

Monday, February 22, 2010

Page 2 of 2

REQUEST NUMBER: 10-1974

PRIORITY	METHOD CODE	CNTNR	SAMPLE ID	SAMPLE MATRIX	DATE SAMPLED	SPECIAL INSTRUCTIONS
EPA 906.0		1	RE15-10-8265	R	2/16/2010	
		1	RE15-10-8269	R	2/16/2010	

Final Page of REQUEST NUMBER 10-1974

Monday, February 22, 2010

LAB CHAIN OF CUSTODY DOCUMENT NUMBER: 10-1974

LOS ALAMOS

REQUEST NUMBER: 10-1974

NATIONAL LABORATORY

ATTN: Valerie Davis

TURNAROUND/REPORT DUE: 3/24/2010

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
RE15-10-8259	1	POLY	H3	Ice	R
RE15-10-8261	1	POLY	H3	Ice	R
RE15-10-8257	1	POLY	H3	Ice	R
RE15-10-8260	1	POLY	H3	Ice	R
RE15-10-8258	1	POLY	H3	Ice	R
RE15-10-8263	1	POLY	H3	Ice	R
RE15-10-8255	1	POLY	H3	Ice	R
RE15-10-8256	1	POLY	H3	Ice	R
RE15-10-8262	1	POLY	H3	Ice	R
RE15-10-8265	1	POLY	H3	Ice	R
RE15-10-8269	1	POLY	H3	Ice	R

Relinquished By:

Date Time

Received By:

Date Time

Printed Name

Signature

Printed Name

Signature

Printed Name

Signature

Printed Name

Signature

Printed Name

Signature

Printed Name

Signature

Received for DISPOSAL By:

Date

Time

Remarks:

Printed Name

Signature

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 2504

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

SAMPLE ID: RE15-10-8255

WORK ORDER:

AS PLANNED		AS COLLECTED		AS PLANNED		AS COLLECTED	
DATE COLLECTED(MM/DD/YYYY):		02/16/2010		MEDIA:		OBT3	
TIME COLLECTED(HH:MM)		844		SUB-MEDIA:		TUFF 1	
PRS ID: 15-007(d)		OK		SAMPLE TECH CODE:		HA	
LOCATION ID: 15-610820		↓		FIELD QC TYPE:		NA	
LOCATION TYPE: GENERIC		BH		FIELD PREP:		NA	
TOP DEPTH: 0		2/16/10 TAM 48.0 48.5		SAMPLE USAGE:		INV	
BOTTOM DEPTH: 0		50.0		SCREEN/PORT DESC:		NA	
FIELD MATRIX: R		R		EXCAVATED: YES/NO/NA		NA	
COMPOSITE TYPE: NA		COMPOSITE TIME INTERVAL: NA		WATER FLOWING: YES/NO/NA		NA	
BOREHOLE: YES/NO/NA		BOREHOLE DECLINATION: -90		BOREHOLE DIRECTION: NA			

#	PRIORITY	ORDER	CNTNR	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
1	Normal	TAM 2/16/10 8082+NMED-HEXP	250 ML AMBER GLASS	Ice		
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:

Pinkish gray Tuff

SAMPLE COMMENTS:

NA

LOCATION DESC: 7d.2

FIELD SCREENING/MEASUREMENT RESULTS:

Alpha \leq 25 dpm
Beta/Gamma \leq 2.10 dpm

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

TAM 2/16/10

COLLECTED BY (PRINT)

TLMcFarland

REVIEWED BY (PRINT)

J. MARIN

RELINQUISHED BY (Printed Name) Rolinda Saunders (Signature) <i>Rolinda Saunders</i>	Date/Time 2/17/10 740	RECEIVED BY (Printed Name) (Signature) <i>Gayle W.</i>	Date/Time 2/17/10 805
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 2504

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

SAMPLE ID: RE15-10-8256

WORK ORDER:

AS PLANNED		AS COLLECTED		AS PLANNED		AS COLLECTED	
DATE COLLECTED(MM/DD/YYYY):		02/16/2010		MEDIA:	OBT3		OK
TIME COLLECTED(HH:MM)		0907		SUB-MEDIA:	TUFF 1		J
PRS ID:	15-007(d)	OK		SAMPLE TECH CODE:	HA		CBS
LOCATION ID:	15-610820	OK		FIELD QC TYPE:	NA		OK
LOCATION TYPE:	GENERIC	BH		FIELD PREP:	NA		J
TOP DEPTH:	0	63.5		SAMPLE USAGE:	INV		J
BOTTOM DEPTH:	0	65.0		SCREEN/PORT DESC:			NA
FIELD MATRIX:	R	R		EXCAVATED: YES/NO/NA			
COMPOSITE TYPE:	NA			COMPOSITE TIME INTERVAL:	NA		
BOREHOLE: YES/NO/NA				BOREHOLE DECLINATION: NA -90			
				BOREHOLE DIRECTION:	NA		

#	PRIORITY	ORDER	CNTNR	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
1	Normal	72m 2/16/10 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, soft

SAMPLE COMMENTS:

NA

LOCATION DESC:

7d-2

FIELD SCREENING/MEASUREMENT RESULTS:

Alpha \leq 15 dpm
Beta/Gamma \leq 1898 dpm

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

72m 2/16/10

COLLECTED BY (PRINT)

Th McFarland

REVIEWED BY (PRINT)

SON mARM

RELINQUISHED BY (Printed Name) Rolenda Saunders (Signature) Rolenda Saunders	Date/Time 2/17/10 740	RECEIVED BY (Printed Name) Joy Wells (Signature) Joy Wells	Date/Time 2/17/10 808
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 2504

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

SAMPLE ID: RE15-10-8257

WORK ORDER:

AS PLANNED		AS COLLECTED		AS PLANNED		AS COLLECTED	
DATE COLLECTED(MM/DD/YYYY):		02/16/2010		MEDIA:		QBT3	
TIME COLLECTED (HH:MM)		0928		SUB-MEDIA:		TUFF 1	
PRS ID:	15-007(d)	OK		SAMPLE TECH CODE:		HA	
LOCATION ID:	15-610820	OK		FIELD QC TYPE:		NA	
LOCATION TYPE:	GENERIC	BH		FIELD PREP:		NA	
TOP DEPTH:	0	79.0		SAMPLE USAGE:		INV	
BOTTOM DEPTH:	0	80.0		SCREEN/PORT DESC:		NA	
FIELD MATRIX:	R	R		EXCAVATED: YES/NO/NA			
COMPOSITE TYPE: NA		COMPOSITE TIME INTERVAL: NA		WATER FLOWING: YES/NO/NA			
BOREHOLE: YES/NO/NA		BOREHOLE DECLINATION: -90		BOREHOLE DIRECTION: NA			

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

SAMPLE DESC: light gray nonindurated tuff

SAMPLE COMMENTS: NA

LOCATION DESC: 7d-2

FIELD SCREENING/MEASUREMENT RESULTS:

Alpha \leq 30 dpm
Beta/Gamma \leq 2.09 dpm

PID $\frac{\text{Ambient Reading}}{\text{Reading}} = \text{ppm}$ 72m 2/16/10

COLLECTED BY (PRINT)

REVIEWED BY (PRINT) J MARIN

RELINQUISHED BY (Printed Name) Rolenda Saunders (Signature) Rolenda Saunders	Date/Time 2/17/10 740	RECEIVED BY (Printed Name) Jayne (Signature) Jayne	Date/Time 2/17/10 805
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 2504

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

SAMPLE ID: RE15-10-8258

WORK ORDER:

AS PLANNED		AS COLLECTED		AS PLANNED		AS COLLECTED	
DATE COLLECTED(MM/DD/YYYY):		02/16/2010		MEDIA:		OBT3	
TIME COLLECTED (HH:MM)		0952		SUB-MEDIA:		TUFF1	
PRS ID: 15-007(d)		ok		SAMPLE TECH CODE:		HA	
LOCATION ID: 15-610820		↓		FIELD QC TYPE:		NA	
LOCATION TYPE: GENERIC		B4		FIELD PREP:		NA	
TOP DEPTH: 0		93.5		SAMPLE USAGE:		INV	
BOTTOM DEPTH: 0		95.0		SCREEN/PORT DESC:		NA	
FIELD MATRIX: R		R		EXCAVATED: YES/NO/NA		NO/NA	
COMPOSITE TYPE: NA		COMPOSITE TIME INTERVAL: NA		WATER FLOWING: YES/NO/NA		NO/NA	
BOREHOLE: YES/NO/NA		BOREHOLE DECLINATION: -90		BOREHOLE DIRECTION: NA			

#	PRIORITY	ORDER	CNTNR	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
1	Normal	72m 2/16/10 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:

Gray and white nonindurated tuff

SAMPLE COMMENTS:

NA

LOCATION DESC:

7d-2

FIELD SCREENING/MEASUREMENT RESULTS:

Alpha \pm 30 dpm
Beta/Gamma \pm 2.15 dpm

72m 2/16/10
PID $\frac{\text{Ambient Reading}}{\text{Reading}} = \text{ppm}$

COLLECTED BY (PRINT)

TLMcFarland

REVIEWED BY (PRINT)

JOH MARRIN

RELINQUISHED BY (Printed Name) Rolanda Saunders (Signature) Rolanda Saunders	Date/Time 2/17/10 740	RECEIVED BY (Printed Name) (Signature)	Date/Time 2/17/10 805
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 2504

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

SAMPLE ID: RE15-10-8259

WORK ORDER:

AS PLANNED		AS COLLECTED		AS PLANNED		AS COLLECTED	
DATE COLLECTED(MM/DD/YYYY):		02/16/2010		MEDIA:		OBT3	
TIME COLLECTED (HH:MM)		1017		SUB-MEDIA:		TUFF 1	
PRS ID:	15-007(d)	ok		SAMPLE TECH CODE:		HA	
LOCATION ID:	15-610820	L		FIELD QC TYPE:		NA	
LOCATION TYPE:	GENERIC	BH		FIELD PREP:		NA	
TOP DEPTH:	0	108.5		SAMPLE USAGE:		INV	
BOTTOM DEPTH:	0	110.0		SCREEN/PORT DESC:		NA	
FIELD MATRIX:	R	R		EXCAVATED: YES/NO/NA		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	72m 2/16/10 8882+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 pinkish gray, nonindurated buff

SAMPLE COMMENTS:

NA

LOCATION DESC:

7d-2

FIELD SCREENING/MEASUREMENT RESULTS:

Alpha \pm 15 dpmBeta/Gamma \pm 2.9 dpmPID $\frac{\text{Ambient Reading}}{\text{Reading}} = \text{ppm}$

72m 2/16/10

COLLECTED BY (PRINT)

REVIEWED BY (PRINT)

TL McFarland

SON MARIN

RELINQUISHED BY (Printed Name) Rolenda Saunders (Signature) Rolenda Saunders	Date/Time 2/17/10 740	RECEIVED BY (Printed Name) (Signature) [Signature]	Date/Time 2/17/10 805
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 2504

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

SAMPLE ID: RE15-10-8260

WORK ORDER:

AS PLANNED		AS COLLECTED		AS PLANNED		AS COLLECTED	
DATE COLLECTED(MM/DD/YYYY):		02/16/2010		MEDIA:	OBT3	73m 2/16/10	ok Ob t2
TIME COLLECTED(HH:MM)		1055		SUB-MEDIA:	TUFF 1		ok
PRS ID:	15-007(d)	ok		SAMPLE TECH CODE:	HA		CBS
LOCATION ID:	15-610820	↓		FIELD QC TYPE:	NA		ok
LOCATION TYPE:	GENERIC	BH		FIELD PREP:	NA		↓
TOP DEPTH:	0	124.0		SAMPLE USAGE:	INV		↓
BOTTOM DEPTH:	0	125.0		SCREEN/PORT DESC:			NA
FIELD MATRIX:	R	R		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	73m 2/16/10 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:

Pinkish gray indurated tuff

SAMPLE COMMENTS:

NA

LOCATION DESC:

7d-2

FIELD SCREENING/MEASUREMENT RESULTS:

Alpha \leq 15 dpm
Beta/Gamma \leq 1898 dpm

PID $\frac{\text{Ambient Reading}}{73m 2/16/10} =$ ppm

COLLECTED BY (PRINT)

i TLMCFaciera

REVIEWED BY (PRINT)

R Saunders

RELINQUISHED BY (Printed Name) Rolenda Saunders (Signature) Rolenda Saunders	Date/Time 2/17/10 740	RECEIVED BY (Printed Name) (Signature) Joy Wz	Date/Time 2/17/10 808
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 2504

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

SAMPLE ID: RE15-10-8261

WORK ORDER:

AS PLANNED		AS COLLECTED		AS PLANNED		AS COLLECTED	
DATE COLLECTED(MM/DD/YYYY):		02/16/2010		MEDIA:		QBT3	
TIME COLLECTED (HH:MM)		1314		SUB-MEDIA:		TUFF 1	
PRS ID:	15-007(d)	ok		SAMPLE TECH CODE:		HA	
LOCATION ID:	15-610820	↓		FIELD QC TYPE:		NA	
LOCATION TYPE:	GENERIC	BH		FIELD PREP:		NA	
TOP DEPTH:	0	138.5		SAMPLE USAGE:		INV	
BOTTOM DEPTH:	0	140.0		SCREEN/PORT DESC:		NA	
FIELD MATRIX:	R	R		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	73m 2/16/10 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, strongly indurated, moderately welded, devitrified, dy, ash flow tuff

SAMPLE COMMENTS:

NA

LOCATION DESC:

7d-2

FIELD SCREENING/MEASUREMENT RESULTS:

Alpha ≤ 41 dpm
Beta/Gamma ≤ 1891 dpm

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

73m 2/16/10

COLLECTED BY (PRINT)

Th McFarland

REVIEWED BY (PRINT)

J M A R I N

RELINQUISHED BY (Printed Name) Rolenda Saunders (Signature) <i>Rolenda Saunders</i>	Date/Time 2/17/10 740	RECEIVED BY (Printed Name) (Signature) <i>[Signature]</i>	Date/Time 2/17/10 805
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 2504

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

SAMPLE ID: RE15-10-8262

WORK ORDER:

AS PLANNED		AS COLLECTED		AS PLANNED		AS COLLECTED	
DATE COLLECTED(MM/DD/YYYY):		02/16/2010		MEDIA: QBT3		QBT2	
TIME COLLECTED (HH:MM)		13:59		SUB-MEDIA: TUFF 1		ok	
PRS ID:	15-007(d)	ok		SAMPLE TECH CODE: HA		CBS	
LOCATION ID:	15-610820	J		FIELD QC TYPE: NA		ok	
LOCATION TYPE:	GENERIC	BH		FIELD PREP: NA		J	
TOP DEPTH:	0	153.5 ft		SAMPLE USAGE: INV		J	
BOTTOM DEPTH:	0	155.0 ft		SCREEN/PORT DESC:		NA	
FIELD MATRIX:	R	R		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	72m 2/16/10 8082+NMED-HEXP	250 ML AMBER GLASS	Ice	Y	
1	J	H3	500 ML POLY	Ice	Y	
1	J	Metals+ClO4+CN	500 ML POLY	Ice	Y	
1	J	RADVANA+B+G	1 EA 8 IN RESEALABLE POLY BAG	None	Y	

SAMPLE DESC:

Light pinkish gray, slightly to moderately indurated, devitrified, dry, ark flow tuff.

SAMPLE COMMENTS:

NA

LOCATION DESC: 7d-2

FIELD SCREENING/MEASUREMENT RESULTS:

51 dpm
Alpha = 51 dpm
Beta/Gamma = 2100 dpm

PID Ambient Reading = 72m 2/16/10 ppm

COLLECTED BY (PRINT)

TL McFarland

REVIEWED BY (PRINT) J. MARIN

RELINQUISHED BY (Printed Name) Rolenda Saunders (Signature) Rolenda Saunders	Date/Time 2/17/10 740	RECEIVED BY (Printed Name) Joy W. S. (Signature) Joy W. S.	Date/Time 2/17/10 805
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 2504

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

SAMPLE ID: RE15-10-8263

WORK ORDER:

AS PLANNED		AS COLLECTED		AS PLANNED		AS COLLECTED	
DATE COLLECTED(MM/DD/YYYY):		02/16/2010		MEDIA: QBT3		QBT 2	
TIME COLLECTED (HH:MM)		1430		SUB-MEDIA: TUFF 1		ok	
PRS ID:	15-007(d)	ok		SAMPLE TECH CODE: HA		CBS	
LOCATION ID:	15-610820	L		FIELD QC TYPE: NA		ok	
LOCATION TYPE:	GENERIC	BH		FIELD PREP: NA		↓	
TOP DEPTH:	0	168.5		SAMPLE USAGE: INV		↓	
BOTTOM DEPTH:	0	170.0		SCREEN/PORT DESC:		NA	
FIELD MATRIX:	R	R		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 reddish brown, slightly indurated, nonwelded, devitrified, dry, ark flow tuff

SAMPLE COMMENTS:

NA

FR: RE15-10-8272

LOCATION DESC:

7d-2

FIELD SCREENING/MEASUREMENT RESULTS:

Alpha \pm 51 dpm
Beta/Gamma \pm 2120 dpm

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

73m 2/16/10

COLLECTED BY (PRINT)

REVIEWED BY (PRINT) J. MARIN

RELINQUISHED BY (Printed Name) Rolanda Saunders (Signature) Rolanda Saunders	Date/Time 2/17/10 740	RECEIVED BY (Printed Name) Jaylen (Signature) Jaylen	Date/Time 2/17/10 805
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 2504

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

SAMPLE ID: RE15-10-8265

WORK ORDER:

AS PLANNED		AS COLLECTED		AS PLANNED		AS COLLECTED	
DATE COLLECTED(MM/DD/YYYY):		02/16/2010		MEDIA:		OBT3	
TIME COLLECTED (HH:MM)		1455		SUB-MEDIA:		TUFF 1	
PRS ID: 15-007(d)		ok		SAMPLE TECH CODE:		HA	
LOCATION ID: UNK		15-610820		FIELD QC TYPE:		NA	
LOCATION TYPE: GENERIC		BH		FIELD PREP:		NA	
TOP DEPTH: 0		178.0		SAMPLE USAGE:		INV	
BOTTOM DEPTH: 0		180.0		SCREEN/PORT DESC:		NA	
FIELD MATRIX: R		R		EXCAVATED: YES/NO/NA		NA	
COMPOSITE TYPE: NA		COMPOSITE TIME INTERVAL: NA		WATER FLOWING: YES/NO/NA		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: Grayish pink slightly indurated ~~light~~ ^{hard} ~~firm~~ ^{firm} No IV welded
 devitrified, dry, arch flow tu & f 2/16/10

SAMPLE COMMENTS:

NA

LOCATION DESC: 7d-2

FIELD SCREENING/MEASUREMENT RESULTS:

Alpha \leq 30 dpm
 Beta/Gamma \leq 2040 dpm

PID $\frac{\text{Ambient Reading}}{72 \text{ m } 2/16/10} = \text{ppm}$

COLLECTED BY (PRINT)

TLMcFarland

REVIEWED BY (PRINT)

J. MARIN

RELINQUISHED BY (Printed Name) Rolenda Saunders (Signature) <i>Rolenda Saunders</i>	Date/Time 2/17/10 740	RECEIVED BY (Printed Name) (Signature) <i>J. Marin</i>	Date/Time 2/17/10 805
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 2504

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

SAMPLE ID: RE15-10-8269

WORK ORDER:

AS PLANNED		AS COLLECTED		AS PLANNED		AS COLLECTED	
DATE COLLECTED(MM/DD/YYYY):		02/16/2010		MEDIA:		QBT3	
TIME COLLECTED (HH:MM)		1455		SUB-MEDIA:		TUFF 1	
PRS ID: 15-007(d)		OK		SAMPLE TECH CODE: HA		CBS	
LOCATION ID: UNK		15-610820		FIELD QC TYPE: ED		OK	
LOCATION TYPE: GENERIC		BH		FIELD PREP: NA		↓	
TOP DEPTH: 0		178.0		SAMPLE USAGE: QC		↓	
BOTTOM DEPTH: 0		180.0		SCREEN/PORT DESC:		NA	
FIELD MATRIX: R		R		EXCAVATED: YES/NO/NA			
COMPOSITE TYPE: NA		COMPOSITE TIME INTERVAL: NA		WATER FLOWING: YES/NO/NA		NO/NA	
BOREHOLE: YES/NO/NA		BOREHOLE DECLINATION: -90		BOREHOLE DIRECTION: NA			

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

SAMPLE DESC: QC Sample of RE15-10-8265

Grayest pink slightly indurated, non welded, dehydrified, dry ash flow tuff

SAMPLE COMMENTS:

NA

LOCATION DESC: 7d-2

FIELD SCREENING/MEASUREMENT RESULTS:

Alpha ≤ 30 dpm
Beta/Gamma ≤ 2070 dpmPID $\frac{\text{Ambient Reading}}{73m \ 2/16/10} = \text{ppm}$

COLLECTED BY (PRINT)

TL McFarland

REVIEWED BY (PRINT)

J. MARIN

RELINQUISHED BY (Printed Name) Rolanda Saunders (Signature) Rolanda Saunders	Date/Time 2/17/10 7:40	RECEIVED BY (Printed Name) (Signature) [Signature]	Date/Time 2/17/10 805
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 2504

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

SAMPLE ID: RE15-10-8272

WORK ORDER:

<u>AS PLANNED</u>		<u>AS COLLECTED</u>	<u>AS PLANNED</u>		<u>AS COLLECTED</u>
DATE COLLECTED(MM/DD/YYYY):		02/16/2010	MEDIA:	NA	ok
TIME COLLECTED (HH:MM)		1500	SUB-MEDIA:	OTHER	
PRS ID:	15-007(d)	ok	SAMPLE TECH CODE:	DC	
LOCATION ID:	UNK	15-610820	FIELD QC TYPE:	FR	
LOCATION TYPE:	GENERIC	BH	FIELD PREP:	UF	
TOP DEPTH:	0	ok	SAMPLE USAGE:	QC	
BOTTOM DEPTH:	0		SCREEN/PORT DESC:		NA
FIELD MATRIX:	W		EXCAVATED: YES/NO/NA		
COMPOSITE TYPE: NA			COMPOSITE TIME INTERVAL: NA		
BOREHOLE: YES/NO/NA			WATER FLOWING: 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 RE15-10-8263

SAMPLE COMMENTS:

Rinsate

LOCATION DESC:

NA

FIELD SCREENING/MEASUREMENT RESULTS:

NA

COLLECTED BY (PRINT)

TLMcFarlane

REVIEWED BY (PRINT)

J. MARIN

RELINQUISHED BY (Printed Name) Rolinda Saunders (Signature) Rolinda Saunders	Date/Time 2/17/10 740	RECEIVED BY (Printed Name) (Signature) [Signature]	Date/Time 2/17/10 805
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):

RE15-10-8269
8265

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):

RE15-10-8272 Rinsate

RS 02/17/10
~~RE15-10-8245 FD~~

8945
WST15-10-~~894X~~ FTB
RS 02-17-10

Reason:

.....
Print Last Name

Saunders

Signature

Glinda Saunders

Date

2/17/10



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1 of 2

ARS Sample Delivery Group: ARS1-10-00276
Analysis Description: Gross Alpha/Beta In (Soil, Sludge, Waste, Sediment (SO))
Analysis Test Method: GPC-A-003

Request or PO Number: N/A
Date Received: 2/18/2010
Report Date: 02/19/10 14:51

ARS Sample ID	Client Sample ID	Isotope	Analysis Results	Analysis Error +/- 2 s	MDC	DLC	Qual	Analysis Units	Analysis Date/Time	Analysis Technician	Tracer/Chem Recovery	Sample Matrix	Collection Date
ARS1-10-00276-001	RE15-10-8269	GROSS ALPHA	10.697	5.568	14.162	4.333	U	pCi/g	2/19/2010	CR	N/A	SO	
ARS1-10-00276-001	RE15-10-8269	GROSS BETA	38.193	6.364	7.844	3.391		pCi/g	2/19/2010	CR	N/A	SO	
ARS1-10-00276-002	RE15-10-8265	GROSS ALPHA	11.347	5.441	12.361	3.509	U	pCi/g	2/19/2010	CR	N/A	SO	
ARS1-10-00276-002	RE15-10-8265	GROSS BETA	46.084	7.285	8.009	3.480		pCi/g	2/19/2010	CR	N/A	SO	
ARS1-10-00276-003	RE15-10-8263	GROSS ALPHA	-2.988	0.686	13.421	4.021	U	pCi/g	2/19/2010	CR	N/A	SO	
ARS1-10-00276-003	RE15-10-8263	GROSS BETA	27.186	5.017	7.690	3.308		pCi/g	2/19/2010	CR	N/A	SO	
ARS1-10-00276-004	RE15-10-8262	GROSS ALPHA	16.863	6.710	13.885	4.214		pCi/g	2/19/2010	CR	N/A	SO	
ARS1-10-00276-004	RE15-10-8262	GROSS BETA	37.171	6.210	7.584	3.276		pCi/g	2/19/2010	CR	N/A	SO	
ARS1-10-00276-005	RE15-10-8261	GROSS ALPHA	2.953	3.534	13.347	3.980	U	pCi/g	2/19/2010	CR	N/A	SO	
ARS1-10-00276-005	RE15-10-8261	GROSS BETA	33.499	5.824	7.952	3.432		pCi/g	2/19/2010	CR	N/A	SO	
ARS1-10-00276-006	RE15-10-8260	GROSS ALPHA	9.712	5.362	14.035	4.145	U	pCi/g	2/19/2010	CR	N/A	SO	
ARS1-10-00276-006	RE15-10-8260	GROSS BETA	28.355	5.266	7.924	3.413		pCi/g	2/19/2010	CR	N/A	SO	
ARS1-10-00276-007	RE15-10-8259	GROSS ALPHA	11.151	5.530	13.539	4.037	U	pCi/g	2/19/2010	CR	N/A	SO	
ARS1-10-00276-007	RE15-10-8259	GROSS BETA	27.604	5.136	7.864	3.408		pCi/g	2/19/2010	CR	N/A	SO	
ARS1-10-00276-008	RE15-10-8258	GROSS ALPHA	6.052	4.662	15.175	4.824	U	pCi/g	2/19/2010	CR	N/A	SO	
ARS1-10-00276-008	RE15-10-8258	GROSS BETA	30.003	5.428	8.011	3.468		pCi/g	2/19/2010	CR	N/A	SO	
ARS1-10-00276-009	RE15-10-8257	GROSS ALPHA	12.411	5.897	13.425	3.811	U	pCi/g	2/19/2010	CR	N/A	SO	
ARS1-10-00276-009	RE15-10-8257	GROSS BETA	24.144	4.784	8.099	3.521		pCi/g	2/19/2010	CR	N/A	SO	
ARS1-10-00276-010	RE15-10-8255	GROSS ALPHA	15.706	6.496	13.437	3.927		pCi/g	2/19/2010	CR	N/A	SO	
ARS1-10-00276-010	RE15-10-8255	GROSS BETA	38.194	6.453	8.242	3.576		pCi/g	2/19/2010	CR	N/A	SO	
ARS1-10-00276-011	RE15-10-8256	GROSS ALPHA	16.381	6.704	13.779	4.005		pCi/g	2/19/2010	CR	N/A	SO	
ARS1-10-00276-011	RE15-10-8256	GROSS BETA	36.007	6.164	7.930	3.423		pCi/g	2/19/2010	CR	N/A	SO	
ARS1-10-00276-012	RE11-10-1560	GROSS ALPHA	8.971	5.175	14.130	4.288	U	pCi/g	2/19/2010	CR	N/A	SO	
ARS1-10-00276-012	RE11-10-1560	GROSS BETA	31.109	5.674	8.889	3.908		pCi/g	2/19/2010	CR	N/A	SO	
ARS1-10-00276-013	RE11-10-1561	GROSS ALPHA	9.231	5.315	14.026	4.182	U	pCi/g	2/19/2010	CR	N/A	SO	
ARS1-10-00276-013	RE11-10-1561	GROSS BETA	36.509	6.190	8.007	3.466		pCi/g	2/19/2010	CR	N/A	SO	
ARS1-10-00276-014	RE11-10-1562	GROSS ALPHA	1.350	2.778	12.112	3.481	U	pCi/g	2/19/2010	CR	N/A	SO	
ARS1-10-00276-014	RE11-10-1562	GROSS BETA	33.262	5.788	8.188	3.564		pCi/g	2/19/2010	CR	N/A	SO	
ARS1-10-00276-015	RE11-10-1563	GROSS ALPHA	7.129	4.631	13.430	3.986	U	pCi/g	2/19/2010	CR	N/A	SO	
ARS1-10-00276-015	RE11-10-1563	GROSS BETA	30.307	5.427	7.748	3.341		pCi/g	2/19/2010	CR	N/A	SO	
ARS1-10-00276-016	RE11-10-1564	GROSS ALPHA	3.283	4.238	16.310	5.341	U	pCi/g	2/19/2010	CR	N/A	SO	
ARS1-10-00276-016	RE11-10-1564	GROSS BETA	33.531	5.833	8.187	3.560		pCi/g	2/19/2010	CR	N/A	SO	
ARS1-10-00276-017	RE11-10-1565	GROSS ALPHA	0.430	3.067	14.783	4.559	U	pCi/g	2/19/2010	CR	N/A	SO	
ARS1-10-00276-017	RE11-10-1565	GROSS BETA	28.160	5.214	8.177	3.548		pCi/g	2/19/2010	CR	N/A	SO	
ARS1-10-00276-018	RE11-10-1566	GROSS ALPHA	3.751	4.211	15.540	4.983	U	pCi/g	2/19/2010	CR	N/A	SO	
ARS1-10-00276-018	RE11-10-1566	GROSS BETA	26.261	5.177	9.206	4.049		pCi/g	2/19/2010	CR	N/A	SO	



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2 of 2

ARS Sample Delivery Group: ARS1-10-00276

Analysis Description: Gross Alpha/Beta in (Soil, Sludge, Waste, Sediment (SOI))

Analysis Test Method: GPC-A-003

Request or PO Number: N/A

Date Received: 2/18/2010

Report Date: 02/19/10 14:51

ARS Sample ID	Client Sample ID	Isotope	Analysis Results	Analysis Error +/- 2 s	MDC	DLC	Qual	Analysis Units	Analysis Date/Time	Analysis Technician	Tracer/Chem Recovery	Sample Matrix	Collection Date
ARS1-10-00276-019	RE11-10-1567	GROSS ALPHA	-2.851	2.411	16.430	5.298	U	pCi/g	2/19/2010	CR	N/A	SO	
ARS1-10-00276-019	RE11-10-1567	GROSS BETA	41.899	6.782	7.903	3.405		pCi/g	2/19/2010	CR	N/A	SO	
ARS1-10-00276-020	RE11-10-1568	GROSS ALPHA	15.884	6.729	15.324	4.914		pCi/g	2/19/2010	CR	N/A	SO	
ARS1-10-00276-020	RE11-10-1568	GROSS BETA	21.471	4.534	8.054	3.479		pCi/g	2/19/2010	CR	N/A	SO	
ARS1-10-00276-021	RE11-10-1569	GROSS ALPHA	10.821	5.863	15.430	5.028	U	pCi/g	2/19/2010	CR	N/A	SO	
ARS1-10-00276-021	RE11-10-1569	GROSS BETA	38.721	6.393	7.536	3.237		pCi/g	2/19/2010	CR	N/A	SO	
ARS1-10-00276-022	RE11-10-1570	GROSS ALPHA	-0.082	2.768	13.813	4.363	U	pCi/g	2/19/2010	CR	N/A	SO	
ARS1-10-00276-022	RE11-10-1570	GROSS BETA	27.261	5.102	8.042	3.474		pCi/g	2/19/2010	CR	N/A	SO	
ARS1-10-00276-023	RE11-10-1571	GROSS ALPHA	6.547	5.040	15.985	5.296	U	pCi/g	2/19/2010	CR	N/A	SO	
ARS1-10-00276-023	RE11-10-1571	GROSS BETA	35.681	6.051	7.790	3.362		pCi/g	2/19/2010	CR	N/A	SO	
ARS1-10-00276-024	RE11-10-1572	GROSS ALPHA	5.004	4.153	13.728	4.415	U	pCi/g	2/19/2010	CR	N/A	SO	
ARS1-10-00276-024	RE11-10-1572	GROSS BETA	19.507	4.178	7.737	3.335		pCi/g	2/19/2010	CR	N/A	SO	
ARS1-10-00276-025	RE11-10-1573	GROSS ALPHA	0.151	3.730	16.805	5.627	U	pCi/g	2/19/2010	CR	N/A	SO	
ARS1-10-00276-025	RE11-10-1573	GROSS BETA	31.305	5.562	7.980	3.444		pCi/g	2/19/2010	CR	N/A	SO	
ARS1-10-00276-026	RE11-10-1576	GROSS ALPHA	-0.117	3.911	17.349	6.135	U	pCi/g	2/19/2010	CR	N/A	SO	
ARS1-10-00276-026	RE11-10-1576	GROSS BETA	39.023	6.509	8.540	3.729		pCi/g	2/19/2010	CR	N/A	SO	
NOTES:													

Project Manager Review

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

LELAP Certificate # 01949

NELAP Certificate # E87558

DATA VALIDATION COVER SHEET

5119-1

Data Validation Cover Sheet

Records Use only



Section I.

REQUEST NUMBER: 10-1974 VALIDATION DATE: 04/04/10 LAB CODE: GELCONTRACT LABORATORY NAME: GEL Laboratories LLCVALIDATOR: John A. Bailey ORGANIZATION: Analytical Quality Associates, Inc.

ANALYTICAL SUITE (CHECK ALL THAT APPLY):

- | | | | |
|---|--|---|--|
| <input type="checkbox"/> TPH-GRO | <input type="checkbox"/> HIGH EXPLOSIVES | <input type="checkbox"/> DIOXIN FURANS | <input type="checkbox"/> LCMSMS PERCHLORATES |
| <input type="checkbox"/> TPH-DRO | <input type="checkbox"/> METALS | <input type="checkbox"/> PCB CONGENERS | <input type="checkbox"/> ORGANOCHLORINE |
| <input type="checkbox"/> GENERAL CHEMISTRY | <input checked="" type="checkbox"/> RADIOCHEMISTRY | <input type="checkbox"/> LCMSMS HIGH EXPLOSIVES | PESTICIDES/POLYCHLORINATED BIPHENYLS |
| <input type="checkbox"/> OTHER (DESCRIBE): <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 for tritium, except for the batch associated with sample RE15-10-8257. However, an LCS was analyzed, met acceptance criteria and, thus, no sample results were qualified.
2. It should be noted that the parent sample for all QC analyses, except for sample -8257, was a LANL sample from another RN. No sample data were qualified as a result.


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

VALIDATOR'S SIGNATURE: _____


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

DATE: 04/04/10


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

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

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

Yes No N/A				Assign Qualifier Listed Below If Criterion = Yes	
(Check One)				Non-detected Analyte	Detected Analyte
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	12. The tracer is < the Lower Acceptance Level (LAL) but $\geq 10\%R$. Follow the external laboratory limits located within the associated data package. Tracer%R is not applicable for Gamma Spectroscopy.	UJ, R3a	J-, R3a
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	13. The Tracer%R value is > the Upper Acceptance Limit (UAL). Follow the external laboratory limits located within the associated data package. Tracer%R is not applicable for Gamma Spectroscopy.	N/A	J+, R3b
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	14. Required tracer information is missing. Data may not be acceptable for use. Contact the SMO or external laboratory for information. Tracer%R is not applicable for Gamma Spectroscopy.	R, R3d	R, R3d
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	15. The LCS percent recovery was <10%. Follow the external laboratory limits located within the associated data package.	R, R12	R, R12
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	16. The LCS percent recovery was < the LAL but >10%. Follow the external laboratory limits located within the associated data package.	UJ, R12a	J-, R12a
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	17. The LCS percent recovery was > the UAL. Follow the external laboratory limits located within the associated data package.	N/A	J+, R12b
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	18. The LCS documentation is missing. Data may not be acceptable for use. Contact the SMO or external laboratory for information.	R, R12c	R, R12c
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	19. Associated duplicate sample has DER or RER > the analytical laboratory's acceptance limits.	R, R10	J, J10
<input 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 (Check One)				Assign Qualifier Listed Below If Criterion = Yes	
				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 type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	27. Quantification of data via data validation did not occur based on Quality Control requirements in this procedure. Adhere to the external laboratory qualifiers found within the Form I analytical data summary sheets generated by the external laboratory.	U, U_LAB	J, J_LAB NQ, NQ

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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 22, 2010

Client Sample ID: RE15-10-8259
Sample ID: 247774001
Matrix: R
Collect Date: 16-FEB-10
Receive Date: 23-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		2.60E+05	493	+/-18300	250	pCi/L		KXX2	03/10/10	0608	960231	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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Contact: Ms. Joylene Valdez
Project: LANL ER Project

Report Date: March 22, 2010

Client Sample ID: RE15-10-8261
Sample ID: 247774002
Matrix: R
Collect Date: 16-FEB-10
Receive Date: 23-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		2.72E+05	704	+/-19200	250	pCi/L		KXX2	03/10/10	0617	960231	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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- > 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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Los Alamos, New Mexico 87545
Contact: Ms. Joylene Valdez
Project: LANL ER Project

Report Date: March 22, 2010

Client Sample ID: RE15-10-8257
Sample ID: 247774003
Matrix: R
Collect Date: 16-FEB-10
Receive Date: 23-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		13.7	3.82	+/-2.41	6.00	pCi/g	KXX2	03/22/10	1058	966914	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
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- 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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Los Alamos, New Mexico 87545
Contact: Ms. Joylene Valdez
Project: LANL ER Project

Report Date: March 22, 2010

Client Sample ID: RE15-10-8260
Sample ID: 247774004
Matrix: R
Collect Date: 16-FEB-10
Receive Date: 23-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		850	234	+/-103	250	pCi/L		KXK2	03/10/10	0634	960231	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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Los Alamos, New Mexico 87545
Contact: Ms. Joylene Valdez
Project: LANL ER Project

Report Date: March 22, 2010

Client Sample ID: RE15-10-8258
Sample ID: 247774005
Matrix: R
Collect Date: 16-FEB-10
Receive Date: 23-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		2.98E+05	737	+/-21000	250	pCi/L		KXX2	03/10/10	0810	960231	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 22, 2010

Client Sample ID: RE15-10-8263
Sample ID: 247774006
Matrix: R
Collect Date: 16-FEB-10
Receive Date: 23-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		3.39E+05	632	+/-23900	250	pCi/L		KXX2	03/10/10	0824	960231	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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Los Alamos, New Mexico 87545
Contact: Ms. Joylene Valdez
Project: LANL ER Project

Report Date: March 22, 2010

Client Sample ID: RE15-10-8255
Sample ID: 247774007
Matrix: R
Collect Date: 16-FEB-10
Receive Date: 23-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		5.08E+05	901	+/-35900	250	pCi/L		KXX2	03/10/10	0833	960231	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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- 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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Los Alamos, New Mexico 87545
Contact: Ms. Joylene Valdez
Project: LANL ER Project

Report Date: March 22, 2010

Client Sample ID: RE15-10-8256
Sample ID: 247774008
Matrix: R
Collect Date: 16-FEB-10
Receive Date: 23-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		2.07E+06	2080	+/-1.46E+05	250	pCi/L		KXXK2	03/10/10	0840	960231	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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- 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 22, 2010

Client Sample ID: RE15-10-8262
Sample ID: 247774009
Matrix: R
Collect Date: 16-FEB-10
Receive Date: 23-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		7.88E+05	979	+/-55400	250	pCi/L		KXX2	03/10/10	0842	960231	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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Los Alamos, New Mexico 87545
Contact: Ms. Joylene Valdez
Project: LANL ER Project

Report Date: March 22, 2010

Client Sample ID: RE15-10-8265
Sample ID: 247774010
Matrix: R
Collect Date: 16-FEB-10
Receive Date: 23-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		2.60E+05	518	+/-18300	250	pCi/L		KXX2	03/10/10	0846	960231	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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- 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 22, 2010

Client Sample ID: RE15-10-8269
Sample ID: 247774011
Matrix: R
Collect Date: 16-FEB-10
Receive Date: 23-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		3.38E+05	672	+/-23800	250	pCi/L		KXK2	03/10/10	0855	960231	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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- 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

Monday, February 22, 2010

LAB CHAIN OF CUSTODY DOCUMENT NUMBER: 10-1974

LOS ALAMOS

REQUEST NUMBER: 10-1974

NATIONAL LABORATORY

ATTN: Valerie Davis

TURNAROUND/REPORT DUE: 3/24/2010

General Engineering Laboratories, Inc.,
Charleston, SC.

TURNAROUND REQ'D: 30

2040 Savage Rd

Charleston, SC 29407

LAB REQUEST COMMENTS:

247774%

SAMPLE ID	CTNR	CTNR DESC	ORDER	PRESERV	MATRIX
RE15-10-8259	1	POLY	H3	Ice	R
RE15-10-8261	1	POLY	H3	Ice	R
RE15-10-8257	1	POLY	H3	Ice	R
RE15-10-8260	1	POLY	H3	Ice	R
RE15-10-8258	1	POLY	H3	Ice	R
RE15-10-8263	1	POLY	H3	Ice	R
RE15-10-8255	1	POLY	H3	Ice	R
RE15-10-8256	1	POLY	H3	Ice	R
RE15-10-8262	1	POLY	H3	Ice	R
RE15-10-8265	1	POLY	H3	Ice	R
RE15-10-8269	1	POLY	H3	Ice	R

Relinquished By:

Date

Time

Received By:

Date

Time

Printed Name

Signature

2/22/10 1400

1400

Patricia D. Overton

Printed Name

Signature

P. D. Overton

2/23/10

08:50

08:50

Printed Name

Signature

Printed Name

Signature

Printed Name

Signature

Printed Name

Signature

Received for DISPOSAL By:

Date

Time

Remarks:

Printed Name

Signature

Monday, February 22, 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: 10-1974

Per Agreement Number:126310011

Project Cost Code: MR3A05529E00

Please analyse the enclosed samples according to the schedule indicated:

SHIP DATE: 2/22/2010

TURNAROUND/REPORT DUE: 3/24/2010

TURNAROUND REQ'D: 30 Days

RAD SCREENING: Yes, Below Background

LAB REQUEST COMMENTS:

LANL ER SMO CONTACT:

Signature:

PRIORITY	METHOD CODE	CATNR	SAMPLE ID	SAMPLE MATRIX	DATE SAMPLED	SPECIAL INSTRUCTIONS
	EPA-906.0	1	RE15-10-8255	R	2/16/2010	
		1	RE15-10-8256	R	2/16/2010	
		1	RE15-10-8257	R	2/16/2010	
		1	RE15-10-8258	R	2/16/2010	
		1	RE15-10-8259	R	2/16/2010	
		1	RE15-10-8260	R	2/16/2010	
		1	RE15-10-8261	R	2/16/2010	
		1	RE15-10-8262	R	2/16/2010	
		1	RE15-10-8263	R	2/16/2010	

REQUEST NUMBER: 10-1974

Monday, February 22, 2010

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

	EPA:906.0	1	RE15-10-8285	R	2/16/2010	
		1	RE15-10-8289	R	2/16/2010	

Final Page of REQUEST NUMBER 10-1974



March 01, 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: 247774
SDG: 10-1974

Dear Ms. Valdez:

GEL Laboratories, LLC (GEL) appreciates the opportunity to provide the following analytical results for the sample(s) we received on February 23, 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: 10-1974
Enclosures

Los Alamos National Laboratory (72733-001-09)
LANL ER Project
Work Order #: 247774
SDG: 10-1974

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Case Narrative

**Case Narrative for
Los Alamos National Laboratory (72733-001-09)
LANL ER Project
Workorder #: 247774
SDG # : 10-1974**

March 01, 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 23, 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 7,11,12C temperatures. Shipping container temperature was within specification (0 - 6C).

Sample Identification The laboratory received the following samples:

<u>Laboratory ID</u>	<u>Client ID</u>
247774001	RE15-10-8259
247774002	RE15-10-8261
247774003	RE15-10-8257
247774004	RE15-10-8260
247774005	RE15-10-8258
247774006	RE15-10-8263
247774007	RE15-10-8255
247774008	RE15-10-8256
247774009	RE15-10-8262
247774010	RE15-10-8265
247774011	RE15-10-8269

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 the word "for" written below it.

Valerie Davis

Project Manager

List of current GEL Certifications as of 01 March 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

Monday, February 22, 2010

LAB CHAIN OF CUSTODY DOCUMENT NUMBER: 10-1974

LOS ALAMOS

REQUEST NUMBER: 10-1974

NATIONAL LABORATORY

ATTN: Valerie Davis

TURNAROUND/REPORT DUE: 3/24/2010

General Engineering Laboratories, Inc.,
Charleston, SC.

TURNAROUND REQ'D: 30

2040 Savage Rd

Charleston, SC 29407

LAB REQUEST COMMENTS:

247774%

SAMPLE ID	CTNR	CTNR DESC	ORDER	PRESERV	MATRIX
RE15-10-8259	1	POLY	H3	Ice	R
RE15-10-8261	1	POLY	H3	Ice	R
RE15-10-8257	1	POLY	H3	Ice	R
RE15-10-8260	1	POLY	H3	Ice	R
RE15-10-8258	1	POLY	H3	Ice	R
RE15-10-8263	1	POLY	H3	Ice	R
RE15-10-8255	1	POLY	H3	Ice	R
RE15-10-8256	1	POLY	H3	Ice	R
RE15-10-8262	1	POLY	H3	Ice	R
RE15-10-8265	1	POLY	H3	Ice	R
RE15-10-8269	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

Monday, February 22, 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: 2/22/2010

TURNAROUND/REPORT DUE: 3/24/2010

TURNAROUND REQ'D: 30 Days

RAD SCREENING: Yes, Below Background

LAB REQUEST COMMENTS:

LANL ER SMO CONTACT:

Signature:

PRIORITY	METHOD CODE	CNTNR	SAMPLE ID	SAMPLE MATRIX	DATE SAMPLED	SPECIAL INSTRUCTIONS
	EPA:906.0	1	RE15-10-8255	R	2/16/2010	
		1	RE15-10-8256	R	2/16/2010	
		1	RE15-10-8257	R	2/16/2010	
		1	RE15-10-8258	R	2/16/2010	
		1	RE15-10-8259	R	2/16/2010	
		1	RE15-10-8260	R	2/16/2010	
		1	RE15-10-8261	R	2/16/2010	
		1	RE15-10-8262	R	2/16/2010	
		1	RE15-10-8263	R	2/16/2010	

Monday, February 22, 2010

REQUEST NUMBER: 10-1974

PRIORITY	METHOD CODE	CNTNR	SAMPLE ID	SAMPLE MATRIX	DATE SAMPLED	SPECIAL INSTRUCTIONS
	EPA:906.0	1	RE15-10-8265	R	2/16/2010	
		1	RE15-10-8269	R	2/16/2010	

Final Page of REQUEST NUMBER 10-1974



SAMPLE RECEIPT & REVIEW FORM

Client: LANL			SDG/ARCOC/Work Order: 10-1974		
Received By: Patricia Dover-Dent			Date Received: February 23, 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) 0,2-4 7,11,&12C
3	Chain of custody documents included with shipment?	X			
4	Sample containers intact and sealed?	X			Circle Applicable: seals broken damaged container leaking container other (describe)
5	Samples requiring chemical preservation at proper pH?		X		Sample ID's, containers affected and observed pH: If Preservation added, Lot#:
6	VOA vials free of headspace (defined as < 6mm bubble)?		X		Sample ID's and containers affected:
7	Are Encore containers present?			X	(If yes, immediately deliver to Volatiles laboratory)
8	Samples received within holding time?	X			Id's and tests affected:
9	Sample ID's on COC match ID's on bottles?	X			Sample ID's and containers affected:
10	Date & time on COC match date & time on bottles?			X	Sample ID's affected: time written on containers, not on COC
11	Number of containers received match number indicated on COC?	X			Sample ID's affected:
12	COC form is properly signed in relinquished/received sections?	X			

Comments: FEDEX#S

7209 7850 1530 0C	7209 7850 1610 2C	7209 7850 1584 3C
7209 7850 1595 2C	7209 7850 1518 3C	7209 7850 1621 4C
7209 7850 1632 2C	7209 7850 1562 3C	7209 7850 1600 7C
7209 7850 1529 2C	7209 7850 1573 3C	7209 7850 1507 11C
	7209 7850 1492 12C	

ORIGIN ID: SAFA (505) 665-9968
JOYLENE VALDEZ
LOS ALAMOS NATL LAB
TAGS BLDG 1237 DPU 03
LOS ALAMOS, NM 87545
UNITED STATES US

SHIP DATE: 22FEB10
ACTWGT: 65.8 LB MAN
CAD: 0014176/CAFE2450

BILL SENDER:

JOYLENE VALDEZ
LOS ALAMOS NATL LAB
TAGS BLDG 1237 DPU 03
LOS ALAMOS, NM 87545
UNITED STATES US

SHIP DATE: 22FEB10
ACTWGT: 61.8 LB MAN
CAD: 0014176/CAFE2450

BILL SENDER

TO VALERIE DAVIS
GENERAL ENGINEERING LAB
2040 SAVAGE RD

CHARLESTON SC 29407

(843) 556-8171
REF: 6B010AMR1A015AGMNO

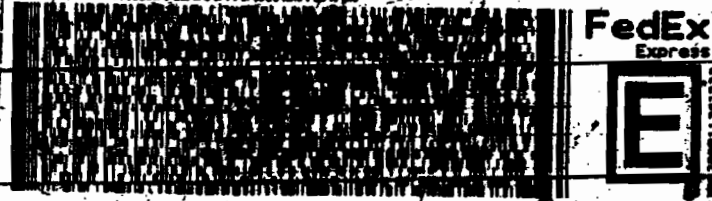
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TO VALERIE DAVIS
GENERAL ENGINEERING LAB
2040 SAVAGE RD

CHARLESTON SC 29407

(843) 556-8171
REF: 6B010AMR2A0515BYDO

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2 of 2
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Matr-N 7209 7850 1584 0201
TUE - 23FEB A1
PRIORITY OVERNIGHT

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29407
SC-US
CHS

ORIGIN ID: SAFA (505) 665-9968
JOYLENE VALDEZ
LOS ALAMOS NATL LAB
TAGS BLDG 1237 DPU 03
LOS ALAMOS, NM 87545
UNITED STATES US

SHIP DATE: 22FEB10
ACTWGT: 65.8 LB MAN
CAD: 0014176/CAFE2450

BILL SENDER

TO VALERIE DAVIS
GENERAL ENGINEERING LAB
2040 SAVAGE RD

CHARLESTON SC 29407

(843) 556-8171
REF: 6B010AMR3A05529E00

2°



ORIGIN ID: SAFA (505) 665-9968
JOYLENE VALDEZ
LOS ALAMOS NATL LAB
TAGS BLDG 1237 DPU 03
LOS ALAMOS, NM 87545
UNITED STATES US

SHIP DATE: 22FEB10
ACTWGT: 62.8 LB MAN
CAD: 0014176/CAFE2450

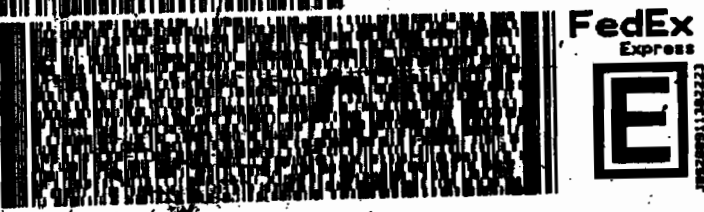
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TO VALERIE DAVIS
GENERAL ENGINEERING LAB
2040 SAVAGE RD

CHARLESTON SC 29407

(843) 556-8171
REF: 6B010AMR1A015AGMNO

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IGIN ID: SAFA (505) 665-9960
SHIP DATE: 22FEB10
ACTMGT: 52.0 LB PMN
CNO: 0014176/CPFE2450
JOYLENE VALDEZ
LOS ALAMOS NATL LAB
TAGO BLDG 1237 DPU 03
LOS ALAMOS, NM 87545
UNITED STATES US
BILL SENDER

VALERIE DAVIS
GENERAL ENGINEERING LAB
2040 SAVAGE RD

CHARLESTON SC 29407
(843) 556-8171
REF: 68010AMR3A05528E00

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SHIP DATE: 22FEB10
ACTMGT: 52.0 LB PMN
CNO: 0014176/CPFE2450
JOYLENE VALDEZ
LOS ALAMOS NATL LAB
TAGO BLDG 1237 DPU 03
LOS ALAMOS, NM 87545
UNITED STATES US
BILL SENDER

TO VALERIE DAVIS
GENERAL ENGINEERING LAB
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(843) 556-8171
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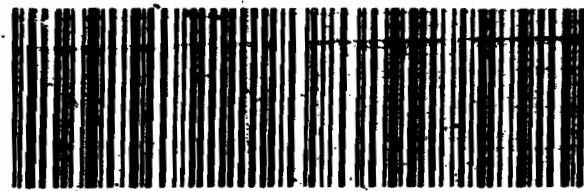
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JOYLENE VALDEZ
LOS ALAMOS NATL LAB
TAGO BLDG 1237 DPU 03
LOS ALAMOS, NM 87545
UNITED STATES US
BILL SENDER

VALERIE DAVIS
GENERAL ENGINEERING LAB
2040 SAVAGE RD

CHARLESTON SC 29407
(843) 556-8171
REF: 68010AMR3A0223KY10

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JOYLENE VALDEZ
LOS ALAMOS NATL LAB
TAGO BLDG 1237 DPU 03
LOS ALAMOS, NM 87545
UNITED STATES US
BILL SENDER

TO VALERIE DAVIS
GENERAL ENGINEERING LAB
2040 SAVAGE RD

CHARLESTON SC 29407
(843) 556-8171
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PRIORITY OVERNIGHT

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ORIGIN ID: SAFA (505) 665-9968
JOYLENE VALDEZ
LOS ALAMOS NATL LAB
TAGO BLDG 1237 DPU 83

LOS ALAMOS, NM 87545
UNITED STATES US

SHIP DATE: 22FEB10
ACTWGT: 82.0 LB HAN
CRD: 0014176/CAFE2450

BILL SENDER

TO VALERIE DAVIS
GENERAL ENGINEERING LAB
2040 SAVAGE RD

CHARLESTON SC 29407

(843) 556-8171

REF: 68010AMR2A05158YDO

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FROM 1 of 2
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ALAMOS NATL LAB
9 BLDG 1237 DPU 83

ALAMOS, NM 87545
UNITED STATES US

CHD: 0014176/CAFE2450

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VALERIE DAVIS
GENERAL ENGINEERING LAB
2040 SAVAGE RD

CHARLESTON SC 29407

(843) 556-8171

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TUE - 23FEB A1
PRIORITY OVERNIGHT

7209 7850 1600

XX CHSA

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ORIGIN ID: SAFA (505) 665-9968
JOYLENE VALDEZ
LOS ALAMOS NATL LAB
TAGO BLDG 1237 DPU 83

LOS ALAMOS, NM 87545
UNITED STATES US

SHIP DATE: 22FEB10
ACTWGT: 48.0 LB HAN
CRD: 0014176/CAFE2450

BILL SENDER

TO VALERIE DAVIS
GENERAL ENGINEERING LAB
2040 SAVAGE RD

CHARLESTON SC 29407

(843) 556-8171

REF: 68010AMR3A05329E00

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FedEx
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FROM 2 of 2
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PRIORITY OVERNIGHT

XX CHSA

29407
SC-
CHS



JOYLENE VALDEZ
LOS ALAMOS NATL LAB
TAGO BLDG 1237 DPU 83

LOS ALAMOS, NM 87545
UNITED STATES US

ACTWGT: 48.0 LB HAN
CRD: 0014176/CAFE2450

BILL SENDER

TO VALERIE DAVIS
GENERAL ENGINEERING LAB
2040 SAVAGE RD

CHARLESTON SC 29407

(843) 556-8171

REF: 68010AMR1A015AGMM0

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Express



TUE - 23FEB A1
PRIORITY OVERNIGHT

7209 7850 1507

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29407
SC-US
CHS



Page 13 of 98

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 10-1974**

Method/Analysis Information

Product: LSC, Tritium Dist, Solid

Analytical Method: EPA 906.0 Modified

Analytical Batch Number: 966914

Sample ID	Client ID
247774003	RE15-10-8257
1202075155	Method Blank (MB)
1202075156	247774003(RE15-10-8257) Sample Duplicate (DUP)
1202075157	247774003(RE15-10-8257) Matrix Spike (MS)
1202075158	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 July 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: 247774003 (RE15-10-8257). The QC was from LANL work order 247774.

QC Information

All of the QC samples met the required acceptance limits.

CSU

The blank result is less than 1.65 times the CSU.

Technical Information:

Holding Time

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

Sample Re-prep/Re-analysis

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

Miscellaneous Information:

Data Exception (DER) Documentation

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

Additional Comments

Additional comments were not required for this sample set.

Blank Decision Level

The blank result is less than the decision level.

Qualifier information

Manual qualifiers were not required.

Method/Analysis Information

Product:	H3
Analytical Method:	GL-RAD-A-002
Analytical Batch Number:	960231

Sample ID	Client ID
247774001	RE15-10-8259
247774002	RE15-10-8261
247774004	RE15-10-8260
247774005	RE15-10-8258
247774006	RE15-10-8263
247774007	RE15-10-8255
247774008	RE15-10-8256
247774009	RE15-10-8262
247774010	RE15-10-8265
247774011	RE15-10-8269
1202059613	Method Blank (MB)
1202059614	248137001(WST16-10-13288) Sample Duplicate (DUP)
1202059615	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.

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: 248137001 (WST16-10-13288). The QC was from LANL work order 248137.

QC Information

All of the QC samples met the required acceptance limits.

CSU

The blank result is less than 1.65 times the CSU.

Technical Information:**Holding Time**

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

Sample Re-prep/Re-analysis

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

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

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

Additional Comments

Additional comments were not required for this sample set.

Blank Decision Level

The blank result is less than the decision level.

Qualifier information

Manual qualifiers were not required.

Certification Statement

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

Review Validation:

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

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

Sharon Z. Smith 3/22/2010

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: 10-1974 GEL Work Order: 247774

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

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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 22, 2010

Client Sample ID: RE15-10-8259
Sample ID: 247774001
Matrix: R
Collect Date: 16-FEB-10
Receive Date: 23-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		2.60E+05	493	+/-18300	250	pCi/L		KXK2	03/10/10	0608	960231	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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Contact: Ms. Joylene Valdez
Project: LANL ER Project

Report Date: March 22, 2010

Client Sample ID: RE15-10-8259
Sample ID: 247774001

Project: LANL01004
Client ID: LANL010

Parameter	Qualifier	Result	DL	TPU	RL	Units	DF	Analyst	Date	Time Batch	Mtd.
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h Preparation or preservation holding time was exceeded
The above sample is reported on an "as received" basis.

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Certificate of Analysis

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

Report Date: March 22, 2010

Client Sample ID: RE15-10-8261
Sample ID: 247774002
Matrix: R
Collect Date: 16-FEB-10
Receive Date: 23-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		2.72E+05	704	+/-19200	250	pCi/L		KXK2	03/10/10	0617	960231	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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Los Alamos, New Mexico 87545
Contact: Ms. Joylene Valdez
Project: LANL ER Project

Report Date: March 22, 2010

Client Sample ID: RE15-10-8261
Sample ID: 247774002

Project: LANL01004
Client ID: LANL010

Parameter	Qualifier	Result	DL	TPU	RL	Units	DF	Analyst	Date	Time	Batch	Mtd.
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Contact: Ms. Joylene Valdez
Project: LANL ER Project

Report Date: March 22, 2010

Client Sample ID: RE15-10-8257
Sample ID: 247774003
Matrix: R
Collect Date: 16-FEB-10
Receive Date: 23-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		13.7	3.82	+/-2.41	6.00	pCi/g		KXK2	03/22/10	1058	966914	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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Los Alamos, New Mexico 87545
Contact: Ms. Joylene Valdez
Project: LANL ER Project

Report Date: March 22, 2010

Client Sample ID: RE15-10-8257
Sample ID: 247774003

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 22, 2010

Client Sample ID: RE15-10-8260
Sample ID: 247774004
Matrix: R
Collect Date: 16-FEB-10
Receive Date: 23-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		850	234	+/-103	250	pCi/L		KXK2	03/10/10	0634	960231	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 22, 2010

Client Sample ID: RE15-10-8260
Sample ID: 247774004

Project: LANL01004
Client ID: LANL010

Parameter	Qualifier	Result	DL	TPU	RL	Units	DF	Analyst	Date	Time	Batch	Mtd.
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Contact: Ms. Joylene Valdez
Project: LANL ER Project

Report Date: March 22, 2010

Client Sample ID: RE15-10-8258
Sample ID: 247774005
Matrix: R
Collect Date: 16-FEB-10
Receive Date: 23-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		2.98E+05	737	+/-21000	250	pCi/L		KXK2	03/10/10	0810	960231	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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Los Alamos, New Mexico 87545
Contact: Ms. Joylene Valdez
Project: LANL ER Project

Report Date: March 22, 2010

Client Sample ID: RE15-10-8258
Sample ID: 247774005

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 22, 2010

Client Sample ID: RE15-10-8263
Sample ID: 247774006
Matrix: R
Collect Date: 16-FEB-10
Receive Date: 23-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		3.39E+05	632	+/-23900	250	pCi/L		KXK2	03/10/10	0824	960231	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

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

Report Date: March 22, 2010

Client Sample ID: RE15-10-8263
Sample ID: 247774006

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 22, 2010

Client Sample ID: RE15-10-8255
Sample ID: 247774007
Matrix: R
Collect Date: 16-FEB-10
Receive Date: 23-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		5.08E+05	901	+/-35900	250	pCi/L		KXK2	03/10/10	0833	960231	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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Los Alamos, New Mexico 87545
Contact: Ms. Joylene Valdez
Project: LANL ER Project

Report Date: March 22, 2010

Client Sample ID: RE15-10-8255
Sample ID: 247774007

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 22, 2010

Client Sample ID: RE15-10-8256
Sample ID: 247774008
Matrix: R
Collect Date: 16-FEB-10
Receive Date: 23-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		2.07E+06	2080	+/-1.46E+05	250	pCi/L		KXK2	03/10/10	0840	960231	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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Address : PO Box 1663
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Los Alamos, New Mexico 87545
Contact: Ms. Joylene Valdez
Project: LANL ER Project

Report Date: March 22, 2010

Client Sample ID: RE15-10-8256
Sample ID: 247774008

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 22, 2010

Client Sample ID: RE15-10-8262
Sample ID: 247774009
Matrix: R
Collect Date: 16-FEB-10
Receive Date: 23-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		7.88E+05	979	+/-55400	250	pCi/L		KXK2	03/10/10	0842	960231	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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- > 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

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 22, 2010

Client Sample ID: RE15-10-8262
Sample ID: 247774009

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

Report Date: March 22, 2010

Client Sample ID: RE15-10-8265
Sample ID: 247774010
Matrix: R
Collect Date: 16-FEB-10
Receive Date: 23-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		2.60E+05	518	+/-18300	250	pCi/L		KXK2	03/10/10	0846	960231	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
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- M Matrix Related Failure
- N/A RPD or %Recovery limits do not apply.
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- UJ Gamma Spectroscopy--Uncertain identification
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- 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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Los Alamos, New Mexico 87545
Contact: Ms. Joylene Valdez
Project: LANL ER Project

Report Date: March 22, 2010

Client Sample ID: RE15-10-8265
Sample ID: 247774010

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.

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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 22, 2010

Client Sample ID: RE15-10-8269
Sample ID: 247774011
Matrix: R
Collect Date: 16-FEB-10
Receive Date: 23-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		3.38E+05	672	+/-23800	250	pCi/L		KXK2	03/10/10	0855	960231	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 22, 2010

Client Sample ID: RE15-10-8269
Sample ID: 247774011

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

Report Date: March 22, 2010

Page 1 of 2

Client : Los Alamos National Laboratory
PO Box 1663
TA-03, SM271, Drop Pt. 02U, Rm
Los Alamos, New Mexico
Contact: Ms. Joylene Valdez
Workorder: 247774

Parmname	NOM	Sample	Qual	QC	Units	RER	REC %	Range	Anlst	Date	Time
Rad Liquid Scintillation											
Batch	960231										
QC1202059614	248137001	DUP									
Tritium			225	U	145	pCi/L	0.375	(0-1)	KXK2	03/10/1019:06	
		TPU:	+/-54.6		+/-51.8						
QC1202059615	LCS										
Tritium		5540			5740	pCi/L	104	(80%-120%)		03/10/1020:44	
		TPU:			+/-417						
QC1202059613	MB										
Tritium				U	75.9	pCi/L				03/10/1017:28	
		TPU:			+/-49.5						
Batch	966914										
QC1202075156	247774003	DUP									
Tritium			13.7		13.4	pCi/g	0.0317	(0-1)	KXK2	03/22/1011:33	
		TPU:	+/-2.41		+/-2.41						
QC1202075158	LCS										
Tritium		33.9			38.7	pCi/g	114	(80%-120%)		03/22/1012:08	
		TPU:			+/-5.27						
QC1202075155	MB										
Tritium				U	-0.361	pCi/g				03/22/1011:16	
		TPU:			+/-1.01						
QC1202075157	247774003	MS									
Tritium		34.1	13.7		51.9	pCi/g	112	(75%-125%)		03/22/1011:51	
		TPU:	+/-2.41		+/-6.78						

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

GEL LABORATORIES LLC

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QC Summary

Workorder: 247774

Page 2 of 2

Paramname	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# 960231 Product: Tritium Date: 3/11/10

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

GEL Laboratories, LLC

RADchecklistrev10, revised 1/13/2010

Primary Review Performed By: [Signature]Secondary Review Performed By: [Signature] 3/11/10

LANL 3/19/10

Tritium Que Sheet

09-MAR-10

Batch #: 960231 Analyst: KKK2 First Client Due Date 19-MAR-10 Internal Due Date: 07-MAR-10
 Spike Isotope: Hydrogen-3 Spike Code: 0124-K Expiration Date: 3/27/10 Vol: 0.1
 LCS Isotope: Hydrogen-3 LCS Code: 0124-K Expiration Date: 3/27/10 Vol: 0.1

Prep Date: 3/9/10 Initials: ppf Pipet ID: 2970968 Witness: MSP 3/10/10 copied: ppf 3/10/10

Sample ID	Client Samp ID	Type	Hazard Code	Min CRDL	Matrix	Client	Sample Date	Aliquot in Vial (gmL)	LSC Rack #	Dist Rig #	Vol added for Dist (mL)	Initial Sample Aliquot (gmL)	Final Wt (g)	total moisture Dist (mL)
247774001-1	RE15-10-8259	SAMPLE		.25 pCi/mL SOIL	LANL010		16-FEB-10	10	44-2	1		493.53	480.20	13.33
247774002-1	RE15-10-8261	SAMPLE		.25 pCi/mL SOIL	LANL010		16-FEB-10	5	44-3	2		551.82	542.99	8.83
247774004-1	RE15-10-8260	SAMPLE		.25 pCi/mL SOIL	LANL010		16-FEB-10	10	44-4	3		517.50	509.14	7.76
247774005-1	RE15-10-8258	SAMPLE		.25 pCi/mL SOIL	LANL010		16-FEB-10	5	44-5	4		500.25	492.25	8.00
247774006-1	RE15-10-8263	SAMPLE		.25 pCi/mL SOIL	LANL010		16-FEB-10	8	44-6	5		573.79	563.46	10.33
247774007-1	RE15-10-8255	SAMPLE		.25 pCi/mL SOIL	LANL010		16-FEB-10	7	44-7	6		497.90	491.93	5.97
247774008-1	RE15-10-8256	SAMPLE		.25 pCi/mL SOIL	LANL010		16-FEB-10	6	44-8	7		528.92	514.11	14.81
247774009-1	RE15-10-8262	SAMPLE		.25 pCi/mL SOIL	LANL010		16-FEB-10	9	44-9	8		541.41	532.21	9.20
247774010-1	RE15-10-8265	SAMPLE		.25 pCi/mL SOIL	LANL010		16-FEB-10	9	44-10	9		533.20	524.14	9.06
247774011-1	RE15-10-8269	SAMPLE		.25 pCi/mL SOIL	LANL010		16-FEB-10	7	44-11	10		511.34	502.14	9.20
247790002-1	RE15-10-8386	SAMPLE		.25 pCi/mL SOIL	LANL010		17-FEB-10	6	44-12	11		426.67	403.63	23.40
247790003-1	RE15-10-8387	SAMPLE		.25 pCi/mL SOIL	LANL010		17-FEB-10	10	57-1	12		416.97	393.20	23.77
248137001-1	WST16-10-13288	SAMPLE		.25 pCi/mL SOIL	LANL010		23-FEB-10	10	57-2	13		544.92	491.52	53.40
248137002-1	WST16-10-13286	SAMPLE		.25 pCi/mL SOIL	LANL010		23-FEB-10	10	57-3	14		575.98	544.30	31.68
248137003-1	WST16-10-13285	SAMPLE		.25 pCi/mL SOIL	LANL010		23-FEB-10	10	57-4	15		540.27	485.10	54.57
248137004-1	WST16-10-13287	SAMPLE		.25 pCi/mL SOIL	LANL010		23-FEB-10	10	57-5	16		539.07	481.93	57.14
1202059613-1	MB for batch 960231	MB		.25 pCi/mL SOIL	QC ACCOUNT			10	57-6	17		20.00	0.00	20.00
1202059614-1	WST16-10-13288(248137001DUP)	DUP		.25 pCi/mL SOIL	QC ACCOUNT			10	57-7	13		544.92	491.52	53.40
1202059615-1	LCS for batch 960231	LCS		.25 pCi/mL SOIL	QC ACCOUNT			10	57-8	18		20.00	0.00	20.00

Bkg Rack #: 44-1

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, Wallac (Yellow) 4140127, LS6000 (Brown) 7060655, Wallac

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

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

Data Reviewed By: ppf 3/11/10

GEL Laboratories LLC, Radiochemistry Division

Page 1 of 1

DATE	3/3/2010	INITIALS	KXK2	BATCH NUMBER	960231	
Sample #	Sample Wet (g)	% Moisture of Sample (Balance Interface using % Moisture Batch)	Total Moisture in Sample (mL)	Sample Dry (g)	mLs aliquoted into LSC vial	Collection Tube Number
247774001	493.53	0.027	13.33	480.20	10	
247774002	551.82	0.016	8.83	542.99	5	
247774003	0.00	0.012	0.00	0.00	10	
247774004	517.50	0.015	7.76	509.74	7	
247774005	500.25	0.016	8.00	492.25	5	
247774006	573.79	0.018	10.33	563.46	8	
247774007	497.90	0.012	5.97	491.93	6	
247774008	528.92	0.028	14.81	514.11	6	
247774009	541.41	0.017	9.20	532.21	9	
247774010	533.20	0.017	9.06	524.14	9	
247774011	511.34	0.018	9.20	502.14	7	
247790002	426.67	0.054	23.04	403.63	6	
247790003	416.97	0.057	23.77	393.20	10	
248137001	544.92	0.098	53.40	491.52	10	
248137002	575.98	0.055	31.68	544.30	10	
248137003	540.27	0.101	54.57	485.70	10	
248137004	539.07	0.106	57.14	481.93	10	
MB	20.00	1.000	20.00	0.00	10	
DUP	544.92	0.098	53.40	491.52	10	
LCS	20.00	1.000	20.00	0.00	10	

Tritium Solid

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

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

LCS S/N : 0134-K
LCS Exp Date : 3/27/2010
LCS Activity (dpm/ml): 2458.34
LCS Volume Added: 0.10

Batch : 960231
Analyst : KXK2
Prep Date : 3/8/2010

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

Procedure Code : LSC_VH3S
Paramname : Tritium
Required MDC : 250 pCi/L
Half-life of Tritium : 12.32 years

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

Sample Characteristics		Wet Sample Weight (g)	Total Moisture L	Sample Aliquot In Vial L	Sample Aliquot Sidev. L	Dry Sample Weight (g)	% Moisture of Sample	Rtg number	Sample Date/Time
Pos.	Sample ID								
1	247774001.1	483.53	0.0133	0.0100	2.5729E-05	480.20	2.70%	1	2/16/2010 12:00
2	247774002.1	551.82	0.0088	0.0050	2.5729E-05	542.99	1.60%	2	2/16/2010 12:00
3	247774004.1	517.50	0.0078	0.0070	2.5729E-05	509.74	1.50%	3	2/16/2010 12:00
4	247774005.1	500.25	0.0080	0.0050	2.5729E-05	482.25	1.60%	4	2/16/2010 12:00
5	247774006.1	573.79	0.0103	0.0080	2.5729E-05	563.46	1.80%	5	2/16/2010 12:00
6	247774007.1	497.90	0.0060	0.0060	2.5729E-05	491.93	1.20%	6	2/16/2010 12:00
7	247774008.1	528.92	0.0148	0.0060	2.5729E-05	514.11	2.80%	7	2/16/2010 12:00
8	247774009.1	541.41	0.0092	0.0090	2.5729E-05	532.21	1.70%	8	2/16/2010 12:00
9	247774010.1	533.20	0.0091	0.0090	2.5729E-05	524.14	1.70%	9	2/16/2010 12:00
10	247774011.1	511.34	0.0092	0.0070	2.5729E-05	502.14	1.80%	10	2/16/2010 12:00
11	247790002.1	426.67	0.0230	0.0060	2.5729E-05	403.63	5.40%	11	2/17/2010 12:00
12	247790003.1	416.97	0.0238	0.0100	2.5729E-05	393.20	5.70%	12	2/17/2010 12:00
13	248137001.1	544.92	0.0534	0.0100	2.5729E-05	491.52	9.80%	13	2/23/2010 12:00
14	248137002.1	575.98	0.0317	0.0100	2.5729E-05	544.30	5.50%	14	2/23/2010 12:00
15	248137003.1	540.27	0.0546	0.0100	2.5729E-05	485.70	10.10%	15	2/23/2010 12:00
16	248137004.1	539.07	0.0571	0.0100	2.5729E-05	491.93	10.60%	16	2/23/2010 12:00
17	1202059613.1	20.00	0.0200	0.0100	2.5729E-05	0.00	100.00%	17	3/9/2010 0:00
18	1202059614.1	544.92	0.0534	0.0100	2.5729E-05	491.52	9.80%	13	2/23/2010 12:00
19	1202059615.1	20.00	0.0200	0.0100	2.5729E-05	0.00	100.00%	18	3/9/2010 0:00

Count raw Data			Background			Calibration Data			Detector Efficiency Error (cpm/dpm)			Backgrounds		
Pos.	Rack Position #	Counting Time (min.)	Quench#	Gross 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	44-2	7.4	110.1	1361.35	95	3/10/2010 8:08	0.997	LSCBROWN	9/9/2009	9/30/2010	0.2365	0.00792	44-1	3/10/2010 4:32
2	44-3	14	109.2	715.29	95	3/10/2010 8:17	0.997	LSCBROWN	9/9/2009	9/30/2010	0.2370	0.00792	44-1	3/10/2010 4:32
3	44-4	95	109.2	6.12	95	3/10/2010 8:34	0.997	LSCBROWN	9/9/2009	9/30/2010	0.2370	0.00792	44-1	3/10/2010 4:32
4	44-5	12.8	109.3	783.2	95	3/10/2010 8:10	0.997	LSCBROWN	9/9/2009	9/30/2010	0.2369	0.00792	44-1	3/10/2010 4:32
5	44-6	7.05	109.2	1426.38	95	3/10/2010 8:24	0.997	LSCBROWN	9/9/2009	9/30/2010	0.2370	0.00792	44-1	3/10/2010 4:32
6	44-7	6.25	109.2	1602.56	95	3/10/2010 8:33	0.997	LSCBROWN	9/9/2009	9/30/2010	0.2370	0.00792	44-1	3/10/2010 4:32
7	44-8	1.55	109.6	6497.42	95	3/10/2010 8:40	0.997	LSCBROWN	9/9/2009	9/30/2010	0.2368	0.00792	44-1	3/10/2010 4:32
8	44-9	2.7	108.4	3725.93	95	3/10/2010 8:42	0.997	LSCBROWN	9/9/2009	9/30/2010	0.2374	0.00792	44-1	3/10/2010 4:32
9	44-10	8.15	108.9	1231.53	95	3/10/2010 8:46	0.997	LSCBROWN	9/9/2009	9/30/2010	0.2371	0.00792	44-1	3/10/2010 4:32
10	44-11	8.05	108.5	1243.73	95	3/10/2010 8:55	0.997	LSCBROWN	9/9/2009	9/30/2010	0.2368	0.00792	44-1	3/10/2010 4:32
11	44-12	9.3	110.1	1080.54	95	3/10/2010 9:05	0.997	LSCBROWN	9/9/2009	9/30/2010	0.2365	0.00792	44-1	3/10/2010 4:32
12	57-1	95	109.9	5	95	3/10/2010 9:17	0.997	LSCBROWN	9/9/2009	9/30/2010	0.2366	0.00792	44-1	3/10/2010 4:32
13	57-2	95	108.7	4.18	95	3/10/2010 10:55	0.998	LSCBROWN	9/9/2009	9/30/2010	0.2372	0.00792	44-1	3/10/2010 4:32
14	57-3	95	108.8	3.98	95	3/10/2010 12:34	0.998	LSCBROWN	9/9/2009	9/30/2010	0.2372	0.00792	44-1	3/10/2010 4:32
15	57-4	95	108.3	3.57	95	3/10/2010 14:12	0.998	LSCBROWN	9/9/2009	9/30/2010	0.2374	0.00792	44-1	3/10/2010 4:32
16	57-5	95	108.9	3.88	95	3/10/2010 15:50	0.998	LSCBROWN	9/9/2009	9/30/2010	0.2371	0.00792	44-1	3/10/2010 4:32
17	57-6	95	108	3.4	95	3/10/2010 17:28	1.000	LSCBROWN	9/9/2009	9/30/2010	0.2375	0.00792	44-1	3/10/2010 4:32
18	57-7	95	108.9	3.76	95	3/10/2010 19:06	0.998	LSCBROWN	9/9/2009	9/30/2010	0.2371	0.00792	44-1	3/10/2010 4:32
19	57-8	95	108.4	33.17	95	3/10/2010 20:44	1.000	LSCBROWN	9/9/2009	9/30/2010	0.2369	0.00792	44-1	3/10/2010 4:32

Notes:

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

Results		Decision Level	Critical Level	Required MDC	Sample Act. Conc.	Sample Act. Error	Net Count Rate	Net Count Rate Error	1 SIGMA Counting Uncertainty	1 SIGMA Total Prop. Uncertainty	Sample QC	Sample Type	RPD	RER	Nominal pC/L	Recovery
Pos.	pC/L	pC/L	pC/L	pC/L	pC/L	pC/L	CPM	CPM	pC/L	pC/L						
1	294.3255	207.7963	250	493.0617	259567.7288	0.013	1358.350	13.565	2592.0616	18263.1263		SAMPLE				
2	440.6812	311.1247	250	703.9855	271692.3246	0.015	712.290	7.150	2727.2927	19194.7499		SAMPLE				
3	159.5383	112.6354	250	233.8746	850.0604	0.100	3.120	0.310	84.4172	103.1572		SAMPLE				
4	458.4328	323.6575	250	736.7935	297861.3668	0.015	780.200	7.824	2985.1071	21029.0258		SAMPLE				
5	375.5545	265.1447	250	631.7362	339333.8297	0.014	1423.380	14.225	3391.2769	23893.7812		SAMPLE				
8	528.7338	373.9966	250	900.5693	509447.2816	0.014	1599.580	16.014	5090.2519	35981.0022		SAMPLE				
7	1039.6307	733.9882	250	2083.7252	2066114.6026	0.014	6494.420	64.745	20597.7745	145711.6351		SAMPLE				
8	528.9643	372.0413	250	978.1642	767672.9567	0.013	3722.930	37.148	7859.6190	55437.0005		SAMPLE				
9	311.9597	220.2462	250	518.4489	260178.8870	0.013	1228.530	12.294	2603.6166	18312.7118		SAMPLE				
10	403.8829	285.1448	250	671.8911	338261.0212	0.014	1240.730	12.431	3389.0983	23834.6600		SAMPLE				
11	441.5547	311.7414	250	726.2057	343133.0007	0.014	1077.540	10.780	3432.9466	24200.9919		SAMPLE				
12	111.8299	78.9528	250	163.9366	381.9601	0.145	2.000	0.290	55.4206	61.4747		SAMPLE				
13	111.4465	78.8822	250	163.3747	224.5940	0.233	1.180	0.275	52.3236	54.8115		SAMPLE				
14	111.4698	78.6987	250	163.4089	186.5579	0.277	0.980	0.271	51.6005	53.2112		SAMPLE				
15	111.3627	78.6231	250	163.2519	108.4038	0.461	0.570	0.263	50.0139	50.5806		SAMPLE				
16	111.4945	78.7161	250	163.4451	167.6586	0.306	0.890	0.269	51.2408	52.5530		SAMPLE				
17	111.0718	78.4176	250	162.8253	75.8742	0.649	0.400	0.260	49.2337	49.5164		MB				
18	111.4969	78.7178	250	163.4485	144.7127	0.351	0.760	0.267	50.7831	51.7834	248137001.1	DUP	43.3%	0.3754	5536.7931	103.6%
19	111.3816	78.6364	250	163.2795	5738.7724	0.022	30.170	0.617	117.3697	416.5678		LCS				

ID: TRITIUM

10 MAR 2010 04:40

USER: 7

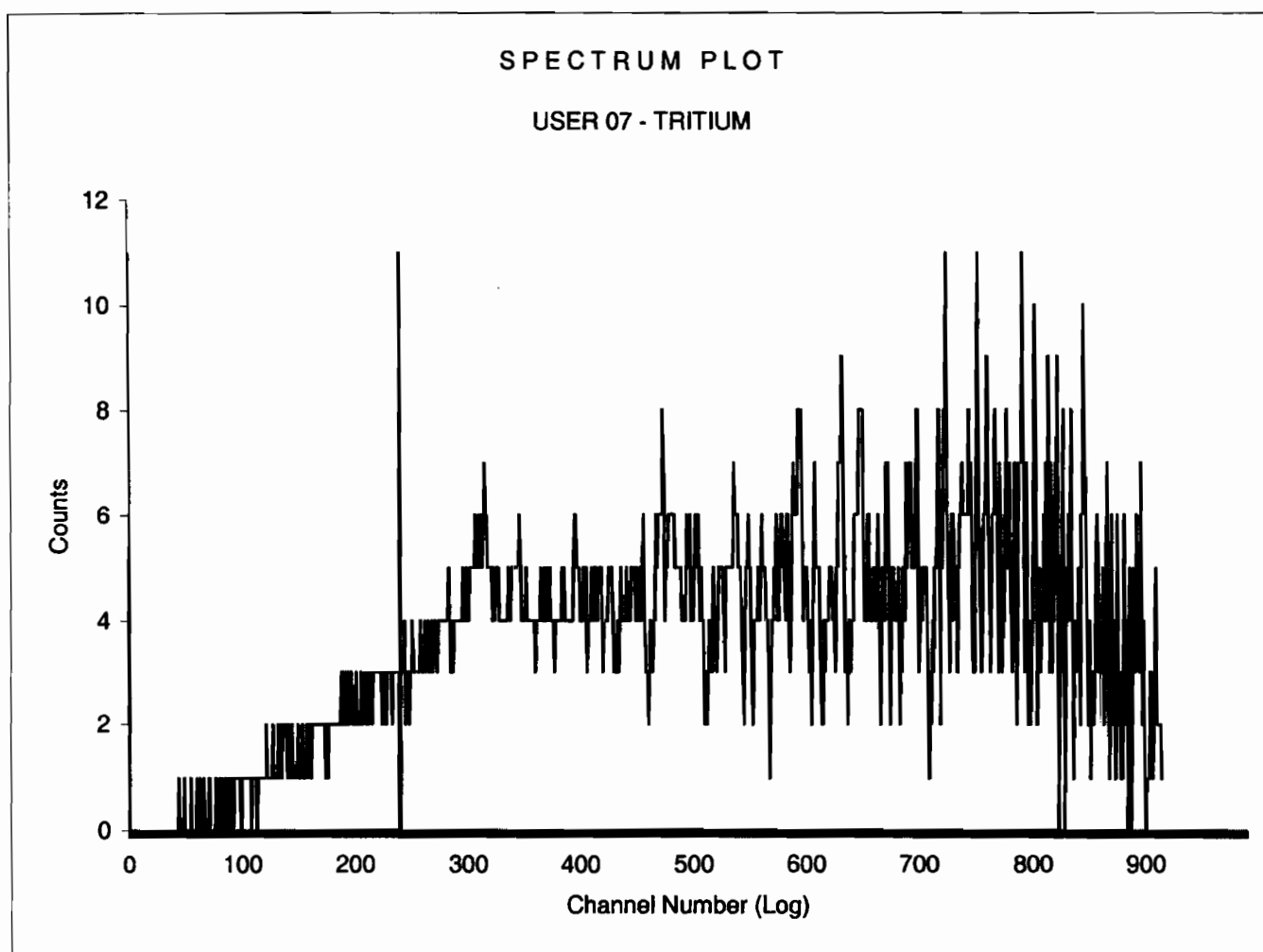
COMMENT: BROWN

PRESET TIME : 95.00
 DATA CALC : CPM H# : YES SAMPLE REPEATS: 1 PRINTER : STD
 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: 0.0 - 240.0 %ERROR: 2.00 FACTOR: 1.000000 BKG. SUB: 0
 CHAN: 0.0 - 900.0 %ERROR: 2.00 FACTOR: 1.000000 BKG. SUB: 0

SAM NO	POS	TIME MIN	H#	WIND1		WIND2		LUMEX %	ELAPSED TIME
				CPM	%ERROR	CPM	%ERROR		
1	44-1	95.00	107.9	3.00	12.53	34.78	3.50	0.89	97.66
2	44-2	7.40	110.1	1361.35	1.99	1816.08	1.73	0.03	106.18
3	44-3	14.00	109.2	715.29	2.00	965.50	1.72	0.07	121.42
4	44-4	95.00	109.2	6.12	8.74	38.58	3.33	1.40	219.71
5	44-5	12.80	109.3	783.20	2.00	1060.00	1.72	0.05	233.75
6	44-6	7.05	109.2	1426.38	1.99	1900.28	1.73	0.04	241.91
7	44-7	6.25	109.2	1602.56	2.00	2133.12	1.73	0.03	249.24
8	44-8	1.55	109.6	6497.42	1.99	8569.03	1.74	0.01	251.74
9	44-9	2.70	108.4	3725.93	1.99	4888.15	1.74	0.02	255.42
10	44-10	8.15	108.9	1231.53	2.00	1632.76	1.73	0.04	264.66
11	44-11	8.05	109.5	1243.73	2.00	1668.32	1.73	0.06	273.84
12	44-12	9.30	110.1	1080.54	2.00	1454.30	1.72	0.05	284.29
13	57-1	95.00	109.9	5.00	9.78	36.83	3.41	1.48	382.70
14	57-2	95.00	108.7	4.18	10.60	35.69	3.46	1.09	480.90
15	57-3	95.00	108.8	3.98	10.95	34.87	3.50	1.23	579.15
16	57-4	95.00	108.3	3.57	11.56	36.64	3.41	1.04	677.37
17	57-5	95.00	108.9	3.88	10.89	37.08	3.39	0.84	775.52
18	57-6	95.00	108.0	3.40	11.48	35.53	3.45	0.55	873.58
19	57-7	95.00	108.9	3.76	11.01	35.61	3.45	0.74	971.71
20	57-8	95.00	109.4	33.17	3.57	75.16	2.37	0.26	1069.75

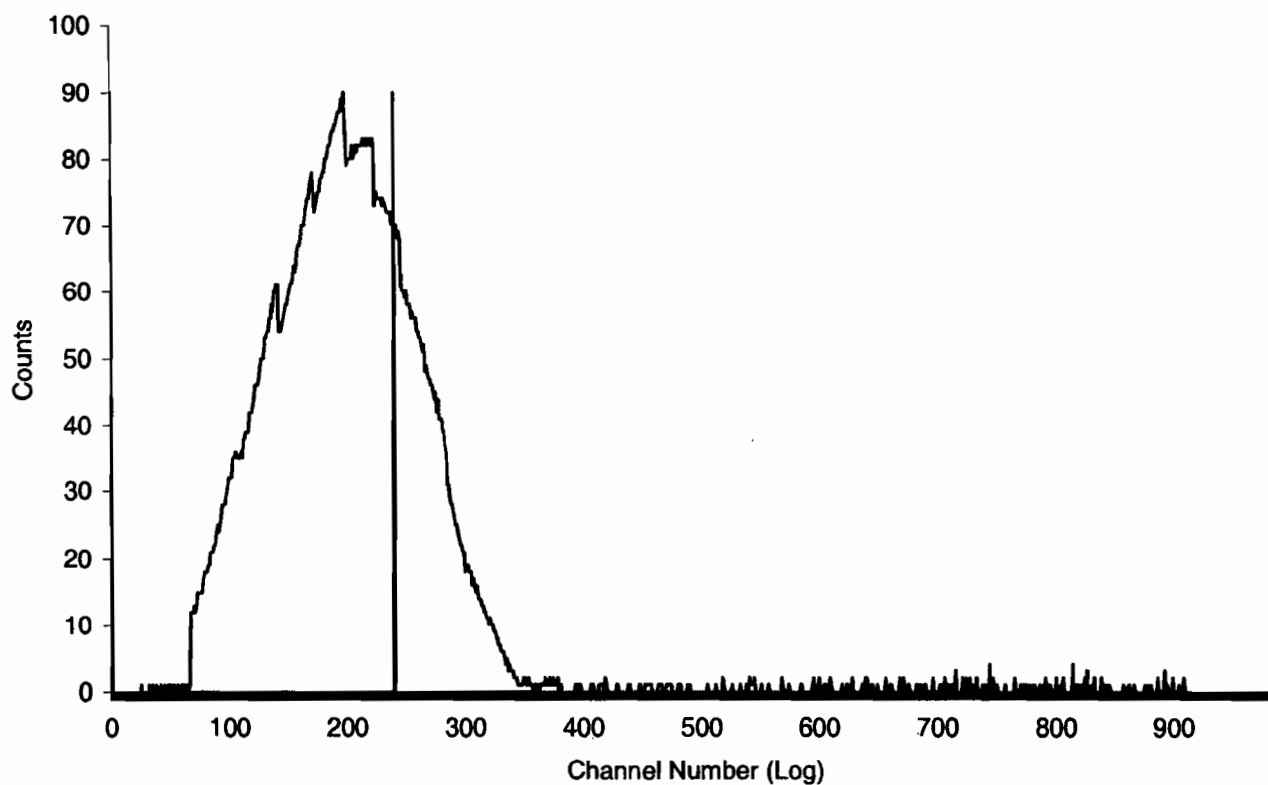
Sample Count Start Time:	10 Mar 2010 04:32:42		
Data Capture Date	10 Mar 2010 06:09:20		
User Filename	S07031044-1A.XLS		
	U07031044-1A.XLS		
Spectrum Type	Log Counts		
User Number	07		
User Id	TRITIUM		
User Comment	BROWN		
Scintillator	LIQUID		
Sample, Rack-Pos, Time:	1	44-1	95.00
H#, Total Counts:	107.9	3333	
Win1: Tritium - Start, End, Counts:	0	240	288
Win2: - Start, End, Counts:	0	990	3333



Sample Count Start Time:	10 Mar 2010 06:08:49		
Data Capture Date	10 Mar 2010 06:16:40		
User Filename	S07031044-2A.XLS		
	U07031044-1A.XLS		
Spectrum Type	Log Counts		
User Number	07		
User Id	TRITIUM		
User Comment	BROWN		
Scintillator	LIQUID		
Sample, Rack-Pos, Time:	2	44-2	7.40
H#, Total Counts:	110.1	13347	
Win1: Tritium - Start, End, Counts:	0	240	10048
Win2: - Start, End, Counts:	0	990	13347

SPECTRUM PLOT

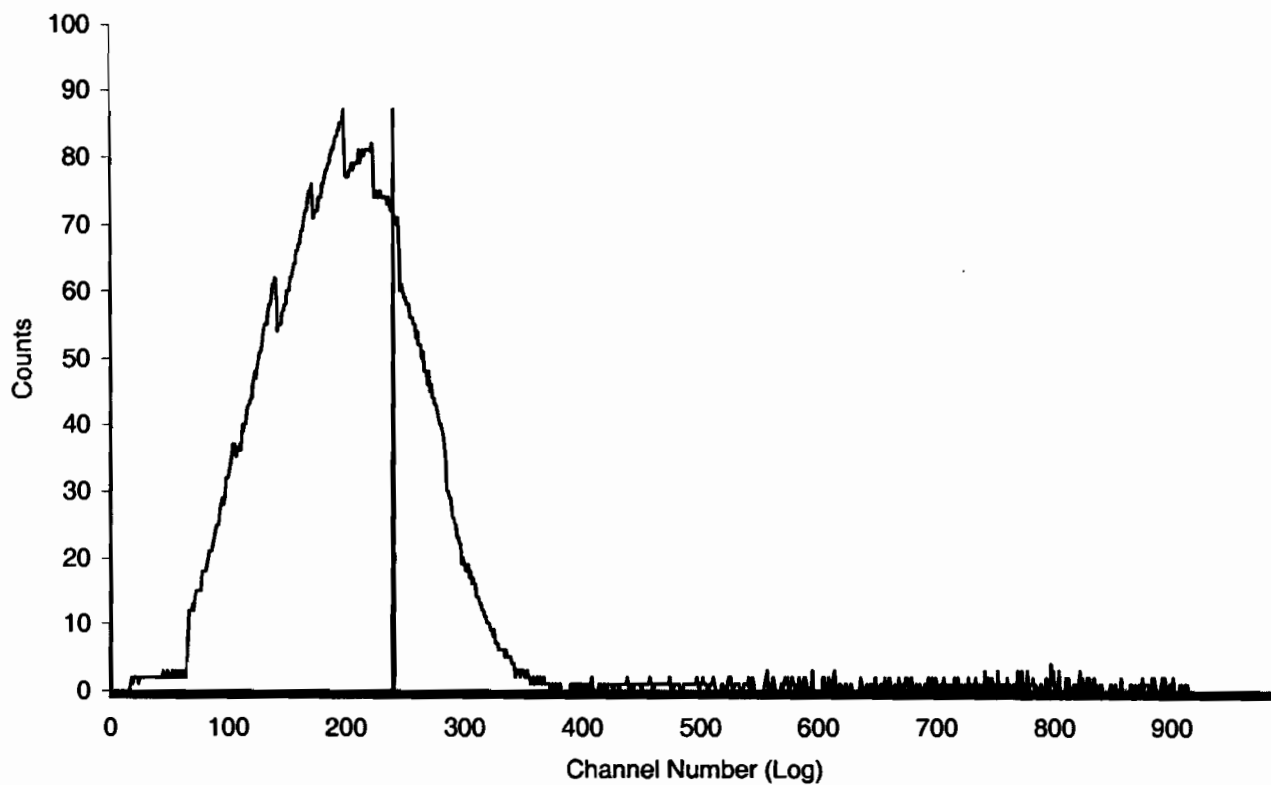
USER 07 - TRITIUM



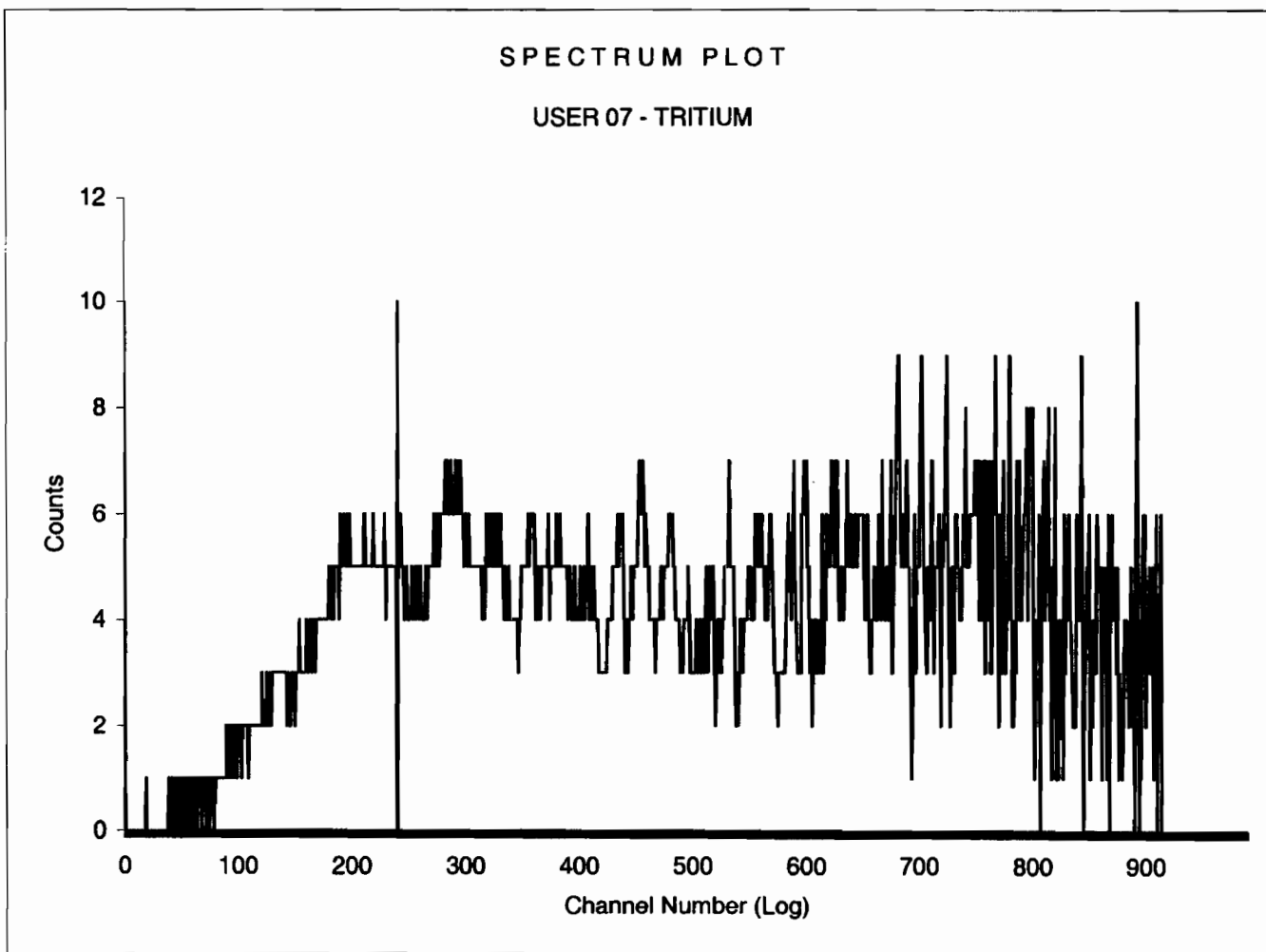
Sample Count Start Time:	10 Mar 2010 06:17:27		
Data Capture Date	10 Mar 2010 06:32:13		
User Filename	S07031044-3A.XLS		
	U07031044-1A.XLS		
Spectrum Type	Log Counts		
User Number	07		
User Id	TRITIUM		
User Comment	BROWN		
Scintillator	LIQUID		
Sample, Rack-Pos, Time:	3	44-3	14.00
H#, Total Counts:	109.2	13524	
Win1: Tritium - Start, End, Counts:	0	240	10085
Win2: - Start, End, Counts:	0	990	13524

SPECTRUM PLOT

USER 07 - TRITIUM



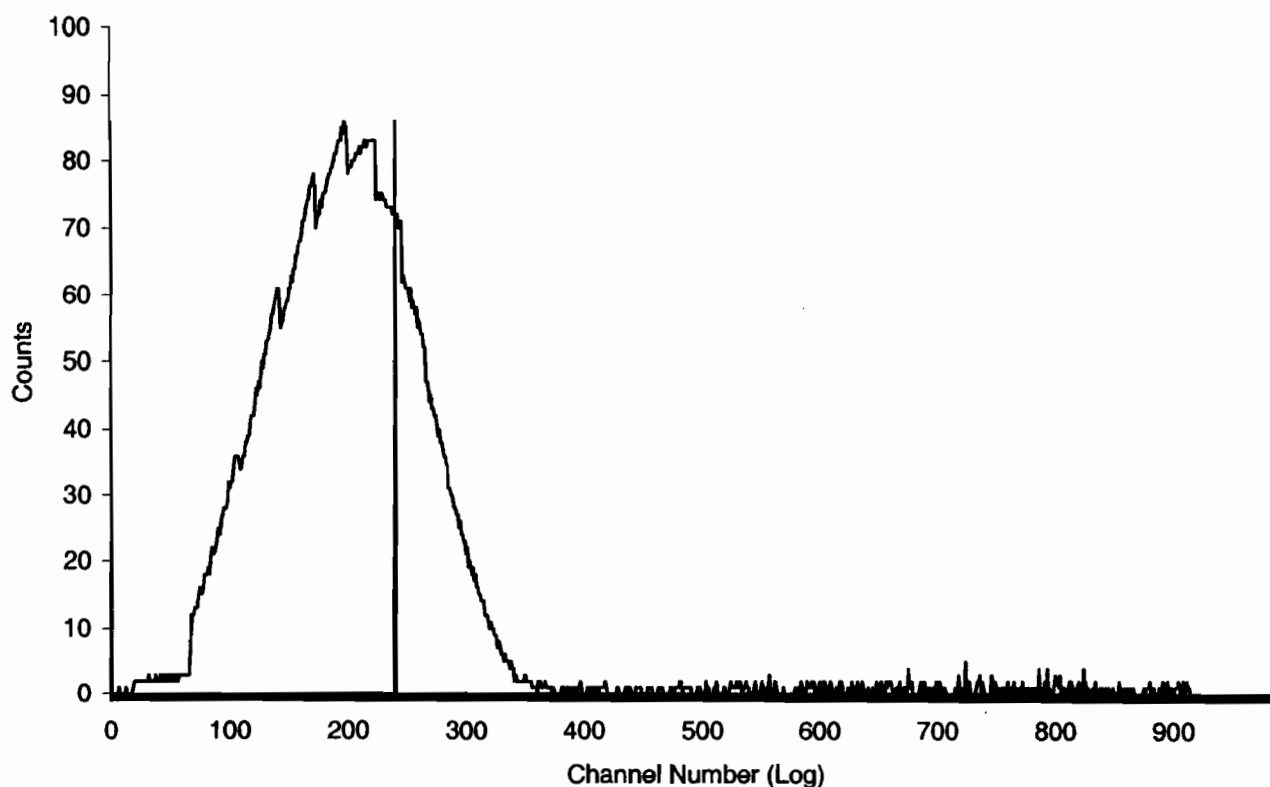
Sample Count Start Time:	10 Mar 2010 06:34:45		
Data Capture Date	10 Mar 2010 08:10:09		
User Filename	S07031044-4A.XLS		
	U07031044-1A.XLS		
Spectrum Type	Log Counts		
User Number	07		
User Id	TRITIUM		
User Comment	BROWN		
Scintillator	LIQUID		
Sample, Rack-Pos, Time:	4	44-4	95.00
H#, Total Counts:	109.2	3712	
Win1: Tritium - Start, End, Counts:	0	240	585
Win2: - Start, End, Counts:	0	990	3711



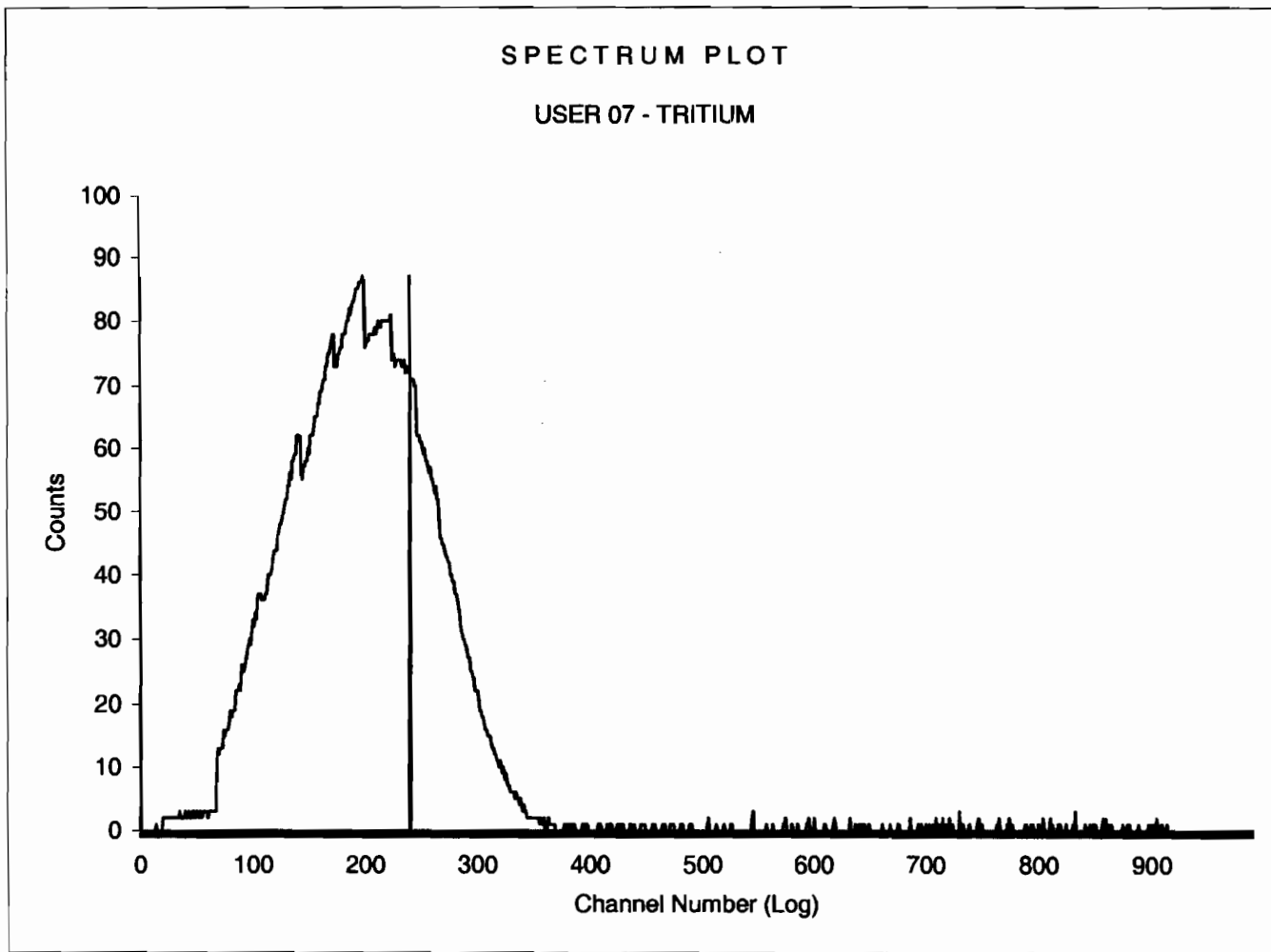
Sample Count Start Time:	10 Mar 2010 08:10:59		
Data Capture Date	10 Mar 2010 08:25:02		
User Filename	S07031044-5A.XLS		
	U07031044-1A.XLS		
Spectrum Type	Log Counts		
User Number	07		
User Id	TRITIUM		
User Comment	BROWN		
Scintillator	LIQUID		
Sample, Rack-Pos, Time:	5	44-5	12.80
H#, Total Counts:	109.3	13580	
Win1: Tritium - Start, End, Counts:	0	240	10094
Win2: - Start, End, Counts:	0	990	13579

SPECTRUM PLOT

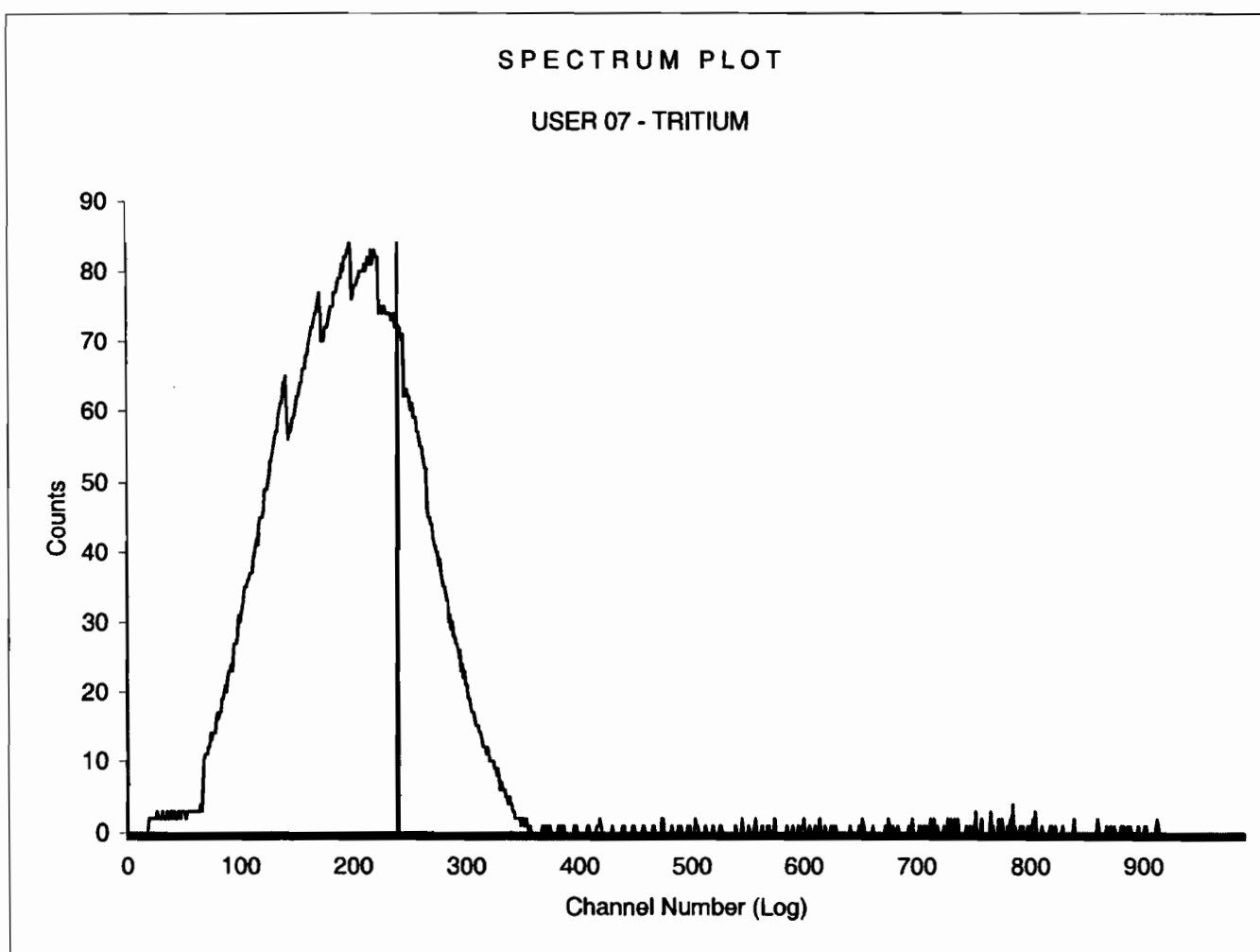
USER 07 - TRITIUM



Sample Count Start Time:	10 Mar 2010 08:24:54		
Data Capture Date	10 Mar 2010 08:32:19		
User Filename	S07031044-6A.XLS		
	U07031044-1A.XLS		
Spectrum Type	Log Counts		
User Number	07		
User Id	TRITIUM		
User Comment	BROWN		
Scintillator	LIQUID		
Sample, Rack-Pos, Time:	6	44-6	7.05
H#, Total Counts:	109.2	13403	
Win1: Tritium - Start, End, Counts:	0	240	10127
Win2: - Start, End, Counts:	0	990	13403



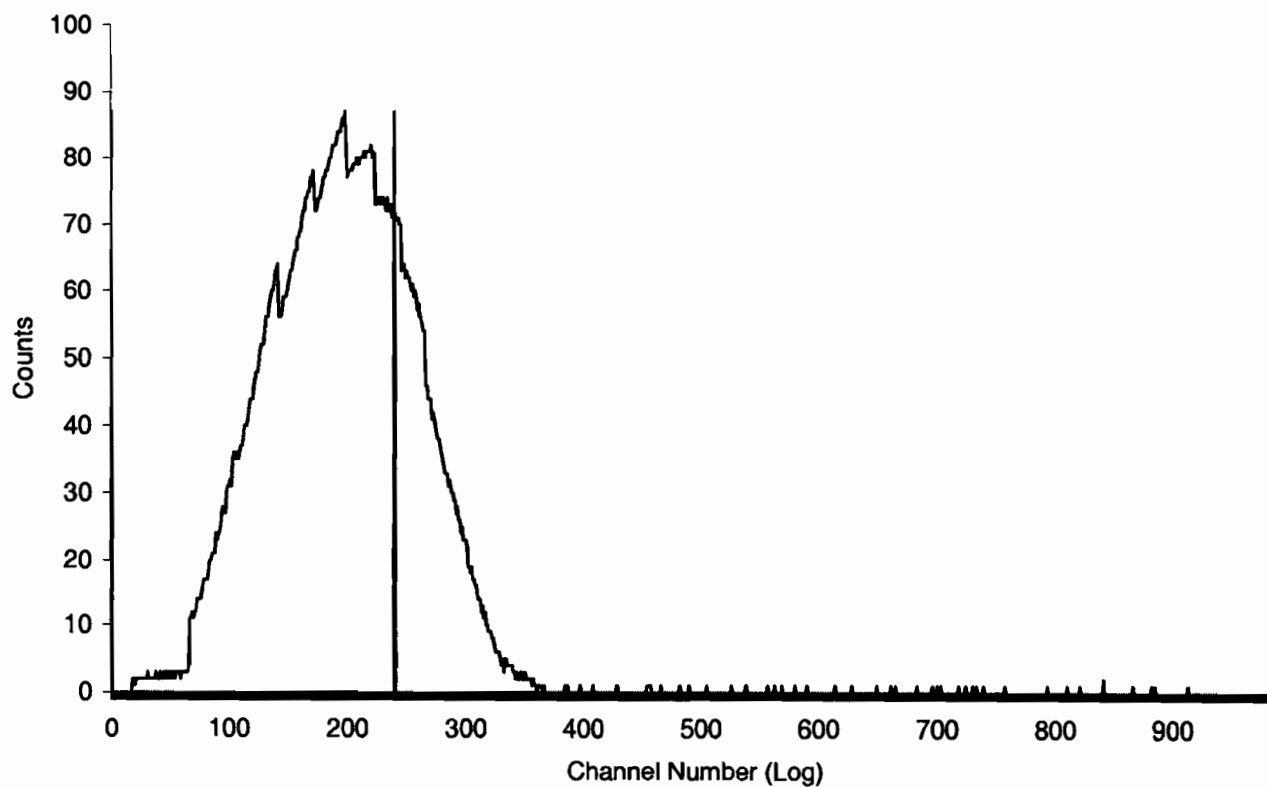
Sample Count Start Time:	10 Mar 2010 08:33:01		
Data Capture Date	10 Mar 2010 08:39:39		
User Filename	S07031044-7A.XLS		
	U07031044-1A.XLS		
Spectrum Type	Log Counts		
User Number	07		
User Id	TRITIUM		
User Comment	BROWN		
Scintillator	LIQUID		
Sample, Rack-Pos, Time:	7	44-7	6.25
H#, Total Counts:	109.2	13338	
Win1: Tritium - Start, End, Counts:	0	240	10088
Win2: - Start, End, Counts:	0	990	13338



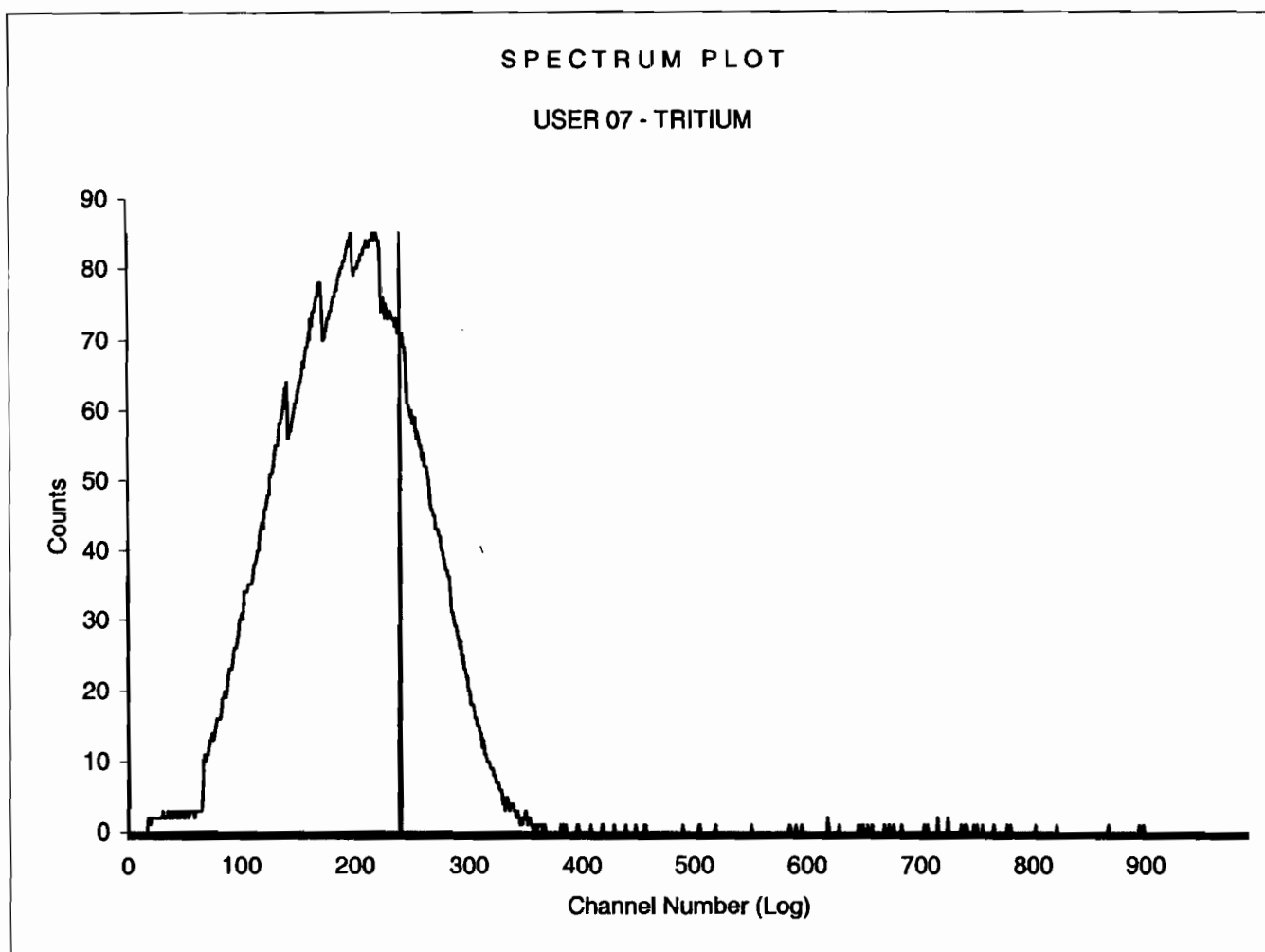
Sample Count Start Time:	10 Mar 2010 08:40:13		
Data Capture Date	10 Mar 2010 08:42:08		
User Filename	S07031044-8A.XLS		
	U07031044-1A.XLS		
Spectrum Type	Log Counts		
User Number	07		
User Id	TRITIUM		
User Comment	BROWN		
Scintillator	LIQUID		
Sample, Rack-Pos, Time:	8	44-8	1.55
H#, Total Counts:	109.6	13283	
Win1: Tritium - Start, End, Counts:	0	240	10141
Win2: - Start, End, Counts:	0	990	13282

SPECTRUM PLOT

USER 07 - TRITIUM



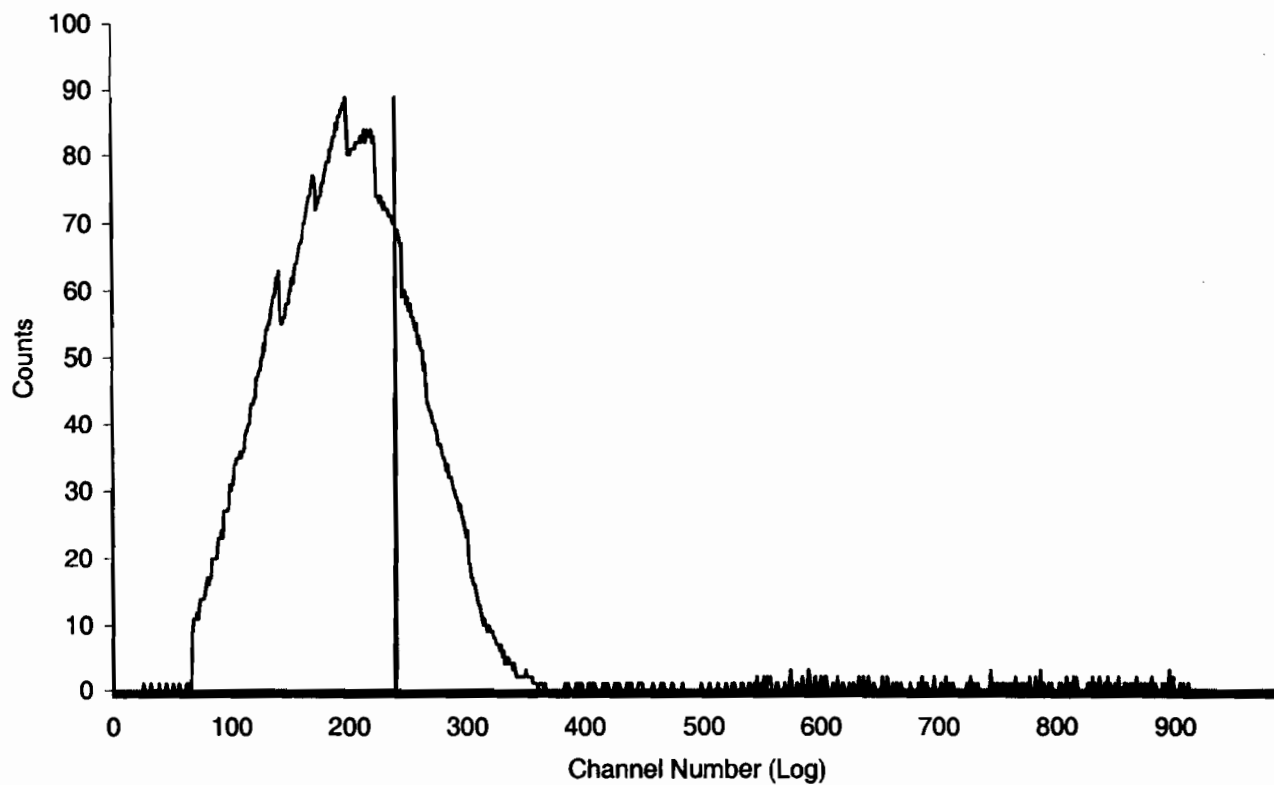
Sample Count Start Time:	10 Mar 2010 08:42:45		
Data Capture Date	10 Mar 2010 08:45:48		
User Filename	S07031044-9A.XLS		
	U07031044-1A.XLS		
Spectrum Type	Log Counts		
User Number	07		
User Id	TRITIUM		
User Comment	BROWN		
Scintillator	LIQUID		
Sample, Rack-Pos, Time:	9	44-9	2.70
H#, Total Counts:	108.4	13198	
Win1: Tritium - Start, End, Counts:	0	240	10130
Win2: - Start, End, Counts:	0	990	13198



Sample Count Start Time:	10 Mar 2010 08:46:33		
Data Capture Date	10 Mar 2010 08:55:04		
User Filename	S07031044-10A.XLS		
	U07031044-1A.XLS		
Spectrum Type	Log Counts		
User Number	07		
User Id	TRITIUM		
User Comment	BROWN		
Scintillator	LIQUID		
Sample, Rack-Pos, Time:	10	44-10	8.15
H#, Total Counts:	108.9	13214	
Win1: Tritium - Start, End, Counts:	0	240	10009
Win2: - Start, End, Counts:	0	990	13214

SPECTRUM PLOT

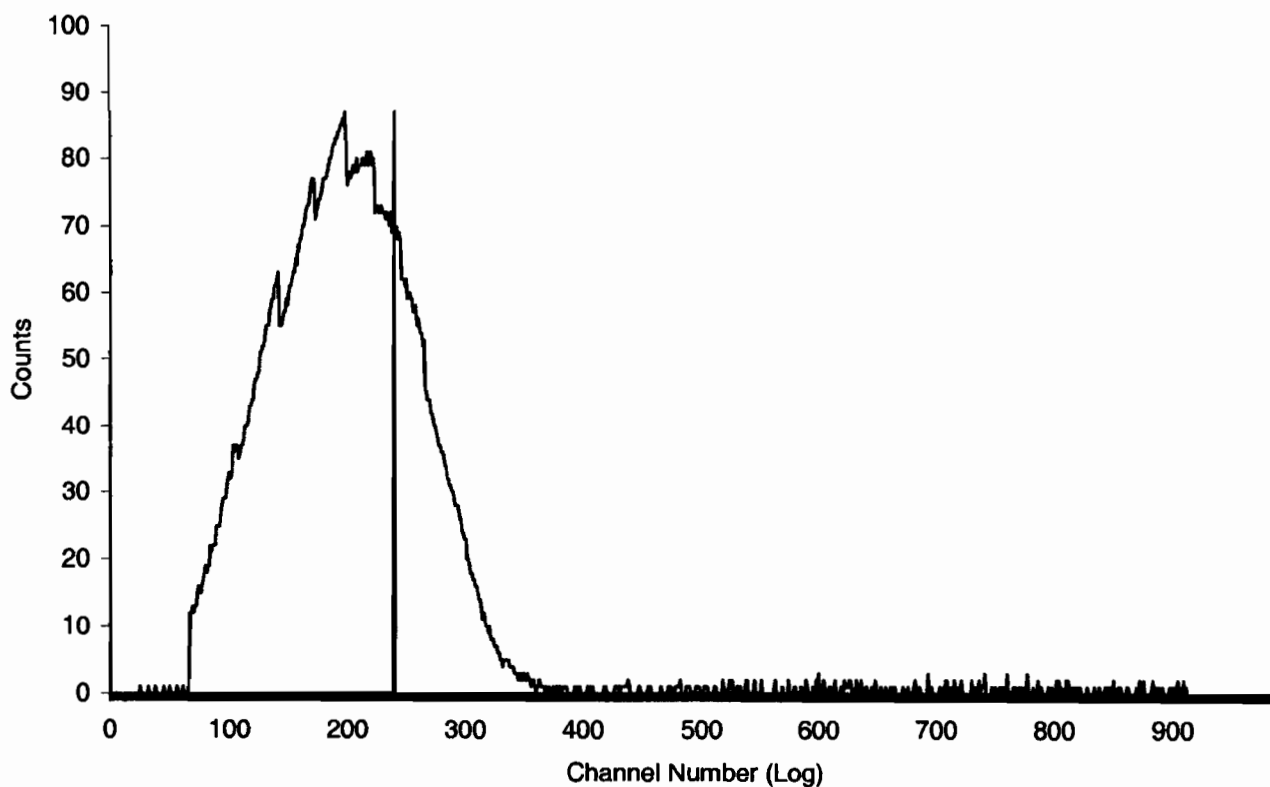
USER 07 - TRITIUM



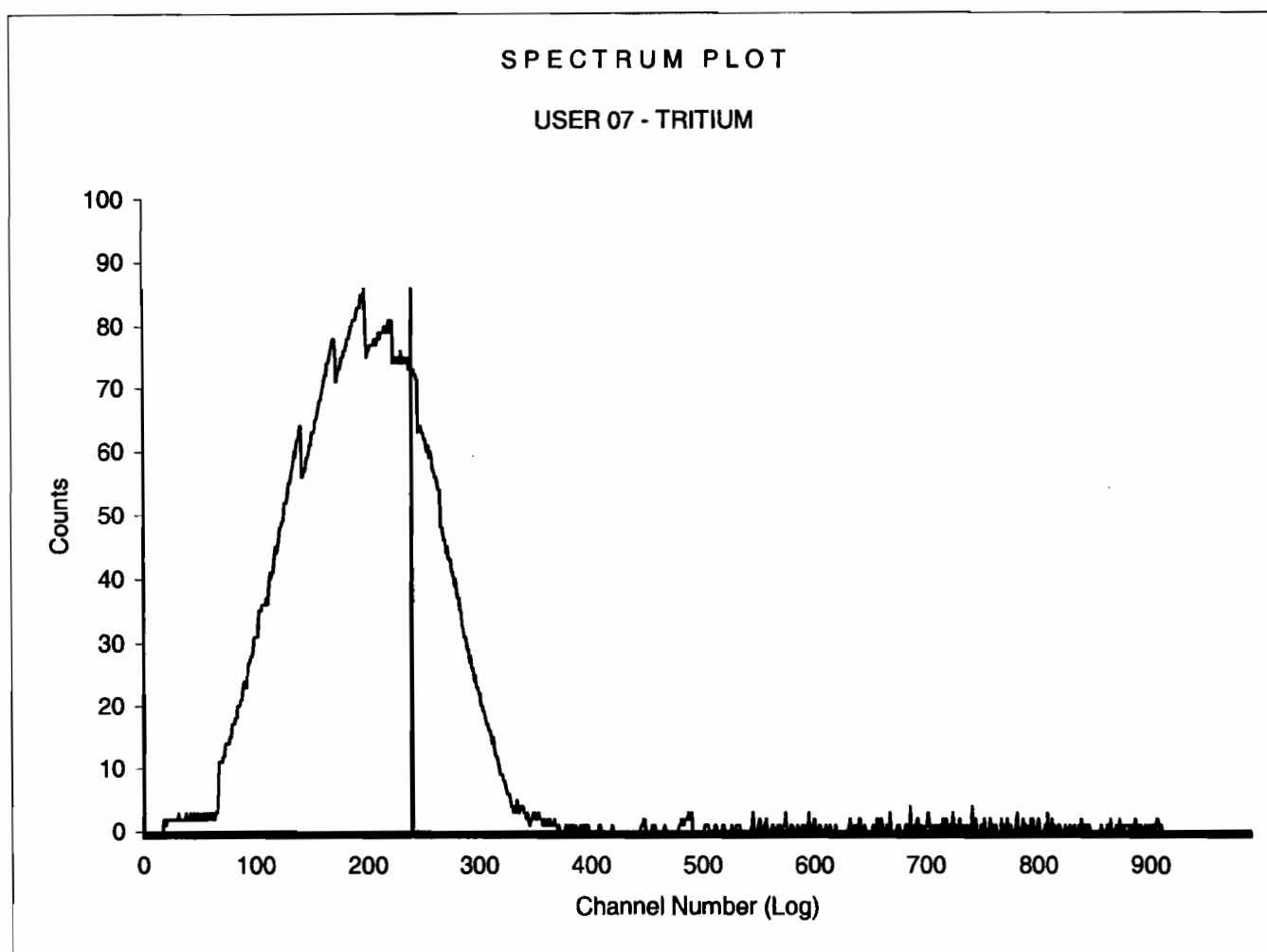
Sample Count Start Time:	10 Mar 2010 08:55:49		
Data Capture Date	10 Mar 2010 09:04:16		
User Filename	S07031044-11A.XLS		
	U07031044-1A.XLS		
Spectrum Type	Log Counts		
User Number	07		
User Id	TRITIUM		
User Comment	BROWN		
Scintillator	LIQUID		
Sample, Rack-Pos, Time:	11	44-11	8.05
H#, Total Counts:	109.5	13342	
Win1: Tritium - Start, End, Counts:	0	240	9984
Win2: - Start, End, Counts:	0	990	13341

SPECTRUM PLOT

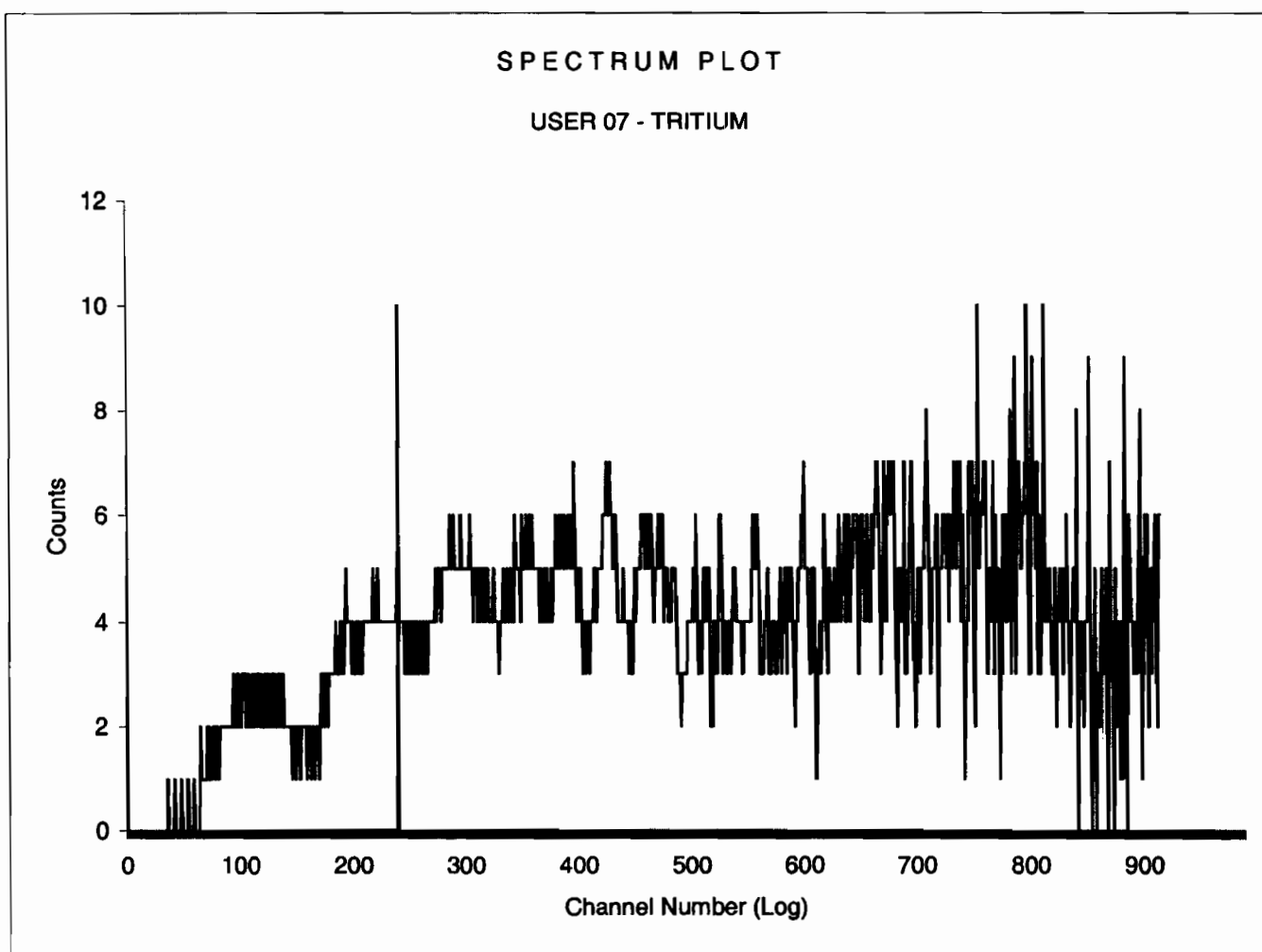
USER 07 - TRITIUM



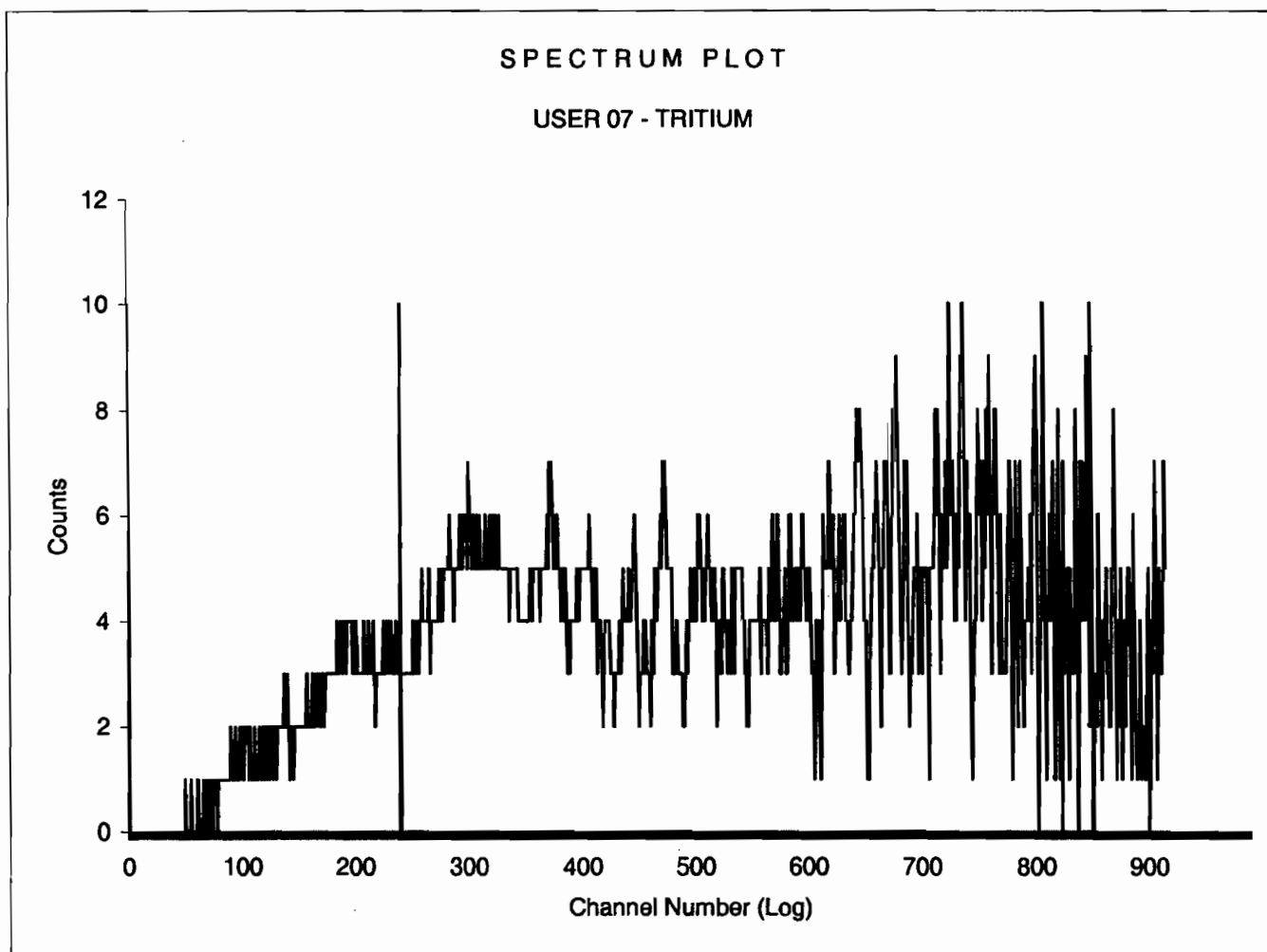
Sample Count Start Time:	10 Mar 2010 09:05:01		
Data Capture Date	10 Mar 2010 09:14:43		
User Filename	S07031044-12A.XLS		
	U07031044-1A.XLS		
Spectrum Type	Log Counts		
User Number	07		
User Id	TRITIUM		
User Comment	BROWN		
Scintillator	LIQUID		
Sample, Rack-Pos, Time:	12	44-12	9.30
H#, Total Counts:	110.1	13542	
Win1: Tritium - Start, End, Counts:	0	240	10122
Win2: - Start, End, Counts:	0	990	13542



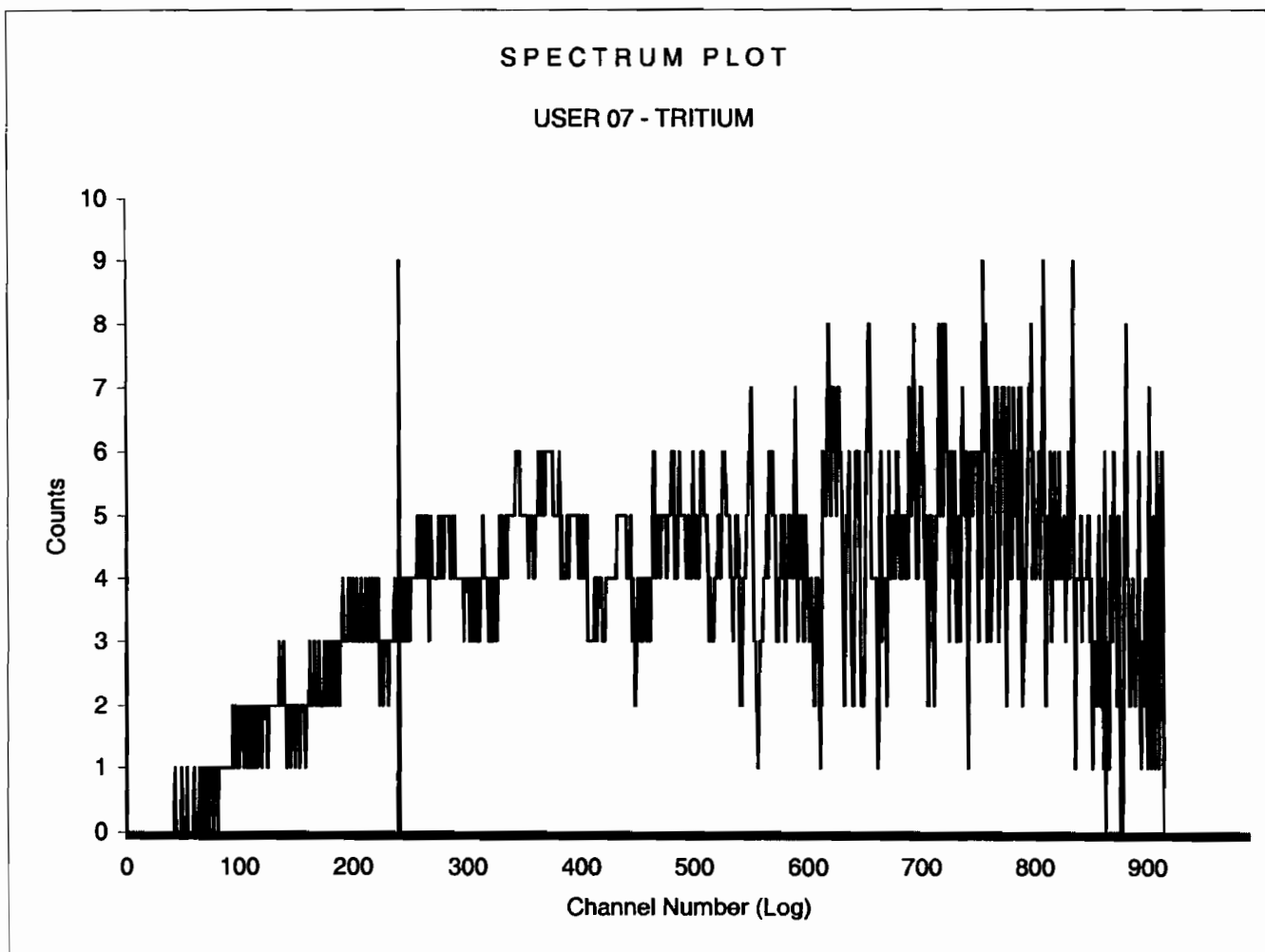
Sample Count Start Time:	10 Mar 2010 09:17:44		
Data Capture Date	10 Mar 2010 10:53:08		
User Filename	S07031057-1A.XLS		
	U07031044-1A.XLS		
Spectrum Type	Log Counts		
User Number	07		
User Id	TRITIUM		
User Comment	BROWN		
Scintillator	LIQUID		
Sample, Rack-Pos, Time:	13	57-1	95.00
H#, Total Counts:	109.9	3562	
Win1: Tritium - Start, End, Counts:	0	240	479
Win2: - Start, End, Counts:	0	990	3562



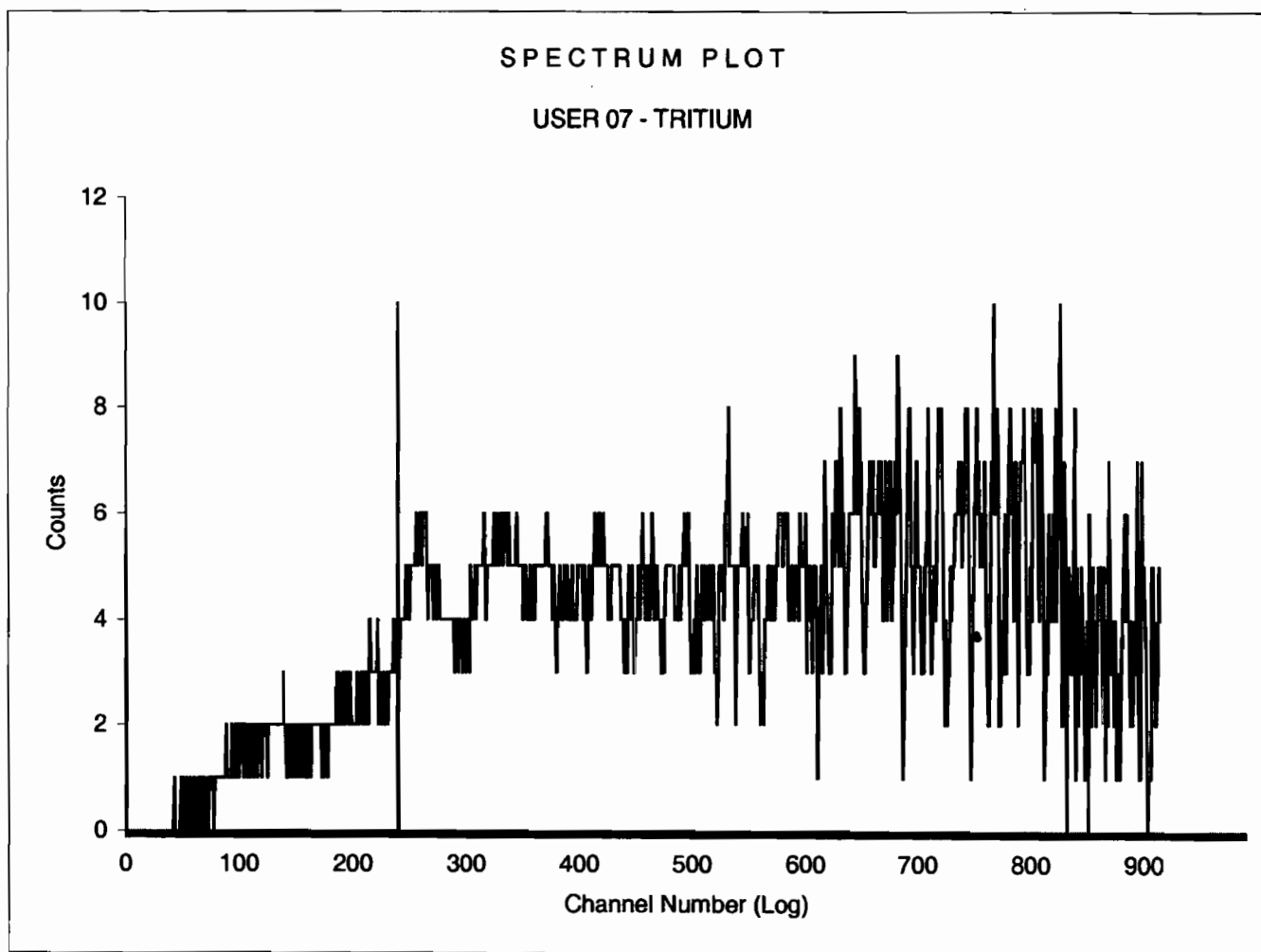
Sample Count Start Time:	10 Mar 2010 10:55:56		
Data Capture Date	10 Mar 2010 12:31:21		
User Filename	S07031057-2A.XLS		
	U07031044-1A.XLS		
Spectrum Type	Log Counts		
User Number	07		
User Id	TRITIUM		
User Comment	BROWN		
Scintillator	LIQUID		
Sample, Rack-Pos, Time:	14	57-2	95.00
H#, Total Counts:	108.7	3447	
Win1: Tritium - Start, End, Counts:	0	240	400
Win2: - Start, End, Counts:	0	990	3447



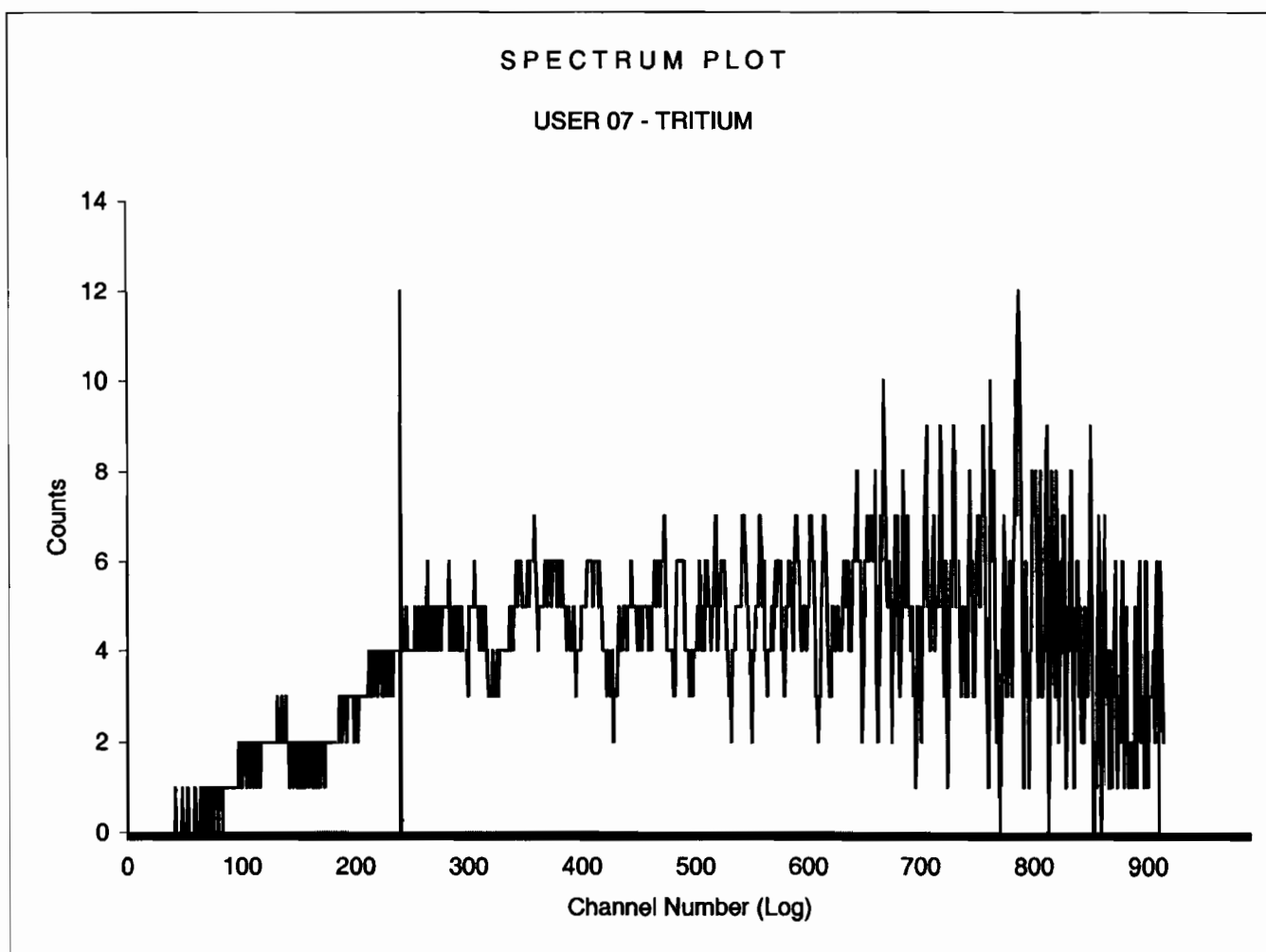
Sample Count Start Time:	10 Mar 2010 12:34:11		
Data Capture Date	10 Mar 2010 14:09:36		
User Filename	S07031057-3A.XLS		
	U07031044-1A.XLS		
Spectrum Type	Log Counts		
User Number	07		
User Id	TRITIUM		
User Comment	BROWN		
Scintillator	LIQUID		
Sample, Rack-Pos, Time:	15	57-3	95.00
H#, Total Counts:	108.8	3364	
Win1: Tritium - Start, End, Counts:	0	240	381
Win2: - Start, End, Counts:	0	990	3364



Sample Count Start Time:	10 Mar 2010 14:12:24		
Data Capture Date	10 Mar 2010 15:47:49		
User Filename	S07031057-4A.XLS		
	U07031044-1A.XLS		
Spectrum Type	Log Counts		
User Number	07		
User Id	TRITIUM		
User Comment	BROWN		
Scintillator	LIQUID		
Sample, Rack-Pos, Time:	16	57-4	95.00
H#, Total Counts:	108.3	3521	
Win1: Tritium - Start, End, Counts:	0	240	342
Win2: - Start, End, Counts:	0	990	3521



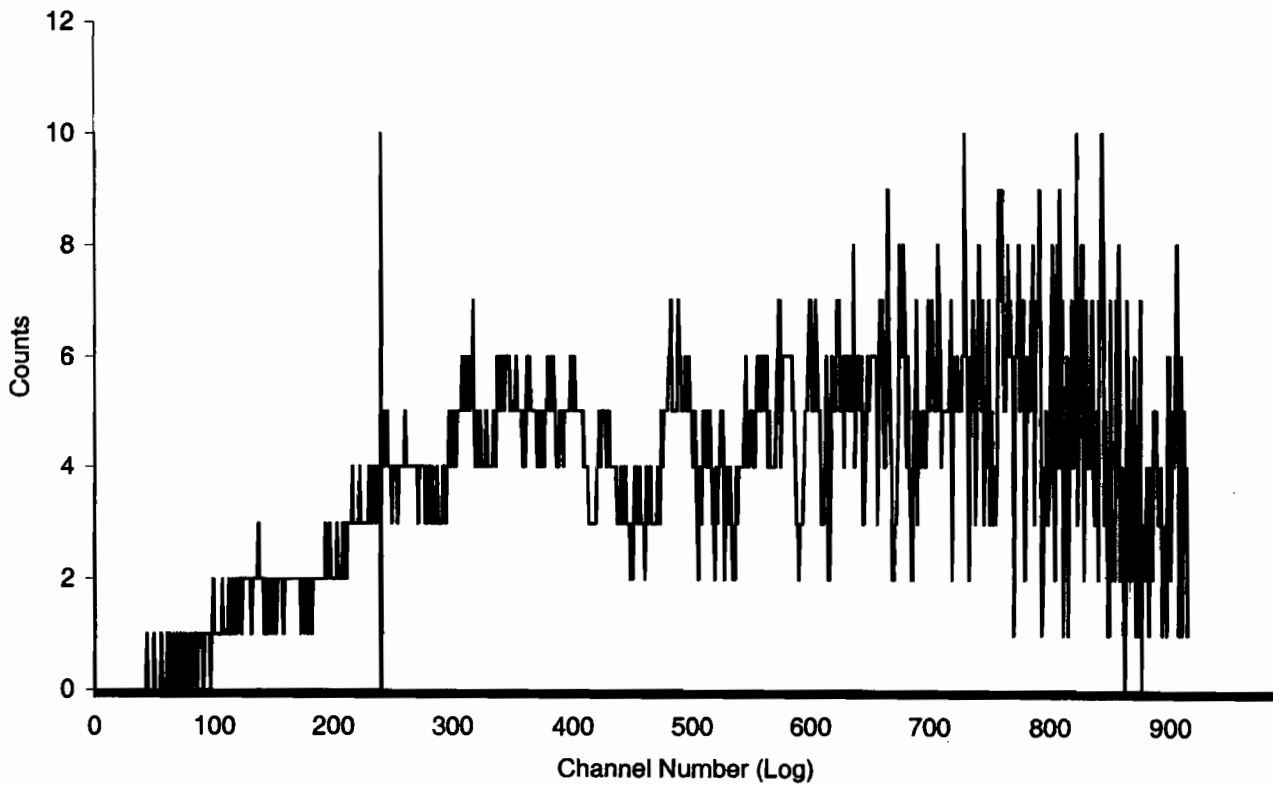
Sample Count Start Time:	10 Mar 2010 15:50:33		
Data Capture Date	10 Mar 2010 17:25:58		
User Filename	S07031057-5A.XLS		
	U07031044-1A.XLS		
Spectrum Type	Log Counts		
User Number	07		
User Id	TRITIUM		
User Comment	BROWN		
Scintillator	LIQUID		
Sample, Rack-Pos, Time:	17	57-5	95.00
H#, Total Counts:	108.9	3572	
Win1: Tritium - Start, End, Counts:	0	240	374
Win2: - Start, End, Counts:	0	990	3572



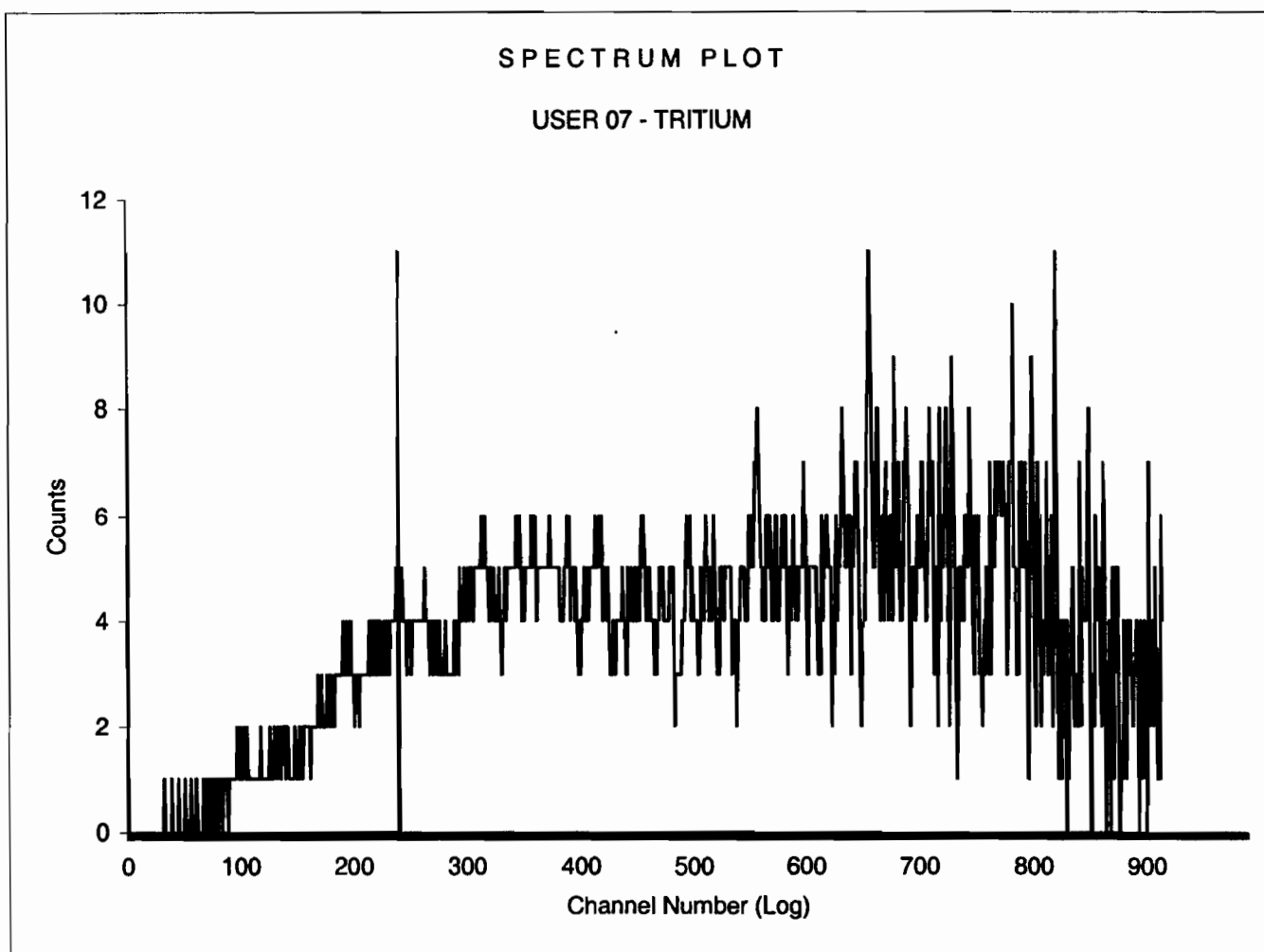
Sample Count Start Time:	10 Mar 2010 17:28:37		
Data Capture Date	10 Mar 2010 19:04:35		
User Filename	S07031057-6A.XLS		
	U07031044-1A.XLS		
Spectrum Type	Log Counts		
User Number	07		
User Id	TRITIUM		
User Comment	BROWN		
Scintillator	LIQUID		
Sample, Rack-Pos, Time:	18	57-6	95.00
H#, Total Counts:	108.0	3430	
Win1: Tritium - Start, End, Counts:	0	240	328
Win2: - Start, End, Counts:	0	990	3430

SPECTRUM PLOT

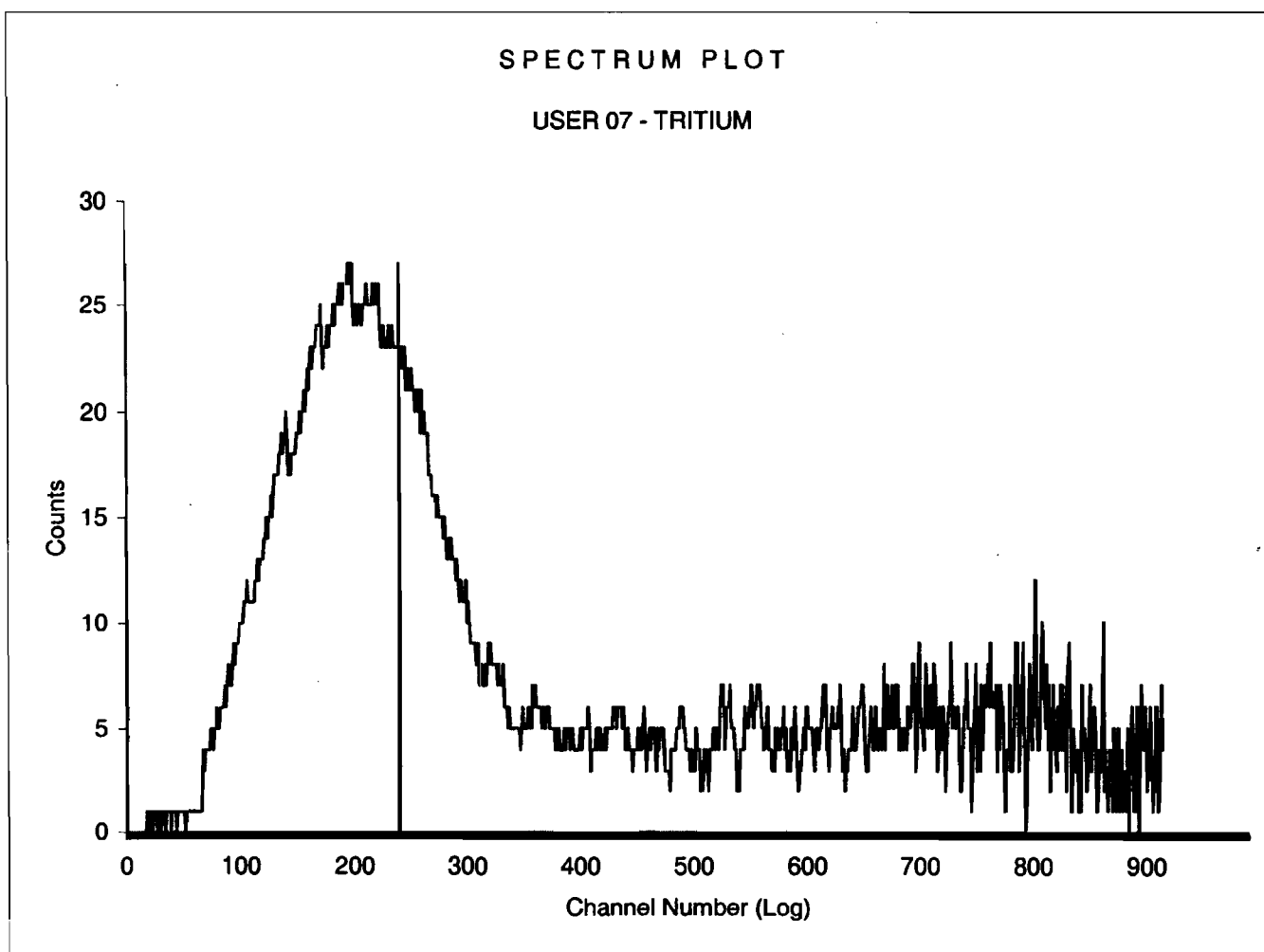
USER 07 - TRITIUM



Sample Count Start Time:	10 Mar 2010 19:06:45
Data Capture Date	10 Mar 2010 20:42:10
User Filename	S07031057-7A.XLS
	U07031044-1A.XLS
Spectrum Type	Log Counts
User Number	07
User Id	TRITIUM
User Comment	BROWN
Scintillator	LIQUID
Sample, Rack-Pos, Time:	19 57-7 95.00
H#, Total Counts:	108.9 3427
Win1: Tritium - Start, End, Counts:	0 240 360
Win2: - Start, End, Counts:	0 990 3426



Sample Count Start Time:	10 Mar 2010 20:44:47		
Data Capture Date	10 Mar 2010 22:20:13		
User Filename	S07031057-8A.XLS		
	U07031044-1A.XLS		
Spectrum Type	Log Counts		
User Number	07		
User Id	TRITIUM		
User Comment	BROWN		
Scintillator	LIQUID		
Sample, Rack-Pos, Time:	20	57-8	95.00
H#, Total Counts:	109.4	7191	
Win1: Tritium - Start, End, Counts:	0	240	3172
Win2: - Start, End, Counts:	0	990	7190



Radiochemistry Batch Checklist, Rev10

Batch# 966914 Product: H3 Date: 3-22-10

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 stasused.	✓		
QC data entered into QC database and batch is in REVW	✓		
Hit notification complete (if necessary)			NA
Batch entered into Case Narrative.	✓		
Batch Data Exception Reports (DER) completed, if applicable.			NA
Batch Data Exception Reports (DER) second reviewed and disposition verified to be completed.			NA
Aliquot Correction completed if required.			NA
Review sample historical results if available (If REMP, results above MDC have been verified by historical results, recount or re-analysis.)	✓		

GEL Laboratories, LLC

RADchecklistrev10, revised 1/13/2010

Primary Review Performed By: [Signature]

Secondary Review Performed By: [Signature]

3/22/10

LANL 3-23-10

Tritium Que Sheet

18-MAR-10

Batch #: 966914 Analyst: KKK2 First Client Due Date 23-MAR-10 Internal Due Date: 16-MAR-10

Spike Isotope: Hydrogen-3

Spike Code: 0134-K

Expiration Date: 3/11/11

Vol: 0.1

LCS Isotope: Hydrogen-3

LCS Code: 0284-K

Expiration Date: 3/11/11

Vol: 0.1

Prep Date: 3/10/10 Initials: KKK2 Pipet ID: 2920668 Witness: JLR 3-20-10

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 #
247774003-1	RE15-10-9257	SAMPLE		6 pC/g	SOIL	LANL010	16-FEB-10	10	54-2	538	50	3.26		13	32
1202075155-1	MB for batch 966914	MB		6 pC/g	SOIL	QC ACCOUNT	16-FEB-10	10	54-3	561	50	3.26		13	33
1202075156-1	RE15-10-9257(247774003DUP)	DUP		6 pC/g	SOIL	QC ACCOUNT	16-FEB-10	10	54-4	564	50	3.23		13	34
1202075157-1	RE15-10-9257(247774003MS)	MS		6 pC/g	SOIL	QC ACCOUNT	16-FEB-10	10	12-1	570	50	3.26		13	35
1202075158-1	LCS for batch 966914	LCS		6 pC/g	SOIL	QC ACCOUNT	16-FEB-10	10	12-2	586	50	3.26		13	36

Bkg Rack #: 54-1 31

3/22/10

Comments:

Bkg prepared with dead water? 03/No

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

Calibration Used: EcoPoint Ultra (19 mL sample/13 mL Econscint Ultra)
Data Reviewed By: JLR 3-22-10

GEL Laboratories LLC, Radiochemistry Division

Page 1 of 1

Tritium Solid

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

Batch : 966914
Analyst : KKK2
Prep Date : 3/20/2010

Spike SN : 0134-K
Spike Exp Date : 3/11/2011
Spike Activity (dpm/ml): 2454.17
Spike Volume Added: 0.10

LCS SN : 0134-K
LCS Exp Date : 3/11/2011
LCS Activity (dpm/ml): 2454.17
LCS Volume Added: 0.10

Procedure Code : LSCDSH3S
Parname : Tritium
Required MDC : 6 pCi/G
Half-life of Tritium : 12.32 years

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

Sample Characteristics		Sample		Sample		Distilled		Sample		Sample		Rig	Sample
Pos.	Sample ID	Total Sample Volume (L)	Sample Aliquot G	Sample Aliquot StDev. G	Sample Aliquot StDev. G	Sample Counted L	Sample Counted L	Sample Counted StDev. L	Sample Counted L	Sample Counted StDev. L	number		Date/Time
1	247774003.1	0.0500	3.2600	3.5572E-03	3.5572E-03	0.0100	0.0100	2.5729E-05	2.5729E-05	2.5729E-05	538		2/16/2010 12:00
2	1202075155.1	0.0500	3.2600	3.5572E-03	3.5572E-03	0.0100	0.0100	2.5729E-05	2.5729E-05	2.5729E-05	561		3/20/2010 0:00
3	1202075156.1	0.0500	3.2300	3.5541E-03	3.5541E-03	0.0100	0.0100	2.5729E-05	2.5729E-05	2.5729E-05	564		2/16/2010 12:00
4	1202075157.1	0.0500	3.2600	3.5572E-03	3.5572E-03	0.0100	0.0100	2.5729E-05	2.5729E-05	2.5729E-05	570		2/16/2010 12:00
5	1202075158.1	0.0500	3.2600	3.5572E-03	3.5572E-03	0.0100	0.0100	2.5729E-05	2.5729E-05	2.5729E-05	586		3/20/2010 0:00

Count raw Data				Background				Calibration Data				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	32	15.0296	763.69	6.67	1.22	15	3/22/2010 10:58	0.995	LSCORANGE	7/23/2009	7/31/2010	0.2771	0.00792	31	3/22/2010 10:41
2	33	15.0297	758.29	1.08	1.22	15	3/22/2010 11:16	1.000	LSCORANGE	7/23/2009	7/31/2010	0.2683	0.00792	31	3/22/2010 10:41
3	34	15.0297	758.22	6.33	1.22	15	3/22/2010 11:33	0.995	LSCORANGE	7/23/2009	7/31/2010	0.2682	0.00792	31	3/22/2010 10:41
4	35	15.0297	761.45	21.65	1.22	15	3/22/2010 11:51	0.995	LSCORANGE	7/23/2009	7/31/2010	0.2734	0.00792	31	3/22/2010 10:41
5	36	15.0297	757.86	16.2	1.22	15	3/22/2010 12:08	1.000	LSCORANGE	7/23/2009	7/31/2010	0.2676	0.00792	31	3/22/2010 10:41

REGISTRY

MON 22 MAR 2010 10:39

*** DIRECTORY PATH :S:\LSC\O\DA\966914A0 ***

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

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	247774003	15:00	1.0E04	NO LIM	1	1	Y	1/10	1:00
3	33	1202075155	15:00	1.0E04	NO LIM	1	1	Y	1/10	1:00
4	34	1202075156	15:00	1.0E04	NO LIM	1	1	Y	1/10	1:00
5	35	1202075157	15:00	1.0E04	NO LIM	1	1	Y	1/10	1:00
6	36	1202075158	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	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
Q013101N.001	22 MAR 2010	10:57				
31	BKG	15:01.780	762.65	1.22	2.51	7.69
Q023201N.001	22 MAR 2010	11:14				
32	247774003	15:01.773	763.69	6.67	8.03	12.25
Q033301N.001	22 MAR 2010	11:32				
33	1202075155	15:01.780	758.29	1.08	2.38	7.35
Q043401N.001	22 MAR 2010	11:49				
34	1202075156	15:01.780	758.22	6.33	8.03	11.57
Q053501N.001	22 MAR 2010	12:07				

Page 1

35	1202075157	15:01.780	761.45	21.65	25.26	30.10
Q063601N.001	22 MAR 2010	12:24				
36	1202075158	15:01.780	757.86	16.20	19.00	23.69

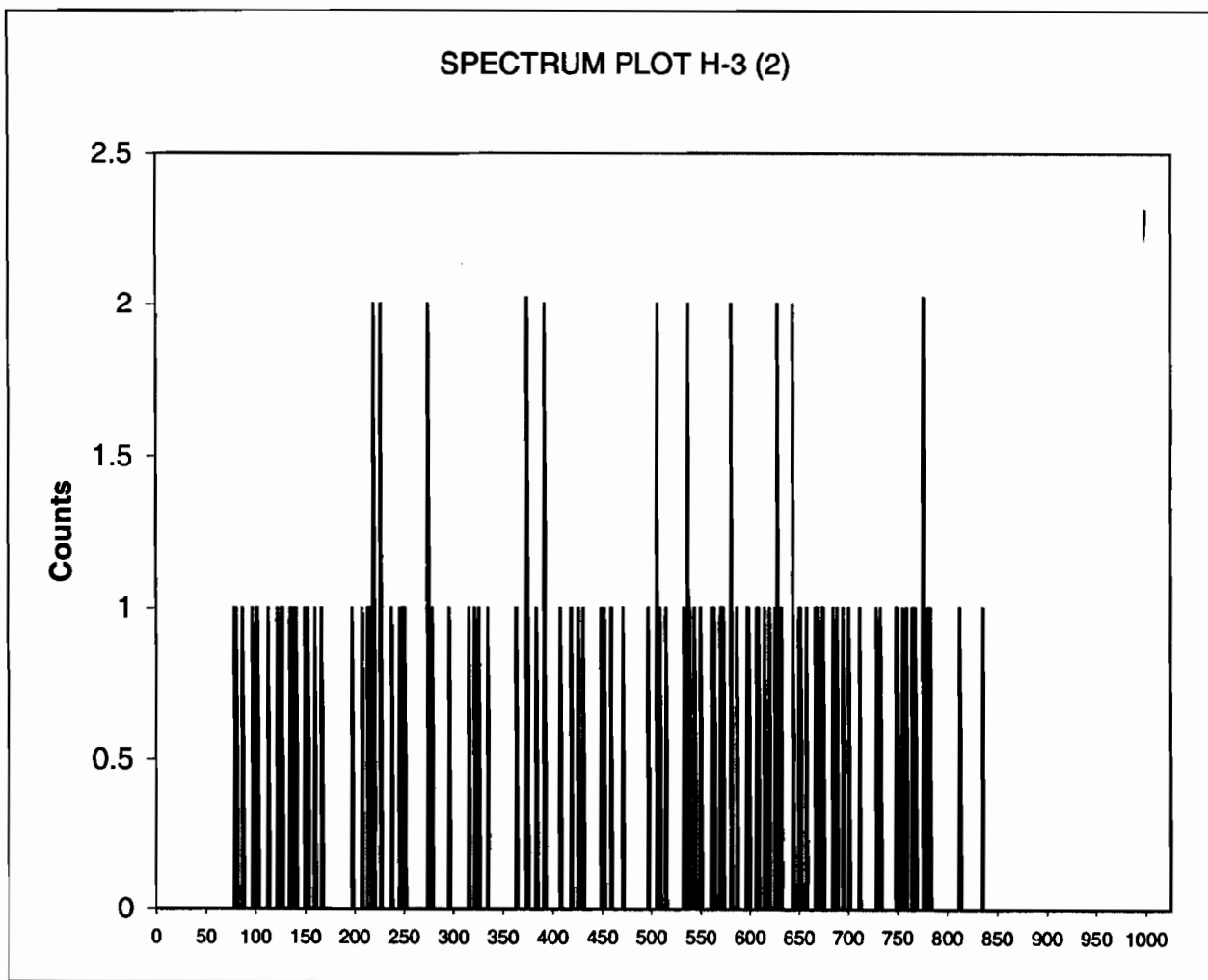
Instrument Type:
Data Capture Date:
FileName:
File Info:

Quantulus
MON 22 MAR 2010 10:39
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s:\sc\files\orange\966914A0\U966914A0.xls

ID: H-3 (2)
Comments: ORANGE

Sample, Rack-Pos, Time: 1, BKG, 15.02967:
Quench: 762.65
Start, End, X-Axis 50-175

Channel Counts



31	0
32	0
33	0
34	0
35	0

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

Quantulus
MON 22 MAR 2010 10:39
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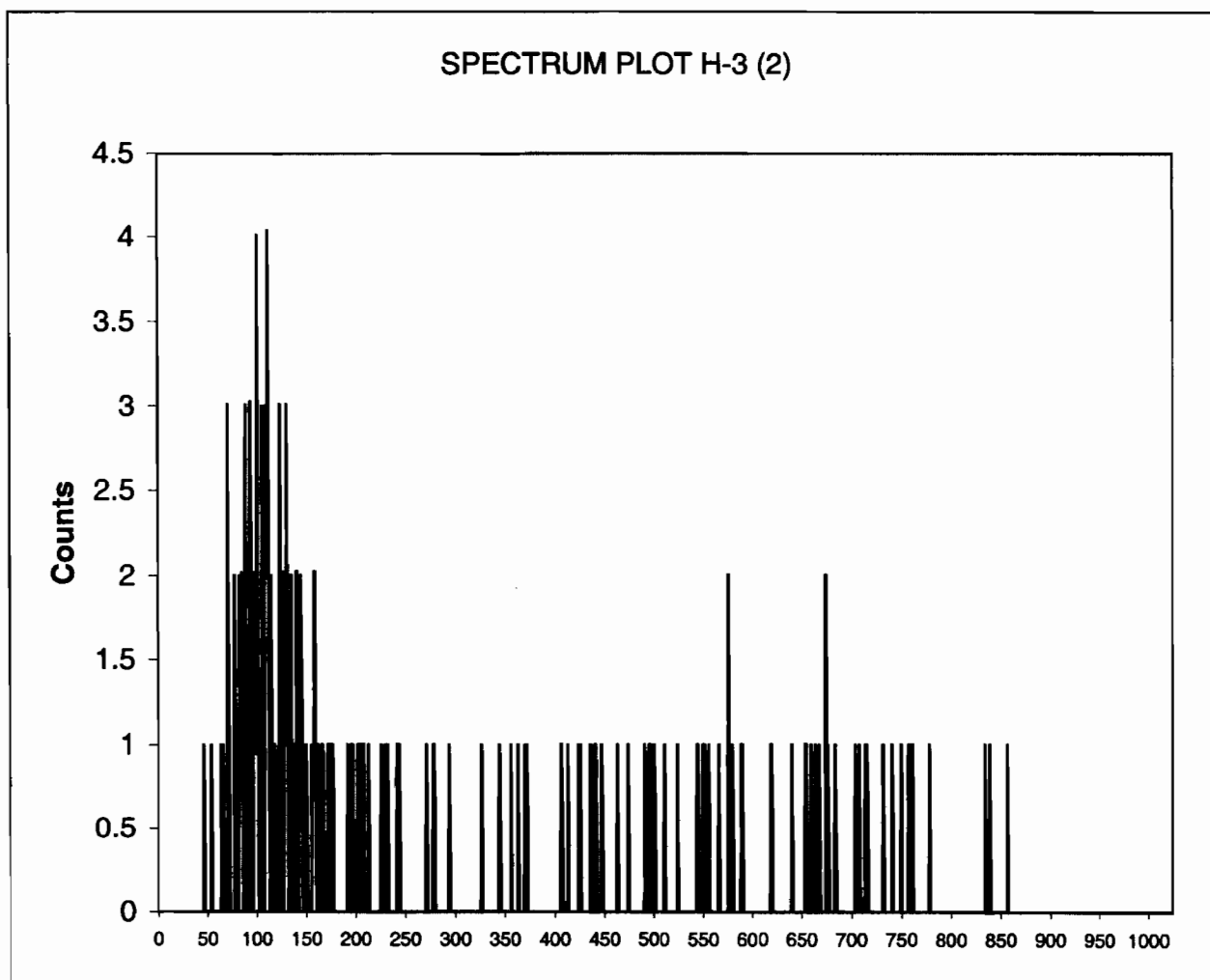
ID:
Comments:

H-3 (2)
ORANGE

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

2, 247774003, 15.02955:
763.69
50-175

Channel Counts



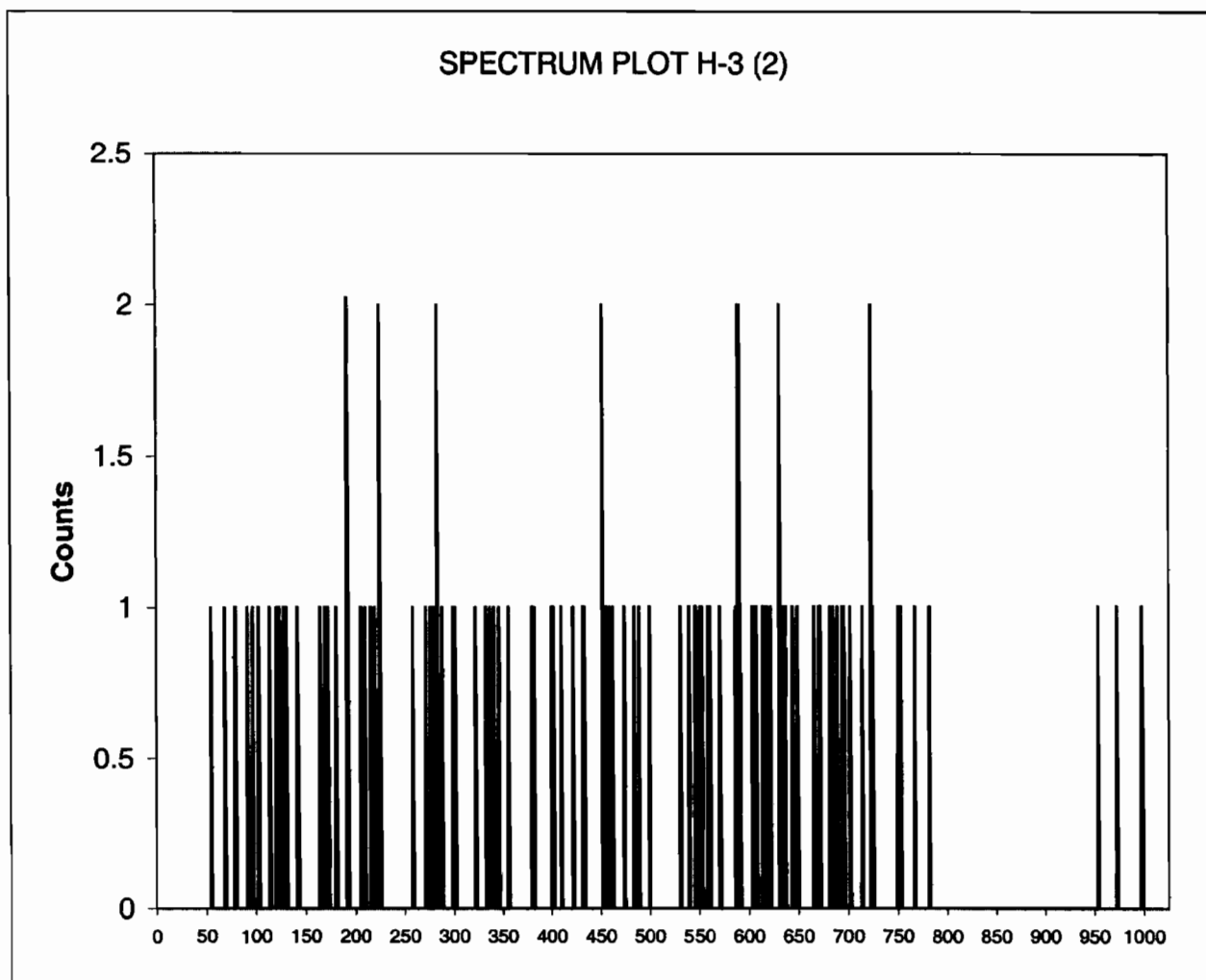
31	0
32	0
33	0
34	0
35	0

Instrument Type: Quantulus
Data Capture Date: MON 22 MAR 2010 10:39
FileName: s:\sc\files\orange\966914A0\SQ033301N.001.xls
File Info: s:\sc\files\orange\966914A0\U966914A0.xls

ID: H-3 (2)
Comments: ORANGE

Sample, Rack-Pos, Time: 3, 1202075155, 15.02967:
Quench: 758.29
Start, End, X-Axis 50-175

Channel Counts



31	0
32	0
33	0
34	0
35	0

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

Quantulus
MON 22 MAR 2010 10:39
s:\sc\files\orange\966914A0\SQ043401N.001.xls
s:\sc\files\orange\966914A0\U966914A0.xls

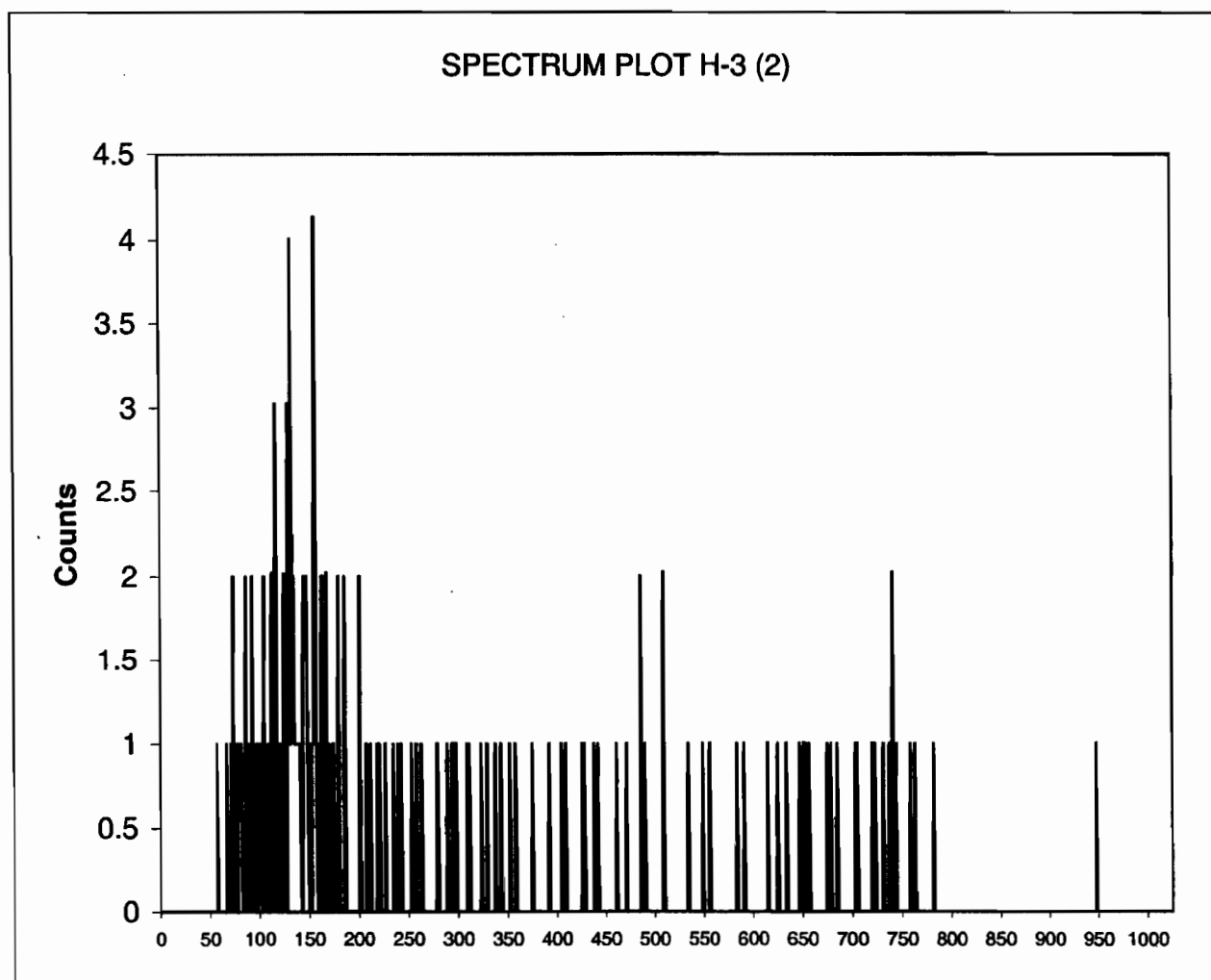
ID:
Comments:

H-3 (2)
ORANGE

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

4, 1202075156, 15.02967:
758.22
50-175

Channel Counts



31	0
32	0
33	0
34	0
35	0

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

Quantulus
MON 22 MAR 2010 10:39
s:\sc\files\orange\966914A0\SQ053501N.001.xls
s:\sc\files\orange\966914A0\U966914A0.xls

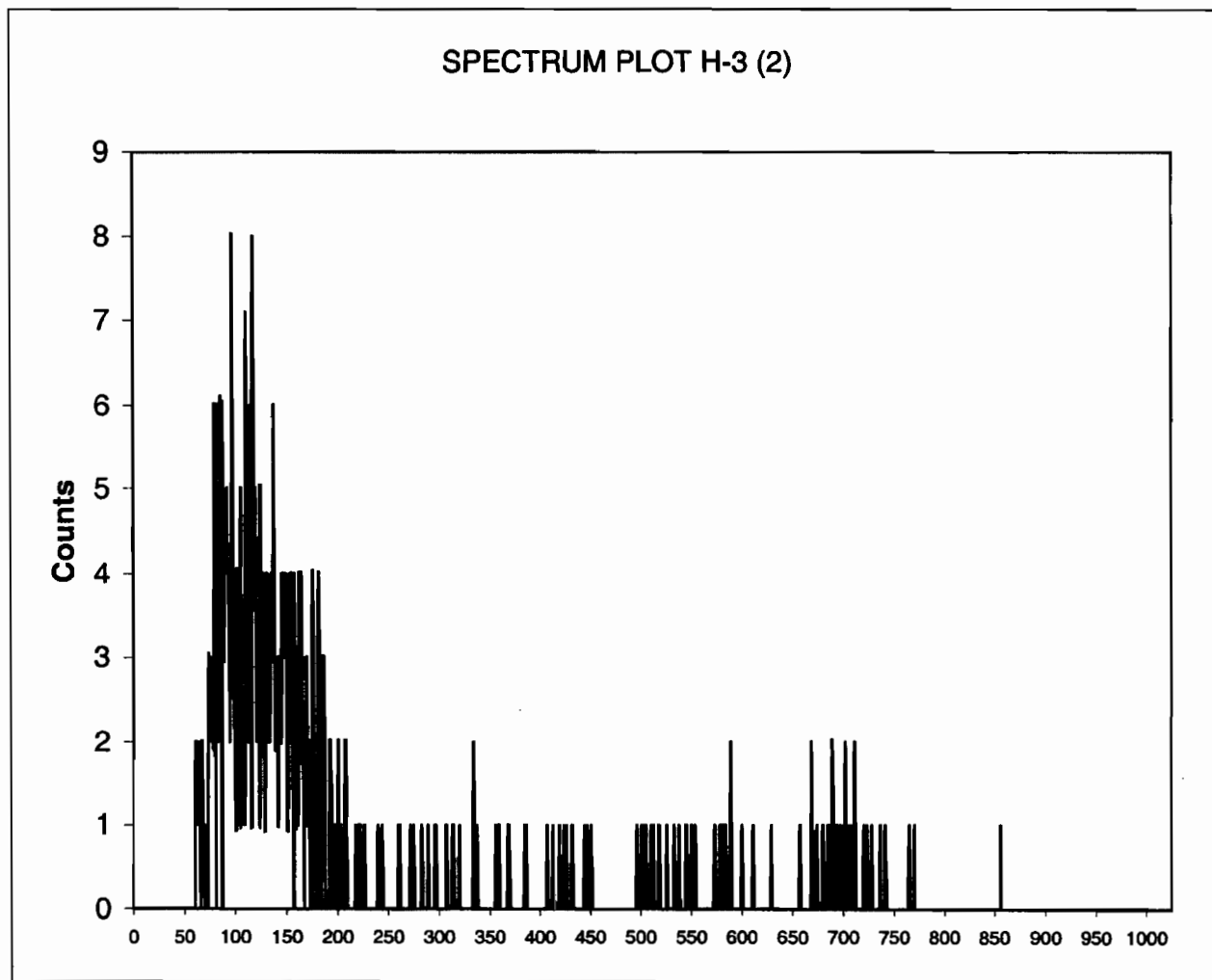
ID:
Comments:

H-3 (2)
ORANGE

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

5, 1202075157, 15.02967:
761.45
50-175

Channel Counts



31	0
32	0
33	0
34	0
35	0

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

Quantulus
MON 22 MAR 2010 10:39
s:\sc\files\orange\966914A0\SQ063601N.001.xls
s:\sc\files\orange\966914A0\U966914A0.xls

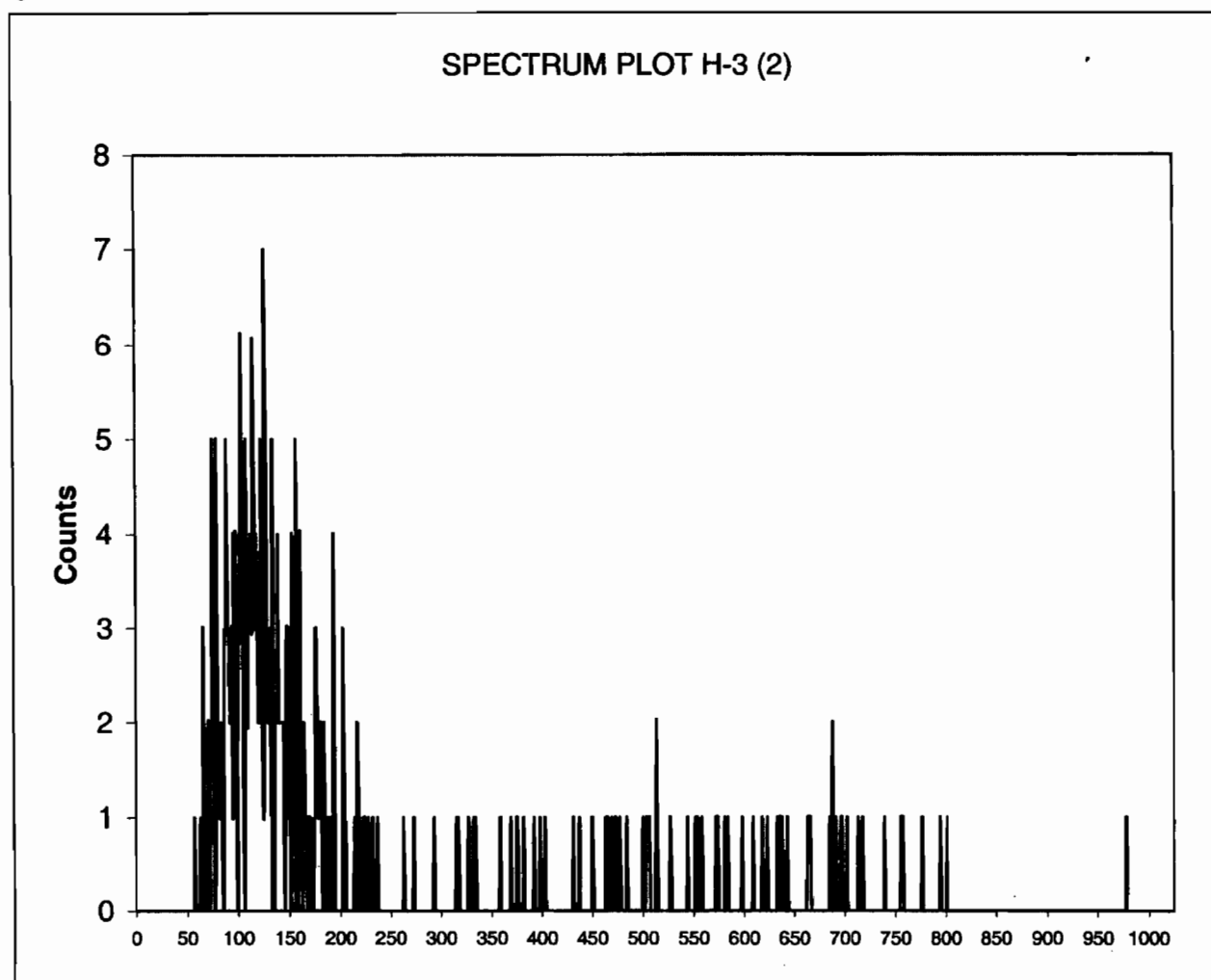
ID:
Comments:

H-3 (2)
ORANGE

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

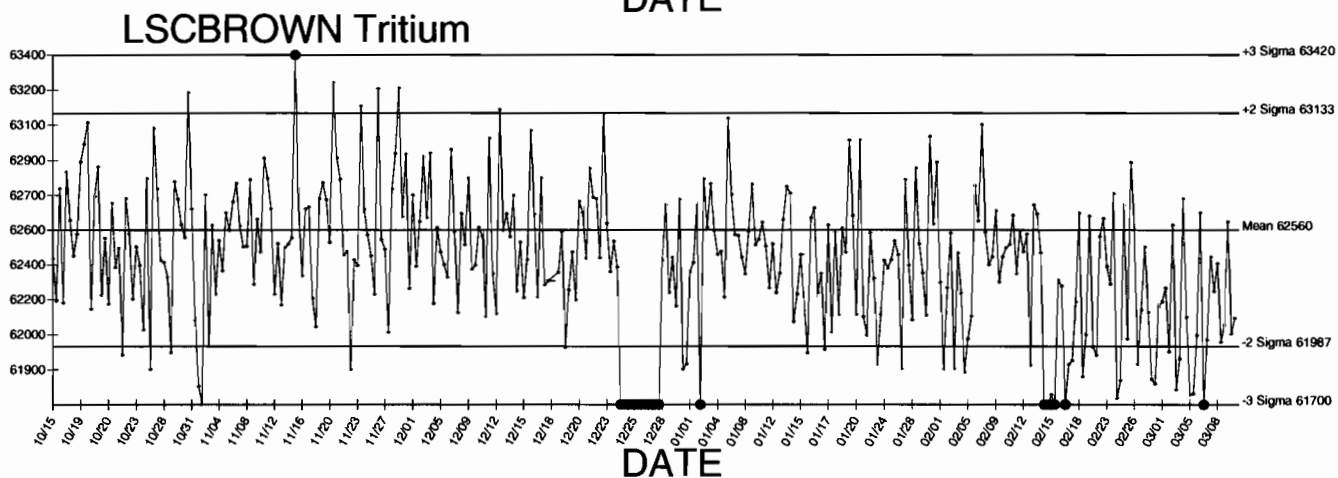
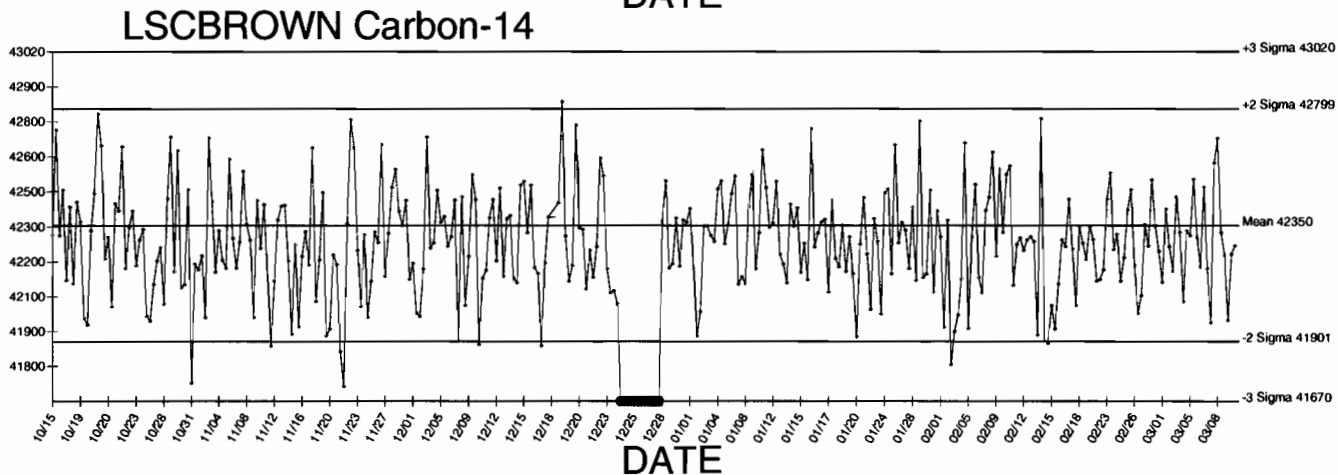
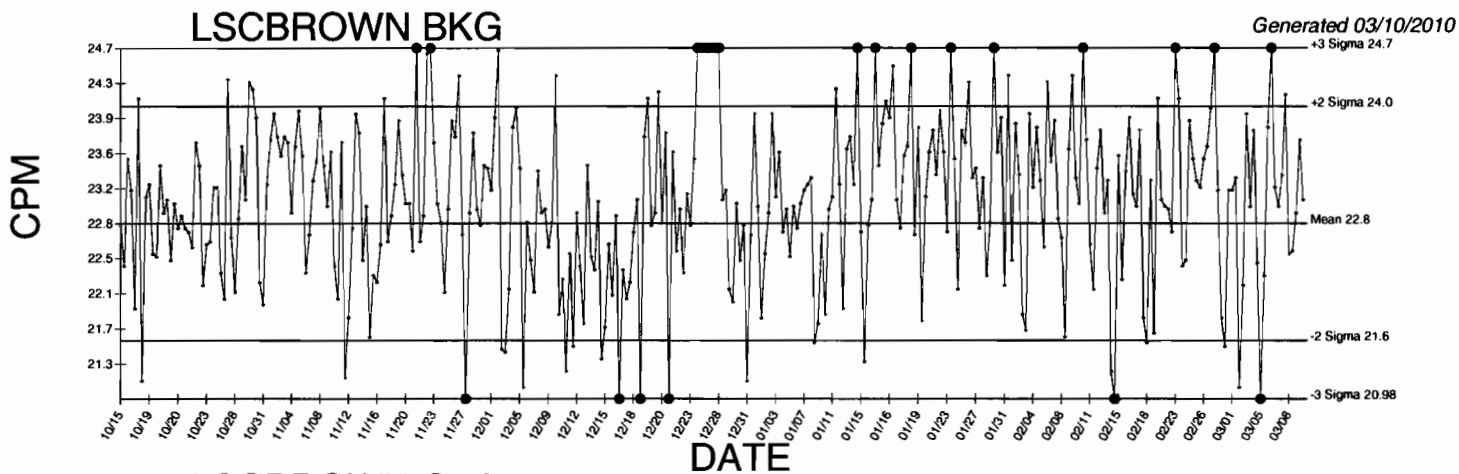
6, 1202075158, 15.02967:
757.86
50-175

Channel Counts

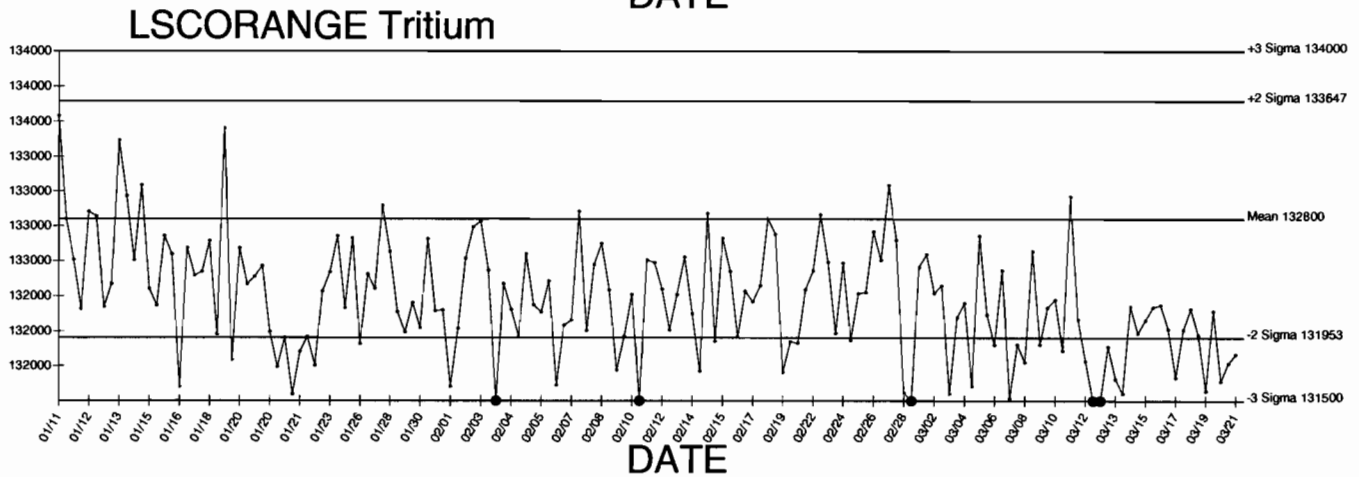
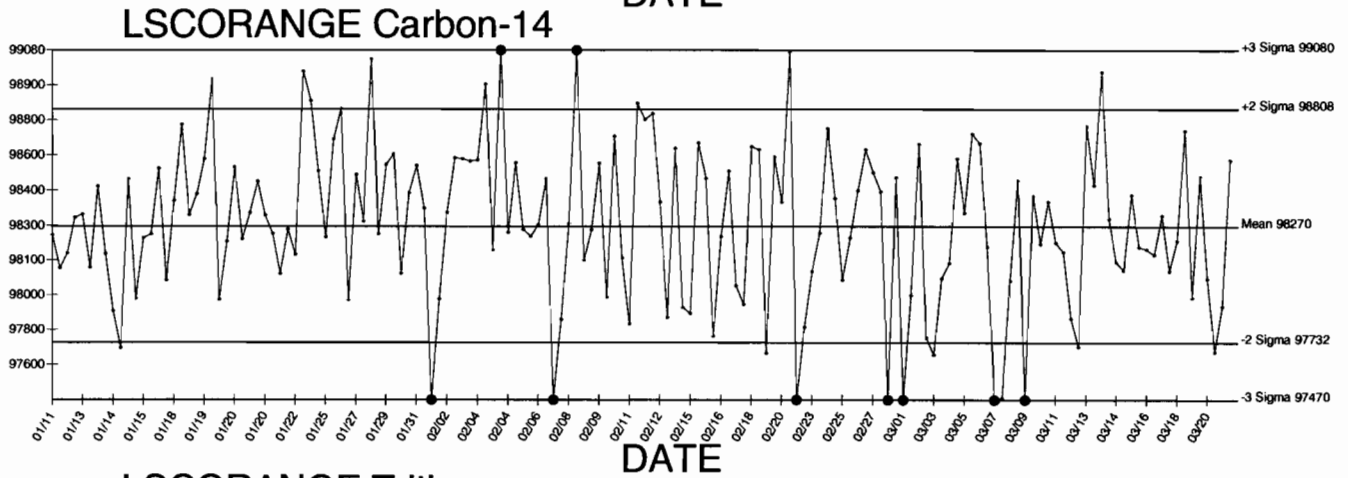
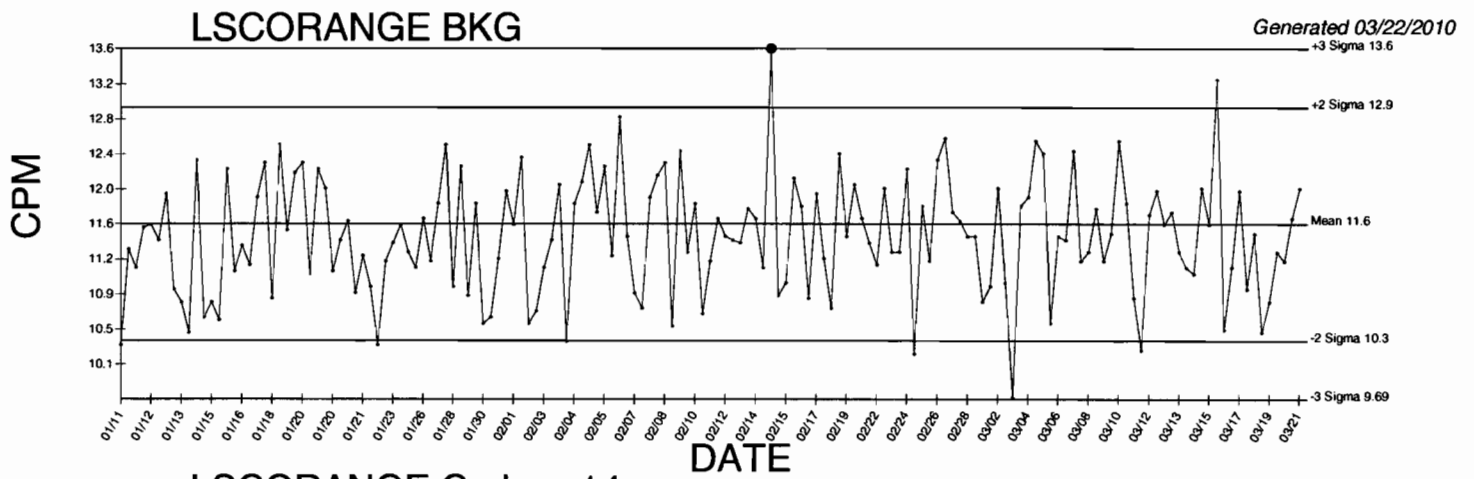


31	0
32	0
33	0
34	0
35	0

BACKGROUND AND EFFICIENCY DATA



● Denotes Outlier



● 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 (μCi) = 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

QC-5-023-061a

Standard Traceability Log Rad

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

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

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

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	1.0000	2741.3099
	0134-K N2	1073.2000	54.0000	1019.2000	1.0000	2678.242955
	0134-K N3	1085.2000	54.0000	1031.2000	1.0000	2709.776428
					Average =	2709.776428

Mean Value (Counting) = 2709.776428
 Stdev = 31.53347278

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

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

where:

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

Reference RAD SOP M-001

Handwritten:
 Amanda Z. Teh 4/9/09

RUNLOGS

Instrument Run Log

Instrument Type: LSC

Batch ID: 960231

Sample ID	Sample Type	Analyst	Instrument	Run Date	Status	Geometry	Calibration Date
247774001	SAMPLE	KXK2	LSCBROWN	10-MAR-10 06:08	DONE		
247774002	SAMPLE	KXK2	LSCBROWN	10-MAR-10 06:17	DONE		
247774004	SAMPLE	KXK2	LSCBROWN	10-MAR-10 06:34	DONE		
247774005	SAMPLE	KXK2	LSCBROWN	10-MAR-10 08:10	DONE		
247774006	SAMPLE	KXK2	LSCBROWN	10-MAR-10 08:24	DONE		
247774007	SAMPLE	KXK2	LSCBROWN	10-MAR-10 08:33	DONE		
247774008	SAMPLE	KXK2	LSCBROWN	10-MAR-10 08:40	DONE		
247774009	SAMPLE	KXK2	LSCBROWN	10-MAR-10 08:42	DONE		
247774010	SAMPLE	KXK2	LSCBROWN	10-MAR-10 08:46	DONE		
247774011	SAMPLE	KXK2	LSCBROWN	10-MAR-10 08:55	DONE		
247790002	SAMPLE	KXK2	LSCBROWN	10-MAR-10 09:05	DONE		
247790003	SAMPLE	KXK2	LSCBROWN	10-MAR-10 09:17	DONE		
248137001	SAMPLE	KXK2	LSCBROWN	10-MAR-10 10:55	DONE		
248137002	SAMPLE	KXK2	LSCBROWN	10-MAR-10 12:34	DONE		
248137003	SAMPLE	KXK2	LSCBROWN	10-MAR-10 14:12	DONE		
248137004	SAMPLE	KXK2	LSCBROWN	10-MAR-10 15:50	DONE		
1202059613	MB	KXK2	LSCBROWN	10-MAR-10 17:28	DONE		
1202059614	DUP	KXK2	LSCBROWN	10-MAR-10 19:06	DONE		
1202059615	LCS	KXK2	LSCBROWN	10-MAR-10 20:44	DONE		

Instrument Run Log

Instrument Type: LSC

Batch ID: 966914

Sample ID	Sample Type	Analyst	Instrument	Run Date	Status	Geometry	Calibration Date
247774003	SAMPLE	KXK2	LSCORANGE	22-MAR-10 10:58	DONE	10mL DW/13mL Ecoscint Ultra	24-JUL-09 00:00
1202075155	MB	KXK2	LSCORANGE	22-MAR-10 11:16	DONE	10mL DW/13mL Ecoscint Ultra	24-JUL-09 00:00
1202075156	DUP	KXK2	LSCORANGE	22-MAR-10 11:33	DONE	10mL DW/13mL Ecoscint Ultra	24-JUL-09 00:00
1202075157	MS	KXK2	LSCORANGE	22-MAR-10 11:51	DONE	10mL DW/13mL Ecoscint Ultra	24-JUL-09 00:00
1202075158	LCS	KXK2	LSCORANGE	22-MAR-10 12:08	DONE	10mL DW/13mL Ecoscint Ultra	24-JUL-09 00:00