

Wednesday, February 17, 2010

REQUEST NUMBER: 10-1910

Page 2 of 2

PRIORITY	METHOD CODE	CNTNR	SAMPLE ID	SAMPLE MATRIX	DATE SAMPLED	SPECIAL INSTRUCTIONS
EPA:906.0		1	RE15-10-8227	R	2/12/2010	
		1	RE15-10-8228	R	2/12/2010	

Final Page of REQUEST NUMBER 10-1910

Wednesday, February 17, 2010

LAB CHAIN OF CUSTODY DOCUMENT NUMBER: 10-1910

LOS ALAMOS

REQUEST NUMBER: 10-1910

NATIONAL LABORATORY

ATTN: Valerie Davis

TURNAROUND/REPORT DUE: 3/19/2010

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
RE15-10-8208	1	POLY	H3	Ice	R
RE15-10-8203	1	POLY	H3	Ice	R
RE15-10-8206	1	POLY	H3	Ice	R
RE15-10-8207	1	POLY	H3	Ice	R
RE15-10-8204	1	POLY	H3	Ice	R
RE15-10-8202	1	POLY	H3	Ice	R
RE15-10-8209	1	POLY	H3	Ice	R
RE15-10-8205	1	POLY	H3	Ice	R
RE15-10-8227	1	POLY	H3	Ice	R
RE15-10-8228	1	POLY	H3	Ice	R
RE15-10-8212	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: 2503

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

SAMPLE ID: RE15-10-8202

WORK ORDER:

AS PLANNED		AS COLLECTED		AS PLANNED		AS COLLECTED	
DATE COLLECTED(MM/DD/YYYY):		02/12/2010		MEDIA:	QBT3		OK
TIME COLLECTED(HH:MM)		08:35		SUB-MEDIA:	TUFF 1		OK
PRS ID:	15-007(c)	OK		SAMPLE TECH CODE:	HA		CBS
LOCATION ID:	15-610818			FIELD QC TYPE:	NA		
LOCATION TYPE:	GENERIC			FIELD PREP:	NA		
TOP DEPTH:	0	63.5		SAMPLE USAGE:	INV		
BOTTOM DEPTH:	0	65.0		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		
1		Metals+ClO4+CN	500 ML POLY	Ice		
1		RADVANA+B+G	1 EA 8 IN RESEALABLE POLY BAG	None		

SAMPLE DESC:

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

SAMPLE COMMENTS: NA

LOCATION DESC: 7c-27

FIELD SCREENING/MEASUREMENT RESULTS:

Alpha = 19 dpm

Beta/Gamma = 420 dpm

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

COLLECTED BY (PRINT)

R. Saunders

REVIEWED BY (PRINT)

S. Marin

RELINQUISHED BY (Printed Name) JON MARIN (Signature) Jon R. Marin	Date/Time 2/12/10 1646	RECEIVED BY (Printed Name) S. MARIN (Signature) [Signature]	Date/Time 2/12/10 1646
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 2503

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

SAMPLE ID: RE15-10-8203

WORK ORDER:

AS PLANNED		AS COLLECTED		AS PLANNED		AS COLLECTED	
DATE COLLECTED(MM/DD/YYYY):		02/12/2010		MEDIA:		OBT3	
TIME COLLECTED (HH:MM)		09:00		SUB-MEDIA:		TUFF 1	
PRS ID:	15-007(c)	OK		SAMPLE TECH CODE:		HA	
LOCATION ID:	15-610818			FIELD QC TYPE:		NA	
LOCATION TYPE:	GENERIC			FIELD PREP:		NA	
TOP DEPTH:	0	79.0 ft		SAMPLE USAGE:		INV	
BOTTOM DEPTH:	0	80.0 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		NO	
BOREHOLE: YES/NO/NA		BOREHOLE DECLINATION: -90°		BOREHOLE DIRECTION: NA			

#	PRIORITY	ORDER	CNTNR	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
1	Normal	ARM 2/12/10 8082+NMED-HEXP	250 ML AMBER GLASS	Ice	Y	
1		H3	500 ML POLY	Ice		
1		Metals+ClO4+CN	500 ML POLY	Ice		
1		RADVANA+B+G	1 EA 8 IN RESEALABLE POLY BAG	None		

SAMPLE DESC:

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

SAMPLE COMMENTS: NA

LOCATION DESC: 7c-27

FIELD SCREENING/MEASUREMENT RESULTS:

Alpha = 22 dpm
Beta/Gamma = 282 dpm

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

COLLECTED BY (PRINT)

REVIEWED BY (PRINT) J. Marin

RELINQUISHED BY (Printed Name) JON MARIN (Signature) Jon R. Marin	Date/Time 02/12/10 1646	RECEIVED BY (Printed Name) G. MARIN (Signature) G. Marin	Date/Time 2/12/10 1646
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 2503

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

SAMPLE ID: RE15-10-8204

WORK ORDER:

AS PLANNED		AS COLLECTED		AS PLANNED		AS COLLECTED	
DATE COLLECTED(MM/DD/YYYY):		02/12/2010		MEDIA:	QBT3		OK
TIME COLLECTED (HH:MM)		09:28.5		SUB-MEDIA:	TUFF 1		OK
PRS ID:	15-007(c)	OK	2mm 2/12/10	SAMPLE TECH CODE:	HA		CB5
LOCATION ID:	15-610818			FIELD QC TYPE:	NA		OK
LOCATION TYPE:	GENERIC			FIELD PREP:	NA		
TOP DEPTH:	0	94.0 ft		SAMPLE USAGE:	INV		
BOTTOM DEPTH:	0	95.0 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+CIO4+CN	500 ML POLY	Ice	Y	
1		RADVANA+B+G	1 EA 8 IN RESEALABLE POLY BAG	None	Y	

SAMPLE DESC:

Light gray, nonindurated, non welded, dehydrified, dry, ash flow tuff

SAMPLE COMMENTS: NA

LOCATION DESC: 7c-27

FIELD SCREENING/MEASUREMENT RESULTS:

Alpha = 6.5 dpm

Beta/Gamma = 257 dpm

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

COLLECTED BY (PRINT)

B. Sounders

REVIEWED BY (PRINT)

J. Marin

RELINQUISHED BY (Printed Name) JON MARIN (Signature) Jon R. Marin	Date/Time 2/12/10 1646	RECEIVED BY (Printed Name) S. MARCZAY (Signature) [Signature]	Date/Time 2/12/10 1646
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 2503

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

SAMPLE ID: RE15-10-8205

WORK ORDER:

AS PLANNED		AS COLLECTED		AS PLANNED		AS COLLECTED	
DATE COLLECTED(MM/DD/YYYY):		02/12/2010		MEDIA:	QBT3		OK
TIME COLLECTED (HH:MM)		09:55		SUB-MEDIA:	TUFF 1		OK
PRS ID:	15-007(c)	OK		SAMPLE TECH CODE:	HA		CBS
LOCATION ID:	15-610818			FIELD QC TYPE:	NA		OK
LOCATION TYPE:	GENERIC			FIELD PREP:	NA		
TOP DEPTH:	0	109.0		SAMPLE USAGE:	INV		
BOTTOM DEPTH:	0	110.0		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	FROM 2/12/10 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:

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

SAMPLE COMMENTS:

NA

LOCATION DESC: 7c-27

FIELD SCREENING/MEASUREMENT RESULTS:

Alpha = $\frac{4.5}{2.7}$ dpm
Beta/Gamma = $\frac{2.5}{8}$ 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) J. R. Marin	Date/Time 02/12/10 16:46	RECEIVED BY (Printed Name) S. MARCZAK (Signature) [Signature]	Date/Time 2/12/10 16:46
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 2503

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

SAMPLE ID: RE15-10-8206

WORK ORDER:

AS PLANNED		AS COLLECTED	AS PLANNED		AS COLLECTED
DATE COLLECTED(MM/DD/YYYY):		02/12/2010	MEDIA:	QBT3	QBT2
TIME COLLECTED (HH:MM)		10:25	SUB-MEDIA:	TUFF 1	OK
PRS ID:	15-007(c)	OK	SAMPLE TECH CODE:	HA	CBS
LOCATION ID:	15-610818		FIELD QC TYPE:	NA	OK
LOCATION TYPE:	GENERIC		FIELD PREP:	NA	
TOP DEPTH:	0	124.0 ft	SAMPLE USAGE:	INV	
BOTTOM DEPTH:	0	130.0 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	Y/N/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+C104+CN	500 ML POLY	Ice	Y	
1		RADVANA+B+G	1 EA 8 IN RESEALABLE POLY BAG	None	Y	

SAMPLE DESC:

Light reddish gray, moderately indurated, moderately welded, devitrified, dry, ash flow tuff.

SAMPLE COMMENTS:

3 runs to collect enough material to sample

LOCATION DESC:

7c-27

FIELD SCREENING/MEASUREMENT RESULTS:

2/12/10 Alpha = 5268 dpm
Beta/Gamma = 200 dpm

2/12/10
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 2/12/10 1646	RECEIVED BY (Printed Name) S. MAULRAY (Signature) [Signature]	Date/Time 2/12/10 1646
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 2503

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

SAMPLE ID: RE15-10-8207

WORK ORDER:

AS PLANNED		AS COLLECTED		AS PLANNED		AS COLLECTED	
DATE COLLECTED(MM/DD/YYYY):		02/12/2010		MEDIA:	QBT3		QBT 2
TIME COLLECTED (HH:MM)		11:46		SUB-MEDIA:	TUFF 1		OK
PRS ID:	15-007(c)	OK		SAMPLE TECH CODE:	HA		CBS
LOCATION ID:	15-610818			FIELD QC TYPE:	NA		OK
LOCATION TYPE:	GENERIC			FIELD PREP:	NA		
TOP DEPTH:	0	139.0 ft		SAMPLE USAGE:	INV		
BOTTOM DEPTH:	0	140.0 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:	-90°		BOREHOLE DIRECTION:
							NA

#	PRIORITY	ORDER	CNTNR	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
1	Normal	1RM 2/12/10 8882+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 reddish brown, moderately indurate, slightly welded, devitrified, in ash flow tuff

SAMPLE COMMENTS:

NA

LOCATION DESC: 7c-27

FIELD SCREENING/MEASUREMENT RESULTS:

Alpha = 59 dpm

Beta/Gamma = 670 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 2/12/10 1646	RECEIVED BY (Printed Name) S. MARIN (Signature) [Signature]	Date/Time 2/12/10 1646
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 2503

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

SAMPLE ID: RE15-10-8208

WORK ORDER:

AS PLANNED		AS COLLECTED		AS PLANNED		AS COLLECTED	
DATE COLLECTED(MM/DD/YYYY):		02/12/2010		MEDIA:	QBT3	QBT2	QBT2
TIME COLLECTED (HH:MM)		12:25		SUB-MEDIA:	TUFF 1	OK	
PRS ID:	15-007(c)	OK		SAMPLE TECH CODE:	HA	CBS	
LOCATION ID:	15-610818			FIELD QC TYPE:	NA	OK	
LOCATION TYPE:	GENERIC			FIELD PREP:	NA		
TOP DEPTH:	0	154.0		SAMPLE USAGE:	INV		
BOTTOM DEPTH:	0	155.0		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:

Light brownish gray, slightly indurated, non welded, devitrified, dk, ark flow tuff

SAMPLE COMMENTS: NA

LOCATION DESC: 7c-27

FIELD SCREENING/MEASUREMENT RESULTS:

Alpha = 32 dpm
Beta/Gamma = 275 dpm

2/12/10
PID Ambient Reading = ppm

COLLECTED BY (PRINT)

REVIEWED BY (PRINT) J. MARIN

R. Saunders

RELINQUISHED BY (Printed Name) JON MARIN (Signature) Jon R. Marin	Date/Time 2/12/10 16:46	RECEIVED BY (Printed Name) S. MARIN (Signature) [Signature]	Date/Time 2/12/10 16:46
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 2503

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

SAMPLE ID: RE15-10-8209

WORK ORDER:

AS PLANNED		AS COLLECTED		AS PLANNED		AS COLLECTED	
DATE COLLECTED(MM/DD/YYYY):		02/12/2010		MEDIA:	QBT3	QBT1	
TIME COLLECTED (HH:MM)		13:15		SUB-MEDIA:	TUFF 1	OK	
PRS ID:	15-007(c)	OK		SAMPLE TECH CODE:	HA	CB5	
LOCATION ID:	15-610818			FIELD QC TYPE:	NA	OK	
LOCATION TYPE:	GENERIC			FIELD PREP:	NA	1	
TOP DEPTH:	0	169.0		SAMPLE USAGE:	INV		
BOTTOM DEPTH:	0	170.0		SCREEN/PORT DESC:	NA		
FIELD MATRIX:	R	OR		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 2/12/10 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:

Light gray, slightly indurated, non welded, devitrified, dry, ash flow tuff
 2/12/10

SAMPLE COMMENTS: NA

LOCATION DESC: 7c-27

FIELD SCREENING/MEASUREMENT RESULTS:

Alpha = 5.9 dpm

Beta/Gamma = 275 dpm

ARM 2/12/10
 PID $\frac{\text{Ambient Reading}}{\text{Reading}} = \text{ppm}$

COLLECTED BY (PRINT)

R. Samuels

REVIEWED BY (PRINT)

J. MARIN

RELINQUISHED BY (Printed Name) JON MARIN (Signature) J. R. Marin	Date/Time 2/12/10 16:46	RECEIVED BY (Printed Name) S. MARCZAK (Signature) [Signature]	Date/Time 2/12/10 16:46
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 2503

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

SAMPLE ID: RE15-10-8212

WORK ORDER:

AS PLANNED		AS COLLECTED		AS PLANNED		AS COLLECTED	
DATE COLLECTED(MM/DD/YYYY):		02/12/2010		MEDIA:	QBT3		QBT 1
TIME COLLECTED (HH:MM)		13:50		SUB-MEDIA:	TUFF 1		OK
PRS ID:	15-007(c)	OK		SAMPLE TECH CODE:	HA		CBS
LOCATION ID:	UNK	15-610818		FIELD QC TYPE:	NA		OK
LOCATION TYPE:	GENERIC	OK		FIELD PREP:	NA		
TOP DEPTH:	0	180.0 ft		SAMPLE USAGE:	INV		
BOTTOM DEPTH:	0	182.5 ft		SCREEN/PORT DESC:			NA
FIELD MATRIX:	R	OK		EXCAVATED: YES <input checked="" type="checkbox"/> NO <input type="checkbox"/>			
COMPOSITE TYPE:	NA			COMPOSITE TIME INTERVAL:	NA		WATER FLOWING: YES <input checked="" type="checkbox"/> NO <input type="checkbox"/> NA
BOREHOLE: YES <input checked="" type="checkbox"/> NO <input type="checkbox"/> 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: 7c-27

FIELD SCREENING/MEASUREMENT RESULTS:

Alpha = 71 dpm
Beta/Gamma = 264 dpm

ARM 2/12/10
PID $\frac{\text{Ambient Reading}}{\text{Reading}} = \text{ppm}$

COLLECTED BY (PRINT)

REVIEWED BY (PRINT)

J. MARIN

RELINQUISHED BY (Printed Name) JON MARIN (Signature) J. Marin	Date/Time 2/12/10 16:46	RECEIVED BY (Printed Name) S. MARCZAY (Signature) [Signature]	Date/Time 2/12/10 16:46
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 2503

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

SAMPLE ID: RE15-10-8227

WORK ORDER:

<u>AS PLANNED</u>		<u>AS COLLECTED</u>	<u>AS PLANNED</u>		<u>AS COLLECTED</u>
DATE COLLECTED(MM/DD/YYYY):		<u>02/12/2010</u>	MEDIA:		<u>OBT3</u>
TIME COLLECTED (HH:MM)		<u>08:35</u>	SUB-MEDIA:		<u>TUFF 1</u>
PRS ID:	<u>15-007(c)</u>	<u>OK</u>	SAMPLE TECH CODE:		<u>HA</u>
LOCATION ID:	<u>UNK</u>	<u>1</u>	FIELD QC TYPE:		<u>FD</u>
LOCATION TYPE:	<u>GENERIC</u>	<u>12m 2/12/10</u>	FIELD PREP:		<u>NA</u>
TOP DEPTH:	<u>0</u>	<u>63.5</u>	SAMPLE USAGE:		<u>QC</u>
BOTTOM DEPTH:	<u>0</u>	<u>65.0 ft</u>	SCREEN/PORT DESC:		<u>NA</u>
FIELD MATRIX:	<u>R</u>	<u>OK</u>	EXCAVATED: YES/NO/NA		<u>NA</u>
COMPOSITE TYPE: <u>NA</u>		COMPOSITE TIME INTERVAL: <u>NA</u>		WATER FLOWING: YES/NO/NA	
BOREHOLE: <u>YES</u> / NO / NA		BOREHOLE DECLINATION: <u>-90°</u>		BOREHOLE DIRECTION: <u>NA</u>	

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

SAMPLE DESC: QC Sample of RE15-10-8202Light gray, nonindurated, nonwelded, devitrified, dry, ash flow tuffSAMPLE COMMENTS: NALOCATION DESC: 7c-27

FIELD SCREENING/MEASUREMENT RESULTS:

Alpha = 19 dpm
 Beta/Gamma = 420 dpm

12m 2/12/10
 PID $\frac{\text{Ambient Reading}}{\text{Reading}} = \text{ppm}$

COLLECTED BY (PRINT)

REVIEWED BY (PRINT)

RELINQUISHED BY (Printed Name) <u>Larry A Lopez</u> (Signature) <u>[Signature]</u>	Date/Time <u>2/12/10</u> <u>1646</u>	RECEIVED BY (Printed Name) <u>S. MADRIZ</u> (Signature) <u>[Signature]</u>	Date/Time <u>2/12/10</u> <u>1646</u>
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 2503

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

SAMPLE ID: RE15-10-8228

WORK ORDER:

AS PLANNED		AS COLLECTED	AS PLANNED		AS COLLECTED
DATE COLLECTED(MM/DD/YYYY):		02/12/2010	MEDIA:		QBT3
TIME COLLECTED (HH:MM)		13:50	SUB-MEDIA:		TUFF 1
PRS ID:	15-007(c)	OK	SAMPLE TECH CODE:		HA
LOCATION ID:	UNK	15-610818	FIELD QC TYPE:		ED
LOCATION TYPE:	GENERIC	OK	FIELD PREP:		NA
TOP DEPTH:	0	180.0 ft	SAMPLE USAGE:		QC
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+CIO4+CN	500 ML POLY	Ice	Y	
1		RADVANA+B+G	1 EA 8 IN RESEALABLE POLY BAG	None	Y	

SAMPLE DESC: QC Sample of RE15-10-8212

SAMPLE COMMENTS: NA

LOCATION DESC: 7c-27

FIELD SCREENING/MEASUREMENT RESULTS:

Alpha = 71 dpm
Beta/Gamma = 264 dpm

PRM
2/12/10
PID $\frac{\text{Ambient Reading}}{\text{Reading}} = \text{ppm}$

COLLECTED BY (PRINT)

R. Saunders

REVIEWED BY (PRINT)

I. MYA RIN

RELINQUISHED BY (Printed Name) JON MARIN (Signature) Jon R. Marin	Date/Time 02/12/10 16:46	RECEIVED BY (Printed Name) S. WATKINS (Signature) [Signature]	Date/Time 2/12/10 16:46
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 2503

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

SAMPLE ID: RE15-10-8236

WORK ORDER:

AS PLANNED		AS COLLECTED		AS PLANNED		AS COLLECTED	
DATE COLLECTED(MM/DD/YYYY):		02/12/2010		MEDIA: NA		OK	
TIME COLLECTED (HH:MM)		12:10		SUB-MEDIA: OTHER			
PRS ID: 15-007(c)		OK		SAMPLE TECH CODE: DC			
LOCATION ID: UNK		15-610818		FIELD QC TYPE: FR			
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 RE15-10-8207

SAMPLE COMMENTS: NA

LOCATION DESC: 7c-27

FIELD SCREENING/MEASUREMENT RESULTS:

Alpha = dpm ^{T_{1/2}}
 Beta/Gamma = dpm ^{2/12/10}

PID $\frac{\text{Ambient Reading}}{\text{Reading}} = \text{ppm}$ ^{T_{1/2} 2/12/10}

COLLECTED BY (PRINT)

R. Saunders

REVIEWED BY (PRINT) J. Marin

RELINQUISHED BY (Printed Name) JON MARIN (Signature) Jon R. Marin	Date/Time 2/12/10 1646	RECEIVED BY (Printed Name) S. M. Garcia (Signature) [Signature]	Date/Time 2/12/10 1646
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 2503

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

SAMPLE ID: RE15-10-8237

WORK ORDER:

AS PLANNED		AS COLLECTED	AS PLANNED		AS COLLECTED
DATE COLLECTED(MM/DD/YYYY):		02/12/2010	MEDIA:	NA	OK
TIME COLLECTED (HH:MM)		13:30	SUB-MEDIA:	OTHER	
PRS ID:	15-007(c)	OK	SAMPLE TECH CODE:	DC	
LOCATION ID:	UNK	15-610818	FIELD QC TYPE:	FR	
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		SW-846:6850	250 ML POLY	Ice	Y	
1		TCN	500 ML POLY	Sodium Hydroxide	Y	

SAMPLE DESC: QC Sample of RE15-10-8209

SAMPLE COMMENTS: NA

LOCATION DESC: 7c-27

FIELD SCREENING/MEASUREMENT RESULTS:

Alpha = ~~_____~~ dpmBeta/Gamma = ~~_____~~ dpm

ARM 2/12/10

PID ~~Ambient
Reading~~ = ppm

ARM 2/12/10

COLLECTED BY (PRINT)

R. Saunders

REVIEWED BY (PRINT)

J. MARIN

RELINQUISHED BY (Printed Name) JON MARIN (Signature) Jon R. Marin	Date/Time 2/12/10 16:46	RECEIVED BY (Printed Name) J. MARIN (Signature) [Signature]	Date/Time 2/12/10 16:46
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

Rad Screening Data Release Form

The Following samples were received at the Field Support Facility (FSF) without screening data (list sample number):

RE15-10-8228
↓
8212
8257
8209
8208
8236
8207
8206
8208
8204
8203
8227
↓
RE15-10 8202

RE36-10-7423
↓
7424
7427
↓
RE36-10 7428

These samples will not be shipped until radiological screening data documentation arrives at the FSF. I understand that it is my responsibility to ensure this information arrives at the FSF in a timely manner. If holding times are missed because screening data does not arrive, I will pick up the samples.

.....
The following samples do not require rad screening data for the reasons stated (list sample numbers): RE15-10-8237(FR)

Reason: Field Kinstate

.....
Print Last Name Lopez

Signature

Larry A. Lopez

Date 02/12/10

DATA VALIDATION COVER SHEET

5119-1

Data Validation Cover Sheet

Records Use only



Section I.

REQUEST NUMBER: 10-1910 VALIDATION DATE: 04/05/2010 LAB CODE: GELCONTRACT LABORATORY NAME: GEL Laboratories LLCVALIDATOR: Mary Donovan 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): <u>tritium</u> | | | |

Section II. Completeness Check

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


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

1. An MS was not analyzed with the batch associated with all samples except RE15-10-8203. However, an LCS was analyzed and met acceptance criteria, thus, no sample results were qualified.
2. It should be noted that the matrix QC for both batches were performed on parent samples from other LANL RNs. No sample data were qualified as a result.


Reviewed by: ETM Level: 1 Date: 4/5/10VALIDATOR'S SIGNATURE: Mary A. Donovan DATE: 04/05/2010

RAD ANALYTICAL DATA VALIDATION CHECKLIST	
5119-2 Rad Analytical Data Validation Checklist	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 checked="" type="checkbox"/>	<input type="checkbox"/>	1. The holding time was >1 and ≤2 times the applicable holding time requirement.	UJ, R9	J-, R9
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	2. The holding time was >2 times the applicable holding time requirement.	R, R9a	J-, R9a
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	3. The results for the affected analytes are considered not detected (U) because the associated sample concentration was less than or equal to the MDC.	U, R5	N/A
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	4. The analyte should be regarded as rejected because spectral interferences prevent positive identification of the analytes.	R, R5a	R, R5a
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	5. The MDC and/or TPU documentation is missing. Data may not be acceptable for use. Contact the SMO or external laboratory for information.	R, R5b	J-, R5b
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	6. The results for the affected analytes should be regarded as not detected (U) because the associated sample concentration was less than 3X the 1 sigma TPU.	U, R11	N/A
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	7. The sample result is ≤5X the concentration of the related analyte in the method blank.	U, R4	N/A
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	8. The affected analytes are considered estimated and biased high because this analyte was identified in the method blank but was >5X.	N/A	J, R4a
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	9. The sample result is ≤5X the concentration of the related analyte in the trip blank, rinsate blank, or equipment blank.	U, R4d	N/A
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	10. Required method blank information is missing. Data may not be acceptable for use. Contact the SMO or external laboratory for information.	R, R4e	R, R4e
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	11. The tracer is <10%R. Follow the external laboratory limits located within the associated data package. Tracer%R is not applicable for Gamma Spectroscopy.	R, R3	R, R3

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

Yes No N/A				Assign Qualifier Listed Below If Criterion = Yes	
(Check One)				Non-detected Analyte	Detected Analyte
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	12. The tracer is < the Lower Acceptance Level (LAL) but $\geq 10\%R$. Follow the external laboratory limits located within the associated data package. Tracer%R is not applicable for Gamma Spectroscopy.	UJ, R3a	J-, R3a
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	13. The Tracer%R value is > the Upper Acceptance Limit (UAL). Follow the external laboratory limits located within the associated data package. Tracer%R is not applicable for Gamma Spectroscopy.	N/A	J+, R3b
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input 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	
5119-2 Rad Analytical Data Validation Checklist	Records Use only 

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

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 12, 2010

Client Sample ID: RE15-10-8208
Sample ID: 247344001
Matrix: R
Collect Date: 12-FEB-10
Receive Date: 18-FEB-10
Collector: Client

Project: LANL01004
Client ID: LANL010

Parameter	Qualifier	Result	DL	TPU	RL	Units	DF	Analyst	Date	Time	Batch	Mtd.
Rad Liquid Scintillation Analysis												
<i>H3 "As Received"</i>												
Tritium		35900	506	+/-2600	250	pCi/L		KXK2	03/09/10	0644	956742	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.

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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 12, 2010

Client Sample ID: RE15-10-8203
Sample ID: 247344002
Matrix: R
Collect Date: 12-FEB-10
Receive Date: 18-FEB-10
Collector: Client

Project: LANL01004
Client ID: LANL010

Parameter	Qualifier	Result	DL	TPU	RL	Units	DF	Analyst	Date	Time	Batch	Mtd.
Rad Liquid Scintillation Analysis												
<i>LSC, Tritium Dist, Solid "As Received"</i>												
Tritium		6.02	4.15	+/-1.54	6.00	pCi/g		KXK2	03/08/10	2333	961331	1

The following Analytical Methods were performed

Method	Description
1	EPA 906.0 Modified

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

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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 12, 2010

Client Sample ID: RE15-10-8206
Sample ID: 247344003
Matrix: R
Collect Date: 12-FEB-10
Receive Date: 18-FEB-10
Collector: Client

Project: LANL01004
Client ID: LANL010

Parameter	Qualifier	Result	DL	TPU	RL	Units	DF	Analyst	Date	Time	Batch	Mtd.
Rad Liquid Scintillation Analysis												
<i>H3 "As Received"</i>												
Tritium		1.13E+05	506	+/-7980	250	pCi/L		KXX2	03/09/10	0701	956742	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 12, 2010

Client Sample ID: RE15-10-8207
Sample ID: 247344004
Matrix: R
Collect Date: 12-FEB-10
Receive Date: 18-FEB-10
Collector: Client

Project: LANL01004
Client ID: LANL010

Parameter	Qualifier	Result	DL	TPU	RL	Units	DF	Analyst	Date	Time	Batch	Mtd.
Rad Liquid Scintillation Analysis												
<i>H3 "As Received"</i>												
Tritium		35800	506	+/-2600	250	pCi/L		KXK2	03/09/10	0717	956742	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 12, 2010

Client Sample ID: RE15-10-8204
Sample ID: 247344005
Matrix: R
Collect Date: 12-FEB-10
Receive Date: 18-FEB-10
Collector: Client

Project: LANL01004
Client ID: LANL010

Parameter	Qualifier	Result	DL	TPU	RL	Units	DF	Analyst	Date	Time	Batch	Mtd.
Rad Liquid Scintillation Analysis												
<i>H3 "As Received"</i>												
Tritium		2.82E+05	504	+/-19800	250	pCi/L		KXK2	03/09/10	0734	956742	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

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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 12, 2010

Client Sample ID: RE15-10-8202
Sample ID: 247344006
Matrix: R
Collect Date: 12-FEB-10
Receive Date: 18-FEB-10
Collector: Client

Project: LANL01004
Client ID: LANL010

Parameter	Qualifier	Result	DL	TPU	RL	Units	DF	Analyst	Date	Time	Batch	Mtd.
Rad Liquid Scintillation Analysis												
<i>H3 "As Received"</i>												
Tritium		8.64E+05	504	+/-60300	250	pCi/L		KXK2	03/09/10	0750	956742	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 12, 2010

Client Sample ID: RE15-10-8209
Sample ID: 247344007
Matrix: R
Collect Date: 12-FEB-10
Receive Date: 18-FEB-10
Collector: Client

Project: LANL01004
Client ID: LANL010

Parameter	Qualifier	Result	DL	TPU	RL	Units	DF	Analyst	Date	Time	Batch	Mtd.
Rad Liquid Scintillation Analysis												
<i>H3 "As Received"</i>												
Tritium		1.34E+05	632	+/-9490	250	pCi/L		KXK2	03/09/10	0806	956742	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 12, 2010

Client Sample ID: RE15-10-8205
Sample ID: 247344008
Matrix: R
Collect Date: 12-FEB-10
Receive Date: 18-FEB-10
Collector: Client

Project: LANL01004
Client ID: LANL010

Parameter	Qualifier	Result	DL	TPU	RL	Units	DF	Analyst	Date	Time	Batch	Mtd.
Rad Liquid Scintillation Analysis												
<i>H3 "As Received"</i>												
Tritium		3.25E+05	722	+/-22800	250	pCi/L		KXK2	03/09/10	0823	956742	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

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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 12, 2010

Client Sample ID: RE15-10-8227
Sample ID: 247344009
Matrix: R
Collect Date: 12-FEB-10
Receive Date: 18-FEB-10
Collector: Client

Project: LANL01004
Client ID: LANL010

Parameter	Qualifier	Result	DL	TPU	RL	Units	DF	Analyst	Date	Time	Batch	Mtd.
Rad Liquid Scintillation Analysis												
<i>H3 "As Received"</i>												
Tritium		8.75E+05	504	+/-61000	250	pCi/L		KXX2	03/09/10	0839	956742	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 :

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- 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

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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 12, 2010

Client Sample ID: RE15-10-8228
Sample ID: 247344010
Matrix: R
Collect Date: 12-FEB-10
Receive Date: 18-FEB-10
Collector: Client

Project: LANL01004
Client ID: LANL010

Parameter	Qualifier	Result	DL	TPU	RL	Units	DF	Analyst	Date	Time	Batch	Mtd.
Rad Liquid Scintillation Analysis												
<i>H3 "As Received"</i>												
Tritium		1.23E+05	723	+/-8740	250	pCi/L		KXX2	03/09/10	0855	956742	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
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- 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

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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 12, 2010

Client Sample ID: RE15-10-8212
Sample ID: 247344011
Matrix: R
Collect Date: 12-FEB-10
Receive Date: 18-FEB-10
Collector: Client

Project: LANL01004
Client ID: LANL010

Parameter	Qualifier	Result	DL	TPU	RL	Units	DF	Analyst	Date	Time	Batch	Mtd.
Rad Liquid Scintillation Analysis												
<i>H3 "As Received"</i>												
Tritium		1.27E+05	845	+/-9040	250	pCi/L		KXX2	03/09/10	0912	956742	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
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- 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

Wednesday, February 17, 2010

LAB CHAIN OF CUSTODY DOCUMENT NUMBER: 10-1910

LOS ALAMOS

REQUEST NUMBER: 10-1910

NATIONAL LABORATORY

ATTN: Valerie Davis

TURNAROUND/REPORT DUE: 3/19/2010

General Engineering Laboratories, Inc.,
Charleston, SC.

TURNAROUND REQ'D: 30

2040 Savage Rd

Charleston, SC 29407

LAB REQUEST COMMENTS:

247344%

SAMPLE ID	CTNR	CTNR DESC	ORDER	PRESERV	MATRIX
RE15-10-8208	1	POLY	H3	Ice	R
RE15-10-8203	1	POLY	H3	Ice	R
RE15-10-8208	1	POLY	H3	Ice	R
RE15-10-8207	1	POLY	H3	Ice	R
RE15-10-8204	1	POLY	H3	Ice	R
RE15-10-8202	1	POLY	H3	Ice	R
RE15-10-8209	1	POLY	H3	Ice	R
RE15-10-8205	1	POLY	H3	Ice	R
RE15-10-8227	1	POLY	H3	Ice	R
RE15-10-8228	1	POLY	H3	Ice	R
RE15-10-8212	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: 10-1910

Wednesday, February 17, 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: 10-1910

Per Agreement Number: 126310011

Project Cost Code: MR3A05529E00

Please analyse the enclosed samples
according to the schedule indicated:

SHIP DATE: 2/17/2010

TURNAROUND/REPORT DUE: 3/19/2010

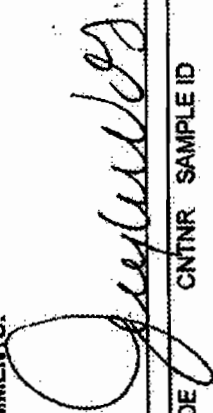
TURNAROUND REQ'D: 30 Days

RAD SCREENING: Yes, Below Background

LAB REQUEST COMMENTS:

LANL ERSO CONTACT:

Signature:



PRIORITY	METHOD CODE	CNTNR	SAMPLE ID	SAMPLE MATRIX	DATE SAMPLED	SPECIAL INSTRUCTIONS
	EPA 906.0					
		1	RE15-10-8202	R	2/12/2010	
		1	RE15-10-8203	R	2/12/2010	
		1	RE15-10-8204	R	2/12/2010	
		1	RE15-10-8205	R	2/12/2010	
		1	RE15-10-8206	R	2/12/2010	
		1	RE15-10-8207	R	2/12/2010	
		1	RE15-10-8208	R	2/12/2010	
		1	RE15-10-8209	R	2/12/2010	
		1	RE15-10-8212	R	2/12/2010	

REQUEST NUMBER: 10-1910

Wednesday, February 17, 2010

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

	EPA 906.0	1	RE15-10-8227	R	2/12/2010	
		1	RE15-10-8228	R	2/12/2010	

Final Page of REQUEST NUMBER 10-1910



February 22, 2010

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: 247344
SDG: 10-1910

Dear Ms. Valdez:

GEL Laboratories, LLC (GEL) appreciates the opportunity to provide the following analytical results for the sample(s) we received on February 18, 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: 10-1910
Enclosures

Los Alamos National Laboratory (72733-001-09)
LANL ER Project
Work Order #: 247344
SDG: 10-1910

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Case Narrative

**Case Narrative for
Los Alamos National Laboratory (72733-001-09)
LANL ER Project
Workorder #: 247344
SDG # : 10-1910**

February 22, 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 18, 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 10C temperature. Shipping container temperature was within specification (0 - 6C).

Sample Identification The laboratory received the following samples:

<u>Laboratory ID</u>	<u>Client ID</u>
247344001	RE15-10-8208
247344002	RE15-10-8203
247344003	RE15-10-8206
247344004	RE15-10-8207
247344005	RE15-10-8204
247344006	RE15-10-8202
247344007	RE15-10-8209
247344008	RE15-10-8205
247344009	RE15-10-8227
247344010	RE15-10-8228
247344011	RE15-10-8212

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 "Valerie Davis" with a stylized flourish at the end.

Valerie Davis

Project Manager

List of current GEL Certifications as of 22 February 2010

State	Certification
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

Wednesday, February 17, 2010

LAB CHAIN OF CUSTODY DOCUMENT NUMBER: 10-1910

LOS ALAMOS

REQUEST NUMBER: 10-1910

NATIONAL LABORATORY

ATTN: Valerie Davis

TURNAROUND/REPORT DUE: 3/19/2010

General Engineering Laboratories, Inc.,
Charleston, SC.

TURNAROUND REQ'D: 30

2040 Savage Rd

Charleston, SC 29407

LAB REQUEST COMMENTS:

247344%

SAMPLE ID	CTNR	CTNR DESC	ORDER	PRESERV	MATRIX
RE15-10-8208	1	POLY	H3	Ice	R
RE15-10-8203	1	POLY	H3	Ice	R
RE15-10-8206	1	POLY	H3	Ice	R
RE15-10-8207	1	POLY	H3	Ice	R
RE15-10-8204	1	POLY	H3	Ice	R
RE15-10-8202	1	POLY	H3	Ice	R
RE15-10-8209	1	POLY	H3	Ice	R
RE15-10-8205	1	POLY	H3	Ice	R
RE15-10-8227	1	POLY	H3	Ice	R
RE15-10-8228	1	POLY	H3	Ice	R
RE15-10-8212	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

Wednesday, February 17, 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: 2/17/2010

TURNAROUND/REPORT DUE: 3/19/2010

TURNAROUND REQ'D: 30 Days

RAD SCREENING: Yes, Below Background

LAB REQUEST COMMENTS:

LANL ER SMO CONTACT:

Signature: 

REQUEST NUMBER: 10-1910

These Samples are on:

LANL Request Number: 10-1910

Per Agreement Number: 126310011

Project Cost Code: MR3A05529E00

PRIORITY	METHOD CODE	CNTNR	SAMPLE ID	SAMPLE MATRIX	DATE SAMPLED	SPECIAL INSTRUCTIONS
	EPA:906.0	1	RE15-10-8202	R	2/12/2010	
		1	RE15-10-8203	R	2/12/2010	
		1	RE15-10-8204	R	2/12/2010	
		1	RE15-10-8205	R	2/12/2010	
		1	RE15-10-8206	R	2/12/2010	
		1	RE15-10-8207	R	2/12/2010	
		1	RE15-10-8208	R	2/12/2010	
		1	RE15-10-8209	R	2/12/2010	
		1	RE15-10-8212	R	2/12/2010	

Wednesday, February 17, 2010

REQUEST NUMBER: 10-1910

PRIORITY	METHOD CODE	CNTNR	SAMPLE ID	SAMPLE MATRIX	DATE SAMPLED	SPECIAL INSTRUCTIONS
	EPA:906.0	1	RE15-10-8227	R	2/12/2010	
		1	RE15-10-8228	R	2/12/2010	

Final Page of REQUEST NUMBER 10-1910



Laboratories LLC

SAMPLE RECEIPT & REVIEW FORM

Client: LANL		SDG/ARCOC/Work Order: 10-1910	
Received By: Patricia Dover-Dent		Date Received: February 18, 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*: 60 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) 1,2 10C
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 1047 1C

7209 7850 1014 2C

7209 7850 1036 2C

7209 7850 1025 2C

7209 7850 0990 10C

7209 7850 1003 10C

ORIGIN ID: SAFA (595) 665-9968
JOYLENE VALDEZ
OS ALAMOS NATL LAB
TAGO BLDG 1237 DPU 83

OS ALAMOS, NM 87545
UNITED STATES US

VALERIE DAVIS
GENERAL ENGINEERING LAB
2040 SAVAGE RD

CHARLESTON SC 29407
(843) 556-8171
REF: 68010AMR3A05529E00

SHIP DATE: 17FEB10
ACTWGT: 51.0 LB MAN
CAD: 0014176/CAFE2450

BILL SENDER

OS ALAMOS NATL LAB

LOS ALAMOS, NM 87545
UNITED STATES US

BILL SENDER

VALERIE DAVIS
GENERAL ENGINEERING LAB
2040 SAVAGE RD

CHARLESTON SC 29407
(843) 556-8171
REF: 68010AMR2A0515BYD0

FedEx

Express



FedEx

Express



THU - 18FEB A1
PRIORITY OVERNIGHT

TRKH 7209 7850 1047
0201

XX CHSA

29407
SC-US
CHS



LOS ALAMOS, NM 87545
UNITED STATES US

BILL SENDER

VALERIE DAVIS
GENERAL ENGINEERING LAB
2040 SAVAGE RD

CHARLESTON SC 29407
(843) 556-8171
REF: 68010AMR3A05529E00

FedEx

Express



THU - 18FEB A1
PRIORITY OVERNIGHT

29407
SC-US
CHS

TRKH 7209 7850 1014
0201

XX CHSA



VALERIE DAVIS
GENERAL ENGINEERING LAB
2040 SAVAGE RD

CHARLESTON SC 29407
(843) 556-8171
REF: 68010AMR3A05529E00

SHIP DATE: 17FEB10
ACTWGT: 57.0 LB MAN
CAD: 0014176/CAFE2450

BILL SENDER

FedEx

Express



THU - 18FEB A1
PRIORITY OVERNIGHT

NPSH 7209 7850 1036
0201

XX CHSA

29407
SC-US
CHS



THU - 18FEB A1
PRIORITY OVERNIGHT

29407
SC-US
CHS

TRKH 7209 7850 1025
0201

XX 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 10-1910**

Method/Analysis Information

Product: LSC, Tritium Dist, Solid

Analytical Method: EPA 906.0 Modified

Analytical Batch Number: 961331

Sample ID	Client ID
247344002	RE15-10-8203
1202062033	Method Blank (MB)
1202062034	247193001(RE15-10-8196) Sample Duplicate (DUP)
1202062035	247193001(RE15-10-8196) Matrix Spike (MS)
1202062036	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: 247193001 (RE15-10-8196). The QC was from LANL work order 247193.

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

Samples were recounted due to a detector lock out condition. Recount is being reported.

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.

Method/Analysis Information

Product: H3
Analytical Method: GL-RAD-A-002
Analytical Batch Number: 956742

Sample ID	Client ID
247344001	RE15-10-8208
247344003	RE15-10-8206
247344004	RE15-10-8207
247344005	RE15-10-8204
247344006	RE15-10-8202
247344007	RE15-10-8209
247344008	RE15-10-8205
247344009	RE15-10-8227
247344010	RE15-10-8228
247344011	RE15-10-8212
1202051381	Method Blank (MB)
1202051382	247360001(RE36-10-7427) Sample Duplicate (DUP)
1202051383	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 Calibrations were performed in July 2009, August 2009 and September 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: 247360001 (RE36-10-7427). The QC was from LANL work order 247360.

QC Information

All of the QC samples met the required acceptance limits.

CSU

The blank 1202051381 (MB) result is greater than 1.65 times the CSU but less than the MDC.

Technical Information:

Holding Time

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

Sample Re-prep/Re-analysis

Samples 1202051381 (MB) and 1202051382 (RE36-10-7427) were recounted due to high MDAs. Sample 1202051382 (RE36-10-7427) was recounted due to high relative percent difference/relative error ratio. Samples were recounted due to a detector lock out condition. Recount is being reported. Sample 1202051381 (MB) was recounted due to the quench number being outside the calibration range. Sample was then recounted due to a negative result greater than three times the error. Final count being reported.

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 1202051381 (MB) result is greater than the decision level but less than the MDC.

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:

John A. Curtis *3/12/2010*
Reviewer/Date: _____

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: 10-1910 GEL Work Order: 247344

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 12, 2010

Client Sample ID: RE15-10-8208
Sample ID: 247344001
Matrix: R
Collect Date: 12-FEB-10
Receive Date: 18-FEB-10
Collector: Client
Project: LANL01004
Client ID: LANL010

Parameter	Qualifier	Result	DL	TPU	RL	Units	DF	Analyst	Date	Time	Batch	Mtd.
Rad Liquid Scintillation Analysis												
<i>H3 "As Received"</i>												
Tritium		35900	506	+/-2600	250	pCi/L		KXX2	03/09/10	0644	956742	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

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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 12, 2010

Client Sample ID: RE15-10-8208
Sample ID: 247344001

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

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Certificate of Analysis

Company : Los Alamos National Laboratory
Address : PO Box 1663
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Los Alamos, New Mexico 87545
Contact: Ms. Joylene Valdez
Project: LANL ER Project

Report Date: March 12, 2010

Client Sample ID: RE15-10-8203
Sample ID: 247344002
Matrix: R
Collect Date: 12-FEB-10
Receive Date: 18-FEB-10
Collector: Client

Project: LANL01004
Client ID: LANL010

Parameter	Qualifier	Result	DL	TPU	RL	Units	DF	Analyst	Date	Time	Batch	Mtd.
Rad Liquid Scintillation Analysis												
<i>LSC, Tritium Dist, Solid "As Received"</i>												
Tritium		6.02	4.15	+/-1.54	6.00	pCi/g		KXK2	03/08/10	2333	961331	1

The following Analytical Methods were performed

Method	Description
1	EPA 906.0 Modified

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

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Los Alamos, New Mexico 87545
Contact: Ms. Joylene Valdez
Project: LANL ER Project

Report Date: March 12, 2010

Client Sample ID: RE15-10-8203
Sample ID: 247344002

Project: LANL01004
Client ID: LANL010

Parameter	Qualifier	Result	DL	TPU	RL	Units	DF	Analyst	Date	Time	Batch	Mtd.
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The above sample is reported on an "as received" basis.

GEL LABORATORIES LLC

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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 12, 2010

Client Sample ID: RE15-10-8206
Sample ID: 247344003
Matrix: R
Collect Date: 12-FEB-10
Receive Date: 18-FEB-10
Collector: Client

Project: LANL01004
Client ID: LANL010

Parameter	Qualifier	Result	DL	TPU	RL	Units	DF	Analyst	Date	Time	Batch	Mtd.
Rad Liquid Scintillation Analysis												
<i>H3 "As Received"</i>												
Tritium		1.13E+05	506	+/-7980	250	pCi/L		KXK2	03/09/10	0701	956742	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

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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 12, 2010

Client Sample ID: RE15-10-8206
Sample ID: 247344003

Project: LANL01004
Client ID: LANL010

Parameter	Qualifier	Result	DL	TPU	RL	Units	DF	Analyst	Date	Time	Batch	Mtd.
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The above sample is reported on an "as received" basis.

GEL LABORATORIES LLC

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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 12, 2010

Client Sample ID: RE15-10-8207
Sample ID: 247344004
Matrix: R
Collect Date: 12-FEB-10
Receive Date: 18-FEB-10
Collector: Client

Project: LANL01004
Client ID: LANL010

Parameter	Qualifier	Result	DL	TPU	RL	Units	DF	Analyst	Date	Time	Batch	Mtd.
Rad Liquid Scintillation Analysis												
<i>H3 "As Received"</i>												
Tritium		35800	506	+/-2600	250	pCi/L		KXX2	03/09/10	0717	956742	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

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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 12, 2010

Client Sample ID: RE15-10-8207
Sample ID: 247344004

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

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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 12, 2010

Client Sample ID: RE15-10-8204
Sample ID: 247344005
Matrix: R
Collect Date: 12-FEB-10
Receive Date: 18-FEB-10
Collector: Client

Project: LANL01004
Client ID: LANL010

Parameter	Qualifier	Result	DL	TPU	RL	Units	DF	Analyst	Date	Time	Batch	Mtd.
Rad Liquid Scintillation Analysis												
<i>H3 "As Received"</i>												
Tritium		2.82E+05	504	+/-19800	250	pCi/L		KXX2	03/09/10	0734	956742	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

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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 12, 2010

Client Sample ID: RE15-10-8204
Sample ID: 247344005

Project: LANL01004
Client ID: LANL010

Parameter	Qualifier	Result	DL	TPU	RL	Units	DF	Analyst	Date	Time	Batch	Mtd.
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The above sample is reported on an "as received" basis.

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Los Alamos, New Mexico 87545
Contact: Ms. Joylene Valdez
Project: LANL ER Project

Report Date: March 12, 2010

Client Sample ID: RE15-10-8202
Sample ID: 247344006
Matrix: R
Collect Date: 12-FEB-10
Receive Date: 18-FEB-10
Collector: Client

Project: LANL01004
Client ID: LANL010

Parameter	Qualifier	Result	DL	TPU	RL	Units	DF	Analyst	Date	Time	Batch	Mtd.
Rad Liquid Scintillation Analysis												
<i>H3 "As Received"</i>												
Tritium		8.64E+05	504	+/-60300	250	pCi/L		KXK2	03/09/10	0750	956742	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

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Contact: Ms. Joylene Valdez
Project: LANL ER Project

Report Date: March 12, 2010

Client Sample ID: RE15-10-8202
Sample ID: 247344006

Project: LANL01004
Client ID: LANL010

Parameter	Qualifier	Result	DL	TPU	RL	Units	DF	Analyst	Date	Time Batch	Mtd.
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Los Alamos, New Mexico 87545
Contact: Ms. Joylene Valdez
Project: LANL ER Project

Report Date: March 12, 2010

Client Sample ID: RE15-10-8209
Sample ID: 247344007
Matrix: R
Collect Date: 12-FEB-10
Receive Date: 18-FEB-10
Collector: Client

Project: LANL01004
Client ID: LANL010

Parameter	Qualifier	Result	DL	TPU	RL	Units	DF	Analyst	Date	Time	Batch	Mtd.
Rad Liquid Scintillation Analysis												
<i>H3 "As Received"</i>												
Tritium		1.34E+05	632	+/-9490	250	pCi/L		KXK2	03/09/10	0806	956742	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 :

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- 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

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Contact: Ms. Joylene Valdez
Project: LANL ER Project

Report Date: March 12, 2010

Client Sample ID: RE15-10-8209
Sample ID: 247344007

Project: LANL01004
Client ID: LANL010

Parameter	Qualifier	Result	DL	TPU	RL	Units	DF	Analyst	Date	Time	Batch	Mtd.
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Los Alamos, New Mexico 87545
Contact: Ms. Joylene Valdez
Project: LANL ER Project

Report Date: March 12, 2010

Client Sample ID: RE15-10-8205
Sample ID: 247344008
Matrix: R
Collect Date: 12-FEB-10
Receive Date: 18-FEB-10
Collector: Client

Project: LANL01004
Client ID: LANL010

Parameter	Qualifier	Result	DL	TPU	RL	Units	DF	Analyst	Date	Time	Batch	Mtd.
Rad Liquid Scintillation Analysis												
<i>H3 "As Received"</i>												
Tritium		3.25E+05	722	+/-22800	250	pCi/L		KXK2	03/09/10	0823	956742	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 :

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- BD Results are either below the MDC or tracer recovery is low
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- 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

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Address : PO Box 1663
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Los Alamos, New Mexico 87545
Contact: Ms. Joylene Valdez
Project: LANL ER Project

Report Date: March 12, 2010

Client Sample ID: RE15-10-8205
Sample ID: 247344008

Project: LANL01004
Client ID: LANL010

Parameter	Qualifier	Result	DL	TPU	RL	Units	DF	Analyst	Date	Time	Batch	Mtd.
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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 12, 2010

Client Sample ID: RE15-10-8227
Sample ID: 247344009
Matrix: R
Collect Date: 12-FEB-10
Receive Date: 18-FEB-10
Collector: Client

Project: LANL01004
Client ID: LANL010

Parameter	Qualifier	Result	DL	TPU	RL	Units	DF	Analyst	Date	Time	Batch	Mtd.
Rad Liquid Scintillation Analysis												
<i>H3 "As Received"</i>												
Tritium		8.75E+05	504	+/-61000	250	pCi/L		KXK2	03/09/10	0839	956742	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).

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- 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
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- 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

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Address : PO Box 1663
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Los Alamos, New Mexico 87545
Contact: Ms. Joylene Valdez
Project: LANL ER Project

Report Date: March 12, 2010

Client Sample ID: RE15-10-8227
Sample ID: 247344009

Project: LANL01004
Client ID: LANL010

Parameter	Qualifier	Result	DL	TPU	RL	Units	DF	Analyst	Date	Time	Batch	Mtd.
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Company : Los Alamos National Laboratory
Address : PO Box 1663
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Los Alamos, New Mexico 87545
Contact: Ms. Joylene Valdez
Project: LANL ER Project

Report Date: March 12, 2010

Client Sample ID: RE15-10-8228
Sample ID: 247344010
Matrix: R
Collect Date: 12-FEB-10
Receive Date: 18-FEB-10
Collector: Client

Project: LANL01004
Client ID: LANL010

Parameter	Qualifier	Result	DL	TPU	RL	Units	DF	Analyst	Date	Time	Batch	Mtd.
Rad Liquid Scintillation Analysis												
<i>H3 "As Received"</i>												
Tritium		1.23E+05	723	+/-8740	250	pCi/L		KXK2	03/09/10	0855	956742	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).

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- 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

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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 12, 2010

Client Sample ID: RE15-10-8228
Sample ID: 247344010

Project: LANL01004
Client ID: LANL010

Parameter	Qualifier	Result	DL	TPU	RL	Units	DF	Analyst	Date	Time	Batch	Mtd.
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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 12, 2010

Client Sample ID: RE15-10-8212
Sample ID: 247344011
Matrix: R
Collect Date: 12-FEB-10
Receive Date: 18-FEB-10
Collector: Client

Project: LANL01004
Client ID: LANL010

Parameter	Qualifier	Result	DL	TPU	RL	Units	DF	Analyst	Date	Time	Batch	Mtd.
Rad Liquid Scintillation Analysis												
<i>H3 "As Received"</i>												
Tritium		1.27E+05	845	+/-9040	250	pCi/L		KXK2	03/09/10	0912	956742	1

The following Analytical Methods were performed

Method	Description
1	GL-RAD-A-002

Notes:

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- 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

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Contact: Ms. Joylene Valdez
Project: LANL ER Project

Report Date: March 12, 2010

Client Sample ID: RE15-10-8212
Sample ID: 247344011

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

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QC Summary

Client : Los Alamos National Laboratory
PO Box 1663
TA-03, SM271, Drop Pt. 02U, Rm
Los Alamos, New Mexico
Contact: Ms. Joylene Valdez
Workorder: 247344

Report Date: March 12, 2010
Page 1 of 2

Parmname	NOM	Sample	Qual	QC	Units	RER	REC %	Range	Anlst	Date	Time
Rad Liquid Scintillation											
Batch	956742										
QC1202051382	247360001	DUP									
Tritium		U	109	U	56.0	pCi/L	0.213	(0-1)	KXK2	03/11/1016:14	
		TPU:	+/-64.6		+/-60.8						
QC1202051383	LCS										
Tritium		5540			5850	pCi/L	106	(80%-120%)		03/09/1010:40	
		TPU:			+/-533						
QC1202051381	MB										
Tritium			U	118	pCi/L					03/11/1018:49	
		TPU:		+/-52.2							
Batch	961331										
QC1202062034	247193001	DUP									
Tritium		U	1.23	U	2.37	pCi/g	0.225	(0-1)	KXK2	03/09/1001:08	
		TPU:	+/-1.24		+/-1.30						
QC1202062036	LCS										
Tritium		33.6			35.2	pCi/g	105	(80%-120%)		03/09/1002:11	
		TPU:			+/-5.21						
QC1202062033	MB										
Tritium			U	0.295	pCi/g					03/09/1000:20	
		TPU:		+/-1.18							
QC1202062035	247193001	MS									
Tritium		33.8	U	1.23	32.6	pCi/g	96.4	(75%-125%)		03/09/1001:55	
		TPU:	+/-1.24		+/-4.92						

Notes:

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- 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

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QC Summary

Workorder: 247344

Page 2 of 2

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

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# 956740 Product: H3 Date: 3-12-10

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 REMF, 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] 3/3/12/10

LANL 3-13-10

Tritium Que Sheet

01-MAR-10

Batch #: 956742

Analyst: KKK2 First Client Due Date 13-MAR-10 Internal Due Date: 03-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: 3/1/10 Initials: JKK Pipet ID: 2970968 Witness: JKK 3/2/10

Sample ID	Client Samp ID	Type	Hazard Code	Min CRDL	Matrix	Client	Sample Date	Aliquot in vial (g/mL)	LSC Rack #	Dist Rig #	Vol added for Dist (mL)	Initial Sample Aliquot (g/mL)	Final Wt (g)	Dist Vol (mL)	LSC Rack #
247344001-1	RE15-10-8208	SAMPLE		.25 pCi/mL SOIL	LANL010	LANL010	12-FEB-10	10	3-2	1		629.19	609.68	19.56	45-1
247344002-1	RE15-10-8208	SAMPLE		.25 pCi/mL SOIL	LANL010	LANL010	12-FEB-10	10	3-3	2		656.61	644.13	12.48	45-2
247344003-1	RE15-10-8206	SAMPLE		.25 pCi/mL SOIL	LANL010	LANL010	12-FEB-10	10	3-4	3		543.22	530.73	12.49	45-3
247344004-1	RE15-10-8207	SAMPLE		.25 pCi/mL SOIL	LANL010	LANL010	12-FEB-10	10	3-5	4		584.52	574.00	10.52	45-4
247344005-1	RE15-10-8204	SAMPLE		.25 pCi/mL SOIL	LANL010	LANL010	12-FEB-10	10	3-6	5		484.09	474.41	9.68	45-5
247344006-1	RE15-10-8202	SAMPLE		.25 pCi/mL SOIL	LANL010	LANL010	12-FEB-10	10	3-7	6		526.52	516.52	10.00	45-6
247344007-1	RE15-10-8209	SAMPLE		.25 pCi/mL SOIL	LANL010	LANL010	12-FEB-10	10	3-8	7		538.62	529.46	9.16	45-7
247344008-1	RE15-10-8205	SAMPLE		.25 pCi/mL SOIL	LANL010	LANL010	12-FEB-10	10	3-9	8		488.40	478.14	10.26	45-8
247344009-1	RE15-10-8227	SAMPLE		.25 pCi/mL SOIL	LANL010	LANL010	12-FEB-10	10	3-10	9		498.81	490.83	7.98	45-9
247344010-1	RE15-10-8228	SAMPLE		.25 pCi/mL SOIL	LANL010	LANL010	12-FEB-10	10	3-11	10		507.26	499.65	7.61	45-10
247344011-1	RE15-10-8212	SAMPLE		.25 pCi/mL SOIL	LANL010	LANL010	12-FEB-10	10	3-12	11		233.14	148.28	84.86	45-11
247360001-1	RE36-10-7427	SAMPLE		.25 pCi/mL SOIL	LANL010	LANL010	12-FEB-10	10	5-1	12		245.14	120.12	125.02	45-12
247360002-1	RE36-10-7423	SAMPLE		.25 pCi/mL SOIL	LANL010	LANL010	12-FEB-10	10	5-2	13		465.60	425.56	40.04	45-13
247360003-1	RE36-10-7428	SAMPLE		.25 pCi/mL SOIL	LANL010	LANL010	12-FEB-10	10	5-3	14		513.00	489.40	43.61	45-14
247360004-1	RE36-10-7424	SAMPLE		.25 pCi/mL SOIL	LANL010	LANL010	12-FEB-10	10	5-4	15		548.91	511.04	37.87	45-15
247551001-1	RE15-10-8349	SAMPLE		.25 pCi/mL SOIL	LANL010	LANL010	15-FEB-10	10	5-5	16		576.98	556.21	20.77	45-16
247551002-1	RE15-10-8348	SAMPLE		.25 pCi/mL SOIL	LANL010	LANL010	15-FEB-10	10	5-6	17		534.79	522.49	12.30	45-17
247552002-1	WST15-10-8894	SAMPLE		.25 pCi/mL SOIL	LANL010	LANL010	15-FEB-10	9	5-7	18		20.00	0.00	20.00	45-18
1202051381-1	MB for batch 956742	MB		.25 pCi/mL SOIL	QC ACCOUNT	QC ACCOUNT		10	5-8	19		233.14	148.28	84.86	45-19
1202051382-1	RE36-10-7427(247360001)DUP	DUP		.25 pCi/mL SOIL	QC ACCOUNT	QC ACCOUNT	12-FEB-10	10	5-9	20		20.00	0.00	20.00	45-20
1202051383-1	LCS for batch 956742	LCS		.25 pCi/mL SOIL	QC ACCOUNT	QC ACCOUNT		10	5-10	21		20.00	0.00	20.00	45-21

Comments:

Bkg prepared with dead water? Yes/No

Instrument Used (circle as appropriate): LS6000 (Red) 7065155, LS6500 (Blue) 7067083, LS6500

(Gold) 7070506, LS6500 (Green) 7067404, Wallace (Yellow) 4140127, LS6000 (Brown) 7060655, Wallace

(Pink) 2200083, Wallace (White) 4140299, Purple 7069123, Silver 7060656, Orange DG60605168

Calibration Used : Ecosci Ultra (10 mL sample/13 mL Ecosci Ultra)

Data Reviewed By: JKK 3-12-10

GEL Laboratories LLC, Radiochemistry Division

Page 1 of 1

DATE	2/25/2010		INITIALS	KXK2		BATCH NUMBER	956742		
Sample #	Sample Wet (g)	Flask Weight (g)	Flask & Sample Wet (g)	% Moisture of Sample (Balance Interface using % Moisture Batch)	Total Moisture In Sample (mL)	Sample Dry (g)	Flask & Sample Dry (g)	mLs aliquoted into LSC vial	Collection Tube Number
247344001	629.19	200.00	829.19	0.031	19.50	609.69	809.69	10	
247344002	9.00	200.00	200.00	0.011	0.00	0.00	200.00	10	
247344003	656.61	200.00	856.61	0.019	12.48	644.13	844.13	10	
247344004	543.22	200.00	743.22	0.023	12.49	530.73	730.73	10	
247344005	584.52	200.00	784.52	0.018	10.52	574.00	774.00	10	
247344006	484.09	200.00	684.09	0.020	9.68	474.41	674.41	10	
247344007	526.52	200.00	726.52	0.019	10.00	516.52	716.52	8	
247344008	538.62	200.00	738.62	0.017	9.16	529.46	729.46	7	
247344009	488.40	200.00	688.40	0.021	10.26	478.14	678.14	10	
247344010	498.81	200.00	698.81	0.016	7.98	490.83	690.83	7	
247344011	507.26	200.00	707.26	0.015	7.61	499.65	699.65	6	
247360001	233.14	200.00	433.14	0.364	84.86	148.28	348.28	10	
247360002	245.14	200.00	445.14	0.510	125.02	120.12	320.12	10	
247360003	465.60	200.00	665.60	0.086	40.04	425.56	625.56	10	
247360004	513.00	200.00	713.00	0.085	43.61	469.40	669.40	10	
247551001	548.91	200.00	748.91	0.069	37.87	511.04	711.04	10	
247551002	576.98	200.00	776.98	0.036	20.77	556.21	756.21	10	
247552002	534.79	200.00	734.79	0.023	12.30	522.49	722.49	9	
MB	20	200.00	220.00	1.000	20.00	0.00	200.00	10	
DUP	233.14	200.00	433.14	0.364	84.86	148.28	348.28	10	
LSC	20	200.00	220.00	1.000	20.00	0.00	200.00	10	

Tritium Solid

Filename : H3VAC.XLS
File type : Excel
Version # : 1.2.6

Batch : 956742
Analyst : KXK2
Prep Date : 3/1/2010

H-3 Abundance : 1

Method Uncertainty : 0.0691

Geometry : 10mL DW/13mL
Ecoscint Ultra

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

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

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

0134-K
3/27/2010
2461.37
0.10

Procedure Code : LSC_VH3S

Paramname : Tritium
Required MDC : 250 pCi/L
Half-life of Tritium : 12.32 years

Sample Characteristics		Wet Sample Weight (g)	Total Moisture L	Sample Aliquot in Vial L	Sample Aliquot Stdev. L	Dry Sample Weight (g)	% Moisture of Sample	Rig number	Sample Date/Time
Pos.	Sample ID								
1	247344001.1	629.19	0.0195	0.0100	2.5729E-05	609.89	3.10%	1	2/12/2010 12:00
2	247344003.1	656.61	0.0125	0.0100	2.5729E-05	644.13	1.90%	3	2/12/2010 12:00
3	247344004.1	543.22	0.0125	0.0100	2.5729E-05	530.73	2.30%	4	2/12/2010 12:00
4	247344005.1	594.52	0.0105	0.0100	2.5729E-05	574.00	1.80%	5	2/12/2010 12:00
5	247344006.1	484.09	0.0097	0.0100	2.5729E-05	474.41	2.00%	6	2/12/2010 12:00
6	247344007.1	528.52	0.0100	0.0080	2.5729E-05	516.52	1.90%	7	2/12/2010 12:00
7	247344008.1	538.62	0.0092	0.0070	2.5729E-05	529.46	1.70%	8	2/12/2010 12:00
8	247344009.1	488.40	0.0103	0.0100	2.5729E-05	478.14	2.10%	9	2/12/2010 12:00
9	247344010.1	498.81	0.0080	0.0070	2.5729E-05	490.83	1.60%	10	2/12/2010 12:00
10	247344011.1	507.26	0.0076	0.0060	2.5729E-05	499.65	1.50%	11	2/12/2010 12:00
11	247360001.1	233.14	0.0849	0.0100	2.5729E-05	148.28	36.40%	12	2/12/2010 12:00
12	247360002.1	245.14	0.1250	0.0100	2.5729E-05	120.12	51.00%	13	2/12/2010 12:00
13	247360003.1	465.60	0.0400	0.0100	2.5729E-05	425.56	8.60%	14	2/12/2010 12:00
14	247360004.1	513.00	0.0436	0.0100	2.5729E-05	469.40	8.50%	15	2/12/2010 12:00
15	247551001.1	548.91	0.0379	0.0100	2.5729E-05	511.04	6.90%	16	2/15/2010 12:00
16	247551002.1	576.98	0.0208	0.0100	2.5729E-05	556.21	3.60%	17	2/15/2010 12:00
17	247552002.1	534.79	0.0123	0.0090	2.5729E-05	522.49	2.30%	18	2/15/2010 12:00
18	1202051381.1	20.00	0.0200	0.0100	2.5729E-05	0.00	100.00%	19	3/1/2010 0:00
19	1202051382.1	233.14	0.0849	0.0100	2.5729E-05	148.28	36.40%	12	2/12/2010 12:00
20	1202051383.1	20.00	0.0200	0.0100	2.5729E-05	0.00	100.00%	20	3/1/2010 0:00

Count raw Data			Counting			Background			Calibration Data			Detector			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 Efficiency Error (cpm/dpm)	Rack Position #	Count Start Date/Time	
1	45-2	15	115.1	167.8	3.13	15	3/9/2010 6:44	0.996	LSCRED	8/21/2009	8/31/2010	0.2077	0.00792	45-1	3/9/2010 6:28	
2	45-3	15	114.4	523.47	3.13	15	3/9/2010 7:01	0.996	LSCRED	8/21/2009	8/31/2010	0.2060	0.00792	45-1	3/9/2010 6:28	
3	45-4	15	114.4	167.73	3.13	15	3/9/2010 7:17	0.996	LSCRED	8/21/2009	8/31/2010	0.2085	0.00792	45-1	3/9/2010 6:28	
4	45-5	15	113.2	1304.73	3.13	15	3/9/2010 7:34	0.996	LSCRED	8/21/2009	8/31/2010	0.2080	0.00792	45-1	3/9/2010 6:28	
5	45-6	15	112.8	3987.8	3.13	15	3/9/2010 7:50	0.996	LSCRED	8/21/2009	8/31/2010	0.2086	0.00792	45-1	3/9/2010 6:28	
6	45-7	15	114.4	497.27	3.13	15	3/9/2010 8:06	0.996	LSCRED	8/21/2009	8/31/2010	0.2080	0.00792	45-1	3/9/2010 6:28	
7	45-8	15	114.4	1049.53	3.13	15	3/9/2010 8:23	0.996	LSCRED	8/21/2009	8/31/2010	0.2087	0.00792	45-1	3/9/2010 6:28	
8	45-9	15	112.7	4040.47	3.13	15	3/9/2010 8:39	0.996	LSCRED	8/21/2009	8/31/2010	0.2078	0.00792	45-1	3/9/2010 6:28	
9	45-10	15	114.8	399.2	3.13	15	3/9/2010 8:55	0.996	LSCRED	8/21/2009	8/31/2010	0.2075	0.00792	45-1	3/9/2010 6:28	
10	45-11	15	115.5	352.93	3.13	15	3/9/2010 9:12	0.996	LSCRED	8/21/2009	8/31/2010	0.2069	0.00792	25-1	3/12/2010 5:35	
11	25-2	90	116.8	4.12	3.62	90	3/12/2010 7:08	0.996	LSCORANGE	7/23/2009	7/31/2010	0.2730	0.00792	21	3/9/2010 14:32	
12	23	50.0287	761.2	1.53	0.87	50	3/9/2010 16:17	0.996	LSCORANGE	7/23/2009	7/31/2010	0.2641	0.00792	21	3/9/2010 14:32	
13	24	50.0286	755.72	1.51	0.87	50	3/9/2010 17:09	0.996	LSCORANGE	7/23/2009	7/31/2010	0.2694	0.00792	22	3/11/2010 13:32	
14	25	30.0287	758.98	1.84	1.87	30	3/11/2010 14:04	0.996	LSCORANGE	7/23/2009	7/31/2010	0.2633	0.00792	22	3/11/2010 13:32	
15	26	30.0287	755.24	3.3	1.87	30	3/11/2010 14:37	0.996	LSCORANGE	7/23/2009	7/31/2010	0.2730	0.00792	22	3/11/2010 13:32	
16	27	30.0287	761.16	3.81	1.87	30	3/11/2010 15:09	0.996	LSCORANGE	7/23/2009	7/31/2010	0.1603	0.00792	31	3/9/2010 8:15	
17	37	2.99642	797.19	3407.39	1.48	15	3/9/2010 10:01	0.997	LSCPINK	8/21/2009	8/31/2010	0.2289	0.00792	57-1	3/11/2010 17:11	
18	57-2	95	120.2	3.55	2.95	95	3/11/2010 18:49	0.998	LSCBROWN	9/8/2009	9/30/2010	0.2748	0.00792	22	3/11/2010 13:32	
19	29	30.0287	762.28	2.21	1.87	30	3/11/2010 16:14	0.996	LSCORANGE	7/23/2009	7/31/2010	0.1687	0.00792	31	3/9/2010 8:15	
20	40	15.0287	805.01	23.38	1.48	15	3/9/2010 10:40	0.999	LSCPINK	8/21/2009	8/31/2010					

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

* - RPD changed to 0% due to activity below MDC for 1202051382.1

Pos.	Results		Critical Level	Required MDC	MDC	Sample Act. Conc.	Sample Act. Error	Net Count		Net Count Rate Error	1 SIGMA Counting Uncertainty		1 SIGMA Total Prop. Uncertainty		Sample QC	Sample Type	RPD	RER	Nominal pC/L	Recovery
	Decision Level	pC/L				pC/L	pC/L	Rate	CPM		pC/L	pC/L	pC/L	pC/L						
1	327.7016	231.3601	250	506.2625	505.5213	35850.5275	0.022	164.670	3.376	734.9276	2602.8117	2602.8117	2602.8117	2602.8117	SAMPLE					
2	327.2218	231.0214	250	505.5213	505.5213	113118.0569	0.014	520.340	5.925	1288.0702	7982.9928	7982.9928	7982.9928	7982.9928	SAMPLE					
3	327.2223	231.0218	250	505.5221	505.5221	35782.8816	0.022	164.600	3.375	733.7026	2597.9461	2597.9461	2597.9461	2597.9461	SAMPLE					
4	326.4706	230.4910	250	504.3608	504.3608	282308.6177	0.011	1301.600	9.338	2025.2838	19766.1225	19766.1225	19766.1225	19766.1225	SAMPLE					
5	326.2406	230.3286	250	504.0054	504.0054	863640.2207	0.010	3984.670	16.311	3535.3460	60254.1980	60254.1980	60254.1980	60254.1980	SAMPLE					
6	409.0301	288.7787	250	631.9080	631.9080	134278.9037	0.015	494.140	5.776	1589.5342	9490.0584	9490.0584	9490.0584	9490.0584	SAMPLE					
7	467.4638	330.0334	250	722.1796	722.1796	324973.6994	0.012	1046.400	8.377	2601.8503	22814.5603	22814.5603	22814.5603	22814.5603	SAMPLE					
8	326.1862	230.2903	250	503.8215	503.8215	874910.1896	0.010	4037.340	18.419	3558.0055	81038.1061	81038.1061	81038.1061	81038.1061	SAMPLE					
9	467.8522	330.3077	250	722.7797	722.7797	123107.1284	0.016	396.070	5.179	1609.7440	8735.8684	8735.8684	8735.8684	8735.8684	SAMPLE					
10	546.6581	385.9453	250	844.5260	844.5260	127039.3109	0.017	349.800	4.872	1769.4337	9044.1889	9044.1889	9044.1889	9044.1889	SAMPLE					
11	144.5099	102.0253	250	211.3396	211.3396	109.3361	0.587	0.500	0.293	64.1273	64.5779	64.5779	64.5779	64.5779	SAMPLE					
12	71.9884	50.8089	250	111.5491	111.5491	109.3093	0.332	0.660	0.219	36.2748	37.0651	37.0651	37.0651	37.0651	SAMPLE					
13	74.4105	52.5344	250	115.3375	115.3375	109.5966	0.341	0.640	0.218	37.3501	38.1221	38.1221	38.1221	38.1221	SAMPLE					
14	138.0514	97.4655	250	211.7033	211.7033	-5.0367	11.716	-0.030	0.351	59.0114	59.0127	59.0127	59.0127	59.0127	SAMPLE					
15	141.2099	99.6954	250	216.5470	216.5470	245.5754	0.290	1.430	0.415	71.2556	73.2786	73.2786	73.2786	73.2786	SAMPLE					
16	136.1953	96.1551	250	208.6570	208.6570	321.3271	0.224	1.940	0.435	72.0352	75.4315	75.4315	75.4315	75.4315	SAMPLE					
17	561.7050	396.5986	250	1106.7297	1106.7297	1066792.5926	0.013	3405.810	33.723	10562.7116	75070.0579	75070.0579	75070.0579	75070.0579	SAMPLE					
18	114.4414	80.7966	250	167.8171	167.8171	118.2536	0.436	0.600	0.262	51.5535	52.2072	52.2072	52.2072	52.2072	MB					
19	135.3608	95.5959	250	207.5773	207.5773	55.9700	1.084	0.340	0.389	60.6780	60.8031	60.8031	60.8031	60.8031	DUP	0.0%	0.2128	5543.6203	105.6%	
20	276.4074	195.1460	250	443.6482	443.6482	5654.2021	0.059	21.900	1.286	343.7942	533.3280	533.3280	533.3280	533.3280	LCS					

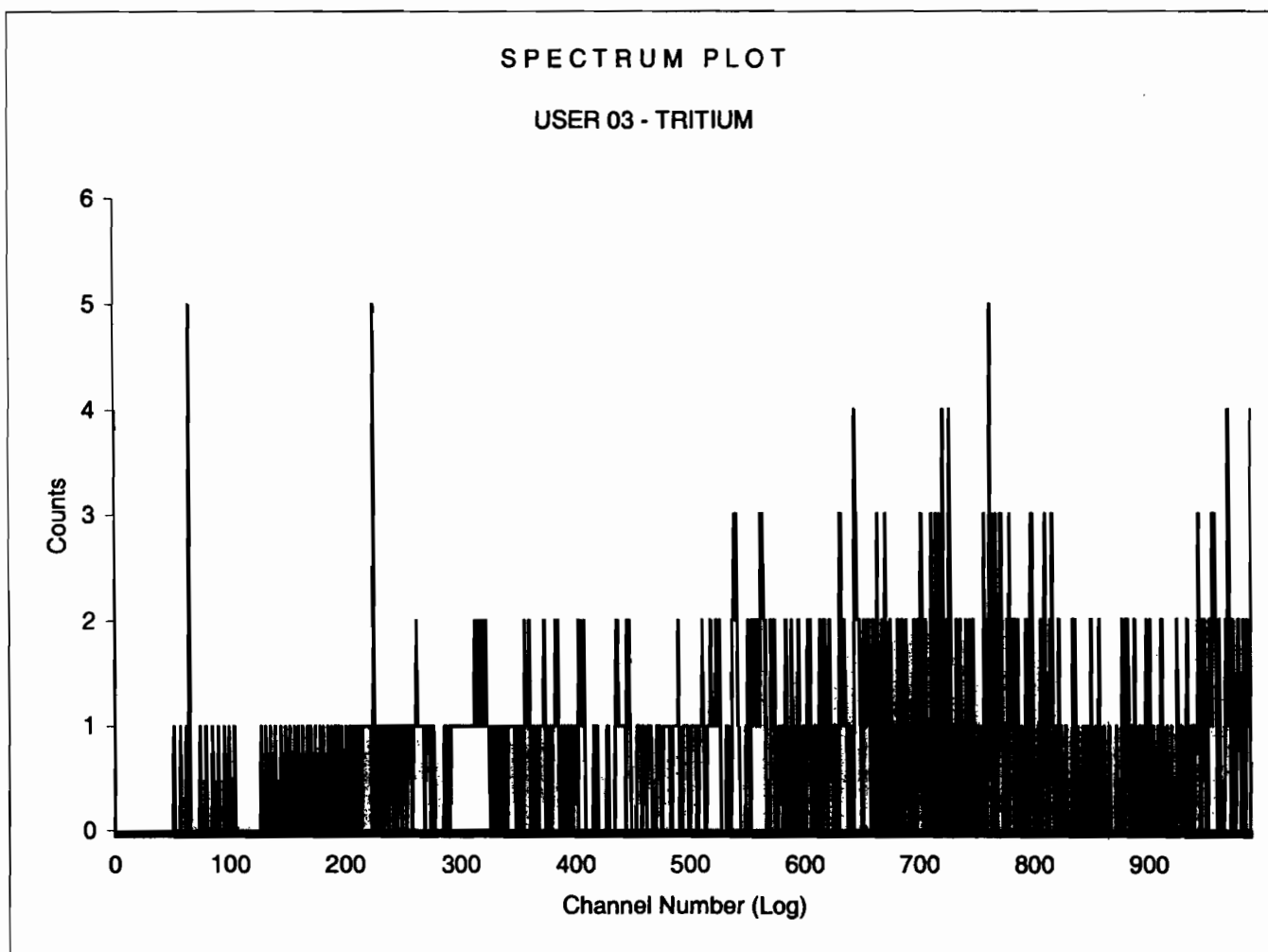
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User Number 3
 User Id TRITIUM
 User Comments RED

Scintillator Choice: LIQUID

Sam	Rack	Time	H#	Raw CPM1	Raw CPM2	CPM Iso1	%Err1	CPM Iso2	%Err2	LumEx	EITime
1	45-1	15.00	114.4	3.73	46.47	3.13	31.85	45.87	7.67	1.41	15.86
2	45-2	15.00	115.1	168.20	275.67	167.80	3.99	275.27	3.11	0.19	32.23
3	45-3	15.00	114.4	523.87	795.73	523.47	2.26	795.33	1.83	0.07	48.60
4	45-4	15.00	114.4	168.13	283.67	167.73	3.99	283.27	3.07	0.18	64.96
5	45-5	15.00	113.2	1305.13	1921.00	1304.73	1.43	1920.60	1.18	0.03	81.32
6	45-6	15.00	112.8	3988.27	5841.07	3987.80	0.82	5840.60	0.68	0.00	97.73
7	45-7	15.00	114.4	497.67	751.87	497.27	2.32	751.47	1.88	0.07	114.10
8	45-8	15.00	114.4	1049.93	1552.00	1049.53	1.59	1551.60	1.31	0.04	130.47
9	45-9	15.00	112.7	4040.93	5932.07	4040.47	0.81	5931.60	0.67	0.00	146.89
10	45-10	15.00	114.8	399.67	620.07	399.20	2.59	619.60	2.08	0.10	163.27
11	45-11	15.00	115.5	353.33	548.33	352.93	2.75	547.93	2.21	0.10	179.63

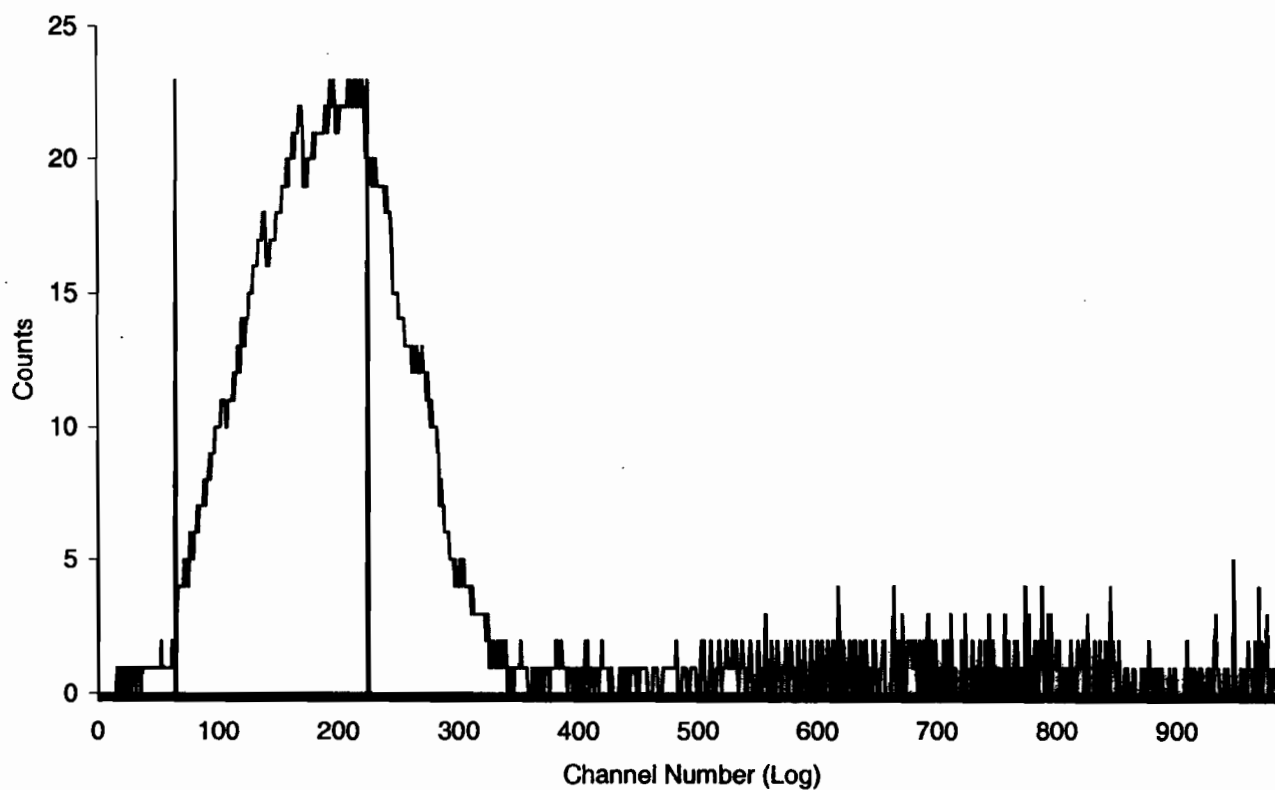
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Spectrum Type	Log Counts		
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User Id	TRITIUM		
User Comment	RED		
Scintillator	LIQUID		
Sample, Rack-Pos, Time:	1	45-1	15.00
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Win2: - Start, End, Counts:	0	990	689



Sample Count Start Time:	9 Mar 2010 06:44:56		
Data Capture Date	09 Mar 2010 06:59:25		
User Filename	S03030945-2A.XLS		
	U03030945-1A.XLS		
Spectrum Type	Log Counts		
User Number	03		
User Id	TRITIUM		
User Comment	RED		
Scintillator	LIQUID		
Sample, Rack-Pos, Time:	2	45-2	15.00
H#, Total Counts:	115.1	4239	
Win1: Tritium - Start, End, Counts:	65	225	2534
Win2: - Start, End, Counts:	0	990	4131

SPECTRUM PLOT

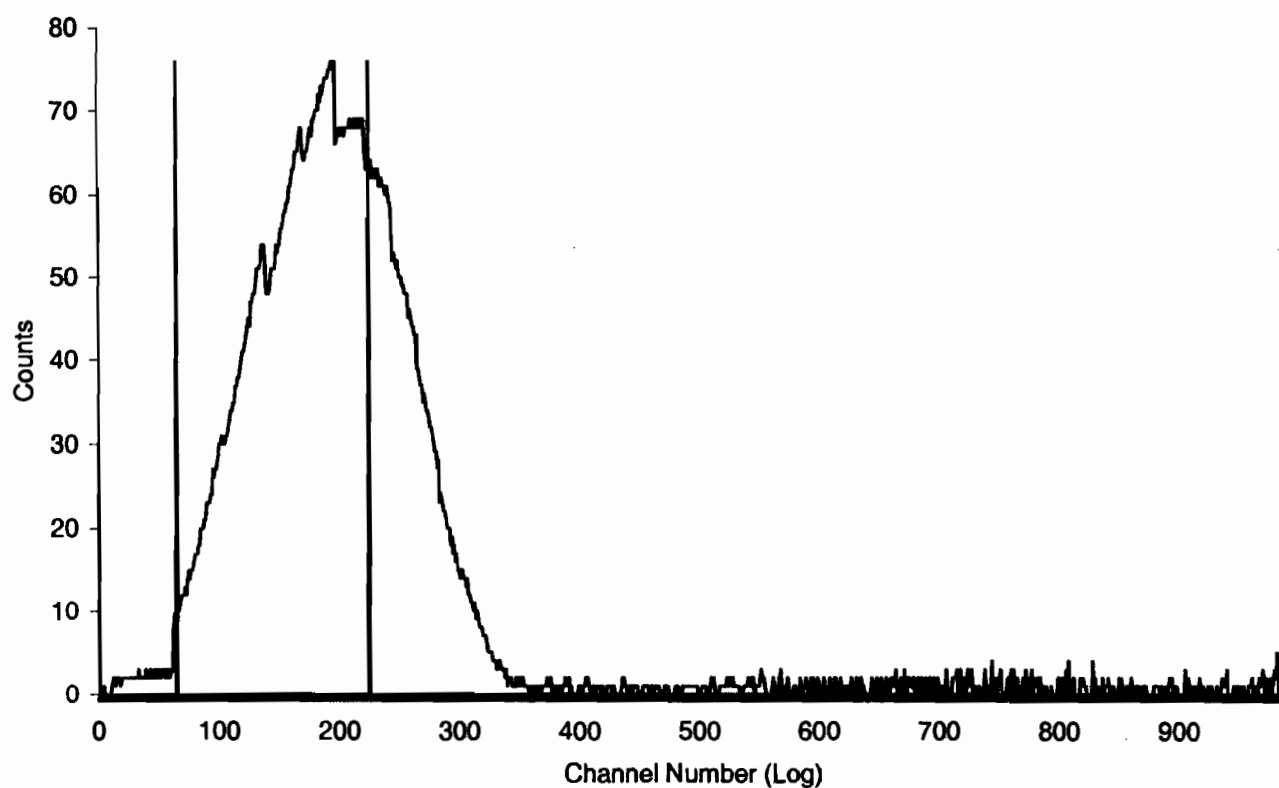
USER 03 - TRITIUM



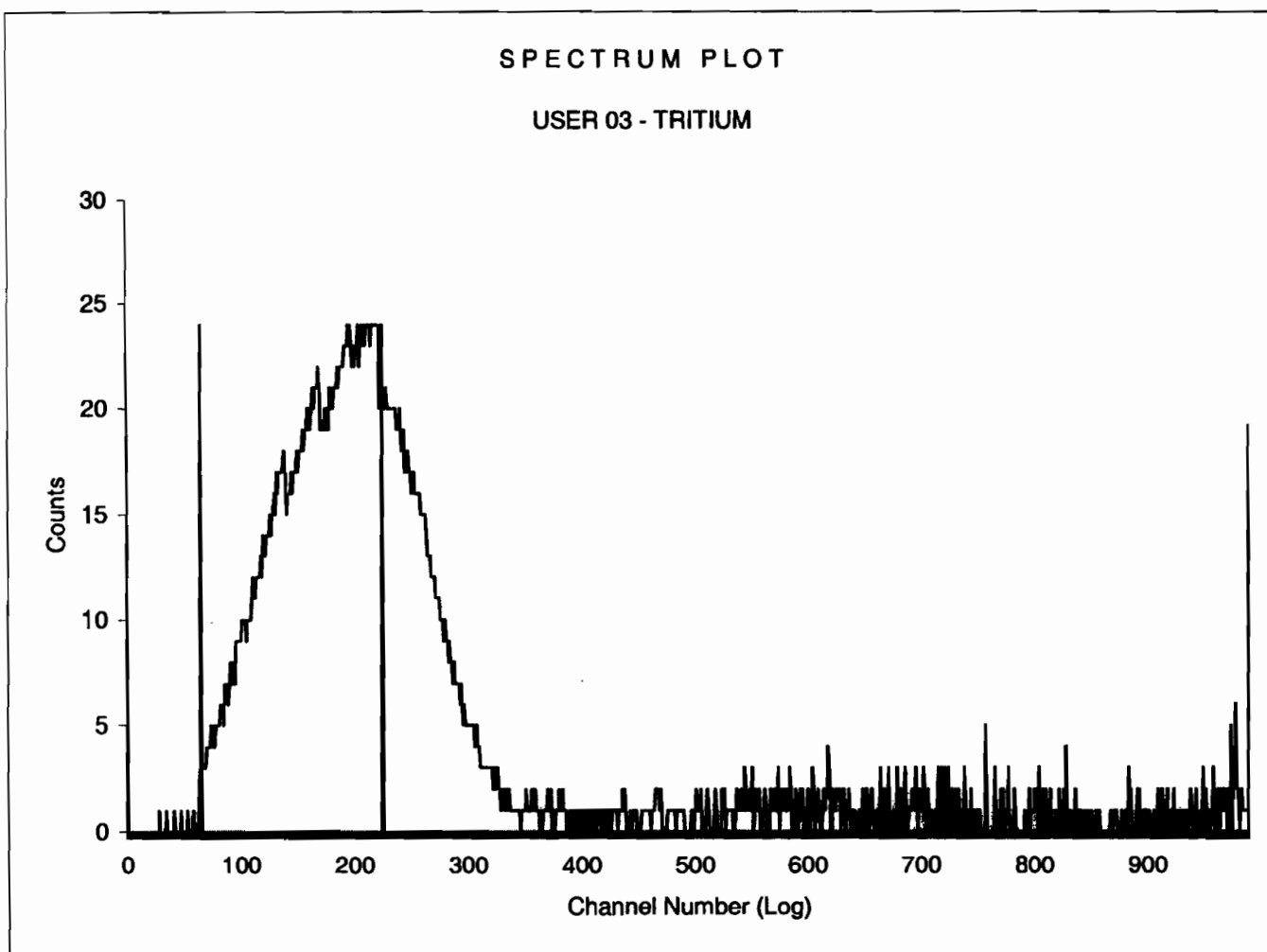
Sample Count Start Time:	9 Mar 2010 07:01:18		
Data Capture Date	09 Mar 2010 07:15:47		
User Filename	S03030945-3A.XLS		
	U03030945-1A.XLS		
Spectrum Type	Log Counts		
User Number	03		
User Id	TRITIUM		
User Comment	RED		
Scintillator	LIQUID		
Sample, Rack-Pos, Time:	3	45-3	15.00
H#, Total Counts:	114.4	12073	
Win1: Tritium - Start, End, Counts:	65	225	7904
Win2: - Start, End, Counts:	0	990	11933

SPECTRUM PLOT

USER 03 - TRITIUM



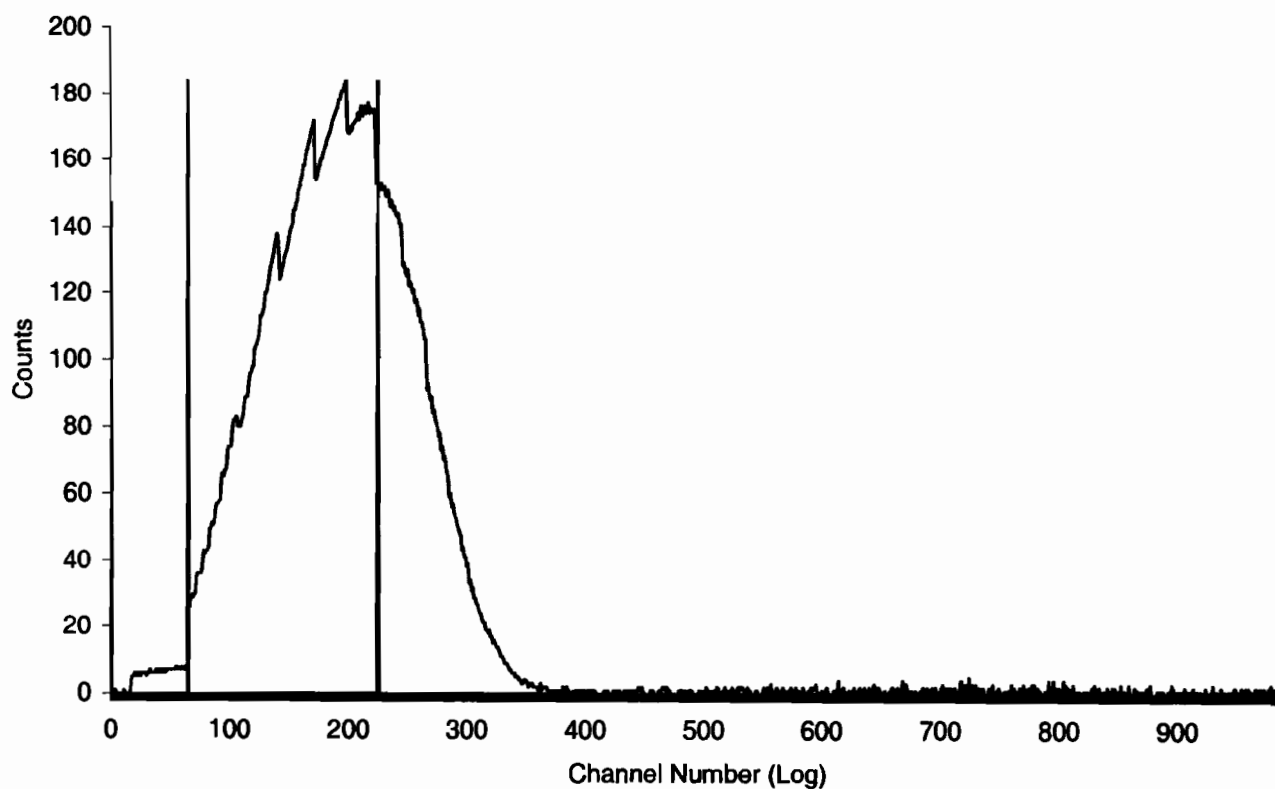
Sample Count Start Time:	9 Mar 2010 07:17:40		
Data Capture Date	09 Mar 2010 07:32:08		
User Filename	S03030945-4A.XLS		
	U03030945-1A.XLS		
Spectrum Type	Log Counts		
User Number	03		
User Id	TRITIUM		
User Comment	RED		
Scintillator	LIQUID		
Sample, Rack-Pos, Time:	4	45-4	15.00
H#, Total Counts:	114.4	4229	
Win1: Tritium - Start, End, Counts:	65	225	2533
Win2: - Start, End, Counts:	0	990	4217



Sample Count Start Time:	9 Mar 2010 07:34:01		
Data Capture Date	09 Mar 2010 07:49:27		
User Filename	S03030945-5A.XLS		
	U03030945-1A.XLS		
Spectrum Type	Log Counts		
User Number	03		
User Id	TRITIUM		
User Comment	RED		
Scintillator	LIQUID		
Sample, Rack-Pos, Time:	5	45-5	15.00
H#, Total Counts:	113.2	28975	
Win1: Tritium - Start, End, Counts:	65	225	19716
Win2: - Start, End, Counts:	0	990	28807

SPECTRUM PLOT

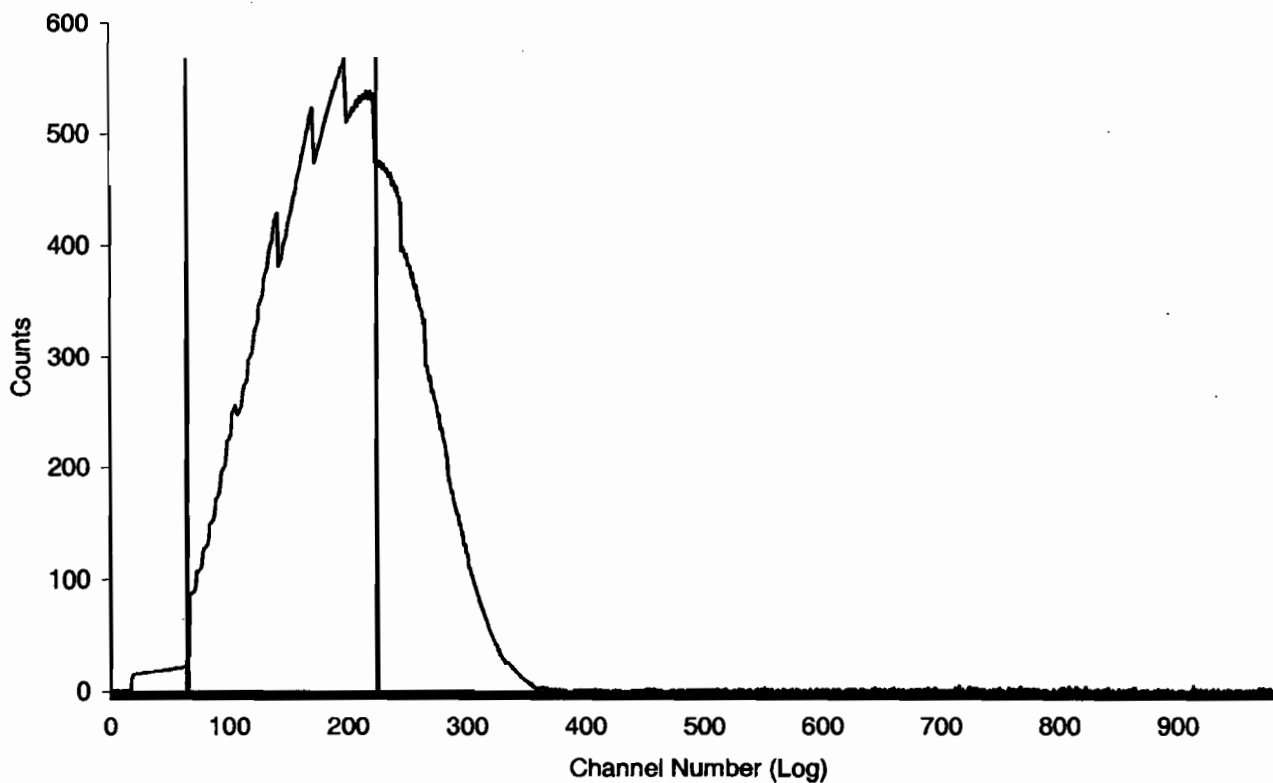
USER 03 - TRITIUM



Sample Count Start Time:	9 Mar 2010 07:50:26		
Data Capture Date	09 Mar 2010 08:04:56		
User Filename	S03030945-6A.XLS		
	U03030945-1A.XLS		
Spectrum Type	Log Counts		
User Number	03		
User Id	TRITIUM		
User Comment	RED		
Scintillator	LIQUID		
Sample, Rack-Pos, Time:	6	45-6	15.00
H#, Total Counts:	112.8	87690	
Win1: Tritium - Start, End, Counts:	65	225	60271
Win2: - Start, End, Counts:	0	990	87598

SPECTRUM PLOT

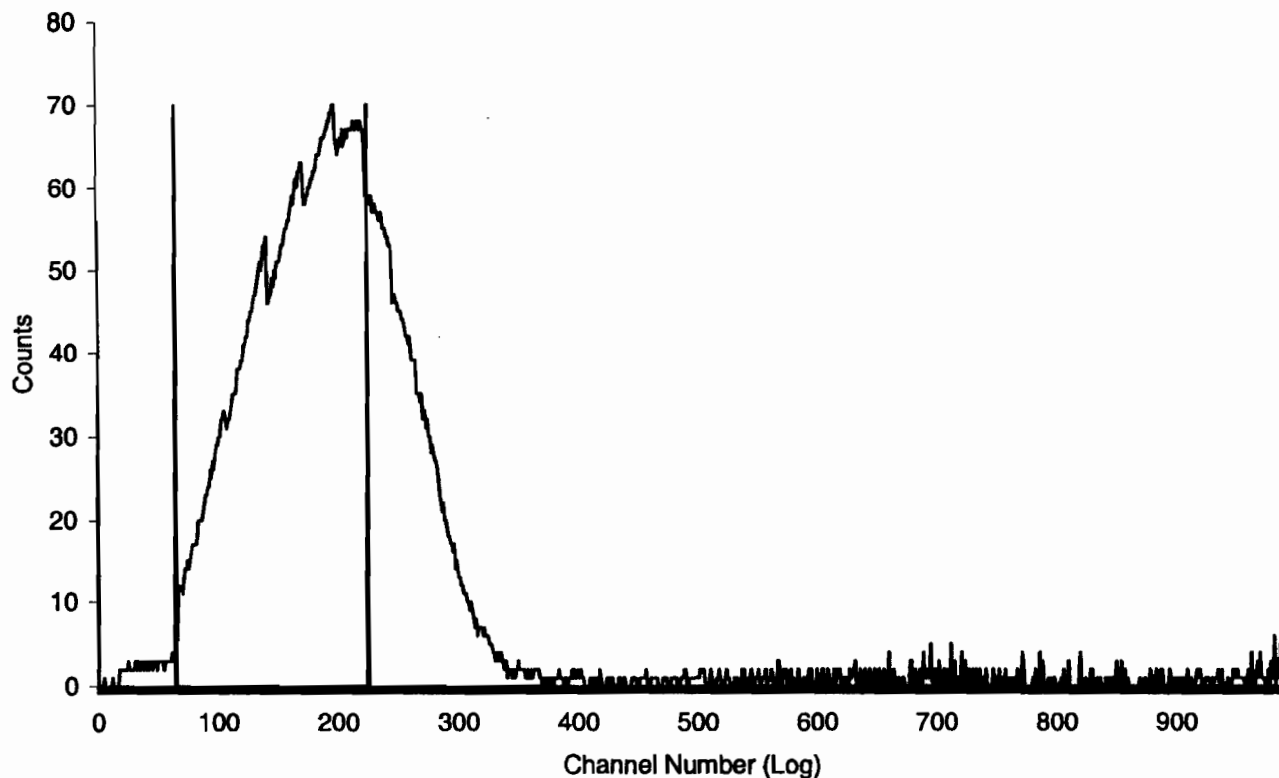
USER 03 - TRITIUM



Sample Count Start Time:	9 Mar 2010 08:06:48		
Data Capture Date	09 Mar 2010 08:21:18		
User Filename	S03030945-7A.XLS		
	U03030945-1A.XLS		
Spectrum Type	Log Counts		
User Number	03		
User Id	TRITIUM		
User Comment	RED		
Scintillator	LIQUID		
Sample, Rack-Pos, Time:	7	45-7	15.00
H#, Total Counts:	114.4	11442	
Win1: Tritium - Start, End, Counts:	65	225	7515
Win2: - Start, End, Counts:	0	990	11274

SPECTRUM PLOT

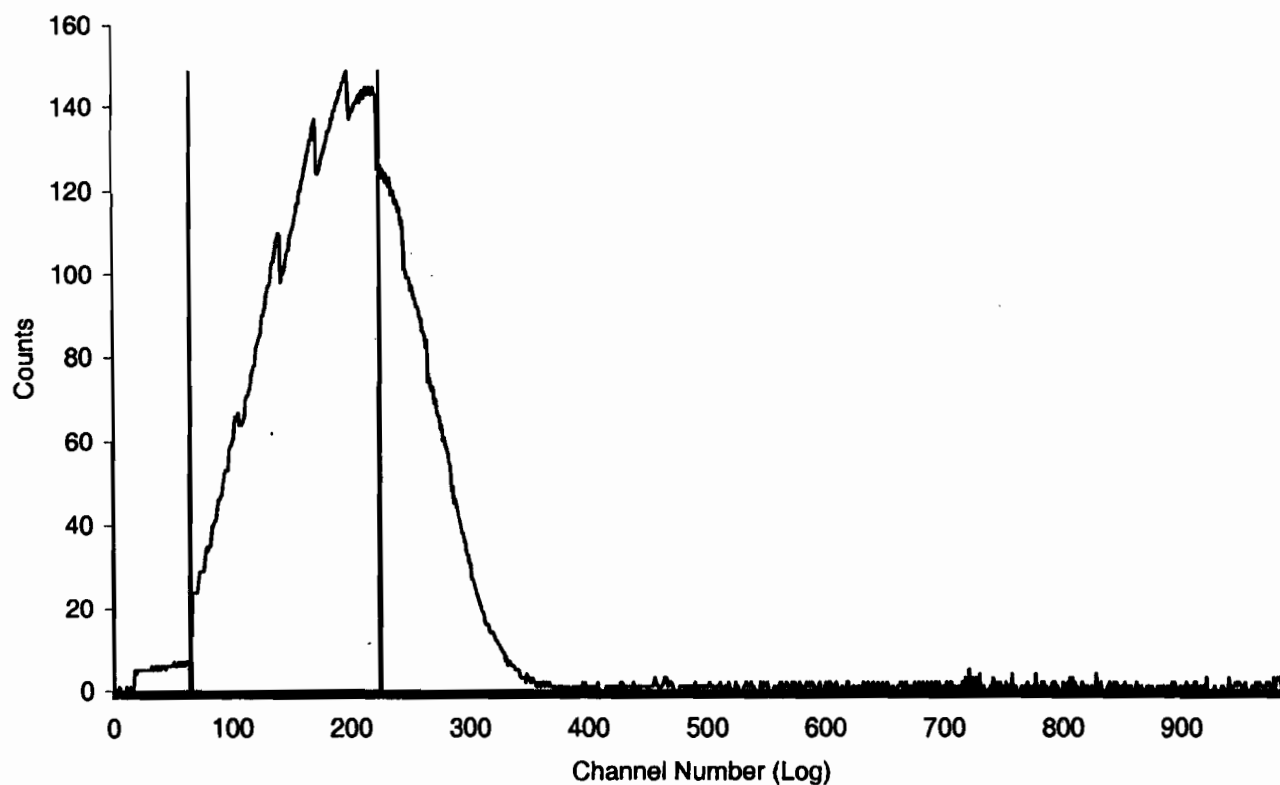
USER 03 - TRITIUM



Sample Count Start Time:	9 Mar 2010 08:23:10		
Data Capture Date	09 Mar 2010 08:37:40		
User Filename	S03030945-8A.XLS		
	U03030945-1A.XLS		
Spectrum Type	Log Counts		
User Number	03		
User Id	TRITIUM		
User Comment	RED		
Scintillator	LIQUID		
Sample, Rack-Pos, Time:	8	45-8	15.00
H#, Total Counts:	114.4	23367	
Win1: Tritium - Start, End, Counts:	65	225	15862
Win2: - Start, End, Counts:	0	990	23269

SPECTRUM PLOT

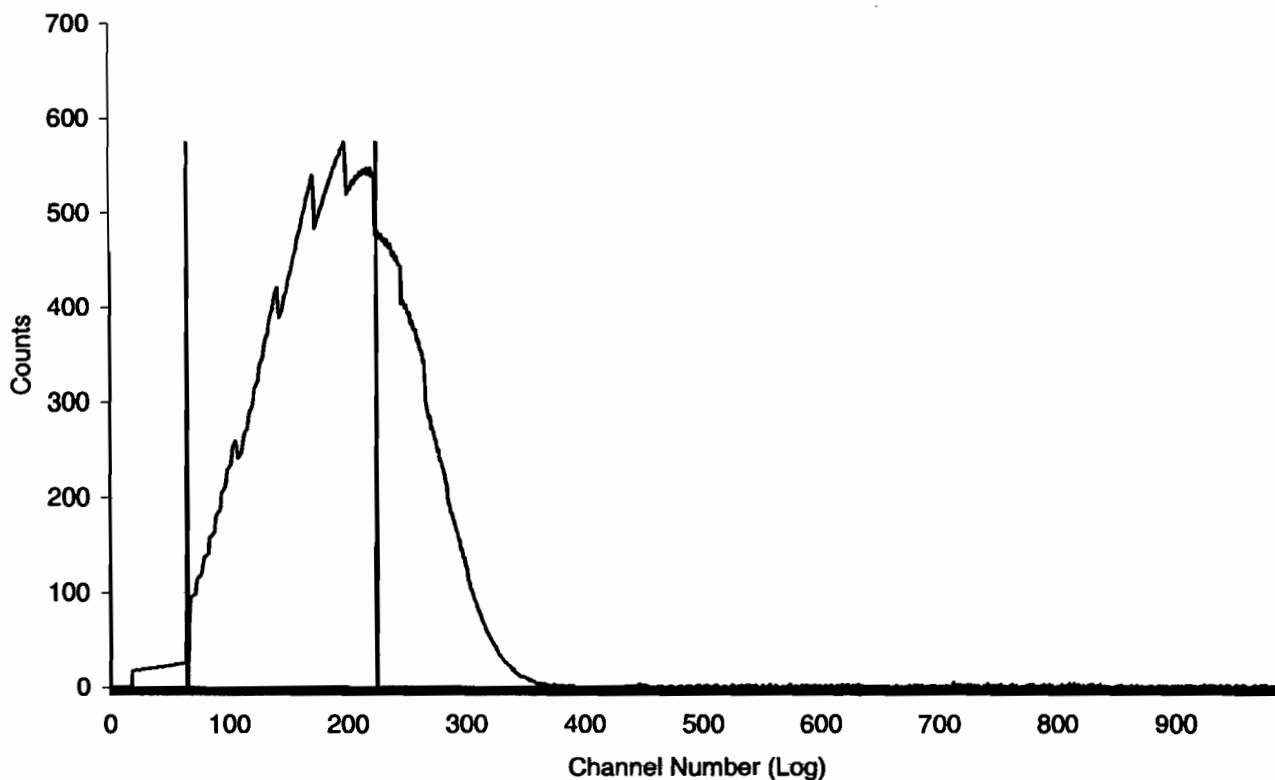
USER 03 - TRITIUM



Sample Count Start Time:	9 Mar 2010 08:39:35		
Data Capture Date	09 Mar 2010 08:54:05		
User Filename	S03030945-9A.XLS		
	U03030945-1A.XLS		
Spectrum Type	Log Counts		
User Number	03		
User Id	TRITIUM		
User Comment	RED		
Scintillator	LIQUID		
Sample, Rack-Pos, Time:	9	45-9	15.00
H#, Total Counts:	112.7	89046	
Win1: Tritium - Start, End, Counts:	65	225	61062
Win2: - Start, End, Counts:	0	990	88957

SPECTRUM PLOT

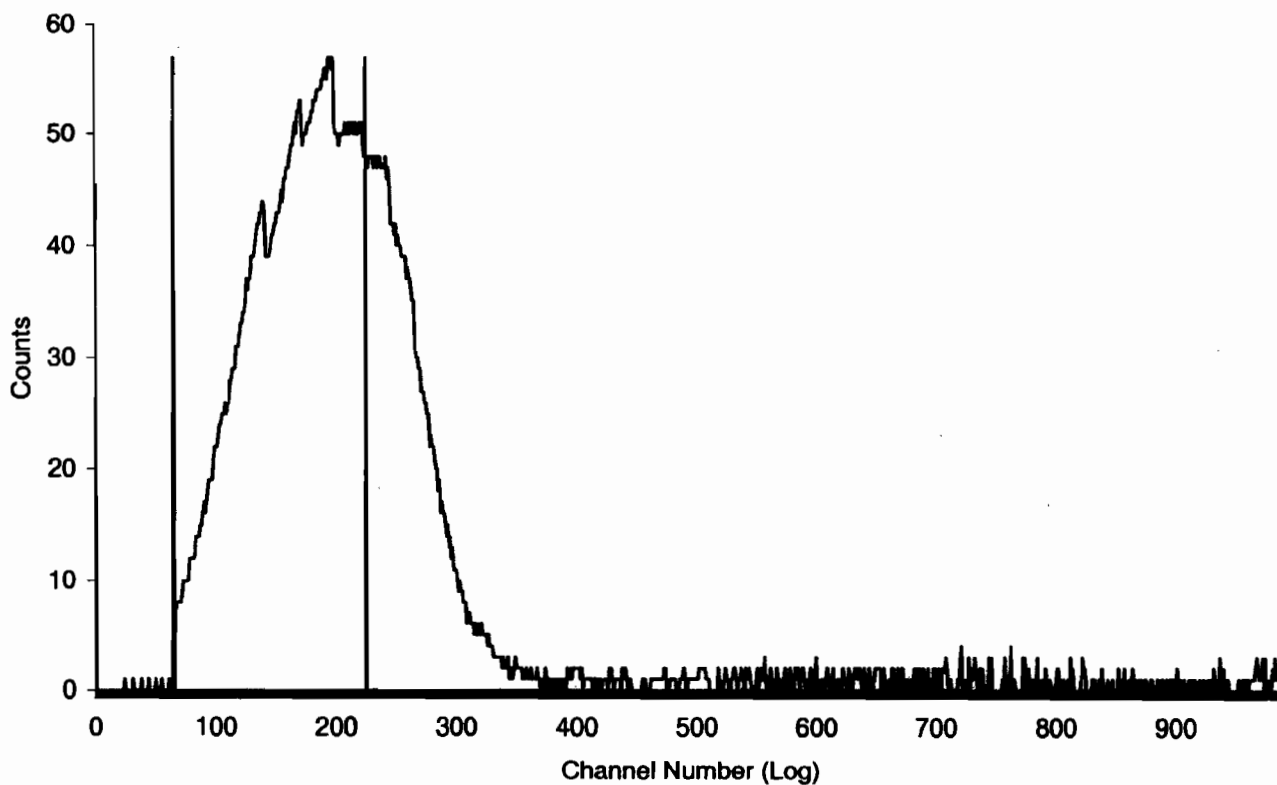
USER 03 - TRITIUM



Sample Count Start Time:	9 Mar 2010 08:55:58		
Data Capture Date	09 Mar 2010 09:10:27		
User Filename	S03030945-10A.XLS		
	U03030945-1A.XLS		
Spectrum Type	Log Counts		
User Number	03		
User Id	TRITIUM		
User Comment	RED		
Scintillator	LIQUID		
Sample, Rack-Pos, Time:	10	45-10	15.00
H#, Total Counts:	114.8	9286	
Win1: Tritium - Start, End, Counts:	65	225	6036
Win2: - Start, End, Counts:	0	990	9198

SPECTRUM PLOT

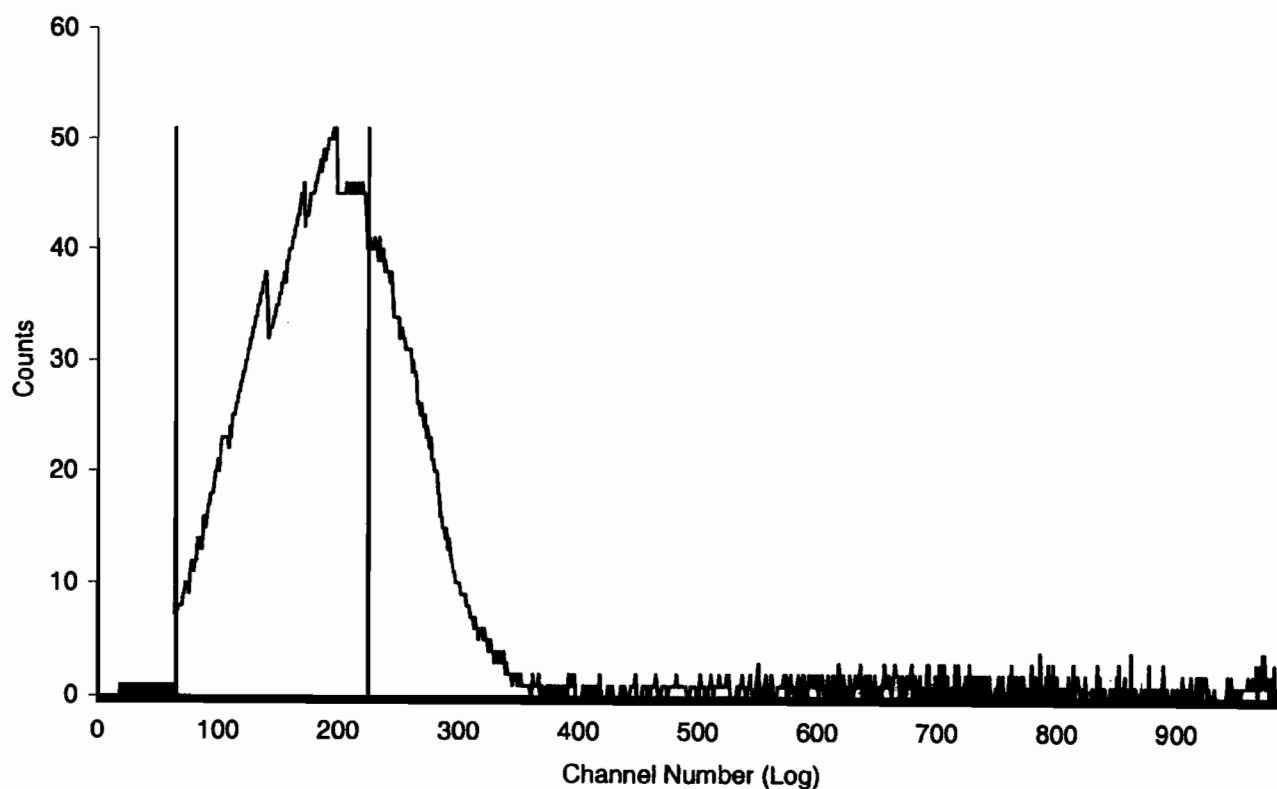
USER 03 - TRITIUM



Sample Count Start Time:	9 Mar 2010 09:12:20		
Data Capture Date	09 Mar 2010 09:26:49		
User Filename	S03030945-11A.XLS		
	U03030945-1A.XLS		
Spectrum Type	Log Counts		
User Number	03		
User Id	TRITIUM		
User Comment	RED		
Scintillator	LIQUID		
Sample, Rack-Pos, Time:	11	45-11	15.00
H#, Total Counts:	115.5	8241	
Win1: Tritium - Start, End, Counts:	65	225	5333
Win2: - Start, End, Counts:	0	990	8157

SPECTRUM PLOT

USER 03 - TRITIUM



REGISTRY

TUE 9 MAR 2010 14:30

*** DIRECTORY PATH :S:\LSC\O\DA\956742A0 ***

PARAMETER GROUP: 8
ID: H-3 (1)

00A PROGRAM MODE 6 ->

ORDER	POS	ID	CTIME	COUNTS	CUCNTS	MCW	REP	STD	STMS	STIME
1	21	BKG	50:00	1.0E04	NO LIM	1	1	Y	1/10	1:00
2	22	247360001	50:00	1.0E04	NO LIM	1	1	Y	1/10	1:00
3	23	247360002	50:00	1.0E04	NO LIM	1	1	Y	1/10	1:00
4	24	247360003	50:00	1.0E04	NO LIM	1	1	Y	1/10	1:00
5	1	1	10:00	6.0E01	2.6E01	1	1	Y	1/10	1:00

JP 3/10/10

NUMBER OF CYCLES 1
COINCIDENCE BIAS (L/H) L

MCA INPUT	TRIGG.	INHIBIT	MEMORY SPLIT
1 LRSUM	DCOS	G	L*R
2 GSUM	G		L*R

WINDOW	CHANNELS	MCA	HALF
1	50- 175	1	2
2	5- 320	1	2
3	1- 1024	1	2
4	50- 320	1	1
5	50- 270	1	1
6	60- 220	1	1
7	1- 1024	2	1
8	1- 1024	2	2

SELECTED PRINTOUT FOR TERMINAL 1 (A)

SELECTED PRINTOUT FOR TERMINAL 2 (B)

1. POS	2. ID	3. CTIME	4. SQP	5. CPM1	6. CPM2	7. CPM3
SEND SPECTRA		12				
RESOLUTION OF SPECTRA	1024					
LISTING	Y					
INSTRUMENT NUMBER	1					

POS	ID	CTIME	SQP	CPM1	CPM2	CPM3
Q012101N.001	9 MAR 2010 15:23					
21	BKG	50:01.780	761.59	.87	2.25	6.56
Q022201N.001	9 MAR 2010 16:15					
22	247360001	50:01.780	760.29	1.92	3.23	7.63
Q032301N.001	9 MAR 2010 17:08					
23	247360002	50:01.780	761.20	1.53	2.88	8.16
Q042401N.001	9 MAR 2010 18:00					
24	247360003	50:01.773	755.72	1.51	3.04	7.79
Q050101N.001	9 MAR 2010 18:04					
1	1	0:01.773	916.30	5020.00	23207.00	100380.00

JP 3/10/10

Page 1

Instrument Type:
Data Capture Date:
FileName:
File Info:

Quantulus
TUE 9 MAR 2010 14:30
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s:\sc\files\orange\956742A0\U956742A0.xls

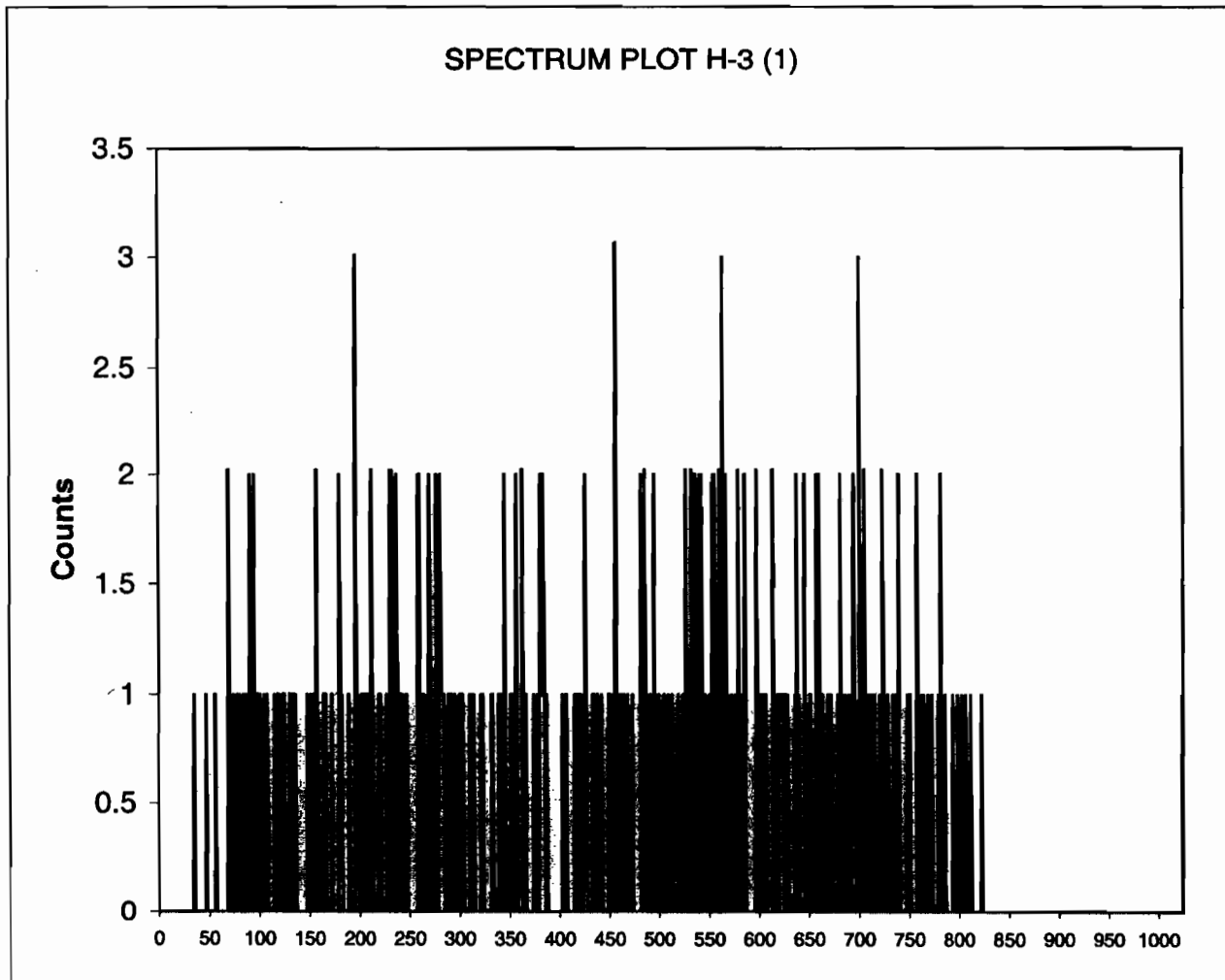
ID:
Comments:

H-3 (1)
ORANGE

Sample, Rack-Pos, Time:
Quench:
Start, End, X-Axis

1, BKG, 50.02967:
761.59
50-175

Channel Counts



32	0
33	0
34	0
35	1

Instrument Type:
Data Capture Date:
FileName:
File Info:

Quantulus
TUE 9 MAR 2010 14:30
s:\sc\files\orange\956742A0\SQ032301N.001.xls
s:\sc\files\orange\956742A0\U956742A0.xls

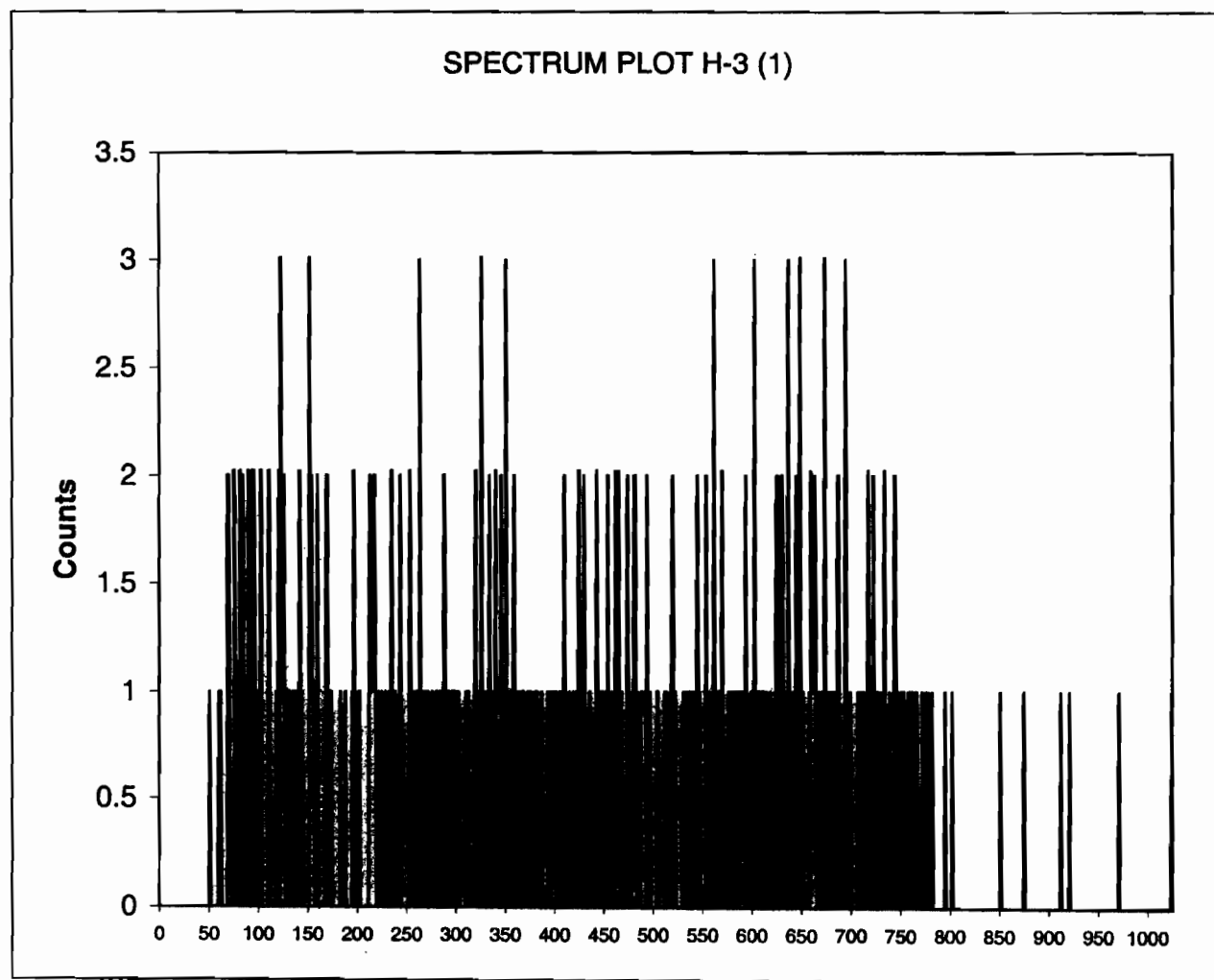
ID:
Comments:

H-3 (1)
ORANGE

Sample, Rack-Pos, Time:
Quench:
Start, End, X-Axis

3, 247360002, 50.02967:
761.2
50-175

Channel Counts



32 0
33 0
34 0
35 0

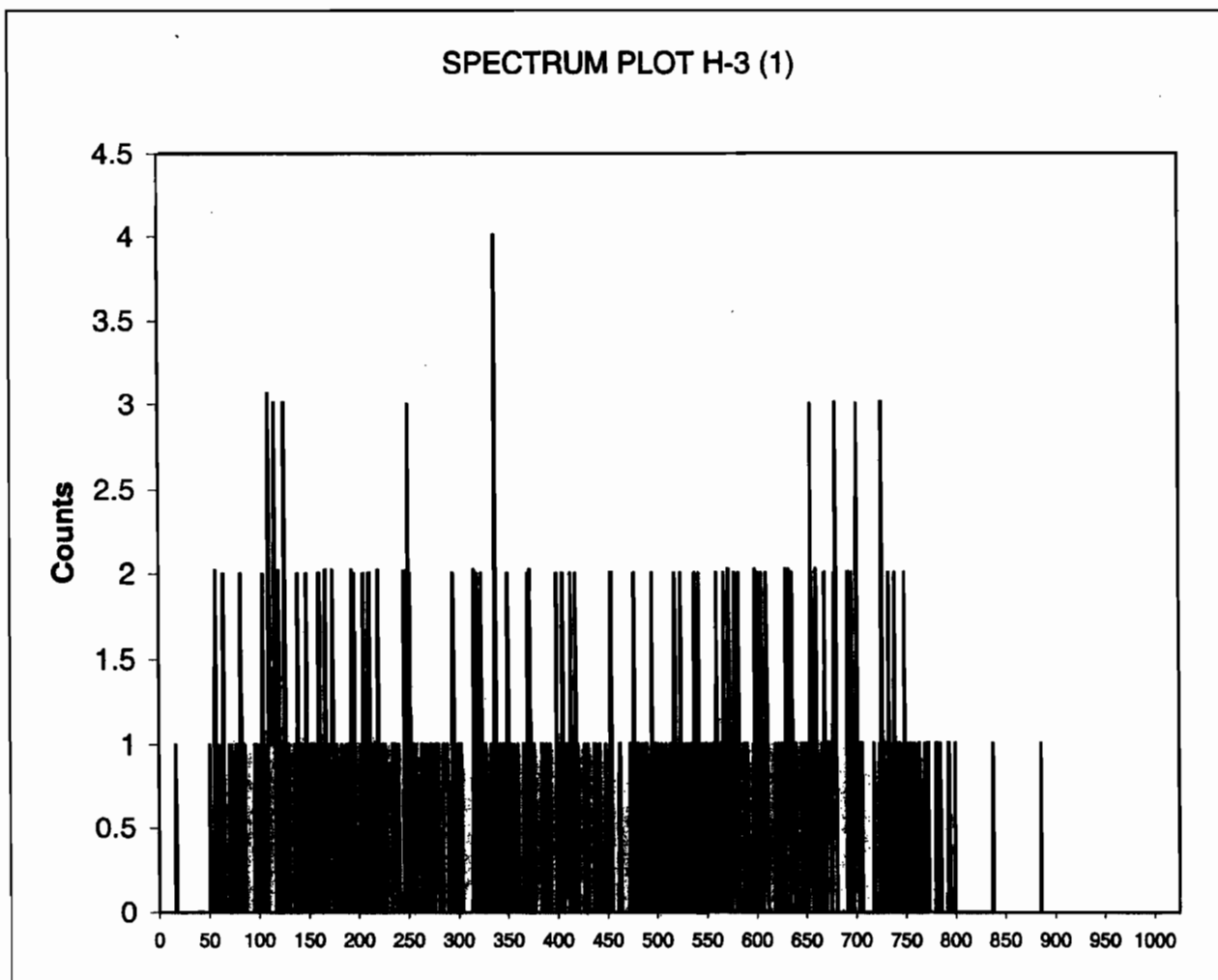
Instrument Type:
Data Capture Date:
FileName:
File Info:

Quantulus
TUE 9 MAR 2010 14:30
s:\sc\files\orange\956742A0\SQ042401N.001.xls
s:\sc\files\orange\956742A0\U956742A0.xls

ID: H-3 (1)
Comments: ORANGE

Sample, Rack-Pos, Time: 4, 247360003, 50.02955:
Quench: 755.72
Start, End, X-Axis 50-175

Channel Counts



32	0
33	0
34	0
35	0

REGISTRY

TUE 9 MAR 2010 8:13

*** DIRECTORY PATH :S:\LSC\Q\DA\956742A0 ***

PARAMETER GROUP: 8
ID: H-3(3)

00A PROGRAM MODE 6 ->

ORDER	POS	ID	CTIME	COUNTS	CUCNTS	MCW	REP	STD	STMS	STIME
1	31	BKG	15:00	1.0E04	NO LIM	1	1	Y	1/10	1:00
2	32	247360002	15:00	1.0E04	NO LIM	1	1	Y	1/10	1:00
3	33	247360003	15:00	1.0E04	NO LIM	1	1	Y	1/10	1:00
4	34	247360004	15:00	1.0E04	NO LIM	1	1	Y	1/10	1:00
5	35	247551001	15:00	1.0E04	NO LIM	1	1	Y	1/10	1:00
6	36	247551002	15:00	1.0E04	NO LIM	1	1	Y	1/10	1:00
7	37	247552002	15:00	1.0E04	NO LIM	1	1	Y	1/10	1:00
8	38	1202051381	15:00	1.0E04	NO LIM	1	1	Y	1/10	1:00
9	39	1202051382	15:00	1.0E04	NO LIM	1	1	Y	1/10	1:00
10	40	1202051383	15:00	1.0E04	NO LIM	1	1	Y	1/10	1:00

NUMBER OF CYCLES 1
COINCIDENCE BIAS (L/H) L

MCA INPUT	TRIGG.	INHIBIT	MEMORY SPLIT
1 LRSUM	DCOS	G	L*R
2 GSUM	G		L*R

WINDOW	CHANNELS	MCA	HALF
1	1- 174	1	2
2	1- 174	1	2
3	60- 220	1	2
4	50- 320	1	1
5	50- 270	1	1
6	60- 220	1	1
7	1- 1024	2	1
8	1- 1024	2	2

SELECTED PRINTOUT FOR TERMINAL 1 (A)

SELECTED PRINTOUT FOR TERMINAL 2 (B)

1.	2.	3.	4.	5.	6.	7.
POS	ID	CTIME	SQP	CPM1	CPM2	CPM3
SEND SPECTRA		12				
RESOLUTION OF SPECTRA	1024					
LISTING	Y					
INSTRUMENT NUMBER	1					

POS	ID	CTIME	SQP	CPM1	CPM2	CPM3
Q013101N.001	9 MAR 2010	8:31				
31	BKG	15:01.785	804.56	1.48	1.48	1.81
Q013201N.001	9 MAR 2010	8:48				
32	247360002	15:01.778	803.43	.94	.94	1.34
Q013301N.001	9 MAR 2010	9:06				

Page 1

REGISTRY

3-12-10 33 ~~247360003 15:01.785 802.68 .74 .74 1.14~~
Q043401N.001 9 MAR 2010 9:23
34 ~~247360004 15:01.785 804.55 1.07 1.07 1.61~~
Q053501N.001 9 MAR 2010 9:41
35 ~~247551001 15:01.785 804.27 1.68 1.68 2.15~~
Q063601N.001 9 MAR 2010 9:58
36 ~~247551002 15:01.785 803.52 2.76 2.76 3.30~~
Q073701N.001 9 MAR 2010 10:04
37 ~~247552002 2:59.785 797.19 3407.39 3407.39 3590.45~~
Q083801N.001 9 MAR 2010 10:21
38 ~~1202051381 15:01.778 798.38 1.01 1.01 1.21~~
Q093901N.001 9 MAR 2010 10:39
39 ~~1202051382 15:01.784 806.74 1.01 1.01 1.01~~
Q104001N.001 9 MAR 2010 10:56
40 1202051383 15:01.784 805.01 23.38 23.38 25.74

Instrument Type:
Data Capture Date:
FileName:
File Info:

Quantulus
TUE 9 MAR 2010 8:13
s:\sc\files\pink\956742A0\SQ013101N.001.xls
s:\sc\files\pink\956742A0\U956742A0.xls

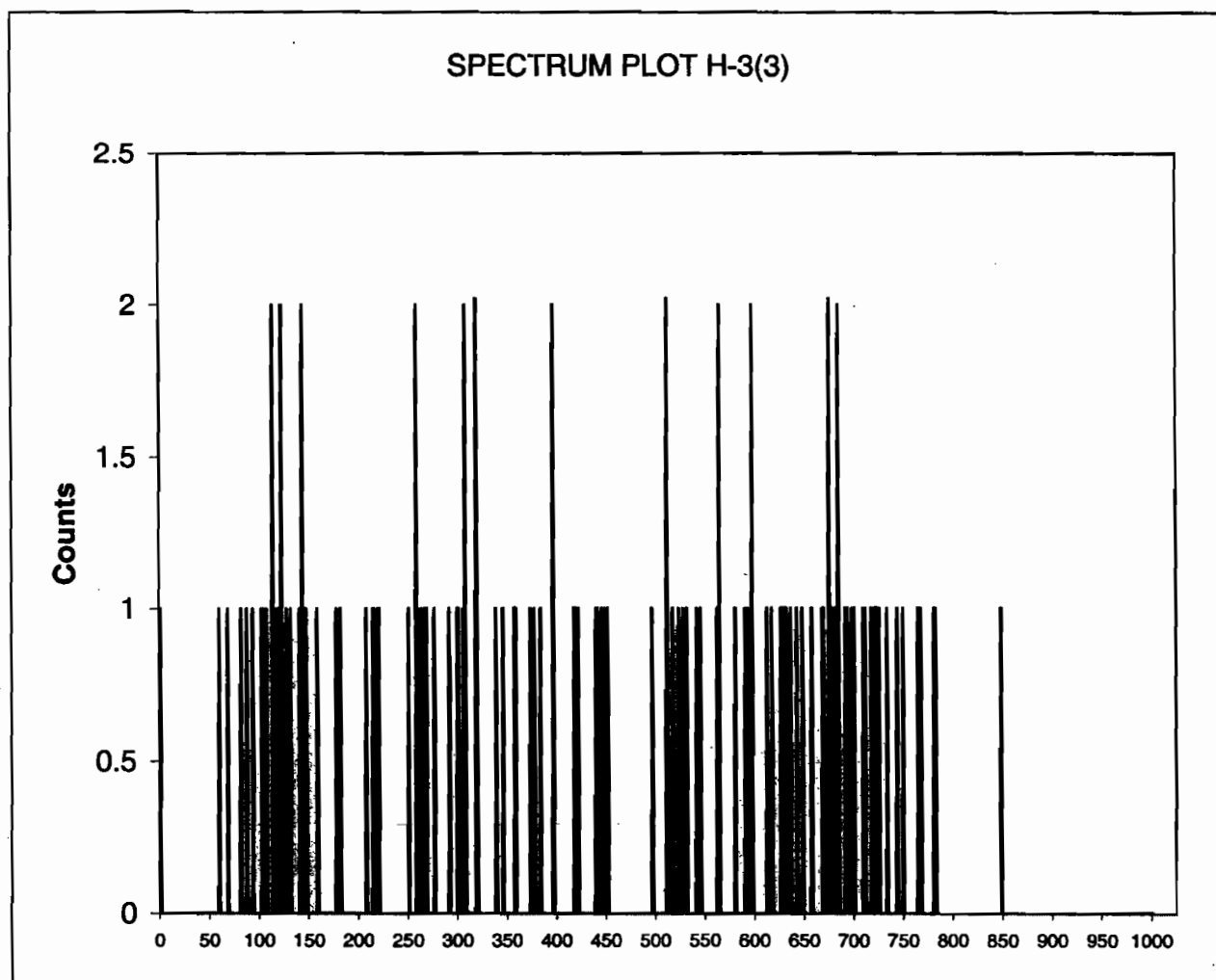
ID:
Comments:

H-3(3)
PINK

Sample, Rack-Pos, Time:
Quench:
Start, End, X-Axis

1, BKG, 15.02975:
804.56
1-174

Channel Counts



32	0
33	0
34	0
35	0

Instrument Type:
Data Capture Date:
FileName:
File Info:

Quantulus
TUE 9 MAR 2010 8:13
s:\sc\files\pink\956742A0\SQ073701N.001.xls
s:\sc\files\pink\956742A0\U956742A0.xls

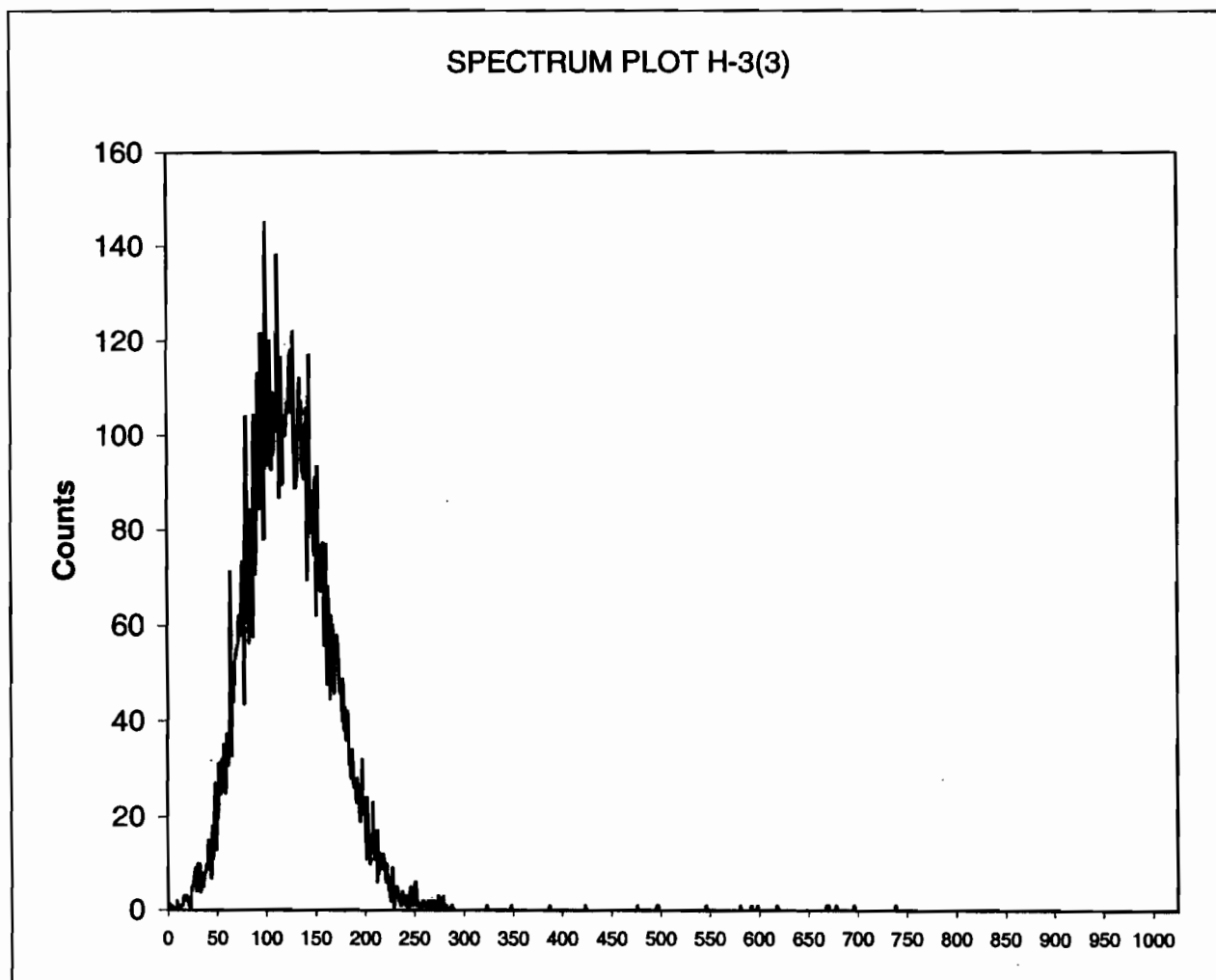
ID:
Comments:

H-3(3)
PINK

Sample, Rack-Pos, Time:
Quench:
Start, End, X-Axis

7, 247552002, 2.996417:
797.19
1-174

Channel Counts



32	10
33	4
34	5
35	8

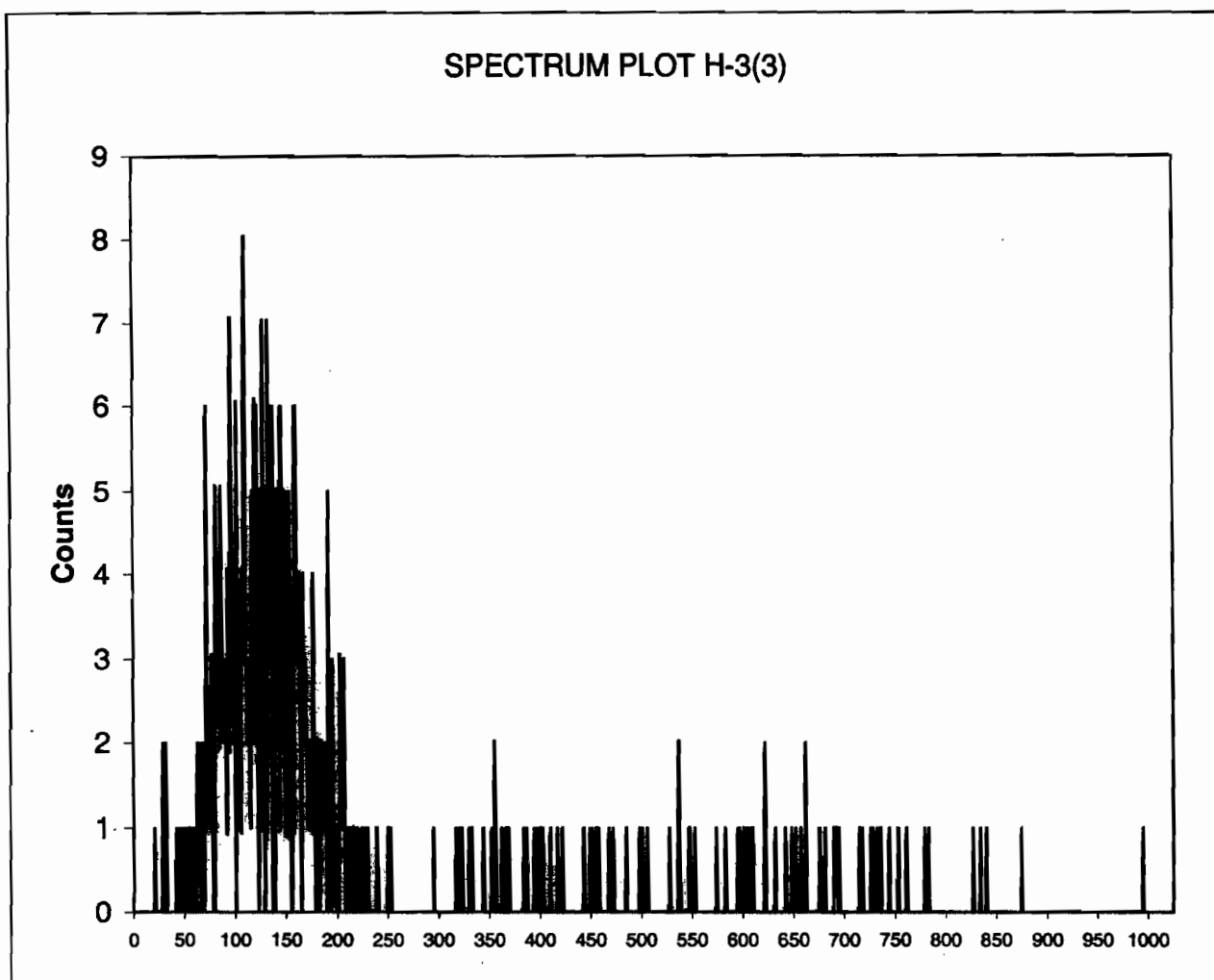
Instrument Type:
Data Capture Date:
FileName:
File Info:

Quantulus
TUE 9 MAR 2010 8:13
s:\sc\files\pink\956742A0\SQ104001N.001.xls
s:\sc\files\pink\956742A0\U956742A0.xls

ID: H-3(3)
Comments: PINK

Sample, Rack-Pos, Time: 10, 1202051383, 15.02973:
Quench: 805.01
Start, End, X-Axis 1-174

Channel Counts



32	2
33	0
34	0
35	0

REGISTRY

THU 11 MAR 2010 13:30

*** DIRECTORY PATH :S:\LSC\O\DA\956742A2 ***

PARAMETER GROUP: 8
ID: H-3 (2)

00A PROGRAM MODE 6 ->

ORDER	POS	ID	CTIME	COUNTS	CUCNTS	MCW	REP	STD	STMS	STIME
1	22	BKG	30:00	1.0E04	NO LIM	1	1	Y	1/10	1:00
2	25	247360004	30:00	1.0E04	NO LIM	1	1	Y	1/10	1:00
3	26	247551001	30:00	1.0E04	NO LIM	1	1	Y	1/10	1:00
4	27	247551002	30:00	1.0E04	NO LIM	1	1	Y	1/10	1:00
5	28	1202051381	30:00	1.0E04	NO LIM	1	1	Y	1/10	1:00
6	29	1202051382	30:00	1.0E04	NO LIM	1	1	Y	1/10	1:00

NUMBER OF CYCLES 1
COINCIDENCE BIAS (L/H) L

MCA INPUT	TRIGG.	INHIBIT	MEMORY SPLIT
1 LRSUM	DCOS	G	L*R
2 GSUM	G		L*R

WINDOW	CHANNELS	MCA	HALF
1	50- 175	1	2
2	5- 320	1	2
3	1- 1024	1	2
4	50- 320	1	1
5	50- 270	1	1
6	60- 220	1	1
7	1- 1024	2	1
8	1- 1024	2	2

SELECTED PRINTOUT FOR TERMINAL 1 (A)

SELECTED PRINTOUT FOR TERMINAL 2 (B)

1.	2.	3.	4.	5.	6.	7.
POS	ID	CTIME	SQP	CPM1	CPM2	CPM3
SEND SPECTRA	12					
RESOLUTION OF SPECTRA	1024					
LISTING	Y					
INSTRUMENT NUMBER	1					

POS	ID	CTIME	SQP	CPM1	CPM2	CPM3
Q012201N.001	11 MAR 2010	14:03				
22	BKG	30:01.780	759.32	1.87	3.30	8.31
Q022501N.001	11 MAR 2010	14:35				
25	247360004	30:01.780	758.98	1.84	3.13	7.83
Q032601N.001	11 MAR 2010	15:08				
26	247551001	30:01.780	755.24	3.30	4.56	10.22
Q042701N.001	11 MAR 2010	15:40				
27	247551002	30:01.780	761.16	3.81	5.35	10.80
Q052801N.001	11 MAR 2010	16:13				

Page 1

3-13-10 28 1202051381 30:01.780 754.26 .71 2.28 6.81
Q062901N.001 11 MAR 2010 16:45
29 1202051382 30:01.780 762.28 2.21 3.68 8.48

REGISTRY

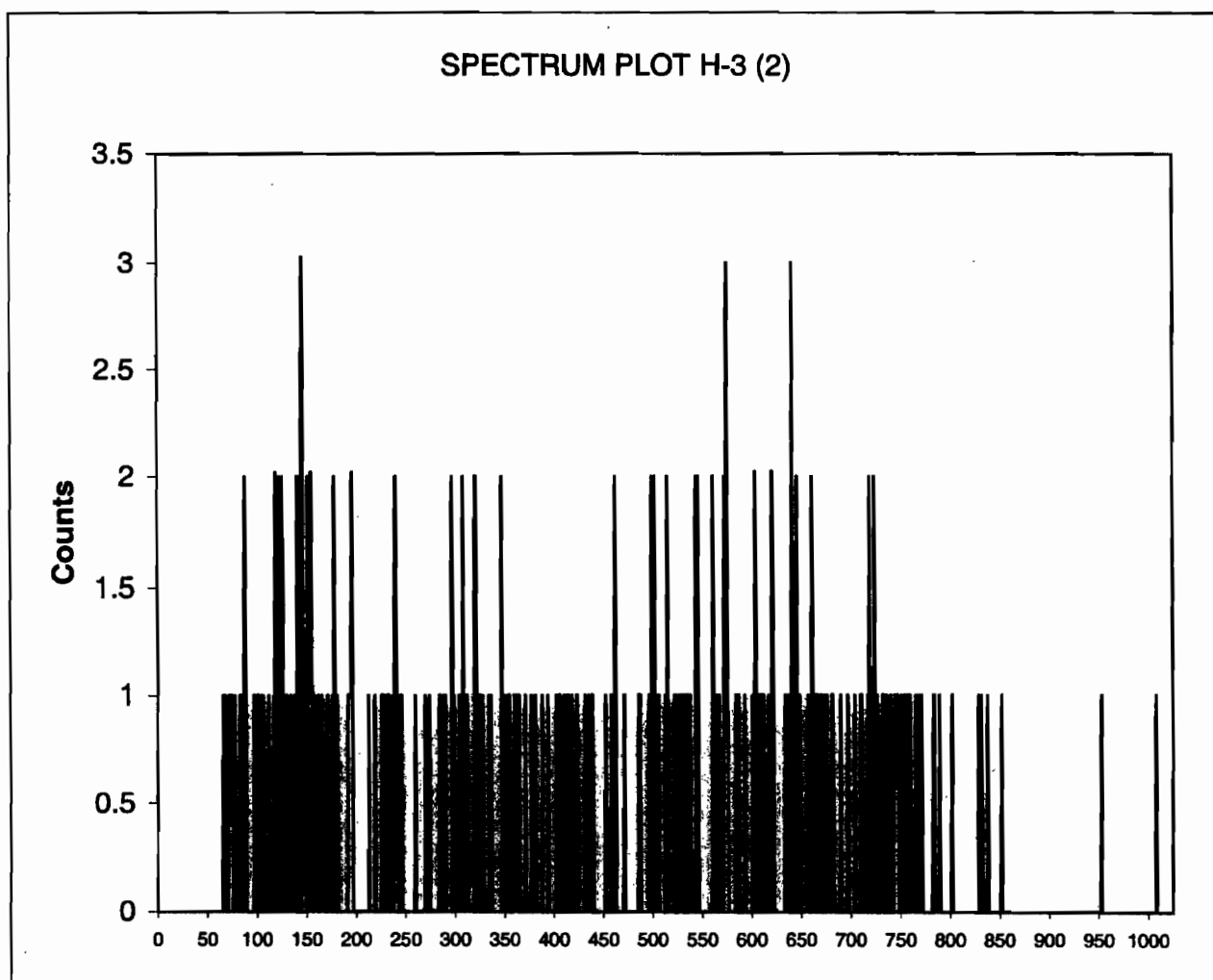
Instrument Type:
Data Capture Date:
FileName:
File Info:

Quantulus
THU 11 MAR 2010 13:30
s:\sc\files\orange\956742A2\SQ012201N.001.xls
s:\sc\files\orange\956742A2\U956742A2.xls

ID: H-3 (2)
Comments: ORANGE

Sample, Rack-Pos, Time: 1, BKG, 30.02967:
Quench: 759.32
Start, End, X-Axis 50-175

Channel Counts



32	0
33	0
34	0
35	0

Instrument Type:
Data Capture Date:
FileName:
File Info:

Quantulus
THU 11 MAR 2010 13:30
s:\sc\files\orange\956742A2\SQ022501N.001.xls
s:\sc\files\orange\956742A2\U956742A2.xls

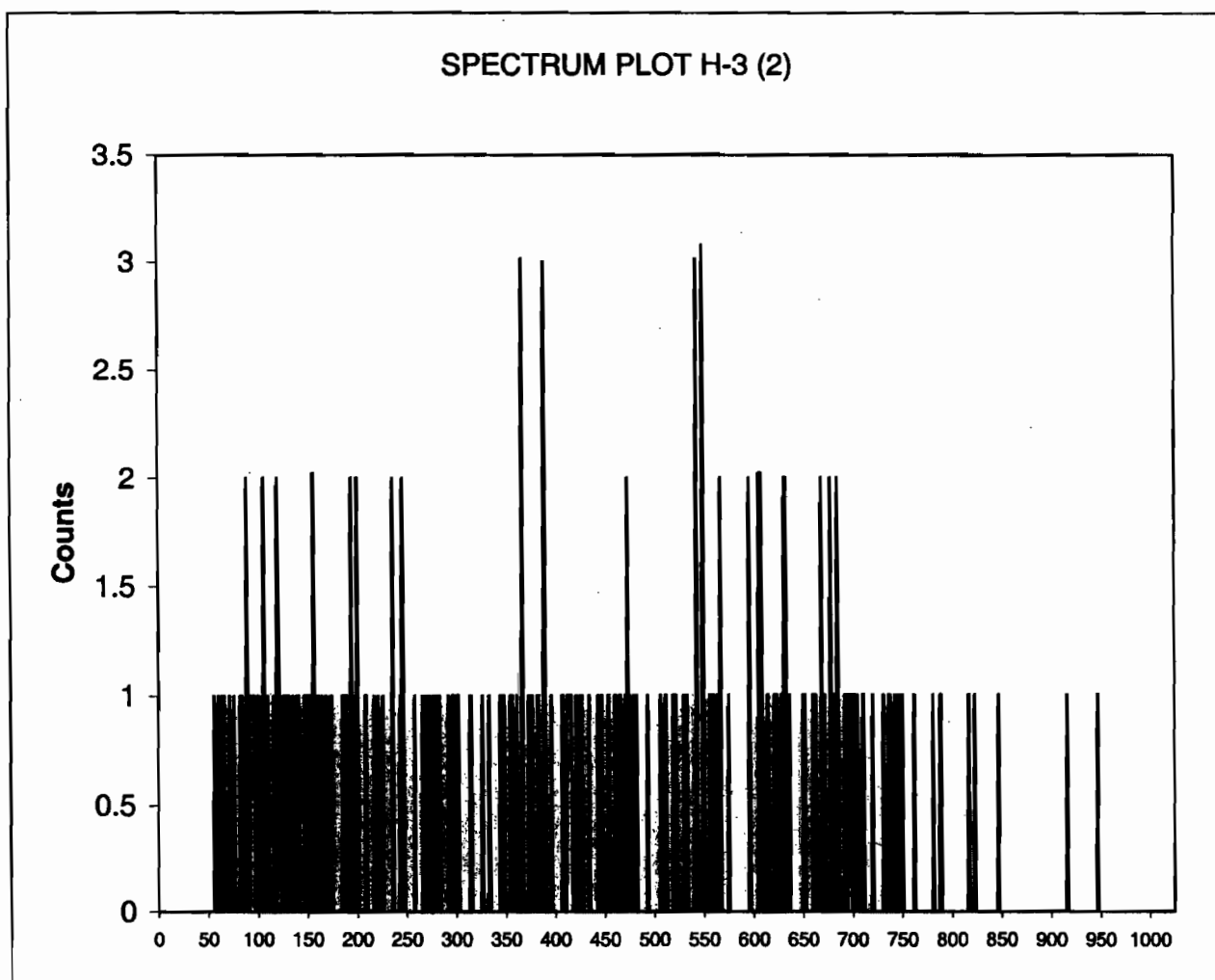
ID:
Comments:

H-3 (2)
ORANGE

Sample, Rack-Pos, Time:
Quench:
Start, End, X-Axis

2, 247360004, 30.02967:
758.98
50-175

Channel Counts



32 0
33 0
34 0
35 0

Instrument Type:
Data Capture Date:
FileName:
File Info:

Quantulus
THU 11 MAR 2010 13:30
s:\sc\files\orange\956742A2\SQ032601N.001.xls
s:\sc\files\orange\956742A2\U956742A2.xls

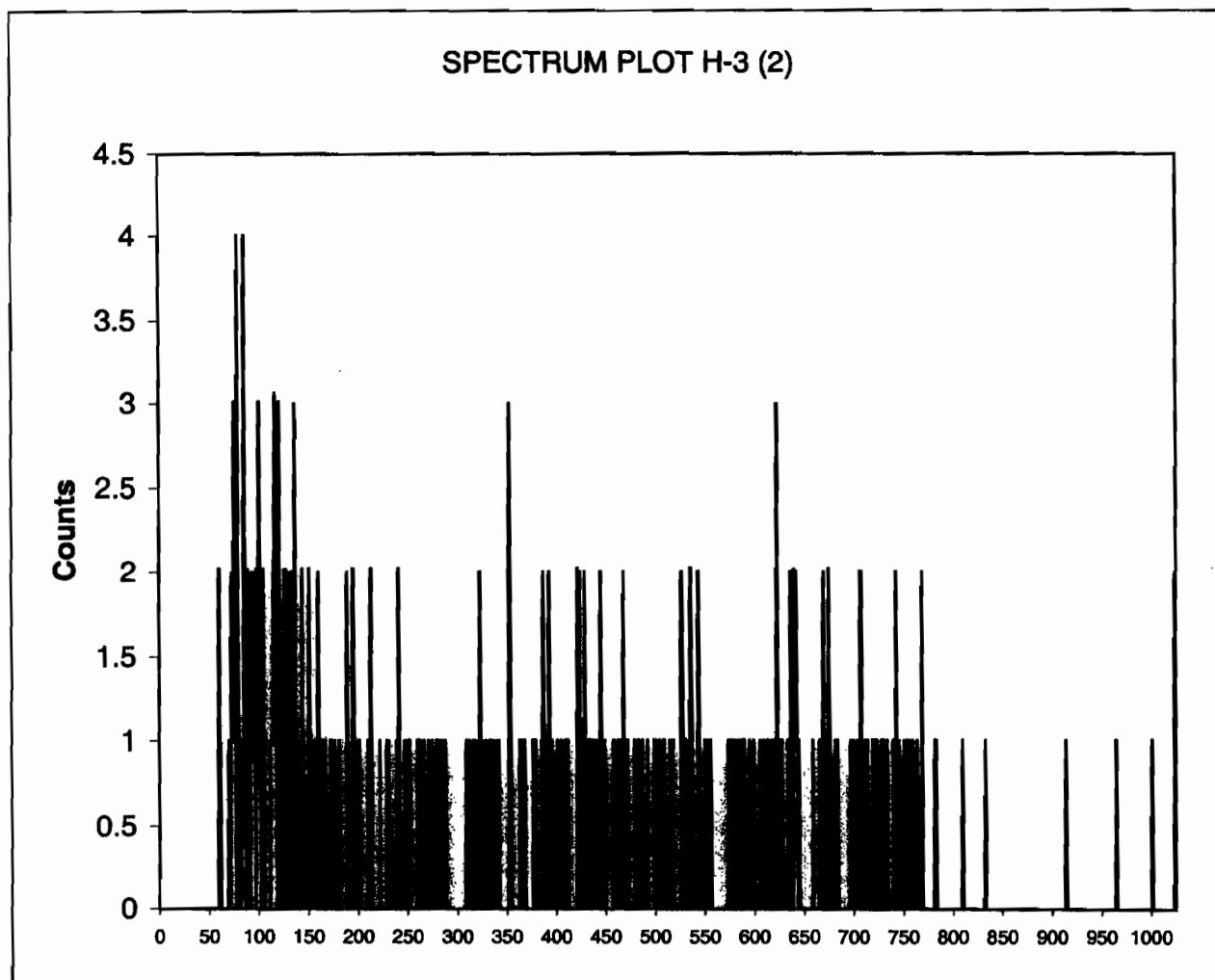
ID:
Comments:

H-3 (2)
ORANGE

Sample, Rack-Pos, Time:
Quench:
Start, End, X-Axis

3, 247551001, 30.02967:
755.24
50-175

Channel Counts



32 0
33 0
34 0
35 0

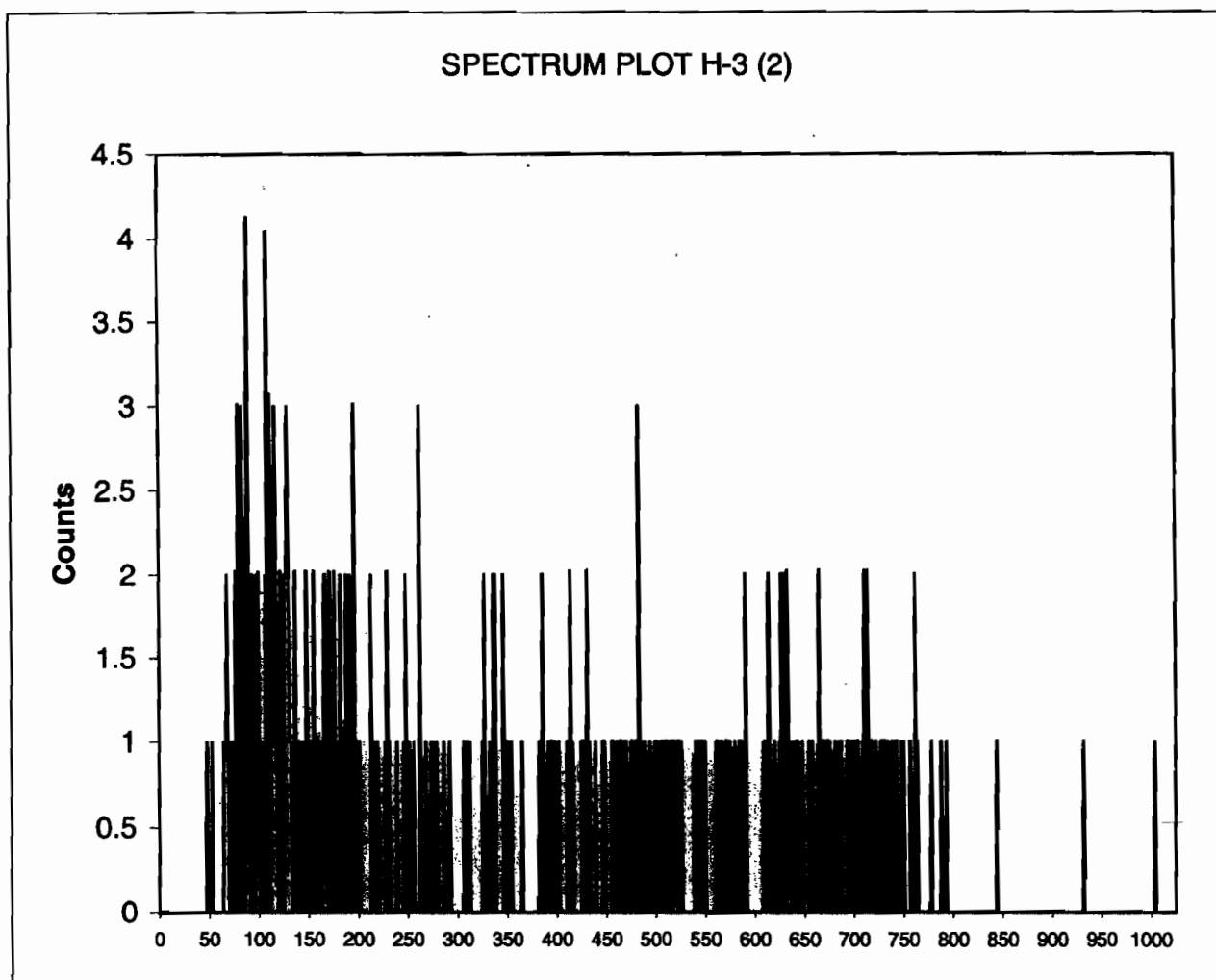
Instrument Type:
Data Capture Date:
FileName:
File Info:

Quantulus
THU 11 MAR 2010 13:30
s:\sc\files\orange\956742A2\SQ042701N.001.xls
s:\sc\files\orange\956742A2\U956742A2.xls

ID: H-3 (2)
Comments: ORANGE

Sample, Rack-Pos, Time: 4, 247551002, 30.02967:
Quench: 761.16
Start, End, X-Axis 50-175

Channel Counts



32	0
33	0
34	0
35	0

Instrument Type:
Data Capture Date:
FileName:
File Info:

Quantulus
THU 11 MAR 2010 13:30
s:\sc\files\orange\956742A2\SQ062901N.001.xls
s:\sc\files\orange\956742A2\U956742A2.xls

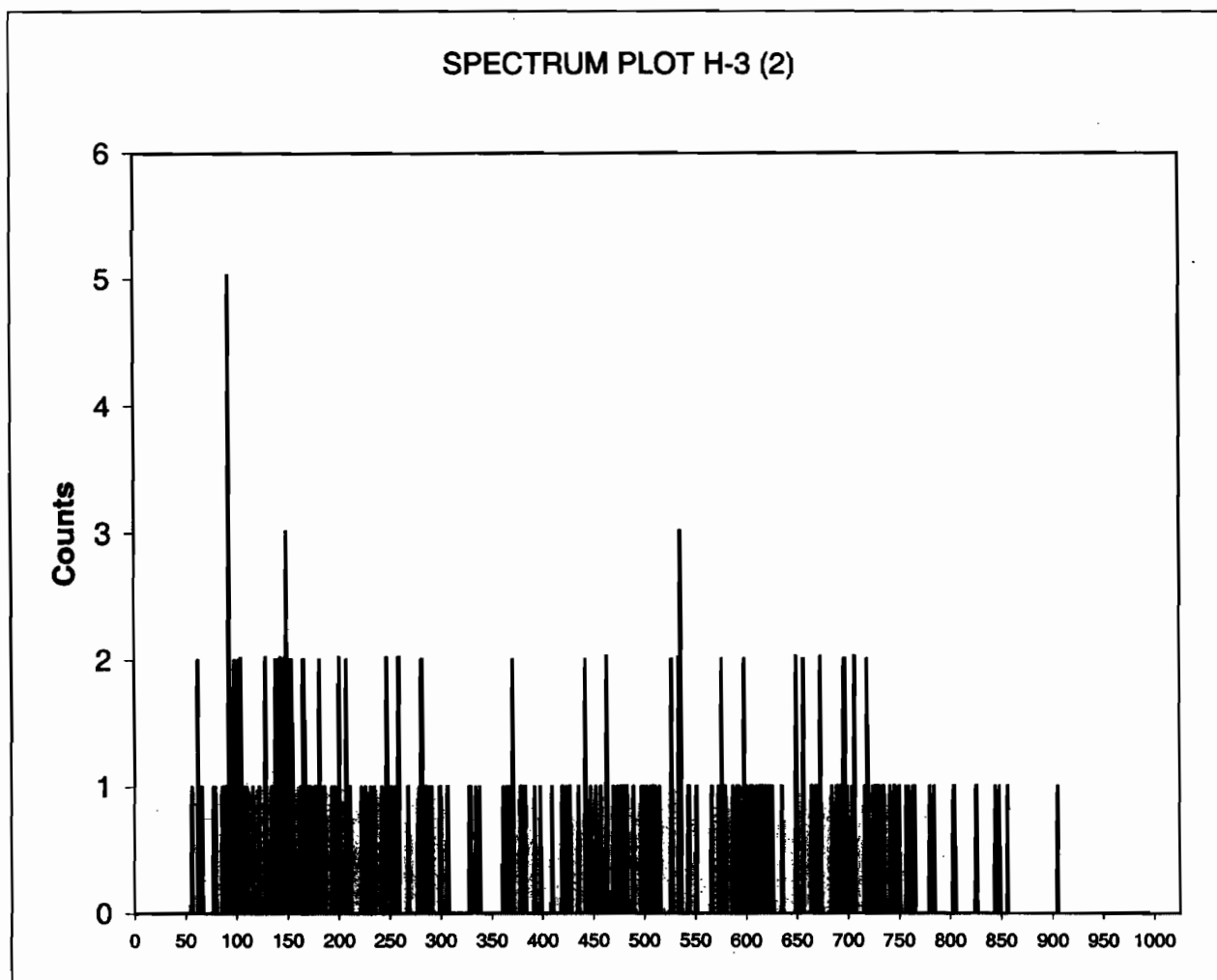
ID:
Comments:

H-3 (2)
ORANGE

Sample, Rack-Pos, Time:
Quench:
Start, End, X-Axis

6, 1202051382, 30.02967:
762.28
50-175

Channel Counts



32	0
33	0
34	0
35	0

Instrument Type LS 6000
 Data Capture Date 11 Mar 2010 17:09:03
 User Filename C:\SCCAPTURE\BROWN\USER13\UN031101.BSF

User Number 13
 User Id TRITIUM
 User Comments BROWN

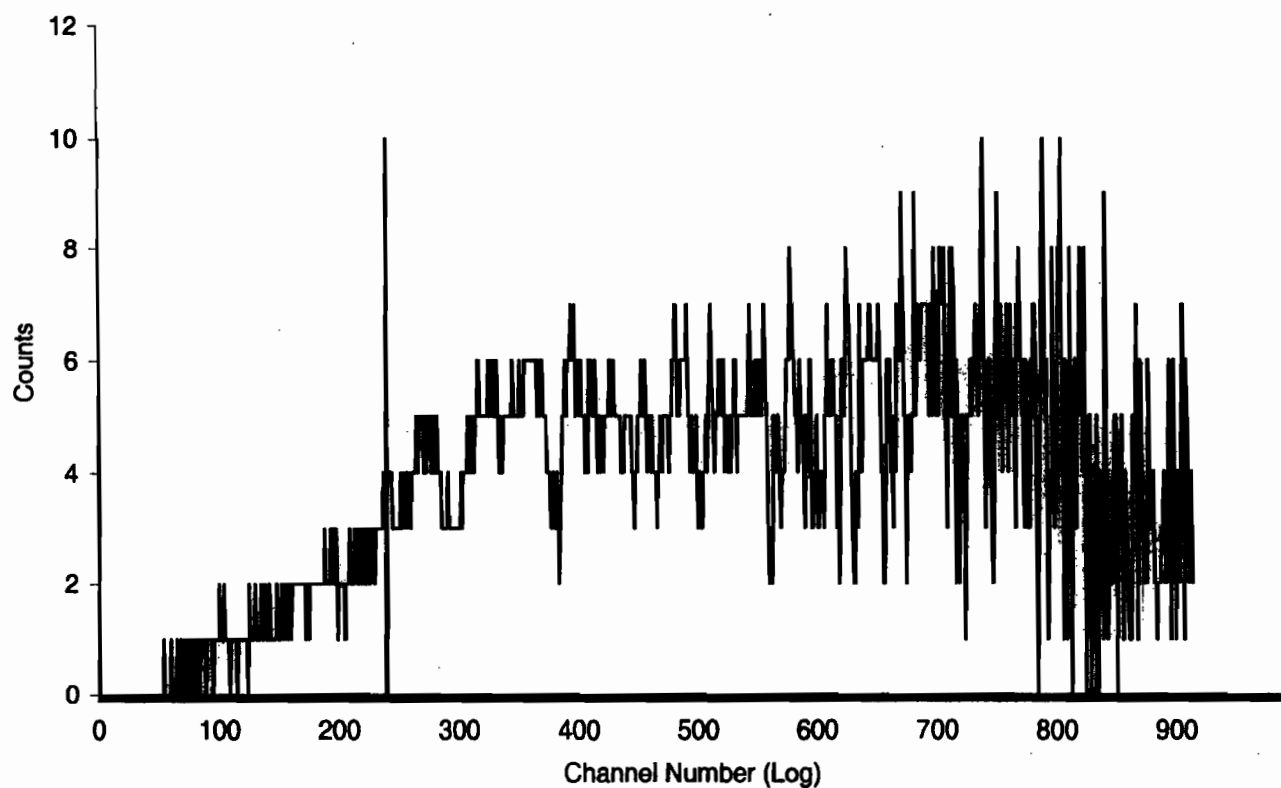
Scintillator Choice: LIQUID

Sam	Rack	Time	H#	Raw CPM1	CPM Iso1	%Err1	LumEx	ETime
1	57-1	95.00	124.7	3.02	2.95	12.10	0.21	97.41
2	57-2	95.00	120.2	3.71	3.55	11.13	0.40	195.42

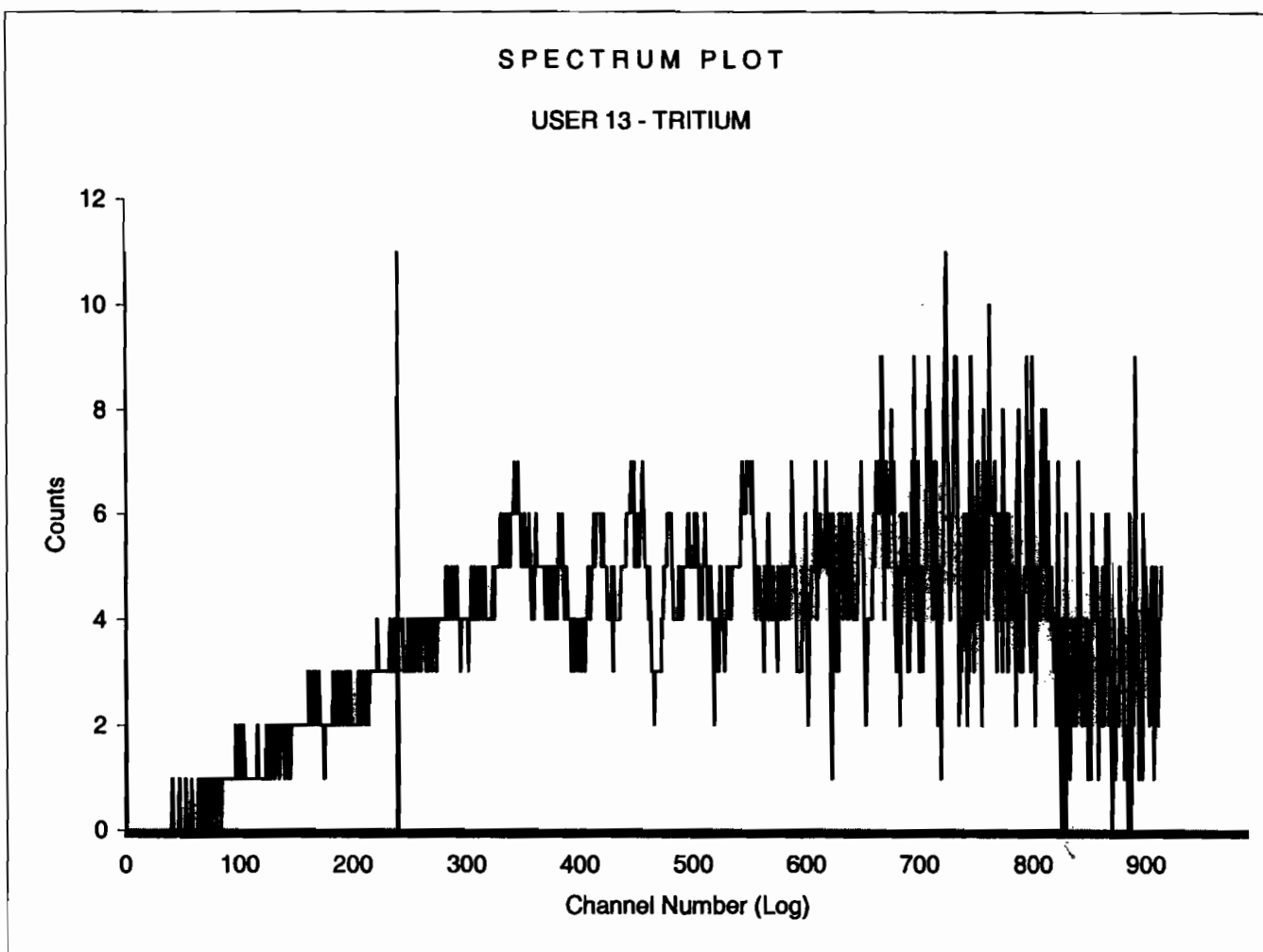
Sample Count Start Time:	11 Mar 2010 17:11:28		
Data Capture Date	11 Mar 2010 18:46:52		
User Filename	S13031157-1A.XLS		
	U13031157-1A.XLS		
Spectrum Type	Log Counts		
User Number	13		
User Id	TRITIUM		
User Comment	BROWN		
Scintillator	LIQUID		
Sample, Rack-Pos, Time:	1	57-1	95.00
H#, Total Counts:	124.7	3462	
Win1: Tritium - Start, End, Counts:	0	240	284
Win2: - Start, End, Counts:	0	990	3462

SPECTRUM PLOT

USER 13 - TRITIUM



Sample Count Start Time:	11 Mar 2010 18:49:28		
Data Capture Date	11 Mar 2010 20:24:52		
User Filename	S13031157-2A.XLS		
	U13031157-1A.XLS		
Spectrum Type	Log Counts		
User Number	13		
User Id	TRITIUM		
User Comment	BROWN		
Scintillator	LIQUID		
Sample, Rack-Pos, Time:	2	57-2	95.00
H#, Total Counts:	120.2	3442	
Win1: Tritium - Start, End, Counts:	0	240	341
Win2: - Start, End, Counts:	0	990	3442



ID: TRITIUM

12 MAR 2010 05:45

USER: 3

COMMENT: RED

PRESET TIME : 65.00

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 NO	POS	TIME MIN	H#	WIND1		WIND2		LUMEX %	ELAPSED TIME
				CPM	%ERROR	CPM	%ERROR		

1	25-1	90.00	128.5	3.62	11.62	49.00	3.02	0.75	92.56
---	------	-------	-------	------	-------	-------	------	------	-------

2	25-2	90.00	116.8	4.12	11.07	48.61	3.04	1.13	185.79
---	------	-------	-------	------	-------	-------	------	------	--------

MISSING SAMPLE

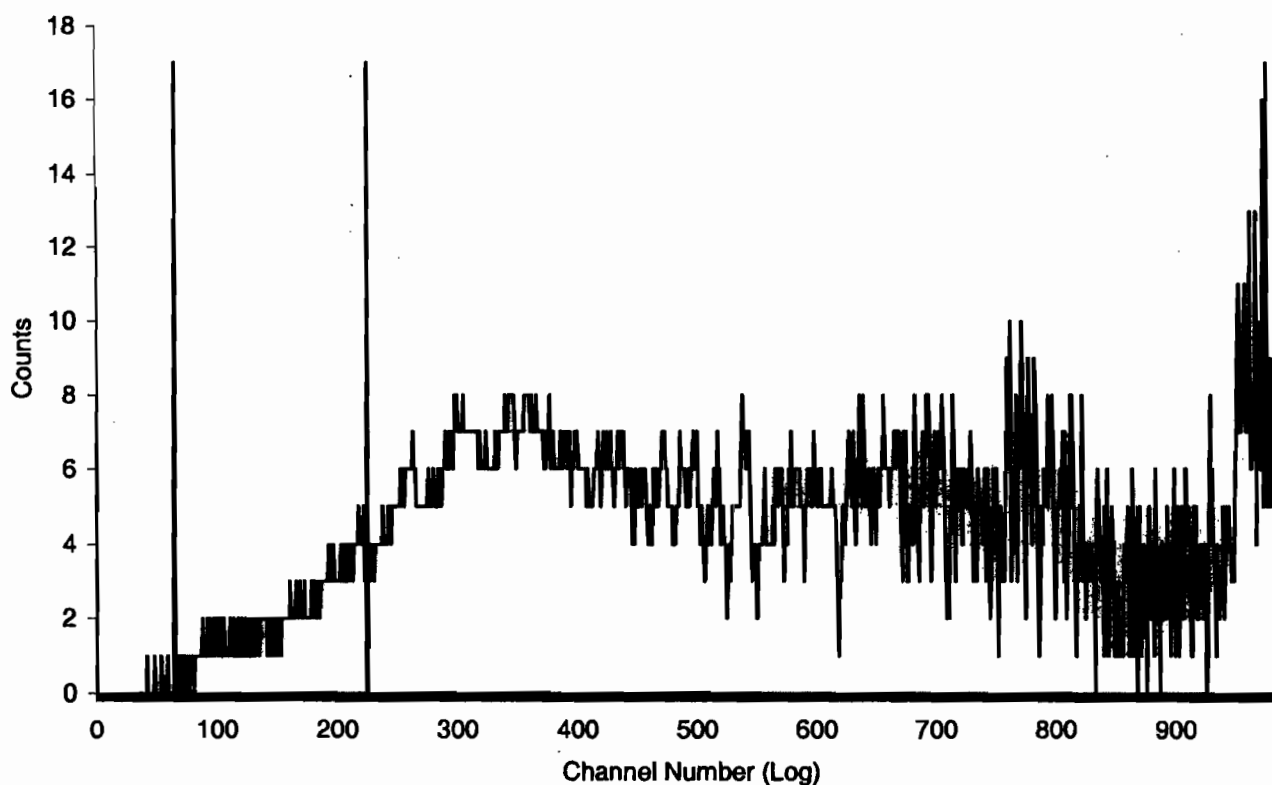
6	25-6	0.25	116.8	4.00	200.00	40.00	63.25	9.87	187.08
---	------	------	-------	------	--------	-------	-------	------	--------

7	25-7	0.05	116.8	60.00	115.47	140.00	75.59	24.96	187.82
---	------	------	-------	-------	--------	--------	-------	-------	--------

Sample Count Start Time:	12 Mar 2010 05:35:10		
Data Capture Date	12 Mar 2010 07:05:37		
User Filename	S03031225-1A.XLS		
	U03031225-1A.XLS		
Spectrum Type	Log Counts		
User Number	03		
User Id	TRITIUM		
User Comment	RED		
Scintillator	LIQUID		
Sample, Rack-Pos, Time:	1	25-1	90.00
H#, Total Counts:	128.5	5147	
Win1: Tritium - Start, End, Counts:	65	225	328
Win2: - Start, End, Counts:	0	990	4421

SPECTRUM PLOT

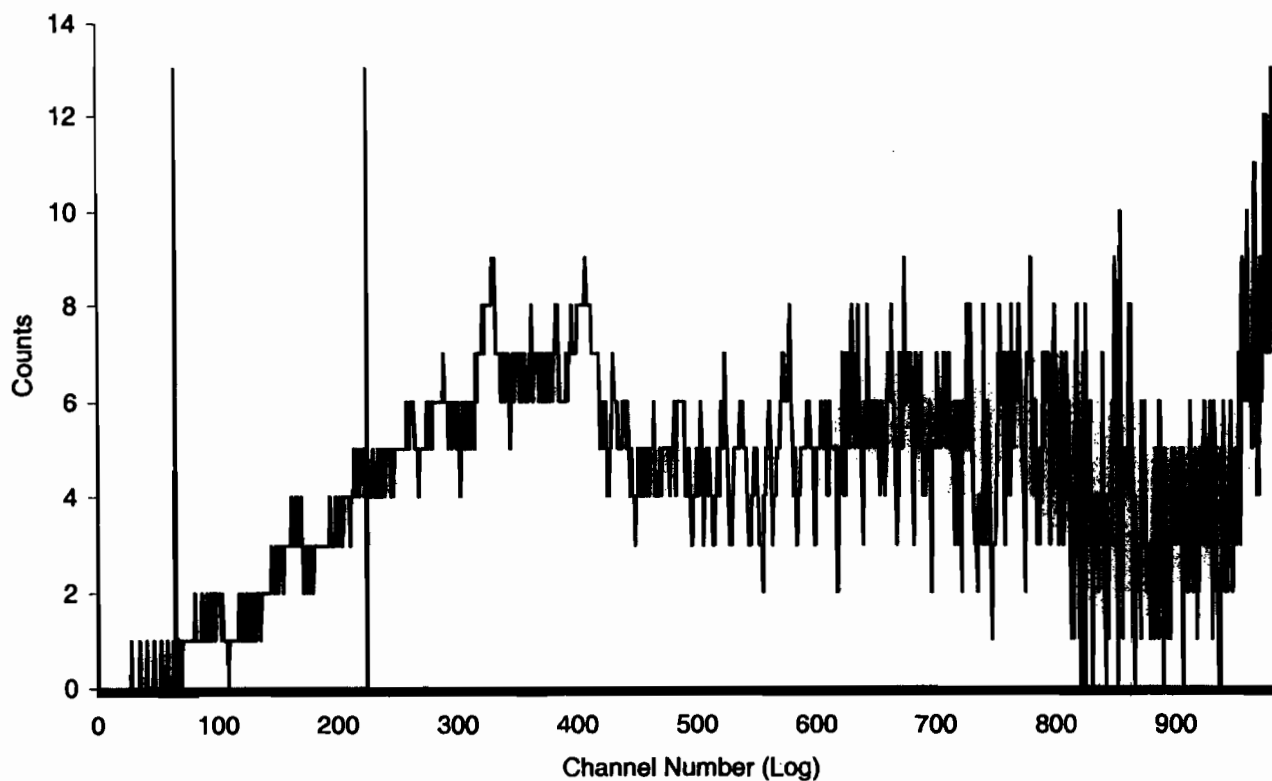
USER 03 - TRITIUM



Sample Count Start Time:	12 Mar 2010 07:08:23
Data Capture Date	12 Mar 2010 08:39:36
User Filename	S03031225-2A.XLS
	U03031225-1A.XLS
Spectrum Type	Log Counts
User Number	03
User Id	TRITIUM
User Comment	RED
Scintillator	LIQUID
Sample, Rack-Pos, Time:	2 25-2 90.00
H#, Total Counts:	116.8 4982
Win1: Tritium - Start, End, Counts:	65 225 374
Win2: - Start, End, Counts:	0 990 4382

SPECTRUM PLOT

USER 03 - TRITIUM



Radiochemistry Batch Checklist, Rev10

Batch# 941331 Product: H3 Date: 3/9/10

Criteria:	Yes	No	Comments
Sample Solids are less than or equal to 100 mg for GAB.			N/A
Samples have been blank corrected (if required)			N/A
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%.			N/A
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.			N/A
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.			N/A
Client Special requirements page has been checked.	✓		
Raw Data and/ or spectrum are included and properly stasured.	✓		
QC data entered into QC database and batch is in REVW			
Hit notification complete (if necessary)	✓		
Batch entered into Case Narrative.	✓		
Batch Data Exception Reports (DER) completed, if applicable.	✓		
Batch Data Exception Reports (DER) second reviewed and disposition verified to be completed.	✓		
Aliquot Correction completed if required.			N/A
Review sample historical results if available (If REMF, 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] 3/9/10

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

Tritium Que Sheet

04-MAR-10

Batch #: 961331

Analyst: KKK2 First Client Due Date 16-MAR-10 Internal Due Date: 09-MAR-10

Spike Isotope: Hydrogen-3

Spike Code: 0134-K Expiration Date: 3/27/10 Vol: 0.1

LCS Isotope: Hydrogen-3

LCS Code: 0134-K Expiration Date: 3/27/10 Vol: 0.1

Prep Date: 3/5/10

Initials: KKK Pipet ID: 2970968

Witness: DM3-5-10

Sample ID	Client Samp ID	Type	Hazard Code	Min CRDL	Matrix	Client	Sample Date	Aliquot in vial (g/mL)	LSC Rack #	Dist Rtg #	Vol added for Dist (mL)	Initial Sample Aliquot (g/mL)	Final Wt (g)	Dist Vol (mL)	LSC Rack #
247193001-1	RE15-10-8196	SAMPLE	6 pCi/g	SOIL	LANL010	LANL010	10-FEB-10	10	47-2	21	50	3.26		13	60-2
247193002-1	RE15-10-8186	SAMPLE	6 pCi/g	SOIL	LANL010	LANL010	10-FEB-10	10	47-3	56	50	3.28		13	60-3
247193003-1	RE15-10-8194	SAMPLE	6 pCi/g	SOIL	LANL010	LANL010	10-FEB-10	10	47-4	90	50	3.27		13	60-4
247193004-1	RE15-10-8189	SAMPLE	6 pCi/g	SOIL	LANL010	LANL010	10-FEB-10	10	47-5	99	50	3.25		13	60-5
247193008-1	RE15-10-8190	SAMPLE	6 pCi/g	SOIL	LANL010	LANL010	10-FEB-10	10	47-6	102	50	3.27		13	60-6
247193009-1	RE15-10-8193	SAMPLE	6 pCi/g	SOIL	LANL010	LANL010	10-FEB-10	10	47-7	109	50	3.27		13	60-7
247193010-1	RE15-10-8191	SAMPLE	6 pCi/g	SOIL	LANL010	LANL010	10-FEB-10	10	47-8	128	50	3.30		13	60-8
247193011-1	RE15-10-8192	SAMPLE	6 pCi/g	SOIL	LANL010	LANL010	10-FEB-10	10	47-9	136	50	3.29		13	60-9
247193014-1	RE15-10-8211	SAMPLE	6 pCi/g	SOIL	LANL010	LANL010	10-FEB-10	10	47-10	136B	50	3.26		13	60-10
247344002-1	RE15-10-8203	SAMPLE	6 pCi/g	SOIL	LANL010	LANL010	12-FEB-10	10	47-11	141	50	3.25		13	60-11
1202062033-1	MB for batch 961331	MB	6 pCi/g	SOIL	QC ACCOUNT	QC ACCOUNT	10-FEB-10	10	47-12	323	50	3.30		13	60-12
1202062034-1	RE15-10-8196(247193001DUP)	DUP	6 pCi/g	SOIL	QC ACCOUNT	QC ACCOUNT	10-FEB-10	10	47-13	304	50	3.25		13	60-13
1202062035-1	RE15-10-8196(247193001MS)	MS	6 pCi/g	SOIL	QC ACCOUNT	QC ACCOUNT	10-FEB-10	10	47-14	500	50	3.29		13	60-14
1202062036-1	LCS for batch 961331	LCS	6 pCi/g	SOIL	QC ACCOUNT	QC ACCOUNT	10-FEB-10	10	47-15	517	50	3.30		13	60-15

Bkg Rack #: 471 60-1
B10110

Comments:

8/3/10

Instrument Used (circle as appropriate): LS6000 (Red) 70651559 LS6500 (Blue) 7067083 LS6500

(Gold) 7070506, LS6500 (Green) 7067404, Wallac (Yellow) 4140127, LS6000 (Brown) 7060655, Wallac

(Pink) 2200082, Wallac (White) 4140299, Purple 7069123, Silver 7060656, Orange DG06095168

GEL Laboratories LLC, Radiochemistry Division

Bkg prepared with dead water? Yes/No

Calibration Used: Ecoscint Ultra (10 mL sample/13 mL Ecoscint Ultra)

Data Reviewed By: [Signature]

Page 1 of 1

Tritium Solid

Filename : H3DST.XLS
File type : Excel
Version # : 1.2.5

Spike S/N : 0134-K
Spike Exp Date : 3/27/2010
Spike Activity (dpm/ml): 2459.85
Spike Volume Added: 0.10

LCS S/N : 0134-K
LCS Exp Date : 3/27/2010
LCS Activity (dpm/ml): 2459.85
LCS Volume Added: 0.10

Batch : 961331
Analyst : KXK2
Prep Date : 3/5/2010

H-3 Abundance : 1
Method Uncertainty : 0.1155
Geometry: 10mL DW/13mL Ecocint
Ultra

Procedure Code : LSCDSH3S
Paramname : Tritium
Required MDC : 8 pCi/G
Half-life of Tritium : 12.32 years

Pipet, 0.1 ml Stdev : +/- 0.000701 ml
Pipet, 0.5 ml Stdev : +/- 0.002564 ml
Pipet, 1.0 ml Stdev : +/- 0.005480 ml
Pipet, 5.0 ml Stdev : +/- 0.025729 ml

Sample Characteristics			Total Sample Volume (L)		Sample Aliquot G		Sample Aliquot StDev. G		Distilled Sample Counted L		Sample Counted StDev. L		Rtg number		Sample Date/Time	
Pos.	Sample ID		Volume (L)		G		G		L		L					
1	247183001.1		0.0500		3.2600		3.5572E-03		0.0100		2.5729E-05		21		2/10/2010 12:00	
2	247193002.1		0.0500		3.2800		3.5593E-03		0.0100		2.5729E-05		56		2/10/2010 12:00	
3	247193003.1		0.0500		3.2700		3.5582E-03		0.0100		2.5729E-05		90		2/10/2010 12:00	
4	247193004.1		0.0500		3.2500		3.5562E-03		0.0100		2.5729E-05		99		2/10/2010 12:00	
5	247193008.1		0.0500		3.2700		3.5582E-03		0.0100		2.5729E-05		102		2/10/2010 12:00	
6	247193009.1		0.0500		3.2700		3.5582E-03		0.0100		2.5729E-05		109		2/10/2010 12:00	
7	247193010.1		0.0500		3.3000		3.5613E-03		0.0100		2.5729E-05		128		2/10/2010 12:00	
8	247193011.1		0.0500		3.2900		3.5603E-03		0.0100		2.5729E-05		136		2/10/2010 12:00	
9	247193014.1		0.0500		3.2800		3.5572E-03		0.0100		2.5729E-05		136B		2/10/2010 12:00	
10	247344002.1		0.0500		3.2500		3.5562E-03		0.0100		2.5729E-05		141		2/12/2010 12:00	
11	1202062033.1		0.0500		3.3000		3.5613E-03		0.0100		2.5729E-05		333		3/5/2010 0:00	
12	1202062034.1		0.0500		3.2500		3.5562E-03		0.0100		2.5729E-05		304		2/10/2010 12:00	
13	1202062035.1		0.0500		3.2900		3.5603E-03		0.0100		2.5729E-05		500		2/10/2010 12:00	
14	1202062036.1		0.0500		3.3000		3.5613E-03		0.0100		2.5729E-05		517		3/5/2010 0:00	

Count raw Data			Background				Calibration Data			Detector			Backgrounds	
Pos.	Rack Position #	Counting Time (min.)	Gross cpm	Quench#	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	60-2	45	3.24	114.6	45	3/8/2010 16:03	0.996	LSCRED	8/21/2009	8/31/2010	0.2079	0.00792	60-1	3/8/2010 15:16
2	60-3	45	3.38	113.8	45	3/8/2010 16:50	0.996	LSCRED	8/21/2009	8/31/2010	0.2082	0.00792	60-1	3/8/2010 15:16
3	60-4	45	3.16	115.5	45	3/8/2010 17:38	0.996	LSCRED	8/21/2009	8/31/2010	0.2075	0.00792	60-1	3/8/2010 15:16
4	60-5	45	14.42	114.3	45	3/8/2010 18:25	0.996	LSCRED	8/21/2009	8/31/2010	0.2080	0.00792	60-1	3/8/2010 15:16
5	60-6	45	41.11	114.7	45	3/8/2010 19:12	0.996	LSCRED	8/21/2009	8/31/2010	0.2079	0.00792	60-1	3/8/2010 15:16
6	60-7	45	2.89	114.3	45	3/8/2010 19:59	0.996	LSCRED	8/21/2009	8/31/2010	0.2080	0.00792	60-1	3/8/2010 15:16
7	60-8	45	7.33	113.3	45	3/8/2010 20:46	0.996	LSCRED	8/21/2009	8/31/2010	0.2084	0.00792	60-1	3/8/2010 15:16
8	60-9	45	4.04	115.3	45	3/8/2010 21:59	0.996	LSCRED	8/21/2009	8/31/2010	0.2078	0.00792	60-1	3/8/2010 15:16
9	60-10	45	3.13	114.5	45	3/8/2010 22:46	0.996	LSCRED	8/21/2009	8/31/2010	0.2080	0.00792	60-1	3/8/2010 15:16
10	60-11	45	4.87	114.6	45	3/8/2010 23:33	0.996	LSCRED	8/21/2009	8/31/2010	0.2079	0.00792	60-1	3/8/2010 15:16
11	60-12	45	2.96	113.8	45	3/9/2010 0:20	0.999	LSCRED	8/21/2009	8/31/2010	0.2082	0.00792	60-1	3/8/2010 15:16
12	1-1	45	3.58	114.2	45	3/9/2010 1:08	0.996	LSCRED	8/21/2009	8/31/2010	0.2081	0.00792	60-1	3/8/2010 15:16
13	5-1	15	12.73	114.3	45	3/9/2010 1:55	0.996	LSCRED	8/21/2009	8/31/2010	0.2080	0.00792	60-1	3/8/2010 15:16
14	5-2	15	13.6	114.6	45	3/9/2010 2:11	0.999	LSCRED	8/21/2009	8/31/2010	0.2079	0.00792	60-1	3/8/2010 15:16

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

* - RPD changed to 0% due to activity below MDC for 1202062034.1

Results		1 SIGMA										1 SIGMA							
Pos.	Decision Level		Critical Level	Required MDC	Sample Act.		Sample Act. Error	Net Count		Net Count Rate	Rate Error	Counting Uncertainty	Total Prop. Uncertainty	Sample QC	Sample Type	RPD	RER	Nominal pCi/G	Recovery
	pCi/G	pCi/G			MDC	pCi/G		Conc.	pCi/G										
1	2.7763	1.9601	6	4.1427	1.2344	0.9659	0.3700	0.3685	1.2294	1.2377				SAMPLE					
2	2.7550	1.9451	6	4.1109	1.6885	0.7308	0.5100	0.3727	1.2338	1.2492				SAMPLE					
3	2.7732	1.9579	6	4.1380	0.9665	1.2623	0.2900	0.3661	1.2199	1.2251				SAMPLE					
4	2.7832	1.9650	6	4.1529	38.6300	0.0544	11.5500	0.6199	2.0732	4.9316				SAMPLE					
5	2.7685	1.9546	6	4.1309	127.2198	0.0273	38.2400	0.9886	3.2890	15.0989				SAMPLE					
6	2.7662	1.9530	6	4.1276	0.0665	17.8885	0.0200	0.3578	1.1893	1.1893				SAMPLE					
7	2.7358	1.9315	6	4.0822	14.8629	0.1071	4.4600	0.4761	1.5552	2.3087				SAMPLE					
8	2.7552	1.9452	6	4.1112	3.8738	0.3350	1.1700	0.3919	1.2974	1.3728				SAMPLE					
9	2.7759	1.9598	6	4.1420	0.8673	1.4044	0.2600	0.3651	1.2181	1.2222				SAMPLE					
10	2.7842	1.9656	6	4.1543	6.0223	0.2276	1.8000	0.4093	1.3695	1.5369				SAMPLE					
11	2.7290	1.9287	6	4.0720	0.2951	3.9993	0.0900	0.3599	1.1804	1.1809				MB					
12	2.7828	1.9647	6	4.1523	2.3743	0.5333	0.7100	0.3786	1.2660	1.2956			247193001.1	DUP	0.0%	0.2250	33.7980	96.4%	
13	3.8884	2.7452	6	6.1513	32.5782	0.0973	9.8600	0.9552	3.1561	4.9195			247193001.1	MS			33.5770	105.0%	
14	3.8656	2.7291	6	6.1152	35.2447	0.0922	10.7300	0.9851	3.2358	5.2093				LCS					

ID: TRITIUM

8 MAR 2010 15:26

USER: 2 COMMENT: RED
 PRESET TIME : 45.00
 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

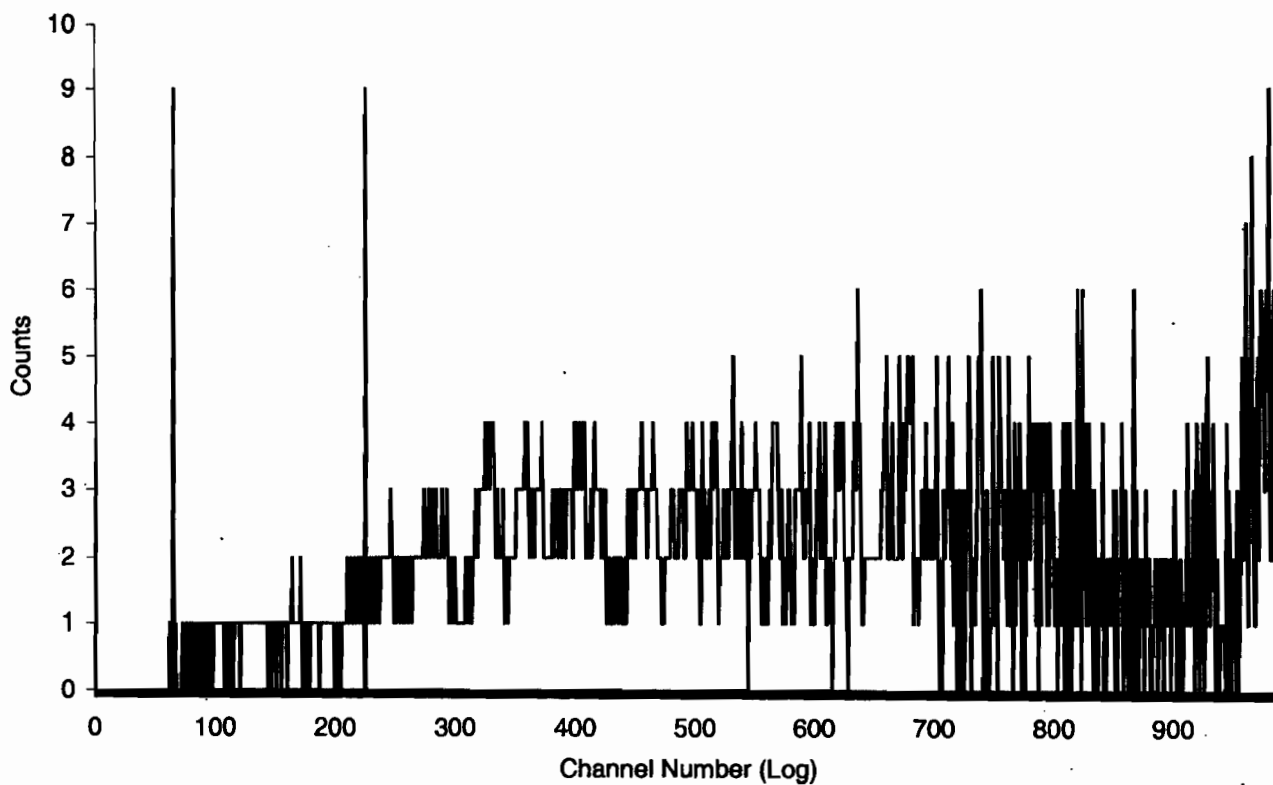
ALPHA-BETA DISCRIMINATION: NO

SAM NO	POS	TIME MIN	H#	WIND1		WIND2		LUMEX %	ELAPSED TIME
				CPM	%ERROR	CPM	%ERROR		
Bk ₁ 1	60-1	45.00	114.6	2.87	19.30	42.60	4.60	1.32	46.57
2	60-2	45.00	114.6	3.24	17.65	41.00	4.68	1.09	93.66
3	60-3	45.00	113.8	3.38	17.46	43.56	4.55	1.19	140.79
4	60-4	45.00	115.5	3.16	18.20	43.38	4.56	1.27	187.90
5	60-5	45.00	114.3	14.42	8.00	58.87	3.90	0.99	235.01
6	60-6	45.00	114.7	41.11	4.68	97.53	3.03	0.58	282.13
7	60-7	45.00	114.3	2.89	19.03	42.27	4.61	1.16	329.33
8	60-8	45.00	113.3	7.33	11.39	49.98	4.24	1.03	376.43
9	60-9	SAMPLE TERMINATED:							

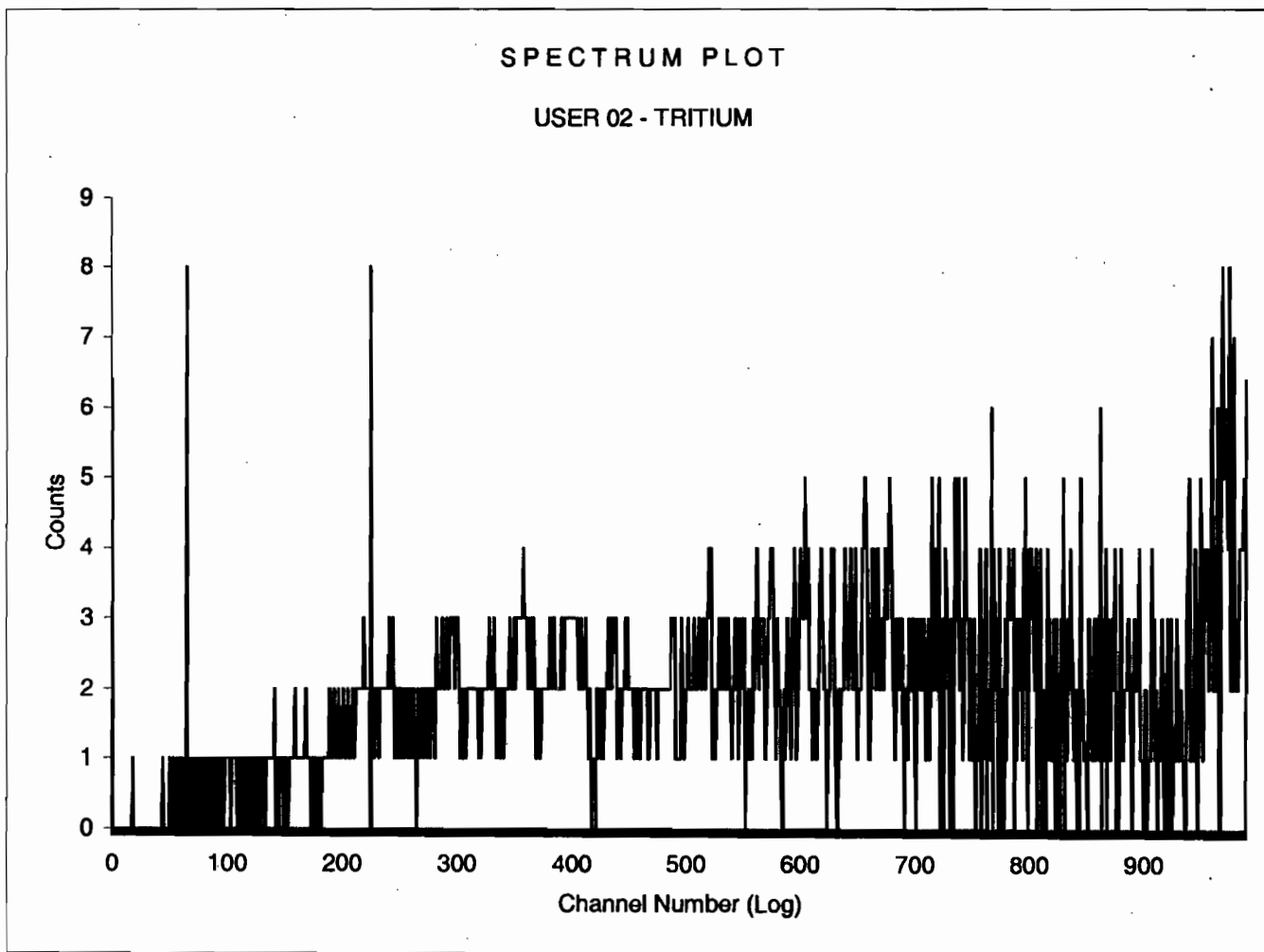
Sample Count Start Time:	8 Mar 2010 15:16:40		
Data Capture Date	08 Mar 2010 16:02:07		
User Filename	S02030860-1A.XLS		
	U02030860-1A.XLS		
Spectrum Type	Log Counts		
User Number	02		
User Id	TRITIUM		
User Comment	RED		
Scintillator	LIQUID		
Sample, Rack-Pos, Time:	1	60-1	45.00
H#, Total Counts:	114.6	2291	
Win1: Tritium - Start, End, Counts:	65	225	131
Win2: - Start, End, Counts:	0	990	1921

SPECTRUM PLOT

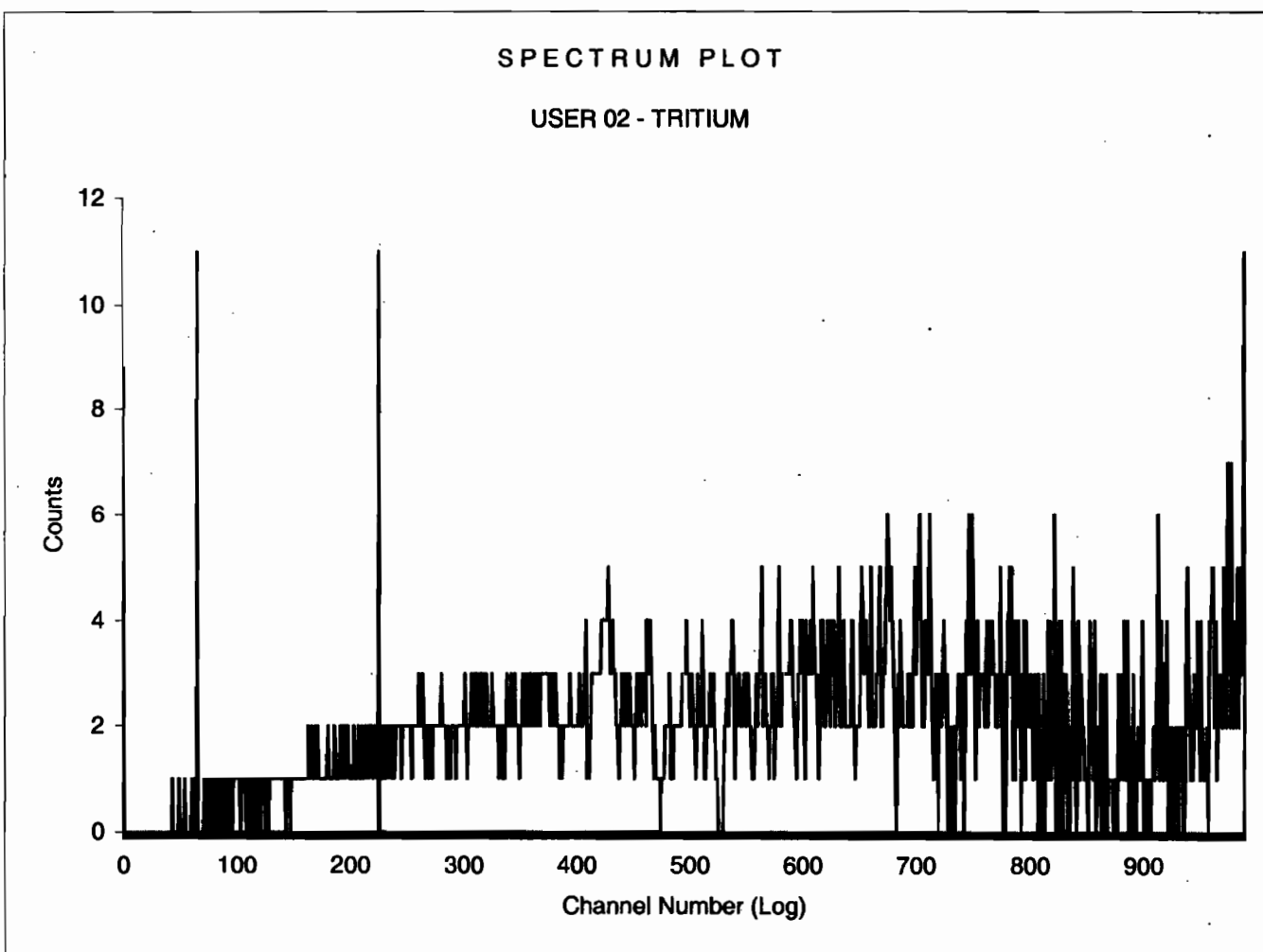
USER 02 - TRITIUM



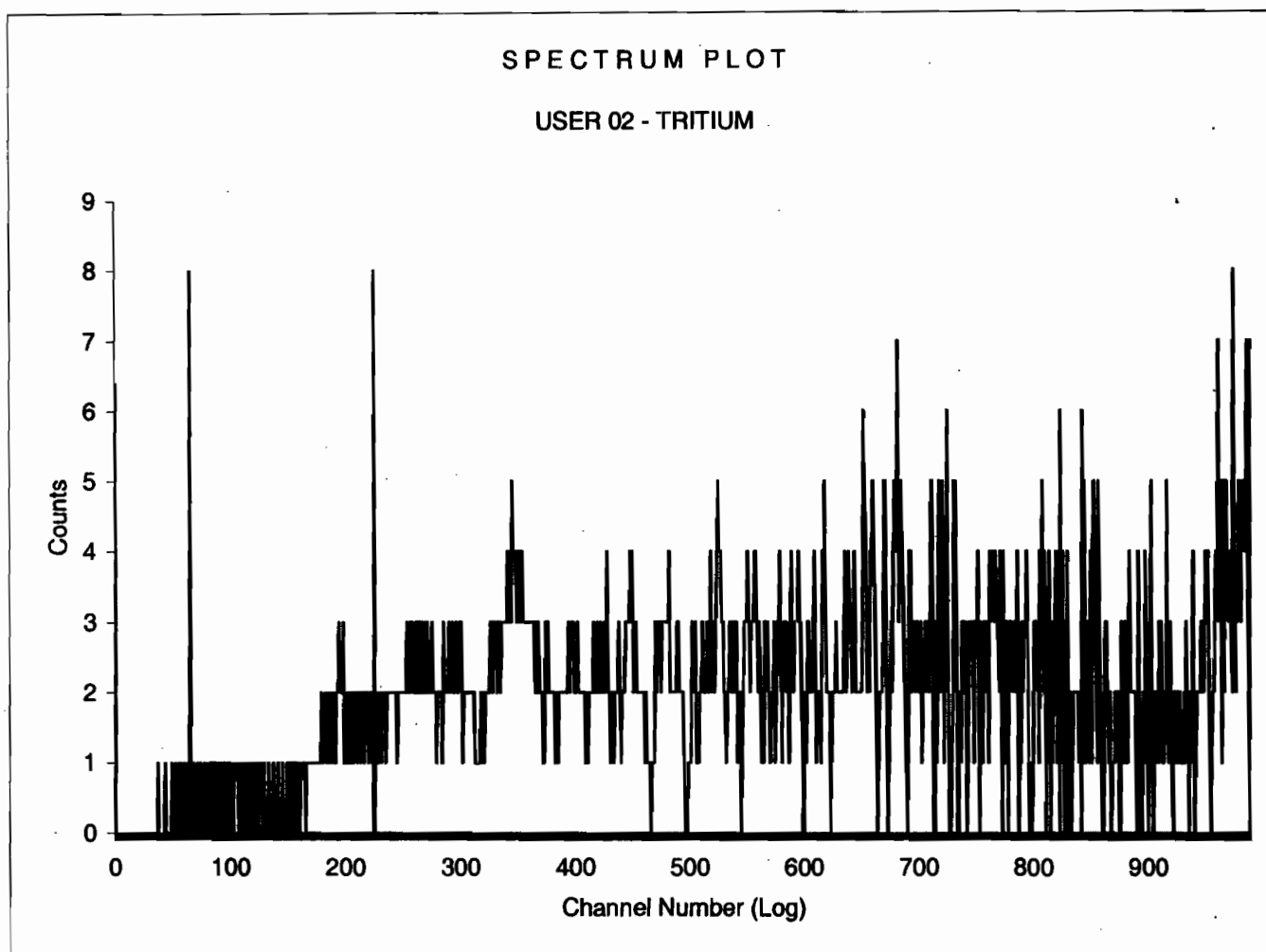
Sample Count Start Time:	8 Mar 2010 16:03:46		
Data Capture Date	08 Mar 2010 16:48:12		
User Filename	S02030860-2A.XLS		
	U02030860-1A.XLS		
Spectrum Type	Log Counts		
User Number	02		
User Id	TRITIUM		
User Comment	RED		
Scintillator	LIQUID		
Sample, Rack-Pos, Time:	2	60-2	45.00
H#, Total Counts:	114.6	2150	
Win1: Tritium - Start, End, Counts:	65	225	148
Win2: - Start, End, Counts:	0	990	1850



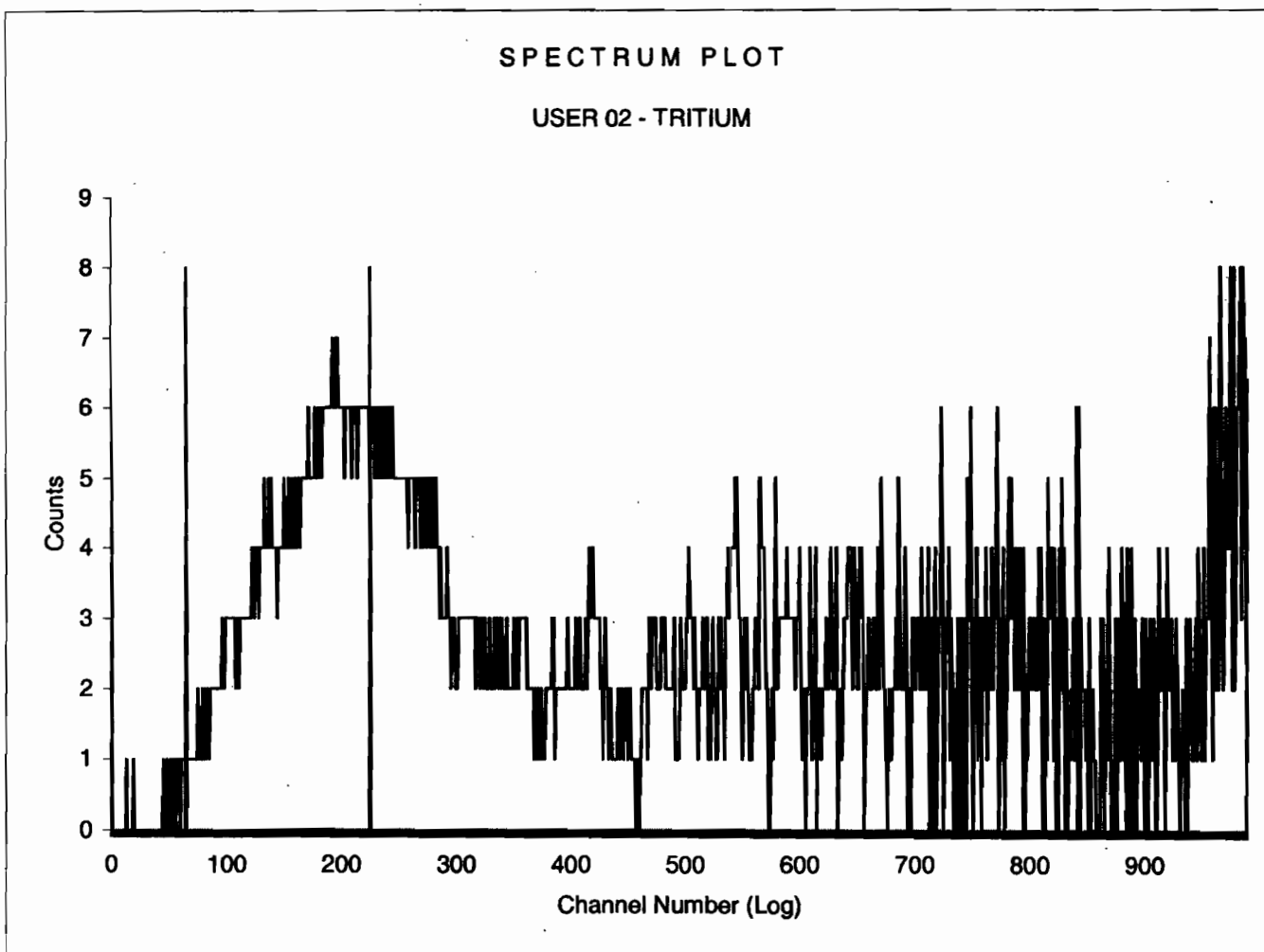
Sample Count Start Time:	8 Mar 2010 16:50:53		
Data Capture Date	08 Mar 2010 17:35:29		
User Filename	S02030860-3A.XLS		
	U02030860-1A.XLS		
Spectrum Type	Log Counts		
User Number	02		
User Id	TRITIUM		
User Comment	RED		
Scintillator	LIQUID		
Sample, Rack-Pos, Time:	3	60-3	45.00
H#, Total Counts:	113.8	2356	
Win1: Tritium - Start, End, Counts:	65	225	152
Win2: - Start, End, Counts:	0	990	1963



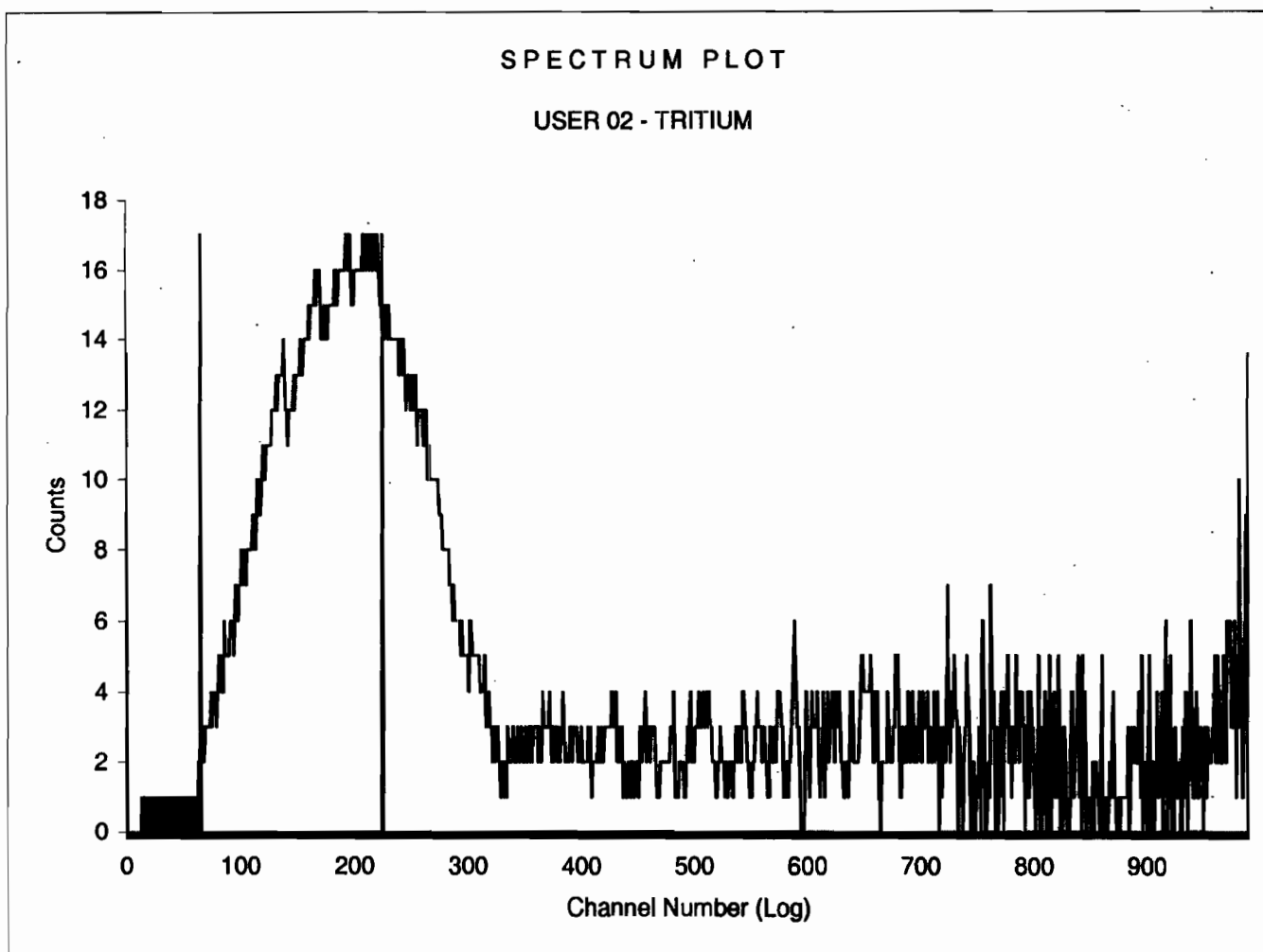
Sample Count Start Time:	8 Mar 2010 17:38:00		
Data Capture Date	08 Mar 2010 18:22:26		
User Filename	S02030860-4A.XLS		
	U02030860-1A.XLS		
Spectrum Type	Log Counts		
User Number	02		
User Id	TRITIUM		
User Comment	RED		
Scintillator	LIQUID		
Sample, Rack-Pos, Time:	4	60-4	45.00
H#, Total Counts:	115.5	1972	
Win1: Tritium - Start, End, Counts:	65	225	142
Win2: - Start, End, Counts:	0	990	1954



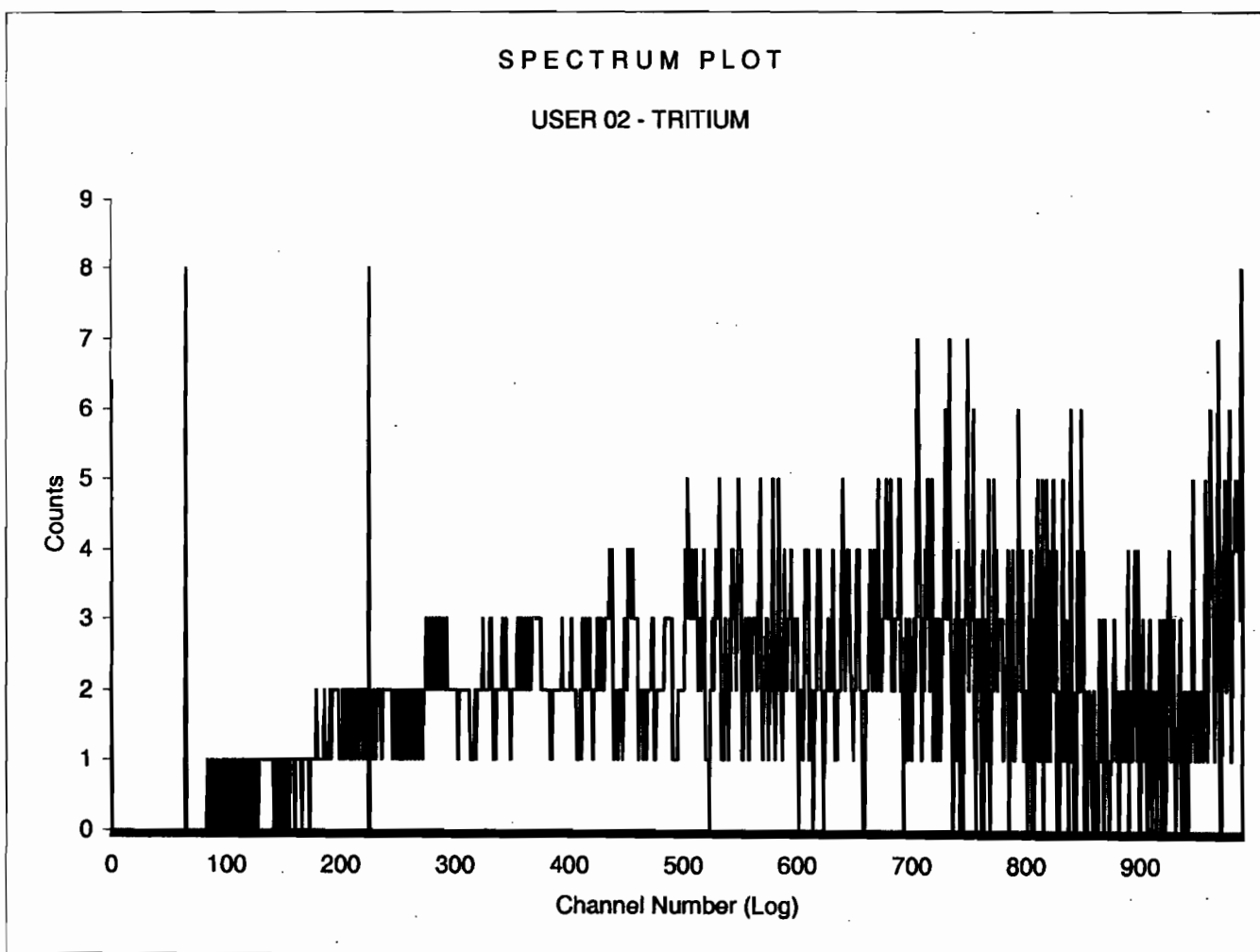
Sample Count Start Time:	8 Mar 2010 18:25:07		
Data Capture Date	08 Mar 2010 19:09:34		
User Filename	S02030860-5A.XLS		
	U02030860-1A.XLS		
Spectrum Type	Log Counts		
User Number	02		
User Id	TRITIUM		
User Comment	RED		
Scintillator	LIQUID		
Sample, Rack-Pos, Time:	5	60-5	45.00
H#, Total Counts:	114.3	3067	
Win1: Tritium - Start, End, Counts:	65	225	654
Win2: - Start, End, Counts:	0	990	2655



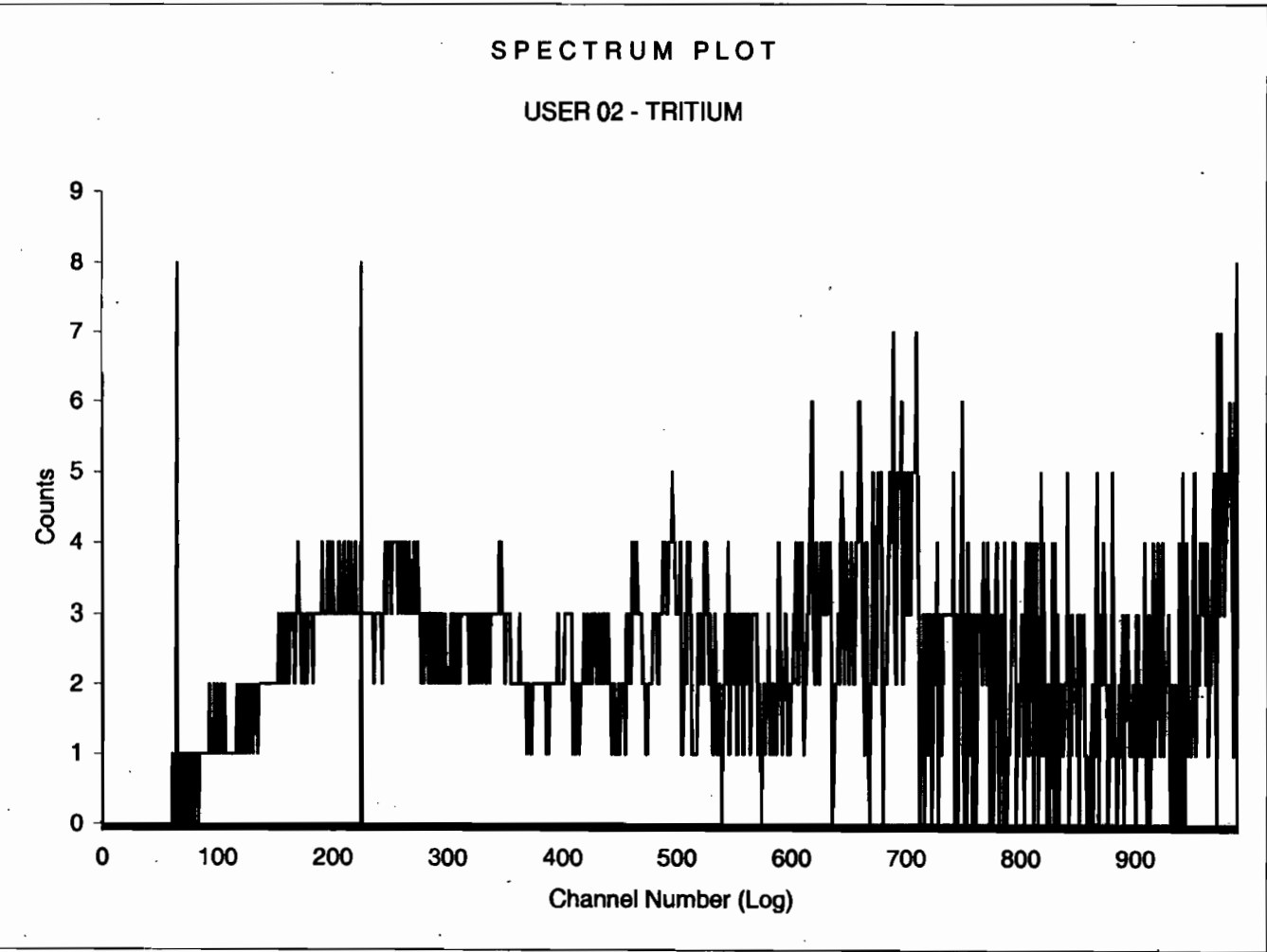
Sample Count Start Time:	8 Mar 2010 19:12:14		
Data Capture Date	08 Mar 2010 19:56:40		
User Filename	S02030860-6A.XLS		
	U02030860-1A.XLS		
Spectrum Type	Log Counts		
User Number	02		
User Id	TRITIUM		
User Comment	RED		
Scintillator	LIQUID		
Sample, Rack-Pos, Time:	6	60-6	45.00
H#, Total Counts:	114.7	4811	
Win1: Tritium - Start, End, Counts:	65	225	1863
Win2: - Start, End, Counts:	0	990	4396



Sample Count Start Time:	8 Mar 2010 19:59:26		
Data Capture Date	08 Mar 2010 20:43:51		
User Filename	S02030860-7A.XLS		
	U02030860-1A.XLS		
Spectrum Type	Log Counts		
User Number	02		
User Id	TRITIUM		
User Comment	RED		
Scintillator	LIQUID		
Sample, Rack-Pos, Time:	7	60-7	45.00
H#, Total Counts:	114.3	2334	
Win1: Tritium - Start, End, Counts:	65	225	132
Win2: - Start, End, Counts:	0	990	1904



Sample Count Start Time:	8 Mar 2010 20:46:32		
Data Capture Date	08 Mar 2010 21:30:58		
User Filename	S02030860-8A.XLS		
	U02030860-1A.XLS		
Spectrum Type	Log Counts		
User Number	02		
User Id	TRITIUM		
User Comment	RED		
Scintillator	LIQUID		
Sample, Rack-Pos, Time:	8	60-8	45.00
H#, Total Counts:	113.3	2569	
Win1: Tritium - Start, End, Counts:	65	225	333
Win2: - Start, End, Counts:	0	990	2253



ID: TRITIUM

8 MAR 2010 22:10

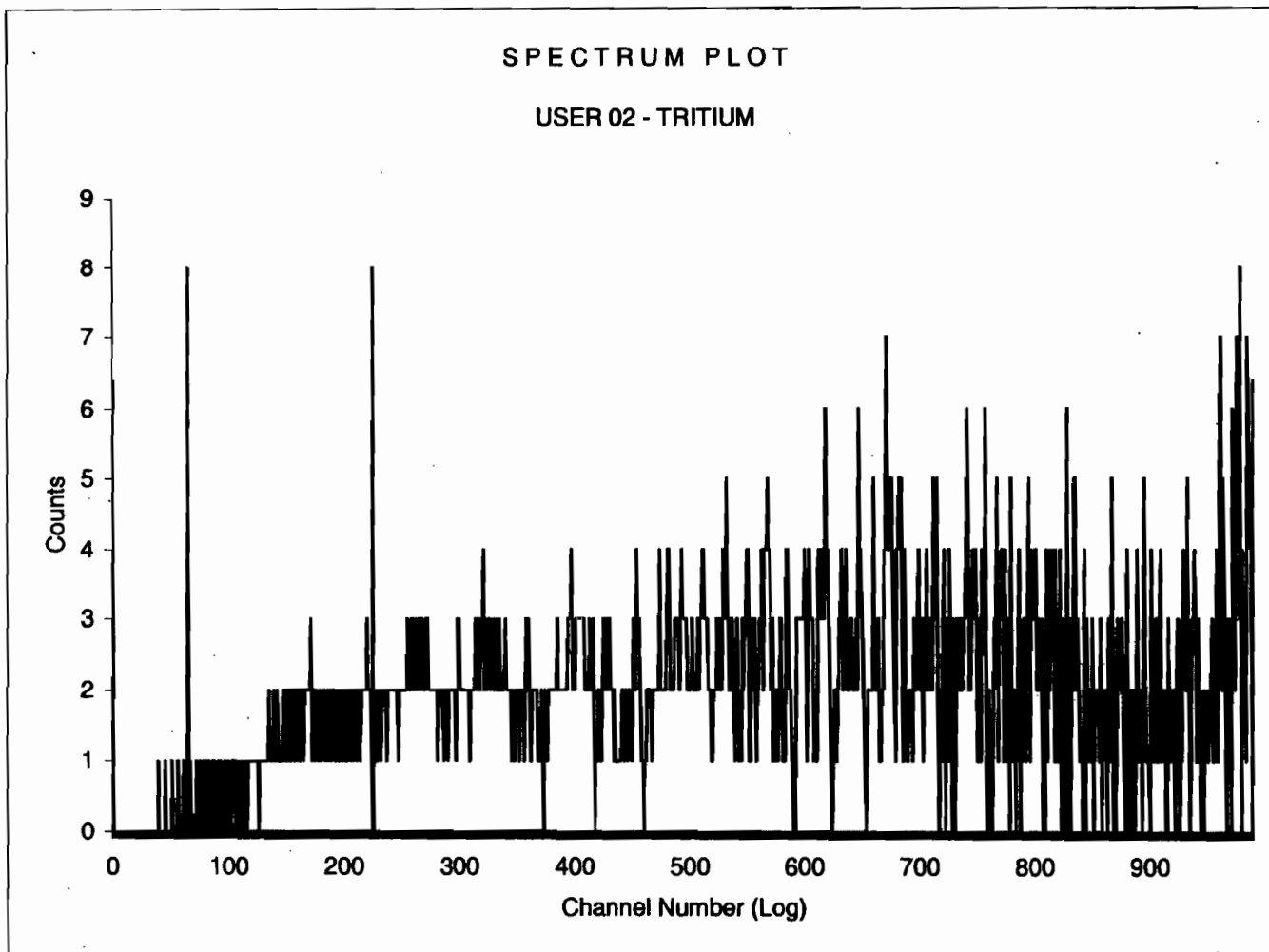
USER: 2 COMMENT: RED
 PRESET TIME : 45.00
 DATA CALC : CPM H# : YES SAMPLE REPEATS: 1 PRINTER : EDIT
 COUNT BLANK : NO IC# : NO REPLICATES : 1 RS232 : EDIT
 TWO PHASE : NO AQC : NO CYCLE REPEATS : 1 DISK : OFF
 SCINTILLATOR: LIQUID LUMEX: YES LOW SAMPLE REJ: 0
 LOW LEVEL : NO HALF LIFE CORRECTION DATE: 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

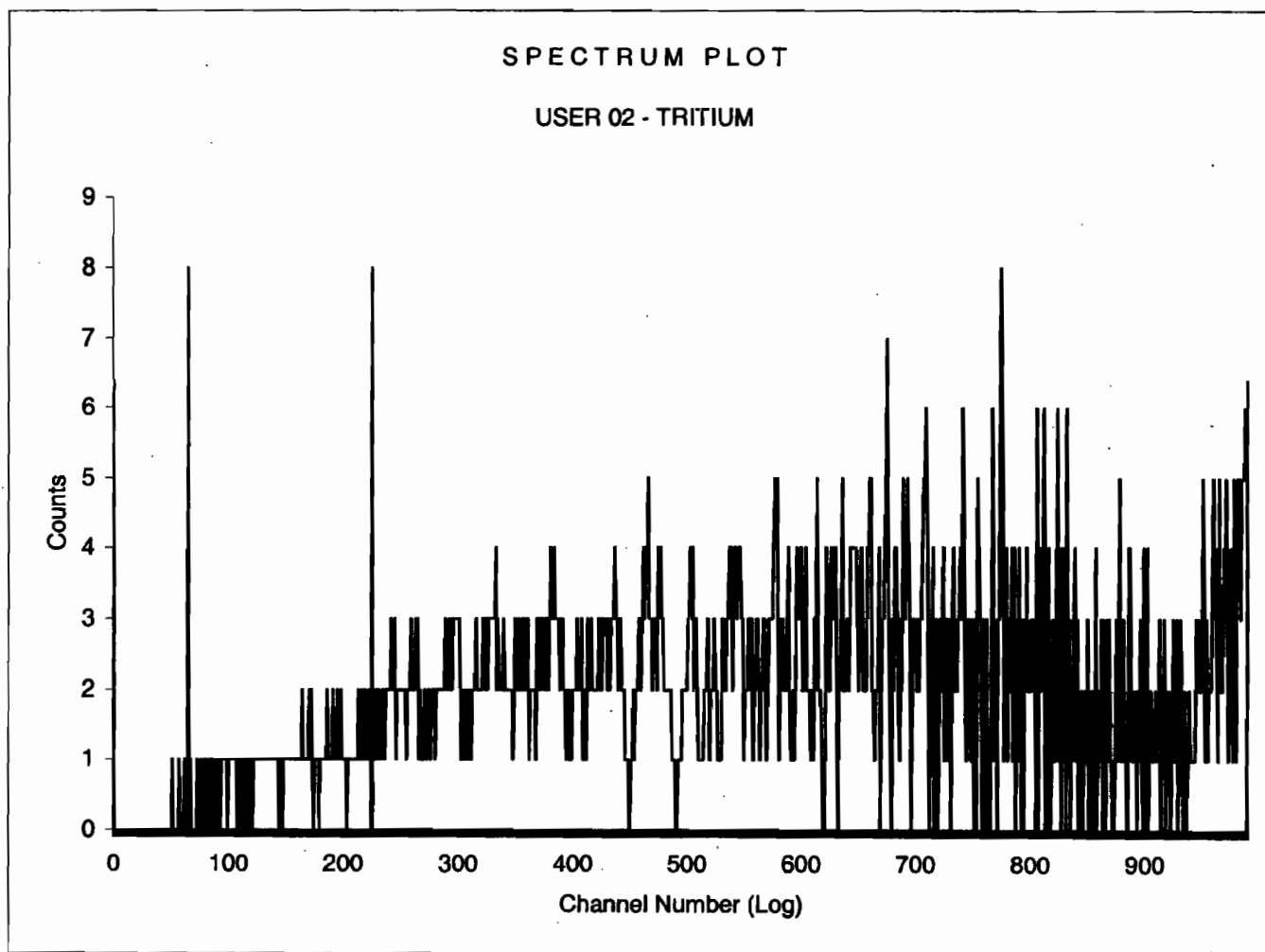
ALPHA-BETA DISCRIMINATION: NO

SAM NO	POS	TIME MIN	H#	WIND1		WIND2		LUMEX %	ELAPSED TIME	
				CPM	%ERROR	CPM	%ERROR			
MISSING SAMPLE										
8	9	60-9	45.00	115.3	4.04	15.62	43.20	4.56	1.04	46.77
9	10	60-10	45.00	114.5	3.13	17.94	42.40	4.60	0.99	93.85
10	11	60-11	45.00	114.6	4.67	14.35	45.47	4.44	0.88	140.93
11	12	60-12	45.00	113.8	2.96	18.48	42.11	4.62	0.91	187.99
12	13	1-1	45.00	114.2	3.58	16.62	43.73	4.53	0.93	235.18

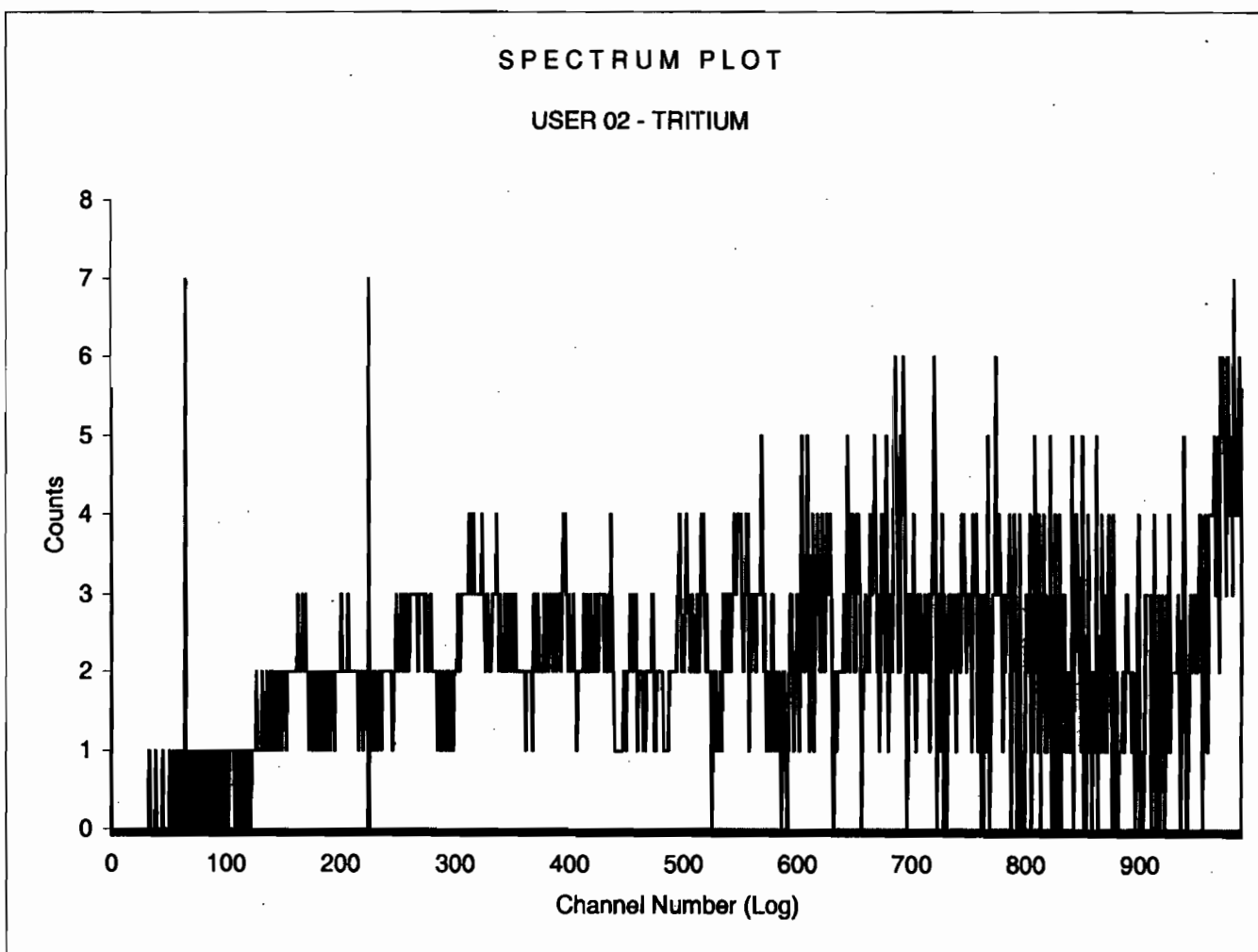
Sample Count Start Time:	8 Mar 2010 21:59:35		
Data Capture Date	08 Mar 2010 22:45:02		
User Filename	S02030860-9A.XLS		
	U02030860-9A.XLS		
Spectrum Type	Log Counts		
User Number	02		
User Id	TRITIUM		
User Comment	RED		
Scintillator	LIQUID		
Sample, Rack-Pos, Time:	9	60-9	45.00
H#, Total Counts:	115.3	2335	
Win1: Tritium - Start, End, Counts:	65	225	183
Win2: - Start, End, Counts:	0	990	1950



Sample Count Start Time:	8 Mar 2010 22:46:40		
Data Capture Date	08 Mar 2010 23:32:07		
User Filename	S02030860-10A.XLS		
	U02030860-9A.XLS		
Spectrum Type	Log Counts		
User Number	02		
User Id	TRITIUM		
User Comment	RED		
Scintillator	LIQUID		
Sample, Rack-Pos, Time:	10	60-10	45.00
H#, Total Counts:	114.5	2303	
Win1: Tritium - Start, End, Counts:	65	225	143
Win2: - Start, End, Counts:	0	990	1917



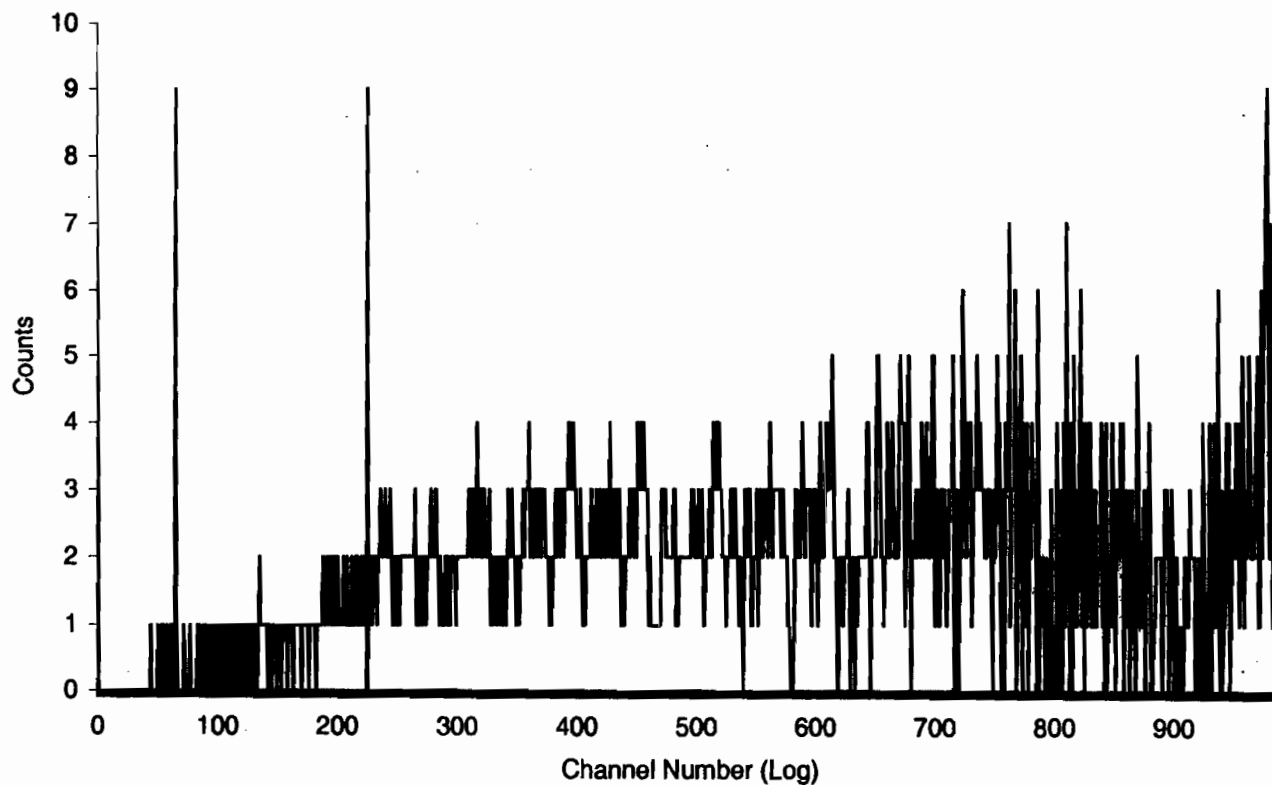
Sample Count Start Time:	8 Mar 2010 23:33:45		
Data Capture Date	09 Mar 2010 00:19:11		
User Filename	S02030960-11A.XLS		
	U02030860-9A.XLS		
Spectrum Type	Log Counts		
User Number	02		
User Id	TRITIUM		
User Comment	RED		
Scintillator	LIQUID		
Sample, Rack-Pos, Time:	11	60-11	45.00
H#, Total Counts:	114.6	2384	
Win1: Tritium - Start, End, Counts:	65	225	211
Win2: - Start, End, Counts:	0	990	2047



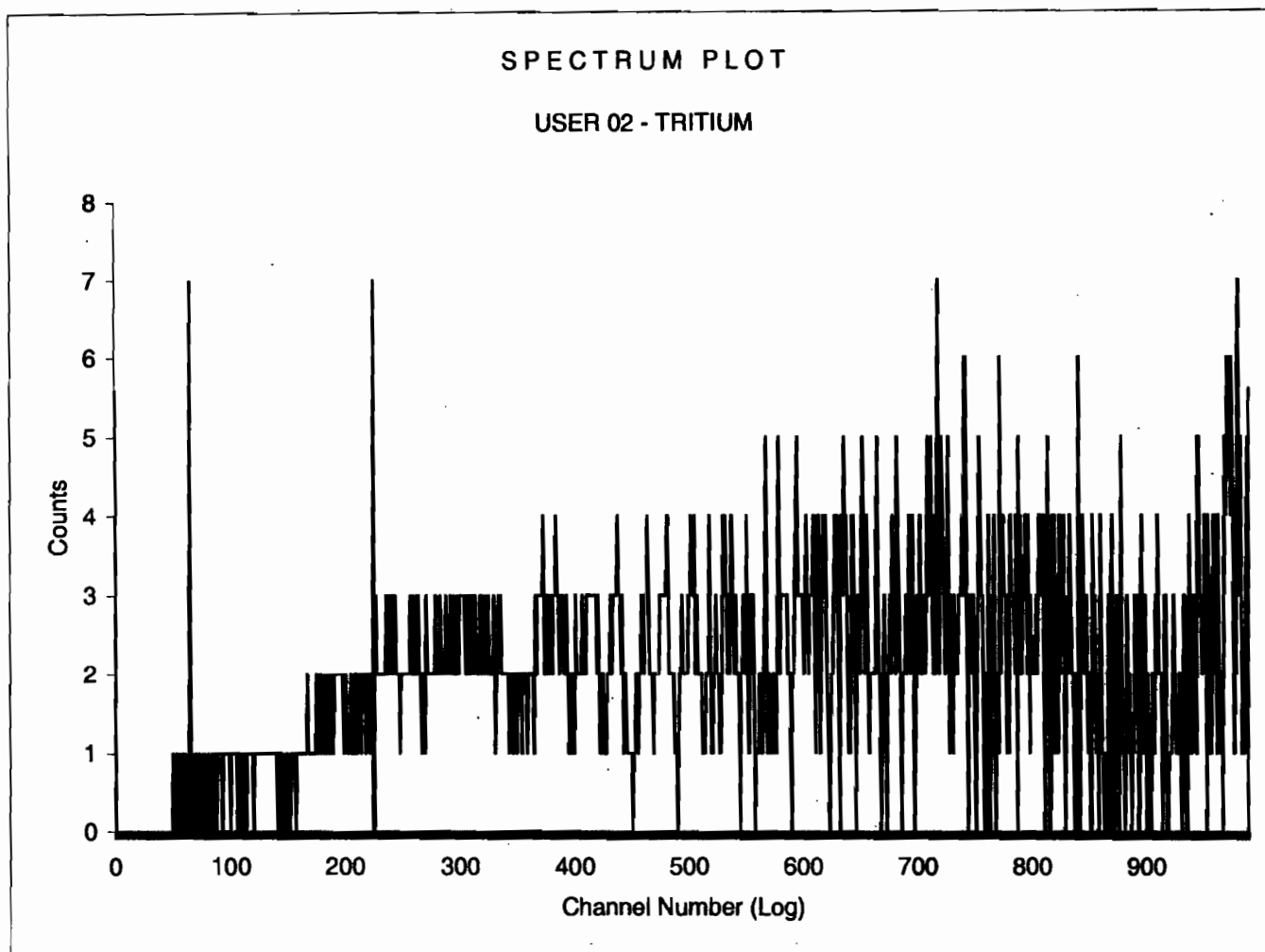
Sample Count Start Time:	9 Mar 2010 00:20:48		
Data Capture Date	09 Mar 2010 01:06:16		
User Filename	S02030960-12A.XLS		
	U02030860-9A.XLS		
Spectrum Type	Log Counts		
User Number	02		
User Id	TRITIUM		
User Comment	RED		
Scintillator	LIQUID		
Sample, Rack-Pos, Time:	12	60-12	45.00
H#, Total Counts:	113.8	2230	
Win1: Tritium - Start, End, Counts:	65	225	134
Win2: - Start, End, Counts:	0	990	1900

SPECTRUM PLOT

USER 02 - TRITIUM



Sample Count Start Time:	9 Mar 2010 01:08:00		
Data Capture Date	09 Mar 2010 01:53:27		
User Filename	S02030901-1A.XLS		
	U02030860-9A.XLS		
Spectrum Type	Log Counts		
User Number	02		
User Id	TRITIUM		
User Comment	RED		
Scintillator	LIQUID		
Sample, Rack-Pos, Time:	13	1-1	45.00
H#, Total Counts:	114.2	2392	
Win1: Tritium - Start, End, Counts:	65	225	163
Win2: - Start, End, Counts:	0	990	1973



9 MAR 2010 02:06

ID: TRITIUM

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 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

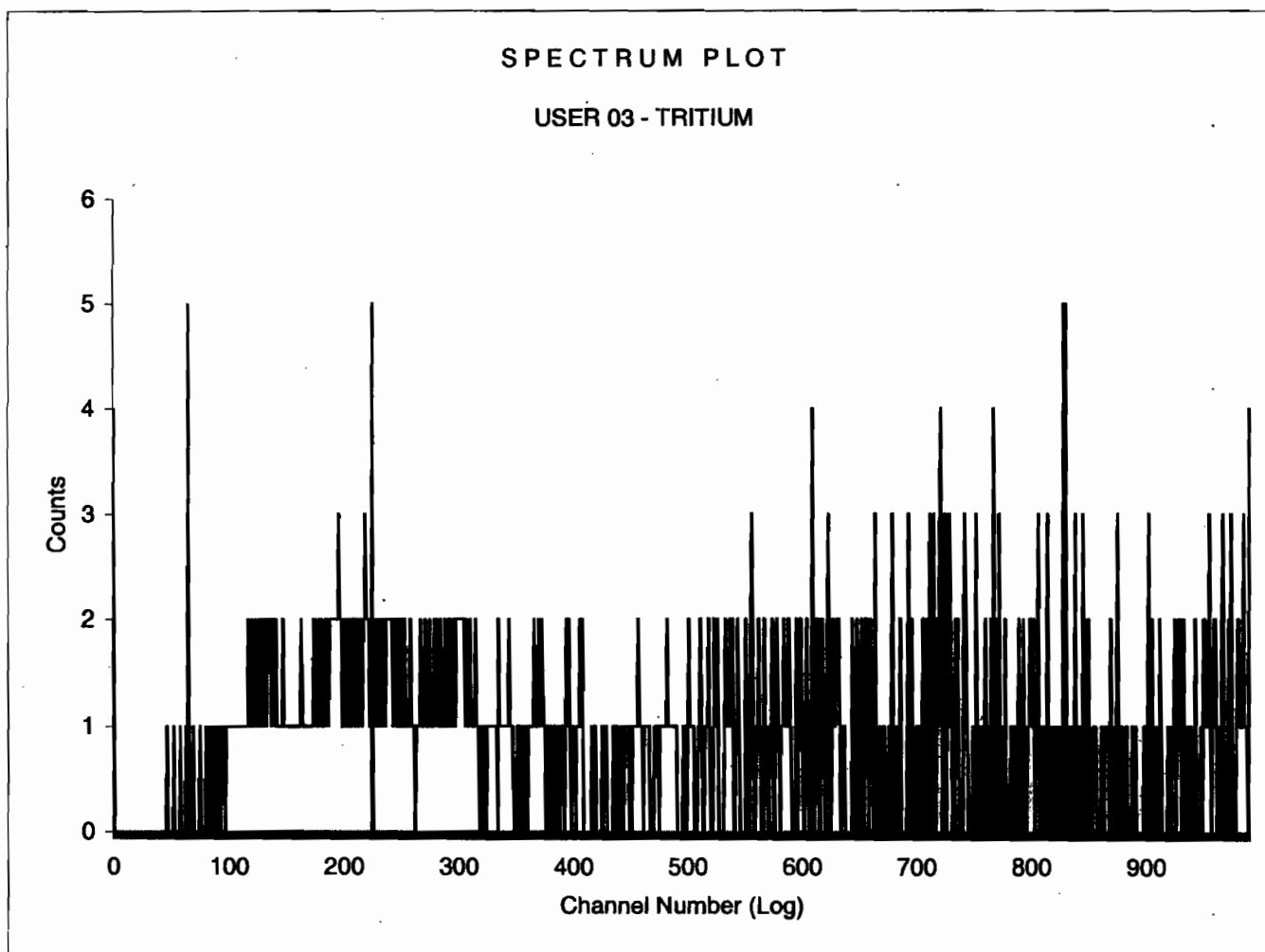
ALPHA-BETA DISCRIMINATION: NO

SAM NO	POS	TIME MIN	H#	WIND1		WIND2		LUMEX %	ELAPSED TIME
				CPM	%ERROR	CPM	%ERROR		
13 1	5-1	15.00	114.3	12.73	14.66	58.33	6.78	0.68	15.84
14 2	5-2	15.00	114.6	13.60	14.21	58.33	6.78	0.74	32.19

INSTRUMENT CALIBRATION: Mini 9 MAR 2010 02:42
 Calibration successful

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

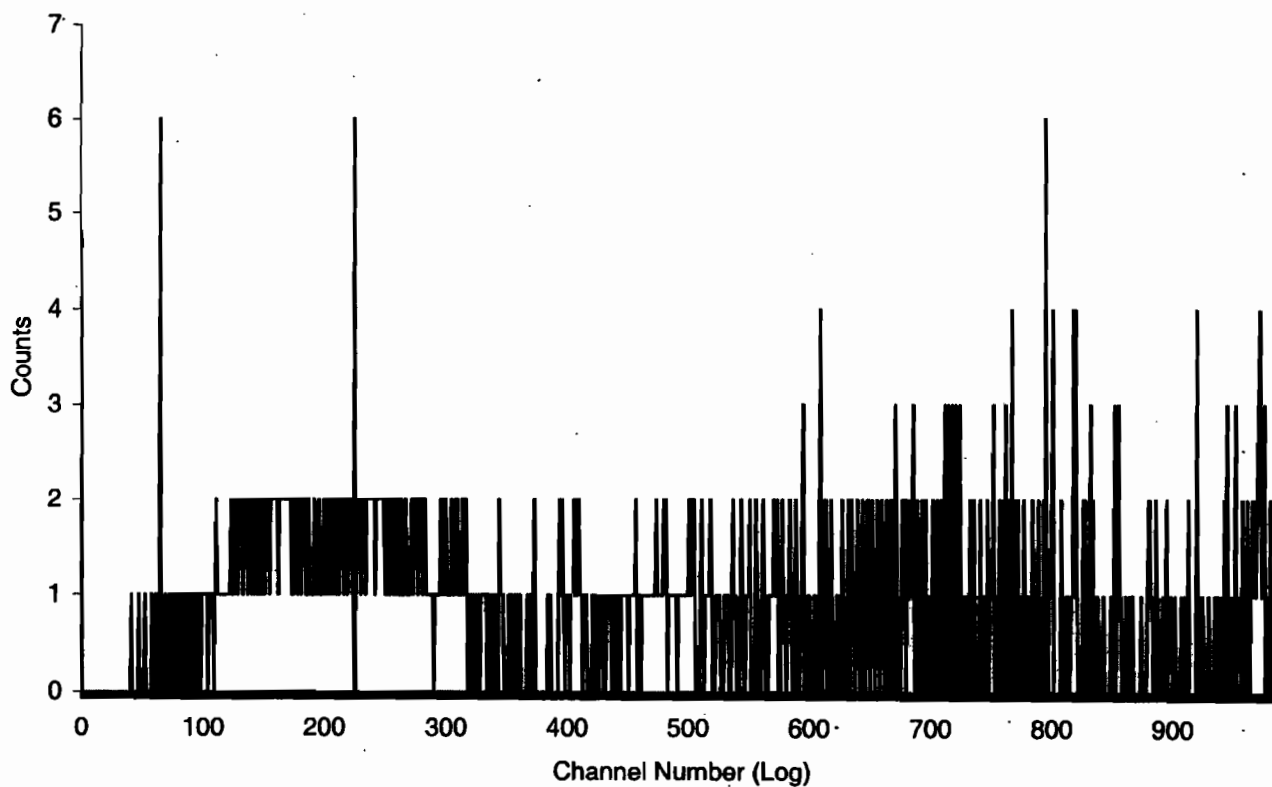
Sample Count Start Time:	9 Mar 2010 01:55:35		
Data Capture Date	09 Mar 2010 02:10:06		
User Filename	S03030905-1A.XLS		
	U03030905-1A.XLS		
Spectrum Type	Log Counts		
User Number	03		
User Id	TRITIUM		
User Comment	RED		
Scintillator	LIQUID		
Sample, Rack-Pos, Time:	1	5-1	15.00
H#, Total Counts:	114.3	965	
Win1: Tritium - Start, End, Counts:	65	225	192
Win2: - Start, End, Counts:	0	990	876



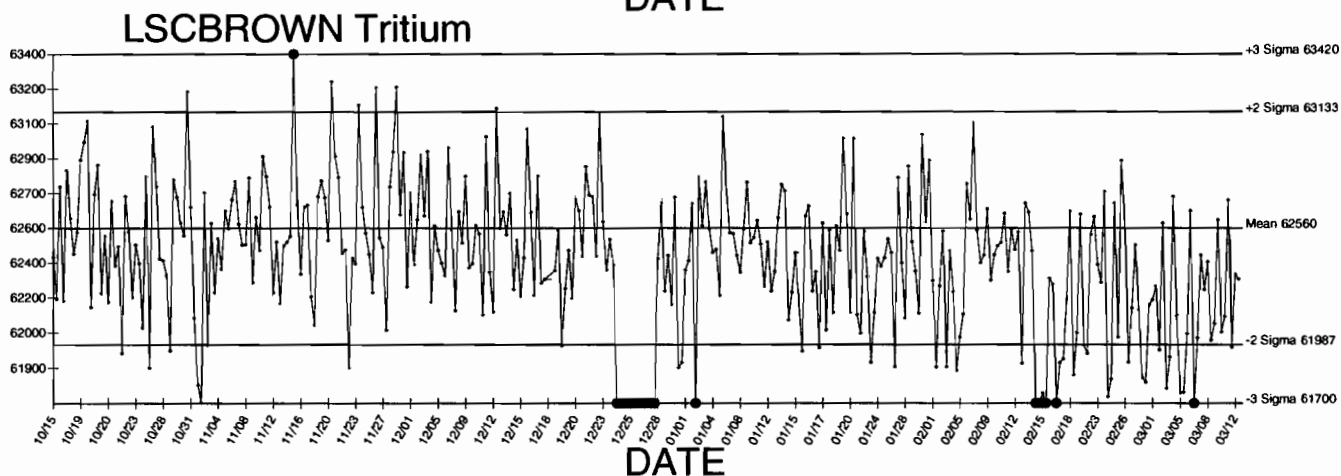
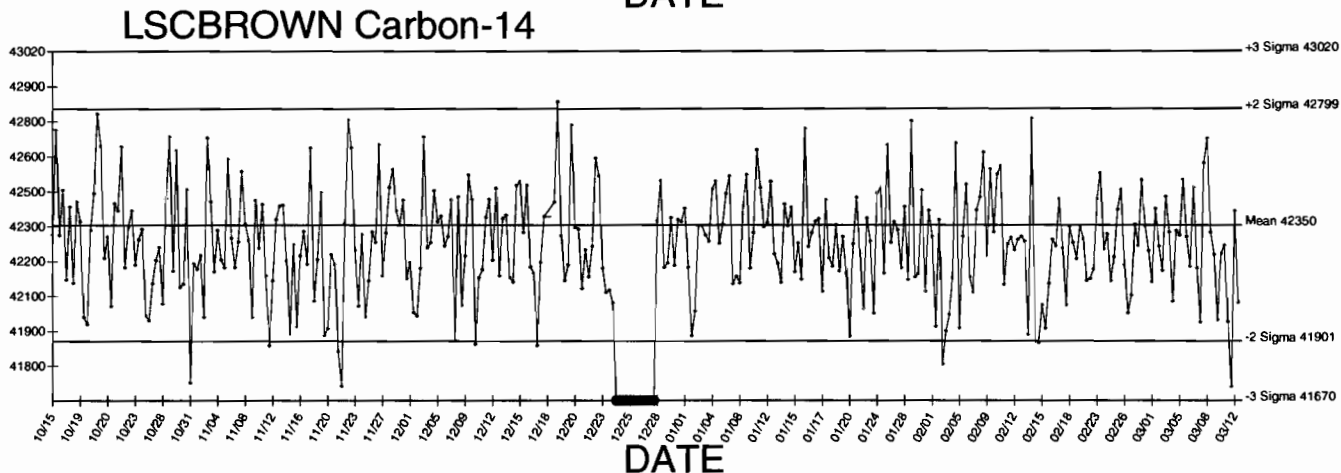
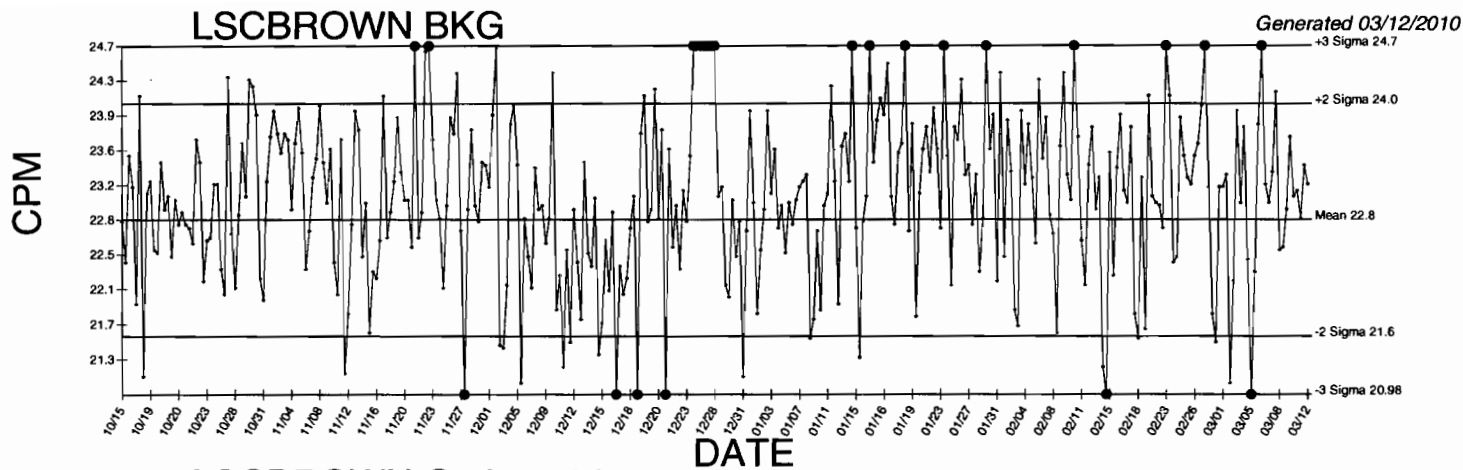
Sample Count Start Time:	9 Mar 2010 02:11:56		
Data Capture Date	09 Mar 2010 02:26:27		
User Filename	S03030905-2A.XLS		
	U03030905-1A.XLS		
Spectrum Type	Log Counts		
User Number	03		
User Id	TRITIUM		
User Comment	RED		
Scintillator	LIQUID		
Sample, Rack-Pos, Time:	2	5-2	15.00
H#, Total Counts:	114.6	961	
Win1: Tritium - Start, End, Counts:	65	225	205
Win2: - Start, End, Counts:	0	990	875

SPECTRUM PLOT

USER 03 - TRITIUM



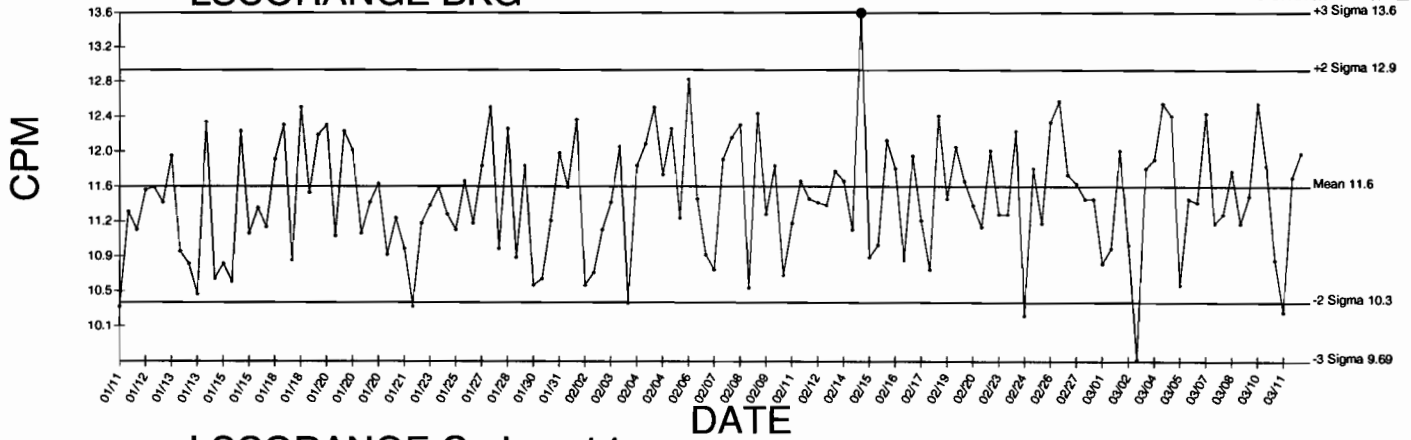
BACKGROUND AND EFFICIENCY DATA



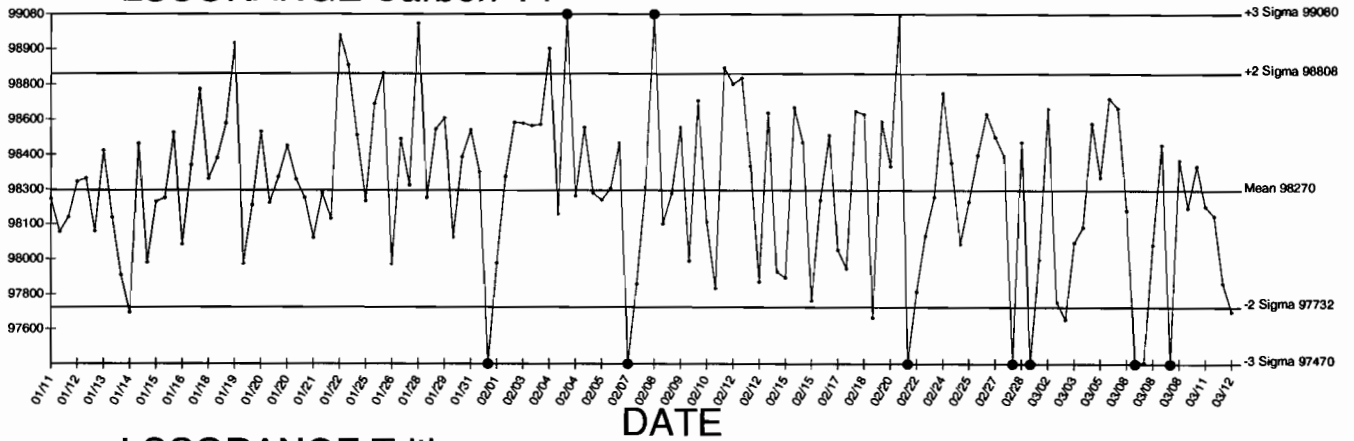
● Denotes Outlier

LSCORANGE BKG

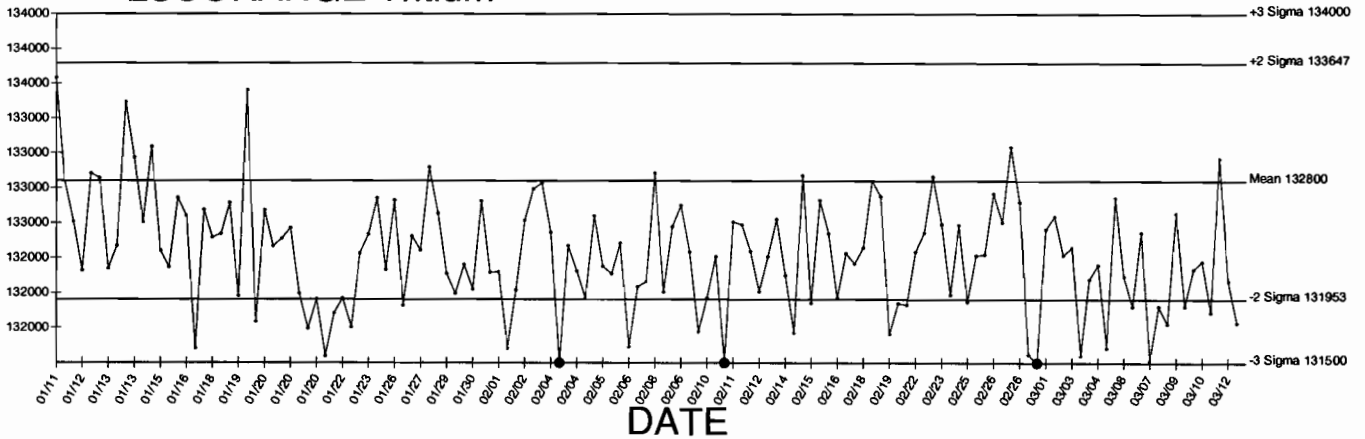
Generated 03/12/2010



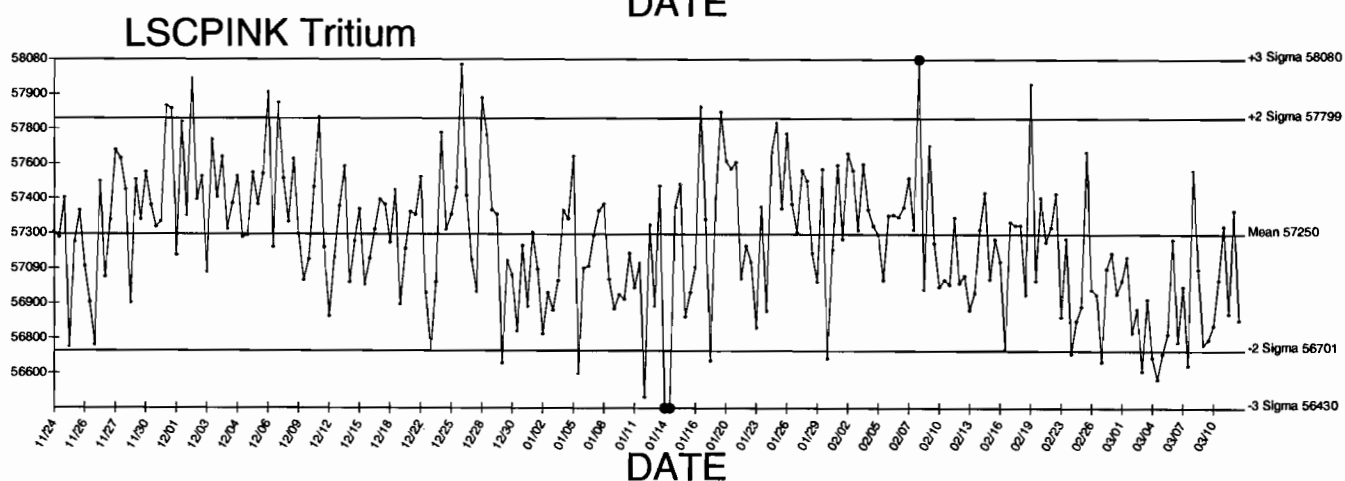
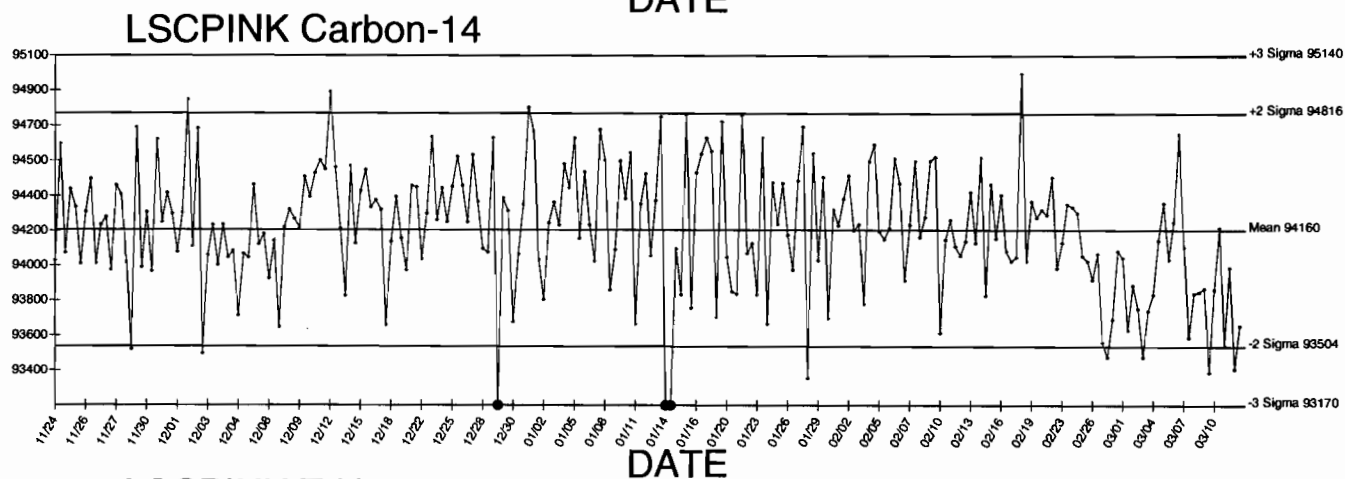
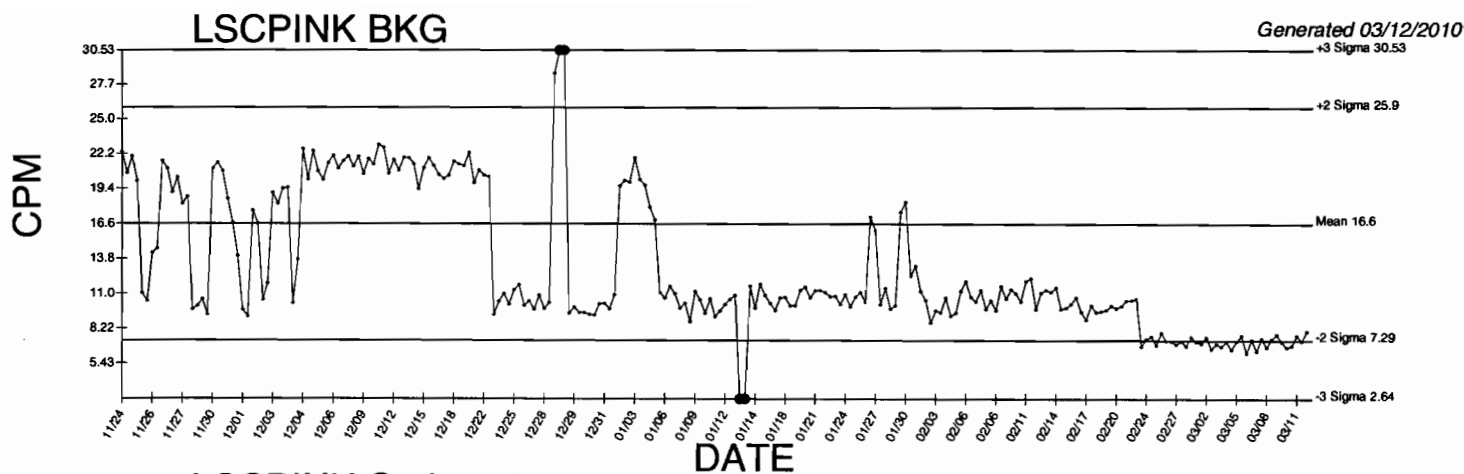
LSCORANGE Carbon-14



LSCORANGE Tritium



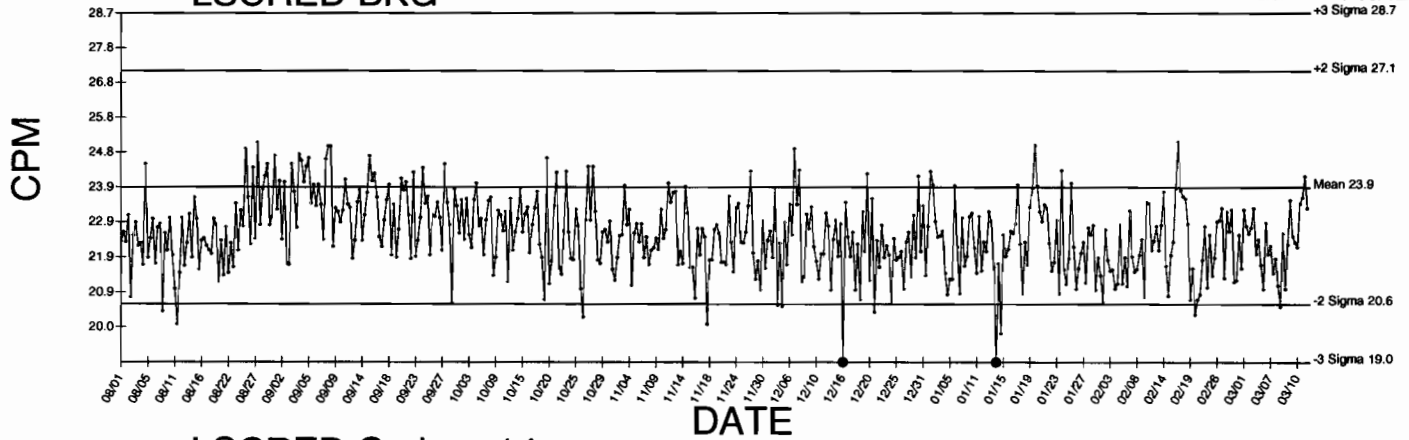
● Denotes Outlier



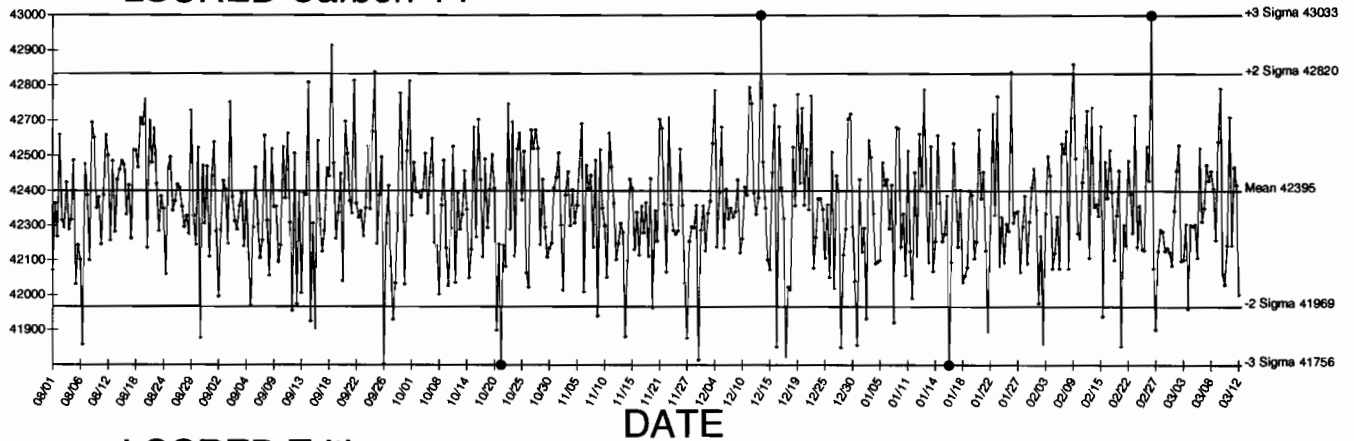
● Denotes Outlier

LSCRED BKG

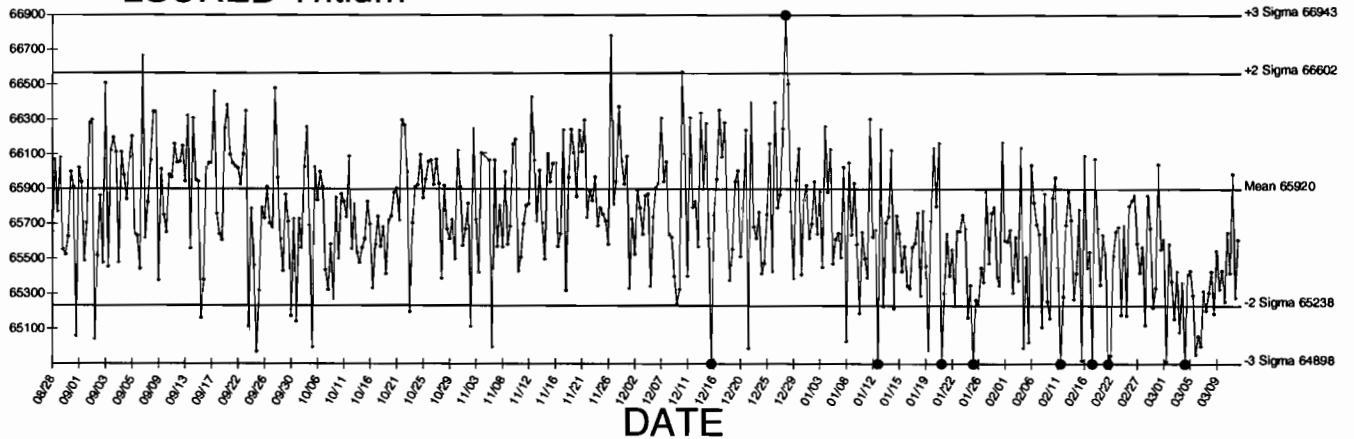
Generated 03/12/2010



LSCRED Carbon-14



LSCRED Tritium



● 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: 2.93×10^7 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 ± 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) = 3.7×10^{10} becquerels exactly.
Useful conversion factors are:
1 microcurie (μ Ci) = 3.7×10^4 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

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

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

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	0.380548	2741.3089
	0134-K N2	1073.2000	54.0000	1019.2000	0.380548	2678.242955
	0134-K N3	1085.2000	54.0000	1031.2000	0.380548	2709.776428
Mean Value (Counting) =	2709.776428		104.954429	Pass		
Stdev =	31.53347278		0.01163693	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 = Fail
 Two sigma = 63.06694556 dpm/mL
 10 % of Mean = 270.9776428 dpm/mL
 Rule 2 (Pass/Fail) = Pass

*exception taken due to full recovery of standard

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 Ecocint Ultra liquid scintillation cocktail was added to each vial and the vials were shaken to mix. A Blank vial was prepared in a similar fashion using 1 mL of DI water and 10 mL of Ecocint 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 J. Dehn 4/9/09

RUNLOGS

Instrument Run Log

Instrument Type: LSC

Batch ID: 956742

Sample ID	Sample Type	Analyst	Instrument	Run Date	Status	Geometry	Calibration Date
247344001	SAMPLE	KXK2	LSCRED	09-MAR-10 06:44	DONE	10mL DW/13mL Ecoscint Ultra	21-AUG-09 00:00
247344003	SAMPLE	KXK2	LSCRED	09-MAR-10 07:01	DONE	10mL DW/13mL Ecoscint Ultra	21-AUG-09 00:00
247344004	SAMPLE	KXK2	LSCRED	09-MAR-10 07:17	DONE	10mL DW/13mL Ecoscint Ultra	21-AUG-09 00:00
247344005	SAMPLE	KXK2	LSCRED	09-MAR-10 07:34	DONE	10mL DW/13mL Ecoscint Ultra	21-AUG-09 00:00
247344006	SAMPLE	KXK2	LSCRED	09-MAR-10 07:50	DONE	10mL DW/13mL Ecoscint Ultra	21-AUG-09 00:00
247344007	SAMPLE	KXK2	LSCRED	09-MAR-10 08:06	DONE	10mL DW/13mL Ecoscint Ultra	21-AUG-09 00:00
247344008	SAMPLE	KXK2	LSCRED	09-MAR-10 08:23	DONE	10mL DW/13mL Ecoscint Ultra	21-AUG-09 00:00
247344009	SAMPLE	KXK2	LSCRED	09-MAR-10 08:39	DONE	10mL DW/13mL Ecoscint Ultra	21-AUG-09 00:00
247344010	SAMPLE	KXK2	LSCRED	09-MAR-10 08:55	DONE	10mL DW/13mL Ecoscint Ultra	21-AUG-09 00:00
247344011	SAMPLE	KXK2	LSCRED	09-MAR-10 09:12	DONE	10mL DW/13mL Ecoscint Ultra	21-AUG-09 00:00
247552002	SAMPLE	KXK2	LSCPINK	09-MAR-10 10:01	DONE	10mL DW/13mL Ecoscint Ultra	21-AUG-09 00:00
1202051383	LCS	KXK2	LSCPINK	09-MAR-10 10:40	DONE	10mL DW/13mL Ecoscint Ultra	21-AUG-09 00:00
247360002	SAMPLE	KXK2	LSCORANGE	09-MAR-10 16:17	DONE	10mL DW/13mL Ecoscint Ultra	24-JUL-09 00:00
247360003	SAMPLE	KXK2	LSCORANGE	09-MAR-10 17:09	DONE	10mL DW/13mL Ecoscint Ultra	24-JUL-09 00:00
247360004	SAMPLE	KXK2	LSCORANGE	11-MAR-10 14:04	DONE	10mL DW/13mL Ecoscint Ultra	24-JUL-09 00:00
247551001	SAMPLE	KXK2	LSCORANGE	11-MAR-10 14:37	DONE	10mL DW/13mL Ecoscint Ultra	24-JUL-09 00:00
247551002	SAMPLE	KXK2	LSCORANGE	11-MAR-10 15:09	DONE	10mL DW/13mL Ecoscint Ultra	24-JUL-09 00:00
1202051382	DUP	KXK2	LSCORANGE	11-MAR-10 16:14	DONE	10mL DW/13mL Ecoscint Ultra	24-JUL-09 00:00
1202051381	MB	KXK2	LSCBROWN	11-MAR-10 18:49	DONE	10mL DW/13mL Ecoscint Ultra	09-SEP-09 00:00
247360001	SAMPLE	KXK2	LSCRED	12-MAR-10 07:08	DONE	10mL DW/13mL Ecoscint Ultra	21-AUG-09 00:00

Instrument Run Log

Instrument Type: LSC

Batch ID: 961331

Sample ID	Sample Type	Analyst	Instrument	Run Date	Status	Geometry	Calibration Date
247193001	SAMPLE	KXK2	LSCRED	08-MAR-10 16:03	DONE	10mL DW/13mL Ecoscint Ultra	21-AUG-09 00:00
247193002	SAMPLE	KXK2	LSCRED	08-MAR-10 16:50	DONE	10mL DW/13mL Ecoscint Ultra	21-AUG-09 00:00
247193003	SAMPLE	KXK2	LSCRED	08-MAR-10 17:38	DONE	10mL DW/13mL Ecoscint Ultra	21-AUG-09 00:00
247193004	SAMPLE	KXK2	LSCRED	08-MAR-10 18:25	DONE	10mL DW/13mL Ecoscint Ultra	21-AUG-09 00:00
247193008	SAMPLE	KXK2	LSCRED	08-MAR-10 19:12	DONE	10mL DW/13mL Ecoscint Ultra	21-AUG-09 00:00
247193009	SAMPLE	KXK2	LSCRED	08-MAR-10 19:59	DONE	10mL DW/13mL Ecoscint Ultra	21-AUG-09 00:00
247193010	SAMPLE	KXK2	LSCRED	08-MAR-10 20:46	DONE	10mL DW/13mL Ecoscint Ultra	21-AUG-09 00:00
247193011	SAMPLE	KXK2	LSCRED	08-MAR-10 21:59	DONE	10mL DW/13mL Ecoscint Ultra	21-AUG-09 00:00
247193014	SAMPLE	KXK2	LSCRED	08-MAR-10 22:46	DONE	10mL DW/13mL Ecoscint Ultra	21-AUG-09 00:00
247344002	SAMPLE	KXK2	LSCRED	08-MAR-10 23:33	DONE	10mL DW/13mL Ecoscint Ultra	21-AUG-09 00:00
1202062033	MB	KXK2	LSCRED	09-MAR-10 00:20	DONE	10mL DW/13mL Ecoscint Ultra	21-AUG-09 00:00
1202062034	DUP	KXK2	LSCRED	09-MAR-10 01:08	DONE	10mL DW/13mL Ecoscint Ultra	21-AUG-09 00:00
1202062035	MS	KXK2	LSCRED	09-MAR-10 01:55	DONE	10mL DW/13mL Ecoscint Ultra	21-AUG-09 00:00
1202062036	LCS	KXK2	LSCRED	09-MAR-10 02:11	DONE	10mL DW/13mL Ecoscint Ultra	21-AUG-09 00:00