

Wednesday, March 09, 2011

REQUEST NUMBER: 11-1587

LOS ALAMOS**NATIONAL LABORATORY**

ATTN: Danny Coleman

American Radiation Services - Primary

1726 Wooddale Court

Baton Rouge, LA 70806

These Samples are on:

LANL Request Number:11-1587

Per Agreement Number:63641-001-10

Project Cost Code: MR8R032NFM00

Please analyse the enclosed samples
according to the schedule indicated:

SHIP DATE: 3/9/2011**TURNAROUND/REPORT DUE: 4/8/2011****TURNAROUND REQ'D: 30 Days****RAD SCREENING: Not Required****LAB REQUEST COMMENTS:**

LANL ER SMO CONTACT:

Signature: 

PRIORITY	METHOD CODE	CNTNR	SAMPLE ID	SAMPLE MATRIX	DATE SAMPLED	SPECIAL INSTRUCTIONS
	EPA:906.0	1	MD21-11-5600	GAS	3/9/2011	
		1	MD21-11-5601	GAS	3/9/2011	
		1	MD21-11-5602	GAS	3/9/2011	
		1	MD21-11-5603	GAS	3/9/2011	
		1	MD21-11-5605	GAS	3/9/2011	
		1	MD21-11-5606	GAS	3/9/2011	
		1	MD21-11-5607	GAS	3/9/2011	
		1	MD21-11-5608	GAS	3/9/2011	
CAS1	121923011-5610	GAS1	121923011-5610	GAS	3/9/2011	

Wednesday, March 09, 2011

LAB CHAIN OF CUSTODY DOCUMENT NUMBER: 11-1587C

LOS ALAMOS

REQUEST NUMBER: 11-1587

NATIONAL LABORATORY

ATTN: Danny Coleman

TURNAROUND/REPORT DUE: 4/8/2011

American Radiation Services - Primary

TURNAROUND REQ'D: 30

1726 Wooddale Court

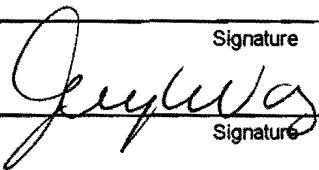
Baton Rouge, LA 70806

LAB REQUEST COMMENTS:

1 of 1

SAMPLE ID	CTNR	CTNR DESC	ORDER	PRESERV	MATRIX
MD21-11-5610	1	SILICA GEL TUBE	H3	None	GAS
MD21-11-5607	1	SILICA GEL TUBE	H3	None	GAS
MD21-11-5605	1	SILICA GEL TUBE	H3	None	GAS
MD21-11-5608	1	SILICA GEL TUBE	H3	None	GAS
MD21-11-5600	1	SILICA GEL TUBE	H3	None	GAS
MD21-11-5602	1	SILICA GEL TUBE	H3	None	GAS
MD21-11-5603	1	SILICA GEL TUBE	H3	None	GAS
MD21-11-5606	1	SILICA GEL TUBE	H3	None	GAS
MD21-11-5601	1	SILICA GEL TUBE	H3	None	GAS

Relinquished By:	Date	Time	Received By:	Date	Time
------------------	------	------	--------------	------	------

	3/9/11	1400			
Signature			Signature		
Signature			Signature		
Signature			Signature		

Received for DISPOSAL By:	Date	Time	Remarks:
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Signature			
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SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 3396

EVENT NAME: Pore Gas Sampling - MDA T - CU 21-016(a)-99

SAMPLE ID: MD21-11-5600

WORK ORDER:

AS PLANNED	AS COLLECTED	AS PLANNED	AS COLLECTED
DATE COLLECTED(MM/DD/YYYY):	3/9/11	MEDIA:	NA
TIME COLLECTED (HH:MM)	950	SUB-MEDIA:	OTHER
PRS ID: 21-018(a)-99	ok	SAMPLE TECH CODE: VOST	
LOCATION ID: 21-24524W	ok	FIELD QC TYPE: NA	
LOCATION TYPE: BH	ok	FIELD PREP: NA	
TOP DEPTH: 42.5	ok	SAMPLE USAGE: INV	
BOTTOM DEPTH: 47.5	ok	SCREEN/PORT DESC:	
FIELD MATRIX: GAS	ok	EXCAVATED: YES/NO/NA	
COMPOSITE TYPE: NA		WATER FLOWING: YES/NO/NA	
BOREHOLE: YES/NO/NA		BOREHOLE DECLINATION: NA	
		BOREHOLE DIRECTION: 90°	

#	PRIORITY	ORDER	CNTNR	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
1		H3	1 EA SILICA GEL TUBE	None	Y	NA
1		TO15	6 LITER SUMMA CANISTER	None	Not collected 3/9/11	

SAMPLE DESC:

column # 17

initial wt = 598.23g
silica wt = 153.52gFinal wt = 611.03g
vapor wt = 12.8g

SAMPLE COMMENTS:

weather data @ 950 T=36°F RH=56% BP 30.36 in

LOCATION DESC:

NA

FIELD SCREENING/MEASUREMENT RESULTS:

atm O₂ 20.9% CO₂ 360 ppm
sub atm O₂ 15.9% CO₂ 2.90%

COLLECTED BY (PRINT) R. Jankl M. Giorgi

REVIEWED BY (PRINT) M. Giorgi

RELINQUISHED BY (Printed Name) M. Giorgi (Signature) M. Giorgi	Date/Time 3/9/11 1345	RECEIVED BY (Printed Name) M. Giorgi (Signature) M. Giorgi	Date/Time 3/9/11 1345
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 3396

EVENT NAME: Pore Gas Sampling - MDA T - CU 21-016(a)-99

SAMPLE ID: MD21-11-5601

WORK ORDER:

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED(MM/DD/YYYY):		3/9/11	MEDIA:	NA	
TIME COLLECTED (HH:MM)		950	SUB-MEDIA:	OTHER	
PRS ID:	21-018(a)-99	ok	SAMPLE TECH CODE:	VOST	
LOCATION ID:	21-24524W	ok	FIELD QC TYPE:	NA	
LOCATION TYPE:	BH	ok	FIELD PREP:	NA	
TOP DEPTH:	122.5	ok	SAMPLE USAGE:	INV	
BOTTOM DEPTH:	127.5	ok	SCREEN/PORT DESC:		port # 2
FIELD MATRIX:	GAS	ok	EXCAVATED: YES/NO	NA	
COMPOSITE TYPE:	NA		COMPOSITE TIME INTERVAL:	NA	
BOREHOLE: YES/NO/NA	NA		BOREHOLE DECLINATION:	NA	
			BOREHOLE DIRECTION:	90°	

#	PRIORITY	ORDER	CNTNR	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
1		H3	1 EA SILICA GEL TUBE	None	Y	NA
1		TO15	6 LITER SUMMA CANISTER	None		Not collected Not sampled

SAMPLE DESC:

column # 18 initial wt = 587.04g
silica wt 149.92g

Final wt 605.28g for
vapor wt = 18.16g

SAMPLE COMMENTS:

weather data @ 950 T = 36°F RH = 56% BP = 30.36 in

LOCATION DESC:

NA

FIELD SCREENING/MEASUREMENT RESULTS:

atm O₂ 20.9% CO₂ 380 ppm
sub atm O₂ 20.2% CO₂ 4500 ppm

COLLECTED BY (PRINT) K. Ernst M. Giorgi

REVIEWED BY (PRINT) M. Giorgi

RELINQUISHED BY (Printed Name) M. Giorgi (Signature) M. Giorgi	Date/Time 3/9/11 1345	RECEIVED BY (Printed Name) M. Giorgi (Signature) M. Giorgi	Date/Time 3/9/11 1345
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 3396

EVENT NAME: Pore Gas Sampling - MDA T - CU 21-016(a)-99

SAMPLE ID: MD21-11-5602

WORK ORDER:

AS PLANNED		AS COLLECTED		AS PLANNED		AS COLLECTED	
DATE COLLECTED(MM/DD/YYYY):		3/9/11		MEDIA:	NA		OK
TIME COLLECTED (HH:MM)		950		SUB-MEDIA:	OTHER		
PRS ID:	21-018(a)-99	OK		SAMPLE TECH CODE:	VOST		
LOCATION ID:	21-24524W	OK		FIELD QC TYPE:	NA		
LOCATION TYPE:	BH	OK		FIELD PREP:	NA		
TOP DEPTH:	172.5	OK		SAMPLE USAGE:	INV		
BOTTOM DEPTH:	177.5	OK		SCREEN/PORT DESC:			
FIELD MATRIX:	GAS	OK		EXCAVATED: YES/NO/OK	OK		port # 3
COMPOSITE TYPE:	NA			COMPOSITE TIME INTERVAL:	NA		
BOREHOLE: YES/NO/NA	YES			BOREHOLE DECLINATION:	NA		
				BOREHOLE DIRECTION:	90°		

#	PRIORITY	ORDER	CNTNR	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
1		H3	1 EA SILICA GEL TUBE	None	Y	NA
1		TO15	6 LITER SUMMA CANISTER	None	Y	NOT collected

SAMPLE DESC:

column # 19

initial wt = 593.90g
silica wt = 167.75gFinal wt = 605.17g
vapor wt = 11.27g

SAMPLE COMMENTS:

weather @ 950 T = 36°F RH = 56% BP = 30.36 in

LOCATION DESC:

NA

FIELD SCREENING/MEASUREMENT RESULTS:

atm O₂ 20.9% CO₂ 420 ppm
sub atm O₂ 20.4% CO₂ 4000 ppm

COLLECTED BY (PRINT) L. Orsht M61 org ii REVIEWED BY (PRINT) MVBorgii

RELINQUISHED BY (Printed Name) MVBorgii (Signature) MVB	Date/Time 3/5/11 1345	RECEIVED BY (Printed Name) MVBorgii (Signature) MVB	Date/Time 3/5/11 1345
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 3396

EVENT NAME: Pore Gas Sampling - MDA T - CU 21-016(a)-99

SAMPLE ID: MD21-11-5603

WORK ORDER:

AS PLANNED		AS COLLECTED		AS PLANNED		AS COLLECTED	
DATE COLLECTED(MM/DD/YYYY):		3/9/11		MEDIA:	NA		
TIME COLLECTED (HH:MM)		950		SUB-MEDIA:	OTHER		
PRS ID:	21-018(a)-99	ok		SAMPLE TECH CODE:	VOST		
LOCATION ID:	21-24524W	ok		FIELD QC TYPE:	NA		
LOCATION TYPE:	BH	ok		FIELD PREP:	NA		
TOP DEPTH:	257.5	ok		SAMPLE USAGE:	INV		
BOTTOM DEPTH:	262.5	ok		SCREEN/PORT DESC:		port #4	
FIELD MATRIX:	GAS	ok		EXCAVATED: YES/NO/NA	NA		
COMPOSITE TYPE:	NA			COMPOSITE TIME INTERVAL:	NA		
BOREHOLE: YES/NO/NA	YES			BOREHOLE DECLINATION:	NA		
				BOREHOLE DIRECTION:	90°		

#	PRIORITY	ORDER	CNTNR	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
1		H3	1 EA SILICA GEL TUBE	None	Y	NA
1		TQ15	6 LITER SUMMA CANISTER	None		

SAMPLE DESC:

column #
20initial wt = 603.29g
silica wt = 150.99gFinal wt = 616.56g
603.29g vapor wt = 13.27g

SAMPLE COMMENTS:

weather @ 950 T = 36°F RH 56% BP 30.36 in

LOCATION DESC:

NA

FIELD SCREENING/MEASUREMENT RESULTS:

atm O₂ 20.9% CO₂ 440ppm
Sub atm O₂ 20.5% CO₂ 4350ppm

COLLECTED BY (PRINT)

R. Onstott M. Giorgi

REVIEWED BY (PRINT)

all V. Onstott

RELINQUISHED BY (Printed Name) (Signature)	Date/Time 3/9/11 1345	RECEIVED BY (Printed Name) (Signature)	Date/Time 3/9/11 1345
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 3396

EVENT NAME: Pore Gas Sampling - MDA T - CU 21-016(a)-99

SAMPLE ID: MD21-11-5605

WORK ORDER:

AS PLANNED		AS COLLECTED		AS PLANNED		AS COLLECTED	
DATE COLLECTED(MM/DD/YYYY):		3/9/11		MEDIA:	NA		
TIME COLLECTED (HH:MM)		950		SUB-MEDIA:	OTHER		
PRS ID:	21-018(a)-99	OK		SAMPLE TECH CODE:	VOST		
LOCATION ID:	21-24524W	OK		FIELD QC TYPE:	NA		
LOCATION TYPE:	BH	OK		FIELD PREP:	NA		
TOP DEPTH:	327.5	OK		SAMPLE USAGE:	INV		
BOTTOM DEPTH:	332.5	OK		SCREEN/PORT DESC:		port # 6	
FIELD MATRIX:	GAS	OK		EXCAVATED: YES/NO	NA		
COMPOSITE TYPE:	NA			COMPOSITE TIME INTERVAL:	NA		
BOREHOLE:	YES/NO/NA			BOREHOLE DECLINATION:	NA		
				BOREHOLE DIRECTION:	90°		

#	PRIORITY	ORDER	CNTNR	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
1		H3	1 EA SILICA GEL TUBE	None	Y	NA
1		TO15	6 LITER SUMMA CANISTER	None		NA

SAMPLE DESC:

column # 23 initial wt = 591.84g
silica wt = 150.67g

Final wt = 605.58g
vapor wt = 13.74g

No 3/9/11 Not collected

SAMPLE COMMENTS:

weather @ 950 T=36°F RH=56% BP 30.36 in

LOCATION DESC:

NA

FIELD SCREENING/MEASUREMENT RESULTS:

atm O₂ 20.9% CO₂ 420ppm
sub atm O₂ 20.9% CO₂ 3700ppm

COLLECTED BY (PRINT) Konstantin M Giorgi REVIEWED BY (PRINT) MW Borgin

RELINQUISHED BY (Printed Name) (Signature)	Date/Time 3/9/11 1345	RECEIVED BY (Printed Name) (Signature)	Date/Time 3/9/11 1345
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 3396

EVENT NAME: Pore Gas Sampling - MDA T - CU 21-016(a)-99

SAMPLE ID: MD21-11-5606

WORK ORDER:

AS PLANNED		AS COLLECTED		AS PLANNED		AS COLLECTED	
DATE COLLECTED(MM/DD/YYYY):		3/9/11		MEDIA:	NA		
TIME COLLECTED (HH:MM)		950		SUB-MEDIA:	OTHER		
PRS ID:	21-018(a)-99	OK		SAMPLE TECH CODE:	VOST		
LOCATION ID:	21-24524W	OK		FIELD QC TYPE:	NA		
LOCATION TYPE:	BH	OK		FIELD PREP:	NA		
TOP DEPTH:	377.5	OK		SAMPLE USAGE:	INV		
BOTTOM DEPTH:	382.5	OK		SCREEN/PORT DESC:			Port # 7
FIELD MATRIX:	GAS	OK		EXCAVATED: YES/NO/NA			
COMPOSITE TYPE:	MA			COMPOSITE TIME INTERVAL:			
BOREHOLE:	YES/NO/NA			BOREHOLE DECLINATION:	NA		
				BOREHOLE DIRECTION:	90°		

#	PRIORITY	ORDER	CNTNR	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
1		H3	1 EA SILICA GEL TUBE	None	Y	MA
1		TO15	6 LITER SUMMA CANISTER	None	to 3/9/11 VOST collected	

SAMPLE DESC:

column # 24

Initial wt = 600.01g
Silica wt = 151.65gFinal wt = 613.48g
Vapor wt = 13.47g

SAMPLE COMMENTS:

weather @ 950 T = 36 °F RH = 56% BP = 30.36 in

LOCATION DESC:

MA

FIELD SCREENING/MEASUREMENT RESULTS:

atm O₂ 20.9% CO₂ 440 ppmSub atm O₂ 20.9% CO₂ 3300 ppm

COLLECTED BY (PRINT)

R Onstott M Gorgi

REVIEWED BY (PRINT)

MV Borge

RELINQUISHED BY (Printed Name) <i>MV Borge</i> (Signature) <i>MV Borge</i>	Date/Time 3/9/11 1345	RECEIVED BY (Printed Name) <i>Miss Untz</i> (Signature) <i>Miss Untz</i>	Date/Time 3/9/11 1345
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 3396

EVENT NAME: Pore Gas Sampling - MDA T - CU 21-016(a)-99

SAMPLE ID: MD21-11-5607

WORK ORDER:

AS PLANNED		AS COLLECTED	AS PLANNED		AS COLLECTED
DATE COLLECTED(MM/DD/YYYY):		3/9/11	MEDIA:	NA	OK
TIME COLLECTED (HH:MM)		950	SUB-MEDIA:	OTHER	
PRS ID:	21-018(a)-99	OK	SAMPLE TECH CODE:	VOST	
LOCATION ID:	21-24524X 5	OK	FIELD QC TYPE:	NA	
LOCATION TYPE:	BH	OK	FIELD PREP:	NA	
TOP DEPTH:	677.5	OK	SAMPLE USAGE:	INV	
BOTTOM DEPTH:	682.5	OK	SCREEN/PORT DESC:		port # 10
FIELD MATRIX:	GAS	OK	EXCAVATED: YES/NO/NA		
COMPOSITE TYPE:	WA		COMPOSITE TIME INTERVAL:	WA	
BOREHOLE: YES/NO/NA			BOREHOLE DECLINATION:	WA	
			BOREHOLE DIRECTION:		90°

#	PRIORITY	ORDER	CNTNR	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
1		H3	1 EA SILICA GEL TUBE	None	Y	NA
1		TO15	6 LITER SUMMA CANISTER	None	NO 3/9/11	NA collected

SAMPLE DESC:

column # 25
moist wt = 595.54 g
silica wt = 146.75 gFinal wt = 603.06 g
vapor wt = 7.52 g

SAMPLE COMMENTS:

weather @ 950 T = 36°F RH = 56% BP = 30.36 in

LOCATION DESC:

NA

FIELD SCREENING/MEASUREMENT RESULTS:

atm O₂ 20.9% CO₂ 440 ppm
sub atm O₂ 20.9% CO₂ 1800 ppm

COLLECTED BY (PRINT) R. on staff M. Giorgi

REVIEWED BY (PRINT) M. V. Birge

RELINQUISHED BY (Printed Name) (Signature)	Date/Time 3/9/11 1345	RECEIVED BY (Printed Name) (Signature)	Date/Time 3/9/11 1345
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 3396

EVENT NAME: Pore Gas Sampling - MDA T - CU 21-016(a)-99

SAMPLE ID: MD21-11-5608

WORK ORDER:

AS PLANNED		AS COLLECTED		AS PLANNED		AS COLLECTED	
DATE COLLECTED(MM/DD/YYYY):		3/9/11		MEDIA:	NA		dk
TIME COLLECTED (HH:MM)		950		SUB-MEDIA:	OTHER		
PRS ID:	21-018(a)-99	dk		SAMPLE TECH CODE:	VOST		
LOCATION ID:	21-24524W-5	21		FIELD QC TYPE:	NA		
LOCATION TYPE:	BH	dk		FIELD PREP:	NA		
TOP DEPTH:	712.5	dk		SAMPLE USAGE:	INV		
BOTTOM DEPTH:	717.5	dk		SCREEN/PORT DESC:			port # 11
FIELD MATRIX:	GAS	dk		EXCAVATED: YES/NO/NA			
COMPOSITE TYPE:	NA			COMPOSITE TIME INTERVAL:			
BOREHOLE: YES/NO/NA	NA			BOREHOLE DECLINATION:	NA		
				BOREHOLE DIRECTION:	90°		

#	PRIORITY	ORDER	CNTNR	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
1		H3	1 EA SILICA GEL TUBE	None	p	NA
1		TO15	6 LITER SUMMA CANISTER	None	20 3/9/11	Not collected

SAMPLE DESC:

Column # 26
 initial wt 582.13g
 silica wt 148.10g

Final wt = 595.86g
 vapor wt = 13.73g

SAMPLE COMMENTS:

weather data @ 950 T = 36°F RH = 56% BP = 30.36 in

LOCATION DESC:

NA

FIELD SCREENING/MEASUREMENT RESULTS:

atm O₂ 20.9% CO₂ 440 ppm
 sub atm O₂ 20.9% CO₂ 2290 ppm

COLLECTED BY (PRINT) K Onstott M Giorgi REVIEWED BY (PRINT) M V Giorgi

RELINQUISHED BY (Printed Name) M V Giorgi (Signature) MVB	Date/Time 3/9/11 1345	RECEIVED BY (Printed Name) M V Giorgi (Signature) MVB	Date/Time 3/9/11 1345
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 3396

EVENT NAME: Pore Gas Sampling - MDA T - CU 21-016(a)-99

SAMPLE ID: MD21-11-5610

WORK ORDER:

AS PLANNED		AS COLLECTED	AS PLANNED		AS COLLECTED
DATE COLLECTED(MM/DD/YYYY):		3/9/11	MEDIA:		NA
TIME COLLECTED (HH:MM)		950	SUB-MEDIA:		OTHER
PRS ID:	21-018(a)-99	ok	SAMPLE TECH CODE:		VOST
LOCATION ID:	21-24524W	ok	FIELD QC TYPE:		FB
LOCATION TYPE:	BH	ok	FIELD PREP:		NA
TOP DEPTH:	0	ok	SAMPLE USAGE:		QC
BOTTOM DEPTH:	0	ok	SCREEN/PORT DESC:		Port 5 FB
FIELD MATRIX:	GAS	ok	EXCAVATED: YES/NO		NA
COMPOSITE TYPE:		NA	COMPOSITE TIME INTERVAL:		WATER FLOWING: YES/NO/NA
BOREHOLE: YES/NO/NA		NA	BOREHOLE DECLINATION:		BOREHOLE DIRECTION:

#	PRIORITY	ORDER	CNTNR	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
1		H3	1 EA SILICA GEL TUBE	None	Y	NA
1		TO15	6 LITER SUMMA CANISTER	None	RO 3/9/11	not collected

SAMPLE DESC: QC Sample of MD 21-11-5604

column # 27

initial wt = 593.25g

silica wt = 148.20g

Final wt 599.41g

DE wt = 6.26.16g

RO 3/9/11

SAMPLE COMMENTS:

NA

LOCATION DESC:

NA

FIELD SCREENING/MEASUREMENT RESULTS:

NA

COLLECTED BY (PRINT) R. Onstott M6109gii

REVIEWED BY (PRINT) M. V. Binger

RELINQUISHED BY (Printed Name) (Signature)	Date/Time 3/5/11 1345	RECEIVED BY (Printed Name) (Signature)	Date/Time 3/9/11 1345
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

DATA VALIDATION COVER SHEET**5119-1****Data Validation Cover Sheet**

Records Use only

**Section I.**REQUEST NUMBER: 11-1587 VALIDATION DATE: 05/17/2011 LAB CODE: ARSCONTRACT LABORATORY NAME: American Radiation ServicesVALIDATOR: Janis Kardatzke ORGANIZATION: Analytical Quality Associates, Inc.

ANALYTICAL SUITE (CHECK ALL THAT APPLY):

- | | | | |
|---|--|---|--|
| <input type="checkbox"/> TPH-GRO | <input type="checkbox"/> HIGH EXPLOSIVES | <input type="checkbox"/> DIOXIN FURANS | <input type="checkbox"/> LCMSMS PERCHLORATES |
| <input type="checkbox"/> TPH-DRO | <input type="checkbox"/> METALS | <input type="checkbox"/> PCB CONGENERS | <input type="checkbox"/> ORGANOCHLORINE |
| <input type="checkbox"/> GENERAL CHEMISTRY | <input checked="" type="checkbox"/> RADIOCHEMISTRY | <input type="checkbox"/> LCMSMS HIGH EXPLOSIVES | PESTICIDES/POLYCHLORINATED BIPHENYLS |
| <input type="checkbox"/> OTHER (DESCRIBE): tritium only | | | |

Section II. Completeness Check

- | YES | NO | N/A | (CHECK ONE) | YES | NO | N/A | (CHECK ONE) |
|-------------------------------------|--------------------------|-------------------------------------|-----------------------------|-------------------------------------|--------------------------|-------------------------------------|--------------------------|
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 1. CHAIN-OF-CUSTODY FORM(S) | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 6. RAW/BSS DATA |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 2. CASE NARRATIVE | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 7. QUALITY CONTROL FORMS |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 3. SAMPLE RESULT FORMS | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 8. QUANTITATION REPORTS |
| <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | 4. SAMPLE CHROMATOGRAMS | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | 9. TICS FORMS |
| <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | 5. STANDARD CHROMATOGRAMS | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | 10. TICS MASS SPECTRA |

Comments/problems noted (include information about requests for further information submitted to the contract laboratory and agreed-upon date of resolution and contract laboratory point of contact):

1. An MS was not analyzed for tritium. However, an LCS was analyzed and met acceptance criteria, thus, no sample data were qualified.
2. A sample duplicate was not analyzed for tritium. However, an LCSD was analyzed and met the acceptance criteria, thus, no sample data were qualified.
3. It should be noted that the LCS/LCSD RER was hand-calculated using the 2-sigma TPU values and was found to be within specifications. No sample data were qualified.

Reviewed by: Mary Donovan Level: I Date: 05/17/11VALIDATOR'S SIGNATURE: DATE: 05/17/2011

RAD ANALYTICAL DATA VALIDATION CHECKLIST


5119-2

Rad Analytical Data Validation Checklist

Records Use only



Yes	No	N/A		Assign Qualifier Listed Below If Criterion = Yes	
				Non-detected Analyte	Detected Analyte
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	1. The holding time was >1 and ≤2 times the applicable holding time requirement.	UJ, R9	J-, R9
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	2. The holding time was >2 times the applicable holding time requirement.	R, R9a	J-, R9a
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	3. The results for the affected analytes are considered not detected (U) because the associated sample concentration was less than or equal to the MDC.	U, R5	N/A
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	4. The analyte should be regarded as rejected because spectral interferences prevent positive identification of the analytes.	R, R5a	R, R5a
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	5. The MDC and/or TPU documentation is missing. Data may not be acceptable for use. Contact the SMO or external laboratory for information.	R, R5b	J-, R5b
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	6. The results for the affected analytes should be regarded as not detected (U) because the associated sample concentration was less than 3X the 1 sigma TPU.	U, R11	N/A
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	7. The sample result is ≤5X the concentration of the related analyte in the method blank.	U, R4	N/A
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	8. The affected analytes are considered estimated and biased high because this analyte was identified in the method blank but was >5X.	N/A	J, R4a
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	9. The sample result is ≤5X the concentration of the related analyte in the trip blank, rinsate blank, or equipment blank.	U, R4d	N/A
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	10. Required method blank information is missing. Data may not be acceptable for use. Contact the SMO or external laboratory for information.	R, R4e	R, R4e
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	11. The tracer is <10%R. Follow the external laboratory limits located within the associated data package. Tracer%R is not applicable for Gamma Spectroscopy.	R, R3	R, R3

RAD ANALYTICAL DATA VALIDATION CHECKLIST		
5119-2 Rad Analytical Data Validation Checklist		Records Use only 

Yes No N/A				Assign Qualifier Listed Below If Criterion = Yes	
(Check One)				Non-detected Analyte	Detected Analyte
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	12. The tracer is < the Lower Acceptance Level (LAL) but $\geq 10\%R$. Follow the external laboratory limits located within the associated data package. Tracer%R is not applicable for Gamma Spectroscopy.	UJ, R3a	J-, R3a
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	13. The Tracer%R value is > the Upper Acceptance Limit (UAL). Follow the external laboratory limits located within the associated data package. Tracer%R is not applicable for Gamma Spectroscopy.	N/A	J+, R3b
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	14. Required tracer information is missing. Data may not be acceptable for use. Contact the SMO or external laboratory for information. Tracer%R is not applicable for Gamma Spectroscopy.	R, R3d	R, R3d
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	15. The LCS percent recovery was <10%. Follow the external laboratory limits located within the associated data package.	R, R12	R, R12
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	16. The LCS percent recovery was < the LAL but >10%. Follow the external laboratory limits located within the associated data package.	UJ, R12a	J-, R12a
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	17. The LCS percent recovery was > the UAL. Follow the external laboratory limits located within the associated data package.	N/A	J+, R12b
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	18. The LCS documentation is missing. Data may not be acceptable for use. Contact the SMO or external laboratory for information.	R, R12c	R, R12c
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	19. Associated duplicate sample has DER or RER > the analytical laboratory's acceptance limits.	R, R10	J, J10
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	20. The duplicate sample was not prepared and/or analyzed with the samples for unspecified reasons. The duplicate information is missing. Data may not be acceptable for use. Contact the SMO or external laboratory for information.	R, R6	R, R6

RAD ANALYTICAL DATA VALIDATION CHECKLIST

5119-2

Rad Analytical Data Validation Checklist

Records Use only



Yes No N/A				Assign Qualifier Listed Below If Criterion = Yes	
(Check One)				Non-detected Analyte	Detected Analyte
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	21. The associated matrix spike recovery was <10%. Follow the external laboratory limits. MS/MSD is not applicable to Gamma Spectroscopy.	R, R6	R, R6
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	22. The associated matrix spike recovery was <10%. Follow the external laboratory limits. MS/MSD is not applicable to Gamma Spectroscopy.	UJ, R6a	J-, R6a
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	23. The associated matrix spike recovery was above the UAL. Follow the external laboratory limits. MS/MSD is not applicable to Gamma Spectroscopy.	UJ, R6b	J+, R6b
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	24. Required matrix spike information is missing. Data may not be acceptable for use. Contact the SMO or external laboratory for information. If LCS information is present, do not Reject. Qualify data based on LCS information. MS/MSD is not applicable to Gamma Spectroscopy.	R, R6c	R, R6c
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	25. Duplicate, dilution, or reanalysis.	UJ, R88	J, R88
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	26. The LANL project chemist identified quality deficiencies in the reported data that require further qualification. This code can ONLY be used and/or under advisement by the LANL project chemist.	UJ, R, R19	J, R, R19
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	27. Quantification of data via data validation did not occur based on Quality Control requirements in this procedure. Adhere to the external laboratory qualifiers found within the Form I analytical data summary sheets generated by the external laboratory.	U, U_LAB	J, J_LAB NQ, NQ



2609 North River Road, Port Allen, Louisiana 70767

1 (800) 401-4277 FAX (225) 381-2996

ARS Sample Delivery Group: ARS1-11-00491
Client Sample ID: MD21-11-5600
Sample Collection Date: 03/09/11
Sample Matrix: Silica

Request or PO Number: 11-1587
ARS Sample ID: ARS1-11-00491-001
Date Received: 03/10/11
Report Date: 05/06/11

Analysis Description	Analysis Results	Analysis Error +/- 1s	MDC	DLC	Qual	Analysis Units	Analysis Test Method	Analysis Date/Time	Analysis Technician	Tracer/Chem Recovery
H-3	18312.003	972.668	220.598	108.432		pCi/L	ARS-054/EPA 906.0	05/03/11 04:39	BS	NA

NOTES: Project Cost Code MR8R032NFM00

Project Manager Review

Notes: American Radiation Services, Inc. assumes no liability for the use or interpretation of any analytical results provided other than the cost of the analysis itself. Reproduction of this report in less than full requires the written consent of the American Radiation Services, Inc.

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NELAP Certificate # E87558



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1 (800) 401-4277 FAX (225) 381-2996

ARS Sample Delivery Group: ARS1-11-00491
Client Sample ID: MD21-11-5601
Sample Collection Date: 03/09/11
Sample Matrix: Silica

Request or PO Number: 11-1587
ARS Sample ID: ARS1-11-00491-002
Date Received: 03/10/11
Report Date: 05/06/11

Analysis Description	Analysis Results	Analysis Error +/- 1s	MDC	DLC	Qual	Analysis Units	Analysis Test Method	Analysis Date/Time	Analysis Technician	Tracer/Chem Recovery
H-3	8321.930	452.722	219.105	107.698		pCi/L	ARS-054/EPA 906.0	05/03/11 07:49	BS	NA

NOTES: Project Cost Code MR8R032NFM00

SDH

Project Manager Review

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LELAP Certificate# 01949

NELAP Certificate # E87558



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ARS Sample Delivery Group: ARS1-11-00491

Client Sample ID: MD21-11-5602

Sample Collection Date: 03/09/11

Sample Matrix: Silica

Request or PO Number: 11-1587

ARS Sample ID: ARS1-11-00491-003

Date Received: 03/10/11

Report Date: 05/06/11

Analysis Description	Analysis Results	Analysis Error +/- 1s	MDC	DLC	Qual	Analysis Units	Analysis Test Method	Analysis Date/Time	Analysis Technician	Tracer/Chem Recovery
H-3	8685.194	471.606	219.884	108.081		pCi/L	ARS-054/EPA 906.0	05/03/11 10:58	BS	NA

NOTES: Project Cost Code MR8R032NFM00

Project Manager Review

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ARS Sample Delivery Group: ARS1-11-00491
Client Sample ID: MD21-11-5603
Sample Collection Date: 03/09/11
Sample Matrix: Silica

Request or PO Number: 11-1587
ARS Sample ID: ARS1-11-00491-004
Date Received: 03/10/11
Report Date: 05/06/11

Analysis Description	Analysis Results	Analysis Error +/- 1s	MDC	DLC	Qual	Analysis Units	Analysis Test Method	Analysis Date/Time	Analysis Technician	Tracer/Chem Recovery
H-3	22232.079	1177.212	220.301	108.286		pCi/L	ARS-054/EPA 906.0	05/03/11 14:08	BS	NA

NOTES: Project Cost Code MR8R032NFM00


Project Manager Review

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ARS Sample Delivery Group: ARS1-11-00491
Client Sample ID: MD21-11-5605
Sample Collection Date: 03/09/11
Sample Matrix: Silica

Request or PO Number: 11-1587
ARS Sample ID: ARS1-11-00491-005
Date Received: 03/10/11
Report Date: 05/06/11

Analysis Description	Analysis Results	Analysis Error +/- 1s	MDC	DLC	Qual	Analysis Units	Analysis Test Method	Analysis Date/Time	Analysis Technician	Tracer/Chem Recovery
H-3	5524.951	308.825	220.414	108.342		pCi/L	ARS-054/EPA 906.0	05/03/11 17:17	BS	NA

NOTES: Project Cost Code MR8R032NFM00

Project Manager Review

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ARS Sample Delivery Group: ARS1-11-00491

Client Sample ID: MD21-11-5606

Sample Collection Date: 03/09/11

Sample Matrix: Silica

Request or PO Number: 11-1587

ARS Sample ID: ARS1-11-00491-006

Date Received: 03/10/11

Report Date: 05/06/11

Analysis Description	Analysis Results	Analysis Error +/- 1s	MDC	DLC	Qual	Analysis Units	Analysis Test Method	Analysis Date/Time	Analysis Technician	Tracer/Chem Recovery
H-3	4340.263	248.407	219.018	107.656		pCi/L	ARS-054/EPA 906.0	05/03/11 20:27	BS	NA

NOTES: Project Cost Code MR8R032NFM00

Project Manager Review

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LELAP Certificate# 01949

NELAP Certificate # E87558



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1 (800) 401-4277 FAX (225) 381-2996

ARS Sample Delivery Group: ARS1-11-00491

Client Sample ID: MD21-11-5607

Sample Collection Date: 03/09/11

Sample Matrix: Silica

Request or PO Number: 11-1587

ARS Sample ID: ARS1-11-00491-007

Date Received: 03/10/11

Report Date: 05/06/11

Analysis Description	Analysis Results	Analysis Error +/- 1s	MDC	DLC	Qual	Analysis Units	Analysis Test Method	Analysis Date/Time	Analysis Technician	Tracer/Chem Recovery
H-3	101.103	66.810	219.380	107.834	U	pCi/L	ARS-054/EPA 906.0	05/03/11 23:36	BS	NA

NOTES: Project Cost Code MR8R032NFM00

SDH

Project Manager Review

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NELAP Certificate # E87558



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ARS Sample Delivery Group: ARS1-11-00491
Client Sample ID: MD21-11-5608
Sample Collection Date: 03/09/11
Sample Matrix: Silica

Request or PO Number: 11-1587
ARS Sample ID: ARS1-11-00491-008
Date Received: 03/10/11
Report Date: 05/06/11

Analysis Description	Analysis Results	Analysis Error +/- 1s	MDC	DLC	Qual	Analysis Units	Analysis Test Method	Analysis Date/Time	Analysis Technician	Tracer/Chem Recovery
H-3	268.997	69.788	219.551	107.918		pCi/L	ARS-054/EPA 906.0	05/04/11 02:45	BS	NA

NOTES: Project Cost Code MR8R032NFM00

Project Manager Review

Notes: American Radiation Services, Inc. assumes no liability for the use or interpretation of any analytical results provided other than the cost of the analysis itself. Reproduction of this report in less than full requires the written consent of the American Radiation Services, Inc.

LELAP Certificate# 01949

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2609 North River Road, Port Allen, Louisiana 70767

1 (800) 401-4277 FAX (225) 381-2996

ARS Sample Delivery Group: ARS1-11-00491
Client Sample ID: MD21-11-5610
Sample Collection Date: 03/09/11
Sample Matrix: Silica

Request or PO Number: 11-1587
ARS Sample ID: ARS1-11-00491-009
Date Received: 03/10/11
Report Date: 05/06/11

Analysis Description	Analysis Results	Analysis Error +/- 1s	MDC	DLC	Qual	Analysis Units	Analysis Test Method	Analysis Date/Time	Analysis Technician	Tracer/Chem Recovery
H-3	2.479	65.923	220.534	108.401	U	pCi/L	ARS-054/EPA 906.0	05/04/11 05:55	BS	NA

NOTES: Project Cost Code MR8R032NFM00

SCH

Project Manager Review

Notes: American Radiation Services, Inc. assumes no liability for the use or interpretation of any analytical results provided other than the cost of the analysis itself. Reproduction of this report in less than full requires the written consent of the American Radiation Services, Inc.

LELAP Certificate# 01949

NELAP Certificate # E87558

Wednesday, March 09, 2011

LAB CHAIN OF CUSTODY DOCUMENT NUMBER: 11-15870

LOS ALAMOS

REQUEST NUMBER: 11-1587

NATIONAL LABORATORY

ATTN: Danny Coleman

TURNAROUND/REPORT DUE: 4/8/2011

American Radiation Services - Primary

TURNAROUND REQ'D: 30

1726 Wooddale Court

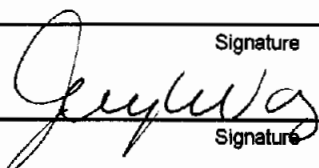
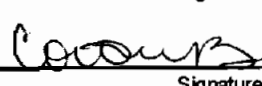
Baton Rouge, LA 70806

LAB REQUEST COMMENTS:

1 of 1

SAMPLE ID	CTNR	CTNR DESC	ORDER	PRESERV	MATRIX
MD21-11-5610	1	SILICA GEL TUBE	H3	None	GAS
MD21-11-5607	1	SILICA GEL TUBE	H3	None	GAS
MD21-11-5605	1	SILICA GEL TUBE	H3	None	GAS
MD21-11-5608	1	SILICA GEL TUBE	H3	None	GAS
MD21-11-5600	1	SILICA GEL TUBE	H3	None	GAS
MD21-11-5602	1	SILICA GEL TUBE	H3	None	GAS
MD21-11-5603	1	SILICA GEL TUBE	H3	None	GAS
MD21-11-5606	1	SILICA GEL TUBE	H3	None	GAS
MD21-11-5601	1	SILICA GEL TUBE	H3	None	GAS

Relinquished By: Date Time Received By: Date Time

Signature Signature
 3/9/11 1400  3/10/11/10:45
Signature Signature

Signature Signature

Received for DISPOSAL By: Date Time Remarks:

Signature

Wednesday, March 09, 2011

REQUEST NUMBER: 11-1587

**LOS ALAMOS
NATIONAL LABORATORY**

ATTN: Danny Coleman

American Radiation Services - Primary

1726 Wooddale Court

Baton Rouge, LA 70806

These Samples are on:

LANL Request Number:11-1587

Per Agreement Number:63641-001-10

Project Cost Code: MR8R032NFM00

Please analyse the enclosed samples
according to the schedule indicated:

SHIP DATE: 3/9/2011**TURNAROUND/REPORT DUE: 4/8/2011****TURNAROUND REQ'D: 30 Days****RAD SCREENING: Not Required****LAB REQUEST COMMENTS:**

LANL ER SMO CONTACT:

Signature: 

PRIORITY	METHOD CODE	CNTNR	SAMPLE ID	SAMPLE MATRIX	DATE SAMPLED	SPECIAL INSTRUCTIONS
	EPA:906.0	1	MD21-11-5600	GAS	3/9/2011	
		1	MD21-11-5601	GAS	3/9/2011	
		1	MD21-11-5602	GAS	3/9/2011	
		1	MD21-11-5603	GAS	3/9/2011	
		1	MD21-11-5605	GAS	3/9/2011	
		1	MD21-11-5606	GAS	3/9/2011	
		1	MD21-11-5607	GAS	3/9/2011	
		1	MD21-11-5608	GAS	3/9/2011	
CAS1	13/52291-5310	GAS1	13/522911-5310	GAS	3/9/2011	



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American Radiation Services Analytical Reports

for

Los Alamos National Laboratory

Request Number: 11-1587



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American Radiation Services Analytical Reports

for

**Los Alamos National Laboratory
Request Number: 11-1587**

Original COC

Wednesday, March 09, 2011

REQUEST NUMBER: 11-1587

LOS ALAMOS**NATIONAL LABORATORY**

ATTN: Danny Coleman

These Samples are on:

American Radiation Services - Primary

LANL Request Number: 11-1587

1726 Wooddale Court

Per Agreement Number: 63641-001-10

Baton Rouge, LA 70806

Project Cost Code: MR8R032NFM00

Please analyse the enclosed samples
according to the schedule indicated:

SHIP DATE: 3/9/2011


TURNAROUND/REPORT DUE: 4/8/2011

TURNAROUND REQ'D: 30 Days

RAD SCREENING: Not Required

LAB REQUEST COMMENTS:

LANL ER SMO CONTACT:

Signature: 

PRIORITY	METHOD CODE	CNTNR	SAMPLE ID	SAMPLE MATRIX	DATE SAMPLED	SPECIAL INSTRUCTIONS
----------	-------------	-------	-----------	---------------	--------------	----------------------

EPA:906.0	1	MD21-11-5600	GAS	3/9/2011	
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1	MD21-11-5601	GAS	3/9/2011	
---	--------------	-----	----------	--

1	MD21-11-5602	GAS	3/9/2011	
---	--------------	-----	----------	--

1	MD21-11-5603	GAS	3/9/2011	
---	--------------	-----	----------	--

1	MD21-11-5605	GAS	3/9/2011	
---	--------------	-----	----------	--

1	MD21-11-5606	GAS	3/9/2011	
---	--------------	-----	----------	--

1	MD21-11-5607	GAS	3/9/2011	
---	--------------	-----	----------	--

1	MD21-11-5608	GAS	3/9/2011	
---	--------------	-----	----------	--

GAS1	MD21-11-5610	GAS1	MD21-11-5610	GAS1	3/9/2011	
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Wednesday, March 09, 2011

LAB CHAIN OF CUSTODY DOCUMENT NUMBER: 11-15870

LOS ALAMOS

REQUEST NUMBER: 11-1587

NATIONAL LABORATORY

ATTN: Danny Coleman

TURNAROUND/REPORT DUE: 4/8/2011

American Radiation Services - Primary

TURNAROUND REQ'D: 30

1726 Wooddale Court

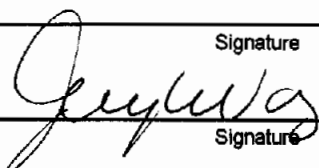
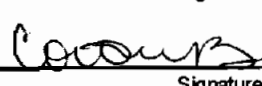
Baton Rouge, LA 70806

LAB REQUEST COMMENTS:

1 of 1

SAMPLE ID	CTNR	CTNR DESC	ORDER	PRESERV	MATRIX
MD21-11-5610	1	SILICA GEL TUBE	H3	None	GAS
MD21-11-5607	1	SILICA GEL TUBE	H3	None	GAS
MD21-11-5605	1	SILICA GEL TUBE	H3	None	GAS
MD21-11-5608	1	SILICA GEL TUBE	H3	None	GAS
MD21-11-5600	1	SILICA GEL TUBE	H3	None	GAS
MD21-11-5602	1	SILICA GEL TUBE	H3	None	GAS
MD21-11-5603	1	SILICA GEL TUBE	H3	None	GAS
MD21-11-5606	1	SILICA GEL TUBE	H3	None	GAS
MD21-11-5601	1	SILICA GEL TUBE	H3	None	GAS

Relinquished By:	Date	Time	Received By:	Date	Time
------------------	------	------	--------------	------	------

	3/9/11	1400		3/10/11	10:45
---	--------	------	--	---------	-------

Signature	Signature
-----------	-----------

Received for DISPOSAL By:	Date	Time	Remarks:
---------------------------	------	------	----------

Signature



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American Radiation Services Analytical Reports

for

**Los Alamos National Laboratory
Request Number: 11-1587**

Case Narrative



2609 North River Road • Port Allen, Louisiana 70767

1 (800) 401-4277 • Fax (225) 381-2996

May 6, 2011

LANL
Keith Greene
PO Box 1663 MS M992
Los Alamos, NM 87545

Request Number: **11-1587**

LANL Sample ID: **MD21-11-5600; MD21-11-5601; MD21-11-5602; MD21-11-5603; MD21-11-5605;
MD21-11-5606; MD21-11-5607; MD21-11-5608; MD21-11-5610.**

Dear Mr. Greene;

On March 10, 2011, ARS International received nine (9) Silica Gel samples to be analyzed for Tritium.

The samples were received in good condition. They were processed and counted using the appropriate counting equipment and QA/QC for this type of analysis. Results of the analysis and QA/QC are attached in the data package.

The client and QA/QC samples were counted with a count time sufficient to meet quality control parameters for counting equipment and were within acceptance criteria and statistical sound detection limits.

If you have any questions please do not hesitate to call at 225.381.2991 or email LANL@amrad.com.

Sincerely,

A handwritten signature in black ink that reads 'Eugene Mulligan'. The signature is written in a cursive, flowing style.

Laboratory Management
ARS International



2609 North River Road • Port Allen, Louisiana 70767

1 (800) 401-4277 • Fax (225) 381-2996

COVER PAGE

**PROJECT SAMPLE IDENTIFICATION
CROSS-REFERENCE
TO ARS SAMPLE LABORATORY IDs**
Subcontract (LANL Agreement Number) 63641-001-10

Request Number	LANL PROJECT SAMPLE ID NUMBER	American Radiation Services SAMPLE ID NUMBER(S)
11-1587	MD21-11-5600	ARS1-11-00491-001
11-1587	MD21-11-5601	ARS1-11-00491-002
11-1587	MD21-11-5602	ARS1-11-00491-003
11-1587	MD21-11-5603	ARS1-11-00491-004
11-1587	MD21-11-5605	ARS1-11-00491-005
11-1587	MD21-11-5606	ARS1-11-00491-006
11-1587	MD21-11-5607	ARS1-11-00491-007
11-1587	MD21-11-5608	ARS1-11-00491-008
11-1587	MD21-11-5610	ARS1-11-00491-009

ANALYTICAL METHODS

Tritium analyses were performed using EPA 906.0.

ANALYTICAL RESULTS

The result data that are flagged with "U" indicate that the activity is below the MDC.



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1 (800) 401-4277 • Fax (225) 381-2996

American Radiation Services Project Manager/Laboratory Director's Comments:

"I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this sample data package and the computer-readable EDD, as applicable, submitted on diskette or by modem, has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature."

"I certify that this electronic image and all hardcopies produced from this image accurately represent the data and is in compliance with the LANL specific requirements, both technically and for completeness, other than the conditions detailed above or in the sample data package narrative. Release, by submission through email, the data contained in this electronic image and the computer-readable EDD (as applicable), has been authorized by the laboratory Manager/Technical Director or the Manager's designee."

Dixene Mulligan
Signature

Laboratory Management, ARS International
Title

5-6-11
Date



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American Radiation Services Analytical Reports

for

Los Alamos National Laboratory

Tritium by Low Level Liquid Scintillation Counting



2609 North River Road, Port Allen, Louisiana 70767

1 (800) 401-4277 FAX (225) 381-2996

ARS Sample Delivery Group: ARS1-11-00491
Client Sample ID: MD21-11-5600
Sample Collection Date: 03/09/11
Sample Matrix: Silica

Request or PO Number: 11-1587
ARS Sample ID: ARS1-11-00491-001
Date Received: 03/10/11
Report Date: 05/06/11

Analysis Description	Analysis Results	Analysis Error +/- 1s	MDC	DLC	Qual	Analysis Units	Analysis Test Method	Analysis Date/Time	Analysis Technician	Tracer/Chem Recovery
H-3	18312.003	972.668	220.598	108.432		pCi/L	ARS-054/EPA 906.0	05/03/11 04:39	BS	NA

NOTES: Project Cost Code MR8R032NFM00

Project Manager Review

Notes: American Radiation Services, Inc. assumes no liability for the use or interpretation of any analytical results provided other than the cost of the analysis itself. Reproduction of this report in less than full requires the written consent of the American Radiation Services, Inc.

LELAP Certificate# 01949

NELAP Certificate # E87558



2609 North River Road, Port Allen, Louisiana 70767

1 (800) 401-4277 FAX (225) 381-2996

ARS Sample Delivery Group: ARS1-11-00491
Client Sample ID: MD21-11-5601
Sample Collection Date: 03/09/11
Sample Matrix: Silica

Request or PO Number: 11-1587
ARS Sample ID: ARS1-11-00491-002
Date Received: 03/10/11
Report Date: 05/06/11

Analysis Description	Analysis Results	Analysis Error +/- 1s	MDC	DLC	Qual	Analysis Units	Analysis Test Method	Analysis Date/Time	Analysis Technician	Tracer/Chem Recovery
H-3	8321.930	452.722	219.105	107.698		pCi/L	ARS-054/EPA 906.0	05/03/11 07:49	BS	NA

NOTES: Project Cost Code MR8R032NFM00

SDH

Project Manager Review

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2609 North River Road, Port Allen, Louisiana 70767

1 (800) 401-4277 FAX (225) 381-2996

ARS Sample Delivery Group: ARS1-11-00491

Client Sample ID: MD21-11-5602

Sample Collection Date: 03/09/11

Sample Matrix: Silica

Request or PO Number: 11-1587

ARS Sample ID: ARS1-11-00491-003

Date Received: 03/10/11

Report Date: 05/06/11

Analysis Description	Analysis Results	Analysis Error +/- 1s	MDC	DLC	Qual	Analysis Units	Analysis Test Method	Analysis Date/Time	Analysis Technician	Tracer/Chem Recovery
H-3	8685.194	471.606	219.884	108.081		pCi/L	ARS-054/EPA 906.0	05/03/11 10:58	BS	NA

NOTES: Project Cost Code MR8R032NFM00

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2609 North River Road, Port Allen, Louisiana 70767

1 (800) 401-4277 FAX (225) 381-2996

ARS Sample Delivery Group: ARS1-11-00491
Client Sample ID: MD21-11-5603
Sample Collection Date: 03/09/11
Sample Matrix: Silica

Request or PO Number: 11-1587
ARS Sample ID: ARS1-11-00491-004
Date Received: 03/10/11
Report Date: 05/06/11

Analysis Description	Analysis Results	Analysis Error +/- 1s	MDC	DLC	Qual	Analysis Units	Analysis Test Method	Analysis Date/Time	Analysis Technician	Tracer/Chem Recovery
H-3	22232.079	1177.212	220.301	108.286		pCi/L	ARS-054/EPA 906.0	05/03/11 14:08	BS	NA

NOTES: Project Cost Code MR8R032NFM00

Project Manager Review

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NELAP Certificate # E87558



2609 North River Road, Port Allen, Louisiana 70767

1 (800) 401-4277 FAX (225) 381-2996

ARS Sample Delivery Group: ARS1-11-00491
Client Sample ID: MD21-11-5605
Sample Collection Date: 03/09/11
Sample Matrix: Silica

Request or PO Number: 11-1587
ARS Sample ID: ARS1-11-00491-005
Date Received: 03/10/11
Report Date: 05/06/11

Analysis Description	Analysis Results	Analysis Error +/- 1s	MDC	DLC	Qual	Analysis Units	Analysis Test Method	Analysis Date/Time	Analysis Technician	Tracer/Chem Recovery
H-3	5524.951	308.825	220.414	108.342		pCi/L	ARS-054/EPA 906.0	05/03/11 17:17	BS	NA

NOTES: Project Cost Code MR8R032NFM00

Project Manager Review

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LELAP Certificate# 01949

NELAP Certificate # E87558



2609 North River Road, Port Allen, Louisiana 70767

1 (800) 401-4277 FAX (225) 381-2996

ARS Sample Delivery Group: ARS1-11-00491

Client Sample ID: MD21-11-5606

Sample Collection Date: 03/09/11

Sample Matrix: Silica

Request or PO Number: 11-1587

ARS Sample ID: ARS1-11-00491-006

Date Received: 03/10/11

Report Date: 05/06/11

Analysis Description	Analysis Results	Analysis Error +/- 1s	MDC	DLC	Qual	Analysis Units	Analysis Test Method	Analysis Date/Time	Analysis Technician	Tracer/Chem Recovery
H-3	4340.263	248.407	219.018	107.656		pCi/L	ARS-054/EPA 906.0	05/03/11 20:27	BS	NA

NOTES: Project Cost Code MR8R032NFM00

Project Manager Review

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NELAP Certificate # E87558



2609 North River Road, Port Allen, Louisiana 70767

1 (800) 401-4277 FAX (225) 381-2996

ARS Sample Delivery Group: ARS1-11-00491

Client Sample ID: MD21-11-5607

Sample Collection Date: 03/09/11

Sample Matrix: Silica

Request or PO Number: 11-1587

ARS Sample ID: ARS1-11-00491-007

Date Received: 03/10/11

Report Date: 05/06/11

Analysis Description	Analysis Results	Analysis Error +/- 1s	MDC	DLC	Qual	Analysis Units	Analysis Test Method	Analysis Date/Time	Analysis Technician	Tracer/Chem Recovery
H-3	101.103	66.810	219.380	107.834	U	pCi/L	ARS-054/EPA 906.0	05/03/11 23:36	BS	NA

NOTES: Project Cost Code MR8R032NFM00

SDH

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2609 North River Road, Port Allen, Louisiana 70767

1 (800) 401-4277 FAX (225) 381-2996

ARS Sample Delivery Group: ARS1-11-00491

Client Sample ID: MD21-11-5608

Sample Collection Date: 03/09/11

Sample Matrix: Silica

Request or PO Number: 11-1587

ARS Sample ID: ARS1-11-00491-008

Date Received: 03/10/11

Report Date: 05/06/11

Analysis Description	Analysis Results	Analysis Error +/- 1s	MDC	DLC	Qual	Analysis Units	Analysis Test Method	Analysis Date/Time	Analysis Technician	Tracer/Chem Recovery
H-3	268.997	69.788	219.551	107.918		pCi/L	ARS-054/EPA 906.0	05/04/11 02:45	BS	NA

NOTES: Project Cost Code MR8R032NFM00

Project Manager Review

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2609 North River Road, Port Allen, Louisiana 70767

1 (800) 401-4277 FAX (225) 381-2996

ARS Sample Delivery Group: ARS1-11-00491
Client Sample ID: MD21-11-5610
Sample Collection Date: 03/09/11
Sample Matrix: Silica

Request or PO Number: 11-1587
ARS Sample ID: ARS1-11-00491-009
Date Received: 03/10/11
Report Date: 05/06/11

Analysis Description	Analysis Results	Analysis Error +/- 1s	MDC	DLC	Qual	Analysis Units	Analysis Test Method	Analysis Date/Time	Analysis Technician	Tracer/Chem Recovery
H-3	2.479	65.923	220.534	108.401	U	pCi/L	ARS-054/EPA 906.0	05/04/11 05:55	BS	NA

NOTES: Project Cost Code MR8R032NFM00

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Project Manager Review

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QC Results per Analytical Batch

Analytical Batch	ARS1-B11-01640
SDG	ARS1-11-00491
Analysis	Tritium (Aqueous)
Analysis Test Method	ARS-054/Liquid Scintillation Counter
Analysis Code	LSC-A-001
Report Units	pCi/L

Acceptable QC Performance Ranges

QC Sample Type	Performance Items and Ranges		
Laboratory Control Sample	Recovery (%):	> 80	< 120
Matrix Spike	Recovery (%):	> 75	< 125
Duplicate	Replicate Error Ratio (RER):	< 1	
	Duplicate Error Ratio (DER):	< 3	
	Relative Percent Difference (RPD %):	≤ 25	

Laboratory Control Sample			Analysis Date	05/02/11 19:14	Analysis Technician	BSTEFFENS	
Analysis Batch Sample ID	QC Type	Analyte	Results	CSU (1s)	Expected Value	LCS Rec (%)	MDC
ARS1-B11-01640-01	LCS	H-3	2460	160	2449	100	220

Duplicate RER/DER/RPD			Analysis Date	05/02/11 22:23	Analysis Technician	BSTEFFENS	
Analyte	Result LCS	CSU LCS (1s)	Results LCSD	CSU LCSD (1s)	RER	DER	RPD
H-3	2460	155	2440	155	0.03	0.09	0.8

Method Blank			Analysis Date	05/03/11 01:31	Analysis Technician	BSTEFFENS	
Analysis Batch Sample ID	QC Type	Analyte	Results	CSU (1s)	MDC	Qual	
ARS1-B11-01640-03	MBL	H-3	-110	64	220	U	

Susan Leese

Susan Leese

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American Radiation Services Analytical Reports

for

Los Alamos National Laboratory

Tritium

by

**Low Level Liquid
Scintillation Counting**

Samples



LSC Instrument Data Transfer Report

\\PACKARD3170_NEW\Results\ARS11-3 Normal 3\

Batch Sample ID													New-8KG Samples Transferred													Samples eligible to Save																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
ARS1-B11-01640													23													23																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
LIMS Batch Sample ID	LSC P#	LSC PTD	LSC S#	LSC SHPL ID	LSC Count Date	LSC CPMA	LSC KSE	LSC BFF	LSC Count Dur	LSC Analyte Batch	LIMS SDC	LIMS Run	LIMS Batch Sample ID	LSC P#	LSC PTD	LSC S#	LSC SHPL ID	LSC Count Date	LSC CPMA	LSC KSE	LSC BFF	LSC Count Dur	LSC Analyte Batch	LIMS SDC	LIMS Run	LIMS Batch Sample ID	LSC P#	LSC PTD	LSC S#	LSC SHPL ID	LSC Count Date	LSC CPMA	LSC KSE	LSC BFF	LSC Count Dur	LSC Analyte Batch	LIMS SDC	LIMS Run																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														
ARS1-B11-01640-01	54		1	BACKGROUND	05/02/11 16:07	6.36	422.88	35.9200	180.00	ARS1-B11-01640			ARS1-B11-01640-01	54		2	B11-01640-01	05/02/11 19:13	16.38	435.49	36.4800	180.00	ARS1-B11-01640			ARS1-B11-01640-02	54		3	B11-01640-02	05/02/11 22:23	16.31	435.50	36.4800	180.00	ARS1-B11-01640			ARS1-B11-01640-03	54		4	B11-01640-03	05/03/11 01:31	5.91	437.63	36.5700	180.00	ARS1-B11-01640			ARS1-B11-01640-04	54		5	B11-01640-04	05/03/11 04:39	80.21	436.54	36.5300	180.00	ARS1-B11-01640			ARS1-B11-01640-05	54		6	B11-01640-05	05/03/11 07:48	40.15	439.73	36.6700	180.00	ARS1-B11-01640			ARS1-B11-01640-06	54		7	B11-01640-06	05/03/11 10:58	41.50	435.59	36.4900	180.00	ARS1-B11-01640			ARS1-B11-01640-07	54		8	B11-01640-07	05/03/11 14:07	96.14	433.67	36.4000	180.00	ARS1-B11-01640			ARS1-B11-01640-08	54		9	B11-01640-08	05/03/11 17:17	28.66	431.65	36.3100	180.00	ARS1-B11-01640			ARS1-B11-01640-09	54		10	B11-01640-09	05/03/11 20:26	23.99	435.20	36.4700	180.00	ARS1-B11-01640			ARS1-B11-01640-10	54		11	B11-01640-10	05/03/11 23:36	6.77	430.55	36.2600	180.00	ARS1-B11-01640			ARS1-B11-01640-11	54		12	B11-01640-11	05/04/11 02:45	7.45	427.76	36.1400	180.00	ARS1-B11-01640			ARS1-B11-01640-12	54		13	B11-01640-12	05/04/11 05:55	6.37	429.04	36.2000	180.00	ARS1-B11-01640			ARS1-B11-01640-13	54		14	B11-01640-13	05/04/11 09:04	6.20	424.17	35.9800	180.00	ARS1-B11-01640			ARS1-B11-01640-14	54		15	B11-01640-14	05/04/11 12:12	6.24	423.99	35.9700	180.00	ARS1-B11-01640			ARS1-B11-01640-15	54		16	B11-01640-15	05/04/11 15:20	6.82	418.05	35.7100	180.00	ARS1-B11-01640			ARS1-B11-01640-16	54		17	B11-01640-16	05/04/11 18:29	6.57	424.88	36.0100	180.00	ARS1-B11-01640			ARS1-B11-01640-17	54		18	B11-01640-17	05/04/11 21:39	6.80	434.42	36.4300	180.00	ARS1-B11-01640			ARS1-B11-01640-18	54		19	B11-01640-18	05/05/11 00:48	6.97	428.92	36.1500	180.00	ARS1-B11-01640			ARS1-B11-01640-19	54		20	B11-01640-19	05/05/11 03:58	7.28	406.85	35.0900	180.00	ARS1-B11-01640			ARS1-B11-01640-20	54		21	B11-01640-20	05/05/11 07:07	8.06	416.46	35.6400	180.00	ARS1-B11-01640			ARS1-B11-01640-21	54		22	B11-01640-21	05/05/11 10:16	7.01	400.48	34.6300	180.00	ARS1-B11-01640			ARS1-B11-01640-22	54		23	B11-01640-22	05/05/11 13:26	137.77	423.60	35.9600	180.00	ARS1-B11-01640			ARS1-B11-01640-23	54		24	B11-01640-23	05/05/11 16:35	156.32	419.18	35.7600	180.00	ARS1-B11-01640			ARS1-B11-00557					05/05/11 00:57																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							</

Procedure		ARS-054	
Variable	Value		
Gross Count Rate	16.380000		
Sample Count Mins	180.000000		
BKG Count Rate	6.360000		
BKG Count Mins	180.000000		
Instrument Efficiency	0.364800		
Sample Aliquot	5.037000		
Dilution Factor	1.000000		
Aliquot Conversion Factor	0.001000		
Sample Collection Date (t1)	5/2/11 7:14 PM		
Count Date (t2)	5/2/11 7:14 PM		
Activity Units = pCi → UCP =	2.2200		
CF	1.0000		
Nuclide Abundance	1.000000		
Half-life Days 1 - Result Isotope	4499.800000		
TPUF_Calibration Factor	0.041330		
TPUF_Aliquoting Factor	0.020000		
TPUF_Field Factor	0.000000		
TPUF_Decay Ingrowth Factor	0.025000		
TPUF_Analysis Factor	0.000000		
TPUF_Unassigned Factor	0.000000		
Activity Units	pCi		
Aliquot Units	L		
Variables Intact Test		OK	

Isotope		H-3	
Calculated Values	Excel	VBA	V/V
ACT	2456.337093	2456.337093	OK
CU	87.132309	87.132309	OK
TPU	155.186549	155.186549	OK
MDA	218.090111	218.090111	OK
DL	107.199670	107.199670	OK
Net Count Rate	10.020000	10.020000	OK
D t 1 (t2 - t1)	0.000000	0.000000	OK
DF	1.000000	1.000000	OK
Sys Err	0.052280	0.052280	OK
K	0.004079	0.004079	OK
K MDA	0.734264	0.734264	OK
Batch Identifiers and Other Related Information			
Batch	ARS1-B11-01640		
Batch ID	ARS1-B11-01640-01		
Analysis Code			
SDG	QC Sample		
Fraction	N/A QC Sample		
Run Number			
Client	QC Sample		
Client Profile			
Client ID	N/A QC Sample		
Instr File Name	71		
Instr Detector	P-54-S-2		
Instr keV			
Version/Date	1.0 -- 11/18/2005		

Reviewed by: SDH

Date: 5-6-11

Procedure		Isotope			
ARS-054		H-3			
Variable	Value	Calculated Values	Excel	VBA	V/V
Gross Count Rate	16.310000	ACT	2444.029206	2444.029206	OK
Sample Count Mins	180.000000	CU	170.855471	170.855471	OK
BKG Count Rate	6.360000	TPU	303.165756	303.165756	OK
BKG Count Mins	180.000000	MDA	218.523849	218.523849	OK
Instrument Efficiency	0.364800	DL	107.412918	107.412918	OK
Sample Aliquot	5.027000	Net Count Rate	9.950000	9.950000	OK
Dilution Factor	1.000000	D t 1 (t2 - t1)	0.000000	0.000000	OK
Aliquot Conversion Factor	0.001000	DF	1.000000	1.000000	OK
		Sys Err	0.052280	0.052280	OK
Sample Collection Date (t1)	5/2/11 10:23 PM	K	0.004071	0.004071	OK
Count Date (t2)	5/2/11 10:23 PM	K MDA	0.732806	0.732806	OK
Activity Units = pCi --- UCF =	2.2200				
CF	1.9600				
Nuclide Abundance	1.000000				
Half-life Days 1 - Result Isotope	4499.800000				
TPUF Calibration Factor	0.041330				
TPUF Aliquoting Factor	0.020000				
TPUF Yield Factor	0.000000				
TPUF Decay Ingrowth Factor	0.025000				
TPUF Analysis Factor	0.000000				
TPUF Unassigned Factor	0.000000				
Activity Units	pCi	Batch Identifiers and Other Related Information			
Aliquot Units	L	Batch	ARS1-B11-01640		
		Batch ID	ARS1-B11-01640-02		
		Analysis Code			
		SDG	QC Sample		
		Fraction	N/A QC Sample		
		Run Number			
		Client	QC Sample		
		Client Profile			
		Client ID	N/A QC Sample		
		Instr File Name	71		
		Instr Detector	P-54-S-3		
		Instr keV			
		Version/Date	1.0 -- 11/18/2005		
0	Variables Intact Test	OK			

Reviewed by:

SDH

Date:

5-6-11

Procedure		ARS-054	
Variable	Value		
Gross Count Rate	80.210000		
Sample Count Mins	180.000000		
BKG Count Rate	6.360000		
BKG Count Mins	180.000000		
Instrument Efficiency	0.365300		
Sample Aliquot	5.015000		
Dilution Factor	1.000000		
Aliquot Conversion Factor	0.001000		
Sample Collection Date (t1)	3/9/11 12:00 PM		
Count Date (t2)	5/3/11 4:39 AM		
Activity Units = pCi --- UCF =	2.2280		
CF	1.0000		
Nuclide Abundance	1.000000		
Half-life Days 1 - Result Isotope	4499.800000		
TPUF_Calibration Factor	0.041330		
TPUF_Aliquoting Factor	0.020000		
TPUF_Yield Factor	0.030000		
TPUF_Decay Ingrowth Factor	0.025000		
TPUF_Analysis Factor	0.000000		
TPUF_Unassigned Factor	0.000000		
Activity Units	pCi		
Aliquot Units	L		
Variables Intact Test		OK	

Isotope		H-3	
Calculated Values	Excel	VBA	V/V
ACT	18312.002839	18312.002829	OK
CD	171.952125	171.952125	OK
TPU	972.667976	972.667975	OK
MDA	220.597748	220.597748	OK
DL	108.432271	108.432271	OK
Net Count Rate	73.850000	73.850000	OK
D t 1 (t2 - t1)	54.693750	54.693750	OK
DF	0.991610	0.991610	OK
Sys Err	0.052280	0.052280	OK
K	0.004033	0.004033	OK
K MDA	0.725917	0.725917	OK
Batch Identifiers and Other Related Information			
Batch	ARS1-B11-01640		
Batch ID	ARS1-B11-01640-04		
Analysis Code	LSC-A-001		
SDG	ARS1-11-00491		
Fraction	001		
Run Number	1		
Client	Los Alamos National Laboratory		
Client Profile	Keith Greene		
Client ID	ND21-11-5600		
Instr File Name	71		
Instr Detector	P-54-S-5		
Instr keV			
Version/Date	1.0 -- 11/18/2005		

Reviewed by:

SDH

Date:

5-6-11

Procedure	ARS-054
Variable	Value
Gross Count Rate	40.150000
Sample Count Mins	180.000000
BKG Count Rate	6.360000
BKG Count Mins	180.000000
Instrument Efficiency	0.365700
Sample Aliquot	5.030000
Dilution Factor	1.000000
Aliquot Conversion Factor	0.001000
Sample Collection Date (t1)	3/9/11 12:00 PM
Count Date (t2)	5/3/11 7:49 AM
Activity Units = pCi --- UCF =	2.2200
CF	1.0000
Nuclide Abundance	1.000000
Halflife Days 1 - Result Isotope	4499.800000
TPUF_Calibration Factor	0.041330
TPUF_Aliquoting Factor	0.020000
TPUF_Yield Factor	0.000000
TPUF_Decay Ingrowth Factor	0.025000
TPUF_Analysis Factor	0.000000
TPUF_Unassigned Factor	0.000000
Activity Units	pCi
Aliquot Units	L

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Procedure		ARS-054	
Variable	Value		
Gross Count Rate	41.500000		
Sample Count Mins	180.000000		
BKG Count Rate	6.360000		
BKG Count Mins	180.000000		
Instrument Efficiency	0.364900		
Sample Aliquot	5.037000		
Dilution Factor	1.000000		
Aliquot Conversion Factor	0.001000		
Sample Collection Date (t1)	3/9/11 12:00 PM		
Count Date (t2)	5/3/11 10:58 AM		
Activity Units = pCi --- UCF =	2.2200		
CF	1.0000		
Nuclide Abundance	1.000000		
Half-life Days 1 - Result Isotope	4499.800000		
TPUF Calibration Factor	0.041330		
TPUF Aliquoting Factor	0.020000		
TPUF Yield Factor	0.000000		
TPUF Decay Ingrowth Factor	0.025000		
TPUF Analysis Factor	0.000000		
TPUF Unassigned Factor	0.000000		
Activity Units	pCi		
Aliquot Units	L		
Variables Intact Test		OK	

Isotope		H-3	
Calculated Values	Excel	VBA	V/V
ACT	8685.193670	8685.193665	OK
CG	127.446480	127.446480	OK
TPU	471.606416	471.606416	OK
MDA	219.883924	219.883924	OK
DL	108.081398	108.081398	OK
Net Count Rate	35.140000	35.140000	OK
D t 1 (t2 - t1)	54.956944	54.956944	OK
DF	0.991570	0.991570	OK
Sys Err	0.052280	0.052280	OK
K	0.004046	0.004046	OK
K MDA	0.728274	0.728274	OK
Batch Identifiers and Other Related Information			
Batch	ARS1-B11-01640		
Batch ID	ARS1-B11-01640-06		
Analysis Code	LSC-A-001		
SDG	ARS1-11-00491		
Fraction	003		
Run Number	1		
Client	Los Alamos National Laboratory		
Client Profile	Keith Greene		
Client ID	MD21-11-5602		
Instr File Name	71		
Instr Detector	P-54-S-7		
Instr keV			
Version/Date	1.0 -- 11/18/2005		

Reviewed by:

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Date:

5-6-11

Procedure		ARS-054	
Variable	Value		
Gross Count Rate	96.140000		
Sample Count Mins	180.000000		
BKG Count Rate	6.360000		
BKG Count Mins	180.000000		
Instrument Efficiency	0.364000		
Sample Aliquot	5.040000		
Dilution Factor	1.000000		
Aliquot Conversion Factor	0.001000		
Sample Collection Date (t1)	3/9/11 12:00 PM		
Count Date (t2)	5/3/11 2:08 PM		
Activity Units = pCi --- UCF =	2.2200		
CF	1.0000		
Nuclide Abundance	1.000000		
Half-life Days 1 - Result Isotope	4499.800000		
TPUF Calibration Factor	0.041330		
TPUF Aliquoting Factor	0.020000		
TPUF Yield Factor	0.000000		
TPUF Decay Ingrowth Factor	0.025000		
TPUF Analysis Factor	0.000000		
TPUF Unassigned Factor	0.000000		
Activity Units	pCi		
Aliquot Units	L		
Variables Intact Test		OK	

Isotope		H-3	
Calculated Values	Excel	VBA	V/V
ACT	22232.078748	22232.078736	OK
CD	186.864219	186.864219	OK
TPU	1177.212323	1177.212322	OK
MDA	220.300864	220.300864	OK
DL	108.286340	108.286340	OK
Net Count Rate	89.780000	89.780000	OK
D t 1 (t2 - t1)	55.088889	55.088889	OK
DF	0.991550	0.991550	OK
Sys Err	0.052280	0.052280	OK
K	0.004038	0.004038	OK
K MDA	0.726896	0.726896	OK
Batch Identifiers and Other Related Information			
Batch	ARS1-B11-01640		
Batch ID	ARS1-B11-01640-07		
Analysis Code	LSC-A-001		
SDG	ARS1-11-00491		
Fraction	004		
Run Number	1		
Client	Los Alamos National Laboratory		
Client Profile	Keith Greene		
Client ID	MD21-11-5603		
Instr File Name	71		
Instr Detector	P-54-S-8		
Instr keV			
Version/Date	1.0 -- 11/18/2005		

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Procedure		ARS-054		Isotope		H-3	
Variable	Value	Calculated Values	Excel	VBA	V/V		
Gross Count Rate	28.660000	ACT	5524.950706	5524.950703	OK		
Sample Count Mins	180.000000	CD	180.281177	180.281177	OK		
BKG Count Rate	6.360000	TPU	308.824506	308.824506	OK		
BKG Count Mins	180.000000	MDA	220.414050	220.414049	OK		
Instrument Efficiency	0.363100	DL	108.341975	108.341975	OK		
Sample Aliquot	5.050000	Net Count Rate	22.300000	22.300000	OK		
Dilution Factor	1.000000	D t 1 (t2 - t1)	55.220139	55.220139	OK		
Aliquot Conversion Factor	0.001000	DF	0.991530	0.991530	OK		
		Sys Err	0.052280	0.052280	OK		
Sample Collection Date (t1)	3/9/11 12:00 PM	K	0.004036	0.004036	OK		
Count Date (t2)	5/3/11 5:17 PM	K MDA	0.726522	0.726522	OK		
Activity Units = pCi --- UCF =	1.2200						
CF	1.0000						
Nuclide Abundance	1.000000						
Half-life Days 1 - Result Isotope	4499.800000						
TPUF Calibration Factor	0.041330						
TPUF Aliquoting Factor	0.020000						
TPUF Yield Factor	0.000000						
TPUF Decay Ingrowth Factor	0.025000						
TPUF Analysis Factor	0.000000						
TPUF Unassigned Factor	0.000000						
Activity Units	pCi	Batch Identifiers and Other Related Information					
Aliquot Units	L	Batch	ARS1-B11-01640				
		Batch ID	ARS1-B11-01640-08				
		Analysis Code	LSC-A-001				
		SDG	ARS1-11-00491				
		Fraction	005				
		Run Number	1				
		Client	Los Alamos National Laboratory				
		Client Profile	Keith Greene				
		Client ID	MD21-11-5605				
		Instr File Name	71				
		Instr Detector	P-54-S-9				
		Instr keV					
		Version/Date	1.0 -- 11/18/2005				
Variables Intact Test	OK						

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Date:

5-6-11

Procedure		ARS-054	
Variable	Value		
Gross Count Rate	23.990000		
Sample Count Mins	180.000000		
BKG Count Rate	6.360000		
BKG Count Mins	180.000000		
Instrument Efficiency	0.364700		
Sample Aliquot	5.060000		
Dilution Factor	1.000000		
Aliquot Conversion Factor	0.091090		
Sample Collection Date (t1)	3/9/11 12:00 PM		
Count Date (t2)	5/3/11 8:27 PM		
Activity Units = pCi --- UCF =	2.2200		
CF	1.0000		
Nuclide Abundance	1.000000		
Half-life Days 1 - Result Isotope	4499.800000		
TPUF Calibration Factor	0.041330		
TPUF Aliquoting Factor	0.020000		
TPUF Yield Factor	0.000000		
TPUF Decay Ingrowth Factor	0.025000		
TPUF Analysis Factor	0.000000		
TPUF Unassigned Factor	0.000000		
Activity Units	pCi		
Aliquot Units	L		

Procedure		ARS-054		Isotope		H-3	
Variable	Value	Calculated Values	Excel	VBA	V/V		
Gross Count Rate	6.770000	ACT	101.103372	101.103372	OK		
Sample Count Mins	180.000000	CD	66.608562	66.608562	OK		
BKG Count Rate	6.360000	TPU	66.809977	66.809977	OK		
BKG Count Mins	180.000000	MDA	219.380243	219.380243	OK		
Instrument Efficiency	0.362600	DL	107.833820	107.833820	OK		
Sample Aliquot	5.081000	Net Count Rate	0.410000	0.410000	OK		
Dilution Factor	1.000000	D t 1 (t2 - t1)	55.483333	55.483333	OK		
Aliquot Conversion Factor	0.001000	DF	0.991490	0.991490	OK		
		Sys Err	0.052280	0.052280	OK		
Sample Collection Date (t1)	3/9/11 12:00 PM	K	0.004055	0.004055	OK		
Count Date (t2)	5/3/11 11:36 PM	K MDA	0.729946	0.729946	OK		
Activity Units = pCi --- UCF =	2.2280						
CF	1.0000						
Nuclide Abundance	1.000000						
Half-life Days 1 - Result Isotope	4499.800000						
TPUF Calibration Factor	0.041330						
TPUF Aliquoting Factor	0.020000						
TPUF Yield Factor	0.030000						
TPUF Decay Ingrowth Factor	0.025000						
TPUF Analysis Factor	0.000000						
TPUF Unassigned Factor	0.000000						
Activity Units	pCi	Batch Identifiers and Other Related Information					
Aliquot Units	L	Batch	ARS1-B11-01640				
		Batch ID	ARS1-B11-01640-10				
		Analysis Code	LSC-A-001				
		SDG	ARS1-11-00491				
		Fraction	007				
		Run Number	1				
		Client	Los Alamos National Laboratory				
		Client Profile	Keith Greene				
		Client ID	MD21-11-5607				
		Instr File Name	71				
		Instr Detector	P-54-S-11				
		Instr keV					
		Version/Date	1.0 -- 11/18/2005				
Variables Intact Test	OK						

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Date: 5-6-11

Procedure		ARS-054	
Variable	Value		
Gross Count Rate	7.450000		
Sample Count Min	180.000000		
BKG Count Rate	6.360000		
BKG Count Min	180.000000		
Instrument Efficiency	0.361400		
Sample Aliquot	5.094000		
Dilution Factor	1.000000		
Aliquot Conversion Factor	0.001000		
Sample Collection Date (t1)	3/9/11 12:00 PM		
Count Date (t2)	5/4/11 2:45 AM		
Activity Units = pCi --> UCF =	2.2200		
CF	1.0000		
Nuclide Abundance	1.000000		
Half-life Days 1 - Result Isotope	4499.800000		
TPUF_Calibration Factor	0.041330		
TPUF_Aliquoting Factor	0.020000		
TPUF_Yield Factor	0.000000		
TPUF_Decay Ingrowth Factor	0.025000		
TPUF_Analysis Factor	0.000000		
TPUF_Unassigned Factor	0.000000		
Activity Units	pCi		
Aliquot Units	L		
Variables Intact Test		OK	

Isotope		H-3	
Calculated Values	Excel	VBA	V/V
ACT	268.996710	268.996710	OK
CU	68.356693	68.356693	OK
TPU	69.788307	69.788307	OK
MDA	219.551394	219.551394	OK
DL	107.917947	107.917947	OK
Net Count Rate	1.090000	1.090000	OK
D t 1 (t2 - t1)	55.614583	55.614583	OK
DF	0.991470	0.991470	OK
Sys Err	0.052280	0.052280	OK
K	0.004052	0.004052	OK
K MDA	0.729377	0.729377	OK
Batch Identifiers and Other Related Information			
Batch	ARS1-B11-01640		
Batch ID	ARS1-B11-01640-11		
Analysis Code	LSC-A-001		
SDG	ARS1-11-00491		
Fraction	008		
Run Number	1		
Client	Los Alamos National Laboratory		
Client Profile	Keith Greene		
Client ID	MD21-11-5606		
Instr File Name	71		
Instr Detector	P-54-S-12		
Instr keV			
Version/Date	1.0 -- 11/18/2005		

Procedure		Isotope			
ARS-054		H-3			
Variable	Value	Calculated Values	Excel	VBA	V/V
Gross Count Rate	6.370000	ACT	2.478905	2.478905	OK
Sample Count Mins	180.000000	CU	65.923133	65.923133	OK
BKG Count Rate	6.360000	TPU	65.923260	65.923260	OK
BKG Count Mins	180.000000	MDA	220.534032	220.534032	OK
Instrument Efficiency	0.362000	DL	108.400951	108.400951	OK
Sample Aliquot	5.063000	Net Count Rate	0.010000	0.010000	OK
Dilution Factor	1.000000	D t 1 (t2 - t1)	55.746528	55.746528	OK
Aliquot Conversion Factor	0.001000	DF	0.991450	0.991450	OK
		Sys Err	0.052280	0.052280	OK
Sample Collection Date (t1)	3/9/11 12:00 PM	K	0.004034	0.004034	OK
Count Date (t2)	5/4/11 5:55 AM	K MDA	0.726127	0.726127	OK
Activity Units = pCi -- UCF =	2.2200				
CF	1.0000				
Nuclide Abundance	1.000000				
Half-life Days 1 - Result Isotope	4499.800000				
TPUF Calibration Factor	0.041330				
TPUF Aliquoting Factor	0.020000				
TPUF Yield Factor	0.000000				
TPUF Decay Ingrowth Factor	0.025000				
TPUF Analysis Factor	0.000000				
TPUF Unassigned Factor	0.000000				
Activity Units	pCi	Batch Identifiers and Other Related Information			
Aliquot Units	L	Batch	ARS1-B11-01640		
		Batch ID	ARS1-B11-01640-12		
		Analysis Code	LSC-A-001		
		SDG	ARS1-11-00491		
		Fraction	009		
		Run Number	1		
		Client	Los Alamos National Laboratory		
		Client Profile	Keith Greene		
		Client ID	MD21-11-5618		
		Instr File Name	71		
		Instr Detector	P-54-S-13		
		Instr keV			
		Version/Date	1.0 -- 11/18/2005		
Variables Intact Test	OK				

Reviewed by:

SDH

Date:

5-6-11



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**American Radiation Services
Analytical Reports**

for

Los Alamos National Laboratory

**Tritium
by
Low Level Liquid
Scintillation Counting
Laboratory
Records**

Analysis Batch Report



Analysis Batch ID ARS1-B11-01640

Method		Tritium (Aqueous)		Analysis		LSC-A-001		Matrix		SI	
Description		SDG		FR		Run		Client ID		Isotope Group	
Batch Sample ID	Type	Blind Iso1	Blind Iso2	Blind Iso3							Lab Deadline
ARS1-B11-01640-01	LCS	B-11644									
ARS1-B11-01640-02	LCSD	B-11645									
ARS1-B11-01640-03	MBL										
ARS1-B11-01640-04	TRG										
ARS1-B11-01640-05	TRG										
ARS1-B11-01640-06	TRG										
ARS1-B11-01640-07	TRG										
ARS1-B11-01640-08	TRG										
ARS1-B11-01640-09	TRG										
ARS1-B11-01640-10	TRG										
ARS1-B11-01640-11	TRG										
ARS1-B11-01640-12	TRG										
ARS1-B11-01640-13	TRG										
ARS1-B11-01640-14	TRG										
ARS1-B11-01640-15	TRG										
ARS1-B11-01640-16	TRG										
ARS1-B11-01640-17	TRG										
ARS1-B11-01640-18	TRG										
ARS1-B11-01640-19	TRG										
ARS1-B11-01640-20	TRG										
ARS1-B11-01640-21	TRG										
ARS1-B11-01640-22	TRG										
ARS1-B11-01640-23	TRG										

85817	85818	85819	85820	85821	85822	85823	85824	85825
11-00491-001-1	11-00491-002-1	11-00491-003-1	11-00491-004-1	11-00491-005-1	11-00491-006-1	11-00491-007-1	11-00491-008-1	11-00491-009-1
WRAD	WRAD	WRAD	WRAD	WRAD	WRAD	WRAD	WRAD	WRAD

85826	85827	85828	85829	85830	85831	85832	85833	85834
11-00622-001-1	11-00622-002-1	11-00622-003-1	11-00622-004-1	11-00622-005-1	11-00622-006-1	11-00526-001-1	11-00526-002-1	11-00526-003-1
WRAD	WRAD	WRAD	WRAD	WRAD	WRAD	WRAD	WRAD	WRAD

85835	85836
11-00527-001-1	11-00527-002-1
WRAD	WRAD

LCS Report
Analytical Batch: ARS1-B11-01640

BlindID	Batch	BatchSampleID	BlindGroup	StatID	Isotope	ExpectedAddition	ExpectedValue	EmptyVt	GrossWt	NetWt	UnitID	ModDate	ExpectedValue_CT	MidPointCountDate	KnownValue
B-11644	ARS1-B11-01640	ARS1-B11-01640-01	B-H3	S-0247	H-3	5	2.454533971	0	1	1	BSTEFFENS	4/18/2011	2.449246341	5/2/2011	2.449246341
B-11645	ARS1-B11-01640	ARS1-B11-01640-02	B-H3	S-0247	H-3	5	2.454533971	0	1	1	BSTEFFENS	4/18/2011	2.449246341	5/2/2011	2.449246341

ID_31001_054	ABatch	ABatchSampleID	ClientID	Aliquot1	AliquotUnits1	IC_ID1	Aliquot2	AliquotUnits2	IC_ID2	UserID	Moddate
8443	ARSI-B11-01640	ARSI-B11-01640-01					5.037 g			BSTEFFENS	05/03/2011 10:19:34
8444	ARSI-B11-01640	ARSI-B11-01640-02					5.027 g			BSTEFFENS	05/03/2011 10:19:34
8445	ARSI-B11-01640	ARSI-B11-01640-03					5.044 g			BSTEFFENS	05/03/2011 10:19:34
8446	ARSI-B11-01640	ARSI-B11-01640-04					5.015 g			85817 BSTEFFENS	05/03/2011 10:19:34
8447	ARSI-B11-01640	ARSI-B11-01640-05	MD21-11-5601				5.03 g			85818 BSTEFFENS	05/03/2011 10:19:34
8448	ARSI-B11-01640	ARSI-B11-01640-06	MD21-11-5602				5.037 g			85819 BSTEFFENS	05/03/2011 10:19:34
8449	ARSI-B11-01640	ARSI-B11-01640-07	MD21-11-5603				5.04 g			85820 BSTEFFENS	05/03/2011 10:19:34
8450	ARSI-B11-01640	ARSI-B11-01640-08	MD21-11-5605				5.05 g			85821 BSTEFFENS	05/03/2011 10:19:34
8451	ARSI-B11-01640	ARSI-B11-01640-09	MD21-11-5606				5.06 g			85822 BSTEFFENS	05/03/2011 10:19:35
8452	ARSI-B11-01640	ARSI-B11-01640-10	MD21-11-5607				5.081 g			85823 BSTEFFENS	05/03/2011 10:19:35
8453	ARSI-B11-01640	ARSI-B11-01640-11	MD21-11-5608				5.094 g			85824 BSTEFFENS	05/03/2011 10:19:35
8454	ARSI-B11-01640	ARSI-B11-01640-12	MD21-11-5610				5.063 g			85825 BSTEFFENS	05/03/2011 10:19:35
8455	ARSI-B11-01640	ARSI-B11-01640-13	MD50-11-5957				5.03 g			85826 BSTEFFENS	05/03/2011 10:19:35
8456	ARSI-B11-01640	ARSI-B11-01640-14	MD50-11-5958				5.075 g			85827 BSTEFFENS	05/03/2011 10:19:35
8457	ARSI-B11-01640	ARSI-B11-01640-15	MD50-11-5959				5.054 g			85828 BSTEFFENS	05/03/2011 10:19:35
8458	ARSI-B11-01640	ARSI-B11-01640-16	MD50-11-5960				5.051 g			85829 BSTEFFENS	05/03/2011 10:19:35
8459	ARSI-B11-01640	ARSI-B11-01640-17	MD50-11-5961				5.069 g			85830 BSTEFFENS	05/03/2011 10:19:35
8460	ARSI-B11-01640	ARSI-B11-01640-18	MD50-11-5962				5.05 g			85831 BSTEFFENS	05/03/2011 10:19:35
8461	ARSI-B11-01640	ARSI-B11-01640-19	MD54-11-3767				5.033 g			85832 BSTEFFENS	05/03/2011 10:19:35
8462	ARSI-B11-01640	ARSI-B11-01640-20	MD54-11-3766				5.028 g			85833 BSTEFFENS	05/03/2011 10:19:35
8463	ARSI-B11-01640	ARSI-B11-01640-21	MD54-11-3768				5.007 g			85834 BSTEFFENS	05/03/2011 10:19:35
8464	ARSI-B11-01640	ARSI-B11-01640-22	MD21-11-5604				5.076 g			85835 BSTEFFENS	05/03/2011 10:19:36
8465	ARSI-B11-01640	ARSI-B11-01640-23	MD21-11-5609				5.055 g			85836 BSTEFFENS	05/03/2011 10:19:36

Batch Result Verification Report

AbatchSampleID	SDG	Fraction	ClientID	Run	Isotope	ACT	TPU	TPUs	TPUs2	MDA	PL	CU	CU1s	CU2s	ActivityReportsUnits
ARSI-B11-01640-01				1	H-3	2456.337093	155.1865492	155.1865492	304.1655363	218.0901114	107.1996705	87.1330894	87.1330894	170.773255	PCI
ARSI-B11-01640-02				1	H-3	2444.029206	303.1657561	154.6764062	303.1657561	218.5239489	107.4129183	170.8554708	87.17115858	170.8554708	PCI
ARSI-B11-01640-03				1	H-3	-109.890336	125.47149	64.01606635	125.47149	217.2514664	106.7874443	124.9651997	63.75775494	124.9651997	PCI
ARSI-B11-01640-04	ARSI-11-00491.001	MD21-11-5600		1	H-3	18312.00283	972.6679752	972.6679752	1906.429231	220.5977489	108.4322707	171.962125	171.962125	337.0457651	PCI
ARSI-B11-01640-05	ARSI-11-00491.002	MD21-11-5601		1	H-3	8321.93042	452.7218584	452.7218584	887.3468424	219.1046617	107.698361	125.1909127	125.1909127	245.3741889	PCI
ARSI-B11-01640-06	ARSI-11-00491.003	MD21-11-5602		1	H-3	8685.193665	471.6064159	471.6064159	924.3485752	219.8839242	108.0813984	127.4464798	127.4464798	249.7951004	PCI
ARSI-B11-01640-07	ARSI-11-00491.004	MD21-11-5603		1	H-3	2223.07874	1177.212322	1177.212322	2307.336151	220.3008638	108.2863403	186.8642194	186.8642194	366.25387	PCI
ARSI-B11-01640-08	ARSI-11-00491.005	MD21-11-5605		1	H-3	5524.950703	308.8245062	308.8245062	605.2960322	220.4140495	108.3419754	109.2811767	109.2811767	214.1911063	PCI
ARSI-B11-01640-09	ARSI-11-00491.006	MD21-11-5606		1	H-3	4340.262838	248.407397	248.407397	486.878498	219.0178177	107.6556738	101.089678	101.089678	198.1357689	PCI
ARSI-B11-01640-10	ARSI-11-00491.007	MD21-11-5607		1	H-3	101.1033721	66.809977	66.809977	130.9475549	219.380243	107.8338198	66.60056208	66.60056208	130.5371017	PCI
ARSI-B11-01640-11	ARSI-11-00491.008	MD21-11-5608		1	H-3	268.9967099	69.78830671	69.78830671	136.7850812	219.5513943	107.9179472	68.35669504	68.35669504	133.9791223	PCI
ARSI-B11-01640-12	ARSI-11-00491.009	MD21-11-5610		1	H-3	2.478905026	65.92326012	65.92326012	129.2095898	220.5340318	108.4009513	65.9231374	65.9231374	129.2093402	PCI
ARSI-B11-01640-13	ARSI-11-00622.001	MD50-11-5957		1	H-3	-40.08725551	66.21593903	66.21593903	129.7832405	222.8958953	109.5618979	66.18276521	66.18276521	129.7182198	PCI
ARSI-B11-01640-14	ARSI-11-00622.002	MD50-11-5958		1	H-3	-29.80773851	65.738359	65.738359	128.8471836	220.9853639	108.6227984	65.7188603	65.7188603	128.8109766	PCI
ARSI-B11-01640-15	ARSI-11-00622.003	MD50-11-5959		1	H-3	115.5754778	68.25550695	68.25550695	133.7807936	223.5237089	109.8704925	67.98753859	67.98753859	133.2555756	PCI
ARSI-B11-01640-16	ARSI-11-00622.004	MD50-11-5960		1	H-3	52.3552919	66.87570253	66.87570253	131.076377	221.7976906	109.0220881	66.81566599	66.81566599	130.9665453	PCI
ARSI-B11-01640-17	ARSI-11-00622.005	MD50-11-5961		1	H-3	108.0492545	66.6387333	66.6387333	130.6119173	218.4664883	107.3846742	66.3988856	66.3988856	130.1418158	PCI
ARSI-B11-01640-18	ARSI-11-00526.001	MD50-11-5962		1	H-3	151.3593526	67.9860895	67.9860895	133.2527354	220.7471757	108.5057197	67.5240136	67.5240136	132.3470667	PCI
ARSI-B11-01640-19	ARSI-11-00526.002	MD54-11-3767		1	H-3	236.672871	71.88884579	71.88884579	140.9021377	228.8634188	112.4851651	70.81603134	70.81603134	138.7994214	PCI
ARSI-B11-01640-20	ARSI-11-00526.002	MD54-11-3766		1	H-3	431.0182784	75.21642731	75.21642731	147.4241975	225.5602129	110.8715124	71.76177035	71.76177035	140.6530699	PCI
ARSI-B11-01640-21	ARSI-11-00526.003	MD54-11-3768		1	H-3	170.3224249	71.96773679	71.96773679	141.0567641	233.1171388	114.5860319	71.41475094	71.41475094	139.9729118	PCI
ARSI-B11-01640-22	ARSI-11-00527.001	MD21-11-5604		1	H-3	32710.89471	1724.529924	1724.529924	3380.078652	221.4480044	108.850204	222.7393677	222.7393677	436.5691807	PCI
ARSI-B11-01640-23	ARSI-11-00527.002	MD21-11-5609		1	H-3	38195.80284	2011.29211	2011.29211	3942.132535	223.6161801	109.9159456	240.4205972	240.4205972	471.2243706	PCI

Batch Result Verification Report

AbatchSampleID	SDG	Fraction	Aliquot	ReportUnits	ChemRecovery	TracerRecovery	SampleCounts	SampleCountMin	BKG_Counts	BKG_CountMin	EFF	ALQ	SampleCollDate	MidPointCountDate	BP_DL
ARS1-B11-01640-01		L					0.091	180	0.035333333	180	0.3648	5.037	5/6/2011	5/2/2011	
ARS1-B11-01640-02		L					0.090611111	180	0.035333333	180	0.3648	5.027	5/6/2011	5/2/2011	
ARS1-B11-01640-03		L					0.032833333	180	0.035333333	180	0.3657	5.044	5/6/2011	5/3/2011	
ARS1-B11-01640-04	ARS1-11-00491	001	L				0.445611111	180	0.035333333	180	0.3653	5.015	3/9/2011	5/3/2011	
ARS1-B11-01640-05	ARS1-11-00491	002	L				0.223055556	180	0.035333333	180	0.3667	5.03	3/9/2011	5/3/2011	
ARS1-B11-01640-06	ARS1-11-00491	003	L				0.230555556	180	0.035333333	180	0.3649	5.037	3/9/2011	5/3/2011	
ARS1-B11-01640-07	ARS1-11-00491	004	L				0.534111111	180	0.035333333	180	0.364	5.04	3/9/2011	5/3/2011	
ARS1-B11-01640-08	ARS1-11-00491	005	L				0.159222222	180	0.035333333	180	0.3631	5.05	3/9/2011	5/3/2011	
ARS1-B11-01640-09	ARS1-11-00491	006	L				0.133277778	180	0.035333333	180	0.3647	5.06	3/9/2011	5/3/2011	
ARS1-B11-01640-10	ARS1-11-00491	007	L				0.037611111	180	0.035333333	180	0.3626	5.081	3/9/2011	5/3/2011	
ARS1-B11-01640-11	ARS1-11-00491	008	L				0.041388889	180	0.035333333	180	0.3614	5.094	3/9/2011	5/4/2011	
ARS1-B11-01640-12	ARS1-11-00491	009	L				0.035368889	180	0.035333333	180	0.362	5.063	3/9/2011	5/4/2011	
ARS1-B11-01640-13	ARS1-11-00622	001	L				0.034444444	180	0.035333333	180	0.3598	5.03	3/22/2011	5/4/2011	
ARS1-B11-01640-14	ARS1-11-00622	002	L				0.034666667	180	0.035333333	180	0.3597	5.075	3/22/2011	5/4/2011	
ARS1-B11-01640-15	ARS1-11-00622	003	L				0.037888889	180	0.035333333	180	0.3571	5.054	3/22/2011	5/4/2011	
ARS1-B11-01640-16	ARS1-11-00622	004	L				0.0365	180	0.035333333	180	0.3601	5.051	3/22/2011	5/4/2011	
ARS1-B11-01640-17	ARS1-11-00622	005	L				0.037777778	180	0.035333333	180	0.3643	5.069	3/22/2011	5/4/2011	
ARS1-B11-01640-18	ARS1-11-00622	006	L				0.038722222	180	0.035333333	180	0.3619	5.05	3/22/2011	5/5/2011	
ARS1-B11-01640-19	ARS1-11-00526	001	L				0.040444444	180	0.035333333	180	0.3509	5.033	3/10/2011	5/5/2011	
ARS1-B11-01640-20	ARS1-11-00526	002	L				0.044777778	180	0.035333333	180	0.3564	5.028	3/10/2011	5/5/2011	
ARS1-B11-01640-21	ARS1-11-00526	003	L				0.038944444	180	0.035333333	180	0.3463	5.007	3/10/2011	5/5/2011	
ARS1-B11-01640-22	ARS1-11-00527	001	L				0.076538889	180	0.035333333	180	0.3596	5.076	3/10/2011	5/5/2011	
ARS1-B11-01640-23	ARS1-11-00527	002	L				0.075555556	180	0.035333333	180	0.3576	5.055	3/10/2011	5/5/2011	

Batch Result Verification Report

BatchSampleID	SDG	Fraction	BP	MDA	Sb	Val	UCF	CF	GrossCountRate	BKCountRate	NetCountRate	PlatingRecovery	InstFile	DetectorID	InstrumentID	Nuclide	Tracer	MeasACT
ARSI-B11-01640-01						2.22	1	1	16.38	6.36	10.02	71		P-54-S-2				
ARSI-B11-01640-02						2.22	1.96	1	16.31	6.36	9.95	71		P-54-S-3				
ARSI-B11-01640-03						2.22	1.96	1	5.91	6.36	-0.45	71		P-54-S-4				
ARSI-B11-01640-04	ARSI-11-00491	001				2.22	1	1	80.21	6.36	73.85	71		P-54-S-5				
ARSI-B11-01640-05	ARSI-11-00491	002				2.22	1	1	40.15	6.36	33.79	71		P-54-S-6				
ARSI-B11-01640-06	ARSI-11-00491	003				2.22	1	1	41.5	6.36	35.14	71		P-54-S-7				
ARSI-B11-01640-07	ARSI-11-00491	004				2.22	1	1	96.14	6.36	89.78	71		P-54-S-8				
ARSI-B11-01640-08	ARSI-11-00491	005				2.22	1	1	28.66	6.36	22.3	71		P-54-S-9				
ARSI-B11-01640-09	ARSI-11-00491	006				2.22	1	1	23.99	6.36	17.63	71		P-54-S-10				
ARSI-B11-01640-10	ARSI-11-00491	007				2.22	1	1	6.77	6.36	0.41	71		P-54-S-11				
ARSI-B11-01640-11	ARSI-11-00491	008				2.22	1	1	7.45	6.36	1.09	71		P-54-S-12				
ARSI-B11-01640-12	ARSI-11-00491	009				2.22	1	1	6.37	6.36	0.01	71		P-54-S-13				
ARSI-B11-01640-13	ARSI-11-00622	001				2.22	1	1	6.2	6.36	-0.16	71		P-54-S-14				
ARSI-B11-01640-14	ARSI-11-00622	002				2.22	1	1	6.24	6.36	-0.12	71		P-54-S-15				
ARSI-B11-01640-15	ARSI-11-00622	003				2.22	1	1	6.82	6.36	0.46	71		P-54-S-16				
ARSI-B11-01640-16	ARSI-11-00622	004				2.22	1	1	6.57	6.36	0.21	71		P-54-S-17				
ARSI-B11-01640-17	ARSI-11-00622	005				2.22	1	1	6.8	6.36	0.44	71		P-54-S-18				
ARSI-B11-01640-18	ARSI-11-00622	006				2.22	1	1	6.97	6.36	0.61	71		P-54-S-19				
ARSI-B11-01640-19	ARSI-11-00526	001				2.22	1	1	7.28	6.36	0.92	71		P-54-S-20				
ARSI-B11-01640-20	ARSI-11-00526	002				2.22	1	1	8.06	6.36	1.7	71		P-54-S-21				
ARSI-B11-01640-21	ARSI-11-00526	003				2.22	1	1	7.01	6.36	0.65	71		P-54-S-22				
ARSI-B11-01640-22	ARSI-11-00527	001				2.22	1	1	137.77	6.36	131.41	71		P-54-S-23				
ARSI-B11-01640-23	ARSI-11-00527	002				2.22	1	1	156.32	6.36	151.96	71		P-54-S-24				

Batch Result Verification Report

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ABatchSampleID	SDG	Fraction	TracerKnown	TracerIsotope	TracerRefDate	TracerRefACT	TracerKnown	HalfLife1	HalfLife2	HalfLife3	TPUF_1	TPUF_2	TPUF_3	TPUF_4	TPUF_5	TPUF_6	DeltaT1	DeltaT2
ARS1-B11-01640-01								4499.8			0.04133	0.02	0	0.025	0	0	0	
ARS1-B11-01640-02								4499.8			0.04133	0.02	0	0.025	0	0	0	
ARS1-B11-01640-03								4499.8			0.04133	0.02	0	0.025	0	0	0	
ARS1-B11-01640-04	ARS1-11-00491	001						4499.8			0.04133	0.02	0	0.025	0	0	54.63975	
ARS1-B11-01640-05	ARS1-11-00491	002						4499.8			0.04133	0.02	0	0.025	0	0	54.8256444	
ARS1-B11-01640-06	ARS1-11-00491	003						4499.8			0.04133	0.02	0	0.025	0	0	54.9559444	
ARS1-B11-01640-07	ARS1-11-00491	004						4499.8			0.04133	0.02	0	0.025	0	0	55.0888889	
ARS1-B11-01640-08	ARS1-11-00491	005						4499.8			0.04133	0.02	0	0.025	0	0	55.2201389	
ARS1-B11-01640-09	ARS1-11-00491	006						4499.8			0.04133	0.02	0	0.025	0	0	55.3520833	
ARS1-B11-01640-10	ARS1-11-00491	007						4499.8			0.04133	0.02	0	0.025	0	0	55.4833333	
ARS1-B11-01640-11	ARS1-11-00491	008						4499.8			0.04133	0.02	0	0.025	0	0	55.6145833	
ARS1-B11-01640-12	ARS1-11-00491	009						4499.8			0.04133	0.02	0	0.025	0	0	55.7465278	
ARS1-B11-01640-13	ARS1-11-00622	001						4499.8			0.04133	0.02	0	0.025	0	0	43.0090278	
ARS1-B11-01640-14	ARS1-11-00622	002						4499.8			0.04133	0.02	0	0.025	0	0	43.1388889	
ARS1-B11-01640-15	ARS1-11-00622	003						4499.8			0.04133	0.02	0	0.025	0	0	43.2708333	
ARS1-B11-01640-16	ARS1-11-00622	004						4499.8			0.04133	0.02	0	0.025	0	0	43.4020833	
ARS1-B11-01640-17	ARS1-11-00622	005						4499.8			0.04133	0.02	0	0.025	0	0	43.5340278	
ARS1-B11-01640-18	ARS1-11-00526	006						4499.8			0.04133	0.02	0	0.025	0	0	55.6652778	
ARS1-B11-01640-19	ARS1-11-00526	001						4499.8			0.04133	0.02	0	0.025	0	0	55.7965278	
ARS1-B11-01640-20	ARS1-11-00526	002						4499.8			0.04133	0.02	0	0.025	0	0	55.9284222	
ARS1-B11-01640-21	ARS1-11-00527	003						4499.8			0.04133	0.02	0	0.025	0	0	56.0597222	
ARS1-B11-01640-22	ARS1-11-00527	001						4499.8			0.04133	0.02	0	0.025	0	0	56.1916667	
ARS1-B11-01640-23	ARS1-11-00527	002						4499.8			0.04133	0.02	0	0.025	0	0		

Batch Result Verification Report

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AbatchSampleID	SDG	Fraction	DeltaT3	DeltaT4	DeltaT5	DeltaT6	DF1	DF2	DF3	IFI	IF2	SysErr	K_Val	K_MDA	AnalysisCode	UserID	ModDate
ARSI-811-01640-01							1					0.052279718	0.004079245	0.73426401		BSTIEFFENS	5/6/2011
ARSI-811-01640-02								1				0.052279718	0.004071146	0.7328063		BSTIEFFENS	5/6/2011
ARSI-811-01640-03												0.052279718	0.004094992	0.737098484		BSTIEFFENS	5/6/2011
ARSI-811-01640-04	ARSI-11-00491	001					0.99150391					0.052279718	0.004032874	0.725917319	LSC-A-001	BSTIEFFENS	5/6/2011
ARSI-811-01640-05	ARSI-11-00491	002					0.99150237					0.052279718	0.004060356	0.730864078	LSC-A-001	BSTIEFFENS	5/6/2011
ARSI-811-01640-06	ARSI-11-00491	003					0.991570189					0.052279718	0.004045966	0.728273916	LSC-A-001	BSTIEFFENS	5/6/2011
ARSI-811-01640-07	ARSI-11-00491	004					0.991550036					0.052279718	0.004038309	0.72689559	LSC-A-001	BSTIEFFENS	5/6/2011
ARSI-811-01640-08	ARSI-11-00491	005					0.991529989					0.052279718	0.004036235	0.72652237	LSC-A-001	BSTIEFFENS	5/6/2011
ARSI-811-01640-09	ARSI-11-00491	006					0.991509837					0.052279718	0.004061966	0.731153877	LSC-A-001	BSTIEFFENS	5/6/2011
ARSI-811-01640-10	ARSI-11-00491	007					0.991489791					0.052279718	0.004055255	0.72994598	LSC-A-001	BSTIEFFENS	5/6/2011
ARSI-811-01640-11	ARSI-11-00491	008					0.991469746					0.052279718	0.004052094	0.729376951	LSC-A-001	BSTIEFFENS	5/6/2011
ARSI-811-01640-12	ARSI-11-00491	009					0.991449595					0.052279718	0.004034039	0.726127052	LSC-A-001	BSTIEFFENS	5/6/2011
ARSI-811-01640-13	ARSI-11-00622	001					0.993416891					0.052279718	0.003991293	0.71843282	LSC-A-001	BSTIEFFENS	5/6/2011
ARSI-811-01640-14	ARSI-11-00622	002					0.993396807					0.052279718	0.0040258	0.724644038	LSC-A-001	BSTIEFFENS	5/6/2011
ARSI-811-01640-15	ARSI-11-00622	003					0.993376935					0.052279718	0.003980083	0.716414949	LSC-A-001	BSTIEFFENS	5/6/2011
ARSI-811-01640-16	ARSI-11-00622	004					0.993356745					0.052279718	0.004011056	0.721990054	LSC-A-001	BSTIEFFENS	5/6/2011
ARSI-811-01640-17	ARSI-11-00622	005					0.993336662					0.052279718	0.004072217	0.732999041	LSC-A-001	BSTIEFFENS	5/6/2011
ARSI-811-01640-18	ARSI-11-00622	006					0.993316473					0.052279718	0.004030144	0.725425936	LSC-A-001	BSTIEFFENS	5/6/2011
ARSI-811-01640-19	ARSI-11-00526	001					0.991462004					0.052279718	0.003887222	0.699669967	LSC-A-001	BSTIEFFENS	5/6/2011
ARSI-811-01640-20	ARSI-11-00526	002					0.991441959					0.052279718	0.003944148	0.70994669	LSC-A-001	BSTIEFFENS	5/6/2011
ARSI-811-01640-21	ARSI-11-00526	003					0.991421808					0.052279718	0.003816291	0.686932446	LSC-A-001	BSTIEFFENS	5/6/2011
ARSI-811-01640-22	ARSI-11-00527	001					0.991401764					0.052279718	0.00401739	0.72313014	LSC-A-001	BSTIEFFENS	5/6/2011
ARSI-811-01640-23	ARSI-11-00527	002					0.991381614					0.052279718	0.003978437	0.716118693	LSC-A-001	BSTIEFFENS	5/6/2011

Assay Definition-

Assay Description:
H3 Normal Lv1

Assay Type: DPM (Single)

Report Name: Report1
Output Data Path: C:\Packard\Tricarb\Results\ARS\H-3 Normal 3\20110502_1602
Raw Results Path: C:\Packard\Tricarb\Results\ARS\H-3 Normal 3\20110502_1602\20110502_1602.results
RTF File Name: C:\Packard\Tricarb\Results\ARS\H-3 Normal 3\20110502_1602\H3 Results.rtf
Comma-Delimited File Name: C:\Packard\Tricarb\Results\ARS\H-3 Normal 3\20110502_1602\H3 Results.csv
Assay File Name: C:\Packard\Tricarb\Assays\H-3 Normal 3.1sa

Count Conditions-

Nuclide: H-3 Normal

Quench Indicator: TSIE/AEC

External Std Terminator (sec): 0.5 2s%

Pre-Count Delay (min): 0.00

Quench Set:

Low Energy: UG STD H-3

Count Time (min): 180.00

Count Mode: Normal

Assay Count Cycles: 1

#Vials/Sample: 1

Repeat Sample Count: 1

Calculate & Reference: Off

Background Subtract: Off

Low CPM Threshold: Off

2 Sigma & Terminator: On - Any Region

Regions	LI	UL	2Sigma & Terminator
A	2.0	18.6	0.50
B	0.0	2000.0	0.00
C	0.0	2000.0	0.00

Count Corrections-

Static Controller: On

Colored Samples: Off

Coincidence Time (nsec): 18

Luminescence Correction: Off

Heterogeneity Monitor: Off

Delay Before Burst (nsec): 75

Half Life-

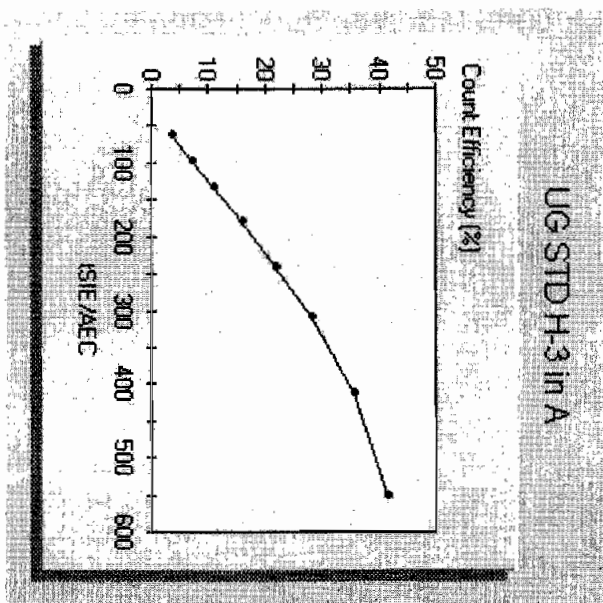
Half Life Correction: Off
Regions Half Life

Units Reference Date

Reference Time

A
B
C

Cycle 1 Results
Quench Curve Block Data



Date Acquired: 06/30/2010
Date Modified:
UG STD H-3 in A

tSIE/AEC	Count Efficiency (%)
551.03	41.58
411.38	35.42
310.08	28.09
241.32	21.90
178.11	15.75
132.72	11.03
96.52	6.92
63.58	3.36

P#	S#	SMP_L_ID	CPMA	DPM1	tSIE	Eff Nucl	In A	Count Time	DATE	TIME	MESSAGES
54	1	BACKGROUND	6.36	17.71	422.88		35.92	180.00	5/2/2011	4:07:03 PM	
54	2	B11-01640-01	16.38	44.91	435.49		36.48	180.00	5/2/2011	7:13:59 PM	
54	3	B11-01640-02	16.31	44.72	435.50		36.48	180.00	5/2/2011	10:23:14 PM	
54	4	B11-01640-03	5.91	16.16	437.63		36.57	180.00	5/3/2011	1:31:18 AM	
54	5	B11-01640-04	80.21	219.60	436.54		36.53	180.00	5/3/2011	4:39:00 AM	
54	6	B11-01640-05	40.15	109.48	439.73		36.67	180.00	5/3/2011	7:48:32 AM	
54	7	B11-01640-06	41.50	113.75	435.59		36.49	180.00	5/3/2011	10:58:02 AM	
54	8	B11-01640-07	96.14	264.11	433.67		36.40	180.00	5/3/2011	2:07:33 PM	
54	9	B11-01640-08	28.66	78.93	431.65		36.31	180.00	5/3/2011	5:17:04 PM	
54	10	B11-01640-09	23.99	65.80	435.20		36.47	180.00	5/3/2011	8:26:32 PM	
54	11	B11-01640-10	6.77	18.67	430.55		36.26	180.00	5/3/2011	11:36:00 PM	
54	12	B11-01640-11	7.45	20.62	427.76		36.14	180.00	5/4/2011	2:45:27 AM	
54	13	B11-01640-12	6.37	17.59	429.04		36.20	180.00	5/4/2011	5:55:02 AM	
54	14	B11-01640-13	6.20	17.23	424.17		35.98	180.00	5/4/2011	9:04:28 AM	
54	15	B11-01640-14	6.24	17.34	423.99		35.97	180.00	5/4/2011	12:12:40 PM	
54	16	B11-01640-15	6.82	19.09	418.05		35.71	180.00	5/4/2011	3:20:13 PM	
54	17	B11-01640-16	6.57	18.25	424.88		36.01	180.00	5/4/2011	6:29:40 PM	
54	18	B11-01640-17	6.80	18.68	434.42		36.43	180.00	5/4/2011	9:39:08 PM	
54	19	B11-01640-18	6.97	19.27	428.92		36.19	180.00	5/5/2011	12:48:36 AM	
54	20	B11-01640-19	7.28	20.74	406.85		35.09	180.00	5/5/2011	3:58:02 AM	
54	21	B11-01640-20	8.06	22.61	416.46		35.64	180.00	5/5/2011	7:07:29 AM	
54	22	B11-01640-21	7.01	20.25	400.48		34.63	180.00	5/5/2011	10:16:58 AM	
54	23	B11-01640-22	137.77	383.16	423.60		35.96	180.00	5/5/2011	1:26:27 PM	
54	24	B11-01640-23	158.32	442.71	419.18		35.76	180.00	5/5/2011	4:35:56 PM	

Beta Liquid Scintillation Counter Log Book

Date	Time	ARS Sample I.D. Number	Batch Number	Liquid Scintillation File Number	Technician Initials
4-21-11	1623	B11-01513-03	B11-01513	2132	JSW
↓	↓	B11-01513-04	↓	↓	JSW
↓	↓	B11-01513-05	↓	↓	JSW
↓	↓	B11-01513-06	↓	↓	JSW
↓	↓	B11-01513-07	↓	↓	JSW
↓	↓	B11-01513-08	↓	↓	JSW
↓	↓	B11-01513-09	↓	↓	JSW
↓	↓	B11-01513-10	↓	↓	JSW
↓	↓	B11-01513-11	↓	↓	JSW
↓	↓	B11-01513-12	↓	↓	JSW
↓	↓	B11-01513-13	↓	↓	JSW
↓	↓	B11-01513-14	↓	↓	JSW
↓	↓	B11-01513-15	↓	↓	JSW
↓	↓	B11-01513-16	↓	↓	JSW
↓	↓	B11-01513-17	↓	↓	JSW
↓	↓	B11-01513-18	↓	↓	JSW
↓	↓	B11-01513-19	↓	↓	JSW
↓	↓	B11-01513-20	↓	↓	JSW
5-2-11	1421	SNC 117	QA	QA	JSW
↓	1506	Background	B11-01646	1602	JSW

Beta Liquid Scintillation Counter Log Book

Date	Time	ARS Sample I.D. Number	Batch Number	Liquid Scintillation File Number	Technician Initials
5-2-11	1504	B11-01640-01	B11-01640	1602	<i>[Signature]</i>
L	L	B11-01640-02	L	L	<i>[Signature]</i>
L	L	B11-01640-03	L	L	<i>[Signature]</i>
L	L	B11-01640-04	L	L	<i>[Signature]</i>
L	L	B11-01640-05	L	L	<i>[Signature]</i>
L	L	B11-01640-06	L	L	<i>[Signature]</i>
L	L	B11-01640-07	L	L	<i>[Signature]</i>
L	L	B11-01640-08	L	L	<i>[Signature]</i>
L	L	B11-01640-09	L	L	<i>[Signature]</i>
L	L	B11-01640-10	L	L	<i>[Signature]</i>
L	L	B11-01640-11	L	L	<i>[Signature]</i>
L	L	B11-01640-12	L	L	<i>[Signature]</i>
L	L	B11-01640-13	L	L	<i>[Signature]</i>
L	L	B11-01640-14	L	L	<i>[Signature]</i>
L	L	B11-01640-15	L	L	<i>[Signature]</i>
L	L	B11-01640-16	L	L	<i>[Signature]</i>
L	L	B11-01640-17	L	L	<i>[Signature]</i>
L	L	B11-01640-18	L	L	<i>[Signature]</i>
L	L	B11-01640-19	L	L	<i>[Signature]</i>
L	L	B11-01640-20	L	L	<i>[Signature]</i>

Beta Liquid Scintillation Counter Log Book

Date	Time	ARS Sample I.D. Number	Batch Number	Liquid Scintillation File Number	Technician Initials
5-2-11	1506	B11-01640-21	B11-01640	1602	<i>[Signature]</i>
↓	↓	B11-01640-22	↓	↓	<i>[Signature]</i>
↓	↓	B11-01640-23	↓	↓	<i>[Signature]</i>
5-4-11	1632	Background	B11-01659	1941	<i>[Signature]</i>
↓	↓	B11-01659-01	↓	↓	<i>[Signature]</i>
↓	↓	B11-01659-02	↓	↓	<i>[Signature]</i>
↓	↓	B11-01659-03	↓	↓	<i>[Signature]</i>
↓	↓	B11-01659-04	↓	↓	<i>[Signature]</i>
↓	↓	B11-01659-05	↓	↓	<i>[Signature]</i>
↓	↓	B11-01659-06	↓	↓	<i>[Signature]</i>
↓	↓	B11-01659-07	↓	↓	<i>[Signature]</i>
↓	↓	B11-01659-08	↓	↓	<i>[Signature]</i>
↓	↓	B11-01659-09	↓	↓	<i>[Signature]</i>
↓	↓	B11-01659-10	↓	↓	<i>[Signature]</i>
↓	↓	B11-01659-11	↓	↓	<i>[Signature]</i>
↓	↓	B11-01659-12	↓	↓	<i>[Signature]</i>
↓	↓	B11-01659-13	↓	↓	<i>[Signature]</i>
↓	↓	B11-01659-14	↓	↓	<i>[Signature]</i>
↓	↓	B11-01659-15	↓	↓	<i>[Signature]</i>
↓	↓	B11-01659-16	↓	↓	<i>[Signature]</i>



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American Radiation Services Analytical Reports

for

Los Alamos National Laboratory

Tritium

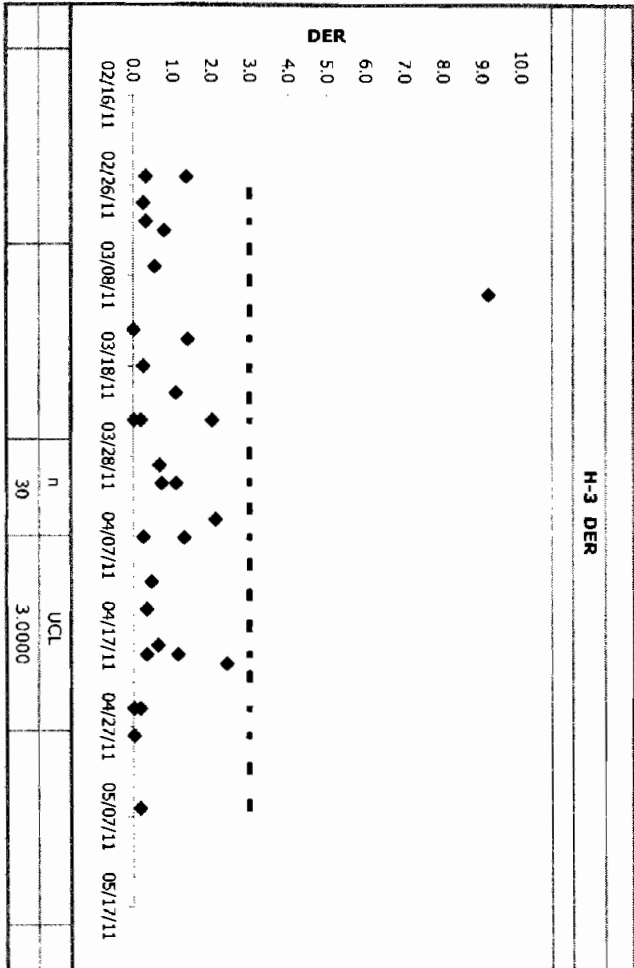
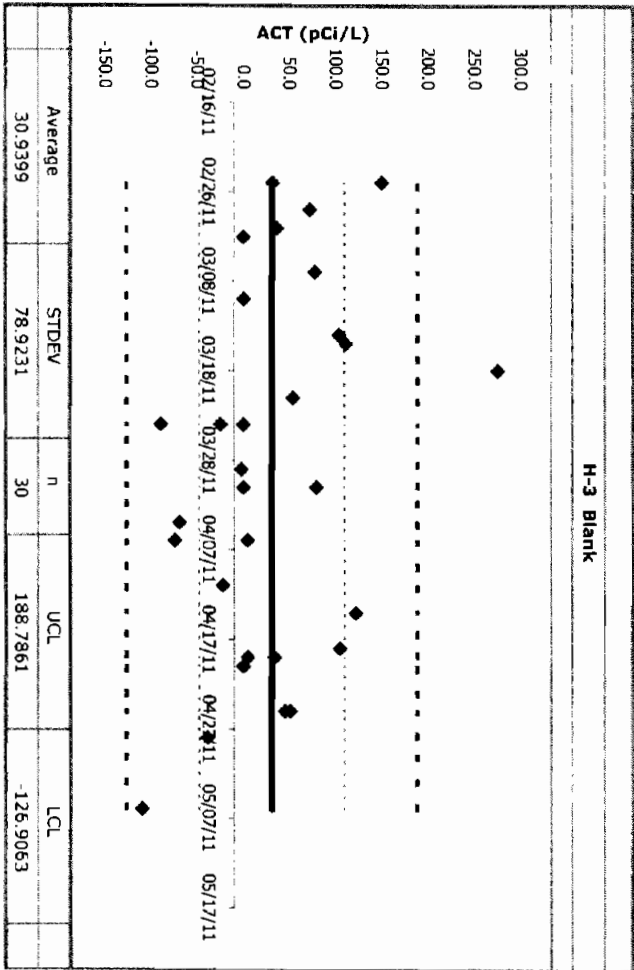
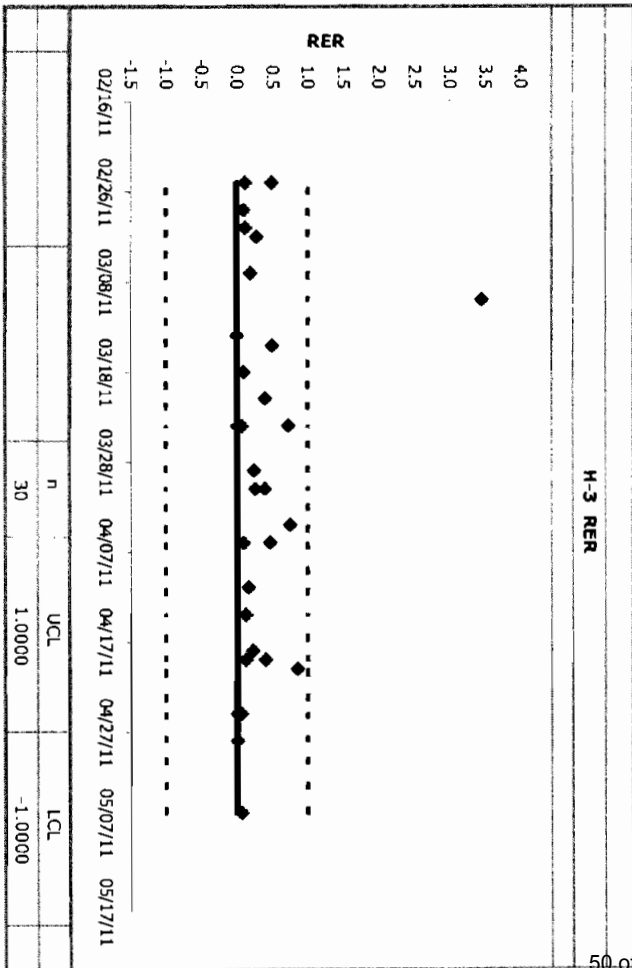
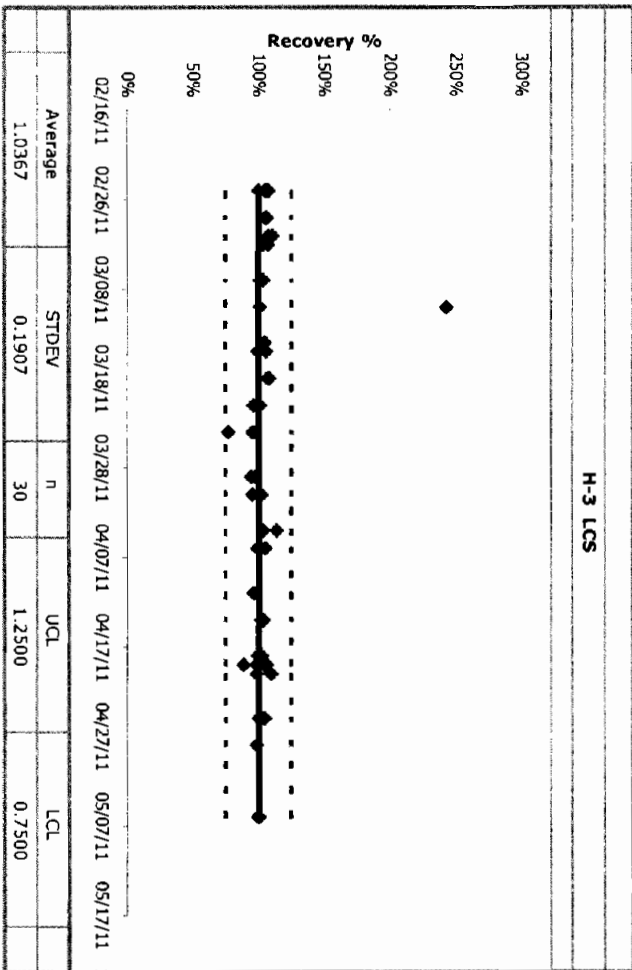
by

Low Level Liquid

Scintillation Counting

Control Charts

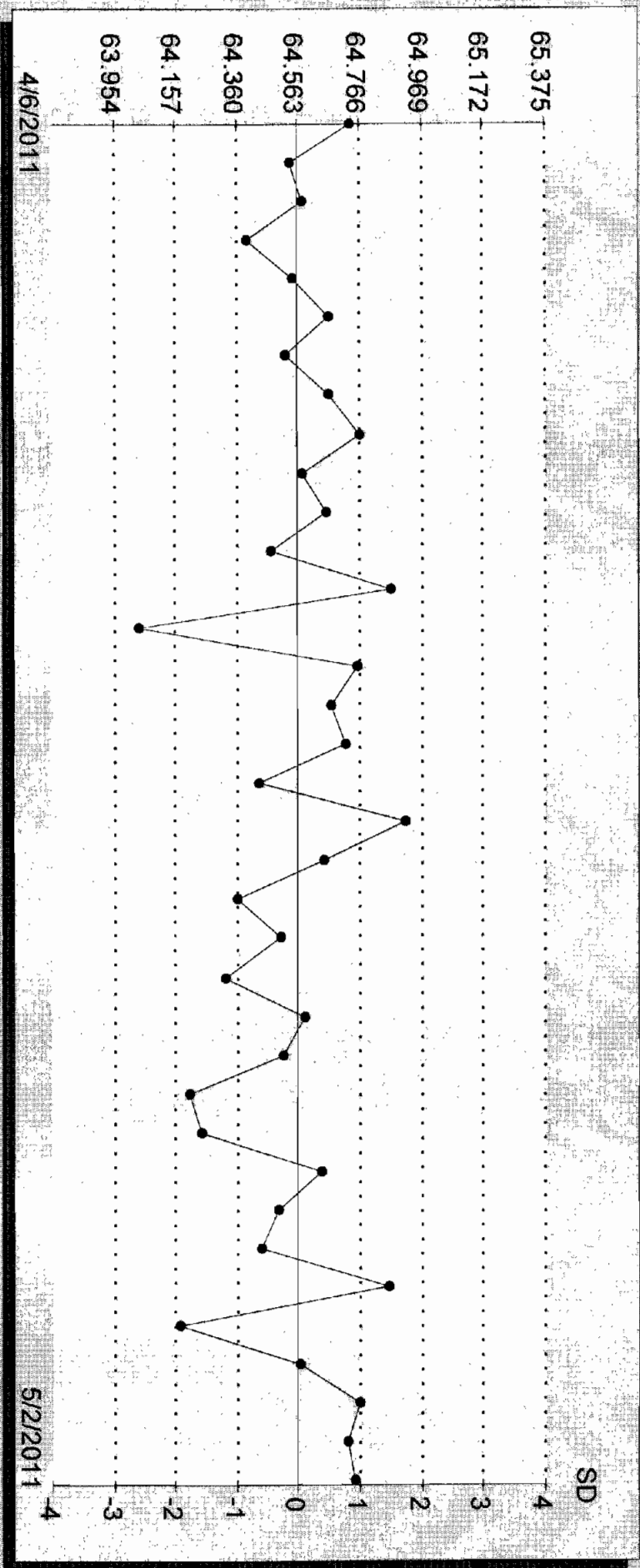
QC Chart



3H Efficiency
Total # pts : 1605
Valid # pts : 36
Mean : 64.56
SD : 0.20

Date	Value	Valid Pt
Apr 06, 2011	64.74	X
Apr 10, 2011	64.54	X
Apr 16, 2011	64.58	X
Apr 19, 2011	64.39	X
Apr 25, 2011	64.54	X
Apr 30, 2011	64.67	X
Apr 30, 2011	64.52	X
Apr 30, 2011	64.66	X
Apr 30, 2011	64.76	X
Apr 30, 2011	64.58	X
Apr 30, 2011	64.66	X
Apr 30, 2011	64.47	X
Apr 30, 2011	64.87	X
Apr 30, 2011	64.03	X
Apr 30, 2011	64.76	X
May 01, 2011	64.67	X
May 01, 2011	64.72	X
May 01, 2011	64.44	X
May 01, 2011	64.92	X
May 01, 2011	64.65	X
May 01, 2011	64.36	X
May 01, 2011	64.50	X
May 01, 2011	64.32	X
May 01, 2011	64.58	X
May 01, 2011	64.51	X
May 01, 2011	64.20	X
May 01, 2011	64.24	X
May 01, 2011	64.64	X
May 01, 2011	64.50	X
May 02, 2011	64.44	X
May 02, 2011	64.86	X
May 02, 2011	64.17	X
May 02, 2011	64.57	X
May 02, 2011	64.76	X
May 02, 2011	64.73	X
May 02, 2011	64.75	X

3H Efficiency : 1605
Total # pts : 36
Valid # pts : 64.56
Mean : 0.20
SD

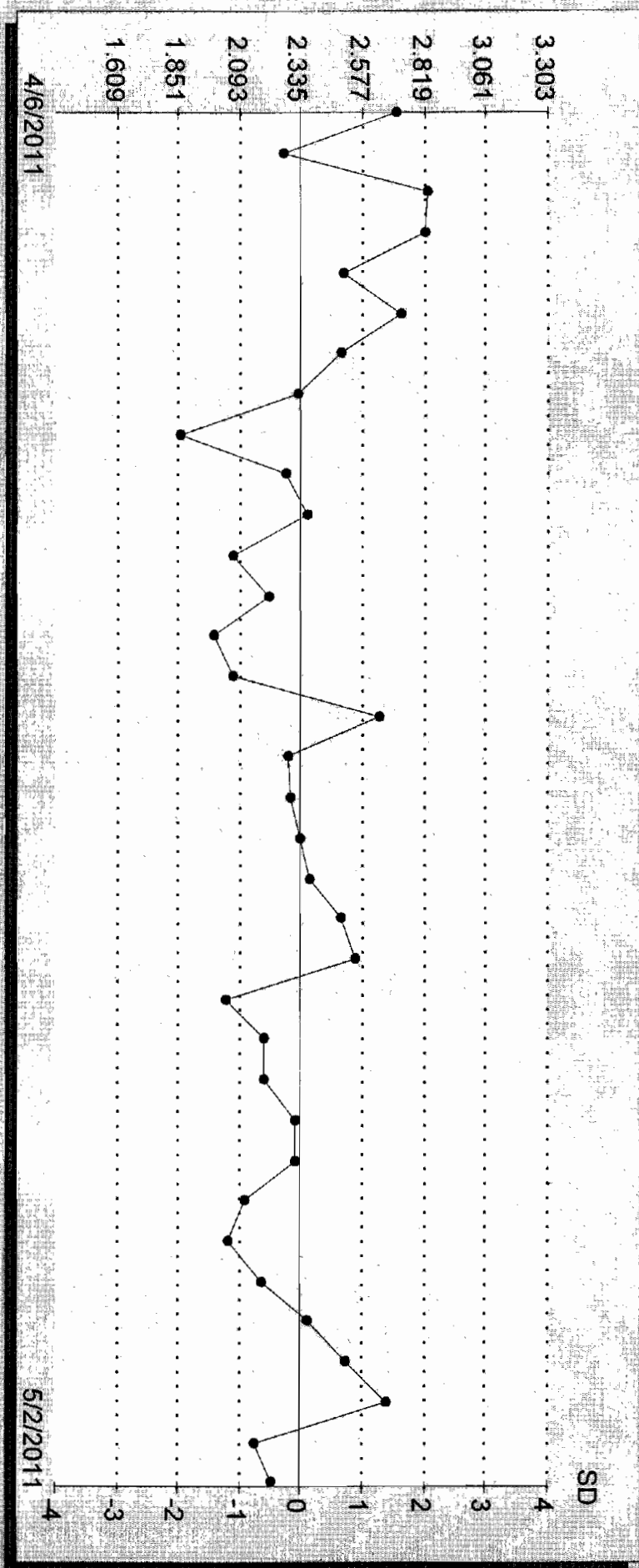


3H Background

Total # pts : 1566
Valid # pts : 35
Mean : 2.34
SD : 0.24

Date	Value	Valid Pt
Apr 06, 2011	2.70	X
Apr 10, 2011	2.27	X
Apr 16, 2011	2.84	X
Apr 19, 2011	2.82	X
Apr 25, 2011	2.50	X
Apr 30, 2011	2.73	X
Apr 30, 2011	2.49	X
Apr 30, 2011	2.32	X
Apr 30, 2011	1.86	X
Apr 30, 2011	2.27	X
Apr 30, 2011	2.36	X
Apr 30, 2011	2.07	X
Apr 30, 2011	2.20	X
Apr 30, 2011	1.99	X
Apr 30, 2011	2.07	X
May 01, 2011	2.64	X
May 01, 2011	2.29	X
May 01, 2011	2.29	X
May 01, 2011	2.34	X
May 01, 2011	2.37	X
May 01, 2011	2.49	X
May 01, 2011	2.55	X
May 01, 2011	2.04	X
May 01, 2011	2.19	X
May 01, 2011	2.19	X
May 01, 2011	2.31	X
May 01, 2011	2.32	X
May 01, 2011	2.12	X
May 01, 2011	2.05	X
May 02, 2011	2.18	X
May 02, 2011	2.36	X
May 02, 2011	2.51	X
May 02, 2011	2.67	X
May 02, 2011	2.15	X
May 02, 2011	2.22	X

3H Background : 1566
 Total # pts : 35
 Valid # pts : 2.34
 Mean : 0.24
 SD





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**American Radiation Services
Analytical Reports**

for

Los Alamos National Laboratory

**Low Level Liquid
Scintillation Counting**

**Calibration
Information**

STD ID: S-0247

ARS INTERNATIONAL		Add/Edit Secondary Stds		Parent Standard Data	
Planning		Parent Solution Reference #		NIST SRM 4927F	
Planning Comments	Create an H-3 LCS standard	Parent Solution #		S-0237	
Target dpm/g (on dil. date)	5.56	Parent Principal Radionuclide		H-3	Half Life (Days) 4499.6000000
Target Final volume mL	2000	Parent Reference Date		03/22/2010 10:10	
Appx mass g of Parent Sol'n	3.274623294	Parent Certified Act		3503.682716	Cert Act/Vol Units dpm g
Appx vol mL of Parent Sol'n	3.280528244	Parent Cert Act Uncert 1 Sigma		0.0036	
Expected Addition for Analysis g	5	Parent Sp. Gravity GMI		0.9982	
Standards Preparation / Dilution		Parent Supplier		NIST SRM 4927F	
Secondary Solution #	S-0247	Parent Date Recvd		01/02/00	
Dilution Date (New Ref Date)	10/11/2010 10:30	Parent Received By		Unknown	
Ampoule, Empty (g)		Parent Cert Exp Date			
Ampoule /Solution Gross (g)		Parent Matrix		H2O	
Net Wt Removed (g)		Certified dpm/g At Ref Date		3503.682716	
Transfer Container, empty (g)	1.7	Certified dpm/g on 10/11/2010 10:30		3385.81045	
Container Plus Solution (g)	4.994	Parent Comments		Intermediate level H-3 standard for creating LCS solutions and matrix spikes. Dilution performed as stated above by B Steffens. -BJS 3/22/10	
Net Wt Transferred (g)	3.294				
DPM Xferred on 10/11/2010 10:30	11185.79962				
Diluent/matrix	DI H2O				
Diluent Density Cont, empty (g)		Parent Tech		Unknown	
Test Mass of 5 mL of Diluent (g)		Is_Primary		FALSE	
Diluent Density Test - (g/mL)		Is_LCS		TRUE	
Dilution Empty Container Mass (g)	473.96	Is_Tracer		FALSE	
Dilution Full Cont g (if measured)	2467.85	Is_Calib		FALSE	
Dilution Final Volume mL (if measured)	2000				
Final Dilution Density (g/mL)	0.999948				
Final Dilution Measured Mass g	1993.89				
Comments	Stock H-3 LCS standard. Dilution performed as stated above by B Steffens. -BJS 10/11/10				
Final Dilution dpm/g	5.610038479				
Final Dil New Ref Date/Time	10/11/2010 10:30				

S-0247



H-3

Verified

10/13/10

SL

Expires

10/13/11

Manufacturer

NIST SRM 4927F

Sol Matrix

H2O

Ref No

NIST SRM 4927F

Tech

Unknown

Parent ID

S-0237



RADIOACTIVE STANDARDS - BATON ROUGE LABORATORY



QUALITY CONTROL PROGRAM
AMERICAN RADIATION SERVICES
RADIOACTIVE REFERENCE SOLUTIONS
ANNUAL ACTIVITY VERIFICATION

VERIFICATION DATE **10/13/2010 20:18** *date counted*
 STANDARD REFERENCE # **S-0247**

Principal Radionuclide
H-3

ENTER --> Half Life, Years
1.232E+01

OR --> Half Life, Days
4.4988E+03
4.4998E+03

Radionuclide **H-3**

Dilution Reference Date **10/11/2010 10:30**

Dilution Activity **2.53** pCi per gram ==> dpm/g **5.61**
 Verif. Date Decay Corrected **2.53** pCi per gram ==> dpm/g **5.61**

Minimum of 3 Required

Trial ID	Sample Counts	Count Time (min)	Detector	Efficiency	Bkg. (cpm)	Net Weight	Decay Corrected Activity Result (dpm/g)	Decay Corrected Activity Result (pCi/g)
S-0247-V1	16.99	1	LSC	0.3440	6.86	5.017	5.87	2.64
S-0247-V2	16.76	1	LSC	0.3484	6.86	4.979	5.70	2.57
S-0247-V3	16.97	1	LSC	0.3465	6.86	4.972	5.87	2.64
S-0247-V4	16.76	1	LSC	0.3449	6.86	4.982	5.76	2.60
S-0247-V5	16.88	1	LSC	0.3433	6.86	4.980	5.86	2.64

	Average	5.81	2.62
	Two Sigma Uncertainty	0.15	0.07
10% Max	PASS	Standard Deviation percent of known concentration	1.35%
		Target Activity	5.61
5% Max	PASS	% Diff	3.66%

Verification Expiration Date: **October 13, 2011**

Prepared & Counted By *[Signature]*

Date: **10/13/2010 20:18**

Verified & Approved By *Dyane Mulligan*

Date: **10-14-10/12:4**

QC Approval *[Signature]*

Date: **10-14-10/12:30**

STD ID: S-0031

ARS INTERNATIONAL		Add/Edit Secondary Stds	Parent Standard Data			
Planning		Parent Solution Reference #	NIST SRM 4927F			
Planning Comments	Dilute Intermediate level solution from SRM 4927F		Parent Solution #	S-0107		
Target dpm/g (on dil. date)	267000	Parent Principal Radionuclide	H-3	Half Life (Days)	4499.5000000	
Target Final volume mL	200	Parent Reference Date	09/03/1998 11:00			
Appx mass g of Parent Sol'n	2.093763934	Parent Certified Act	38082000	Certs Act/Vol Units	dpm	g
Appx vol ml of Parent Sol'n	2.097539505	Parent Cert Act Uncert 1 Sigma	0.0036			
Expected Addition for Analysis g		Parent Sp. Gravity GMI	0.9982			
Standards Preparation / Dilution		Parent Supplier	NIST SRM 4927F			
Secondary Solution #	S-0031	Parent Date Recvd	01/02/00			
Dilution Date (New Ref Date)	10/19/2005 00:00	Parent Received By	Unknown			
Ampoule, Empty (g)		Parent Cert Exp Date				
Ampoule /Solution Gross (g)		Parent Matrix	H2O			
Net Wt Removed (g)		Certified dpm/g At Ref Date	38082000			
Transfer Container, empty (g)	0	Certified dpm/g on 10/19/2005 00:00	25504307.89			
Container Plus Solution (g)	4.7574	Parent Comments	Primary for S-0029 - Information entered from dilution records - 4/18/2006 RTS			
Net Wt Transferred (g)	4.7574					
DPM Xferred on 10/19/2005 00:00	121334194.3					
Diluent/matrix	H2O	Parent Tech	Unknown			
Diluent Density Cont, empty (g)		Is_Primary	FALSE			
Test Mass of 5 ml of Diluent (g)		Is_LCS	TRUE			
Diluent Density Test - (g/mL)		Is_Trcer	FALSE			
Dilution Empty Container Mass (g)	1	Is_Calib	FALSE			
Dilution Full Cont g (if measured)	200.64					
Dilution Final Volume ml (if measured)	200					
Final Dilution Density (g/mL)	0.9982					
Final Dilution Measured Mass g	199.64					
Comments	S-0031 Intermediate dilution - Information entered from dilution records - 4/19/2006 RTS					
Final Dilution dpm/g	607764.9488					
Final Dil New Ref Date/Time	10/19/2005 00:00					



Add / Edit *Primary* Standards

Solution Reference #	NIST SRM 4927F		
Solution #	S-0107		
Principal Radionuclide	H-3	Half Life (Days)	4499.8000
Reference Date	09/03/98 11:00		
Certified Act	634700.0000	Cert. Act/Vol Units	Bq g
Cert Act Uncert 1 Sigma (fractional .03=3%)	0.0036		
Sp. Gravity G/ML	0.9982		
Supplier	NIST SRM 4927F		
Date Recvd	01/02/00		
Received By	Unknown		
Cert Exp Date			
Matrix	H2O		
Certified dpm/g At Reference Date	38082000		
Certified dpm/g On 10/15/2010 15:48	19261068.03		
Comments	Primary for S-0029 - Information entered from dilution records - 4/18/2006 RTS		
Primary Tech	Unknown		
Is_Primary	TRUE		
Is_LCS	TRUE		
Is_Tracer	FALSE		
Is_Calib	FALSE		

5-0031



National Institute of Standards & Technology

Certificate

Standard Reference Material 4927F Hydrogen-3 Radioactivity Standard

This Standard Reference Material (SRM) consists of radioactive hydrogen-3, as water, in 5 mL of distilled water. The solution is contained in a flame-sealed NIST borosilicate-glass ampoule. The SRM is intended for the calibration of beta-particle counting instruments and for the monitoring of radiochemical procedures.

Radiological Hazard

The SRM ampoule contains hydrogen-3 with a total activity of approximately 3.2 MBq. Hydrogen-3 decays by beta-particle emission. None of the beta particles escape from the SRM ampoule. During the decay process no photons are emitted. Approximate unshielded dose rates at several distances (as of the reference time) are given in note [a]*. There is no detectable external radiation. The SRM should be used only by persons qualified to handle radioactive material.

Chemical Hazard

The SRM ampoule contains only distilled water. There is no chemical hazard. If the ampoule is to be opened to transfer the solution, the recommended procedure is given on page 2.

Storage and Handling

The SRM should be stored and used at a temperature between 5 and 65 °C. The solution in an unopened ampoule should remain stable and homogeneous until at least September 2008.

The ampoule (or any subsequent container) should always be clearly marked as containing radioactive material. If the ampoule is transported it should be packed, marked, labeled, and shipped in accordance with the applicable national, international, and carrier regulations. The solution in the ampoule is a dangerous good (hazardous material) because of the radioactivity.

Preparation

This Standard Reference Material was prepared in the Physics Laboratory, Ionizing Radiation Division, Radioactivity Group, L.R. Karam, Group Leader. The overall technical direction and physical measurements leading to certification were provided by L.L. Lucas and M.P. Unterwieser of the Radioactivity Group.

The support aspects involved in the preparation, certification, and issuance of this SRM were coordinated through the Standard Reference Materials Program by J.W.L. Thomas.

Bert M. Coursey, Chief
Ionizing Radiation Division

Gaithersburg, Maryland 20899
June 1999
Half-life and text revised October 2000

Nancy M. Trahey, Chief
Standard Reference Materials Program

PROPERTIES OF SRM 4927F

Certified values

Solution density	$(0.996 \pm 0.002) \text{ g} \cdot \text{mL}^{-1}$ at 20.0 °C [b]*
Radionuclide	Hydrogen-3
Reference time	1200 EST, 3 September 1998 1100 CST
Massic activity of the solution [c]	$634.7 \text{ kBq} \cdot \text{g}^{-1}$
Relative expanded uncertainty ($k=2$)	0.72% [d] [e]

Uncertified values

Physical Properties:			
Source description	Liquid in flame-sealed NIST borosilicate-glass ampoule		
Ampoule specifications	Body outside diameter	(16.5 ± 0.5) mm	
	Wall Thickness	(0.60 ± 0.04) mm	
	Barium content	Less than 2.5%	
	Lead-oxide content	Less than 0.02%	
	Other heavy elements	Trace quantities	
Solution mass	Approximately 5.0 g		
Chemical Properties:			
Solution composition	Chemical Formula	Concentration (mol·L ⁻¹)	Mass Fraction (g·g ⁻¹)
	H ₂ O ³ HHO	55 6 × 10 ⁻⁷	1.00 1 × 10 ⁻⁸
Radiological Properties:			
Radionuclidic impurities	None detected [f]		
Half lives used	Hydrogen-3: (4500 ± 8) d [g]		
Calibration method and measuring instrument(s)	4πβ gas counting of SRM 4927E using the NIST length-compensated internal gas proportional counters and intercomparison of SRMs 4927E/4927F using two 4πβ liquid-scintillation counting systems [h]		

NOTES

- [a] The Sievert is the SI unit for dose equivalent. See reference [1]. One μSv is equal to 0.1 mrem.
 Distance from Ampoule (cm): 1 30 100
 Approximate Dose Rate ($\mu\text{Sv/h}$): <0.1 (Not detectable)

- [b] The stated uncertainty is two times the standard uncertainty.

- [c] Massic activity is the preferred name for the quantity activity divided by the total mass of the sample. See reference [1].

- [d] The reported value, y , of massic activity (activity per unit mass) at the reference time was not measured directly but was derived from measurements and calculations of other quantities. This can be expressed as $y = f(x_1, x_2, x_3, \dots, x_n)$, where f is a mathematical function derived from the assumed model of the measurement process.

 The value, x_i , used for each input quantity i has a standard uncertainty, $u(x_i)$, that generates a corresponding uncertainty in y , $u_i(y) = |\partial y / \partial x_i| \cdot u(x_i)$, called a component of combined standard uncertainty of y .

 The combined standard uncertainty of y , $u_c(y)$, is the positive square root of the sum of the squares of the components of combined standard uncertainty.

 The combined standard uncertainty is multiplied by a coverage factor of $k = 2$ to obtain U , the expanded uncertainty of y .

 Since it can be assumed that the possible estimated values of the massic activity are approximately normally distributed with approximate standard deviation $u_c(y)$, the unknown value of the massic activity is believed to lie in the interval $y \pm U$ with a level of confidence of approximately 95 percent.

 For further information on the expression of uncertainties, see references [2] and [3].

- [e] The value of each standard uncertainty component, and hence the value of the expanded uncertainty itself, is a best estimate based upon all available information, but is only approximately known. That is to say, the "uncertainty of the uncertainty" is large and not well known. This is true for uncertainties evaluated by statistical methods (e.g., the relative standard deviation of the standard deviation of the mean for the massic response is approximately 50%) and for uncertainties evaluated by other methods (which could easily be over estimated or under estimated by substantial amounts). The unknown value of the expanded uncertainty is believed to lie in the interval $U/2$ to $2U$ (i.e., within a factor of 2 of the estimated value).

- [f] The estimated limit of detection for radionuclides is $300 \text{ Bq} \cdot \text{g}^{-1}$.

- [g] The stated uncertainty is the standard uncertainty. See reference [5].

- [h] Extensive gas-counting measurements were made on the SRM 4927E solution during 1998 and 1999. The SRM 4927F solution was intercompared with the SRM 4927E solution using liquid-scintillation counting.

- [i] Relative standard uncertainty of the input quantity x_i .



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**American Radiation Services
Analytical Reports**

for

Los Alamos National Laboratory

Percent Moisture



2609 North River Road, Port Allen, Louisiana 70767

1 (800) 401-4277 FAX (225) 381-2996

ARS Sample Delivery Group: ARS1-11-00491
Client Sample ID: MD21-11-5600
Sample Collection Date: 03/09/11
Sample Matrix: Silica

Request or PO Number: 11-1587
ARS Sample ID: ARS1-11-00491-001
Date Received: 03/10/11
Report Date: 05/06/11

Analysis Description	Analysis Results	Analysis Error +/- 1s	MDC	DLC	Qual	Analysis Units	Analysis Test Method	Analysis Date/Time	Analysis Technician	Tracer/Chem Recovery
Percent Moisture	9.148	NA	NA	NA		%	Percent Moisture	05/03/11 04:39	BS	NA

NOTES: Project Cost Code MR8R032NFM00

Project Manager Review

Notes: American Radiation Services, Inc. assumes no liability for the use or interpretation of any analytical results provided other than the cost of the analysis itself. Reproduction of this report in less than full requires the written consent of the American Radiation Services, Inc.

LELAP Certificate# 01949

NELAP Certificate # E87558



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ARS Sample Delivery Group: ARS1-11-00491
Client Sample ID: MD21-11-5601
Sample Collection Date: 03/09/11
Sample Matrix: Silica

Request or PO Number: 11-1587
ARS Sample ID: ARS1-11-00491-002
Date Received: 03/10/11
Report Date: 05/06/11

Analysis Description	Analysis Results	Analysis Error +/- 1s	MDC	DLC	Qual	Analysis Units	Analysis Test Method	Analysis Date/Time	Analysis Technician	Tracer/Chem Recovery
Percent Moisture	11.705	NA	NA	NA		%	Percent Moisture	05/03/11 07:49	BS	NA

NOTES: Project Cost Code MR8R032NFM00

Project Manager Review

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ARS Sample Delivery Group: ARS1-11-00491
Client Sample ID: MD21-11-5602
Sample Collection Date: 03/09/11
Sample Matrix: Silica

Request or PO Number: 11-1587
ARS Sample ID: ARS1-11-00491-003
Date Received: 03/10/11
Report Date: 05/06/11

Analysis Description	Analysis Results	Analysis Error +/- 1s	MDC	DLC	Qual	Analysis Units	Analysis Test Method	Analysis Date/Time	Analysis Technician	Tracer/Chem Recovery
Percent Moisture	8.491	NA	NA	NA		%	Percent Moisture	05/03/11 10:58	BS	NA

NOTES: Project Cost Code MR8R032NFM00

Project Manager Review

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ARS Sample Delivery Group: ARS1-11-00491

Client Sample ID: MD21-11-5603

Sample Collection Date: 03/09/11

Sample Matrix: Silica

Request or PO Number: 11-1587

ARS Sample ID: ARS1-11-00491-004

Date Received: 03/10/11

Report Date: 05/06/11

Analysis Description	Analysis Results	Analysis Error +/- 1s	MDC	DLC	Qual	Analysis Units	Analysis Test Method	Analysis Date/Time	Analysis Technician	Tracer/Chem Recovery
Percent Moisture	9.899	NA	NA	NA		%	Percent Moisture	05/03/11 14:08	BS	NA

NOTES: Project Cost Code MR8R032NFM00

Project Manager Review

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NELAP Certificate # E87558



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ARS Sample Delivery Group: ARS1-11-00491
Client Sample ID: MD21-11-5605
Sample Collection Date: 03/09/11
Sample Matrix: Silica

Request or PO Number: 11-1587
ARS Sample ID: ARS1-11-00491-005
Date Received: 03/10/11
Report Date: 05/06/11

Analysis Description	Analysis Results	Analysis Error +/- 1s	MDC	DLC	Qual	Analysis Units	Analysis Test Method	Analysis Date/Time	Analysis Technician	Tracer/Chem Recovery
Percent Moisture	9.926	NA	NA	NA		%	Percent Moisture	05/03/11 17:17	BS	NA

NOTES: Project Cost Code MR8R032NFM00

SDH

Project Manager Review

Notes: American Radiation Services, Inc. assumes no liability for the use or interpretation of any analytical results provided other than the cost of the analysis itself. Reproduction of this report in less than full requires the written consent of the American Radiation Services, Inc.

LELAP Certificate# 01949

NELAP Certificate # E87558



2609 North River Road, Port Allen, Louisiana 70767

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ARS Sample Delivery Group: ARS1-11-00491
Client Sample ID: MD21-11-5606
Sample Collection Date: 03/09/11
Sample Matrix: Silica

Request or PO Number: 11-1587
ARS Sample ID: ARS1-11-00491-006
Date Received: 03/10/11
Report Date: 05/06/11

Analysis Description	Analysis Results	Analysis Error +/- 1s	MDC	DLC	Qual	Analysis Units	Analysis Test Method	Analysis Date/Time	Analysis Technician	Tracer/Chem Recovery
Percent Moisture	9.653	NA	NA	NA		%	Percent Moisture	05/03/11 20:27	BS	NA

NOTES: Project Cost Code MR8R032NFM00

Project Manager Review

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LELAP Certificate# 01949

NELAP Certificate # E87558



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ARS Sample Delivery Group: ARS1-11-00491
Client Sample ID: MD21-11-5607
Sample Collection Date: 03/09/11
Sample Matrix: Silica

Request or PO Number: 11-1597
ARS Sample ID: ARS1-11-00491-007
Date Received: 03/10/11
Report Date: 05/06/11

Analysis Description	Analysis Results	Analysis Error +/- 1s	MDC	DLC	Qual	Analysis Units	Analysis Test Method	Analysis Date/Time	Analysis Technician	Tracer/Chem Recovery
Percent Moisture	7.114	NA	NA	NA	U	%	Percent Moisture	05/03/11 23:36	BS	NA

NOTES: Project Cost Code MR8R032NFM00

Project Manager Review

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LELAP Certificate# 01949

NELAP Certificate # E97558



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ARS Sample Delivery Group: ARS1-11-00491

Client Sample ID: MD21-11-5608

Sample Collection Date: 03/09/11

Sample Matrix: Silica

Request or PO Number: 11-1587

ARS Sample ID: ARS1-11-00491-008

Date Received: 03/10/11

Report Date: 05/06/11

Analysis Description	Analysis Results	Analysis Error +/- 1s	MDC	DLC	Qual	Analysis Units	Analysis Test Method	Analysis Date/Time	Analysis Technician	Tracer/Chem Recovery
Percent Moisture	9.189	NA	NA	NA		%	Percent Moisture	05/04/11 02:45	BS	NA

NOTES: Project Cost Code MR8R032NFM00

Project Manager Review

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NELAP Certificate # E87558



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ARS Sample Delivery Group: ARS1-11-00491
Client Sample ID: MD21-11-5610
Sample Collection Date: 03/09/11
Sample Matrix: Silica

Request or PO Number: 11-1587
ARS Sample ID: ARS1-11-00491-009
Date Received: 03/10/11
Report Date: 05/06/11

Analysis Description	Analysis Results	Analysis Error +/- 1s	MDC	DLC	Qual	Analysis Units	Analysis Test Method	Analysis Date/Time	Analysis Technician	Tracer/Chem Recovery
Percent Moisture	5.521	NA	NA	NA	U	%	Percent Moisture	05/04/11 05:55	BS	NA

NOTES: Project Cost Code MR8R032NFM00

Project Manager Review

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American Radiation Services Analytical Reports

for

Los Alamos National Laboratory

Percent Moisture Laboratory Records

AMERICAN RADIATION SERVICES
Port Allen, LA
PERCENT MOISTURE DETERMINATION IN SOILS

SDG Number ARS1-11-00491, 00622, 00526, 00527
 Client LANL

LANL ID	ARS ID	weight of cylinder with gel (g)	weight of empty cylinder (g)	Weight of gel (g)	amount of liquid collected (ml)	amount of liquid tested (ml)	% moisture
MD21-11-5600	ARS1-11-00491-001	612	446	166	15.186	5.015	9.14819277
MD21-11-5601	ARS1-11-00491-002	606	438	167	19.547	5.03	11.7047904
MD21-11-5602	ARS1-11-00491-003	607	428	179	15.199	5.037	8.49106145
MD21-11-5603	ARS1-11-00491-004	617	454	165	16.333	5.04	9.89878788
MD21-11-5605	ARS1-11-00491-005	607	443	165	16.378	5.05	9.92606061
MD21-11-5606	ARS1-11-00491-006	615	450	165	15.928	5.06	9.65333333
MD21-11-5607	ARS1-11-00491-007	605	450	154	10.955	5.081	7.11363636
MD21-11-5608	ARS1-11-00491-008	598	436	162	14.886	5.094	9.18888889
MD21-11-5610	ARS1-11-00491-009	601	447	154	8.502	5.063	5.52077922
MD50-11-5957	ARS1-11-00622-001	604	443	161	13.697	5.03	8.50745342
MD50-11-5958	ARS1-11-00622-002	601	443	157	10.123	5.075	6.44777707
MD50-11-5959	ARS1-11-00622-003	598	440	159	9.564	5.054	6.01509434
MD50-11-5960	ARS1-11-00622-004	606	442	164	18.137	5.051	11.0591463
MD50-11-5961	ARS1-11-00622-005	610	444	165	16.472	5.069	9.9830303
MD50-11-5962	ARS1-11-00622-006	602	441	161	15.059	5.05	9.35341615

MD54-11-3767	ARS1-11-00526-001	611	455	156	11.189	5.033	7.1724359
MD54-11-3766	ARS1-11-00526-002	628	455	172	21.497	5.028	12.4982558
MD54-11-3768	ARS1-11-00526-003	599	438	159	16.892	5.007	10.6238994
MD21-11-5604	ARS1-11-00527-001	629	461	168	18.983	5.076	11.2994048
MD21-11-5605	ARS1-11-00527-002	604	435	169	19.375	5.055	11.464497

Balance ID: 0102/H1331122173560P

Pipettor ID: FJ40469

Signature

Ray Stott

Date

5-6-11

AMERICAN RADIATION SERVICES
Port Allen, LA
PERCENT MOISTURE DETERMINATION IN SOILS

SDG Number ARS1-11-00491, 00622, 00526, 00527
Client LANL

LANL ID	ARS ID	weight of cylinder with gel (g)	weight of empty cylinder (g)	Weight of gel (g)	amount of liquid collected (ml)	amount of liquid tested (ml)	% moisture
MD21-11-5600	ARS1-11-00491-001	612	446	166	15.186	5.015	#DIV/0!
MD21-11-5601	ARS1-11-00491-002	686	438	167	19.547	5.036	#DIV/0!
MD21-11-5602	ARS1-11-00491-003	607	428	179	15.199	5.037	#DIV/0!
MD21-11-5603	ARS1-11-00491-004	617	454	165	16.333	5.040	#DIV/0!
MD21-11-5605	ARS1-11-00491-005	607	443	165	16.378	5.050	#DIV/0!
MD21-11-5606	ARS1-11-00491-006	615	450	165	15.928	5.060	#DIV/0!
MD21-11-5607	ARS1-11-00491-007	605	450	154	10.955	5.081	#DIV/0!
MD21-11-5608	ARS1-11-00491-008	598	436	162	14.886	5.094	#DIV/0!
MD21-11-5610	ARS1-11-00491-009	601	447	154	8.502	5.063	#DIV/0!
MD50-11-5957	ARS1-11-00622-001	604	443	161	13.697	5.030	#DIV/0!
MD50-11-5958	ARS1-11-00622-002	601	443	157	10.123	5.075	#DIV/0!
MD50-11-5959	ARS1-11-00622-003	598	440	159	9.564	5.054	#DIV/0!
MD50-11-5960	ARS1-11-00622-004	606	442	164	18.137	5.051	#DIV/0!
MD50-11-5961	ARS1-11-00622-005	610	444	165	16.472	5.069	#DIV/0!
MD50-11-5962	ARS1-11-00622-006	602	441	161	15.059	5.050	#DIV/0!

LCS-5.037
LCSB-5.027
B1K-5.044

MD54-11-3767	ARS1-11-00526-001	611	455	156	11.189	5.033	#DIV/0!
MD54-11-3766	ARS1-11-00526-002	628	455	172	21.497	5.028	#DIV/0!
MD54-11-3768	ARS1-11-00526-003	599	438	159	16.892	5.007	#DIV/0!
MD21-11-5604	ARS1-11-00527-001	429	461	168	18.983	5.076	#DIV/0!
MD21-11-5605	ARS1-11-00527-002	604	435	169	19.375	5.055	#DIV/0!

Balance ID: 0102/H1331122173560P

Pipettor ID: FJ40469

Signature



Date

5-3-11



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American Radiation Services Analytical Reports

for

Los Alamos National Laboratory

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Report Compilation Checklist

ARS SDG: 11-00491 Client Name: LANL Sample Matrix: SI

LEVEL 1 COMPONENTS

	1st Reviewer			
1) Cover Page Complete and Accurate (see ARS-059)?	<input checked="" type="checkbox"/> Yes	No	N/A	
2) Technical Review Checklist(s) Complete and Accurate?	<input checked="" type="checkbox"/> Yes	No	N/A	
3) Case Narrative Complete and Accurate (see ARS-059)?	<input checked="" type="checkbox"/> Yes	No	N/A	
4) Form 1s Present for all Samples and Tests?	<input checked="" type="checkbox"/> Yes	No	N/A	
5) Client Specific Components are Present and Complete?	<input checked="" type="checkbox"/> Yes	No	N/A	

LEVEL 2 COMPONENTS

	1st Reviewer			
6) Batch Quality Control Report is Present and Accurate?	<input checked="" type="checkbox"/> Yes	No	N/A	
7) DQO Report is Present and Accurate?	<input checked="" type="checkbox"/> Yes	No	N/A	
8) Client Specific Batch QC Components are Present and Complete?	<input checked="" type="checkbox"/> Yes	No	N/A	

LEVEL 3 COMPONENTS

	1st Reviewer			
9) Efficiencies are Present?	<input checked="" type="checkbox"/> Yes	No	N/A	
10) Calibrations are Present?	<input checked="" type="checkbox"/> Yes	No	N/A	
11) Backgrounds are Present?	<input checked="" type="checkbox"/> Yes	No	N/A	
12) Spectrum Analysis is Present?	<input checked="" type="checkbox"/> Yes	No	N/A	
13) Spectral Plots are Present?	<input checked="" type="checkbox"/> Yes	No	N/A	
14) Plateaus are Present?	<input checked="" type="checkbox"/> Yes	No	N/A	
15) Control Charts are Present?	<input checked="" type="checkbox"/> Yes	No	N/A	
16) Other:	Yes	No	<input checked="" type="checkbox"/> N/A	

LEVEL 4 COMPONENTS

	1st Reviewer			
17) Preparation Raw Data Present, Signed and Complete?	<input checked="" type="checkbox"/> Yes	No	N/A	
18) Instrument Raw Data Present and Complete?	<input checked="" type="checkbox"/> Yes	No	N/A	
19) Calibration Certificates Present?	<input checked="" type="checkbox"/> Yes	No	N/A	
20) Copies of Log Book Pages Present?	<input checked="" type="checkbox"/> Yes	No	N/A	
21) Sample Receiving Documentation Present?	<input checked="" type="checkbox"/> Yes	No	N/A	
22) LIMS Reports Present?	<input checked="" type="checkbox"/> Yes	No	N/A	
23) Applicable Correspondence Present?	<input checked="" type="checkbox"/> Yes	No	N/A	
24) Other:	Yes	No	<input checked="" type="checkbox"/> N/A	

Susan Heese 5-6-11
Report Generator Signature Date

RM 5-6-11
Management Review Signature Date



LSC Technical Review Checklist

ARS SDG 11-00491Sample Matrix: SI Aliquot (Circle One): Dry As Received ☒ Filtered Other: _____Required QC Samples (Mark all that apply): Blank ☒ LQS ☒ LQSD ☒ Sample Dup MS MSDARS A. Batch ID(s): Batch A: B11-01640 Batch B: N/A Batch C: N/ATest Method(s): LSC-A-001 N/A N/A

A. RADIOCHEMICAL PREPARATION REVIEW

	Chemist Review			Verifier Review		
1) 100% of Manual Transcriptions Verified?	<input checked="" type="radio"/> Yes	No	N/A	<input checked="" type="radio"/> Yes	No	N/A
2) 100% of Manual Calculations Verified?	Yes	No	<input checked="" type="radio"/> N/A	Yes	No	<input checked="" type="radio"/> N/A
3) Blank Composition/Configuration Matches Calibration?	<input checked="" type="radio"/> Yes	No	N/A	<input checked="" type="radio"/> Yes	No	N/A
4) Deviations from procedure are documented and verified?	Yes	No	<input checked="" type="radio"/> N/A	Yes	No	<input checked="" type="radio"/> N/A
5) Appropriate Cocktail Selected?	<input checked="" type="radio"/> Yes	No	N/A	<input checked="" type="radio"/> Yes	No	N/A
6) Sample Prep Anomaly? <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes (See Tech Notes) NCR # (If initiated): _____						
<div>Chemist Signature: <u>[Signature]</u> Date: <u>5-3-11</u></div> <div>Verifier Review Signature: <u>[Signature]</u> Date: <u>5-3-11</u></div>						

B. ANALYSIS REVIEW

	Analyst Review			QA Officer Review		
1) Calibrations Valid and Current?	<input checked="" type="radio"/> Yes	No	N/A	<input checked="" type="radio"/> Yes	No	N/A
2) Backgrounds Valid and Current?	<input checked="" type="radio"/> Yes	No	N/A	<input checked="" type="radio"/> Yes	No	N/A
3) Source Checks Completed and Acceptable?	<input checked="" type="radio"/> Yes	No	N/A	<input checked="" type="radio"/> Yes	No	N/A
QA Officer Signature: <u>[Signature]</u> Date: <u>5-6-11</u>						
	Analyst Review			Technical Review		
4) Background Checks Complete and Acceptable?	<input checked="" type="radio"/> Yes	No	N/A	<input checked="" type="radio"/> Yes	No	N/A
5) 100% of Manually Entered Parameters Verified Accurate?	<input checked="" type="radio"/> Yes	No	N/A	<input checked="" type="radio"/> Yes	No	N/A
6) Appropriate QC samples initiated at required frequency?	<input checked="" type="radio"/> Yes	No	N/A	<input checked="" type="radio"/> Yes	No	N/A
6) Test/Sample Specific Parameters (See ARS-059 for details)						
a) Analysis Parameters Checked and Correct and Peak Shapes are Acceptable?	<input checked="" type="radio"/> Yes	No	N/A	Yes	No	N/A
b) Spectra show no Evidence of Interferences?	<input checked="" type="radio"/> Yes	No	N/A	Yes	No	N/A
c) Sample Quench for All Samples within Range of Quench Curve?	<input checked="" type="radio"/> Yes	No	N/A	Yes	No	N/A
7) Analysis Anomaly? <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes (See Comments) NCR # (If initiated): _____						
<div>Analyst Signature: <u>[Signature]</u> Date: <u>5-6-11</u></div> <div>Technical Reviewer Signature: <u>N/A</u> Date: _____</div>						

SDG Report - Samples and Containers

SDG		ARS1-11-00491		SDG Specific Data		TAT Days		29		Project Type		Environmental	
Sample Count		Rpt Level	4	Date Received	3/10/2011	COC Number	11-1587						
Client		Los Alamos National Laboratory		Client Deadline	4/8/2011	PO Number	63641-001-10						
Client Code		114		Internal Deadline	4/7/2011	Job Number	MR2R032NFM00						
Profile Number		PN-00094		Lab Deadline	4/5/2011	Job Location							
Comments													

Samples and Containers (→) Checked in This Far																										
FR	ClientID	Matrix	SampleStartDate	SampleEndDate	Disp	Hold	Arch	Storage	X	Units	Y	Units	Z	Units	Comments											
001	MD21-11-5600	SI	03/09/11 12:00 PM	03/09/11 12:00 PM	H	90	5	Q6																		
→	IC ID	82005	1	1.00																						
		Volume, mL																								
002	MD21-11-5601	SI	03/09/11 12:00 PM	03/09/11 12:00 PM	H	90	5	Q6																		
→	IC ID	82006	1	1.00																						
		Volume, mL																								
003	MD21-11-5602	SI	03/09/11 12:00 PM	03/09/11 12:00 PM	H	90	5	Q6																		
→	IC ID	82007	1	1.00																						
		Volume, mL																								
004	MD21-11-5603	SI	03/09/11 12:00 PM	03/09/11 12:00 PM	H	90	5	Q6																		
→	IC ID	82008	1	1.00																						
		Volume, mL																								
005	MD21-11-5605	SI	03/09/11 12:00 PM	03/09/11 12:00 PM	H	90	5	Q6																		
→	IC ID	82009	1	1.00																						
		Volume, mL																								
006	MD21-11-5606	SI	03/09/11 12:00 PM	03/09/11 12:00 PM	H	90	5	Q6																		
→	IC ID	82010	1	1.00																						
		Volume, mL																								
007	MD21-11-5607	SI	03/09/11 12:00 PM	03/09/11 12:00 PM	H	90	5	Q6																		
→	IC ID	82011	1	1.00																						
		Volume, mL																								
008	MD21-11-5608	SI	03/09/11 12:00 PM	03/09/11 12:00 PM	H	90	5	Q6																		
→	IC ID	82012	1	1.00																						
		Volume, mL																								
009	MD21-11-5610	SI	03/09/11 12:00 PM	03/09/11 12:00 PM	H	90	5	Q6																		
→	IC ID	82013	1	1.00																						
		Volume, mL																								

SDG Report - Analysis Assignments

Temp SDG	ARS1-11-00491	Sample Count	
Client	Los Alamos National Laboratory	Analysis Count	1-9

Samples Count Totals per Analysis		
Analysis Code	Analysis Description	Samples Count
LSC-A-001	Tritium in (Water [Aqueous, AQ, SI])	9

Analyses Assigned Per Fraction		
Fraction	Analysis Code	X = Assigned
001	LSC-A-001	X
002	LSC-A-001	X
003	LSC-A-001	X
004	LSC-A-001	X
005	LSC-A-001	X
006	LSC-A-001	X
007	LSC-A-001	X
008	LSC-A-001	X
009	LSC-A-001	X

Analysis Code	Group	Isotope	Activity	Units	Aliquot Units	Procedure No.	ROD	CS LL	CS UL	MS LL	MS UL	Ready LL	Ready UL	Grav LL	Grav UL	RER RPD	CritConc	RoughRptReq	BlankCorrConcMDS	BlankCorrStdAll	CountTimeReq	AliquotReq
LSC-A-001	STD	H-3	PCI	L		ARS-054	2.50E+02	80	120	75	125	30	110	40	110	1.00	25	FALSE	FALSE	FALSE		

ARS FILE TRACKING SHEET

SDG: ARS1-11-00491

Task	Date / Time	Initials
Date & Time Samples Received	3/10/2011/10:45	2w
ICOC Initiated / Storage Location: <u>Q6</u>	3/10/2011/11:55	2w
Technical Checks Performed	See Batch	—
Report Written / EDD Generated: <u>5-6-11/10:12</u> <u>SDH</u>	<u>5-6-11/10:16</u> <u>SDH</u>	<u>SDH</u>
Quality Assurance Checks Performed on Report	5-6-11/10:22	SDH
Management Check Performed on Report	5-6-11/10:22	SDH
Preliminary Report Sent		
Report E-mailed		
Report Faxed		
Report Reviewed		
Report Mailed		
Invoice Completed Invoice #: _____		
Report Imaged		

SPECIAL REQUIREMENTS

Requirement	Yes	No
3 Hour Rush		✓
24 Hour Rush		✓
48 Hour Rush		✓
Special Invoicing ^{see notes} Mgmt. Approval: _____		✓

NOTES:

SDG: ARLS 1-11-00

SHIPPING CONTAINER

COC PRESENT WITH SAMPLES

COC ☒ Yes ☐ No

SAMPLE CONTAINER(S)

Good Condition ☒ Yes ☐ No
 Sec. Seals ☒ Yes ☐ No
 Seal Intact ☒ Yes ☐ No ☐ N/A
 Radioactive ☐ Yes ☒ No

Marked Radioactive

Samples Rcv

Matrix [AF , AQ , BI , FE , LT , (SI) , SO , UR , VG]

Exposure Rate Meter:	<u>m3 242861</u>	Serial No.:	<u>m44-2 PR264266</u>	Calibration Due Date:	<u>4/9/11</u>
Count Rate Meter:	<u>m2 154859</u>	Serial No.:	<u>m44-9 PR184559</u>	Calibration Due Date:	<u>4-6-11</u>
Background Exposure Rate (μ R/hr)	<u>24</u>	Max. Exposure Rate on Shipping Containers Externals (Plus Bkgd)	<u>12</u>	μ R/hr	
Background Count Rate (cpm)	<u>20</u>	Max. Removable Count Rate on Shipping Containers Externals (Plus Bkgd)	<u>30</u>	cpm	
		Max. Removable Count Rate on Shipping Containers Internals (Plus Bkgd)	<u>30</u>	cpm	

[illegible]

Date/Time Surveyed: 3-10-11 1108