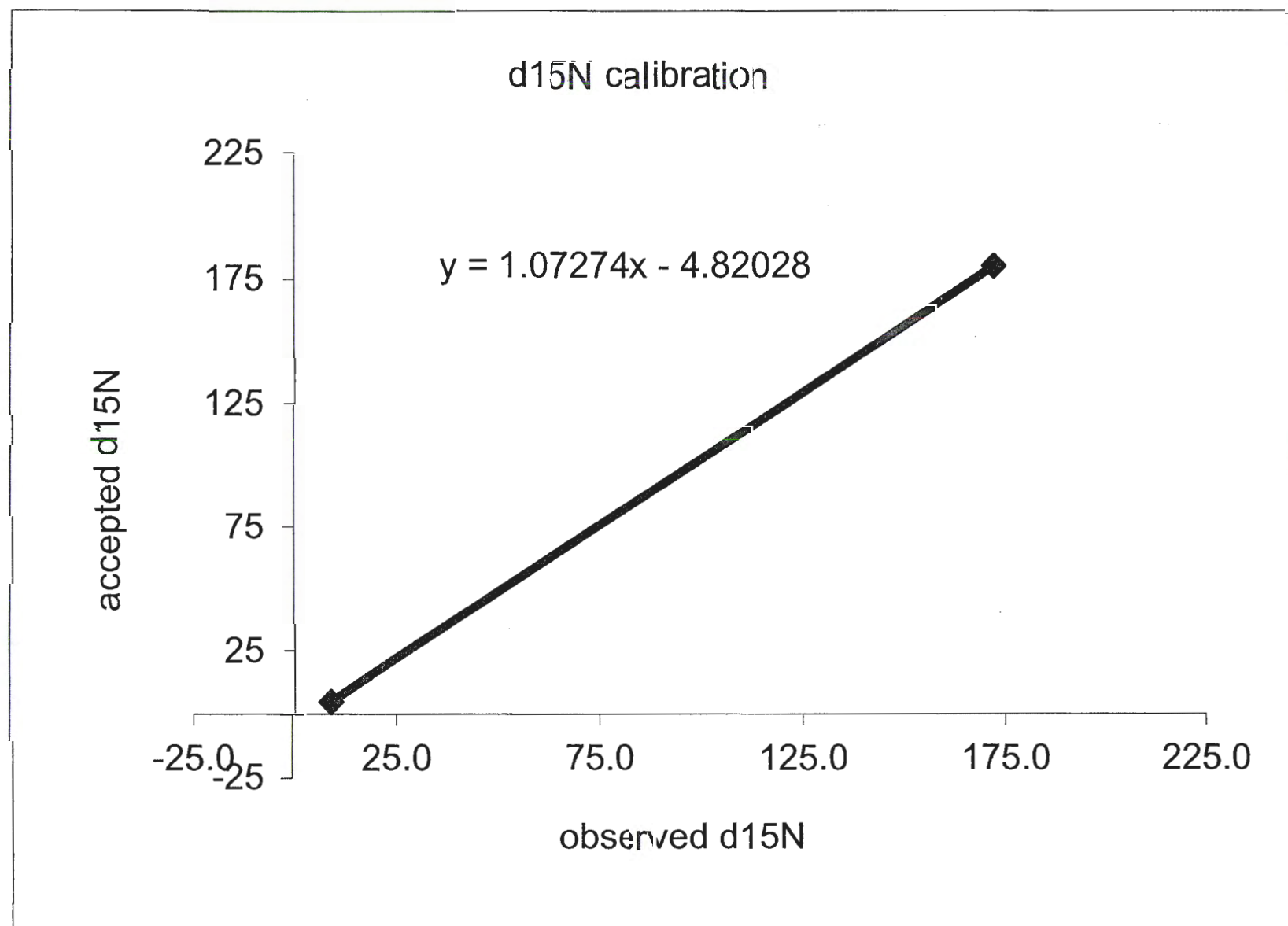
Nitrate calibrated data

Date analyzed: 9/29/2015
 Operator: George Perkins
 Isoprime data file: Nitrate Bugs 9/29/2015

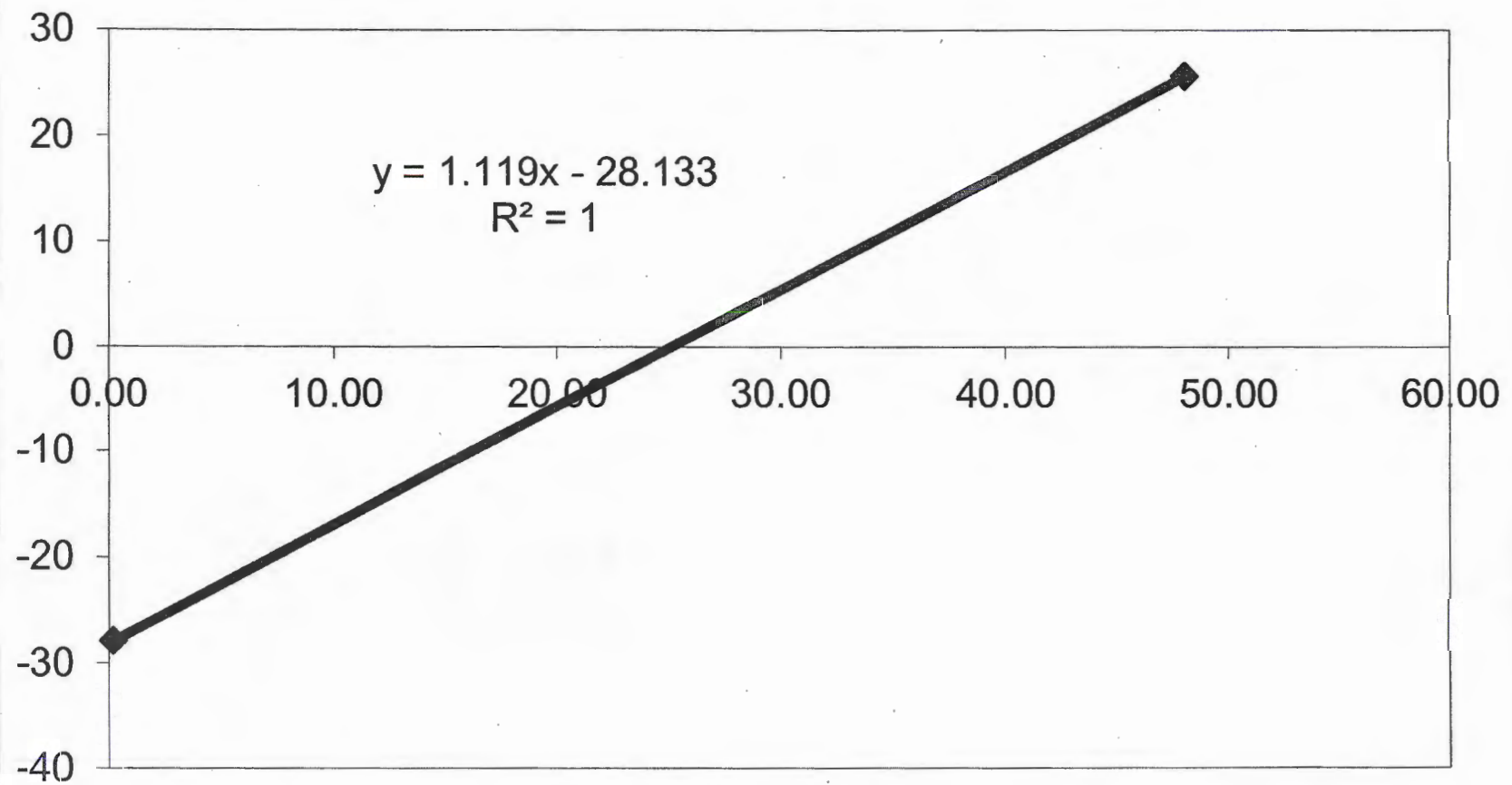
Generation of calibrati		$\delta^{15}\text{N}$ Value		$\delta^{18}\text{O}$	$\delta^{18}\text{O}$	$\delta^{17}\text{O}$
		actual	obs	actual	measured	actual
KNO ₃	USGS35	2.7		57.5		51.5
KNO ₃	USGS32	180.0	172.29	25.7		
KNO ₃	IAEA-NO3	4.7	8.87	25.6	48.02	
KNO ₃	USGS34	-1.8		-27.9	0.21	15.05
slope						b-int.
$\delta^{18}\text{O} =$		1.119				-28.13
$\delta^{15}\text{N} =$		1.07274				-4.82
N-linearity						
O-linearity						

Sample #	Sample Name	RT	Pk Ht	Raw d15N	Raw d18O	Corr d15N	Corr d18O	corr. d15N	corr. d18O	Comment
2	air-1 9-29-2015.raw	233.2	0.15	91.13	207.30	92.94	203.84	92.94	203.84	
3	IAEA-NO3-1 9-29-2015.raw	231.1	9.32	8.78	47.36	4.60	24.86	4.60	24.86	
4	IAEA-NO3-2 9-29-2015.raw	235.0	9.71	8.92	48.23	4.75	25.84	4.75	25.84	
5	USGS32-1 9-29-2015.raw	233.0	7.44	172.36	53.88	180.08	32.16	180.08	32.16	
6	USGS34-1 9-29-2015.raw	233.6	8.22	4.13	0.97	-0.39	-27.04	-0.39	-27.04	
7	CAMO-15-95814 1 9-29-2015.raw	233.0	8.14	12.25	23.53	8.32	-1.80	8.32	-1.80	
8	CAMO-15-95762 1 9-29-2015.raw	232.7	8.60	12.07	23.25	8.13	-2.11	8.13	-2.11	
9	CrCH4-15-102176 1 9-29-2015.raw	231.8	7.99	8.13	25.33	3.91	0.21	3.91	0.21	
10	CrCH4-15-102177 1 9-29-2015.raw	230.3	7.50	7.99	24.46	3.75	-0.77	3.75	-0.77	
11	CrCH4-15-102178 1 9-29-2015.raw	230.0	8.24	8.19	25.83	3.97	0.77	3.97	0.77	
12	CrCH2-15-102161 1 9-29-2015.raw	230.0	9.24	16.69	23.92	13.08	-1.37	13.08	-1.37	
13	IAEA-NO3-3 9-29-2015.raw	235.2	9.31	8.95	48.14	4.78	25.74	4.78	25.74	
14	Blank 9-29-2015.raw	236.4	0.04	202.13	456.58	212.01	482.78	212.01	482.78	
15	CrCH3-15-102172 1 9-29-2015.raw	230.3	8.41	13.11	24.61	9.24	-0.59	9.24	-0.59	
16	CrCH3-15-102170 1 9-29-2015.raw	233.4	7.62	13.36	25.22	9.51	0.08	9.51	0.08	
17	CrCH3-15-102171 1 9-29-2015.raw	239.3	6.62	13.97	26.28	10.17	1.28	10.17	1.28	
18	CrCH2-15-102164 1 9-29-2015.raw	234.9	8.36	11.36	23.87	7.37	-1.42	7.37	-1.42	
19	CrCH2-15-102165 1 9-29-2015.raw	234.5	8.57	10.94	23.73	6.92	-1.58	6.92	-1.58	

20	CrCH5-15-102182 1 9-29-2015.raw	234.8	7.31		15.05	26.18	11.32	1.16	11.32	1.16	
21	IAEA-NO3-4 9-29-2015.raw	233.9	9.57		8.74	48.01	4.55	25.59	4.55	25.59	
22	CrCH5-15-102183 1 9-29-2015.raw	243.7	6.93		15.17	26.17	11.46	1.15	11.46	1.15	
23	CrCH5-15-102184 1 9-29-2015.raw	237.9	8.34		15.01	25.64	11.28	0.56	11.28	0.56	
24	CrCH1-15-102153 1 9-29-2015.raw	236.2	7.13		15.92	28.04	12.25	3.24	12.25	3.24	
25	CrCH1-15-102154 1 9-29-2015.raw	236.9	7.81		15.18	27.27	11.46	2.38	11.46	2.38	
26	CrCH4-15-102176-dup 1 9-29-2015.raw	235.6	7.79		9.21	27.72	5.06	2.89	5.06	2.89	
27	IAEA-NO3-5 9-29-2015.raw	235.6	9.55		8.99	48.34	4.82	25.96	4.82	25.96	
28	USGS32-2 9-29-2015.raw	234.9	8.02		172.22	53.12	179.92	31.31	179.92	31.31	
29	USGS34-2 9-29-2015.raw	234.8	7.67		2.95	-0.56	-1.65	-28.75	-1.65	-28.75	
30	Malink-1 9-29-2015.raw	234.2	7.41		7.83	41.27	3.57	18.05	3.57	18.05	
							4.70	25.60	4.70	25.60	
							0.12	0.43	0.12	0.43	



d18O Calibration



Stable Isotope CF Analysis Results



File: N2O Linearity 9-29-2015.raw	Acquisition Date: 29/9/15 9:43
Project: Trace Gas Nitrates.PRO	Weight: 0.00
Sample list: Ref gas stability template.spl	Injection Volume: 0
Line: 3	Bottle: 2
MS file: N2O ref gas stability	Type:
Inlet: Trace Gas	Standard:
Inlet file: Ref Gas Stability	Slot Number: JB 000
Sample ID:	Run Index:
Description:	

Reference standard	Corrections
Species: N2O by CF (uncalibrated)	Equilibrium correction: None
Gas: N2O Uncalibrated N2O	
Ratio type: Molecular	
Deconvolution: No deconvolution	
Elemental delta	
Label: Value: Molecular delta	
Ratio 1: 15N delta 45 2.50 wrt: Air	
Ratio 2: 18O delta 46 25.00 SMOW	

Reference Data

Peak No	Major Height (nA)	RT (Sec)	Ratio 45/44	Ratio 46/44
1	2.25	29.1	7.9055E-03	2.0618E-03
2	3.02	89.1	7.9021E-03	2.0595E-03
3	3.87	149.1	7.8986E-03	2.0569E-03
4	3.88	209.1	7.8965E-03	2.0568E-03
5	4.84	269.1	7.8937E-03	2.0539E-03
6	5.80	329.1	7.8920E-03	2.0526E-03
7	6.70	389.1	7.8909E-03	2.0517E-03
8	7.78	449.0	7.8898E-03	2.0512E-03
9	8.55	509.0	7.8891E-03	2.0506E-03
10	8.53	569.0	7.8882E-03	2.0503E-03
Mean:			7.8946E-03	2.0544E-03
Std Dev of fit (%):			0.20	0.56

Sample Data

Peak No	RT (Sec)	Major Height (nA)	Major Area	Ratio 45/44	Raw Delta	delta 15N	Ratio 46/44	Raw Delta	delta 18O
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Bugs nitrate run log

9-29-2015

Vial #	Sample	temp ID	conc.	volume (ul)	
1	air-1		0.00	n/a	
2	IAEA-NO3-1		8.812880433	364	
3	IAEA-NO3-2		8.812880433	364	
4	USGS32-1		7.899088377	407	
5	USGS34-1		8.015612196	401	
6	AA07	CAMO-15-95814	1	5.48	586
7	AA09	CAMO-15-95762	1	5.39	595
8	AB01	CrCH4-15-102176	1	18.43	174
9	AB03	CrCH4-15-102177	1	18.66	172
10	AB05	CrCH4-15-102178	1	19.11	168
11	AB07	CrCH2-15-102161	1	14.10	228
12	IAEA-NO3-3		8.812880433	364	
13	Blank			#DIV/0!	
14	AB09	CrCH3-15-102172	1	21.86	147
15	AC01	CrCH3-15-102170	1	22.34	144
16	AC03	CrCH3-15-102171	1	22.68	142
17	AC05	CrCH2-15-102164	1	4.09	785
18	AC07	CrCH2-15-102165	1	4.01	801
19	AC09	CrCH5-15-102182	1	4.49	716
20	IAEA-NO3-4		8.812880433	364	
21	AD01	CrCH5-15-102183	1	4.92	653
22	AD03	CrCH5-15-102184	1	4.88	658
23	AD05	CrCH1-15-102153	1	18.48	174
24	AD07	CrCH1-15-102154	1	17.60	182
25	AB01	CrCH4-15-102176-dup	1	18.43	174
26	IAEA-NO3-5		8.812880433	364	
27	USGS32-2		7.899088377	407	
28	USGS34-2		8.015612196	401	
29	Malink-1		9.536554679	337	

Stable Isotope CF Analysis Results



File: N2O Stability 9-29-2015.raw	Acquisition Date: 29/9/15 9:02
Project: Trace Gas Nitrates.PRO	Weight: 0.00
Sample list: Ref gas stability template.spl	Injection Volume: 0
Line: 4	Bottle: 3
MS file: N2O ref gas stability	Type:
Inlet: Trace Gas	Standard:
Inlet file: Ref Gas Stability	Slot Number: JB 000
Sample ID:	Run Index:
Description:	

Reference standard	Corrections
Species: N2O by CF (uncalibrated)	Equilibrium correction: None
Gas: N2O Uncalibrated N2O	
Ratio type: Molecular	
Deconvolution: No deconvolution	
Elemental delta	
Label: Value:	
Ratio 1: 15N	Label: Value: wrt:
Ratio 2: 18O	delta 45 2.50 Air
	delta 46 25.00 SMOW

Reference Data

Peak No	Major Height (nA)	RT (Sec)	Ratio 45/44	Ratio 46/44
1	3.20	29.1	7.9192E-03	2.0521E-03
2	3.18	89.1	7.9172E-03	2.0519E-03
3	3.16	149.1	7.9159E-03	2.0519E-03
4	3.14	209.1	7.9144E-03	2.0518E-03
5	3.13	269.1	7.9131E-03	2.0519E-03
6	3.12	329.1	7.9119E-03	2.0519E-03
7	3.11	389.1	7.9113E-03	2.0520E-03
8	3.09	449.1	7.9103E-03	2.0521E-03
9	3.08	509.1	7.9095E-03	2.0522E-03
10	3.07	569.1	7.9093E-03	2.0524E-03

Mean: 7.9132E-03 2.0520E-03
Std Dev of fit (%): 0.08 0.08

Sample Data

Peak No	RT (Sec)	Major Height (nA)	Major Area	Ratio 45/44	Raw Delta	delta 15N	Ratio 46/44	Raw Delta	delta 18O
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