

Tuesday, February 02, 2010

Page 1 of 2  
REQUEST NUMBER: 10-1546

**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: 10-1546  
Per Agreement Number: 126310041  
Project Cost Code: MR8R032TNB00

Please analyse the enclosed samples  
according to the schedule indicated:

SHIP DATE: 2/2/2010  
TURNAROUND/REPORT DUE: 2/7/2010  
TURNAROUND REQ'D: 5 Days

RAD SCREENING: Yes, Below Background  
LAB REQUEST COMMENTS:

LANL ER SMO CONTACT:

Signature:

PRIORITY	METHOD CODE	CNTNR	SAMPLE ID	SAMPLE MATRIX	DATE SAMPLED	SPECIAL INSTRUCTIONS
	EPA:906.0	1	MD21-10-10151	GAS	2/1/2010	
		1	MD21-10-10152	GAS	2/1/2010	
		1	MD21-10-10153	GAS	2/2/2010	
		1	MD21-10-10154	GAS	2/1/2010	
		1	MD21-10-10155	GAS	2/1/2010	
		1	MD21-10-10156	GAS	2/2/2010	
		1	MD21-10-10157	GAS	2/1/2010	
		1	MD21-10-10158	GAS	2/1/2010	
		1	MD21-10-10159	GAS	2/1/2010	

Tuesday, February 02, 2010

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REQUEST NUMBER: 10-1546

PRIORITY	METHOD CODE	CNTNR	SAMPLE ID	SAMPLE MATRIX	DATE SAMPLED	SPECIAL INSTRUCTIONS
EPA:906.0		1	MD21-10-10160	GAS	2/1/2010	

Final Page of REQUEST NUMBER 10-1546

Tuesday, February 02, 2010

LAB CHAIN OF CUSTODY DOCUMENT NUMBER: 10-1546C

**LOS ALAMOS**

REQUEST NUMBER: 10-1546

**NATIONAL LABORATORY**

ATTN: Danny Coleman

TURNAROUND/REPORT DUE: 2/7/2010

American Radiation Services - Primary

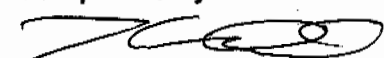
TURNAROUND REQ'D: 5

1726 Wooddale Court

Baton Rouge, LA 70806

**LAB REQUEST COMMENTS:**

SAMPLE ID	CTNR	CTNR DESC	ORDER	PRESERV	MATRIX
MD21-10-10157	1	SILICA GEL TUBE	H3	None	GAS
MD21-10-10151	1	SILICA GEL TUBE	H3	None	GAS
MD21-10-10158	1	SILICA GEL TUBE	H3	None	GAS
MD21-10-10155	1	SILICA GEL TUBE	H3	None	GAS
MD21-10-10159	1	SILICA GEL TUBE	H3	None	GAS
MD21-10-10156	1	SILICA GEL TUBE	H3	None	GAS
MD21-10-10160	1	SILICA GEL TUBE	H3	None	GAS
MD21-10-10152	1	SILICA GEL TUBE	H3	None	GAS
MD21-10-10153	1	SILICA GEL TUBE	H3	None	GAS
MD21-10-10154	1	SILICA GEL TUBE	H3	None	GAS

**Relinquished By:****Date****Time****Received By:****Date****Time**

2/2/10

3:00

Printed Name

Signature

Printed Name

Signature

Printed Name

Signature

Printed Name

Signature

Printed Name

Signature

Printed Name

Signature

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

Printed Name

Signature

## SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 2561

EVENT NAME: 3rd Qtr. MDA V Tritium Vapor Monitoring - CU 21-018(a)-99

SAMPLE ID: MD21-10-10156

WORK ORDER:

AS PLANNED		AS COLLECTED		AS PLANNED		AS COLLECTED	
DATE COLLECTED(MM/DD/YYYY):		2/2/2010		MEDIA:	NA		OK
TIME COLLECTED (HH:MM)		1035		SUB-MEDIA:	OTHER		
PRS ID:	21-018(a)-99	OK		SAMPLE TECH CODE:	VOST		
LOCATION ID:	21-24524W			FIELD QC TYPE:	NA		
LOCATION TYPE:	BH			FIELD PREP:	NA		
TOP DEPTH:	327.5			SAMPLE USAGE:	INV		
BOTTOM DEPTH:	332.5			SCREEN/PORT DESC:	Geo Probe Soil/gas implant, port #6		
FIELD MATRIX:	GAS			EXCAVATED: YES/NO/NA	NA		
COMPOSITE TYPE:	NA			COMPOSITE TIME INTERVAL:	NA		
BOREHOLE: YES/NO/NA	YES			BOREHOLE DECLINATION:	vertical		
				BOREHOLE DIRECTION:	NA		

#	PRIORITY	ORDER	CNTNR	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
1	5 DAY	H3	1 EA SILICA GEL TUBE	None	Y	none

SAMPLE DESC: tritium vapor / silica gel cartridge

beginning: T = 27°F; rh = 74%; barometer = 29.98" Hg - start time 1200, 2/1/2010  
 end: T = 30°F; rh = 55%; barometer = 30.11" Hg - end time see above

SAMPLE COMMENTS:

Mass gel = 140.57g final mass = 601.69g  
 initial mass = 591.15g volume purged = 1898.042 L

LOCATION DESC:

HSA constructed BH, port #6, Qct

FIELD SCREENING/MEASUREMENT RESULTS:

NA

COLLECTED BY (PRINT)

Lindsay Hay

REVIEWED BY (PRINT)

Why? /

RELINQUISHED BY (Printed Name) Lindsay Hay (Signature) Why?	Date/Time 2/2/2010 1410	RECEIVED BY (Printed Name) Sherri Sherwood (Signature) Sherri Sherwood	Date/Time 2/2/10 1410
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

5 DAY TURN AROUND

## SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 2561

EVENT NAME: 3rd Qtr. MDA V Tritium Vapor Monitoring - CU 21-018(a)-99

SAMPLE ID: MD21-10-10153

WORK ORDER:

AS PLANNED		AS COLLECTED		AS PLANNED		AS COLLECTED	
DATE COLLECTED(MM/DD/YYYY):		2/2/2010		MEDIA:	NA		OK
TIME COLLECTED (HH:MM)		1035		SUB-MEDIA:	OTHER		
PRS ID:	21-018(a)-99	OK		SAMPLE TECH CODE:	VOST		
LOCATION ID:	21-24524W			FIELD QC TYPE:	NA		
LOCATION TYPE:	BH			FIELD PREP:	NA		
TOP DEPTH:	172.5			SAMPLE USAGE:	INV		
BOTTOM DEPTH:	177.5			SCREEN/PORT DESC:	Geo Probe soil/gas implant, port #3		
FIELD MATRIX:	GAS			EXCAVATED: YES/NO/NA	NA		
COMPOSITE TYPE:	NA			COMPOSITE TIME INTERVAL:	NA		
BOREHOLE:	YES/NO/NA			BOREHOLE DECLINATION:	vertical		
				BOREHOLE DIRECTION:	NA		

#	PRIORITY	ORDER	CNTNR	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
1	5 DAY	H3	1 EA SILICA GEL TUBE	None	Y	none

SAMPLE DESC: tritium-vapor / silica gel cartridge

beginning: T = 27°F; rh = 74%; barometer = 29.98" Hg - start time 1200, 2/1/2010  
 end: T = 30°F; rh = 55%; barometer = 30.11" Hg - end time see above

SAMPLE COMMENTS:

mass gel = 138.37g      final mass = 606.32g  
 initial mass = 593.51g      volume purged = 2326.117L

LOCATION DESC:

HSA constructed BH, port #3, Obtlv

FIELD SCREENING/MEASUREMENT RESULTS:

NA

COLLECTED BY (PRINT)

Lindsay Hay

REVIEWED BY (PRINT)

Y. H. H.

RELINQUISHED BY (Printed Name) Lindsay Hay (Signature) Y. H. H.	Date/Time 2/2/2010 1410	RECEIVED BY (Printed Name) Sherri Shawwood (Signature) Sherri Shawwood	Date/Time 2/2/10 1410
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

5 Day Turn Around

## SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 2561

EVENT NAME: 3rd Qtr. MDA V Tritium Vapor Monitoring - CU 21-018(a)-99

SAMPLE ID: MD21-10-10151

WORK ORDER:

AS PLANNED		AS COLLECTED		AS PLANNED		AS COLLECTED	
DATE COLLECTED(MM/DD/YYYY):		2/1/2010		MEDIA:		NA	
TIME COLLECTED (HH:MM)		0830		SUB-MEDIA:		OTHER	
PRS ID:	21-018(a)-99	OK		SAMPLE TECH CODE:		VOST	
LOCATION ID:	21-24524W			FIELD QC TYPE:		NA	
LOCATION TYPE:	BH			FIELD PREP:		NA	
TOP DEPTH:	42.5			SAMPLE USAGE:		INV	
BOTTOM DEPTH:	47.5	✓		SCREEN/PORT DESC:		Geoprobe soil/gas implant, port #1	
FIELD MATRIX:	GAS	OK		EXCAVATED: YES/NO/NA		NA	
COMPOSITE TYPE: NA		COMPOSITE TIME INTERVAL: NA		WATER FLOWING: YES/NO/NA		NA	
BOREHOLE: YES/NO/NA		BOREHOLE DECLINATION: vertical		BOREHOLE DIRECTION: NA			

#	PRIORITY	ORDER	CNTNR	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
1	5 day	H3	1 EA SILICA GEL TUBE	None	Y	none

SAMPLE DESC: tritium vapor / silica gel cartridge  
 beginning T = 23°F; rh = 100%; barometer = 30.08" Hg - start time 1245, 1/29/10  
 end T = 27°F; rh = 74%; barometer = 29.98" Hg - end time see above

## SAMPLE COMMENTS:

mass of gel = 135.13g final mass = 598.30g  
 initial mass = 569.72g volume purged = 9461.370d

## LOCATION DESC:

ASA constructed BH, port #1, 45.0' bgs, 26t3  
 lph 2/1/2010

## FIELD SCREENING/MEASUREMENT RESULTS:

NA

COLLECTED BY (PRINT)

REVIEWED BY (PRINT)

Lindsay Ary

RELINQUISHED BY (Printed Name) Lindsay Ary (Signature) <i>Lindsay Ary</i>	Date/Time 2/1/2010 1440	RECEIVED BY (Printed Name) Henri Sherwood (Signature) <i>Henri Sherwood</i>	Date/Time 2/1/10 1440
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

5 Day Turn Around

## SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 2561

EVENT NAME: 3rd Qtr. MDA V Tritium Vapor Monitoring - CU 21-018(a)-99

SAMPLE ID: MD21-10-10152

WORK ORDER:

AS PLANNED		AS COLLECTED		AS PLANNED		AS COLLECTED	
DATE COLLECTED(MM/DD/YYYY):		2/1/2010		MEDIA:	NA		OK
TIME COLLECTED (HH:MM)		0830		SUB-MEDIA:	OTHER		
PRS ID:	21-018(a)-99	OK		SAMPLE TECH CODE:	VOST		
LOCATION ID:	21-24524W			FIELD QC TYPE:	NA		
LOCATION TYPE:	BH			FIELD PREP:	NA		
TOP DEPTH:	122.5			SAMPLE USAGE:	INV		
BOTTOM DEPTH:	127.5			SCREEN/PORT DESC:	Geoprobe soil/gas implant, port #2		
FIELD MATRIX:	GAS			EXCAVATED: YES/NO	NA		
COMPOSITE TYPE:	NA			COMPOSITE TIME INTERVAL:	NA		
BOREHOLE	YES NO/NA			BOREHOLE DECLINATION:	Vertical		
				BOREHOLE DIRECTION:	NA		

#	PRIORITY	ORDER	CNTNR	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
1	5 DAY	H3	1 EA SILICA GEL TUBE	None	Y	none

SAMPLE DESC: tritium vapor / silica gel cartridge  
 beginning: T = 23°F; rh = 100%; barometer = 30.08" Hg start time 1245, 1/29/10  
 end: T = 27°F; rh = 74%; barometer = 29.98" Hg end time see above

## SAMPLE COMMENTS:

mass of gel = 136.74g  
 initial mass = 590.45g  
 final mass = 626.53g  
 volume purged = 5045.163 l

## LOCATION DESC:

HSA constructed BH, port #2, obt 2

## FIELD SCREENING/MEASUREMENT RESULTS:

NA

## COLLECTED BY (PRINT)

Lindsay Hay

## REVIEWED BY (PRINT)

Lindsay Hay

RELINQUISHED BY (Printed Name) Lindsay Hay (Signature) <i>Lindsay Hay</i>	Date/Time 2/1/2010 1440	RECEIVED BY (Printed Name) Sherri Newwood (Signature) <i>Sherri Newwood</i>	Date/Time 2/1/10 1440
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

5 Day Turn Around

## SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 2561

EVENT NAME: 3rd Qtr. MDA V Tritium Vapor Monitoring - CU 21-018(a)-99

SAMPLE ID: MD21-10-10154

WORK ORDER:

AS PLANNED		AS COLLECTED		AS PLANNED		AS COLLECTED	
DATE COLLECTED(MM/DD/YYYY):		2/1/2010		MEDIA:	NA		OK
TIME COLLECTED (HH:MM)		0830		SUB-MEDIA:	OTHER		
PRS ID:	21-018(a)-99	OK		SAMPLE TECH CODE:	VOST		
LOCATION ID:	21-24524W			FIELD QC TYPE:	NA		
LOCATION TYPE:	BH			FIELD PREP:	NA		
TOP DEPTH:	257.5			SAMPLE USAGE:	INV		
BOTTOM DEPTH:	262.5			SCREEN/PORT DESC:	Gasprobe soil/gas implant, port #4		
FIELD MATRIX:	GAS			EXCAVATED: YES/NO	NA		
COMPOSITE TYPE:	NA			COMPOSITE TIME INTERVAL:	NA		
BOREHOLE: YES/NO/NA	YES			BOREHOLE DECLINATION:	vertical		
BOREHOLE DECLINATION:				BOREHOLE DIRECTION:	NA		

#	PRIORITY	ORDER	CNTNR	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
1	5 DAY	H3	1 EA SILICA GEL TUBE	None	Y	none

SAMPLE DESC: tritium vapor / silica gel cartridge  
 beginning: T = 23°F; rh = 100%; barometrl = 30.08" Hg - start time 1245, 1/29/10  
 end: T = 27°F; rh = 74%; barometrl = 29.98" Hg - end time see above

## SAMPLE COMMENTS:

mass of gel = 134.04g final mass = 601.32g  
 initial mass = 577.24g volume purged = 5432.771 l

## LOCATION DESC:

HSA Constructed BH, port #4, 2661g

## FIELD SCREENING/MEASUREMENT RESULTS:

NA

field duplicate sample ID: MD21-10-10160  
collected in parallel

COLLECTED BY (PRINT)

Lindsay Ray

REVIEWED BY (PRINT)

Lindsay Ray

RELINQUISHED BY (Printed Name) Lindsay Ray (Signature) <i>Lindsay Ray</i>	Date/Time 2/1/2010 1440	RECEIVED BY (Printed Name) Sheri Sherwood (Signature) <i>Sheri Sherwood</i>	Date/Time 2/1/10 1440
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

5 Day Turn Around



## SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 2561

EVENT NAME: 3rd Qtr. MDA V Tritium Vapor Monitoring - CU 21-018(a)-99

SAMPLE ID: MD21-10-10160

WORK ORDER:

AS PLANNED		AS COLLECTED		AS PLANNED		AS COLLECTED	
DATE COLLECTED(MM/DD/YYYY):		2/1/2010		MEDIA:	NA		OK
TIME COLLECTED (HH:MM)		0830		SUB-MEDIA:	OTHER		
PRS ID:	21-018(a)-99	OK		SAMPLE TECH CODE:	VOST		
LOCATION ID:	UNK			FIELD QC TYPE:	FD		
LOCATION TYPE:	GENERIC			FIELD PREP:	NA		
TOP DEPTH:	0			SAMPLE USAGE:	QC		
BOTTOM DEPTH:	0			SCREEN/PORT DESC:	Geoprobe soil/gas implant, port #4		
FIELD MATRIX:	GAS			EXCAVATED: YES/NO	NA		
COMPOSITE TYPE:	NA			COMPOSITE TIME INTERVAL:	NA		
				WATER FLOWING: YES/NO	NA		
BOREHOLE:	YES/NO/NA			BOREHOLE DECLINATION:	vertical		
				BOREHOLE DIRECTION:	NA		

#	PRIORITY	ORDER	CNTNR	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
1	5 DAY	H3	1 EA SILICA GEL TUBE	None	Y	none

SAMPLE DESC: QC Sample of FD sample of sample ID: MD21-10-10154  
 tritium vapor/silica gel cartridge  
 beginning: T=23°F; rh=100%; barometer=30.08" Hg - start time 1245, 1/29/10  
 end: T=27°F; rh=74%; barometer=29.98" Hg - end time see above

SAMPLE COMMENTS:

mass of gel = 139.60g  
 initial mass = 591.34g  
 final mass = 627.88g  
 volume purged = 4659.753L

LOCATION DESC:

HSA Constructed BH, port #4, obt lg

FIELD SCREENING/MEASUREMENT RESULTS:

NA

COLLECTED BY (PRINT)

Lindsay Hay

REVIEWED BY (PRINT)

Lindsay Hay

RELINQUISHED BY (Printed Name) Lindsay Hay (Signature) <i>Lindsay Hay</i>	Date/Time 2/1/2010 1440	RECEIVED BY (Printed Name) Shervin Sherwood (Signature) <i>Shervin Sherwood</i>	Date/Time 2/1/10 1440
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

5 Day Turn Around

## SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 2561

EVENT NAME: 3rd Qtr. MDA V Tritium Vapor Monitoring - CU 21-018(a)-99

SAMPLE ID: MD21-10-10155

WORK ORDER:

AS PLANNED		AS COLLECTED		AS PLANNED		AS COLLECTED	
DATE COLLECTED(MM/DD/YYYY):		2/1/2010		MEDIA:	NA		OK
TIME COLLECTED (HH:MM)		0830		SUB-MEDIA:	OTHER		
PRS ID:	21-018(a)-99	OK		SAMPLE TECH CODE:	VOST		
LOCATION ID:	21-24524W			FIELD QC TYPE:	NA		
LOCATION TYPE:	BH			FIELD PREP:	NA		
TOP DEPTH:	300			SAMPLE USAGE:	INV		
BOTTOM DEPTH:	305			SCREEN/PORT DESC:	Geoprobe soil/gas implant, port #5		
FIELD MATRIX:	GAS			EXCAVATED: YES/NO	NA		
COMPOSITE TYPE:	NA			COMPOSITE TIME INTERVAL:	NA		
BOREHOLE	YES/NO/NA			BOREHOLE DECLINATION:	vertical		
	(Circled)			BOREHOLE DIRECTION:	NA		

#	PRIORITY	ORDER	CNTNR	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
1	5 DAY	H3	1 EA SILICA GEL TUBE	None	Y	none

SAMPLE DESC: tritium vapor / silica gel cartridge

beginning: T = 23°F; rh = 100%; barometer = 30.08" Hg - start time 1245, 1/29/10

end: T = 27°F; rh = 74%; barometer = 29.98" Hg - end time see above

SAMPLE COMMENTS:

mass of gel = 135.76g

final mass = 618.14g

initial mass = 566.77g

volume purged = 6090.717 L

LOCATION DESC:

HSA constructed BH, port #5, Qbtt

FIELD SCREENING/MEASUREMENT RESULTS:

NA

COLLECTED BY (PRINT)

Lindsay Hay

REVIEWED BY (PRINT)

Lindsay Hay

RELINQUISHED BY (Printed Name) Lindsay Hay (Signature) <i>[Signature]</i>	Date/Time 2/1/2010 1440	RECEIVED BY (Printed Name) Sheri Sherwood (Signature) <i>[Signature]</i>	Date/Time 2/1/10 1440
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

5 Day Turn Around

## SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 2561

EVENT NAME: 3rd Qtr. MDA V Tritium Vapor Monitoring - CU 21-018(a)-99

SAMPLE ID: MD21-10-10157

WORK ORDER:

AS PLANNED		AS COLLECTED		AS PLANNED		AS COLLECTED	
DATE COLLECTED(MM/DD/YYYY):		2/1/2010		MEDIA:	NA		0/2
TIME COLLECTED (HH:MM)		0830		SUB-MEDIA:	OTHER		
PRS ID:	21-018(a)-99	0/2		SAMPLE TECH CODE:	VOST		
LOCATION ID:	21-24524W			FIELD QC TYPE:	NA		
LOCATION TYPE:	BH			FIELD PREP:	NA		
TOP DEPTH:	377.5			SAMPLE USAGE:	INV		
BOTTOM DEPTH:	382.5			SCREEN/PORT DESC:	Geoprobe soil/gas implant, port #7		
FIELD MATRIX:	GAS			EXCAVATED: YES/NO/NA	NA		
COMPOSITE TYPE:	NA			COMPOSITE TIME INTERVAL:	NA		
				WATER FLOWING: YES/NO/NA	NA		
BOREHOLE: YES/NO/NA	YES			BOREHOLE DECLINATION:	Vertical		
				BOREHOLE DIRECTION:	NA		

#	PRIORITY	ORDER	CNTNR	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
1	S DAY	H3	1 EA SILICA GEL TUBE	None	Y	none

SAMPLE DESC: tritium vapor / silica gel cartridge

beginning: T = 23°F; rh = 100%; barometer = 30.08" Hg - start time 1245, 1/29/10  
end: T = 27°F; rh = 74%; barometer = 29.98" Hg - end time see above

SAMPLE COMMENTS:

mass of gel = 136.85g

final mass = 604.45g

initial mass = 574.61g

volume purged = 5587.921 L

LOCATION DESC:

HSA constructed BH, port #7, Q bot

FIELD SCREENING/MEASUREMENT RESULTS:

NA

COLLECTED BY (PRINT)

Lindsay Hay

REVIEWED BY (PRINT)

Lindsay Hay

RELINQUISHED BY	Date/Time	RECEIVED BY	Date/Time
(Printed Name) Lindsay Hay	2/1/2010	(Printed Name) Sheri Sherwood	2/1/10
(Signature) [Signature]	1440	(Signature) [Signature]	1440
RELINQUISHED BY	Date/Time	RECEIVED BY	Date/Time
(Printed Name)		(Printed Name)	
(Signature)		(Signature)	

5 Day Turn Around

## SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 2561

EVENT NAME: 3rd Qtr. MDA V Tritium Vapor Monitoring - CU 21-018(a)-99

SAMPLE ID: MD21-10-10158

WORK ORDER:

AS PLANNED		AS COLLECTED		AS PLANNED		AS COLLECTED	
DATE COLLECTED(MM/DD/YYYY):		2/1/2010		MEDIA:	NA		012
TIME COLLECTED (HH:MM)		0830		SUB-MEDIA:	OTHER		
PRS ID:	21-018(a)-99	012		SAMPLE TECH CODE:	VOST		
LOCATION ID:	21-24524S			FIELD QC TYPE:	NA		
LOCATION TYPE:	BH			FIELD PREP:	NA		
TOP DEPTH:	677.5			SAMPLE USAGE:	INV		
BOTTOM DEPTH:	682.5			SCREEN/PORT DESC:	Gas probe soil/gas implant, port #10		
FIELD MATRIX:	GAS			EXCAVATED: YES/NO	NA		
COMPOSITE TYPE:	NA			COMPOSITE TIME INTERVAL:	NA		
BOREHOLE: YES/NO/NA				WATER FLOWING: YES/NO	NA		
BOREHOLE DECLINATION:	vertical			BOREHOLE DIRECTION:	NA		

#	PRIORITY	ORDER	CNTNR	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
1	5 DAY	H3	1 EA SILICA GEL TUBE	None	Y	none

SAMPLE DESC: tritium vapor/silica gel cartridge

beginning: T = 23°F; rh = 100%; barometer = 30.08" Hg - start time 1245, 1/29/10  
end: T = 27°F; rh = 74%; barometer = 29.98" Hg - end time see above

SAMPLE COMMENTS:

mass of gel = 134.61g final mass = 618.56g  
initial mass = 595.15g volume purged = 4076.031 l

LOCATION DESC:

AR constructed BH, port #10, 2 bog

FIELD SCREENING/MEASUREMENT RESULTS:

NA

COLLECTED BY (PRINT)

Lindsay Hay

REVIEWED BY (PRINT)

Lindsay Hay

RELINQUISHED BY (Printed Name) Lindsay Hay (Signature) <i>[Signature]</i>	Date/Time 2/1/2010 1440	RECEIVED BY (Printed Name) Sherril Sherwood (Signature) <i>[Signature]</i>	Date/Time 2/1/10 1440
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

5 Day Turn Around

## SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 2561

EVENT NAME: 3rd Qtr. MDA V Tritium Vapor Monitoring - CU 21-018(a)-99

SAMPLE ID: MD21-10-10159

WORK ORDER:

AS PLANNED		AS COLLECTED		AS PLANNED		AS COLLECTED	
DATE COLLECTED(MM/DD/YYYY):		2/1/2010		MEDIA:	NA		OK
TIME COLLECTED (HH:MM)		0830		SUB-MEDIA:	OTHER		
PRS ID:	21-018(a)-99	OK		SAMPLE TECH CODE:	VOST		
LOCATION ID:	21-24524S			FIELD QC TYPE:	NA		
LOCATION TYPE:	BH			FIELD PREP:	NA		
TOP DEPTH:	712.5			SAMPLE USAGE:	INV		
BOTTOM DEPTH:	717.5			SCREEN/PORT DESC:	Gas probe soil/gas implant, port #1		
FIELD MATRIX:	GAS			EXCAVATED: YES/NO	NA		
COMPOSITE TYPE:	NA			COMPOSITE TIME INTERVAL:	NA		
BOREHOLE	(YES) NO/NA			BOREHOLE DECLINATION:	Vertical		
				BOREHOLE DIRECTION:	NA		

#	PRIORITY	ORDER	CNTNR	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
1	5 DAY	H3	1 EA SILICA GEL TUBE	None	Y	none

SAMPLE DESC: tritium vapor / silica gel cartridge  
beginning: T = 23°F; rh = 100%; barometer = 30.08" Hg - start time 1245, 1/29/10  
end: T = 27°F; rh = 74%; barometer = 29.98" Hg - end time see above  
SAMPLE COMMENTS:  
mass of gel = 141.60g  
initial mass = 589.51g  
final mass = 623.04g  
Volume purged = 6261.228 l

LOCATION DESC:

## FIELD SCREENING/MEASUREMENT RESULTS:

NA

COLLECTED BY (PRINT)


Lindsay Hay

REVIEWED BY (PRINT)

Lindsay Hay

RELINQUISHED BY (Printed Name) Lindsay Hay (Signature) <i>Lindsay Hay</i>	Date/Time 2/1/2010 1440	RECEIVED BY (Printed Name) Sheri Greenwood (Signature) <i>Sheri Greenwood</i>	Date/Time 2/1/10 1440
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

5 Day Turn Around

DATA VALIDATION COVER SHEET	
<b>5119-1</b>  <p style="text-align: center;"><b>Data Validation Cover Sheet</b></p>	Records Use only  

Section I.		
REQUEST NUMBER: 10-1546	VALIDATION DATE: 02/17/2010	LAB CODE: ARS
CONTRACT LABORATORY NAME: <u>American Radiation Services</u>		
VALIDATOR: <u>Mary Donovan</u> ORGANIZATION: <u>Analytical Quality Associates, Inc.</u>		
ANALYTICAL SUITE (CHECK ALL THAT APPLY):		
<input type="checkbox"/> TPH-GRO	<input type="checkbox"/> HIGH EXPLOSIVES	<input type="checkbox"/> DIOXIN FURANS
<input type="checkbox"/> TPH-DRO	<input type="checkbox"/> METALS	<input type="checkbox"/> PCB CONGENERS
<input type="checkbox"/> GENERAL CHEMISTRY	<input checked="" type="checkbox"/> RADIOCHEMISTRY	<input type="checkbox"/> LCMSMS HIGH EXPLOSIVES
		<input type="checkbox"/> LCMSMS PERCHLORATES
		<input type="checkbox"/> ORGANOCHLORINE PESTICIDES/POLYCHLORINATED BIPHENYLS
<input type="checkbox"/> OTHER (DESCRIBE): <u>Tritium only</u>		


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 type="checkbox"/>	<input type="checkbox"/>	<input checked="" 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. It should be noted that no Duplicate or MS samples were analyzed. However, an LCS and LCSD were analyzed and met acceptance criteria and, thus, no sample data were qualified, based on professional judgment.
2. It should also be noted that the LCS/LCSD RER was calculated by the laboratory using the 1-sigma TPU values. Thus, 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 as a result.

Reviewed by: Monica Dymerski Level I Date: 02/17/10

VALIDATOR'S SIGNATURE: Mary A. Donovan DATE: 02/17/2010


RAD ANALYTICAL DATA VALIDATION CHECKLIST	
<b>5119-2</b>  <b>Rad Analytical Data Validation Checklist</b>	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 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	Records Use only
<div style="display: flex; justify-content: space-between; align-items: center;"> <div>Rad Analytical Data Validation Checklist</div> <div>  </div> </div>	

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	
<b>5119-2</b>  <b>Rad Analytical Data Validation Checklist</b>	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

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

ARS Sample Delivery Group: ARS1-10-00166

Client Sample ID: MD21-10-10151

Sample Collection Date: 02/01/10

Sample Matrix: Silica

Request or PO Number: 10-1546

ARS Sample ID: ARS1-10-00166-001

Date Received: 02/03/10

Report Date: 02/05/10

Analysis Description	Analysis Results	Analysis Error +/- 2 s	MDC	DLC	Qual	Analysis Units	Analysis Test Method	Analysis Date/Time	Analysis Technician	Tracer/Chem Recovery
H-3	26917.295	1423.099	231.943	113.952		pCi/L	ARS-054/EPA 906.0	02/04/10 05:42	BDS	

NOTES: Project Cost Code - MR8R032TNB00

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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02/17/10



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ARS Sample Delivery Group: ARS1-10-00166  
Client Sample ID: MD21-10-10152  
Sample Collection Date: 02/01/10  
Sample Matrix: Silica

Request or PO Number: 10-1546  
ARS Sample ID: ARS1-10-00166-002  
Date Received: 02/03/10  
Report Date: 02/05/10

Analysis Description	Analysis Results	Analysis Error +/- 2 s	MDC	DLC	Qual	Analysis Units	Analysis Test Method	Analysis Date/Time	Analysis Technician	Tracer/Chem Recovery
H-3	10901.303	587.806	228.917	112.465		pCi/L	ARS-054/EPA 906.0	02/04/10 08:51	BJS	

NOTES: Project Cost Code - MR8R032TNB00

*JFM*

Project Manager Review

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ARS Sample Delivery Group: ARS1-10-00166  
Client Sample ID: MD21-10-10153  
Sample Collection Date: 02/01/10  
Sample Matrix: Silica

Request or PO Number: 10-1546  
ARS Sample ID: ARS1-10-00166-003  
Date Received: 02/03/10  
Report Date: 02/05/10

Analysis Description	Analysis Results	Analysis Error +/- 2 s	MDC	DLC	Qual	Analysis Units	Analysis Test Method	Analysis Date/Time	Analysis Technician	Tracer/Chem Recovery
H-3	9430.914	513.731	250.948	123.289		pCi/L	ARS-054/EPA 906.0	02/04/10 12:01	BJS	

NOTES: Project Cost Code - MR8R032TNB00

*24m*

Project Manager Review

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ARS Sample Delivery Group: ARS1-10-00166  
Client Sample ID: MD21-10-10154  
Sample Collection Date: 02/01/10  
Sample Matrix: Silica

Request or PO Number: 10-1546  
ARS Sample ID: ARS1-10-00166-004  
Date Received: 02/03/10  
Report Date: 02/05/10

Analysis Description	Analysis Results	Analysis Error +/- 2 s	MDC	DLC	Qual	Analysis Units	Analysis Test Method	Analysis Date/Time	Analysis Technician	Tracer/Chem Recovery
H-3	18809.321	1000.271	236.492	116.187		pCi/L	ARS-054/EPA 906.0	02/04/10 15:10	BJS	

NOTES: Project Cost Code - MRBR032TNB00

  
Project Manager Review

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ARS Sample Delivery Group: ARS1-10-00166

Client Sample ID: MD21-10-10155

Sample Collection Date: 02/01/10

Sample Matrix: Silica

Request or PO Number: 10-1546


ARS Sample ID: ARS1-10-00166-005

Date Received: 02/03/10

Report Date: 02/05/10

Analysis Description	Analysis Results	Analysis Error +/- 2 s	MDC	DLC	Qual	Analysis Units	Analysis Test Method	Analysis Date/Time	Analysis Technician	Tracer/Chern Recovery
H-3	59541.633	3127.740	230.925	113.452		pCi/L	ARS-054/EPA 906.0	02/04/10 18:20	BJS	

NOTES: Project Cost Code - MR8R032TNB00

  
Project Manager Review

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NELAP Certificate # E87558

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ARS Sample Delivery Group: ARS1-10-00166  
Client Sample ID: MD21-10-10156  
Sample Collection Date: 02/01/10  
Sample Matrix: Silica

Request or PO Number: 10-1546  
ARS Sample ID: ARS1-10-00166-006  
Date Received: 02/03/10  
Report Date: 02/05/10

Analysis Description	Analysis Results	Analysis Error +/- 2 s	MDC	DLC	Qual	Analysis Units	Analysis Test Method	Analysis Date/Time	Analysis Technician	Tracer/Chem Recovery
H-3	5571.365	316.681	261.346	128.397		pCi/L	ARS-054/EPA 906.0	02/04/10 21:29	BJS	

NOTES: Project Cost Code - MR8R032TNB00

  
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ARS Sample Delivery Group: ARS1-10-00166

Client Sample ID: MD21-10-10157

Sample Collection Date: 02/01/10

Sample Matrix: Silica

Request or PO Number: 10-1546

ARS Sample ID: ARS1-10-00166-007

Date Received: 02/03/10

Report Date: 02/05/10

Analysis Description	Analysis Results	Analysis Error +/- 2 s	MDC	DLC	Qual	Analysis Units	Analysis Test Method	Analysis Date/Time	Analysis Technician	Tracer/Chem Recovery
H-3	6853.975	378.500	230.205	113.098		pCi/L	ARS-054/EPA 906.0	02/05/10 00:38	BJS	

NOTES: Project Cost Code - MR8R032TNB00

  
Project Manager Review

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ARS Sample Delivery Group: ARS1-10-00166  
Client Sample ID: MD21-10-10158  
Sample Collection Date: 02/01/10  
Sample Matrix: Silica

Request or PO Number: 10-1546  
ARS Sample ID: ARS1-10-00166-008  
Date Received: 02/03/10  
Report Date: 02/05/10

Analysis Description	Analysis Results	Analysis Error +/- 2 s	NDC	DLC	Qual	Analysis Units	Analysis Test Method	Analysis Date/Time	Analysis Technician	Tracer/Chem Recovery
H-3	-13.552	69.841	234.325	115.122	U	pCi/L	ARS-054/EPA 906.0	02/05/10 03:48	BJS	

NOTES: Project Cost Code - MRBR032TNB00

  
Project Manager Review

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ARS Sample Delivery Group: ARS1-10-00166  
Client Sample ID: MD21-10-10159  
Sample Collection Date: 02/01/10  
Sample Matrix: Silica

Request or PO Number: 10-1546  
ARS Sample ID: ARS1-10-00166-009  
Date Received: 02/03/10  
Report Date: 02/05/10

Analysis Description	Analysis Results	Analysis Error +/- 2 s	MDC	DLC	Qual	Analysis Units	Analysis Test Method	Analysis Date/Time	Analysis Technician	Tracer/Chem Recovery
H-3	93.813	70.380	231.726	113.845	U	pCi/L	ARS-054/EPA 906.0	02/05/10 06:57	BJS	

NOTES: Project Cost Code - MRBR032TNB00

*[Signature]*

Project Manager Review

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NELAP Certificate # E87558

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02/17/10



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ARS Sample Delivery Group: ARS1-10-00166  
Client Sample ID: MD21-10-10160  
Sample Collection Date: 02/01/10  
Sample Matrix: Silica

Request or PO Number: 10-1546  
ARS Sample ID: ARS1-10-00166-010  
Date Received: 02/03/10  
Report Date: 02/05/10

Analysis Description	Analysis Results	Analysis Error +/- 2 s	MDC	DLC	Qual	Analysis Units	Analysis Test Method	Analysis Date/Time	Analysis Technician	Tracer/Chem Recovery
H-3	19153.506	1017.963	233.288	114.613		pCi/L	ARS-054/EPA 906.0	02/05/10 10:07	BJS	

NOTES: Project Cost Code - MR8R032TNB00

*VJM*

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

MAD  
02/17/10

Tuesday, February 02, 2010

**LOS ALAMOS**

**NATIONAL LABORATORY**

ATTN: Danny Coleman

American Radiation Services - Primary

1726 Wooddale Court

Baton Rouge, LA 70806

LAB REQUEST COMMENTS:

Page 1 of 1

LAB CHAIN OF CUSTODY DOCUMENT NUMBER: 10-1546C

REQUEST NUMBER: 10-1546

TURNAROUND/REPORT DUE: 2/7/2010

TURNAROUND REQ'D: 5

SAMPLE ID	CTNR	CTNR DESC	ORDER	PRESERV	MATRIX
MD21-10-10157	1	SILICA GEL TUBE	H3	None	GAS
MD21-10-10151	1	SILICA GEL TUBE	H3	None	GAS
MD21-10-10158	1	SILICA GEL TUBE	H3	None	GAS
MD21-10-10155	1	SILICA GEL TUBE	H3	None	GAS
MD21-10-10159	1	SILICA GEL TUBE	H3	None	GAS
MD21-10-10156	1	SILICA GEL TUBE	H3	None	GAS
MD21-10-10160	1	SILICA GEL TUBE	H3	None	GAS
MD21-10-10152	1	SILICA GEL TUBE	H3	None	GAS
MD21-10-10153	1	SILICA GEL TUBE	H3	None	GAS
MD21-10-10154	1	SILICA GEL TUBE	H3	None	GAS

Relinquished By:

Date

Time

Received By:

Date

Time

Printed Name

Signature

Printed Name

Signature

Printed Name

Signature

Printed Name

Signature

Printed Name

Signature

Printed Name

Signature

Received for DISPOSAL By:

Date

Time

Remarks:

Printed Name

Signature

Tuesday, February 02, 2010  
**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: 10-1546  
Per Agreement Number: 126310041  
Project Cost Code: MR8R032TNB00

Please analyse the enclosed samples  
according to the schedule indicated:

SHIP DATE: 2/2/2010  
TURNAROUND/REPORT DUE: 2/7/2010  
TURNAROUND REQ'D: 5 Days

RAD SCREENING: Yes, Below Background  
LAB REQUEST COMMENTS:

LANL ER SMO CONTACT:  
Signature: 

PRIORITY	METHOD CODE	CNTNR	SAMPLE ID	SAMPLE MATRIX	DATE SAMPLED	SPECIAL INSTRUCTIONS
EPA:906.0						
		1	MD21-10-10151	GAS	2/1/2010	
		1	MD21-10-10152	GAS	2/1/2010	
		1	MD21-10-10153	GAS	2/2/2010	
		1	MD21-10-10154	GAS	2/1/2010	
		1	MD21-10-10155	GAS	2/1/2010	
		1	MD21-10-10156	GAS	2/2/2010	
		1	MD21-10-10157	GAS	2/1/2010	
		1	MD21-10-10158	GAS	2/1/2010	
		1	MD21-10-10159	GAS	2/1/2010	

Tuesday, February 02, 2010

REQUEST NUMBER: 10-1546

PRIORITY	METHOD CODE	CNTNR	SAMPLE ID	SAMPLE MATRIX	DATE SAMPLED	SPECIAL INSTRUCTIONS
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	EPA:906.0	1	MD21-10-10160	GAS	2/1/2010	
--	-----------	---	---------------	-----	----------	--

Final Page of REQUEST NUMBER 10-1546



# **American Radiation Services Analytical Reports**

**for**

## **Los Alamos National Laboratory**

# **Request Number: 10-1546**



2609 North River Road • Port Allen, Louisiana 70767

1 (800) 401-4277 • Fax (225) 381-2996

# **American Radiation Services Analytical Reports**

**for**

**Los Alamos National Laboratory**

**Request Number: 10-1546**

# **Original COC**



Tuesday, February 02, 2010

LAB CHAIN OF CUSTODY DOCUMENT NUMBER: 10-1546C

**LOS ALAMOS**

REQUEST NUMBER: 10-1546

**NATIONAL LABORATORY**

ATTN: Danny Coleman

TURNAROUND/REPORT DUE: 2/7/2010

American Radiation Services - Primary

TURNAROUND REQ'D: 5

1726 Wooddale Court

Baton Rouge, LA 70806

## LAB REQUEST COMMENTS:

SAMPLE ID	CTNR	CTNR DESC	ORDER	PRESERV	MATRIX
MD21-10-10157	1	SILICA GEL TUBE	H3	None	GAS
MD21-10-10151	1	SILICA GEL TUBE	H3	None	GAS
MD21-10-10158	1	SILICA GEL TUBE	H3	None	GAS
MD21-10-10155	1	SILICA GEL TUBE	H3	None	GAS
MD21-10-10159	1	SILICA GEL TUBE	H3	None	GAS
MD21-10-10156	1	SILICA GEL TUBE	H3	None	GAS
MD21-10-10160	1	SILICA GEL TUBE	H3	None	GAS
MD21-10-10152	1	SILICA GEL TUBE	H3	None	GAS
MD21-10-10153	1	SILICA GEL TUBE	H3	None	GAS
MD21-10-10154	1	SILICA GEL TUBE	H3	None	GAS

Relinquished By:

Date

Time

Received By:

Date

Time



2/2/10

3:00

William Stickle



2-3-10

10:00

Printed Name

Signature

Printed Name

Signature

Printed Name

Signature

Printed Name

Signature

Printed Name

Signature

Printed Name

Signature

Received for DISPOSAL By:

Date

Time

Remarks:

Printed Name

Signature

REQUEST NUMBER: 10-1546

Tuesday, February 02, 2010

**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: 10-1546  
Per Agreement Number: 126310041  
Project Cost Code: MR8R032TNB00

Please analyse the enclosed samples  
according to the schedule indicated:

**SHIP DATE: 2/2/2010**  
**TURNAROUND/REPORT DUE: 2/7/2010**  
**TURNAROUND REQ'D: 5 Days**

**RAD SCREENING: Yes, Below Background**  
**LAB REQUEST COMMENTS:**

LANL ER SMO CONTACT:

Signature: 

PRIORITY	METHOD CODE	CNTNR	SAMPLE ID	SAMPLE MATRIX	DATE SAMPLED	SPECIAL INSTRUCTIONS
	EPA:906.0	1	MD21-10-10151	GAS	2/1/2010	
		1	MD21-10-10152	GAS	2/1/2010	
		1	MD21-10-10153	GAS	2/2/2010	
		1	MD21-10-10154	GAS	2/1/2010	
		1	MD21-10-10155	GAS	2/1/2010	
		1	MD21-10-10156	GAS	2/2/2010	
		1	MD21-10-10157	GAS	2/1/2010	
		1	MD21-10-10158	GAS	2/1/2010	
		1	MD21-10-10159	GAS	2/1/2010	

Tuesday, February 02, 2010

REQUEST NUMBER: 10-1546

PRIORITY	METHOD CODE	CNTNR	SAMPLE ID	SAMPLE MATRIX	DATE SAMPLED	SPECIAL INSTRUCTIONS
	EPA:906.0	1	MD21-10-10160	GAS	2/1/2010	

Final Page of REQUEST NUMBER 10-1546

Tuesday, February 02, 2010

LAB CHAIN OF CUSTODY DOCUMENT NUMBER: 10-1546C

LOS ALAMOS

REQUEST NUMBER: 10-1546

NATIONAL LABORATORY

ATTN: Danny Coleman

TURNAROUND/REPORT DUE: 2/7/2010

American Radiation Services - Primary

TURNAROUND REQ'D: 5

1726 Wooddale Court

Baton Rouge, LA 70806

LAB REQUEST COMMENTS:

SAMPLE ID	CTNR	CTNR DESC	ORDER	PRESERV	MATRIX
MD21-10-10157	1	SILICA GEL TUBE	H3	None	GAS
MD21-10-10151	1	SILICA GEL TUBE	H3	None	GAS
MD21-10-10158	1	SILICA GEL TUBE	H3	None	GAS
MD21-10-10155	1	SILICA GEL TUBE	H3	None	GAS
MD21-10-10159	1	SILICA GEL TUBE	H3	None	GAS
MD21-10-10156	1	SILICA GEL TUBE	H3	None	GAS
MD21-10-10160	1	SILICA GEL TUBE	H3	None	GAS
MD21-10-10152	1	SILICA GEL TUBE	H3	None	GAS
MD21-10-10153	1	SILICA GEL TUBE	H3	None	GAS
MD21-10-10154	1	SILICA GEL TUBE	H3	None	GAS

Relinquished By:

Date

Time

Received By:

Date

Time

Printed Name

Signature

2/2/10

2:00

Printed Name

Signature

William Stickle

William Stickle

2-3-10

10:00

Printed Name

Signature

Printed Name

Signature

Printed Name

Signature

Printed Name

Signature

Received for DISPOSAL By:

Date

Time

Remarks:

Printed Name

Signature



# **American Radiation Services Analytical Reports**

**for**

**Los Alamos National Laboratory  
Request Number: 10-1546**

# **Case Narrative**



February 5, 2010

LANL  
Keith Greene  
Drop Point MS H865  
Los Alamos, NM 87545

Request Number: 10-1546

LANL Sample ID: MD21-10-10151, MD21-10-10152, MD21-10-10153, MD21-10-10154, MD21-10-10155,  
MD21-10-10156, MD21-10-10157, MD21-10-10158, MD21-10-10159, MD21-10-10160

Dear Mr. Greene;

On February 3, 2010, ARS International received 10 Silica Gel sample(s) to be analyzed for Tritium.

The samples 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 [ProjectManagers@amrad.com](mailto:ProjectManagers@amrad.com).

Sincerely,

A handwritten signature in black ink that reads 'Virgene Mulligan'. The signature is fluid and cursive, with the first name 'Virgene' being more prominent.

Virgene Mulligan  
Vice President – Laboratory Services  
ARS International



## COVER PAGE

18980SOW0-8S

Statement of Work for Analytical Laboratories

**PROJECT SAMPLE IDENTIFICATION  
CROSS-REFERENCE  
TO ARS SAMPLE LABORATORY IDs**

Subcontract (LANL Agreement Number) 126310041

Request Number	LANL PROJECT SAMPLE ID NUMBER	American Radiation Services SAMPLE ID NUMBER(S)
10-1546	MD21-10-10151	ARS1-10-00166-001
10-1546	MD21-10-10152	ARS1-10-00166-002
10-1546	MD21-10-10153	ARS1-10-00166-003
10-1546	MD21-10-10154	ARS1-10-00166-004
10-1546	MD21-10-10155	ARS1-10-00166-005
10-1546	MD21-10-10156	ARS1-10-00166-006
10-1546	MD21-10-10157	ARS1-10-00166-007
10-1546	MD21-10-10158	ARS1-10-00166-008
10-1546	MD21-10-10159	ARS1-10-00166-009
10-1546	MD21-10-10160	ARS1-10-00166-010

### ANALYTICAL METHODS

Tritium analyses were performed using EPA 906 (ARS-054)

### ANALYTICAL RESULTS

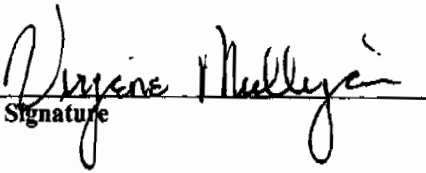
The result data that are flagged with "U" indicate that the activity is below the MDC.



**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."*

  
Signature

Vice President -- Laboratory Services, ARS  
International  
Title

2-5-10  
Date





# **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

12 of 86

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

ARS Sample Delivery Group: ARS1-10-00166  
Client Sample ID: MD21-10-10151  
Sample Collection Date: 02/01/10  
Sample Matrix: Silica

Request or PO Number: 10-1546  
ARS Sample ID: ARS1-10-00166-001  
Date Received: 02/03/10  
Report Date: 02/05/10

Analysis Description	Analysis Results	Analysis Error +/- 2 s	MDC	DLC	Qual	Analysis Units	Analysis Test Method	Analysis Date/Time	Analysis Technician	Tracer/Chem Recovery
H-3	26917.295	1423.099	231.943	113.952		pCi/L	ARS-054/EPA 906.0	02/04/10 05:42	BJS	

NOTES: Project Cost Code - MR8R032TNB00

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

13 of 86

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

ARS Sample Delivery Group: ARS1-10-00166  
Client Sample ID: MD21-10-10152  
Sample Collection Date: 02/01/10  
Sample Matrix: Silica

Request or PO Number: 10-1546  
ARS Sample ID: ARS1-10-00166-002  
Date Received: 02/03/10  
Report Date: 02/05/10

Analysis Description	Analysis Results	Analysis Error +/- 2 s	MDC	DLC	Qual	Analysis Units	Analysis Test Method	Analysis Date/Time	Analysis Technician	Tracer/Chem Recovery
H-3	10901.303	587.806	228.917	112.465		pCi/L	ARS-054/EPA 906.0	02/04/10 08:51	BJS	

NOTES: Project Cost Code - MR8R032TNB00

*JFM*

Project Manager Review

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NELAP Certificate # E87558



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14 of 86

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

ARS Sample Delivery Group: ARS1-10-00166  
Client Sample ID: MD21-10-10153  
Sample Collection Date: 02/01/10  
Sample Matrix: Silica

Request or PO Number: 10-1546  
ARS Sample ID: ARS1-10-00166-003  
Date Received: 02/03/10  
Report Date: 02/05/10

Analysis Description	Analysis Results	Analysis Error +/- 2 s	MDC	DLC	Qual	Analysis Units	Analysis Test Method	Analysis Date/Time	Analysis Technician	Tracer/Chem Recovery
H-3	9430.914	513.731	250.948	123.289		pCi/L	ARS-054/EPA 906.0	02/04/10 12:01	BJS	

**NOTES: Project Cost Code - MR8R032TNB00**

Project Manager Review

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15 of 86

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

ARS Sample Delivery Group: ARS1-10-00166  
Client Sample ID: MD21-10-10154  
Sample Collection Date: 02/01/10  
Sample Matrix: Silica

Request or PO Number: 10-1546  
ARS Sample ID: ARS1-10-00166-004  
Date Received: 02/03/10  
Report Date: 02/05/10

Analysis Description	Analysis Results	Analysis Error +/- 2 s	MDC	DLC	Qual	Analysis Units	Analysis Test Method	Analysis Date/Time	Analysis Technician	Tracer/Chem Recovery
H-3	18809.321	1000.271	236.492	116.187		pCi/L	ARS-054/EPA 906.0	02/04/10 15:10	BJS	

NOTES: Project Cost Code - MR8R032TNB00

Project Manager Review

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NELAP Certificate # E87558



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

ARS Sample Delivery Group: ARS1-10-00166

Client Sample ID: MD21-10-10155

Sample Collection Date: 02/01/10

Sample Matrix: Silica

Request or PO Number: 10-1546

ARS Sample ID: ARS1-10-00166-005

Date Received: 02/03/10

Report Date: 02/05/10

Analysis Description	Analysis Results	Analysis Error +/- 2 s	MDC	DLC	Qual	Analysis Units	Analysis Test Method	Analysis Date/Time	Analysis Technician	Tracer/Chem Recovery
H-3	59541.633	3127.740	230.925	113.452		pCi/L	ARS-054/EPA 906.0	02/04/10 18:20	BJ5	

NOTES: Project Cost Code - MR8R032TNB00

Project Manager Review

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NELAP Certificate # E87558



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17 of 86

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

ARS Sample Delivery Group: ARS1-10-00166  
Client Sample ID: MD21-10-10156  
Sample Collection Date: 02/01/10  
Sample Matrix: Silica

Request or PO Number: 10-1546  
ARS Sample ID: ARS1-10-00166-006  
Date Received: 02/03/10  
Report Date: 02/05/10

Analysis Description	Analysis Results	Analysis Error +/- 2 s	MDC	DLC	Qual	Analysis Units	Analysis Test Method	Analysis Date/Time	Analysis Technician	Tracer/Chem Recovery
H-3	5571.365	316.681	261.346	128.397		pCi/L	ARS-054/EPA 906.0	02/04/10 21:29	BJS	

NOTES: Project Cost Code - MR8R032TNB00

*[Signature]*

Project Manager Review

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18 of 86

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

ARS Sample Delivery Group: ARS1-10-00166  
Client Sample ID: MD21-10-10157  
Sample Collection Date: 02/01/10  
Sample Matrix: Silica

Request or PO Number: 10-1546  
ARS Sample ID: ARS1-10-00166-007  
Date Received: 02/03/10  
Report Date: 02/05/10

Analysis Description	Analysis Results	Analysis Error +/- 2 s	MDC	DLC	Qual	Analysis Units	Analysis Test Method	Analysis Date/Time	Analysis Technician	Tracer/Chem Recovery
H-3	6853.975	378.500	230.205	113.098		pCi/L	ARS-054/EPA 906.0	02/05/10 00:38	BJS	

**NOTES: Project Cost Code - MR8R032TNB00**

Project Manager Review

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NELAP Certificate # E87558





2609 North River Road, Port Allen, Louisiana 70767

19 of 86

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

ARS Sample Delivery Group: ARS1-10-00166  
Client Sample ID: MD21-10-10158  
Sample Collection Date: 02/01/10  
Sample Matrix: Silica

Request or PO Number: 10-1546  
ARS Sample ID: ARS1-10-00166-008  
Date Received: 02/03/10  
Report Date: 02/05/10

Analysis Description	Analysis Results	Analysis Error +/- 2 s	MDC	DLC	Qual	Analysis Units	Analysis Test Method	Analysis Date/Time	Analysis Technician	Tracer/Chem Recovery
H-3	-13.552	69.841	234.325	115.122	U	pCi/L	ARS-054/EPA 906.0	02/05/10 03:48	BJS	

**NOTES: Project Cost Code - MR8R032TNB00**

Project Manager Review

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NELAP Certificate # E87558



2609 North River Road, Port Allen, Louisiana 70767

20 of 86

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

ARS Sample Delivery Group: ARS1-10-00166  
Client Sample ID: MD21-10-10159  
Sample Collection Date: 02/01/10  
Sample Matrix: Silica

Request or PO Number: 10-1546  
ARS Sample ID: ARS1-10-00166-009  
Date Received: 02/03/10  
Report Date: 02/05/10

Analysis Description	Analysis Results	Analysis Error +/- 2 s	MDC	DLC	Qual	Analysis Units	Analysis Test Method	Analysis Date/Time	Analysis Technician	Tracer/Chem Recovery
H-3	93.813	70.380	231.726	113.845	U	pCi/L	ARS-054/EPA 906.0	02/05/10 06:57	BJS	

NOTES: Project Cost Code - MR8R032TNB00

Project Manager Review

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NELAP Certificate # E87558



2609 North River Road, Port Allen, Louisiana 70767

21 of 86

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

ARS Sample Delivery Group: ARS1-10-00166  
Client Sample ID: MD21-10-10160  
Sample Collection Date: 02/01/10  
Sample Matrix: Silica

Request or PO Number: 10-1546  
ARS Sample ID: ARS1-10-00166-010  
Date Received: 02/03/10  
Report Date: 02/05/10

Analysis Description	Analysis Results	Analysis Error +/- 2 s	MDC	DLC	Qual	Analysis Units	Analysis Test Method	Analysis Date/Time	Analysis Technician	Tracer/Chem Recovery
H-3	19153.506	1017.963	233.288	114.613		pCi/L	ARS-054/EPA 906.0	02/05/10 10:07	BJS	

**NOTES: Project Cost Code - MR8R032TNB00**

*rpm*

Project Manager Review

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2609 North River Road, Port Allen, Louisiana 70767

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

**QC Results Report**

Sample Delivery Group: ARS1-10-00166

Date Received: 2/3/2010

**Laboratory Control Sample Evaluation**

Analysis Batch	QC Type	Analyte	Analysis Results	CSU 1 (1s)	MDC	Expected Value	Qual	Report Units	Analysis Test Method	Analysis Date/Time	Analysis Technician	Percent Recovery (%)	LCS Acceptance Range
ARS1-B10-00640	LCS	H3	1251.602	102.121	221.278	1221.62		pCi/L	ARS-054/EPA 906.0	2/3/2010 2021	BJS	102	75%-125%

**Blank Evaluation**

Analysis Batch	QC Type	Analyte	Analysis Results	CSU 1 (1s)	MDC	Expected Value	Qual	Report Units	Analysis Test Method	Analysis Date/Time	Analysis Technician
ARS1-B10-00640	MBL	H3	-109.267	126.767	219.684	NA		pCi/L	ARS-054/EPA 906.0	2-4-10 0235	BJS

**RER Duplicate Evaluation**

Analysis Batch	QC Type	Analysis Description	Result 1	CSU 1 (1s)	Result 2	CSU 1 (1s)	Qual	Analysis Units	Analysis Test Method	Analysis Date/Time	Analysis Technician	RER	RER Acceptance Range
ARS1-B10-00640	DUP	H3	1251.602	102.121	1166.724	98.364		pCi/L	ARS-054/EPA 906.0	2-3-10 2328	BJS	0.42	< 1

**DER Duplicate Evaluation**

Analysis Batch	QC Type	Analysis Description	Result 1	CSU 1 (1s)	Result 2	CSU 1 (1s)	Qual	Analysis Units	Analysis Test Method	Analysis Date/Time	Analysis Technician	DER	DER Acceptance Range
ARS1-B10-00640	DUP	H3	1251.602	102.121	1166.724	98.364		pCi/L	ARS-054/EPA 906.0	2-3-10 2328	BJS	1.20	< 3

Project Manager Review

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LELAP Certificate# 01949

NELAP Certificate # E87558



# **American Radiation Services Analytical Reports**

**for**

## **Los Alamos National Laboratory**

### **Tritium**

**by**

### **Low Level Liquid Scintillation Counting**

# **Samples**

ARS INTERNATIONAL		LSC Instrument Data Transfer Report									
ARS1-B10-00640		13					13				
BKG		1	2	3	4	5	6	7	8	9	10
ARS1-B10-00640-01	44	1	2	3	4	5	6	7	8	9	10
ARS1-B10-00640-02	44	2	3	4	5	6	7	8	9	10	11
ARS1-B10-00640-03	44	3	4	5	6	7	8	9	10	11	12
ARS1-B10-00640-04	44	4	5	6	7	8	9	10	11	12	13
ARS1-B10-00640-05	44	5	6	7	8	9	10	11	12	13	14
ARS1-B10-00640-06	44	6	7	8	9	10	11	12	13	14	15
ARS1-B10-00640-07	44	7	8	9	10	11	12	13	14	15	16
ARS1-B10-00640-08	44	8	9	10	11	12	13	14	15	16	17
ARS1-B10-00640-09	44	9	10	11	12	13	14	15	16	17	18
ARS1-B10-00640-10	44	10	11	12	13	14	15	16	17	18	19
ARS1-B10-00640-11	44	11	12	13	14	15	16	17	18	19	20
ARS1-B10-00640-12	44	12	13	14	15	16	17	18	19	20	21
ARS1-B10-00640-13	44	13	14	15	16	17	18	19	20	21	22
LSC 2		ARS1-B10-00640									
BKG		1	2	3	4	5	6	7	8	9	10
ARS1-B10-00640	180.00	35.3500	396.97	6.00	10.89	10.59	5.57	106.33	47.17	376.52	331.23
ARS1-B10-00640	180.00	35.0300	392.35	10.89	10.59	5.57	106.33	47.17	376.52	331.23	30.7800
ARS1-B10-00640	180.00	35.2800	395.92	10.59	5.57	106.33	47.17	376.52	331.23	30.7800	32.7400
ARS1-B10-00640	180.00	35.2700	395.85	5.57	106.33	47.17	376.52	331.23	30.7800	32.7400	33.5300
ARS1-B10-00640	180.00	33.4800	370.06	106.33	47.17	376.52	331.23	30.7800	32.7400	33.5300	29.6100
ARS1-B10-00640	180.00	33.9300	376.52	331.23	30.7800	32.7400	33.5300	29.6100	33.7100	32.9800	33.4500
ARS1-B10-00640	180.00	33.7400	359.47	331.23	30.7800	32.7400	33.5300	29.6100	33.7100	32.9800	33.4500
ARS1-B10-00640	180.00	33.5300	370.74	331.23	30.7800	32.7400	33.5300	29.6100	33.7100	32.9800	33.4500
ARS1-B10-00640	180.00	29.6100	314.27	331.23	30.7800	32.7400	33.5300	29.6100	33.7100	32.9800	33.4500
ARS1-B10-00640	180.00	33.7100	373.44	331.23	30.7800	32.7400	33.5300	29.6100	33.7100	32.9800	33.4500
ARS1-B10-00640	180.00	32.9800	362.85	331.23	30.7800	32.7400	33.5300	29.6100	33.7100	32.9800	33.4500
ARS1-B10-00640	180.00	33.4500	369.59	331.23	30.7800	32.7400	33.5300	29.6100	33.7100	32.9800	33.4500
ARS1-B10-00640	180.00	33.2400	366.56	331.23	30.7800	32.7400	33.5300	29.6100	33.7100	32.9800	33.4500

Procedure		ARS-054		Isotope	H-3	
Variable	Value	Calculated Values		VBA	V/V	
Gross Count Rate	10.890000	ACT	1251.601620	1251.601620	OK	
Sample Count Mins	180.000000	CI	78.403568	78.403568	OK	
BKG Count Rate	6.000000	TPU	102.120746	102.120746	OK	
BKG Count Mins	180.000000	MDA	221.277511	221.277511	OK	
Instrument Efficiency	0.350300	DL	108.712011	108.712011	OK	
Sample Aliquot	5.024000	Net Count Rate	4.890000	4.890000	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)	2/3/10 8:21 PM	K	0.003907	0.003907	OK	
Count Date (t2)	2/3/10 8:21 PM	K MDA	0.703259	0.703259	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-B10-00640			
		Batch ID	ARS1-B10-00640-01			
		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	73			
		Instr Detector	P-44-S-2			
		Instr keV				
		Version/Date	1.0 -- 11/18/2005			
Variables Intact Test	OK					

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Procedure		ARS-054		Isotope		H-3	
Variable	Value	Calculated Values	VBA	V/V			
Gross Count Rate	10.590000	ACT	1166.723530	1166.723530	OK		
Sample Count Mins	180.000000	CU	151.251010	151.251010	OK		
BKG Count Rate	6.000000	TPU	192.794129	192.794129	OK		
BKG Count Mins	180.000000	MDA	219.753242	219.753242	OK		
Instrument Efficiency	0.352800	DL	107.963149	107.963149	OK		
Sample Aliquot	5.023000	Net Count Rate	4.590000	4.590000	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)	2/3/10 11:28 PM	K	0.003934	0.003934	OK		
Count Date (t2)	2/3/10 11:28 PM	K MDA	0.708137	0.708137	OK		
Activity Units = pCi --- UCF =	2.2209						
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-B10-00640				
		Batch ID	ARS1-B10-00640-02				
		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	73				
		Instr Detector	P-44-S-3				
		Instr keV					
		Version/Date	1.0 -- 11/18/2005				
Variables Intact Test	OK						

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Procedure		Isotope			
ARS-054		H-3			
Variable	Value	Calculated Values	Batch	VBA	V/V
Gross Count Rate	5.570000	ACT	-109.266627	-109.266627	OK
Sample Count Mins	180.000000	CU	126.271570	126.271570	OK
BKG Count Rate	6.000000	TPU	126.766982	126.766982	OK
BKG Count Mins	180.000000	MDA	219.684341	219.684341	OK
Instrument Efficiency	0.352700	DL	107.929299	107.929299	OK
Sample Aliquot	5.026000	Net Count Rate	-0.430000	-0.430000	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)	2/4/10 2:35 AM	K	0.003935	0.003935	OK
Count Date (t2)	2/4/10 2:35 AM	K MDA	0.708359	0.708359	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-B10-00640		
		Batch ID	ARS1-B10-00640-03		
		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	73		
		Instr Detector	P-44-S-4		
		Instr keV			
		Version/Date	1.0 -- 11/18/2005		
Variables Intact Test	OK				

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Procedure		ARS-054		Isotope		H-3	
Variable	Value	Calculated Values	Excel	VBA	V/V		
Gross Count Rate	47.170000	ACT	10901.303233	10901.303232	OK		
Sample Count Minis	180.000000	CU	143.911212	143.911212	OK		
BKG Count Rate	6.000000	TPU	587.805996	587.805996	OK		
BKG Count Minis	180.000000	MDA	228.916751	228.916751	OK		
Instrument Efficiency	0.339300	DL	112.465114	112.465114	OK		
Sample Aliquot	5.016000	Net Count Rate	41.170000	41.170000	OK		
Dilution Factor	1.000000	D t 1 (t2 - t1)	2.868750	2.868750	OK		
Aliquot Conversion Factor	0.001000	DF	0.999558	0.999558	OK		
		Sys Err	0.052280	0.052280	OK		
Sample Collection Date (t1)	2/1/10 12:00 PM	K	0.003777	0.003777	OK		
Count Date (t2)	2/4/10 8:51 AM	K MDA	0.679790	0.679790	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-B10-00640				
		Batch ID	ARS1-B10-00640-05				
		Analysis Code	LSC-A-001				
		SDG	ARS1-10-00166				
		Fraction	002				
		Run Number	1				
		Client	Los Alamos National Laboratory				
		Client Profile	Keith Greene				
		Client ID	MD21-10-10152				
		Instr File Name	73				
		Instr Detector	P-44-S-6				
		Instr keV					
		Version/Date	1.0 -- 11/18/2005				
Variables Intact Test	OK						

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Procedure		Isotope			
ARS-054		H-3			
Variable	Value	Calculated Values	ACT	VBA	V/V
Gross Count Rate	38.490000	ACT	9430.914021	9430.914021	OK
Sample Count Min	180.000000	CU	144.310863	144.310863	OK
BKG Count Rate	6.000000	TPU	513.730975	513.730975	OK
BKG Count Min	180.000000	K MDA	250.948205	250.948205	OK
Instrument Efficiency	0.307800	DL	123.289005	123.289005	OK
Sample Aliquot	5.044000	Net Count Rate	32.490000	32.490000	OK
Dilution Factor	1.000000	D t 1 (t2 - t1)	3.000694	3.000694	OK
Aliquot Conversion Factor	0.001000	DF	0.999538	0.999538	OK
		Sys Err	0.052280	0.052280	OK
Sample Collection Date (t1)	2/1/10 12:00 PM	K	0.003445	0.003445	OK
Count Date (t2)	2/4/10 12:01 PM	K MDA	0.620110	0.620110	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-B10-00640		
		Batch ID	ARS1-B10-00640-06		
		Analysis Code	LSC-A-001		
		SDG	ARS1-10-00166		
		Fraction	003		
		Run Number	1		
		Client	Los Alamos National Laboratory		
		Client Profile	Keith Greene		
		Client ID	MD21-10-10153		
		Instr File Name	73		
		Instr Detector	P-44-G-7		
		Instr keV			
		Version/Date	1.0 -- 11/18/2005		
Variables Intact Test	OK				

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Procedure		ARS-054	Isotope		H-3	
Variable	Value		Calculated Values	VBA	V/V	
Gross Count Rate	74.760000		ACT	18809.320582	18809.320581	OK
Sample Count Mins	180.000000		CU	183.211081	183.211081	OK
BKG Count Rate	6.000000		TPU	1000.271429	1000.271429	OK
BKG Count Mins	180.000000		MDA	236.492435	236.492435	OK
Instrument Efficiency	0.327400		DL	116.186993	116.186993	OK
Sample Aliquot	5.032000		Net Count Rate	68.760000	68.760000	OK
Dilution Factor	1.000000		D t 1 (t2 - t1)	3.131944	3.131944	OK
Aliquot Conversion Factor	0.001000		DF	0.999518	0.999518	OK
			Sys Err	0.052280	0.052280	OK
Sample Collection Date (t1)	2/1/10 12:00 PM		K	0.003656	0.003656	OK
Count Date (t2)	2/4/10 3:10 PM		K MDA	0.658014	0.658014	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-B10-00640		
			Batch ID	ARS1-B10-00640-07		
			Analysis Code	LSC-A-001		
			SDG	ARS1-10-00166		
			Fraction	004		
			Run Number	1		
			Client	Los Alamos National Laboratory		
			Client Profile	Keith Greene		
			Client ID	MD21-10-10154		
			Instr File Name	73		
			Instr Detector	P-44-S-8		
			Instr keV			
			Version/Date	1.0 -- 11/18/2005		
Variables Intact Test	OK					

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Procedure		ARS-054	
Variable	Value		
Gross Count Rate	228.910000		
Sample Count Mins	180.000000		
BKG Count Rate	6.000000		
BKG Count Mins	180.000000		
Instrument Efficiency	0.335300		
Sample Aliquot	5.032000		
Dilution Factor	1.000000		
Aliquot Conversion Factor	0.001000		
Sample Collection Date (t1)	2/1/10 12:00 PM		
Count Date (t2)	2/4/10 6:20 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	VBA	V/V	
ACT	59541.632918	59541.632916	OK
CF	305.144600	305.144600	OK
TPU	3127.740422	3127.740422	OK
MDA	230.925136	230.925136	OK
DL	113.451819	113.451819	OK
Net Count Rate	222.910000	222.910000	OK
D t 1 (t2 - t1)	3.263889	3.263889	OK
DF	0.999497	0.999497	OK
Sys Err	0.052280	0.052280	OK
K	0.003744	0.003744	OK
K MDA	0.673878	0.673878	OK
Batch Identifiers and Other Related Information			
Batch	ARS1-B10-00640		
Batch ID	ARS1-B10-00640-08		
Analysis Code	LSC-A-001		
SDG	ARS1-10-00166		
Fraction	005		
Run Number	1		
Client	Los Alamos National Laboratory		
Client Profile	Keith Greene		
Client ID	MD21-10-10155		
Instr File Name	73		
Instr Detector	P-44-S-9		
Instr keV			
Version/Date	1.0 -- 11/18/2005		

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Procedure		Isotope	
ARS-054		H-3	
Variable	Value	Calculated Values	V/V
Gross Count Rate	24.430000	ACT 5571.364958	5571.364958 OK
Sample Count Mins	180.000000	CU 124.284238	124.284238 OK
BKG Count Rate	6.000000	TPU 316.681092	316.681092 OK
BKG Count Mins	180.000000	MDA 261.346262	261.346262 OK
Instrument Efficiency	0.296100	DL 128.397494	128.397494 OK
Sample Aliquot	5.035000	Net Count Rate 18.430000	18.430000 OK
Dilution Factor	1.000000	D t 1 (t2 - t1) 3.395139	3.395139 OK
Aliquot Conversion Factor	0.001800	DF 0.999477	0.999477 OK
		Sys Err 0.052280	0.052280 OK
Sample Collection Date (t1)	2/1/10 12:00 PM	K 0.003308	0.003308 OK
Count Date (t2)	2/4/10 9:29 PM	K MDA 0.595438	0.595438 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-B10-00640
		Batch ID	ARS1-B10-00640-09
		Analysis Code	LSC-A-001
		SDG	ARS1-ID-00166
		Fraction	006
		Run Number	1
		Client	Los Alamos National Laboratory
		Client Profile	Keith Greene
		Client ID	MD21-10-10156
		Instr File Name	73
		Instr Detector	P-44-S-10
		Instr keV	
		Version/Date	1.0 -- 11/18/2005
Variables Intact Test	OK		

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Procedure		Isotope	
ARS-054		H-3	
Variable	Value	Calculated Values	VBA V/V
Gross Count Rate	31.740000	ACT 6853.974818	6853.974817 OK
Sample Count Mins	180.000000	CU 121.926554	121.926554 OK
BKG Count Rate	6.000000	TPU 378.499808	378.499808 OK
BKG Count Mins	180.000000	MDA 230.204591	230.204591 OK
Instrument Efficiency	0.337100	DL 113.097820	113.097820 OK
Sample Aliquot	5.021000	Net Count Rate	25.740000 25.740000 OK
Dilution Factor	1.000000	D t 1 (t2 - t1)	3.526389 3.526389 OK
Aliquot Conversion Factor	0.001000	DF	0.999457 0.999457 OK
		Sys Err	0.052280 0.052280 OK
Sample Collection Date (t1)	2/1/10 12:00 PM	K	0.003755 0.003755 OK
Count Date (t2)	2/5/10 12:38 AM	K MDA	0.675987 0.675987 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-B10-00640
		Batch ID	ARS1-B10-00640-10
		Analysis Code	LSC-A-001
		SDG	ARS1-10-00166
		Fraction	007
		Run Number	1
		Client	Los Alamos National Laboratory
		Client Profile	Keith Greene
		Client ID	MD21-10-10157
		Instr File Name	73
		Instr Detector	P-44 S-11
		Instr keV	
		Version/Date	1.0 -- 11/18/2005
Variables Intact Test	OK		

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Procedure		ARS-054	
Variable	Value		
Gross Count Rate	5.950000		
Sample Count Mins	180.000000		
BKG Count Rate	6.000000		
BKG Count Mins	180.000000		
Instrument Efficiency	0.329800		
Sample Aliquot	5.042000		
Dilution Factor	1.000000		
Aliquot Conversion Factor	0.001000		
Sample Collection Date (t1)	2/1/10 12:00 PM		
Count Date (t2)	2/5/10 3:48 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		
Variables Intact Test		OK	

Isotope		H-3	
Calculated Values	UCL	VBA	V/V
ACT	-13.552152	-13.552152	OK
CU	69.837064	69.837064	OK
TPU	69.840657	69.840657	OK
MDA	234.324819	234.324819	OK
DL	115.122057	115.122057	OK
Net Count Rate	-0.050000	-0.050000	OK
D t 1 (t2 - t1)	3.658333	3.658333	OK
DF	0.999437	0.999437	OK
Sys Err	0.052280	0.052280	OK
K	0.003689	0.003689	OK
K MDA	0.664101	0.664101	OK
Batch Identifiers and Other Related Information			
Batch	ARS1-B10-00640		
Batch ID	ARS1-B10-00640-11		
Analysis Code	LSC-A-001		
SDG	ARS1-10-00166		
Fraction	008		
Run Number	1		
Client	Los Alamos National Laboratory		
Client Profile	Keith Greene		
Client ID	MD21-10-1015B		
Instr File Name	73		
Instr Detector	P-44-S-12		
Instr keV			
Version/Date	1.0 -- 11/18/2005		

Procedure		Isotope		H-3	
Variable	Value	Calculated Values	Expected	VBA	V/V
Gross Count Rate	6.350000	ACT	93.813120	93.813120	OK
Sample Count Mins	180.000000	CU	70.208996	70.208996	OK
BKG Count Rate	6.000000	TPU	70.380093	70.380093	OK
BKG Count Mins	180.000000	MDA	231.726422	231.726422	OK
Instrument Efficiency	0.334500	DL	113.845484	113.845484	OK
Sample Aliquot	5.027000	Net Count Rate	0.350000	0.350000	OK
Dilution Factor	1.000000	D t 1 (t2 - t1)	3.789583	3.789583	OK
Aliquot Conversion Factor	0.001000	DF	0.999416	0.999416	OK
		Sys Err	0.052280	0.052280	OK
Sample Collection Date (t1)	2/1/10 12:00 PM	K	0.003731	0.003731	OK
Count Date (t2)	2/5/10 6:57 AM	K MDA	0.671548	0.671548	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-B10-00640		
		Batch ID	ARS1-B10-00640-12		
		Analysis Code	LSC-A-001		
		SDG	ARS1-10-00166		
		Fraction	009		
		Run Number	1		
		Client	Los Alamos National Laboratory		
		Client Profile	Keith Greene		
		Client ID	MD21-10-10159		
		Instr File Name	73		
		Instr Detector	P-44-S-13		
		Instr keV			
Variables Intact Test	OK	Version/Date	1.0 -- 11/18/2005		

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Procedure		ARS-054	
Variable	Value		
Gross Count Rate	76.980000		
Sample Count Mins	180.000000		
BKG Count Rate	6.000000		
BKG Count Mins	180.000000		
Instrument Efficiency	0.332400		
Sample Aliquot	5.025000		
Dilution Factor	1.000000		
Aliquot Conversion Factor	0.001000		
Sample Collection Date (t1)	2/1/10 12:00 PM		
Count Date (t2)	2/5/10 10:07 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	FRA	VBA	V/V
ACT	19153.506076	19153.506075	OK
CU	193.215728	193.215728	OK
TPU	1017.963450	1017.963450	OK
MDA	233.287951	233.287951	OK
DL	114.612652	114.612652	OK
Net Count Rate	70.980000	70.980000	OK
D t 1 (t2 - t1)	3.921528	3.921528	OK
DF	0.999396	0.999396	OK
Sys Err	0.052280	0.052280	OK
K	0.003706	0.003706	OK
K MDA	0.667053	0.667053	OK
Batch Identifiers and Other Related Information			
Batch	ARS1-B10-00640		
Batch ID	ARS1-B10-00640-13		
Analysis Code	LSC-A-001		
SDG	ARS1-ID-00166		
Fraction	010		
Run Number	1		
Client	Los Alamos National Laboratory		
Client Profile	Keith Greene		
Client ID	MD21-10-10160		
Instr File Name	73		
Instr Detector	P-44-S-14		
Instr keV			
Version/Date	1.0 -- 11/18/2005		

2.5.10



# **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 <b>ARS1-B10-00640</b>											
Method		ARS-054		Analysis		LSC-A-001		Matrix		SI	
Description											
Type		Blind Iso1		Blind Iso2		Blind Iso3					
ARS1-B10-00640-01		LCS		B-09070							
ARS1-B10-00640-02		LCS		B-09071							
ARS1-B10-00640-03		MBL									
ARS1-B10-00640-04		TRG						SDG		FR	
ARS1-B10-00640-05		TRG						ARS1-10-00166		001	
ARS1-B10-00640-06		TRG						ARS1-10-00166		002	
ARS1-B10-00640-07		TRG						ARS1-10-00166		003	
ARS1-B10-00640-08		TRG						ARS1-10-00166		004	
ARS1-B10-00640-09		TRG						ARS1-10-00166		005	
ARS1-B10-00640-10		TRG						ARS1-10-00166		006	
ARS1-B10-00640-11		TRG						ARS1-10-00166		007	
ARS1-B10-00640-12		TRG						ARS1-10-00166		008	
ARS1-B10-00640-13		TRG						ARS1-10-00166		009	
								ARS1-10-00166		010	
										Client ID	
										MD21-10-10151	
										STD	
										02/03/10	
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46296 10-00166-001-12 WRAD  
46297 10-00166-002-12 WRAD  
46298 10-00166-003-12 WRAD  
46299 10-00166-004-12 WRAD

46300 10-00166-005-12 WRAD

46301 10-00166-006-12 WRAD

46302 10-00166-007-12 WRAD

46303 10-00166-008-12 WRAD

46304 10-00166-009-12 WRAD  
46305 10-00166-010-12 WRAD

Batch Result Verification Report

BatchSampleID	SDG	Fraction	ClientID	Run	Isotope	ACT	TPU	TPU1s	TPU2s	MDA	DL	CU	CU1s	CU2s	ActivityReportUnits
ARS1-B10-00640-01				1	H-3	1251.60162	102.1207458	102.1207458	200.1566617	221.2775106	108.7120112	78.40356848	78.40356848	151.6709942	PC
ARS1-B10-00640-02				1	H-3	1166.72353	192.7941288	98.36435145	192.7941288	219.7532418	107.9631491	151.2510098	77.16888254	151.2510098	PC
ARS1-B10-00640-03				1	H-3	-109.2666271	126.7669824	64.67703185	126.7669824	219.6843407	107.9292985	126.2715699	64.42427035	126.2715699	PC
ARS1-B10-00640-04	ARS1-10-00166 001		MD21-10-10151	1	H-3	26917.29549	1423.09901	1423.09901	2789.27406	231.9426578	113.9517194	211.9396617	211.9396617	415.401737	PC
ARS1-B10-00640-05	ARS1-10-00166 002		MD21-10-10152	1	H-3	10901.30323	587.8059962	587.8059962	1152.099753	228.9167506	112.4651135	143.911212	143.911212	282.0659756	PC
ARS1-B10-00640-06	ARS1-10-00166 003		MD21-10-10153	1	H-3	9430.914021	513.7309745	513.7309745	1006.91271	250.948205	123.2890048	144.3108632	144.3108632	282.8492919	PC
ARS1-B10-00640-07	ARS1-10-00166 004		MD21-10-10154	1	H-3	18809.32058	1000.271429	1000.271429	1960.532001	236.4924388	116.1869933	183.2310807	183.2310807	359.1329182	PC
ARS1-B10-00640-08	ARS1-10-00166 005		MD21-10-10155	1	H-3	59541.63292	3127.740422	3127.740422	6130.371227	230.9251362	113.4518186	305.1446	305.1446	598.0834161	PC
ARS1-B10-00640-09	ARS1-10-00166 006		MD21-10-10156	1	H-3	5571.364958	316.6810921	316.6810921	620.6949405	261.3462618	128.3974935	124.2942381	124.2942381	243.6167067	PC
ARS1-B10-00640-10	ARS1-10-00166 007		MD21-10-10157	1	H-3	6853.974817	378.499808	378.499808	741.8596237	230.2045914	113.0978202	121.9266544	121.9266544	238.9762427	PC
ARS1-B10-00640-11	ARS1-10-00166 008		MD21-10-10158	1	H-3	-13.55215232	69.84065734	69.84065734	136.8876884	234.3248186	115.1220575	69.83706353	69.83706353	136.8806445	PC
ARS1-B10-00640-12	ARS1-10-00166 009		MD21-10-10159	1	H-3	93.81312006	70.38009275	70.38009275	137.9449818	231.7264216	113.8454842	70.2089959	70.2089959	137.609632	PC
ARS1-B10-00640-13	ARS1-10-00166 010		MD21-10-10160	1	H-3	19153.50608	1017.96345	1017.96345	1995.208362	233.2879508	114.612852	183.2157275	183.2157275	359.102826	PC

Batch Result Verification Report

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BatchSampleID	SDG	Fraction	AllquotReportUnits	ChemRecovery	TracerRecovery	SampleCounts	SampleCountMins	BKG_Counts	BKG_CountMins	EFF	ALIQ	SampleCalDate	MidPointCountDate	BP_DL
ARS1-B10-00640-01			L			0.0605	180	0.033333333	180	0.3503	5.024	2/5/2010	2/3/2010	
ARS1-B10-00640-02			L			0.056833333	180	0.033333333	180	0.3528	5.023	2/5/2010	2/3/2010	
ARS1-B10-00640-03			L			0.030944444	180	0.033333333	180	0.3527	5.026	2/5/2010	2/4/2010	
ARS1-B10-00640-04	ARS1-10-00166 001		L			0.590722222	180	0.033333333	180	0.3348	5.017	2/1/2010	2/4/2010	
ARS1-B10-00640-05	ARS1-10-00166 002		L			0.262055556	180	0.033333333	180	0.3393	5.016	2/1/2010	2/4/2010	
ARS1-B10-00640-06	ARS1-10-00166 003		L			0.213833333	180	0.033333333	180	0.3278	5.044	2/1/2010	2/4/2010	
ARS1-B10-00640-07	ARS1-10-00166 004		L			0.415333333	180	0.033333333	180	0.3274	5.032	2/1/2010	2/4/2010	
ARS1-B10-00640-08	ARS1-10-00166 005		L			1.271722222	180	0.033333333	180	0.3353	5.032	2/1/2010	2/4/2010	
ARS1-B10-00640-09	ARS1-10-00166 006		L			0.135722222	180	0.033333333	180	0.2961	5.035	2/1/2010	2/4/2010	
ARS1-B10-00640-10	ARS1-10-00166 007		L			0.176333333	180	0.033333333	180	0.3371	5.021	2/1/2010	2/5/2010	
ARS1-B10-00640-11	ARS1-10-00166 008		L			0.030555556	180	0.033333333	180	0.3298	5.042	2/1/2010	2/5/2010	
ARS1-B10-00640-12	ARS1-10-00166 009		L			0.035277778	180	0.033333333	180	0.3345	5.027	2/1/2010	2/5/2010	
ARS1-B10-00640-13	ARS1-10-00166 010		L			0.427666667	180	0.033333333	180	0.3324	5.025	2/1/2010	2/5/2010	

Batch Result Verification Report

ABatchSampleID	SDG	Fraction	BP_MDA	Sb_Val	UCF	CF	GrossCountRate	BKGCountRate	NetCountRate	PlatingRecovery	InstFileNm	DetectorID	InstrumentKey	NuclideAbd	TracerMassACT
ARS1-B10-00640-01					2.22	1	10.89	6	4.89		73	P-44-S-2			
ARS1-B10-00640-02					2.22	1.96	10.59	6	4.59		73	P-44-S-3			
ARS1-B10-00640-03					2.22	1.96	5.57	6	-0.43		73	P-44-S-4			
ARS1-B10-00640-04					2.22	1	106.33	6	100.33		73	P-44-S-5			
ARS1-B10-00640-05	ARS1-10-00166 001				2.22	1	47.17	6	41.17		73	P-44-S-6			
ARS1-B10-00640-06	ARS1-10-00166 002				2.22	1	38.49	6	32.49		73	P-44-S-7			
ARS1-B10-00640-07	ARS1-10-00166 003				2.22	1	74.76	6	68.76		73	P-44-S-8			
ARS1-B10-00640-08	ARS1-10-00166 004				2.22	1	228.91	6	222.91		73	P-44-S-9			
ARS1-B10-00640-09	ARS1-10-00166 005				2.22	1	24.43	6	18.43		73	P-44-S-10			
ARS1-B10-00640-10	ARS1-10-00166 006				2.22	1	31.74	6	25.74		73	P-44-S-11			
ARS1-B10-00640-11	ARS1-10-00166 007				2.22	1	5.95	6	-0.05		73	P-44-S-12			
ARS1-B10-00640-12	ARS1-10-00166 008				2.22	1	6.35	6	0.35		73	P-44-S-13			
ARS1-B10-00640-13	ARS1-10-00166 009				2.22	1	76.98	6	70.98		73	P-44-S-14			
ARS1-B10-00640-14	ARS1-10-00166 010				2.22	1		6			73				



Batch Result Verification Report

ABatchSampleID	SDG	Fraction	TracerKnownACT	TracerIsotope	TracerRefDate	TracerRefACT	TracerKnown	HalfLife1	HalfLife2	HalfLife3	TPUF_1	TPUF_2	TPUF_3	TPUF_4	TPUF_5	TPUF_6	DeltaT1	DeltaT2
ARS1-B10-00640-01								4499.8			0.04133	0.02	0	0.025	0	0	0	0
ARS1-B10-00640-02								4499.8			0.04133	0.02	0	0.025	0	0	0	0
ARS1-B10-00640-03								4499.8			0.04133	0.02	0	0.025	0	0	0	0
ARS1-B10-00640-04								4499.8			0.04133	0.02	0	0.025	0	0	2.7375	
ARS1-B10-00640-05	ARS1-10-00166	001						4499.8			0.04133	0.02	0	0.025	0	0	2.86875	
ARS1-B10-00640-06	ARS1-10-00166	002						4499.8			0.04133	0.02	0	0.025	0	0	3.000694444	
ARS1-B10-00640-07	ARS1-10-00166	003						4499.8			0.04133	0.02	0	0.025	0	0	3.131944444	
ARS1-B10-00640-08	ARS1-10-00166	004						4499.8			0.04133	0.02	0	0.025	0	0	3.263888889	
ARS1-B10-00640-09	ARS1-10-00166	005						4499.8			0.04133	0.02	0	0.025	0	0	3.395138889	
ARS1-B10-00640-10	ARS1-10-00166	006						4499.8			0.04133	0.02	0	0.025	0	0	3.526388889	
ARS1-B10-00640-11	ARS1-10-00166	007						4499.8			0.04133	0.02	0	0.025	0	0	3.658333333	
ARS1-B10-00640-12	ARS1-10-00166	008						4499.8			0.04133	0.02	0	0.025	0	0	3.789583333	
ARS1-B10-00640-13	ARS1-10-00166	009						4499.8			0.04133	0.02	0	0.025	0	0	3.921527778	
ARS1-B10-00640-14	ARS1-10-00166	010						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	IF1	IF2	SysErr	K_Val	K_MDA	AnalysisCode	UserID	ModDate
ARS1-B10-00640-01							1					0.052279718	0.003906994	0.703258917		BSTEFFENS	2/5/2010
ARS1-B10-00640-02							1					0.052279718	0.003934094	0.708136914		BSTEFFENS	2/5/2010
ARS1-B10-00640-03							1					0.052279718	0.003935328	0.708359012		BSTEFFENS	2/5/2010
ARS1-B10-00640-04	ARS1-10-00166 001						0.999578406					0.052279718	0.003727343	0.670921787	LSC-A-001	BSTEFFENS	2/5/2010
ARS1-B10-00640-05	ARS1-10-00166 002						0.999558197					0.052279718	0.003776613	0.679790282	LSC-A-001	BSTEFFENS	2/5/2010
ARS1-B10-00640-06	ARS1-10-00166 003						0.999537881					0.052279718	0.003445053	0.620109566	LSC-A-001	BSTEFFENS	2/5/2010
ARS1-B10-00640-07	ARS1-10-00166 004						0.999517673					0.052279718	0.003655634	0.658014198	LSC-A-001	BSTEFFENS	2/5/2010
ARS1-B10-00640-08	ARS1-10-00166 005						0.999497356					0.052279718	0.003743767	0.673878059	LSC-A-001	BSTEFFENS	2/5/2010
ARS1-B10-00640-09	ARS1-10-00166 006						0.999477151					0.052279718	0.003307986	0.595437568	LSC-A-001	BSTEFFENS	2/5/2010
ARS1-B10-00640-10	ARS1-10-00166 007						0.999456944					0.052279718	0.003755485	0.67598731	LSC-A-001	BSTEFFENS	2/5/2010
ARS1-B10-00640-11	ARS1-10-00166 008						0.999436631					0.052279718	0.003689451	0.664101154	LSC-A-001	BSTEFFENS	2/5/2010
ARS1-B10-00640-12	ARS1-10-00166 009						0.999416425					0.052279718	0.003730821	0.67154786	LSC-A-001	BSTEFFENS	2/5/2010
ARS1-B10-00640-13	ARS1-10-00166 010						0.999396112					0.052279718	0.003705849	0.667052807	LSC-A-001	BSTEFFENS	2/5/2010

Assay Definition-

Assay Description:  
 H3 Normal Lvl

Assay Type: DPM (Single)

Report Name: Report1

Output Data Path: C:\Packard\Tricarb\Results\ARS\H-3 Normal Lvl\20100203\_1709

Raw Results Path: C:\Packard\Tricarb\Results\ARS\H-3 Normal Lvl\20100203\_1709\20100203\_1709.results

RTF File Name: C:\Packard\Tricarb\Results\ARS\H-3 Normal Lvl\20100203\_1709\H3 Results.rtf

Comma-Delimited File Name: C:\Packard\Tricarb\Results\ARS\H-3 Normal Lvl\20100203\_1709\H3 Results.csv

Assay File Name: C:\Packard\Tricarb\Assays\H-3 Normal Lvl.lsa

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	LL	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

Delay Before Burst (nsec): 75

Luminescence Correction: Off

Heterogeneity Monitor: Off

Half Life-

Half Life Correction: Off

Regions Half Life

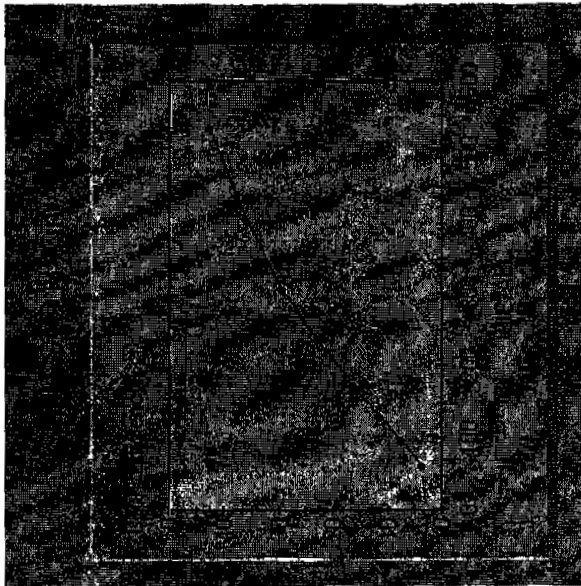
Units

Reference Date

Reference Time

A  
B  
C

Cycle 1 Results  
Quench Curve Block Data



Date Acquired: 05/05/2009  
Date Modified:  
UG STD H-3 in A

tsIE/AEC	Count	Efficiency (%)
533.53	42.76	
406.26	35.99	
306.93	29.10	
237.55	22.83	
174.55	16.30	
131.14	11.32	
97.13	7.31	
62.75	3.54	

P#	S#	SMPL ID	CPMA	DPM1	tSIE	Eff Nucl	In A	Count Time	DATE	TIME	MESSAGES
44	1	BACKGROUND	6.00	16.99	396.97	35.35		180.00	2/3/2010	5:14:21 PM	
44	2	B10-00640-01	10.89	31.09	392.35	35.03		180.00	2/3/2010	8:21:12 PM	
44	3	B10-00640-02	10.59	30.01	395.92	35.28		180.00	2/3/2010	11:28:09 PM	
44	4	B10-00640-03	5.57	15.80	395.85	35.27		180.00	2/4/2010	2:35:01 AM	
44	5	B10-00640-04	106.33	317.59	370.06	33.48		180.00	2/4/2010	5:41:56 AM	
44	6	B10-00640-05	47.17	139.01	376.52	33.93		180.00	2/4/2010	8:51:21 AM	
44	7	B10-00640-06	38.49	125.05	331.23	30.78		180.00	2/4/2010	12:00:46 PM	
44	8	B10-00640-07	74.76	228.33	359.47	32.74		180.00	2/4/2010	3:10:11 PM	
44	9	B10-00640-08	228.91	682.77	370.74	33.53		180.00	2/4/2010	6:19:37 PM	
44	10	B10-00640-09	24.43	82.50	314.27	29.61		180.00	2/4/2010	9:28:59 PM	
44	11	B10-00640-10	31.74	94.14	373.44	33.71		180.00	2/5/2010	12:38:22 AM	
44	12	B10-00640-11	5.95	18.05	362.85	32.98		180.00	2/5/2010	3:47:44 AM	
44	13	B10-00640-12	6.35	18.97	369.59	33.45		180.00	2/5/2010	6:57:12 AM	
44	14	B10-00640-13	76.98	231.61	366.56	33.24		180.00	2/5/2010	10:06:34 AM	

ID_31001_054	ABatch	ABatchSampleID	ClientID	Allquot1	AliquotUnits1	IC_ID1	Aliquot2	AliquotUnits2	IC_ID2	UserID	ModDate
4513	ARS1-B10-00640	ARS1-B10-00640-01					5.024 g			BSTEFFENS	02/04/2010 09:40:08
4514	ARS1-B10-00640	ARS1-B10-00640-02					5.023 g			BSTEFFENS	02/04/2010 09:40:08
4515	ARS1-B10-00640	ARS1-B10-00640-03					5.026 g			BSTEFFENS	02/04/2010 09:40:08
4516	ARS1-B10-00640	ARS1-B10-00640-04	MD21-10-10151				5.017 g		46296	BSTEFFENS	02/04/2010 09:40:08
4517	ARS1-B10-00640	ARS1-B10-00640-05	MD21-10-10152				5.016 g		46297	BSTEFFENS	02/04/2010 09:40:08
4518	ARS1-B10-00640	ARS1-B10-00640-06	MD21-10-10153				5.044 g		46298	BSTEFFENS	02/04/2010 09:40:08
4519	ARS1-B10-00640	ARS1-B10-00640-07	MD21-10-10154				5.032 g		46299	BSTEFFENS	02/04/2010 09:40:08
4520	ARS1-B10-00640	ARS1-B10-00640-08	MD21-10-10155				5.032 g		46300	BSTEFFENS	02/04/2010 09:40:08
4521	ARS1-B10-00640	ARS1-B10-00640-09	MD21-10-10156				5.035 g		46301	BSTEFFENS	02/04/2010 09:40:08
4522	ARS1-B10-00640	ARS1-B10-00640-10	MD21-10-10157				5.021 g		46302	BSTEFFENS	02/04/2010 09:40:08
4523	ARS1-B10-00640	ARS1-B10-00640-11	MD21-10-10158				5.042 g		46303	BSTEFFENS	02/04/2010 09:40:08
4524	ARS1-B10-00640	ARS1-B10-00640-12	MD21-10-10159				5.027 g		46304	BSTEFFENS	02/04/2010 09:40:08
4525	ARS1-B10-00640	ARS1-B10-00640-13	MD21-10-10160				5.025 g		46305	BSTEFFENS	02/04/2010 09:40:08

## Beta Liquid Scintillation Counter Log Book

Date	Time	ARS Sample I.D. Number	Batch Number	Liquid Scintillation File Number	Technician Initials
2-2-10	0856	B10-00492-05	B10-00492	1054	J
↓	↓	B10-00492-06	↓	↓	J
↓	↓	B10-00492-07	↓	↓	J
↓	↓	B10-00492-08	↓	↓	J
↓	↓	B10-00492-09	↓	↓	J
↓	↓	B10-00492-10	↓	↓	J
2-3-10	15:36	SNC 117	Q A	Q A	J
↓	↓	Background	B10-00640	1709	J
↓	↓	B10-00640-01	↓	↓	J
↓	↓	B10-00640-02	↓	↓	J
↓	↓	B10-00640-03	↓	↓	J
↓	↓	B10-00640-04	↓	↓	J
↓	↓	B10-00640-05	↓	↓	J
↓	↓	B10-00640-06	↓	↓	J
↓	↓	B10-00640-07	↓	↓	J
↓	↓	B10-00640-08	↓	↓	J
↓	↓	B10-00640-09	↓	↓	J
↓	↓	B10-00640-10	↓	↓	J
↓	↓	B10-00640-11	↓	↓	J
↓	↓	B10-00640-12	↓	↓	J

## Beta Liquid Scintillation Counter Log Book

Date	Time	ARS Sample I.D. Number	Batch Number	Liquid Scintillation File Number	Technician Initials
2-3-10	1536	B10-00640-13	B10-00640	1709	JF
2-4-10	1227	SNC 117	QA	QA	JF
↓	↓	Background	B10-00512	File number not yet assigned for 2-5-10	JF
↓	↓	B10-00512-01	↓		JF
↓	↓	B10-00512-02	↓	↓	JF
↓	↓	B10-00512-03	↓	↓	JF
↓	↓	B10-00512-04	↓	↓	JF
↓	↓	B10-00512-05	↓	↓	JF
↓	↓	B10-00512-06	↓	↓	JF
↓	↓	B10-00512-07	↓	↓	JF
↓	↓	B10-00512-08	↓	↓	JF
↓	↓	B10-00512-09	↓	↓	JF
↓	↓	B10-00512-10	↓	↓	JF
↓	↓	B10-00512-11	↓	↓	JF
<div style="position: relative; height: 100px;"> <span style="position: absolute; top: 0; left: 0; transform: rotate(-45deg); font-size: 2em;">JB</span> <span style="position: absolute; top: 0; left: 0; transform: rotate(-45deg); font-size: 1.5em;">2-8-10</span> </div>					



LCS Report  
Analytical Batch: ARS1-B10-00640

Radio	Batch	Alt Batch/Spec ID	Elmer Group	Std ID	Isotope	Expected Calibration	Expected Value	Emp. Corr.	Grav. Corr.	Factor	Usr. Corr.	Post Date	Expected Value CT	P. d. Param. Count Rate	Isotope Value
B-09070	ARS1-B10-00640	ARS1-B10-00640-01	B-H3	S-0217	H-3	2	1.222747136	0	0	1	1	1/28/2010	1.221617549	2/3/2010	1.221617549
B-09071	ARS1-B10-00640	ARS1-B10-00640-02	B-H3	S-0217	H-3	2	1.222747136	0	0	1	1	1/28/2010	1.221617549	2/3/2010	1.221617549



# **American Radiation Services Analytical Reports**

**for**

**Los Alamos National Laboratory**

**Tritium**

**by**

**Low Level Liquid  
Scintillation Counting**

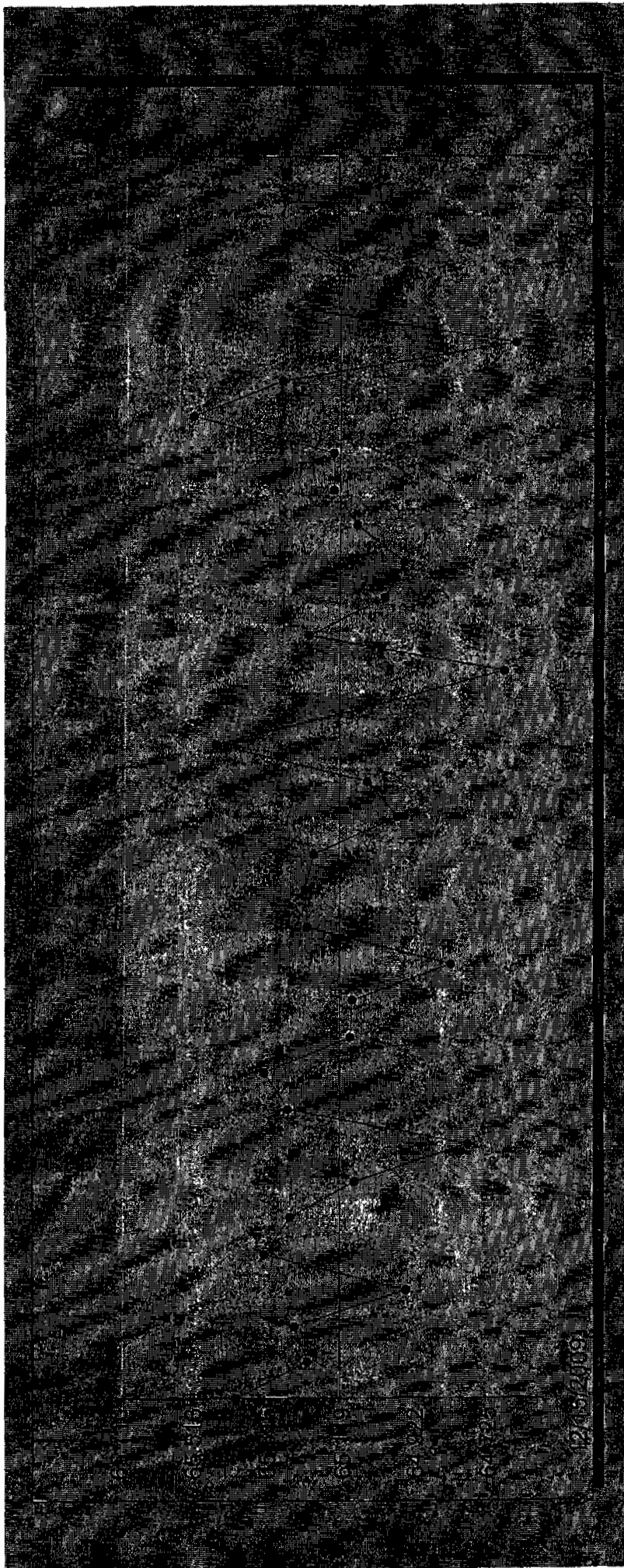
**Control Charts**

## 3H Efficiency

Total # pts : 1369  
Valid # pts : 35  
Mean : 65.12  
SD : 0.20

Date	Value	Valid Pt
Dec 15, 2009	65.40	X
Dec 16, 2009	65.21	X
Dec 21, 2009	65.24	X
Dec 25, 2009	64.94	X
Dec 26, 2009	65.32	X
Dec 27, 2009	65.25	X
Dec 27, 2009	65.08	X
Dec 27, 2009	64.77	X
Dec 27, 2009	65.26	X
Dec 27, 2009	65.32	X
Dec 27, 2009	65.09	X
Dec 27, 2009	65.09	X
Dec 27, 2009	64.82	X
Dec 27, 2009	65.20	X
Dec 27, 2009	65.21	X
Dec 27, 2009	65.19	X
Dec 27, 2009	64.96	X
Dec 27, 2009	65.04	X
Dec 27, 2009	65.44	X
Dec 28, 2009	65.06	X
Dec 28, 2009	64.67	X
Dec 28, 2009	65.20	X
Dec 28, 2009	64.99	X
Dec 28, 2009	64.94	X
Dec 28, 2009	65.07	X
Dec 28, 2009	65.13	X
Jan 02, 2010	65.14	X
Jan 04, 2010	65.51	X
Jan 08, 2010	65.27	X
Jan 19, 2010	64.64	X
Jan 22, 2010	65.25	X
Jan 25, 2010	65.10	X
Jan 28, 2010	65.24	X
Feb 02, 2010	65.13	X
Feb 03, 2010	65.04	X

3H Efficiency  
Total # pts : 1369  
Valid # pts : 35  
Mean : 65.12  
SD : 0.20

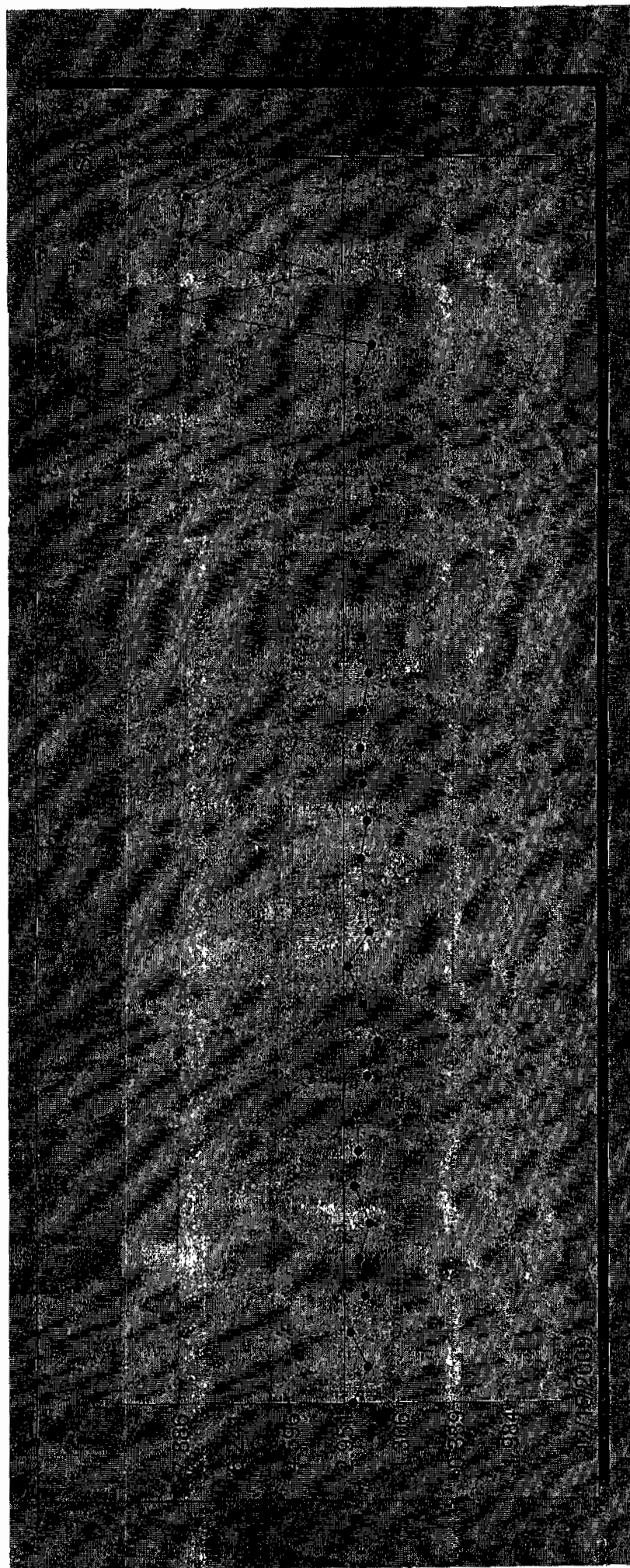


## 3H Background

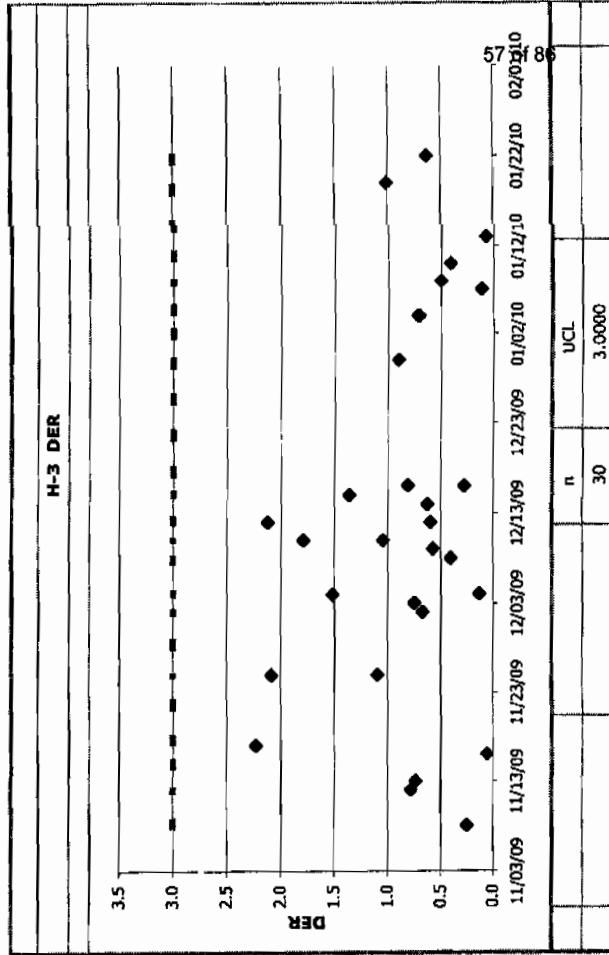
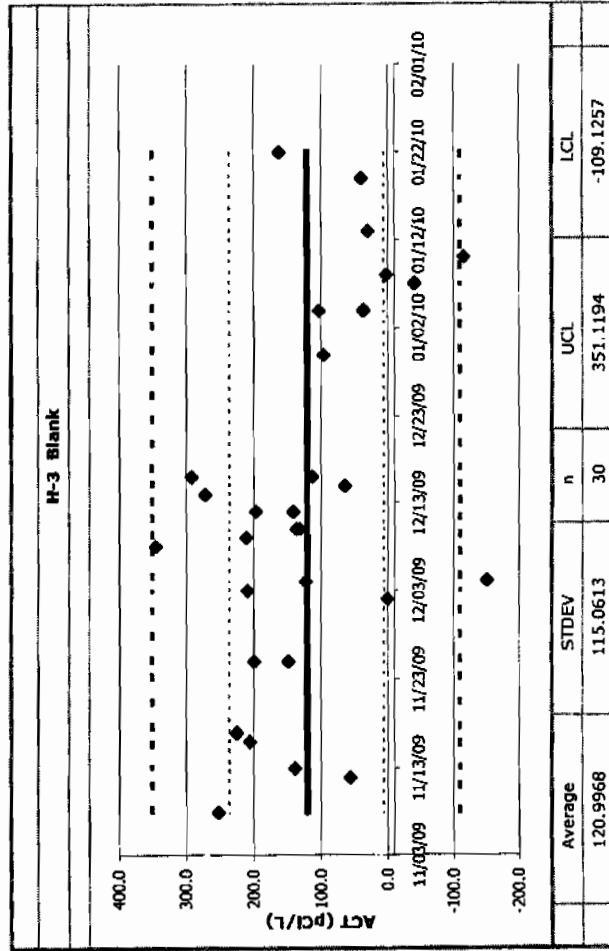
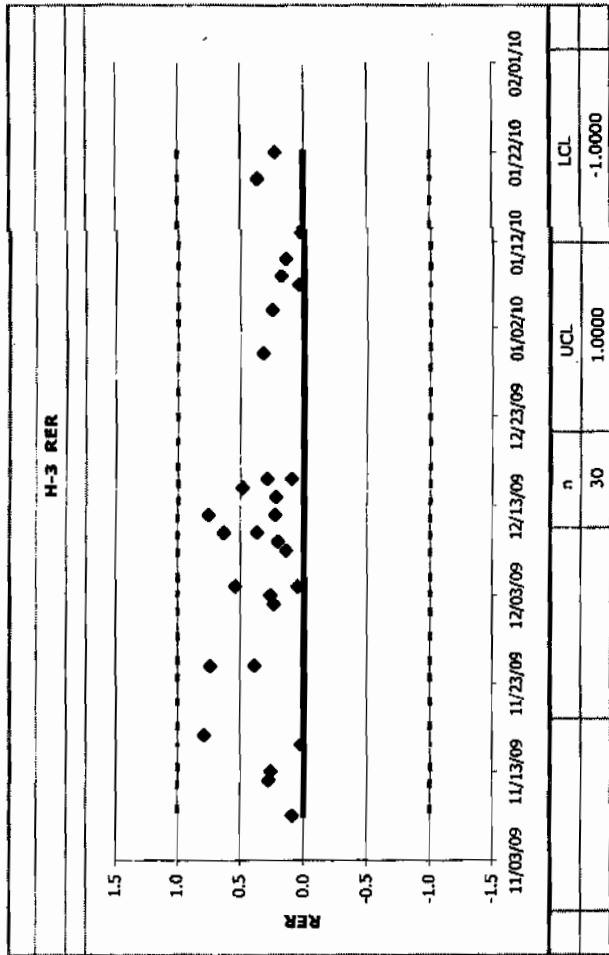
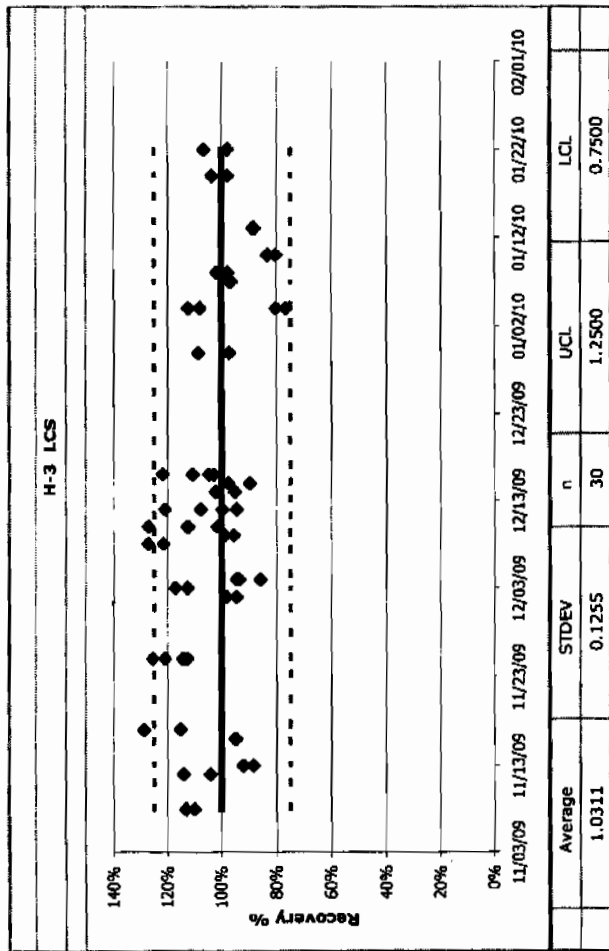
Total # Pts : 1334  
Valid # Pts : 35  
Mean : 2.95  
SD : 1.64

Date	Value	Valid Pt
Dec 15, 2009	2.66	X
Dec 16, 2009	2.20	X
Dec 21, 2009	2.76	X
Dec 25, 2009	2.29	X
Dec 26, 2009	2.48	X
Dec 27, 2009	2.17	X
Dec 27, 2009	2.58	X
Dec 27, 2009	2.48	X
Dec 27, 2009	2.54	X
Dec 27, 2009	2.24	X
Dec 27, 2009	1.90	X
Dec 27, 2009	2.37	X
Dec 27, 2009	2.79	X
Dec 27, 2009	2.14	X
Dec 27, 2009	2.27	X
Dec 27, 2009	2.40	X
Dec 27, 2009	2.20	X
Dec 27, 2009	2.31	X
Dec 27, 2009	2.42	X
Dec 28, 2009	2.33	X
Dec 28, 2009	2.12	X
Dec 28, 2009	2.36	X
Dec 28, 2009	2.42	X
Dec 28, 2009	2.58	X
Dec 28, 2009	2.00	X
Dec 28, 2009	2.01	X
Jan 02, 2010	2.39	X
Jan 04, 2010	2.48	X
Jan 08, 2010	2.52	X
Jan 19, 2010	2.08	X
Jan 22, 2010	8.28	X
Jan 25, 2010	3.59	X
Jan 28, 2010	7.73	X
Feb 02, 2010	7.52	X
Feb 03, 2010	5.64	X

3H Background  
Total # pts : 1334  
Valid # pts : 35  
Mean : 2.95  
SD : 1.64



# QC Chart





# **American Radiation Services Analytical Reports**

**for**

**Los Alamos National Laboratory**

**Low Level Liquid  
Scintillation Counting**

**Calibration  
Information**



STD ID: S-0209

ARS INTERNATIONAL		Add/Edit Secondary Stds	Parent Standard Data
Planning		Parent Solution Reference #	
Planning Comments	Create an intermediate level standard for use in creating LCS stock solutions and MSe.	Parent Solution #	
Target dpm/g (on dil. date)	3443	Parent Principal Radionuclide	Half Life (Days)
Target Final Volume ml	200	Parent Reference Date	05/04/2009 14:28
Approx mass g of Parent Sol'n	1.3327	Parent Certified Act	Cert Act/Vol Units
Approx vol ml of Parent Sol'n	1.3327	Parent Cert Act Uncert 1 Sigma	None
Expected Addition for Analysis g	1	Parent Sp. Gravity G/ml	
Standards Preparation / Dilution		Parent Supplier	
Secondary Solution #		Parent Date Rec'd	05/04/09
Dilution Date (New Ref Date)	05/04/2009 14:28	Parent Received By	
Ampoule, Empty (g)		Parent Cert Exp Date	75
Ampoule /Solution Gross (g)		Parent Matrix	H2O
Net Wt Removed (g)		Certified dpm/g At Ref Date	407764.9496
Transfer Container, empty (g)	13.126	Certified dpm/g on 05/04/2009 14:28	407764.9496
Container Plus Solution (g)	14.583		
Net Wt Transferred (g)		Parent Comments	S-0209 Intermediate dilution - information shared from dilution records - 5/19/2009 RTS
DPM Xferred on 05/04/2009 14:28	4077		
Diluent/matrix	DI H2O	Parent Tech	Unknown
Diluent Density Cont, empty (g)		Is_Primary	FALSE
Test Mass of 5 ml of Diluent (g)		Is_LCS	FALSE
Diluent Density Test - (g/mL)		Is_Tracer	FALSE
Dilution Empty Container Mass (g)	68.227	Is_Calib	FALSE
Dilution Full Cont g (if measured)	270.479		
Dilution Final Volume ml (if measured)	200		
Final Dilution Density (g/mL)	1.001		
Final Dilution Measured Mass g	200.227		
Comments	Intermediate level H3 standard. Dilution performed as stated above by B Steffens. -BJS 5/4/09		
Final Dilution dpm/g	4077.275094		
Final Dil New Ref Date/Time	05/04/2009		

Printed: 5/6/2009 8:19 AM



## QUALITY CONTROL PROGRAM

 AMERICAN RADIATION SERVICES  
 RADIOACTIVE REFERENCE SOLUTIONS  
 ANNUAL ACTIVITY VERIFICATION

 VERIFICATION DATE 5/5/2009 23:42 date counted  
 STANDARD REFERENCE # S-0209

Principal Radionuclide

H-3

ENTER →

Half Life, Years

1.232E+01

OR →

Half Life, Days

4.4998E+03  
4.4998E+03

Radionuclide

H-3Dilution Reference Date 5/4/2009 14:28Dilution Activity 1616.83 pCi per gram ==> dpm/g3588.91Verif. Date Decay Corrected 1616.28 pCi per gram ==> dpm/g3588.15

## 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-0209-V1	6740.26	1	LSC	0.3632	5.88	5.042	3677.47	1656.52
S-0209-V2	8726.63	1	LSC	0.3611	5.88	5.041	3692.10	1663.11
S-0209-V3	6748.40	1	LSC	0.3635	5.88	5.043	3678.15	1656.82
S-0209-V4	6748.92	1	LSC	0.3651	5.88	5.038	3665.94	1651.33
S-0209-V5	6771.51	1	LSC	0.3603	5.88	5.054	3715.43	1673.62

10% Max

PASS

Standard Deviation percent of known concentration

5% Max

PASS

Average

3685.821660.28

Two Sigma Uncertainty

37.1916.75

Target Activity

3588.151616.28

% Diff

2.72%2.72%Verification Expiration Date: May 5, 2010

Prepared &amp; Counted By

[Signature]Date: 5/5/2009 23:42

Verified &amp; Approved By

[Signature]Date: 5/6/09 15:51

QC Approval

[Signature]Date: 5/6/09

STD ID: S-0217

ARS INTERNATIONAL		Add/Edit Secondary Stds	Parent Standard Data	
Planning		Parent Solution Reference #		
Planning Comments	H-3 Normal Level LCS	Parent Solution #		
Target dpm/g (on dil. date)	2.8	Parent Principal Radionuclide:	Half Life (Days)	
Target Final volume mL	2000	Parent Reference Date		
Appx mass g of Parent Sol'n	1.579	Parent Certified Act	Certi Act/Vol Units	
Appx vol mL of Parent Sol'n		Parent Cert Act Uncert 1 Sigma		
Expected Addition for Analysis g	2	Parent Sp. Gravity G/Ml		
Standards Preparation / Dilution		Parent Supplier		
Secondary Solution #		Parent Date Recvd		
Dilution Date (New Ref Date)	07/19/2009 12:40	Parent Received By		
Ampoule, Empty (g)		Parent Cert Exp Date		
Ampoule / Solution Gross (g)		Parent Matrix		
Net Wt Removed (g)		Certified dpm/g At Ref Date		
Transfer Container, empty (g)	0	Certified dpm/g on 07/19/2009 12:40		
Container Plus Solution (g)	1.579	Parent Comments		
Net Wt Transferred (g)				
DPM Xferred on 07/19/2009 12:40	556.415322			
Diluent/matrix	H2O	Parent Tech		
Diluent Density Cont, empty (g)		Is_Primary		
Test Mass of 5 ml of Diluent (g)		Is_LCS		
Diluent Density Test - (g/mL)		Is_Tracer		
Dilution Empty Container Mass (g)	1	Is_Calib		
Dilution Full Cont g (If measured)	2003			
Dilution Final Volume mL (If measured)				
Final Dilution Density (g/mL)				
Final Dilution Measured Mass g				
Comments	H-3 Normal LCS: New Mix to replace expended S-0204			
Final Dilution dpm/g				
Final Dil New Ref Date/Time	07/19/2009 12:40			

Printed: 7/30/2009 2:12 PM



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

VERIFICATION DATE 7/30/2009 10:56 date counted  
 STANDARD REFERENCE # S-1234

Principal Radionuclide

H-3

ENTER →

Half Life, Years

1.232E+01

OR →

Half Life, Days

4.4998E+03  
4.4998E+03Radionuclide H-3Dilution Reference Date 7/19/2009 12:49Dilution Activity 1.26 pCi per gram ==> dpm/g 2.80Verif. Date Decay Corrected 1.26 pCi per gram ==> dpm/g 2.79**Minimum of 3 Required**

Trail ID	Sample Count	Count Time (min)	Detector	Efficiency	Bkg (cpm)	Net Weight	Decay Corrected Activity Result (dpm/g)	Decay Corrected Activity Result (pCi/g)
S-0217-V1(5)	10.72	1	LSC	0.3631	5.47	5.031	2.87	1.29
S-0217-V2(5)	10.62	1	LSC	0.3621	5.47	5.011	2.84	1.28
S-0217-V3(5)	10.44	1	LSC	0.3636	5.47	5.000	2.73	1.23

10% Max

PASS

Standard Deviation percent of known concentration

5% Max

PASS

Target Activity

% Diff

Average	2.82	1.27
Two Sigma Uncertainty	0.14	0.06
	2.61%	2.61%
	2.79	1.28
	0.86%	0.86%

Verification Expiration Date: July 30, 2010

Prepared &amp; Counted By

Halley AnnDate: 7/30/2009 10:56

Verified &amp; Approved By

Doreen E. MulliganDate: 8-6-09

QC Approval

ImaginedDate: 7-30-09



# **American Radiation Services Analytical Reports**

**for**

**Los Alamos National Laboratory**

# **Percent Moisture**



2609 North River Road, Port Allen, Louisiana 70767

64 of 86

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

ARS Sample Delivery Group: ARS1-10-00166  
Client Sample ID: MD21-10-10151  
Sample Collection Date: 02/01/10  
Sample Matrix: Silica

Request or PO Number: 10-1546  
ARS Sample ID: ARS1-10-00166-001  
Date Received: 02/03/10  
Report Date: 02/05/10

Analysis Description	Analysis Results	Analysis Error +/- 2 s	MDC	DLC	Qual	Analysis Units	Analysis Test Method	Analysis Date/Time	Analysis Technician	Tracer/Chem Recovery
Percent Moisture	15.152	N/A	N/A	N/A	N/A	%	Percent Moisture	02/04/10 00:00	BJS	N/A

**NOTES: Project Cost Code - MR8R032TNB00**

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

65 of 86

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

ARS Sample Delivery Group: ARS1-10-00166  
Client Sample ID: MD21-10-10152  
Sample Collection Date: 02/01/10  
Sample Matrix: Silica

Request or PO Number: 10-1546  
ARS Sample ID: ARS1-10-00166-002  
Date Received: 02/03/10  
Report Date: 02/05/10

Analysis Description	Analysis Results	Analysis Error +/- 2 s	MDC	DLC	Qual	Analysis Units	Analysis Test Method	Analysis Date/Time	Analysis Technician	Tracer/Chem Recovery
Percent Moisture	16.191	N/A	N/A	N/A	N/A	%	Percent Moisture	02/04/10 00:00	BJS	N/A
NOTES: Project Cost Code - MR8R032TNB00										

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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2609 North River Road, Port Allen, Louisiana 70767

66 of 86

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

ARS Sample Delivery Group: ARS1-10-00166

Client Sample ID: MD21-10-10153

Sample Collection Date: 02/01/10

Sample Matrix: Silica

Request or PO Number: 10-1546

ARS Sample ID: ARS1-10-00166-003

Date Received: 02/03/10

Report Date: 02/05/10

Analysis Description	Analysis Results	Analysis Error +/- 2 s	MDC	DLC	Qual	Analysis Units	Analysis Test Method	Analysis Date/Time	Analysis Technician	Tracer/Chem Recovery
Percent Moisture	10.318	N/A	N/A	N/A	N/A	%	Percent Moisture	02/04/10 00:00	BJS	N/A

NOTES: Project Cost Code - MR8R032TNB00

*BTM*

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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2609 North River Road, Port Allen, Louisiana 70767

67 of 86

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

ARS Sample Delivery Group: ARS1-10-00166  
Client Sample ID: MD21-10-10154  
Sample Collection Date: 02/01/10  
Sample Matrix: Silica

Request or PO Number: 10-1546  
ARS Sample ID: ARS1-10-00166-004  
Date Received: 02/03/10  
Report Date: 02/05/10

Analysis Description	Analysis Results	Analysis Error +/- 2 s	MDC	DLC	Qual	Analysis Units	Analysis Test Method	Analysis Date/Time	Analysis Technician	Tracer/Chem Recovery
Percent Moisture	17.488	N/A	N/A	N/A	N/A	%	Percent Moisture	02/04/10 00:00	BJS	N/A

NOTES: Project Cost Code - MR8R032TNB00

*24m*

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: ARS1-10-00166  
Client Sample ID: MD21-10-10155  
Sample Collection Date: 02/01/10  
Sample Matrix: Silica

Request or PO Number: 10-1546  
ARS Sample ID: ARS1-10-00166-005  
Date Received: 02/03/10  
Report Date: 02/05/10

Analysis Description	Analysis Results	Analysis Error +/- 2 s	MDC	DLC	Qual	Analysis Units	Analysis Test Method	Analysis Date/Time	Analysis Technician	Tracer/Chem Recovery
Percent Moisture	22.242	N/A	N/A	N/A	N/A	%	Percent Moisture	02/04/10 00:00	BJS	N/A

**NOTES: Project Cost Code - MR8R032TNB00**

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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ARS Sample Delivery Group: ARS1-10-00166  
Client Sample ID: MD21-10-10156  
Sample Collection Date: 02/01/10  
Sample Matrix: Silica

Request or PO Number: 10-1546  
ARS Sample ID: ARS1-10-00166-006  
Date Received: 02/03/10  
Report Date: 02/05/10

Analysis Description	Analysis Results	Analysis Error +/- 2 s	MDC	DLC	Qual	Analysis Units	Analysis Test Method	Analysis Date/Time	Analysis Technician	Tracer/Chem Recovery
Percent Moisture	9.216	N/A	N/A	N/A	N/A	%	Percent Moisture	02/04/10 00:00	BJS	N/A

**NOTES: Project Cost Code - MR8R032TNB00**

Project Manager Review

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ARS Sample Delivery Group: ARS1-10-00166  
Client Sample ID: MD21-10-10157  
Sample Collection Date: 02/01/10  
Sample Matrix: Silica

Request or PO Number: 10-1546  
ARS Sample ID: ARS1-10-00166-007  
Date Received: 02/03/10  
Report Date: 02/05/10

Analysis Description	Analysis Results	Analysis Error +/- 2 s	MDC	DLC	Qual	Analysis Units	Analysis Test Method	Analysis Date/Time	Analysis Technician	Tracer/Chem Recovery
Percent Moisture	18.891	N/A	N/A	N/A	N/A	%	Percent Moisture	02/04/10 00:00	BJS	N/A
NOTES: Project Cost Code - MR8R032TNB00										

Project Manager Review

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NELAP Certificate # E87558



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ARS Sample Delivery Group: ARS1-10-00166

Client Sample ID: MD21-10-10158

Sample Collection Date: 02/01/10

Sample Matrix: Silica

Request or PO Number: 10-1546

ARS Sample ID: ARS1-10-00166-008

Date Received: 02/03/10

Report Date: 02/05/10

Analysis Description	Analysis Results	Analysis Error +/- 2 s	MDC	DLC	Qual	Analysis Units	Analysis Test Method	Analysis Date/Time	Analysis Technician	Tracer/Chem Recovery
Percent Moisture	15.803	N/A	N/A	N/A	N/A	%	Percent Moisture	02/04/10 00:00	BJS	N/A

NOTES: Project Cost Code - MR8R032TNB00

  
Project Manager Review

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NELAP Certificate # E87558



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ARS Sample Delivery Group: ARS1-10-00166  
Client Sample ID: MD21-10-10159  
Sample Collection Date: 02/01/10  
Sample Matrix: Silica

Request or PO Number: 10-1546  
ARS Sample ID: ARS1-10-00166-009  
Date Received: 02/03/10  
Report Date: 02/05/10

Analysis Description	Analysis Results	Analysis Error +/- 2 s	MDC	DLC	Qual	Analysis Units	Analysis Test Method	Analysis Date/Time	Analysis Technician	Tracer/Chem Recovery
Percent Moisture	20.465	N/A	N/A	N/A	N/A	%	Percent Moisture	02/04/10 00:00	BJS	N/A

**NOTES: Project Cost Code - MR8R032TNB00**

Project Manager Review

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ARS Sample Delivery Group: ARS1-10-00166  
Client Sample ID: MD21-10-10160  
Sample Collection Date: 02/01/10  
Sample Matrix: Silica

Request or PO Number: 10-1546  
ARS Sample ID: ARS1-10-00166-010  
Date Received: 02/03/10  
Report Date: 02/05/10

Analysis Description	Analysis Results	Analysis Error +/- 2 s	MDC	DLC	Qual	Analysis Units	Analysis Test Method	Analysis Date/Time	Analysis Technician	Tracer/Chem Recovery
Percent Moisture	21.999	N/A	N/A	N/A	N/A	%	Percent Moisture	02/04/10 00:00	BJS	N/A

NOTES: Project Cost Code - MR8R032TNB00

*BHM*

Project Manager Review

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# **American Radiation Services Analytical Reports**

**for**

**Los Alamos National Laboratory**

# **Percent Moisture Laboratory Records**





# **American Radiation Services Analytical Reports**

**for**

**Los Alamos National Laboratory**

# **Folder Duplicate**

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

SDG Number ARS1-10-00166  
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
MD21-10-10151	ARS1-10-00166-001	598	434	164	24.85	5.017	15.152439
MD21-10-10152	ARS1-10-00166-002	627	454	173	28.01	5.016	16.1907514
MD21-10-10153	ARS1-10-00166-003	608	455	152	15.684	5.044	10.3184211
MD21-10-10154	ARS1-10-00166-004	602	437	164	28.681	5.032	17.4884146
MD21-10-10155	ARS1-10-00166-005	619	433	186	41.371	5.032	22.2424731
MD21-10-10156	ARS1-10-00166-006	603	450	152	14.009	5.035	9.21644737
MD21-10-10157	ARS1-10-00166-007	605	438	166	31.359	5.021	18.8909639
MD21-10-10158	ARS1-10-00166-008	619	461	158	24.968	5.042	15.8025316
MD21-10-10159	ARS1-10-00166-009	623	448	176	36.018	5.027	20.4647727
MD21-10-10160	ARS1-10-00166-010	628	452	176	38.719	5.025	21.9994318
Balance ID:	0102/H1331122173560P						
Pipettor ID:	FJ40469						

Signature

Date

2-4-16

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

SDG Number ARS1-10-00166  
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
MD21-10-10151	ARS1-10-00166-001	598	434	164	24.850	5.017	#DIV/0!
MD21-10-10152	ARS1-10-00166-002	627	454	173	28.010	5.016	#DIV/0!
MD21-10-10153	ARS1-10-00166-003	608	455	152	15.684	5.044	#DIV/0!
MD21-10-10154	ARS1-10-00166-004	602	437	164	28.681	5.032	#DIV/0!
MD21-10-10155	ARS1-10-00166-005	619	433	186	41.371	5.032	#DIV/0!
MD21-10-10156	ARS1-10-00166-006	603	450	152	14.009	5.035	#DIV/0!
MD21-10-10157	ARS1-10-00166-007	605	438	166	31.359	5.021	#DIV/0!
MD21-10-10158	ARS1-10-00166-008	619	461	158	24.968	5.042	#DIV/0!
MD21-10-10159	ARS1-10-00166-009	623	448	176	36.018	5.027	#DIV/0!
MD21-10-10160	ARS1-10-00166-010	628	452	176	38.719	5.025	#DIV/0!

Balance ID: 0102/H1331122173560P  
Pipettor ID: FJ40469

Signature

Date

2-3-10

LCS-5.024  
LCSB-5.023  
BLK-5.026



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# **American Radiation Services Analytical Reports**

**for**

**Los Alamos National Laboratory**

# **Folder Duplicate**



## Report Compilation Checklist

ARS SDG: 10-00166 Client Name: LANL Sample Matrix: Silica Gel

### 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?	Yes	No	<input checked="" type="checkbox"/> 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 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	

Virginia Mulligan 2-5-10  
Report Generator Signature Date

Beyel 2-8-10  
Management Review Signature Date



## LSC Technical Review Checklist

ARS SDG <u>10-00166</u>			
Sample Matrix: <u>Silica Gel</u>	Allquot (Circle One): Dry As <del>Received</del> Filtered Other: _____		
Required QC Samples (Mark all that apply):	<del>Blank</del>	<del>LOS</del>	<del>LOSD</del> Sample Dup MS MSD
ARS A. Batch ID(s):	Batch A: <u>B10-00640</u>	Batch B: <u>N/A</u>	Batch C: <u>N/A</u>
Test Method(s):	<u>LSC-A-001</u>	<u>N/A</u>	<u>N/A</u>

### A. RADIOCHEMICAL PREPARATION REVIEW

	Chemist Review	Verifier Review
1) 100% of Manual Transcriptions Verified?	<u>Yes</u> No N/A	<u>Yes</u> No N/A
2) 100% of Manual Calculations Verified?	Yes No <u>N/A</u>	Yes No <u>N/A</u>
3) Blank Composition/Configuration Matches Calibration?	<u>Yes</u> No N/A	<u>Yes</u> No N/A
4) Deviations from procedure are documented and verified?	Yes No <u>N/A</u>	Yes No <u>N/A</u>
5) Appropriate Cocktail Selected?	<u>Yes</u> No N/A	<u>Yes</u> No N/A
6) Sample Prep Anomaly? <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes (See Tech Notes) NCR # (If initiated): _____		
<u>[Signature]</u> Chemist Signature	<u>2-3-10</u> Date	<u>[Signature]</u> Verifier Review Signature
<u>2-3-10</u> Date		

### B. ANALYSIS REVIEW

	Analyst Review	QA Officer Review
1) Calibrations Valid and Current?	<u>Yes</u> No N/A	<u>Yes</u> No N/A
2) Backgrounds Valid and Current?	<u>Yes</u> No N/A	<u>Yes</u> No N/A
3) Source Checks Completed and Acceptable?	<u>Yes</u> No N/A	<u>Yes</u> No N/A
<u>[Signature]</u> QA Officer Signature		<u>2-5-10</u> Date
	Analyst Review	Technical Review
4) Background Checks Complete and Acceptable?	<u>Yes</u> No N/A	Yes No N/A
5) 100% of Manually Entered Parameters Verified Accurate?	<u>Yes</u> No N/A	Yes No N/A
6) Appropriate QC samples initiated at required frequency?	<u>Yes</u> No N/A	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?	<u>Yes</u> No N/A	Yes No <u>N/A</u>
b) Spectra show no Evidence of Interferences?	<u>Yes</u> No N/A	Yes No N/A
c) Sample Quench for All Samples within Range of Quench Curve?	<u>Yes</u> No N/A	Yes No N/A
7) Analysis Anomaly? <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes (See Comments) NCR # (If initiated): _____		
<u>[Signature]</u> Analyst Signature	<u>2-5-10</u> Date	<u>N/A</u> Technical Reviewer Signature
<u>2-5-10</u> Date		



## LSC Technical Review Checklist

Batch A: B10-00640**C. BATCH QC VALIDATION**

	Proj. Mgr. Review	QA Officer Review
1) Activity + 3xCSU a Negative Number?	Yes <input type="radio"/> <b>No</b> <input checked="" type="radio"/> N/A	Yes <input type="radio"/> <b>No</b> <input checked="" type="radio"/> N/A
2) RDL Criteria are Met?	<b>Yes</b> <input checked="" type="radio"/> No <input type="radio"/> N/A <input type="radio"/>	<b>Yes</b> <input checked="" type="radio"/> No <input type="radio"/> N/A <input type="radio"/>
3) Method Blank Criterion Met?	<b>Yes</b> <input checked="" type="radio"/> No <input type="radio"/> N/A <input type="radio"/>	<b>Yes</b> <input checked="" type="radio"/> No <input type="radio"/> N/A <input type="radio"/>
4) LCS/LCD Criteria Met?	<b>Yes</b> <input checked="" type="radio"/> No <input type="radio"/> N/A <input type="radio"/>	<b>Yes</b> <input checked="" type="radio"/> No <input type="radio"/> N/A <input type="radio"/>
5) Duplicate (Sample Duplicate, LCSD, MSD) Criteria Met?	<b>Yes</b> <input checked="" type="radio"/> No <input type="radio"/> N/A <input type="radio"/>	<b>Yes</b> <input checked="" type="radio"/> No <input type="radio"/> N/A <input type="radio"/>
6) MS/MSD Criteria Met?	Yes <input type="radio"/> No <input type="radio"/> <b>N/A</b> <input checked="" type="radio"/>	Yes <input type="radio"/> No <input type="radio"/> <b>N/A</b> <input checked="" type="radio"/>
7) Batch QC Anomaly? <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes (See Tech Notes)    NCR # (If initiated): _____		
<u>14m</u> Project Manager Signature	<u>2-5-10</u> Date	<u>16yd</u> QA Officer Signature
		<u>2-9-10</u> Date

**GENERAL COMMENTS**

# ARS FILE TRACKING SHEET

SDG: **10-00166**

Task	Date / Time	Initials
Date & Time Samples Received	2-3-10 / 10:00	WGS
ICOC Initiated / Storage Location: <u>O6</u>	2-3-10 / 10:42	WGS
Technical Checks Performed	See Batch	
Report Written	2-5-10/1703	Uhm
Quality Assurance Checks Performed on Report		
Management Check Performed on Report	2-9-10 0814	JB
Preliminary Report Sent	2-5-10 / 1700	Uhm
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 <sup>see notes</sup> Mgmt. Approval: _____		✓

NOTES:





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# SDG Report - Samples and Containers

SDG Specific Data									
SDG		AR51-10-00166		TAT Days		5		Project Type	
Sample Count		Rpt Level		Date Received		2/3/2010		COC Number	
Client		Los Alamos National Laboratory		Client Deadline		2/7/2010		PO Number	
Client Code		114		Internal Deadline		2/5/2010		Job Number	
Profile Number		PN-00094		Lab Deadline		2/3/2010		Job Location	
Comments									

Samples and Containers (→) Checked In Thus Far														
FR	ClientID	Matrix	SampleStartDate	SampleEndDate	Disp	Hold	Arch	Storage	X	Units	Y	Units	Z	Comments
001	MD21-10-10151	SI	02/01/10 12:00 PM	02/01/10 12:00 PM	H	90	5	O6						
→	46001	1		1.00			70	22		N	N/A			
002	MD21-10-10152	SI	02/01/10 12:00 PM	02/01/10 12:00 PM	H	90	5	O6						
→	46002	1		1.00			70	22		N	N/A			
003	MD21-10-10153	SI	02/01/10 12:00 PM	02/01/10 12:00 PM	H	90	5	O6						
→	46003	1		1.00			70	22		N	N/A			
004	MD21-10-10154	SI	02/01/10 12:00 PM	02/01/10 12:00 PM	H	90	5	O6						
→	46004	1		1.00			70	22		N	N/A			
005	MD21-10-10155	SI	02/01/10 12:00 PM	02/01/10 12:00 PM	H	90	5	O6						
→	46005	1		1.00			80	22		N	N/A			
006	MD21-10-10156	SI	02/01/10 12:00 PM	02/01/10 12:00 PM	H	90	5	O6						
→	46006	1		1.00			70	22		N	N/A			
007	MD21-10-10157	SI	02/01/10 12:00 PM	02/01/10 12:00 PM	H	90	5	O6						
→	46007	1		1.00			80	22		N	N/A			
008	MD21-10-10158	SI	02/01/10 12:00 PM	02/01/10 12:00 PM	H	90	5	O6						
→	46008	1		1.00			70	22		N	N/A			
009	MD21-10-10159	SI	02/01/10 12:00 PM	02/01/10 12:00 PM	H	90	5	O6						
→	46009	1		1.00			70	22		N	N/A			
010	MD21-10-10160	SI	02/01/10 12:00 PM	02/01/10 12:00 PM	H	90	5	O6						
→	46010	1		1.00			70	23		N	N/A			

### SDG Report - Analysis Assignments

Temp SDG	ARS1-10-00166	Sample Count	
Client	Los Alamos National Laboratory	Analysis Count	1-10

Samples Count Totals per Analysis		
Analysis Code	Analysis Description	Samples Count
LSC-A-001	Tritium In (Water [Aqueous, AQ])	10

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
010	LSC-A-001	X