

Friday, February 19, 2010

**LOS ALAMOS**  
**NATIONAL LABORATORY**

ATTN: Valerie Davis

General Engineering Laboratories, Inc., Charleston, SC.

2040 Savage Rd

Charleston, SC 29407

These Samples are on:

LANL Request Number: 10-1958

Per Agreement Number: 126310011

Project Cost Code: MR3A05529E00

Please analyse the enclosed samples  
according to the schedule indicated:

SHIP DATE: 2/19/2010

TURNAROUND/REPORT DUE: 3/21/2010

TURNAROUND REQ'D: 30 Days

RAD SCREENING: Yes, Below Background

LAB REQUEST COMMENTS:

LANL ER SMO CONTACT:

Signature:



PRIORITY	METHOD CODE	QNTNR	SAMPLE ID	SAMPLE MATRIX	DATE SAMPLED	SPECIAL INSTRUCTIONS
EPA:906.0		1	RE15-10-8247	R	2/15/2010	
		1	RE15-10-8248	R	2/15/2010	
		1	RE15-10-8249	R	2/15/2010	
		1	RE15-10-8250	R	2/15/2010	
		1	RE15-10-8251	R	2/15/2010	
		1	RE15-10-8252	R	2/15/2010	
		1	RE15-10-8253	R	2/15/2010	
		1	RE15-10-8254	R	2/15/2010	
		1	RE15-10-8264	R	2/15/2010	

Friday, February 19, 2010

Page 2 of 2  
REQUEST NUMBER: 10-1958

PRIORITY	METHOD CODE	CNTNR	SAMPLE ID	SAMPLE MATRIX	DATE SAMPLED	SPECIAL INSTRUCTIONS
EPA:906.0		1	RE15-10-8268	R	2/15/2010	

Final Page of REQUEST NUMBER 10-1958

Friday, February 19, 2010

LAB CHAIN OF CUSTODY DOCUMENT NUMBER: 10-1958

**LOS ALAMOS**

REQUEST NUMBER: 10-1958

**NATIONAL LABORATORY**

ATTN: Valerie Davis

TURNAROUND/REPORT DUE: 3/21/2010

General Engineering Laboratories, Inc.,  
Charleston, SC.

TURNAROUND REQ'D: 30

2040 Savage Rd

Charleston, SC 29407

## LAB REQUEST COMMENTS:

SAMPLE ID	CTNR	CTNR DESC	ORDER	PRESERV	MATRIX
RE15-10-8252	1	POLY	H3	Ice	R
RE15-10-8253	1	POLY	H3	Ice	R
RE15-10-8250	1	POLY	H3	Ice	R
RE15-10-8251	1	POLY	H3	Ice	R
RE15-10-8248	1	POLY	H3	Ice	R
RE15-10-8249	1	POLY	H3	Ice	R
RE15-10-8247	1	POLY	H3	Ice	R
RE15-10-8254	1	POLY	H3	Ice	R
RE15-10-8268	1	POLY	H3	Ice	R
RE15-10-8264	1	POLY	H3	Ice	R

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

## SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 2504

EVENT NAME: 4th Qtr. FY09 - SWMU 15-007(d) - Threemile Canyon

SAMPLE ID: RE15-10-8247

WORK ORDER:

AS PLANNED		AS COLLECTED		AS PLANNED		AS COLLECTED	
DATE COLLECTED(MM/DD/YYYY):		02/15/2010		MEDIA:	QBT3		OK
TIME COLLECTED (HH:MM)		09:05		SUB-MEDIA:	TUFF 1		OK
PRS ID:	15-007(d)	OK		SAMPLE TECH CODE:	HA		CBS
LOCATION ID:	15-610819			FIELD QC TYPE:	NA		
LOCATION TYPE:	GENERIC			FIELD PREP:	NA		
TOP DEPTH:	0	109.0 ft		SAMPLE USAGE:	INV		
BOTTOM DEPTH:	0	110.0 ft		SCREEN/PORT DESC:			NA
FIELD MATRIX:	R	OK		EXCAVATED: YES/NO/NA			
COMPOSITE TYPE:	NA			COMPOSITE TIME INTERVAL:	NA		
BOREHOLE:	YES/NO/NA			BOREHOLE DECLINATION:	-90°		
				BOREHOLE DIRECTION:	NA		

#	PRIORITY	ORDER	CNTNR	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
1	Normal	8082+NMED-HEXP	250 ML AMBER GLASS	Ice	Y	
1		H3	500 ML POLY	Ice	Y	
1		Metals+ClO4+CN	500 ML POLY	Ice	Y	
1		RADVANA+B+G	1 EA 8 IN RESEALABLE POLY BAG	None	Y	

## SAMPLE DESC:

Light brownish gray, non indurated, non welded, dehydrated, dry, and flow tuff.

SAMPLE COMMENTS: NA

LOCATION DESC: 7 d-1

## FIELD SCREENING/MEASUREMENT RESULTS:

Alpha = 36 dpm  
Beta/Gamma = 2112 dpm

PID  $\frac{\text{Ambient Reading}}{\text{Reading}} = \text{ppm}$

COLLECTED BY (PRINT)

REVIEWED BY (PRINT)

RELINQUISHED BY (Printed Name) JON MAREN (Signature) Jon R. Marin	Date/Time 2/16/10 08:18 AM	RECEIVED BY (Printed Name) Sheri Sherwood (Signature) Sheri Sherwood	Date/Time 2/16/10 0818
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

## SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 2504

EVENT NAME: 4th Qtr. FY09 - SWMU 15-007(d) - Threemile Canyon

SAMPLE ID: RE15-10-8248

WORK ORDER:

AS PLANNED		AS COLLECTED	AS PLANNED		AS COLLECTED
DATE COLLECTED(MM/DD/YYYY):		02/15/2010	MEDIA:	QBT3	QBT2
TIME COLLECTED(HH:MM)		09:50	SUB-MEDIA:	TUFF 1	OK
PRS ID:	15-007(d)	OK	SAMPLE TECH CODE:	HA	CBS
LOCATION ID:	15-610819		FIELD QC TYPE:	NA	OK
LOCATION TYPE:	GENERIC		FIELD PREP:	NA	
TOP DEPTH:	0	123.5 ft	SAMPLE USAGE:	INV	
BOTTOM DEPTH:	0	125.0 ft	SCREEN/PORT DESC:		NA
FIELD MATRIX:	R	OK	EXCAVATED: YES/NO/NA		
COMPOSITE TYPE:	NA		COMPOSITE TIME INTERVAL:	NA	
			WATER FLOWING: YES/NO/NA		
BOREHOLE: YES/NO/NA			BOREHOLE DECLINATION:	-90°	
			BOREHOLE DIRECTION:	NA	

#	PRIORITY	ORDER	CNTNR	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
1	Normal	2082+NMED-HEXP	250 ML AMBER GLASS	Ice	Y	
1		H3	500 ML POLY	Ice	Y	
1		Metals+ClO4+CN	500 ML POLY	Ice	Y	
1		RADVANA+B+G	1 EA 8 IN RESEALABLE POLY BAG	None	Y	

## SAMPLE DESC:

Light brownish gray, strongly indurated, partially welded, devitrified, dry, ash flow tuff

## SAMPLE COMMENTS:

NA

LOCATION DESC: 7d-1

## FIELD SCREENING/MEASUREMENT RESULTS:

Alpha = 46 dpm  
Beta/Gamma = 2110 dpm

PID  $\frac{\text{Ambient Reading}}{\text{Reading}} = \text{ppm}$

COLLECTED BY (PRINT)

R. Saunders

REVIEWED BY (PRINT) J. MARIN

RELINQUISHED BY (Printed Name) JON MARIN (Signature) Jon R. Marin	Date/Time 2/16/10 08:18 AM	RECEIVED BY (Printed Name) Sheri Sherwood (Signature) Sheri Sherwood	Date/Time 2/16/10 0818
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

## SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 2504

EVENT NAME: 4th Qtr. FY09 - SWMU 15-007(d) - Threemile Canyon

SAMPLE ID: RE15-10-8249

WORK ORDER:

AS PLANNED		AS COLLECTED		AS PLANNED		AS COLLECTED	
DATE COLLECTED(MM/DD/YYYY):		02/15/2016		MEDIA:	OBT3		OBT 2
TIME COLLECTED(HH:MM)		10:35		SUB-MEDIA:	TUFF 1		OK
PRS ID:	15-007(d)	OK		SAMPLE TECH CODE:	HA		CBS
LOCATION ID:	15-610819			FIELD QC TYPE:	NA		
LOCATION TYPE:	GENERIC			FIELD PREP:	NA		
TOP DEPTH:	0	138.5 ft		SAMPLE USAGE:	INV		
BOTTOM DEPTH:	0	140.0 ft		SCREEN/PORT DESC:			NA
FIELD MATRIX:	R	OK		EXCAVATED: YES/NO	NA		
COMPOSITE TYPE:	NA			COMPOSITE TIME INTERVAL:	NA		
				WATER FLOWING: YES/NO	NA		
BOREHOLE: YES/NO/NA				BOREHOLE DECLINATION:	-90°		
				BOREHOLE DIRECTION:	NA		

#	PRIORITY	ORDER	CNTNR	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
1	Normal	1RM 2/15/10 8082+NMED-HEXP	250 ML AMBER GLASS	Ice	Y	
1		H3	500 ML POLY	Ice	Y	
1		Metals+ClO4+CN	500 ML POLY	Ice	Y	
1		RADVANA+B+G	1 EA 8 IN RESEALABLE POLY BAG	None	Y	

## SAMPLE DESC:

1RM 2/15/10 Light grayish brown, strongly indurated, non to partially welded, dig, dehydrified, ash flow tuff.

## SAMPLE COMMENTS:

NA

## LOCATION DESC:

7d-1

## FIELD SCREENING/MEASUREMENT RESULTS:

Alpha = 10 dpm  
Beta/Gamma = 1989 dpm

1RM 2/15/10  
PID  $\frac{\text{Ambient Reading}}{\text{Reading}} = \text{ppm}$

## COLLECTED BY (PRINT)

R. Saunders

## REVIEWED BY (PRINT) JON MARIN

RELINQUISHED BY	Date/Time	RECEIVED BY	Date/Time
(Printed Name) JON MARIN	2/16/10	(Printed Name) Sheri Sherwood	2/16/10
(Signature) Jon R. Marin	08:17AM	(Signature) Sheri Sherwood	08/17
RELINQUISHED BY	Date/Time	RECEIVED BY	Date/Time
(Printed Name)		(Printed Name)	
(Signature)		(Signature)	

## SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 2504

EVENT NAME: 4th Qtr. FY09 - SWMU 15-007(d) - Threemile Canyon

SAMPLE ID: RE15-10-8250

WORK ORDER:

AS PLANNED		AS COLLECTED	AS PLANNED		AS COLLECTED
DATE COLLECTED(MM/DD/YYYY):		02/15/2010	MEDIA:	QBT3	QBT2
TIME COLLECTED (HH:MM)		11:12	SUB-MEDIA:	TUFF 1	OK
PRS ID:	15-007(d)	OK	SAMPLE TECH CODE:	HA	CBS
LOCATION ID:	15-610819		FIELD QC TYPE:	NA	OK
LOCATION TYPE:	GENERIC		FIELD PREP:	NA	
TOP DEPTH:	Q	154.0 ft	SAMPLE USAGE:	INV	
BOTTOM DEPTH:	Q	155.0 ft	SCREEN/PORT DESC:		NA
FIELD MATRIX:	R	OK	EXCAVATED: YES (NO) NA		
COMPOSITE TYPE:	NA		COMPOSITE TIME INTERVAL:	NA	
			WATER FLOWING: YES (NO) NA		
BOREHOLE: (YES) NO/NA			BOREHOLE DECLINATION: -90°		
			BOREHOLE DIRECTION: NA		

#	PRIORITY	ORDER	CNTNR	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
1	Normal	15-007(d) 8082+NMED-HEXP	250 ML AMBER GLASS	Ice	Y	
1		H3	500 ML POLY	Ice	Y	
1		Metals+ClO4+CN	500 ML POLY	Ice	Y	
1		RADVANA+B+G	1 EA 8 IN RESEALABLE POLY BAG	None	Y	

## SAMPLE DESC:

Light brownish gray, slightly indurated, slightly welded, devitrified,  
dry, a-h flow + tuff

## SAMPLE COMMENTS:

NA

## LOCATION DESC:

7d-1

## FIELD SCREENING/MEASUREMENT RESULTS:

Alpha = 36 dpm

Beta/Gamma = 1963 dpm

PID  $\frac{\text{Ambient Reading}}{\text{Reading}} = \text{ppm}$ 

## COLLECTED BY (PRINT)

R. Saunders

## REVIEWED BY (PRINT)

J. Marin

RELINQUISHED BY	Date/Time	RECEIVED BY	Date/Time
(Printed Name) JON MARIN	2/16/10	(Printed Name) Sheri Sherwood	2/16/10
(Signature) Jon H. Marin	08:16AM	(Signature) Sheri Sherwood	0816
RELINQUISHED BY	Date/Time	RECEIVED BY	Date/Time
(Printed Name)		(Printed Name)	
(Signature)		(Signature)	

## SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 2504

EVENT NAME: 4th Qtr. FY09 - SWMU 15-007(d) - Threemile Canyon

SAMPLE ID: RE15-10-8251

WORK ORDER:

AS PLANNED		AS COLLECTED		AS PLANNED		AS COLLECTED	
DATE COLLECTED(MM/DD/YYYY):		02/15/2010		MEDIA:	OBT3		QBT 1
TIME COLLECTED (HH:MM)		11:50		SUB-MEDIA:	TUFF 1		OK
PRS ID:	15-007(d)	OK		SAMPLE TECH CODE:	HA		CBS
LOCATION ID:	15-610819			FIELD QC TYPE:	NA		OK
LOCATION TYPE:	GENERIC			FIELD PREP:	NA		
TOP DEPTH:	0	169.0 Ft		SAMPLE USAGE:	INV		
BOTTOM DEPTH:	0	170.0 Ft		SCREEN/PORT DESC:			NA
FIELD MATRIX:	R	OK		EXCAVATED: YES (NO) / NA			
COMPOSITE TYPE:	NA			COMPOSITE TIME INTERVAL:	NA		WATER FLOWING: YES (NO) / NA
BOREHOLE: (YES) / NO / NA				BOREHOLE DECLINATION:	-90°		BOREHOLE DIRECTION:
							NA

#	PRIORITY	ORDER	CNTNR	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
1	Normal	ARM 2/15/10 2082+NMED-HEXP	250 ML AMBER GLASS	Ice	Y	
1		H3	500 ML POLY	Ice	Y	
1		Metals+ClO4+CN	500 ML POLY	Ice	Y	
1		RADVANA+B+G	1 EA 8 IN RESEALABLE POLY BAG	None	Y	

## SAMPLE DESC:

Light brownish gray, non to slightly indurated, non welded, deiritrified  
 dm, arch flow turb.

## SAMPLE COMMENTS:

NA

## LOCATION DESC:

7d-1  
 ARM 2/15/10

## FIELD SCREENING/MEASUREMENT RESULTS:

Alpha = 36 dpm  
 Beta/Gamma = 2140 dpm

PID Ambient Reading = ppm ARM 2/15/10

## COLLECTED BY (PRINT)

R. Saunders

## REVIEWED BY (PRINT)

J. MARIN

RELINQUISHED BY (Printed Name) JON MARIN (Signature) Jon R. Marin	Date/Time 2/16/10 08:16 AM	RECEIVED BY (Printed Name) Sherri Sherwood (Signature) Sherri Sherwood	Date/Time 2/16/10 0816
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time



## SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 2504

EVENT NAME: 4th Qtr. FY09 - SWMU 15-007(d) - Threemile Canyon

SAMPLE ID: RE15-10-8252

WORK ORDER:

AS PLANNED		AS COLLECTED		AS PLANNED		AS COLLECTED	
DATE COLLECTED(MM/DD/YYYY):		02/15/2010		MEDIA:	QBT3		OK
TIME COLLECTED (HH:MM)		15:50		SUB-MEDIA:	TUFF 1		OK
PRS ID:	15-007(d)	OK		SAMPLE TECH CODE:	HA		CB5
LOCATION ID:	15-610820			FIELD QC TYPE:	NA		OK
LOCATION TYPE:	GENERIC			FIELD PREP:	NA		
TOP DEPTH:	Q	4.0 ft		SAMPLE USAGE:	INV		
BOTTOM DEPTH:	Q	5.0 ft		SCREEN/PORT DESC:			NA
FIELD MATRIX:	R	OK		EXCAVATED: YES/NO/NA	NO		
COMPOSITE TYPE:	NA			COMPOSITE TIME INTERVAL:	NA		WATER FLOWING: YES/NO/NA
BOREHOLE: YES/NO/NA				BOREHOLE DECLINATION:			BOREHOLE DIRECTION:

#	PRIORITY	ORDER	CNTNR	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
1	Normal	8082+NMED-HEXP	250 ML AMBER GLASS	Ice	Y	
1		H3	500 ML POLY	Ice	Y	
1		Metals+ClO4+CN	500 ML POLY	Ice	Y	
1		RADVANA+B+G	1 EA 8 IN RESEALABLE POLY BAG	None	Y	

SAMPLE DESC:

Light gray non indurated non welded, devitrified, dry, ash flow tuff.

SAMPLE COMMENTS: NA

LOCATION DESC:

7d-2

FIELD SCREENING/MEASUREMENT RESULTS:

HE Spot Test Negative

Alpha = 25 dpm

Beta/Gamma = 2070 dpm

PID <sup>Ambient</sup> Reading = ppm

COLLECTED BY (PRINT)

R. Saunders

REVIEWED BY (PRINT)

J. MARLIN

RELINQUISHED BY (Printed Name) JON MARLIN (Signature) Jon R. Marlin	Date/Time 2/16/10 08:16 AM	RECEIVED BY (Printed Name) Jennifer Newwood (Signature) Jennifer Newwood	Date/Time 2/16/10 08:16
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

## SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 2504

EVENT NAME: 4th Qtr. FY09 - SWMU 15-007(d) - Threemile Canyon

SAMPLE ID: RE15-10-8253

WORK ORDER:

AS PLANNED		AS COLLECTED		AS PLANNED		AS COLLECTED	
DATE COLLECTED(MM/DD/YYYY):		02/15/2010		MEDIA:	OBT3		OK
TIME COLLECTED (HH:MM)		16:18		SUB-MEDIA:	TUFF 1		OK
PRS ID:	15-007(d)	OK		SAMPLE TECH CODE:	HA		CBS
LOCATION ID:	15-610820			FIELD QC TYPE:	NA		OK
LOCATION TYPE:	GENERIC			FIELD PREP:	NA		
TOP DEPTH:	0	18.0 ft		SAMPLE USAGE:	INV		
BOTTOM DEPTH:	0	20.0 ft		SCREEN/PORT DESC:			NA
FIELD MATRIX:	R	OK		EXCAVATED: YES/NO/NA			
COMPOSITE TYPE:	NA			COMPOSITE TIME INTERVAL:	1/4		WATER FLOWING: YES (NO) NA
BOREHOLE: (YES/NO/NA)				BOREHOLE DECLINATION:	-90°		BOREHOLE DIRECTION: NA

#	PRIORITY	ORDER	CNTNR	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
1	Normal	8082+NMED-HEXP	250 ML AMBER GLASS	Ice	Y	
1		H3	500 ML POLY	Ice	Y	
1		Metals+ClO4+CN	500 ML POLY	Ice	Y	
1		RADVANA+B+G	1 EA 8 IN RESEALABLE POLY BAG	None	Y	

## SAMPLE DESC:

Light gray, nonindurated, nonwelded, devitrified, dry, ash flow tuff

## SAMPLE COMMENTS:

NA

## LOCATION DESC:

7d-2

## FIELD SCREENING/MEASUREMENT RESULTS:

Alpha = 20 dpm  
Beta/Gamma = 2040 dpm

PID <sup>Ambient</sup> Reading = ppm

from 2/15/10

## COLLECTED BY (PRINT)

## REVIEWED BY (PRINT)

J. MARIN

RELINQUISHED BY (Printed Name) JON MARIN (Signature) Jon R. Marin	Date/Time 2/16/10 08:16 AM	RECEIVED BY (Printed Name) Sheri Sherwood (Signature) Sheri Sherwood	Date/Time 2/16/10 0816
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

## SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 2504

EVENT NAME: 4th Qtr. FY09 - SWMU 15-007(d) - Threemile Canyon

SAMPLE ID: RE15-10-8254

WORK ORDER:

AS PLANNED		AS COLLECTED		AS PLANNED		AS COLLECTED	
DATE COLLECTED(MM/DD/YYYY):		02/15/2010		MEDIA:	QBT3		OK
TIME COLLECTED (HH:MM)		16:57		SUB-MEDIA:	TUFF 1		OK
PRS ID:	15-007(d)	OK		SAMPLE TECH CODE:	HA		CBS
LOCATION ID:	15-610820			FIELD QC TYPE:	NA		OK
LOCATION TYPE:	GENERIC			FIELD PREP:	NA		
TOP DEPTH:	0	34.0 ft		SAMPLE USAGE:	INV		
BOTTOM DEPTH:	0	35.0 ft		SCREEN/PORT DESC:			NA
FIELD MATRIX:	R	OK		EXCAVATED: YES/NO/NA			
COMPOSITE TYPE:	NA			COMPOSITE TIME INTERVAL:	NA		WATER FLOWING: YES/NO/NA
BOREHOLE:	YES/NO/NA			BOREHOLE DECLINATION:	-90°		BOREHOLE DIRECTION: NA

#	PRIORITY	ORDER	CNTNR	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
1	Normal	8082+NMED-HEXP	250 ML AMBER GLASS	Ice	Y	
1		H3	500 ML POLY	Ice	Y	
1		Metals+CIO4+CN	500 ML POLY	Ice	Y	
1		RADVANA+B+G	1 EA 8 IN RESEALABLE POLY BAG	None	Y	

SAMPLE DESC:

Light gray, slightly indurated, non welded, dehydrified, dry, ash flow tuff,

SAMPLE COMMENTS: NA

LOCATION DESC: 7d-2

FIELD SCREENING/MEASUREMENT RESULTS:

Alpha = 25 dpm  
Beta/Gamma = 1845 dpm

PID  $\frac{\text{Ambient Reading}}{\text{ppm}} = \text{ppm}$

COLLECTED BY (PRINT)

R. Saunders

REVIEWED BY (PRINT)

S. MARY

RELINQUISHED BY (Printed Name) JON MARIN (Signature) Jon R. Marin	Date/Time 08:16 AM 2/16/10	RECEIVED BY (Printed Name) Sherri Greenwood (Signature) Sherri Greenwood	Date/Time 8:16 2/16/10
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

## SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 2504

EVENT NAME: 4th Qtr. FY09 - SWMU 15-007(d) - Threemile Canyon

SAMPLE ID: RE15-10-8264

WORK ORDER:

AS PLANNED		AS COLLECTED		AS PLANNED		AS COLLECTED	
DATE COLLECTED(MM/DD/YYYY):		02/15/2010		MEDIA:	QBT3		QBT1
TIME COLLECTED (HH:MM)		12:15		SUB-MEDIA:	TUFF1		OK
PRS ID:	15-007(d)	OK		SAMPLE TECH CODE:	HA		CB5
LOCATION ID:	UNK	15-610819		FIELD QC TYPE:	NA		OK
LOCATION TYPE:	GENERIC	OK		FIELD PREP:	NA		
TOP DEPTH:	0	181.5 ft		SAMPLE USAGE:	INV		
BOTTOM DEPTH:	0	182.5 ft		SCREEN/PORT DESC:			NA
FIELD MATRIX:	R	OK		EXCAVATED: YES/NO/NA	NO		
COMPOSITE TYPE:	NA			COMPOSITE TIME INTERVAL:	NA		
				WATER FLOWING: YES/NO/NA	NO		
BOREHOLE:	YES/NO/NA			BOREHOLE DECLINATION:	-90°		
				BOREHOLE DIRECTION:	NA		

#	PRIORITY	ORDER	CNTNR	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
1	Normal	8082+NMED-HEXP	250 ML AMBER GLASS	Ice	Y	
1		H3	500 ML POLY	Ice	Y	
1		Metals+ClO4+CN	500 ML POLY	Ice	Y	
1		RADVANA+B+G	1 EA 8 IN RESEALABLE POLY BAG	None	Y	

## SAMPLE DESC:

Light gray, non indurated, non welded, devitrified, dry, ash flow tuff

SAMPLE COMMENTS: NA

LOCATION DESC: 7d-1

## FIELD SCREENING/MEASUREMENT RESULTS:

Alpha = 5 dpm  
Beta/Gamma = 1956 dpm

PID  $\frac{\text{Ambient Reading}}{\text{Reading}} = \text{ppm}$

PRM 2/15/10

COLLECTED BY (PRINT)

REVIEWED BY (PRINT) J. Marin

R. Saunders

RELINQUISHED BY (Printed Name) JON MARIN (Signature) Jon R. Marin	Date/Time 2/16/10 08:16 AM	RECEIVED BY (Printed Name) Sheri Sherwood (Signature) Sheri Sherwood	Date/Time 2/16/10 0816
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

## SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 2504

EVENT NAME: 4th Qtr. FY09 - SWMU 15-007(d) - Threemile Canyon

SAMPLE ID: RE15-10-8268

WORK ORDER:

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED(MM/DD/YYYY):		02/15/10	MEDIA:	QBT3	OK
TIME COLLECTED (HH:MM)		16:18	SUB-MEDIA:	TUFF 1	OK
PRS ID:	15-007(d)	OK	SAMPLE TECH CODE:	HA	CBS
LOCATION ID:	UNK	15-61082.0	FIELD QC TYPE:	FD	OK
LOCATION TYPE:	GENERIC	OK	FIELD PREP:	NA	
TOP DEPTH:	0	18.0 ft	SAMPLE USAGE:	QC	
BOTTOM DEPTH:	0	20.0 ft	SCREEN/PORT DESC:		NA
FIELD MATRIX:	R	OK	EXCAVATED: YES/NO	NA	
COMPOSITE TYPE:	NA		COMPOSITE TIME INTERVAL:	NA	
			WATER FLOWING: YES/NO	NA	
BOREHOLE: YES/NO/NA			BOREHOLE DECLINATION: ~90°		
			BOREHOLE DIRECTION: NA		

#	PRIORITY	ORDER	CNTNR	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
1	Normal	8082+NMED-HEXP	250 ML AMBER GLASS	Ice	Y	
1		H3	500 ML POLY	Ice	Y	
1		Metals+ClO4+CN	500 ML POLY	Ice	Y	
1		RADVANA+B+G	1 EA 8 IN RESEALABLE POLY BAG	None	Y	

SAMPLE DESC: QC Sample of RE15-10-8253

Light gray non-indurated non-welded dehydrified, dry, ash flow tuff

SAMPLE COMMENTS:

NA

LOCATION DESC:

7d-2

FIELD SCREENING/MEASUREMENT RESULTS:

Alpha = 20 dpm  
Beta/Gamma = 2040 dpmPID  $\frac{\text{Ambient Reading}}{\text{ppm}} = \text{ppm}$   
PRM 2/15/10

COLLECTED BY (PRINT)

R. Saunders

REVIEWED BY (PRINT)

J. MARIN

RELINQUISHED BY (Printed Name) J. MARIN (Signature) J. Marin	Date/Time 2/16/10 08:16 AM	RECEIVED BY (Printed Name) Sherri Sherwood (Signature) Sherri Sherwood	Date/Time 2/16/10 0816
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

## SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 2504

EVENT NAME: 4th Qtr. FY09 - SWMU 15-007(d) - Threemile Canyon

SAMPLE ID: RE15-10-8271

WORK ORDER:

AS PLANNED		AS COLLECTED	AS PLANNED		AS COLLECTED
DATE COLLECTED(MM/DD/YYYY):		02/15/10	MEDIA:	NA	OK
TIME COLLECTED (HH:MM)		16:30	SUB-MEDIA:	OTHER	
PRS ID:	15-007(d)	OK	SAMPLE TECH CODE:	DC	
LOCATION ID:	UNK	15-610820	FIELD QC TYPE:	ER	
LOCATION TYPE:	GENERIC	OK	FIELD PREP:	UF	
TOP DEPTH:	0	0	SAMPLE USAGE:	QC	
BOTTOM DEPTH:	0	0	SCREEN/PORT DESC:		NA
FIELD MATRIX:	W	OK	EXCAVATED: YES/NO/NA		
COMPOSITE TYPE:	NA		COMPOSITE TIME INTERVAL:	NA	
			WATER FLOWING: YES/NO/NA		
BOREHOLE: YES/NO/NA			BOREHOLE DECLINATION: -90°		
			BOREHOLE DIRECTION:	NA	

#	PRIORITY	ORDER	CNTNR	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
1	Normal	METALS-GEL	1 LITER POLY	Nitric Acid	Y	
1	1	SW-846:6850	250 ML POLY	Ice	Y	
1	1	TCN	500 ML POLY	Sodium Hydroxide	Y	

SAMPLE DESC: QC Sample of RE15-10-8253

SAMPLE COMMENTS: NA

LOCATION DESC: 7d-2

FIELD SCREENING/MEASUREMENT RESULTS: NA

COLLECTED BY (PRINT)

R. Saunders

REVIEWED BY (PRINT) J. MARIN

RELINQUISHED BY (Printed Name) Jon Marin (Signature) Jon R. Marin	Date/Time 09:15 AM 2/16/10	RECEIVED BY (Printed Name) Sherrill Sherwood (Signature) Sherrill Sherwood	Date/Time 0815 2/16/10
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time



2609 North River Road, Port Allen, Louisiana 70767

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

ARS Sample Delivery Group: ARS1-10-00262

Analysis Description: Gross Alpha/Beta in (Soil, Sludge, Waste, Sediment [SO])

Analysis Test Method: GPC-A-003

Request or PO Number: N/A

Date Received: 2/17/2010

Report Date: 02/18/10 12:34

ARS Sample ID	Client Sample ID	Isotope	Analysis Results	Analysis Error +/- 2 s	MDC	DLC	Qual	Analysis Units	Analysis Date/Time	Analysis Technician	Tracer/Chem Recovery	Sample Matrix	Collection Date
ARS1-10-00262-001	RE15-10-8302	GROSS ALPHA	6.817	4.732	14.397	4.405	U	PC/g	2/18/2010	CR	N/A	SO	
ARS1-10-00262-001	RE15-10-8302	GROSS BETA	25.135	4.841	7.848	3.393	U	PC/g	2/18/2010	CR	N/A	SO	
ARS1-10-00262-002	RE15-10-8303	GROSS ALPHA	5.392	3.976	12.127	3.443	U	PC/g	2/18/2010	CR	N/A	SO	
ARS1-10-00262-002	RE15-10-8303	GROSS BETA	32.960	5.742	8.016	3.483	U	PC/g	2/18/2010	CR	N/A	SO	
ARS1-10-00262-003	RE15-10-8310	GROSS ALPHA	4.815	3.949	13.061	3.913	U	PC/g	2/18/2010	CR	N/A	SO	
ARS1-10-00262-003	RE15-10-8310	GROSS BETA	28.560	5.211	7.666	3.298	U	PC/g	2/18/2010	CR	N/A	SO	
ARS1-10-00262-004	RE15-10-8311	GROSS ALPHA	16.706	6.638	13.740	4.170	U	PC/g	2/18/2010	CR	N/A	SO	
ARS1-10-00262-004	RE15-10-8311	GROSS BETA	31.065	5.505	7.578	3.274	U	PC/g	2/18/2010	CR	N/A	SO	
ARS1-10-00262-005	RE15-10-8312	GROSS ALPHA	9.299	5.281	13.981	4.169	U	PC/g	2/18/2010	CR	N/A	SO	
ARS1-10-00262-005	RE15-10-8312	GROSS BETA	41.326	6.770	7.991	3.448	U	PC/g	2/18/2010	CR	N/A	SO	
ARS1-10-00262-006	RE15-10-8313	GROSS ALPHA	7.489	4.853	13.949	4.119	U	PC/g	2/18/2010	CR	N/A	SO	
ARS1-10-00262-006	RE15-10-8313	GROSS BETA	43.056	6.963	7.921	3.412	U	PC/g	2/18/2010	CR	N/A	SO	
ARS1-10-00262-007	RE15-10-8314	GROSS ALPHA	5.109	4.119	13.539	4.037	U	PC/g	2/18/2010	CR	N/A	SO	
ARS1-10-00262-007	RE15-10-8314	GROSS BETA	24.911	4.797	7.864	3.408	U	PC/g	2/18/2010	CR	N/A	SO	
ARS1-10-00262-008	RE15-10-8315	GROSS ALPHA	-4.587	0.925	16.695	5.307	U	PC/g	2/18/2010	CR	N/A	SO	
ARS1-10-00262-008	RE15-10-8315	GROSS BETA	41.335	6.715	8.074	3.495	U	PC/g	2/18/2010	CR	N/A	SO	
ARS1-10-00262-009	RE15-10-8254	GROSS ALPHA	9.792	5.179	12.801	3.634	U	PC/g	2/18/2010	CR	N/A	SO	
ARS1-10-00262-009	RE15-10-8254	GROSS BETA	24.323	4.794	8.108	3.525	U	PC/g	2/18/2010	CR	N/A	SO	
ARS1-10-00262-010	RE15-10-8268	GROSS ALPHA	8.073	5.086	14.434	4.219	U	PC/g	2/18/2010	CR	N/A	SO	
ARS1-10-00262-010	RE15-10-8268	GROSS BETA	26.329	5.062	8.262	3.585	U	PC/g	2/18/2010	CR	N/A	SO	
ARS1-10-00262-011	RE15-10-8253	GROSS ALPHA	3.451	3.582	13.138	3.819	U	PC/g	2/18/2010	CR	N/A	SO	
ARS1-10-00262-011	RE15-10-8253	GROSS BETA	32.688	5.715	7.891	3.407	U	PC/g	2/18/2010	CR	N/A	SO	
ARS1-10-00262-012	RE15-10-8252	GROSS ALPHA	2.746	3.546	13.798	4.188	U	PC/g	2/18/2010	CR	N/A	SO	
ARS1-10-00262-012	RE15-10-8252	GROSS BETA	35.047	6.091	8.879	3.904	U	PC/g	2/18/2010	CR	N/A	SO	
ARS1-10-00262-013	RE15-10-8264	GROSS ALPHA	18.758	7.035	13.380	3.990	U	PC/g	2/18/2010	CR	N/A	SO	
ARS1-10-00262-013	RE15-10-8264	GROSS BETA	37.384	6.327	7.991	3.459	U	PC/g	2/18/2010	CR	N/A	SO	
ARS1-10-00262-014	RE15-10-8251	GROSS ALPHA	9.207	4.947	12.428	3.572	U	PC/g	2/18/2010	CR	N/A	SO	
ARS1-10-00262-014	RE15-10-8251	GROSS BETA	28.501	5.280	8.199	3.569	U	PC/g	2/18/2010	CR	N/A	SO	
ARS1-10-00262-015	RE15-10-8250	GROSS ALPHA	9.265	5.182	13.645	4.049	U	PC/g	2/18/2010	CR	N/A	SO	
ARS1-10-00262-015	RE15-10-8250	GROSS BETA	36.111	6.111	7.756	3.345	U	PC/g	2/18/2010	CR	N/A	SO	
ARS1-10-00262-016	RE15-10-8249	GROSS ALPHA	3.355	4.301	16.569	5.426	U	PC/g	2/18/2010	CR	N/A	SO	
ARS1-10-00262-016	RE15-10-8249	GROSS BETA	27.286	5.120	8.204	3.568	U	PC/g	2/18/2010	CR	N/A	SO	
ARS1-10-00262-017	RE15-10-8248	GROSS ALPHA	2.496	3.730	14.783	4.559	U	PC/g	2/18/2010	CR	N/A	SO	
ARS1-10-00262-017	RE15-10-8248	GROSS BETA	31.617	5.622	8.177	3.548	U	PC/g	2/18/2010	CR	N/A	SO	
ARS1-10-00262-018	RE15-10-8247	GROSS ALPHA	3.909	4.426	16.310	5.230	U	PC/g	2/18/2010	CR	N/A	SO	
ARS1-10-00262-018	RE15-10-8247	GROSS BETA	30.943	5.717	9.264	4.075	U	PC/g	2/18/2010	CR	N/A	SO	



2609 North River Road, Port Allen, Louisiana 70767

1 (800) 401-4277 FAX (225) 361-2996

ARS Sample Delivery Group: ARS1-10-00262

Analysis Description: Gross Alpha/Beta in (Soil, Sludge, Waste, Sediment [SO])

Analysis Test Method: GPC-A-003

Request or PO Number: N/A

Date Received: 2/17/2010

Report Date: 02/18/10 12:34

ACS Sample ID	Client Sample ID	Isotope	Analysis Results	Analysis Error +/- 2 s	MC	DLC	Qual	Analysis Units	Analysis Date/Time	Analysis Technician	Trace/Chem Recovery	Sample Matrix	Collection Date
ARS1-10-00262-019	RE15-10-8894	GROSS ALPHA	7.676	5.176	15.661	5.050	U	PC/g	2/18/2010	CR	N/A	SO	
ARS1-10-00262-019	RE15-10-8894	GROSS BETA	23.779	4.717	7.870	3.391	U	PC/g	2/18/2010	CR	N/A	SO	
ARS1-10-00262-020	RE15-10-8349	GROSS ALPHA	14.120	6.531	15.732	5.045	U	PC/g	2/18/2010	CR	N/A	SO	
ARS1-10-00262-020	RE15-10-8349	GROSS BETA	38.731	6.505	8.084	3.491	U	PC/g	2/18/2010	CR	N/A	SO	
ARS1-10-00262-021	RE15-10-8348	GROSS ALPHA	12.891	6.315	15.594	5.082	U	PC/g	2/18/2010	CR	N/A	SO	
ARS1-10-00262-021	RE15-10-8348	GROSS BETA	42.571	6.852	7.546	3.242	U	PC/g	2/18/2010	CR	N/A	SO	
ARS1-10-00262-022	RE16-10-1514	GROSS ALPHA	1.837	3.758	15.319	4.839	U	PC/g	2/18/2010	CR	N/A	SO	
ARS1-10-00262-022	RE16-10-1514	GROSS BETA	45.190	7.195	8.022	3.465	U	PC/g	2/18/2010	CR	N/A	SO	
ARS1-10-00262-023	RE16-10-13141	GROSS ALPHA	-1.251	2.802	15.097	5.002	U	PC/g	2/18/2010	CR	N/A	SO	
ARS1-10-00262-023	RE16-10-13141	GROSS BETA	26.989	4.999	7.752	3.346	U	PC/g	2/18/2010	CR	N/A	SO	
ARS1-10-00262-024	RE16-10-13142	GROSS ALPHA	9.142	5.361	14.808	4.762	U	PC/g	2/18/2010	CR	N/A	SO	
ARS1-10-00262-024	RE16-10-13142	GROSS BETA	35.501	6.042	7.756	3.343	U	PC/g	2/18/2010	CR	N/A	SO	
ARS1-10-00262-025	RE16-10-13143	GROSS ALPHA	8.291	5.673	16.892	5.656	U	PC/g	2/18/2010	CR	N/A	SO	
ARS1-10-00262-025	RE16-10-13143	GROSS BETA	37.273	6.288	7.980	3.444	U	PC/g	2/18/2010	CR	N/A	SO	
ARS1-10-00262-026	RE16-10-13147	GROSS ALPHA	5.527	5.069	17.198	6.082	U	PC/g	2/18/2010	CR	N/A	SO	
ARS1-10-00262-026	RE16-10-13147	GROSS BETA	32.272	5.756	8.540	3.729	U	PC/g	2/18/2010	CR	N/A	SO	

## NOTES:

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 client.

LEIAP Certificate # 01949

NEIAP Certificate # E87558



## DATA VALIDATION COVER SHEET

5119-1

## Data Validation Cover Sheet

Records Use only



## Section I.

REQUEST NUMBER: 10-1958 VALIDATION DATE: 04/04/10 LAB CODE: GEL

CONTRACT LABORATORY NAME: GEL Laboratories LLC

VALIDATOR: John A. Bailey ORGANIZATION: Analytical Quality Associates, Inc.

ANALYTICAL SUITE (CHECK ALL THAT APPLY):

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

## 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. An MS was not analyzed for tritium. However, an LCS was analyzed, met acceptance criteria and, thus, no sample results were qualified.
2. It should be noted that the parent sample for all QC analyses was a LANL sample from another RN. No sample data were qualified as a result.

Reviewed by: Monica Dymerski Level I Date: 04/06/10

VALIDATOR'S SIGNATURE:


A handwritten signature in cursive script, appearing to read "John A. Bailey".

DATE: 04/04/10

DATA VALIDATION COVER SHEET	
<b>5119-1</b>  <b>Data Validation Cover Sheet</b>	Records Use only   Los Alamos NATIONAL LABORATORY EST. 1945
Form 5119-1, Revision 0.0	LOS ALAMOS Environmental Restoration Project

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

Yes No N/A (Check One)				Assign Qualifier Listed Below If Criterion = Yes	
				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 type="checkbox"/>	<input checked="" 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 (Check One)				Assign Qualifier Listed Below If Criterion = Yes	
				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 type="checkbox"/>	<input checked="" 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

# GEL LABORATORIES LLC

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

## Certificate of Analysis

Company : Los Alamos National Laboratory  
Address : PO Box 1663  
TA-03, SM271, Drop Pt. 02U, Rm  
Los Alamos, New Mexico 87545  
Contact: Ms. Joylene Valdez  
Project: LANL ER Project

Report Date: March 16, 2010

Client Sample ID: RE15-10-8252  
Sample ID: 247568001  
Matrix: R  
Collect Date: 15-FEB-10  
Receive Date: 20-FEB-10  
Collector: Client

Project: LANL01004  
Client ID: LANL010

Parameter	Qualifier	Result	DL	TPU	RL	Units	DF	Analyst	Date	Time	Batch	Mtd.
<b>Rad Liquid Scintillation Analysis</b>												
<i>H3 "As Received"</i>												
Tritium		57900	202	+/-4050	250	pCi/L		KXK2	03/12/10	0219	960227	1

### The following Analytical Methods were performed

Method	Description
1	GL-RAD-A-002

#### Notes:

TPU is calculated at the 67% confidence level (1-sigma).

The Qualifiers in this report are defined as follows :

- \*\* Analyte is a surrogate compound
- < Result is less than value reported
- > Result is greater than value reported
- A The TIC is a suspected aldol-condensation product
- B For General Chemistry and Organic analysis the target analyte was detected in the associated blank.
- BD Results are either below the MDC or tracer recovery is low
- C Analyte has been confirmed by GC/MS analysis
- D Results are reported from a diluted aliquot of the sample
- F Estimated Value
- H Analytical holding time was exceeded
- J Value is estimated
- M M if above MDC and less than LLD
- M Matrix Related Failure
- N/A RPD or %Recovery limits do not apply.
- ND Analyte concentration is not detected above the detection limit
- NJ Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- R Sample results are rejected
- U Analyte was analyzed for, but not detected above the MDL, MDA, or LOD.
- UI Gamma Spectroscopy--Uncertain identification
- UJ Gamma Spectroscopy--Uncertain identification
- X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- Y QC Samples were not spiked with this compound
- ^ RPD of sample and duplicate evaluated using +/-RL. Concentrations are <5X the RL. Qualifier Not Applicable for Radiochemistry.

# GEL LABORATORIES LLC

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

## Certificate of Analysis

Company : Los Alamos National Laboratory  
Address : PO Box 1663  
TA-03, SM271, Drop Pt. 02U, Rm  
Los Alamos, New Mexico 87545  
Contact: Ms. Joylene Valdez  
Project: LANL ER Project

Report Date: March 16, 2010

Client Sample ID: RE15-10-8253  
Sample ID: 247568002  
Matrix: R  
Collect Date: 15-FEB-10  
Receive Date: 20-FEB-10  
Collector: Client

Project: LANL01004  
Client ID: LANL010

Parameter	Qualifier	Result	DL	TPU	RL	Units	DF	Analyst	Date	Time	Batch	Mtd.
<b>Rad Liquid Scintillation Analysis</b>												
<i>H3 "As Received"</i>												
Tritium		4.22E+06	201	+/-2.94E+05	250	pCi/L		KXK2	03/12/10	1051	960227	1

### The following Analytical Methods were performed

Method	Description
1	GL-RAD-A-002

#### Notes:

TPU is calculated at the 67% confidence level (1-sigma).

The Qualifiers in this report are defined as follows :

- \*\* Analyte is a surrogate compound
- < Result is less than value reported
- > Result is greater than value reported
- A The TIC is a suspected aldol-condensation product
- B For General Chemistry and Organic analysis the target analyte was detected in the associated blank.
- BD Results are either below the MDC or tracer recovery is low
- C Analyte has been confirmed by GC/MS analysis
- D Results are reported from a diluted aliquot of the sample
- F Estimated Value
- H Analytical holding time was exceeded
- J Value is estimated
- M M if above MDC and less than LLD
- M Matrix Related Failure
- N/A RPD or %Recovery limits do not apply.
- ND Analyte concentration is not detected above the detection limit
- NJ Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- R Sample results are rejected
- U Analyte was analyzed for, but not detected above the MDL, MDA, or LOD.
- UI Gamma Spectroscopy--Uncertain identification
- UJ Gamma Spectroscopy--Uncertain identification
- X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- Y QC Samples were not spiked with this compound
- ^ RPD of sample and duplicate evaluated using +/-RL. Concentrations are <5X the RL. Qualifier Not Applicable for Radiochemistry.
- h Preparation or preservation holding time was exceeded

# GEL LABORATORIES LLC

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

## Certificate of Analysis

Company : Los Alamos National Laboratory  
Address : PO Box 1663  
TA-03, SM271, Drop Pt. 02U, Rm  
Los Alamos, New Mexico 87545  
Contact: Ms. Joylene Valdez  
Project: LANL ER Project

Report Date: March 16, 2010

Client Sample ID: RE15-10-8250  
Sample ID: 247568003  
Matrix: R  
Collect Date: 15-FEB-10  
Receive Date: 20-FEB-10  
Collector: Client

Project: LANL01004  
Client ID: LANL010

Parameter	Qualifier	Result	DL	TPU	RL	Units	DF	Analyst	Date	Time	Batch	Mtd.
<b>Rad Liquid Scintillation Analysis</b>												
<i>H3 "As Received"</i>												
Tritium		3.28E+05	201	+/-22900	250	pCi/L		KXK2	03/12/10	1229	960227	1

### The following Analytical Methods were performed

Method	Description
1	GL-RAD-A-002

#### Notes:

TPU is calculated at the 67% confidence level (1-sigma).

The Qualifiers in this report are defined as follows :

- \*\* Analyte is a surrogate compound
- < Result is less than value reported
- > Result is greater than value reported
- A The TIC is a suspected aldol-condensation product
- B For General Chemistry and Organic analysis the target analyte was detected in the associated blank.
- BD Results are either below the MDC or tracer recovery is low
- C Analyte has been confirmed by GC/MS analysis
- D Results are reported from a diluted aliquot of the sample
- F Estimated Value
- H Analytical holding time was exceeded
- J Value is estimated
- M M if above MDC and less than LLD
- M Matrix Related Failure
- N/A RPD or %Recovery limits do not apply.
- ND Analyte concentration is not detected above the detection limit
- NJ Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- R Sample results are rejected
- U Analyte was analyzed for, but not detected above the MDL, MDA, or LOD.
- UI Gamma Spectroscopy--Uncertain identification
- UJ Gamma Spectroscopy--Uncertain identification
- X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- Y QC Samples were not spiked with this compound
- ^ RPD of sample and duplicate evaluated using +/-RL. Concentrations are <5X the RL. Qualifier Not Applicable for Radiochemistry.
- h Preparation or preservation holding time was exceeded



# GEL LABORATORIES LLC

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

## Certificate of Analysis

Company : Los Alamos National Laboratory  
Address : PO Box 1663  
TA-03, SM271, Drop Pt. 02U, Rm  
Los Alamos, New Mexico 87545  
Contact: Ms. Joylene Valdez  
Project: LANL ER Project

Report Date: March 16, 2010

Client Sample ID: RE15-10-8251  
Sample ID: 247568004  
Matrix: R  
Collect Date: 15-FEB-10  
Receive Date: 20-FEB-10  
Collector: Client

Project: LANL01004  
Client ID: LANL010

Parameter	Qualifier	Result	DL	TPU	RL	Units	DF	Analyst	Date	Time	Batch	Mtd.
<b>Rad Liquid Scintillation Analysis</b>												
<i>H3 "As Received"</i>												
Tritium		3.76E+05	202	+/-26200	250	pCi/L		KXK2	03/12/10	1408	960227	1

### The following Analytical Methods were performed

Method	Description
1	GL-RAD-A-002

#### Notes:

TPU is calculated at the 67% confidence level (1-sigma).

The Qualifiers in this report are defined as follows :

- \*\* Analyte is a surrogate compound
- < Result is less than value reported
- > Result is greater than value reported
- A The TIC is a suspected aldol-condensation product
- B For General Chemistry and Organic analysis the target analyte was detected in the associated blank.
- BD Results are either below the MDC or tracer recovery is low
- C Analyte has been confirmed by GC/MS analysis
- D Results are reported from a diluted aliquot of the sample
- F Estimated Value
- H Analytical holding time was exceeded
- J Value is estimated
- M M if above MDC and less than LLD
- M Matrix Related Failure
- N/A RPD or %Recovery limits do not apply.
- ND Analyte concentration is not detected above the detection limit
- NJ Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- R Sample results are rejected
- U Analyte was analyzed for, but not detected above the MDL, MDA, or LOD.
- UI Gamma Spectroscopy--Uncertain identification
- UJ Gamma Spectroscopy--Uncertain identification
- X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- Y QC Samples were not spiked with this compound
- ^ RPD of sample and duplicate evaluated using +/-RL. Concentrations are <5X the RL. Qualifier Not Applicable for Radiochemistry.
- h Preparation or preservation holding time was exceeded

## GEL LABORATORIES LLC

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

### Certificate of Analysis

Company : Los Alamos National Laboratory  
Address : PO Box 1663  
TA-03, SM271, Drop Pt. 02U, Rm  
Los Alamos, New Mexico 87545  
Contact: Ms. Joylene Valdez  
Project: LANL ER Project

Report Date: March 16, 2010

Client Sample ID: RE15-10-8248  
Sample ID: 247568005  
Matrix: R  
Collect Date: 15-FEB-10  
Receive Date: 20-FEB-10  
Collector: Client

Project: LANL01004  
Client ID: LANL010

Parameter	Qualifier	Result	DL	TPU	RL	Units	DF	Analyst	Date	Time	Batch	Mtd.
<b>Rad Liquid Scintillation Analysis</b>												
<i>H3 "As Received"</i>												
Tritium		2.77E+05	251	+/-19400	250	pCi/L		KXK2	03/12/10	1546	960227	1

#### **The following Analytical Methods were performed**

Method	Description
1	GL-RAD-A-002

#### **Notes:**

TPU is calculated at the 67% confidence level (1-sigma).

The Qualifiers in this report are defined as follows :

- \*\* Analyte is a surrogate compound
- < Result is less than value reported
- > Result is greater than value reported
- A The TIC is a suspected aldol-condensation product
- B For General Chemistry and Organic analysis the target analyte was detected in the associated blank.
- BD Results are either below the MDC or tracer recovery is low
- C Analyte has been confirmed by GC/MS analysis
- D Results are reported from a diluted aliquot of the sample
- F Estimated Value
- H Analytical holding time was exceeded
- J Value is estimated
- M M if above MDC and less than LLD
- M Matrix Related Failure
- N/A RPD or %Recovery limits do not apply.
- ND Analyte concentration is not detected above the detection limit
- NJ Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- R Sample results are rejected
- U Analyte was analyzed for, but not detected above the MDL, MDA, or LOD.
- UI Gamma Spectroscopy--Uncertain identification
- UJ Gamma Spectroscopy--Uncertain identification
- X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- Y QC Samples were not spiked with this compound
- ^ RPD of sample and duplicate evaluated using +/-RL. Concentrations are <5X the RL. Qualifier Not Applicable for Radiochemistry.
- h Preparation or preservation holding time was exceeded

# GEL LABORATORIES LLC

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

## Certificate of Analysis

Company : Los Alamos National Laboratory  
Address : PO Box 1663  
TA-03, SM271, Drop Pt. 02U, Rm  
Los Alamos, New Mexico 87545  
Contact: Ms. Joylene Valdez  
Project: LANL ER Project

Report Date: March 16, 2010

Client Sample ID: RE15-10-8249  
Sample ID: 247568006  
Matrix: R  
Collect Date: 15-FEB-10  
Receive Date: 20-FEB-10  
Collector: Client

Project: LANL01004  
Client ID: LANL010

Parameter	Qualifier	Result	DL	TPU	RL	Units	DF	Analyst	Date	Time	Batch	Mtd.
<b>Rad Liquid Scintillation Analysis</b>												
<i>H3 "As Received"</i>												
Tritium		2.69E+05	212	+/-18800	250	pCi/L		KXK2	03/12/10	1725	960227	1

### The following Analytical Methods were performed

Method	Description
1	GL-RAD-A-002

#### Notes:

TPU is calculated at the 67% confidence level (1-sigma).

The Qualifiers in this report are defined as follows :

- \*\* Analyte is a surrogate compound
- < Result is less than value reported
- > Result is greater than value reported
- A The TIC is a suspected aldol-condensation product
- B For General Chemistry and Organic analysis the target analyte was detected in the associated blank.
- BD Results are either below the MDC or tracer recovery is low
- C Analyte has been confirmed by GC/MS analysis
- D Results are reported from a diluted aliquot of the sample
- F Estimated Value
- H Analytical holding time was exceeded
- J Value is estimated
- M M if above MDC and less than LLD
- M Matrix Related Failure
- N/A RPD or %Recovery limits do not apply.
- ND Analyte concentration is not detected above the detection limit
- NJ Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- R Sample results are rejected
- U Analyte was analyzed for, but not detected above the MDL, MDA, or LOD.
- UI Gamma Spectroscopy--Uncertain identification
- UJ Gamma Spectroscopy--Uncertain identification
- X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- Y QC Samples were not spiked with this compound
- ^ RPD of sample and duplicate evaluated using +/-RL. Concentrations are <5X the RL. Qualifier Not Applicable for Radiochemistry.
- h Preparation or preservation holding time was exceeded

# GEL LABORATORIES LLC

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

## Certificate of Analysis

Company : Los Alamos National Laboratory  
Address : PO Box 1663  
TA-03, SM271, Drop Pt. 02U, Rm  
Los Alamos, New Mexico 87545  
Contact: Ms. Joylene Valdez  
Project: LANL ER Project

Report Date: March 16, 2010

Client Sample ID: RE15-10-8247  
Sample ID: 247568007  
Matrix: R  
Collect Date: 15-FEB-10  
Receive Date: 20-FEB-10  
Collector: Client

Project: LANL01004  
Client ID: LANL010

Parameter	Qualifier	Result	DL	TPU	RL	Units	DF	Analyst	Date	Time	Batch	Mtd.
<b>Rad Liquid Scintillation Analysis</b>												
<i>H3 "As Received"</i>												
Tritium		2.62E+05	201	+/-18300	250	pCi/L		KXX2	03/12/10	1903	960227	1

### The following Analytical Methods were performed

Method	Description
1	GL-RAD-A-002

#### Notes:

TPU is calculated at the 67% confidence level (1-sigma).

The Qualifiers in this report are defined as follows :

- \*\* Analyte is a surrogate compound
- < Result is less than value reported
- > Result is greater than value reported
- A The TIC is a suspected aldol-condensation product
- B For General Chemistry and Organic analysis the target analyte was detected in the associated blank.
- BD Results are either below the MDC or tracer recovery is low
- C Analyte has been confirmed by GC/MS analysis
- D Results are reported from a diluted aliquot of the sample
- F Estimated Value
- H Analytical holding time was exceeded
- J Value is estimated
- M M if above MDC and less than LLD
- M Matrix Related Failure
- N/A RPD or %Recovery limits do not apply.
- ND Analyte concentration is not detected above the detection limit
- NJ Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- R Sample results are rejected
- U Analyte was analyzed for, but not detected above the MDL, MDA, or LOD.
- UI Gamma Spectroscopy--Uncertain identification
- UJ Gamma Spectroscopy--Uncertain identification
- X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- Y QC Samples were not spiked with this compound
- ^ RPD of sample and duplicate evaluated using +/-RL. Concentrations are <5X the RL. Qualifier Not Applicable for Radiochemistry.
- h Preparation or preservation holding time was exceeded

# GEL LABORATORIES LLC

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

## Certificate of Analysis

Company : Los Alamos National Laboratory  
Address : PO Box 1663  
TA-03, SM271, Drop Pt. 02U, Rm  
Los Alamos, New Mexico 87545  
Contact: Ms. Joylene Valdez  
Project: LANL ER Project

Report Date: March 16, 2010

Client Sample ID: RE15-10-8254  
Sample ID: 247568008  
Matrix: R  
Collect Date: 15-FEB-10  
Receive Date: 20-FEB-10  
Collector: Client

Project: LANL01004  
Client ID: LANL010

Parameter	Qualifier	Result	DL	TPU	RL	Units	DF	Analyst	Date	Time	Batch	Mtd.
<b>Rad Liquid Scintillation Analysis</b>												
<i>H3 "As Received"</i>												
Tritium		4.13E+06	201	+/-2.87E+05	250	pCi/L		KXX2	03/12/10	2043	960227	1

### The following Analytical Methods were performed

Method	Description
1	GL-RAD-A-002

#### Notes:

TPU is calculated at the 67% confidence level (1-sigma).

The Qualifiers in this report are defined as follows :

- \*\* Analyte is a surrogate compound
- < Result is less than value reported
- > Result is greater than value reported
- A The TIC is a suspected aldol-condensation product
- B For General Chemistry and Organic analysis the target analyte was detected in the associated blank.
- BD Results are either below the MDC or tracer recovery is low
- C Analyte has been confirmed by GC/MS analysis
- D Results are reported from a diluted aliquot of the sample
- F Estimated Value
- H Analytical holding time was exceeded
- J Value is estimated
- M M if above MDC and less than LLD
- M Matrix Related Failure
- N/A RPD or %Recovery limits do not apply.
- ND Analyte concentration is not detected above the detection limit
- NJ Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- R Sample results are rejected
- U Analyte was analyzed for, but not detected above the MDL, MDA, or LOD.
- UI Gamma Spectroscopy--Uncertain identification
- UJ Gamma Spectroscopy--Uncertain identification
- X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- Y QC Samples were not spiked with this compound
- ^ RPD of sample and duplicate evaluated using +/-RL. Concentrations are <5X the RL. Qualifier Not Applicable for Radiochemistry.
- h Preparation or preservation holding time was exceeded

## GEL LABORATORIES LLC

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

### Certificate of Analysis

Company : Los Alamos National Laboratory  
Address : PO Box 1663  
TA-03, SM271, Drop Pt. 02U, Rm  
Los Alamos, New Mexico 87545  
Contact: Ms. Joylene Valdez  
Project: LANL ER Project

Report Date: March 16, 2010

Client Sample ID: RE15-10-8268  
Sample ID: 247568009  
Matrix: R  
Collect Date: 15-FEB-10  
Receive Date: 20-FEB-10  
Collector: Client

Project: LANL01004  
Client ID: LANL010

Parameter	Qualifier	Result	DL	TPU	RL	Units	DF	Analyst	Date	Time	Batch	Mtd.
<b>Rad Liquid Scintillation Analysis</b>												
<i>H3 "As Received"</i>												
Tritium		4.10E+06	202	+/-2.85E+05	250	pCi/L		KXK2	03/12/10	2223	960227	1

#### The following Analytical Methods were performed

Method	Description
1	GL-RAD-A-002

#### Notes:

TPU is calculated at the 67% confidence level (1-sigma).

The Qualifiers in this report are defined as follows :

- \*\* Analyte is a surrogate compound
- < Result is less than value reported
- > Result is greater than value reported
- A The TIC is a suspected aldol-condensation product
- B For General Chemistry and Organic analysis the target analyte was detected in the associated blank.
- BD Results are either below the MDC or tracer recovery is low
- C Analyte has been confirmed by GC/MS analysis
- D Results are reported from a diluted aliquot of the sample
- F Estimated Value
- H Analytical holding time was exceeded
- J Value is estimated
- M M if above MDC and less than LLD
- M Matrix Related Failure
- N/A RPD or %Recovery limits do not apply.
- ND Analyte concentration is not detected above the detection limit
- NJ Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- R Sample results are rejected
- U Analyte was analyzed for, but not detected above the MDL, MDA, or LOD.
- UI Gamma Spectroscopy--Uncertain identification
- UJ Gamma Spectroscopy--Uncertain identification
- X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- Y QC Samples were not spiked with this compound
- ^ RPD of sample and duplicate evaluated using +/-RL. Concentrations are <5X the RL. Qualifier Not Applicable for Radiochemistry.
- h Preparation or preservation holding time was exceeded

# GEL LABORATORIES LLC

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

## Certificate of Analysis

Company : Los Alamos National Laboratory  
Address : PO Box 1663  
TA-03, SM271, Drop Pt. 02U, Rm  
Los Alamos, New Mexico 87545  
Contact: Ms. Joylene Valdez  
Project: LANL ER Project

Report Date: March 16, 2010

Client Sample ID: RE15-10-8264  
Sample ID: 247568010  
Matrix: R  
Collect Date: 15-FEB-10  
Receive Date: 20-FEB-10  
Collector: Client

Project: LANL01004  
Client ID: LANL010

Parameter	Qualifier	Result	DL	TPU	RL	Units	DF	Analyst	Date	Time	Batch	Mtd.
<b>Rad Liquid Scintillation Analysis</b>												
<i>H3 "As Received"</i>												
Tritium		3.78E+05	202	+/-26400	250	pCi/L		KXK2	03/13/10	0001	960227	1

### The following Analytical Methods were performed

Method	Description
1	GL-RAD-A-002

#### Notes:

TPU is calculated at the 67% confidence level (1-sigma).

The Qualifiers in this report are defined as follows :

- \*\* Analyte is a surrogate compound
- < Result is less than value reported
- > Result is greater than value reported
- A The TIC is a suspected aldol-condensation product
- B For General Chemistry and Organic analysis the target analyte was detected in the associated blank.
- BD Results are either below the MDC or tracer recovery is low
- C Analyte has been confirmed by GC/MS analysis
- D Results are reported from a diluted aliquot of the sample
- F Estimated Value
- H Analytical holding time was exceeded
- J Value is estimated
- M M if above MDC and less than LLD
- M Matrix Related Failure
- N/A RPD or %Recovery limits do not apply.
- ND Analyte concentration is not detected above the detection limit
- NJ Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- R Sample results are rejected
- U Analyte was analyzed for, but not detected above the MDL, MDA, or LOD.
- UI Gamma Spectroscopy--Uncertain identification
- UJ Gamma Spectroscopy--Uncertain identification
- X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- Y QC Samples were not spiked with this compound
- ^ RPD of sample and duplicate evaluated using +/-RL. Concentrations are <5X the RL. Qualifier Not Applicable for Radiochemistry.
- h Preparation or preservation holding time was exceeded

Friday, February 19, 2010

LAB CHAIN OF CUSTODY DOCUMENT NUMBER: 10-1958

**LOS ALAMOS**

REQUEST NUMBER: 10-1958

**NATIONAL LABORATORY**

ATTN: Valerie Davis

TURNAROUND/REPORT DUE: 3/21/2010

General Engineering Laboratories, Inc.,  
Charleston, SC.

TURNAROUND REQ'D: 30

2040 Savage Rd

Charleston, SC 29407

LAB REQUEST COMMENTS:

2475681

SAMPLE ID	CTNR	CTNR DESC	ORDER	PRESERV	MATRIX
RE15-10-8252	1	POLY	H3	Ice	R
RE15-10-8253	1	POLY	H3	Ice	R
RE15-10-8250	1	POLY	H3	Ice	R
RE15-10-8251	1	POLY	H3	Ice	R
RE15-10-8248	1	POLY	H3	Ice	R
RE15-10-8249	1	POLY	H3	Ice	R
RE15-10-8247	1	POLY	H3	Ice	R
RE15-10-8254	1	POLY	H3	Ice	R
RE15-10-8268	1	POLY	H3	Ice	R
RE15-10-8264	1	POLY	H3	Ice	R

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



REQUEST NUMBER: 10-1958

Friday, February 19, 2010

**LOS ALAMOS  
NATIONAL LABORATORY**

ATTN: Valerie Davis

General Engineering Laboratories, Inc., Charleston, SC.

2040 Savage Rd

Charleston, SC 29407

These Samples are on:

LANL Request Number: 10-1958

Per Agreement Number: 126310011

Project Cost Code: MR3A05529E00

Please analyse the enclosed samples  
according to the schedule indicated:

SHIP DATE: 2/19/2010

TURNAROUND/REPORT DUE: 3/21/2010

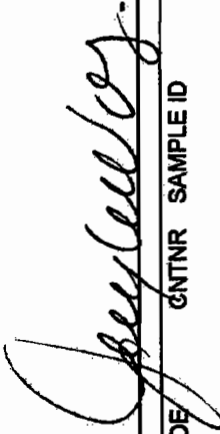
TURNAROUND REQ'D: 30 Days

RAD SCREENING: Yes, Below Background

LAB REQUEST COMMENTS:

LANL ER SMO CONTACT:

Signature:



PRIORITY	METHOD CODE	QNTNR	SAMPLE ID	SAMPLE MATRIX	DATE SAMPLED	SPECIAL INSTRUCTIONS
	EPA:906.0	1	RE15-10-8247	R	2/15/2010	
		1	RE15-10-8248	R	2/15/2010	
		1	RE15-10-8249	R	2/15/2010	
		1	RE15-10-8250	R	2/15/2010	
		1	RE15-10-8251	R	2/15/2010	
		1	RE15-10-8252	R	2/15/2010	
		1	RE15-10-8253	R	2/15/2010	
		1	RE15-10-8254	R	2/15/2010	
		1	RE15-10-8264	R	2/15/2010	

Friday, February 19, 2010

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

EPA:906.0	1	RE15-10-8288	R	2/15/2010	
-----------	---	--------------	---	-----------	--

Final Page of REQUEST NUMBER 10-1958



February 24, 2010

[www.gel.com](http://www.gel.com)

Ms. Joylene Valdez  
Los Alamos National Laboratory  
PO Box 1663  
TA-03, SM271, Drop Pt. 02U, Rm111  
Los Alamos, New Mexico 87545

Re: LANL ER Project  
Work Order: 247568  
SDG: 10-1958

Dear Ms. Valdez:

GEL Laboratories, LLC (GEL) appreciates the opportunity to provide the following analytical results for the sample(s) we received on February 20, 2010, and analyzed for Radiochemistry. This original data report has been prepared and reviewed in accordance with GEL's standard operating procedures.

Our policy is to provide high quality, personalized analytical services to enable you to meet your analytical needs on time every time. We trust that you will find everything in order and to your satisfaction. If you have any questions, please do not hesitate to call me at (843) 556-8171, ext. 4485.

Sincerely,

Valerie Davis  
Project Manager

Purchase Order: 72733-001-09  
Chain of Custody: 10-1958  
Enclosures

**Los Alamos National Laboratory (72733-001-09)**  
**LANL ER Project**  
**Work Order #: 247568**  
**SDG: 10-1958**

## TABLE OF CONTENTS

Case Narrative.....	1
Chain of Custody and Supporting Documentation.....	5
Data Review Qualifier Flag Definition Sheet.....	13
Radiological Analysis.....	15
Sample Data Summary.....	19
Quality Control Data.....	41
Raw Data.....	44
Background and Efficiency Data.....	80
Standards Data.....	82
Runlogs.....	86

# Case Narrative

**Case Narrative for  
Los Alamos National Laboratory (72733-001-09)  
LANL ER Project  
Workorder #: 247568  
SDG # : 10-1958**

**February 24, 2010**

**Laboratory Identification:**

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

**Summary**

**Sample receipt** The samples arrived at GEL Laboratories LLC, Charleston, South Carolina on February 20, 2010 for analysis. The samples were prepared/analyzed within the required holding time. Shipping container temperatures were checked, documented, and within specifications. The samples were screened according to GEL Standard Operating Procedure. The samples were delivered with proper chain of custody documentation and signatures. All sample containers arrived without any visible signs of tampering or breakage. Containers were checked for pH, where appropriate, and matched the preservative as documented on the accompanying chain of custody. The containers for radiochemistry were received at 12C temperature. Shipping container temperature was within specification (0 - 6C).

**Sample Identification** The laboratory received the following samples:

<b><u>Laboratory ID</u></b>	<b><u>Client ID</u></b>
247568001	RE15-10-8252
247568002	RE15-10-8253
247568003	RE15-10-8250
247568004	RE15-10-8251
247568005	RE15-10-8248
247568006	RE15-10-8249
247568007	RE15-10-8247
247568008	RE15-10-8254
247568009	RE15-10-8268
247568010	RE15-10-8264

**Case Narrative**

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

**Data Package** The enclosed data package contains the following sections: Case Narrative, Chain of Custody, Cooler Receipt Checklist, Data Package Qualifier Definitions and data from the following fractions: Radiochemistry.

I certify that this data report is in compliance with the terms and conditions of the subcontract and task order, both technically and for completeness, for other than the conditions detailed in the attached case narrative.

A handwritten signature in black ink, appearing to read "for Valerie Davis".

Valerie Davis

Project Manager



**List of current GEL Certifications as of 24 February 2010**

<b>State</b>	<b>Certification</b>
Arizona	AZ0668
Arkansas	88-0651
CLIA	42D0904046
California – NELAP	01151CA
Colorado	GEL
Connecticut	PH-0169
Dept. of Navy	NFESC 413
EPA Region 5	WG-15J
Florida – NELAP	E87156
Georgia	E87156 (FL/NELAP)
Georgia DW	967
Hawaii	N/A
ISO 17025	2567.01
Idaho	SC00012
Illinois – NELAP	200029
Indiana	C-SC-01
Kansas – NELAP	E-10332
Kentucky	90129
Louisiana – NELAP	03046
Maryland	270
Massachusetts	M-SC012
Nevada	SC00012
New Jersey – NELAP	SC002
New Mexico	FL NELAP E87156
New York – NELAP	11501
North Carolina	233
North Carolina DW	45709
Oklahoma	9904
Pennsylvania – NELAP	68-00485
South Carolina	10120001/10120002
Tennessee	TN 02934
Texas – NELAP	T104704235-07B-TX
U.S. Dept. of Agriculture	S-52597
Utah – NELAP	GEL
Vermont	VT87156
Virginia	00151
Washington	C1641

# **Chain of Custody and Supporting Documentation**

Friday, February 19, 2010

LAB CHAIN OF CUSTODY DOCUMENT NUMBER: 10-1958

LOS ALAMOS

REQUEST NUMBER: 10-1958

NATIONAL LABORATORY

ATTN: Valerie Davis

TURNAROUND/REPORT DUE: 3/21/2010

General Engineering Laboratories, Inc.,  
Charleston, SC.

TURNAROUND REQ'D: 30

2040 Savage Rd

Charleston, SC 29407

LAB REQUEST COMMENTS:

247568°/

SAMPLE ID	CTNR	CTNR DESC	ORDER	PRESERV	MATRIX
RE15-10-8252	1	POLY	H3	Ice	R
RE15-10-8253	1	POLY	H3	Ice	R
RE15-10-8250	1	POLY	H3	Ice	R
RE15-10-8251	1	POLY	H3	Ice	R
RE15-10-8248	1	POLY	H3	Ice	R
RE15-10-8249	1	POLY	H3	Ice	R
RE15-10-8247	1	POLY	H3	Ice	R
RE15-10-8254	1	POLY	H3	Ice	R
RE15-10-8268	1	POLY	H3	Ice	R
RE15-10-8264	1	POLY	H3	Ice	R

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

Friday, February 19, 2010

**LOS ALAMOS**  
NATIONAL LABORATORY

ATTN: Valerie Davis

General Engineering Laboratories, Inc., Charleston, SC.

2040 Savage Rd

Charleston, SC 29407

Please analyse the enclosed samples  
according to the schedule indicated:

**SHIP DATE: 2/19/2010**

**TURNAROUND/REPORT DUE: 3/21/2010**

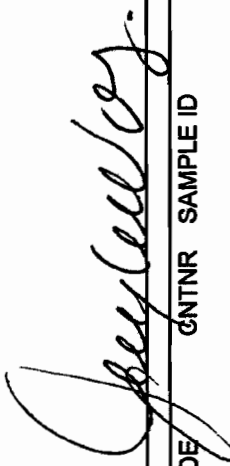
**TURNAROUND REQ'D: 30 Days**

**RAD SCREENING: Yes, Below Background**

**LAB REQUEST COMMENTS:**

LANL ER SMO CONTACT:

Signature:



REQUEST NUMBER: 10-1958

These Samples are on:

LANL Request Number: 10-1958

Per Agreement Number: 126310011

Project Cost Code: MR3A05529E00

PRIORITY	METHOD CODE	QNTNR	SAMPLE ID	SAMPLE MATRIX	DATE SAMPLED	SPECIAL INSTRUCTIONS
	EPA:906.0	1	RE15-10-8247	R	2/15/2010	
		1	RE15-10-8248	R	2/15/2010	
		1	RE15-10-8249	R	2/15/2010	
		1	RE15-10-8250	R	2/15/2010	
		1	RE15-10-8251	R	2/15/2010	
		1	RE15-10-8252	R	2/15/2010	
		1	RE15-10-8253	R	2/15/2010	
		1	RE15-10-8254	R	2/15/2010	
		1	RE15-10-8264	R	2/15/2010	

Friday, February 19, 2010

Page 2 of 2

REQUEST NUMBER: 10-1958

PRIORITY	METHOD CODE	CNTNR	SAMPLE ID	SAMPLE MATRIX	DATE SAMPLED	SPECIAL INSTRUCTIONS
	EPA:906.0	1	RE15-10-8268	R	2/15/2010	

Final Page of REQUEST NUMBER 10-1958



Laboratories LLC

## SAMPLE RECEIPT &amp; REVIEW FORM

Client: LANL			SDG/ARCO/Work Order: 10-1958		
Received By: Patricia Dover-Dent			Date Received: February 20, 2009		
Suspected Hazard Information	Yes	No	*If Counts > x2 area background on samples not marked "radioactive", contact the Radiation Safety Group of further investigation.		
COC/Samples marked as radioactive?		X	Maximum Counts Observed*: 40 CPM		
Classified Radioactive II by RSO?		X			
COC/Samples marked containing PCBs?		X			
Shipped as a DOT Hazardous?		X	Hazard Class Shipped: UN#:		
Samples identified as Foreign Soil?		X			

Sample Receipt Criteria		Yes	NA	No	Comments/Qualifiers (Required for Non-Conforming Items)
1	Shipping containers received intact and sealed?	X			Circle Applicable: seals broken damaged container leaking container other (describe)
2	Samples requiring cold preservation within 0 ≤ 6 deg. C?	X			Preservation Method: ice bags blue ice dry ice none other (describe) 2-6 12C
3	Chain of custody documents included with shipment?	X			
4	Sample containers intact and sealed?	X			Circle Applicable: seals broken damaged container leaking container other (describe)
5	Samples requiring chemical preservation at proper pH?		X		Sample ID's, containers affected and observed pH: If Preservation added, Lot#:
6	VOA vials free of headspace (defined as < 6mm bubble)?		X		Sample ID's and containers affected:
7	Are Encore containers present?			X	(If yes, immediately deliver to Volatiles laboratory)
8	Samples received within holding time?	X			Id's and tests affected:
9	Sample ID's on COC match ID's on bottles?	X			Sample ID's and containers affected:
10	Date & time on COC match date & time on bottles?			X	Sample ID's affected: time written on containers, not on COC
11	Number of containers received match number indicated on COC?	X			Sample ID's affected:
12	COC form is properly signed in relinquished/received sections?	X			

## Comments: FEDEX#S

7209 7850 1448 2C  
 7209 7850 1426 2C  
 7209 7850 1437 3C  
 7209 7850 1460 4C  
 7209 7850 1470 6C  
 7209 7850 1459 6C  
 7209 7850 1415 5C  
 7209 7850 1390 12C  
 7209 7850 1404 12C

ORIGIN ID: SFA (555) 555-9969  
JOYLENE VALDEZ  
LOS ALAMOS NATL LAB  
TAGS BLDG 1237 DPU 03  
LOS ALAMOS NM 87545  
UNITED STATES US

SHIP DATE: 19FEB10  
ACTNGT: 65.0 LB MAN  
CAD: 0014176/CAFE2450

BILL SENDER

ORIGIN ID: SFA (555) 555-9969  
JOYLENE VALDEZ  
LOS ALAMOS NATL LAB  
TAGS BLDG 1237 DPU 03

LOS ALAMOS NM 87545  
UNITED STATES US

ORIGIN ID: SFA (555) 555-9969  
ACTNGT: 65.0 LB MAN  
CAD: 0014176/CAFE2450

BILL SENDER

TO VALERIE DAVIS  
GENERAL ENGINEERING LAB  
2040 SAVAGE RD

CHARLESTON SC 29407

(843) 555-8171  
REF: 6B010AMR3A0532VA00

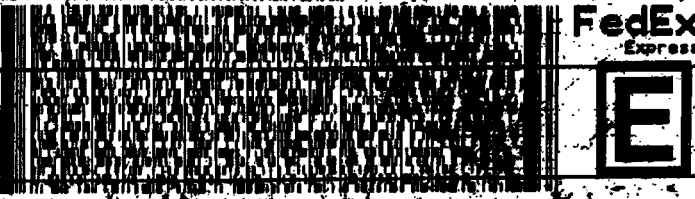
2°

TO VALERIE DAVIS  
GENERAL ENGINEERING LAB  
2040 SAVAGE RD

CHARLESTON SC 29407

(843) 555-8171  
REF: 6B010AMR3A05529E00

2°



2 of 2  
MPN 7209 7850 1446  
Matr 7209 7850 1437 0291  
### SATURDAY ###  
PRIORITY OVERNIGHT

29407  
SC-US  
CHS

X0 CHSA

2 of 2  
MPN 7209 7850 1426  
Matr 7209 7850 1415 0291  
### SATURDAY ### A1  
PRIORITY OVERNIGHT

29407  
SC-US  
CHS

X0 CHSA



ORIGIN ID: SFA (555) 555-9969  
JOYLENE VALDEZ  
LOS ALAMOS NATL LAB  
TAGS BLDG 1237 DPU 03

SHIP DATE: 19FEB10  
ACTNGT: 65.0 LB MAN  
CAD: 0014176/CAFE2450

LOS ALAMOS NM 87545  
UNITED STATES US

BILL SENDER

ORIGIN ID: SFA (555) 555-9969  
JOYLENE VALDEZ  
LOS ALAMOS NATL LAB  
TAGS BLDG 1237 DPU 03

LOS ALAMOS NM 87545  
UNITED STATES US

ORIGIN ID: SFA (555) 555-9969  
ACTNGT: 65.0 LB MAN  
CAD: 0014176/CAFE2450

BILL SENDER

TO VALERIE DAVIS  
GENERAL ENGINEERING LAB  
2040 SAVAGE RD

3°

CHARLESTON SC 29407

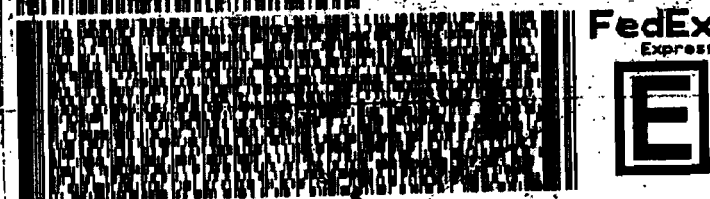
(843) 555-8171  
REF: 6B010AMR3A0532VA00

TO VALERIE DAVIS  
GENERAL ENGINEERING LAB  
2040 SAVAGE RD

4°

CHARLESTON SC 29407

(843) 555-8171  
REF: 6B010AMR3A0532VA00



1 of 2  
TRK# 7209 7850 1437  
Matr 7209 7850 1437 0201  
### SATURDAY ### A1  
PRIORITY OVERNIGHT

29407  
SC-US  
CHS

X0 CHSA

2 of 2  
TRK# 7209 7850 1450  
Matr 7209 7850 1459 0201  
### SATURDAY ### A1  
PRIORITY OVERNIGHT

29407  
SC-US  
CHS

X0 CHSA

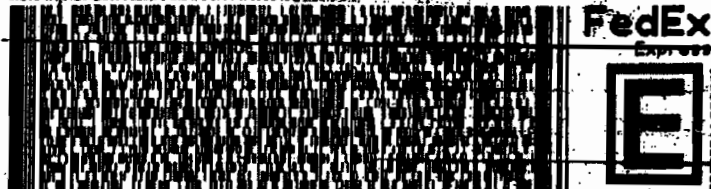
ORIGIN ID: SAFA (605) 655-9968  
JOYLENE VALDEZ  
LOS ALAMOS NATL LAB  
TAGO BLDG 1237 DPL 03  
LOS ALAMOS, NM 87545  
UNITED STATES US

SHIP DATE: 19FEB10  
ACTWGT: 52.0 LB MAN  
CAD: 0014176/CAFE2450  
BILL SENDER

TO VALERIE DAVIS  
GENERAL ENGINEERING LAB  
2040 SAVAGE RD

CHARLESTON SC 29407  
(843) 556-8171  
REF: 6B010AMR3A0532VA00

0014176/CAFE2450

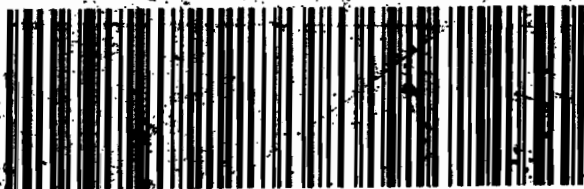


TRKH 7209 7850 1470  
0281

### SATURDAY ### A1  
PRIORITY OVERNIGHT

29407  
SC-US  
CHS

X0 CHSA



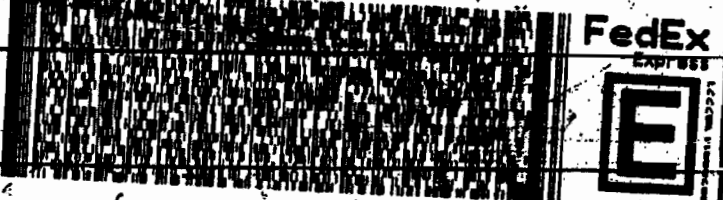
ORIGIN ID: SAFA (605) 655-9968  
JOYLENE VALDEZ  
LOS ALAMOS NATL LAB  
TAGO BLDG 1237 DPL 03  
LOS ALAMOS, NM 87545  
UNITED STATES US

SHIP DATE: 19FEB10  
ACTWGT: 59.0 LB MAN  
CAD: 0014176/CAFE2450  
BILL SENDER

TO VALERIE DAVIS  
GENERAL ENGINEERING LAB  
2040 SAVAGE RD

CHARLESTON SC 29407  
(843) 556-8171  
REF: 6B010AMR3A0532VA00

0014176/CAFE2450

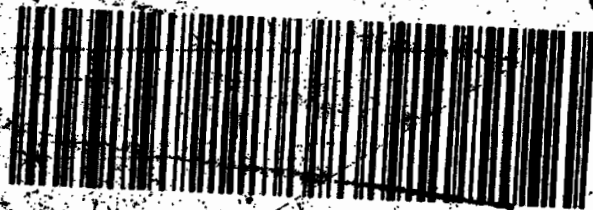


1 of 2  
TRKH 7209 7850 1459  
0281  
NN MASTER NN

### SATURDAY ### A1  
PRIORITY OVERNIGHT

29407  
SC-US  
CHS

X0 CHSA



JOYLENE VALDEZ (605) 655-9968  
LOS ALAMOS NATL LAB  
TAGO BLDG 1237 DPL 03  
LOS ALAMOS, NM 87545  
UNITED STATES US

SHIP DATE: 19FEB10  
ACTWGT: 59.0 LB MAN  
CAD: 0014176/CAFE2450  
BILL SENDER

TO VALERIE DAVIS  
GENERAL ENGINEERING LAB  
2040 SAVAGE RD

CHARLESTON SC 29407  
(843) 556-8171  
REF: 6B010AMR3A05529E20

0014176/CAFE2450



1 of 2  
TRKH 7209 7850 1415  
0281  
NN MASTER NN

### SATURDAY ### A1  
PRIORITY OVERNIGHT

29407  
SC-US  
CHS

X0 CHSA



ORIGIN ID: SAFA (505) 665-9066  
JOYENE VALDEZ  
LOS ALAMOS NATL LAB  
TAGS BLDG 1207 DPU 83  
LOS ALAMOS NM 87545  
UNITED STATES US

SHIP DATE: 19FEB10  
ACTWGT: 59.0 LB MAN  
CAD: 0014176/CAFE2450

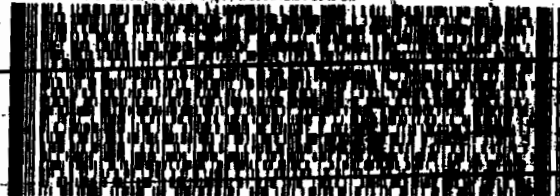
BILL SENDER

TO VALERIE DAVIS  
GENERAL ENGINEERING LAB  
2040 SAVAGE RD

CHARLESTON SC 29407

(843) 556-8171  
REF: 6B010AMR3A05529E00

0011 0000 0000 0000 0000 0000 0000 0000



FedEx  
Express



0011 0000 0000 0000 0000 0000 0000 0000

2 of 3

### SATURDAY ### A1

MPS# 7209 7850 1390

PRIORITY OVERNIGHT

Matr# 7209 7850 1390 0261

29407

SC-US  
CHS

X0 CHSA



LOS ALAMOS NM 87545  
UNITED STATES US

BILL SENDER

TO VALERIE DAVIS  
GENERAL ENGINEERING LAB  
2040 SAVAGE RD

CHARLESTON SC 29407

(843) 556-8171  
REF: 6B010AMR3A05529E00

0011 0000 0000 0000 0000 0000 0000 0000



FedEx  
Express



0011 0000 0000 0000 0000 0000 0000 0000

3 of 3

### SATURDAY ### A1

MPS# 7209 7850 1404

PRIORITY OVERNIGHT

Matr# 7209 7850 1390 0261

29407

SC-US  
CHS

X0 CHSA



# **Data Review Qualifier Flag Definition Sheet**

## Data Review Qualifier Definitions

Qualifier      Explanation

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

# RADIOLOGICAL ANALYSIS

**Radiochemistry Case Narrative  
Los Alamos National Laboratory (LANL)  
SDG 10-1958**

**Method/Analysis Information**

**Product:** H3  
**Analytical Method:** GL-RAD-A-002  
**Analytical Batch Number:** 960227

<b>Sample ID</b>	<b>Client ID</b>
247568001	RE15-10-8252
247568002	RE15-10-8253
247568003	RE15-10-8250
247568004	RE15-10-8251
247568005	RE15-10-8248
247568006	RE15-10-8249
247568007	RE15-10-8247
247568008	RE15-10-8254
247568009	RE15-10-8268
247568010	RE15-10-8264
1202059604	Method Blank (MB)
1202059605	247563008(RE15-10-8302) Sample Duplicate (DUP)
1202059606	Laboratory Control Sample (LCS)

The samples in this SDG were analyzed on an "as received" basis.

**SOP Reference**

Procedure for preparation, analysis and reporting of analytical data are controlled by GEL Laboratories LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-RAD-A-002 REV# 18.

**Calibration Information:**

**Calibration Information**

All initial and continuing calibration requirements have been met. The initial Calibration was performed in August 2009.

**Standards Information**

Standard solutions for these analysis are NIST traceable or verified with a NIST traceable standard and used before the expiration dates.

**Sample Geometry**

All counting sources were prepared in the same geometry as the calibration standards.

**Quality Control (QC) Information:****Blank Information**

The blank volume is representative of the sample volume in this batch.

**Designated QC**

The following sample was used for QC: 247563008 (RE15-10-8302). The QC was from LANL work order 247563.

**QC Information**

All of the QC samples met the required acceptance limits.

**CSU**

The blank result is less than 1.65 times the CSU.

**Technical Information:****Holding Time**

All sample procedures for this sample set were performed within the required holding time.

**Sample Re-prep/Re-analysis**

None of the samples in this sample set required reprep or reanalysis.

**Miscellaneous Information:****Data Exception (DER) Documentation**

Data exception reports are generated to document any procedural anomalies that may deviate from referenced SOP or contractual documents. A data exception report (DER) was not generated for this SDG.

**Additional Comments**

Additional comments were not required for this sample set.

**Blank Decision Level**

The blank result is less than the decision level.

**Qualifier information**

Manual qualifiers were not required.

**Certification Statement**

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

**Review Validation:**

GEL requires all analytical data to be verified by a qualified data validator. In addition, all data designated for CLP or CLP-like packaging will receive a third level validation upon completion of the data package.

**The following data validator verified the information presented in this case narrative:**

**Reviewer/Date:** *Ramona Wells 3/16/10*

# SAMPLE DATA SUMMARY



## GEL LABORATORIES LLC

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

### Certificate of Analysis Report for

LANL010 Los Alamos National Laboratory (72733-001-09)

Client SDG: 10-1958 GEL Work Order: 247568

**The Qualifiers in this report are defined as follows:**

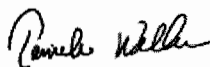
- \* Indicates that a quality control analyte recovery is outside of specified acceptance criteria.
- \*\* Indicates the analyte is a surrogate compound.

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

The designation ND, if present, appears in the result column when the analyte concentration is not detected above the detection limit.

This data report has been prepared and reviewed in accordance with GEL Laboratories LLC standard operating procedures. Please direct any questions to your Project Manager, Valerie Davis.

Reviewed by



# GEL LABORATORIES LLC

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

## Certificate of Analysis

Company : Los Alamos National Laboratory  
Address : PO Box 1663  
TA-03, SM271, Drop Pt. 02U, Rm  
Los Alamos, New Mexico 87545  
Contact: Ms. Joylene Valdez  
Project: LANL ER Project

Report Date: March 16, 2010

Client Sample ID: RE15-10-8252  
Sample ID: 247568001  
Matrix: R  
Collect Date: 15-FEB-10  
Receive Date: 20-FEB-10  
Collector: Client

Project: LANL01004  
Client ID: LANL010

Parameter	Qualifier	Result	DL	TPU	RL	Units	DF	Analyst	Date	Time	Batch	Mtd.
<b>Rad Liquid Scintillation Analysis</b>												
<i>H3 "As Received"</i>												
Tritium		57900	202	+/-4050	250	pCi/L		KXK2	03/12/10	0219	960227	1

### The following Analytical Methods were performed

Method	Description
1	GL-RAD-A-002

### Notes:

TPU is calculated at the 67% confidence level (1-sigma).

The Qualifiers in this report are defined as follows :

- \*\* Analyte is a surrogate compound
- < Result is less than value reported
- > Result is greater than value reported
- A The TIC is a suspected aldol-condensation product
- B For General Chemistry and Organic analysis the target analyte was detected in the associated blank.
- BD Results are either below the MDC or tracer recovery is low
- C Analyte has been confirmed by GC/MS analysis
- D Results are reported from a diluted aliquot of the sample
- F Estimated Value
- H Analytical holding time was exceeded
- J Value is estimated
- M M if above MDC and less than LLD
- M Matrix Related Failure
- N/A RPD or %Recovery limits do not apply.
- ND Analyte concentration is not detected above the detection limit
- NJ Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- R Sample results are rejected
- U Analyte was analyzed for, but not detected above the MDL, MDA, or LOD.
- UI Gamma Spectroscopy--Uncertain identification
- UJ Gamma Spectroscopy--Uncertain identification
- X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- Y QC Samples were not spiked with this compound
- ^ RPD of sample and duplicate evaluated using +/-RL. Concentrations are <5X the RL. Qualifier Not Applicable for Radiochemistry.

# GEL LABORATORIES LLC

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

## Certificate of Analysis

Company : Los Alamos National Laboratory  
Address : PO Box 1663  
TA-03, SM271, Drop Pt. 02U, Rm  
Los Alamos, New Mexico 87545  
Contact: Ms. Joylene Valdez  
Project: LANL ER Project

Report Date: March 16, 2010

Client Sample ID: RE15-10-8252  
Sample ID: 247568001

Project: LANL01004  
Client ID: LANL010

Parameter	Qualifier	Result	DL	TPU	RL	Units	DF	Analyst	Date	Time	Batch	Mtd.
-----------	-----------	--------	----	-----	----	-------	----	---------	------	------	-------	------

h Preparation or preservation holding time was exceeded  
The above sample is reported on an "as received" basis.

# GEL LABORATORIES LLC

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

## Certificate of Analysis

Company : Los Alamos National Laboratory  
Address : PO Box 1663  
TA-03, SM271, Drop Pt. 02U, Rm  
Los Alamos, New Mexico 87545  
Contact: Ms. Joylene Valdez  
Project: LANL ER Project

Report Date: March 16, 2010

Client Sample ID: RE15-10-8253  
Sample ID: 247568002  
Matrix: R  
Collect Date: 15-FEB-10  
Receive Date: 20-FEB-10  
Collector: Client

Project: LANL01004  
Client ID: LANL010

Parameter	Qualifier	Result	DL	TPU	RL	Units	DF	Analyst	Date	Time	Batch	Mtd.
<b>Rad Liquid Scintillation Analysis</b>												
<i>H3 "As Received"</i>												
Tritium		4.22E+06	201	+/-2.94E+05	250	pCi/L		KXK2	03/12/10	1051	960227	1

### The following Analytical Methods were performed

Method	Description
1	GL-RAD-A-002

#### Notes:

TPU is calculated at the 67% confidence level (1-sigma).

The Qualifiers in this report are defined as follows :

- \*\* Analyte is a surrogate compound
- < Result is less than value reported
- > Result is greater than value reported
- A The TIC is a suspected aldol-condensation product
- B For General Chemistry and Organic analysis the target analyte was detected in the associated blank.
- BD Results are either below the MDC or tracer recovery is low
- C Analyte has been confirmed by GC/MS analysis
- D Results are reported from a diluted aliquot of the sample
- F Estimated Value
- H Analytical holding time was exceeded
- J Value is estimated
- M M if above MDC and less than LLD
- M Matrix Related Failure
- N/A RPD or %Recovery limits do not apply.
- ND Analyte concentration is not detected above the detection limit
- NJ Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- R Sample results are rejected
- U Analyte was analyzed for, but not detected above the MDL, MDA, or LOD.
- UI Gamma Spectroscopy--Uncertain identification
- UJ Gamma Spectroscopy--Uncertain identification
- X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- Y QC Samples were not spiked with this compound
- ^ RPD of sample and duplicate evaluated using +/-RL. Concentrations are <5X the RL. Qualifier Not Applicable for Radiochemistry.
- h Preparation or preservation holding time was exceeded

## GEL LABORATORIES LLC

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

### Certificate of Analysis

Company : Los Alamos National Laboratory  
Address : PO Box 1663  
TA-03, SM271, Drop Pt. 02U, Rm  
Los Alamos, New Mexico 87545  
Contact: Ms. Joylene Valdez  
Project: LANL ER Project

Report Date: March 16, 2010

Client Sample ID: RE15-10-8253  
Sample ID: 247568002

Project: LANL01004  
Client ID: LANL010

Parameter	Qualifier	Result	DL	TPU	RL	Units	DF	Analyst	Date	Time	Batch	Mtd.
-----------	-----------	--------	----	-----	----	-------	----	---------	------	------	-------	------

The above sample is reported on an "as received" basis.

# GEL LABORATORIES LLC

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

## Certificate of Analysis

Company : Los Alamos National Laboratory  
Address : PO Box 1663  
TA-03, SM271, Drop Pt. 02U, Rm  
Los Alamos, New Mexico 87545  
Contact: Ms. Joylene Valdez  
Project: LANL ER Project

Report Date: March 16, 2010

Client Sample ID: RE15-10-8250  
Sample ID: 247568003  
Matrix: R  
Collect Date: 15-FEB-10  
Receive Date: 20-FEB-10  
Collector: Client

Project: LANL01004  
Client ID: LANL010

Parameter	Qualifier	Result	DL	TPU	RL	Units	DF	Analyst	Date	Time	Batch	Mtd.
<b>Rad Liquid Scintillation Analysis</b>												
<i>H3 "As Received"</i>												
Tritium		3.28E+05	201	+/-22900	250	pCi/L		KXK2	03/12/10	1229	960227	1

### The following Analytical Methods were performed

Method	Description
1	GL-RAD-A-002

#### Notes:

TPU is calculated at the 67% confidence level (1-sigma).

The Qualifiers in this report are defined as follows :

- \*\* Analyte is a surrogate compound
- < Result is less than value reported
- > Result is greater than value reported
- A The TIC is a suspected aldol-condensation product
- B For General Chemistry and Organic analysis the target analyte was detected in the associated blank.
- BD Results are either below the MDC or tracer recovery is low
- C Analyte has been confirmed by GC/MS analysis
- D Results are reported from a diluted aliquot of the sample
- F Estimated Value
- H Analytical holding time was exceeded
- J Value is estimated
- M M if above MDC and less than LLD
- M Matrix Related Failure
- N/A RPD or %Recovery limits do not apply.
- ND Analyte concentration is not detected above the detection limit
- NJ Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- R Sample results are rejected
- U Analyte was analyzed for, but not detected above the MDL, MDA, or LOD.
- UI Gamma Spectroscopy--Uncertain identification
- UJ Gamma Spectroscopy--Uncertain identification
- X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- Y QC Samples were not spiked with this compound
- ^ RPD of sample and duplicate evaluated using +/-RL. Concentrations are <5X the RL. Qualifier Not Applicable for Radiochemistry.
- h Preparation or preservation holding time was exceeded

## GEL LABORATORIES LLC

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

### Certificate of Analysis

Company : Los Alamos National Laboratory  
Address : PO Box 1663  
TA-03, SM271, Drop Pt. 02U, Rm  
Los Alamos, New Mexico 87545  
Contact: Ms. Joylene Valdez  
Project: LANL ER Project

Report Date: March 16, 2010

Client Sample ID: RE15-10-8250  
Sample ID: 247568003

Project: LANL01004  
Client ID: LANL010

Parameter	Qualifier	Result	DL	TPU	RL	Units	DF	Analyst	Date	Time	Batch	Mtd.
-----------	-----------	--------	----	-----	----	-------	----	---------	------	------	-------	------

The above sample is reported on an "as received" basis.

# GEL LABORATORIES LLC

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

## Certificate of Analysis

Company : Los Alamos National Laboratory  
Address : PO Box 1663  
TA-03, SM271, Drop Pt. 02U, Rm  
Los Alamos, New Mexico 87545  
Contact: Ms. Joylene Valdez  
Project: LANL ER Project

Report Date: March 16, 2010

Client Sample ID: RE15-10-8251  
Sample ID: 247568004  
Matrix: R  
Collect Date: 15-FEB-10  
Receive Date: 20-FEB-10  
Collector: Client

Project: LANL01004  
Client ID: LANL010

Parameter	Qualifier	Result	DL	TPU	RL	Units	DF	Analyst	Date	Time	Batch	Mtd.
<b>Rad Liquid Scintillation Analysis</b>												
<i>H3 "As Received"</i>												
Tritium		3.76E+05	202	+/-26200	250	pCi/L		KXK2	03/12/10	1408	960227	1

### The following Analytical Methods were performed

Method	Description
1	GL-RAD-A-002

#### Notes:

TPU is calculated at the 67% confidence level (1-sigma).

The Qualifiers in this report are defined as follows :

- \*\* Analyte is a surrogate compound
- < Result is less than value reported
- > Result is greater than value reported
- A The TIC is a suspected aldol-condensation product
- B For General Chemistry and Organic analysis the target analyte was detected in the associated blank.
- BD Results are either below the MDC or tracer recovery is low
- C Analyte has been confirmed by GC/MS analysis
- D Results are reported from a diluted aliquot of the sample
- F Estimated Value
- H Analytical holding time was exceeded
- J Value is estimated
- M M if above MDC and less than LLD
- M Matrix Related Failure
- N/A RPD or %Recovery limits do not apply.
- ND Analyte concentration is not detected above the detection limit
- NJ Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- R Sample results are rejected
- U Analyte was analyzed for, but not detected above the MDL, MDA, or LOD.
- UI Gamma Spectroscopy--Uncertain identification
- UJ Gamma Spectroscopy--Uncertain identification
- X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- Y QC Samples were not spiked with this compound
- ^ RPD of sample and duplicate evaluated using +/-RL. Concentrations are <5X the RL. Qualifier Not Applicable for Radiochemistry.
- h Preparation or preservation holding time was exceeded



# GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - [www.gel.com](http://www.gel.com)

## Certificate of Analysis

Company : Los Alamos National Laboratory  
Address : PO Box 1663  
TA-03, SM271, Drop Pt. 02U, Rm  
Los Alamos, New Mexico 87545  
Contact: Ms. Joylene Valdez  
Project: LANL ER Project

Report Date: March 16, 2010

Client Sample ID: RE15-10-8251  
Sample ID: 247568004

Project: LANL01004  
Client ID: LANL010

Parameter	Qualifier	Result	DL	TPU	RL	Units	DF	Analyst	Date	Time	Batch	Mtd.
-----------	-----------	--------	----	-----	----	-------	----	---------	------	------	-------	------

The above sample is reported on an "as received" basis.

# GEL LABORATORIES LLC

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

## Certificate of Analysis

Company : Los Alamos National Laboratory  
Address : PO Box 1663  
TA-03, SM271, Drop Pt. 02U, Rm  
Los Alamos, New Mexico 87545  
Contact: Ms. Joylene Valdez  
Project: LANL ER Project

Report Date: March 16, 2010

Client Sample ID: RE15-10-8248  
Sample ID: 247568005  
Matrix: R  
Collect Date: 15-FEB-10  
Receive Date: 20-FEB-10  
Collector: Client

Project: LANL01004  
Client ID: LANL010

Parameter	Qualifier	Result	DL	TPU	RL	Units	DF	Analyst	Date	Time	Batch	Mtd.
<b>Rad Liquid Scintillation Analysis</b>												
<i>H3 "As Received"</i>												
Tritium		2.77E+05	251	+/-19400	250	pCi/L		KXK2	03/12/10	1546	960227	1

### The following Analytical Methods were performed

Method	Description
1	GL-RAD-A-002

#### Notes:

TPU is calculated at the 67% confidence level (1-sigma).

The Qualifiers in this report are defined as follows :

- \*\* Analyte is a surrogate compound
- < Result is less than value reported
- > Result is greater than value reported
- A The TIC is a suspected aldol-condensation product
- B For General Chemistry and Organic analysis the target analyte was detected in the associated blank.
- BD Results are either below the MDC or tracer recovery is low
- C Analyte has been confirmed by GC/MS analysis
- D Results are reported from a diluted aliquot of the sample
- F Estimated Value
- H Analytical holding time was exceeded
- J Value is estimated
- M M if above MDC and less than LLD
- M Matrix Related Failure
- N/A RPD or %Recovery limits do not apply.
- ND Analyte concentration is not detected above the detection limit
- NJ Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- R Sample results are rejected
- U Analyte was analyzed for, but not detected above the MDL, MDA, or LOD.
- UI Gamma Spectroscopy--Uncertain identification
- UJ Gamma Spectroscopy--Uncertain identification
- X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- Y QC Samples were not spiked with this compound
- ^ RPD of sample and duplicate evaluated using +/-RL. Concentrations are <5X the RL. Qualifier Not Applicable for Radiochemistry.
- h Preparation or preservation holding time was exceeded

## GEL LABORATORIES LLC

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

### Certificate of Analysis

Company : Los Alamos National Laboratory  
Address : PO Box 1663  
TA-03, SM271, Drop Pt. 02U, Rm  
Los Alamos, New Mexico 87545  
Contact: Ms. Joylene Valdez  
Project: LANL ER Project

Report Date: March 16, 2010

Client Sample ID: RE15-10-8248  
Sample ID: 247568005

Project: LANL01004  
Client ID: LANL010

Parameter	Qualifier	Result	DL	TPU	RL	Units	DF	Analyst	Date	Time	Batch	Mtd.
-----------	-----------	--------	----	-----	----	-------	----	---------	------	------	-------	------

The above sample is reported on an "as received" basis.

# GEL LABORATORIES LLC

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

## Certificate of Analysis

Company : Los Alamos National Laboratory  
Address : PO Box 1663  
TA-03, SM271, Drop Pt. 02U, Rm  
Los Alamos, New Mexico 87545  
Contact: Ms. Joylene Valdez  
Project: LANL ER Project

Report Date: March 16, 2010

Client Sample ID: RE15-10-8249  
Sample ID: 247568006  
Matrix: R  
Collect Date: 15-FEB-10  
Receive Date: 20-FEB-10  
Collector: Client

Project: LANL01004  
Client ID: LANL010

Parameter	Qualifier	Result	DL	TPU	RL	Units	DF	Analyst	Date	Time	Batch	Mtd.
<b>Rad Liquid Scintillation Analysis</b>												
<i>H3 "As Received"</i>												
Tritium		2.69E+05	212	+/-18800	250	pCi/L		KXK2	03/12/10	1725	960227	1

### The following Analytical Methods were performed

Method	Description
1	GL-RAD-A-002

#### Notes:

TPU is calculated at the 67% confidence level (1-sigma).

The Qualifiers in this report are defined as follows :

- \*\* Analyte is a surrogate compound
- < Result is less than value reported
- > Result is greater than value reported
- A The TIC is a suspected aldol-condensation product
- B For General Chemistry and Organic analysis the target analyte was detected in the associated blank.
- BD Results are either below the MDC or tracer recovery is low
- C Analyte has been confirmed by GC/MS analysis
- D Results are reported from a diluted aliquot of the sample
- F Estimated Value
- H Analytical holding time was exceeded
- J Value is estimated
- M M if above MDC and less than LLD
- M Matrix Related Failure
- N/A RPD or %Recovery limits do not apply.
- ND Analyte concentration is not detected above the detection limit
- NJ Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- R Sample results are rejected
- U Analyte was analyzed for, but not detected above the MDL, MDA, or LOD.
- UI Gamma Spectroscopy--Uncertain identification
- UJ Gamma Spectroscopy--Uncertain identification
- X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- Y QC Samples were not spiked with this compound
- ^ RPD of sample and duplicate evaluated using +/-RL. Concentrations are <5X the RL. Qualifier Not Applicable for Radiochemistry.
- h Preparation or preservation holding time was exceeded

# GEL LABORATORIES LLC

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

## Certificate of Analysis

Company : Los Alamos National Laboratory  
Address : PO Box 1663  
TA-03, SM271, Drop Pt. 02U, Rm  
Los Alamos, New Mexico 87545  
Contact: Ms. Joylene Valdez  
Project: LANL ER Project

Report Date: March 16, 2010

Client Sample ID: RE15-10-8249  
Sample ID: 247568006

Project: LANL01004  
Client ID: LANL010

Parameter	Qualifier	Result	DL	TPU	RL	Units	DF	Analyst	Date	Time	Batch	Mtd.
-----------	-----------	--------	----	-----	----	-------	----	---------	------	------	-------	------

The above sample is reported on an "as received" basis.

# GEL LABORATORIES LLC

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

## Certificate of Analysis

Company : Los Alamos National Laboratory  
Address : PO Box 1663  
TA-03, SM271, Drop Pt. 02U, Rm  
Los Alamos, New Mexico 87545  
Contact: Ms. Joylene Valdez  
Project: LANL ER Project

Report Date: March 16, 2010

Client Sample ID: RE15-10-8247  
Sample ID: 247568007  
Matrix: R  
Collect Date: 15-FEB-10  
Receive Date: 20-FEB-10  
Collector: Client

Project: LANL01004  
Client ID: LANL010

Parameter	Qualifier	Result	DL	TPU	RL	Units	DF	Analyst	Date	Time	Batch	Mtd.
<b>Rad Liquid Scintillation Analysis</b>												
<i>H3 "As Received"</i>												
Tritium		2.62E+05	201	+/-18300	250	pCi/L		KXK2	03/12/10	1903	960227	1

### The following Analytical Methods were performed

Method	Description
1	GL-RAD-A-002

#### Notes:

TPU is calculated at the 67% confidence level (1-sigma).

The Qualifiers in this report are defined as follows :

- \*\* Analyte is a surrogate compound
- < Result is less than value reported
- > Result is greater than value reported
- A The TIC is a suspected aldol-condensation product
- B For General Chemistry and Organic analysis the target analyte was detected in the associated blank.
- BD Results are either below the MDC or tracer recovery is low
- C Analyte has been confirmed by GC/MS analysis
- D Results are reported from a diluted aliquot of the sample
- F Estimated Value
- H Analytical holding time was exceeded
- J Value is estimated
- M M if above MDC and less than LLD
- M Matrix Related Failure
- N/A RPD or %Recovery limits do not apply.
- ND Analyte concentration is not detected above the detection limit
- NJ Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- R Sample results are rejected
- U Analyte was analyzed for, but not detected above the MDL, MDA, or LOD.
- UI Gamma Spectroscopy--Uncertain identification
- UJ Gamma Spectroscopy--Uncertain identification
- X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- Y QC Samples were not spiked with this compound
- ^ RPD of sample and duplicate evaluated using +/-RL. Concentrations are <5X the RL. Qualifier Not Applicable for Radiochemistry.
- h Preparation or preservation holding time was exceeded

# GEL LABORATORIES LLC

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

## Certificate of Analysis

Company : Los Alamos National Laboratory  
Address : PO Box 1663  
TA-03, SM271, Drop Pt. 02U, Rm  
Los Alamos, New Mexico 87545  
Contact: Ms. Joylene Valdez  
Project: LANL ER Project

Report Date: March 16, 2010

Client Sample ID: RE15-10-8247  
Sample ID: 247568007

Project: LANL01004  
Client ID: LANL010

Parameter	Qualifier	Result	DL	TPU	RL	Units	DF	Analyst	Date	Time	Batch	Mtd.
-----------	-----------	--------	----	-----	----	-------	----	---------	------	------	-------	------

The above sample is reported on an "as received" basis.

# GEL LABORATORIES LLC

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

## Certificate of Analysis

Company : Los Alamos National Laboratory  
Address : PO Box 1663  
TA-03, SM271, Drop Pt. 02U, Rm  
Los Alamos, New Mexico 87545  
Contact: Ms. Joylene Valdez  
Project: LANL ER Project

Report Date: March 16, 2010

Client Sample ID: RE15-10-8254  
Sample ID: 247568008  
Matrix: R  
Collect Date: 15-FEB-10  
Receive Date: 20-FEB-10  
Collector: Client

Project: LANL01004  
Client ID: LANL010

Parameter	Qualifier	Result	DL	TPU	RL	Units	DF	Analyst	Date	Time	Batch	Mtd.
<b>Rad Liquid Scintillation Analysis</b>												
<i>H3 "As Received"</i>												
Tritium		4.13E+06	201	+/-2.87E+05	250	pCi/L		KXK2	03/12/10	2043	960227	1

### The following Analytical Methods were performed

Method	Description
1	GL-RAD-A-002

#### Notes:

TPU is calculated at the 67% confidence level (1-sigma).

The Qualifiers in this report are defined as follows :

- \*\* Analyte is a surrogate compound
- < Result is less than value reported
- > Result is greater than value reported
- A The TIC is a suspected aldol-condensation product
- B For General Chemistry and Organic analysis the target analyte was detected in the associated blank.
- BD Results are either below the MDC or tracer recovery is low
- C Analyte has been confirmed by GC/MS analysis
- D Results are reported from a diluted aliquot of the sample
- F Estimated Value
- H Analytical holding time was exceeded
- J Value is estimated
- M M if above MDC and less than LLD
- M Matrix Related Failure
- N/A RPD or %Recovery limits do not apply.
- ND Analyte concentration is not detected above the detection limit
- NJ Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- R Sample results are rejected
- U Analyte was analyzed for, but not detected above the MDL, MDA, or LOD.
- UI Gamma Spectroscopy--Uncertain identification
- UJ Gamma Spectroscopy--Uncertain identification
- X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- Y QC Samples were not spiked with this compound
- ^ RPD of sample and duplicate evaluated using +/-RL. Concentrations are <5X the RL. Qualifier Not Applicable for Radiochemistry.
- h Preparation or preservation holding time was exceeded



# GEL LABORATORIES LLC

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

## Certificate of Analysis

Company : Los Alamos National Laboratory  
Address : PO Box 1663  
TA-03, SM271, Drop Pt. 02U, Rm  
Los Alamos, New Mexico 87545  
Contact: Ms. Joylene Valdez  
Project: LANL ER Project

Report Date: March 16, 2010

Client Sample ID: RE15-10-8254  
Sample ID: 247568008

Project: LANL01004  
Client ID: LANL010

Parameter	Qualifier	Result	DL	TPU	RL	Units	DF	Analyst	Date	Time	Batch	Mtd.
-----------	-----------	--------	----	-----	----	-------	----	---------	------	------	-------	------

The above sample is reported on an "as received" basis.

# GEL LABORATORIES LLC

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

## Certificate of Analysis

Company : Los Alamos National Laboratory  
Address : PO Box 1663  
TA-03, SM271, Drop Pt. 02U, Rm  
Los Alamos, New Mexico 87545  
Contact: Ms. Joylene Valdez  
Project: LANL ER Project

Report Date: March 16, 2010

Client Sample ID: RE15-10-8268  
Sample ID: 247568009  
Matrix: R  
Collect Date: 15-FEB-10  
Receive Date: 20-FEB-10  
Collector: Client

Project: LANL01004  
Client ID: LANL010

Parameter	Qualifier	Result	DL	TPU	RL	Units	DF	Analyst	Date	Time	Batch	Mtd.
<b>Rad Liquid Scintillation Analysis</b>												
<i>H3 "As Received"</i>												
Tritium		4.10E+06	202	+/-2.85E+05	250	pCi/L		KXK2	03/12/10	2223	960227	1

### The following Analytical Methods were performed

Method	Description
1	GL-RAD-A-002

#### Notes:

TPU is calculated at the 67% confidence level (1-sigma).

The Qualifiers in this report are defined as follows :

- \*\* Analyte is a surrogate compound
- < Result is less than value reported
- > Result is greater than value reported
- A The TIC is a suspected aldol-condensation product
- B For General Chemistry and Organic analysis the target analyte was detected in the associated blank.
- BD Results are either below the MDC or tracer recovery is low
- C Analyte has been confirmed by GC/MS analysis
- D Results are reported from a diluted aliquot of the sample
- F Estimated Value
- H Analytical holding time was exceeded
- J Value is estimated
- M M if above MDC and less than LLD
- M Matrix Related Failure
- N/A RPD or %Recovery limits do not apply.
- ND Analyte concentration is not detected above the detection limit
- NJ Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- R Sample results are rejected
- U Analyte was analyzed for, but not detected above the MDL, MDA, or LOD.
- UI Gamma Spectroscopy--Uncertain identification
- UJ Gamma Spectroscopy--Uncertain identification
- X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- Y QC Samples were not spiked with this compound
- ^ RPD of sample and duplicate evaluated using +/-RL. Concentrations are <5X the RL. Qualifier Not Applicable for Radiochemistry.
- h Preparation or preservation holding time was exceeded

# GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - [www.gel.com](http://www.gel.com)

## Certificate of Analysis

Company : Los Alamos National Laboratory  
Address : PO Box 1663  
TA-03, SM271, Drop Pt. 02U, Rm  
Los Alamos, New Mexico 87545  
Contact: Ms. Joylene Valdez  
Project: LANL ER Project

Report Date: March 16, 2010

Client Sample ID: RE15-10-8268  
Sample ID: 247568009

Project: LANL01004  
Client ID: LANL010

Parameter	Qualifier	Result	DL	TPU	RL	Units	DF	Analyst	Date	Time	Batch	Mtd.
-----------	-----------	--------	----	-----	----	-------	----	---------	------	------	-------	------

The above sample is reported on an "as received" basis.

# GEL LABORATORIES LLC

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

## Certificate of Analysis

Company : Los Alamos National Laboratory  
Address : PO Box 1663  
TA-03, SM271, Drop Pt. 02U, Rm  
Los Alamos, New Mexico 87545  
Contact: Ms. Joylene Valdez  
Project: LANL ER Project

Report Date: March 16, 2010

Client Sample ID: RE15-10-8264  
Sample ID: 247568010  
Matrix: R  
Collect Date: 15-FEB-10  
Receive Date: 20-FEB-10  
Collector: Client

Project: LANL01004  
Client ID: LANL010

Parameter	Qualifier	Result	DL	TPU	RL	Units	DF	Analyst	Date	Time	Batch	Mtd.
<b>Rad Liquid Scintillation Analysis</b>												
<i>H3 "As Received"</i>												
Tritium		3.78E+05	202	+/-26400	250	pCi/L		KXK2	03/13/10	0001	960227	1

### The following Analytical Methods were performed

Method	Description
1	GL-RAD-A-002

### Notes:

TPU is calculated at the 67% confidence level (1-sigma).

The Qualifiers in this report are defined as follows :

- \*\* Analyte is a surrogate compound
- < Result is less than value reported
- > Result is greater than value reported
- A The TIC is a suspected aldol-condensation product
- B For General Chemistry and Organic analysis the target analyte was detected in the associated blank.
- BD Results are either below the MDC or tracer recovery is low
- C Analyte has been confirmed by GC/MS analysis
- D Results are reported from a diluted aliquot of the sample
- F Estimated Value
- H Analytical holding time was exceeded
- J Value is estimated
- M M if above MDC and less than LLD
- M Matrix Related Failure
- N/A RPD or %Recovery limits do not apply.
- ND Analyte concentration is not detected above the detection limit
- NJ Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- R Sample results are rejected
- U Analyte was analyzed for, but not detected above the MDL, MDA, or LOD.
- UI Gamma Spectroscopy--Uncertain identification
- UJ Gamma Spectroscopy--Uncertain identification
- X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- Y QC Samples were not spiked with this compound
- ^ RPD of sample and duplicate evaluated using +/-RL. Concentrations are <5X the RL. Qualifier Not Applicable for Radiochemistry.
- h Preparation or preservation holding time was exceeded

# GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - [www.gel.com](http://www.gel.com)

## Certificate of Analysis

Company : Los Alamos National Laboratory  
Address : PO Box 1663  
TA-03, SM271, Drop Pt. 02U, Rm  
Los Alamos, New Mexico 87545  
Contact: Ms. Joylene Valdez  
Project: LANL ER Project

Report Date: March 16, 2010

Client Sample ID: RE15-10-8264  
Sample ID: 247568010

Project: LANL01004  
Client ID: LANL010

Parameter	Qualifier	Result	DL	TPU	RL	Units	DF	Analyst	Date	Time	Batch	Mtd.
-----------	-----------	--------	----	-----	----	-------	----	---------	------	------	-------	------

The above sample is reported on an "as received" basis.

# QUALITY CONTROL DATA

# GEL LABORATORIES LLC

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

## QC Summary

Report Date: March 16, 2010

Page 1 of 2

Client : Los Alamos National Laboratory  
PO Box 1663  
TA-03, SM271, Drop Pt. 02U, Rm  
Los Alamos, New Mexico  
Contact: Ms. Joylene Valdez  
Workorder: 247568

Parmname	NOM	Sample Qual	QC	Units	RER	REC%	Range	Anlst	Date Time
<b>Rad Liquid Scintillation</b>									
Batch	960227								
QC1202059605	247563008	DUP							
Tritium			1740	1490	pCi/L	0.438	(0-1)	KXK2	03/13/1004:56
		TPU:	+/-149	+/-133					
QC1202059606	LCS								
Tritium	5540		5840	pCi/L		106	(80%-120%)		03/13/1006:34
		TPU:	+/-513						
QC1202059604	MB								
Tritium		U	-125	pCi/L					03/13/1003:18
		TPU:	+/-56.4						

### Notes:

The Qualifiers in this report are defined as follows:

- \*\* Analyte is a surrogate compound
- < Result is less than value reported
- > Result is greater than value reported
- A The TIC is a suspected aldol-condensation product
- B For General Chemistry and Organic analysis the target analyte was detected in the associated blank.
- BD Results are either below the MDC or tracer recovery is low
- C Analyte has been confirmed by GC/MS analysis
- D Results are reported from a diluted aliquot of the sample
- F Estimated Value
- H Analytical holding time was exceeded
- J Value is estimated
- M M if above MDC and less than LLD
- M Matrix Related Failure
- N/A RPD or %Recovery limits do not apply.
- ND Analyte concentration is not detected above the detection limit
- NJ Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- R Sample results are rejected
- U Analyte was analyzed for, but not detected above the MDL, MDA, or LOD.
- UI Gamma Spectroscopy--Uncertain identification
- UJ Gamma Spectroscopy--Uncertain identification
- X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- Y QC Samples were not spiked with this compound
- ^ RPD of sample and duplicate evaluated using +/-RL. Concentrations are <5X the RL. Qualifier Not Applicable for Radiochemistry.
- h Preparation or preservation holding time was exceeded

## GEL LABORATORIES LLC

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

### QC Summary

Workorder: 247568

Page 2 of 2

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

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

\*\* Indicates analyte is a surrogate compound.

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

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

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



# RAW DATA

# Radiochemistry Batch Checklist, Rev10

Batch# 960227 Product: H3 Date: 3-16-10

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

GEL Laboratories, LLC

RADchecklistrev10, revised 1/13/2010

Primary Review Performed By: [Signature]

Secondary Review Performed By: [Signature] 3/16/10

LANL 3-19-10

# Tritium Que Sheet

10-MAR-10

Batch #: 960227 Analyst: KXK2 First Client Due Date 19-MAR-10 Internal Due Date: 09-MAR-10  
 Spike Isotope: Hydrogen-3 Spike Code: \_\_\_\_\_ Expiration Date: \_\_\_\_\_ Vol: \_\_\_\_\_  
 LCS Isotope: Hydrogen-3 LCS Code: 0134-K Expiration Date: 3/27/10 Vol: 0.1

Prep Date: 3/9/10 Initials: KXK Pipet ID: 2970968 Witness: AW 3/9/10

Sample ID	Client Samp ID	Type	Hazard Code	Min CRDL	Matrix	Citent	Sample Date	Aliquot In Vol (g/mL)	LSC Rack #	Dist Rig #	Vol added for Dist (mL)	Initial Sample Aliquot (g/mL)	Final Wt (g)	Total Moisture Dist (mL)
247563001-1	REIS-10-4314	SAMPLE		.25 pCi/mL SOIL	LANL010		15-FEB-10	10	33-3	1		548.76	533.94	14.82
247563002-1	REIS-10-4313	SAMPLE		.25 pCi/mL SOIL	LANL010		15-FEB-10	10	33-3	2		595.56	574.72	20.84
247563003-1	REIS-10-4312	SAMPLE		.25 pCi/mL SOIL	LANL010		15-FEB-10	10	33-4	3		510.42	484.31	26.03
247563004-1	REIS-10-4315	SAMPLE		.25 pCi/mL SOIL	LANL010		15-FEB-10	10	33-5	4		611.20	591.03	20.17
247563005-1	REIS-10-4311	SAMPLE		.25 pCi/mL SOIL	LANL010		15-FEB-10	10	33-6	5		559.00	538.88	20.12
247563006-1	REIS-10-4310	SAMPLE		.25 pCi/mL SOIL	LANL010		15-FEB-10	10	33-7	6		558.33	538.23	20.10
247563007-1	REIS-10-4303	SAMPLE		.25 pCi/mL SOIL	LANL010		15-FEB-10	10	40-1	7		528.54	512.16	16.38
247563008-1	REIS-10-4302	SAMPLE		.25 pCi/mL SOIL	LANL010		15-FEB-10	10	40-2	8		559.80	531.25	28.55
247568001-1	REIS-10-4252	SAMPLE		.25 pCi/mL SOIL	LANL010		15-FEB-10	10	60-3	9		499.96	486.46	13.50
247568002-1	REIS-10-4253	SAMPLE		.25 pCi/mL SOIL	LANL010		15-FEB-10	10	0-1	10		520.79	507.25	13.54
247568003-1	REIS-10-4259	SAMPLE		.25 pCi/mL SOIL	LANL010		15-FEB-10	10	0-2	11		594.66	582.17	12.49
247568004-1	REIS-10-4251	SAMPLE		.25 pCi/mL SOIL	LANL010		15-FEB-10	10	0-3	12		587.50	572.81	14.69
247568005-1	REIS-10-4248	SAMPLE		.25 pCi/mL SOIL	LANL010		15-FEB-10	8	0-4	13		535.14	526.58	8.56
247568006-1	REIS-10-4249	SAMPLE		.25 pCi/mL SOIL	LANL010		15-FEB-10	9.5	0-5	14		654.27	633.80	10.47
247568007-1	REIS-10-4247	SAMPLE		.25 pCi/mL SOIL	LANL010		15-FEB-10	10	0-6	15		496.75	485.82	10.93
247568008-1	REIS-10-4254	SAMPLE		.25 pCi/mL SOIL	LANL010		15-FEB-10	10	0-7	16		671.30	660.45	10.85
247568009-1	REIS-10-4268	SAMPLE		.25 pCi/mL SOIL	LANL010		15-FEB-10	10	0-8	17		521.95	507.86	14.09
247568010-1	REIS-10-4264	SAMPLE		.25 pCi/mL SOIL	LANL010		15-FEB-10	10	0-9	18		555.77	534.65	21.12
248283002-1	WST36-10-8928	SAMPLE		.25 pCi/mL SOIL	LANL010		23-FEB-10	8.5	0-10	19		568.32	556.39	11.93
1207059604-1	MB for batch 960227	MB		.25 pCi/mL SOIL	QC ACCOUNT		15-FEB-10	10	0-11	20		20.00	0.00	20.00
1207059605-1	DUP for batch 960227	DUP		.25 pCi/mL SOIL	QC ACCOUNT		23-FEB-10	10	0-12	8		569.80	531.25	28.55
1207059606-1	LCS for batch 960227	LCS		.25 pCi/mL SOIL	QC ACCOUNT		3/5/10	10	37-1	21		20.00	0.00	20.00

Bkg Rack #: 33-1/49-1

dailes ✓

Bkg prepared with dead water? Yes/No

Comments:

Instrument Used (circle as appropriate): LS6000 (Red) 7063155, LS6500 (Blue) 7067083, LS6500 (Gold) 7070506, LS6500 (Green) 7067406, Wallac (Yellow) 4140127, LS6000 (Brown) 7060655, Wallac (Pink) 2200082, Wallac (White) 4140299, Purple 7069723, Silver 7060656, Orange DG06095168

Calibration Used: Ecocont Ultra (10 mL sample/13 mL Econscint Ultra)  
 Data Reviewed By: AW 3-15-10

GEL Laboratories LLC, Radiochemistry Division

Page 1 of 1

DATE	3/10/2010	INITIALS	KXK2	BATCH NUMBER	960227				
Sample #	Flask Wt. (g)	Sample Wet (g)	Flask & Sample Wet (g)	% Moisture of Sample (Balance Interface using % Moisture Batch)	Total Moisture in Sample (mL)	Flask & Sample Dry (g)	Sample Dry (g)	mLs aliquoted into LSC vial	Collection Tube Number
247563001	200	548.76	748.76	0.027	14.82	733.94	533.94	10	
247563002	200	595.56	795.56	0.035	20.84	774.72	574.72	10	
247563003	200	510.42	710.42	0.051	26.03	684.39	484.39	10	
247563004	200	611.20	811.20	0.033	20.17	791.03	591.03	10	
247563005	200	559.00	759.00	0.036	20.12	738.88	538.88	10	
247563006	200	558.33	758.33	0.036	20.10	738.23	538.23	10	
247563007	200	528.54	728.54	0.031	16.38	712.16	512.16	10	
247563008	200	559.80	759.80	0.051	28.55	731.25	531.25	10	
247568001	200	498.96	698.96	0.027	13.50	686.46	486.46	10	
247568002	200	520.79	720.79	0.026	13.54	707.25	507.25	10	
247568003	200	594.66	794.66	0.021	12.49	782.17	582.17	10	
247568004	200	587.50	787.50	0.025	14.69	772.81	572.81	10	
247568005	200	535.14	735.14	0.016	8.56	726.58	526.58	8	
247568006	200	654.27	854.27	0.016	10.47	843.80	643.80	9.5	
247568007	200	496.75	696.75	0.022	10.93	685.82	485.82	10	
247568008	200	571.30	771.30	0.019	10.85	760.45	560.45	10	
247568009	200	521.95	721.95	0.027	14.09	707.86	507.86	10	
247568010	200	555.77	755.77	0.038	21.12	734.65	534.65	10	
248203002	200	568.32	768.32	0.021	11.93	756.39	556.39	8	
MB	200	20.00	220.00	1	20.00	200.00	0.00	10	
DUP	200	559.80	759.80	0.051	28.55	731.25	531.25	10	
MS	200	20.00	220.00	1	20.00	200.00	0.00	10	

T960227r

## Tritium Solid

Filename : H9VAC.XLS  
File type : Excel  
Version # : 1.26

Batch : 960227  
Analyst : KXK2  
Prep Date : 3/9/2010

H-3 Abundance : 1  
Method Uncertainty : 0.0691  
Geometry: 10mL DW/13mL  
Eoscent Ultra

Spike SN :  
Spike Exp Date :  
Spike Activity (dpm/ml):  
Spike Volume Added:

N/A  
N/A  
N/A  
N/A

LCS SN :  
LCS Exp Date :  
LCS Activity (dpm/ml):  
LCS Volume Added:

0134-K  
3/27/2010  
2458.34  
0.10

Procedure Code : LSC\_VHRS  
Parmaname : Tritium  
Required MDC : 250 pCi/L  
Half-life of Tritium : 12.32 years

Pipet, 0.1 ml Stddev : +/-  
Pipet, 0.5 ml Stddev : +/-  
Pipet, 1.0 ml Stddev : +/-  
Pipet, 5.0 ml Stddev : +/-

0.000701 ml  
0.002564 ml  
0.005480 ml  
0.025729 ml

Sample Characteristics												
Pos.	Sample ID	Wet Sample Weight (g)	Total Moisture L	Sample Aliquot in Vial L	Sample Aliquot Stddev. L	Dry Sample Weight (g)	% Moisture of Sample	Rig number	Sample Date/Time			
1	247563001.1	548.76	0.0148	0.0100	2.5728E-05	533.94	2.70%	1	2/15/2010 12:00			
2	247563002.1	595.56	0.0208	0.0100	2.5728E-05	574.72	3.50%	2	2/15/2010 12:00			
3	247563003.1	510.42	0.0260	0.0100	2.5728E-05	484.39	5.10%	3	2/15/2010 12:00			
4	247563004.1	611.20	0.0202	0.0100	2.5728E-05	591.03	3.30%	4	2/15/2010 12:00			
5	247563005.1	559.00	0.0201	0.0100	2.5728E-05	538.88	3.60%	5	2/15/2010 12:00			
6	247563006.1	558.33	0.0201	0.0100	2.5728E-05	538.23	3.60%	6	2/15/2010 12:00			
7	247563007.1	528.54	0.0164	0.0100	2.5728E-05	512.16	3.10%	7	2/15/2010 12:00			
8	247563008.1	559.80	0.0286	0.0100	2.5728E-05	531.25	5.10%	8	2/15/2010 12:00			
9	247568001.1	499.96	0.0135	0.0100	2.5728E-05	486.46	2.70%	9	2/15/2010 12:00			
10	247568002.1	520.79	0.0135	0.0100	2.5728E-05	507.25	2.60%	10	2/15/2010 12:00			
11	247568003.1	594.66	0.0125	0.0100	2.5728E-05	582.17	2.10%	11	2/15/2010 12:00			
12	247568004.1	587.50	0.0147	0.0100	2.5728E-05	572.81	2.50%	12	2/15/2010 12:00			
13	247568005.1	535.14	0.0086	0.0080	2.5728E-05	526.58	1.60%	13	2/15/2010 12:00			
14	247568006.1	654.27	0.0105	0.0085	2.5728E-05	643.80	1.60%	14	2/15/2010 12:00			
15	247568007.1	498.75	0.0109	0.0100	2.5728E-05	485.82	2.20%	15	2/15/2010 12:00			
16	247568008.1	571.30	0.0109	0.0100	2.5728E-05	560.45	1.90%	16	2/15/2010 12:00			
17	247568009.1	521.95	0.0141	0.0100	2.5728E-05	507.86	2.70%	17	2/15/2010 12:00			
18	247568010.1	555.77	0.0211	0.0100	2.5728E-05	534.65	3.80%	18	2/15/2010 12:00			
19	248203002.1	568.32	0.0119	0.0080	2.5728E-05	556.39	2.10%	19	2/23/2010 12:00			
20	1202059604.1	20.00	0.0200	0.0100	2.5728E-05	0.00	100.00%	20	3/9/2010 0:00			
21	1202059605.1	559.98	0.0286	0.0100	2.5728E-05	531.25	5.13%	8	2/15/2010 12:00			
22	1202059606.1	20.00	0.0200	0.0100	2.5728E-05	0.00	100.00%	21	3/9/2010 0:00			

Count raw Data				Background				Calibration Data				Detector Efficiency				Backgrounds	
Pos.	Rack Position #	Counting Time (min.)	Quench#	Gross cpm	cpm	Count Time (min.)	Count Start Date/Time	Sample Decay	Counted on	Calibration Date	Calibration Due Date	Detector Efficiency (cpm/dpm)	Detector Error (cpm/dpm)	Rack Position #	Count Start Date/Time		
1	33-2	95	114	28.19	3.52	95	3/11/2010 11:33	0.996	LSCRED	8/21/2009	8/31/2010	0.2082	0.00792	33-1	3/11/2010 9:54		
2	33-3	95	114.5	13.46	3.52	95	3/11/2010 13:11	0.996	LSCRED	8/21/2009	8/31/2010	0.2080	0.00792	33-1	3/11/2010 9:54		
3	33-4	95	114	12.25	3.52	95	3/11/2010 14:50	0.996	LSCRED	8/21/2009	8/31/2010	0.2082	0.00792	33-1	3/11/2010 9:54		
4	33-5	95	114.4	22.76	3.52	95	3/11/2010 16:28	0.996	LSCRED	8/21/2009	8/31/2010	0.2080	0.00792	33-1	3/11/2010 9:54		
5	33-6	95	114.1	10.22	3.52	95	3/11/2010 18:08	0.996	LSCRED	8/21/2009	8/31/2010	0.2081	0.00792	33-1	3/11/2010 9:54		
6	33-7	95	114.7	17.73	3.52	95	3/11/2010 19:46	0.996	LSCRED	8/21/2009	8/31/2010	0.2079	0.00792	33-1	3/11/2010 9:54		
7	60-1	95	114.9	11.96	3.52	95	3/11/2010 23:03	0.996	LSCRED	8/21/2009	8/31/2010	0.2078	0.00792	33-1	3/11/2010 9:54		
8	60-2	95	114.8	11.51	3.52	95	3/12/2010 0:41	0.996	LSCRED	8/21/2009	8/31/2010	0.2079	0.00792	33-1	3/11/2010 9:54		
9	60-3	95	114.6	269.92	3.52	95	3/12/2010 2:19	0.996	LSCRED	8/21/2009	8/31/2010	0.2079	0.00792	33-1	3/11/2010 9:54		
10	0-1	95	113.6	19442.22	3.52	95	3/12/2010 10:51	0.996	LSCRED	8/21/2009	8/31/2010	0.2082	0.00792	33-1	3/11/2010 9:54		
11	0-2	95	114	1514.74	3.52	95	3/12/2010 12:29	0.996	LSCRED	8/21/2009	8/31/2010	0.2082	0.00792	33-1	3/11/2010 9:54		
12	0-3	95	114.7	1730.79	3.52	95	3/12/2010 14:08	0.996	LSCRED	8/21/2009	8/31/2010	0.2079	0.00792	33-1	3/11/2010 9:54		
13	0-4	95	112.3	1028	3.52	95	3/12/2010 15:46	0.996	LSCRED	8/21/2009	8/31/2010	0.2088	0.00792	33-1	3/11/2010 9:54		
14	0-5	95	113.7	1181.49	3.52	95	3/12/2010 17:25	0.996	LSCRED	8/21/2009	8/31/2010	0.2083	0.00792	33-1	3/11/2010 9:54		
15	0-6	95	113.4	1212.12	3.52	95	3/12/2010 19:03	0.996	LSCRED	8/21/2009	8/31/2010	0.2084	0.00792	33-1	3/11/2010 9:54		
16	0-7	95	113.7	19013.33	3.52	95	3/12/2010 20:43	0.996	LSCRED	8/21/2009	8/31/2010	0.2083	0.00792	33-1	3/11/2010 9:54		
17	0-8	95	114.7	18833.67	3.52	95	3/12/2010 22:23	0.996	LSCRED	8/21/2009	8/31/2010	0.2079	0.00792	33-1	3/11/2010 9:54		
18	0-9	95	114.4	1744.07	3.52	95	3/13/2010 0:01	0.996	LSCRED	8/21/2009	8/31/2010	0.2080	0.00792	33-1	3/11/2010 9:54		
19	49-2	120	731.78	3.93	2.86	120	3/15/2010 21:09	0.997	LSCYELLOW	8/21/2009	8/31/2010	0.2033	0.00792	49-1	3/15/2010 19:07		
20	0-11	95	113.6	2.94	3.52	95	3/13/2010 3:18	0.999	LSCRED	8/21/2009	8/31/2010	0.2083	0.00792	33-1	3/11/2010 9:54		
21	0-12	95	115.1	10.37	3.52	95	3/13/2010 4:56	0.996	LSCRED	8/21/2009	8/31/2010	0.2077	0.00792	33-1	3/11/2010 9:54		
22	37-1	15	114.6	30.47	3.52	95	3/13/2010 6:34	0.999	LSCRED	8/21/2009	8/31/2010	0.2079	0.00792	33-1	3/11/2010 9:54		

## Notes:

- 1 - Results are decay corrected to Sample Date/Time  
 2 - Reference date for Spike Activity (dpm/ml) is the batch Prep Date  
 3 - Spike Nominals are decay corrected to Sample Date/Time

Results		Decision Level	Critical Level	Required MDC	MDC	Sample Act. Conc.	Sample Act. Error	Net Count Rate	Net Count Rate Error	1 SIGMA Counting Uncertainty	1 SIGMA Total Prop. Uncertainty	Sample QC	Sample Type	RPD	RER	Nominal pC/L	Recovery
Pos.	pC/L	pC/L	pC/L	pC/L	pC/L	pC/L	pC/L	CPM	CPM	pC/L	pC/L						
1	137.7611	97.2605		250	201.3797	5358.1539	0.025	24.670	0.578	125.4823	393.7139		SAMPLE				
2	137.9005	97.3590		250	201.5836	2161.0852	0.043	9.940	0.423	91.9163	176.3608		SAMPLE				
3	137.7640	97.2625		250	201.3840	1896.1358	0.047	8.730	0.407	88.4931	158.9691		SAMPLE				
4	137.8753	97.3412		250	201.5467	4182.2609	0.029	19.240	0.526	114.3291	312.9178		SAMPLE				
5	137.7940	97.2837		250	201.4278	1455.5413	0.057	6.700	0.390	82.6183	130.7777		SAMPLE				
6	137.9634	97.4033		250	201.6755	3090.8472	0.034	14.210	0.473	102.8729	238.5874		SAMPLE				
7	138.0244	97.4464		250	201.7647	1836.5139	0.049	8.440	0.404	87.8414	155.1725		SAMPLE				
8	137.9967	97.4268		250	201.7241	1738.3409	0.051	7.990	0.398	86.5378	148.8187		SAMPLE				
9	137.9406	97.3872		250	201.6421	57935.6303	0.011	266.400	1.697	368.9612	4051.9061		SAMPLE				
10	137.7283	97.2374		250	201.3318	4220947.2933	0.009	19438.700	14.307	3106.6559	293994.8956		SAMPLE				
11	137.7831	97.2761		250	201.4120	328278.1072	0.009	1511.220	3.988	868.4140	22880.3095		SAMPLE				
12	137.9797	97.4148		250	201.6993	375746.4367	0.009	1727.270	4.273	929.4718	26186.3056		SAMPLE				
13	171.7079	121.2272		250	251.0033	277340.4413	0.010	1024.480	3.295	892.0450	19351.4653		SAMPLE				
14	144.9556	102.3399		250	211.8987	269208.4833	0.009	1177.970	3.532	807.1490	18769.8282		SAMPLE				
15	137.6320	97.1694		250	201.1910	262253.6240	0.009	1208.600	3.577	776.2106	18281.7983		SAMPLE				
16	137.7107	97.2250		250	201.3061	4127281.0804	0.009	19009.810	14.148	3071.8133	287471.9713		SAMPLE				
17	137.9870	97.4200		250	201.7089	4096485.3636	0.009	18530.150	14.081	3063.4012	285326.4627		SAMPLE				
18	137.9032	97.3609		250	201.5875	379425.5789	0.009	1740.550	4.289	932.5087	26372.8916		SAMPLE				
19	141.3302	99.7803		250	206.5063	297.2729	0.222	1.070	0.238	66.0870	69.2590		SAMPLE				
20	137.2353	96.8893		250	200.6111	-125.4912	0.450	-0.580	0.261	58.4208	56.4211		MB				
21	138.1100	97.5069		250	201.8898	1491.5415	0.056	6.850	0.382	83.2596	133.1302		DUP	15.3%	0.4377	247563008.1	
22	263.3093	185.8986		250	415.1563	5842.8357	0.054	26.950	1.438	311.7926	512.6428		LCS			5536.7931	105.5%

## ID: TRITIUM

11 MAR 2010 10:03

USER: 2

COMMENT: RED

PRESET TIME : 120.00

DATA CALC : CPM H# : YES SAMPLE REPEATS: 1 PRINTER : EDIT

COUNT BLANK : NO IC# : NO REPLICATES : 1 RS232 : EDIT

TWO PHASE : NO ADC : NO CYCLE REPEATS : 1 DISK : OFF

SCINTILLATOR: LIQUID LUMEX: YES LOW SAMPLE REJ: 0

LOW LEVEL : NO HALF LIFE CORRECTION DATE: none

CHAN: 65.0 - 225.0 %ERROR: 0.00 FACTOR: 1.000000 BKG. SUB: 0

CHAN: 0.0 - 990.0 %ERROR: 0.00 FACTOR: 1.000000 BKG. SUB: 0

ALPHA-BETA DISCRIMINATION: NO

SAMPL NO	POS	TIME MIN	H#	WIND1		WIND2		LUMEX %	ELAPSED TIME
				CPM	%ERROR	CPM	%ERROR		
1	33-1	95.00	113.6	3.52	12.18	46.34	3.04	1.70	97.93
2	33-2	95.00	114.0	28.19	3.93	82.41	2.27	1.15	196.43
3	33-3	95.00	114.5	13.46	5.79	61.85	2.63	1.52	294.95
4	33-4	95.00	114.0	12.25	6.11	58.34	2.71	1.79	393.51
5	33-5	95.00	114.4	22.76	4.39	71.96	2.44	1.37	492.05
6	33-6	SAMPLE TERMINATED:							
7	33-7	SAMPLE TERMINATED:							



## ID: TRITIUM

11 MAR 2010 18:17

USER: 2

COMMENT: RED

```

PRESET TIME :      95.00
DATA CALC   :      CPM  H#   : YES  SAMPLE REPEATS:   1  PRINTER      : EDIT
COUNT BLANK :      NO  IC#  : NO  REPLICATES   :   1  RS232       : EDIT
TWO PHASE    :      NO  AQC  : NO  CYCLE REPEATS :   1  DISK        : OFF
SCINTILLATOR :    LIQUID LUMEX: YES  LOW SAMPLE REJ:   0
LOW LEVEL    :      NO  HALF LIFE CORRECTION DATE:      none

```

```

CHAN:  65.0 - 225.0  %ERROR: 0.00  FACTOR:  1.000000  BKG. SUB:      0
CHAN:   0.0 - 990.0  %ERROR: 0.00  FACTOR:  1.000000  BKG. SUB:      0

```

ALPHA-BETA DISCRIMINATION: NO

SAM	POS	TIME MIN	H#	WIND1		WIND2		LUMEX %	ELAPSED TIME
				CPM	%ERROR	CPM	%ERROR		
MISSING SAMPLE									
6	33-6	95.00	114.1	10.22	6.74	53.68	2.83	1.92	99.07
7	33-7	95.00	114.7	17.73	5.00	66.26	2.54	1.34	196.56

## ID: TRITIUM

11 MAR 2010 23:11

USER: 2 COMMENT: RED  
 PRESET TIME : 95.00  
 DATA CALC : CPM H# : YES SAMPLE REPEATS: 1 PRINTER : EDIT  
 COUNT BLANK : NO IC# : NO REPLICATES : 1 RS232 : EDIT  
 TWO PHASE : NO ADC : NO CYCLE REPEATS : 1 DISK : OFF  
 SCINTILLATOR: LIQUID LUMEX: YES LOW SAMPLE REJ: 0  
 LOW LEVEL : NO HALF LIFE CORRECTION DATE: none

CHAN: 65.0 - 225.0 %ERROR: 0.00 FACTOR: 1.000000 BKG. SUB: 0  
 CHAN: 0.0 - 990.0 %ERROR: 0.00 FACTOR: 1.000000 BKG. SUB: 0

ALPHA-BETA DISCRIMINATION: NO

SAM NO	POS	TIME MIN	H#	WIND1		WIND2		LUMEX %	ELAPSED TIME
				CPM	%ERROR	CPM	%ERROR		
1	60-1	95.00	114.9	11.96	6.14	62.35	2.62	1.32	97.94
2	60-2	95.00	114.8	11.51	6.25	61.19	2.64	1.22	196.37
3	60-3	95.00	114.6	269.92	1.25	431.72	0.99	0.17	294.77

INSTRUMENT CALIBRATION: Mini 12 MAR 2010 04:09  
 Calibration successful

Calibrating Auto DPM  
 Counting Standard for 14C  
 Calibration Complete: 14C  
 Counting Standard for 3H  
 Calibration Complete: 3H  
 Calibration Successful

ID: TRITIUM

12 MAR 2010 10:59

USER: 2

COMMENT: RED

PRESET TIME : 95.00

DATA CALC : CPM H# : YES SAMPLE REPEATS: 1 PRINTER : EDIT

COUNT BLANK : NO IC# : NO REPLICATES : 1 RS232 : EDIT

TWO PHASE : NO ADC : NO CYCLE REPEATS : 1 DJSK : OFF

SCINTILLATOR: LIQUID LUMEX: YES LOW SAMPLE REJ: 0

LOW LEVEL : NO HALF LIFE CORRECTION DATE: none

CHAN: 65.0 - 225.0 %ERROR: 0.00 FACTOR: 1.000000 BKG. SUB: 0

CHAN: 0.0 - 990.0 %ERROR: 0.00 FACTOR: 1.000000 BKG. SUB: 0

ALPHA-BETA DISCRIMINATION: NO

SAM NO	POS	TIME MIN	H#	WIND1		WIND2		LUMEX %	ELAPSED TIME
				CPM	%ERROR	CPM	%ERROR		
1	0-1	95.00	113.8	19442.22	0.15	28095.98	0.12	0.01	99.17
2	0-2	95.00	114.0	1514.74	0.53	2240.23	0.43	0.04	197.72
3	0-3	95.00	114.7	1730.79	0.49	2539.36	0.41	0.03	296.24
4	0-4	95.00	112.3	1028.00	0.64	1545.53	0.52	0.06	394.77
5	0-5	95.00	113.7	1181.49	0.60	1753.71	0.49	0.05	493.25
6	0-6	95.00	113.4	1212.12	0.59	1797.66	0.48	0.04	591.76
7	0-7	95.00	113.7	19013.33	0.15	27531.88	0.12	0.01	691.42
8	0-8	95.00	114.7	18833.67	0.15	27307.73	0.12	0.01	791.03
9	0-9	95.00	114.4	1744.07	0.49	2569.88	0.40	0.02	889.46
10	0-10	95.00	114.7	4.38	10.32	46.33	3.03	1.00	987.76
11	0-11	95.00	113.6	2.94	12.84	43.23	3.14	0.97	1086.03
12	0-12	95.00	115.1	10.37	6.51	53.62	2.81	0.82	1184.28

## ID: TRITIUM

13 MAR 2010 06:44

USER: 3 COMMENT: RED  
 PRESET TIME : 15.00  
 DATA CALC : CPM H# : YES SAMPLE REPEATS: 1 PRINTER : EDIT  
 COUNT BLANK : NO IC# : NO REPLICATES : 1 RS232 : EDIT  
 TWO PHASE : NO ADC : NO CYCLE REPEATS : 1 DISK : OFF  
 SCINTILLATOR: LIQUID LUMEX: YES LOW SAMPLE REJ: 0  
 LOW LEVEL : NO HALF LIFE CORRECTION DATE: none

CHAN: 65.0 - 225.0 %ERROR: 0.00 FACTOR: 1.000000 BKG. SUB: 0  
 CHAN: 0.0 - 990.0 %ERROR: 0.00 FACTOR: 1.000000 BKG. SUB: 0

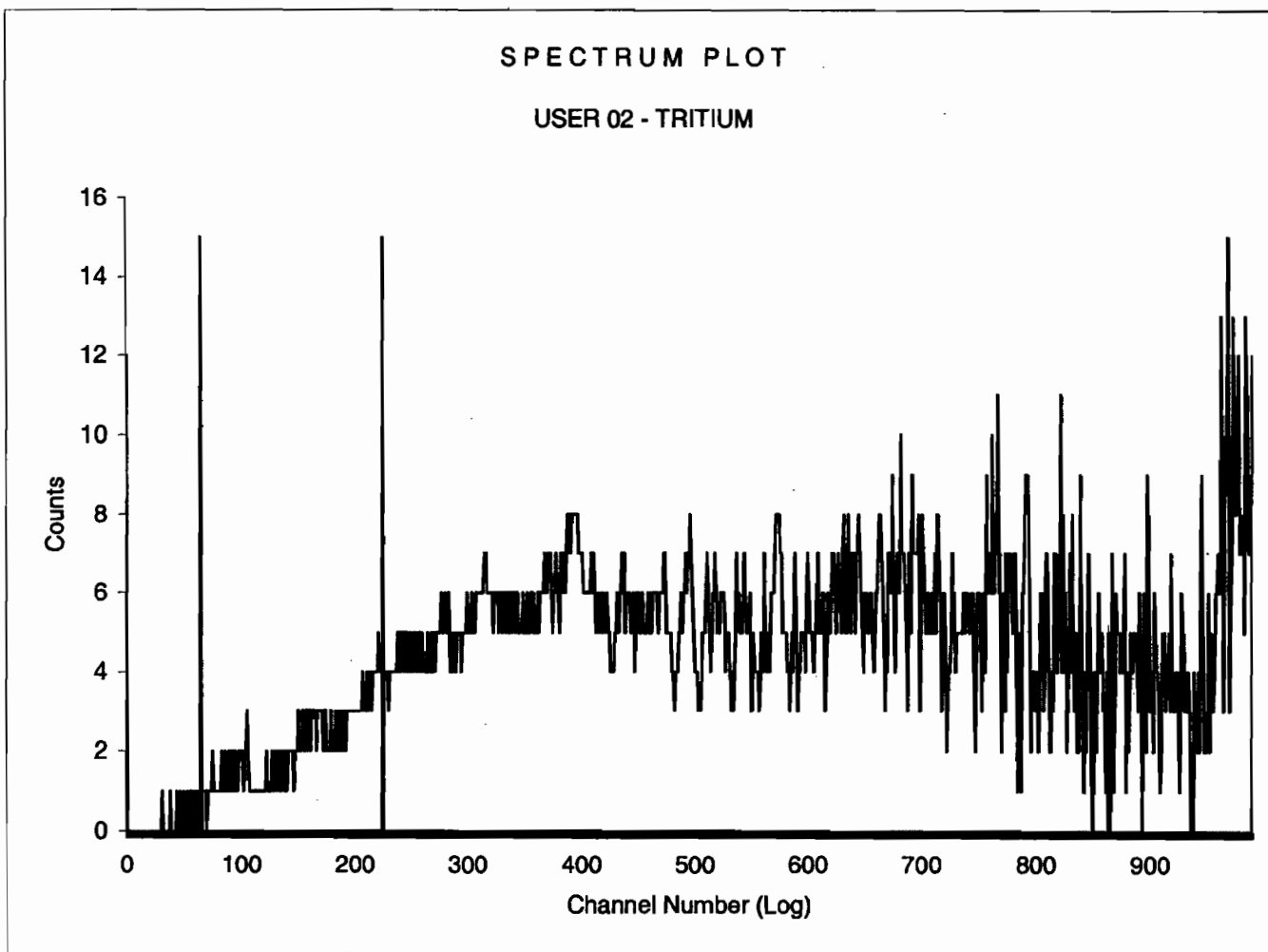
ALPHA-BETA DISCRIMINATION: NO

SAM NO	POS	TIME MIN	H#	WIND1		WIND2		LUMEX %	ELAPSED TIME
				CPM	%ERROR	CPM	%ERROR		
1	37-1	15.00	114.6	30.47	9.42	84.33	5.64	0.56	15.81

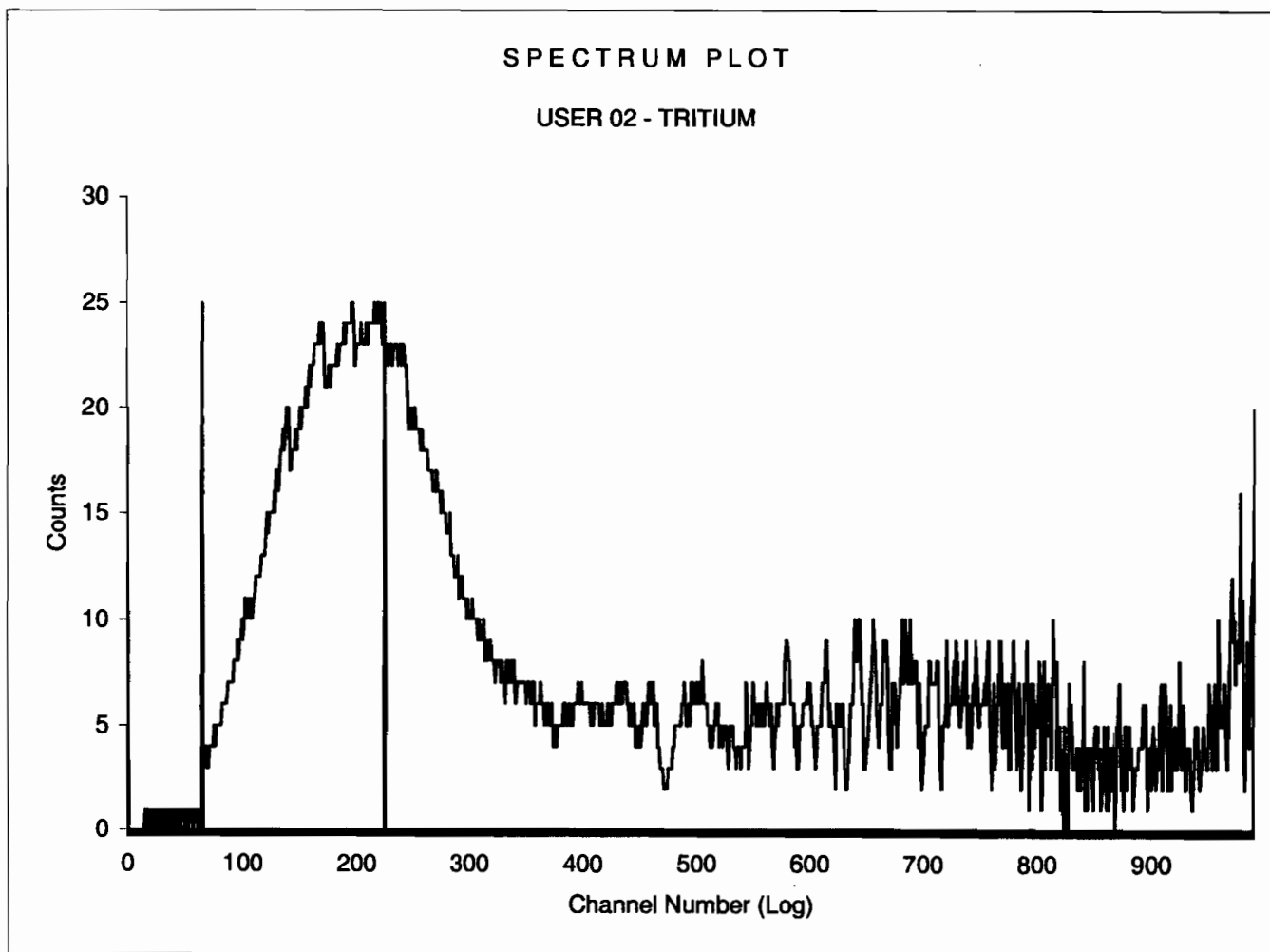
INSTRUMENT CALIBRATION: Mini 13 MAR 2010 07:03  
 Calibration successful

Calibrating Auto DPM  
 Counting Standard for 14C  
 Calibration Complete: 14C  
 Counting Standard for 3H  
 Calibration Complete: 3H  
 Calibration Successful

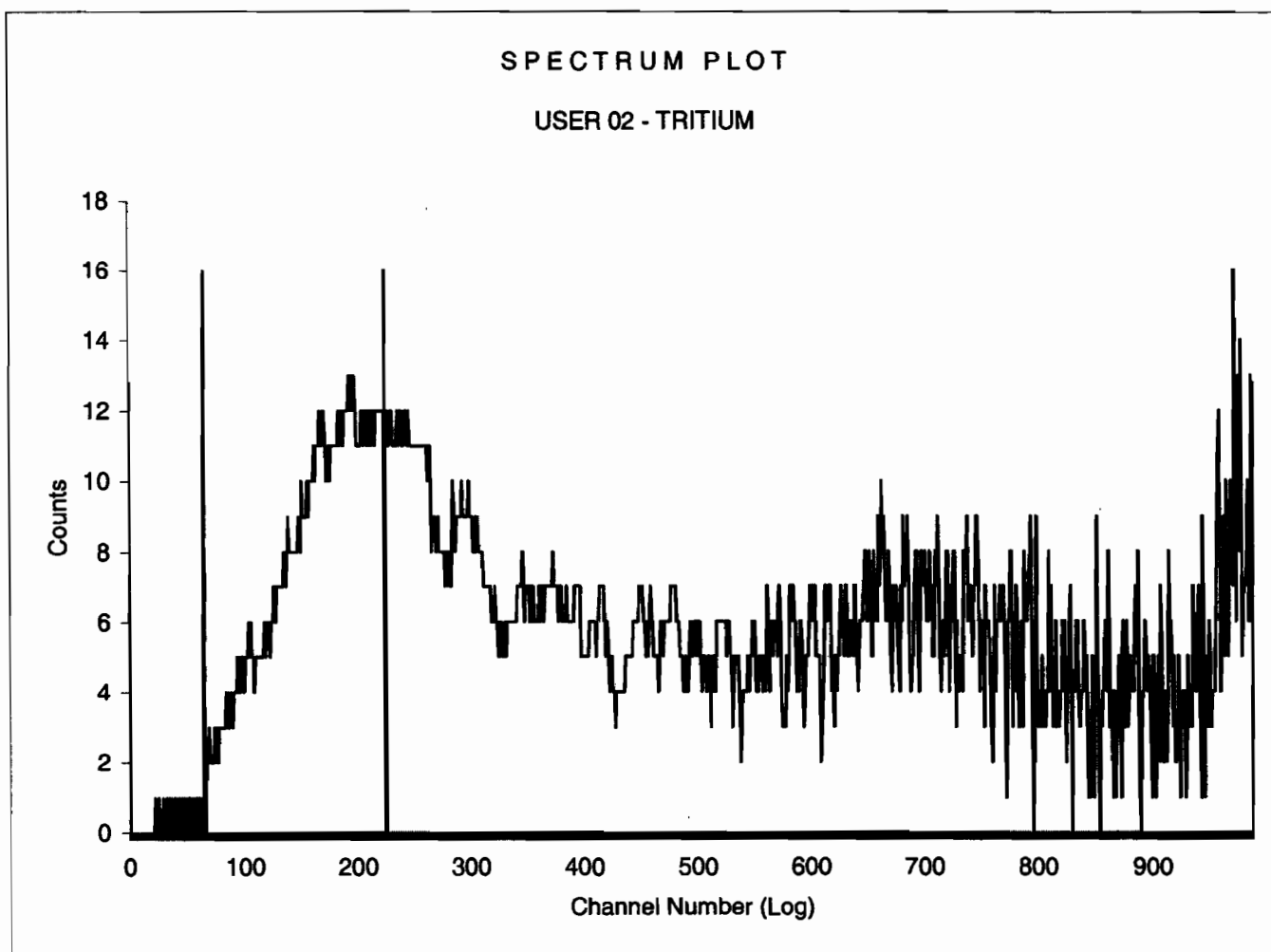
Sample Count Start Time:	11 Mar 2010 09:54:58		
Data Capture Date	11 Mar 2010 11:29:20		
User Filename	S02031133-1A.XLS		
	U02031133-1A.XLS		
Spectrum Type	Log Counts		
User Number	02		
User Id	TRITIUM		
User Comment	RED		
Scintillator	LIQUID		
Sample, Rack-Pos, Time:	1	33-1	95.00
H#, Total Counts:	113.6	5061	
Win1: Tritium - Start, End, Counts:	65	225	338
Win2: - Start, End, Counts:	0	990	4409



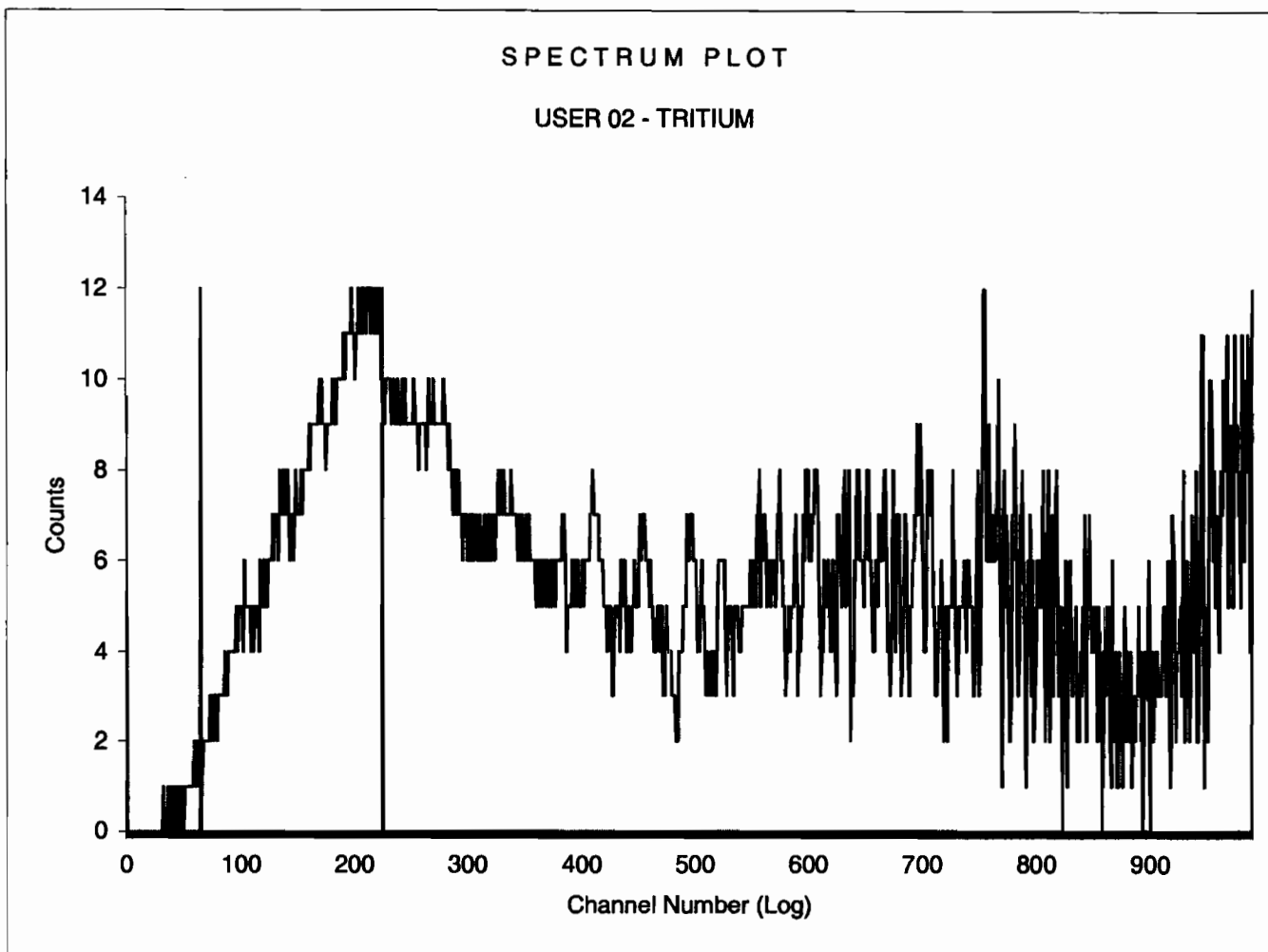
Sample Count Start Time:	11 Mar 2010 11:33:28		
Data Capture Date	11 Mar 2010 13:07:51		
User Filename	S02031133-2A.XLS		
	U02031133-1A.XLS		
Spectrum Type	Log Counts		
User Number	02		
User Id	TRITIUM		
User Comment	RED		
Scintillator	LIQUID		
Sample, Rack-Pos, Time:	2	33-2	95.00
H#, Total Counts:	114.0	8659	
Win1: Tritium - Start, End, Counts:	65	225	2697
Win2: - Start, End, Counts:	0	990	7836



Sample Count Start Time:	11 Mar 2010 13:11:59		
Data Capture Date	11 Mar 2010 14:46:22		
User Filename	S02031133-3A.XLS		
	U02031133-1A.XLS		
Spectrum Type	Log Counts		
User Number	02		
User Id	TRITIUM		
User Comment	RED		
Scintillator	LIQUID		
Sample, Rack-Pos, Time:	3	33-3	95.00
H#, Total Counts:	114.5	6781	
Win1: Tritium - Start, End, Counts:	65	225	1289
Win2: - Start, End, Counts:	0	990	5888

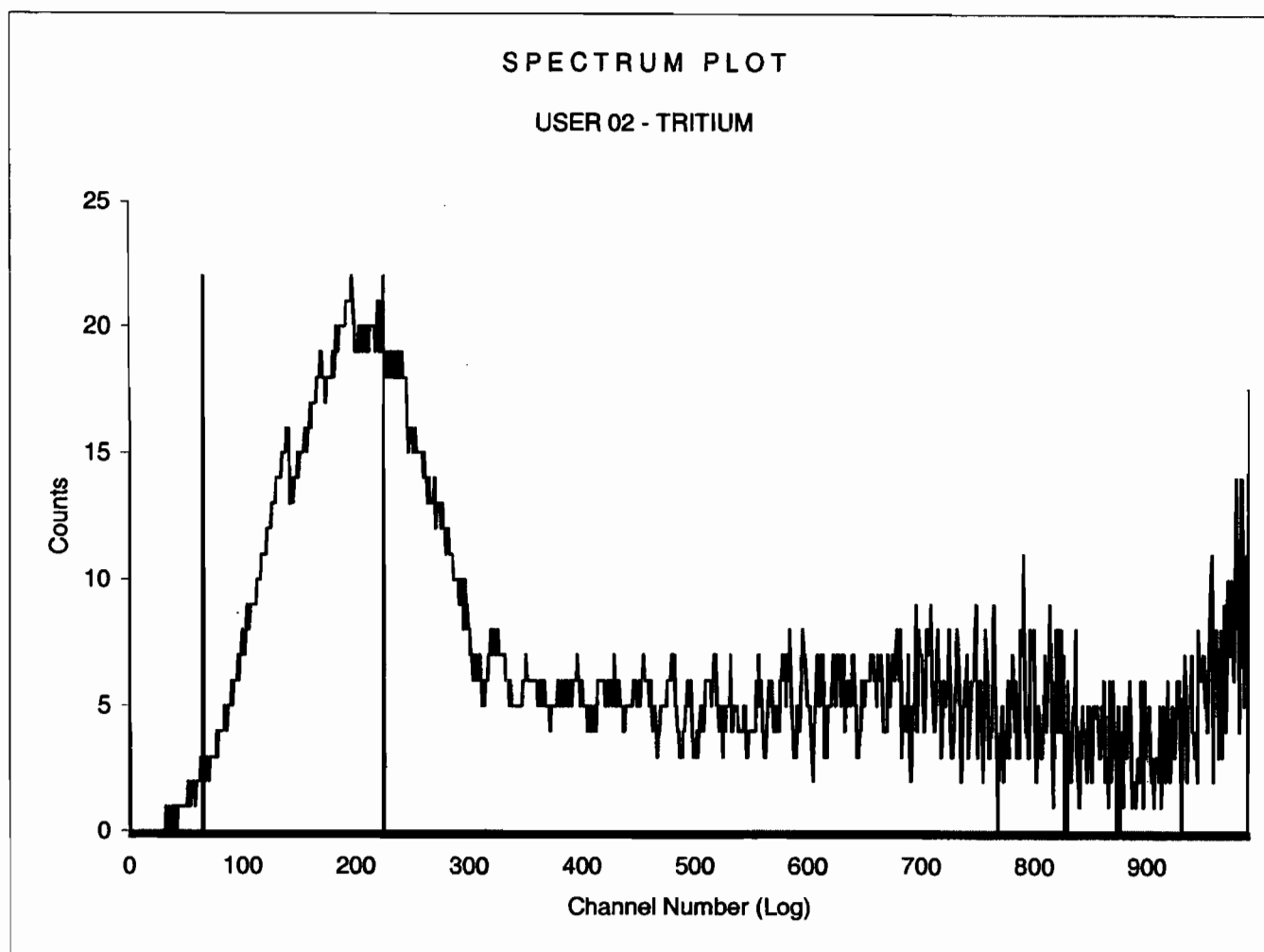


Sample Count Start Time:	11 Mar 2010 14:50:33		
Data Capture Date	11 Mar 2010 16:24:55		
User Filename	S02031133-4A.XLS		
	U02031133-1A.XLS		
Spectrum Type	Log Counts		
User Number	02		
User Id	TRITIUM		
User Comment	RED		
Scintillator	LIQUID		
Sample, Rack-Pos, Time:	4	33-4	95.00
H#, Total Counts:	114.0	6280	
Win1: Tritium - Start, End, Counts:	65	225	1172
Win2: - Start, End, Counts:	0	990	5560

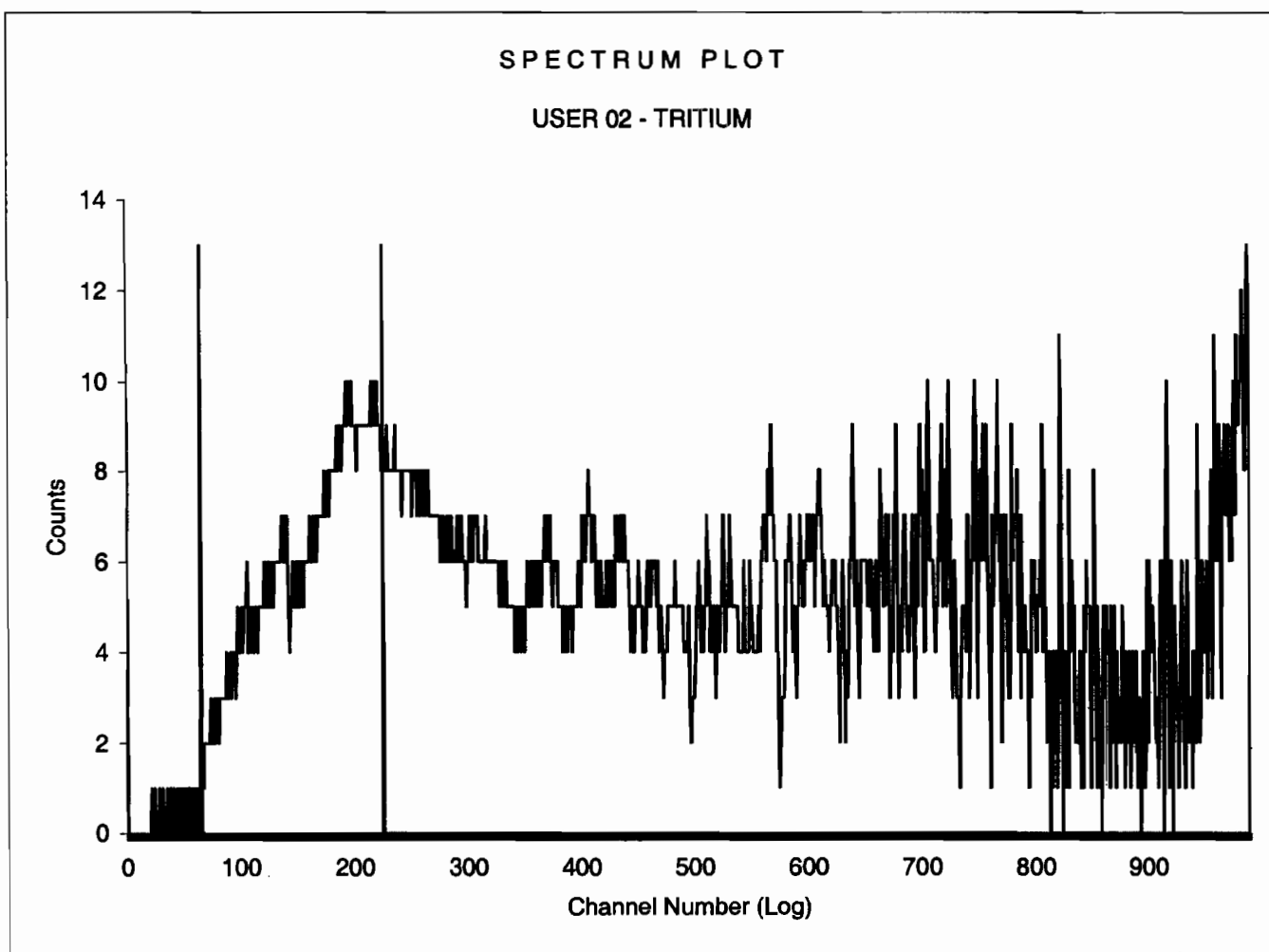




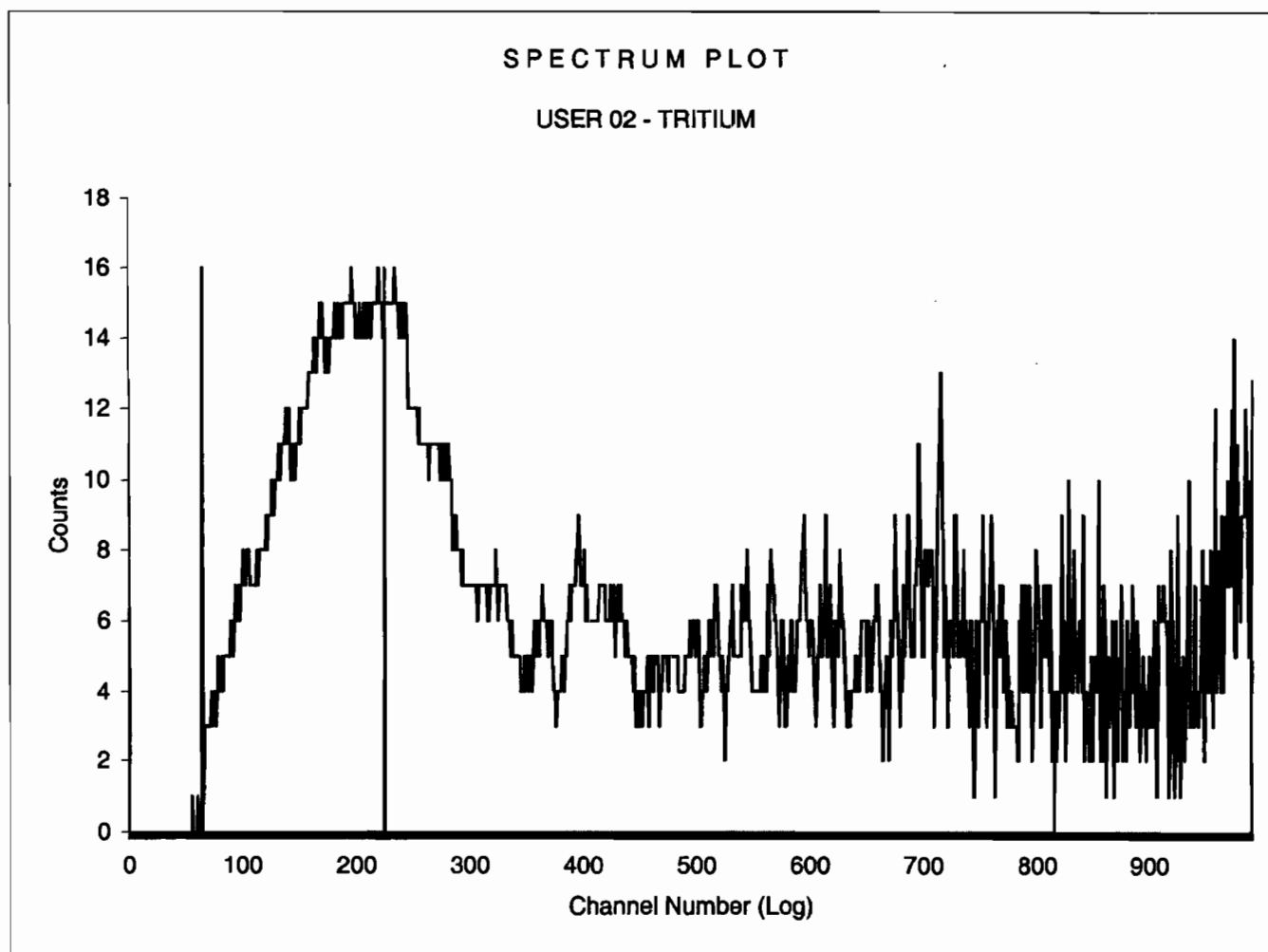
Sample Count Start Time:	11 Mar 2010 16:29:05		
Data Capture Date	11 Mar 2010 18:03:30		
User Filename	S02031133-5A.XLS		
	U02031133-1A.XLS		
Spectrum Type	Log Counts		
User Number	02		
User Id	TRITIUM		
User Comment	RED		
Scintillator	LIQUID		
Sample, Rack-Pos, Time:	5	33-5	95.00
H#, Total Counts:	114.4	7540	
Win1: Tritium - Start, End, Counts:	65	225	2177
Win2: - Start, End, Counts:	0	990	6843



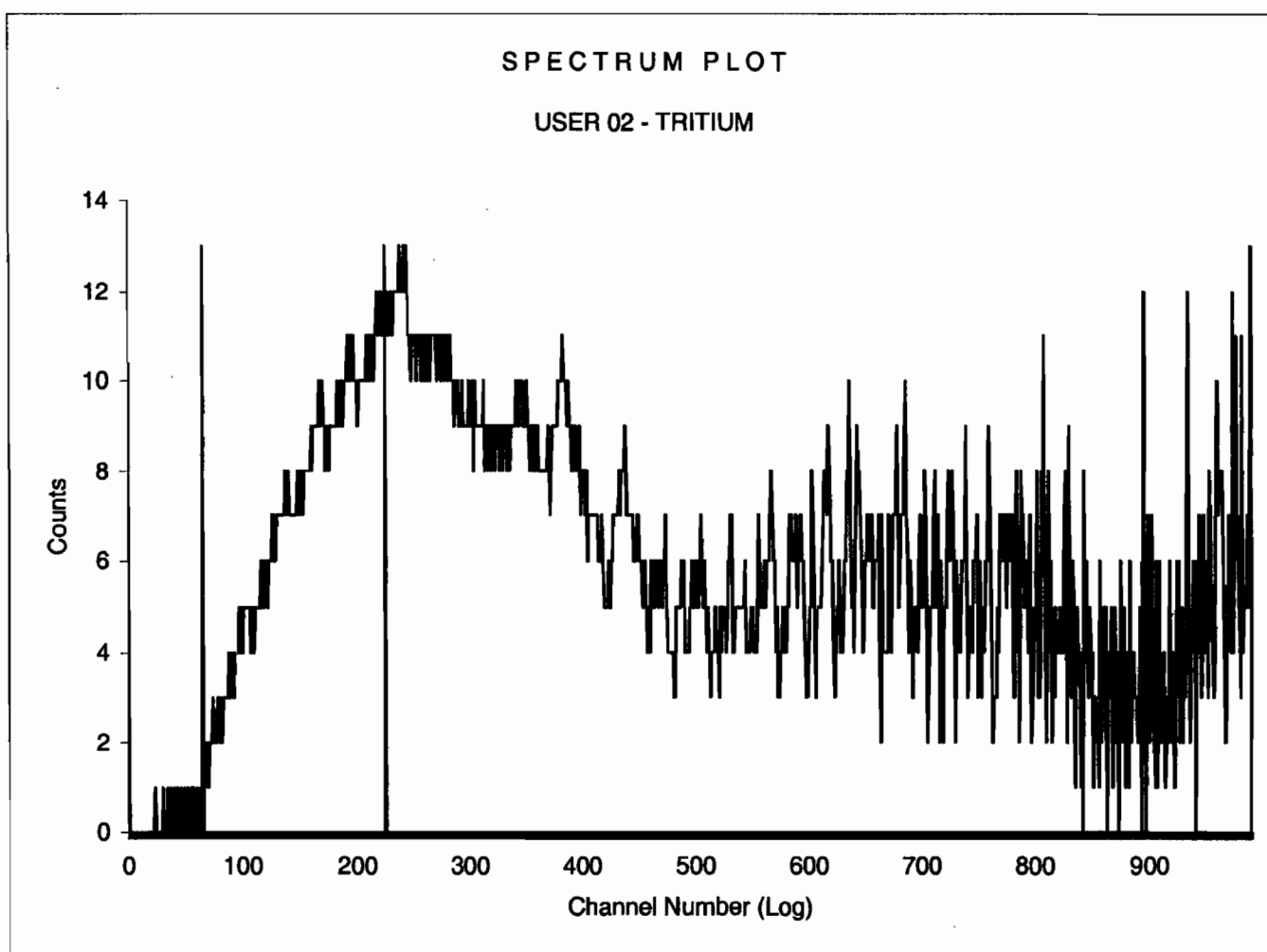
Sample Count Start Time:	11 Mar 2010 18:08:05		
Data Capture Date	11 Mar 2010 19:43:19		
User Filename	S02031133-6A.XLS		
	U02031133-6A.XLS		
Spectrum Type	Log Counts		
User Number	02		
User Id	TRITIUM		
User Comment	RED		
Scintillator	LIQUID		
Sample, Rack-Pos, Time:	6	33-6	95.00
H#, Total Counts:	114.1	5786	
Win1: Tritium - Start, End, Counts:	65	225	979
Win2: - Start, End, Counts:	0	990	5113



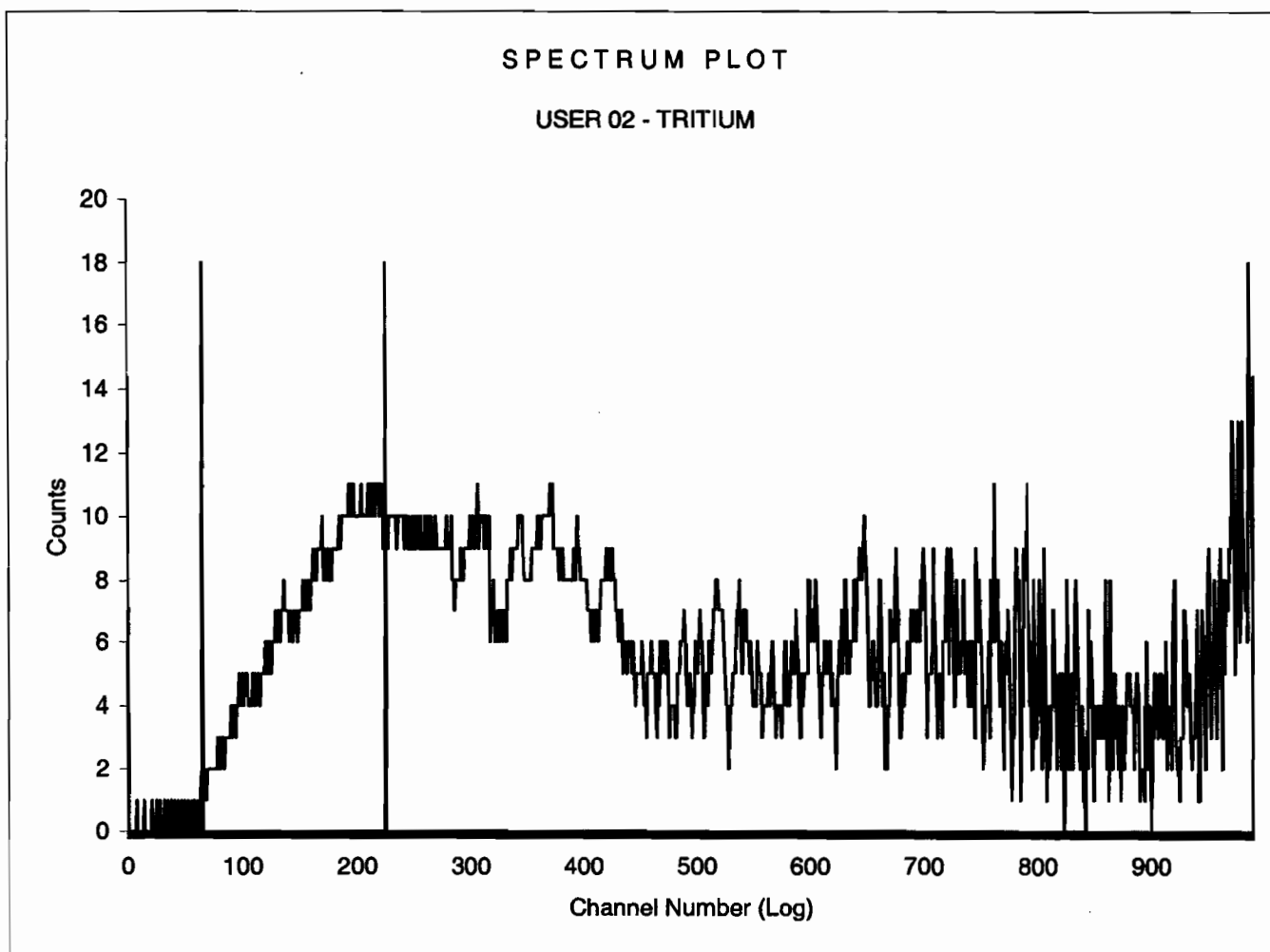
Sample Count Start Time:	11 Mar 2010 19:46:35		
Data Capture Date	11 Mar 2010 21:21:49		
User Filename	S02031133-7A.XLS		
	U02031133-6A.XLS		
Spectrum Type	Log Counts		
User Number	02		
User Id	TRITIUM		
User Comment	RED		
Scintillator	LIQUID		
Sample, Rack-Pos, Time:	7	33-7	95.00
H#, Total Counts:	114.7	7098	
Win1: Tritium - Start, End, Counts:	65	225	1699
Win2: - Start, End, Counts:	0	990	6270



Sample Count Start Time:	11 Mar 2010 23:03:08		
Data Capture Date	12 Mar 2010 00:38:25		
User Filename	S02031260-1A.XLS		
	U02031160-1A.XLS		
Spectrum Type	Log Counts		
User Number	02		
User Id	TRITIUM		
User Comment	RED		
Scintillator	LIQUID		
Sample, Rack-Pos, Time:	1	60-1	95.00
H#, Total Counts:	114.9	6701	
Win1: Tritium - Start, End, Counts:	65	225	1146
Win2: - Start, End, Counts:	0	990	5932



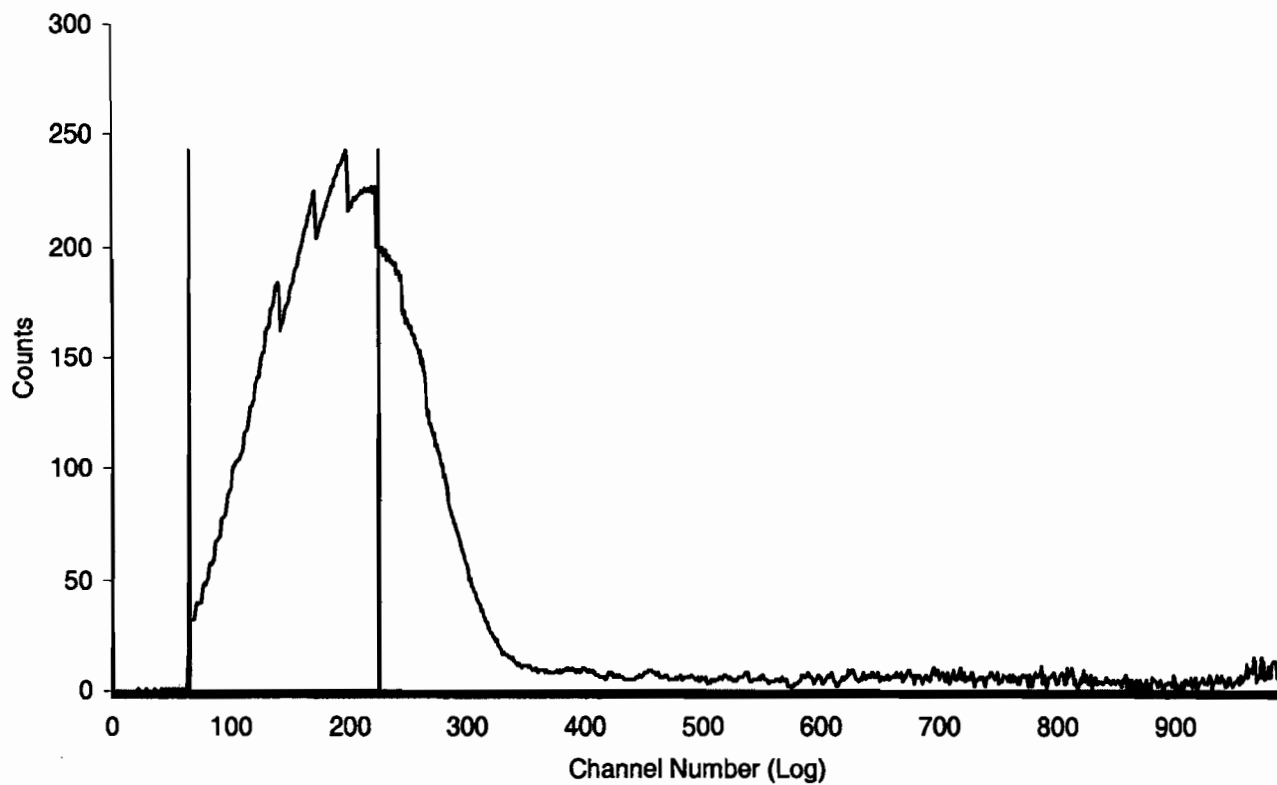
Sample Count Start Time:	12 Mar 2010 00:41:34
Data Capture Date	12 Mar 2010 02:15:59
User Filename	S02031260-2A.XLS
	U02031160-1A.XLS
Spectrum Type	Log Counts
User Number	02
User Id	TRITIUM
User Comment	RED
Scintillator	LIQUID
Sample, Rack-Pos, Time:	2 60-2 95.00
H#, Total Counts:	114.8 6567
Win1: Tritium - Start, End, Counts:	65 225 1102
Win2: - Start, End, Counts:	0 990 5824



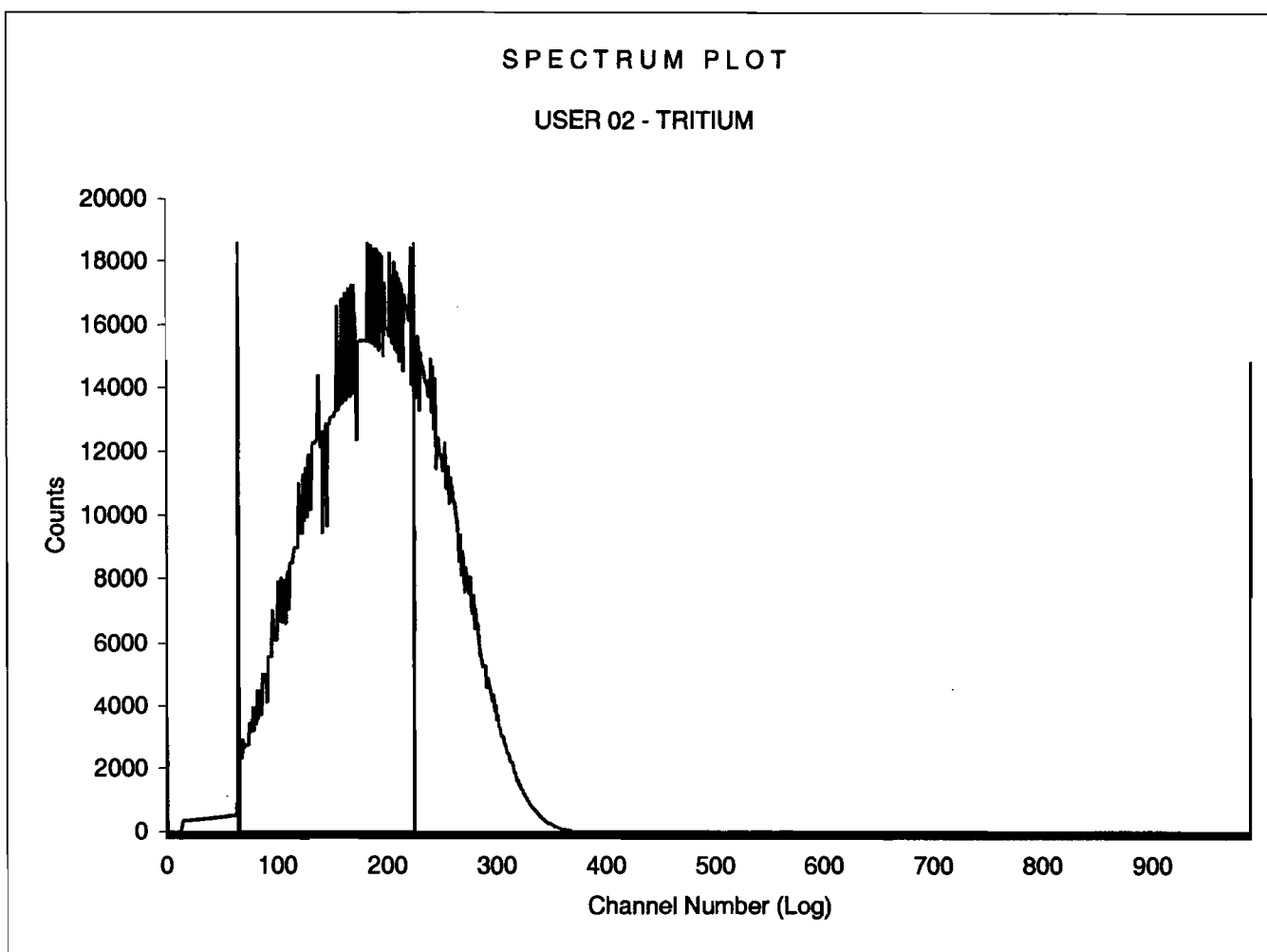
Sample Count Start Time:	12 Mar 2010 02:19:58		
Data Capture Date	12 Mar 2010 03:54:23		
User Filename	S02031260-3A.XLS		
	U02031160-1A.XLS		
Spectrum Type	Log Counts		
User Number	02		
User Id	TRITIUM		
User Comment	RED		
Scintillator	LIQUID		
Sample, Rack-Pos, Time:	3	60-3	95.00
H#, Total Counts:	114.6	41480	
Win1: Tritium - Start, End, Counts:	65	225	25809
Win2: - Start, End, Counts:	0	990	40769

# SPECTRUM PLOT

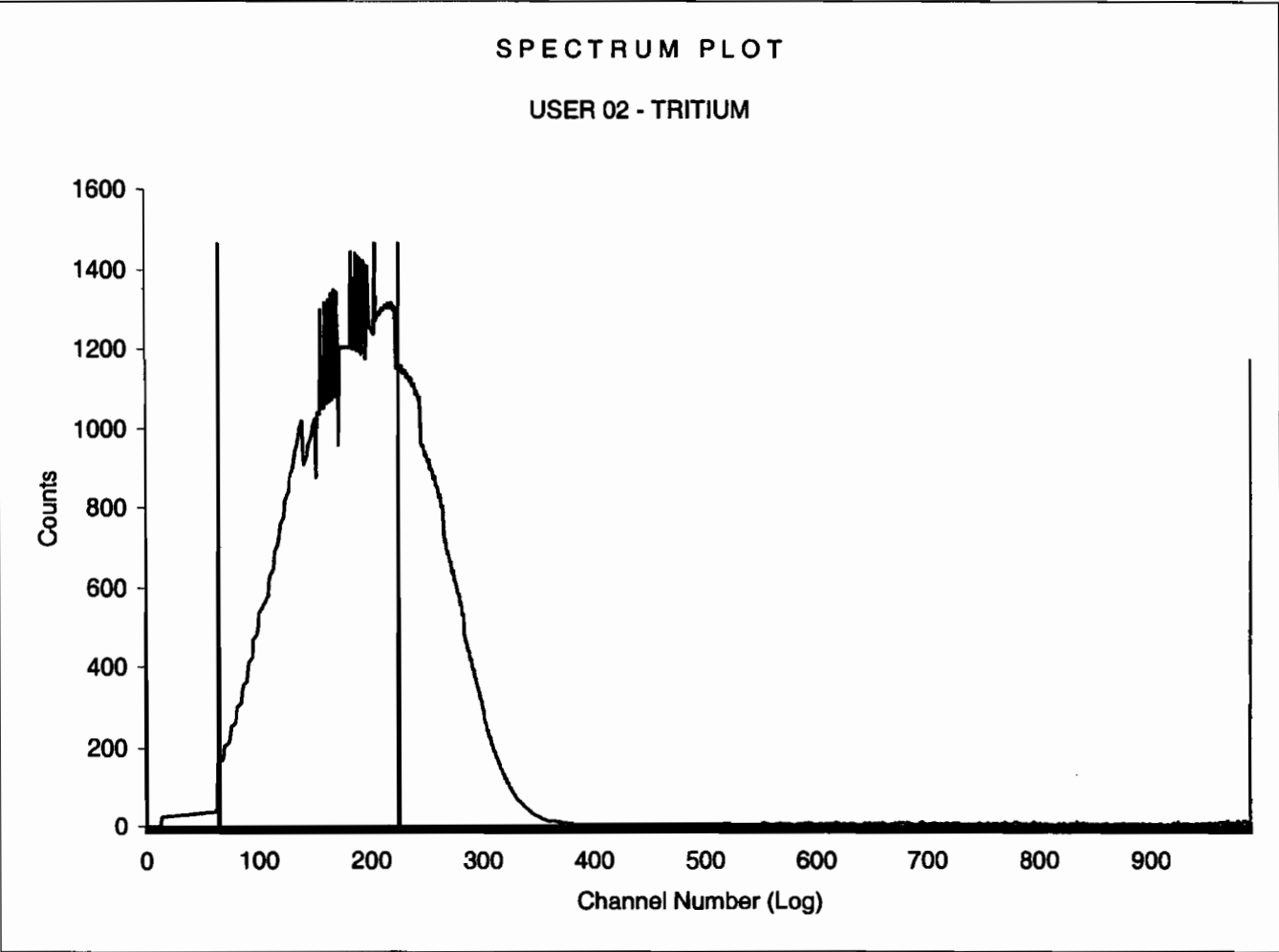
USER 02 - TRITIUM



Sample Count Start Time:	12 Mar 2010 10:51:20		
Data Capture Date	12 Mar 2010 12:26:46		
User Filename	S02031200-1A.XLS		
	U02031200-1A.XLS		
Spectrum Type	Log Counts		
User Number	02		
User Id	TRITIUM		
User Comment	RED		
Scintillator	LIQUID		
Sample, Rack-Pos, Time:	1	0-1	95.00
H#, Total Counts:	113.8	2669914	
Win1: Tritium - Start, End, Counts:	65	225	1858392
Win2: - Start, End, Counts:	0	990	2668847



Sample Count Start Time:	12 Mar 2010 12:29:53		
Data Capture Date	12 Mar 2010 14:05:18		
User Filename	S02031200-2A.XLS		
	U02031200-1A.XLS		
Spectrum Type	Log Counts		
User Number	02		
User Id	TRITIUM		
User Comment	RED		
Scintillator	LIQUID		
Sample, Rack-Pos, Time:	2	0-2	95.00
H#, Total Counts:	114.0	213491	
Win1: Tritium - Start, End, Counts:	65	225	144880
Win2: - Start, End, Counts:	0	990	212815

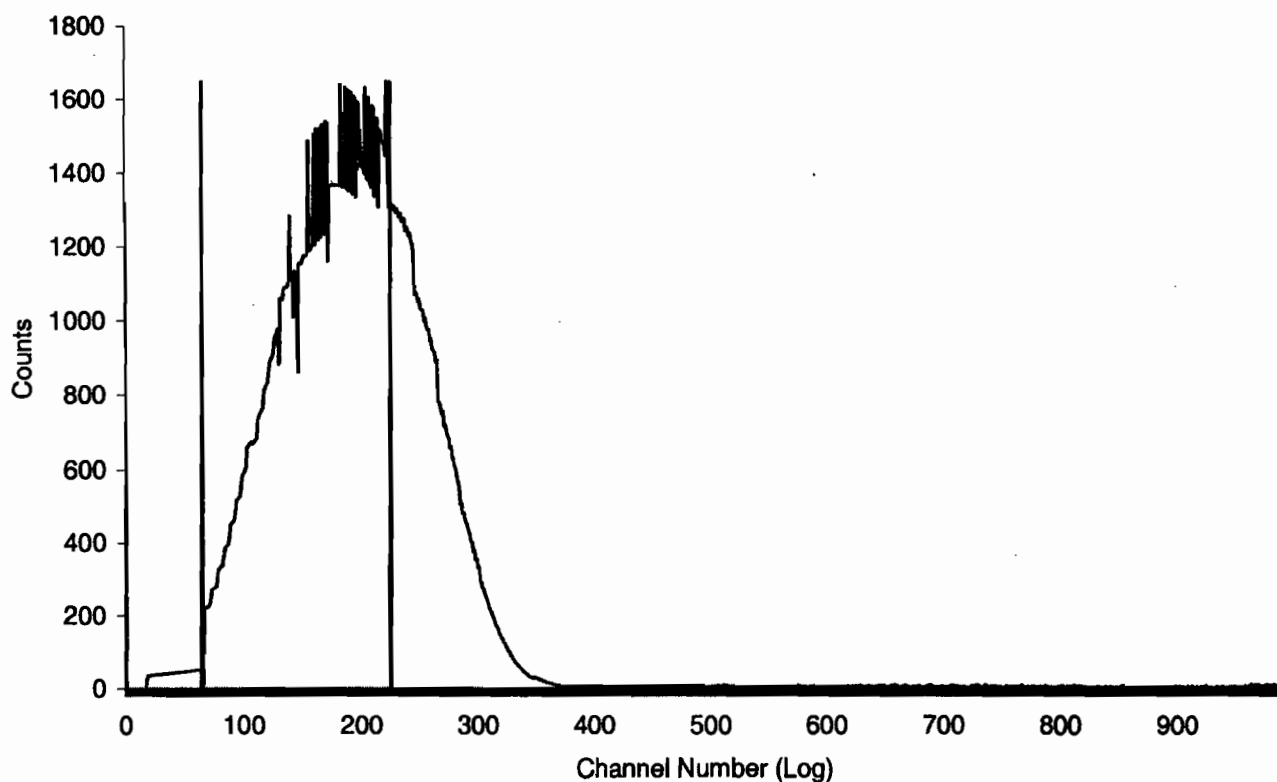




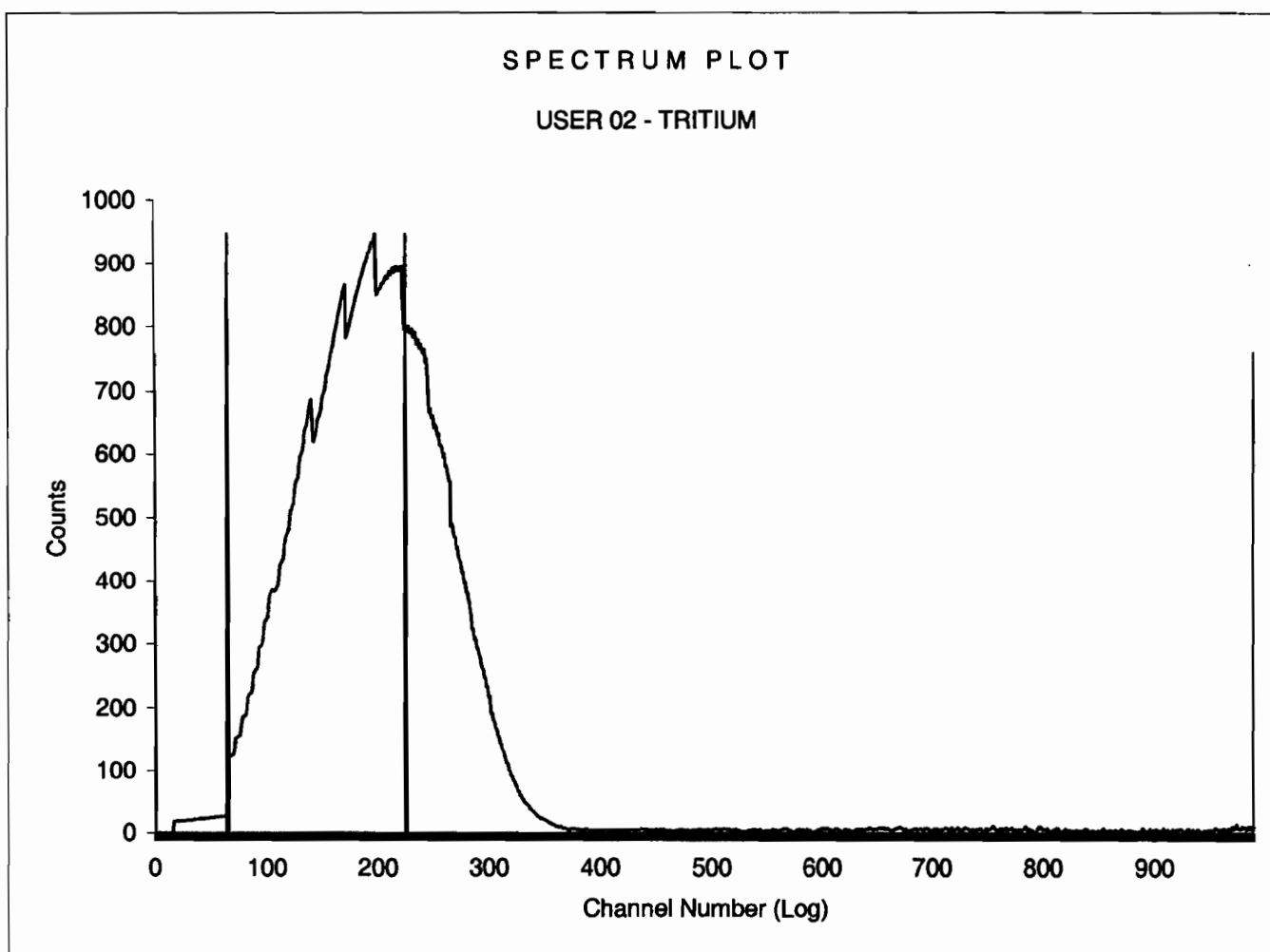
Sample Count Start Time:	12 Mar 2010 14:08:24		
Data Capture Date	12 Mar 2010 15:43:50		
User Filename	S02031200-3A.XLS		
	U02031200-1A.XLS		
Spectrum Type	Log Counts		
User Number	02		
User Id	TRITIUM		
User Comment	RED		
Scintillator	LIQUID		
Sample, Rack-Pos, Time:	3	0-3	95.00
H#, Total Counts:	114.7	241912	
Win1: Tritium - Start, End, Counts:	65	225	165687
Win2: - Start, End, Counts:	0	990	241207

# SPECTRUM PLOT

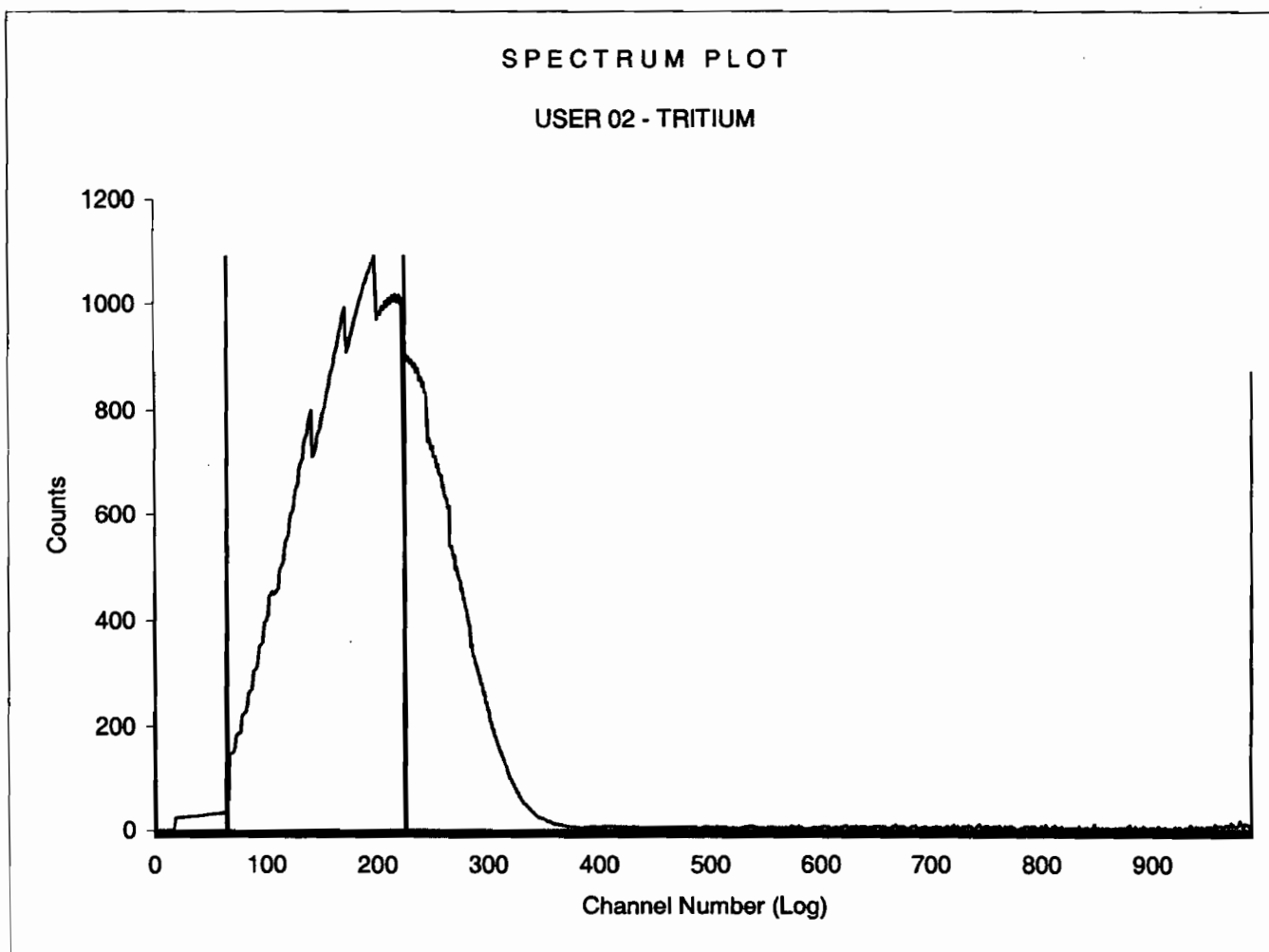
USER 02 - TRITIUM



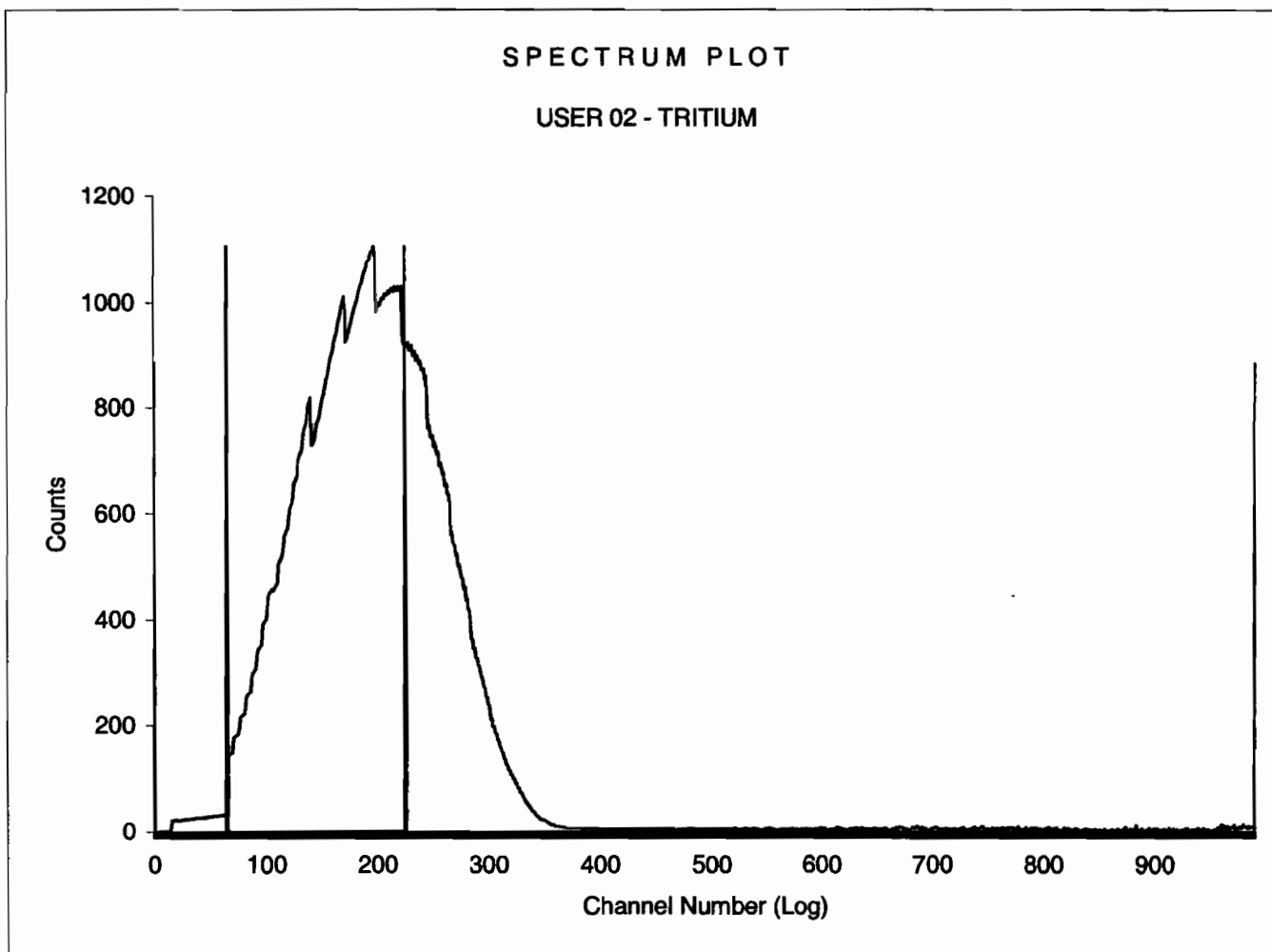
Sample Count Start Time:	12 Mar 2010 15:46:56		
Data Capture Date	12 Mar 2010 17:22:21		
User Filename	S02031200-4A.XLS		
	U02031200-1A.XLS		
Spectrum Type	Log Counts		
User Number	02		
User Id	TRITIUM		
User Comment	RED		
Scintillator	LIQUID		
Sample, Rack-Pos, Time:	4	0-4	95.00
H#, Total Counts:	112.3	147660	
Win1: Tritium - Start, End, Counts:	65	225	98417
Win2: - Start, End, Counts:	0	990	146827



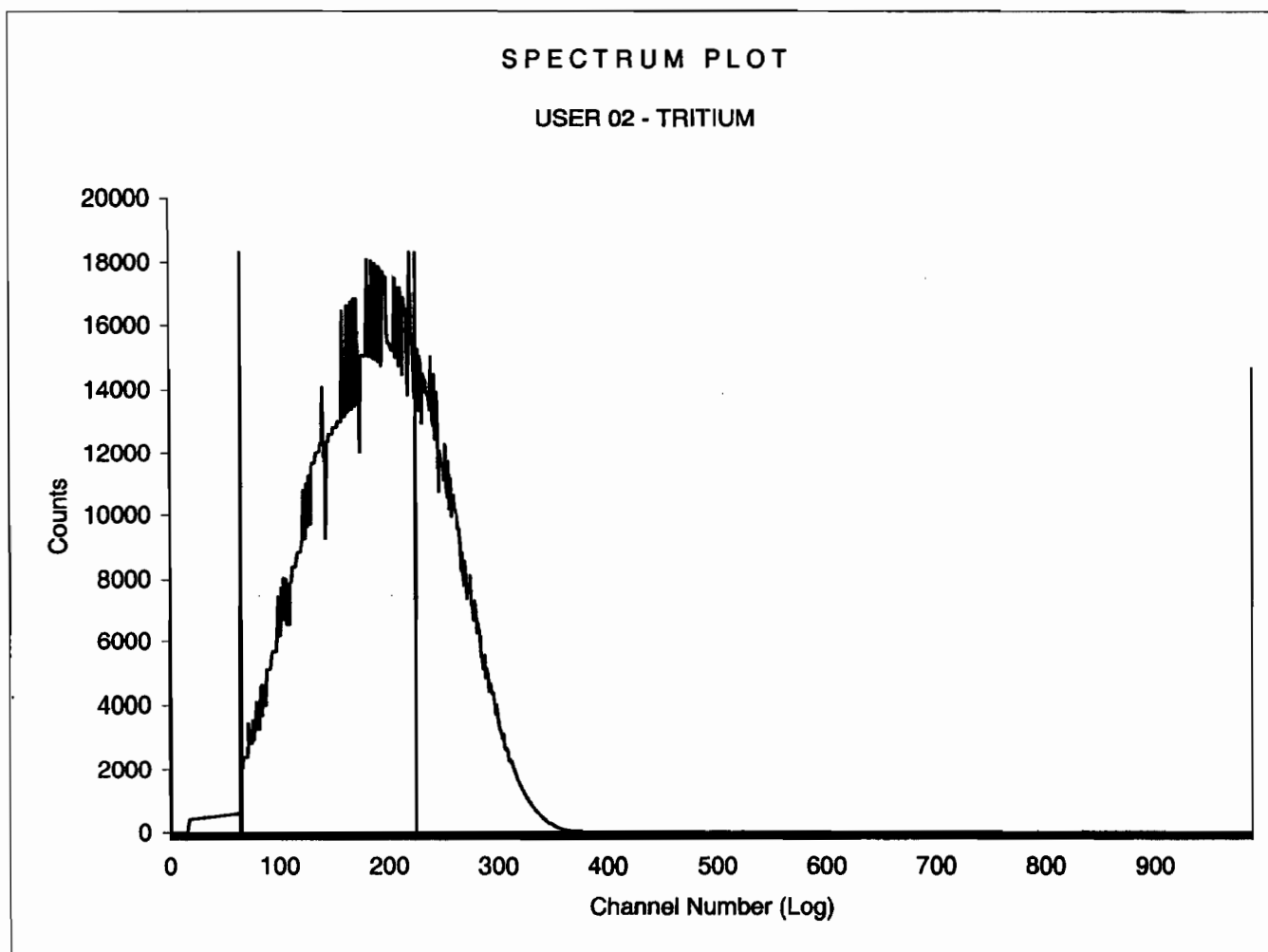
Sample Count Start Time:	12 Mar 2010 17:25:25		
Data Capture Date	12 Mar 2010 19:00:51		
User Filename	S02031200-5A.XLS		
	U02031200-1A.XLS		
Spectrum Type	Log Counts		
User Number	02		
User Id	TRITIUM		
User Comment	RED		
Scintillator	LIQUID		
Sample, Rack-Pos, Time:	5	0-5	95.00
H#, Total Counts:	113.7	167253	
Win1: Tritium - Start, End, Counts:	65	225	113111
Win2: - Start, End, Counts:	0	990	166599



Sample Count Start Time:	12 Mar 2010 19:03:56		
Data Capture Date	12 Mar 2010 20:39:20		
User Filename	S02031200-6A.XLS		
	U02031200-1A.XLS		
Spectrum Type	Log Counts		
User Number	02		
User Id	TRITIUM		
User Comment	RED		
Scintillator	LIQUID		
Sample, Rack-Pos, Time:	6	0-6	95.00
H#, Total Counts:	113.4	171631	
Win1: Tritium - Start, End, Counts:	65	225	115933
Win2: - Start, End, Counts:	0	990	170774



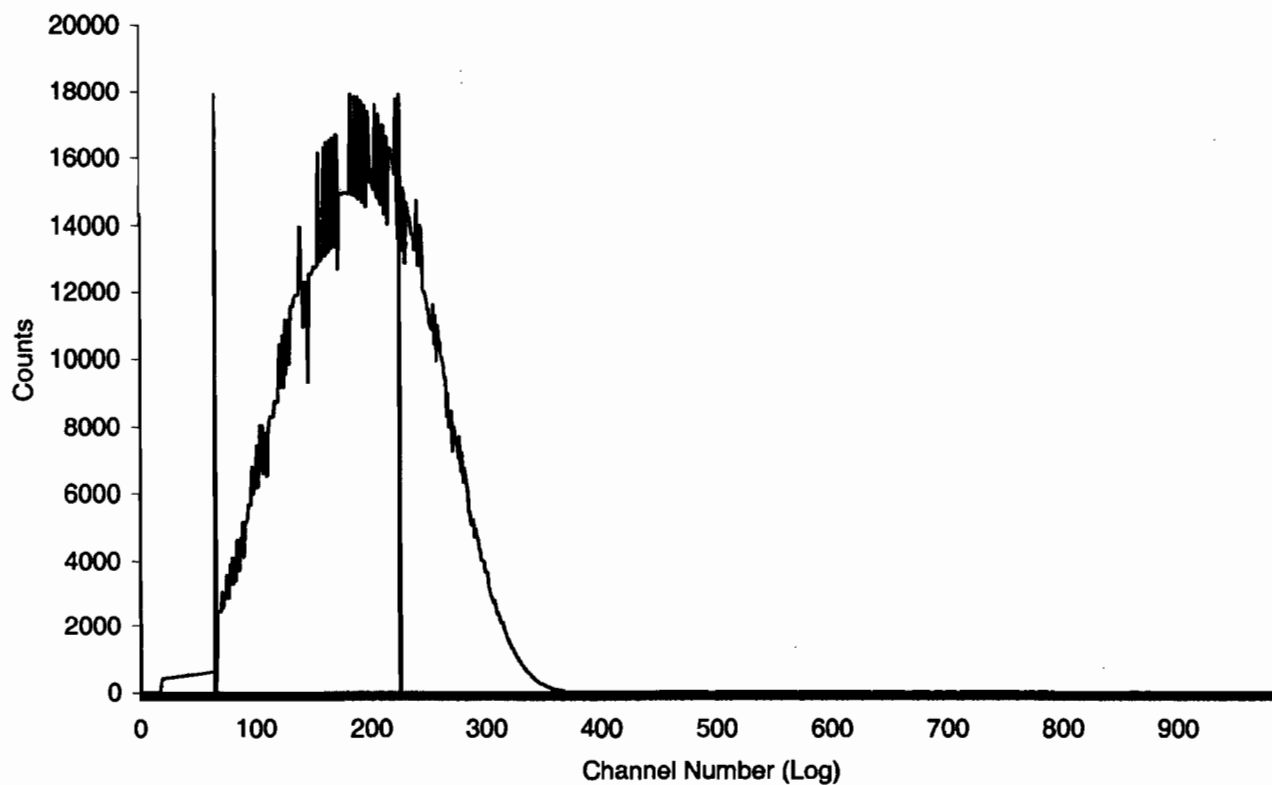
Sample Count Start Time:	12 Mar 2010 20:43:35		
Data Capture Date	12 Mar 2010 22:19:01		
User Filename	S02031200-7A.XLS		
	U02031200-1A.XLS		
Spectrum Type	Log Counts		
User Number	02		
User Id	TRITIUM		
User Comment	RED		
Scintillator	LIQUID		
Sample, Rack-Pos, Time:	7	0-7	95.00
H#, Total Counts:	113.7	2616197	
Win1: Tritium - Start, End, Counts:	65	225	1819244
Win2: - Start, End, Counts:	0	990	2615214



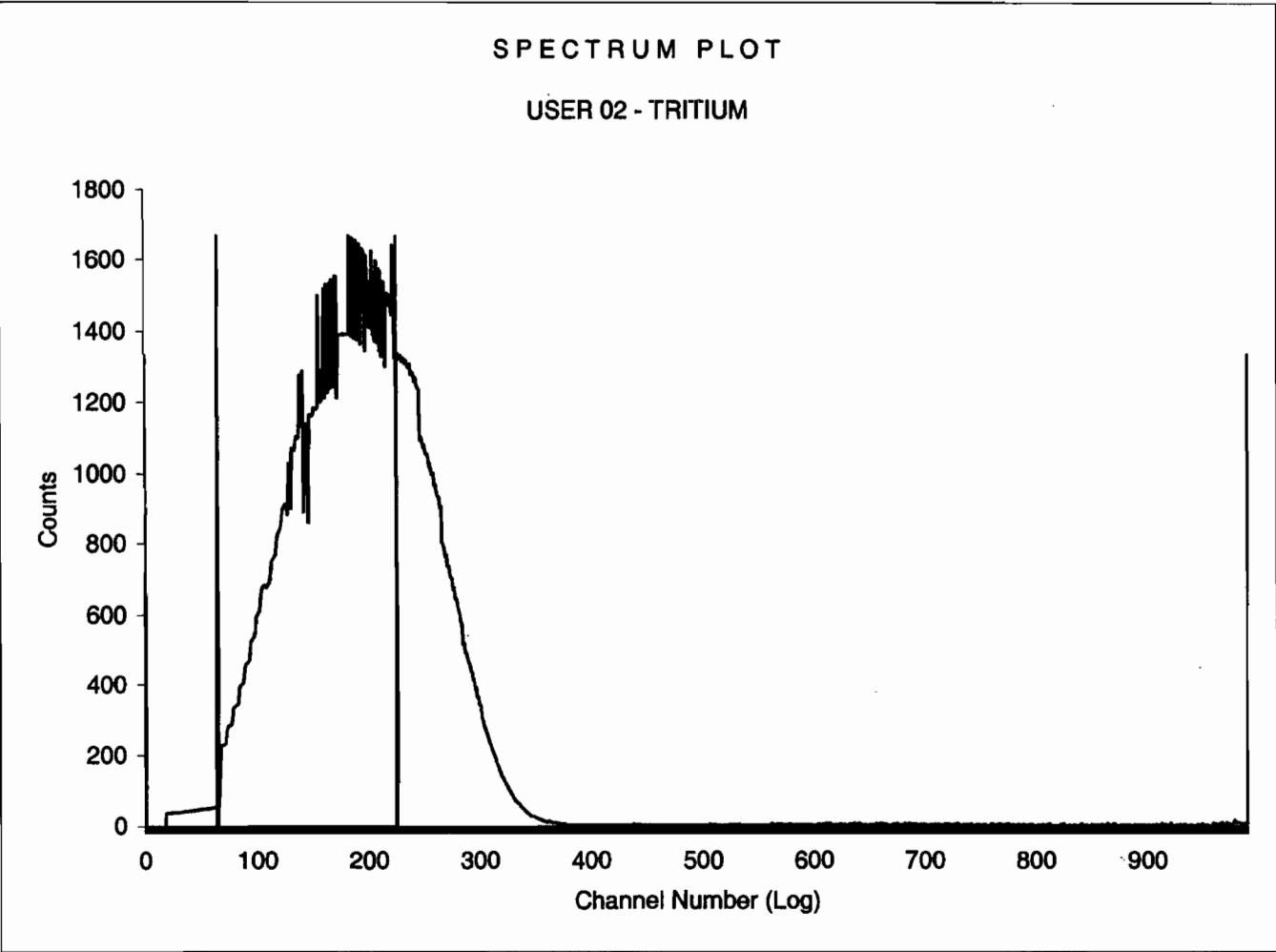
Sample Count Start Time:	12 Mar 2010 22:23:12		
Data Capture Date	12 Mar 2010 23:58:38		
User Filename	S02031200-8A.XLS		
	U02031200-1A.XLS		
Spectrum Type	Log Counts		
User Number	02		
User Id	TRITIUM		
User Comment	RED		
Scintillator	LIQUID		
Sample, Rack-Pos, Time:	8	0-8	95.00
H#, Total Counts:	114.7	2594957	
Win1: Tritium - Start, End, Counts:	65	225	1804019
Win2: - Start, End, Counts:	0	990	2593910

# SPECTRUM PLOT

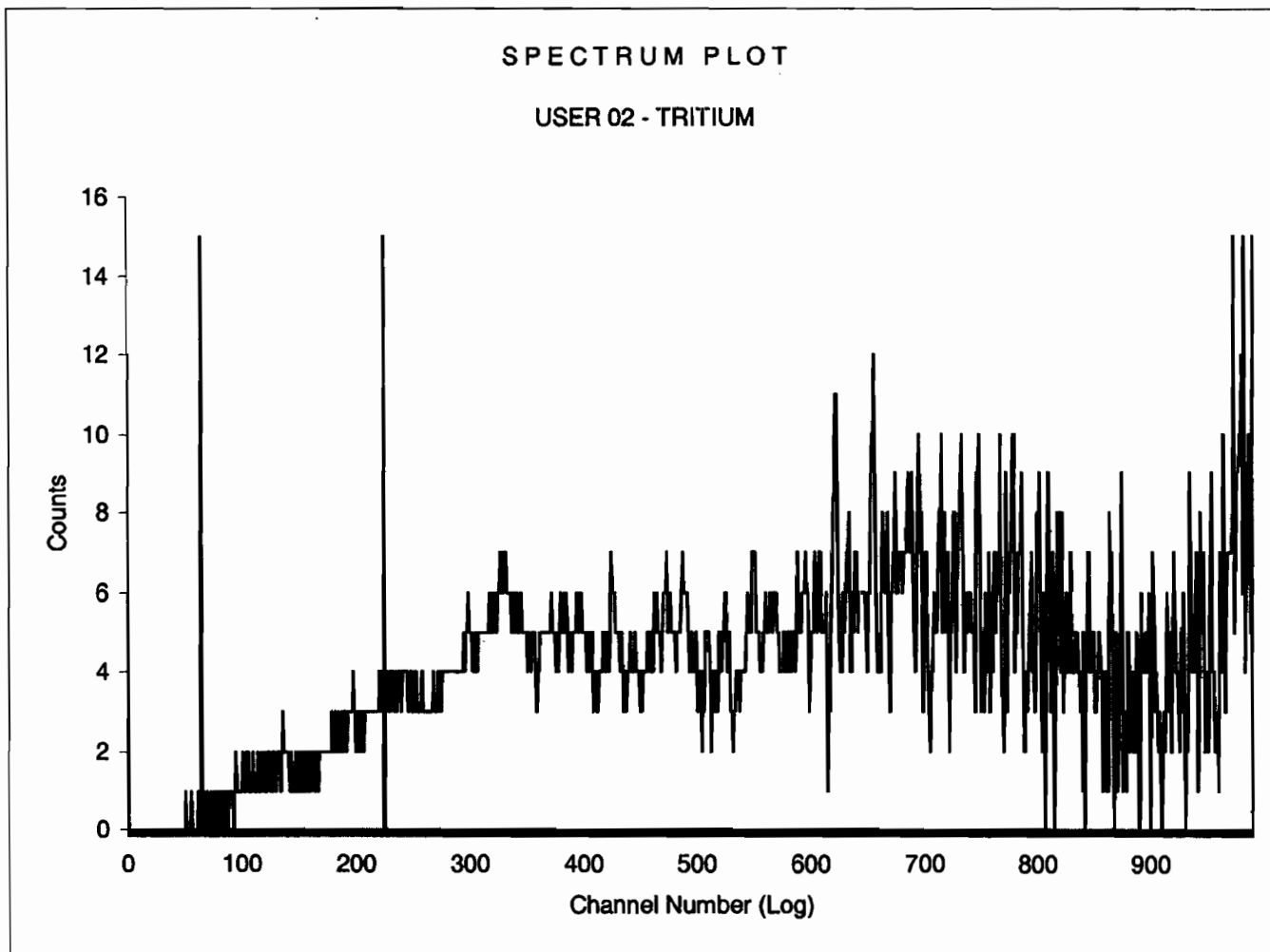
USER 02 - TRITIUM



Sample Count Start Time:	13 Mar 2010 00:01:38		
Data Capture Date	13 Mar 2010 01:37:04		
User Filename	S02031300-9A.XLS		
	U02031200-1A.XLS		
Spectrum Type	Log Counts		
User Number	02		
User Id	TRITIUM		
User Comment	RED		
Scintillator	LIQUID		
Sample, Rack-Pos, Time:	9	0-9	95.00
H#, Total Counts:	114.4	244904	
Win1: Tritium - Start, End, Counts:	65	225	166972
Win2: - Start, End, Counts:	0	990	244118

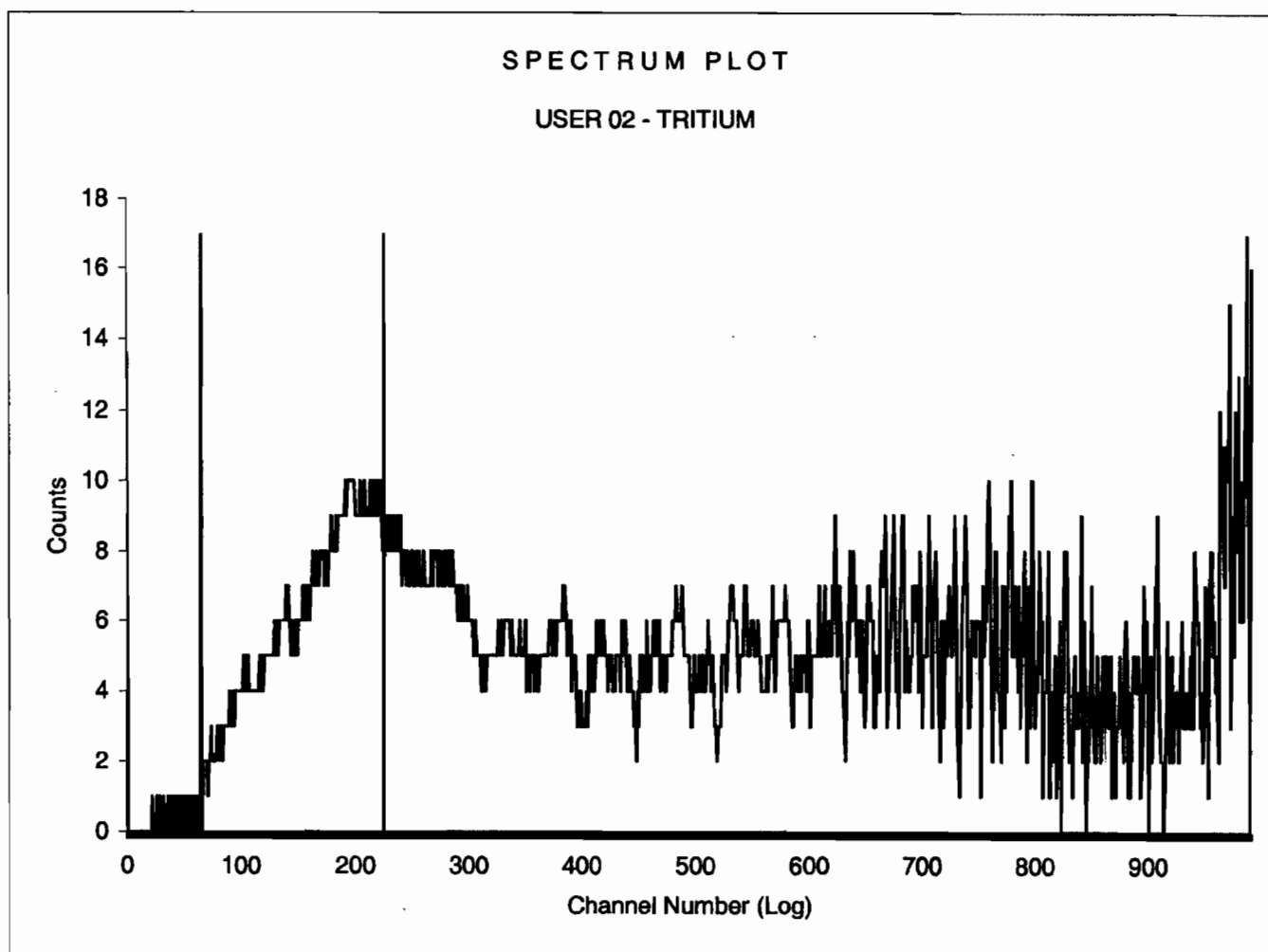


Sample Count Start Time:	13 Mar 2010 03:18:12		
Data Capture Date	13 Mar 2010 04:53:37		
User Filename	S02031300-11A.XLS		
	U02031200-1A.XLS		
Spectrum Type	Log Counts		
User Number	02		
User Id	TRITIUM		
User Comment	RED		
Scintillator	LIQUID		
Sample, Rack-Pos, Time:	11	0-11	95.00
H#, Total Counts:	113.6	4881	
Win1: Tritium - Start, End, Counts:	65	225	282
Win2: - Start, End, Counts:	0	990	4116





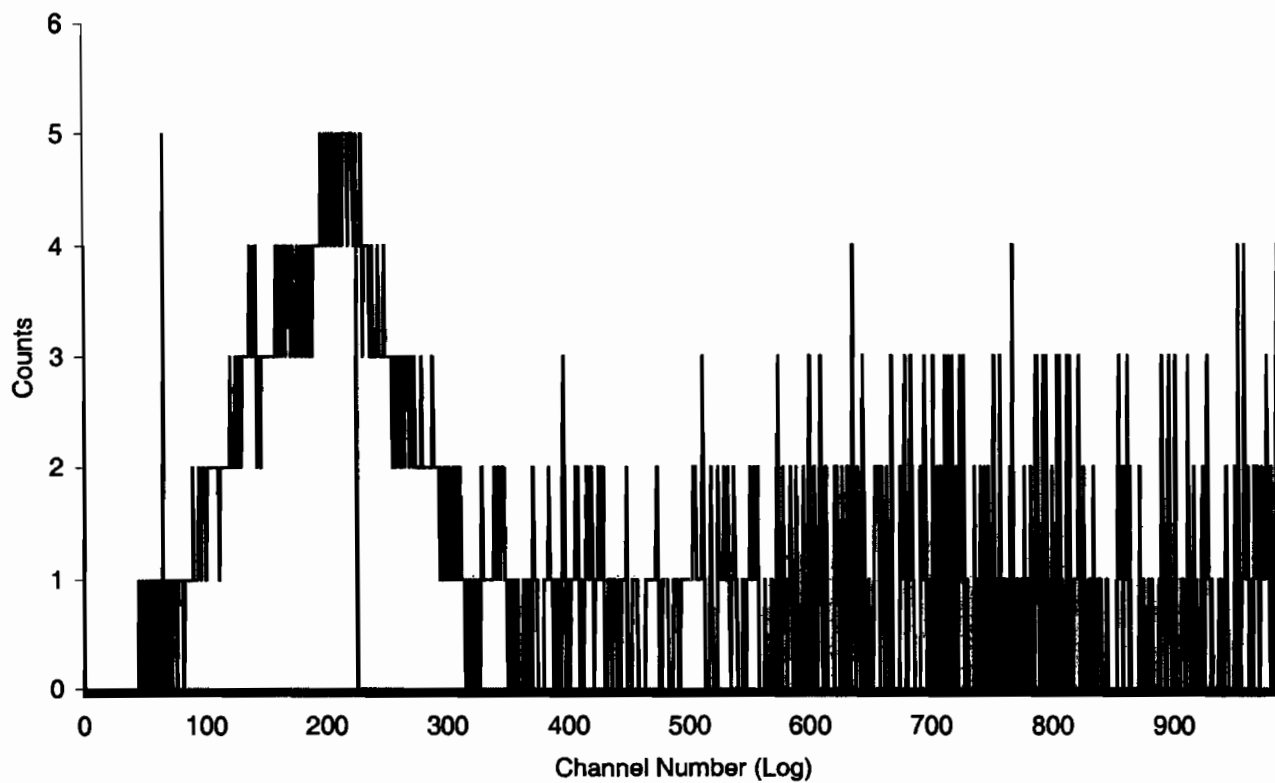
Sample Count Start Time:	13 Mar 2010 04:56:27		
Data Capture Date	13 Mar 2010 06:32:12		
User Filename	S02031300-12A.XLS		
	U02031200-1A.XLS		
Spectrum Type	Log Counts		
User Number	02		
User Id	TRITIUM		
User Comment	RED		
Scintillator	LIQUID		
Sample, Rack-Pos, Time:	12	0-12	95.00
H#, Total Counts:	115.1	5830	
Win1: Tritium - Start, End, Counts:	65	225	992
Win2: - Start, End, Counts:	0	990	5107



Sample Count Start Time:	13 Mar 2010 06:34:05		
Data Capture Date	13 Mar 2010 06:48:27		
User Filename	S03031337-1A.XLS		
	U03031337-1A.XLS		
Spectrum Type	Log Counts		
User Number	03		
User Id	TRITIUM		
User Comment	RED		
Scintillator	LIQUID		
Sample, Rack-Pos, Time:	1	37-1	15.00
H#, Total Counts:	114.6	1399	
Win1: Tritium - Start, End, Counts:	65	225	460
Win2: - Start, End, Counts:	0	990	1269

# SPECTRUM PLOT

USER 03 - TRITIUM



---

**PROTOCOL** : 10 H-3 120 min  
**DATE** : 2010/03/15  
**TIME** : 19:07  
**ID** : P10AS258

H-3

Wallac 1414 WinSpectral v1.40 S/N 4140127

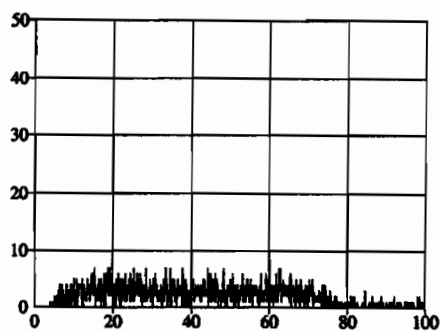
**Counting mode** : DPM  
**Quench index** : SQP(E)  
**Isotope(s)** : H3  
H3 = ,12.43 y  
**Protocol name** : H-3 120 min  
**Counting time** : 7200  
**Repeats** : 1  
**Cycles** : 1  
**Replicates** : 1  
**2 sigma %** : 0.00  
**Minimum cpm** : 0.00 Checking time: 10  
**Sp. library of Isotope H3** : Wallac  
**Vial type** : Diffuse  
**Liquid system** : HiSafe  
**Advanced modes** : Chemillum  
**Output to Display** :  
POS,DPM1,CPMw2,CLMM,FNCT2,  
RACK,RACKPOS,FNCT1,SQPE,DATE,  
TIME,CPMw1,CPM,CPM1,CTIME  
**Additions to Display** : Listing,Header,Spectrum  
**Header** : H-3  
**Spectrum** : Rnd.Cos,Beta  
**Window 1** : 25- 190 /Beta  
**Window 2** : 25- 190 /Rnd.Cos  
**Window 3** : 1-1024 /Beta  
**Window 4** : 1-1024 /Beta  
**Window 5** : 1-1024 /Beta  
**Window 6** : 1-1024 /Beta  
**FNCT1 = FNCT1** : CTIME/60  
**FNCT2 = FNCT2** : CPMW1-CPMW2  
**FNCT3 = FNCT3** :  
**FNCT4 = FNCT4** :

**Total activity:**

H3 26.4 DPM 0.000 kBq

### H-3

Rack_position	Count_Time(min)	Quench_number	H-3_CPM	Run_Date
49	1	120.00	735.46	2.86 3/15/2010 7:07 PM



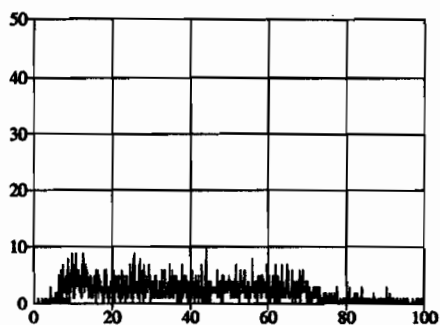
Counts  
Chem

Gross_B_CPM	LUMEX
3.00	0.00

Lumex_CPM	DPM
0.10	11.40

Counts  
Beta

Rack_position	Count_Time(min)	Quench_number	H-3_CPM	Run_Date
49	2	120.00	731.78	3.93 3/15/2010 9:09 PM



Counts  
Chem

Gross_B_CPM	LUMEX
4.10	0.00

Lumex_CPM	DPM
0.10	15.00

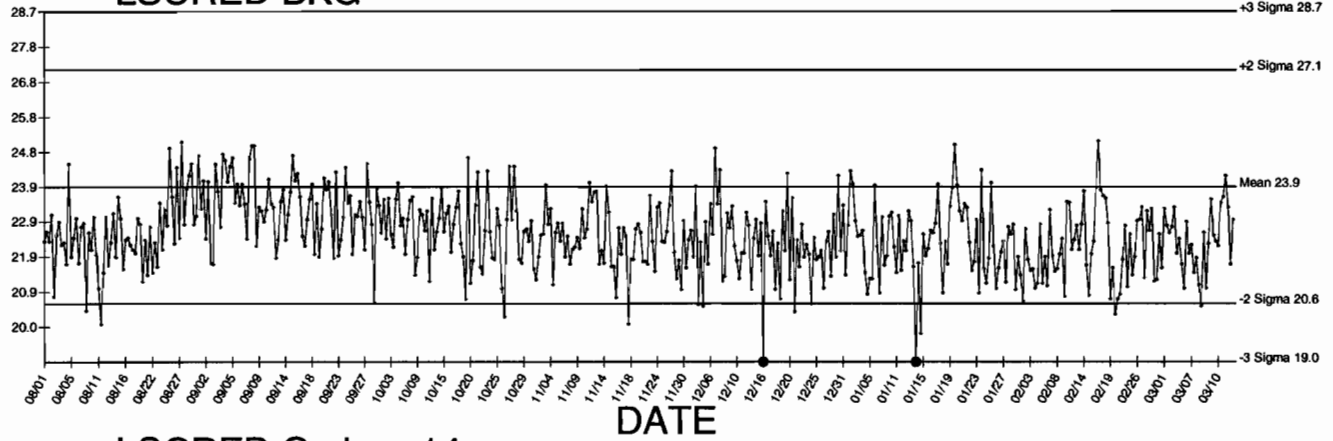
Counts  
Beta

# BACKGROUND AND EFFICIENCY DATA

# LSCRED BKG

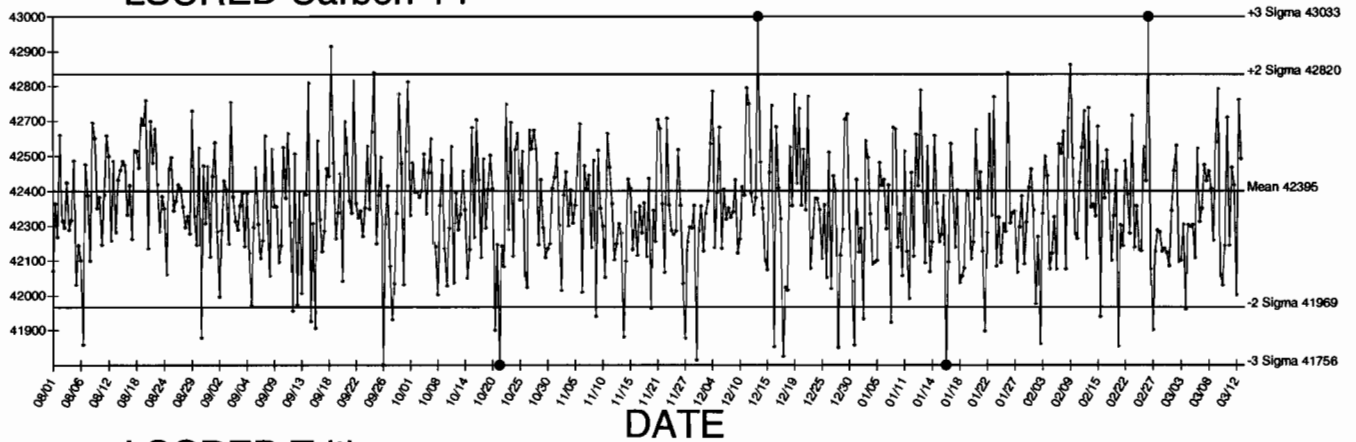
Generated 03/13/2010  
+3 Sigma 28.7

CPM



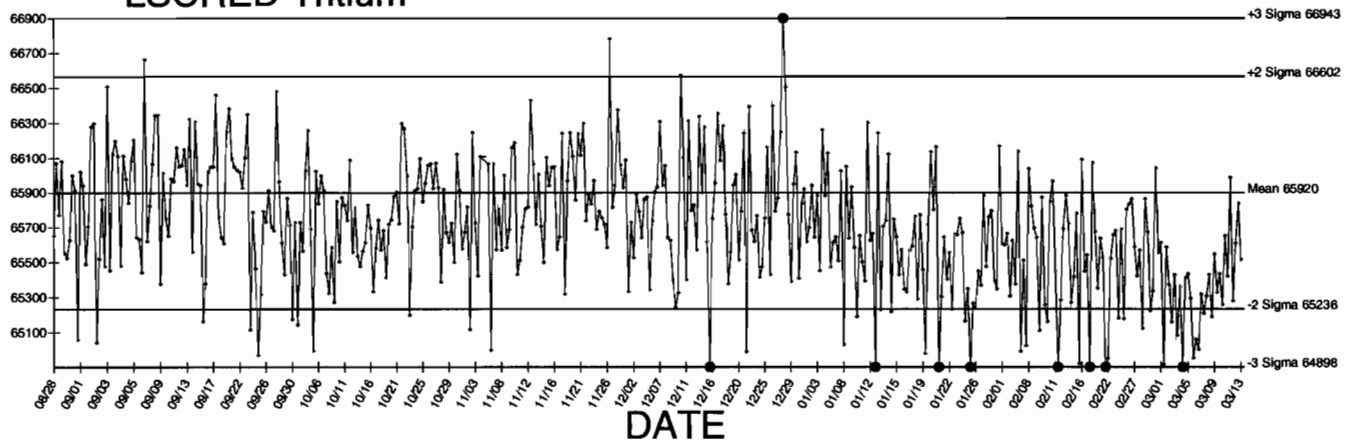
# LSCRED Carbon-14

DATE



# LSCRED Tritium

DATE



● Denotes Outlier

# STANDARDS DATA

0134



CALIBRATION  
No. 0146

**Description** Radionuclide: TRITIUM (HYDROGEN-3) Product code: TRY-64

Chemical form: water Batch: 111

**Measurement** Reference time: 1200 GMT on 1 March 1996

Radioactive concentration of tritium: 488.0 kilobecquerels per gram of water

which is equivalent to: 13.19 microcuries per gram of water

or:  $2.93 \times 10^7$  disintegrations per minute  
per gram of water

**Method of Measurement**

This reference material was calibrated by direct comparison with a standard of tritium-labelled water obtained from the National Institute of Standards and Technology, USA.

**Accuracy** The OVERALL UNCERTAINTY of the result quoted above is estimated to be less than  $\pm 2.5\%$

This estimate of uncertainty was calculated in accordance with the recommendations of the International Commission on Radiation Units and Measurements (ICRU Report 12). The limits of uncertainty were taken as the arithmetic sum of the uncertainty due to random variations, calculated at the 99.7% confidence level, and the estimated systematic uncertainties.

**Purity** No radioactive impurities were detected. (Impurities with total activity greater than 0.001% of the activity of the tritium would have been detected).

**Physical Data** Half-life of tritium:  $12.43 \pm 0.11$  years

Maximum beta energy of tritium: 18.6 keV

**Remarks:** The S.I. unit of radioactivity is the becquerel.

1 becquerel (Bq) = 1 nuclear transformation per second, therefore

1 curie (Ci) =  $3.7 \times 10^{10}$  becquerels exactly.

Useful conversion factors are:

1 microcurie ( $\mu\text{Ci}$ ) =  $3.7 \times 10^4$  Bq = 37 kilobecquerels (kBq)

1 kilobecquerel (kBq) = 27.027 nanocuries (nCi)

This product meets the quality assurance requirements of NRC Regulatory Guide 4.15 for achieving implicit NIST (NBS) traceability as defined in NCRP58 (1985).

**Approved  
signatory**

2C-5-023-061a



# Standard Traceability Log Rad

Source Material Info		A Solution Material Info	
Parent Code:	0134	Isotope:	Tritium
Prepared By:	Angela Johnson	Prepared By:	Angela Johnson
Carrier Conc:	DI WATER	Prep Date:	02/21/2001
Reference Date:	03/01/1996	Verification Date:	09/10/2008
Ampoule Mass (g):	5 g	Expiration Date:	03/27/2010
Uncertainty:	+/- 2.5 %	Primary Code:	0134-A
LogBook No:	RC S 023 061	Dilution(mL):	100 mL
		Mass of Parent(g):	3.3659 g
		Density(g/mL):	1.0004
		Balance ID:	38080204

## Calculations Converting parent activity to dpm/mL|dpm/g

$(\text{Mass of parent(g)}) * (\text{Parent Activity (kBq/g)}) * (\text{conversion dpm to kBq}) / (\text{Dilution Vol}) = \text{Parent Activity (dpm/mL)}$
$(\text{Mass of parent(g)}) * (\text{Parent Activity (kBq/g)}) * (\text{conversion dpm to kBq}) / \text{Density (g/mL)} / (\text{Dilution Vol}) = \text{Parent Activity (dpm/g)}$
$(3.3659 \text{ g}) * (488 \text{ kBq/g}) * (60000 \text{ dpm/kBq}) / (100 \text{ mL}) = 985535.5200 \text{ dpm/mL}$
$(3.3659 \text{ g}) * (488 \text{ kBq/g}) * (60000 \text{ dpm/kBq}) / (1.0004 \text{ g/mL}) / (100 \text{ mL}) = 985180.3116 \text{ dpm/g}$

## Secondary Standards

Prep Date	Preparer	Mass Primary	Dilution (mL)	Code	Conc dpm/mL	Verification Date	Expiration Date
07/20/2004	Amanda Fehr	5.86	1000	0134-H	5773.1566 dpm/mL	07/25/2006	07/25/2007
12/20/2005	Amanda Fehr	5.5451	1000	0134-I	5462.92 dpm/mL	12/20/2006	12/20/2007
07/11/2007	Daniel Roy	5.5863	1000	0134-J	5503.5128 dpm/ml	07/29/2008	07/29/2009
03/25/2009	Mary Aders	5.4917	1000	0134-K	5410.3147 dpm/ml	03/27/2009	03/27/2010

GEL Laboratories LLC  
Version 1.0 9/18/2000

# Verification for H-3 Standard 0134-K

M. Aders	Isotope	Detector CPM	BKG CPM	NET CPM	Detector Eff Mass, Used (mL)	Source DPM/mL
4/9/2009	0134-K N1	1097.2000	54.0000	1043.2000	1.0000	2741.3099
	0134-K N2	1073.2000	54.0000	1019.2000	1.0000	2678.242955
	0134-K N3	1085.2000	54.0000	1031.2000	1.0000	2709.776428
Mean Value (Counting) =	2709.776428		104.954429	Pass	Average =	2709.776428
Stdev =	31.53347278		0.01163893	Rule 3 (Pass/Fail)		

Certificate Value = 2581.86 dpm/mL  
 Lower Limit = 2646.709482 dpm/mL  
 Upper Limit = 2772.843373 dpm/mL  
 Rule 1 Pass/Fail Fall \*exception taken due to full recovery of standard  
 Two sigma = 63.06694556 dpm/mL  
 10 % of Mean = 270.9778428 dpm/mL  
 Rule 2 (Pass/Fail) Pass

## Verification Rules

- Rule 1 = The certificate value (NOT including any uncertainty) shall lie within the 95% confidence interval determined from the mean and two sigma standard deviation of the three measurements
- Rule 2 = The two sigma value used for the 95% confidence interval shall not exceed 10% of the mean value of the three verification measurements.
- Rule 3 = The determined mean value shall be within 10% of the certificate value.

The analyst prepared three standard verification sources for H-3 source 0134-K by transferring 0.1 mL portions of the standard into glass liquid scintillation vials. Ten mL of Ecoscint Ultra liquid scintillation cocktail was added to each vial and the vials were shaken to mix. A Blank vial was prepared in a similar fashion using 1 mL of DI water and 10 mL of Ecoscint Ultra liquid scintillation cocktail. The standard verification vials and Background source were dark adapted for two hours and counted on Silver for H-3 source standard verification. The H-3 efficiency calibration which was used for verification calculations was performed on 4/9/09 using 0020-A (H-3). Calibration data is recorded in this logbook under H-3 0020. Each verification source calculation was performed as follows:

$$\text{Source dpm/g} = (A - B)/(C/D)$$

where:

- A = Ver. source cpm,
- B = BKG cpm,
- C = System efficiency, (cpm/dpm), and
- D = mass used for standard verification.

Reference RAD SOP M-001

Handwritten: 4/12/09  
 Amanda L. Lehn 4/19/09

# RUNLOGS

# Instrument Run Log

Instrument Type: LSC

Batch ID: 960227

Sample ID	Sample Type	Analyst	Instrument	Run Date	Status	Geometry	Calibration Date
247563001	SAMPLE	KXK2	LSCRED	11-MAR-10 11:33	DONE	10mL DW/13mL Ecoscint Ultra	21-AUG-09 00:00
247563002	SAMPLE	KXK2	LSCRED	11-MAR-10 13:11	DONE	10mL DW/13mL Ecoscint Ultra	21-AUG-09 00:00
247563003	SAMPLE	KXK2	LSCRED	11-MAR-10 14:50	DONE	10mL DW/13mL Ecoscint Ultra	21-AUG-09 00:00
247563004	SAMPLE	KXK2	LSCRED	11-MAR-10 16:29	DONE	10mL DW/13mL Ecoscint Ultra	21-AUG-09 00:00
247563005	SAMPLE	KXK2	LSCRED	11-MAR-10 18:08	DONE	10mL DW/13mL Ecoscint Ultra	21-AUG-09 00:00
247563006	SAMPLE	KXK2	LSCRED	11-MAR-10 19:46	DONE	10mL DW/13mL Ecoscint Ultra	21-AUG-09 00:00
247563007	SAMPLE	KXK2	LSCRED	11-MAR-10 23:03	DONE	10mL DW/13mL Ecoscint Ultra	21-AUG-09 00:00
247563008	SAMPLE	KXK2	LSCRED	12-MAR-10 00:41	DONE	10mL DW/13mL Ecoscint Ultra	21-AUG-09 00:00
247568001	SAMPLE	KXK2	LSCRED	12-MAR-10 02:19	DONE	10mL DW/13mL Ecoscint Ultra	21-AUG-09 00:00
247568002	SAMPLE	KXK2	LSCRED	12-MAR-10 10:51	DONE	10mL DW/13mL Ecoscint Ultra	21-AUG-09 00:00
247568003	SAMPLE	KXK2	LSCRED	12-MAR-10 12:29	DONE	10mL DW/13mL Ecoscint Ultra	21-AUG-09 00:00
247568004	SAMPLE	KXK2	LSCRED	12-MAR-10 14:08	DONE	10mL DW/13mL Ecoscint Ultra	21-AUG-09 00:00
247568005	SAMPLE	KXK2	LSCRED	12-MAR-10 15:46	DONE	10mL DW/13mL Ecoscint Ultra	21-AUG-09 00:00
247568006	SAMPLE	KXK2	LSCRED	12-MAR-10 17:25	DONE	10mL DW/13mL Ecoscint Ultra	21-AUG-09 00:00
247568007	SAMPLE	KXK2	LSCRED	12-MAR-10 19:03	DONE	10mL DW/13mL Ecoscint Ultra	21-AUG-09 00:00
247568008	SAMPLE	KXK2	LSCRED	12-MAR-10 20:43	DONE	10mL DW/13mL Ecoscint Ultra	21-AUG-09 00:00
247568009	SAMPLE	KXK2	LSCRED	12-MAR-10 22:23	DONE	10mL DW/13mL Ecoscint Ultra	21-AUG-09 00:00
247568010	SAMPLE	KXK2	LSCRED	13-MAR-10 00:01	DONE	10mL DW/13mL Ecoscint Ultra	21-AUG-09 00:00
1202059604	MB	KXK2	LSCRED	13-MAR-10 03:18	DONE	10mL DW/13mL Ecoscint Ultra	21-AUG-09 00:00
1202059605	DUP	KXK2	LSCRED	13-MAR-10 04:56	DONE	10mL DW/13mL Ecoscint Ultra	21-AUG-09 00:00
1202059606	LCS	KXK2	LSCRED	13-MAR-10 06:34	DONE	10mL DW/13mL Ecoscint Ultra	21-AUG-09 00:00
248203002	SAMPLE	KXK2	LSCYELLOW	15-MAR-10 21:09	DONE	10mL DW/13mL Ecoscint Ultra	21-AUG-09 00:00