START 9715523.0649

LK7304-LAS

0046377

Lockheed Environmental Systems & Technologies Co.
Lockheed Analytical Services
975 Kelly Johnson Drive Las Vegas, Nevada 89119-3705
Telephone 702-361-0220 800-582-7505 Facsimile 702-361-8146

LOCKHEED MARTIN

JAN 1997 RECEIVED EDMC

July 9, 1996

Ms. Joan Kessner
Bechtel Hanford, Inc.
3350 George Washington Way
MS B1-35
Richland, WA 99352

JUL 1996 RECEIVED Data Log In

RE:	Log-in No.:	L7304
	Quotation No.:	Q400000-B
	SAF:	B96-124
	Document File No.:	0622596C
	BHI Document Control No.:	381
	SDG No.:	LK7304

The attached data report contains the analytical results of samples that were submitted to Lockheed Analytical Services on June 22, 1996. The temperature of the cooler upon receipt was 2°C. Sample containers received agree with the chain-of-custody documentation. Sample containers were received intact. Samples were received in time to meet the analytical holding time requirements.

The case narratives included in the following attachments provide a detailed description of all events that occurred during sample preparation, analysis, and data review specific to the samples and analytical methods requested.

A list of data qualifiers, chain-of-custody forms, sample receiving checklist, and log-in report are also enclosed representing the samples received within this group.

If you have any questions concerning the analysis or the data please call Kathleen M. Hall at (509) 375-4741.

"I certify that this data package is in compliance with the SOW, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hard copy data package has been authorized by the Laboratory Manager or a designee, as verified by the following signature."

Sincerely,

Karen Hermann FOR

Kathleen M. Hall
Client Services Representative

cc: Client Services
Document Control

Lockheed Analytical Services

Log-in No.: L7304
Quotation No.: Q400000-B
SAF: B96-124
Document File No.: 0622596C
BHI Document File No.: 381
SDG No.: LK7304
Page No.: 1

CASE NARRATIVE
RADIOCHEMICAL ANALYSES

The routine calibration and quality control (QC) analyses performed for this batch include as applicable: instrument calibration, initial and continuing calibration verification, quench monitoring standards, instrument background analysis, method blanks, yield tracer, laboratory control samples, matrix spike samples, and duplicate samples.

NOTE: Chemical recoveries and minimum detectable activities can be found on the preparation sheets and calculation sheets of the attached raw data.

Holding Time Requirements

All holding time requirements were met.

Analytical Method Gross Alpha/Beta

The gross alpha/beta analysis was performed using standard operating procedure, LAL-91-SOP-0060. The samples were analyzed in workgroup 38485. The instrument calibration verification met criteria. The method blank was within QC criteria. The laboratory control sample recoveries were within QC criteria. The duplicate recoveries were within QC criteria. No re-analyses were performed.

Yvonne M. Jacoby
Prepared By

July 5, 1996
Date

9713523.0651

LOCKHEED ANALYTICAL SERVICES
LOGIN CHAIN OF CUSTODY REPORT (ln01)
Jun 24 1996, 04:42 pm

Login Number: L7304
Account: 596 Bechtel Hanford, Inc. * Richland, WA
Project: BECHTEL-HANFORD Bechtel Hanford Project

Laboratory Sample Number	Client Sample Number	Collect Date	Receive Date	PR	Due Date
L7304-1	B0HGK3	18-JUN-96	22-JUN-96		07-JUL-96
TEMP 2; SAF# B96-124					
Location: 157					
Liq. Waste 7 S SCREENING		Hold: 15-DEC-96			
L7304-2	B0HGK3	18-JUN-96	22-JUN-96		07-JUL-96
TEMP 2; SAF# B96-124					
Location: 157					
Liq. Waste 7 S GR ALP/BETA LAL-0060		Hold: 15-DEC-96			
L7304-3	REPORT TYPE	22-JUN-96	22-JUN-96		07-JUL-96
SAF# B96-124					
Location:					
Water 1 S EDD - DISK DEL.					
Water 1 S RAD RPT TYPE 2					

0006

Signature: [illegible]

Date: 6-24-96

06225460

Bechtel Hanford, Inc.

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST L7304

Page ____ of ____

Data Turnaround
■ Priority
☐ Normal

Collector D.Bowers	Company Contact P.K.Huff	Telephone 373-4566
Project Designation 109N Oil Sampling - 1000 Steam Cleaner Liquid	Sampling Location 100N 90 Day Pad	SAF No. B96-124
Ice Chest No. Billy	Field Logbook No. EFL-1133-1	Method of Shipment Hand Delivered 2904658732
Shipped To Lockheed	Offsite Property No. ~~NA~~ BW 6-21-96 W96-0-0640-50	Bill of Lading/Air Bill No. ~~NA~~ BW 6-21-96 ~~2904658566~~ BW 6-21-96

Possible Sample Hazards/Remarks

Special Handling and/or Storage

Preservation	None	None									
Type of Container	G/P	G/P									
No. of Container(s)	1	1									
Volume	1L	20mL									
SAMPLE ANALYSIS	Gross Alpha Gross Beta	Activity Scan									

Sample No.	Matrix*	Date Sampled	Time Sampled										
BOHGK3	DL	6/18/96	1236	X	X								

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By	Date/Time	Received By	Date/Time
D Bowers	6-18-96/1435	Ken Whitten	1435 B Whitten 6-18-96
Relinquished By	Date/Time	Received By	Date/Time
Ken Whitten	0930 B Whitten 6-18-96 BW 6-21-96		
Relinquished By	Date/Time	Received By	Date/Time
Relinquished By	Date/Time	Received By	Date/Time

SPECIAL INSTRUCTIONS

Matrix*
S = Soil
SE = Sediment
SO = Solid
SL = Sludge
W = Water
O = Oil
A = Air
DS = Drum Solids
DL = Drum Liquids
T = Tissue
Wi = Wipe
L = Liquid
V = Vegetation
X = Other

LABORATORY SECTION	Received By A M Miller	Title Sample Custodian	Date/Time 6-22-96/0930
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

9713423.0632

2000

9713523.0653

LOCKHEED MARTIN

Sample Login
Login Review Checklist

Lot Number L7304

The login review should be conducted by that person logging in the samples as well as a peer. Please use this checklist to ensure that such reviews occur in a uniform basis. Please sign and date below to verify that a login review has occurred. This checklist should be affixed to each login package prior to distribution.

For effective login review, at a minimum, five reports form the login process are required. These are the COC (or equivalent), the login COC report, the sample summary report, the sample receiving checklist, and the login quotation. Before beginning review, ensure that these five components are available. Jobs with single component samples, the sample summary report may be omitted.

SAMPLE SUMMARY REPORT	YES	NO	N/A	Comment
1. Are all sample ID's correct?	X			
2. Are all samples present?	X			
3. Are all matrices indicated correctly?	X			
4. Are all analyses on the COC logged in for the appropriate samples?	X			
5. Are all analyses logged in for the correct container?	X			
6. Are samples logged in according to LAS batching procedures?	X			

LOGIN CHAIN OF CUSTODY	YES	NO	N/A	Comment
1. Are the collect, receive, and due dates correct for every sample?	X			
2. Have all appropriate comments been indicated in the comment section?			X	

SAMPLE RECEIVING CHECKLIST	YES	NO	N/A	Comment
1. Are all discrepancies between the COC and the login noted (if applicable)?			X	

0008

primary review signature	date	secondary review signature	date
[illegible]	6-24-96	[illegible]	6-24-96

Lockheed Analytical Services
Sample Receiving Checklist

Client Name: Bechtel-Hanford Job No. L7304 Cooler ID:

COOLER CONDITION UPON RECEIPT			
Temperature of cooler upon receipt:	2°C		
temperature of temp. blank upon receipt:			
	Yes	No	* Comments/Discrepancies
custody seals intact	X		
chain of custody present	X		
blue ice (or equiv.) present/frozen	X		
rad survey completed	X		

SAMPLE CONDITION UPON RECEIPT			
	Yes	No	* Comments/Discrepancies
all bottles labeled	X		
samples intact	X		
proper container used for sample type	X		
sample volume sufficient for analysis	X		
proper pres. indicated on the COC	X		
VOA's contain headspace			N/A
are samples bi-phasic (if so, indicate sample ID'S):			N/A

MISCELLANEOUS ITEMS			
	Yes	No	* Comments/Discrepancies
samples with short holding times		X	
samples to subcontract		X	

ADDITIONAL COMMENTS/DISCREPANCIES

Completed by / date: [illegible] 1-24-96

Sent to the client (date/initials): ** Client's signature upon receipt:

*Notes: * = contact the appropriate CSR of any discrepancies immediately upon receipt*

*** = please review this information and return via facsimille to the appropriate CSR (702) 361-8146*

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version 2.0 (11/11/94)

9713523.0655

Lockheed Analytical Laboratory
SAMPLE SUMMARY REPORT (su02)
Bechtel Hanford, Inc. * Richland, WA

Client Sample Number	LAL Sample Number	SDG Number	Matrix	Method
BOHGK3	L7304-1		Liq. Waste	SCREENING
	L7304-2		Liq. Waste	GR ALP/BETA LAL
REPORT TYPE	L7304-3		Water	EDD - DISK DEL.
	L7304-3		Water	RAD RPT TYPE 2

0623591

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LOCKHEED ANALYTICAL SERVICES

RADIOCHEMISTRY DATA REPORT
Account Name: Bechtel Hanford, Inc. * Richland, WA
Project Name: BECHTEL-HANFORD
Project Desc: Bechtel Hanford Project

Client Sample ID: B0HGK3
Date Collected: 18-JUN-96
Matrix: Liq. Waste

Login Number: L7304
Date Received: 22-JUN-96

Constituent	Method	Batch	Activity	Error	MDA	Qualifier	Units	Analyzed	Lab ID
Gross Alpha	LAL-0060	38485	0.14	0.63	1.2		pCi/g	03-JUL-96	L7304-2
Gross Beta	LAL-0060	38485	33.5	2.5	1.1		pCi/g	03-JUL-96	L7304-2

12 7-19-96

Quick Turn

LOCKHEED ANALYTICAL LABORATORY

SAMPLE PREPARATION LOG FOR GROSS ALPHA/BETA ANALYSIS

LAL-91-SOP-0060

Date Prep Started : 7/3/96
Workgroup Number : GR ALP/BETA LAL-0060 38485

Matrix : Liq. Waste
Prep Due Date : 07/01/96

CLIENT SAMPLE ID	LAL ID		QC	CHILD LAL ID	pH <2	ALQT VOL (g/L/smp)	PLANCHET TARE WT (grams)	PLANCHET GROSS WT (grams)	* * *	SAMPLE WEIGHT (grams)	COMMENTS
L7304-2	38485DUP1	1	DUP1	38485-01	N	~~.0005~~	8.7397	8.8116			0.5g
Lab Ctrl Sample	38485LCS1	2	LCS1	38485-02		~~.250~~	8.5858	8.6646			100g
Method Blank	38485MBB	3	MBB1	38485-03		~~.250~~	8.6261	8.6262			100g
B0HGY0	L7301-17	4		38485-04		~~.015~~	8.7143	8.7458			15.0
B0HGK3	L7304-2	5	SMP1	38485-05		~~.0005~~	8.7206	8.7992			0.5
		6									
		7									
		8									
		9									
		10									
		11									
		12									
		13									
		14									
		15									
		16									
		17									
		18									
		19									
		20									
		21									
		22									
		23									
		24									

LCS Volume & RefDate	1.0 mL	8/1/90	MS Volume & RefDate		Prep Anlst: CO
LCS Nuclide	Am-241	Sr-90	MS Nuclide		Start Date: 7/3/96
LCS Activity	9.81 pCi/mL	12.0 pCi/mL	MS Activity		Count Anlst:
LCS ID #	95-721-13-		MS ID #		

Balance Number : 40020046 ( )
( )

Pipette Number : 71008 ( )
( )

LCS added by: CO
Witnessed by : DH

Comments :

Analyst : [signature]
Checked by: SV
Cnt Rm Custody\Date : SV 7-3-96

V96106

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001

LOCKHEED ANALYTICAL LABORATORY

SAMPLE PREPARATION LOG FOR GROSS ALPHA/BETA ANALYSIS

LAL-91-SOP-0060

Date Prep Started : 7/3/96 | Matrix : Liq. Waste

Workgroup Number : GR ALP/BETA LAL-0060 38485 | Prep Due Date : 07/01/96

CLIENT SAMPLE ID	LAL ID		QC	CHILD LAL ID	pH <2	ALQT VOL (g)	PLANCHET TARE WT (grams)	PLANCHET GROSS WT (grams)	* * *	SAMPLE WEIGHT (grams)	COMMENTS
L7304-2	38485DUP1	1	DUP1	38485-01	N	0.5	8.7397	8.8116		0.0719	
Lab Ctrl Sample	38485LCS1	2	LCS1	38485-02	N	100.0	8.5858	8.6646		0.0788	
Method Blank	38485MBB	3	MBB1	38485-03	N	100.0	8.6261	8.6262		0.0001	
B0HGY0	L7301-17	4		38485-04	N	15.0	8.7143	8.7458		0.0315	
B0HGK3	L7304-2	5	SMP1	38485-05	N	0.5	8.7206	8.7992		0.0786	
		6									
		7									
		8									
		9									
		10									
		11									
		12									
		13									
		14									
		15									
		16									
		17									
		18									
		19									
		20									
		21									
		22									
		23									
		24									

LCS Volume & RefDate	1.0 mL; 08/01/90		MS Volume & RefDate		Prep Anlst: CD
LCS Nuclide	Am-241	Sr-90	MS Nuclide		Start Date: 7/3/96
LCS Activity	9.8 pCi/mL	12.0 pCi/mL	MS Activity		Count Anlst:
LCS ID #	95-721-13-1		MS ID #		

Balance Number : 40020046 ( ) ( ) | Pipette Number : 71008 ( ) ( ) | LCS added by: CD | Witnessed by : DH

Comments :

Analyst: [signature] Checked by: SV

V96106

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0018

LOCKHEED ANALYTICAL LABORATORY

ALPHA ACTIVITY CALCULATIONS FOR GROSS ALPHA/BETA ANALYSIS

LAL-91-SOP-0060

Workgroup No: GR ALP/BETA LAL-0060 38485

PARENT LAL ID	DET	PLANCHET LAL ID	CTIME (min)	COUNTS ALPHA	COUNTS ALPHA BKG	EFF ALPHA	Bkg Corr ACTIVITY pCi/g	CNT ERR 2 SIGMA pCi/g	TTL ERR 2 SIGMA pCi/g	LLD ALPHA pCi/g	MDA ALPHA pCi/g	FLAGS	COUNT DATE
38485DUP1	LB1-C4	38485-01	100	2	4.5	0.100	-0.2210	0.4489	0.4491	0.8847	1.1291	DUP1	07/03/96
38485LCS1	LB1-C3	38485-02	100	214	3.8	0.094	0.1005	0.0138	0.0147	0.0043	0.0056	LCS1	07/03/96
38485MBB	LB1-C2	38485-03	100	1	3.8	0.202	-0.0006	0.0010	0.0010	0.0020	0.0026	MBB1	07/03/96
L7301-17	LB1-C1	38485-04	100	6	4.1	0.145	0.0039	0.0129	0.0129	0.0196	0.0252		07/03/96
L7304-2	LB1-D1	38485-05	100	7	5.4	0.098	0.1450	0.6323	0.6324	0.9908	1.2389	SMP1	07/03/96

Comments : 38485LCS1 Alpha LCS Recovery = 0.1/0.1 = 103.4 %.
L7304-2, 38485DUP1 RPD = -962.9 %, RER = 0.34

MBB = -0.0006 pCi/g => less than RDL(HAMDC).

V96106

Date Completed : 7-3-96
Anlst Signature : [signature]

Checked by : [signature]

9713523.0659

0019

LOCKHEED ANALYTICAL LABORATORY

BETA ACTIVITY CALCULATIONS FOR GROSS ALPHA/BETA ANALYSIS

LAL-91-SOP-0060

Workgroup No: GR ALP/BETA LAL-0060 38485

PARENT LAL ID	DET	PLANCHET LAL ID	CTIME (min)	COUNTS BETA	COUNTS BETA BKG	EFF BETA	A>>B XTALK Factor	Bkg Corr ACTIVITY pCi/g	CNT ERR 2 SIGMA pCi/g	TTL ERR 2 SIGMA pCi/g	LLD BETA pCi/g	MDA BETA pCi/g	FLAGS	COUNT DATE
38485DUP1	LB1-C4	38485-01	100	1709	99.7	0.402	0.279	36.0899	1.8685	2.5976	1.0405	1.1012	DUP1	07/03/96
38485LCS1	LB1-C3	38485-02	100	1157	100.0	0.404	0.281	0.1113	0.0078	0.0095	0.0052	0.0055	LCS1	07/03/96
38485MBB	LB1-C2	38485-03	100	96	99.7	0.420	0.258	-0.0003	0.0029	0.0029	0.0050	0.0053	MBB1	07/03/96
L7301-17	LB1-C1	38485-04	100	201	104.7	0.417	0.267	0.0690	0.0247	0.0249	0.0343	0.0362		07/03/96
L7304-2	LB1-D1	38485-05	100	1624	104.8	0.408	0.281	33.5135	1.7983	2.4580	1.0503	1.1101	SMP1	07/03/96

Comments : 38485LCS1 Beta LCS Recovery = 0.1/0.1 = 106.8 %.
L7304-2, 38485DUP1 RPD = 7.4 %, RER = 0.51

MBB = -0.0003 pCi/g => less than RDL(HAMDC).

V96106

Date Completed : 7-3-96
Anlst Signature : SV

Checked by : JH

9713523.0660

0020

PROJECT Gross Alpha/Beta LCS

Continued From Page _____

SECONDARY/WORKING LEVEL STANDARD DILUTION RECORD

Dilution Source Information

Isotope:	Am-241 and Sr4-90
Parent Barcode Number	AA0030 AA0046
Vendor or Certificate I.D. # of Parent Standard:	Am-241 IPL 388-100-1 Sr4-90 NIST SRM 4919G
Diluted Source Logbook I.D. #:	Am-241 91-0225-60-1 Sr4-90 91-0225-30-2
Balance Verification?:	Yes
Diluent Used:	0.1 N HNO_3

Dilution

*Diluent:	0.1 N HNO_3 + 42mg $Sr(NO_3)_2$/mL
*Density of diluent (g/ml):	NA
a: Parent Specific Activity:	Am-241 981 pCi/mL Sr-90 600 pCi/mL on 8/1/90
b: Amount of Source Transferred:	Am-241 0.5 mL Sr-90 0.5 ~~g~~ mL
c: Total amount of Dilution:	500 ~~g~~ mL
d: Total Volume of Dilution:	500 mL
e: Activity of Dilution [a * b / c]:	NA
f: Activity of Dilution (a * b / d):	Am-241 9.81 pCi/mL Sr4-90 12 pCi/mL on 8/1/90
Dilution Logbook I.D. #:	95-721-13-1

Prepared By: Joe Hutchinson Preparation Date: 8/23/95

Reviewed By: [signature] Review Date: 8/24/95

*If the diluent remains unchanged from the diluent used for the dilution source, then a weight dilution of a volume unit source can be performed without a density conversion. If the diluent changes, a weighted proportion density conversion is necessary.

Read and Understood By

0022

Signed _____ Date _____ Signed _____ Date _____

S/d. [illegible] 91-0225-60-1 AA0030

9715523.0662

CERTIFICATE OF CALIBRATION
ALPHA STANDARD SOLUTION

Radionuclide	Am-241	Customer:	LOCKHEED ENGINEERING & SCIENCES Co
Half Life:	432.7 ± 0.5 years	P.O.No.:	06LAB1245
Catalog No.:	7241	Reference Date:	November 1 1991 12:00 PST.
Source No.:	388-100-1	Contained Radioactivity:	0.997 µCi.

Description of Solution

a. Mass of solution:	5.0007	grams.
b. Chemical form:	AmCl3 in 0.5N HCl	
c. Carrier content:	None added	
d. Density:	1.0077	gram/ml @ 20°C.

Radioimpurities

None detected

Radioactive Daughters

None detected

Radionuclide Concentration

0.1994 µCi/gram.

Method of Calibration

Weighed aliquots of the solution were assayed using a liquid scintillation counter.

Uncertainty of Measurement

a. Systematic uncertainty in instrument calibration:	±2.0%
b. Random uncertainty in assay:	±0.7%
c. Random uncertainty in weighing(s):	±0.0%
d. Total uncertainty at the 99% confidence level:	±2.7%

NIST Traceability

This calibration is implicitly traceable to the National Institute of Standards and Technology.

Notes

1. Nuclear data were taken from "Table of Isotopes", Seventh Edition, edited by Virginia S. Shirley.
2. IPL participates in an NIST measurement assurance program to establish and maintain implicit traceability for a number of nuclides, based on the blind assay(and later NIST certification) of Standard Reference Materials. (As in NRC Regulatory Guide 4.15)

Gary A Gilmore
QUALITY CONTROL

ISOTOPE PRODUCTS LABORATORIES
1800 No. Keystone Street.,
Burbank, California 91504
(818) 843 - 7000

9713523.0663

60

PROJECT Preparation of Am-241 Std

Notebook No. 0225

Continued From Page

Cert # Parent Ref.	Calib Cert. Date	Exp. Date	Ref #	Vendor	Prep In	Witness In
388-100-1	Nov 1, 1991	5/6/94	91-0225-601	IPL	JH	[illegible]

Item #	Preparation Date	Final Conc.	Initial Conc	Bar Code
1	5/6/92	9,800 pCi/g	0.9976 Ci in 5 g 0.1994 uCi/g	AA0030

The entire standard was transferred to a 100-mL volumetric V.F. and the ~~sample~~ Std AH was diluted to 100mL with 0.5N HCl.

68.4902
63.5665 g wt. V.F
4.9237 g std

164.01 g std + dilution
63.57 g V.F.
100.44 g diluted Std

$$\text{Activity Std} = \frac{0.1994\ \mu Ci/g \times 4.9237\ g\ of\ std}{100.44\ g\ dilution}$$

Density 0.5N HCl = 1.003598 g/ml ⇒ 0.0097748 uCi/g × 1.003598 g/ml
= 0.0098 uCi/g = 0.009810 uCi/gm
or = 9,800 pCi/g = 9810 pCi/ml

[illegible] 9/11/92

Continued on Page

0024

Read and Understood By

Joe Hutchison 5/11/92 [illegible] 7/13/92

Signed Date Signed Date

9713523.0664 THIS IS A PHOTOCOPY OF THE CERTIFICATE WHICH IS BEING MAILED TO YOU UNDER SEPARATE COVER.

AA004

National Institute of Standards & Technology

Certificate

Standard Reference Material 4919-G
Radioactivity Standard

Radionuclide	Strontium-90
Source identification	4919-G
Source description	Solution in NIST borosilicate-glass ampoule [1]*
Solution composition	Strontium-90 plus yttrium-90 plus approximately 95 μg each of non-radioactive strontium and yttrium per gram of 1-molar hydrochloric acid [2]
Mass	Approximately 5.0 grams
Radioactivity concentration	4.514×10^3 Bq g^{-1}
Reference time	1200 EST August 1, 1990
Overall uncertainty	1.05 percent [3]
Photon-emitting impurities	None observed [4]
Alpha-particle-emitting impurities	None observed [5]
Half life	28.5 ± 0.2 years [6]
Measuring instrument	$4\pi\beta$ liquid-scintillation counter

This standard reference material was prepared in the Center for Radiation Research, Ionizing Radiation Division, Radioactivity Group, Dale D. Hoppes, Group Leader.

Gaithersburg, MD 20899
[illegible]uary, 1991

William P. Reed, Acting Chief
Office of Standard Reference Materials

*Notes on back

0025

9713523.0665

Notebook No. LAL-91-LOG-0199

PROJECT SR-90 Radionuclide Standard Preparation

Continued From Page

CERT # Parent Ref #	Calibration Cert Date	Expiration Date	Reference #	VENDOR	PREP INITIALS	WITNESS INITIALS
SRM # 4919-G	1200 Aug 1, 1990	10-2-93	SRM #4919-6-A 91-0199-63	NIST	[illegible]	[illegible]

ITEM #	PREPARATION DATE	Final Concentration	INITIAL Concentration
1	10-2-91 ~~1200 EST~~ ~~Aug 1, 1990~~	12-2-91 ~~600,068.5999~~ 6000.685 Pci/ml	4.514×10^3 Bq-1

9/10/91

Radionuclide = SR-90

Source # 4919-G

Source description # Solution in NIST Borosilicate glass ampule

Composition # SR-90 + Y-90 plus approximately 95 ng of non radioactive SR and yttrium per gram of 1 molar HCL

mass approximately 5.0 grams

Radioactivity conc 4.514×10^3 Bq^{-1}

Reference Time = 1200 EST Aug. 1, 1990

T1/2 = 28.5 ± 0.2 years

10/2/91 Preparation

1/ weighing 100.0 ml V.F + Standard of SR-90 in ampule = 65.2000

100.0 ml V.F. (empty) (g) = 60.2814

Difference of mass (g) t.w. = 4.9186

2/ Calculations:

4.514×10^3 Bq/g $\times$ 4.9186 = 22,202.5604 Bq

22,202.5604 Bq $\times$ 27.027 Pci/Bq = 600,068.5999 Pci

(STD date Aug 1, 1990)

Continued on Page

Transfered 11-19-91 Paul [illegible]

(Referenced From LAL LOG 0199 pg 63)

Read and Understood By

0026

Signed [illegible] Date 11/19/91

Signed [illegible] Date 12/4/91