This document was too large to scan as a whole document, therefore it required breaking into smaller sections.

DOCUMENT NUMBER: SD-WM-DP-179

SECTION 8 **OF** 10

TITLE: Final Report for Tank 241-S-102 Push Mode Cores 125 & 130
[Pages 2110 thru 2-01]

DATE: 7/12/94

ORIGINATOR: Fritts L L

CO: WHC

RECIPIENT:

CO:

REFERENCES: ECN-633302

06/04/96 09:47
A-0004-1

LABCORE Data Entry Template for Worklist# 9562

Analyst: RDM **Instrument:** GEA00 #3 **Book#** 12256

Method: LA-548-121 Rev/Mod E-0

Worklist Comment: S102. Sample size is on traveler. new

S	Type	Sample#	R	A	Test	Matrix	Group#	Project
1	STD				@GEA-02	SOLID		
2	BLNK-PREP				@GEA-02	SOLID		
3	SAMPLE	S96T001473	0	F	@GEA-02	SOLID	96000094	S102
	Analytes Requested:	AM24102 , AM24102E, CO60-02 , CO60-02E, CS13702 , CS13702E, EU15402 , EU15402E, EU15502 , EU15502E						
4	DUP	S96T001473	0	F	@GEA-02	SOLID		
5	SAMPLE	S96T001474	0	F	@GEA-02	SOLID	96000094	S102
	Analytes Requested:	AM24102 , AM24102E, CO60-02 , CO60-02E, CS13702 , CS13702E, EU15402 , EU15402E, EU15502 , EU15502E						
6	DUP	S96T001474	0	F	@GEA-02	SOLID		

Final page for worklist # 9562

RDMorgan 6/5/96
Analyst Signature **Date**

C.J. Jones
Analyst Signature **Date**

Data Entry Comments:

S = Worklist Slot Number, R = Replicate Number, A = Aliquot Code.

LABCORE Completed RadChem Report for Worklist#: 9562

Analyst: rdm **Instrument:** GEA03 **Book#** 9512B56

Method: LA-548-121 Rev/Mod E-0

Worklist Comment: S102. Sample size is on traveler. new

Seq	Type	Sample#	R	A		Test	Matrix	Actual		Found	DL or Yield	Unit
1	STD		0		@GEA-02	CO60-02	SOLID	2.521e-02		2.53e-02	100.357	% Recovery
1	STD		0		@GEA-02	CO60-02E	SOLID	1		1.21	1.210	% Ct Error
1	STD		0		@GEA-02	CS13702	SOLID	2.702e-02		2.73e-02	101.036	% Recovery
1	STD		0		@GEA-02	CS13702E	SOLID	1		1.43	1.430	% Ct Error
2	BLNK-PREP		0		@GEA-02	CO60-02	SOLID	1		<1.59e-2		uCi/g
2	BLNK-PREP		0		@GEA-02	CS13702	SOLID	1		1.45e-01	0.145	uCi/g
2	BLNK-PREP		0		@GEA-02	EU15402	SOLID	1		<3.19e-2		uCi/g
2	BLNK-PREP		0		@GEA-02	EU15502	SOLID	1		<3.26e-2		uCi/g
2	BLNK-PREP		0		@GEA-02	AM24102	SOLID	1		<9.04e-2		uCi/g
3	SAMPLE	S96T001473	0	F	@GEA-02	CO60-02	SOLID	N/A	<	2.119e-02	211.9e-004	uCi/g
3	SAMPLE	S96T001473	0	F	@GEA-02	CO60-02E	SOLID	N/A		n/a	0.0e+000	% Ct. Error
3	SAMPLE	S96T001473	0	F	@GEA-02	CS13702	SOLID	N/A		1.002e+02	0.0e+000	uCi/g
3	SAMPLE	S96T001473	0	F	@GEA-02	CS13702E	SOLID	N/A		0.480	0.0e+000	% Ct. Error
3	SAMPLE	S96T001473	0	F	@GEA-02	EU15402	SOLID	N/A		1.726e-01	0.0e+000	uCi/g
3	SAMPLE	S96T001473	0	F	@GEA-02	EU15402E	SOLID	N/A		22.0	0.0e+000	% Ct. Error
3	SAMPLE	S96T001473	0	F	@GEA-02	EU15502	SOLID	N/A	<	2.461e-01	246.0e-003	uCi/g
3	SAMPLE	S96T001473	0	F	@GEA-02	EU15502E	SOLID	N/A		n/a	0.0e+000	% Ct. Error
3	SAMPLE	S96T001473	0	F	@GEA-02	AM24102	SOLID	N/A	<	6.368e-01	637.0e-003	uCi/g
3	SAMPLE	S96T001473	0	F	@GEA-02	AM24102E	SOLID	N/A		n/a	0.0e+000	% Ct. Error
4	DUP	S96T001473	0	F	@GEA-02	CO60-02	SOLID	<2.12e-2		<2.02e-2		RPD
4	DUP	S96T001473	0	F	@GEA-02	CO60-02E	SOLID	1		n/a		% Ct Error
4	DUP	S96T001473	0	F	@GEA-02	CS13702	SOLID	1.00e+02		1.00e+02	0.000	RPD
4	DUP	S96T001473	0	F	@GEA-02	CS13702E	SOLID	1		0.480	0.480	% Ct Error
4	DUP	S96T001473	0	F	@GEA-02	EU15402	SOLID	1.73e-01		2.04e-01	16.446	RPD
4	DUP	S96T001473	0	F	@GEA-02	EU15402E	SOLID	1		18.6	18.600	% Ct Error
4	DUP	S96T001473	0	F	@GEA-02	EU15502	SOLID	<2.46e-1		<2.41e-1		RPD
4	DUP	S96T001473	0	F	@GEA-02	EU15502E	SOLID	1		n/a		% Ct Error
4	DUP	S96T001473	0	F	@GEA-02	AM24102	SOLID	<6.37e-1		<6.24e-1		RPD
4	DUP	S96T001473	0	F	@GEA-02	AM24102E	SOLID	1		n/a		% Ct Error
5	SAMPLE	S96T001474	0	F	@GEA-02	CO60-02	SOLID	N/A	<	1.716e-02	171.6e-004	uCi/g
5	SAMPLE	S96T001474	0	F	@GEA-02	CO60-02E	SOLID	N/A		n/a	0.0e+000	% Ct. Error
5	SAMPLE	S96T001474	0	F	@GEA-02	CS13702	SOLID	N/A		1.005e+02	0.0e+000	uCi/g
5	SAMPLE	S96T001474	0	F	@GEA-02	CS13702E	SOLID	N/A		0.470	0.0e+000	% Ct. Error
5	SAMPLE	S96T001474	0	F	@GEA-02	EU15402	SOLID	N/A	<	8.154e-02	815.4e-004	uCi/g
5	SAMPLE	S96T001474	0	F	@GEA-02	EU15402E	SOLID	N/A		n/a	0.0e+000	% Ct. Error
5	SAMPLE	S96T001474	0	F	@GEA-02	EU15502	SOLID	N/A	<	2.369e-01	237.0e-003	uCi/g
5	SAMPLE	S96T001474	0	F	@GEA-02	EU15502E	SOLID	N/A		n/a	0.0e+000	% Ct. Error
5	SAMPLE	S96T001474	0	F	@GEA-02	AM24102	SOLID	N/A	<	6.118e-01	612.0e-003	uCi/g
5	SAMPLE	S96T001474	0	F	@GEA-02	AM24102E	SOLID	N/A		n/a	0.0e+000	% Ct. Error
6	DUP	S96T001474	0	F	@GEA-02	CO60-02	SOLID	<1.72e-2		<1.79e-2		RPD
6	DUP	S96T001474	0	F	@GEA-02	CO60-02E	SOLID	1		n/a		% Ct Error

Units shown for QC (BLK/BKG) may not reflect the actual units.

LABCORE Completed RadChem Report for Worklist#: 9562

Seq	Type	Sample#	R	A		Test	Matrix	Actual	Found	DL or Yield	Unit
6	DUP	S96T001474	0	F	@GEA-02	CS13702	SOLID	1.00e+02	9.98e+01	0.200	RPD
6	DUP	S96T001474	0	F	@GEA-02	CS13702E	SOLID	1	0.470	0.470	% Ct Error
6	DUP	S96T001474	0	F	@GEA-02	EU15402	SOLID	<8.15e-2	1.64e-01		RPD
6	DUP	S96T001474	0	F	@GEA-02	EU15402E	SOLID	1	23.9	23.900	% Ct Error
6	DUP	S96T001474	0	F	@GEA-02	EU15502	SOLID	<2.37e-1	<2.34e-1		RPD
6	DUP	S96T001474	0	F	@GEA-02	EU15502E	SOLID	1	n/a		% Ct Error
6	DUP	S96T001474	0	F	@GEA-02	AM24102	SOLID	<6.12e-1	<6.06e-1		RPD
6	DUP	S96T001474	0	F	@GEA-02	AM24102E	SOLID	1	n/a		% Ct Error

Comments Section:

Comments for sample# S96T001473 **and test** @GEA-02 .
DL=0 => n/a. Sample 1000x higher than blank => OK.

Comments for sample# S96T001474 **and test** @GEA-02 .
DL=0 => n/a. Sample 1000x higher than blank => OK.

Final page for worklist# 9562

Analyst Signature **Date** **Analyst Signature** **Date**

B Machelor 6/6/96
Reviewer Signature **Date**

Units shown for QC (BLK/BKG) may not reflect the actual units.

```
*****************************************************************************
* 222-S Laboratory Counting Room    5-JUN-1996 09:52:11.10                  *
*****************************************************************************
      >>>>>>>>>> SAMPLE INFORMATION <<<<<<<<<<
Worklist #:              9562
Sample ID:               WL9562-STD
Sample Size:             1.00000E-03 L
Dilution Factor:         1.00000E+00

      >>>>>>>>>> COUNT INFORMATION <<<<<<<<<<
Detector ID:
File Number:             dka300:[spec.GEA3]3g3625.cnf
Geometry:                42
Count Time:              0 00:50:00.00 sec
Real Time:               0 00:50:09.64 sec
Dead Time:               0.3%

      >>>>>>>>>> ANALYSIS INFORMATION <<<<<<<<<<
Sample Count Time:       5-JUN-1996 09:01:22.08
Decayed to:              5-JUN-1996 09:01:22.08
Standard Deviations:     2
Analysis Library:        ENVGEA
Analyst:                 ALJ
Background Subtract:     DKA300:[SPEC.GEA3]3GBACK

      >>>>>>>>>> CALIBRATION INFORMATION <<<<<<<<<<
 Date of last energy calibration:       11-MAR-1994 11:47:01.11
 Date of last efficiency calibration:   15-MAR-1994 10:28:40.20
*****************************************************************************
```

WHC-CP-WM-DP-179, REV. 1

Removed by: 6-5-96

Verified by: 6/6/96

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity uCi/L
0	661.67*	24157	1.60	1323.52	1315	17	1.4		CS-137	27.3
0	1173.33	15838	1.90	2346.93	2339	17	1.7		CO-60	25.0
0	1332.58	14623	1.99	2665.54	2655	19	1.7		CO-60	25.6

Sample ID : WL9562-STD
Acquisition date : 5-JUN-1996 09:01:22

WHC-SD-WM-DP-179, REV.1

Total number of lines in spectrum	3	
Number of unidentified lines	0	
Number of lines tentatively identified by NID	3	100.00%

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean Uncorrected uCi/L	Wtd Mean Decay Corr uCi/L	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
CO-60	5.27Y	1.000	2.529E+01	2.529E+01	0.031E+01	1.21	
CS-137	30.00Y	1.000	2.730E+01	2.730E+01	0.039E+01	1.43	
		Total Activity :	5.259E+01	5.259E+01			
		Grand Total Activity :	5.259E+01	5.259E+01			

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Sample ID : WL9562-STD
Acquisition date : 5-JUN-1996 09:01:22
WHC-SD-WM-DP-179, REV. 1

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
BE-7	1244.	477.59	1.1621E+00
NA-22	98.	1274.53	7.7564E-02
NA-24	23.	1368.55	4.0296E-02
K-40	125.	1460.75	9.1409E-01
CR-51	1176.	320.08	8.5008E-01
MN-54	765.	834.83	1.5120E-01
CO-56	748.	846.76	1.5150E-01
CO-57	1297.	122.06	6.2324E-02
CO-58	667.	810.78	1.3841E-01
FE-59	767.	1099.25	3.3963E-01
SE-75	1472.	264.66	1.4251E-01
SR-85	844.	514.01	1.0946E-01
Y-88	17.	1836.06	4.2788E-02
NB-94	868.	871.09	1.6715E-01
ZRNB-95	637.	724.18	2.7944E-01
RU-103	938.	497.08	1.1847E-01
RURH-106	617.	621.93	2.1290E+00
AG-108m	621.	722.94	1.3258E-01
CD-109	1156.	88.03	1.9484E+00
AG-110M	952.	657.76	1.4535E-01
SN-113	1155.	391.69	1.5453E-01
TE-123m	1373.	159.00	6.5967E-02
SB-124	652.	602.73	1.0808E-01
SB-125	1200.	427.89	3.6765E-01
TE-125m	1262.	109.27	2.0017E+01
I-131	1148.	364.48	1.1515E-01
CS-134	653.	604.70	1.0864E-01
BA-140	781.	537.31	4.3006E-01
LA-140	19.	1596.21	4.3008E-02
CEPR-144	1302.	133.51	9.4434E-01
EU-152	33.	1408.01	2.3362E-01
EU-154	97.	1274.51	2.2502E-01
EU-155	1234.	105.31	2.6431E-01
HG-203	1352.	279.20	1.0183E-01
TL-208	1356.	277.36	1.3104E+00
BI-212	646.	727.18	1.8555E+00
PB-212	1622.	238.63	1.8603E-01
BI-214	657.	609.31	2.3890E-01
PB-214	1200.	351.92	4.6377E-01
RA-224	1596.	240.99	2.0490E+00
RA-226	1586.	186.10	1.8646E+00
AC-228	974.	911.21	6.9150E-01
TH-228	1101.	84.37	5.8569E+00
TH-229	1154.	88.47	2.8219E-01
PA-233	1237.	312.17	2.2338E-01
UTH-233	1524.	245.34	7.5041E+01
PA-234M	753.	1001.03	2.9711E-01
TH-234	1081.	63.29	3.9083E+00
U-235	1576.	185.71	1.1296E-01
NP-237	1178.	86.48	5.9076E-01
NP-239	1251.	106.12	2.5286E-01

Sample ID : WL9562-STD Acquisition date : 5-JUN-1996 09:01:22
WHC-SD-WM-DP-179, REV. 1

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
PU-239	1334.	129.30	8.3198E+02
AM-241	1053.	59.54	6.8075E-01
AM-243	1119.	74.67	1.6491E-01

```
*****************************************************************************
* 222-S Laboratory Counting Room    5-JUN-1996 11:03:55.39                  *
*****************************************************************************
      >>>>>>>>>> SAMPLE INFORMATION <<<<<<<<<<
Worklist #:              9562
Sample ID:               WL9562-BLK
Sample Size:             1.00000E-03 L
Dilution Factor:         1.00000E+00

      >>>>>>>>>> COUNT INFORMATION <<<<<<<<<<
Detector ID:
File Number:             dka300:[spec.GEA3]3g3626.cnf
Geometry:                42
Count Time:              0 00:50:00.00 sec
Real Time:               0 00:50:00.47 sec
Dead Time:               0.0%

      >>>>>>>>>> ANALYSIS INFORMATION <<<<<<<<<<
Sample Count Time:       5-JUN-1996 10:13:13.89
Decayed to:              5-JUN-1996 10:13:13.89
Standard Deviations:     2
Analysis Library:        ENVGEA
Analyst:                 ALJ
Background Subtract:     DKA300:[SPEC.GEA3]3GBACK

      >>>>>>>>>> CALIBRATION INFORMATION <<<<<<<<<<
 Date of last energy calibration:       11-MAR-1994 11:47:01.11
 Date of last efficiency calibration:   15-MAR-1994 10:28:40.20
*****************************************************************************
```

WHC-CP-WM-DP-175, REV. 1

Removed by: 6-5-96

Verified by: 6/6/96

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity uCi/L
0	582.90*	10	1.03	1165.99	1162		7138.2			
0	609.44*	26	1.52	1219.07	1213	13	98.6			
0	661.70*	259	1.54	1323.58	1315	16	17.3		CS-137	0.293

Sample ID : WL9562-BLK Acquisition date : 5-JUN-1996 10:13:13

Total number of lines in spectrum	3	
Number of unidentified lines	0	
Number of lines tentatively identified by NID	3	100.00%

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean Uncorrected uCi/L	Wtd Mean Decay Corr uCi/L	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
CS-137	30.00Y	1.000	2.929E-01	2.929E-01	0.508E-01	17.34	
		Total Activity :	2.929E-01	2.929E-01			
		Grand Total Activity :	2.929E-01	2.929E-01			

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Sample ID : WL9562-BLK
Acquisition date : 5-JUN-1996 10:13:13

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
BE-7	38.	477.59	2.0182E-01
NA-22	8.	1274.53	2.2163E-02
NA-24	11.	1368.55	2.7636E-02
K-40	127.	1460.75	9.2377E-01
CR-51	55.	320.08	1.8362E-01
MN-54	13.	834.83	1.9981E-02
CO-56	18.	846.76	2.3545E-02
CO-57	78.	122.06	1.5328E-02
CO-58	14.	810.78	2.0060E-02
FE-59	18.	1099.25	5.1853E-02
CO-60	16.	1332.50	3.2089E-02
SE-75	59.	264.66	2.8443E-02
SR-85	51.	514.01	2.6823E-02
Y-88	1.	1836.06	1.0492E-02
NB-94	12.	871.09	1.9789E-02
ZRNB-95	17.	724.18	4.6323E-02
RU-103	38.	497.08	2.3954E-02
RURH-106	27.	621.93	4.4266E-01
AG-108m	17.	722.94	2.1766E-02
CD-109	66.	88.03	4.6465E-01
AG-110M	23.	657.76	2.2536E-02
SN-113	43.	391.69	2.9725E-02
TE-123m	74.	159.00	1.5320E-02
SB-124	28.	602.73	2.2314E-02
SB-125	48.	427.89	7.3315E-02
TE-125m	92.	109.27	5.3949E+00
I-131	50.	364.48	2.3922E-02
CS-134	27.	604.70	2.2262E-02
BA-140	21.	537.31	7.0221E-02
LA-140	6.	1596.21	2.4827E-02
CEPR-144	64.	133.51	2.0987E-01
EU-152	11.	1408.01	1.3437E-01
EU-154	8.	1274.51	6.4229E-02
EU-155	76.	105.31	6.5798E-02
HG-203	86.	279.20	2.5689E-02
TL-208	78.	277.36	3.1521E-01
BI-212	19.	727.18	3.1542E-01
PB-212	91.	238.63	4.4170E-02
BI-214	65.	609.31	7.5329E-02
PB-214	64.	351.92	1.0689E-01
RA-224	72.	240.99	4.3482E-01
RA-226	93.	186.10	4.5234E-01
AC-228	23.	911.21	1.0706E-01
TH-228	73.	84.37	1.5082E+00
TH-229	71.	88.47	6.9798E-02
PA-233	50.	312.17	4.4988E-02
UTH-233	75.	245.34	1.6667E+01
PA-234M	19.	1001.03	4.7266E-02
TH-234	63.	63.29	9.4680E-01
U-235	99.	185.71	2.8358E-02
NP-237	78.	86.48	1.5171E-01

Sample ID : WL9562-BLK Acquisition date : 5-JUN-1996 10:13:13

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
NP-239	72.	106.12	6.0753E-02
PU-239	72.	129.30	1.9356E+02
AM-241	75.	59.54	1.8216E-01
AM-243	74.	74.67	4.2440E-02

****
* 222-S Laboratory Counting Room 5-JUN-1996 11:54:55.49 *
****

>>>>>>>>>> SAMPLE INFORMATION <<<<<<<<<< WHC-SD-WM-DP-175, REV. 1

Worklist #: 9562
Sample ID: S96T001473-SAM
Sample Size: 1.00000E-03 L
Dilution Factor: 1.00000E+00

Removed by:

>>>>>>>>>> COUNT INFORMATION <<<<<<<<<<

Detector ID:
File Number: dka300:[spec.GEA3]3g3627.cnf
Geometry: 42
Count Time: 0 00:50:00.00 sec
Real Time: 0 00:50:22.17 sec
Dead Time: 0.7%

Verified by: B Machelor 6/6/96

>>>>>>>>>> ANALYSIS INFORMATION <<<<<<<<<<

Sample Count Time: 5-JUN-1996 11:03:53.58
Decayed to: 5-JUN-1996 11:03:53.58
Standard Deviations: 2
Analysis Library: ENVGEA
Analyst: ALJ
Background Subtract: DKA300:[SPEC.GEA3]3GBACK

>>>>>>>>>> CALIBRATION INFORMATION <<<<<<<<<<

Date of last energy calibration: 11-MAR-1994 11:47:01.11
Date of last efficiency calibration: 15-MAR-1994 10:28:40.20

****

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity uCi/L
0	123.07	383	1.01	246.62	243	8	69.2		CO-57	0.142
									EU-154	0.302
0	661.65*	178499	1.56	1323.49	1315	17	0.5		CS-137	202.
0	723.17	72	1.07	1446.51	1443	9	39.2		EU-154	0.372
0	874.09	64	1.54	1748.34	1741	16	46.8		EU-154	0.645
0	1005.05	53	1.79	2010.30	2004	15	50.0		EU-154	0.411
0	1274.71	58	1.71	2549.76	2545	11	37.6		EU-154	0.283

Summary of Nuclide Activity
Sample ID : S96T001473-SAM

Acquisition date : 5-JUN-1996 11:03:53

WHC-SD-WM-DP-179, REV. 1

Total number of lines in spectrum	6	
Number of unidentified lines	0	
Number of lines tentatively identified by NID	6	100.00%

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean Uncorrected uCi/L	Wtd Mean Decay Corr uCi/L	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
~~CO-57~~	~~271.80D~~	~~1.000~~	~~1.424E-01~~	~~1.424E-01~~	~~0.986E-01~~	~~69.22~~	~~K~~
CS-137	30.00Y	1.000	2.018E+02	2.018E+02	0.001E+03	0.48	
EU-154	8.59Y	1.000	3.485E-01	3.485E-01	0.766E-01	21.98	
		Total Activity :	2.022E+02	2.022E+02			
		Grand Total Activity :	2.022E+02	2.022E+02			

7/10/96

Flags: "K" = Keyline not found
"E" = Manually edited
"M" = Manually accepted
"A" = Nuclide specific abn. limit

Sample ID : S96T001473-SAM
Acquisition date : 5-JUN-1996 11:03:53

WHC-SD-WM-DP-179, REV. 1

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
BE-7	5485.	477.59	2.4399E+00
NA-22	75.	1274.53	6.7881E-02
NA-24	4.	1368.55	1.7919E-02
K-40	134.	1460.75	9.4698E-01
CR-51	4117.	320.08	1.5907E+00
MN-54	34.	834.83	3.1652E-02
CO-56	42.	846.76	3.5760E-02
CO-58	40.	810.78	3.3954E-02
FE-59	24.	1099.25	6.0364E-02
CO-60	28.	1332.50	4.2714E-02
SE-75	4703.	264.66	2.5471E-01
SR-85	2662.	514.01	1.9433E-01
Y-88	7.	1836.06	2.7714E-02
NB-94	62.	871.09	4.4700E-02
ZRNB-95	120.	724.18	1.2109E-01
RU-103	3214.	497.08	2.1929E-01
RURH-106	1011.	621.93	2.7241E+00
AG-108m	116.	722.94	5.7277E-02
CD-109	4053.	88.03	3.6483E+00
AG-110M	3450.	657.76	2.7668E-01
SN-113	4668.	391.69	3.1060E-01
TE-123m	4653.	159.00	1.2144E-01
SB-124	998.	602.73	1.3368E-01
SB-125	5426.	427.89	7.8181E-01
TE-125m	4277.	109.27	3.6848E+01
I-131	4498.	364.48	2.2797E-01
CS-134	1010.	604.70	1.3514E-01
BA-140	1881.	537.31	6.6757E-01
LA-140	9.	1596.21	2.9605E-02
CEPR-144	4516.	133.51	1.7590E+00
EU-152	8.	1408.01	1.1259E-01
EU-155	4347.	105.31	4.9614E-01
HG-203	4408.	279.20	1.8389E-01
TL-208	4436.	277.36	2.3697E+00
BI-212	64.	727.18	5.8325E-01
PB-212	5316.	238.63	3.3680E-01
BI-214	998.	609.31	2.9450E-01
PB-214	4370.	351.92	8.8690E-01
RA-224	5216.	240.99	3.7041E+00
RA-226	6142.	186.10	3.6694E+00
AC-228	55.	911.21	1.6411E-01
TH-228	3889.	84.37	1.1007E+01
TH-229	4079.	88.47	5.3048E-01
PA-233	4183.	312.17	4.1075E-01
UTH-233	5106.	245.34	1.3738E+02
PA-234M	35.	1001.03	6.4078E-02
TH-234	3713.	63.29	7.2432E+00
U-235	6077.	185.71	2.2185E-01
NP-237	4046.	86.48	1.0948E+00
NP-239	4372.	106.12	4.7274E-01
PU-239	4680.	129.30	1.5584E+03

Sample ID : S96T001473-SAM Acquisition date : 5-JUN-1996 11:03:53

WHC-SD-WM-DP-179, REV. 1

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
AM-241	3745.	59.54	1.2837E+00
AM-243	3911.	74.67	3.0833E-01

```
*****************************************************************************
* 222-S Laboratory Counting Room    5-JUN-1996 13:34:47.62                  *
*****************************************************************************
      >>>>>>>>>> SAMPLE INFORMATION <<<<<<<<<<
Worklist #:              9562
Sample ID:               S96T1473-DUP
Sample Size:             1.00000E-03 L
Dilution Factor:         1.00000E+00

      >>>>>>>>>> COUNT INFORMATION <<<<<<<<<<
Detector ID:
File Number:             dka300:[spec.GEA3]3g3628.cnf
Geometry:                42
Count Time:              0 00:50:00.00 sec
Real Time:               0 00:50:22.83 sec
Dead Time:               0.8%

      >>>>>>>>>> ANALYSIS INFORMATION <<<<<<<<<<
Sample Count Time:       5-JUN-1996 12:43:45.54
Decayed to:              5-JUN-1996 12:43:45.54
Standard Deviations:     2
Analysis Library:        ENVGEA
Analyst:                 MB
Background Subtract:     DKA300:[SPEC.GEA3]3GBACK

      >>>>>>>>>> CALIBRATION INFORMATION <<<<<<<<<<
 Date of last energy calibration:       11-MAR-1994 11:47:01.11
 Date of last efficiency calibration:   15-MAR-1994 10:28:40.20
*****************************************************************************
```

WHC-SD-WM-DP-179, REV. 1

Removed by: 6-5-96

Verified by: 6/6/96

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity uCi/L
0	123.11	604	1.38	246.70	243	8	43.9		CO-57	0.225
									EU-154	0.477
0	661.66*	183629	1.59	1323.49	1315	17	0.5		CS-137	208.
0	723.55	104	1.61	1447.28	1442	12	37.4		EU-154	0.541
0	872.89	42	1.71	1745.95	1740	11	56.6		EU-154	0.428
0	973.48	70	12.29	1947.16	1936	29	50.2			
0	1004.57	70	0.94	2009.35	2002	15	38.2		EU-154	0.535
0	1173.30	30	1.11	2346.86	2341	14	69.3			
0	1274.56	75	2.05	2549.45	2545	10	28.1		EU-154	0.366

Sample ID : S96T1473-DUP Acquisition date : 5-JUN-1996 12:43:45

WHC-SD-WM-DP-170, REV. 1

Total number of lines in spectrum	8	
Number of unidentified lines	1	
Number of lines tentatively identified by NID	7	87.50%

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean Uncorrected uCi/L	Wtd Mean Decay Corr uCi/L	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
~~CO-57~~	~~271.80D~~	~~1.000~~	~~2.249E-01~~	~~2.249E-01~~	~~0.987E-01~~	~~43.90~~	~~K~~
CS-137	30.00Y	1.000	2.076E+02	2.076E+02	0.001E+03	0.48	
EU-154	8.59Y	1.000	4.245E-01	4.245E-01	0.791E-01	18.63	
		Total Activity :	2.082E+02	2.082E+02			
		Grand Total Activity :	2.082E+02	2.082E+02			

154Eu 7/10/96

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Sample ID : S96T1473-DUP
Acquisition date : 5-JUN-1996 12:43:45

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
BE-7	5508.	477.59	2.4450E+00
NA-22	87.	1274.53	7.3201E-02
NA-24	13.	1368.55	3.0535E-02
K-40	129.	1460.75	9.2913E-01
CR-51	4216.	320.08	1.6097E+00
MN-54	45.	834.83	3.6862E-02
CO-56	31.	846.76	3.1021E-02
CO-58	36.	810.78	3.2087E-02
FE-59	24.	1099.25	5.9664E-02
CO-60	27.	1332.50	4.2014E-02
SE-75	4711.	264.66	2.5493E-01
SR-85	2761.	514.01	1.9793E-01
Y-88	3.	1836.06	1.8173E-02
NB-94	54.	871.09	4.1532E-02
ZRNB-95	158.	724.18	1.3907E-01
RU-103	3380.	497.08	2.2491E-01
RURH-106	986.	621.93	2.6906E+00
AG-108m	154.	722.94	6.6140E-02
CD-109	4293.	88.03	3.7547E+00
AG-110M	3651.	657.76	2.8464E-01
SN-113	4937.	391.69	3.1945E-01
TE-123m	4843.	159.00	1.2391E-01
SB-124	1019.	602.73	1.3510E-01
SB-125	5498.	427.89	7.8697E-01
TE-125m	4301.	109.27	3.6953E+01
I-131	4458.	364.48	2.2697E-01
CS-134	1010.	604.70	1.3511E-01
BA-140	1992.	537.31	6.8702E-01
LA-140	8.	1596.21	2.8137E-02
CEPR-144	4662.	133.51	1.7872E+00
EU-152	10.	1408.01	1.2861E-01
EU-155	4437.	105.31	5.0124E-01
HG-203	4595.	279.20	1.8774E-01
TL-208	4671.	277.36	2.4317E+00
BI-212	73.	727.18	6.2437E-01
PB-212	5475.	238.63	3.4179E-01
BI-214	1019.	609.31	2.9766E-01
PB-214	4437.	351.92	8.9373E-01
RA-224	5359.	240.99	3.7545E+00
RA-226	6399.	186.10	3.7454E+00
AC-228	54.	911.21	1.6341E-01
TH-228	4325.	84.37	1.1607E+01
TH-229	4246.	88.47	5.4124E-01
PA-233	4334.	312.17	4.1812E-01
UTH-233	5290.	245.34	1.3982E+02
PA-234M	32.	1001.03	6.1360E-02
TH-234	3762.	63.29	7.2913E+00
U-235	6346.	185.71	2.2671E-01
NP-237	4397.	86.48	1.1412E+00
NP-239	4458.	106.12	4.7735E-01
PU-239	4965.	129.30	1.6051E+03

Sample ID : S96T1473-DUP Acquisition date : 5-JUN-1996 12:43:45

WHC-SD-WM-DP-178, REV. 1

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
AM-241	3820.	59.54	1.2965E+00
AM-243	4034.	74.67	3.1314E-01

```
*****************************************************************************
* 222-S Laboratory Counting Room    5-JUN-1996 14:33:06.27                  *
*****************************************************************************
      >>>>>>>>>> SAMPLE INFORMATION <<<<<<<<<<
Worklist #:              9562
Sample ID:               S96T001474-SAM
Sample Size:             1.00000E-03 L
Dilution Factor:         1.00000E+00

      >>>>>>>>>> COUNT INFORMATION <<<<<<<<<<
Detector ID:
File Number:             dka300:[spec.GEA3]3g3629.cnf
Geometry:                42
Count Time:              0 00:50:00.00 sec
Real Time:               0 00:50:23.36 sec
Dead Time:               0.8%

      >>>>>>>>>> ANALYSIS INFORMATION <<<<<<<<<<
Sample Count Time:       5-JUN-1996 13:42:03.95
Decayed to:              5-JUN-1996 13:42:03.95
Standard Deviations:     2
Analysis Library:        ENVGEA
Analyst:                 ALJ
Background Subtract:     DKA300:[SPEC.GEA3]3GBACK

      >>>>>>>>>> CALIBRATION INFORMATION <<<<<<<<<<
 Date of last energy calibration:       11-MAR-1994 11:47:01.11
 Date of last efficiency calibration:   15-MAR-1994 10:28:40.20
*****************************************************************************
```

WHC-SD-WM-DP-170, REV. 1

Removed by: ALJ 6-5-96

Verified by: D Bachelor 6/6/96

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity uCi/L
0	122.81	340	1.19	246.11	244	6	62.4		CO-57	0.127
0	661.67*	188311	1.58	1323.51	1315	17	0.5		CS-137	213.
0	1004.97	45	1.05	2010.13	2001	18	62.3			
0	1274.52	50	1.49	2549.36	2543	16	41.8			

Sample ID : S96T001474-SAM
Acquisition date : 5-JUN-1996 13:42:03

WHC-CD-WM-DP-173, REV. 1

Total number of lines in spectrum	4	
Number of unidentified lines	0	
Number of lines tentatively identified by NID	4	100.00%

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean Uncorrected uCi/L	Wtd Mean Decay Corr uCi/L	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
~~CO-57~~	~~271.80D~~	~~1.000~~	~~1.266E-01~~	~~1.266E-01~~	~~0.790E-01~~	~~62.42~~	~~BKG~~
CS-137	30.00Y	1.000	2.128E+02	2.128E+02	0.010E+02	0.47	
		Total Activity :	2.130E+02	2.130E+02			
		Grand Total Activity :	2.130E+02	2.130E+02			

7/10/96

Flags: "K" = Keyline not found
"E" = Manually edited
"M" = Manually accepted
"A" = Nuclide specific abn. limit

Sample ID : S96T001474-SAM
Acquisition date : 5-JUN-1996 13:42:03

WHC-CD-WM-DP-170, REV. 1

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
BE-7	5680.	477.59	2.4829E+00
NA-22	58.	1274.53	5.9550E-02
NA-24	13.	1368.55	3.0330E-02
K-40	152.	1460.75	1.0085E+00
CR-51	4581.	320.08	1.6779E+00
MN-54	47.	834.83	3.7569E-02
CO-56	31.	846.76	3.0910E-02
CO-58	41.	810.78	3.4234E-02
FE-59	22.	1099.25	5.7478E-02
CO-60	20.	1332.50	3.6396E-02
SE-75	4939.	264.66	2.6104E-01
SR-85	2916.	514.01	2.0340E-01
Y-88	1.	1836.06	1.0492E-02
NB-94	63.	871.09	4.5219E-02
ZRNB-95	96.	724.18	1.0824E-01
RU-103	3462.	497.08	2.2761E-01
RURH-106	1020.	621.93	2.7361E+00
AG-108m	93.	722.94	5.1326E-02
CD-109	4213.	88.03	3.7194E+00
AG-110M	3601.	657.76	2.8268E-01
SN-113	4786.	391.69	3.1452E-01
TE-123m	4924.	159.00	1.2493E-01
SB-124	1031.	602.73	1.3591E-01
SB-125	5542.	427.89	7.9010E-01
TE-125m	4375.	109.27	3.7271E+01
I-131	4527.	364.48	2.2872E-01
CS-134	1007.	604.70	1.3495E-01
BA-140	1928.	537.31	6.7585E-01
LA-140	4.	1596.21	1.9737E-02
CEPR-144	4752.	133.51	1.8043E+00
EU-152	5.	1408.01	8.9422E-02
EU-154	57.	1274.51	1.7289E-01
EU-155	4455.	105.31	5.0225E-01
HG-203	4767.	279.20	1.9123E-01
TL-208	4778.	277.36	2.4594E+00
BI-212	58.	727.18	5.5846E-01
PB-212	5568.	238.63	3.4467E-01
BI-214	1058.	609.31	3.0332E-01
PB-214	4393.	351.92	8.8943E-01
RA-224	5498.	240.99	3.8031E+00
RA-226	6434.	186.10	3.7558E+00
AC-228	41.	911.21	1.4175E-01
TH-228	4249.	84.37	1.1505E+01
TH-229	4208.	88.47	5.3877E-01
PA-233	4587.	312.17	4.3016E-01
UTH-233	5370.	245.34	1.4088E+02
PA-234M	30.	1001.03	5.9528E-02
TH-234	3961.	63.29	7.4811E+00
U-235	6322.	185.71	2.2627E-01
NP-237	4310.	86.48	1.1300E+00
NP-239	4381.	106.12	4.7321E-01

Sample ID : S96T001474-SAM Acquisition date : 5-JUN-1996 13:42:03

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
PU-239	4900.	129.30	1.5945E+03
AM-241	3824.	59.54	1.2972E+00
AM-243	4044.	74.67	3.1355E-01

WHC-CP-WM-DP-173, REV. 1

```
*****************************************************************************
* 222-S Laboratory Counting Room    5-JUN-1996 15:26:42.70                  *
*****************************************************************************
```

WHC-SD-WM-DP-173, REV. 1

>>>>>>>>>> SAMPLE INFORMATION <<<<<<<<<<

Worklist #:	9562
Sample ID:	S96T001474-DUP
Sample Size:	1.00000E-03 L
Dilution Factor:	1.00000E+00

Removed by: 6-5-96

>>>>>>>>>> COUNT INFORMATION <<<<<<<<<<

Detector ID:	
File Number:	dka300:[spec.GEA3]3g3630.cnf
Geometry:	42
Count Time:	0 00:50:00.00 sec
Real Time:	0 00:50:23.41 sec
Dead Time:	0.8%

Verified by: Bachelor 6/6/96

>>>>>>>>>> ANALYSIS INFORMATION <<<<<<<<<<

Sample Count Time:	5-JUN-1996 14:35:39.29
Decayed to:	5-JUN-1996 14:35:39.29
Standard Deviations:	2
Analysis Library:	ENVGEA
Analyst:	ALJ
Background Subtract:	DKA300:[SPEC.GEA3]3GBACK

>>>>>>>>>> CALIBRATION INFORMATION <<<<<<<<<<

Date of last energy calibration: 11-MAR-1994 11:47:01.11
Date of last efficiency calibration: 15-MAR-1994 10:28:40.20

*****

Post-NID Peak Search Report

It	Energy	Area	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides	Activity uCi/L
0	122.52	192	1.02	245.53	244	5	96.0		CO-57	7.152E-02
									EU-154	0.152
0	661.67*	188761	1.58	1323.52	1315	17	0.5		CS-137	213.
0	723.35	58	1.54	1446.88	1443	8	44.0		EU-154	0.302
0	873.80	25	1.53	1747.77	1744	8	82.0		EU-154	0.255
0	1172.79	29	1.52	2345.86	2340	11	53.4			
0	1274.70	86	1.95	2549.74	2540	18	29.3		EU-154	0.424

Summary of Nuclide Activity
Sample ID : S96T001474-DUP

Acquisition date : 5-JUN-1996 14:35:39

WHC-SD-WM-DP-170, REV. 1

Total number of lines in spectrum	6	
Number of unidentified lines	0	
Number of lines tentatively identified by NID	6	100.00%

Nuclide Type :

Nuclide	Hlife	Decay	Wtd Mean Uncorrected uCi/L	Wtd Mean Decay Corr uCi/L	Decay Corr 2-Sigma Error	2-Sigma %Error	Flags
~~CO-57~~	~~271.80D~~	~~1.000~~	~~7.151E-02~~	~~7.152E-02~~	~~6.868E-02~~	~~96.04~~	B K9
CS-137	30.00Y	1.000	2.133E+02	2.134E+02	0.010E+02	0.47	
EU-154	8.59Y	1.000	3.493E-01	3.493E-01	0.833E-01	23.85	9/10/96
			---	---			
	Total Activity :		2.138E+02	2.138E+02			
	Grand Total Activity :		2.138E+02	2.138E+02			

Flags: "K" = Keyline not found "M" = Manually accepted
"E" = Manually edited "A" = Nuclide specific abn. limit

Sample ID : S96T001474-DUP Acquisition date : 5-JUN-1996 14:35:39

WHC-SD-WM-DP-178, REV. 1

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
BE-7	5682.	477.59	2.4834E+00
NA-22	93.	1274.53	7.5521E-02
NA-24	9.	1368.55	2.4910E-02
K-40	150.	1460.75	1.0022E+00
CR-51	4482.	320.08	1.6598E+00
MN-54	44.	834.83	3.6166E-02
CO-56	42.	846.76	3.5789E-02
CO-58	30.	810.78	2.9301E-02
FE-59	23.	1099.25	5.8841E-02
CO-60	22.	1332.50	3.8173E-02
SE-75	4901.	264.66	2.6003E-01
SR-85	2849.	514.01	2.0106E-01
Y-88	1.	1836.06	1.0492E-02
NB-94	53.	871.09	4.1381E-02
ZRNB-95	99.	724.18	1.1011E-01
RU-103	3475.	497.08	2.2802E-01
RURH-106	1026.	621.93	2.7445E+00
AG-108m	106.	722.94	5.4679E-02
CD-109	4324.	88.03	3.7683E+00
AG-110M	3639.	657.76	2.8418E-01
SN-113	4960.	391.69	3.2018E-01
TE-123m	4948.	159.00	1.2524E-01
SB-124	1034.	602.73	1.3610E-01
SB-125	5799.	427.89	8.0823E-01
TE-125m	4519.	109.27	3.7876E+01
I-131	4611.	364.48	2.3081E-01
CS-134	1038.	604.70	1.3697E-01
BA-140	2001.	537.31	6.8864E-01
LA-140	6.	1596.21	2.3488E-02
CEPR-144	4919.	133.51	1.8358E+00
EU-152	7.	1408.01	1.0629E-01
EU-155	4411.	105.31	4.9980E-01
HG-203	4651.	279.20	1.8889E-01
TL-208	4635.	277.36	2.4224E+00
BI-212	52.	727.18	5.2725E-01
PB-212	5468.	238.63	3.4158E-01
BI-214	1088.	609.31	3.0760E-01
PB-214	4478.	351.92	8.9796E-01
RA-224	5452.	240.99	3.7869E+00
RA-226	6440.	186.10	3.7574E+00
AC-228	41.	911.21	1.4105E-01
TH-228	4208.	84.37	1.1449E+01
TH-229	4294.	88.47	5.4428E-01
PA-233	4545.	312.17	4.2815E-01
UTH-233	5352.	245.34	1.4064E+02
PA-234M	21.	1001.03	4.9386E-02
TH-234	3918.	63.29	7.4412E+00
U-235	6370.	185.71	2.2712E-01
NP-237	4420.	86.48	1.1443E+00
NP-239	4348.	106.12	4.7146E-01
PU-239	4832.	129.30	1.5834E+03

Sample ID : S96T001474-DUP Acquisition date : 5-JUN-1996 14:35:39

WHC-CP-WM-DP-170, REV. 1

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/L)
AM-241	3794.	59.54	1.2922E+00
AM-243	4027.	74.67	3.1288E-01

LABCORE Data Entry Template for Worklist# 7052

Analyst: KNT **Instrument:** AB00 12 **Book#** 9656

Method: LA-220-101 Rev/Mod D-1

Worklist Comment: Use .250 mL sample size. Rerun #1. SLF

S	Type	Sample#	R	A	Test	Matrix	Group#	Project
1	STD				@SR90-01	SOLID		
2	BLNK-PREP				@SR90-01	SOLID		
3	BLNK/BKG				@SR90-01	SOLID		
4	SAMPLE	S96T000879	0	F	@SR90-01	SOLID	96000030	S102
	Analytes Requested: SR90-01 , SR90-01C, SR90-01E							
5	DUP	S96T000879	0	F	@SR90-01	SOLID		
6	SAMPLE	S96T000880	0	F	@SR90-01	SOLID	96000030	S102
	Analytes Requested: SR90-01 , SR90-01C, SR90-01E							
7	DUP	S96T000880	0	F	@SR90-01	SOLID		

Final page for worklist # 7052

Kim Thomas 3-31-96
Analyst Signature **Date**

Sharon L Hall 4-1-96
Analyst Signature **Date**

Lyeria Z Cochran 4/1/96

Data Entry Comments:

S = Worklist Slot Number, R = Replicate Number, A = Aliquot Code.

LABCORE Completed Worklist Report for Worklist# 7052

Analyst: knt **Instrument:** AB12 **Book#** _____

Method: _____ Rev/Mod _____

Worklist Comment: Use .250 mL sample size. Rerun #1. SLF

Seq	Type	Sample#	R	A	Test		Matrix	Actual	Found	DL or Yield	Unit
1	STD		0		@SR90-01	SR90-01	SOLID	1.23E-03	1.05E-3	85.370	% Recovery
1	STD		0		@SR90-01	SR90-01C	SOLID	100	9.01E+01	90.100	% Recovery
1	STD		0		@SR90-01	SR90-01E	SOLID	1.00	1.92E+00	1.920	% Ct. Error
2	BLNK-PREP		0		@SR90-01	SR90-01	SOLID	1	7.50E-3	1.000e-002	uCi/g
2	BLNK-PREP		0		@SR90-01	SR90-01C	SOLID	100	9.02E+01	90.200	% Recovery
2	BLNK-PREP		0		@SR90-01	SR90-01E	SOLID	1.00	5.55E+01	55.500	% Ct. Error
3	BLNK/BKG		0		@SR90-01	SR90-01	SOLID	1	2.06E+00	2.060	uCi/g
4	SAMPLE	S96T000879	0	F	@SR90-01	SR90-01	SOLID	N/A	5.76E+00	4.810e-003	uCi/g
4	SAMPLE	S96T000879	0	F	@SR90-01	SR90-01C	SOLID	N/A	9.01E+01	1.000e-004	% Recovery
4	SAMPLE	S96T000879	0	F	@SR90-01	SR90-01E	SOLID	N/A	1.18E+00	0.000	% Ct. Error
5	DUP	S96T000879	0	F	@SR90-01	SR90-01	SOLID	5.76E+0	5.39E+0	6.640	RPD
5	DUP	S96T000879	0	F	@SR90-01	SR90-01C	SOLID	100	9.12E+01	91.200	% Recovery
5	DUP	S96T000879	0	F	@SR90-01	SR90-01E	SOLID	1.00	1.20E+00	1.200	% Ct. Error
6	SAMPLE	S96T000880	0	F	@SR90-01	SR90-01	SOLID	N/A	5.34E+01	4.390e-003	uCi/g
6	SAMPLE	S96T000880	0	F	@SR90-01	SR90-01C	SOLID	N/A	9.08E+01	1.000e-004	% Recovery
6	SAMPLE	S96T000880	0	F	@SR90-01	SR90-01E	SOLID	N/A	3.69E-01	0.000	% Ct. Error
7	DUP	S96T000880	0	F	@SR90-01	SR90-01	SOLID	5.34E+1	5.41E+1	1.300	RPD
7	DUP	S96T000880	0	F	@SR90-01	SR90-01C	SOLID	100	9.08E+01	90.800	% Recovery
7	DUP	S96T000880	0	F	@SR90-01	SR90-01E	SOLID	1.00	3.76E-01	0.380	% Ct. Error

Final page for worklist# 7052

Analyst Signature **Date** **Analyst Signature** **Date**

4/2/96

Reviewer Signature **Date**

Units shown for QC (BLK/BKG) may not reflect the actual units.

WORKBOOK PAGE: STD1

Sr-89/90 : LA-220-101 (D-1), 102 (E-3), 104 (D-1) LIQUIDS

							STANDARD
Type	DETECTOR NUMBER		12	CARRIER ADDED in mL	(CVA)		1.000
STD	TOTAL COUNTS	(TC)	10511	GROSS WEIGHT	(W2)		7.2978
Work List	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1)		7.2077
7052	BACKGROUND in cpm	(BKG)	3.4	NET WEIGHT	(W3)		0.0901
Test Code	SAMPLE VOLUME in mL	(SS)	1.000	DELTA TIME (HOURS)	(DT)		17.63
@SR90-01	DILUTION FACTOR	(DF)	1				
Matrix	DIGEST DILUTION FACTOR	DDF	1				
LIQUID	SAMPLE COUNT RATE	(Rs)	1047.70	SR-90 EFFICIENCY FACTO	(C1)		0.4180
Batch Number	CRITICAL LEVEL	(Lc)	1.11	Y-90 EFFICIENCY FACTOR	(C2)		0.4660
96002765	TIME OF SEPARATION	(ST)	00:50	Rmax			N/A
Rerun	DATE OF SEPARATION	(SD)	03/31/96	DETECTION LIMIT	(Ld)		2.31
0	TIME OF COUNT	(TOC)	18:28	Sr-89/90 CONC. in µCi/L			1.0501E+00
Sample Prep	DATE OF COUNT	(DOC)	03/31/96				
N/A	STANDARD BOOK #		9B56				
Sample #	STANDARD VALUE in µCi/mL		1.2305E-03				
WL7052							
Instrument Code							
WB27811							
Prepared By							
SLH							
Chemist							
SLF							
Analyst							
KNT							
Date Complete							
04/01/96							
Analysis Date							
03/31/96							
Analysis Time							
12:50 AM							
Sample Point							
S102							

Sample Count Rate (Rs) = (Total Counts (TC) / Count Time (CT)) - Background in cpm (BKG)

Sr-89/90 CONC in µCi/mL REPLACE RS WITH RMAX IF RS<=LcAND RS>=0 OR REPLACE RS WITH Lc IF RS<0

RS*DF*DDF*1000/((C1+C2*(1-e to the power of ((-natural log 2)/64.2*DT)))*SS*REC*2220000)

NOTE: 64.2 = Half Life for Y-90 and Rec. = Fractional Carrier Recovery ((W2-W1) / (CVA * 0.1000))

Relative Counting Error = The Square Root of ((TC + BKG * CT) / (TC - BKG * CT)*1.96)

Percent Carrier Recovery = (Net Weight / Expected weight) * 100

NOTE: Expected weight = CVA * 0.1

Detection Levels and Less Than Values are determined from Procedure LA-508-002.

Delta Time (hours) = ((DOC - SD) * 24) + (TOC - ST) / 100

Sr-89/90 CONCENTRATION	1.05E-03	µCi/mL
RELATIVE COUNTING ERROR	1.9%	
PERCENT CARRIER RECOVERY	90.1%	

DETECTION LEVEL

2.32E-06 µCi/L

Analyst:	KNT	Date:	01-Apr-96
Signature of Chemist:	SLF	Date:	4/2/96

STANDARD.WB1 REV 1.2 22010NML

WORKBOOK PAGE: BLANK2

LA-220-101 / D-1 Sr-89/90 : LA-220-101 (D-1), 102 (E-3), 104 (D-1)

						BLNK-PREP
Type	DETECTOR NUMBER		12	CARRIER ADDED in mL	(CVA)	1.000
BLNK-PREP	TOTAL COUNTS	(TC)	70	GROSS WEIGHT	(W2)	7.3225
Work List	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1)	7.2323
7052	BACKGROUND in cpm	(BKG)	3.4	NET WEIGHT	(W3)	0.0902
Test Code	SAMPLE VOLUME in mL	(SS)	0.250	DELTA TIME (HOURS)	(DT)	17.83
@SR90-01	DILUTION FACTOR	(DF)	1			
Matrix	DIGEST FACTOR (g/L)	(D g/L	1.9196			
SOLID	SAMPLE COUNT RATE	(Rs)	3.60	SR-90 EFFICIENCY FACTOR	(C1)	0.4180
Batch Number	CRITICAL LEVEL	(Lc)	1.11	Y-90 EFFICIENCY FACTOR	(C2)	0.4660
96002765	TIME OF SEPARATION	(ST)	00:50	Rmax		N/A
Rerun	DATE OF SEPARATION	(SD)	03/31/96	DETECTION LIMIT	(Ld)	2.31
0	TIME OF COUNT	(TOC)	18:40	Sr-89/90 CONC in µCi/g		7.4982E-03
Sample Prep	DATE OF COUNT	(DOC)	03/31/96			
N/A						
Sample #						
WL7052						
Instrument Code						
WB27811						
Prepared By						
SLH						
Chemist						
SLF						
Analyst						
KNT						
Date Complete						
04/01/96						
Analysis Date						
03/31/96						
Analysis Time						
12:50 AM						
Sample Point						
S102						

Sample Count Rate (Rs) = (Total Counts (TC) / Count Time (CT)) - Background in cpm (BKG)

Sr-89/90 CONC in µCi/g Replace RS with RMAX if RS<=Lc and RS>=0 or Replace RS with Lc if RS<0

RS*1000*DF/((C1+C2*(1-e to the power of ((-natural log 2)/64.2*DT)))*SS*DDF*REC*2220000)

NOTE: 64.2 = Half Life for Y-90 and Rec. = Fractional Carrier Recovery ((W2-W1) / (CVA * 0.1000))

Relative Counting Error = The Square Root of ((TC + BKG * CT) / (TC - BKG * CT)*1.96)

Percent Carrier Recovery = (Net Weight / Expected weight) * 100

NOTE: Expected weight = CVA * 0.1

Detection Levels and Less Than Values are determined from Procedure LA-508-002.

Delta Time (hours) = ((DOC - SD) * 24) + (TOC - ST) / 100

Sr-89/90 CONCENTRATION	7.50E-03	µCi/g	DETECTION LEVEL
RELATIVE COUNTING ERROR	55.5%		4.82E-03 µCi/g
PERCENT CARRIER RECOVERY	90.2%		

Analyst:		KNT	Date:	01-Apr-96
Signature of Chemist:		SLF	Date:	4/2/96

BLANK.WB1 REV 1.2 22010NML

WORKBOOK PAGE: SAM4

LA-220-101 / D-1 Sr-89/90 : LA-220-101 (D-1), 102 (E-3), 104 (D-1)

						SAMPLE
Type	DETECTOR NUMBER		12	CARRIER ADDED in mL	(CVA)	1.000
SAMPLE	TOTAL COUNTS	(TC)	27714	GROSS WEIGHT	(W2)	7.3554
Work List	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1)	7.2653
7052	BACKGROUND in cpm	(BKG)	3.4	NET WEIGHT	(W3)	0.0901
Test Code	SAMPLE VOLUME in mL	(SS)	0.250	DELTA TIME (HOURS)	(DT)	18.02
@SR90-01	DILUTION FACTOR	(DF)	1			
Matrix	DIGEST FACTOR (g/L)	(D g/L	1.9196			
SOLID	SAMPLE COUNT RATE	(Rs)	2768.00	SR-90 EFFICIENCY FACTOR	(C1)	0.4180
Batch Number	CRITICAL LEVEL	(Lc)	1.11	Y-90 EFFICIENCY FACTOR	(C2)	0.4660
96002765	TIME OF SEPARATION	(ST)	00:50	Rmax		N/A
Rerun	DATE OF SEPARATION	(SD)	03/31/96	DETECTION LIMIT	(Ld)	2.31
1	TIME OF COUNT	(TOC)	18:51	Sr-89/90 CONC in µCi/g		5.7629E+00
Sample Prep	DATE OF COUNT	(DOC)	03/31/96			
FUSION01						
Sample #						
S96T000879						
Instrument Code						
WB27811						
Prepared By						
SLH						
Chemist						
SLF						
Analyst						
KNT						
Date Complete						
04/01/96						
Analysis Date						
03/31/96						
Analysis Time						
12:50 AM						
Sample Point						
S102						

Sample Count Rate (Rs) = (Total Counts (TC) / Count Time (CT)) - Background in cpm (BKG)

Sr-89/90 CONC in µCi/g Replace RS with RMAX if RS<=Lc and RS>=0 or Replace RS with Lc if RS<0

RS*1000*DF/((C1+C2*(1-e to the power of ((-natural log 2)/64.2*DT)))*SS*DDF*REC*2220000)

NOTE: 64.2 = Half Life for Y-90 and Rec. = Fractional Carrier Recovery ((W2-W1) / (CVA * 0.1000))

Relative Counting Error = The Square Root of ((TC + BKG * CT) / (TC - BKG * CT)*1.96)

Percent Carrier Recovery = (Net Weight / Expected weight) * 100

NOTE: Expected weight = CVA * 0.1

Detection Levels and Less Than Values are determined from Procedure LA-508-002.

Delta Time (hours) = ((DOC - SD) * 24) + (TOC - ST) / 100

Sr-89/90 CONCENTRATION	5.76E+00	µCi/g	DETECTION LEVEL
RELATIVE COUNTING ERROR	1.2%		4.81E-03 µCi/g
PERCENT CARRIER RECOVERY	90.1%		

Analyst:	KNT	Date:	01-Apr-96
Signature of Chemist:	SLF	Date:	4/2/96

SAMPLE.WB1 REV 1.2 22010NML

WORKBOOK PAGE: DUP5

LA-220-101 / D-1 Sr-89/90 : LA-220-101 (D-1), 102 (E-3), 104 (D-1)

							DUP
Type	DETECTOR NUMBER		12	CARRIER ADDED in mL	(CVA)		1.000
DUP	TOTAL COUNTS	(TC)	26751	GROSS WEIGHT	(W2)		7.3481
Work List	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1)		7.2569
7052	BACKGROUND in cpm	(BKG)	3.4	NET WEIGHT	(W3)		0.0912
Test Code	SAMPLE VOLUME in mL	(SS)	0.250	DELTA TIME (HOURS)	(DT)		18.22
@SR90-01	DILUTION FACTOR	(DF)	1				
Matrix	DIGEST FACTOR (g/L)	(D g/L	1.9544				
SOLID	SAMPLE COUNT RATE	(Rs)	2671.70	SR-90 EFFICIENCY FACTOR	(C1)		0.4180
Batch Number	CRITICAL LEVEL	(Lc)	1.11	Y-90 EFFICIENCY FACTOR	(C2)		0.4660
96002765	TIME OF SEPARATION	(ST)	00:50	Rmax			N/A
Rerun	DATE OF SEPARATION	(SD)	03/31/96	DETECTION LIMIT	(Ld)		2.31
1	TIME OF COUNT	(TOC)	19:03	Sr-89/90 CONC in µCi/g			5.3886E+00
Sample Prep	DATE OF COUNT	(DOC)	03/31/96				
FUSION01							
Sample #							
S96T000879							
Instrument Code	Sample Count Rate (Rs) = (Total Counts (TC) / Count Time (CT)) - Background in cpm (BKG)						
WB27811	Sr-89/90 CONC in µCi/g Replace RS with RMAX if RS<=Lc and RS>=0 or Replace RS with Lc if RS<0						
Prepared By	RS*1000*DF/((C1+C2*(1-e to the power of ((-natural log 2)/64.2*DT)))*SS*DDF*REC*2220000)						
SLH	NOTE: 64.2 = Half Life for Y-90 and Rec. = Fractional Carrier Recovery ((W2-W1) / (CVA * 0.1000))						
Chemist	Relative Counting Error = The Square Root of ((TC + BKG * CT) / (TC - BKG * CT)*1.96)						
SLF	Percent Carrier Recovery = (Net Weight / Expected weight) * 100						
Analyst	NOTE: Expected weight = CVA * 0.1						
KNT	Detection Levels and Less Than Values are determined from Procedure LA-508-002.						
Date Complete	Delta Time (hours) = ((DOC - SD) * 24) + (TOC - ST) / 100						
04/01/96							
Analysis Date							DETECTION LEVEL
03/31/96	Sr-89/90 CONCENTRATION			5.39E+00		µCi/g	
Analysis Time							
12:50 AM	RELATIVE COUNTING ERROR			1.2%			4.66E-03 µCi/g
Sample Point							
S102	PERCENT CARRIER RECOVERY			91.2%			

Analyst:	KNT	Date:	01-Apr-96
Signature of Chemist:	SLF	Date:	4/2/96

SAMPLE.WB1 REV 1.2 22010NML

2142

WORKBOOK PAGE: SAM6

LA-220-101 / D-1 Sr-89/90 : LA-220-101 (D-1), 102 (E-3), 104 (D-1)

							SAMPLE
Type	DETECTOR NUMBER		12	CARRIER ADDED in mL	(CVA)		1.000
SAMPLE	TOTAL COUNTS	(TC)	281508	GROSS WEIGHT	(W2)		7.2908
Work List	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1)		7.2000
7052	BACKGROUND in cpm	(BKG)	3.4	NET WEIGHT	(W3)		0.0908
Test Code	SAMPLE VOLUME in mL	(SS)	0.250	DELTA TIME (HOURS)	(DT)		18.38
@SR90-01	DILUTION FACTOR	(DF)	1				
Matrix	DIGEST FACTOR (g/L)	(D g/L	2.0828				
SOLID	SAMPLE COUNT RATE	(Rs)	28147.40	SR-90 EFFICIENCY FACTOR	(C1)		0.4180
Batch Number	CRITICAL LEVEL	(Lc)	1.11	Y-90 EFFICIENCY FACTOR	(C2)		0.4660
96002765	TIME OF SEPARATION	(ST)	00:50	Rmax			N/A
Rerun	DATE OF SEPARATION	(SD)	03/31/96	DETECTION LIMIT	(Ld)		2.31
1	TIME OF COUNT	(TOC)	19:13	Sr-89/90 CONC in µCi/g			5.3432E+01
Sample Prep	DATE OF COUNT	(DOC)	03/31/96				
FUSION01							
Sample #							
S96T000880							
Instrument Code	Sample Count Rate (Rs) = (Total Counts (TC) / Count Time (CT)) - Background in cpm (BKG)						
WB27811	Sr-89/90 CONC in µCi/g Replace RS with RMAX if RS<=Lc and RS>=0 or Replace RS with Lc if RS<0						
Prepared By	RS*1000*DF/((C1+C2*(1-e to the power of ((-natural log 2)/64.2*DT)))*SS*DDF*REC*2220000)						
SLH	NOTE: 64.2 = Half Life for Y-90 and Rec. = Fractional Carrier Recovery ((W2-W1) / (CVA * 0.1000))						
Chemist	Relative Counting Error = The Square Root of ((TC + BKG * CT) / (TC - BKG * CT)*1.96)						
SLF	Percent Carrier Recovery = (Net Weight / Expected weight) * 100						
Analyst	NOTE: Expected weight = CVA * 0.1						
KNT	Detection Levels and Less Than Values are determined from Procedure LA-508-002.						
Date Complete	Delta Time (hours) = ((DOC - SD) * 24) + (TOC - ST) / 100						
04/01/96							
Analysis Date							DETECTION LEVEL
03/31/96	Sr-89/90 CONCENTRATION			5.34E+01	µCi/g		
Analysis Time							
12:50 AM	RELATIVE COUNTING ERROR			0.4%			4.39E-03 µCi/g
Sample Point							
S102	PERCENT CARRIER RECOVERY			90.8%			

Analyst:	KNT	Date:	01-Apr-96
Signature of Chemist:	SLF	Date:	4/2/96

SAMPLE.WB1 REV 1.2 22010NML

WORKBOOK PAGE: DUP7

LA-220-101 / D-1 Sr-89/90 : LA-220-101 (D-1), 102 (E-3), 104 (D-1)

							DUP
Type	DETECTOR NUMBER		12	CARRIER ADDED in mL	(CVA)		1.000
DUP	TOTAL COUNTS	(TC)	271299	GROSS WEIGHT	(W2)		7.3308
Work List	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1)		7.2400
7052	BACKGROUND in cpm	(BKG)	3.4	NET WEIGHT	(W3)		0.0908
Test Code	SAMPLE VOLUME in mL	(SS)	0.250	DELTA TIME (HOURS)	(DT)		18.57
@SR90-01	DILUTION FACTOR	(DF)	1				
Matrix	DIGEST FACTOR (g/L)	(D g/L	1.978				
SOLID	SAMPLE COUNT RATE	(Rs)	27126.50	SR-90 EFFICIENCY FACTOR	(C1)		0.4180
Batch Number	CRITICAL LEVEL	(Lc)	1.11	Y-90 EFFICIENCY FACTOR	(C2)		0.4660
96002765	TIME OF SEPARATION	(ST)	00:50	Rmax			N/A
Rerun	DATE OF SEPARATION	(SD)	03/31/96	DETECTION LIMIT	(Ld)		2.31
1	TIME OF COUNT	(TOC)	19:24	Sr-89/90 CONC in µCi/g			5.4141E+01
Sample Prep	DATE OF COUNT	(DOC)	03/31/96				
FUSION01							
Sample #							
S96T000880							

Instrument Code	Sample Count Rate (Rs) = (Total Counts (TC) / Count Time (CT)) - Background in cpm (BKG)
WB27811	Sr-89/90 CONC in µCi/g Replace RS with RMAX if RS<=Lc and RS>=0 or Replace RS with Lc if RS<0
Prepared By	RS*1000*DF/((C1+C2*(1-e to the power of ((-natural log 2)/64.2*DT)))*SS*DDF*REC*2220000)
SLH	NOTE: 64.2 = Half Life for Y-90 and Rec. = Fractional Carrier Recovery ((W2-W1) / (CVA * 0.1000))
Chemist	Relative Counting Error = The Square Root of ((TC + BKG * CT) / (TC - BKG * CT)*1.96)
SLF	Percent Carrier Recovery = (Net Weight / Expected weight) * 100
Analyst	NOTE: Expected weight = CVA * 0.1
KNT	Detection Levels and Less Than Values are determined from Procedure LA-508-002.
Date Complete	Delta Time (hours) = ((DOC - SD) * 24) + (TOC - ST) / 100
04/01/96	
Analysis Date	
03/31/96	
Analysis Time	
12:50 AM	
Sample Point	
S102	

Sr-89/90 CONCENTRATION	5.41E+01	µCi/g
RELATIVE COUNTING ERROR	0.4%	
PERCENT CARRIER RECOVERY	90.8%	

DETECTION LEVEL 4.62E-03 µCi/g

Analyst:	KNT	Date:	01-Apr-96
Signature of Chemist:	SLF	Date:	4/2/96

SAMPLE.WB1 REV 1.2 22010NML

LABCORE Data Entry Template for Worklist# 8180

Analyst: DPB **Instrument:** AB00 12 **Book#** 9B56

Method: LA-220-101 Rev/Mod D-1

Worklist Comment: S102.Determine sample size using ludlum. new

S	Type	Sample#	R	A	Test	Matrix	Group#	Project
1	STD				@SR90-01	SOLID		
2	BLNK-PREP				@SR90-01	SOLID		
3	BLNK/BKG				@SR90-01	SOLID		
4	SAMPLE	S96T001583	0	F	@SR90-01	SOLID	96000094	S102
	Analytes Requested: SR90-01 , SR90-01C, SR90-01E							
5	DUP	S96T001583	0	F	@SR90-01	SOLID		
6	SAMPLE	S96T001584	0	F	@SR90-01	SOLID	96000094	S102
	Analytes Requested: SR90-01 , SR90-01C, SR90-01E							
7	DUP	S96T001584	0	F	@SR90-01	SOLID		
8	SAMPLE	S96T001585	0	F	@SR90-01	SOLID	96000094	S102
	Analytes Requested: SR90-01 , SR90-01C, SR90-01E							
9	DUP	S96T001585	0	F	@SR90-01	SOLID		

Final page for worklist # 8180

Daniel P. Bromley 5/3/96
Analyst Signature **Date**

[illegible] 5/7/96
Analyst Signature **Date**

Sue E. Hogan 5/7/96

Data Entry Comments:

S = Worklist Slot Number, R = Replicate Number, A = Aliquot Code.

LABCORE Completed RadChem Report for Worklist#: 8180

Analyst: dpb **Instrument:** AB12 **Book#** _____

Method: _____ Rev/Mod _____

Worklist Comment: S102.Determine sample size using ludlum. new

Seq	Type	Sample#	R	A	Test		Matrix	Actual	Found	DL or Yield	Unit
1	STD		0		@SR90-01	SR90-01	SOLID	1.23E-03	1.24E-3	100.813	% Recovery
1	STD		0		@SR90-01	SR90-01C	SOLID	100	9.06E+01	90.600	% Recovery
1	STD		0		@SR90-01	SR90-01E	SOLID	1.00	1.78E+00	1.780	% Ct. Erro
2	BLNK-PREP		0		@SR90-01	SR90-01	SOLID	1	<8.77E-3		uCi/g
2	BLNK-PREP		0		@SR90-01	SR90-01C	SOLID	100	8.53E+01	85.300	% Recovery
2	BLNK-PREP		0		@SR90-01	SR90-01E	SOLID	1.00	1.12E+02	112.000	uCi/g
3	BLNK/BKG		0		@SR90-01	SR90-01	SOLID	1	.75	0.750	BLNK/BKG
4	SAMPLE	S96T001583	0	F	@SR90-01	SR90-01	SOLID	N/A	4.31E+00	175.0e-004	uCi/g
4	SAMPLE	S96T001583	0	F	@SR90-01	SR90-01C	SOLID	N/A	8.75E+01	0.0e+000	% Recovery
4	SAMPLE	S96T001583	0	F	@SR90-01	SR90-01E	SOLID	N/A	2.11E+00	0.0e+000	% Ct. Error
5	DUP	S96T001583	0	F	@SR90-01	SR90-01	SOLID	4.31E+0	4.36E+0	1.153	RPD
5	DUP	S96T001583	0	F	@SR90-01	SR90-01C	SOLID	100	8.56E+01	85.600	% Recovery
5	DUP	S96T001583	0	F	@SR90-01	SR90-01E	SOLID	1.00	2.14E+00	2.140	% Cnt Err
6	SAMPLE	S96T001584	0	F	@SR90-01	SR90-01	SOLID	N/A	3.82E+01	174.0e-004	uCi/g
6	SAMPLE	S96T001584	0	F	@SR90-01	SR90-01C	SOLID	N/A	8.68E+01	0.0e+000	% Recovery
6	SAMPLE	S96T001584	0	F	@SR90-01	SR90-01E	SOLID	N/A	7.01E-01	0.0e+000	% Ct. Error
7	DUP	S96T001584	0	F	@SR90-01	SR90-01	SOLID	3.82E+1	3.95E+1	3.346	RPD
7	DUP	S96T001584	0	F	@SR90-01	SR90-01C	SOLID	100	8.68E+01	86.800	% Recovery
7	DUP	S96T001584	0	F	@SR90-01	SR90-01E	SOLID	1.00	6.86E-01	0.686	% Cnt Err
8	SAMPLE	S96T001585	0	F	@SR90-01	SR90-01	SOLID	N/A	4.01E+01	198.0e-004	uCi/g
8	SAMPLE	S96T001585	0	F	@SR90-01	SR90-01C	SOLID	N/A	8.55E+01	0.0e+000	% Recovery
8	SAMPLE	S96T001585	0	F	@SR90-01	SR90-01E	SOLID	N/A	7.31E-01	0.0e+000	% Ct. Error
9	DUP	S96T001585	0	F	@SR90-01	SR90-01	SOLID	4.01E+1	3.93E+1	2.015	RPD
9	DUP	S96T001585	0	F	@SR90-01	SR90-01C	SOLID	100	8.47E+01	84.700	% Recovery
9	DUP	S96T001585	0	F	@SR90-01	SR90-01E	SOLID	1.00	7.52E-01	0.752	% Cnt Err

Final page for worklist# 8180

Analyst Signature **Date** **Analyst Signature** **Date**

5/13/96

Reviewer Signature **Date**

Units shown for QC (BLK/BKG) may not reflect the actual units.

WORKBOOK PAGE: STD1

Sr-89/90 : LA-220-101 (D-1), 102 (E-3), 104 (D-1) LIQUIDS

						STANDARD
Type	DETECTOR NUMBER		12	CARRIER ADDED in mL	(CVA)	1.000
STD	TOTAL COUNTS	(TC)	12355	GROSS WEIGHT	(W2)	7.0903
Work List	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1)	6.9997
8180	BACKGROUND in cpm	(BKG)	8.3	NET WEIGHT	(W3)	0.0906
Test Code	SAMPLE VOLUME in mL	(SS)	1.000	DELTA TIME (HOURS)	(DT)	16.50
@SR90-01	DILUTION FACTOR	(DF)	1			
Matrix	DIGEST DILUTION FACTOR	DDF	1			
LIQUID	SAMPLE COUNT RATE	(Rs)	1227.20	SR-90 EFFICIENCY FACTO	(C1)	0.4180
Batch Number	CRITICAL LEVEL	(Lc)	1.74	Y-90 EFFICIENCY FACTOR	(C2)	0.4660
96004032	TIME OF SEPARATION	(ST)	14:30	Rmax		N/A
Rerun	DATE OF SEPARATION	(SD)	05/03/96	DETECTION LIMIT	(Ld)	3.56
0	TIME OF COUNT	(TOC)	07:00	Sr-89/90 CONC. in µCi/L		1.2350E+00
Sample Prep	DATE OF COUNT	(DOC)	05/04/96			
N/A	STANDARD BOOK #		9B56			
Sample #	STANDARD VALUE in µCi/mL		1.2279E-03			
WL8180						
Instrument Code						
WB27811						
Prepared By						
MCB						
Chemist						
JLS						
Analyst						
DPB						
Date Complete						
05/07/96						
Analysis Date						
05/03/96						
Analysis Time						
02:30 PM						
Sample Point						
S-102						

Sample Count Rate (Rs) = (Total Counts (TC) / Count Time (CT)) - Background in cpm (BKG)

Sr-89/90 CONC in µCi/mL REPLACE RS WITH RMAX IF RS<=LcAND RS>=0 OR REPLACE RS WITH Lc IF RS<0

RS*DF*DDF*1000/((C1+C2*(1-e to the power of ((-natural log 2)/64.2*DT)))*SS*REC*2220000)

NOTE: 64.2 = Half Life for Y-90 and Rec. = Fractional Carrier Recovery ((W2-W1) / (CVA * 0.1000))

Relative Counting Error = The Square Root of ((TC + BKG * CT) / (TC - BKG * CT)*1.96)

Percent Carrier Recovery = (Net Weight / Expected weight) * 100

NOTE: Expected weight = CVA * 0.1

Detection Levels and Less Than Values are determined from Procedure LA-508-002.

Delta Time (hours) = ((DOC - SD) * 24) + (TOC - ST) / 100

Sr-89/90 CONCENTRATION	1.24E-03	µCi/mL	DETECTION LEVEL
RELATIVE COUNTING ERROR	1.8%		3.58E-06 µCi/L
PERCENT CARRIER RECOVERY	90.6%		

Analyst:	DPB	Date:	07-May-96
Signature of Chemist:	JLS	Date:	5/13/96

STANDARD.WB1 REV 1.2 22010NML

WORKBOOK PAGE: BLANK2

LA-220-101 / D-1 Sr-89/90 : LA-220-101 (D-1), 102 (E-3), 104 (D-1)

							BLNK-PREP
Type	DETECTOR NUMBER		12	CARRIER ADDED in mL	(CVA)		1.000
BLNK-PREP	TOTAL COUNTS	(TC)	62	GROSS WEIGHT	(W2)		7.0980
Work List	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1)		7.0127
8180	BACKGROUND in cpm	(BKG)	8.3	NET WEIGHT	(W3)		0.0853
Test Code	SAMPLE VOLUME in mL	(SS)	0.100	DELTA TIME (HOURS)	(DT)		16.95
@SR90-01	DILUTION FACTOR	(DF)	1				
Matrix	DIGEST FACTOR (g/L)	(D g/L	2.1076				
SOLID	SAMPLE COUNT RATE	(Rs)	53.70	SR-90 EFFICIENCY FACTOR	(C1)		0.4180
Batch Number	CRITICAL LEVEL	(Lc)	4.83	Y-90 EFFICIENCY FACTOR	(C2)		0.4660
96004032	TIME OF SEPARATION	(ST)	14:30	Rmax			N/A
Rerun	DATE OF SEPARATION	(SD)	05/03/96	DETECTION LIMIT	(Ld)		9.76
0	TIME OF COUNT	(TOC)	07:27	Sr-89/90 CONC in µCi/g			2.7131E-01
Sample Prep	DATE OF COUNT	(DOC)	05/04/96				
N/A							
Sample #							
WL8180							
Instrument Code							
WB27811							
Prepared By							
MCB							
Chemist							
JLS							
Analyst							
DPB							
Date Complete							
05/07/96							
Analysis Date							
05/03/96							
Analysis Time							
02:30 PM							
Sample Point							
S-102							

Sample Count Rate (Rs) = (Total Counts (TC) / Count Time (CT)) - Background in cpm (BKG)

Sr-89/90 CONC in µCi/g Replace RS with RMAX if RS<=Lc and RS>=0 or Replace RS with Lc if RS<0

RS*1000*DF/((C1+C2*(1-e to the power of ((-natural log 2)/64.2*DT)))*SS*DDF*REC*2220000)

NOTE: 64.2 = Half Life for Y-90 and Rec. = Fractional Carrier Recovery ((W2-W1) / (CVA * 0.1000))

Relative Counting Error = The Square Root of ((TC + BKG * CT) / (TC - BKG * CT)*1.96)

Percent Carrier Recovery = (Net Weight / Expected weight) * 100

NOTE: Expected weight = CVA * 0.1

Detection Levels and Less Than Values are determined from Procedure LA-508-002.

Delta Time (hours) = ((DOC - SD) * 24) + (TOC - ST) / 100

Sr-89/90 CONCENTRATION	2.71E-01	µCi/g	DETECTION LEVEL
RELATIVE COUNTING ERROR	30.6%		4.93E-02 µCi/g
PERCENT CARRIER RECOVERY	85.3%		

Analyst:		DPB	Date:	07-May-96
Signature of Chemist:		JLS	Date:	5/13/96

BLANK.WB1 REV 1.2 22010NML

WORKBOOK PAGE: SAM4

LA-220-101 / D-1 Sr-89/90 : LA-220-101 (D-1), 102 (E-3), 104 (D-1)

							SAMPLE
Type	DETECTOR NUMBER		12	CARRIER ADDED in mL	(CVA)	1.000
SAMPLE	TOTAL COUNTS	(TC)	8857	GROSS WEIGHT	(W2)	7.1321
Work List	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1)	7.0446
8180	BACKGROUND in cpm	(BKG)	8.3	NET WEIGHT	(W3)	0.0875
Test Code	SAMPLE VOLUME in mL	(SS)	0.100	DELTA TIME (HOURS)	(DT)	17.17
@SR90-01	DILUTION FACTOR	(DF)	1			
Matrix	DIGEST FACTOR (g/L)	(D g/L	2.1076			
SOLID	SAMPLE COUNT RATE	(Rs)	877.40	SR-90 EFFICIENCY FACTOR	(C1)	0.4180
Batch Number	CRITICAL LEVEL	(Lc)	1.74	Y-90 EFFICIENCY FACTOR	(C2)	0.4660
96004032	TIME OF SEPARATION	(ST)	14:30	Rmax		N/A
Rerun	DATE OF SEPARATION	(SD)	05/03/96	DETECTION LIMIT	(Ld)	3.56
0	TIME OF COUNT	(TOC)	07:40	Sr-89/90 CONC in µCi/g		4.3135E+00
Sample Prep	DATE OF COUNT	(DOC)	05/04/96			
FUSION01						
Sample #						
S96T001583						

Instrument Code	Sample Count Rate (Rs) = (Total Counts (TC) / Count Time (CT)) - Background in cpm (BKG)
WB27811	Sr-89/90 CONC in µCi/g Replace RS with RMAX if RS<=Lc and RS>=0 or Replace RS with Lc if RS<0
Prepared By	RS*1000*DF/((C1+C2*(1-e to the power of ((-natural log 2)/64.2*DT)))*SS*DDF*REC*2220000)
MCB	NOTE: 64.2 = Half Life for Y-90 and Rec. = Fractional Carrier Recovery ((W2-W1) / (CVA * 0.1000))
Chemist	Relative Counting Error = The Square Root of ((TC + BKG * CT) / (TC - BKG * CT)*1.96)
JLS	Percent Carrier Recovery = (Net Weight / Expected weight) * 100
Analyst	NOTE: Expected weight = CVA * 0.1
DPB	Detection Levels and Less Than Values are determined from Procedure LA-508-002.
Date Complete	Delta Time (hours) = ((DOC - SD) * 24) + (TOC - ST) / 100
05/07/96	
Analysis Date	
05/03/96	Sr-89/90 CONCENTRATION 4.31E+00 µCi/g
Analysis Time	
02:30 PM	RELATIVE COUNTING ERROR 2.1%
Sample Point	
S-102	PERCENT CARRIER RECOVERY 87.5%

DETECTION LEVEL 1.75E-02 µCi/g

Analyst:	DPB	Date:	07-May-96
Signature of Chemist:	JLS	Date:	5/13/96

SAMPLE.WB1 REV 1.2 22010NML

WORKBOOK PAGE: DUP5

LA-220-101 / D-1 Sr-89/90 : LA-220-101 (D-1), 102 (E-3), 104 (D-1)

							DUP
Type	DETECTOR NUMBER		12	CARRIER ADDED in mL	(CVA)	1.000
DUP	TOTAL COUNTS	(TC)	8627	GROSS WEIGHT	(W2)	7.0923
Work List	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1)	7.0067
8180	BACKGROUND in cpm	(BKG)	8.3	NET WEIGHT	(W3)	0.0856
Test Code	SAMPLE VOLUME in mL	(SS)	0.100	DELTA TIME (HOURS)	(DT)	17.33
@SR90-01	DILUTION FACTOR	(DF)	1			
Matrix	DIGEST FACTOR (g/L)	(D g/L	2.0704			
SOLID	SAMPLE COUNT RATE	(Rs)	854.40	SR-90 EFFICIENCY FACTOR	(C1)	0.4180
Batch Number	CRITICAL LEVEL	(Lc)	1.74	Y-90 EFFICIENCY FACTOR	(C2)	0.4660
96004032	TIME OF SEPARATION	(ST)	14:30	Rmax		N/A
Rerun	DATE OF SEPARATION	(SD)	05/03/96	DETECTION LIMIT	(Ld)	3.56
0	TIME OF COUNT	(TOC)	07:50	Sr-89/90 CONC in µCi/g		4.3647E+00
Sample Prep	DATE OF COUNT	(DOC)	05/04/96			
FUSION01						
Sample #						
S96T001583						
Instrument Code						
WB27811						
Prepared By						
MCB						
Chemist						
JLS						
Analyst						
DPB						
Date Complete						
05/07/96						
Analysis Date						
05/03/96						
Analysis Time						
02:30 PM						
Sample Point						
S-102						

Sample Count Rate (Rs) = (Total Counts (TC) / Count Time (CT)) - Background in cpm (BKG)

Sr-89/90 CONC in µCi/g Replace RS with RMAX if RS<=Lc and RS>=0 or Replace RS with Lc if RS<0

RS*1000*DF/((C1+C2*(1-e to the power of ((-natural log 2)/64.2*DT)))*SS*DDF*REC*2220000)

NOTE: 64.2 = Half Life for Y-90 and Rec. = Fractional Carrier Recovery ((W2-W1) / (CVA * 0.1000))

Relative Counting Error = The Square Root of ((TC + BKG * CT) / (TC - BKG * CT)*1.96)

Percent Carrier Recovery = (Net Weight / Expected weight) * 100

NOTE: Expected weight = CVA * 0.1

Detection Levels and Less Than Values are determined from Procedure LA-508-002.

Delta Time (hours) = ((DOC - SD) * 24) + (TOC - ST) / 100

				DETECTION LEVEL
Sr-89/90 CONCENTRATION	4.36E+00	µCi/g		
RELATIVE COUNTING ERROR	2.1%			1.82E-02 µCi/g
PERCENT CARRIER RECOVERY	85.6%			

Analyst:	DPB	Date:	07-May-96	
Signature of Chemist:	JLS	Date:	5/13/96	

SAMPLE.WB1 REV 1.2 22010NML

WORKBOOK PAGE: SAM6

LA-220-101 / D-1 Sr-89/90 : LA-220-101 (D-1), 102 (E-3), 104 (D-1)

						SAMPLE
Type	DETECTOR NUMBER		12	CARRIER ADDED in mL	(CVA)	1.000
SAMPLE	TOTAL COUNTS	(TC)	78329	GROSS WEIGHT	(W2)	7.1548
Work List	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1)	7.0680
8180	BACKGROUND in cpm	(BKG)	8.3	NET WEIGHT	(W3)	0.0868
Test Code	SAMPLE VOLUME in mL	(SS)	0.100	DELTA TIME (HOURS)	(DT)	17.50
@SR90-01	DILUTION FACTOR	(DF)	1			
Matrix	DIGEST FACTOR (g/L)	(D g/L	2.1308			
SOLID	SAMPLE COUNT RATE	(Rs)	7824.60	SR-90 EFFICIENCY FACTOR	(C1)	0.4180
Batch Number	CRITICAL LEVEL	(Lc)	1.74	Y-90 EFFICIENCY FACTOR	(C2)	0.4660
96004032	TIME OF SEPARATION	(ST)	14:30	Rmax		N/A
Rerun	DATE OF SEPARATION	(SD)	05/03/96	DETECTION LIMIT	(Ld)	3.56
0	TIME OF COUNT	(TOC)	08:00	Sr-89/90 CONC in µCi/g		3.8249E+01
Sample Prep	DATE OF COUNT	(DOC)	05/04/96			
FUSION01						
Sample #						
S96T001584						
Instrument Code						
WB27811						
Prepared By						
MCB						
Chemist						
JLS						
Analyst						
DPB						
Date Complete						
05/07/96						
Analysis Date						
05/03/96						
Analysis Time						
02:30 PM						
Sample Point						
S-102						

Sample Count Rate (Rs) = (Total Counts (TC) / Count Time (CT)) - Background in cpm (BKG)

Sr-89/90 CONC in µCi/g Replace RS with RMAX if RS<=Lc and RS>=0 or Replace RS with Lc if RS<0

RS*1000*DF/((C1+C2*(1-e to the power of ((-natural log 2)/64.2*DT)))*SS*DDF*REC*2220000)

NOTE: 64.2 = Half Life for Y-90 and Rec. = Fractional Carrier Recovery ((W2-W1) / (CVA * 0.1000))

Relative Counting Error = The Square Root of ((TC + BKG * CT) / (TC - BKG * CT)*1.96)

Percent Carrier Recovery = (Net Weight / Expected weight) * 100

NOTE: Expected weight = CVA * 0.1

Detection Levels and Less Than Values are determined from Procedure LA-508-002.

Delta Time (hours) = ((DOC - SD) * 24) + (TOC - ST) / 100

Sr-89/90 CONCENTRATION	3.82E+01	µCi/g	DETECTION LEVEL
RELATIVE COUNTING ERROR	0.7%		1.74E-02 µCi/g
PERCENT CARRIER RECOVERY	86.8%		

Analyst:	DPB	Date:	07-May-96
Signature of Chemist:	JLS	Date:	5/13/96

SAMPLE.WB1 REV 1.2 22010NML

WORKBOOK PAGE: DUP7

LA-220-101 / D-1 Sr-89/90 : LA-220-101 (D-1), 102 (E-3), 104 (D-1)

							DUP
Type	DETECTOR NUMBER		12	CARRIER ADDED in mL	(CVA)	1.000
DUP	TOTAL COUNTS	(TC)	81942	GROSS WEIGHT	(W2)	7.0893
Work List	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1)	7.0025
8180	BACKGROUND in cpm	(BKG)	8.3	NET WEIGHT	(W3)	0.0868
Test Code	SAMPLE VOLUME in mL	(SS)	0.100	DELTA TIME (HOURS)	(DT)	17.97
@SR90-01	DILUTION FACTOR	(DF)	1			
Matrix	DIGEST FACTOR (g/L)	(D g/L	2.1512			
SOLID	SAMPLE COUNT RATE	(Rs)	8185.90	SR-90 EFFICIENCY FACTOR	(C1)	0.4180
Batch Number	CRITICAL LEVEL	(Lc)	1.74	Y-90 EFFICIENCY FACTOR	(C2)	0.4660
96004032	TIME OF SEPARATION	(ST)	14:30	Rmax		N/A
Rerun	DATE OF SEPARATION	(SD)	05/03/96	DETECTION LIMIT	(Ld)	3.56
0	TIME OF COUNT	(TOC)	08:28	Sr-89/90 CONC in µCi/g		3.9482E+01
Sample Prep	DATE OF COUNT	(DOC)	05/04/96			
FUSION01						
Sample #						
S96T001584						
Instrument Code	Sample Count Rate (Rs) = (Total Counts (TC) / Count Time (CT)) - Background in cpm (BKG)					
WB27811	Sr-89/90 CONC in µCi/g Replace RS with RMAX if RS<=Lc and RS>=0 or Replace RS with Lc if RS<0					
Prepared By	RS*1000*DF/((C1+C2*(1-e to the power of ((-natural log 2)/64.2*DT)))*SS*DDF*REC*2220000)					
MCB	NOTE: 64.2 = Half Life for Y-90 and Rec. = Fractional Carrier Recovery ((W2-W1) / (CVA * 0.1000))					
Chemist	Relative Counting Error = The Square Root of ((TC + BKG * CT) / (TC - BKG * CT)*1.96)					
JLS	Percent Carrier Recovery = (Net Weight / Expected weight) * 100					
Analyst	NOTE: Expected weight = CVA * 0.1					
DPB	Detection Levels and Less Than Values are determined from Procedure LA-508-002.					
Date Complete	Delta Time (hours) = ((DOC - SD) * 24) + (TOC - ST) / 100					
05/07/96						
Analysis Date						DETECTION LEVEL
05/03/96	Sr-89/90 CONCENTRATION		3.95E+01		µCi/g	
Analysis Time						
02:30 PM	RELATIVE COUNTING ERROR		0.7%			1.72E-02 µCi/g
Sample Point						
S-102	PERCENT CARRIER RECOVERY		86.8%			

Analyst:		DPB	Date:	07-May-96
Signature of Chemist:		JLS	Date:	5/13/96

SAMPLE.WB1 REV 1.2 22010NML

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WORKBOOK PAGE: SAM8

LA-220-101 / D-1 Sr-89/90 : LA-220-101 (D-1), 102 (E-3), 104 (D-1)

							SAMPLE
Type	DETECTOR NUMBER		12	CARRIER ADDED in mL	(CVA)	1.000
SAMPLE	TOTAL COUNTS	(TC)	72158	GROSS WEIGHT	(W2)	7.1705
Work List	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1)	7.0850
8180	BACKGROUND in cpm	(BKG)	8.3	NET WEIGHT	(W3)	0.0855
Test Code	SAMPLE VOLUME in mL	(SS)	0.100	DELTA TIME (HOURS)	(DT)	19.08
@SR90-01	DILUTION FACTOR	(DF)	1			
Matrix	DIGEST FACTOR (g/L)	(D g/L	1.8748			
SOLID	SAMPLE COUNT RATE	(Rs)	7207.50	SR-90 EFFICIENCY FACTOR	(C1)	0.4180
Batch Number	CRITICAL LEVEL	(Lc)	1.74	Y-90 EFFICIENCY FACTOR	(C2)	0.4660
96004032	TIME OF SEPARATION	(ST)	14:30	Rmax		N/A
Rerun	DATE OF SEPARATION	(SD)	05/03/96	DETECTION LIMIT	(Ld)	3.56
0	TIME OF COUNT	(TOC)	09:35	Sr-89/90 CONC in µCi/g		4.0125E+01
Sample Prep	DATE OF COUNT	(DOC)	05/04/96			
FUSION01						
Sample #						
S96T001585						
Instrument Code	Sample Count Rate (Rs) = (Total Counts (TC) / Count Time (CT)) - Background in cpm (BKG)					
WB27811	Sr-89/90 CONC in µCi/g Replace RS with RMAX if RS<=Lc and RS>=0 or Replace RS with Lc if RS<0					
Prepared By	RS*1000*DF/((C1+C2*(1-e to the power of ((-natural log 2)/64.2*DT)))*SS*DDF*REC*2220000)					
MCB	NOTE: 64.2 = Half Life for Y-90 and Rec. = Fractional Carrier Recovery ((W2-W1) / (CVA * 0.1000))					
Chemist	Relative Counting Error = The Square Root of ((TC + BKG * CT) / (TC - BKG * CT)*1.96)					
JLS	Percent Carrier Recovery = (Net Weight / Expected weight) * 100					
Analyst	NOTE: Expected weight = CVA * 0.1					
DPB	Detection Levels and Less Than Values are determined from Procedure LA-508-002.					
Date Complete	Delta Time (hours) = ((DOC - SD) * 24) + (TOC - ST) / 100					
05/07/96						
Analysis Date						DETECTION LEVEL
05/03/96	Sr-89/90 CONCENTRATION		4.01E+01	µCi/g		
Analysis Time						
02:30 PM	RELATIVE COUNTING ERROR		0.7%			1.98E-02 µCi/g
Sample Point						
S-102	PERCENT CARRIER RECOVERY		85.5%			

Analyst:	DPB	Date:	07-May-96
Signature of Chemist:	JLS	Date:	5/13/96

SAMPLE.WB1 REV 1.2 22010NML

2153

7.0808

LA-220-101 / D-1 Sr-89/90 : LA-220-101 (D-1), 102 (E-3), 104 (D-1)

							DUP
Type	DETECTOR NUMBER		12	CARRIER ADDED in mL	(CVA)		1.000
DUP	TOTAL COUNTS	(TC)	68129	GROSS WEIGHT	(W2)		7.0808
Work List	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1)		6.9961
8180	BACKGROUND in cpm	(BKG)	8.3	NET WEIGHT	(W3)		0.0847
Test Code	SAMPLE VOLUME in mL	(SS)	0.100	DELTA TIME (HOURS)	(DT)		19.25
@SR90-01	DILUTION FACTOR	(DF)	1				
Matrix	DIGEST FACTOR (g/L)	(D g/L	1.8196				
SOLID	SAMPLE COUNT RATE	(Rs)	6804.60	SR-90 EFFICIENCY FACTOR	(C1)		0.4180
Batch Number	CRITICAL LEVEL	(Lc)	1.74	Y-90 EFFICIENCY FACTOR	(C2)		0.4660
96004032	TIME OF SEPARATION	(ST)	14:30	Rmax			N/A
Rerun	DATE OF SEPARATION	(SD)	05/03/96	DETECTION LIMIT	(Ld)		3.56
0	TIME OF COUNT	(TOC)	09:45	Sr-89/90 CONC in µCi/g			3.9347E+01
Sample Prep	DATE OF COUNT	(DOC)	05/04/96				
FUSION01							
Sample #							
S96T001585							
Instrument Code	Sample Count Rate (Rs) = (Total Counts (TC) / Count Time (CT)) - Background in cpm (BKG)						
WB27811	Sr-89/90 CONC in µCi/g Replace RS with RMAX if RS<=Lc and RS>=0 or Replace RS with Lc if RS<0						
Prepared By	RS*1000*DF/((C1+C2*(1-e to the power of ((-natural log 2)/64.2*DT)))*SS*DDF*REC*2220000)						
MCB	NOTE: 64.2 = Half Life for Y-90 and Rec. = Fractional Carrier Recovery ((W2-W1) / (CVA * 0.1000))						
Chemist	Relative Counting Error = The Square Root of ((TC + BKG * CT) / (TC - BKG * CT)*1.96)						
JLS	Percent Carrier Recovery = (Net Weight / Expected weight) * 100						
Analyst	NOTE: Expected weight = CVA * 0.1						
DPB	Detection Levels and Less Than Values are determined from Procedure LA-508-002.						
Date Complete	Delta Time (hours) = ((DOC - SD) * 24) + (TOC - ST) / 100						
05/07/96							
Analysis Date							DETECTION LEVEL
05/03/96	Sr-89/90 CONCENTRATION		3.93E+01		µCi/g		
Analysis Time							
02:30 PM	RELATIVE COUNTING ERROR		0.8%				2.06E-02 µCi/g
Sample Point							
S-102	PERCENT CARRIER RECOVERY		84.7%				

Analyst:		DPB	Date:	07-May-96
Signature of Chemist:		JLS	Date:	5/13/96

SAMPLE.WB1 REV 1.2 22010NML

LABCORE Data Entry Template for Worklist# 9538

Analyst: KNT **Instrument:** AB00 10 **Book#** 9856

Method: LA-220-101 Rev/Mod D-1

Worklist Comment: S102. Determine sample size using ludlum. new

S	Type	Sample#	R	A	Test	Matrix	Group#	Project
1	STD				@SR90-01	SOLID		
2	BLNK-PREP				@SR90-01	SOLID		
3	BLNK/BKG				@SR90-01	SOLID		
4	SAMPLE	S96T000870	0	F	@SR90-01	SOLID	96000030	S102
	Analytes Requested: SR90-01 , SR90-01C, SR90-01E							
5	DUP	S96T000870	0	F	@SR90-01	SOLID		
6	SAMPLE	S96T000871	0	F	@SR90-01	SOLID	96000030	S102
	Analytes Requested: SR90-01 , SR90-01C, SR90-01E							
7	DUP	S96T000871	0	F	@SR90-01	SOLID		

Final page for worklist # 9538

Kim Thomas 6-5-96
Analyst Signature **Date**

Sue E. Hogan 6/5/96
Analyst Signature **Date**
Sharon Hale 6-6-96

Data Entry Comments:

S = Worklist Slot Number, R = Replicate Number, A = Aliquot Code

LABCORE Completed RadChem Report for Worklist#: 9538

Analyst: knt **Instrument:** AB10 **Book#** 9856

Method: LA-920-101 Rev/Mod D-1

Worklist Comment: S102. Determine sample size using ludlum. new

Seq	Type	Sample#	R	A	Test		Matrix	Actual	Found	DL or Yield	Unit
1	STD		0		@SR90-01	SR90-01	SOLID	1.23E-03	1.26E-3	102.439	% Recovery
1	STD		0		@SR90-01	SR90-01C	SOLID	100	8.97E+01	89.700	% Recovery
1	STD		0		@SR90-01	SR90-01E	SOLID	1.00	1.89E+00	1.890	% Ct. Erro
2	BLNK-PREP		0		@SR90-01	SR90-01	SOLID	1	1.78E-1	0.178	uCi/g
2	BLNK-PREP		0		@SR90-01	SR90-01C	SOLID	100	9.02E+01	90.200	% Recovery
2	BLNK-PREP		0		@SR90-01	SR90-01E	SOLID	1.00	1.65E+01	16.500	uCi/g
3	BLNK/BKG		0		@SR90-01	SR90-01	SOLID	1	3.53E+00	3.530	BLNK/BKG
4	SAMPLE	S96T000870	0	F	@SR90-01	SR90-01	SOLID	N/A	5.83E+00	269.0e-004	uCi/g
4	SAMPLE	S96T000870	0	F	@SR90-01	SR90-01C	SOLID	N/A	9.15E+01	0.0e+000	% Recovery
4	SAMPLE	S96T000870	0	F	@SR90-01	SR90-01E	SOLID	N/A	2.16E+00	0.0e+000	% Ct. Error
5	DUP	S96T000870	0	F	@SR90-01	SR90-01	SOLID	5.83E+0	6.05E+0	3.704	RPD
5	DUP	S96T000870	0	F	@SR90-01	SR90-01C	SOLID	100	8.87E+01	88.700	% Recovery
5	DUP	S96T000870	0	F	@SR90-01	SR90-01E	SOLID	1.00	2.05E+00	2.050	% Cnt Err
6	SAMPLE	S96T000871	0	F	@SR90-01	SR90-01	SOLID	N/A	3.81E+00	236.0e-004	uCi/g
6	SAMPLE	S96T000871	0	F	@SR90-01	SR90-01C	SOLID	N/A	8.97E+01	0.0e+000	% Recovery
6	SAMPLE	S96T000871	0	F	@SR90-01	SR90-01E	SOLID	N/A	2.51E+00	0.0e+000	% Ct. Error
7	DUP	S96T000871	0	F	@SR90-01	SR90-01	SOLID	3.81E+0	3.77E+0	1.055	RPD
7	DUP	S96T000871	0	F	@SR90-01	SR90-01C	SOLID	100	9.01E+01	90.100	% Recovery
7	DUP	S96T000871	0	F	@SR90-01	SR90-01E	SOLID	1.00	2.48E+00	2.480	% Cnt Err

Final page for worklist# 9538

Analyst Signature Date

Analyst Signature Date

Reviewer Signature Date 6/6/96

Units shown for QC (BLK/BKG) may not reflect the actual units.

WORKBOOK PAGE: STD1

Sr-89/90 : LA-220-101 (D-1), 102 (E-3), 104 (D-1) LIQUIDS

						STANDARD
	DETECTOR NUMBER		10	CARRIER ADDED in mL	(CVA)	1.000
STD	TOTAL COUNTS	(TC)	11085	GROSS WEIGHT	(W2)	7.2793
	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1)	7.1896
9538	BACKGROUND in cpm	(BKG)	10.0	NET WEIGHT	(W3)	0.0897
	SAMPLE VOLUME in mL	(SS)	1.000	DELTA TIME (HOURS)	(DT)	7.28
@SR90-01	DILUTION FACTOR	(DF)	1			
	DIGEST DILUTION FACTOR	DDF	1			
LIQUID	SAMPLE COUNT RATE	(Rs)	1098.50	SR-90 EFFICIENCY FACTO	(C1)	0.4051
	CRITICAL LEVEL	(Lc)	1.91	Y-90 EFFICIENCY FACTOR	(C2)	0.4503
96005712	TIME OF SEPARATION	(ST)	11:05	Rmax		N/A
	DATE OF SEPARATION	(SD)	06/05/96	DETECTION LIMIT	(Ld)	3.90
0	TIME OF COUNT	(TOC)	18:22	Sr-89/90 CONC. in µCi/L		1.2561E+00
	DATE OF COUNT	(DOC)	06/05/96			
N/A	STANDARD BOOK #		9B56			
	STANDARD VALUE in µCi/mL		1.2252E-03			

WL9538

WB26870

SEH

JLS

KNT

06/06/96

06/05/96

11:05 AM

S102

Sample Count Rate (Rs) = (Total Counts (TC) / Count Time (CT)) - Background in cpm (BKG)

Sr-89/90 CONC in µCi/mL REPLACE RS WITH RMAX IF RS<=LcAND RS>=0 OR REPLACE RS WITH Lc IF RS<0

RS*DF*DDF*1000/((C1+C2*(1-e to the power of ((-natural log 2)/64.2*DT)))*SS*REC*2220000)

NOTE: 64.2 = Half Life for Y-90 and Rec. = Fractional Carrier Recovery ((W2-W1) / (CVA * 0.1000))

Relative Counting Error = The Square Root of ((TC + BKG * CT) / (TC - BKG * CT)*1.96)

Percent Carrier Recovery = (Net Weight / Expected weight) * 100

NOTE: Expected weight = CVA * 0.1

Detection Levels and Less Than Values are determined from Procedure LA-508-002.

Delta Time (hours) = ((DOC - SD) * 24) + (TOC - ST) / 100

Sr-89/90 CONCENTRATION	1.26E-03	µCi/mL	DETECTION LEVEL
RELATIVE COUNTING ERROR	1.9%		4.46E-06 µCi/L
PERCENT CARRIER RECOVERY	89.7%		

Analyst:	KNT	Date:	06-Jun-96
Signature of Chemist:	JLS	Date:	6/6/96

STANDARD.WB1 REV 1.2 22010NML

2157

WORKBOOK PAGE: BLANK2

LA-220-101 / D-1 Sr-89/90 : LA-220-101 (D-1), 102 (E-3), 104 (D-1)

							BLNK-PREP
	DETECTOR NUMBER		10	CARRIER ADDED in mL	(CVA)		1.000
BLNK-PREP	TOTAL COUNTS	(TC)	353	GROSS WEIGHT	(W2)		7.2566
	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1)		7.1664
9538	BACKGROUND in cpm	(BKG)	10.0	NET WEIGHT	(W3)		0.0902
	SAMPLE VOLUME in mL	(SS)	0.100	DELTA TIME (HOURS)	(DT)		7.50
@SR90-01	DILUTION FACTOR	(DF)	1				
	DIGEST FACTOR (g/L)	(D g/L	1.6156				
SOLID	SAMPLE COUNT RATE	(Rs)	25.30	SR-90 EFFICIENCY FACTOR	(C1)		0.4051
	CRITICAL LEVEL	(Lc)	1.91	Y-90 EFFICIENCY FACTOR	(C2)		0.4503
96005712	TIME OF SEPARATION	(ST)	11:05	Rmax			N/A
	DATE OF SEPARATION	(SD)	06/05/96	DETECTION LIMIT	(Ld)		3.90
0	TIME OF COUNT	(TOC)	18:35	Sr-89/90 CONC in µCi/g			1.7768E-01
	DATE OF COUNT	(DOC)	06/05/96				

Sample Prep	
N/A	
Sample #	
WL9538	
Instrument Code	Sample Count Rate (Rs) = (Total Counts (TC) / Count Time (CT)) - Background in cpm (BKG)
WB26870	Sr-89/90 CONC in µCi/g Replace RS with RMAX if RS<=Lc and RS>=0 or Replace RS with Lc if RS<0
Prepared By	RS*1000*DF/((C1+C2*(1-e to the power of ((-natural log 2)/64.2*DT)))*SS*DDF*REC*2220000)
SEH	NOTE: 64.2 = Half Life for Y-90 and Rec. = Fractional Carrier Recovery ((W2-W1) / (CVA * 0.1000))
Chemist	Relative Counting Error = The Square Root of ((TC + BKG * CT) / (TC - BKG * CT)*1.96)
JLS	Percent Carrier Recovery = (Net Weight / Expected weight) * 100
Analyst	NOTE: Expected weight = CVA * 0.1
KNT	Detection Levels and Less Than Values are determined from Procedure LA-508-002.
Date Complete	Delta Time (hours) = ((DOC - SD) * 24) + (TOC - ST) / 100
06/06/96	

Analysis Date				DETECTION LEVEL
06/05/96	Sr-89/90 CONCENTRATION	1.78E-01	µCi/g	
Analysis Time				
11:05 AM	RELATIVE COUNTING ERROR	16.5%		2.74E-02 µCi/g
Sample Point				
S102	PERCENT CARRIER RECOVERY	90.2%		

Analyst:	KNT	Date:	06-Jun-96
Signature of Chemist:	JLS	Date:	6/6/96

BLANK.WB1 REV 1.2 22010NML

WORKBOOK PAGE: SAM4

LA-220-101 / D-1 Sr-89/90 : LA-220-101 (D-1), 102 (E-3), 104 (D-1)

							SAMPLE
	DETECTOR NUMBER		10	CARRIER ADDED in mL	(CVA)		1.000
SAMPLE	TOTAL COUNTS	(TC)	8538	GROSS WEIGHT	(W2)		7.3228
	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1)		7.2313
9538	BACKGROUND in cpm	(BKG)	10.0	NET WEIGHT	(W3)		0.0915
	SAMPLE VOLUME in mL	(SS)	0.100	DELTA TIME (HOURS)	(DT)		7.75
@SR90-01	DILUTION FACTOR	(DF)	1				
	DIGEST FACTOR (g/L)	(D g/L	1.6156				
SOLID	SAMPLE COUNT RATE	(Rs)	843.80	SR-90 EFFICIENCY FACTOR	(C1)		0.4051
	CRITICAL LEVEL	(Lc)	1.91	Y-90 EFFICIENCY FACTOR	(C2)		0.4503
96005712	TIME OF SEPARATION	(ST)	11:05	Rmax			N/A
	DATE OF SEPARATION	(SD)	06/05/96	DETECTION LIMIT	(Ld)		3.90
0	TIME OF COUNT	(TOC)	18:50	Sr-89/90 CONC in µCi/g			5.8271E+00
	DATE OF COUNT	(DOC)	06/05/96				

Sample Prep	
FUSION01	
Sample #	
S96T000870	
Instrument Code	Sample Count Rate (Rs) = (Total Counts (TC) / Count Time (CT)) - Background in cpm (BKG)
WB26870	Sr-89/90 CONC in µCi/g Replace RS with RMAX if RS<=Lc and RS>=0 or Replace RS with Lc if RS<0
Prepared By	RS*1000*DF/((C1+C2*(1-e to the power of ((-natural log 2)/64.2*DT)))*SS*DDF*REC*2220000)
SEH	NOTE: 64.2 = Half Life for Y-90 and Rec. = Fractional Carrier Recovery ((W2-W1) / (CVA * 0.1000))
Chemist	Relative Counting Error = The Square Root of ((TC + BKG * CT) / (TC - BKG * CT)*1.96)
JLS	Percent Carrier Recovery = (Net Weight / Expected weight) * 100
Analyst	NOTE: Expected weight = CVA * 0.1
KNT	Detection Levels and Less Than Values are determined from Procedure LA-508-002.
Date Complete	Delta Time (hours) = ((DOC - SD) * 24) + (TOC - ST) / 100
06/06/96	
Analysis Date	
06/05/96	
Analysis Time	
11:05 AM	
Sample Point	
S102	

Sr-89/90 CONCENTRATION	5.83E+00	µCi/g	DETECTION LEVEL
RELATIVE COUNTING ERROR	2.2%		2.69E-02 µCi/g
PERCENT CARRIER RECOVERY	91.5%		

Analyst:	KNT	Date:	06-Jun-96
Signature of Chemist:	JLS	Date:	6/6/96

SAMPLE.WB1 REV 1.2 22010NML

WORKBOOK PAGE: DUP5

LA-220-101 / D-1 Sr-89/90 : LA-220-101 (D-1), 102 (E-3), 104 (D-1)

							DUP
	DETECTOR NUMBER		10	CARRIER ADDED in mL	(CVA)		1.000
DUP	TOTAL COUNTS	(TC)	9457	GROSS WEIGHT	(W2)		7.2940
	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1)		7.2053
9538	BACKGROUND in cpm	(BKG)	10.0	NET WEIGHT	(W3)		0.0887
	SAMPLE VOLUME in mL	(SS)	0.100	DELTA TIME (HOURS)	(DT)		7.92
@SR90-01	DILUTION FACTOR	(DF)	1				
	DIGEST FACTOR (g/L)	(D g/L	1.7784				
SOLID	SAMPLE COUNT RATE	(Rs)	935.70	SR-90 EFFICIENCY FACTOR	(C1)		0.4051
	CRITICAL LEVEL	(Lc)	1.91	Y-90 EFFICIENCY FACTOR	(C2)		0.4503
96005712	TIME OF SEPARATION	(ST)	11:05	Rmax			N/A
	DATE OF SEPARATION	(SD)	06/05/96	DETECTION LIMIT	(Ld)		3.90
0	TIME OF COUNT	(TOC)	19:00	Sr-89/90 CONC in µCi/g			6.0453E+00
	DATE OF COUNT	(DOC)	06/05/96				

FUSION01
Sample #
S96T000870
Instrument Code
WB26870
Prepared By
SEH
Chemist
JLS
Analyst
KNT
Date Completed
06/06/96
Analysis Date
06/05/96
Analysis Time
11:05 AM
Sample Point
S102

Sample Count Rate (Rs) = (Total Counts (TC) / Count Time (CT)) - Background in cpm (BKG)

Sr-89/90 CONC in µCi/g Replace RS with RMAX if RS<=Lc and RS>=0 or Replace RS with Lc if RS<0

RS*1000*DF/((C1+C2*(1-e to the power of ((-natural log 2)/64.2*DT)))*SS*DDF*REC*2220000)

NOTE: 64.2 = Half Life for Y-90 and Rec. = Fractional Carrier Recovery ((W2-W1) / (CVA * 0.1000))

Relative Counting Error = The Square Root of ((TC + BKG * CT) / (TC - BKG * CT)*1.96)

Percent Carrier Recovery = (Net Weight / Expected weight) * 100

NOTE: Expected weight = CVA * 0.1

Detection Levels and Less Than Values are determined from Procedure LA-508-002.

Delta Time (hours) = ((DOC - SD) * 24) + (TOC - ST) / 100

			DETECTION LEVEL
Sr-89/90 CONCENTRATION	6.05E+00	µCi/g	2.52E-02 µCi/g
RELATIVE COUNTING ERROR	2.0%		
PERCENT CARRIER RECOVERY	88.7%		

Analyst:	KNT	Date:	06-Jun-96
Signature of Chemist:	JLS	Date:	6/6/96

SAMPLE.WB1 REV 1.2 22010NML

2160

WORKBOOK PAGE: SAM6

LA-220-101 / D-1 Sr-89/90 : LA-220-101 (D-1), 102 (E-3), 104 (D-1)

							SAMPLE
	DETECTOR NUMBER		10	CARRIER ADDED in mL	(CVA)		1.000
SAMPLE	TOTAL COUNTS	(TC)	6388	GROSS WEIGHT	(W2)		7.3237
	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1)		7.2340
9538	BACKGROUND in cpm	(BKG)	10.0	NET WEIGHT	(W3)		0.0897
	SAMPLE VOLUME in mL	(SS)	0.100	DELTA TIME (HOURS)	(DT)		8.17
@SR90-01	DILUTION FACTOR	(DF)	1				
	DIGEST FACTOR (g/L)	(D g/L	1.8708				
SOLID	SAMPLE COUNT RATE	(Rs)	628.60	SR-90 EFFICIENCY FACTOR	(C1)		0.4051
	CRITICAL LEVEL	(Lc)	1.91	Y-90 EFFICIENCY FACTOR	(C2)		0.4503
96005712	TIME OF SEPARATION	(ST)	11:05	Rmax			N/A
	DATE OF SEPARATION	(SD)	06/05/96	DETECTION LIMIT	(Ld)		3.90
0	TIME OF COUNT	(TOC)	19:15	Sr-89/90 CONC in µCi/g			3.8080E+00
	DATE OF COUNT	(DOC)	06/05/96				

FUSION01

S96T000871

WB26870

SEH

JLS

KNT

06/06/96

06/05/96

11:05 AM

S102

Sample Count Rate (Rs) = (Total Counts (TC) / Count Time (CT)) - Background in cpm (BKG)

Sr-89/90 CONC in µCi/g Replace RS with RMAX if RS<=Lc and RS>=0 or Replace RS with Lc if RS<0

RS*1000*DF/((C1+C2*(1-e to the power of ((-natural log 2)/64.2*DT)))*SS*DDF*REC*2220000)

NOTE: 64.2 = Half Life for Y-90 and Rec. = Fractional Carrier Recovery ((W2-W1) / (CVA * 0.1000))

Relative Counting Error = The Square Root of ((TC + BKG * CT) / (TC - BKG * CT)*1.96)

Percent Carrier Recovery = (Net Weight / Expected weight) * 100

NOTE: Expected weight = CVA * 0.1

Detection Levels and Less Than Values are determined from Procedure LA-508-002.

Delta Time (hours) = ((DOC - SD) * 24) + (TOC - ST) / 100

Sr-89/90 CONCENTRATION	3.81E+00	µCi/g	DETECTION LEVEL
RELATIVE COUNTING ERROR	2.5%		2.36E-02 µCi/g
PERCENT CARRIER RECOVERY	89.7%		

Analyst:	KNT	Date:	06-Jun-96
Signature of Chemist:	JLS	Date:	6/6/96

SAMPLE.WB1 REV 1.2 22010NML

2161

WORKBOOK PAGE: DUP7

LA-220-101 / D-1 **Sr-89/90 : LA-220-101 (D-1), 102 (E-3), 104 (D-1)**

							DUP
	DETECTOR NUMBER		10	CARRIER ADDED in mL	(CVA)		1.000
DUP	TOTAL COUNTS	(TC)	6519	GROSS WEIGHT	(W2)		7.3020
	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1)		7.2119
9538	BACKGROUND in cpm	(BKG)	10.0	NET WEIGHT	(W3)		0.0901
	SAMPLE VOLUME in mL	(SS)	0.100	DELTA TIME (HOURS)	(DT)		8.33
@SR90-01	DILUTION FACTOR	(DF)	1				
	DIGEST FACTOR (g/L)	(D g/L	1.916				
SOLID	SAMPLE COUNT RATE	(Rs)	641.90	SR-90 EFFICIENCY FACTOR	(C1)		0.4051
	CRITICAL LEVEL	(Lc)	1.91	Y-90 EFFICIENCY FACTOR	(C2)		0.4503
96005712	TIME OF SEPARATION	(ST)	11:05	Rmax			N/A
	DATE OF SEPARATION	(SD)	06/05/96	DETECTION LIMIT	(Ld)		3.90
0	TIME OF COUNT	(TOC)	19:25	Sr-89/90 CONC in µCi/g			3.7737E+00
	DATE OF COUNT	(DOC)	06/05/96				
FUSION01							
S96T000871							

Instrument Code	Sample Count Rate (Rs) = (Total Counts (TC) / Count Time (CT)) - Background in cpm (BKG)
WB26870	Sr-89/90 CONC in µCi/g Replace RS with RMAX if RS<=Lc and RS>=0 or Replace RS with Lc if RS<0
Prepared By	RS*1000*DF/((C1+C2*(1-e to the power of ((-natural log 2)/64.2*DT)))*SS*DDF*REC*2220000)
SEH	NOTE: 64.2 = Half Life for Y-90 and Rec. = Fractional Carrier Recovery ((W2-W1) / (CVA * 0.1000))
Chemist	Relative Counting Error = The Square Root of ((TC + BKG * CT) / (TC - BKG * CT)*1.96)
JLS	Percent Carrier Recovery = (Net Weight / Expected weight) * 100
Analyst	NOTE: Expected weight = CVA * 0.1
KNT	Detection Levels and Less Than Values are determined from Procedure LA-508-002.
Date Complete	Delta Time (hours) = ((DOC - SD) * 24) + (TOC - ST) / 100
06/06/96	

Analysis Date				DETECTION LEVEL
06/05/96	Sr-89/90 CONCENTRATION	3.77E+00	µCi/g	
Analysis Time				
11:05 AM	RELATIVE COUNTING ERROR	2.5%		2.29E-02 µCi/g
Sample Point				
S102	PERCENT CARRIER RECOVERY	90.1%		

Analyst:	KNT	Date:	06-Jun-96
Signature of Chemist:	JLS	Date:	6/6/96

SAMPLE.WB1 REV 1.2 22010NML

2162

LABCORE Data Entry Template for Worklist# 9539

Analyst: KNT **Instrument:** AB00 12 **Book#** 9B56

Method: LA-220-101 Rev/Mod 0-1

Worklist Comment: S102. Determine sample size using ludlum. new

S	Type	Sample#	R	A	Test	Matrix	Group#	Project
1	STD				@SR90-01	SOLID		
2	BLNK-PREP				@SR90-01	SOLID		
3	BLNK/BKG				@SR90-01	SOLID		
4	SAMPLE	S96T000874	0	F	@SR90-01	SOLID	96000030	S102
	Analytes Requested: SR90-01 , SR90-01C, SR90-01E							
5	DUP	S96T000874	0	F	@SR90-01	SOLID		
6	SAMPLE	S96T000875	0	F	@SR90-01	SOLID	96000030	S102
	Analytes Requested: SR90-01 , SR90-01C, SR90-01E							
7	DUP	S96T000875	0	F	@SR90-01	SOLID		

Final page for worklist # 9539

Kim Thomas 6-5-96
Analyst Signature **Date**

Shyuan L Walker 6-6-96
Analyst Signature **Date**

Sue E. Hogan 6/6/96

Data Entry Comments:

S = Worklist Slot Number, R = Replicate Number, A = Aliquot Code.

LABCORE Completed RadChem Report for Worklist#: 9539

Analyst: knt **Instrument:** AB12 **Book#** 9854

Method: LA-220-101 Rev/Mod D-1

Worklist Comment: S102. Determine sample size using ludlum. new

Seq	Type	Sample#	R	A	Test	Matrix	Actual	Found	DL or Yield	Unit
1	STD		0		@SR90-01 SR90-01	SOLID	1.23E-03	1.23E-3	100.000	% Recovery
1	STD		0		@SR90-01 SR90-01C	SOLID	100	8.86E+01	88.600	% Recovery
1	STD		0		@SR90-01 SR90-01E	SOLID	1.00	1.87E+00	1.870	% Ct. Erro
2	BLNK-PREP		0		@SR90-01 SR90-01	SOLID	1	9.84E-3	98.400e-004	uCi/g
2	BLNK-PREP		0		@SR90-01 SR90-01C	SOLID	100	8.93E+01	89.300	% Recovery
2	BLNK-PREP		0		@SR90-01 SR90-01E	SOLID	1.00	6.20E+01	62.000	uCi/g
3	BLNK/BKG		0		@SR90-01 SR90-01	SOLID	1	3.00E+00	3.000	BLNK/BKG
4	SAMPLE	S96T000874	0	F	@SR90-01 SR90-01	SOLID	N/A	5.81E+01	639.0e-005	uCi/g
4	SAMPLE	S96T000874	0	F	@SR90-01 SR90-01C	SOLID	N/A	8.89E+01	0.0e+000	% Recovery
4	SAMPLE	S96T000874	0	F	@SR90-01 SR90-01E	SOLID	N/A	5.71E-01	0.0e+000	% Ct. Error
5	DUP	S96T000874	0	F	@SR90-01 SR90-01	SOLID	5.81E+1	5.92E+1	1.876	RPD
5	DUP	S96T000874	0	F	@SR90-01 SR90-01C	SOLID	100	8.92E+01	89.200	% Recovery
5	DUP	S96T000874	0	F	@SR90-01 SR90-01E	SOLID	1.00	5.71E-01	0.571	% Cnt Err
6	SAMPLE	S96T000875	0	F	@SR90-01 SR90-01	SOLID	N/A	2.62E+01	671.0e-005	uCi/g
6	SAMPLE	S96T000875	0	F	@SR90-01 SR90-01C	SOLID	N/A	9.00E+01	0.0e+000	% Recovery
6	SAMPLE	S96T000875	0	F	@SR90-01 SR90-01E	SOLID	N/A	8.71E-01	0.0e+000	% Ct. Error
7	DUP	S96T000875	0	F	@SR90-01 SR90-01	SOLID	2.62E+1	2.75E+1	4.842	RPD
7	DUP	S96T000875	0	F	@SR90-01 SR90-01C	SOLID	100	8.87E+01	88.700	% Recovery
7	DUP	S96T000875	0	F	@SR90-01 SR90-01E	SOLID	1.00	8.82E-01	0.882	% Cnt Err

Final page for worklist# 9539

Analyst Signature **Date**

Analyst Signature **Date**

Reviewer Signature **Date** 6/6/96

Units shown for QC (BLK/BKG) may not reflect the actual units.

WORKBOOK PAGE: STD1

WHC-SD-WM-DP-173, REV. 1

Sr-89/90 : LA-220-101 (D-1), 102 (E-3), 104 (D-1) LIQUIDS

Type	DETECTOR NUMBER		12	CARRIER ADDED in mL	(CVA)	STANDARD 1.000
STD	TOTAL COUNTS	(TC)	10999	GROSS WEIGHT	(W2)	7.1852
Work list	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1)	7.0966
9539	BACKGROUND in cpm	(BKG)	1.0	NET WEIGHT	(W3)	0.0886
Test Code	SAMPLE VOLUME in mL	(SS)	1.000	DELTA TIME (HOURS)	(DT)	7.28
@SR90-01	DILUTION FACTOR	(DF)	1			
Matrix	DIGEST DILUTION FACTOR	DDF	1			
LIQUID	SAMPLE COUNT RATE	(Rs)	1098.90	SR-90 EFFICIENCY FACTO	(C1)	0.4180
Batch Number	CRITICAL LEVEL	(Lc)	0.60	Y-90 EFFICIENCY FACTOR	(C2)	0.4660
96005713	TIME OF SEPARATION	(ST)	11:05	Rmax		N/A
Rerun #	DATE OF SEPARATION	(SD)	06/05/96	DETECTION LIMIT	(Ld)	1.30
0	TIME OF COUNT	(TOC)	18:22	Sr-89/90 CONC. in µCi/L		1.2327E+00
Sample/Aliq #	DATE OF COUNT	(DOC)	06/05/96			
N/A	STANDARD BOOK #		9B56			
Sample #	STANDARD VALUE in µCi/mL		1.2252E-03			
WL9539						
Instrument Code						
WB27811						
Entered By						
SLH2						
Chemist						
JLS						
Analyst						
KNT						
Date Complete						
06/06/96						
Analysis Date						
06/05/96						
Analysis Time						
11:05 AM						
Sample Point						
S102						

Sample Count Rate (Rs) = (Total Counts (TC) / Count Time (CT)) - Background in cpm (BKG)

Sr-89/90 CONC in µCi/mL REPLACE RS WITH RMAX IF RS<=LcAND RS>=0 OR REPLACE RS WITH Lc IF RS<0

RS*DF*DDF*1000/((C1+C2*(1-e to the power of ((-natural log 2)/64.2*DT)))*SS*REC*2220000)

NOTE: 64.2 = Half Life for Y-90 and Rec. = Fractional Carrier Recovery ((W2-W1) / (CVA * 0.1000))

Relative Counting Error = The Square Root of ((TC + BKG * CT) / (TC - BKG * CT)*1.96)

Percent Carrier Recovery = (Net Weight / Expected weight) * 100

NOTE: Expected weight = CVA * 0.1

Detection Levels and Less Than Values are determined from Procedure LA-508-002.

Delta Time (hours) = ((DOC - SD) * 24) + (TOC - ST) / 100

Sr-89/90 CONCENTRATION	1.23E-03	µCi/mL
RELATIVE COUNTING ERROR	1.9%	
PERCENT CARRIER RECOVERY	88.6%	

DETECTION LEVEL

1.45E-06 µCi/L

Analyst:	KNT	Date:	06-Jun-96
Signature of Chemist:	JLS	Date:	6/6/96

STANDARD.WB1 REV 1.2 22040NML

WORKBOOK PAGE: BLANK2

LA-220-101 / D-1 Sr-89/90 : LA-220-101 (D-1), 102 (E-3), 104 (D-1)

							BLNK-PREP
Type	DETECTOR NUMBER		12	CARRIER ADDED in mL	(CVA)		1.000
BLNK-PREP	TOTAL COUNTS	(TC)	30	GROSS WEIGHT	(W2)		7.3102
Work List	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1)		7.2209
9539	BACKGROUND in cpm	(BKG)	1.0	NET WEIGHT	(W3)		0.0893
Test Code	SAMPLE VOLUME in mL	(SS)	0.100	DELTA TIME (HOURS)	(DT)		7.50
@SR90-01	DILUTION FACTOR	(DF)	1				
Matrix	DIGEST FACTOR (g/L)	(D g/L	2.2564				
SOLID	SAMPLE COUNT RATE	(Rs)	2.00	SR-90 EFFICIENCY FACTOR	(C1)		0.4180
Batch Number	CRITICAL LEVEL	(Lc)	0.60	Y-90 EFFICIENCY FACTOR	(C2)		0.4660
96005713	TIME OF SEPARATION	(ST)	11:05	Rmax			N/A
Aliquot Parth	DATE OF SEPARATION	(SD)	06/05/96	DETECTION LIMIT	(Ld)		1.30
0	TIME OF COUNT	(TOC)	18:35	Sr-89/90 CONC in µCi/g			9.8428E-03
Sample Prep	DATE OF COUNT	(DOC)	06/05/96				
N/A							
Sampler							
WL9539							
Instrument Code	Sample Count Rate (Rs) = (Total Counts (TC) / Count Time (CT)) - Background in cpm (BKG)						
WB27811	Sr-89/90 CONC in µCi/g Replace RS with RMAX if RS<=Lc and RS>=0 or Replace RS with Lc if RS<0						
Prepared By	RS*1000*DF/((C1+C2*(1-e to the power of ((-natural log 2)/64.2*DT)))*SS*DDF*REC*2220000)						
SLH2	NOTE: 64.2 = Half Life for Y-90 and Rec. = Fractional Carrier Recovery ((W2-W1) / (CVA * 0.1000))						
Chemist	Relative Counting Error = The Square Root of ((TC + BKG * CT) / (TC - BKG * CT)*1.96)						
JLS	Percent Carrier Recovery = (Net Weight / Expected weight) * 100						
Analyst	NOTE: Expected weight = CVA * 0.1						
KNT	Detection Levels and Less Than Values are determined from Procedure LA-508-002.						
Data Complete	Delta Time (hours) = ((DOC - SD) * 24) + (TOC - ST) / 100						
06/06/96							
Analysis Date							DETECTION LEVEL
06/05/96	Sr-89/90 CONCENTRATION			9.84E-03	µCi/g		
Analysis Time							
11:05 AM	RELATIVE COUNTING ERROR			62.0%			6.38E-03 µCi/g
Sample Point							
S102	PERCENT CARRIER RECOVERY			89.3%			

Analyst:	KNT	Date:	06-Jun-96
Signature of Chemist:	JLS	Date:	6/6/96

BLANK.WB1 REV 1.2 2201NML

WORKBOOK PAGE: SAM4

WHC-CD-WM-DP-175, REV. /

LA-220-101 / D-1 Sr-89/90 : LA-220-101 (D-1), 102 (E-3), 104 (D-1)

							SAMPLE
Type	DETECTOR NUMBER		12	CARRIER ADDED in mL	(CVA)	1.000
SAMPLE	TOTAL COUNTS	(TC)	117814	GROSS WEIGHT	(W2)	7.3208
Work List	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1)	7.2319
9539	BACKGROUND in cpm	(BKG)	1.0	NET WEIGHT	(W3)	0.0889
Test Code	SAMPLE VOLUME in mL	(SS)	0.100	DELTA TIME (HOURS)	(DT)	7.75
@SR90-01	DILUTION FACTOR	(DF)	1			
Matrix	DIGEST FACTOR (g/L)	(D g/L	2.2564			
SOLID	SAMPLE COUNT RATE	(Rs)	11780.40	SR-90 EFFICIENCY FACTOR	(C1)	0.4180
Batch Number	CRITICAL LEVEL	(Lc)	0.60	Y-90 EFFICIENCY FACTOR	(C2)	0.4660
96005713	TIME OF SEPARATION	(ST)	11:05	Rmax		N/A
Rerun	DATE OF SEPARATION	(SD)	06/05/96	DETECTION LIMIT	(Ld)	1.30
0	TIME OF COUNT	(TOC)	18:50	Sr-89/90 CONC in µCi/g		5.8089E+01
Sample Prep	DATE OF COUNT	(DOC)	06/05/96			
FUSION01						
Sample #						
S96T000874						
Instrument Code						
WB27811						
Prepared By						
SLH2						
Chemist						
JLS						
Analyst						
KNT						
Date Complete						
06/06/96						
Analysis Date						
06/05/96						
Analysis Time						
11:05 AM						
Sample Point						
S102						

Sample Count Rate (Rs) = (Total Counts (TC) / Count Time (CT)) - Background in cpm (BKG)

Sr-89/90 CONC in µCi/g Replace RS with RMAX if RS<=Lc and RS>=0 or Replace RS with Lc if RS<0

RS*1000*DF/((C1+C2*(1-e to the power of ((-natural log 2)/64.2*DT)))*SS*DDF*REC*2220000)

NOTE: 64.2 = Half Life for Y-90 and Rec. = Fractional Carrier Recovery ((W2-W1) / (CVA * 0.1000))

Relative Counting Error = The Square Root of ((TC + BKG * CT) / (TC - BKG * CT)*1.96)

Percent Carrier Recovery = (Net Weight / Expected weight) * 100

NOTE: Expected weight = CVA * 0.1

Detection Levels and Less Than Values are determined from Procedure LA-508-002.

Delta Time (hours) = ((DOC - SD) * 24) + (TOC - ST) / 100

Sr-89/90 CONCENTRATION	5.81E+01	µCi/g	DETECTION LEVEL
RELATIVE COUNTING ERROR	0.6%		6.39E-03 µCi/g
PERCENT CARRIER RECOVERY	88.9%		

Analyst:	KNT	Date:	06-Jun-96
Signature of Chemist:	JLS	Date:	6/6/96

SAMPLE.WB1 REV 1.2 22010NML

WORKBOOK PAGE: DUP5

WHC-SD-WM-DP-173, REV. 1

LA-220-101 / D-1 Sr-89/90 : LA-220-101 (D-1), 102 (E-3), 104 (D-1)

							DUP
Type	DETECTOR NUMBER		12	CARRIER ADDED in mL	(CVA)	1.000
DUP	TOTAL COUNTS	(TC)	117780	GROSS WEIGHT	(W2)	7.3016
Worklist	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1)	7.2124
9539	BACKGROUND in cpm	(BKG)	1.0	NET WEIGHT	(W3)	0.0892
Test Code	SAMPLE VOLUME in mL	(SS)	0.100	DELTA TIME (HOURS)	(DT)	7.92
@SR90-01	DILUTION FACTOR	(DF)	1			
Matrix	DIGEST FACTOR (g/L)	(D g/L	2.2016			
SOLID	SAMPLE COUNT RATE	(Rs)	11777.00	SR-90 EFFICIENCY FACTOR	(C1)	0.4180
Batch Number	CRITICAL LEVEL	(Lc)	0.60	Y-90 EFFICIENCY FACTOR	(C2)	0.4660
96005713	TIME OF SEPARATION	(ST)	11:05	Rmax		N/A
Rerun	DATE OF SEPARATION	(SD)	06/05/96	DETECTION LIMIT	(Ld)	1.30
0	TIME OF COUNT	(TOC)	19:00	Sr-89/90 CONC in µCi/g		5.9217E+01
Sample Prep	DATE OF COUNT	(DOC)	06/05/96			
FUSION01						
Sample #						
S96T000874						

Instrument Code	Sample Count Rate (Rs) = (Total Counts (TC) / Count Time (CT)) - Background in cpm (BKG)
WB27811	Sr-89/90 CONC in µCi/g Replace RS with RMAX if RS<=Lc and RS>=0 or Replace RS with Lc if RS<0
Prepared By	RS*1000*DF/((C1+C2*(1-e to the power of ((-natural log 2)/64.2*DT)))*SS*DDF*REC*2220000)
SLH2	NOTE: 64.2 = Half Life for Y-90 and Rec. = Fractional Carrier Recovery ((W2-W1) / (CVA * 0.1000))
Chemist	Relative Counting Error = The Square Root of ((TC + BKG * CT) / (TC - BKG * CT)*1.96)
JLS	Percent Carrier Recovery = (Net Weight / Expected weight) * 100
Analyst	NOTE: Expected weight = CVA * 0.1
KNT	Detection Levels and Less Than Values are determined from Procedure LA-508-002.
Date Complete	Delta Time (hours) = ((DOC - SD) * 24) + (TOC - ST) / 100
06/06/96	
Analysis Date	
06/05/96	
Analysis Time	
11:05 AM	
Sample Point	
S102	

Sr-89/90 CONCENTRATION	5.92E+01	µCi/g	DETECTION LEVEL
RELATIVE COUNTING ERROR	0.6%		6.51E-03 µCi/g
PERCENT CARRIER RECOVERY	89.2%		

Analyst:	KNT	Date:	06-Jun-96
Signature of Chemist:	JLS	Date:	6/6/96

SAMPLE.WB1 REV 1.2 22010NML

WORKBOOK PAGE: SAM6

WHC-SD-WM-DP-170, REV. 1

LA-220-101 / D-1 Sr-89/90 : LA-220-101 (D-1), 102 (E-3), 104 (D-1)

							SAMPLE
Type	DETECTOR NUMBER		12	CARRIER ADDED in mL	(CVA)		1.000
SAMPLE	TOTAL COUNTS	(TC)	50645	GROSS WEIGHT	(W2)		7.1379
Work List	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1)		7.0479
9539	BACKGROUND in cpm	(BKG)	1.0	NET WEIGHT	(W3)		0.0900
Test Code	SAMPLE VOLUME in mL	(SS)	0.100	DELTA TIME (HOURS)	(DT)		8.17
@SR90-01	DILUTION FACTOR	(DF)	1				
Matrix	DIGEST FACTOR (g/L)	(D g/L	2.1136				
SOLID	SAMPLE COUNT RATE	(Rs)	5063.50	SR-90 EFFICIENCY FACTOR	(C1)		0.4180
Batch Number	CRITICAL LEVEL	(Lc)	0.60	Y-90 EFFICIENCY FACTOR	(C2)		0.4660
96005713	TIME OF SEPARATION	(ST)	11:05	Rmax			N/A
Rerun	DATE OF SEPARATION	(SD)	06/05/96	DETECTION LIMIT	(Ld)		1.30
0	TIME OF COUNT	(TOC)	19:15	Sr-89/90 CONC in µCi/g			2.6218E+01
Sample Prep	DATE OF COUNT	(DOC)	06/05/96				
FUSION01							
Sample #							
S96T000875							
Instrument Code	Sample Count Rate (Rs) = (Total Counts (TC) / Count Time (CT)) - Background in cpm (BKG)						
WB27811	Sr-89/90 CONC in µCi/g Replace RS with RMAX if RS<=Lc and RS>=0 or Replace RS with Lc if RS<0						
Prepared By	RS*1000*DF/((C1+C2*(1-e to the power of ((-natural log 2)/64.2*DT)))*SS*DDF*REC*2220000)						
SLH2	NOTE: 64.2 = Half Life for Y-90 and Rec. = Fractional Carrier Recovery ((W2-W1) / (CVA * 0.1000))						
Chemist	Relative Counting Error = The Square Root of ((TC + BKG * CT) / (TC - BKG * CT)*1.96)						
JLS	Percent Carrier Recovery = (Net Weight / Expected weight) * 100						
Analyst	NOTE: Expected weight = CVA * 0.1						
KNT	Detection Levels and Less Than Values are determined from Procedure LA-508-002.						
Date Complete	Delta Time (hours) = ((DOC - SD) * 24) + (TOC - ST) / 100						
06/06/96							
Analysis Date							DETECTION LEVEL
06/05/96	Sr-89/90 CONCENTRATION			2.62E+01	µCi/g		
Analysis Time							
11:05 AM	RELATIVE COUNTING ERROR			0.9%			6.71E-03 µCi/g
Sample Point							
S102	PERCENT CARRIER RECOVERY			90.0%			

Analyst:	KNT	Date:	06-Jun-96
Signature of Chemist:	JLS	Date:	6/6/96

SAMPLE.WB1 REV 1.2 22010NML

WORKBOOK PAGE: DUP7

VHG-SD-WM-DP-173, REV. 1

LA-220-101 / D-1 Sr-89/90 : LA-220-101 (D-1), 102 (E-3), 104 (D-1)

						DUP
Type	DETECTOR NUMBER		12	CARRIER ADDED in mL	(CVA)	1.000
DUP	TOTAL COUNTS	(TC)	49373	GROSS WEIGHT	(W2)	7.5129
Work List	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1)	7.4242
9539	BACKGROUND in cpm	(BKG)	1.0	NET WEIGHT	(W3)	0.0887
Test Code	SAMPLE VOLUME in mL	(SS)	0.100	DELTA TIME (HOURS)	(DT)	8.33
@SR90-01	DILUTION FACTOR	(DF)	1			
Matrix	DIGEST FACTOR (g/L)	(D g/L	1.9876			
SOLID	SAMPLE COUNT RATE	(Rs)	4936.30	SR-90 EFFICIENCY FACTOR	(C1)	0.4180
Batch Number	CRITICAL LEVEL	(Lc)	0.60	Y-90 EFFICIENCY FACTOR	(C2)	0.4660
96005713	TIME OF SEPARATION	(ST)	11:05	Rmax		N/A
Rerun	DATE OF SEPARATION	(SD)	06/05/96	DETECTION LIMIT	(Ld)	1.30
0	TIME OF COUNT	(TOC)	19:25	Sr-89/90 CONC in µCi/g		2.7532E+01
Sample Prep	DATE OF COUNT	(DOC)	06/05/96			
FUSION01						
Sample #						
S96T000875						
Instrument Code	Sample Count Rate (Rs) = (Total Counts (TC) / Count Time (CT)) - Background in cpm (BKG)					
WB27811	Sr-89/90 CONC in µCi/g Replace RS with RMAX if RS<=Lc and RS>=0 or Replace RS with Lc if RS<0					
Prepared By	RS*1000*DF/((C1+C2*(1-e to the power of ((-natural log 2)/64.2*DT)))*SS*DDF*REC*2220000)					
SLH2	NOTE: 64.2 = Half Life for Y-90 and Rec. = Fractional Carrier Recovery ((W2-W1) / (CVA * 0.1000))					
Chemist	Relative Counting Error = The Square Root of ((TC + BKG * CT) / (TC - BKG * CT)*1.96)					
JLS	Percent Carrier Recovery = (Net Weight / Expected weight) * 100					
Analyst	NOTE: Expected weight = CVA * 0.1					
KNT	Detection Levels and Less Than Values are determined from Procedure LA-508-002.					
Date Complete	Delta Time (hours) = ((DOC - SD) * 24) + (TOC - ST) / 100					
06/06/96						
Analysis Date						DETECTION LEVEL
06/05/96	Sr-89/90 CONCENTRATION		2.75E+01		µCi/g	
Analysis Time						
11:05 AM	RELATIVE COUNTING ERROR		0.9%			7.23E-03 µCi/g
Sample Point						
S102	PERCENT CARRIER RECOVERY		88.7%			

Analyst:	KNT	Date:	06-Jun-96
Signature of Chemist:	JLS	Date:	6/6/96

SAMPLE.WB1 REV 1.2 22010NML

LABCORE Data Entry Template for Worklist# 9542

Analyst: SLH **Instrument:** AB00 12 **Book#** 9856

Method: LA-220-101 Rev/Mod D-1

Worklist Comment: S102. Determine sample size using ludlum. new

S	Type	Sample#	R	A	Test	Matrix	Group#	Project
1	STD				@SR90-01	SOLID		
2	BLNK-PREP				@SR90-01	SOLID		
3	BLNK/BKG				@SR90-01	SOLID		
4	SAMPLE	S96T001468	0	F	@SR90-01	SOLID	96000094	S102
		Analytes Requested: SR90-01 , SR90-01C, SR90-01E						
5	DUP	S96T001468	0	F	@SR90-01	SOLID		

Final page for worklist # 9542

Sandra J Hood Boatright
Analyst Signature **Date** 6-7-96

Analyst Signature **Date** 6/7/96
C.J. Opinen 6/7/96

Data Entry Comments:

S = Worklist Slot Number, R = Replicate Number, A = Aliquot Code.

LABCORE Completed RadChem Report for Worklist#: 9542

Analyst: slh **Instrument:** AB12 **Book#** 9856

Method: LA-220-101 Rev/Mod D-1

Worklist Comment: S102. Determine sample size using ludlum. new

Seq	Type	Sample#	R	A	Test		Matrix	Actual	Found	DL or Yield	Unit
1	STD		0		@SR90-01	SR90-01	SOLID	1.23E-03	1.28E-3	104.065	% Recovery
1	STD		0		@SR90-01	SR90-01C	SOLID	100	9.09E+01	90.900	% Recovery
1	STD		0		@SR90-01	SR90-01E	SOLID	1.00	1.85E+00	1.850	% Ct. Erro
2	BLNK-PREP		0		@SR90-01	SR90-01	SOLID	1	1.09E-2	10.900e-003	uCi/g
2	BLNK-PREP		0		@SR90-01	SR90-01C	SOLID	100	8.87E+01	88.700	% Recovery
2	BLNK-PREP		0		@SR90-01	SR90-01E	SOLID	1.00	2.37E+01	23.700	uCi/g
3	BLNK/BKG		0		@SR90-01	SR90-01	SOLID	1	7.43E+00	7.430	BLNK/BKG
4	SAMPLE	S96T001468	0	F	@SR90-01	SR90-01	SOLID	N/A	6.36E+00	181.0e-005	uCi/g
4	SAMPLE	S96T001468	0	F	@SR90-01	SR90-01C	SOLID	N/A	9.00E+01	0.0e+000	% Recovery
4	SAMPLE	S96T001468	0	F	@SR90-01	SR90-01E	SOLID	N/A	8.50E-01	0.0e+000	% Ct. Error
5	DUP	S96T001468	0	F	@SR90-01	SR90-01	SOLID	6.36E+0	6.22E+0	2.226	RPD
5	DUP	S96T001468	0	F	@SR90-01	SR90-01C	SOLID	100	8.63E+01	86.300	% Recovery
5	DUP	S96T001468	0	F	@SR90-01	SR90-01E	SOLID	1.00	8.20E-01	0.820	% Cnt Err

Final page for worklist# 9542

Analyst Signature Date

Analyst Signature Date

Reviewer Signature Date 6/11/96

Units shown for QC (BLK/BKG) may not reflect the actual units.

WORKBOOK PAGE: STD1

Sr-89/90 : LA-220-101 (D-1), 102 (E-3), 104 (D-1) LIQUIDS

							STANDARD
Type	DETECTOR NUMBER		12	CARRIER ADDED in mL	(CVA)		1.000
STD	TOTAL COUNTS	(TC)	11313	GROSS WEIGHT	(W2)		7.1009
Instrument	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1)		7.0100
9542	BACKGROUND in cpm	(BKG)	1.4	NET WEIGHT	(W3)		0.0909
Sample Code	SAMPLE VOLUME in mL	(SS)	1.000	DELTA TIME (HOURS)	(DT)		3.75
@SR90-01	DILUTION FACTOR	(DF)	1				
Matrix	DIGEST DILUTION FACTOR	DDF	1				
LIQUID	SAMPLE COUNT RATE	(Rs)	1129.90	SR-90 EFFICIENCY FACTO	(C1)		0.4180
Batch Number	CRITICAL LEVEL	(Lc)	0.71	Y-90 EFFICIENCY FACTOR	(C2)		0.4660
96005714	TIME OF SEPARATION	(ST)	09:45	Rmax			N/A
Aliquot	DATE OF SEPARATION	(SD)	06/07/96	DETECTION LIMIT	(Ld)		1.52
0	TIME OF COUNT	(TOC)	13:30	Sr-89/90 CONC. in µCi/L			1.2828E+00
Sample Prep	DATE OF COUNT	(DOC)	06/07/96				
N/A	STANDARD BOOK #		9B56				
Analyst	STANDARD VALUE in µCi/mL		1.2251E-03				
WL9542							
Instrument Code							
WB27811							
Prepared By							
MCB							
Prep Method							
SLF							
Analyst							
SLH							
Date Complete							
06/07/96							
Analysis Date							
06/07/96							
Analysis Time							
09:45 AM							
Sample Point							
S-102							

Sample Count Rate (Rs) = (Total Counts (TC) / Count Time (CT)) - Background in cpm (BKG)

Sr-89/90 CONC in µCi/mL REPLACE RS WITH RMAX IF RS<=LcAND RS>=0 OR REPLACE RS WITH Lc IF RS<0

RS*DF*DDF*1000/((C1+C2*(1-e to the power of ((-natural log 2)/64.2*DT)))*SS*REC*2220000)

NOTE: 64.2 = Half Life for Y-90 and Rec. = Fractional Carrier Recovery ((W2-W1) / (CVA * 0.1000))

Relative Counting Error = The Square Root of ((TC + BKG * CT) / (TC - BKG * CT)*1.96)

Percent Carrier Recovery = (Net Weight / Expected weight) * 100

NOTE: Expected weight = CVA * 0.1

Detection Levels and Less Than Values are determined from Procedure LA-508-002.

Delta Time (hours) = ((DOC - SD) * 24) + (TOC - ST) / 100

Sr-89/90 CONCENTRATION	1.28E-03	µCi/mL	DETECTION LEVEL
RELATIVE COUNTING ERROR	1.8%		1.72E-06 µCi/L
PERCENT CARRIER RECOVERY	90.9%		

Analyst:	SLH	Date:	07-Jun-96
Signature of Chemist:	SLF	Date:	6/11/96

STANDARD.WB1 REV 1.2 22010NML

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WORKBOOK PAGE: BLANK2

LA-220-101 / D-1 Sr-89/90 : LA-220-101 (D-1), 102 (E-3), 104 (D-1)

							BLNK-PREP
Sample Type	DETECTOR NUMBER		12	CARRIER ADDED in mL	(CVA)	1.000
BLNK-PREP	TOTAL COUNTS	(TC)	104	GROSS WEIGHT	(W2)	7.3065
Work Order	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1)	7.2178
9542	BACKGROUND in cpm	(BKG)	1.4	NET WEIGHT	(W3)	0.0887
Test Code	SAMPLE VOLUME in mL	(SS)	0.500	DELTA TIME (HOURS)	(DT)	3.92
@SR90-01	DILUTION FACTOR	(DF)	1			
Matrix	DIGEST FACTOR (g/L)	(D g/L	1.9144			
SOLID	SAMPLE COUNT RATE	(Rs)	9.00	SR-90 EFFICIENCY FACTOR	(C1)	0.4180
Field Number	CRITICAL LEVEL	(Lc)	0.71	Y-90 EFFICIENCY FACTOR	(C2)	0.4660
96005714	TIME OF SEPARATION	(ST)	09:45	Rmax		N/A
Rerun	DATE OF SEPARATION	(SD)	06/07/96	DETECTION LIMIT	(Ld)	1.52
0	TIME OF COUNT	(TOC)	13:40	Sr-89/90 CONC in µCi/g		1.0919E-02
Sample Point	DATE OF COUNT	(DOC)	06/07/96			
N/A						
Instrument						
WL9542						

Instrument Code	Sample Count Rate (Rs) = (Total Counts (TC) / Count Time (CT)) - Background in cpm (BKG)
WB27811	Sr-89/90 CONC in µCi/g Replace RS with RMAX if RS<=Lc and RS>=0 or Replace RS with Lc if RS<0
Prepared By	RS*1000*DF/((C1+C2*(1-e to the power of ((-natural log 2)/64.2*DT)))*SS*DDF*REC*2220000)
MCB	NOTE: 64.2 = Half Life for Y-90 and Rec. = Fractional Carrier Recovery ((W2-W1) / (CVA * 0.1000))
Checked By	Relative Counting Error = The Square Root of ((TC + BKG * CT) / (TC - BKG * CT)*1.96)
SLF	Percent Carrier Recovery = (Net Weight / Expected weight) * 100
Analyst	NOTE: Expected weight = CVA * 0.1
SLH	Detection Levels and Less Than Values are determined from Procedure LA-508-002.
Date Complete	Delta Time (hours) = ((DOC - SD) * 24) + (TOC - ST) / 100
06/07/96	
Analysis Date	
06/07/96	
Analysis Time	
09:45 AM	
Sample Point	
S-102	

Sr-89/90 CONCENTRATION	1.09E-02	µCi/g	DETECTION LEVEL
RELATIVE COUNTING ERROR	23.7%		1.84E-03 µCi/g
PERCENT CARRIER RECOVERY	88.7%		

Analyst:	SLH	Date:	07-Jun-96
Signature of Chemist:	SLF	Date:	6/11/96

BLANK.WB1 REV 1.2 22010NML

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WORKBOOK PAGE: BL_BKG3

LA-220-101 / D-1 Sr-89/90 : LA-220-101 (D-1), 102 (E-3), 104 (D-1)

Analytype	DETECTOR NUMBER		12
BLNK/BKG	TOTAL COUNTS	(TC)	104
Work List	COUNT TIME in minute	(CT)	10.00
9542	BACKGROUND in cpm	(BKG)	1.40

Test Groups

@SR90-01

Matrix

SOLID

Batch Number

96005714

Rerun

0

Sample Prep

N/A

Sample #

WL9542

Instrument Code

WB27811

Prepared By

MCB

Chemist

SLF

Analyst

SLH

Date Complete

06/07/96

Analysis Date

06/07/96

Analysis Time

09:45 AM

Sample Point

S-102

Result = (Total Counts (TC) / Count Time (CT)) / (Background in cpm (BKG))

RESULT	=	7.43E+00

Analyst:	SLH	Date:	07-Jun-96
Signature of Chemist:	SLF	Date:	6/11/96

BL_BKG.WB1 REV 1.2 22010NML Page 1 of 1

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WORKBOOK PAGE: SAM4

LA-220-101 / D-1 Sr-89/90 : LA-220-101 (D-1), 102 (E-3), 104 (D-1)

							SAMPLE
Type	DETECTOR NUMBER		12	CARRIER ADDED in mL	(CVA)		1.000
SAMPLE	TOTAL COUNTS	(TC)	53275	GROSS WEIGHT	(W2)		7.1383
Work List	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1)		7.0483
9542	BACKGROUND in cpm	(BKG)	1.4	NET WEIGHT	(W3)		0.0900
Test Code	SAMPLE VOLUME in mL	(SS)	0.500	DELTA TIME (HOURS)	(DT)		4.08
@SR90-01	DILUTION FACTOR	(DF)	1				
Matrix	DIGEST FACTOR (g/L)	(D g/L	1.9144				
SOLID	SAMPLE COUNT RATE	(Rs)	5326.10	SR-90 EFFICIENCY FACTOR	(C1)		0.4180
Batch Number	CRITICAL LEVEL	(Lc)	0.71	Y-90 EFFICIENCY FACTOR	(C2)		0.4660
96005714	TIME OF SEPARATION	(ST)	09:45	Rmax			N/A
Rerun	DATE OF SEPARATION	(SD)	06/07/96	DETECTION LIMIT	(Ld)		1.52
0	TIME OF COUNT	(TOC)	13:50	Sr-89/90 CONC in µCi/g			6.3568E+00
Sample/Prep	DATE OF COUNT	(DOC)	06/07/96				
FUSION01							
Sample #							
S96T001468							
Instrument Code	Sample Count Rate (Rs) = (Total Counts (TC) / Count Time (CT)) - Background in cpm (BKG)						
WB27811	Sr-89/90 CONC in µCi/g Replace RS with RMAX if RS<=Lc and RS>=0 or Replace RS with Lc if RS<0						
Prepared By	RS*1000*DF/((C1+C2*(1-e to the power of ((-natural log 2)/64.2*DT)))*SS*DDF*REC*2220000)						
MCB	NOTE: 64.2 = Half Life for Y-90 and Rec. = Fractional Carrier Recovery ((W2-W1) / (CVA * 0.1000))						
Chemist	Relative Counting Error = The Square Root of ((TC + BKG * CT) / (TC - BKG * CT)*1.96)						
SLF	Percent Carrier Recovery = (Net Weight / Expected weight) * 100						
Analyst	NOTE: Expected weight = CVA * 0.1						
SLH	Detection Levels and Less Than Values are determined from Procedure LA-508-002.						
Date Complete	Delta Time (hours) = ((DOC - SD) * 24) + (TOC - ST) / 100						
06/07/96							
Analysis Date							DETECTION LEVEL
06/07/96	Sr-89/90 CONCENTRATION			6.36E+00		µCi/g	
Analysis Time							
09:45 AM	RELATIVE COUNTING ERROR			0.8%			1.81E-03 µCi/g
Sample Point							
S-102	PERCENT CARRIER RECOVERY			90.0%			

Analyst:	SLH	Date:	07-Jun-96
Signature of Chemist:	SLF	Date:	6/11/96

SAMPLE.WB1 REV 1.2 22010NML

WORKBOOK PAGE: DUP5

LA-220-101 / D-1 Sr-89/90 : LA-220-101 (D-1), 102 (E-3), 104 (D-1)

							DUP
Type	DETECTOR NUMBER		12	CARRIER ADDED in mL	(CVA)		1.000
DUP	TOTAL COUNTS	(TC)	57141	GROSS WEIGHT	(W2)		7.0947
Work List	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1)		7.0084
9542	BACKGROUND in cpm	(BKG)	1.4	NET WEIGHT	(W3)		0.0863
Test Code	SAMPLE VOLUME in mL	(SS)	0.500	DELTA TIME (HOURS)	(DT)		4.33
@SR90-01	DILUTION FACTOR	(DF)	1				
Matrix	DIGEST FACTOR (g/L)	(D g/L	2.1812				
SOLID	SAMPLE COUNT RATE	(Rs)	5712.70	SR-90 EFFICIENCY FACTOR	(C1)		0.4180
Batch Number	CRITICAL LEVEL	(Lc)	0.71	Y-90 EFFICIENCY FACTOR	(C2)		0.4660
96005714	TIME OF SEPARATION	(ST)	09:45	Rmax			N/A
Rerun	DATE OF SEPARATION	(SD)	06/07/96	DETECTION LIMIT	(Ld)		1.52
0	TIME OF COUNT	(TOC)	14:05	Sr-89/90 CONC in µCi/g			6.2237E+00
Sample Prep	DATE OF COUNT	(DOC)	06/07/96				
FUSION01							
Sample							
S96T001468							
Instrument Code	Sample Count Rate (Rs) = (Total Counts (TC) / Count Time (CT)) - Background in cpm (BKG)						
WB27811	Sr-89/90 CONC in µCi/g Replace RS with RMAX if RS<=Lc and RS>=0 or Replace RS with Lc if RS<0						
Prepared By	RS*1000*DF/((C1+C2*(1-e to the power of ((-natural log 2)/64.2*DT)))*SS*DDF*REC*2220000)						
MCB	NOTE: 64.2 = Half Life for Y-90 and Rec. = Fractional Carrier Recovery ((W2-W1) / (CVA * 0.1000))						
Chemist	Relative Counting Error = The Square Root of ((TC + BKG * CT) / (TC - BKG * CT)*1.96)						
SLF	Percent Carrier Recovery = (Net Weight / Expected weight) * 100						
Analyst	NOTE: Expected weight = CVA * 0.1						
SLH	Detection Levels and Less Than Values are determined from Procedure LA-508-002.						
Date Complete	Delta Time (hours) = ((DOC - SD) * 24) + (TOC - ST) / 100						
06/07/96							
Analysis Date							DETECTION LEVEL
06/07/96	Sr-89/90 CONCENTRATION			6.22E+00		µCi/g	
Analysis Time							
09:45 AM	RELATIVE COUNTING ERROR			0.8%			1.65E-03 µCi/g
Sample Point							
S-102	PERCENT CARRIER RECOVERY			86.3%			

Analyst:	SLH	Date:	07-Jun-96
Signature of Chemist:	SLF	Date:	6/11/96

SAMPLE.WB1 REV 1.2 22010NML

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LABCORE Data Entry Template for Worklist# 9546

Analyst: SLH **Instrument:** AB00 #10 **Book#** 9356

Method: LA-220-101 Rev/Mod D-1

Worklist Comment: S102. Determine sample size using ludlum. new

S	Type	Sample#	R	A	Test	Matrix	Group#	Project
1	STD				@SR90-01	SOLID		
2	BLNK-PREP				@SR90-01	SOLID		
3	BLNK/BKG				@SR90-01	SOLID		
4	SAMPLE	S96T001473	0	F	@SR90-01	SOLID	96000094	S102
	Analytes Requested: SR90-01 , SR90-01C, SR90-01E							
5	DUP	S96T001473	0	F	@SR90-01	SOLID		
6	SAMPLE	S96T001474	0	F	@SR90-01	SOLID	96000094	S102
	Analytes Requested: SR90-01 , SR90-01C, SR90-01E							
7	DUP	S96T001474	0	F	@SR90-01	SOLID		

Final page for worklist # 9546

Sandra L Hood Bartright
Analyst Signature **Date** 6-7-96

Carol L. Orrien 6/10/96
Analyst Signature **Date**

M S Sin 6/10/96

Data Entry Comments:

S = Worklist Slot Number, R = Replicate Number, A = Aliquot Code.

LABCORE Completed RadChem Report for Worklist#: 9546

Analyst: slh **Instrument:** AB10 **Book#** 9856

Method: LA-220-101 Rev/Mod D-1

Worklist Comment: S102. Determine sample size using ludlum. new

Seq	Type	Sample#	R	A	Test		Matrix	Actual	Found	DL or Yield	Unit
1	STD		0		@SR90-01	SR90-01	SOLID	1.23E-03	1.21E-3	98.374	% Recovery
1	STD		0		@SR90-01	SR90-01C	SOLID	100	9.69E+01	96.900	% Recovery
1	STD		0		@SR90-01	SR90-01E	SOLID	1.00	1.87E+00	1.870	% Ct. Erro
2	BLNK-PREP		0		@SR90-01	SR90-01	SOLID	1	5.67E-3	56.700e-004	uCi/g
2	BLNK-PREP		0		@SR90-01	SR90-01C	SOLID	100	9.30E+01	93.000	% Recovery
2	BLNK-PREP		0		@SR90-01	SR90-01E	SOLID	1.00	6.33E+01	63.300	uCi/g
3	BLNK/BKG		0		@SR90-01	SR90-01	SOLID	1	1.46E+00	1.460	BLNK/BKG
4	SAMPLE	S96T001473	0	F	@SR90-01	SR90-01	SOLID	N/A	3.68E+01	456.0e-005	uCi/g
4	SAMPLE	S96T001473	0	F	@SR90-01	SR90-01C	SOLID	N/A	9.25E+01	0.0e+000	% Recovery
4	SAMPLE	S96T001473	0	F	@SR90-01	SR90-01E	SOLID	N/A	3.41E-01	0.0e+000	% Ct. Error
5	DUP	S96T001473	0	F	@SR90-01	SR90-01	SOLID	3.68E+1	3.59E+1	2.476	RPD
5	DUP	S96T001473	0	F	@SR90-01	SR90-01C	SOLID	100	9.55E+01	95.500	% Recovery
5	DUP	S96T001473	0	F	@SR90-01	SR90-01E	SOLID	1.00	3.34E-01	0.334	% Cnt Err
6	SAMPLE	S96T001474	0	F	@SR90-01	SR90-01	SOLID	N/A	2.51E+01	434.0e-005	uCi/g
6	SAMPLE	S96T001474	0	F	@SR90-01	SR90-01C	SOLID	N/A	9.12E+01	0.0e+000	% Recovery
6	SAMPLE	S96T001474	0	F	@SR90-01	SR90-01E	SOLID	N/A	4.03E-01	0.0e+000	% Ct. Error
7	DUP	S96T001474	0	F	@SR90-01	SR90-01	SOLID	2.51E+1	2.44E+1	2.828	RPD
7	DUP	S96T001474	0	F	@SR90-01	SR90-01C	SOLID	100	9.23E+01	92.300	% Recovery
7	DUP	S96T001474	0	F	@SR90-01	SR90-01E	SOLID	1.00	4.05E-01	0.405	% Cnt Err

Final page for worklist# 9546

Analyst Signature Date

Analyst Signature Date

Reviewer Signature Date 6/11/96

Units shown for QC (BLK/BKG) may not reflect the actual units.

WORKBOOK PAGE: STD1

Sr-89/90 : LA-220-101 (D-1), 102 (E-3), 104 (D-1) LIQUIDS

Type	DETECTOR NUMBER		10	CARRIER ADDED in mL	(CVA)		STANDARD 1.000
STD	TOTAL COUNTS	(TC)	11345	GROSS WEIGHT	(W2)		7.1508
Work List	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1)		7.0539
9546	BACKGROUND in cpm	(BKG)	11.0	NET WEIGHT	(W3)		0.0969
Test Code	SAMPLE VOLUME in mL	(SS)	1.000	DELTA TIME (HOURS)	(DT)		5.42
@SR90-01	DILUTION FACTOR	(DF)	1				
Matrix	DIGEST DILUTION FACTOR	DDF	1				
LIQUID	SAMPLE COUNT RATE	(Rs)	1123.50	SR-90 EFFICIENCY FACTO	(C1)		0.4051
Batch Number	CRITICAL LEVEL	(Lc)	2.00	Y-90 EFFICIENCY FACTOR	(C2)		0.4503
96005715	TIME OF SEPARATION	(ST)	14:00	Rmax			N/A
Rerun	DATE OF SEPARATION	(SD)	06/07/96	DETECTION LIMIT	(Ld)		4.09
0	TIME OF COUNT	(TOC)	19:25	Sr-89/90 CONC. in µCi/L			1.2127E+00
Sample Prep	DATE OF COUNT	(DOC)	06/07/96				
N/A	STANDARD BOOK #		9B56				
Sample #	STANDARD VALUE in µCi/mL		1.2251E-03				
WL9546							
Instrument Code							
WB26870							
Prepared By							
CJO							
Chemist							
JLS							
Analyst							
SLH							
Date Complete							
06/10/96							
Analysis Date							
06/07/96							
Analysis Time							
02:00 PM							
Sample Point							
S102							

Sample Count Rate (Rs) = (Total Counts (TC) / Count Time (CT)) - Background in cpm (BKG)

Sr-89/90 CONC in µCi/mL REPLACE RS WITH RMAX IF RS<=LcAND RS>=0 OR REPLACE RS WITH Lc IF RS<0

RS*DF*DDF*1000/((C1+C2*(1-e to the power of ((-natural log 2)/64.2*DT)))*SS*REC*2220000)

NOTE: 64.2 = Half Life for Y-90 and Rec. = Fractional Carrier Recovery ((W2-W1) / (CVA * 0.1000))

Relative Counting Error = The Square Root of ((TC + BKG * CT) / (TC - BKG * CT)*1.96)

Percent Carrier Recovery = (Net Weight / Expected weight) * 100

NOTE: Expected weight = CVA * 0.1

Detection Levels and Less Than Values are determined from Procedure LA-508-002.

Delta Time (hours) = ((DOC - SD) * 24) + (TOC - ST) / 100

Sr-89/90 CONCENTRATION	1.21E-03	µCi/mL
RELATIVE COUNTING ERROR	1.9%	
PERCENT CARRIER RECOVERY	96.9%	

DETECTION LEVEL 4.41E-06 µCi/L

Analyst:	SLH	Date:	10-Jun-96
Signature of Chemist:	JLS	Date:	6/11/96

STANDARD.WB1 REV 1.2 22010NML

WORKBOOK PAGE: BLANK2

LA-220-101 / D-1 Sr-89/90 : LA-220-101 (D-1), 102 (E-3), 104 (D-1)

							BLNK-PREP
Analyzer	DETECTOR NUMBER		10	CARRIER ADDED in mL	(CVA)	1.000
BLNK-PREP	TOTAL COUNTS	(TC)	161	GROSS WEIGHT	(W2)	7.3292
Work List #	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1)	7.2362
9546	BACKGROUND in cpm	(BKG)	11.0	NET WEIGHT	(W3)	0.0930
Barcode	SAMPLE VOLUME in mL	(SS)	0.500	DELTA TIME (HOURS)	(DT)	5.70
@SR90-01	DILUTION FACTOR	(DF)	1			
Matrix	DIGEST FACTOR (g/L)	(D g/L	2.0158			
SOLID	SAMPLE COUNT RATE	(Rs)	5.10	SR-90 EFFICIENCY FACTOR	(C1)	0.4051
Batch Number	CRITICAL LEVEL	(Lc)	2.00	Y-90 EFFICIENCY FACTOR	(C2)	0.4503
96005715	TIME OF SEPARATION	(ST)	14:00	Rmax		N/A
Batch #	DATE OF SEPARATION	(SD)	06/07/96	DETECTION LIMIT	(Ld)	4.09
0	TIME OF COUNT	(TOC)	19:42	Sr-89/90 CONC in µCi/g		5.6736E-03
Sample Prep	DATE OF COUNT	(DOC)	06/07/96			
N/A						
Sample #						
WL9546						

Instrument Code	Sample Count Rate (Rs) = (Total Counts (TC) / Count Time (CT)) - Background in cpm (BKG)
WB26870	Sr-89/90 CONC in µCi/g Replace RS with RMAX if RS<=Lc and RS>=0 or Replace RS with Lc if RS<0
Prepared By	RS*1000*DF/((C1+C2*(1-e to the power of ((-natural log 2)/64.2*DT)))*SS*DDF*REC*2220000)
CJO	NOTE: 64.2 = Half Life for Y-90 and Rec. = Fractional Carrier Recovery ((W2-W1) / (CVA * 0.1000))
Chemist	Relative Counting Error = The Square Root of ((TC + BKG * CT) / (TC - BKG * CT)*1.96)
JLS	Percent Carrier Recovery = (Net Weight / Expected weight) * 100
Analyst	NOTE: Expected weight = CVA * 0.1
SLH	Detection Levels and Less Than Values are determined from Procedure LA-508-002.
Date Complete	Delta Time (hours) = ((DOC - SD) * 24) + (TOC - ST) / 100
06/10/96	

Analysis Date				DETECTION LEVEL
06/07/96	Sr-89/90 CONCENTRATION	5.67E-03	µCi/g	
Analysis Time				
02:00 PM	RELATIVE COUNTING ERROR	63.3%		4.55E-03 µCi/g
Sample Point				
S102	PERCENT CARRIER RECOVERY	93.0%		

Analyst:	SLH	Date:	10-Jun-96
Signature of Chemist:	JLS	Date:	6/11/96

BLANK.WB1 REV 1.2 22010NML

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WORKBOOK PAGE: BL_BKG3

LA-220-101 / D-1 Sr-89/90 : LA-220-101 (D-1), 102 (E-3), 104 (D-1)

Sample Type	DETECTOR NUMBER		10
BLNK/BKG	TOTAL COUNTS	(TC)	161
Work List	COUNT TIME in minute	(CT)	10.00
9546	BACKGROUND in cpm	(BKG)	11.00

Test Code
@SR90-01

Matrix
SOLID

Batch Number
96005715

Reprun
0

Sample Prep
N/A

Sample#
WL9546

Instrument Code
WB26870

Prepared By
CJO

Chemist
JLS

Analyst
SLH

Date Complete
06/10/96

Analysis Date
06/07/96

Analysis Time
02:00 PM

Sample Point
7

Result = (Total Counts (TC) / Count Time (CT)) / (Background in cpm (BKG))

RESULT	=	1.46E+00

Analyst:	SLH	Date:	10-Jun-96
Signature of Chemist:	JLS	Date:	6/11/96

BL_BKG.WB1 REV 1.2 22010NML Page 1 of 1

WORKBOOK PAGE: SAM4

LA-220-101 / D-1 Sr-89/90 : LA-220-101 (D-1), 102 (E-3), 104 (D-1)

							SAMPLE
Type	DETECTOR NUMBER		10	CARRIER ADDED in mL	(CVA)		1.000
SAMPLE	TOTAL COUNTS	(TC)	330196	GROSS WEIGHT	(W2)		7.2945
Work List	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1)		7.2020
9546	BACKGROUND in cpm	(BKG)	11.0	NET WEIGHT	(W3)		0.0925
Test Code	SAMPLE VOLUME in mL	(SS)	0.500	DELTA TIME (HOURS)	(DT)		6.00
@SR90-01	DILUTION FACTOR	(DF)	1				
Matrix	DIGEST FACTOR (g/L)	(D g/L	2.0158				
SOLID	SAMPLE COUNT RATE	(Rs)	33008.60	SR-90 EFFICIENCY FACTOR	(C1)		0.4051
Batch Number	CRITICAL LEVEL	(Lc)	2.00	Y-90 EFFICIENCY FACTOR	(C2)		0.4503
96005715	TIME OF SEPARATION	(ST)	14:00	Rmax			N/A
Rerun	DATE OF SEPARATION	(SD)	06/07/96	DETECTION LIMIT	(Ld)		4.09
0	TIME OF COUNT	(TOC)	20:00	Sr-89/90 CONC in µCi/g			3.6803E+01
Sample Prep	DATE OF COUNT	(DOC)	06/07/96				
FUSION01							
Sample #							
S96T001473							
Instrument Code	Sample Count Rate (Rs) = (Total Counts (TC) / Count Time (CT)) - Background in cpm (BKG)						
WB26870	Sr-89/90 CONC in µCi/g Replace RS with RMAX if RS<=Lc and RS>=0 or Replace RS with Lc if RS<0						
Prepared By	RS*1000*DF/((C1+C2*(1-e to the power of ((-natural log 2)/64.2*DT)))*SS*DDF*REC*2220000)						
CJO	NOTE: 64.2 = Half Life for Y-90 and Rec. = Fractional Carrier Recovery ((W2-W1) / (CVA * 0.1000))						
Chemist	Relative Counting Error = The Square Root of ((TC + BKG * CT) / (TC - BKG * CT)*1.96)						
JLS	Percent Carrier Recovery = (Net Weight / Expected weight) * 100						
Analyst	NOTE: Expected weight = CVA * 0.1						
SLH	Detection Levels and Less Than Values are determined from Procedure LA-508-002.						
Date Complete	Delta Time (hours) = ((DOC - SD) * 24) + (TOC - ST) / 100						
06/10/96							
Analysis Date							DETECTION LEVEL
06/07/96	Sr-89/90 CONCENTRATION			3.68E+01		µCi/g	
Analysis Time							
02:00 PM	RELATIVE COUNTING ERROR			0.3%			4.56E-03 µCi/g
Sample Point							
S102	PERCENT CARRIER RECOVERY			92.5%			

Analyst:	SLH	Date:	10-Jun-96
Signature of Chemist:	JLS	Date:	6/11/96

SAMPLE.WB1 REV 1.2 22010NML

WORKBOOK PAGE: DUP5

LA-220-101 / D-1 Sr-89/90 : LA-220-101 (D-1), 102 (E-3), 104 (D-1)

						DUP
Type	DETECTOR NUMBER		10	CARRIER ADDED in mL	(CVA)	1.000
DUP	TOTAL COUNTS	(TC)	343844	GROSS WEIGHT	(W2)	7.4720
Work List	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1)	7.3765
9546	BACKGROUND in cpm	(BKG)	11.0	NET WEIGHT	(W3)	0.0955
Test Code	SAMPLE VOLUME in mL	(SS)	0.500	DELTA TIME (HOURS)	(DT)	6.17
@SR90-01	DILUTION FACTOR	(DF)	1			
Matrix	DIGEST FACTOR (g/L)	(D g/L	2.0788			
SOLID	SAMPLE COUNT RATE	(Rs)	34373.40	SR-90 EFFICIENCY FACTOR	(C1)	0.4051
Batch Number	CRITICAL LEVEL	(Lc)	2.00	Y-90 EFFICIENCY FACTOR	(C2)	0.4503
96005715	TIME OF SEPARATION	(ST)	14:00	Rmax		N/A
Rerun	DATE OF SEPARATION	(SD)	06/07/96	DETECTION LIMIT	(Ld)	4.09
0	TIME OF COUNT	(TOC)	20:10	Sr-89/90 CONC in µCi/g		3.5933E+01
Sample Prep	DATE OF COUNT	(DOC)	06/07/96			
FUSION01						
Sample#						
S96T001473						

Sample Count Rate (Rs) = (Total Counts (TC) / Count Time (CT)) - Background in cpm (BKG)

Sr-89/90 CONC in µCi/g Replace RS with RMAX if RS<=Lc and RS>=0 or Replace RS with Lc if RS<0

RS*1000*DF/((C1+C2*(1-e to the power of ((-natural log 2)/64.2*DT)))*SS*DDF*REC*2220000)

NOTE: 64.2 = Half Life for Y-90 and Rec. = Fractional Carrier Recovery ((W2-W1) / (CVA * 0.1000))

Relative Counting Error = The Square Root of ((TC + BKG * CT) / (TC - BKG * CT)*1.96)

Percent Carrier Recovery = (Net Weight / Expected weight) * 100

NOTE: Expected weight = CVA * 0.1

Detection Levels and Less Than Values are determined from Procedure LA-508-002.

Delta Time (hours) = ((DOC - SD) * 24) + (TOC - ST) / 100

Instrument Code				
WB26870				
Prepared By				
CJO				
Chemist				
JLS				
Analyst				
SLH				
Date Complete				
06/10/96				
Analysis Date				DETECTION LEVEL
06/07/96	Sr-89/90 CONCENTRATION	3.59E+01	µCi/g	
Analysis Time				
02:00 PM	RELATIVE COUNTING ERROR	0.3%		4.27E-03 µCi/g
Sample Point				
S102	PERCENT CARRIER RECOVERY	95.5%		

Analyst:	SLH	Date:	10-Jun-96
Signature of Chemist:	JLS	Date:	6/11/96

SAMPLE.WB1 REV 1.2 22010NML

WORKBOOK PAGE: SAM6

LA-220-101 / D-1 Sr-89/90 : LA-220-101 (D-1), 102 (E-3), 104 (D-1)

							SAMPLE
Type	DETECTOR NUMBER		10	CARRIER ADDED in mL	(CVA)		1.000
SAMPLE	TOTAL COUNTS	(TC)	236423	GROSS WEIGHT	(W2)		7.3220
Work List	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1)		7.2308
9546	BACKGROUND in cpm	(BKG)	11.0	NET WEIGHT	(W3)		0.0912
Test Code	SAMPLE VOLUME in mL	(SS)	0.500	DELTA TIME (HOURS)	(DT)		7.25
@SR90-01	DILUTION FACTOR	(DF)	1				
Matrix	DIGEST FACTOR (g/L)	(D g/L	2.1204				
SOLID	SAMPLE COUNT RATE	(Rs)	23631.30	SR-90 EFFICIENCY FACTOR	(C1)		0.4051
Batch Number	CRITICAL LEVEL	(Lc)	2.00	Y-90 EFFICIENCY FACTOR	(C2)		0.4503
96005715	TIME OF SEPARATION	(ST)	14:00	Rmax			N/A
Rerun #	DATE OF SEPARATION	(SD)	06/07/96	DETECTION LIMIT	(Ld)		4.09
0	TIME OF COUNT	(TOC)	21:15	Sr-89/90 CONC in µCi/g			2.5077E+01
Sample Prep	DATE OF COUNT	(DOC)	06/07/96				
FUSION01							
Sample #							
S96T001474							
Instrument Code	Sample Count Rate (Rs) = (Total Counts (TC) / Count Time (CT)) - Background in cpm (BKG)						
WB26870	Sr-89/90 CONC in µCi/g Replace RS with RMAX if RS<=Lc and RS>=0 or Replace RS with Lc if RS<0						
Prepared By	RS*1000*DF/((C1+C2*(1-e to the power of ((-natural log 2)/64.2*DT)))*SS*DDF*REC*2220000)						
CJO	NOTE: 64.2 = Half Life for Y-90 and Rec. = Fractional Carrier Recovery ((W2-W1) / (CVA * 0.1000))						
Chemist	Relative Counting Error = The Square Root of ((TC + BKG * CT) / (TC - BKG * CT)*1.96)						
JLS	Percent Carrier Recovery = (Net Weight / Expected weight) * 100						
Analyst	NOTE: Expected weight = CVA * 0.1						
SLH	Detection Levels and Less Than Values are determined from Procedure LA-508-002.						
Date Complete	Delta Time (hours) = ((DOC - SD) * 24) + (TOC - ST) / 100						
06/10/96							
Analysis Date							DETECTION LEVEL
06/07/96	Sr-89/90 CONCENTRATION			2.51E+01		µCi/g	
Analysis Time							
02:00 PM	RELATIVE COUNTING ERROR			0.4%			4.34E-03 µCi/g
Sample Point							
S102	PERCENT CARRIER RECOVERY			91.2%			

Analyst:	SLH	Date:	10-Jun-96
Signature of Chemist:	JLS	Date:	6/11/96

SAMPLE.WB1 REV 1.2 22010NML

WORKBOOK PAGE: DUP7

LA-220-101 / D-1 Sr-89/90 : LA-220-101 (D-1), 102 (E-3), 104 (D-1)

Type	DETECTOR NUMBER		10	CARRIER ADDED in mL	(CVA)	DUP 1.000
DUP	TOTAL COUNTS	(TC)	234420	GROSS WEIGHT	(W2)	7.1340
Work List	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1)	7.0417
9546	BACKGROUND in cpm	(BKG)	11.0	NET WEIGHT	(W3)	0.0923
Test Code	SAMPLE VOLUME in mL	(SS)	0.500	DELTA TIME (HOURS)	(DT)	7.42
@SR90-01	DILUTION FACTOR	(DF)	1			
Matrix	DIGEST FACTOR (g/L)	(D g/L	2.1332			
SOLID	SAMPLE COUNT RATE	(Rs)	23431.00	SR-90 EFFICIENCY FACTOR	(C1)	0.4051
Batch Number	CRITICAL LEVEL	(Lc)	2.00	Y-90 EFFICIENCY FACTOR	(C2)	0.4503
96005715	TIME OF SEPARATION	(ST)	14:00	Rmax		N/A
Rerun	DATE OF SEPARATION	(SD)	06/07/96	DETECTION LIMIT	(Ld)	4.09
0	TIME OF COUNT	(TOC)	21:25	Sr-89/90 CONC in µCi/g		2.4380E+01
Sample Prep	DATE OF COUNT	(DOC)	06/07/96			
FUSION01						
Sample #						
S96T001474						
Instrument Code	Sample Count Rate (Rs) = (Total Counts (TC) / Count Time (CT)) - Background in cpm (BKG)					
WB26870	Sr-89/90 CONC in µCi/g Replace RS with RMAX if RS<=Lc and RS>=0 or Replace RS with Lc if RS<0					
Prepared By	RS*1000*DF/((C1+C2*(1-e to the power of ((-natural log 2)/64.2*DT)))*SS*DDF*REC*2220000)					
CJO	NOTE: 64.2 = Half Life for Y-90 and Rec. = Fractional Carrier Recovery ((W2-W1) / (CVA * 0.1000))					
Chemist	Relative Counting Error = The Square Root of ((TC + BKG * CT) / (TC - BKG * CT)*1.96)					
JLS	Percent Carrier Recovery = (Net Weight / Expected weight) * 100					
Analyst	NOTE: Expected weight = CVA * 0.1					
SLH	Detection Levels and Less Than Values are determined from Procedure LA-508-002.					
Date Complete	Delta Time (hours) = ((DOC - SD) * 24) + (TOC - ST) / 100					
06/10/96						
Analysis Date						DETECTION LEVEL
06/07/96	Sr-89/90 CONCENTRATION		2.44E+01		µCi/g	
Analysis Time						
02:00 PM	RELATIVE COUNTING ERROR		0.4%			4.25E-03 µCi/g
Sample Point						
S102	PERCENT CARRIER RECOVERY		92.3%			

Analyst:	SLH	Date:	10-Jun-96
Signature of Chemist:	JLS	Date:	6/11/96

SAMPLE.WB1 REV 1.2 22010NML

THE FOLLOWING ANALYSES WERE RERUN. THEY ARE INCLUDED IN THE DATA PACKAGE BUT THE RESULTS HAVE NOT BEEN REPORTED IN THE FINAL SUMMARY REPORTS.

2ufs

LABCORE Data Entry Template for Worklist# 6863

Analyst: S.C.L **Instrument:** AB00 18 **Book#** 47856

Method: LA-508-101 Rev/Mod D-2

Worklist Comment: Determine sample size using ludlum.For spike use: 0.1ml.new

S	Type	Sample#	R	A	Test	Matrix	Group#	Project
1	STD				@AB-01	SOLID		
2	BLNK-PREP				@AB-01	SOLID		
3	BLNK/BKG				@AB-01	SOLID		
4	SAMPLE	S96T000879	0	F	@AB-01	SOLID	96000030	S102
	Analytes Requested: ALPHA01 , ALPHA01E, BETA-01 , BETA-01E							
5	DUP	S96T000879	0	F	@AB-01	SOLID		
6	SPK	S96T000879	0	F	@AB-01	SOLID		
7	SAMPLE	S96T000880	0	F	@AB-01	SOLID	96000030	S102
	Analytes Requested: ALPHA01 , ALPHA01E, BETA-01 , BETA-01E							
8	DUP	S96T000880	0	F	@AB-01	SOLID		
9	SPK	S96T000880	0	F	@AB-01	SOLID		

Final page for worklist # 6863

Sue C Lai 4-8-96
Analyst Signature **Date**

Sue Hogan 4/9/96
Analyst Signature **Date**

C.J. Quinn 4/9/96

DATA NOT USED IN PACKAGE

Data Entry Comments:

AT STD recovery is out of control limits.
Batch will be rerun [signature] 4/11/96

S = Worklist Slot Number, R = Replicate Number, A = Aliquot Code.

LABCORE Completed Worklist Report for Worklist# 6863

Analyst: scl **Instrument:** AB18 **Book#** _____

Method: _____ Rev/Mod _____

Worklist Comment: Determine sample size using ludlum.For spike use: 0.1ml.new

Seq	Type	Sample#	R	A		Test	Matrix	Actual	Found	DL or Yield	Unit
1	STD		0		@AB-01	ALPHA01	SOLID	1.28E-04	1.59E-4	124.220	% Recovery
1	STD		0		@AB-01	ALPHA01E	SOLID	1	4.22E+00	4.220	% Ct. Error
1	STD		0		@AB-01	BETA-01	SOLID	1.81E-03	2.00E-3	110.500	% Recovery
1	STD		0		@AB-01	BETA-01E	SOLID	1	8.34E-01	0.830	% Ct. Error
2	BLNK-PREP		0		@AB-01	ALPHA01	SOLID	1	<2.61E-3		uCi/g
2	BLNK-PREP		0		@AB-01	ALPHA01E	SOLID	1.00	5.00E+02	500.000	% Ct. Error
2	BLNK-PREP		0		@AB-01	BETA-01	SOLID	1	9.28E-2	9.000e-002	uCi/g
2	BLNK-PREP		0		@AB-01	BETA-01E	SOLID	1.00	1.36E+01	13.600	% Ct. Error
3	BLNK/BKG		0		@AB-01	ALPHA01	SOLID	1.00E+00	6.11E-01	0.610	uCi/g
3	BLNK/BKG		0		@AB-01	BETA-01	SOLID	1.00E+00	2.87E+00	2.870	uCi/g
4	SAMPLE	S96T000879	0	F	@AB-01	ALPHA01	SOLID	N/A	1.79E-02	6.240e-003	uCi/g
4	SAMPLE	S96T000879	0	F	@AB-01	ALPHA01E	SOLID	N/A	3.56E+01	0.000	% Ct. Error
4	SAMPLE	S96T000879	0	F	@AB-01	BETA-01	SOLID	N/A	1.01E+02	1.460e-002	uCi/g
4	SAMPLE	S96T000879	0	F	@AB-01	BETA-01E	SOLID	N/A	2.65E-01	0.000	% Ct. Error
5	DUP	S96T000879	0	F	@AB-01	ALPHA01	SOLID	1.79E-2	1.89E-2	5.430	RPD
5	DUP	S96T000879	0	F	@AB-01	ALPHA01E	SOLID	1.00	3.19E+01	31.900	% Ct. Error
5	DUP	S96T000879	0	F	@AB-01	BETA-01	SOLID	1.01E+2	1.04E+2	2.930	RPD
5	DUP	S96T000879	0	F	@AB-01	BETA-01E	SOLID	1.00	2.61E-01	0.260	% Ct. Error
6	SPK	S96T000879	0	F	@AB-01	ALPHA01	SOLID	3.59E-02	2.04E-02	56.820	% Recovery
6	SPK	S96T000879	0	F	@AB-01	BETA-01	SOLID	1.92E-01	1.56E-01	81.250	% Recovery
7	SAMPLE	S96T000880	0	F	@AB-01	ALPHA01	SOLID	N/A	3.74E-01	2.530e-002	uCi/g
7	SAMPLE	S96T000880	0	F	@AB-01	ALPHA01E	SOLID	N/A	1.30E+01	0.000	% Ct. Error
7	SAMPLE	S96T000880	0	F	@AB-01	BETA-01	SOLID	N/A	2.06E+02	5.910e-002	uCi/g
7	SAMPLE	S96T000880	0	F	@AB-01	BETA-01E	SOLID	N/A	3.74E-01	0.000	% Ct. Error
8	DUP	S96T000880	0	F	@AB-01	ALPHA01	SOLID	3.74E-1	4.03E-1	7.460	RPD
8	DUP	S96T000880	0	F	@AB-01	ALPHA01E	SOLID	1.00	1.28E+01	12.800	% Ct. Error
8	DUP	S96T000880	0	F	@AB-01	BETA-01	SOLID	2.06E+2	2.09E+2	1.450	RPD
8	DUP	S96T000880	0	F	@AB-01	BETA-01E	SOLID	1.00	3.85E-01	0.390	% Ct. Error
9	SPK	S96T000880	0	F	@AB-01	ALPHA01	SOLID	3.59E-02	2.47E-02	68.800	% Recovery
9	SPK	S96T000880	0	F	@AB-01	BETA-01	SOLID	1.92E-01	1.68E-01	87.200	% Recovery

DATA NOT USED IN PACKAGE

Final page for worklist# 6863

Analyst Signature Date

Analyst Signature Date

Reviewer Signature 4/11/96 Date

Units shown for QC (BLK/BKG) may not reflect the actual units.

LABCORE Completed Worklist Report for Worklist# 6863

Analyst: scl **Instrument:** AB18 **Book#** _____

Method: _____ Rev/Mod _____

Worklist Comment: Determine sample size using ludlum.For spike use: 0.1ml.new

Seq	Type	Sample#	R	A		Test	Matrix	Actual	Found	DL or Yield	Unit
1	STD			0	@AB-01	ALPHA01	SOLID	1.28E-04	1.59E-4	124.220	% Recovery
1	STD			0	@AB-01	ALPHA01E	SOLID	1	4.22E+00	4.220	% Ct. Error
1	STD			0	@AB-01	BETA-01	SOLID	1.81E-03	2.00E-3	110.500	% Recovery
1	STD			0	@AB-01	BETA-01E	SOLID	1	8.34E-01	0.830	% Ct. Error
2	BLNK-PREP			0	@AB-01	ALPHA01	SOLID	1	<2.61E-3		uCi/g
2	BLNK-PREP			0	@AB-01	ALPHA01E	SOLID	1.00	5.00E+02	500.000	% Ct. Error
2	BLNK-PREP			0	@AB-01	BETA-01	SOLID	1	9.28E-2	9.000e-002	uCi/g
2	BLNK-PREP			0	@AB-01	BETA-01E	SOLID	1.00	1.36E+01	13.600	% Ct. Error
3	BLNK/BKG			0	@AB-01	ALPHA01	SOLID	0.00E+00	6.11E-01	0.000	uCi/g
3	BLNK/BKG			0	@AB-01	BETA-01	SOLID	0.00E+00	2.87E+00	0.000	uCi/g
4	SAMPLE	S96T000879	0	F	@AB-01	ALPHA01	SOLID	N/A	1.79E-02	6.240e-003	uCi/g
4	SAMPLE	S96T000879	0	F	@AB-01	ALPHA01E	SOLID	N/A	3.56E+01	0.000	% Ct. Error
4	SAMPLE	S96T000879	0	F	@AB-01	BETA-01	SOLID	N/A	1.01E+02	1.460e-002	uCi/g
4	SAMPLE	S96T000879	0	F	@AB-01	BETA-01E	SOLID	N/A	2.65E-01	0.000	% Ct. Error
5	DUP	S96T000879	0	F	@AB-01	ALPHA01	SOLID	1.79E-2	1.89E-2	5.430	RPD
5	DUP	S96T000879	0	F	@AB-01	ALPHA01E	SOLID	1.00	3.19E+01	31.900	% Ct. Error
5	DUP	S96T000879	0	F	@AB-01	BETA-01	SOLID	1.01E+2	1.04E+2	2.930	RPD
5	DUP	S96T000879	0	F	@AB-01	BETA-01E	SOLID	1.00	2.61E-01	0.260	% Ct. Error
6	SPK	S96T000879	0	F	@AB-01	ALPHA01	SOLID	3.59E-02	2.04E-02	56.820	% Recovery
6	SPK	S96T000879	0	F	@AB-01	BETA-01	SOLID	1.92E-01	1.56E-01	81.250	% Recovery
7	SAMPLE	S96T000880	0	F	@AB-01	ALPHA01	SOLID	N/A	3.74E-01	2.530e-002	uCi/g
7	SAMPLE	S96T000880	0	F	@AB-01	ALPHA01E	SOLID	N/A	1.30E+01	0.000	% Ct. Error
7	SAMPLE	S96T000880	0	F	@AB-01	BETA-01	SOLID	N/A	2.06E+02	5.910e-002	uCi/g
7	SAMPLE	S96T000880	0	F	@AB-01	BETA-01E	SOLID	N/A	3.74E-01	0.000	% Ct. Error
8	DUP	S96T000880	0	F	@AB-01	ALPHA01	SOLID	3.74E-1	4.03E-1	7.460	RPD
8	DUP	S96T000880	0	F	@AB-01	ALPHA01E	SOLID	1.00	1.28E+01	12.800	% Ct. Error
8	DUP	S96T000880	0	F	@AB-01	BETA-01	SOLID	2.06E+2	2.09E+2	1.450	RPD
8	DUP	S96T000880	0	F	@AB-01	BETA-01E	SOLID	1.00	3.85E-01	0.390	% Ct. Error
9	SPK	S96T000880	0	F	@AB-01	ALPHA01	SOLID	3.59E-02	2.47E-02	68.800	% Recovery
9	SPK	S96T000880	0	F	@AB-01	BETA-01	SOLID	1.92E-01	2.65E-01	138.020	% Recovery

Final page for worklist# 6863

Analyst Signature **Date** **Analyst Signature** **Date**

DATA NOT USED IN PACKAGE

Reviewer Signature **Date**

Units shown for QC (BLK/BKG) may not reflect the actual units.

Corrected QC Yield + Actual for BLNK/BKG and Found + yield for SPK.

4/10/96

WORKBOOK PAGE: STD1

TB : LA-508-101 (D-2) STANDARD

			STANDARD	REPLICATE
Type	DETECTOR NUMBER		18	18
STD	DISH SIZE (1 , 2 , or 5)	(MS)	2	2
Work List	GROSS COUNTS	(GC)	56077	57999
6863	COUNT TIME in MINUTES	(CT)	30	30
AT or TB ?	BACKGROUND in cpm	(BKG)	9	9
TB	SAMPLE SIZE in mL	(SS)	1.000	1.000
Test Code	DILUTION FACTOR	(DF)	1	1
@AB-01	STANDARD BOOK NUMBER	(Std BN)	47B56	47B56
Matrix	EFFICIENCY FACTOR	(EFF)	0.4260	0.4260
LIQUID	Lc, Rmax, or Rs,(SAMPLE RATE) as APPROPRIATE		1860.233	1924.300
Batch Number	Standard Value in µCi/mL		1.81E-03	
96002566	Concentration in µCi/L	=	1.97E+00	
Rerun	Replicate Concentration in µCi/L	=	2.03E+00	
0	AVERAGE CONCENTRATION in µCi/L	=	2.0009E+00	
Sample Prep				
N/A				
Sample #				
WL#6863				
Instrument Code				
WB27809				
Prepared By				
SEH				
Chemist				
SLF				
Analyst				
SCL				
Date Complete				
04/08/96				
Analysis Date				
04/08/96				
Analysis Time				
01:30 PM				
Sample Point				
S102				

Rs (Sample Count Rate) = (TC / CT) - BKG

TOTAL BETA µCi/L = Rs * 1000mL/L * DF / (EFF * SS * 2220000dpm/µCi)

TOTAL BETA µCi/mL = TOTAL BETA µCi/L / 1000mL/L

Relative Counting Error = [|(The Square Root of TC + BKG * CT) / (TC - BKG * CT)|] * 1.96 * 100

Detection Levels and Less Than Values are determined from Procedure LA-508-002.

			DETECTION LEVEL
TOTAL BETA CONCENTRATION in µCi/mL	=	2.00E-03	2.80E-06 µCi/mL
RELATIVE COUNTING ERROR	=	0.8%	

Analyst:		SEH	Date: 08-Apr-96
Signature of Chemist:		SLF	Date: 4/10/96

STANDARD.WB1 Rev. 1.0 508101ML

DATA NOT USED IN PACKAGE

WORKBOOK PAGE: STD2

AT : LA-508-101 (D-2) STANDARD

			STANDARD	REPLICATE
Type	DETECTOR NUMBER		18	18
STD	DISH SIZE (1 , 2 , or 5)	(MS)	2	2
Work List	GROSS COUNTS	(GC)	2181	2263
6863	COUNT TIME in MINUTES	(CT)	30	30
AT or TB ?	BACKGROUND in cpm	(BKG)	0.3	0.3
AT	SAMPLE SIZE in mL	(SS)	1.000	1.000
Test Code	DILUTION FACTOR	(DF)	1	1
@AB-01	STANDARD BOOK NUMBER	(Std BN)	47B56	47B56
Matrix	EFFICIENCY FACTOR	(EFF)	0.2095	0.2095
LIQUID	Lc, Rmax, or Rs,(SAMPLE RATE) as APPROPRIATE		72.400	75.133
Batch Number	Standard Value in µCi/mL		1.28E-04	
96002566	Concentration in µCi/L	=	1.56E-01	
Rerun	Replicate Concentration in µCi/L	=	1.62E-01	
0	AVERAGE CONCENTRATION in µCi/L	=	1.5861E-01	

Sample Prep: N/A

Sample #: WL#6863

Instrument Code: WB27809

Prepared By: SEH

Chemist: SLF

Analyst: SCL

Date Complete: 04/08/96

Analysis Date: 04/08/96

Analysis Time: 01:30 PM

Sample Point: S102

Rs (Sample Count Rate) = (TC / CT) - BKG

ALPHA TOTAL µCi/L = Rs * 1000mL/L * DF / (EFF * SS * 2220000dpm/µCi)

ALPHA TOTAL µCi/mL = ALPHA TOTAL µCi/L / 1000mL/L

Relative Counting Error = [|(The Square Root of TC + BKG * CT) / (TC - BKG * CT)|] * 1.96 * 100

Detection Levels and Less Than Values are determined from Procedure LA-508-002.

				DETECTION LEVEL
ALPHA TOTAL CONCENTRATION in µCi/mL	=	1.59E-04		
RELATIVE COUNTING ERROR	=	4.2%		1.20E-06 µCi/mL

Analyst:		SEH	Date: 08-Apr-96
Signature of Chemist:		SLF	Date: 4/10/96

STANDARD.WB1 Rev. 1.0 508101ML

DATA NOT USED IN PACKAGE

WORKBOOK PAGE: BLANK3

TB : LA-508-101 (D-2) SOLIDS

			BLNK-PREP	REPLICATE
Type	DETECTOR NUMBER		18	18
BLNK-PREP	DISH SIZE (1 , 2 , or 5)	(MS)	2	2
Work List	GROSS COUNTS	(GC)	828	723
6863	COUNT TIME in MINUTES	(CT)	30	30
AT or TB ?	BACKGROUND in cpm	(BKG)	9	9
TB	SAMPLE SIZE in mL	(SS)	0.100	0.100
Test Code	DILUTION FACTOR	(DF)	1	1
@AB-01	DIGEST GRAMS of SOLIDS / L	(Dg/L)	1.9196	1.9196
Matrix	EFFICIENCY FACTOR	(EFF)	0.4260	0.4260
SOLID	Lc, Rmax, or Rs,(SAMPLE RATE) as APPROPRIATE		18.600	15.100

Batch Number	
96002566	Blank Concentration in µCi/g 1.02E-01
Rerun	Replicate Concentration in µCi/g 8.32E-02
0	Average Concentration in µCi/g 9.2817E-02

Sample Prep	
N/A	Rs (Sample Count Rate) = (TC / CT) - BKG
Sample #	TOTAL BETA µCi/g = Rs * 1000mL/L * DF / (EFF * SS * Dg/L * 2220000dpm/µCi)
WL#6863	
Instrument Code	Relative Counting Error = [|(The Square Root of TC + BKG * CT) / (TC - BKG * CT)|] * 1.96 * 100
WB27809	Detection Levels and Less Than Values are determined from Procedure LA-508-002.
Prepared By	
SEH	
Chemist	
SLF	
Analyst	
SCL	
Date Complete	
04/08/96	
Analysis Date	
04/08/96	
Analysis Time	
01:30 PM	
Sample Point	
S102	

TOTAL BETA in µCi/g (Average)	=	9.28E-02	DETECTION LEVEL
RELATIVE COUNTING ERROR		13.6%	1.46E-02 µCi/g

Analyst:	SCL		Date: 08-Apr-96
Signature of Chemist:		SLF	Date: 4/10/96

BLANK.WB1 Rev. 1.0 508101ML

DATA NOT USED IN PACKAGE

WORKBOOK PAGE: BLANK4

AT : LA-508-101 (D-2) SOLIDS

			BLNK-PREP	REPLICATE
Type	DETECTOR NUMBER		18	18
BLNK-PREP	DISH SIZE (1 , 2 , or 5)	(MS)	2	2
Work List	GROSS COUNTS	(GC)	6	5
6863	COUNT TIME in MINUTES	(CT)	30	30
AT or TB ?	BACKGROUND in cpm	(BKG)	0.3	0.3
AT	SAMPLE SIZE in mL	(SS)	0.100	0.100
Test Code	DILUTION FACTOR	(DF)	1	1
@AB-01	DIGEST GRAMS of SOLIDS / L	(Dg/L)	1.9196	1.9196
Matrix	EFFICIENCY FACTOR	(EFF)	0.2095	0.2095
SOLID	Lc, Rmax, or Rs,(SAMPLE RATE) as APPROPRIATE		0.233	0.233
Batch Number				
96002566	Blank Concentration in µCi/g	<	2.61E-03	
* Rerun	Replicate Concentration in µCi/g	<	2.61E-03	
0	Maximum Concentration in µCi/g	<	2.6137E-03	

Sample Prep: N/A

Sample #:

Instrument Code: WB27809

Prepared By: SEH

Chemist: SLF

Analyst: SCL

Date Complete: 04/08/96

Analysis Date: 04/08/96

Analysis Time: 01:30 PM

Sample Point: S102

Rs (Sample Count Rate) = (TC / CT) - BKG

ALPHA TOTAL µCi/g = Rs * 1000mL/L * DF / (EFF * SS * Dg/L * 2220000dpm/µCi)

Relative Counting Error = [|(The Square Root of TC + BKG * CT) / (TC - BKG * CT)|] * 1.96 * 100

Detection Levels and Less Than Values are determined from Procedure LA-508-002.

				DETECTION LEVEL
ALPHA TOTAL in µCi/g (Maximum)	=	< 2.61E-03		
LESS Than Value was Determined from Lc.				6.24E-03 µCi/g
RELATIVE COUNTING ERROR			500.0%	

Analyst:		SCL	Date: 08-Apr-96
Signature of Chemist:		SLF	Date: 4/10/96

BLANK.WB1 Rev. 1.0 508101ML

DATA NOT USED IN PACKAGE

WORKBOOK PAGE: SAM7

TB : LA-508-101 (D-2) SOLIDS

			SAMPLE	REPLICATE
Type	DETECTOR NUMBER		18	18
SAMPLE	DISH SIZE (1 , 2 , or 5)	(MS)	2	2
Work List	GROSS COUNTS	(GC)	547664	552212
6863	COUNT TIME in MINUTES	(CT)	30	30
AT or TB ?	BACKGROUND in cpm	(BKG)	9	9
TB	SAMPLE SIZE in mL	(SS)	0.100	0.100
Test Code	DILUTION FACTOR	(DF)	1	1
@AB-01	DIGEST GRAMS of SOLIDS / L	(Dg/L)	1.9196	1.9196
Matrix	EFFICIENCY FACTOR	(EFF)	0.4260	0.4260
SOLID	Lc, Rmax, or Rs,(SAMPLE RATE) as APPROPRIATE		18246.467	18398.067

Batch Number	
96002566	
Rerun	
0	
Sample Prep	
FUSION01	
Sample #	
S96T000879	
Instrument Code	
WB27809	
Prepared By	
SEH	
Chemist	
SLF	
Analyst	
SCL	
Date Complete	
04/08/96	
Analysis Date	
04/08/96	
Analysis Time	
01:30 PM	
Sample Point	
S102	

Blank Concentration in µCi/g	1.01E+02
Replicate Concentration in µCi/g	1.01E+02
Average Concentration in µCi/g	1.0093E+02

Rs (Sample Count Rate) = (TC / CT) - BKG

TOTAL BETA µCi/g = Rs * 1000mL/L * DF / (EFF * SS * Dg/L * 2220000dpm/µCi)

Relative Counting Error = [|(The Square Root of TC + BKG * CT) / (TC - BKG * CT)|] * 1.96 * 100

Detection Levels and Less Than Values are determined from Procedure LA-508-002.

		DETECTION LEVEL
TOTAL BETA in µCi/g (Average) =	1.01E+02	
RELATIVE COUNTING ERROR	0.3%	1.46E-02 µCi/g

Analyst:		SCL	Date: 08-Apr-96
Signature of Chemist:		SLF	Date: 4/10/96

SAMPLE.WB1 Rev. 1.0 508101ML

DATA NOT USED IN PACKAGE

WORKBOOK PAGE: SAM8

AT : LA-508-101 (D-2) SOLIDS

			SAMPLE	REPLICATE
Type	DETECTOR NUMBER		18	18
SAMPLE	DISH SIZE (1 , 2 , or 5)	(MS)	2	2
Work List	GROSS COUNTS	(GC)	52	62
6863	COUNT TIME in MINUTES	(CT)	30	30
AT or TB ?	BACKGROUND in cpm	(BKG)	0.3	0.3
AT	SAMPLE SIZE in mL	(SS)	0.100	0.100
Test Code	DILUTION FACTOR	(DF)	1	1
@AB-01	DIGEST GRAMS of SOLIDS / L	(Dg/L)	1.9196	1.9196
Matrix	EFFICIENCY FACTOR	(EFF)	0.2095	0.2095
SOLID	Lc, Rmax, or Rs,(SAMPLE RATE) as APPROPRIATE		1.433	1.767

Blank Concentration in µCi/g	1.61E-02
Replicate Concentration in µCi/g	1.98E-02
Average Concentration in µCi/g	1.7921E-02

Batch Number: 96002566
Rerun: 0
Sample Prep: FUSION01
Sample # : S96T000879
Instrument Code: WB27809
Prepared By: SEH
Chemist: SLF
Analyst: SCL
Date Complete: 04/08/96
Analysis Date: 04/08/96
Analysis Time: 01:30 PM
Sample Point: S102

Rs (Sample Count Rate) = (TC / CT) - BKG
ALPHA TOTAL µCi/g = Rs * 1000mL/L * DF / (EFF * SS * Dg/L * 2220000dpm/µCi)

Relative Counting Error = [|(The Square Root of TC + BKG * CT) / (TC - BKG * CT)|] * 1.96 * 100
Detection Levels and Less Than Values are determined from Procedure LA-508-002.

ALPHA TOTAL in µCi/g (Average)	=	1.79E-02	DETECTION LEVEL
RELATIVE COUNTING ERROR		35.6%	6.24E-03 µCi/g

Analyst:		SCL	Date: 08-Apr-96
Signature of Chemist:		SLF	Date: 4/10/96

SAMPLE.WB1 Rev. 1.0 508101ML

DATA NOT USED IN PACKAGE

WORKBOOK PAGE: DUP9

TB : LA-508-101 (D-2) SOLIDS

			DUP	REPLICATE
Type	DETECTOR NUMBER		18	18
DUP	DISH SIZE (1 , 2 , or 5)	(MS)	2	2
Work List	GROSS COUNTS	(GC)	588804	565693
6863	COUNT TIME in MINUTES	(CT)	30	30
AT or TB ?	BACKGROUND in cpm	(BKG)	9	9
TB	SAMPLE SIZE in mL	(SS)	0.100	0.100
Test Code	DILUTION FACTOR	(DF)	1	1
@AB-01	DIGEST GRAMS of SOLIDS / L	(Dg/L)	1.9544	1.9544
Matrix	EFFICIENCY FACTOR	(EFF)	0.4260	0.4260
SOLID	Lc, Rmax, or Rs,(SAMPLE RATE) as APPROPRIATE		19617.800	18847.433

Batch Number		
96002566	Blank Concentration in µCi/g	1.06E+02
Rerun	Replicate Concentration in µCi/g	1.02E+02
0	Average Concentration in µCi/g	1.0405E+02

Sample Prep: FUSION01

Sample #: S96T000879

Instrument Code: WB27809

Prepared By: SEH

Chemist: SLF

Analyst: SCL

Date Complete: 04/08/96

Analysis Date: 04/08/96

Analysis Time: 01:30 PM

Sample Point: S102

Rs (Sample Count Rate) = (TC / CT) - BKG

TOTAL BETA µCi/g = Rs * 1000mL/L * DF / (EFF * SS * Dg/L * 2220000dpm/µCi)

Relative Counting Error = [|(The Square Root of TC + BKG * CT) / (TC - BKG * CT)|] * 1.96 * 100

Detection Levels and Less Than Values are determined from Procedure LA-508-002.

TOTAL BETA in µCi/g (Average)	=	1.04E+02	DETECTION LEVEL
RELATIVE COUNTING ERROR		0.3%	1.43E-02 µCi/g

Analyst:	SCL		Date: 08-Apr-96
Signature of Chemist:		SLF	Date: 4/10/96

SAMPLE.WB1 Rev. 1.0 508101ML

DATA NOT USED IN PACKAGE

WORKBOOK PAGE: DUP1

AT : LA-508-101 (D-2) SOLIDS

			DUP	REPLICATE
Type	DETECTOR NUMBER		18	18
DUP	DISH SIZE (1 , 2 , or 5)	(MS)	2	2
Work List	GROSS COUNTS	(GC)	61	60
6863	COUNT TIME in MINUTES	(CT)	30	30
AT or TB?	BACKGROUND in cpm	(BKG)	0.3	0.3
AT	SAMPLE SIZE in mL	(SS)	0.100	0.100
Test Code	DILUTION FACTOR	(DF)	1	1
@AB-01	DIGEST GRAMS of SOLIDS / L	(Dg/L)	1.9544	1.9544
Matrix	EFFICIENCY FACTOR	(EFF)	0.2095	0.2095
SOLID	Lc, Rmax, or Rs,(SAMPLE RATE) as APPROPRIATE		1.733	1.700

Blank Concentration in µCi/g	1.91E-02
Replicate Concentration in µCi/g	1.87E-02
Average Concentration in µCi/g	1.8886E-02

Batch Number: 96002566
Rerun: 0
Sample Prep: FUSION01
Sample #: S96T000879
Instrument Code: WB27809
Prepared By: SEH
Chemist: SLF
Analyst: SCL
Date Complete: 04/08/96
Analysis Date: 04/08/96
Analysis Time: 01:30 PM
Sample Point: S102

Rs (Sample Count Rate) = (TC / CT) - BKG

ALPHA TOTAL µCi/g = Rs * 1000mL/L * DF / (EFF * SS * Dg/L * 2220000dpm/µCi)

Relative Counting Error = [|(The Square Root of TC + BKG * CT) / (TC - BKG * CT)|] * 1.96 * 100

Detection Levels and Less Than Values are determined from Procedure LA-508-002.

ALPHA TOTAL in µCi/g (Average)	=	1.89E-02	DETECTION LEVEL
RELATIVE COUNTING ERROR		31.9%	6.13E-03 µCi/g

Analyst:	SCL		Date: 08-Apr-96
Signature of Chemist:		SLF	Date: 4/10/96

SAMPLE.WB1 Rev. 1.0 508101ML

DATA NOT USED IN PACKAGE

WORKBOOK PAGE: SPIKE11

TB : LA-508-101 (D-2) SPIKED SAMPLE

				SPIKE	REPLICATE
Type	DETECTOR NUMBER			18	18
SPK	DISH SIZE 1 , 2 , or 5		(MS)	2	2
Work List	TOTAL COUNTS		(TC)	335951	324818
6863	COUNT TIME in MINUTES		(CT)	10	10
AT or TB ?	BACKGROUND in cpm		(BKG)	9	9
TB	SAMPLE VOLUME in mL	(Spiked Vial)	(SS)	0.100	0.100
Test Code	SAMPLE DILUTION FACTOR	(Spiked Vial)	(DF)	1	1
@AB-01	DIGEST GRAMS of SOLIDS / L		(Dg/L)	1.9196	1.9196
Matrix	SPIKE VOLUME in mL		(SVol)	0.100	0.100
SOLID	SPIKE DILUTION FACTOR		(SDF)	1	1
Batch Number	SPIKE BOOK NUMBER		(Spk BN)	42B56	42B56
96002566	SPIKE VALUE in µCi/mL		(SVal)	1.9229E-01	1.9229E-01
Rerun	INSTRUMENT EFFICIENCY FACTOR		(EFF)	0.426	0.426
0	SAMPLE + SPIKE µCi/g		(S+S)	1.85E+02	1.79E+02
Sample Prep	AVERAGE or MAXIMUM µCi/g in SAMPLE			1.0093E+02	
FUSION01					
Sample #					
S96T000879	Rs (Sample Count Rate) = (TC / CT) - BKG				
Instrument Code	SAMPLE + SPIKE µCi/g = Rs * 1000mL/L * DF / (EFF * SS * Dg/L *2220000dpm/µCi)				
WB27809	QC ACTUAL = SVal				
Prepared By	QC FOUND = (((S+S µCi/g - SAMPLE µCi/g) * ((SDF/(SVol*1000))/(DF/SS/Dg/L))))				
SEH	PERCENT SPIKE RECOVERY = (QC FOUND / QC ACTUAL) *100				
Chemist					
SLF					
Analyst					
SCL					
Date Complete					
04/08/96					
Analysis Date					
04/08/96	QC ACTUAL		=	1.92E-01	
Analysis Time	QC FOUND		=	1.56E-01	
01:30 PM	AVG. PERCENT SPIKE RECOVERY		=	80.9%	
Sample Point					
S102					

Analyst:		SEH	Date: 08-Apr-96
Signature of Chemist:		SLF	Date: 4/10/96

SPIKE.WB1 Rev. 1.0 508101ML

DATA NOT USED IN PACKAGE

WORKBOOK PAGE: SPIKE12

AT : LA-508-101 (D-2) SPIKED SAMPLE

			SPIKE	REPLICATE
Type	DETECTOR NUMBER		18	18
SPK	DISH SIZE 1 , 2 , or 5	(MS)	2	2
Work List	TOTAL COUNTS	(TC)	32141	24960
6863	COUNT TIME in MINUTES	(CT)	30	30
AT or TB ?	BACKGROUND in cpm	(BKG)	0.3	0.3
AT	SAMPLE VOLUME in mL (Spiked Vial)	(SS)	0.100	0.100
Test Code	SAMPLE DILUTION FACTOR (Spiked Vial)	(DF)	1	1
@AB-01	DIGEST GRAMS of SOLIDS / L	(Dg/L)	1.9196	1.9196
Matrix	SPIKE VOLUME in mL	(SVol)	0.100	0.100
SOLID	SPIKE DILUTION FACTOR	(SDF)	1	1
Batch Number	SPIKE BOOK NUMBER	(Spk BN)	123B43	123B43
96002566	SPIKE VALUE in µCi/mL	(SVal)	3.5897E-02	3.5897E-02
Rerun	INSTRUMENT EFFICIENCY FACTOR	(EFF)	0.2095	0.2095
0	SAMPLE + SPIKE µCi/g	(S+S)	1.20E+01	9.32E+00
Sample Prep	AVERAGE or MAXIMUM µCi/g in SAMPLE		1.7921E-02	
FUSION01				
Sample #				
S96T000879	Rs (Sample Count Rate) = (TC / CT) - BKG			
Instrument Code	SAMPLE + SPIKE µCi/g = Rs * 1000mL/L * DF / (EFF * SS * Dg/L *2220000dpm/µCi)			
WB27809	QC ACTUAL = SVal			
Prepared By	QC FOUND = (((S+S µCi/g - SAMPLE µCi/g) * ((SDF/(SVol*1000))/(DF/SS/Dg/L))))			
SEH	PERCENT SPIKE RECOVERY = (QC FOUND / QC ACTUAL) *100			
Chemist				
SLF				
Analyst				
SCL				
Date Complete				
04/08/96				
Analysis Date				
04/08/96	QC ACTUAL	=	3.59E-02	
Analysis Time	QC FOUND	=	2.04E-02	
01:30 PM	AVG. PERCENT SPIKE RECOVERY	=	56.9%	
Sample Point				
S102				

Analyst:		SEH	Date: 08-Apr-96
Signature of Chemist:		SLF	Date: 4/10/96

SPIKE.WB1 Rev. 1.0 508101ML

DATA
NOT USED
IN PACKAGE

WORKBOOK PAGE: SAM1

TB : LA-508-101 (D-2) SOLIDS

			SAMPLE	REPLICATE
Type	DETECTOR NUMBER		18	18
SAMPLE	DISH SIZE (1 , 2 , or 5)	(MS)	2	2
Work List	GROSS COUNTS	(GC)	275533	277564
6863	COUNT TIME in MINUTES	(CT)	30	30
AT or TB ?	BACKGROUND in cpm	(BKG)	9	9
TB	SAMPLE SIZE in mL	(SS)	0.250	0.250
Test Code	DILUTION FACTOR	(DF)	11	11
@AB-01	DIGEST GRAMS of SOLIDS / L	(Dg/L)	2.0828	2.0828
Matrix	EFFICIENCY FACTOR	(EFF)	0.4260	0.4260
SOLID	Lc, Rmax, or Rs,(SAMPLE RATE) as APPROPRIATE		9175.433	9243.133

Batch Number	
96002566	Blank Concentration in µCi/g 2.05E+02
Rerun	Replicate Concentration in µCi/g 2.06E+02
0	Average Concentration in µCi/g 2.0572E+02
Sample Prep	
FUSION01	Rs (Sample Count Rate) = (TC / CT) - BKG
Sample #	TOTAL BETA µCi/g = Rs * 1000mL/L * DF / (EFF * SS * Dg/L * 2220000dpm/µCi)
S96T000880	
Instrument Code	Relative Counting Error = [|(The Square Root of TC + BKG * CT) / (TC - BKG * CT)|] * 1.96 * 100
WB27809	Detection Levels and Less Than Values are determined from Procedure LA-508-002.
Prepared By	
SEH	
Chemist	
SLF	TOTAL BETA in µCi/g (Average) = 2.06E+02
Analyst	
SCL	
Date Complete	
04/08/96	RELATIVE COUNTING ERROR 0.4%
Analysis Date	
04/08/96	
Analysis Time	
01:30 PM	
Sample Point	
S102	

DETECTION LEVEL
5.91E-02 µCi/g

Analyst:		SCL	Date: 08-Apr-96
Signature of Chemist:		SLF	Date: 4/10/96

SAMPLE.WB1 Rev. 1.0 508101MU

DATA NOT USED IN PACKAGE

WORKBOOK PAGE: SAM1

AT : LA-508-101 (D-2) SOLIDS

			SAMPLE	REPLICATE
Type	DETECTOR NUMBER		18	18
SAMPLE	DISH SIZE (1 , 2 , or 5)	(MS)	2	2
Work List	GROSS COUNTS	(GC)	253	259
6863	COUNT TIME in MINUTES	(CT)	30	30
AT or TB ?	BACKGROUND in cpm	(BKG)	0.3	0.3
AT	SAMPLE SIZE in mL	(SS)	0.250	0.250
Test Code	DILUTION FACTOR	(DF)	11	11
@AB-01	DIGEST GRAMS of SOLIDS / L	(Dg/L)	2.0828	2.0828
Matrix	EFFICIENCY FACTOR	(EFF)	0.2095	0.2095
SOLID	Lc, Rmax, or Rs,(SAMPLE RATE) as APPROPRIATE		8.133	8.333

Batch Number	
96002566	Blank Concentration in µCi/g 3.69E-01
Rerun	Replicate Concentration in µCi/g 3.79E-01
0	Average Concentration in µCi/g 3.7398E-01
Sample Prep	
FUSION01	Rs (Sample Count Rate) = (TC / CT) - BKG
Sample #	ALPHA TOTAL µCi/g = Rs * 1000mL/L * DF / (EFF * SS * Dg/L * 2220000dpm/µCi)
S96T000880	
Instrument Code	Relative Counting Error = [|(The Square Root of TC + BKG * CT) / (TC - BKG * CT)|] * 1.96 * 100
WB27809	Detection Levels and Less Than Values are determined from Procedure LA-508-002.
Prepared By	
SEH	
Chemist	
SLF	ALPHA TOTAL in µCi/g (Average) = 3.74E-01
Analyst	
SCL	
Date Complete	
04/08/96	RELATIVE COUNTING ERROR 13.0%
Analysis Date	
04/08/96	
Analysis Time	
01:30 PM	
Sample Point	
S102	

DETECTION LEVEL
2.53E-02 µCi/g

Analyst:		SCL	Date: 08-Apr-96
Signature of Chemist:		SLF	Date: 4/10/96

SAMPLE.WB1 Rev. 1.0 508101ML

DATA NOT USED IN PACKAGE

WORKBOOK PAGE: DUP1

TB : LA-508-101 (D-2) SOLIDS

			DUP	REPLICATE
Type	DETECTOR NUMBER		18	18
DUP	DISH SIZE (1 , 2 , or 5)	(MS)	2	2
Work List	GROSS COUNTS	(GC)	273505	260301
6863	COUNT TIME in MINUTES	(CT)	30	30
AT or TB ?	BACKGROUND in cpm	(BKG)	9	9
TB	SAMPLE SIZE in mL	(SS)	0.250	0.250
Test Code	DILUTION FACTOR	(DF)	11	11
@AB-01	DIGEST GRAMS of SOLIDS / L	(Dg/L)	1.978	1.978
Matrix	EFFICIENCY FACTOR	(EFF)	0.4260	0.4260
SOLID	Lc, Rmax, or Rs,(SAMPLE RATE) as APPROPRIATE		9107.833	8667.700

Batch Number	
96002566	Blank Concentration in µCi/g 2.14E+02
Rerun	Replicate Concentration in µCi/g 2.04E+02
0	Average Concentration in µCi/g 2.0905E+02
Sample Prep	
FUSION01	Rs (Sample Count Rate) = (TC / CT) - BKG
Sample#	TOTAL BETA µCi/g = Rs * 1000mL/L * DF / (EFF * SS * Dg/L * 2220000dpm/µCi)
S96T000880	
Instrument Code	Relative Counting Error = [|(The Square Root of TC + BKG * CT) / (TC - BKG * CT)|] * 1.96 * 100
WB27809	Detection Levels and Less Than Values are determined from Procedure LA-508-002.
Prepared By	
SEH	
Chemist	
SLF	TOTAL BETA in µCi/g (Average) = 2.09E+02
Analyst	
SCL	
Date Complete	
04/08/96	RELATIVE COUNTING ERROR 0.4%
Analysis Date	
04/08/96	
Analysis Time	
01:30 PM	
Sample Point	
S102	

DETECTION LEVEL
6.23E-02 µCi/g

Analyst:		SCL	Date: 08-Apr-96
Signature of Chemist:		SLF	Date: 4/10/96

SAMPLE.WB1 Rev. 1.0 508101MI

DATA NOT USED IN PACKAGE

WORKBOOK PAGE: DUP1

AT : LA-508-101 (D-2) SOLIDS

			DUP	REPLICATE
Type	DETECTOR NUMBER		18	18
DUP	DISH SIZE (1 , 2 , or 5)	(MS)	2	2
Work List	GROSS COUNTS	(GC)	263	260
6863	COUNT TIME in MINUTES	(CT)	30	30
AT or TB ?	BACKGROUND in cpm	(BKG)	0.3	0.3
AT	SAMPLE SIZE in mL	(SS)	0.250	0.250
Test Code	DILUTION FACTOR	(DF)	11	11
@AB-01	DIGEST GRAMS of SOLIDS / L	(Dg/L)	1.978	1.978
Matrix	EFFICIENCY FACTOR	(EFF)	0.2095	0.2095
SOLID	Lc, Rmax, or Rs,(SAMPLE RATE) as APPROPRIATE		8.467	8.367

Batch Number	
96002566	Blank Concentration in µCi/g 4.05E-01
Rerun	Replicate Concentration in µCi/g 4.00E-01
0	Average Concentration in µCi/g 4.0256E-01
Sample Prep	
FUSION01	Rs (Sample Count Rate) = (TC / CT) - BKG
Sample #	ALPHA TOTAL µCi/g = Rs * 1000mL/L * DF / (EFF * SS * Dg/L * 2220000dpm/µCi)
S96T000880	
Instrument Code	Relative Counting Error = [|(The Square Root of TC + BKG * CT) / (TC - BKG * CT)|] * 1.96 * 100
WB27809	Detection Levels and Less Than Values are determined from Procedure LA-508-002.
Prepared By	
SEH	
Chemist	
SLF	
Analyst	
SCL	
Date Complete	
04/08/96	
Analysis Date	
04/08/96	
Analysis Time	
01:30 PM	
Sample Point	
S102	

ALPHA TOTAL in µCi/g (Average)	=	4.03E-01	DETECTION LEVEL
RELATIVE COUNTING ERROR		12.8%	2.67E-02 µCi/g

Analyst:	SCL		Date: 08-Apr-96
Signature of Chemist:		SLF	Date: 4/10/96

SAMPLE.WB1 Rev. 1.0 508101ML

DATA
NOT USED
IN PACKAGE

WORKBOOK PAGE: SPIKE17

TB : LA-508-101 (D-2) SPIKED SAMPLE

				SPIKE	REPLICATE
	DETECTOR NUMBER			18	18
SPK	DISH SIZE 1 , 2 , or 5		(MS)	2	2
	TOTAL COUNTS		(TC)	768943	735741
6863	COUNT TIME in MINUTES		(CT)	30	30
	BACKGROUND in cpm		(BKG)	9	9
TB	SAMPLE VOLUME in mL	(Spiked Vial)	(SS)	0.250	0.250
	SAMPLE DILUTION FACTOR	(Spiked Vial)	(DF)	11	11
@AB-01	DIGEST GRAMS of SOLIDS / L		(Dg/L)	2.0828	2.0828
	SPIKE VOLUME in mL		(SVol)	0.100	0.100
SOLID	SPIKE DILUTION FACTOR		(SDF)	1	1
	SPIKE BOOK NUMBER		(Spk BN)	42B56	42B56
96002566	SPIKE VALUE in µCi/mL		(SVal)	1.9229E-01	1.9229E-01
	INSTRUMENT EFFICIENCY FACTOR		(EFF)	0.426	0.426
0	SAMPLE + SPIKE µCi/g		(S+S)	5.72E+02	5.48E+02
	AVERAGE or MAXIMUM µCi/g in SAMPLE			2.0572E+02	

FUSION01

S96T000880

WB27809

SEH

SLF

SCL

04/08/96

Rs (Sample Count Rate) = (TC / CT) - BKG

SAMPLE + SPIKE µCi/g = Rs * 1000mL/L * DF / (EFF * SS * Dg/L *2220000dpm/µCi)

QC ACTUAL = SVal

QC FOUND = (((S+S µCi/g - SAMPLE µCi/g) * ((SDF/(SVol*1000))/(DF/SS/Dg/L))))

PERCENT SPIKE RECOVERY = (QC FOUND / QC ACTUAL) *100

04/08/96	QC ACTUAL	=	1.92E-01
	QC FOUND	=	1.68E-01
01:30 PM	AVG. PERCENT SPIKE RECOVERY	=	87.2%

S102

Analyst:		SEH	Date: 08-Apr-96
Signature of Chemist:		SLF	Date: 4/10/96

SPIKE.WB1 Rev. 1.0 508101ML

DATA NOT USED IN PACKAGE

WORKBOOK PAGE: SPIKE18

AT : LA-508-101 (D-2) SPIKED SAMPLE

			SPIKE	REPLICATE
Type	DETECTOR NUMBER		18	18
SPK	DISH SIZE 1 , 2 , or 5	(MS)	2	2
Work List	TOTAL COUNTS	(TC)	36638	32811
6863	COUNT TIME in MINUTES	(CT)	30	30
AT or TB ?	BACKGROUND in cpm	(BKG)	0.3	0.3
AT	SAMPLE VOLUME in mL (Spiked Vial)	(SS)	0.250	0.250
Test Code	SAMPLE DILUTION FACTOR (Spiked Vial)	(DF)	11	11
@AB-01	DIGEST GRAMS of SOLIDS / L	(Dg/L)	2.0828	2.0828
Matrix	SPIKE VOLUME in mL	(SVol)	0.100	0.100
SOLID	SPIKE DILUTION FACTOR	(SDF)	1	1
Batch Number	SPIKE BOOK NUMBER	(Spk BN)	123B43	123B43
96002566	SPIKE VALUE in µCi/mL	(SVal)	3.5897E-02	3.5897E-02
Rerun	INSTRUMENT EFFICIENCY FACTOR	(EFF)	0.2095	0.2095
0	SAMPLE + SPIKE µCi/g	(S+S)	5.55E+01	4.97E+01
Sample Prep	AVERAGE or MAXIMUM µCi/g in SAMPLE		3.7398E-01	
FUSION01				
Sample #				
S96T000880	Rs (Sample Count Rate) = (TC / CT) - BKG			
Instrument Code	SAMPLE + SPIKE µCi/g = Rs * 1000mL/L * DF / (EFF * SS * Dg/L *2220000dpm/µCi)			
WB27809	QC ACTUAL = SVal			
Prepared By	QC FOUND = (((S+S µCi/g - SAMPLE µCi/g) * ((SDF/(SVol*1000))/(DF/SS/Dg/L))))			
SEH	PERCENT SPIKE RECOVERY = (QC FOUND / QC ACTUAL) *100			
Chemist				
SLF				
Analyst				
SCL				
Date Complete				
04/08/96				
Analysis Date				
04/08/96	QC ACTUAL	=	3.59E-02	
Analysis Time	QC FOUND	=	2.47E-02	
01:30 PM	AVG. PERCENT SPIKE RECOVERY	=	68.8%	
Sample Point				
S102				

Analyst:		SEH	Date: 08-Apr-96
Signature of Chemist:		SLF	Date: 4/10/96

SPIKE.WB1 Rev. 1.0 508101ML

DATA NOT USED IN PACKAGE

LABCORE Data Entry Template for Worklist# 6889

Analyst: A.Y. **Instrument:** AB00 #12 **Book#** 91356

Method: LA-220-101 Rev/Mod D-1

Worklist Comment: Determine sample size using ludlum. new

S	Type	Sample#	R	A	Test	Matrix	Group#	Project
1	STD				@SR90-01	SOLID		
2	BLNK-PREP				@SR90-01	SOLID		
3	BLNK/BKG				@SR90-01	SOLID		
4	SAMPLE	S96T000879	0	F	@SR90-01	SOLID	96000030	S102
	Analytes Requested: SR90-01 , SR90-01C, SR90-01E							
5	DUP	S96T000879	0	F	@SR90-01	SOLID		
6	SAMPLE	S96T000880	0	F	@SR90-01	SOLID	96000030	S102
	Analytes Requested: SR90-01 , SR90-01C, SR90-01E							
7	DUP	S96T000880	0	F	@SR90-01	SOLID		

Final page for worklist # 6889

Rae Ann Green 3-23-96
Analyst Signature **Date**

Sylvia Z Chuan 3/25/96
Analyst Signature **Date**

Sue Hogan 3/26/96

DATA
NOT USED
IN PACKAGE

Data Entry Comments: STD recovery is out of control limits.
Batch will be rerun. 3/27/96

S = Worklist Slot Number, R = Replicate Number, A = Aliquot Code.

LABCORE Completed Worklist Report for Worklist# 6889

Analyst: rag **Instrument:** AB12 **Book#** _____

Method: _____ Rev/Mod _____

Worklist Comment: Determine sample size using ludlum. new

Seq	Type	Sample#	R	A	Test	Matrix	Actual	Found	DL or Yield	Unit
1	STD		0		@SR90-01 SR90-01	SOLID	1.23E-03	1.38E-3	112.200	% Recovery
1	STD		0		@SR90-01 SR90-01C	SOLID	100	7.79E+01	77.900	% Recovery
1	STD		0		@SR90-01 SR90-01E	SOLID	1.00	1.93E+00	1.930	% Ct. Error
2	BLNK-PREP		0		@SR90-01 SR90-01	SOLID	1	9.34E-3	1.000e-002	uCi/g
2	BLNK-PREP		0		@SR90-01 SR90-01C	SOLID	100	6.88E+01	68.800	% Recovery
2	BLNK-PREP		0		@SR90-01 SR90-01E	SOLID	1.00	6.79E+01	67.900	% Ct. Error
3	BLNK/BKG		0		@SR90-01 SR90-01	SOLID	1	1.92E+00	1.920	uCi/g
4	SAMPLE	S96T000879	0	F	@SR90-01 SR90-01	SOLID	N/A	6.57E+00	6.190e-003	uCi/g
4	SAMPLE	S96T000879	0	F	@SR90-01 SR90-01C	SOLID	N/A	8.54E+01	1.000e-004	% Recovery
4	SAMPLE	S96T000879	0	F	@SR90-01 SR90-01E	SOLID	N/A	1.21E+00	0.000	% Ct. Error
5	DUP	S96T000879	0	F	@SR90-01 SR90-01	SOLID	6.57E+0	5.93E+0	10.240	RPD
5	DUP	S96T000879	0	F	@SR90-01 SR90-01C	SOLID	100	8.64E+01	86.400	% Recovery
5	DUP	S96T000879	0	F	@SR90-01 SR90-01E	SOLID	1.00	1.26E+00	1.260	% Ct. Error
6	SAMPLE	S96T000880	0	F	@SR90-01 SR90-01	SOLID	N/A	6.08E+01	5.660e-003	uCi/g
6	SAMPLE	S96T000880	0	F	@SR90-01 SR90-01C	SOLID	N/A	8.56E+01	1.000e-004	% Recovery
6	SAMPLE	S96T000880	0	F	@SR90-01 SR90-01E	SOLID	N/A	3.81E-01	0.000	% Ct. Error
7	DUP	S96T000880	0	F	@SR90-01 SR90-01	SOLID	6.08E+1	6.69E+1	9.550	RPD
7	DUP	S96T000880	0	F	@SR90-01 SR90-01C	SOLID	100	8.49E+01	84.900	% Recovery
7	DUP	S96T000880	0	F	@SR90-01 SR90-01E	SOLID	1.00	3.73E-01	0.370	% Ct. Error

Final page for worklist# 6889

Analyst Signature **Date** **Analyst Signature** **Date**

3/27/96

Reviewer Signature **Date**

DATA NOT USED IN PACKAGE

Units shown for QC (BLK/BKG) may not reflect the actual units.

WORKBOOK PAGE: STD1

Sr-89/90 : LA-220-101 (D-1), 102 (E-3), 104 (D-1) LIQUIDS

						STANDARD
Type	DETECTOR NUMBER		12	CARRIER ADDED in mL	(CVA)	1.000
STD	TOTAL COUNTS	(TC)	10455	GROSS WEIGHT	(W2)	7.2652
Work List	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1)	7.1873
6889	BACKGROUND in cpm	(BKG)	3.9	NET WEIGHT	(W3)	0.0779
Test Code	SAMPLE VOLUME in mL	(SS)	1.000	DELTA TIME (HOURS)	(DT)	3.83
@SR90-01	DILUTION FACTOR	(DF)	1			
Matrix	DIGEST DILUTION FACTOR	DDF	1			
LIQUID	SAMPLE COUNT RATE	(Rs)	1041.60	SR-90 EFFICIENCY FACTO	(C1)	0.4180
Batch Number	CRITICAL LEVEL	(Lc)	1.19	Y-90 EFFICIENCY FACTOR	(C2)	0.4660
96002596	TIME OF SEPARATION	(ST)	10:10	Rmax		N/A
Rerun	DATE OF SEPARATION	(SD)	03/23/96	DETECTION LIMIT	(Ld)	2.47
0	TIME OF COUNT	(TOC)	14:00	Sr-89/90 CONC. in µCi/L		1.3786E+00
Sample Prep	DATE OF COUNT	(DOC)	03/23/96			
N/A	STANDARD BOOK #		9B56			
Sample #	STANDARD VALUE in µCi/mL		1.2312E-03			
WL6889						
Instrument Code						
WB27811	Sample Count Rate (Rs) = (Total Counts (TC) / Count Time (CT)) - Background in cpm (BKG)					
Prepared By	Sr-89/90 CONC in µCi/mL REPLACE RS WITH RMAX IF RS<=LcAND RS>=0 OR REPLACE RS WITH Lc IF RS<0					
SZC	RS*DF*DDF*1000/((C1+C2*(1-e to the power of ((-natural log 2)/64.2*DT)))*SS*REC*2220000)					
Chemist	NOTE: 64.2 = Half Life for Y-90 and Rec. = Fractional Carrier Recovery ((W2-W1) / (CVA * 0.1000))					
SLF	Relative Counting Error = The Square Root of ((TC + BKG * CT) / (TC - BKG * CT)*1.96)					
Analyst	Percent Carrier Recovery = (Net Weight / Expected weight) * 100					
RAG	NOTE: Expected weight = CVA * 0.1					
Date Complete	Detection Levels and Less Than Values are determined from Procedure LA-508-002.					
03/25/96	Delta Time (hours) = ((DOC - SD) * 24) + (TOC - ST) / 100					DETECTION LEVEL
Analysis Date						
03/23/96	Sr-89/90 CONCENTRATION		1.38E-03		µCi/mL	
Analysis Time						
10:00 AM	RELATIVE COUNTING ERROR		1.9%			3.27E-06 µCi/L
Sample Point						
S102	PERCENT CARRIER RECOVERY		77.9%			

Analyst:	RAG	Date:	25-Mar-96
Signature of Chemist:	SLF	Date:	3/27/96

STANDARD.WB1 REV 1.2 22010NML

DATA NOT USED IN PACKAGE

WORKBOOK PAGE: BLANK2

LA-220-101 / D-1 Sr-89/90 : LA-220-101 (D-1), 102 (E-3), 104 (D-1)

						BLNK-PREP
Type	DETECTOR NUMBER		12	CARRIER ADDED in mL	(CVA)	1.000
BLNK-PREP	TOTAL COUNTS	(TC)	69	GROSS WEIGHT	(W2)	7.3095
Work List	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1)	7.2407
6889	BACKGROUND in cpm	(BKG)	3.9	NET WEIGHT	(W3)	0.0688
Test Code	SAMPLE VOLUME in mL	(SS)	0.250	DELTA TIME (HOURS)	(DT)	4.08
@SR90-01	DILUTION FACTOR	(DF)	1			
Matrix	DIGEST FACTOR (g/L)	(D g/L	1.9196			
SOLID	SAMPLE COUNT RATE	(Rs)	3.00	SR-90 EFFICIENCY FACTOR	(C1)	0.4180
Batch Number	CRITICAL LEVEL	(Lc)	1.19	Y-90 EFFICIENCY FACTOR	(C2)	0.4660
96002596	TIME OF SEPARATION	(ST)	10:10	Rmax		N/A
Rerun	DATE OF SEPARATION	(SD)	03/23/96	DETECTION LIMIT	(Ld)	2.47
0	TIME OF COUNT	(TOC)	14:15	Sr-89/90 CONC in µCi/g		9.3424E-03
Sample Prep	DATE OF COUNT	(DOC)	03/23/96			
N/A						
Sample #						
WL6889						
Instrument Code	Sample Count Rate (Rs) = (Total Counts (TC) / Count Time (CT)) - Background in cpm (BKG)					
WB27811	Sr-89/90 CONC in µCi/g Replace RS with RMAX if RS<=Lc and RS>=0 or Replace RS with Lc if RS<0					
Prepared By	RS*1000*DF/((C1+C2*(1-e to the power of ((-natural log 2)/64.2*DT)))*SS*DDF*REC*2220000)					
SZC	NOTE: 64.2 = Half Life for Y-90 and Rec. = Fractional Carrier Recovery ((W2-W1) / (CVA * 0.1000))					
Chemist	Relative Counting Error = The Square Root of ((TC + BKG * CT) / (TC - BKG * CT)*1.96)					
SLF	Percent Carrier Recovery = (Net Weight / Expected weight) * 100					
Analyst	NOTE: Expected weight = CVA * 0.1					
RAG	Detection Levels and Less Than Values are determined from Procedure LA-508-002.					
Date Complete	Delta Time (hours) = ((DOC - SD) * 24) + (TOC - ST) / 100					
03/25/96						
Analysis Date						DETECTION LEVEL
03/23/96	Sr-89/90 CONCENTRATION		9.34E-03		µCi/g	
Analysis Time						
10:00 AM	RELATIVE COUNTING ERROR		67.9%			7.69E-03 µCi/g
Sample Point						
S102	PERCENT CARRIER RECOVERY		68.8%			

Analyst:		RAG	Date:	25-Mar-96
Signature of Chemist:		SLF	Date:	3/27/96

BLANK.WB1 REV 1.2 22010NML

DATA NOT USED IN PACKAGE

2210

WORKBOOK PAGE: SAM4

LA-220-101 / D-1 Sr-89/90 : LA-220-101 (D-1), 102 (E-3), 104 (D-1)

							SAMPLE
Type	DETECTOR NUMBER		12	CARRIER ADDED in mL	(CVA)		1.000
SAMPLE	TOTAL COUNTS	(TC)	26294	GROSS WEIGHT	(W2)		7.3049
Work List	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1)		7.2195
6889	BACKGROUND in cpm	(BKG)	3.9	NET WEIGHT	(W3)		0.0854
Test Code	SAMPLE VOLUME in mL	(SS)	0.250	DELTA TIME (HOURS)	(DT)		4.25
@SR90-01	DILUTION FACTOR	(DF)	1				
Matrix	DIGEST FACTOR (g/L)	(D g/L	1.9196				
SOLID	SAMPLE COUNT RATE	(Rs)	2625.50	SR-90 EFFICIENCY FACTOR	(C1)		0.4180
Batch Number	CRITICAL LEVEL	(Lc)	1.19	Y-90 EFFICIENCY FACTOR	(C2)		0.4660
96002596	TIME OF SEPARATION	(ST)	10:15	Rmax			N/A
Rerun	DATE OF SEPARATION	(SD)	03/23/96	DETECTION LIMIT	(Ld)		2.47
0	TIME OF COUNT	(TOC)	14:30	Sr-89/90 CONC in µCi/g			6.5748E+00
Sample Prep	DATE OF COUNT	(DOC)	03/23/96				
FUSION01							
Sample #							
S96T000879							
Instrument Code	Sample Count Rate (Rs) = (Total Counts (TC) / Count Time (CT)) - Background in cpm (BKG)						
WB27811	Sr-89/90 CONC in µCi/g Replace RS with RMAX if RS<=Lc and RS>=0 or Replace RS with Lc if RS<0						
Prepared By	RS*1000*DF/((C1+C2*(1-e to the power of ((-natural log 2)/64.2*DT)))*SS*DDF*REC*2220000)						
SZC	NOTE: 64.2 = Half Life for Y-90 and Rec. = Fractional Carrier Recovery ((W2-W1) / (CVA * 0.1000))						
Chemist	Relative Counting Error = The Square Root of ((TC + BKG * CT) / (TC - BKG * CT)*1.96)						
SLF	Percent Carrier Recovery = (Net Weight / Expected weight) * 100						
Analyst	NOTE: Expected weight = CVA * 0.1						
RAG	Detection Levels and Less Than Values are determined from Procedure LA-508-002.						
Date Complete	Delta Time (hours) = ((DOC - SD) * 24) + (TOC - ST) / 100						
03/25/96							
Analysis Date							DETECTION LEVEL
03/23/96	Sr-89/90 CONCENTRATION			6.57E+00	µCi/g		
Analysis Time							
10:00 AM	RELATIVE COUNTING ERROR			1.2%			6.19E-03 µCi/g
Sample Point							
S102	PERCENT CARRIER RECOVERY			85.4%			

Analyst:		RAG	Date:	25-Mar-96
Signature of Chemist:		SLF	Date:	3/27/96

SAMPLE.WB1 REV 1.2 22010NML

DATA NOT USED IN PACKAGE

24496

WHC-SD-WM-DP-170, REV. 1

LA-220-101 / D-1 Sr-89/90 : LA-220-101 (D-1), 102 (E-3), 104 (D-1)

							DUP
Type	DETECTOR NUMBER		12	CARRIER ADDED in mL	(CVA)		1.000
DUP	TOTAL COUNTS	(TC)	24496	GROSS WEIGHT	(W2)		7.2882
Work List	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1)		7.2018
6889	BACKGROUND in cpm	(BKG)	3.9	NET WEIGHT	(W3)		0.0864
Test Code	SAMPLE VOLUME in mL	(SS)	0.250	DELTA TIME (HOURS)	(DT)		4.50
@SR90-01	DILUTION FACTOR	(DF)	1				
Matrix	DIGEST FACTOR (g/L)	(D g/L	1.9544				
SOLID	SAMPLE COUNT RATE	(Rs)	2445.70	SR-90 EFFICIENCY FACTOR	(C1)		0.4180
Batch Number	CRITICAL LEVEL	(Lc)	1.19	Y-90 EFFICIENCY FACTOR	(C2)		0.4660
96002596	TIME OF SEPARATION	(ST)	10:15	Rmax			N/A
Rerun	DATE OF SEPARATION	(SD)	03/23/96	DETECTION LIMIT	(Ld)		2.47
0	TIME OF COUNT	(TOC)	14:45	Sr-89/90 CONC in µCi/g			5.9297E+00
Sample Prep	DATE OF COUNT	(DOC)	03/23/96				
FUSION01							
Sample #							
S96T000879							
Instrument Code	Sample Count Rate (Rs) = (Total Counts (TC) / Count Time (CT)) - Background in cpm (BKG)						
WB27811	Sr-89/90 CONC in µCi/g Replace RS with RMAX if RS<=Lc and RS>=0 or Replace RS with Lc if RS<0						
Prepared By	RS*1000*DF/((C1+C2*(1-e to the power of ((-natural log 2)/64.2*DT)))*SS*DDF*REC*2220000)						
SZC	NOTE: 64.2 = Half Life for Y-90 and Rec. = Fractional Carrier Recovery ((W2-W1) / (CVA * 0.1000))						
Chemist	Relative Counting Error = The Square Root of ((TC + BKG * CT) / (TC - BKG * CT)*1.96)						
SLF	Percent Carrier Recovery = (Net Weight / Expected weight) * 100						
Analyst	NOTE: Expected weight = CVA * 0.1						
RAG	Detection Levels and Less Than Values are determined from Procedure LA-508-002.						
Date Complete	Delta Time (hours) = ((DOC - SD) * 24) + (TOC - ST) / 100						
03/25/96							
Analysis Date							DETECTION LEVEL
03/23/96	Sr-89/90 CONCENTRATION			5.93E+00	µCi/g		
Analysis Time							
10:00 AM	RELATIVE COUNTING ERROR			1.3%			5.99E-03 µCi/g
Sample Point							
S102	PERCENT CARRIER RECOVERY			86.4%			

Analyst:		RAG	Date:	25-Mar-96
Signature of Chemist:		SLF	Date:	3/27/96

SAMPLE.WB1 REV 1.2 22010NML

DATA NOT USED IN PACKAGE

2212

WORKBOOK PAGE: SAM6

LA-220-101 / D-1 Sr-89/90 : LA-220-101 (D-1), 102 (E-3), 104 (D-1)

							SAMPLE
Type	DETECTOR NUMBER		12	CARRIER ADDED in mL	(CVA)		1.000
SAMPLE	TOTAL COUNTS	(TC)	265325	GROSS WEIGHT	(W2)		7.2884
Work List	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1)		7.2028
6889	BACKGROUND in cpm	(BKG)	3.9	NET WEIGHT	(W3)		0.0856
Test Code	SAMPLE VOLUME in mL	(SS)	0.250	DELTA TIME (HOURS)	(DT)		4.75
@SR90-01	DILUTION FACTOR	(DF)	1				
Matrix	DIGEST FACTOR (g/L)	(D g/L	2.0828				
SOLID	SAMPLE COUNT RATE	(Rs)	26528.60	SR-90 EFFICIENCY FACTOR	(C1)		0.4180
Batch Number	CRITICAL LEVEL	(Lc)	1.19	Y-90 EFFICIENCY FACTOR	(C2)		0.4660
96002596	TIME OF SEPARATION	(ST)	10:15	Rmax			N/A
Rerun	DATE OF SEPARATION	(SD)	03/23/96	DETECTION LIMIT	(Ld)		2.47
0	TIME OF COUNT	(TOC)	15:00	Sr-89/90 CONC in µCi/g			6.0753E+01
Sample Prep	DATE OF COUNT	(DOC)	03/23/96				
FUSION01							
Sample #							
S96T000880							
Instrument Code	Sample Count Rate (Rs) = (Total Counts (TC) / Count Time (CT)) - Background in cpm (BKG)						
WB27811	Sr-89/90 CONC in µCi/g Replace RS with RMAX if RS<=Lc and RS>=0 or Replace RS with Lc if RS<0						
Prepared By	RS*1000*DF/((C1+C2*(1-e to the power of ((-natural log 2)/64.2*DT)))*SS*DDF*REC*2220000)						
SZC	NOTE: 64.2 = Half Life for Y-90 and Rec. = Fractional Carrier Recovery ((W2-W1) / (CVA * 0.1000))						
Chemist	Relative Counting Error = The Square Root of ((TC + BKG * CT) / (TC - BKG * CT)*1.96)						
SLF	Percent Carrier Recovery = (Net Weight / Expected weight) * 100						
Analyst	NOTE: Expected weight = CVA * 0.1						
RAG	Detection Levels and Less Than Values are determined from Procedure LA-508-002.						
Date Complete	Delta Time (hours) = ((DOC - SD) * 24) + (TOC - ST) / 100						
03/25/96							
Analysis Date							DETECTION LEVEL
03/23/96	Sr-89/90 CONCENTRATION			6.08E+01	µCi/g		
Analysis Time							
10:00 AM	RELATIVE COUNTING ERROR			0.4%			5.66E-03 µCi/g
Sample Point							
S102	PERCENT CARRIER RECOVERY			85.6%			

Analyst:		RAG	Date:	25-Mar-96
Signature of Chemist:		SLF	Date:	3/27/96

SAMPLE.WB1 REV 1.2 22010NML

DATA NOT USED IN PACKAGE

WORKBOOK PAGE: DUP7

LA-220-101 / D-1 Sr-89/90 : LA-220-101 (D-1), 102 (E-3), 104 (D-1)

						DUP
Type	DETECTOR NUMBER		12	CARRIER ADDED in mL	(CVA)	1.000
DUP	TOTAL COUNTS	(TC)	275783	GROSS WEIGHT	(W2)	7.9639
Work List	COUNT TIME in MINUTES	(CT)	10	TARE WEIGHT	(W1)	7.8790
6889	BACKGROUND in cpm	(BKG)	3.9	NET WEIGHT	(W3)	0.0849
Test Code	SAMPLE VOLUME in mL	(SS)	0.250	DELTA TIME (HOURS)	(DT)	4.92
@SR90-01	DILUTION FACTOR	(DF)	1			
Matrix	DIGEST FACTOR (g/L)	(D g/L	1.978			
SOLID	SAMPLE COUNT RATE	(Rs)	27574.40	SR-90 EFFICIENCY FACTOR	(C1)	0.4180
Batch Number	CRITICAL LEVEL	(Lc)	1.19	Y-90 EFFICIENCY FACTOR	(C2)	0.4660
96002596	TIME OF SEPARATION	(ST)	10:15	Rmax		N/A
Rerun	DATE OF SEPARATION	(SD)	03/23/96	DETECTION LIMIT	(Ld)	2.47
0	TIME OF COUNT	(TOC)	15:10	Sr-89/90 CONC in µCi/g		6.6922E+01
Sample Prep	DATE OF COUNT	(DOC)	03/23/96			
FUSION01						
Sample #						
S96T000880						
Instrument Code						
WB27811						
Prepared By						
SZC						
Chemist						
SLF						
Analyst						
RAG						
Date Complete						
03/25/96						
Analysis Date						
03/23/96						
Analysis Time						
10:00 AM						
Sample Point						
S102						

Sample Count Rate (Rs) = (Total Counts (TC) / Count Time (CT)) - Background in cpm (BKG)

Sr-89/90 CONC in µCi/g Replace RS with RMAX if RS<=Lc and RS>=0 or Replace RS with Lc if RS<0

RS*1000*DF/((C1+C2*(1-e to the power of ((-natural log 2)/64.2*DT)))*SS*DDF*REC*2220000)

NOTE: 64.2 = Half Life for Y-90 and Rec. = Fractional Carrier Recovery ((W2-W1) / (CVA * 0.1000))

Relative Counting Error = The Square Root of ((TC + BKG * CT) / (TC - BKG * CT)*1.96)

Percent Carrier Recovery = (Net Weight / Expected weight) * 100

NOTE: Expected weight = CVA * 0.1

Detection Levels and Less Than Values are determined from Procedure LA-508-002.

Delta Time (hours) = ((DOC - SD) * 24) + (TOC - ST) / 100

			DETECTION LEVEL
Sr-89/90 CONCENTRATION	6.69E+01	µCi/g	6.00E-03 µCi/g
RELATIVE COUNTING ERROR	0.4%		
PERCENT CARRIER RECOVERY	84.9%		

Analyst:		RAG	Date:	25-Mar-96
Signature of Chemist:		SLF	Date:	3/27/96

SAMPLE.WB1 REV 1.2 22010NML

DATA NOT USED IN PACKAGE

LABCORE Data Entry Template for Worklist# 8190

Analyst: KNT **Instrument:** U01 _____ **Book#** 45856

Method: LA-925-009 Rev/Mod A-1

Worklist Comment: 1-10ml Sample Prep.For spike use: 0.1ml. new

S	Type	Sample#	R	A	Test	Matrix	Group#	Project
1	STD				@U-01	SOLID		
2	BLNK-PREP				@U-01	SOLID		
3	SAMPLE	S96T001583	0	F	@U-01	SOLID	96000094	S102
		Analytes Requested:			U-02	, U-02E		
4	DUP	S96T001583	0	F	@U-01	SOLID		
5	SPK	S96T001583	0	F	@U-01	SOLID		
6	SAMPLE	S96T001584	0	F	@U-01	SOLID	96000094	S102
		Analytes Requested:			U-02	, U-02E		
7	DUP	S96T001584	0	F	@U-01	SOLID		
8	SPK	S96T001584	0	F	@U-01	SOLID		
9	SAMPLE	S96T001585	0	F	@U-01	SOLID	96000094	S102
		Analytes Requested:			U-02	, U-02E		
10	DUP	S96T001585	0	F	@U-01	SOLID		
11	SPK	S96T001585	0	F	@U-01	SOLID		

Final page for worklist # 8190

Kim Thomas 5-2-96
Analyst Signature **Date**

[illegible] 5/7/96
Analyst Signature **Date**
C.J. Opinen 5/7/96

Data Entry Comments:

S = Worklist Slot Number, R = Replicate Number, A = Aliquot Code.

worklistrad Version 0.0 04/18/96
05/09/96 11:25

5702

LABCORE Completed RadChem Report for Worklist#: 8190

Analyst: knt **Instrument:** U01 **Book#** 45856

Method: LA-925-009 Rev/Mod A-1

Worklist Comment: 1-10ml Sample Prep.For spike use: 0.1ml. new

Seq	Type	Sample#	R	A		Test	Matrix	Actual	Found	DL or Yield	Unit
1	STD		0		aU-01	U-02	SOLID	6.39E-02	6.18E-02	96.714	% Recovery
1	STD		0		aU-01	U-02E	SOLID	1	3.22E+00	3.220	Ratio
2	BLNK-PREP		0		aU-01	U-02	SOLID	1	5.36	5.360	uCi/g
2	BLNK-PREP		0		aU-01	U-02E	SOLID	1	1.52E+00	1.520	Ratio
3	SAMPLE	S96T001583	0	F	aU-01	U-02	SOLID	N/A	4.99E+01	193.0e-002	ug/g
3	SAMPLE	S96T001583	0	F	aU-01	U-02E	SOLID	N/A	1.40E+00	0.0e+000	% Inst Error
4	DUP	S96T001583	0	F	aU-01	U-02	SOLID	4.99E+1	4.81E+1	3.673	RPD
4	DUP	S96T001583	0	F	aU-01	U-02E	SOLID	1	1.65E+00	1.650	Ratio
5	SPK	S96T001583	0	F	aU-01	U-02	SOLID	5.69E+01	6.91E+01	121.441	% Recovery
6	SAMPLE	S96T001584	0	F	aU-01	U-02	SOLID	N/A	1.44E+03	174.0e-003	ug/g
6	SAMPLE	S96T001584	0	F	aU-01	U-02E	SOLID	N/A	3.24E+00	0.0e+000	% Inst Error
7	DUP	S96T001584	0	F	aU-01	U-02	SOLID	1.44E+3	1.53E+3	6.061	RPD
7	DUP	S96T001584	0	F	aU-01	U-02E	SOLID	1	3.19E+00	3.190	Ratio
8	SPK	S96T001584	0	F	aU-01	U-02	SOLID	5.69E+01	6.66E+01	117.047	% Recovery
9	SAMPLE	S96T001585	0	F	aU-01	U-02	SOLID	N/A	6.22E+03	217.0e-002	ug/g
9	SAMPLE	S96T001585	0	F	aU-01	U-02E	SOLID	N/A	3.19E+00	0.0e+000	% Inst Error
10	DUP	S96T001585	0	F	aU-01	U-02	SOLID	6.22E+3	6.59E+3	5.777	RPD
10	DUP	S96T001585	0	F	aU-01	U-02E	SOLID	1	3.17E+00	3.170	Ratio
11	SPK	S96T001585	0	F	aU-01	U-02	SOLID	5.69E+01	4.74E+01	83.304	% Recovery

Final page for worklist# 8190

Analyst Signature Date

Analyst Signature Date

Reviewer Signature Date 5/9/96

Units shown for QC (BLK/BKG) may not reflect the actual units.

URANIUM ANALYSIS

Standard Report

Standard for LOW Range - 2.48E-06 g/L
Laser Pulses 500 Date/Time 05/01/96/22:35:46

Reference	Standard
Intensity 7550	Intensity 10404
Lifetime 309.32 + .72 us	Lifetime 302.93 + 1.81 us
R2 .99956	R2 .9565
Intercept 2664.85	Intercept 11535.15 + 1.08E+02

Sample ID 45856 Date/Time 05/02/96/00:39:28
Description STD Cal Y=6.27E+07X-2.90E+02
Ref. Ratio .987 Intensity 3043 (t= 39 us)
Laser Pulses 500 Conc 6.18E-05 + 1.99E-06 g/L
Lifetime 256 + 1.047 us Dilution Factor 1 mL/mL
R2 .9993
Integrated 53374 FINAL RESULT 6.18E-05 + 1.99E-06 g/L
Range: HIGH

Sample ID Date/Time 05/02/96/00:45:33
Description BLNK-PREP Cal Y=4.67E+09X0
Ref. Ratio 1.01 Intensity 4354 (t= 39 us)
Laser Pulses 500 Conc 1.13E-06 + 1.72E-08 g/L
Lifetime 226 + 1.169 us Dilution Factor 1 mL/mL
R2 .9989
Integrated 67685 FINAL RESULT 1.13E-06 + 1.72E-08 g/L
Range: LOW

Sample ID 96C0001557 Date/Time 05/02/96/01:06:40
Description 34P Cal Y=4.67E+09X0
Ref. Ratio 1.012 Intensity 3751 (t= 39 us)
Laser Pulses 500 Conc 9.37E-07 + 1.34E-08 g/L
Lifetime 277 + 1.018 us Dilution Factor 1 mL/mL
R2 .999
Integrated 70964 FINAL RESULT 9.37E-07 + 1.34E-08 g/L
Range: LOW

Sample ID 96C0001558 Date/Time 05/02/96/01:08:42
Description DUP Cal Y=4.67E+09X0
Ref. Ratio 1.011 Intensity 3760 (t= 39 us)
Laser Pulses 500 Conc 9.95E-06 + 1.64E-07 g/L
Lifetime 174 + .857 us Dilution Factor 1 mL/mL
R2 .999
Integrated 46305 FINAL RESULT 9.95E-06 + 1.64E-07 g/L
Range: LOW

URANIUM ANALYSIS

Background Report

Background for LOW Range
Laser Pulses 500

First Time Data Used (sample) 4
Date/Time 05/01/96/22:20:20

Reference	Sample
Intensity 7637	Intensity 343
Lifetime 309.89 + 1.47 us	
R2 .99903	
Intercept 8554.5	

Background Report

Background for HIGH Range
Laser Pulses 500

First Time Data Used (sample) 4
Date/Time [illegible]

Reference	Sample
Intensity [illegible]	Intensity [illegible]
Lifetime [illegible] us	
R2 [illegible]	
Intercept [illegible]	

Standard Report

Standard for LOW Range [illegible] g/L
Laser Pulses [illegible]

Date/Time [illegible]

Reference	Sample
Intensity [illegible]	Intensity [illegible]
Lifetime [illegible] + [illegible] us	Lifetime [illegible] + [illegible] us
R2 [illegible]	R2 [illegible]
Intercept [illegible]	Intercept [illegible] + [illegible]

Standard Report

Standard for HIGH Range [illegible] g/L
Laser Pulses [illegible]

Date/Time [illegible]

Reference	Sample
Intensity [illegible]	Intensity [illegible]
Lifetime [illegible] + [illegible] us	Lifetime [illegible] + [illegible] us
R2 [illegible]	R2 [illegible]
Intercept [illegible]	Intercept [illegible] + [illegible]

URANIUM ANALYSIS

Sample ID 896T001583 Date/Time 05/02/96/01:10:25
Description SPK Cal Y=6.27E+07X-2.90E+02
Ref. Ratio 1.021 Intensity 34393 (t= 39 us)
Laser Pulses 500 Conc 7.02E-04 + 2.35E-05 g/L
Lifetime 168 + .84 us Dilution Factor 1 mL/mL
R2 .9989
Integrated 420720 FINAL RESULT 7.02E-04 + 2.35E-05 g/L
Range: HIGH

Sample ID 896T001584 Date/Time 05/02/96/01:10:02
Description BAN Cal Y=6.27E+07X-2.90E+02
Ref. Ratio 1.012 Intensity 14957 (t= 39 us)
Laser Pulses 500 Conc 3.08E-04 + 9.92E-06 g/L
Lifetime 167 + .847 us Dilution Factor 1 mL/mL
R2 .9999
Integrated 177377 FINAL RESULT 3.08E-04 + 9.92E-06 g/L
Range: HIGH

Sample ID 896T001585 Date/Time 05/02/96/01:10:35
Description DIF Cal Y=6.27E+07X-2.90E+02
Ref. Ratio 1.022 Intensity 16284 (t= 39 us)
Laser Pulses 500 Conc 3.29E-04 + 1.38E-05 g/L
Lifetime 211 + .575 us Dilution Factor 1 mL/mL
R2 .9997
Integrated 249817 FINAL RESULT 3.29E-04 + 1.38E-05 g/L
Range: HIGH

Sample ID 896T001586 Date/Time 05/02/96/01:10:12
Description DF Cal Y=6.27E+07X-2.90E+02
Ref. Ratio 1.012 Intensity 48762 (t= 39 us)
Laser Pulses 500 Conc 9.72E-04 + 3.10E-05 g/L
Lifetime 181 + .716 us Dilution Factor 1 mL/mL
R2 .9997
Integrated 582455 FINAL RESULT 9.72E-04 + 3.10E-05 g/L
Range: HIGH

Sample ID 896T001588 Date/Time 05/02/96/01:09:57
Description 54X Cal Y=6.27E+07X-2.90E+02
Ref. Ratio 1.019 Intensity 8196 (t= 39 us)
Laser Pulses 500 Conc 1.08E-04 + 3.78E-06 g/L
Lifetime 165 + .676 us Dilution Factor 1 mL/mL
R2 .9997
Integrated 70176 FINAL RESULT 1.08E-04 + 3.78E-06 g/L
Range: HIGH

URANIUM ANALYSIS

Sample ID 8967001565
Description DUP
Ref. Ratio 1.026
Laser Pulses 300
Lifetime 255 + .547 us
R2 .9998
Integrated 96331
Range: HIGH

Date/Time 05/02/96/01:32:46
Cal Y=6.27E-07X-2.50E+02
Intensity 5244 (t= 39 us)
Conc 1.09E-04 + 3.46E-06 g/L
Dilution Factor 1 mL/mL

FINAL RESULT 1.09E-04 + 3.46E-06 g/L

Sample ID 8967001553
Description DUP
Ref. Ratio 1.026
Laser Pulses 300
Lifetime 1[illegible] + [illegible] us
R2 .9999
Integrated [illegible]
Range: HIGH

Date/Time 05/02/96/01:[illegible]
Cal Y=[illegible]X-[illegible]
Intensity 47166 (t= 117 us)
Conc [illegible] + [illegible] g/L
Dilution Factor 1 mL/mL

FINAL RESULT [illegible] + [illegible] g/L

WORKBOOK PAGE: STD1

Uranium by Phosphorescence: LA-925-009 (A-1) LIQUID/SOLID

Type			
STD			STANDARD
Work List	STANDARD BOOK #		45B56
8190	VOLUME OF SAMPLE (mL)	(SS)	1.00
Test Code	DILUTION FACTOR OF SAMPLE	(DF)	1.00
@U-01	PREPARATION FACTOR OF SAMPLE	(PF)	1.00
Matrix	LIFETIME IN MICROSECONDS		256.00
LIQUID	R2 VALUE		0.9993
Batch Number	RANGE (HIGH OR LOW)		HIGH
96004033	INSTRUMENT UNCERTAINTY	(IU)	1.99E-06
Rerun	INSTRUMENT RESULT	(IR)	6.18E-05
0	DETECTION LEVEL (µg/mL)		3.70E-05
Sample Prep			
N/A	RESULT (µg/mL)		6.18E-02
Sample #	VALUE OF STANDARD		6.39E-02
WL8190	%RECOVERY		96.71
Instrument Code	RELATIVE % UNCERTAINTY		3.2
U01			
Prepared By			
MCB			
Chemist			
JLS			
Analyst			
KNT			
Date Complete			
05/07/96			
Analysis Date			
05/02/96			
Analysis Time			
01:20 AM			
Sample Point			
S-102			

Result = DF * PF * IR * 1000

Detection Level = 3.70 E-08 * DF * PF * 1000

% Recovery = Result / Value of Standard * 100

Relative % Uncertainty = IU / IR * 100

Analyst:	KNT	Date:	07-May-96
Signature of Chemist:	JLS	Date:	5/9/96

STANDARD.WB1 REV 2.0 925009ML

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WORKBOOK PAGE: BLANK2

Uranium by Phosphorescence: LA-925-009 (A-1) LIQUID/SOLID

Type			
BLNK-PREP			BLANK
Work List	VOLUME OF SAMPLE (mL)	(SS)	1.00
8190	DILUTION FACTOR OF SAMPLE	(DF)	1.00
Test Code	PREPARATION FACTOR OF SAMPLE	(PF)	10.00
@U-01	DIGEST FACTOR	(Dg/L)	2.1076
Matrix	LIFETIME IN MICROSECONDS		226.00
SOLID	R2 VALUE		0.9988
Batch Number	RANGE (HIGH OR LOW)		low
96004033	INSTRUMENT UNCERTAINTY	(IU)	1.72E-08
Rerun	INSTRUMENT RESULT	(IR)	1.13E-06
0	DETECTION LEVEL µg/g		1.76E-01
Sample Prep			
N/A	CONCENTRATION IN SOLUTION (g/L)		1.13E-05
Sample #	RESULT (µg/g)		5.36E+00
WL8190	RELATIVE % UNCERTAINTY		1.5
Instrument Code			
U01			
Prepared By			
MCB			
Chemist			
JLS			
Analyst			
KNT			
Date Complete			
05/07/96			
Analysis Date			
05/02/96			
Analysis Time			
01:20 AM			
Sample Point			
S-102			

Result = Conc. in Solution (g/L) * 1000000 / Dg/L

Detection Level = 3.70 E-08 * DF * PF * 1000000/ DF

Relative % Uncertainty = IU / IR * 100

Concentration in Solution (g/L) = IR * DF * PF

Analyst:	KNT	Date:	07-May-96
Signature of Chemist: J L Blessman	JLS	Date:	5/9/96

BLANK.WB1 REV 2.0 925009ML

2222

WORKBOOK PAGE: SAM3

Uranium by Phosphorescence: LA-925-009 (A-1) LIQUID/SOLID

Type			
SAMPLE			SAMPLE
Work List	VOLUME OF SAMPLE (mL)	(SS)	1.00
8190	DILUTION FACTOR OF SAMPLE	(DF)	11.00
Test Code	PREPARATION FACTOR OF SAMPLE	(PF)	10.00
@U-01	DIGEST FACTOR	(Dg/L)	2.1076
Matrix	LIFETIME IN MICROSECONDS		277.00
SOLID	R2 VALUE		0.9990
Batch Number	RANGE (HIGH OR LOW)		LOW
96004033	INSTRUMENT UNCERTAINTY	(IU)	1.34E-08
Rerun	INSTRUMENT RESULT	(IR)	9.57E-07
0	DETECTION LEVEL µg/g		1.93E+00
Sample Prep			
FUSION01	CONCENTRATION IN SOLUTION (g/L)		1.05E-04
Sample #	RESULT (µg/g)		4.99E+01
S96T001583	RELATIVE % UNCERTAINTY		1.4
Instrument Code			
U01			
Prepared By			
MCB			
Chemist			
JLS			
Analyst			
KNT			
Date Complete			
05/07/96			
Analysis Date			
05/02/96			
Analysis Time			
01:20 AM			
Sample Point			
S-102			

Result = Conc. in Solution (g/L) * 1000000 / Dg/L

Detection Level = 3.70 E-08 * DF * PF * 1000000/ DF

Relative % Uncertainty = IU / IR * 100

Concentration in Solution (g/L) = IR * DF * PF

Analyst:	KNT	Date:	07-May-96
Signature of Chemist:	JLS	Date:	5/9/96

SAMPLE.WB1 REV 2.0 925009ML

WORKBOOK PAGE: DUP4

Uranium by Phosphorescence: LA-925-009 (A-1) LIQUID/SOLID

Type			DUP
DUP			
Work List	VOLUME OF SAMPLE (mL)	(SS)	1.00
8190	DILUTION FACTOR OF SAMPLE	(DF)	1.00
Test Code	PREPARATION FACTOR OF SAMPLE	(PF)	10.00
@U-01	DIGEST FACTOR	(Dg/L)	2.0704
Matrix	LIFETIME IN MICROSECONDS		174.00
SOLID	R2 VALUE		0.9990
Batch Number	RANGE (HIGH OR LOW)		LOW
96004033	INSTRUMENT UNCERTAINTY	(IU)	1.64E-07
Rerun	INSTRUMENT RESULT	(IR)	9.95E-06
0	DETECTION LEVEL µg/g		1.79E-01
Sample Prep			
FUSION01	CONCENTRATION IN SOLUTION (g/L)		9.95E-05
Sample #	RESULT (µg/g)		4.81E+01
S96T001583	RELATIVE % UNCERTAINTY		1.6
Instrument Code			
U01			
Prepared By			
MCB			
Chemist			
JLS			
Analyst			
KNT			
Date Complete			
05/07/96			
Analysis Date			
05/02/96			
Analysis Time			
01:20 AM			
Sample Point			
S-102			

Result = Conc. in Solution (g/L) * 1000000 / Dg/L

Detection Level = 3.70 E-08 * DF * PF * 1000000/ DF

Relative % Uncertainty = IU / IR * 100

Concentration in Solution (g/L) = IR * DF * PF

Analyst:	KNT	Date:	07-May-96
Signature of Chemist:	JLS	Date:	5/9/96

SAMPLE.WB1 REV 2.0 925009ML

WORKBOOK PAGE: SPIKE5

Uranium by Phosphorescence: LA-925-009 (A-1) LIQUID/SOLID

Type			SPIKE
SPK	SPIKE BOOK #		22B55
Work List	VOLUME OF SAMPLE + SPIKE (mL)	(SS)	1.00
8190	DILUTION FACTOR OF SAMPLE + SPIKE	(DF)	1.00
Test Code	PREPARATION FACTOR OF SAMPLE + SPIKE	(PF)	10.00
@U-01	DIGEST FACTOR OF SAMPLE	(DDF)	2.1078
Matrix	LIFETIME IN MICROSECONDS		168.00
SOLID	R2 VALUE		0.9989
Batch Number	RANGE (HIGH OR LOW)		HIGH
95004033	INSTRUMENT RESULT	(IR)	7.02E-04
Rerun	CONCENTRATION IN SOLUTION (g/L)	(CONC)	7.02E-03
0	SPIKE VALUE (g/L)	(SV)	5.69E-02
Sample Prep	INITIAL VOLUME OF SPIKE (mL)	(IV)	0.10
FUSION01	ORIGINAL SAMPLE VOLUME BEFORE PREP (mL)	(OSV)	1.00
Sample Number	CONCENTRATION IN SOLN (g/L) FROM SAMPLE FORM	(SR)	1.05E-04
S96T001583			
Instrument Code			
U01	Concentration = IR * DF * PF		
Prepared By			
MCB	QC Actual (µg/mL) = SV (g/L) * 1000		
Chemist			
JLS	QC Found (µg/mL) = (CONC - SR) * OSV / IV * 1000		
Analyst			
KNT	% Recovery = QC FOUND / QC ACTUAL		
Date Complete			
05/07/96			
Analysis Date			
05/02/96	QC ACTUAL	=	5.69E+01 µg/mL
Analysis Time	QC FOUND	=	6.91E+01 µg/mL
01:20 AM	% SPIKE RECOVERY	=	121.5%
Sample Point			
S-102			

Analyst:		KNT	Date:	07-May-96
Signature of Chemist:	J L Supper	JLS	Date:	5/9/96

SPIKE.WB1 REV 2.0 925009ML

2225

WORKBOOK PAGE: SAM6

Uranium by Phosphorescence: LA-925-009 (A-1) LIQUID/SOLID

Type			SAMPLE
SAMPLE			
Work List	VOLUME OF SAMPLE (mL)	(SS)	1.00
8190	DILUTION FACTOR OF SAMPLE	(DF)	1.00
Test Code	PREPARATION FACTOR OF SAMPLE	(PF)	10.00
@U-01	DIGEST FACTOR	(Dg/L)	2.1308
Matrix	LIFETIME IN MICROSECONDS		167.00
SOLID	R2 VALUE		0.9995
Batch Number	RANGE (HIGH OR LOW)		HIGH
96004033	INSTRUMENT UNCERTAINTY	(IU)	9.92E-06
Rerun	INSTRUMENT RESULT	(IR)	3.06E-04
0	DETECTION LEVEL µg/g		1.74E-01
Sample Prep			
FUSION01	CONCENTRATION IN SOLUTION (g/L)		3.06E-03
Sample #	RESULT (µg/g)		1.44E+03
S96T001584	RELATIVE % UNCERTAINTY		3.2
Instrument Code			
U01			
Prepared By			
MCB			
Chemist			
JLS			
Analyst			
KNT			
Date Complete			
05/07/96			
Analysis Date			
05/02/96			
Analysis Time			
01:20 AM			
Sample Point			
S-102			

Result = Conc. in Solution (g/L) * 1000000 / Dg/L

Detection Level = 3.70 E-08 * DF * PF * 1000000/ DF

Relative % Uncertainty = IU / IR * 100

Concentration in Solution (g/L) = IR * DF * PF

Analyst:		KNT	Date:	07-May-96
Signature of Chemist:	J L Slupper	JLS	Date:	5/9/96

SAMPLE.WB1 REV 2.0 925009ML

WORKBOOK PAGE: DUP7

Uranium by Phosphorescence: LA-925-009 (A-1) LIQUID/SOLID

			DUP
Type			
DUP			
Work List	VOLUME OF SAMPLE (mL)	(SS)	1.00
8190	DILUTION FACTOR OF SAMPLE	(DF)	1.00
Test Code	PREPARATION FACTOR OF SAMPLE	(PF)	10.00
@U-01	DIGEST FACTOR	(Dg/L)	2.1512
Matrix	LIFETIME IN MICROSECONDS		211.00
SOLID	R2 VALUE		0.9997
Batch Number	RANGE (HIGH OR LOW)		HIGH
96004033	INSTRUMENT UNCERTAINTY	(IU)	1.05E-05
Rerun	INSTRUMENT RESULT	(IR)	3.29E-04
0	DETECTION LEVEL µg/g		1.72E-01
Sample Prep			
FUSION01	CONCENTRATION IN SOLUTION (g/L)		3.29E-03
Sample #	RESULT (µg/g)		1.53E+03
S96T001584	RELATIVE % UNCERTAINTY		3.2
Instrument Code			
U01			
Prepared By			
MCB			
Chemist			
JLS			
Analyst			
KNT			
Date Complete			
05/07/96			
Analysis Date			
05/02/96			
Analysis Time			
01:20 AM			
Sample Point			
S-102			

Result = Conc. in Solution (g/L) * 1000000 / Dg/L

Detection Level = 3.70 E-08 * DF * PF * 1000000/ DF

Relative % Uncertainty = IU / IR * 100

Concentration in Solution (g/L) = IR * DF * PF

Analyst:	KNT	Date:	07-May-96
Signature of Chemist: J S Lippert	JLS	Date:	5/9/96

SAMPLE.WB1 REV 2.0 925009ML

2227

WORKBOOK PAGE: SPIKE8

Uranium by Phosphorescence: LA-925-009 (A-1) LIQUID/SOLID

			SPIKE
SPK	SPIKE BOOK #		22B55
8190	VOLUME OF SAMPLE + SPIKE (mL)	(SS)	1.00
8190	DILUTION FACTOR OF SAMPLE + SPIKE	(DF)	1.00
@U-01	PREPARATION FACTOR OF SAMPLE + SPIKE	(PF)	10.00
@U-01	DIGEST FACTOR OF SAMPLE	(DDF)	2.1308
SOLID	LIFETIME IN MICROSECONDS		251.00
SOLID	R2 VALUE		0.9997
96004033	RANGE (HIGH OR LOW)		HIGH
96004033	INSTRUMENT RESULT	(IR)	9.72E-04
0	CONCENTRATION IN SOLUTION (g/L)	(CONC)	9.72E-03
0	SPIKE VALUE (g/L)	(SV)	5.69E-02
FUSION01	INITIAL VOLUME OF SPIKE (mL)	(IV)	0.10
FUSION01	ORIGINAL SAMPLE VOLUME BEFORE PREP (mL)	(OSV)	1.00
S96T001584	CONCENTRATION IN SOLN (g/L) FROM SAMPLE FORM	(SR)	3.06E-03

Type: SPK
Work List: 8190
Test Code: @U-01
Matrix: SOLID
Batch Number: 96004033
Rerun: 0
Sample Prep: FUSION01
Sample Number: S96T001584
Instrument Code: U01
Prepared By: MCB
Chemist: JLS
Analyst: KNT
Date Complete: 05/07/96
Analysis Date: 05/02/96
Analysis Time: 01:20 AM
Sample Point: S-102

Concentration = IR * DF * PF

QC Actual (µg/mL) = SV (g/L) * 1000

QC Found (µg/mL) = (CONC - SR) * OSV / IV * 1000

% Recovery = QC FOUND / QC ACTUAL

QC ACTUAL	=	5.69E+01	µg/mL
QC FOUND	=	6.66E+01	µg/mL
% SPIKE RECOVERY	=	117.0%	

Analyst:	KNT	Date:	07-May-96
Signature of Chemist:	JLS	Date:	5/9/96

SPIKE.WB1 REV 2.0 925009ML

2223

WORKBOOK PAGE: SAM9

Uranium by Phosphorescence: LA-925-009 (A-1) LIQUID/SOLID

Type			
SAMPLE			SAMPLE
Work List	VOLUME OF SAMPLE (mL)	(SS)	1.00
8190	DILUTION FACTOR OF SAMPLE	(DF)	11.00
Test Code	PREPARATION FACTOR OF SAMPLE	(PF)	10.00
@U-01	DIGEST FACTOR	(Dg/L)	1.8748
Matrix	LIFETIME IN MICROSECONDS		253.00
SOLID	R2 VALUE		0.9997
Batch Number	RANGE (HIGH OR LOW)		HIGH
96004033	INSTRUMENT UNCERTAINTY	(IU)	3.38E-06
Rerun	INSTRUMENT RESULT	(IR)	1.06E-04
0	DETECTION LEVEL µg/g		2.17E+00
Sample Prep			
FUSION01	CONCENTRATION IN SOLUTION (g/L)		1.17E-02
Sample #	RESULT (µg/g)		6.22E+03
S96T001585	RELATIVE % UNCERTAINTY		3.2
Instrument Code			
U01			
Prepared By			
MCB			
Chemist			
JLS			
Analyst			
KNT			
Date Complete			
05/07/96			
Analysis Date			
05/02/96			
Analysis Time			
01:20 AM			
Sample Point			
S-102			

Result = Conc. in Solution (g/L) * 1000000 / Dg/L

Detection Level = 3.70 E-08 * DF * PF * 1000000/ DF

Relative % Uncertainty = IU / IR * 100

Concentration in Solution (g/L) = IR * DF * PF

Analyst:	KNT	Date:	07-May-96
Signature of Chemist: J S Supple	JLS	Date:	5/9/96

SAMPLE.WB1 REV 2.0 925009ML

WORKBOOK PAGE: DUP10

Uranium by Phosphorescence: LA-925-009 (A-1) LIQUID/SOLID

Type			DUP
DUP			
Work List	VOLUME OF SAMPLE (mL)	(SS)	1.00
8190	DILUTION FACTOR OF SAMPLE	(DF)	11.00
Test Code	PREPARATION FACTOR OF SAMPLE	(PF)	10.00
@U-01	DIGEST FACTOR	(Dg/L)	1.8196
Matrix	LIFETIME IN MICROSECONDS		255.00
SOLID	R2 VALUE		0.9998
Batch Number	RANGE (HIGH OR LOW)		HIGH
96004033	INSTRUMENT UNCERTAINTY	(IU)	3.46E-06
Rerun	INSTRUMENT RESULT	(IR)	1.09E-04
0	DETECTION LEVEL µg/g		2.24E+00
Sample Prep			
FUSION01	CONCENTRATION IN SOLUTION (g/L)		1.20E-02
Sample #	RESULT (µg/g)		6.59E+03
S96T001585	RELATIVE % UNCERTAINTY		3.2
Instrument Code			
U01			
Prepared By			
MCB			
Chemist			
JLS			
Analyst			
KNT			
Date Complete			
05/07/96			
Analysis Date			
05/02/96			
Analysis Time			
01:20 AM			
Sample Point			
S-102			

Result = Conc. in Solution (g/L) * 1000000 / Dg/L

Detection Level = 3.70 E-08 * DF * PF * 1000000/ DF

Relative % Uncertainty = IU / IR * 100

Concentration in Solution (g/L) = IR * DF * PF

Analyst:	KNT	Date:	07-May-96
Signature of Chemist: J.L. Slipper	JLS	Date:	5/9/96

SAMPLE.WB1 REV 2.0 925009ML

WORKBOOK PAGE: SPIKE11

Uranium by Phosphorescence: LA-925-009 (A-1) LIQUID/SOLID

Type			SPIKE
SPK	SPIKE BOOK #		22B55
Work List	VOLUME OF SAMPLE + SPIKE (mL)	(SS)	1.00
8190	DILUTION FACTOR OF SAMPLE + SPIKE	(DF)	1.00
Test Code	PREPARATION FACTOR OF SAMPLE + SPIKE	(PF)	10.00
@U-01	DIGEST FACTOR OF SAMPLE	(DDF)	1.8748
Matrix	LIFETIME IN MICROSECONDS		163.00
SOLID	R2 VALUE		0.9985
Batch Number	RANGE (HIGH OR LOW)		HIGH
96004033	INSTRUMENT RESULT	(IR)	1.64E-03
Rerun	CONCENTRATION IN SOLUTION (g/L)	(CONC)	1.64E-02
0	SPIKE VALUE (g/L)	(SV)	5.69E-02
Sample Prep	INITIAL VOLUME OF SPIKE (mL)	(IV)	0.10
FUSION01	ORIGINAL SAMPLE VOLUME BEFORE PREP (mL)	(OSV)	1.00
Sample Number	CONCENTRATION IN SOLN (g/L) FROM SAMPLE FORM	(SR)	1.17E-02
S96T001585			
Instrument Code			
U01	Concentration = IR * DF * PF		
Prepared By			
MCB	QC Actual (µg/mL) = SV (g/L) * 1000		
Chemist			
JLS	QC Found (µg/mL) = (CONC - SR) * OSV / IV * 1000		
Analyst			
KNT	% Recovery = QC FOUND / QC ACTUAL		
Date Complete			
05/07/96			
Analysis Date			
05/02/96	QC ACTUAL	=	5.69E+01 µg/mL
Analysis Time	QC FOUND	=	4.74E+01 µg/mL
01:20 AM	% SPIKE RECOVERY	=	83.3%
Sample Point			
S-102			

Analyst:	KNT	Date:	07-May-96
Signature of Chemist:	JLS	Date: 5/9/96	

SPIKE.WB1 REV 2.0 925009ML

LABCORE Data Entry Template for Worklist# 9568

Analyst: RK **Instrument:** U01 _____ **Book#** 45B56

Method: LA-925-009 Rev/Mod A-1

Worklist Comment: S102. 0.1-10 sample prep.For spike use: 0.1ml. new

S	Type	Sample#	R	A	Test	Matrix	Group#	Project
1	STD				@U-01	SOLID		
2	BLNK-PREP				@U-01	SOLID		
3	SAMPLE	S96T000874	0	F	@U-01	SOLID	96000030	S102
		Analytes Requested:			U-02	, U-02E		
4	DUP	S96T000874	0	F	@U-01	SOLID		
5	SPK	S96T000874	0	F	@U-01	SOLID		
6	SAMPLE	S96T000875	0	F	@U-01	SOLID	96000030	S102
		Analytes Requested:			U-02	, U-02E		
7	DUP	S96T000875	0	F	@U-01	SOLID		

Final page for worklist # 9568

Rob Kim 6/11/96
Analyst Signature **Date**

Analyst Signature **Date**

Data Entry Comments:

S = Worklist Slot Number, R = Replicate Number, A = Aliquot Code.

LABCORE Completed Worklist Report for Worklist# 9568

Analyst: rwk **Instrument:** U01 **Book#** 45856

Method: LA-925-009 Rev/Mod A-1

Worklist Comment: S102. 0.1-10 sample prep.For spike use: 0.1ml. new

Seq	Type	Sample#	R	A		Test	Matrix	Actual	Found	DL or Yield	Unit
1	STD		0		@U-01	U-02	SOLID	6.39E-02	6.66E-02	104.225	% Recovery
1	STD		0		@U-01	U-02E	SOLID	1	3.27E+00	3.270	Ratio
2	BLNK-PREP		0		@U-01	U-02	SOLID	1	<1.64E+0		ug/g
2	BLNK-PREP		0		@U-01	U-02E	SOLID	1	N/A		Ratio
3	SAMPLE	S96T000874	0	F	@U-01	U-02	SOLID	N/A	2.50E+03	1.640	ug/g
3	SAMPLE	S96T000874	0	F	@U-01	U-02E	SOLID	N/A	3.21E+00		% Inst Error
4	DUP	S96T000874	0	F	@U-01	U-02	SOLID	2.50E+3	2.81E+3	11.676	RPD
4	DUP	S96T000874	0	F	@U-01	U-02E	SOLID	1	3.24E+00	3.240	Ratio
5	SPK	S96T000874	0	F	@U-01	U-02	SOLID	5.69E+01	6.96E+01	122.320	% Recovery
6	SAMPLE	S96T000875	0	F	@U-01	U-02	SOLID	N/A	1.21E+03	1.750	ug/g
6	SAMPLE	S96T000875	0	F	@U-01	U-02E	SOLID	N/A	1.24E+00		% Inst Error
7	DUP	S96T000875	0	F	@U-01	U-02	SOLID	1.21E+3	1.23E+3	1.639	RPD
7	DUP	S96T000875	0	F	@U-01	U-02E	SOLID	1	1.20E+00	1.200	Ratio

Final page for worklist# 9568

6-11-96

Analyst Signature **Date**

Analyst Signature **Date**

6/13/96

Reviewer Signature **Date**

Units shown for QC (BLK/BKG) may not reflect the actual units.

URANIUM ANALYSIS

Sample ID 45B56
Description LMCS
Ref. Ratio 1.003
Laser Pulses 500
Lifetime 303 + 1.966 us
R2 .9982
Integrated 51844
Range: HIGH

Date/Time 06/10/96/21:55:16
Cal Y=4.72E+07X-1.27E+02
Intensity 2714 (t= 39 us)
Conc 6.66E-05 + 2.18E-06 ug/L
Dilution Factor 1 mL/mL

FINAL RESULT 6.66E-05 + 2.18E-06 ug/L

Sample ID PREP BLK
Description S-102
Ref. Ratio 1.032
Laser Pulses 500
Lifetime + us
R2
Integrated 0
Range: HIGH

Date/Time 06/11/96/00:01:45
Cal Y=4.72E+07X-1.27E+02
Intensity 7 (t= 39 us)
Conc 2.69E-06 + 8.53E-08 ug/L
Dilution Factor 1 mL/mL

FINAL RESULT 2.69E-06 + 8.53E-08 ug/L

1ml direct

Sample ID PREP BLK
Description S-102
Ref. Ratio 1.041
Laser Pulses 500
Lifetime + us
R2
Integrated 0
Range: LOW
Sample <= Blank

Date/Time 06/11/96/00:02:27
Cal Y=3.34E+09X0
Intensity -225 (t= 39 us)
Conc + ug/L
Dilution Factor 1 mL/mL

FINAL RESULT

1ml direct

Sample ID S96T000874
Description S-102
Ref. Ratio 1.049
Laser Pulses 500
Lifetime 259 + .861 us
R2 .9995
Integrated 37828
Range: HIGH

Date/Time 06/11/96/02:20:41
Cal Y=4.72E+07X-1.27E+02
Intensity 2141 (t= 39 us)
Conc 5.63E-05 + 1.81E-06 ug/L
Dilution Factor 1 mL/mL

FINAL RESULT 5.63E-05 + 1.81E-06 ug/L

Sample ID S96T000874 DUP
Description S-102
Ref. Ratio 1.048
Laser Pulses 500
Lifetime 278 + 1.396 us
R2 .9989
Integrated 44442
Range: HIGH

Date/Time 06/11/96/02:24:03
Cal Y=4.72E+07X-1.27E+02
Intensity 2452 (t= 39 us)
Conc 6.18E-05 + 2.00E-06 ug/L
Dilution Factor 1 mL/mL

FINAL RESULT 6.18E-05 + 2.00E-06 ug/L

URANIUM ANALYSIS

Sample ID S96T000874 SP.
Description S-102
Ref. Ratio 1.054
Laser Pulses 500
Lifetime 265 + .82 us
R2 .9996
Integrated 539362
Range: HIGH

Date/Time 06/11/96/02:27:46
Cal Y=4.72E+07X-1.27E+02
Intensity 30153 (t= 39 us)
Conc 7.52E-04 + 2.41E-05 ug/L
Dilution Factor 1 mL/mL

FINAL RESULT 7.52E-04 + 2.41E-05 ug/L

Sample ID S96T000875
Description S-102
Ref. Ratio 1.057
Laser Pulses 500
Lifetime 272 + 1.793 us
R2 .9981
Integrated 17808
Range: HIGH

Date/Time 06/11/96/02:31:38
Cal Y=4.72E+07X-1.27E+02
Intensity 957 (t= 39 us)
Conc 2.68E-05 + 8.85E-07 ug/L
Dilution Factor 1 mL/mL

FINAL RESULT 2.68E-05 + 8.85E-07 ug/L

Sample ID S96T000875
Description S-102
Ref. Ratio 1.075
Laser Pulses 500
Lifetime 271 + .79 us
R2 .9996
Integrated 907437
Range: LOW

Date/Time 06/11/96/02:32:20
Cal Y=3.34E+09X0
Intensity 48292 (t= 143 us)
Conc 2.56E-05 + 3.18E-07 ug/L
Dilution Factor 1 mL/mL

FINAL RESULT 2.56E-05 + 3.18E-07 ug/L

Sample ID S96T000875 DUP
Description S-102
Ref. Ratio 1.064
Laser Pulses 500
Lifetime 276 + 1.934 us
R2 .9979
Integrated 17426
Range: HIGH

Date/Time 06/11/96/02:36:04
Cal Y=4.72E+07X-1.27E+02
Intensity 921 (t= 39 us)
Conc 2.60E-05 + 8.61E-07 ug/L
Dilution Factor 1 mL/mL

FINAL RESULT 2.60E-05 + 8.61E-07 ug/L

Sample ID S96T000875 DUP
Description S-102
Ref. Ratio 1.096
Laser Pulses 500
Lifetime 274 + .72 us
R2 .9997
Integrated 920406
Range: LOW

Date/Time 06/11/96/02:36:46
Cal Y=3.34E+09X0
Intensity 48454 (t= 130 us)
Conc 2.45E-05 + 2.95E-07 ug/L
Dilution Factor 1 mL/mL

FINAL RESULT 2.45E-05 + 2.95E-07 ug/L

WORKBOOK PAGE: STD1

Uranium by Phosphorescence: LA-925-009 (A-1) LIQUID/SOLID

STD			STANDARD
	STANDARD BOOK #		45B56
9568	VOLUME OF SAMPLE (mL)	(SS)	1.00
	DILUTION FACTOR OF SAMPLE	(DF)	1.00
@U-01	PREPARATION FACTOR OF SAMPLE	(PF)	1.00
	LIFETIME IN MICROSECONDS		303.00
LIQUID	R2 VALUE		0.9982
	RANGE (HIGH OR LOW)		HIGH
96005733	INSTRUMENT UNCERTAINTY	(IU)	2.18E-06
	INSTRUMENT RESULT	(IR)	6.66E-05
0	DETECTION LEVEL (µg/mL)		3.70E-05
N/A	RESULT (µg/mL)		6.66E-02
	VALUE OF STANDARD		6.39E-02
STANDARD	%RECOVERY		104.23
	RELATIVE % UNCERTAINTY		3.3
U01			
RCJ	Result = DF * PF * IR * 1000		
JLS	Detection Level = 3.70 E-08 * DF * PF * 1000		
RWK	% Recovery = Result / Value of Standard * 100		
Date Counted			
06/11/96	Relative % Uncertainty = IU / IR * 100		
Analyzed			
06/11/96			
Analysis Time			
03:40 AM			
Sample Code			
S102			

Analyst:		RWK	Date:	11-Jun-96
Signature of Chemist:		JLS	Date:	6/13/96

STANDARD.WB1 REV 2.0 925009ML

2236

WORKBOOK PAGE: BLANK2

Uranium by Phosphorescence: LA-925-009 (A-1) LIQUID/SOLID

BLNK-PREP			BLANK
	VOLUME OF SAMPLE (mL)	(SS)	1.00
9568	DILUTION FACTOR OF SAMPLE	(DF)	1.00
	PREPARATION FACTOR OF SAMPLE	(PF)	100.00
@U-01	DIGEST FACTOR	(Dg/L)	2.2564
	LIFETIME IN MICROSECONDS		0.00
SOLID	R2 VALUE		0.0000
	RANGE (HIGH OR LOW)		LOW
96005733	INSTRUMENT UNCERTAINTY	(IU)	0.00E+00
	INSTRUMENT RESULT	(IR)	0.00E+00
0	DETECTION LEVEL µg/g		1.64E+00
N/A	CONCENTRATION IN SOLUTION (g/L)		0.00E+00
	RESULT (µg/g)	<	1.64E+00
BLANK-PREP	RELATIVE % UNCERTAINTY		N/A

U01
RCJ
JLS
RWK
Date Collected
06/11/96
Date Received
06/11/96
Analysis Time
03:40 AM
Instrument
S102

Result = Conc. in Solution (g/L) * 1000000 / Dg/L

Detection Level = 3.70 E-08 * DF * PF * 1000000/ DF

Relative % Uncertainty = IU / IR * 100

Concentration in Solution (g/L) = IR * DF * PF

Analyst:	RWK	Date:	11-Jun-96
Signature of Chemist:	JLS	Date:	6/13/96

BLANK.WB1 REV 2.0 925009ML

WORKBOOK PAGE: SAM3

Uranium by Phosphorescence: LA-925-009 (A-1) LIQUID/SOLID

SAMPLE			SAMPLE
	VOLUME OF SAMPLE (mL)	(SS)	1.00
9568	DILUTION FACTOR OF SAMPLE	(DF)	1.00
	PREPARATION FACTOR OF SAMPLE	(PF)	100.00
@U-01	DIGEST FACTOR	(Dg/L)	2.2564
	LIFETIME IN MICROSECONDS		259.00
SOLID	R2 VALUE		0.9995
	RANGE (HIGH OR LOW)		HIGH
96005733	INSTRUMENT UNCERTAINTY	(IU)	1.81E-06
	INSTRUMENT RESULT	(IR)	5.63E-05
0	DETECTION LEVEL µg/g		1.64E+00
FUSION01	CONCENTRATION IN SOLUTION (g/L)		5.63E-03
	RESULT (µg/g)		2.50E+03
S96T000874	RELATIVE % UNCERTAINTY		3.2

U01

RCJ

JLS

RWK

Date Compl.

06/11/96

Arrival Date

06/11/96

Analysis Time

03:40 AM

S102

Result = Conc. in Solution (g/L) * 1000000 / Dg/L

Detection Level = 3.70 E-08 * DF * PF * 1000000/ DF

Relative % Uncertainty = IU / IR * 100

Concentration in Solution (g/L) = IR * DF * PF

Analyst:	RWK	Date:	11-Jun-96
Signature of Chemist:	JLS	Date:	6/13/96

SAMPLE.WB1 REV 2.0 925009ML

2238

WORKBOOK PAGE: DUP4

Uranium by Phosphorescence: LA-925-009 (A-1) LIQUID/SOLID

DUP			DUP
	VOLUME OF SAMPLE (mL)	(SS)	1.00
9568	DILUTION FACTOR OF SAMPLE	(DF)	1.00
	PREPARATION FACTOR OF SAMPLE	(PF)	100.00
@U-01	DIGEST FACTOR	(Dg/L)	2.2016
	LIFETIME IN MICROSECONDS		278.00
SOLID	R2 VALUE		0.9989
	RANGE (HIGH OR LOW)		HIGH
96005733	INSTRUMENT UNCERTAINTY	(IU)	2.00E-06
	INSTRUMENT RESULT	(IR)	6.18E-05
0	DETECTION LEVEL µg/g		1.68E+00
FUSION01	CONCENTRATION IN SOLUTION (g/L)		6.18E-03
	RESULT (µg/g)		2.81E+03
S96T000874	RELATIVE % UNCERTAINTY		3.2

U01
RCJ
JLS
RWK
Date Sample
06/11/96
Analyzed
06/11/96
Analysis Time
03:40 AM
Instrument
S102

Result = Conc. in Solution (g/L) * 1000000 / Dg/L

Detection Level = 3.70 E-08 * DF * PF * 1000000/ DF

Relative % Uncertainty = IU / IR * 100

Concentration in Solution (g/L) = IR * DF * PF

Analyst:	RWK	Date:	11-Jun-96
Signature of Chemist:	JLS	Date:	6/13/96

SAMPLE.WB1 REV 2.0 925009ML

2239

WORKBOOK PAGE: SPIKE5

Uranium by Phosphorescence: LA-925-009 (A-1) LIQUID/SOLID

			SPIKE
SPK	SPIKE BOOK #		22B55
	VOLUME OF SAMPLE + SPIKE (mL)	(SS)	1.00
9568	DILUTION FACTOR OF SAMPLE + SPIKE	(DF)	1.00
	PREPARATION FACTOR OF SAMPLE + SPIKE	(PF)	100.00
@U-01	DIGEST FACTOR OF SAMPLE	(DDF)	2.2564
	LIFETIME IN MICROSECONDS		265.00
SOLID	R2 VALUE		0.9996
	RANGE (HIGH OR LOW)		HIGH
96005733	INSTRUMENT RESULT	(IR)	7.52E-04
	CONCENTRATION IN SOLUTION (g/L)	(CONC)	7.52E-02
0	SPIKE VALUE (g/L)	(SV)	5.69E-02
	INITIAL VOLUME OF SPIKE (mL)	(IV)	0.10
FUSION01	ORIGINAL SAMPLE VOLUME BEFORE PREP (mL)	(OSV)	0.10
	CONCENTRATION IN SOLN (g/L) FROM SAMPLE FORM	(SR)	5.63E-03
S96T000874			

U01	Concentration = IR * DF * PF
RCJ	QC Actual (µg/mL) = SV (g/L) * 1000
JLS	QC Found (µg/mL) = (CONC - SR) * OSV / IV * 1000
RWK	% Recovery = QC FOUND / QC ACTUAL
06/11/96	

06/11/96	QC ACTUAL	=	5.69E+01	µg/mL
	QC FOUND	=	6.96E+01	µg/mL
03:40 AM	% SPIKE RECOVERY	=	122.3%	
S102				

Analyst:		RWK	Date:	11-Jun-96
Signature of Chemist:		JLS	Date:	6/13/96

SPIKE.WB1 REV 2.0 925009ML

2240

WORKBOOK PAGE: SAM6

Uranium by Phosphorescence: LA-925-009 (A-1) LIQUID/SOLID

SAMPLE			SAMPLE
	VOLUME OF SAMPLE (mL)	(SS)	1.00
9568	DILUTION FACTOR OF SAMPLE	(DF)	1.00
	PREPARATION FACTOR OF SAMPLE	(PF)	100.00
@U-01	DIGEST FACTOR	(Dg/L)	2.1136
	LIFETIME IN MICROSECONDS		271.00
SOLID	R2 VALUE		0.9996
	RANGE (HIGH OR LOW)		LOW
96005733	INSTRUMENT UNCERTAINTY	(IU)	3.18E-07
	INSTRUMENT RESULT	(IR)	2.56E-05
0	DETECTION LEVEL µg/g		1.75E+00
FUSION01	CONCENTRATION IN SOLUTION (g/L)		2.56E-03
	RESULT (µg/g)		1.21E+03
S96T000875	RELATIVE % UNCERTAINTY		1.2

U01

RCJ

JLS

RWK

06/11/96

06/11/96

03:40 AM

S102

Result = Conc. in Solution (g/L) * 1000000 / Dg/L

Detection Level = 3.70 E-08 * DF * PF * 1000000/ DF

Relative % Uncertainty = IU / IR * 100

Concentration in Solution (g/L) = IR * DF * PF

Analyst:	RWK	Date:	11-Jun-96
Signature of Chemist:	JLS	Date:	6/13/96

SAMPLE.WB1 REV 2.0 925009ML

2241

WORKBOOK PAGE: DUP7

Uranium by Phosphorescence: LA-925-009 (A-1) LIQUID/SOLID

DUP			DUP
	VOLUME OF SAMPLE (mL)	(SS)	1.00
9568	DILUTION FACTOR OF SAMPLE	(DF)	1.00
	PREPARATION FACTOR OF SAMPLE	(PF)	100.00
@U-01	DIGEST FACTOR	(Dg/L)	1.9876
	LIFETIME IN MICROSECONDS		274.00
SOLID	R2 VALUE		0.9997
	RANGE (HIGH OR LOW)		LOW
96005733	INSTRUMENT UNCERTAINTY	(IU)	2.95E-07
	INSTRUMENT RESULT	(IR)	2.45E-05
0	DETECTION LEVEL µg/g		1.86E+00
FUSION01	CONCENTRATION IN SOLUTION (g/L)		2.45E-03
	RESULT (µg/g)		1.23E+03
S96T000875	RELATIVE % UNCERTAINTY		1.2

U01

RCJ

JLS

RWK

06/11/96

06/11/96

03:40 AM

S102

Result = Conc. in Solution (g/L) * 1000000 / Dg/L

Detection Level = 3.70 E-08 * DF * PF * 1000000/ DF

Relative % Uncertainty = IU / IR * 100

Concentration in Solution (g/L) = IR * DF * PF

Analyst:		RWK	Date:	11-Jun-96
Signature of Chemist:		JLS	Date:	6/13/96

SAMPLE.WB1 REV 2.0 925009ML

2242

06/04/96 10:34
A-0004-1

LABCORE Data Entry Template for Worklist# 9571

Analyst: A.B.B **Instrument:** U01 _____ **Book#** 45B56

Method: LA-925-009 Rev/Mod A-1 _____

Worklist Comment: S102. 0.1-10ml sample prep.For spike use: 0.1ml. new

S	Type	Sample#	R	A	Test	Matrix	Group#	Project
1	STD				@U-01	SOLID		
2	BLNK-PREP				@U-01	SOLID		
3	SAMPLE	S96T001473	0	F	@U-01	SOLID	96000094	S102
		Analytes Requested:			U-02	, U-02E		
4	DUP	S96T001473	0	F	@U-01	SOLID		
5	SPK	S96T001473	0	F	@U-01	SOLID		
6	SAMPLE	S96T001474	0	F	@U-01	SOLID	96000094	S102
		Analytes Requested:			U-02	, U-02E		
7	DUP	S96T001474	0	F	@U-01	SOLID		

Final page for worklist # 9571

D B Buffer 6-7-96
Analyst Signature **Date**

[illegible] 6-7-96
Analyst Signature **Date**

Data Entry Comments:

S = Worklist Slot Number, R = Replicate Number, A = Aliquot Code.

LABCORE Completed Worklist Report for Worklist# 9571

Analyst: dgg **Instrument:** U01 **Book#** 45B56

Method: LA-925-009 Rev/Mod A-1

Worklist Comment: S102. 0.1-10ml sample prep.For spike use: 0.1ml. new

Seq	Type	Sample#	R	A	Test	Matrix	Actual	Found	DL or Yield	Unit
1	STD		0	@U-01	U-02	SOLID	6.39E-02	6.37E-02	99.687	% Recovery
1	STD		0	@U-01	U-02E	SOLID	1	3.12E+00	3.120	Ratio
2	BLNK-PREP		0	@U-01	U-02	SOLID	1	<1.84E+0		ug/g
2	BLNK-PREP		0	@U-01	U-02E	SOLID	1	N/A		Ratio
4	DUP	S96T001473	0 F	@U-01	U-02	SOLID	1.28E+3	2.03E+3	45.317	RPD
4	DUP	S96T001473	0 F	@U-01	U-02E	SOLID	1	1.35E+00	1.350	Ratio
5	SPK	S96T001473	0 F	@U-01	U-02	SOLID	5.69E+01	5.18E+01	91.037	% Recovery
6	SAMPLE	S96T001474	0 F	@U-01	U-02	SOLID	N/A	9.57E+02	1.740	ug/g
6	SAMPLE	S96T001474	0 F	@U-01	U-02E	SOLID	N/A	1.21E+00		% Inst Error
7	DUP	S96T001474	0 F	@U-01	U-02	SOLID	9.57E+2	1.00E+3	4.394	RPD
7	DUP	S96T001474	0 F	@U-01	U-02E	SOLID	1	1.12E+00	1.120	Ratio

Final page for worklist# 9571

Analyst Signature **Date** **Analyst Signature** **Date**

Jennifer L. Sharpe 6/11/96
Reviewer Signature **Date**

Sample S96T001473 will be rerun due to high RPD between sample and duplicate.

Units shown for QC (BLK/BKG) may not reflect the actual units.

URANIUM ANALYSIS

Sample ID 45B56
Description LMCS STD.
Ref. Ratio 1.056
Laser Pulses 500
Lifetime 268 + 1.103 us
R2 .9993
Integrated 58474
Range: HIGH

Date/Time 06/07/96/10:36:47
Cal Y=5.96E+07X+1.936
Intensity 3057 (t= 39 us)
Conc 6.37E-05 + 1.99E-06 g/L
Dilution Factor 1 mL/mL
FINAL RESULT 6.37E-05 + 1.99E-06 g/L

Sample ID PREP BLK
Description S 102
Ref. Ratio 1.081
Laser Pulses 500
Lifetime + us
R2
Integrated 0
Range: LOW
Sample <= Blank

Date/Time 06/07/96/10:41:40
Cal Y=3.84E+09X0
Intensity -427 (t= 39 us)
Conc + g/L
Dilution Factor X mL/mL
FINAL RESULT

Sample ID S96T001473
Description S 102
Ref. Ratio 1.075
Laser Pulses 500
Lifetime 205 + 2.077 us
R2 .9956
Integrated 635973
Range: LOW

Date/Time 06/07/96/10:45:11
Cal Y=3.84E+09X0
Intensity 45684 (t= 169 us)
Conc 2.58E-05 + 6.91E-07 g/L
Dilution Factor 1 mL/mL
FINAL RESULT 2.58E-05 + 6.91E-07 g/L

Sample ID S96T001473-DUP
Description S 102
Ref. Ratio 1.077
Laser Pulses 500
Lifetime 244 + .753 us
R2 .9985
Integrated 533160
Range: LOW

Date/Time 06/07/96/10:50:03
Cal Y=3.84E+09X0
Intensity 47798 (t= 288 us)
Conc 4.22E-05 + 8.70E-07 g/L
Dilution Factor 1 mL/mL
FINAL RESULT 4.22E-05 + 8.70E-07 g/L

Sample ID S96T001473-SPK
Description S 102
Ref. Ratio 1.086
Laser Pulses 500
Lifetime 245 + .873 us
R2 .9994
Integrated 460036
Range: HIGH

Date/Time 06/07/96/10:52:52
Cal Y=5.96E-07X+1.936
Intensity 27549 (t= 39 us)
Conc 5.44E-04 + 1.69E-05 g/L
Dilution Factor 1 mL/mL
FINAL RESULT 5.44E-04 + 1.69E-05 g/L

Sample ID S96T001474
Description S 102
Ref. Ratio 1.091
Laser Pulses 500
Lifetime 280 + .919 us
R2 .9995
Integrated 900298
Range: LOW

Date/Time 06/07/96/10:56:43
Cal Y=3.84E+09X0
Intensity 46899 (t= 130 us)
Conc 2.03E-05 + 2.45E-07 g/L
Dilution Factor 1 mL/mL
FINAL RESULT 2.03E-05 + 2.45E-07 g/L

URANIUM ANALYSIS

Sample ID S96T001474-DUP
Description S 102
Ref. Ratio 1.093 Date/Time 06/07/96/10:59:23
Laser Pulses 500 Cal Y=3.84E+09X0
Lifetime 297 + .54 us Intensity 46532 (t= 156 us)
R2 .9999 Conc 2.14E-05 + 2.39E-07 g/L
Integrated 931516 Dilution Factor 1 mL/mL
Range: LOW

---------- FINAL RESULT 2.14E-05 + 2.39E-07 g/L

Uranium by Phosphorescence: LA-925-009 (A-1) LIQUID/SOLID

STD			STANDARD
	STANDARD BOOK #		45B56
9571	VOLUME OF SAMPLE (mL)	(SS)	1.00
	DILUTION FACTOR OF SAMPLE	(DF)	1.00
@U-01	PREPARATION FACTOR OF SAMPLE	(PF)	1.00
	LIFETIME IN MICROSECONDS		268.00
LIQUID	R2 VALUE		0.9993
	RANGE (HIGH OR LOW)		HIGH
96005735	INSTRUMENT UNCERTAINTY	(IU)	1.99E-06
	INSTRUMENT RESULT	(IR)	6.37E-05
0	DETECTION LEVEL (µg/mL)		3.70E-05
N/A	RESULT (µg/mL)		6.37E-02
	VALUE OF STANDARD		6.39E-02
45B56	%RECOVERY		99.69
	RELATIVE % UNCERTAINTY		3.1
U01			
RCJ	Result = DF * PF * IR * 1000		
JLS	Detection Level = 3.70 E-08 * DF * PF * 1000		
DGG	% Recovery = Result / Value of Standard * 100		
06/07/96	Relative % Uncertainty = IU / IR * 100		
06/07/96			
10:45 AM			
S-102			

Analyst:		DGG	Date:	07-Jun-96
Signature of Chemist:	[signature]	JLS	Date:	6/11/96

STANDARD.WB1 REV 2.0 925009ML

WORKBOOK PAGE: BLANK2

Uranium by Phosphorescence: LA-925-009 (A-1) LIQUID/SOLID

BLNK-PREP			BLANK
	VOLUME OF SAMPLE (mL)	(SS)	1.00
9571	DILUTION FACTOR OF SAMPLE	(DF)	1.00
	PREPARATION FACTOR OF SAMPLE	(PF)	100.00
@U-01	DIGEST FACTOR	(Dg/L)	2.0158
	LIFETIME IN MICROSECONDS		0.00
SOLID	R2 VALUE		0.0000
	RANGE (HIGH OR LOW)		LOW
96005735	INSTRUMENT UNCERTAINTY	(IU)	0.00E+00
	INSTRUMENT RESULT	(IR)	0.00E+00
0	DETECTION LEVEL µg/g		1.84E+00
N/A	CONCENTRATION IN SOLUTION (g/L)		0.00E+00
	RESULT (µg/g)	<	1.84E+00
BLANK-PREP	RELATIVE % UNCERTAINTY		N/A
U01			
	Result = Conc. In Solution (g/L) * 1000000 / Dg/L		
RCJ			
	Detection Level = 3.70 E-08 * DF * PF * 1000000/ DF		
JLS			
	Relative % Uncertainty = IU / IR * 100		
DGG			
	Concentration In Solution (g/L) = IR * DF * PF		
06/07/96			
06/07/96			
10:45 AM			
S-102			

Analyst:	DGG	Date:	07-Jun-96
Signature of Chemist:	JLS	Date:	6/11/96

BLANK.WB1 REV 2.0 925009ML

2248

WORKBOOK PAGE: SAM3

Uranium by Phosphorescence: LA-925-009 (A-1) LIQUID/SOLID

SAMPLE			SAMPLE
	VOLUME OF SAMPLE (mL)	(SS)	1.00
9571	DILUTION FACTOR OF SAMPLE	(DF)	1.00
	PREPARATION FACTOR OF SAMPLE	(PF)	100.00
@U-01	DIGEST FACTOR	(Dg/L)	2.0158
	LIFETIME IN MICROSECONDS		205.00
SOLID	R2 VALUE		0.9956
	RANGE (HIGH OR LOW)		LOW
96005735	INSTRUMENT UNCERTAINTY	(IU)	6.91E-07
	INSTRUMENT RESULT	(IR)	2.58E-05
0	DETECTION LEVEL µg/g		1.84E+00
FUSION01	CONCENTRATION IN SOLUTION (g/L)		2.58E-03
	RESULT (µg/g)		1.28E+03
S96T001473	RELATIVE % UNCERTAINTY		2.7

U01
RCJ
JLS
DGG
Date Completed
06/07/96
Analysis Date
06/07/96
Analysis Time
10:45 AM
Sample Volume
S-102

Result = Conc. in Solution (g/L) * 1000000 / Dg/L

Detection Level = 3.70 E-08 * DF * PF * 1000000/ DF

Relative % Uncertainty = IU / IR * 100

Concentration in Solution (g/L) = IR * DF * PF

Analyst:		DGG	Date:	07-Jun-96
Signature of Chemist:		JLS	Date:	6/11/96

SAMPLE.WB1 REV 2.0 925009ML

2249

WORKBOOK PAGE: DUP4

Uranium by Phosphorescence: LA-925-009 (A-1) LIQUID/SOLID

DUP			DUP
	VOLUME OF SAMPLE (mL)	(SS)	1.00
9571	DILUTION FACTOR OF SAMPLE	(DF)	1.00
	PREPARATION FACTOR OF SAMPLE	(PF)	100.00
@U-01	DIGEST FACTOR	(Dg/L)	2.0788
	LIFETIME IN MICROSECONDS		244.00
SOLID	R2 VALUE		0.9995
	RANGE (HIGH OR LOW)		LOW
96005735	INSTRUMENT UNCERTAINTY	(IU)	5.70E-07
	INSTRUMENT RESULT	(IR)	4.22E-05
0	DETECTION LEVEL µg/g		1.78E+00
FUSION01	CONCENTRATION IN SOLUTION (g/L)		4.22E-03
	RESULT (µg/g)		2.03E+03
S96T001473	RELATIVE % UNCERTAINTY		1.4

U01
RCJ
JLS
DGG
Date Completed
06/07/96
Analysis Date
06/07/96
Analysis Time
10:45 AM
Balance ID
S-102

Result = Conc. in Solution (g/L) * 1000000 / Dg/L

Detection Level = 3.70 E-08 * DF * PF * 1000000/ DF

Relative % Uncertainty = IU / IR * 100

Concentration in Solution (g/L) = IR * DF * PF

Analyst:	DGG	Date:	07-Jun-96
Signature of Chemist:	JLS	Date:	6/11/96

SAMPLE.WB1 REV 2.0 925009ML

2250

WORKBOOK PAGE: SPIKE5

Uranium by Phosphorescence: LA-925-009 (A-1) LIQUID/SOLID

			SPIKE
SPK	SPIKE BOOK #		22B55
	VOLUME OF SAMPLE + SPIKE (mL)	(SS)	1.00
9571	DILUTION FACTOR OF SAMPLE + SPIKE	(DF)	1.00
	PREPARATION FACTOR OF SAMPLE + SPIKE	(PF)	100.00
@U-01	DIGEST FACTOR OF SAMPLE	(DDF)	2.0158
	LIFETIME IN MICROSECONDS		245.00
SOLID	R2 VALUE		0.9994
	RANGE (HIGH OR LOW)		HIGH
96005735	INSTRUMENT RESULT	(IR)	5.44E-04
	CONCENTRATION IN SOLUTION (g/L)	(CONC)	5.44E-02
0	SPIKE VALUE (g/L)	(SV)	5.69E-02
	INITIAL VOLUME OF SPIKE (mL)	(IV)	0.10
FUSION01	ORIGINAL SAMPLE VOLUME BEFORE PREP (mL)	(OSV)	0.10
	CONCENTRATION IN SOLN (g/L) FROM SAMPLE FORM	(SR)	2.58E-03
S96T001473			
U01	Concentration = IR * DF * PF		
RCJ	QC Actual (µg/mL) = SV (g/L) * 1000		
JLS	QC Found (µg/mL) = (CONC - SR) * OSV / IV * 1000		
DGG	% Recovery = QC FOUND / QC ACTUAL		
Date Completed			
06/07/96			
Analysis Date			
06/07/96	QC ACTUAL	=	5.69E+01 µg/mL
Analysis Time	QC FOUND	=	5.18E+01 µg/mL
10:45 AM	% SPIKE RECOVERY	=	91.1%
Instrument Serial #			
S-102			

Analyst:	DGG	Date:	07-Jun-96
Signature of Chemist:	JLS	Date:	6/11/96

SPIKE.WB1 REV 2.0 925009ML

2251

WORKBOOK PAGE: SAM6

Uranium by Phosphorescence: LA-925-009 (A-1) LIQUID/SOLID

SAMPLE			SAMPLE
	VOLUME OF SAMPLE (mL)	(SS)	1.00
9571	DILUTION FACTOR OF SAMPLE	(DF)	1.00
	PREPARATION FACTOR OF SAMPLE	(PF)	100.00
@U-01	DIGEST FACTOR	(Dg/L)	2.1204
	LIFETIME IN MICROSECONDS		280.00
SOLID	R2 VALUE		0.9995
	RANGE (HIGH OR LOW)		LOW
96005735	INSTRUMENT UNCERTAINTY	(IU)	2.45E-07
	INSTRUMENT RESULT	(IR)	2.03E-05
0	DETECTION LEVEL µg/g		1.74E+00
FUSION01	CONCENTRATION IN SOLUTION (g/L)		2.03E-03
	RESULT (µg/g)		9.57E+02
S96T001474	RELATIVE % UNCERTAINTY		1.2

Type
U01
Operator
RCJ
Chemist
JLS
Analyst
DGG
Date Completed
06/07/96
Analysis Date
06/07/96
Analysis Time
10:45 AM
Sample Number
S-102

Result = Conc. in Solution (g/L) * 1000000 / Dg/L

Detection Level = 3.70 E-08 * DF * PF * 1000000/ DF

Relative % Uncertainty = IU / IR * 100

Concentration in Solution (g/L) = IR * DF * PF

Analyst:		DGG	Date:	07-Jun-96
Signature of Chemist:		JLS	Date:	6/11/96

SAMPLE.WB1 REV 2.0 925009ML

2252

WORKBOOK PAGE: DUP7

Uranium by Phosphorescence: LA-925-009 (A-1) LIQUID/SOLID

DUP			DUP
	VOLUME OF SAMPLE (mL)	(SS)	1.00
9571	DILUTION FACTOR OF SAMPLE	(DF)	1.00
	PREPARATION FACTOR OF SAMPLE	(PF)	100.00
@U-01	DIGEST FACTOR	(Dg/L)	2.1332
	LIFETIME IN MICROSECONDS		297.00
SOLID	R2 VALUE		0.9999
	RANGE (HIGH OR LOW)		LOW
96005735	INSTRUMENT UNCERTAINTY	(IU)	2.39E-07
	INSTRUMENT RESULT	(IR)	2.14E-05
0	DETECTION LEVEL µg/g		1.73E+00
FUSION01	CONCENTRATION IN SOLUTION (g/L)		2.14E-03
	RESULT (µg/g)		1.00E+03
S96T001474	RELATIVE % UNCERTAINTY		1.1

U01

RCJ

JLS

DGG

06/07/96

06/07/96

10:45 AM

S-102

Result = Conc. in Solution (g/L) * 1000000 / Dg/L

Detection Level = 3.70 E-08 * DF * PF * 1000000/ DF

Relative % Uncertainty = IU / IR * 100

Concentration in Solution (g/L) = IR * DF * PF

Analyst:	DGG	Date:	07-Jun-96
Signature of Chemist:	JLS	Date:	6/11/96

SAMPLE.WB1 REV 2.0 925009ML

06/11/96 07:58
A-0004-1

LABCORE Data Entry Template for Worklist# 9828

Analyst: NBS **Instrument:** U01 _____ **Book#** 45B56

Method: LA-925-009 Rev/Mod A-1

Worklist Comment: 1-10 sample prep / rerun / jls

S	Type	Sample#	R	A	Test	Matrix	Group#	Project
1	STD				@U-01	SOLID		
2	BLNK-PREP				@U-01	SOLID		
3	SAMPLE	S96T001473	0	F	@U-01	SOLID	96000094	S102
		Analytes Requested:			U-02	, U-02E		
4	DUP	S96T001473	0	F	@U-01	SOLID		
5	SPK	S96T001473	0	F	@U-01	SOLID		

Final page for worklist # 9828

_____ **Analyst Signature** **Date**

N B Griffin 6-13-96 **Analyst Signature** **Date**

Leo E. Hogan 6-13-96

Sharon L Walker 6-14-96

Data Entry Comments:

S = Worklist Slot Number, R = Replicate Number, A = Aliquot Code.

worklistrad Version 0.0 04/18/96
06/14/96 09:59

LABCORE Completed RadChem Report for Worklist#: 9828

Analyst: dgg **Instrument:** U01 **Book#** 45836

Method: LA-905-009 Rev/Mod A-1

Worklist Comment: 1-10 sample prep / rerun / jls

Seq	Type	Sample#	R	A		Test	Matrix	Actual	Found	DL or Yield	Unit
1	STD		0		@U-01	U-02	SOLID	6.39E-02	6.48E-02	101.408	% Recovery
1	STD		0		@U-01	U-02E	SOLID	1	3.13E+00	3.130	Ratio
2	BLNK-PREP		0		@U-01	U-02	SOLID	1	2.38E+0	2.380	ug/g
2	BLNK-PREP		0		@U-01	U-02E	SOLID	1	2.78E+00	2.780	Ratio
3	SAMPLE	S96T001473	0	F	@U-01	U-02	SOLID	N/A	1.10E+03	184.0e-003	ug/g
3	SAMPLE	S96T001473	0	F	@U-01	U-02E	SOLID	N/A	4.14E+00	0.0e+000	% Inst Error
4	DUP	S96T001473	0	F	@U-01	U-02	SOLID	1.10E+3	1.19E+3	7.860	RPD
4	DUP	S96T001473	0	F	@U-01	U-02E	SOLID	1	4.29E+00	4.290	Ratio
5	SPK	S96T001473	0	F	@U-01	U-02	SOLID	5.69E+01	3.30E+01	57.996	% Recovery

Final page for worklist# 9828

Analyst Signature **Date** **Analyst Signature** **Date**

[signature] 6/19/96
Reviewer Signature **Date**

Sample concentration overwhelms added spike resulting in spike recovery below control limits. Original analysis with smaller sample size shows acceptable spike recovery. No rerun requested.

Units shown for QC (BLK/BKG) may not reflect the actual units.

URANIUM ANALYSIS

Sample ID 45B56
Description LMCS STD.
Ref. Ratio 1.021
Laser Pulses 500
Lifetime 244 + 1.195 us
R2 .999
Integrated 50363
Range: HIGH

Date/Time 06/12/96/23:59:10
Cal Y=5.82E+07X-2.10E+02
Intensity 3000 (t= 39 us)
Conc 6.48E-05 + 2.03E-06 g/L
Dilution Factor 1 mL/mL

FINAL RESULT 6.48E-05 + 2.03E-06 g/L

Sample ID BLNK-PREP
Description S-102
Ref. Ratio .975
Laser Pulses 500
Lifetime 186 + 2.306 us
R2 .9935
Integrated 26731
Range: LOW

Date/Time 06/13/96/01:55:16
Cal Y=5.82E+07X-2.10E+02
Intensity 2025 (t= 39 us)
Conc 4.79E-07 + 1.33E-08 g/L
Dilution Factor 1 mL/mL

FINAL RESULT 4.79E-07 + 1.33E-08 g/L

Sample ID S96T001473
Description S-102
Ref. Ratio .983
Laser Pulses 500
Lifetime 170 + 2.145 us
R2 .9932
Integrated 127050
Range: HIGH

Date/Time 06/13/96/01:57:28
Cal Y=5.82E+07X-2.10E+02
Intensity 11237 (t= 39 us)
Conc 2.22E-04 + 9.20E-06 g/L
Dilution Factor 1 mL/mL

FINAL RESULT 2.22E-04 + 9.20E-06 g/L

Sample ID S96T001473-DUP
Description S-102
Ref. Ratio .989
Laser Pulses 500
Lifetime 182 + 2.663 us
R2 .9909
Integrated 153297
Range: HIGH

Date/Time 06/13/96/02:01:39
Cal Y=5.82E+07X-2.10E+02
Intensity 13443 (t= 39 us)
Conc 2.47E-04 + 1.06E-05 g/L
Dilution Factor 1 mL/mL

FINAL RESULT 2.47E-04 + 1.06E-05 g/L

Sample ID S96T001473-SPK
Description S-102
Ref. Ratio .997
Laser Pulses 500
Lifetime 186 + 2.725 us
R2 .9908
Integrated 352075
Range: HIGH

Date/Time 06/13/96/02:02:58
Cal Y=5.82E+07X-2.10E+02
Intensity 30998 (t= 39 us)
Conc 5.52E-04 + 2.36E-05 g/L
Dilution Factor 1 mL/mL

FINAL RESULT 5.52E-04 + 2.36E-05 g/L

WORKBOOK PAGE: STD1

Uranium by Phosphorescence: LA-925-009 (A-1) LIQUID/SOLID

STD			STANDARD
Sample #	STANDARD BOOK #		45B56
9828	VOLUME OF SAMPLE (mL)	(SS)	1.00
Test Code	DILUTION FACTOR OF SAMPLE	(DF)	1.00
@U-01	PREPARATION FACTOR OF SAMPLE	(PF)	1.00
Matrix	LIFETIME IN MICROSECONDS		244.00
LIQUID	R2 VALUE		0.9990
Batch Number	RANGE (HIGH OR LOW)		HIGH
96006003	INSTRUMENT UNCERTAINTY	(IU)	2.03E-06
Rerun	INSTRUMENT RESULT	(IR)	6.48E-05
0	DETECTION LEVEL (µg/mL)		3.70E-05
Sample Prep			
N/A	RESULT (µg/mL)		6.48E-02
Sample #	VALUE OF STANDARD		6.39E-02
WL9828	%RECOVERY		101.41
Instrument Code	RELATIVE % UNCERTAINTY		3.1
U-01			
Prepared By			
SEH			
Chemist			
JLS			
Analyst			
DGG			
Date Complete			
06/13/96			
Analysis Date			
06/13/96			
Analysis Time			
01:40 AM			
Sample Point			
S102			

Result = DF * PF * IR * 1000

Detection Level = 3.70 E-08 * DF * PF * 1000

% Recovery = Result / Value of Standard * 100

Relative % Uncertainty = IU / IR * 100

Analyst:	DGG	Date:	13-Jun-96
Signature of Chemist:	JLS	Date:	6/19/96

STANDARD.WB1 REV 2.0 925009ML

WORKBOOK PAGE: BLANK2

Uranium by Phosphorescence: LA-925-009 (A-1) LIQUID/SOLID

BLNK-PREP			BLANK
Work Number	VOLUME OF SAMPLE (mL)	(SS)	1.00
9828	DILUTION FACTOR OF SAMPLE	(DF)	1.00
Test Code	PREPARATION FACTOR OF SAMPLE	(PF)	10.00
@U-01	DIGEST FACTOR	(Dg/L)	2.0158
Matrix	LIFETIME IN MICROSECONDS		186.00
SOLID	R2 VALUE		0.9935
Batch Number	RANGE (HIGH OR LOW)		LOW
96006003	INSTRUMENT UNCERTAINTY	(IU)	1.33E-08
Batch	INSTRUMENT RESULT	(IR)	4.79E-07
0	DETECTION LEVEL µg/g		1.84E-01
Sample Prep			
N/A	CONCENTRATION IN SOLUTION (g/L)		4.79E-06
Sample #	RESULT (µg/g)		2.38E+00
WL9828	RELATIVE % UNCERTAINTY		2.8

Instrument Code
U-01
Prepared By
SEH
Chemist
JLS
Analyst
DGG
Date Complete
06/13/96
Analysis Date
06/13/96
Analysis Time
01:40 AM
Sample Point
S102

Result = Conc. in Solution (g/L) * 1000000 / Dg/L

Detection Level = 3.70 E-08 * DF * PF * 1000000/ DF

Relative % Uncertainty = IU / IR * 100

Concentration in Solution (g/L) = IR * DF * PF

Analyst:	DGG	Date:	13-Jun-96
Signature of Chemist:	JLS	Date:	6/17/96

BLANK.WB1 REV 2.0 925009ML

WORKBOOK PAGE: SAM3

Uranium by Phosphorescence: LA-925-009 (A-1) LIQUID/SOLID

Type			
SAMPLE			SAMPLE
Sample #	VOLUME OF SAMPLE (mL)	(SS)	1.00
9828	DILUTION FACTOR OF SAMPLE	(DF)	1.00
Prep Code	PREPARATION FACTOR OF SAMPLE	(PF)	10.00
@U-01	DIGEST FACTOR	(Dg/L)	2.0158
Lifetime	LIFETIME IN MICROSECONDS		170.00
SOLID	R2 VALUE		0.9932
Batch Number	RANGE (HIGH OR LOW)		HIGH
96006003	INSTRUMENT UNCERTAINTY	(IU)	9.20E-06
Rerun	INSTRUMENT RESULT	(IR)	2.22E-04
1	DETECTION LEVEL µg/g		1.84E-01
Sample Prep			
FUSION01	CONCENTRATION IN SOLUTION (g/L)		2.22E-03
Sample #	RESULT (µg/g)		1.10E+03
S96T001473	RELATIVE % UNCERTAINTY		4.1
Instrument Code			
U-01			
Prepared By			
SEH			
Chemist			
JLS			
Analyst			
DGG			
Date Complete			
06/13/96			
Analysis Date			
06/13/96			
Analysis Time			
01:40 AM			
Sample Point			
S102			

Result = Conc. in Solution (g/L) * 1000000 / Dg/L

Detection Level = 3.70 E-08 * DF * PF * 1000000/ DF

Relative % Uncertainty = IU / IR * 100

Concentration in Solution (g/L) = IR * DF * PF

Analyst:	DGG	Date:	13-Jun-96
Signature of Chemist:	JLS	Date:	6/19/96

SAMPLE.WB1 REV 2.0 925009ML

WORKBOOK PAGE: DUP4

Uranium by Phosphorescence: LA-925-009 (A-1) LIQUID/SOLID

DUP			DUP
	VOLUME OF SAMPLE (mL)	(SS)	1.00
9828	DILUTION FACTOR OF SAMPLE	(DF)	1.00
	PREPARATION FACTOR OF SAMPLE	(PF)	10.00
@U-01	DIGEST FACTOR	(Dg/L)	2.0788
	LIFETIME IN MICROSECONDS		182.00
SOLID	R2 VALUE		0.9909
	RANGE (HIGH OR LOW)		HIGH
96006003	INSTRUMENT UNCERTAINTY	(IU)	1.06E-05
	INSTRUMENT RESULT	(IR)	2.47E-04
1	DETECTION LEVEL µg/g		1.78E-01
FUSION01	CONCENTRATION IN SOLUTION (g/L)		2.47E-03
	RESULT (µg/g)		1.19E+03
S96T001473	RELATIVE % UNCERTAINTY		4.3

Instrument Code
U-01
Prepared By
SEH
Chemist
JLS
Analyst
DGG
Date Complete
06/13/96
Analysis Date
06/13/96
Analysis Time
01:40 AM
Sample Point
S102

Result = Conc. in Solution (g/L) * 1000000 / Dg/L

Detection Level = 3.70 E-08 * DF * PF * 1000000/ DF

Relative % Uncertainty = IU / IR * 100

Concentration in Solution (g/L) = IR * DF * PF

Analyst:	DGG	Date:	13-Jun-96
Signature of Chemist:	JLS	Date:	6/19/96

SAMPLE.WB1 REV 2.0 925009ML

WORKBOOK PAGE: SPIKE5

Uranium by Phosphorescence: LA-925-009 (A-1) LIQUID/SOLID

			SPIKE
SPK	SPIKE BOOK #		22B66
	VOLUME OF SAMPLE + SPIKE (mL)	(SS)	1.00
9828	DILUTION FACTOR OF SAMPLE + SPIKE	(DF)	1.00
	PREPARATION FACTOR OF SAMPLE + SPIKE	(PF)	10.00
@U-01	DIGEST FACTOR OF SAMPLE	(DDF)	2.0168
	LIFETIME IN MICROSECONDS		186.00
SOLID	R2 VALUE		0.9908
	RANGE (HIGH OR LOW)		HIGH
96006003	INSTRUMENT RESULT	(IR)	5.52E-04
	CONCENTRATION IN SOLUTION (g/L)	(CONC)	5.52E-03
1	SPIKE VALUE (g/L)	(SV)	5.69E-02
	INITIAL VOLUME OF SPIKE (mL)	(IV)	0.10
FUSION01	ORIGINAL SAMPLE VOLUME BEFORE PREP (mL)	(OSV)	1.00
	CONCENTRATION IN SOLN (g/L) FROM SAMPLE FORM	(SR)	2.22E-03

S96T001473

U-01

Concentration = IR * DF * PF

SEH

QC Actual (µg/mL) = SV (g/L) * 1000

JLS

QC Found (µg/mL) = (CONC - SR) * OSV / IV * 1000

DGG

% Recovery = QC FOUND / QC ACTUAL

06/13/96

06/13/96

QC ACTUAL	=	5.69E+01	µg/mL
QC FOUND	=	3.30E+01	µg/mL
% SPIKE RECOVERY	=	58.0%	

01:40 AM

S102

Analyst:	DGG	Date:	13-Jun-96
Signature of Chemist:	JLS	Date:	6/19/96

SPIKE.WB1 REV 2.0 925009ML

LABCORE Data Entry Template for Worklist# 9944

Analyst: A N.S.B **Instrument:** U01 **Book#** 45B56

Method: LA-925-009 Rev/Mod A-1

Worklist Comment: 1-10 mL sample prep / rerun / jls

S	Type	Sample#	R	A	Test	Matrix	Group#	Project
1	STD				@U-01	SOLID		
2	BLNK-PREP				@U-01	SOLID		
3	SAMPLE	S96T000870	0	F	@U-01	SOLID	96000030	S102
		Analytes Requested:			U-02	, U-02E		
4	DUP	S96T000870	0	F	@U-01	SOLID		
5	SPK	S96T000870	0	F	@U-01	SOLID		
6	SAMPLE	S96T000871	0	F	@U-01	SOLID	96000030	S102
		Analytes Requested:			U-02	, U-02E		
7	DUP	S96T000871	0	F	@U-01	SOLID		

Final page for worklist # 9944

D B Griffin 6-14-96
Analyst Signature **Date**

[illegible] 6-17-96
Analyst Signature **Date**

Data Entry Comments:

S = Worklist Slot Number, R = Replicate Number, A = Aliquot Code.

LABCORE Completed Worklist Report for Worklist# 9944

Analyst: dgg **Instrument:** U01 **Book#** 45856

Method: LA-925-009 Rev/Mod A-1

Worklist Comment: 1-10 mL sample prep / rerun / jls

Seq	Type	Sample#	R	A	Test	Matrix	Actual	Found	DL or Yield	Unit
1	STD		0	@U-01	U-02	SOLID	6.39E-02	6.54E-02	102.347	% Recovery
1	STD		0	@U-01	U-02E	SOLID	1	3.20E+00	3.200	Ratio
2	BLNK-PREP		0	@U-01	U-02	SOLID	1	1.05E+0	1.050	ug/g
2	BLNK-PREP		0	@U-01	U-02E	SOLID	1	2.99E+00	2.990	Ratio
3	SAMPLE	S96T000870	0 F	@U-01	U-02	SOLID	N/A	2.40E+01	0.229	ug/g
3	SAMPLE	S96T000870	0 F	@U-01	U-02E	SOLID	N/A	2.20E+00		% Inst Error
4	DUP	S96T000870	0 F	@U-01	U-02	SOLID	2.40E+1	2.07E+1	14.765	RPD
4	DUP	S96T000870	0 F	@U-01	U-02E	SOLID	1	2.51E+00	2.510	Ratio
5	SPK	S96T000870	0 F	@U-01	U-02	SOLID	5.69E+01	5.22E+01	91.740	% Recovery
6	SAMPLE	S96T000871	0 F	@U-01	U-02	SOLID	N/A	2.23E+01	0.198	ug/g
6	SAMPLE	S96T000871	0 F	@U-01	U-02E	SOLID	N/A	2.03E+00		% Inst Error
7	DUP	S96T000871	0 F	@U-01	U-02	SOLID	2.23E+1	1.99E+1	11.374	RPD
7	DUP	S96T000871	0 F	@U-01	U-02E	SOLID	1	1.96E+00	1.960	Ratio

Final page for worklist# 9944

Analyst Signature Date

Analyst Signature Date

[signature], 6/17/96
Reviewer Signature Date

Units shown for QC (BLK/BKG) may not reflect the actual units.

URANIUM ANALYSIS

Sample ID BLNK-PREP
Description S-102
Ref. Ratio .803
Laser Pulses 500
Lifetime 382 + 10.634 us
R2 .9677
Integrated 17527
Range: LOW

Date/Time 06/14/96/02:09:54
Cal Y=5.02E+09X+4.88E-04
Intensity 918 (t= 39 us)
Conc 1.70E-07 + 5.09E-09 ug/L
Dilution Factor 1 mL/mL

FINAL RESULT 1.70E-07 + 5.09E-09 ~~ug/L~~ g/L

Sample ID S96T000870
Description S-102
Ref. Ratio .857
Laser Pulses 500
Lifetime 197 + 1.9 us
R2 .996
Integrated 223847
Range: LOW

Date/Time 06/14/96/02:46:51
Cal Y=5.02E+09X+4.88E-04
Intensity 16826 (t= 39 us)
Conc 3.87E-06 + 8.53E-08 ug/L
Dilution Factor 1 mL/mL

FINAL RESULT 3.87E-06 + 8.53E-08 ~~ug/L~~ g/L

Sample ID S96T000870-DUP
Description S-102
Ref. Ratio .847
Laser Pulses 500
Lifetime 184 + 1.978 us
R2 .9951
Integrated 199339
Range: LOW

Date/Time 06/14/96/02:16:58
Cal Y=5.02E+09X+4.88E-04
Intensity 16021 (t= 39 us)
Conc 3.68E-06 + 9.22E-08 ug/L
Dilution Factor 1 mL/mL

FINAL RESULT 3.68E-06 + 9.22E-08 ~~ug/L~~ g/L

Sample ID S96T000870-SPK
Description S-102
Ref. Ratio .848
Laser Pulses 500
Lifetime 204 + 1.395 us
R2 .998
Integrated 362068
Range: HIGH

Date/Time 06/14/96/02:20:22
Cal Y=5.82E-07X-2.10E-02
Intensity 25042 (t= 39 us)
Conc 5.26E-04 + 1.74E-05 ug/L
Dilution Factor 1 mL/mL

FINAL RESULT 5.26E-04 + 1.74E-05 ~~ug/L~~ g/L

Sample ID S96T000871
Description S-102
Ref. Ratio .867
Laser Pulses 500
Lifetime 196 + 1.681 us
R2 .9968
Integrated 239917
Range: LOW

Date/Time 06/14/96/02:25:38
Cal Y=5.02E+09X+4.88E-04
Intensity 17682 (t= 39 us)
Conc 4.18E-06 + 8.49E-08 ug/L
Dilution Factor 1 mL/mL

FINAL RESULT 4.18E-06 + 8.49E-08 ~~ug/L~~ g/L

URANIUM ANALYSIS

Sample ID S96T000871-DUP
Description S-102
Ref. Ratio .861
Laser Pulses 500
Lifetime 205 + 1.737 us
R2 .9969
Integrated 229053
Range: LOW

Date/Time 06/14/96/02:28:00
Cal Y=5.02E+09X+4.88E-04
Intensity 16420 (t= 39 us)
Conc 3.81E-06 + 7.46E-08 ug/L
Dilution Factor 1 mL/mL

FINAL RESULT 3.81E-06 + 7.46E-08 ~~mg/L~~ ug/L

WORKBOOK PAGE: STD1

Uranium by Phosphorescence: LA-925-009 (A-1) LIQUID/SOLID

Type			STANDARD
STD			
Work List	STANDARD BOOK #		45B56
9944	VOLUME OF SAMPLE (mL)	(SS)	1.00
Test Code	DILUTION FACTOR OF SAMPLE	(DF)	1.00
@U-01	PREPARATION FACTOR OF SAMPLE	(PF)	1.00
Matrix	LIFETIME IN MICROSECONDS		259.00
LIQUID	R2 VALUE		0.9981
Batch Number	RANGE (HIGH OR LOW)		HIGH
96006124	INSTRUMENT UNCERTAINTY	(IU)	2.09E-06
Rerun	INSTRUMENT RESULT	(IR)	6.54E-05
0	DETECTION LEVEL (µg/mL)		3.70E-05
Sample Prep			
N/A	RESULT (µg/mL)		6.54E-02
Sample #	VALUE OF STANDARD		6.39E-02
STD	%RECOVERY		102.35
Instrument Code	RELATIVE % UNCERTAINTY		3.2
UO1			
Prepared By			
GJH			
Chemist			
JLS			
Analyst			
DGG			
Date Complete			
06/17/96			
Analysis Date			
06/14/96			
Analysis Time			
03:00 AM			
Sample Point			
S102			

Result = DF * PF * IR * 1000

Detection Level = 3.70 E-08 * DF * PF * 1000

% Recovery = Result / Value of Standard * 100

Relative % Uncertainty = IU / IR * 100

Analyst:	DGG	Date:	17-Jun-96
Signature of Chemist:	JLS	Date:	

STANDARD.WB1 REV 2.0 925009ML

WORKBOOK PAGE: BLANK2

Uranium by Phosphorescence: LA-925-009 (A-1) LIQUID/SOLID

Type			
BLNK-PREP			BLANK
Work List	VOLUME OF SAMPLE (mL)	(SS)	1.00
9944	DILUTION FACTOR OF SAMPLE	(DF)	1.00
Test Code	PREPARATION FACTOR OF SAMPLE	(PF)	10.00
@U-01	DIGEST FACTOR	(Dg/L)	1.6156
Matrix	LIFETIME IN MICROSECONDS		382.00
SOLID	R2 VALUE		0.9677
Batch Number	RANGE (HIGH OR LOW)		LOW
96006124	INSTRUMENT UNCERTAINTY	(IU)	5.09E-09
Rerun	INSTRUMENT RESULT	(IR)	1.70E-07
0	DETECTION LEVEL µg/g		2.29E-01
Sample Prep			
N/A	CONCENTRATION IN SOLUTION (g/L)		1.70E-06
Sample #	RESULT (µg/g)		1.05E+00
BLNK	RELATIVE % UNCERTAINTY		3.0
Instrument Code			
UO1			
Prepared By			
GJH			
Chemist			
JLS			
Analyst			
DGG			
Date Complete			
06/17/96			
Analysis Date			
06/14/96			
Analysis Time			
03:00 AM			
Sample Point			
S102			

Result = Conc. in Solution (g/L) * 1000000 / Dg/L

Detection Level = 3.70 E-08 * DF * PF * 1000000/ DF

Relative % Uncertainty = IU / IR * 100

Concentration in Solution (g/L) = IR * DF * PF

Analyst:	DGG	Date:	17-Jun-96
Signature of Chemist:	JLS	Date:	

BLANK.WB1 REV 2.0 925009ML

WORKBOOK PAGE: SAM3

Uranium by Phosphorescence: LA-925-009 (A-1) LIQUID/SOLID

Type			
SAMPLE			SAMPLE
Work List	VOLUME OF SAMPLE (mL)	(SS)	1.00
9944	DILUTION FACTOR OF SAMPLE	(DF)	1.00
Test Code	PREPARATION FACTOR OF SAMPLE	(PF)	10.00
@U-01	DIGEST FACTOR	(Dg/L)	1.6156
Matrix	LIFETIME IN MICROSECONDS		197.00
SOLID	R2 VALUE		0.9960
Batch Number	RANGE (HIGH OR LOW)		LOW
96006124	INSTRUMENT UNCERTAINTY	(IU)	8.53E-08
Rerun	INSTRUMENT RESULT	(IR)	3.87E-06
1	DETECTION LEVEL µg/g		2.29E-01
Sample Prep			
FUSION01	CONCENTRATION IN SOLUTION (g/L)		3.87E-05
Sample #	RESULT (µg/g)		2.40E+01
S96T000870	RELATIVE % UNCERTAINTY		2.2
Instrument Code			
UO1			
Prepared By	Result = Conc. in Solution (g/L) * 1000000 / Dg/L		
GJH			
Chemist	Detection Level = 3.70 E-08 * DF * PF * 1000000/ DF		
JLS			
Analyst	Relative % Uncertainty = IU / IR * 100		
DGG			
Date Complete	Concentration in Solution (g/L) = IR * DF * PF		
06/17/96			
Analysis Date			
06/14/96			
Analysis Time			
03:00 AM			
Sample Point			
S102			

Analyst:	DGG	Date:	17-Jun-96
Signature of Chemist:	JLS	Date:	

SAMPLE.WB1 REV 2.0 925009ML

WORKBOOK PAGE: DUP4

Uranium by Phosphorescence: LA-925-009 (A-1) LIQUID/SOLID

Type			
DUP			DUP
Work List	VOLUME OF SAMPLE (mL)	(SS)	1.00
9944	DILUTION FACTOR OF SAMPLE	(DF)	1.00
Test Code	PREPARATION FACTOR OF SAMPLE	(PF)	10.00
@U-01	DIGEST FACTOR	(Dg/L)	1.7784
Matrix	LIFETIME IN MICROSECONDS		184.00
SOLID	R2 VALUE		0.9951
Batch Number	RANGE (HIGH OR LOW)		LOW
96006124	INSTRUMENT UNCERTAINTY	(IU)	9.22E-08
Rerun	INSTRUMENT RESULT	(IR)	3.68E-06
1	DETECTION LEVEL µg/g		2.08E-01
Sample Prep			
FUSION01	CONCENTRATION IN SOLUTION (g/L)		3.68E-05
Sample #	RESULT (µg/g)		2.07E+01
S96T000870	RELATIVE % UNCERTAINTY		2.5
Instrument Code			
UO1			
Prepared By	Result = Conc. in Solution (g/L) * 1000000 / Dg/L		
GJH			
Chemist	Detection Level = 3.70 E-08 * DF * PF * 1000000/ DF		
JLS			
Analyst	Relative % Uncertainty = IU / IR * 100		
DGG			
Date Complete	Concentration in Solution (g/L) = IR * DF * PF		
06/17/96			
Analysis Date			
06/14/96			
Analysis Time			
03:00 AM			
Sample Point			
S102			

Analyst:	DGG	Date:	17-Jun-96
Signature of Chemist:	JLS	Date:	

SAMPLE.WB1 REV 2.0 925009ML

WORKBOOK PAGE: SPIKE5

Uranium by Phosphorescence: LA-925-009 (A-1) LIQUID/SOLID

Type			SPIKE
SPK	SPIKE BOOK #		22B55
Work List	VOLUME OF SAMPLE + SPIKE (mL)	(SS)	1.00
9944	DILUTION FACTOR OF SAMPLE + SPIKE	(DF)	1.00
Test Code	PREPARATION FACTOR OF SAMPLE + SPIKE	(PF)	10.00
@U-01	DIGEST FACTOR OF SAMPLE	(DDF)	1.6156
Matrix	LIFETIME IN MICROSECONDS		204.00
SOLID	R2 VALUE		0.9980
Batch Number	RANGE (HIGH OR LOW)		HIGH
96006124	INSTRUMENT RESULT	(IR)	5.26E-04
Rerun	CONCENTRATION IN SOLUTION (g/L)	(CONC)	5.26E-03
1	SPIKE VALUE (g/L)	(SV)	5.69E-02
Sample Prep	INITIAL VOLUME OF SPIKE (mL)	(IV)	0.10
FUSION01	ORIGINAL SAMPLE VOLUME BEFORE PREP (mL)	(OSV)	1.00
Sample Number	CONCENTRATION IN SOLN (g/L) FROM SAMPLE FORM	(SR)	3.87E-05
S96T000870			
Instrument Code			
UO1	Concentration = IR * DF * PF		
Prepared By			
GJH	QC Actual (µg/mL) = SV (g/L) * 1000		
Chemist			
JLS	QC Found (µg/mL) = (CONC - SR) * OSV / IV * 1000		
Analyst			
DGG	% Recovery = QC FOUND / QC ACTUAL		
Date Complete			
06/17/96			
Analysis Date			
06/14/96	QC ACTUAL	=	5.69E+01 µg/mL
Analysis Time	QC FOUND	=	5.22E+01 µg/mL
03:00 AM	% SPIKE RECOVERY	=	91.8%
Sample Point			
S102			

Analyst:	DGG	Date:	17-Jun-96
Signature of Chemist:	JLS	Date:	

SPIKE.WB1 REV 2.0 925009ML

WORKBOOK PAGE: SAM6

Uranium by Phosphorescence: LA-925-009 (A-1) LIQUID/SOLID

Type			
SAMPLE			SAMPLE
Work List	VOLUME OF SAMPLE (mL)	(SS)	1.00
9944	DILUTION FACTOR OF SAMPLE	(DF)	1.00
Test Code	PREPARATION FACTOR OF SAMPLE	(PF)	10.00
@U-01	DIGEST FACTOR	(Dg/L)	1.8708
Matrix	LIFETIME IN MICROSECONDS		196.00
SOLID	R2 VALUE		0.9968
Batch Number	RANGE (HIGH OR LOW)		LOW
96006124	INSTRUMENT UNCERTAINTY	(IU)	8.49E-08
Rerun	INSTRUMENT RESULT	(IR)	4.18E-06
1	DETECTION LEVEL µg/g		1.98E-01
Sample Prep			
FUSION01	CONCENTRATION IN SOLUTION (g/L)		4.18E-05
Sample #	RESULT (µg/g)		2.23E+01
S96T000871	RELATIVE % UNCERTAINTY		2.0
Instrument Code			
UO1			
Prepared By	Result = Conc. in Solution (g/L) * 1000000 / Dg/L		
GJH			
Chemist	Detection Level = 3.70 E-08 * DF * PF * 1000000/ DF		
JLS			
Analyst	Relative % Uncertainty = IU / IR * 100		
DGG			
Date Complete	Concentration in Solution (g/L) = IR * DF * PF		
06/17/96			
Analysis Date			
06/14/96			
Analysis Time			
03:00 AM			
Sample Point			
S102			

Analyst:	DGG	Date:	17-Jun-96
Signature of Chemist:	JLS	Date:	

SAMPLE.WB1 REV 2.0 925009ML

WORKBOOK PAGE: DUP7

Uranium by Phosphorescence: LA-925-009 (A-1) LIQUID/SOLID

Type			
DUP			DUP
Work List	VOLUME OF SAMPLE (mL)	(SS)	1.00
9944	DILUTION FACTOR OF SAMPLE	(DF)	1.00
Test Code	PREPARATION FACTOR OF SAMPLE	(PF)	10.00
@U-01	DIGEST FACTOR	(Dg/L)	1.9160
Matrix	LIFETIME IN MICROSECONDS		205.00
SOLID	R2 VALUE		0.9969
Batch Number	RANGE (HIGH OR LOW)		LOW
96006124	INSTRUMENT UNCERTAINTY	(IU)	7.46E-08
Rerun	INSTRUMENT RESULT	(IR)	3.81E-06
1	DETECTION LEVEL µg/g		1.93E-01
Sample Prep			
FUSION01	CONCENTRATION IN SOLUTION (g/L)		3.81E-05
Sample #	RESULT (µg/g)		1.99E+01
S96T000871	RELATIVE % UNCERTAINTY		2.0
Instrument Code			
UO1			
Prepared By			
GJH			
Chemist			
JLS			
Analyst			
DGG			
Date Complete			
06/17/96			
Analysis Date			
06/14/96			
Analysis Time			
03:00 AM			
Sample Point			
S102			

Result = Conc. in Solution (g/L) * 1000000 / Dg/L

Detection Level = 3.70 E-08 * DF * PF * 1000000/ DF

Relative % Uncertainty = IU / IR * 100

Concentration in Solution (g/L) = IR * DF * PF

Analyst:	DGG	Date:	17-Jun-96
Signature of Chemist:	JLS	Date:	

SAMPLE.WB1 REV 2.0 925009ML

2272

LABCORE Data Entry Template for Worklist# 9945

Analyst: CRJ **Instrument:** U01 **Book#** SSB54

Method: LA-925-009 Rev/Mod A-1

Worklist Comment: 1-10 mL sample prep / rerun / jls

S	Type	Sample#	R	A	Test	Matrix	Group#	Project
1	STD				@U-01	SOLID		
2	BLNK-PREP				@U-01	SOLID		
3	SAMPLE	S96T001468	0	F	@U-01	SOLID	96000094	S102
		Analytes Requested:			U-02	, U-02E		
4	DUP	S96T001468	0	F	@U-01	SOLID		
5	SPK	S96T001468	0	F	@U-01	SOLID		

Final page for worklist # 9945

C L Johnson 6/24/96
Analyst Signature **Date**

M S Brown 6/25/96
Analyst Signature **Date**

Sue E. Hogan 6-25-96

Data Entry Comments:

S = Worklist Slot Number, R = Replicate Number, A = Aliquot Code.

LABCORE Completed RadChem Report for Worklist#: 9945

Analyst: crj **Instrument:** U01 **Book#** _____

Method: _____ Rev/Mod _____

Worklist Comment: 1-10 mL sample prep / rerun / jls

Seq	Type	Sample#	R	A		Test	Matrix	Actual	Found	DL or Yield	Unit
1	STD		0		au-01	U-02	SOLID	5.10E-02	4.83E-02	94.706	% Recovery
1	STD		0		au-01	U-02E	SOLID	1	1.34E+00	1.340	Ratio
2	BLNK-PREP		0		au-01	U-02	SOLID	1	9.98e-1	0.998	ug/g
2	BLNK-PREP		0		au-01	U-02E	SOLID	1	3.03E+00	3.030	Ratio
3	SAMPLE	S96T001468	0	F	au-01	U-02	SOLID	N/A	1.47E+01	213.0e-002	ug/g
3	SAMPLE	S96T001468	0	F	au-01	U-02E	SOLID	N/A	1.64E+00	0.0e+000	% Inst Error
4	DUP	S96T001468	0	F	au-01	U-02	SOLID	1.47E+1	1.39E+1	5.594	RPD
4	DUP	S96T001468	0	F	au-01	U-02E	SOLID	1	1.44E+00	1.440	Ratio
5	SPK	S96T001468	0	F	au-01	U-02	SOLID	5.69E+01	1.01E+02	177.504	% Recovery

Final page for worklist# 9945

Analyst Signature **Date** **Analyst Signature** **Date**

Jennifer L Blogan 6/25/96
Reviewer Signature **Date**

RPD between sample and duplicate within project limits. Spike recovery of original analysis was 113%.

Units shown for QC (BLK/BKG) may not reflect the actual units.

URANIUM ANALYSIS

Sample ID 55E56
Description STANDARD
Ref. Ratio .998
Laser Pulses 500
Lifetime 205 + .526 us
R2 .9797
Integrated 817968
Range: LOW

Date/Time 06/24/96/14:40:14
Cal Y=4.47E+09X+4.88E-04
Intensity 52602 (t= 273 us)
Conc 4.83E-05 + 6.46E-07 g/L
Dilution Factor 1 mL/mL

FINAL RESULT 4.83E-05 + 6.46E-07 g/L

Sample ID PREP BLANK
Description BLANK
Ref. Ratio .999
Laser Pulses 500
Lifetime 186 + 2.597 us
R2 .9917
Integrated 9137
Range: LOW

Date/Time 06/24/96/15:05:24
Cal Y=4.47E+09X+4.88E-04
Intensity 617 (t= 38 us)
Conc 1.91E-07 + 5.79E-09 g/L
Dilution Factor 1 mL/mL

FINAL RESULT 1.91E-07 + 5.79E-09 g/L

Sample ID S96T001468
Description SAMPLE
Ref. Ratio .974
Laser Pulses 500
Lifetime 232 + 1.717 us
R2 .9976
Integrated 15312
Range: LOW

Date/Time 06/24/96/15:15:11
Cal Y=4.47E+09X+4.88E-04
Intensity 910 (t= 38 us)
Conc 2.55E-07 + 4.17E-09 g/L
Dilution Factor 1 mL/mL

1-10

FINAL RESULT 2.55E-07 + 4.17E-09 g/L

Sample ID S96T001468
Description DUP 1-10
Ref. Ratio 1.024
Laser Pulses 500
Lifetime 278 + 1.868 us
R2 .998
Integrated 19612
Range: LOW

Date/Time 06/24/96/15:17:38
Cal Y=4.47E+09X+4.88E-04
Intensity 1028 (t= 38 us)
Conc 2.76E-07 + 3.97E-09 g/L
Dilution Factor 1 mL/mL

1-10

FINAL RESULT 2.76E-07 + 3.97E-09 g/L

Sample ID S96T001468
Description SPIKE 0
Ref. Ratio 1.026
Laser Pulses 500
Lifetime 229 + .815 us
R2 .9993
Integrated 78467
Range: HIGH

Date/Time 06/24/96/15:24:02
Cal Y=6.39E+07X+51.02
Intensity 4669 (t= 38 us)
Conc 9.20E-05 + 2.97E-06 g/L
Dilution Factor 1 mL/mL

FINAL RESULT 9.20E-05 + 2.97E-06 g/L

1-10

WORKBOOK PAGE: STD1

Uranium by Phosphorescence: LA-925-009 (A-1) LIQUID/SOLID

Type			
STD			STANDARD
Work Bch	STANDARD BOOK #		55B56
9945	VOLUME OF SAMPLE (mL)	(SS)	1.00
Test Code	DILUTION FACTOR OF SAMPLE	(DF)	1.00
@U-01	PREPARATION FACTOR OF SAMPLE	(PF)	1.00
Matrix	LIFETIME IN MICROSECONDS		205.00
LIQUID	R2 VALUE		0.9997
Batch Number	RANGE (HIGH OR LOW)		LOW
96006123	INSTRUMENT UNCERTAINTY	(IU)	6.46E-07
Rerun	INSTRUMENT RESULT	(IR)	4.83E-05
0	DETECTION LEVEL (µg/mL)		3.70E-05
Sample Prep			
N/A	RESULT (µg/mL)		4.83E-02
Sample #	VALUE OF STANDARD		5.10E-02
WL9945	%RECOVERY		94.71
Instrument Code	RELATIVE % UNCERTAINTY		1.3
U01			
Prepared By			
MCB			
Chemist			
JLS			
Analyst			
CRJ			
Date Complete			
06/25/96			
Analysis Date			
06/24/96			
Analysis Time			
03:15 PM			
Sample Point			
S-102			

Result = DF * PF * IR * 1000

Detection Level = 3.70 E-08 * DF * PF * 1000

% Recovery = Result / Value of Standard * 100

Relative % Uncertainty = IU / IR * 100

Analyst:	CRJ	Date:	25-Jun-96
Signature of Chemist:	JLS	Date:	6/25/96

STANDARD.WB1 REV 2.0 925009ML

WORKBOOK PAGE: BLANK2

Uranium by Phosphorescence: LA-925-009 (A-1) LIQUID/SOLID

Type			
BLNK-PREP			BLANK
Work List	VOLUME OF SAMPLE (mL)	(SS)	1.00
9945	DILUTION FACTOR OF SAMPLE	(DF)	1.00
Test Code	PREPARATION FACTOR OF SAMPLE	(PF)	10.00
@U-01	DIGEST FACTOR	(Dg/L)	1.9144
Matrix	LIFETIME IN MICROSECONDS		186.00
SOLID	R2 VALUE		0.9917
Batch Number	RANGE (HIGH OR LOW)		LOW
96006123	INSTRUMENT UNCERTAINTY	(IU)	5.79E-09
Rerun	INSTRUMENT RESULT	(IR)	1.91E-07
0	DETECTION LEVEL µg/g		1.93E-01
Sample Prep			
N/A	CONCENTRATION IN SOLUTION (g/L)		1.91E-06
Sample #	RESULT (µg/g)		9.98E-01
WL9945	RELATIVE % UNCERTAINTY		3.0
Instrument Code			
U01			
Prepared By			
MCB			
Chemist			
JLS			
Analyst			
CRJ			
Date Complete			
06/25/96			
Analysis Date			
06/24/96			
Analysis Time			
03:15 PM			
Sample Point			
S-102			

Result = Conc. in Solution (g/L) * 1000000 / Dg/L

Detection Level = 3.70 E-08 * DF * PF * 1000000/ DF

Relative % Uncertainty = IU / IR * 100

Concentration in Solution (g/L) = IR * DF * PF

Analyst:	CRJ	Date:	25-Jun-96
Signature of Chemist:	JLS	Date:	6/25/96

BLANK.WB1 REV 2.0 925009ML

WORKBOOK PAGE: SAM3

Uranium by Phosphorescence: LA-925-009 (A-1) LIQUID/SOLID

Type			
SAMPLE			SAMPLE
Vial	VOLUME OF SAMPLE (mL)	(SS)	1.00
9945	DILUTION FACTOR OF SAMPLE	(DF)	11.00
Method	PREPARATION FACTOR OF SAMPLE	(PF)	10.00
@U-01	DIGEST FACTOR	(Dg/L)	1.9144
Matrix	LIFETIME IN MICROSECONDS		232.00
SOLID	R2 VALUE		0.9976
Batch Number	RANGE (HIGH OR LOW)		LOW
96006123	INSTRUMENT UNCERTAINTY	(IU)	4.17E-09
Kartridge	INSTRUMENT RESULT	(IR)	2.55E-07
1	DETECTION LEVEL µg/g		2.13E+00
Sample Prep			
FUSION01	CONCENTRATION IN SOLUTION (g/L)		2.81E-05
Sample	RESULT (µg/g)		1.47E+01
S96T001468	RELATIVE % UNCERTAINTY		1.6
Instrument Code			
U01			
Prepared By			
MCB			
Chemist			
JLS			
Analyst			
CRJ			
Date Complete			
06/25/96			
Analysis Date			
06/24/96			
Analysis Time			
03:15 PM			
Sample Point			
S-102			

Result = Conc. in Solution (g/L) * 1000000 / Dg/L

Detection Level = 3.70 E-08 * DF * PF * 1000000/ DF

Relative % Uncertainty = IU / IR * 100

Concentration in Solution (g/L) = IR * DF * PF

Analyst:	CRJ	Date:	25-Jun-96
Signature of Chemist:	JLS	Date:	6/25/96

SAMPLE.WB1 REV 2.0 925009ML

WORKBOOK PAGE: DUP4

Uranium by Phosphorescence: LA-925-009 (A-1) LIQUID/SOLID

Type			
DUP			DUP
Analytical Method	VOLUME OF SAMPLE (mL)	(SS)	1.00
9945	DILUTION FACTOR OF SAMPLE	(DF)	11.00
Test Code	PREPARATION FACTOR OF SAMPLE	(PF)	10.00
@U-01	DIGEST FACTOR	(Dg/L)	2.1812
Matrix	LIFETIME IN MICROSECONDS		278.00
SOLID	R2 VALUE		0.9980
Batch Number	RANGE (HIGH OR LOW)		LOW
96006123	INSTRUMENT UNCERTAINTY	(IU)	3.97E-09
Form	INSTRUMENT RESULT	(IR)	2.76E-07
1	DETECTION LEVEL µg/g		1.87E+00
Sample Prep			
FUSION01	CONCENTRATION IN SOLUTION (g/L)		3.04E-05
Sample #	RESULT (µg/g)		1.39E+01
S96T001468	RELATIVE % UNCERTAINTY		1.4
Instrument Code			
U01			
Prepared By			
MCB			
Chemist			
JLS			
Analyst			
CRJ			
Date Complete			
06/25/96			
Analysis Date			
06/24/96			
Analysis Time			
03:15 PM			
Sample Point			
S-102			

Result = Conc. in Solution (g/L) * 1000000 / Dg/L

Detection Level = 3.70 E-08 * DF * PF * 1000000/ DF

Relative % Uncertainty = IU / IR * 100

Concentration in Solution (g/L) = IR * DF * PF

Analyst:	CRJ	Date:	25-Jun-96
Signature of Chemist:	JLS	Date:	6/25/96

SAMPLE.WB1 REV 2.0 925009ML

WORKBOOK PAGE: SPIKE5

Uranium by Phosphorescence: LA-925-009 (A-1) LIQUID/SOLID

Type			SPIKE
SPK	SPIKE BOOK #		22B55
Work Flow	VOLUME OF SAMPLE + SPIKE (mL)	(SS)	1.00
9945	DILUTION FACTOR OF SAMPLE + SPIKE	(DF)	11.00
Test Code	PREPARATION FACTOR OF SAMPLE + SPIKE	(PF)	10.00
@U-01	DIGEST FACTOR OF SAMPLE	(DDF)	1.9144
Matrix	LIFETIME IN MICROSECONDS		229.00
SOLID	R2 VALUE		0.9993
Batch Number	RANGE (HIGH OR LOW)		HIGH
96006123	INSTRUMENT RESULT	(IR)	9.20E-05
Rerun	CONCENTRATION IN SOLUTION (g/L)	(CONC)	1.01E-02
1	SPIKE VALUE (g/L)	(SV)	5.69E-02
Sample Prep	INITIAL VOLUME OF SPIKE (mL)	(IV)	0.10
FUSION01	ORIGINAL SAMPLE VOLUME BEFORE PREP (mL)	(OSV)	1.00
Sample Number	CONCENTRATION IN SOLN (g/L) FROM SAMPLE FORM	(SR)	2.81E-05
S96T001468			
Instrument Code			
U01	Concentration = IR * DF * PF		
Prepared By			
MCB	QC Actual (µg/mL) = SV (g/L) * 1000		
Chemist			
JLS	QC Found (µg/mL) = (CONC - SR) * OSV / IV * 1000		
Analyst			
CRJ	% Recovery = QC FOUND / QC ACTUAL		
Date Complete			
06/25/96			
Analysis Date			
06/24/96	QC ACTUAL	=	5.69E+01 µg/mL
Analysis Time	QC FOUND	=	1.01E+02 µg/mL
03:15 PM	% SPIKE RECOVERY	=	177.4%
Sample Point			
S-102			

Analyst:	CRJ	Date:	25-Jun-96
Signature of Chemist:	JLS	Date:	6/25/96

SPIKE.WB1 REV 2.0 925009ML

LABCORE Data Entry Template for Worklist# 10102

Analyst: RK **Instrument:** U01 _____ **Book#** 45B56

Method: LA-925-009 Rev/Mod A-1

Worklist Comment: 1-10 sample prep / 0.1 ml spike / rerun 2 / jls

S	Type	Sample#	R	A	Test	Matrix	Group#	Project
1	STD				@U-01	SOLID		
2	BLNK-PREP				@U-01	SOLID		
3	SAMPLE	S96T000879	0	F	@U-01	SOLID	96000030	S102
		Analytes Requested:			U-02	, U-02E		
4	DUP	S96T000879	0	F	@U-01	SOLID		
5	SPK	S96T000879	0	F	@U-01	SOLID		
6	SAMPLE	S96T000880	0	F	@U-01	SOLID	96000030	S102
		Analytes Requested:			U-02	, U-02E		
7	DUP	S96T000880	0	F	@U-01	SOLID		
8	SPK	S96T000880	0	F	@U-01	SOLID		

Final page for worklist # 10102

Rob Kim 6/21/96
Analyst Signature **Date**

Gary Hammitt 6-22-96
Analyst Signature **Date**

Linda Conlin 6-22-96

Data Entry Comments:

S = Worklist Slot Number, R = Replicate Number, A = Aliquot Code.

LABCORE Completed Worklist Report for Worklist# 10102

Analyst: rwk **Instrument:** U01 **Book#** 45856

Method: LA-925-009 Rev/Mod A-1

Worklist Comment: 1-10 sample prep / 0.1 ml spike / rerun 2 / jls

Seq	Type	Sample#	R	A		Test	Matrix	Actual	Found	DL or Yield	Unit
1	STD		0		@U-01	U-02	SOLID	6.39E-02	5.92E-02	92.645	% Recovery
1	STD		0		@U-01	U-02E	SOLID	1	9.75E+00	9.750	Ratio
2	BLNK-PREP		0		@U-01	U-02	SOLID	1	2.27E+0	2.270	ug/g
2	BLNK-PREP		0		@U-01	U-02E	SOLID	1	2.25E+00	2.250	Ratio
3	SAMPLE	S96T000879	0	F	@U-01	U-02	SOLID	N/A	3.50E+02	0.193	ug/g
3	SAMPLE	S96T000879	0	F	@U-01	U-02E	SOLID	N/A	9.88E+00		% Inst Error
4	DUP	S96T000879	0	F	@U-01	U-02	SOLID	3.50E+2	3.01E+2	15.054	RPD
4	DUP	S96T000879	0	F	@U-01	U-02E	SOLID	1	9.78E+00	9.780	Ratio
5	SPK	S96T000879	0	F	@U-01	U-02	SOLID	5.69E+01	5.68E+01	99.824	% Recovery
6	SAMPLE	S96T000880	0	F	@U-01	U-02	SOLID	N/A	1.47E+03	0.178	ug/g
6	SAMPLE	S96T000880	0	F	@U-01	U-02E	SOLID	N/A	9.74E+00		% Inst Error
7	DUP	S96T000880	0	F	@U-01	U-02	SOLID	1.47E+3	1.46E+3	0.683	RPD
7	DUP	S96T000880	0	F	@U-01	U-02E	SOLID	1	9.76E+00	9.760	Ratio
8	SPK	S96T000880	0	F	@U-01	U-02	SOLID	5.69E+01	6.22E+01	109.315	% Recovery

Final page for worklist# 10102

Analyst Signature **Date** **Analyst Signature** **Date**

J. Slipper 6/24/96
Reviewer Signature **Date**

Units shown for QC (BLK/BKG) may not reflect the actual units.

Sample ID 45B56
Description STD
Ref. Ratio 1.058
Laser Pulses 500
Lifetime 199 + .582 us
R2 .9996
Integrated 40937
Range: HIGH

Date/Time 06/21/96/00:55:09
Cal Y=4.61E+07X+824.889
Intensity 2768 (t= 39 us)
Conc 5.92E-05 + 5.77E-06 G/L
Dilution Factor 1 mL/mL

FINAL RESULT 5.92E-05 + 5.77E-06 G/L

Sample ID PREP BLK
Description S-102
Ref. Ratio 1.078
Laser Pulses 500
Lifetime 457 + 4.53E+02 us
R2 .1129
Integrated 141
Range: [illegible]
Sample [illegible]

Date/Time 06/21/96/01:00:[illegible]
Cal Y=4.61E+07X+824.889
Intensity [illegible] (t= [illegible] us)
[illegible]
[illegible] G/L

[illegible] BLK
[illegible] S-102
Ref. Ratio 1.086
Laser Pulses 500
Lifetime [illegible] + [illegible]
R2 .9977
Integrated [illegible]
Range: LOW

Date/Time 06/2[illegible]
Cal [illegible]
Intensity [illegible]
[illegible] /mL

FINAL RESULT 6.36E-07 + 9.53E-09 G/L

Sample ID S96T000577
Description S-102
Ref. Ratio 1.053
Laser Pulses 500
Lifetime 178 + 1.411 us
R2 .9973
Integrated 40264
Range: HIGH

Date/Time 06/21/96/01:51:57
Cal Y=4.61E+07X+824.889
Intensity 3073 (t= 39 us)
Conc 6.71E-05 + 6.63E-06 G/L
Dilution Factor 1 mL/mL

FINAL RESULT 6.71E-05 + 6.63E-06 G/L

Sample ID S96T000579 DUP
Description S-102
Ref. Ratio 1.062
Laser Pulses 500
Lifetime 181 + .853 us
R2 .9991
Integrated 37062
Range: HIGH

Date/Time 06/21/96/01:56:52
Cal Y=4.61E+07X+824.889
Intensity 2844 (t= 39 us)
Conc 5.89E-05 + 5.76E-06 G/L
Dilution Factor 1 mL/mL

FINAL RESULT 5.89E-05 + 5.76E-06 G/L

Sample ID S96T000579 SP.
Description S-102
Ref. Ratio 1.069
Laser Pulses 500
Lifetime 175 + .676 us
R2 .9994
Integrated 302375
Range: HIGH

Date/Time 06/21/96/02:05:08
Cal Y=4.61E+07X+824.889
Intensity 24075 (t= 39 us)
Conc 6.35E-04 + 6.20E-05 G/L
Dilution Factor 1 mL/mL

FINAL RESULT 6.35E-04 + 6.20E-05 G/L

URANIUM ANALYSIS

Sample ID S96T000880
Description S-102
Ref. Ratio 1.07
Laser Pulses 500
Lifetime 200 + .549 us
R2 .9997
Integrated 172558
Range: HIGH

Date/Time 06/21/96/02:13:58
Cal Y=4.61E+07X+824.889
Intensity 11959 (t= 39 us)
Conc 3.06E-04 + 2.98E-05 G/L
Dilution Factor 1 mL/mL

FINAL RESULT 3.06E-04 + 2.98E-05 G/L

Sample ID S96T000880 DUP
Description S-102
Ref. Ratio 1.062
Laser Pulses 500
Lifetime 197 + .593 us
R2 .9996
Integrated 161740
Range: HIGH

Date/Time 06/21/96/02:22:01
Cal Y=4.61E+07X+824.889
Intensity 11285 (t= 39 us)
Conc 2.89E-04 + 2.82E-05 G/L
Dilution Factor 1 mL/mL

FINAL RESULT 2.89E-04 + 2.82E-05 G/L

Sample ID S96T000880 SP.
Description S-102
Ref. Ratio 1.071
Laser Pulses 500
Lifetime 226 + .619 us
R2 .9997
Integrated 571404
Range: HIGH

Date/Time 06/21/96/02:24:44
Cal Y=4.61E+07X+824.889
Intensity 33247 (t= 39 us)
Conc 9.28E-04 + 9.05E-05 G/L
Dilution Factor 1 mL/mL

FINAL RESULT 9.28E-04 + 9.05E-05 G/L

WORKBOOK PAGE: STD1

Uranium by Phosphorescence: LA-925-009 (A-1) LIQUID/SOLID

Type			
STD			STANDARD
Work List	STANDARD BOOK #		45B56
10102	VOLUME OF SAMPLE (mL)	(SS)	1.00
Test Code	DILUTION FACTOR OF SAMPLE	(DF)	1.00
@U-01	PREPARATION FACTOR OF SAMPLE	(PF)	1.00
Matrix	LIFETIME IN MICROSECONDS		199.00
LIQUID	R2 VALUE		0.9996
Batch Number	RANGE (HIGH OR LOW)		HIGH
96006319	INSTRUMENT UNCERTAINTY	(IU)	5.77E-06
Rerun	INSTRUMENT RESULT	(IR)	5.92E-05
0	DETECTION LEVEL (µg/mL)		3.70E-05
Sample Prep			
N/A	RESULT (µg/mL)		5.92E-02
Sample #	VALUE OF STANDARD		6.39E-02
STD	%RECOVERY		92.64
Instrument Code	RELATIVE % UNCERTAINTY		9.7
U01			
Prepared By			
GJH	Result = DF * PF * IR * 1000		
Chemist			
JLS	Detection Level = 3.70 E-08 * DF * PF * 1000		
Analyst			
RWK	% Recovery = Result / Value of Standard * 100		
Date Complete			
06/22/96	Relative % Uncertainty = IU / IR * 100		
Analysis Date			
06/21/96			
Analysis Time			
02:24 AM			
Sample Point			
S102			

Analyst:	RWK	Date:	22-Jun-96
Signature of Chemist:	JLS	Date:	6/24/96

STANDARD.WB1 REV 2.0 925009ML

WORKBOOK PAGE: BLANK2

Uranium by Phosphorescence: LA-925-009 (A-1) LIQUID/SOLID

Type			
BLNK-PREP			BLANK
Work List	VOLUME OF SAMPLE (mL)	(SS)	1.00
10102	DILUTION FACTOR OF SAMPLE	(DF)	1.00
Test Code	PREPARATION FACTOR OF SAMPLE	(PF)	10.00
@U-01	DIGEST FACTOR	(Dg/L)	1.9196
Matrix	LIFETIME IN MICROSECONDS		240.00
SOLID	R2 VALUE		0.9938
Batch Number	RANGE (HIGH OR LOW)		LOW
96006319	INSTRUMENT UNCERTAINTY	(IU)	9.83E-09
Rerun	INSTRUMENT RESULT	(IR)	4.36E-07
0	DETECTION LEVEL µg/g		1.93E-01
Sample Prep			
N/A	CONCENTRATION IN SOLUTION (g/L)		4.36E-06
Sample #	RESULT (µg/g)		2.27E+00
BLNK-PREP	RELATIVE % UNCERTAINTY		2.3
Instrument Code			
U01			
Prepared By			
GJH			
Chemist			
JLS			
Analyst			
RWK			
Date Complete			
06/22/96			
Analysis Date			
06/21/96			
Analysis Time			
02:24 AM			
Sample Point			
S102			

Result = Conc. in Solution (g/L) * 1000000 / Dg/L

Detection Level = 3.70 E-08 * DF * PF * 1000000/ DF

Relative % Uncertainty = IU / IR * 100

Concentration in Solution (g/L) = IR * DF * PF

Analyst:		RWK	Date:	22-Jun-96
Signature of Chemist:	J L Shupers	JLS	Date:	6/21/96

BLANK.WB1 REV 2.0 925009ML

2286

WORKBOOK PAGE: SAM3

Uranium by Phosphorescence: LA-925-009 (A-1) LIQUID/SOLID

Type			
SAMPLE			SAMPLE
Work List	VOLUME OF SAMPLE (mL)	(SS)	1.00
10102	DILUTION FACTOR OF SAMPLE	(DF)	1.00
Test Code	PREPARATION FACTOR OF SAMPLE	(PF)	10.00
@U-01	DIGEST FACTOR	(Dg/L)	1.9196
Matrix	LIFETIME IN MICROSECONDS		178.00
SOLID	R2 VALUE		0.9973
Batch Number	RANGE (HIGH OR LOW)		HIGH
96006319	INSTRUMENT UNCERTAINTY	(IU)	6.63E-06
Rerun #	INSTRUMENT RESULT	(IR)	6.71E-05
3	DETECTION LEVEL µg/g		1.93E-01
Sample Prep			
FUSION01	CONCENTRATION IN SOLUTION (g/L)		6.71E-04
Sample #	RESULT (µg/g)		3.50E+02
S96T000879	RELATIVE % UNCERTAINTY		9.9
Instrument Code			
U01			
Prepared By			
GJH			
Chemist			
JLS			
Analyst			
RWK			
Date Complete			
06/22/96			
Analysis Date			
06/21/96			
Analysis Time			
02:24 AM			
Sample Point			
S102			

Result = Conc. in Solution (g/L) * 1000000 / Dg/L

Detection Level = 3.70 E-08 * DF * PF * 1000000/ DF

Relative % Uncertainty = IU / IR * 100

Concentration in Solution (g/L) = IR * DF * PF

Analyst:	RWK	Date:	22-Jun-96
Signature of Chemist:	JLS	Date:	6/24/96

SAMPLE.WB1 REV 2.0 925009ML

2287

WORKBOOK PAGE: DUP4

Uranium by Phosphorescence: LA-925-009 (A-1) LIQUID/SOLID

Type			
DUP			DUP
Work List	VOLUME OF SAMPLE (mL)	(SS)	1.00
10102	DILUTION FACTOR OF SAMPLE	(DF)	1.00
Test Code	PREPARATION FACTOR OF SAMPLE	(PF)	10.00
@U-01	DIGEST FACTOR	(Dg/L)	1.9544
Matrix	LIFETIME IN MICROSECONDS		181.00
SOLID	R2 VALUE		0.9991
Batch Number	RANGE (HIGH OR LOW)		HIGH
96006319	INSTRUMENT UNCERTAINTY	(IU)	5.76E-06
Rerun	INSTRUMENT RESULT	(IR)	5.89E-05
3	DETECTION LEVEL µg/g		1.89E-01
Sample Prep			
FUSION01	CONCENTRATION IN SOLUTION (g/L)		5.89E-04
Sample #	RESULT (µg/g)		3.01E+02
S96T000879	RELATIVE % UNCERTAINTY		9.8
Instrument Code			
U01			
Prepared By			
GJH			
Chemist			
JLS			
Analyst			
RWK			
Date Complete			
06/22/96			
Analysis Date			
06/21/96			
Analysis Time			
02:24 AM			
Sample Point			
S102			

Result = Conc. in Solution (g/L) * 1000000 / Dg/L

Detection Level = 3.70 E-08 * DF * PF * 1000000/ DF

Relative % Uncertainty = IU / IR * 100

Concentration in Solution (g/L) = IR * DF * PF

Analyst:	RWK	Date:	22-Jun-96
Signature of Chemist:	JLS	Date:	6/21/96

SAMPLE.WB1 REV 2.0 925009ML

WORKBOOK PAGE: SPIKE5

Uranium by Phosphorescence: LA-925-009 (A-1) LIQUID/SOLID

Type			SPIKE
SPK	SPIKE BOOK #		22B55
Work List	VOLUME OF SAMPLE + SPIKE (mL)	(SS)	1.00
10102	DILUTION FACTOR OF SAMPLE + SPIKE	(DF)	1.00
Test Code	PREPARATION FACTOR OF SAMPLE + SPIKE	(PF)	10.00
@U-01	DIGEST FACTOR OF SAMPLE	(DDF)	1.9196
Matrix	LIFETIME IN MICROSECONDS		175.00
SOLID	R2 VALUE		0.9994
Batch Number	RANGE (HIGH OR LOW)		HIGH
96006319	INSTRUMENT RESULT	(IR)	6.35E-04
Rerun	CONCENTRATION IN SOLUTION (g/L)	(CONC)	6.35E-03
3	SPIKE VALUE (g/L)	(SV)	5.69E-02
Sample Prep	INITIAL VOLUME OF SPIKE (mL)	(IV)	0.10
FUSION01	ORIGINAL SAMPLE VOLUME BEFORE PREP (mL)	(OSV)	1.00
Sample Number	CONCENTRATION IN SOLN (g/L) FROM SAMPLE FORM	(SR)	6.71E-04
S96T000879			
Instrument Code			
U01	Concentration = IR * DF * PF		
Prepared By			
GJH	QC Actual (µg/mL) = SV (g/L) * 1000		
Chemist			
JLS	QC Found (µg/mL) = (CONC - SR) * OSV / IV * 1000		
Analyst			
RWK	% Recovery = QC FOUND / QC ACTUAL		
Date Complete			
06/22/96			
Analysis Date			
06/21/96	QC ACTUAL	=	5.69E+01 µg/mL
Analysis Time	QC FOUND	=	5.68E+01 µg/mL
02:24 AM	% SPIKE RECOVERY	=	99.8%
Sample Point			
S102			

Analyst:	RWK	Date:	22-Jun-96
Signature of Chemist:	JLS	Date:	6/24/96

SPIKE.WB1 REV 2.0 925009ML

WORKBOOK PAGE: SAM6

Uranium by Phosphorescence: LA-925-009 (A-1) LIQUID/SOLID

WHC-SD-WM-DP-179, REV. 1

Type			
SAMPLE			SAMPLE
Work List	VOLUME OF SAMPLE (mL)	(SS)	1.00
10102	DILUTION FACTOR OF SAMPLE	(DF)	1.00
Test Code	PREPARATION FACTOR OF SAMPLE	(PF)	10.00
@U-01	DIGEST FACTOR	(Dg/L)	2.0828
Matrix	LIFETIME IN MICROSECONDS		200.00
SOLID	R2 VALUE		0.9997
Batch Number	RANGE (HIGH OR LOW)		HIGH
96006319	INSTRUMENT UNCERTAINTY	(IU)	2.98E-05
Rerun	INSTRUMENT RESULT	(IR)	3.06E-04
3	DETECTION LEVEL µg/g		1.78E-01
Sample Prep			
FUSION01	CONCENTRATION IN SOLUTION (g/L)		3.06E-03
Sample #	RESULT (µg/g)		1.47E+03
S96T000880	RELATIVE % UNCERTAINTY		9.7
Instrument Code			
U01			
Prepared By			
GJH			
Chemist			
JLS			
Analyst			
RWK			
Date Complete			
06/22/96			
Analysis Date			
06/21/96			
Analysis Time			
02:24 AM			
Sample Point			
S102			

Result = Conc. in Solution (g/L) * 1000000 / Dg/L

Detection Level = 3.70 E-08 * DF * PF * 1000000/ DF

Relative % Uncertainty = IU / IR * 100

Concentration in Solution (g/L) = IR * DF * PF

Analyst:	RWK	Date:	22-Jun-96
Signature of Chemist:	JLS	Date:	6/24/96

SAMPLE.WB1 REV 2.0 925009ML

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WORKBOOK PAGE: DUP7

Uranium by Phosphorescence: LA-925-009 (A-1) LIQUID/SOLID

Type			
DUP			DUP
Work List	VOLUME OF SAMPLE (mL)	(SS)	1.00
10102	DILUTION FACTOR OF SAMPLE	(DF)	1.00
Test Code	PREPARATION FACTOR OF SAMPLE	(PF)	10.00
@U-01	DIGEST FACTOR	(Dg/L)	1.9780
Matrix	LIFETIME IN MICROSECONDS		197.00
SOLID	R2 VALUE		0.9996
Batch Number	RANGE (HIGH OR LOW)		HIGH
96006319	INSTRUMENT UNCERTAINTY	(IU)	2.82E-05
Rerun	INSTRUMENT RESULT	(IR)	2.89E-04
3	DETECTION LEVEL µg/g		1.87E-01
Sample Prep			
FUSION01	CONCENTRATION IN SOLUTION (g/L)		2.89E-03
Sample #	RESULT (µg/g)		1.46E+03
S96T000880	RELATIVE % UNCERTAINTY		9.8
Instrument Code			
U01			
Prepared By			
GJH			
Chemist			
JLS			
Analyst			
RWK			
Date Complete			
06/22/96			
Analysis Date			
06/21/96			
Analysis Time			
02:24 AM			
Sample Point			
S102			

Result = Conc. in Solution (g/L) * 1000000 / Dg/L

Detection Level = 3.70 E-08 * DF * PF * 1000000/ DF

Relative % Uncertainty = IU / IR * 100

Concentration in Solution (g/L) = IR * DF * PF

Analyst:	RWK	Date:	22-Jun-96
Signature of Chemist:	JLS	Date:	6/24/96

SAMPLE.WB1 REV 2.0 925009ML

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WORKBOOK PAGE: SPIKE8

Uranium by Phosphorescence: LA-925-009 (A-1) LIQUID/SOLID

Type			SPIKE
SPK	SPIKE BOOK #		22B55
Work List	VOLUME OF SAMPLE + SPIKE (mL)	(SS)	1.00
10102	DILUTION FACTOR OF SAMPLE + SPIKE	(DF)	1.00
Test Code	PREPARATION FACTOR OF SAMPLE + SPIKE	(PF)	10.00
@U-01	DIGEST FACTOR OF SAMPLE	(DDF)	2.0828
Matrix	LIFETIME IN MICROSECONDS		226.00
SOLID	R2 VALUE		0.9997
Batch Number	RANGE (HIGH OR LOW)		HIGH
96006319	INSTRUMENT RESULT	(IR)	9.28E-04
Rerun	CONCENTRATION IN SOLUTION (g/L)	(CONC)	9.28E-03
3	SPIKE VALUE (g/L)	(SV)	5.69E-02
Sample Prep	INITIAL VOLUME OF SPIKE (mL)	(IV)	0.10
FUSION01	ORIGINAL SAMPLE VOLUME BEFORE PREP (mL)	(OSV)	1.00
Sample Number	CONCENTRATION IN SOLN (g/L) FROM SAMPLE FORM	(SR)	3.06E-03
S96T000880			
Instrument Code			
U01	Concentration = IR * DF * PF		
Prepared By			
GJH	QC Actual (µg/mL) = SV (g/L) * 1000		
Chemist			
JLS	QC Found (µg/mL) = (CONC - SR) * OSV / IV * 1000		
Analyst			
RWK	% Recovery = QC FOUND / QC ACTUAL		
Date Complete			
06/22/96			
Analysis Date			
06/21/96	QC ACTUAL	=	5.69E+01 µg/mL
Analysis Time	QC FOUND	=	6.22E+01 µg/mL
02:24 AM	% SPIKE RECOVERY	=	109.3%
Sample Point			
S102			

Analyst:	RWK	Date:	22-Jun-96
Signature of Chemist:	JLS	Date:	6/24/96

SPIKE.WB1 REV 2.0 925009ML

2292

THE FOLLOWING ANALYSES WERE RERUN. THEY ARE INCLUDED IN THE DATA PACKAGE BUT THE RESULTS HAVE NOT BEEN REPORTED IN THE FINAL SUMMARY REPORTS.

03/22/96 13:31
A-0004-1

LABCORE Data Entry Template for Worklist# 6892

Analyst: CRJ **Instrument:** U01 U01 **Book#** ~~15B55C~~ 15B56 CRJ 4/1/96

Method: LA-925-009 Rev/Mod A-1

Worklist Comment: 1-10ml Sample Prep.For spike use: 0.1ml spike. new

S	Type	Sample#	R	A	Test	Matrix	Group#	Project
1	STD				@U-01	SOLID		
2	BLNK-PREP				@U-01	SOLID		
3	SAMPLE	S96T000879	0	F	@U-01	SOLID	96000030	S102
		Analytes Requested:			U-02	, U-02E		
4	DUP	S96T000879	0	F	@U-01	SOLID		
5	SPK	S96T000879	0	F	@U-01	SOLID		
6	SAMPLE	S96T000880	0	F	@U-01	SOLID	96000030	S102
		Analytes Requested:			U-02	, U-02E		
7	DUP	S96T000880	0	F	@U-01	SOLID		
8	SPK	S96T000880	0	F	@U-01	SOLID		

Final page for worklist # 6892

C. Johnson 4/5/96
Analyst Signature **Date**

M. Brown 4/9/96
Analyst Signature **Date**
Sue Hogan 4/9/96

DATA NOT USED IN PACKAGE

Data Entry Comments:

S = Worklist Slot Number, R = Replicate Number, A = Aliquot Code.

LABCORE Completed Worklist Report for Worklist# 6892

Analyst: crj **Instrument:** U01 **Book#** 45856

Method: LA-925-009 Rev/Mod A-1

Worklist Comment: 1-10ml Sample Prep.For spike use: 0.1ml spike. new

Seq	Type	Sample#	R	A		Test	Matrix	Actual	Found	DL or Yield	Unit
1	STD		0		@U-01	U-02	SOLID	6.39E-02	6.63E-02	103.760	% Recovery
1	STD		0		@U-01	U-02E	SOLID	1	3.17E+00	3.170	% Inst Error
2	BLNK-PREP		0		@U-01	U-02	SOLID	1	5.37E+1	53.700	ug/g
2	BLNK-PREP		0		@U-01	U-02E	SOLID	1	1.22E+00	1.220	% Inst Error
3	SAMPLE	S96T000879	0	F	@U-01	U-02	SOLID	N/A	3.00E+02	0.193	ug/g
3	SAMPLE	S96T000879	0	F	@U-01	U-02E	SOLID	N/A	4.36E+00	0.000	% Inst Error
4	DUP	S96T000879	0	F	@U-01	U-02	SOLID	3.00E+2	3.39E+2	12.210	RPD
4	DUP	S96T000879	0	F	@U-01	U-02E	SOLID	1	4.98E+00	4.980	% Inst Error
5	SPK	S96T000879	0	F	@U-01	U-02	SOLID	5.69E+01	3.58E+01	62.920	% Recovery
6	SAMPLE	S96T000880	0	F	@U-01	U-02	SOLID	N/A	8.31E+02	0.178	ug/g
6	SAMPLE	S96T000880	0	F	@U-01	U-02E	SOLID	N/A	5.04E+00	0.000	% Inst Error
7	DUP	S96T000880	0	F	@U-01	U-02	SOLID	8.31E+2	7.48E+2	10.510	RPD
7	DUP	S96T000880	0	F	@U-01	U-02E	SOLID	1	5.35E+00	5.350	% Inst Error
8	SPK	S96T000880	0	F	@U-01	U-02	SOLID	5.69E+01	2.03E+01	35.680	% Recovery

Final page for worklist# 6892

Analyst Signature **Date** **Analyst Signature** **Date**

[signature] 4/9/96
Reviewer Signature **Date**

Spike results do not meet control limits. S96T000879 and S96T000880 will be rerun.

DATA NOT USED IN PACKAGE

Units shown for QC (BLK/BKG) may not reflect the actual units.

Sample ID S96T000879 Date/Time 04/05/96/14:02:54
Description SPK Cal Y=8.55E+07X-4.08E+02
Ref. Ratio 1.043 Intensity 32963 (t= 39 us)
Laser Pulses 500 Conc 4.16E-04 + 1.80E-05 g/L
Lifetime 181 + 2.59 us Dilution Factor 1 mL/mL
R2 .9913
Integrated 377053 FINAL RESULT 4.16E-04 + 1.80E-05 g/L
Range: HIGH

Sample ID S96T000880 Date/Time 04/05/96/14:05:23
Description SAM Cal Y=8.55E+07X-4.08E+02
Ref. Ratio 1.053 Intensity 14035 (t= 39 us)
Laser Pulses 500 Conc 1.73E-04 + 8.72E-06 g/L
Lifetime 169 + 2.964 us Dilution Factor 1 mL/mL
R2 .9869
Integrated 144633 FINAL RESULT 1.73E-04 + 8.72E-06 g/L
Range: HIGH

Sample ID S96T000880 Date/Time 04/05/96/14:06:54
Description DUP Cal Y=8.55E+07X-4.08E+02
Ref. Ratio 1.021 Intensity 12353 (t= 39 us)
Laser Pulses 500 Conc 1.48E-04 + 7.92E-06 g/L
Lifetime 166 + 3.189 us Dilution Factor 1 mL/mL
R2 .9845
Integrated 121859 FINAL RESULT 1.48E-04 + 7.92E-06 g/L
Range: HIGH

Sample ID S96T000880 Date/Time 04/05/96/14:08:03
Description SPK Cal Y=8.55E+07X-4.08E+02
Ref. Ratio 1.016 Intensity 34096 (t= 39 us)
Laser Pulses 500 Conc 3.76E-04 + 2.13E-05 g/L
Lifetime 165 + 3.397 us Dilution Factor 1 mL/mL
R2 .9821
Integrated 315839 FINAL RESULT 3.76E-04 + 2.13E-05 g/L
Range: HIGH

DATA NOT USED IN PACKAGE

Sample ID 45B56
Description STD
Ref. Ratio 1.042
Laser Pulses 500
Lifetime 256 + .846 us
R2 .9995
Integrated 77759
Range: HIGH

Date/Time 04/05/96/13:50:50
Cal Y=8.55E+07X-4.08E+02
Intensity 4325 (t= 39 us)
Conc 6.63E-05 + 2.10E-06 g/L
Dilution Factor 1 mL/mL

FINAL RESULT 6.63E-05 + 2.10E-06 g/L

WL 6892

Sample ID WL6892
Description BLK
Ref. Ratio 1.049
Laser Pulses 500
Lifetime 227 + 1.618 us
R2 .9978
Integrated 10323
Range: HIGH

Date/Time 04/05/96/13:57:14
Cal Y=8.55E+07X-4.08E+02
Intensity 657 (t= 39 us)
Conc 1.39E-05 + 4.67E-07 g/L
Dilution Factor 1 mL/mL

FINAL RESULT 1.39E-05 + 4.67E-07 g/L

Sample ID WL6892
Description BLK
Ref. Ratio 1.021
Laser Pulses 500
Lifetime 224 + .666 us
R2 .9996
Integrated 804930
Range: LOW

Date/Time 04/05/96/13:57:56
Cal Y=6.04E+09X0
Intensity 49471 (t= 39 us)
Conc 1.03E-05 + 1.26E-07 g/L
Dilution Factor 1 mL/mL

FINAL RESULT 1.03E-05 + 1.26E-07 g/L

Sample ID S96T000879
Description SAM
Ref. Ratio 1.047
Laser Pulses 500
Lifetime 172 + 2.365 us
R2 .9919
Integrated 45628
Range: HIGH

Date/Time 04/05/96/14:00:03
Cal Y=8.55E+07X-4.08E+02
Intensity 4089 (t= 39 us)
Conc 5.76E-05 + 2.51E-06 g/L
Dilution Factor 1 mL/mL

FINAL RESULT 5.76E-05 + 2.51E-06 g/L

Sample ID S96T000879
Description DUP
Ref. Ratio 1.041
Laser Pulses 500
Lifetime 171 + 2.974 us
R2 .9871
Integrated 53395
Range: HIGH

Date/Time 04/05/96/14:01:26
Cal Y=8.55E+07X-4.08E+02
Intensity 5021 (t= 39 us)
Conc 6.63E-05 + 3.30E-06 g/L
Dilution Factor 1 mL/mL

FINAL RESULT 6.63E-05 + 3.30E-06 g/L

DATA NOT USED IN PACKAGE

WORKBOOK PAGE: STD1

Uranium by Phosphorescence: LA-925-009 (A-1) LIQUID/SOLID

Type			
STD			STANDARD
Work List	STANDARD BOOK #		45B56
6892	VOLUME OF SAMPLE (mL)	(SS)	1.00
Test Code	DILUTION FACTOR OF SAMPLE	(DF)	1.00
@U-01	PREPARATION FACTOR OF SAMPLE	(PF)	1.00
Matrix	LIFETIME IN MICROSECONDS		256.00
LIQUID	R2 VALUE		0.9995
Batch Number	RANGE (HIGH OR LOW)		HIGH
96002597	INSTRUMENT UNCERTAINTY	(IU)	2.10E-06
Rerun	INSTRUMENT RESULT	(IR)	6.63E-05
0	DETECTION LEVEL (µg/mL)		3.70E-05
Sample Prep			
N/A	RESULT (µg/mL)		6.63E-02
Sample #	VALUE OF STANDARD		6.39E-02
WL6892	%RECOVERY		103.76
Instrument Code	RELATIVE % UNCERTAINTY		3.2
U01			
Prepared By			
MCB			
Chemist			
JLS			
Analyst			
CRJ			
Date Complete			
04/09/96			
Analysis Date			
04/05/96			
Analysis Time			
01:45 PM			
Sample Point			
S-102			

Result = DF * PF * IR * 1000

Detection Level = 3.70 E-08 * DF * PF * 1000

% Recovery = Result / Value of Standard * 100

Relative % Uncertainty = IU / IR * 100

Analyst:	CRJ	Date:	09-Apr-96
Signature of Chemist:	JLS	Date:	

STANDARD.WB1 REV 2.0 925009ML

DATA NOT USED IN PACKAGE

WORKBOOK PAGE: BLANK2

Uranium by Phosphorescence: LA-925-009 (A-1) LIQUID/SOLID

Type			
BLNK-PREP			BLANK
Work List	VOLUME OF SAMPLE (mL)	(SS)	1.00
6892	DILUTION FACTOR OF SAMPLE	(DF)	1.00
Test Code	PREPARATION FACTOR OF SAMPLE	(PF)	10.00
@U-01	DIGEST FACTOR	(Dg/L)	1.9196
Matrix	LIFETIME IN MICROSECONDS		224.00
SOLID	R2 VALUE		0.9996
Batch Number	RANGE (HIGH OR LOW)		LOW
96002597	INSTRUMENT UNCERTAINTY	(IU)	1.26E-07
Rerun	INSTRUMENT RESULT	(IR)	1.03E-05
0	DETECTION LEVEL µg/g		1.93E-01
Sample Prep			
N/A	CONCENTRATION IN SOLUTION (g/L)		1.03E-04
Sample #	RESULT (µg/g)		5.37E+01
WL6892	RELATIVE % UNCERTAINTY		1.2
Instrument Code			
U01			
Prepared By			
MCB			
Chemist			
JLS			
Analyst			
CRJ			
Date Complete			
04/09/96			
Analysis Date			
04/05/96			
Analysis Time			
01:45 PM			
Sample Point			
S-102			

Result = Conc. in Solution (g/L) * 1000000 / Dg/L

Detection Level = 3.70 E-08 * DF * PF * 1000000/ DF

Relative % Uncertainty = IU / IR * 100

Concentration in Solution (g/L) = IR * DF * PF

Analyst:	CRJ	Date:	09-Apr-96
Signature of Chemist:	JLS	Date:	

BLANK.WB1 REV 2.0 925009ML

DATA NOT USED IN PACKAGE

WORKBOOK PAGE: SAM3

Uranium by Phosphorescence: LA-925-009 (A-1) LIQUID/SOLID

Type			
SAMPLE			SAMPLE
Work List	VOLUME OF SAMPLE (mL)	(SS)	1.00
6892	DILUTION FACTOR OF SAMPLE	(DF)	1.00
Test Code	PREPARATION FACTOR OF SAMPLE	(PF)	10.00
@U-01	DIGEST FACTOR	(Dg/L)	1.9196
Matrix	LIFETIME IN MICROSECONDS		172.00
SOLID	R2 VALUE		0.9919
Batch Number	RANGE (HIGH OR LOW)		HIGH
96002597	INSTRUMENT UNCERTAINTY	(IU)	2.51E-06
Rerun	INSTRUMENT RESULT	(IR)	5.76E-05
0	DETECTION LEVEL µg/g		1.93E-01
Sample Prep			
FUSION01	CONCENTRATION IN SOLUTION (g/L)		5.76E-04
Sample #	RESULT (µg/g)		3.00E+02
S96T000879	RELATIVE % UNCERTAINTY		4.4
Instrument Code			
U01			
Prepared By			
MCB			
Chemist			
JLS			
Analyst			
CRJ			
Date Complete			
04/09/96			
Analysis Date			
04/05/96			
Analysis Time			
01:45 PM			
Sample Point			
S-102			

Result = Conc. in Solution (g/L) * 1000000 / Dg/L

Detection Level = 3.70 E-08 * DF * PF * 1000000/ DF

Relative % Uncertainty = IU / IR * 100

Concentration in Solution (g/L) = IR * DF * PF

Analyst:	CRJ	Date:	09-Apr-96
Signature of Chemist:	JLS	Date:	

SAMPLE.WB1 REV 2.0 925009ML

DATA NOT USED IN PACKAGE

WORKBOOK PAGE: DUP4

Uranium by Phosphorescence: LA-925-009 (A-1) LIQUID/SOLID

Type			
DUP			DUP
Work List	VOLUME OF SAMPLE (mL)	(SS)	1.00
6892	DILUTION FACTOR OF SAMPLE	(DF)	1.00
Test Code	PREPARATION FACTOR OF SAMPLE	(PF)	10.00
@U-01	DIGEST FACTOR	(Dg/L)	1.9544
Matrix	LIFETIME IN MICROSECONDS		171.00
SOLID	R2 VALUE		0.9871
Batch Number	RANGE (HIGH OR LOW)		HIGH
96002597	INSTRUMENT UNCERTAINTY	(IU)	3.30E-06
Rerun	INSTRUMENT RESULT	(IR)	6.63E-05
0	DETECTION LEVEL µg/g		1.89E-01
Sample Prep			
FUSION01	CONCENTRATION IN SOLUTION (g/L)		6.63E-04
Sample #	RESULT (µg/g)		3.39E+02
S96T000879	RELATIVE % UNCERTAINTY		5.0
Instrument Code			
U01			
Prepared By			
MCB			
Chemist			
JLS			
Analyst			
CRJ			
Date Complete			
04/09/96			
Analysis Date			
04/05/96			
Analysis Time			
01:45 PM			
Sample Point			
S-102			

Result = Conc. in Solution (g/L) * 1000000 / Dg/L

Detection Level = 3.70 E-08 * DF * PF * 1000000/ DF

Relative % Uncertainty = IU / IR * 100

Concentration in Solution (g/L) = IR * DF * PF

Analyst:	CRJ	Date:	09-Apr-96
Signature of Chemist:	JLS	Date:	

SAMPLE.WB1 REV 2.0 925009ML

DATA NOT USED IN PACKAGE

WORKBOOK PAGE: SPIKE5

Uranium by Phosphorescence: LA-925-009 (A-1) LIQUID/SOLID

Type			SPIKE
SPK	SPIKE BOOK #		22B55
Work List	VOLUME OF SAMPLE + SPIKE (mL)	(SS)	1.00
6892	DILUTION FACTOR OF SAMPLE + SPIKE	(DF)	1.00
Test Code	PREPARATION FACTOR OF SAMPLE + SPIKE	(PF)	10.00
@U-01	DIGEST FACTOR OF SAMPLE	(DDF)	1.9196
Matrix	LIFETIME IN MICROSECONDS		181.00
SOLID	R2 VALUE		0.9913
Batch Number	RANGE (HIGH OR LOW)		HIGH
96002597	INSTRUMENT RESULT	(IR)	4.16E-04
Rerun	CONCENTRATION IN SOLUTION (g/L)	(CONC)	4.16E-03
0	SPIKE VALUE (g/L)	(SV)	5.69E-02
Sample Prep	INITIAL VOLUME OF SPIKE (mL)	(IV)	0.10
FUSION01	ORIGINAL SAMPLE VOLUME BEFORE PREP (mL)	(OSV)	1.00
Sample Number	CONCENTRATION IN SOLN (g/L) FROM SAMPLE FORM	(SR)	5.76E-04
S96T000879			
Instrument Code			
U01	Concentration = IR * DF * PF		
Prepared By			
MCB	QC Actual (µg/mL) = SV (g/L) * 1000		
Chemist			
JLS	QC Found (µg/mL) = (CONC - SR) * OSV / IV * 1000		
Analyst			
CRJ	% Recovery = QC FOUND / QC ACTUAL		
Date Complete			
04/09/96			
Analysis Date			
04/05/96	QC ACTUAL	=	5.69E+01 µg/mL
Analysis Time	QC FOUND	=	3.58E+02 µg/mL
01:45 PM	% SPIKE RECOVERY	=	629.9%
Sample Point			
S-102			

Analyst:	CRJ	Date:	09-Apr-96
Signature of Chemist:	JLS	Date:	

SPIKE.WB1 REV 2.0 925009ML

DATA NOT USED IN PACKAGE

WORKBOOK PAGE: SAM6

Uranium by Phosphorescence: LA-925-009 (A-1) LIQUID/SOLID

Type			
SAMPLE			SAMPLE
Work List	VOLUME OF SAMPLE (mL)	(SS)	1.00
6892	DILUTION FACTOR OF SAMPLE	(DF)	1.00
Test Code	PREPARATION FACTOR OF SAMPLE	(PF)	10.00
@U-01	DIGEST FACTOR	(Dg/L)	2.0828
Matrix	LIFETIME IN MICROSECONDS		169.00
SOLID	R2 VALUE		0.9869
Batch Number	RANGE (HIGH OR LOW)		HIGH
96002597	INSTRUMENT UNCERTAINTY	(IU)	8.72E-06
Rerun	INSTRUMENT RESULT	(IR)	1.73E-04
0	DETECTION LEVEL µg/g		1.78E-01
Sample Prep			
FUSION01	CONCENTRATION IN SOLUTION (g/L)		1.73E-03
Sample #	RESULT (µg/g)		8.31E+02
S96T000880	RELATIVE % UNCERTAINTY		5.0
Instrument Code			
U01			
Prepared By			
MCB			
Chemist			
JLS			
Analyst			
CRJ			
Date Complete			
04/09/96			
Analysis Date			
04/05/96			
Analysis Time			
01:45 PM			
Sample Point			
S-102			

Result = Conc. in Solution (g/L) * 1000000 / Dg/L

Detection Level = 3.70 E-08 * DF * PF * 1000000/ DF

Relative % Uncertainty = IU / IR * 100

Concentration in Solution (g/L) = IR * DF * PF

Analyst:	CRJ	Date:	09-Apr-96
Signature of Chemist:	JLS	Date:	

SAMPLE.WB1 REV 2.0 925009ML

DATA NOT USED IN PACKAGE

WORKBOOK PAGE: DUP7

Uranium by Phosphorescence: LA-925-009 (A-1) LIQUID/SOLID

Type			
DUP			DUP
Work List	VOLUME OF SAMPLE (mL)	(SS)	1.00
6892	DILUTION FACTOR OF SAMPLE	(DF)	1.00
Test Code	PREPARATION FACTOR OF SAMPLE	(PF)	10.00
@U-01	DIGEST FACTOR	(Dg/L)	1.9780
Matrix	LIFETIME IN MICROSECONDS		166.00
SOLID	R2 VALUE		0.9845
Batch Number	RANGE (HIGH OR LOW)		HIGH
96002597	INSTRUMENT UNCERTAINTY	(IU)	7.92E-06
Rerun	INSTRUMENT RESULT	(IR)	1.48E-04
0	DETECTION LEVEL µg/g		1.87E-01
Sample Prep			
FUSION01	CONCENTRATION IN SOLUTION (g/L)		1.48E-03
Sample #	RESULT (µg/g)		7.48E+02
S96T000880	RELATIVE % UNCERTAINTY		5.4
Instrument Code			
U01			
Prepared By			
MCB			
Chemist			
JLS			
Analyst			
CRJ			
Date Complete			
04/09/96			
Analysis Date			
04/05/96			
Analysis Time			
01:45 PM			
Sample Point			
S-102			

Result = Conc. in Solution (g/L) * 1000000 / Dg/L

Detection Level = 3.70 E-08 * DF * PF * 1000000/ DF

Relative % Uncertainty = IU / IR * 100

Concentration in Solution (g/L) = IR * DF * PF

Analyst:	CRJ	Date:	09-Apr-96
Signature of Chemist:	JLS	Date:	

SAMPLE.WB1 REV 2.0 925009ML

DATA NOT USED IN PACKAGE

WORKBOOK PAGE: SPIKE8

Uranium by Phosphorescence: LA-925-009 (A-1) LIQUID/SOLID

Type			SPIKE
SPK	SPIKE BOOK #		22B55
Work List	VOLUME OF SAMPLE + SPIKE (mL)	(SS)	1.00
6892	DILUTION FACTOR OF SAMPLE + SPIKE	(DF)	1.00
Test Code	PREPARATION FACTOR OF SAMPLE + SPIKE	(PF)	10.00
@U-01	DIGEST FACTOR OF SAMPLE	(DDF)	2.0828
Matrix	LIFETIME IN MICROSECONDS		165.00
SOLID	R2 VALUE		0.9821
Batch Number	RANGE (HIGH OR LOW)		HIGH
96002597	INSTRUMENT RESULT	(IR)	3.76E-04
Rerun	CONCENTRATION IN SOLUTION (g/L)	(CONC)	3.76E-03
0	SPIKE VALUE (g/L)	(SV)	5.69E-02
Sample Prep	INITIAL VOLUME OF SPIKE (mL)	(IV)	0.10
FUSION01	ORIGINAL SAMPLE VOLUME BEFORE PREP (mL)	(OSV)	1.00
Sample Number	CONCENTRATION IN SOLN (g/L) FROM SAMPLE FORM	(SR)	1.73E-03
S96T000880			
Instrument Code			
U01	Concentration = IR * DF * PF		
Prepared By			
MCB	QC Actual (µg/mL) = SV (g/L) * 1000		
Chemist			
JLS	QC Found (µg/mL) = (CONC - SR) * OSV / IV * 1000		
Analyst			
CRJ	% Recovery = QC FOUND / QC ACTUAL		
Date Complete			
04/09/96			
Analysis Date			
04/05/96	QC ACTUAL	=	5.69E+01 µg/mL
Analysis Time	QC FOUND	=	2.03E+01 µg/mL
01:45 PM	% SPIKE RECOVERY	=	35.7%
Sample Point			
S-102			

Analyst:	CRJ	Date:	09-Apr-96
Signature of Chemist:	JLS	Date:	

SPIKE.WB1 REV 2.0 925009ML

DATA NOT USED IN PACKAGE

LABCORE Data Entry Template for Worklist# 7593

Analyst: DCD **Instrument:** U01 **Book#** 45B56

Method: LA-925-009 Rev/Mod A-1

Worklist Comment: 0.1 - 10 mL sample prep / 0.1 mL spike / rerun / jls

S	Type	Sample#	R	A	Test	Matrix	Group#	Project
1	STD				@U-01	SOLID		
2	BLNK-PREP				@U-01	SOLID		
3	SAMPLE	S96T000879	0	F	@U-01	SOLID	96000030	S102
		Analytes Requested:			U-02	, U-02E		
4	DUP	S96T000879	0	F	@U-01	SOLID		
5	SPK	S96T000879	0	F	@U-01	SOLID		
6	SAMPLE	S96T000880	0	F	@U-01	SOLID	96000030	S102
		Analytes Requested:			U-02	, U-02E		
7	DUP	S96T000880	0	F	@U-01	SOLID		
8	SPK	S96T000880	0	F	@U-01	SOLID		

Final page for worklist # 7593

Prep - Wayne Buzhardt
Analyst Signature **Date**

Analysis - David C Dunlap

4/19/96
Analyst Signature **Date**

Spike result for S96T000880 does not meet control limits. Sample results do not agree with original analysis. Rerun.

5/2/96

DATA NOT USED IN PACKAGE

Data Entry Comments:

S = Worklist Slot Number, R = Replicate Number, A = Aliquot Code.

Background Report

Background for HIGH Range
Laser Pulses 500

First Time Data Used (sample) 4
Date/Time 04/16/96/07:44:43

Reference	Sample
Intensity 8715	Intensity 10
Lifetime 336.72 + 1.43 us	High background
R2 .99925	
Intercept 9770.79	

Background Report

Background for LOW Range
Laser Pulses 500

First Time Data Used (sample) 4
Date/Time 04/16/96/07:47:30

Reference	Sample
Intensity 8675	Intensity 694
Lifetime 343.24 + 1.58 us	Low background
R2 .99909	
Intercept 9704.77	

Standard Report

Standard for HIGH Range - 9.90E-04 B/L
Laser Pulses 500

Date/Time 04/16/96/08:02:33

Reference	Standard
Intensity 8480	Intensity 51940 High STD
Lifetime 341.03 + 1.02 us	Lifetime 295.66 + .77 us
R2 .99914	R2 .9997
Intercept 9734.15	Intercept 76833.06 + 1.77E+02

Standard Report

Standard for HIGH Range - 4.95E-04 B/L
Laser Pulses 500

Date/Time 04/16/96/08:04:49

Reference	Standard
Intensity 8677	Intensity 30467 MED STD
Lifetime 343.21 + 1.11 us	Lifetime 260.58 + .85 us
R2 .99983	R2 .9996
Intercept 9746.24	Intercept 36681.77 + 1.50E+02

DATA NOT USED IN DATA

Standard Report

Standard for LOW Range - 2.48E-06 G/L
Laser Pulses 500 Date/Time 04/16/96/08:06:23

Reference		Standard	
Intensity	8552	Intensity	11210 LOW STD
Lifetime	344.68 + 1.07 us	Lifetime	211.77 + .61 us
R2	.99974	R2	.9996
Intercept	9767.41	Intercept	14,412.37 + 1.39E-02

Sample ID [illegible] Date/Time [illegible]
[illegible] Dal [illegible]
Ref. Peak [illegible] Intensity [illegible]
Laser Pulses [illegible] Conc [illegible]
Lifetime [illegible] us Dilution Factor [illegible]
R2 [illegible]
Integrated [illegible] FINAL RESULT [illegible] G/L
Range: [illegible]

Sample ID [illegible] Date/Time [illegible]
[illegible] Dal [illegible]
Ref. Peak [illegible] Intensity [illegible]
Laser Pulses [illegible] Conc [illegible]
Lifetime [illegible] us Dilution Factor [illegible]
R2 [illegible]
Integrated [illegible] FINAL RESULT [illegible] G/L
Range: [illegible]

Sample ID [illegible] Date/Time [illegible]
[illegible] Dal [illegible]
Ref. Peak [illegible] Intensity [illegible]
Laser Pulses [illegible] Conc [illegible]
Lifetime [illegible] us Dilution Factor [illegible]
R2 [illegible]
Integrated [illegible] FINAL RESULT [illegible] G/L
Range: [illegible]

DATA NOT USED

BEST AVAILABLE COPY

Sample ID 596T000879
Description DUPLICATE
Ref. Ratio 1.04
Laser Pulses 500
Lifetime 197 + 2.053 us
R2 .9954
Integrated 54670
Range: HIGH

Date/Time 04/16/96/10:12:52
Cal Y=7.76E+07X-9.48E+02
Intensity 4249 (t= 39 us)
Conc 7.18E-05 + 2.63E-06 G/L
Dilution Factor 1 mL/mL

FINAL RESULT 7.18E-05 + 2.63E-06 G/L

Sample ID 596T000879
Description SPIKE
Ref. Ratio 1.012
Laser Pulses 500
Lifetime 201 + 1.706 us
R2 .9969
Integrated 494626
Range: HIGH

Date/Time 04/16/96/09:40:10
Cal Y=7.76E+07X-9.48E+02
Intensity 36420 (t= 39 us)
Conc 5.53E-04 + 1.91E-05 G/L
Dilution Factor 1 mL/mL

FINAL RESULT 5.53E-04 + 1.91E-05 G/L

Sample ID 596T000880
Description SAMPLE
Ref. Ratio 1.002
Laser Pulses 500
Lifetime 193 + 1.077 us
R2 .9987
Integrated 197063
Range: HIGH

Date/Time 04/16/96/09:45:03
Cal Y=7.76E+07X-9.48E+02
Intensity 14355 (t= 39 us)
Conc 2.37E-04 + 7.70E-06 G/L
Dilution Factor 1 mL/mL

FINAL RESULT 2.37E-04 + 7.70E-06 G/L

Sample ID 596T000880
Description DUPLICATE
Ref. Ratio 1.02
Laser Pulses 500
Lifetime 214 + 1.526 us
R2 .995
Integrated 254244
Range: HIGH

Date/Time 04/16/96/09:48:04
Cal Y=7.76E+07X-9.48E+02
Intensity 16493 (t= 39 us)
Conc 2.61E-04 + 8.54E-06 G/L
Dilution Factor 1 mL/mL

FINAL RESULT 2.61E-04 + 8.54E-06 G/L

Sample ID 596T000880
Description SPIKE
Ref. Ratio 1.027
Laser Pulses 500
Lifetime 182 + 2.064 us
R2 .9944
Integrated 161338
Range: HIGH

Date/Time 04/16/96/09:54:07
Cal Y=7.76E+07X-9.48E+02
Intensity 13296 (t= 39 us)
Conc 2.05E-04 + 7.96E-06 G/L
Dilution Factor 1 mL/mL

FINAL RESULT 2.05E-04 + 7.96E-06 G/L

DATA NOT USED IN PACKAGE

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WORKBOOK PAGE: STD1

Uranium by Phosphorescence: LA-925-009 (A-1) LIQUID/SOLID

Type			STANDARD
STD			
Work List	STANDARD BOOK #		45B56
7593	VOLUME OF SAMPLE (mL)	(SS)	1.00
Test Code	DILUTION FACTOR OF SAMPLE	(DF)	1.00
@U-01	PREPARATION FACTOR OF SAMPLE	(PF)	1.00
Matrix	LIFETIME IN MICROSECONDS		272.00
LIQUID	R2 VALUE		0.9982
Batch Number	RANGE (HIGH OR LOW)		HIGH
96003397	INSTRUMENT UNCERTAINTY	(IU)	2.07E-06
Rerun	INSTRUMENT RESULT	(IR)	6.50E-05
0	DETECTION LEVEL (µg/mL)		3.70E-05
Sample Prep			
N/A	RESULT (µg/mL)		6.50E-02
Sample #	VALUE OF STANDARD		6.39E-02
WL7593	%RECOVERY		101.72
Instrument Code	RELATIVE % UNCERTAINTY		3.2
U01			
Prepared By			
MCB			
Chemist			
JLS			
Analyst			
DCD			
Date Complete			
04/19/96			
Analysis Date			
04/16/96			
Analysis Time			
10:10 AM			
Sample Point			
S-102			

Result = DF * PF * IR * 1000

Detection Level = 3.70 E-08 * DF * PF * 1000

% Recovery = Result / Value of Standard * 100

Relative % Uncertainty = IU / IR * 100

Analyst:	DCD	Date:	19-Apr-96
Signature of Chemist:	JLS	Date:	4/23/96

STANDARD.WB1 REV 2.0 925009ML

WORKBOOK PAGE: BLANK2

Uranium by Phosphorescence: LA-925-009 (A-1) LIQUID/SOLID

Type			
BLNK-PREP			BLANK
Work List	VOLUME OF SAMPLE (mL)	(SS)	1.00
7593	DILUTION FACTOR OF SAMPLE	(DF)	1.00
Test Code	PREPARATION FACTOR OF SAMPLE	(PF)	100.00
@U-01	DIGEST FACTOR	(Dg/L)	1.9196
Matrix	LIFETIME IN MICROSECONDS		208.00
SOLID	R2 VALUE		0.9996
Batch Number	RANGE (HIGH OR LOW)		LOW
96003397	INSTRUMENT UNCERTAINTY	(IU)	2.70E-08
Rerun	INSTRUMENT RESULT	(IR)	2.12E-06
0	DETECTION LEVEL µg/g		1.93E+00
Sample Prep			
N/A	CONCENTRATION IN SOLUTION (g/L)		2.12E-04
Sample #	RESULT (µg/g)		1.10E+02
WL7593	RELATIVE % UNCERTAINTY		1.3
Instrument Code			
U01			
Prepared By			
MCB			
Chemist			
JLS			
Analyst			
DCD			
Date Complete			
04/19/96			
Analysis Date			
04/16/96			
Analysis Time			
10:10 AM			
Sample Point			
S-102			

Result = Conc. in Solution (g/L) * 1000000 / Dg/L

Detection Level = 3.70 E-08 * DF * PF * 1000000/ DF

Relative % Uncertainty = IU / IR * 100

Concentration in Solution (g/L) = IR * DF * PF

Analyst:	DCD	Date:	19-Apr-96
Signature of Chemist:	JLS	Date:	4/23/96

BLANK.WB1 REV 2.0 925009ML

DATA NOT USED IN PACKAGE

I:\925009\OUT\UR7593.WB1 04/19/96 10:29:29

WORKBOOK PAGE: SAM3

Uranium by Phosphorescence: LA-925-009 (A-1) LIQUID/SOLID

Type			
SAMPLE			SAMPLE
Work List	VOLUME OF SAMPLE (mL)	(SS)	1.00
7593	DILUTION FACTOR OF SAMPLE	(DF)	1.00
Test Code	PREPARATION FACTOR OF SAMPLE	(PF)	100.00
@U-01	DIGEST FACTOR	(Dg/L)	1.9196
Matrix	LIFETIME IN MICROSECONDS		175.00
SOLID	R2 VALUE		0.9980
Batch Number	RANGE (HIGH OR LOW)		HIGH
96003397	INSTRUMENT UNCERTAINTY	(IU)	2.78E-06
Rerun	INSTRUMENT RESULT	(IR)	8.17E-05
1	DETECTION LEVEL µg/g		1.93E+00
Sample Prep			
FUSION01	CONCENTRATION IN SOLUTION (g/L)		8.17E-03
Sample #	RESULT (µg/g)		4.26E+03
S96T000879	RELATIVE % UNCERTAINTY		3.4
Instrument Code			
U01			
Prepared By			
MCB			
Chemist			
JLS			
Analyst			
DCD			
Date Complete			
04/19/96			
Analysis Date			
04/16/96			
Analysis Time			
10:10 AM			
Sample Point			
S-102			

Result = Conc. in Solution (g/L) * 1000000 / Dg/L

Detection Level = 3.70 E-08 * DF * PF * 1000000/ DF

Relative % Uncertainty = IU / IR * 100

Concentration in Solution (g/L) = IR * DF * PF

Analyst:	DCD	Date:	19-Apr-96
Signature of Chemist:	JLS	Date:	4/23/96

SAMPLE.WB1 REV 2.0 925009ML

WORKBOOK PAGE: DUP4

Uranium by Phosphorescence: LA-925-009 (A-1) LIQUID/SOLID

Type			
DUP			DUP
Work List	VOLUME OF SAMPLE (mL)	(SS)	1.00
7593	DILUTION FACTOR OF SAMPLE	(DF)	1.00
Test Code	PREPARATION FACTOR OF SAMPLE	(PF)	100.00
@U-01	DIGEST FACTOR	(Dg/L)	1.9544
Matrix	LIFETIME IN MICROSECONDS		197.00
SOLID	R2 VALUE		0.9954
Batch Number	RANGE (HIGH OR LOW)		HIGH
96003397	INSTRUMENT UNCERTAINTY	(IU)	2.63E-06
Rerun	INSTRUMENT RESULT	(IR)	7.18E-05
1	DETECTION LEVEL µg/g		1.89E+00
Sample Prep			
FUSION01	CONCENTRATION IN SOLUTION (g/L)		7.18E-03
Sample #	RESULT (µg/g)		3.67E+03
S96T000879	RELATIVE % UNCERTAINTY		3.7
Instrument Code			
U01			
Prepared By			
MCB			
Chemist			
JLS			
Analyst			
DCD			
Date Complete			
04/19/96			
Analysis Date			
04/16/96			
Analysis Time			
10:10 AM			
Sample Point			
S-102			

Result = Conc. in Solution (g/L) * 1000000 / Dg/L

Detection Level = 3.70 E-08 * DF * PF * 1000000/ DF

Relative % Uncertainty = IU / IR * 100

Concentration in Solution (g/L) = IR * DF * PF

Analyst:	DCD	Date:	19-Apr-96
Signature of Chemist:	JLS	Date:	4/23/96

SAMPLE.WB1 REV 2.0 925009ML

DATA NOT USED IN DATA

I:\925009\OUT\UR7593.WB1 04/19/96 10:46:29

WORKBOOK PAGE: SPIKE5

Uranium by Phosphorescence: LA-925-009 (A-1) LIQUID/SOLID

Type			SPIKE
SPK	SPIKE BOOK #		22B56
Work List	VOLUME OF SAMPLE + SPIKE (mL)	(SS)	1.00
7593	DILUTION FACTOR OF SAMPLE + SPIKE	(DF)	1.00
Test Code	PREPARATION FACTOR OF SAMPLE + SPIKE	(PF)	100.00
@U-01	DIGEST FACTOR OF SAMPLE	(DDF)	1.8196
Matrix	LIFETIME IN MICROSECONDS		201.00
SOLID	R2 VALUE		0.9969
Batch Number	RANGE (HIGH OR LOW)		HIGH
96003397	INSTRUMENT RESULT	(IR)	5.53E-04
Rerun	CONCENTRATION IN SOLUTION (g/L)	(CONC)	5.53E-02
1	SPIKE VALUE (g/L)	(SV)	5.69E-02
Sample Prep	INITIAL VOLUME OF SPIKE (mL)	(IV)	0.10
FUSION01	ORIGINAL SAMPLE VOLUME BEFORE PREP (mL)	(OSV)	0.10
Sample Number	CONCENTRATION IN SOLN (g/L) FROM SAMPLE FORM	(SR)	8.17E-03
S96T000879			
Instrument Code			
U01	Concentration = IR * DF * PF		
Prepared By			
MCB	QC Actual (µg/mL) = SV (g/L) * 1000		
Chemist			
JLS	QC Found (µg/mL) = (CONC - SR) * OSV / IV * 1000		
Analyst			
DCD	% Recovery = QC FOUND / QC ACTUAL		
Date Complete			
04/19/96			
Analysis Date			
04/16/96	QC ACTUAL	=	5.69E+01 µg/mL
Analysis Time	QC FOUND	=	4.71E+01 µg/mL
10:10 AM	% SPIKE RECOVERY	=	82.8%
Sample Point			
S-102			

Analyst:		DCD	Date:	19-Apr-96
Signature of Chemist:	J L Shippen	JLS	Date:	4/23/96

SPIKE.WB1 REV 2.0 925009ML

WORKBOOK PAGE: SAM6

Uranium by Phosphorescence: LA-925-009 (A-1) LIQUID/SOLID

Type			
SAMPLE			SAMPLE
Work List	VOLUME OF SAMPLE (mL)	(SS)	1.00
7593	DILUTION FACTOR OF SAMPLE	(DF)	1.00
Test Code	PREPARATION FACTOR OF SAMPLE	(PF)	100.00
@U-01	DIGEST FACTOR	(Dg/L)	2.0828
Matrix	LIFETIME IN MICROSECONDS		193.00
SOLID	R2 VALUE		0.9987
Batch Number	RANGE (HIGH OR LOW)		HIGH
96003397	INSTRUMENT UNCERTAINTY	(IU)	7.70E-06
Rerun	INSTRUMENT RESULT	(IR)	2.37E-04
1	DETECTION LEVEL µg/g		1.78E+00
Sample Prep			
FUSION01	CONCENTRATION IN SOLUTION (g/L)		2.37E-02
Sample #	RESULT (µg/g)		1.14E+04
S96T000880	RELATIVE % UNCERTAINTY		3.2

Instrument Code
U01
Prepared By
MCB
Chemist
JLS
Analyst
DCD
Date Complete
04/19/96
Analysis Date
04/16/96
Analysis Time
10:10 AM
Sample Point
S-102

Result = Conc. in Solution (g/L) * 1000000 / Dg/L

Detection Level = 3.70 E-08 * DF * PF * 1000000/ DF

Relative % Uncertainty = IU / IR * 100

Concentration in Solution (g/L) = IR * DF * PF

Analyst:	DCD	Date:	19-Apr-96
Signature of Chemist:	JLS	Date:	4/23/96

SAMPLE.WB1 REV 2.0 925009ML

WORKBOOK PAGE: DUP7

Uranium by Phosphorescence: LA-925-009 (A-1) LIQUID/SOLID

Type			DUP
DUP			
Work List	VOLUME OF SAMPLE (mL)	(SS)	1.00
7593	DILUTION FACTOR OF SAMPLE	(DF)	1.00
Test Code	PREPARATION FACTOR OF SAMPLE	(PF)	100.00
@U-01	DIGEST FACTOR	(Dg/L)	1.9780
Matrix	LIFETIME IN MICROSECONDS		224.00
SOLID	R2 VALUE		0.9980
Batch Number	RANGE (HIGH OR LOW)		HIGH
96003397	INSTRUMENT UNCERTAINTY	(IU)	8.54E-06
Rerun	INSTRUMENT RESULT	(IR)	2.61E-04
1	DETECTION LEVEL µg/g		1.87E+00
Sample Prep			
FUSION01	CONCENTRATION IN SOLUTION (g/L)		2.61E-02
Sample #	RESULT (µg/g)		1.32E+04
S96T000880	RELATIVE % UNCERTAINTY		3.3
Instrument Code			
U01			
Prepared By			
MCB			
Chemist			
JLS			
Analyst			
DCD			
Date Complete			
04/19/96			
Analysis Date			
04/16/96			
Analysis Time			
10:10 AM			
Sample Point			
S-102			

Result = Conc. in Solution (g/L) * 1000000 / Dg/L

Detection Level = 3.70 E-08 * DF * PF * 1000000/ DF

Relative % Uncertainty = IU / IR * 100

Concentration in Solution (g/L) = IR * DF * PF

Analyst:	DCD	Date:	19-Apr-96
Signature of Chemist:	JLS	Date:	4/23/96

SAMPLE.WB1 REV 2.0 925009ML

DATA NOT USED IN PACKAGE

WORKBOOK PAGE: SPIKE8

Uranium by Phosphorescence: LA-925-009 (A-1) LIQUID/SOLID

			SPIKE
Type			
SPK	SPIKE BOOK #		22B56
Work List	VOLUME OF SAMPLE + SPIKE (mL)	(SS)	1.00
7593	DILUTION FACTOR OF SAMPLE + SPIKE	(DF)	1.00
Test Code	PREPARATION FACTOR OF SAMPLE + SPIKE	(PF)	100.00
@U-01	DIGEST FACTOR OF SAMPLE	(DDF)	2.0828
Matrix	LIFETIME IN MICROSECONDS		182.00
SOLID	R2 VALUE		0.9944
Batch Number	RANGE (HIGH OR LOW)		HIGH
96003397	INSTRUMENT RESULT	(IR)	2.05E-04
Rerun	CONCENTRATION IN SOLUTION (g/L)	(CONC)	2.05E-02
1	SPIKE VALUE (g/L)	(SV)	5.69E-02
Sample Prep	INITIAL VOLUME OF SPIKE (mL)	(IV)	0.10
FUSION01	ORIGINAL SAMPLE VOLUME BEFORE PREP (mL)	(OSV)	0.10
Sample Number	CONCENTRATION IN SOLN (g/L) FROM SAMPLE FORM	(SR)	2.37E-02
S96T000880			
Instrument Code			
U01	Concentration = IR * DF * PF		
Prepared By			
MCB	QC Actual (µg/mL) = SV (g/L) * 1000		
Chemist			
JLS	QC Found (µg/mL) = (CONC - SR) * OSV / IV * 1000		
Analyst			
DCD	% Recovery = QC FOUND / QC ACTUAL		
Date Complete			
04/19/96			
Analysis Date	QC FOUND IS A < VALUE; 0 WILL BE REPORTED TO MLIMS AND DVD		
04/16/96	QC ACTUAL	=	5.69E+01 µg/mL
Analysis Time	QC FOUND	<	-3.20E+00 µg/mL
10:10 AM	% SPIKE RECOVERY	<	-5.6%
Sample Point			
S-102			

Analyst:	DCD	Date:	19-Apr-96
Signature of Chemist:	JLS	Date:	4/23/96

SPIKE.WB1 REV 2.0 925009ML

DATA NOT [illegible]

LABCORE Completed RadChem Report for Worklist#: 8247

Analyst: cjo **Instrument:** U01 **Book#** 45856

Method: LA 925-009 Rev/Mod A-1

Worklist Comment: 0.1 - 10 mL sample prep / 0.1 mL spike / rerun 2 / jls

Seq	Type	Sample#	R	A		Test	Matrix	Actual	Found	DL or Yield	Unit
1	STD			0	@U-01	U-02	SOLID	6.39E-02	7.06E-02	110.485	% Recovery
1	STD			0	@U-01	U-02E	SOLID	1	1.22E+00	1.220	% Inst Error
2	BLNK-PREP			0	@U-01	U-02	SOLID	1	2.68E+2	268.000	ug/g
2	BLNK-PREP			0	@U-01	U-02E	SOLID	1	1.09E+00	1.090	% Inst Error
3	SAMPLE	S96T000879	F	0	@U-01	U-02	SOLID	N/A	5.83E+02	193.0e-002	ug/g
3	SAMPLE	S96T000879	F	0	@U-01	U-02E	SOLID	N/A	1.11E+00	0.0e+000	% Inst Error
4	DUP	S96T000879	F	0	@U-01	U-02	SOLID	5.83E+2	4.81E+2	19.173	RPD
4	DUP	S96T000879	F	0	@U-01	U-02E	SOLID	1	1.34E+00	1.340	% Inst Error
5	SPK	S96T000879	F	0	@U-01	U-02	SOLID	5.69E+01	4.31E+01	75.747	% Recovery
6	SAMPLE	S96T000880	F	0	@U-01	U-02	SOLID	N/A	1.46E+03	178.0e-002	ug/g
6	SAMPLE	S96T000880	F	0	@U-01	U-02E	SOLID	N/A	1.23E+00	0.0e+000	% Inst Error
7	DUP	S96T000880	F	0	@U-01	U-02	SOLID	1.46E+3	1.55E+3	5.980	RPD
7	DUP	S96T000880	F	0	@U-01	U-02E	SOLID	1	1.16E+00	1.160	% Inst Error
8	SPK	S96T000880	F	0	@U-01	U-02	SOLID	5.69E+01	4.24E+01	74.517	% Recovery

Final page for worklist# 8247

Analyst Signature **Date** **Analyst Signature** **Date**

J. L. Shippen 5/7/96
Reviewer Signature **Date**

Blank-prep was not available for re-analysis. Previous analyses show no indication of blank-prep contamination.

Rerun per project coordinator

J. L. Shippen
6/20/96

Units shown for QC (BLK/BKG) may not reflect the actual units.

LABCORE Data Entry Template for Worklist# 8247

Analyst: KGH **Instrument:** U01 _____ **Book#** 45B56

Method: LA-925-009 Rev/Mod A-1

Worklist Comment: 0.1 - 10 mL sample prep / 0.1 mL spike / rerun 2 / jls

S	Type	Sample#	R	A	Test	Matrix	Group#	Project
1	STD				@U-01	SOLID		
2	BLNK-PREP				@U-01	SOLID		
3	SAMPLE	S96T000879	0	F	@U-01	SOLID	96000030	S102
		Analytes Requested:			U-02	, U-02E		
4	DUP	S96T000879	0	F	@U-01	SOLID		
5	SPK	S96T000879	0	F	@U-01	SOLID		
6	SAMPLE	S96T000880	0	F	@U-01	SOLID	96000030	S102
		Analytes Requested:			U-02	, U-02E		
7	DUP	S96T000880	0	F	@U-01	SOLID		
8	SPK	S96T000880	0	F	@U-01	SOLID		

Final page for worklist # 8247

[signature] 5/3/96
Analyst Signature **Date**

Sue E Hogan 5/3/96
Analyst Signature **Date**

C.J. Quinn 5/6/96

DATA NOT USED IN PACKAGE

Data Entry Comments: THERE WAS NO BLANK-REP WITH THE SAMPLES. I RAN A BLANK, 1ML H_2O.

S = Worklist Slot Number, R = Replicate Number, A = Aliquot Code.

URANIUM ANALYSIS

Sample ID 45656 std
Description standard
Ref. Ratio 1.015
Laser Pulses 500
Lifetime 208 + .78 us
R2 .9999
Integrated 754161
Date/Time 05/03/96/02:01:29
Cal Y=4.80E-09X+4.88E-04
Intensity 45563 (t= 350 us)
Conc 7.36E-05 + 8.58E-07 g/l/mL
Dilution Factor 1 mL/mL
FINAL REBULT 7.06E-05 + 8.58E-07 g/l/mL
Range: LOW

Sample ID blank
Description blank
Ref. Ratio 1.031
Laser Pulses 500
Lifetime 180 + .752 us
R2 .9997
Integrated 284312
Date/Time 05/03/96/03:05:18
Cal Y=4.80E-09X+4.88E-04
Intensity 16022 (t= 39 us)
Conc 5.15E-06 + 5.63E-08 g/l/mL
Dilution Factor 1 mL/mL
FINAL REBULT 5.15E-06 + 5.63E-08 g/l/mL
Range: LOW

Sample ID g96t000879
Description sample
Ref. Ratio 1.037
Laser Pulses 500
Lifetime 210 + .471 us
R2 .9998
Integrated 650183
Date/Time 05/03/96/03:12:44
Cal Y=4.80E-09X+4.88E-04
Intensity 4.780 (t= 39 us)
Conc 1.12E-05 + 1.24E-07 g/l/mL
Dilution Factor 1 mL/mL
FINAL REBULT 1.12E-05 + 1.24E-07 g/l/mL
Range: LOW

Sample ID g96t000877
Description sample
Ref. Ratio 1.040
Laser Pulses 500
Lifetime 207 + .477 us
R2 .9998
Integrated 427058
Date/Time 05/03/96/03:21:18
Cal Y=7.89E-07X-8.12E-03
Intensity 2527 (t= 39 us)
Conc 4.42E-04 + 1.37E-06 g/l
Dilution Factor 1 mL/mL
FINAL REBULT 4.42E-04 + 1.37E-06 g/l/
Range: HIGH

Sample ID g96t000880
Description sample
Ref. Ratio 1.042
Laser Pulses 500
Lifetime 174 + .477 us
R2 .9997
Integrated 754113
Date/Time 05/03/96/03:28:13
Cal Y=4.80E-09X+4.88E-04
Intensity 45999 (t= 153 us)
Conc 7.04E-05 + 7.74E-07 g/l/mL
Dilution Factor 1 mL/mL
FINAL REBULT 7.04E-05 + 7.74E-07 g/l/mL
Range: LOW

URANIUM ANALYSIS

Sample ID s96t000880
Description dup
Ref. Ratio 1.052
Laser Pulses 500
Lifetime 204 + .365 us
R2 .9999
Integrated 753832
Range: LOW

Date/Time 05/03/96/03:31:47
Cal Y=4.80E+09X+4.88E-04
Intensity 49106 (t= 208 us)
Conc 3.06E-05 + 3.54E-07 g/l/mL
Dilution Factor 1 mL/mL

FINAL RESULT 3.06E-05 + 3.54E-07 g/l/mL

Sample ID s96t000880
Description spk
Ref. Ratio 1.057
Laser Pulses 500
Lifetime 178 + .217 us
R2 .9999
Integrated 372705
Range: MID-

Date/Time 05/03/96/03:33:49
Cal Y=7.89E-07X+302.43
Intensity 27774 (t= 37 us)
Conc 4.54E-04 + 1.40E-05 g/l
Dilution Factor 1 mL/mL

FINAL RESULT 4.54E-04 + 1.40E-05 g/l

BEST AVAILABLE COPY

WORKBOOK PAGE: STD1

Uranium by Phosphorescence: LA-925-009 (A-1) LIQUID/SOLID

Type			
STD			STANDARD
Work List	STANDARD BOOK #		45B56
8247	VOLUME OF SAMPLE (mL)	(SS)	1.00
Test Code	DILUTION FACTOR OF SAMPLE	(DF)	1.00
@U-01	PREPARATION FACTOR OF SAMPLE	(PF)	1.00
Matrix	LIFETIME IN MICROSECONDS		208.00
LIQUID	R2 VALUE		0.9999
Batch Number	RANGE (HIGH OR LOW)		LOW
96004149	INSTRUMENT UNCERTAINTY	(IU)	8.58E-07
Rerun	INSTRUMENT RESULT	(IR)	7.06E-05
0	DETECTION LEVEL (µg/mL)		3.70E-05
Sample Prep			
N/A	RESULT (µg/mL)		7.06E-02
Sample #	VALUE OF STANDARD		6.39E-02
WL8247	%RECOVERY		110.49
Instrument Code	RELATIVE % UNCERTAINTY		1.2
UO1			
Prepared By			
SEH			
Chemist			
JLS			
Analyst			
KGH			
Date Complete			
05/03/96			
Analysis Date			
05/03/96			
Analysis Time			
12:00 AM			
Sample Point			
S102			

Result = DF * PF * IR * 1000

Detection Level = 3.70 E-08 * DF * PF * 1000

% Recovery = Result / Value of Standard * 100

Relative % Uncertainty = IU / IR * 100

Analyst:	KGH	Date:	03-May-96
Signature of Chemist:	JLS	Date:	5/7/96

STANDARD.WB1 REV 2.0 925009ML

DATA NOT USED IN PACKAGE

WORKBOOK PAGE: BLANK2

Uranium by Phosphorescence: LA-925-009 (A-1) LIQUID/SOLID

Type			
BLNK-PREP			BLANK
Work List	VOLUME OF SAMPLE (mL)	(SS)	1.00
8247	DILUTION FACTOR OF SAMPLE	(DF)	1.00
Test Code	PREPARATION FACTOR OF SAMPLE	(PF)	100.00
@U-01	DIGEST FACTOR	(Dg/L)	1.9196
Matrix	LIFETIME IN MICROSECONDS		180.00
SOLID	R2 VALUE		0.9999
Batch Number	RANGE (HIGH OR LOW)		LOW
96004149	INSTRUMENT UNCERTAINTY	(IU)	5.63E-08
Rerun	INSTRUMENT RESULT	(IR)	5.15E-06
0	DETECTION LEVEL µg/g		1.93E+00
Sample Prep			
N/A	CONCENTRATION IN SOLUTION (g/L)		5.15E-04
Sample #	RESULT (µg/g)		2.68E+02
WL8247	RELATIVE % UNCERTAINTY		1.1
Instrument Code			
UO1			
Prepared By			
SEH			
Chemist			
JLS			
Analyst			
KGH			
Date Complete			
05/03/96			
Analysis Date			
05/03/96			
Analysis Time			
12:00 AM			
Sample Point			
S102			

Result = Conc. in Solution (g/L) * 1000000 / Dg/L

Detection Level = 3.70 E-08 * DF * PF * 1000000/ DF

Relative % Uncertainty = IU / IR * 100

Concentration in Solution (g/L) = IR * DF * PF

Analyst:		KGH	Date: 03-May-96
Signature of Chemist:	J L Slupski	JLS	Date: 5/7/96

BLANK.WB1 REV 2.0 925009ML

DATA NOT USED IN PACKAGE

WORKBOOK PAGE: SAM3

Uranium by Phosphorescence: LA-925-009 (A-1) LIQUID/SOLID

Type			SAMPLE
SAMPLE			
Work List	VOLUME OF SAMPLE (mL)	(SS)	1.00
8247	DILUTION FACTOR OF SAMPLE	(DF)	1.00
Test Code	PREPARATION FACTOR OF SAMPLE	(PF)	100.00
@U-01	DIGEST FACTOR	(Dg/L)	1.9196
Matrix	LIFETIME IN MICROSECONDS		210.00
SOLID	R2 VALUE		0.9998
Batch Number	RANGE (HIGH OR LOW)		LOW
96004149	INSTRUMENT UNCERTAINTY	(IU)	1.24E-07
Rerun	INSTRUMENT RESULT	(IR)	1.12E-05
2	DETECTION LEVEL µg/g		1.93E+00
Sample Prep			
FUSION01	CONCENTRATION IN SOLUTION (g/L)		1.12E-03
Sample #	RESULT (µg/g)		5.83E+02
S96T000879	RELATIVE % UNCERTAINTY		1.1
Instrument Code			
UO1			
Prepared By	Result = Conc. in Solution (g/L) * 1000000 / Dg/L		
SEH			
Chemist	Detection Level = 3.70 E-08 * DF * PF * 1000000/ DF		
JLS			
Analyst	Relative % Uncertainty = IU / IR * 100		
KGH			
Date Complete	Concentration in Solution (g/L) = IR * DF * PF		
05/03/96			
Analysis Date			
05/03/96			
Analysis Time			
12:00 AM			
Sample Point			
S102			

Analyst:	KGH	Date:	03-May-96
Signature of Chemist:	JLS	Date:	5/7/96

SAMPLE.WB1 REV 2.0 925009ML

DATA NOT USED IN PACKAGE

2324

WORKBOOK PAGE: DUP4

Uranium by Phosphorescence: LA-925-009 (A-1) LIQUID/SOLID

Type			
DUP			DUP
Work List	VOLUME OF SAMPLE (mL)	(SS)	1.00
8247	DILUTION FACTOR OF SAMPLE	(DF)	1.00
Test Code	PREPARATION FACTOR OF SAMPLE	(PF)	100.00
@U-01	DIGEST FACTOR	(Dg/L)	1.9544
Matrix	LIFETIME IN MICROSECONDS		195.00
SOLID	R2 VALUE		0.9992
Batch Number	RANGE (HIGH OR LOW)		LOW
96004149	INSTRUMENT UNCERTAINTY	(IU)	1.26E-07
Rerun	INSTRUMENT RESULT	(IR)	9.40E-06
2	DETECTION LEVEL µg/g		1.89E+00
Sample Prep			
FUSION01	CONCENTRATION IN SOLUTION (g/L)		9.40E-04
Sample #	RESULT (µg/g)		4.81E+02
S96T000879	RELATIVE % UNCERTAINTY		1.3
Instrument Code			
UO1			
Prepared By			
SEH			
Chemist			
JLS			
Analyst			
KGH			
Date Complete			
05/03/96			
Analysis Date			
05/03/96			
Analysis Time			
12:00 AM			
Sample Point			
S102			

Result = Conc. in Solution (g/L) * 1000000 / Dg/L

Detection Level = 3.70 E-08 * DF * PF * 1000000/ DF

Relative % Uncertainty = IU / IR * 100

Concentration in Solution (g/L) = IR * DF * PF

Analyst:	KGH	Date:	03-May-96
Signature of Chemist:	JLS	Date:	5/7/96

SAMPLE.WB1 REV 2.0 925009ML

DATA NOT USED IN PACKAGE

WORKBOOK PAGE: SPIKE5

Uranium by Phosphorescence: LA-925-009 (A-1) LIQUID/SOLID

Type			SPIKE
SPK	SPIKE BOOK #		22B55
Work List	VOLUME OF SAMPLE + SPIKE (mL)	(SS)	1.00
8247	DILUTION FACTOR OF SAMPLE + SPIKE	(DF)	1.00
Test Code	PREPARATION FACTOR OF SAMPLE + SPIKE	(PF)	100.00
@U-01	DIGEST FACTOR OF SAMPLE	(DDF)	1.9196
Matrix	LIFETIME IN MICROSECONDS		207.00
SOLID	R2 VALUE		0.9998
Batch Number	RANGE (HIGH OR LOW)		HIGH
96004149	INSTRUMENT RESULT	(IR)	4.42E-04
Rerun	CONCENTRATION IN SOLUTION (g/L)	(CONC)	4.42E-02
2	SPIKE VALUE (g/L)	(SV)	5.69E-02
Sample Prep	INITIAL VOLUME OF SPIKE (mL)	(IV)	0.10
FUSION01	ORIGINAL SAMPLE VOLUME BEFORE PREP (mL)	(OSV)	0.10
Sample Number	CONCENTRATION IN SOLN (g/L) FROM SAMPLE FORM	(SR)	1.12E-03
S96T000879			
Instrument Code			
UO1	Concentration = IR * DF * PF		
Prepared By			
SEH	QC Actual (µg/mL) = SV (g/L) * 1000		
Chemist			
JLS	QC Found (µg/mL) = (CONC - SR) * OSV / IV * 1000		
Analyst			
KGH	% Recovery = QC FOUND / QC ACTUAL		
Date Complete			
05/03/96			
Analysis Date			
05/03/96	QC ACTUAL	=	5.69E+01 µg/mL
Analysis Time	QC FOUND	=	4.31E+01 µg/mL
12:00 AM	% SPIKE RECOVERY	=	75.7%
Sample Point			
S102			

Analyst:	KGH	Date:	03-May-96
Signature of Chemist:	JLS	Date:	5/7/96

SPIKE.WB1 REV 2.0 925009ML

DATA NOT USED IN PACKAGE

WORKBOOK PAGE: SAM6

Uranium by Phosphorescence: LA-925-009 (A-1) LIQUID/SOLID

Type			
SAMPLE			SAMPLE
Work List	VOLUME OF SAMPLE (mL)	(SS)	1.00
8247	DILUTION FACTOR OF SAMPLE	(DF)	1.00
Test Code	PREPARATION FACTOR OF SAMPLE	(PF)	100.00
@U-01	DIGEST FACTOR	(Dg/L)	2.0828
Matrix	LIFETIME IN MICROSECONDS		194.00
SOLID	R2 VALUE		0.9997
Batch Number	RANGE (HIGH OR LOW)		LOW
96004149	INSTRUMENT UNCERTAINTY	(IU)	3.74E-07
Rerun	INSTRUMENT RESULT	(IR)	3.04E-05
2	DETECTION LEVEL µg/g		1.78E+00
Sample Prep			
FUSION01	CONCENTRATION IN SOLUTION (g/L)		3.04E-03
Sample #	RESULT (µg/g)		1.46E+03
S96T000880	RELATIVE % UNCERTAINTY		1.2
Instrument Code			
UO1			
Prepared By			
SEH			
Chemist			
JLS			
Analyst			
KGH			
Date Complete			
05/03/96			
Analysis Date			
05/03/96			
Analysis Time			
12:00 AM			
Sample Point			
S102			

Result = Conc. in Solution (g/L) * 1000000 / Dg/L

Detection Level = 3.70 E-08 * DF * PF * 1000000/ DF

Relative % Uncertainty = IU / IR * 100

Concentration in Solution (g/L) = IR * DF * PF

Analyst:	KGH	Date:	03-May-96
Signature of Chemist:	JLS	Date:	5/7/96

SAMPLE.WB1 REV 2.0 925009ML

DATA NOT USED IN PACKAGE

WORKBOOK PAGE: DUP7

Uranium by Phosphorescence: LA-925-009 (A-1) LIQUID/SOLID

Type			
DUP			DUP
Work List	VOLUME OF SAMPLE (mL)	(SS)	1.00
8247	DILUTION FACTOR OF SAMPLE	(DF)	1.00
Test Code	PREPARATION FACTOR OF SAMPLE	(PF)	100.00
@U-01	DIGEST FACTOR	(Dg/L)	1.9780
Matrix	LIFETIME IN MICROSECONDS		204.00
SOLID	R2 VALUE		0.9999
Batch Number	RANGE (HIGH OR LOW)		LOW
96004149	INSTRUMENT UNCERTAINTY	(IU)	3.54E-07
Rerun	INSTRUMENT RESULT	(IR)	3.06E-05
2	DETECTION LEVEL µg/g		1.87E+00
Sample Prep			
FUSION01	CONCENTRATION IN SOLUTION (g/L)		3.06E-03
Sample #	RESULT (µg/g)		1.55E+03
S96T000880	RELATIVE % UNCERTAINTY		1.2
Instrument Code			
UO1			
Prepared By			
SEH			
Chemist			
JLS			
Analyst			
KGH			
Date Complete			
05/03/96			
Analysis Date			
05/03/96			
Analysis Time			
12:00 AM			
Sample Point			
S102			

Result = Conc. in Solution (g/L) * 1000000 / Dg/L

Detection Level = 3.70 E-08 * DF * PF * 1000000/ DF

Relative % Uncertainty = IU / IR * 100

Concentration in Solution (g/L) = IR * DF * PF

Analyst:	KGH	Date:	03-May-96
Signature of Chemist:	JLS	Date:	5/7/96

SAMPLE.WB1 REV 2.0 925009ML

DATA NOT USED IN PACKAGE

WORKBOOK PAGE: SPIKE8

Uranium by Phosphorescence: LA-925-009 (A-1) LIQUID/SOLID

Type			SPIKE
SPK	SPIKE BOOK #		22B55
Work List	VOLUME OF SAMPLE + SPIKE (mL)	(SS)	1.00
8247	DILUTION FACTOR OF SAMPLE + SPIKE	(DF)	1.00
Test Code	PREPARATION FACTOR OF SAMPLE + SPIKE	(PF)	100.00
@U-01	DIGEST FACTOR OF SAMPLE	(DDF)	2.0828
Matrix	LIFETIME IN MICROSECONDS		178.00
SOLID	R2 VALUE		0.9999
Batch Number	RANGE (HIGH OR LOW)		HIGH
96004149	INSTRUMENT RESULT	(IR)	4.54E-04
Rerun	CONCENTRATION IN SOLUTION (g/L)	(CONC)	4.54E-02
2	SPIKE VALUE (g/L)	(SV)	5.69E-02
Sample Prep	INITIAL VOLUME OF SPIKE (mL)	(IV)	0.10
FUSION01	ORIGINAL SAMPLE VOLUME BEFORE PREP (mL)	(OSV)	0.10
Sample Number	CONCENTRATION IN SOLN (g/L) FROM SAMPLE FORM	(SR)	3.04E-03
S96T000880			
Instrument Code			
UO1	Concentration = IR * DF * PF		
Prepared By			
SEH	QC Actual (µg/mL) = SV (g/L) * 1000		
Chemist			
JLS	QC Found (µg/mL) = (CONC - SR) * OSV / IV * 1000		
Analyst			
KGH	% Recovery = QC FOUND / QC ACTUAL		
Date Complete			
05/03/96			
Analysis Date			
05/03/96	QC ACTUAL	=	5.69E+01 µg/mL
Analysis Time	QC FOUND	=	4.24E+01 µg/mL
12:00 AM	% SPIKE RECOVERY	=	74.4%
Sample Point			
S102			

Analyst:	KGH	Date:	03-May-96
Signature of Chemist:	JLS	Date:	5/7/96

SPIKE.WB1 REV 2.0 925009ML

DATA NOT USED IN PACKAGE

LABCORE Completed Worklist Report for Worklist# 9567

Analyst: dgg **Instrument:** U01 **Book#** 45856

Method: LA-925-009 Rev/Mod A-1

Worklist Comment: S102. 0.1-10ml sample prep.For spike use: 0.1ml. new

Seq	Type	Sample#	R	A		Test	Matrix	Actual	Found	DL or Yield	Unit
1	STD		0		@U-01	U-02	SOLID	6.39E-02	6.75E-02	105.634	% Recovery
1	STD		0		@U-01	U-02E	SOLID	1	3.26E+00	3.260	Ratio
2	BLNK-PREP		0		@U-01	U-02	SOLID	1	<2.29E+0		ug/g
2	BLNK-PREP		0		@U-01	U-02E	SOLID	1	N/A		Ratio
3	SAMPLE	S96T000870	0	F	@U-01	U-02	SOLID	N/A	5.12E+01	2.290	ug/g
3	SAMPLE	S96T000870	0	F	@U-01	U-02E	SOLID	N/A	1.37E+00		% Inst Error
4	DUP	S96T000870	0	F	@U-01	U-02	SOLID	5.12E+1	8.66E+1	51.379	RPD
4	DUP	S96T000870	0	F	@U-01	U-02E	SOLID	1	1.25E+00	1.250	Ratio
5	SPK	S96T000870	0	F	@U-01	U-02	SOLID	5.69E+01	6.67E+01	117.223	% Recovery
6	SAMPLE	S96T000871	0	F	@U-01	U-02	SOLID	N/A	7.54E+01	1.980	ug/g
6	SAMPLE	S96T000871	0	F	@U-01	U-02E	SOLID	N/A	1.22E+00		% Inst Error
7	DUP	S96T000871	0	F	@U-01	U-02	SOLID	7.54E+1	4.37E+1	53.233	RPD
7	DUP	S96T000871	0	F	@U-01	U-02E	SOLID	1	3.07E+00	3.070	Ratio

Final page for worklist# 9567

6-10-96

Analyst Signature **Date** **Analyst Signature** **Date**

6/13/96

Reviewer Signature **Date**

Results suggest samples were mixed up.
Rerun.

DATA NOT USED IN PACKAGE

06/04/96 10:30
A-0004-1

LABCORE Data Entry Template for Worklist# 9567

Analyst: DBB **Instrument:** U01 _____ **Book#** 45 B56

Method: LA-925-009 Rev/Mod A-1

Worklist Comment: S102. 0.1-10ml sample prep.For spike use: 0.1ml. new

S	Type	Sample#	R	A	Test	Matrix	Group#	Project
1	STD				@U-01	SOLID		
2	BLNK-PREP				@U-01	SOLID		
3	SAMPLE	S96T000870	0	F	@U-01	SOLID	96000030	S102
		Analytes Requested:			U-02	, U-02E		
4	DUP	S96T000870	0	F	@U-01	SOLID		
5	SPK	S96T000870	0	F	@U-01	SOLID		
6	SAMPLE	S96T000871	0	F	@U-01	SOLID	96000030	S102
		Analytes Requested:			U-02	, U-02E		
7	DUP	S96T000871	0	F	@U-01	SOLID		

Final page for worklist # 9567

DB Brown 6-9-96
Analyst Signature **Date**

Analyst Signature **Date**

Data Entry Comments:

DATA NOT USED IN PACKAGE

S = Worklist Slot Number, R = Replicate Number, A = Aliquot Code.

Sample ID 45B56
Description LMCS STD.
Ref. Ratio 1.063
Laser Pulses 500
Lifetime 298 + 1.782 us
R2 .8885
Integrated 51808
Range: HIGH

Date/Time 06/09/96/11:49:07
Cal Y=4.72E+07X-1.27E+02
Intensity 2688 (t= 39 us)
Conc 6.75E-05 + 2.20E-06 g/L
Dilution Factor 1 mL/mL
FINAL RESULT 6.75E-05 + 2.20E-06 g/L

Sample ID BLNK-PREP
Description S-102
Ref. Ratio 1.108
Laser Pulses 500
Lifetime + us
R2
Integrated 0
Range: LOW
Sample <= Blank

Date/Time 06/09/96/15:00:34
Cal Y=3.34E+09X0
Intensity -141 (t= 39 us)
Conc + g/L
Dilution Factor 1 mL/mL
FINAL RESULT

Sample ID S96T000870
Description S-102
Ref. Ratio 1.108
Laser Pulses 500
Lifetime 254 + 1.346 us
R2 .8888
Integrated 40445
Range: LOW

Date/Time 06/09/96/15:05:29
Cal Y=3.34E+09X0
Intensity 2110 (t= 39 us)
Conc 8.27E-07 + 1.13E-08 g/L
Dilution Factor 1 mL/mL
FINAL RESULT 8.27E-07 + 1.13E-08 g/L

Sample ID S96T000870-DUP
Description S-102
Ref. Ratio 1.112
Laser Pulses 500
Lifetime 260 + 1.011 us
R2 .8894
Integrated 76797
Range: LOW

Date/Time 06/09/96/15:10:38
Cal Y=3.34E+09X0
Intensity 4156 (t= 39 us)
Conc 1.54E-06 + 1.93E-08 g/L
Dilution Factor 1 mL/mL
FINAL RESULT 1.54E-06 + 1.93E-08 g/L

Sample ID S96T000870-SPK
Description S-102
Ref. Ratio 1.118
Laser Pulses 500
Lifetime 262 + .826 us
R2 .9998
Integrated 475887
Range: HIGH

Date/Time 06/09/96/15:12:48
Cal Y=4.72E+07X-1.27E+02
Intensity 27051 (t= 39 us)
Conc 6.69E-04 + 2.14E-05 g/L
Dilution Factor 1 mL/mL
FINAL RESULT 6.69E-04 + 2.14E-05 g/L

Sample ID S96T000871
Description S-102
Ref. Ratio 1.110
Laser Pulses 500
Lifetime 253 + .788 us
R2 .9996
Integrated 68650
Range: LOW

Date/Time 06/09/96/15:24:01
Cal Y=3.34E+09X0
Intensity 3735 (t= 39 us)
Conc 1.41E-06 + 1.72E-08 g/L
Dilution Factor 1 mL/mL
FINAL RESULT 1.41E-06 + 1.72E-08 g/L

Sample ID S96T000871-DUP
Description S-102
Ref. Ratio 1.088
Laser Pulses 500
Lifetime 171 + 2.192 us
R2 .883
Integrated 26530
Range: LOW

Date/Time 06/09/96/15:31:44
Cal Y=3.34E+09X0
Intensity 1828 (t= 39 us)
Conc 5.38E-07 + 2.57E-08 g/L
Dilution Factor 1 mL/mL
FINAL RESULT 5.38E-07 + 2.57E-08 g/L

WORKBOOK PAGE: STD1

Uranium by Phosphorescence: LA-925-009 (A-1) LIQUID/SOLID

STD			STANDARD
	STANDARD BOOK #		45B56
9567	VOLUME OF SAMPLE (mL)	(SS)	1.00
	DILUTION FACTOR OF SAMPLE	(DF)	1.00
@U-01	PREPARATION FACTOR OF SAMPLE	(PF)	1.00
	LIFETIME IN MICROSECONDS		298.00
LIQUID	R2 VALUE		0.9985
	RANGE (HIGH OR LOW)		HIGH
96005731	INSTRUMENT UNCERTAINTY	(IU)	2.20E-06
	INSTRUMENT RESULT	(IR)	6.75E-05
0	DETECTION LEVEL (µg/mL)		3.70E-05
N/A	RESULT (µg/mL)		6.75E-02
	VALUE OF STANDARD		6.39E-02
STD	%RECOVERY		105.63
	RELATIVE % UNCERTAINTY		3.3
UO1			
RTS	Result = DF * PF * IR * 1000		
JLS	Detection Level = 3.70 E-08 * DF * PF * 1000		
DGG	% Recovery = Result / Value of Standard * 100		
Data Complete			
06/10/96	Relative % Uncertainty = IU / IR * 100		
Data Reviewed			
06/09/96			
Analyst Initials			
S-102			

Analyst:	DGG	Date:	10-Jun-96
Signature of Chemist:	JJ Slupek	JLS	Date: 6/13/96

STANDARD.WB1 REV 2.0 925009ML

DATA NOT USED

WORKBOOK PAGE: BLANK2

Uranium by Phosphorescence: LA-925-009 (A-1) LIQUID/SOLID

BLNK-PREP			BLANK
	VOLUME OF SAMPLE (mL)	(SS)	1.00
9567	DILUTION FACTOR OF SAMPLE	(DF)	1.00
	PREPARATION FACTOR OF SAMPLE	(PF)	100.00
@U-01	DIGEST FACTOR	(Dg/L)	1.6156
	LIFETIME IN MICROSECONDS		0.00
SOLID	R2 VALUE		0.0000
	RANGE (HIGH OR LOW)		LOW
96005731	INSTRUMENT UNCERTAINTY	(IU)	0.00E+00
	INSTRUMENT RESULT	(IR)	0.00E+00
0	DETECTION LEVEL µg/g		2.29E+00
N/A	CONCENTRATION IN SOLUTION (g/L)		0.00E+00
	RESULT (µg/g)	<	2.29E+00
BLNK	RELATIVE % UNCERTAINTY		N/A

UO1
RTS
JLS
DGG
06/10/96
06/09/96
S-102

Result = Conc. In Solution (g/L) * 1000000 / Dg/L

Detection Level = 3.70 E-08 * DF * PF * 1000000/ DF

Relative % Uncertainty = IU / IR * 100

Concentration in Solution (g/L) = IR * DF * PF

Analyst:	DGG	Date:	10-Jun-96
Signature of Chemist:	JLS	Date:	6/13/96

BLANK.WB1 REV 2.0 925009ML

DATA NOT USED IN REPORT

2334

WORKBOOK PAGE: SAM3

Uranium by Phosphorescence: LA-925-009 (A-1) LIQUID/SOLID

SAMPLE			SAMPLE
	VOLUME OF SAMPLE (mL)	(SS)	1.00
9567	DILUTION FACTOR OF SAMPLE	(DF)	1.00
	PREPARATION FACTOR OF SAMPLE	(PF)	100.00
@U-01	DIGEST FACTOR	(Dg/L)	1.6156
	LIFETIME IN MICROSECONDS		254.00
SOLID	R2 VALUE		0.9988
	RANGE (HIGH OR LOW)		LOW
96005731	INSTRUMENT UNCERTAINTY	(IU)	1.13E-08
	INSTRUMENT RESULT	(IR)	8.27E-07
0	DETECTION LEVEL µg/g		2.29E+00
FUSION01	CONCENTRATION IN SOLUTION (g/L)		8.27E-05
	RESULT (µg/g)		5.12E+01
S96T000870	RELATIVE % UNCERTAINTY		1.4

Method	UO1
Analyst	RTS
Checked By	JLS
Reviewed By	DGG
Data Compl.	06/10/96
Analysis Date	06/09/96
Analysis Time	
Sample Source	S-102

Result = Conc. In Solution (g/L) * 1000000 / Dg/L

Detection Level = 3.70 E-08 * DF * PF * 1000000/ DF

Relative % Uncertainty = IU / IR * 100

Concentration In Solution (g/L) = IR * DF * PF

Analyst:		DGG	Date:	10-Jun-96
Signature of Chemist:		JLS	Date:	6/13/96

SAMPLE.WB1 REV 2.0 925009ML

WORKBOOK PAGE: DUP4

Uranium by Phosphorescence: LA-925-009 (A-1) LIQUID/SOLID

DUP			DUP
	VOLUME OF SAMPLE (mL)	(SS)	1.00
9567	DILUTION FACTOR OF SAMPLE	(DF)	1.00
	PREPARATION FACTOR OF SAMPLE	(PF)	100.00
@U-01	DIGEST FACTOR	(Dg/L)	1.7784
	LIFETIME IN MICROSECONDS		260.00
SOLID	R2 VALUE		0.9994
	RANGE (HIGH OR LOW)		LOW
96005731	INSTRUMENT UNCERTAINTY	(IU)	1.93E-08
	INSTRUMENT RESULT	(IR)	1.54E-06
0	DETECTION LEVEL µg/g		2.08E+00
FUSION01	CONCENTRATION IN SOLUTION (g/L)		1.54E-04
	RESULT (µg/g)		8.66E+01
S96T000870	RELATIVE % UNCERTAINTY		1.3

UO1
RTS
JLS
DGG
Date Complete
06/10/96
Analysis Date
06/09/96
Analysis Time
S-102

Result = Conc. in Solution (g/L) * 1000000 / Dg/L

Detection Level = 3.70 E-08 * DF * PF * 1000000/ DF

Relative % Uncertainty = IU / IR * 100

Concentration in Solution (g/L) = IR * DF * PF

Analyst:		DGG	Date:	10-Jun-96
Signature of Chemist:		JLS	Date:	6/13/96

SAMPLE.WB1 REV 2.0 925009ML

DATA NOT USED IN PACKAGE

2036

WORKBOOK PAGE: SPIKE5

Uranium by Phosphorescence: LA-925-009 (A-1) LIQUID/SOLID

			SPIKE
SPK	SPIKE BOOK #		22B55
	VOLUME OF SAMPLE + SPIKE (mL)	(SS)	1.00
9567	DILUTION FACTOR OF SAMPLE + SPIKE	(DF)	1.00
	PREPARATION FACTOR OF SAMPLE + SPIKE	(PF)	100.00
@U-01	DIGEST FACTOR OF SAMPLE	(DDF)	1.6156
	LIFETIME IN MICROSECONDS		262.00
SOLID	R2 VALUE		0.9996
	RANGE (HIGH OR LOW)		HIGH
96005731	INSTRUMENT RESULT	(IR)	6.69E-04
	CONCENTRATION IN SOLUTION (g/L)	(CONC)	6.69E-02
0	SPIKE VALUE (g/L)	(SV)	5.69E-02
	INITIAL VOLUME OF SPIKE (mL)	(IV)	0.10
FUSION01	ORIGINAL SAMPLE VOLUME BEFORE PREP (mL)	(OSV)	0.10
	CONCENTRATION IN SOLN (g/L) FROM SAMPLE FORM	(SR)	1.54E-04
S96T000870			
UO1	Concentration = IR * DF * PF		
RTS	QC Actual (µg/mL) = SV (g/L) * 1000		
JLS	QC Found (µg/mL) = (CONC - SR) * OSV / IV * 1000		
DGG	% Recovery = QC FOUND / QC ACTUAL		
Date Completed			
06/10/96			
Analyzed On			
06/09/96	QC ACTUAL	=	5.69E+01 µg/mL
Analysis Time	QC FOUND	=	6.67E+01 µg/mL
	% SPIKE RECOVERY	=	117.3%
Balance Number			
S-102			

Analyst:		DGG	Date:	10-Jun-96
Signature of Chemist:	J. L. Lupo	JLS	Date:	6/13/96

SPIKE.WB1 REV 2.0 925009ML

WORKBOOK PAGE: SAM6

Uranium by Phosphorescence: LA-925-009 (A-1) LIQUID/SOLID

SAMPLE			SAMPLE
	VOLUME OF SAMPLE (mL)	(SS)	1.00
9567	DILUTION FACTOR OF SAMPLE	(DF)	1.00
	PREPARATION FACTOR OF SAMPLE	(PF)	100.00
@U-01	DIGEST FACTOR	(Dg/L)	1.8708
	LIFETIME IN MICROSECONDS		253.00
SOLID	R2 VALUE		0.9996
	RANGE (HIGH OR LOW)		LOW
96005731	INSTRUMENT UNCERTAINTY	(IU)	1.72E-08
	INSTRUMENT RESULT	(IR)	1.41E-06
0	DETECTION LEVEL µg/g		1.98E+00
FUSION01	CONCENTRATION IN SOLUTION (g/L)		1.41E-04
	RESULT (µg/g)		7.54E+01
S96T000871	RELATIVE % UNCERTAINTY		1.2

UO1
RTS
JLS
DGG
Date Completed
06/10/96
Analysis Date
06/09/96
Analysis Time
Sample Unit
S-102

Result = Conc. in Solution (g/L) * 1000000 / Dg/L

Detection Level = 3.70 E-08 * DF * PF * 1000000/ DF

Relative % Uncertainty = IU / IR * 100

Concentration in Solution (g/L) = IR * DF * PF

Analyst:	DGG	Date:	10-Jun-96
Signature of Chemist:	JLS	Date:	6/13/96

SAMPLE.WB1 REV 2.0 925009ML

WORKBOOK PAGE: DUP7

Uranium by Phosphorescence: LA-925-009 (A-1) LIQUID/SOLID

DUP			DUP
	VOLUME OF SAMPLE (mL)	(SS)	1.00
9567	DILUTION FACTOR OF SAMPLE	(DF)	1.00
	PREPARATION FACTOR OF SAMPLE	(PF)	100.00
@U-01	DIGEST FACTOR	(Dg/L)	1.9160
	LIFETIME IN MICROSECONDS		171.00
SOLID	R2 VALUE		0.9930
	RANGE (HIGH OR LOW)		LOW
96005731	INSTRUMENT UNCERTAINTY	(IU)	2.57E-08
	INSTRUMENT RESULT	(IR)	8.38E-07
0	DETECTION LEVEL µg/g		1.93E+00
FUSION01	CONCENTRATION IN SOLUTION (g/L)		8.38E-05
	RESULT (µg/g)		4.37E+01
S96T000871	RELATIVE % UNCERTAINTY		3.1

UO1

RTS

JLS

DGG

06/10/96

06/09/96

S-102

Result = Conc. in Solution (g/L) * 1000000 / Dg/L

Detection Level = 3.70 E-08 * DF * PF * 1000000/ DF

Relative % Uncertainty = IU / IR * 100

Concentration in Solution (g/L) = IR * DF * PF

Analyst:	DGG	Date:	10-Jun-96
Signature of Chemist:	JLS	Date:	6/13/96

SAMPLE.WB1 REV 2.0 925009ML

DATA NOT USED IN PACKAGE

WHC-SD-WM-DP-179, REV. 1

LABCORE Completed RadChem Report for Worklist#: 9570

Analyst: rwk **Instrument:** U01 **Book#** 45856

Method: LA-925-004 Rev/Mod A-1

Worklist Comment: S102. 0.1-10ml sample prep.For spike use: 0.1ml. new

Seq Type	Sample#	R	A		Test	Matrix	Actual	Found	DL or Yield	Unit
1 STD		0		aU-01	U-02	SOLID	6.39E-02	6.76E-02	105.790	% Recovery
1 STD		0		aU-01	U-02E	SOLID	1	3.25E+00	3.250	Ratio
2 BLNK-PREP		0		aU-01	U-02	SOLID	1	2.03E+1	20.300	ug/g
2 BLNK-PREP		0		aU-01	U-02E	SOLID	1	6.44E+00	6.440	Ratio
4 DUP	S96T001468	0	F	aU-01	U-02	SOLID	3.98e+1	2.01E+1	65.776	RPD
4 DUP	S96T001468	0	F	aU-01	U-02E	SOLID	1	3.83E+00	3.830	Ratio
5 SPK	S96T001468	0	F	aU-01	U-02	SOLID	5.69E+01	6.44E+01	113.181	% Recovery

Final page for worklist# 9570

Analyst Signature **Date** **Analyst Signature** **Date**

[signature] 6/13/96
Reviewer Signature **Date**

Sample will be rerun due to high RPD between sample and duplicate.

Units shown for QC (BLK/BKG) may not reflect the actual units.

LABCORE Data Entry Template for Worklist# 9570

Analyst: RK **Instrument:** U01 _____ **Book#** 45656

Method: LA-925-009 Rev/Mod A-1

Worklist Comment: S102. 0.1-10ml sample prep.For spike use: 0.1ml. new

S	Type	Sample#	R	A	Test	Matrix	Group#	Project
1	STD				@U-01	SOLID		
2	BLNK-PREP				@U-01	SOLID		
3	SAMPLE	S96T001468	0	F	@U-01	SOLID	96000094	S102
		Analytes Requested:			U-02	, U-02E		
4	DUP	S96T001468	0	F	@U-01	SOLID		
5	SPK	S96T001468	0	F	@U-01	SOLID		

Final page for worklist # 9570

Robert Kim 6/10/96

Analyst Signature **Date**

Analyst Signature **Date**

Data Entry Comments:

S = Worklist Slot Number, R = Replicate Number, A = Aliquot Code.

Sample ID 45B56
Description LMCS STD.
Ref. Ratio 1.066
Laser Pulses 500
Lifetime 299 + 1.753 us
R2 .9985
Integrated 51960
Range: HIGH

Date/Time 06/09/96/20:02:22
Cal Y=4.72E+07X-1.27E+02
Intensity 2695 (t= 39 us)
Conc 6.76E-05 + 2.20E-06 g/L
Dilution Factor 1 mL/mL

FINAL RESULT 6.76E-05 + 2.20E-06 g/L

Sample ID BLK PREP
Description S-102
Ref. Ratio 1.06
Laser Pulses 500
Lifetime 314 + 1.68E+02 us
R2 .3024
Integrated 132
Range: HIGH

Date/Time 06/09/96/23:23:25
Cal Y=4.72E+07X-1.27E+02
Intensity 14 (t= 39 us)
Conc 3.08E-06 + 6.27E-07 g/L
Dilution Factor 1 mL/mL

FINAL RESULT 3.08E-06 + 6.27E-07 g/L

Sample ID BLK PREP
Description S-102
Ref. Ratio 1.064
Laser Pulses 500
Lifetime 177 + 5.352 us
R2 .963
Integrated 12609
Range: LOW

Date/Time 06/09/96/23:24:11
Cal Y=3.34E+09X0
Intensity 751 (t= 39 us)
Conc 3.88E-07 + 2.50E-08 g/L
Dilution Factor 1 mL/mL

FINAL RESULT 3.88E-07 + 2.50E-08 g/L

WHC-SD-WM-DP-179, REV. 1

Sample ID S96T001468
Description S-102
Ref. Ratio 1.068
Laser Pulses 500
Lifetime 246 + 23.785 us
R2 .8561
Integrated 343
Range: HIGH

Date/Time 06/09/96/23:29:01
Cal Y=4.72E+07X-1.27E+02
Intensity 21 (t= 39 us)
Conc 3.40E-06 + 2.77E-07 g/L
Dilution Factor 1 mL/mL

FINAL RESULT 3.40E-06 + 2.77E-07 g/L

Sample ID S96T001468
Description S-102
Ref. Ratio 1.072
Laser Pulses 500
Lifetime 222 + 1.344 us
R2 .9984
Integrated 32631
Range: LOW

Date/Time 06/09/96/23:30:44
Cal Y=3.34E+09X0
Intensity 2049 (t= 39 us)
Conc 7.62E-07 + 1.16E-08 g/L
Dilution Factor 1 mL/mL

FINAL RESULT 7.62E-07 + 1.16E-08 g/L

Sample ID S96T001468 DUP
Description S-102
Ref. Ratio 1.068
Laser Pulses 500
Lifetime 393 + 2.33E+02 us
R2 .2405
Integrated 131
Range: HIGH

Date/Time 06/09/96/23:39:37
Cal Y=4.72E+07X-1.27E+02
Intensity 12 (t= 39 us)
Conc 3.02E-06 + 5.77E-07 g/L
Dilution Factor 1 mL/mL

FINAL RESULT 3.02E-06 + 5.77E-07 g/L

Sample ID S96T001468 DUP
Description S-102
Ref. Ratio 1.084
Laser Pulses 500
Lifetime 201 + 3.899 us
R2 .884
Integrated 16750
Range: LOW

Date/Time 06/09/96/23:41:18
Cal Y=3.34E+09X0
Intensity 979 (t= 39 us)
Conc 4.39E-07 + 1.68E-08 g/L
Dilution Factor 1 mL/mL

FINAL RESULT 4.39E-07 + 1.68E-08 g/L

Sample ID S96T001468 SP.
Description S-102
Ref. Ratio 1.082
Laser Pulses 500
Lifetime 273 + 1.018 us
R2 .9994
Integrated 475043
Range: HIGH

Date/Time 06/09/96/23:46:04
Cal Y=4.72E+07X-1.27E+02
Intensity 26102 (t= 39 us)
Conc 6.45E-04 + 2.07E-05 g/L
Dilution Factor 1 mL/mL

FINAL RESULT 6.45E-04 + 2.07E-05 g/L

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WORKBOOK PAGE: STD1

Uranium by Phosphorescence: LA-925-009 (A-1) LIQUID/SOLID

STD			STANDARD
	STANDARD BOOK #		45B56
9570	VOLUME OF SAMPLE (mL)	(SS)	1.00
	DILUTION FACTOR OF SAMPLE	(DF)	1.00
@U-01	PREPARATION FACTOR OF SAMPLE	(PF)	1.00
	LIFETIME IN MICROSECONDS		299.00
LIQUID	R2 VALUE		0.9985
	RANGE (HIGH OR LOW)		HIGH
96005734	INSTRUMENT UNCERTAINTY	(IU)	2.20E-06
	INSTRUMENT RESULT	(IR)	6.76E-05
0	DETECTION LEVEL (µg/mL)		3.70E-05
N/A	RESULT (µg/mL)		6.76E-02
	VALUE OF STANDARD		6.39E-02
STD	%RECOVERY		105.79
	RELATIVE % UNCERTAINTY		3.3
U01			
RTS	Result = DF * PF * IR * 1000		
JLS	Detection Level = 3.70 E-08 * DF * PF * 1000		
RWK	% Recovery = Result / Value of Standard * 100		
06/10/96	Relative % Uncertainty = IU / IR * 100		
06/10/96			
S-102			

Analyst:	RWK	Date:	10-Jun-96
Signature of Chemist:	JLS	Date:	6/13/96

STANDARD.WB1 REV 2.0 925009ML

WORKBOOK PAGE: BLANK2

Uranium by Phosphorescence: LA-925-009 (A-1) LIQUID/SOLID

BLNK-PREP			BLANK
	VOLUME OF SAMPLE (mL)	(SS)	1.00
9570	DILUTION FACTOR OF SAMPLE	(DF)	1.00
	PREPARATION FACTOR OF SAMPLE	(PF)	100.00
@U-01	DIGEST FACTOR	(Dg/L)	1.9144
	LIFETIME IN MICROSECONDS		177.00
SOLID	R2 VALUE		0.9630
	RANGE (HIGH OR LOW)		LOW
96005734	INSTRUMENT UNCERTAINTY	(IU)	2.50E-08
	INSTRUMENT RESULT	(IR)	3.88E-07
0	DETECTION LEVEL µg/g		1.93E+00
N/A	CONCENTRATION IN SOLUTION (g/L)		3.88E-05
	RESULT (µg/g)		2.03E+01
BLNK	RELATIVE % UNCERTAINTY		6.4

U01

RTS

JLS

RWK

06/10/96

06/10/96

S-102

Result = Conc. in Solution (g/L) * 1000000 / Dg/L

Detection Level = 3.70 E-08 * DF * PF * 1000000/ DF

Relative % Uncertainty = IU / IR * 100

Concentration in Solution (g/L) = IR * DF * PF

Analyst:		RWK	Date:	10-Jun-96
Signature of Chemist:		JLS	Date:	6/13/96

BLANK.WB1 REV 2.0 925009ML

2344

WORKBOOK PAGE: SAM3

Uranium by Phosphorescence: LA-925-009 (A-1) LIQUID/SOLID

Type			
SAMPLE			SAMPLE
Work List	VOLUME OF SAMPLE (mL)	(SS)	1.00
9570	DILUTION FACTOR OF SAMPLE	(DF)	1.00
Test Code	PREPARATION FACTOR OF SAMPLE	(PF)	100.00
@U-01	DIGEST FACTOR	(Dg/L)	1.9144
Matrix	LIFETIME IN MICROSECONDS		222.00
SOLID	R2 VALUE		0.9984
Batch Number	RANGE (HIGH OR LOW)		LOW
96005734	INSTRUMENT UNCERTAINTY	(IU)	1.16E-08
Rerun	INSTRUMENT RESULT	(IR)	7.62E-07
0	DETECTION LEVEL µg/g		1.93E+00
Sample Prep			
FUSION01	CONCENTRATION IN SOLUTION (g/L)		7.62E-05
Sample #	RESULT (µg/g)		3.98E+01
S96T001468	RELATIVE % UNCERTAINTY		1.5
Instrument Code			
U01			
Prepared By			
RTS			
Chemist			
JLS			
Analyst			
RWK			
Date Complete			
06/10/96			
Analysis Date			
06/10/96			
Analysis Time			
Sample Point			
S-102			

Result = Conc. in Solution (g/L) * 1000000 / Dg/L

Detection Level = 3.70 E-08 * DF * PF * 1000000/ DF

Relative % Uncertainty = IU / IR * 100

Concentration in Solution (g/L) = IR * DF * PF

Analyst:	RWK	Date:	10-Jun-96
Signature of Chemist:	JLS	Date:	6/13/96

SAMPLE.WB1 REV 2.0 925009ML

DATA NOT USED IN PACKAGE

WORKBOOK PAGE: DUP4

Uranium by Phosphorescence: LA-925-009 (A-1) LIQUID/SOLID

DUP			DUP
	VOLUME OF SAMPLE (mL)	(SS)	1.00
9570	DILUTION FACTOR OF SAMPLE	(DF)	1.00
	PREPARATION FACTOR OF SAMPLE	(PF)	100.00
@U-01	DIGEST FACTOR	(Dg/L)	2.1812
	LIFETIME IN MICROSECONDS		201.00
SOLID	R2 VALUE		0.9840
	RANGE (HIGH OR LOW)		LOW
96005734	INSTRUMENT UNCERTAINTY	(IU)	1.68E-08
	INSTRUMENT RESULT	(IR)	4.39E-07
0	DETECTION LEVEL µg/g		1.70E+00
FUSION01	CONCENTRATION IN SOLUTION (g/L)		4.39E-05
	RESULT (µg/g)		2.01E+01
S96T001468	RELATIVE % UNCERTAINTY		3.8

U01
RTS
JLS
RWK
Date Completed
06/10/96
Analysis Date
06/10/96
Analysis Time
Sample Code
S-102

Result = Conc. in Solution (g/L) * 1000000 / Dg/L

Detection Level = 3.70 E-08 * DF * PF * 1000000/ DF

Relative % Uncertainty = IU / IR * 100

Concentration in Solution (g/L) = IR * DF * PF

Analyst:		RWK	Date:	10-Jun-96
Signature of Chemist:		JLS	Date:	6/13/96

SAMPLE.WB1 REV 2.0 925009ML

DATA NOT USED IN PAGINATION

WORKBOOK PAGE: SPIKE5

Uranium by Phosphorescence: LA-925-009 (A-1) LIQUID/SOLID

Type			SPIKE
SPK	SPIKE BOOK #		22B55
Work List	VOLUME OF SAMPLE + SPIKE (mL)	(SS)	1.00
9570	DILUTION FACTOR OF SAMPLE + SPIKE	(DF)	1.00
Test Code	PREPARATION FACTOR OF SAMPLE + SPIKE	(PF)	100.00
@U-01	DIGEST FACTOR OF SAMPLE	(DDF)	1.9144
Matrix	LIFETIME IN MICROSECONDS		273.00
SOLID	R2 VALUE		0.9994
Batch Number	RANGE (HIGH OR LOW)		HIGH
96005734	INSTRUMENT RESULT	(IR)	6.45E-04
Rerun	CONCENTRATION IN SOLUTION (g/L)	(CONC)	6.45E-02
0	SPIKE VALUE (g/L)	(SV)	5.69E-02
Sample Prep	INITIAL VOLUME OF SPIKE (mL)	(IV)	0.10
FUSION01	ORIGINAL SAMPLE VOLUME BEFORE PREP (mL)	(OSV)	0.10
Sample Number	CONCENTRATION IN SOLN (g/L) FROM SAMPLE FORM	(SR)	7.62E-05
S96T001468			
Instrument Code			
U01	Concentration = IR * DF * PF		
Prepared By			
RTS	QC Actual (µg/mL) = SV (g/L) * 1000		
Chemist			
JLS	QC Found (µg/mL) = (CONC - SR) * OSV / IV * 1000		
Analyst			
RWK	% Recovery = QC FOUND / QC ACTUAL		
Date Complete			
06/10/96			
Analysis Date			
06/10/96	QC ACTUAL	=	5.69E+01 µg/mL
Analysis Time	QC FOUND	=	6.44E+01 µg/mL
	% SPIKE RECOVERY	=	113.2%
Sample Point			
S-102			

Analyst:	RWK	Date:	10-Jun-96
Signature of Chemist:	JLS	Date:	6/13/96

SPIKE.WB1 REV 2.0 925009ML

2347

Westinghouse
Hanford Company
P.O. Box 1970 Richland, WA 99352

WHC-SD-WM-DP-179, REV. 0

ANALYTICAL SERVICES

45-DAY SAFETY SCREENING RESULTS FOR TANK 241-S-102, PUSH MODE CORES 125 AND 131

Project Coordinator: LARRY L. FRITTS

Prepared for the U.S. Department of Energy
Office of Environmental Restoration
and Waste Management

by

Westinghouse Hanford Company
Box 1970
Richland, Washington

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NARRATIVE

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WHC-SD-WM-DP-179, REV. 0

45-DAY SAFETY SCREENING RESULTS FOR TANK 241-S-102 PUSH MODE CORES 125 AND 130

SUMMARY

Twenty-five push mode core segments were removed from tank 241-S-102 risers 11 and 14 between January 9, 1996 and March 8, 1996. Safety screening tests specified in the Tank Sampling and Analysis Plan (TSAP), namely differential scanning calorimetry (DSC), thermogravimetric analysis (TGA), bulk density, and total alpha activity (AT) were performed. The upper limit to a one-sided 95% confidence interval was computed for DSC and AT for comparison to the safety screening limits.

The vapor sampling results for January 26, 1996 are reported in Table 1. The vapor in the vapor space above the waste in tank 241-S-102 is far below the lower explosion limit (LEL) stated in the TSAP. Ammonia concentrations are above the 500 parts per million (ppm) threshold considered by the National Institute of Safety and Health (NIOSH) to be "immediately dangerous to life or health".

None of the subsamples exceeded either the Differential Scanning Calorimetry (DSC) or Total Alpha Activity (AT) action limits as stated in the Safety Screening Data Quality Objective. The data for the liquid and solid waste indicate the tank is "safe" when compared to the criteria in the Safety Screening Data Quality Objective.

SCOPE

This document is the 45-day report deliverable for the 241-S-102 push mode core samples collected between January 9, 1996 and March 8, 1996 and received by the 222-S Laboratory between January 17, 1996 and March 11, 1996. The samples were subsampled and analyzed according to the TSAP (reference 1). The analytical results are included in Table 6.

Attachment 1 is a cross reference to relate the tank farm identification numbers to the 222-S Laboratory LabCore sample numbers. The subsamples generated in the laboratory for analysis are identified in these diagrams with their sources shown.

Dome space flammability screening results, primary safety screening results and the raw data from DSC and TGA tests are included in this report.

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Table 1: Characteristics of Vapor Space as Determined by Combustible Gas Monitoring Tank 241-S-102, Dome Space

Vapor Characteristic Measured	Riser 7		
	Breather	Riser 3 ft	Dome Space 20 ft
Flammable vapor concentration as percent of lower explosion limit (LEL)	0%	6%	6%
Volume percent oxygen (O_2) gas	20.9%	20.5%	20.4%
Concentration of ammonia (NH_3) gas	700 ppm	Greater Than 700 ppm	Greater Than 700 ppm
Concentration of total organic carbon (TOC) vapor	16.2 ppm	25.1 ppm	65.3 ppm

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Appearance and Sample Handling

Core 125

Eleven push mode core segments were removed from tank 241-S-102 riser 11 between January 9, 1996 and January 13, 1996. All segments were received by the 222-S laboratory on January 17, 1996. The last of the segments was extruded on January 24, 1996. Table 2 summarizes the extrusion information.

Segment 1 (96-010) produced 1.0 gram of material. This was insufficient for any analyses and the material was discarded. Segments containing saltcake were divided into subsegments based on the appearance of the material. Segments 2 (96-011), 3 (96-012), 4 (96-013), 5 (96-014), 6 (96-015), 7(96-016), 8(96-017), and 11 (96-020) resembled saltcake. Segment 6 was divided into quarter segments A, B, C based on the middle portion of the segment appearing "wet". Segment 8 was divided into half segments based on differences in appearance noted in the hotcell logbook. Segments 9 (96-018) and 10 (96-019) resembled sludge and were divided into half segments. Drainable liquid was recovered from segments 7 (96-016) and 11 (96-020).

Core 130

Eleven push mode core segments were scheduled for removal from tank 241-S-102 riser 14. Problems with sampling resulted in 14 segments being taken between January 24, 1996 and March 8, 1996. Initial review of the sampling problems shows no impact to data quality and these problems will be further explored in the final report. The samples were received by the 222-S laboratory between February 14, 1996 and March 11, 1996. Extrusions occurred between February 16, 1996 and March 18, 1996. Table 3 summarizes the extrusion information.

Segment 1(96-042) produced no material. Segment 6 was sampled three times resulting in segments 6(96-047), 6A(96-047A), and 6B(96-047B). Segment 8 was sampled two times resulting in segments 8(96-049) and 8A(96-049A). Segments containing saltcake were divided into subsegments based on the appearance of the material. Segments 2(96-043), 3(96-044), 4(96-045), 6A, 6B, 7(96-048), and 8 resembled saltcake. The saltcake in segment 7 was blue-gray in color, the saltcake from other segments was dark to light gray. Segments 5(96-046) and 8A resembled a mixture of sludge and saltcake and were divided into quarter segments A, B, and C based on differences in appearance as noted in the hotcell logbook. Segments 6 and 11(96-052) resembled a mixture of sludge and saltcake and were divided into half segments. Segments 9(96-050) and 10(96-051) resembled sludge and were divided into half segments. Drainable liquid was recovered from segments 5, 6A, and 10. Liner liquid was recovered from 6A and was treated as a drainable liquid. The liner liquid and drainable liquid from 6A looked the same.

WHC-SD-WM-DP-179, REV. 0

Field Blank

A field blank was provided to the 222-S laboratory with core 125. It underwent the same analysis as the drainable liquid as instructed by the TSAP.

Table 2. Sample Receipt and Extrusion Information for Tank 241-S-102, Core 125.

Segment	Sample Number	Date Sampled	Date Received	Date Extruded	Liner Liquid (g)	Drainable Liquid Recovered (g)	Solids Recovered (g)	Sample Description
1	96-010	1/9/96	1/17/96	1/21/96	0.0	0.0	1.0 (discarded)	Solids were gray in color and resembled saltcake.
2	96-011	1/10/96	1/17/96	1/21/96	0.0	0.0	142.0 (upper half)	Solids were a mixture of brown and white in color and resembled a saltcake.
3	96-012	1/11/96	1/17/96	1/21/96	0.0	0.0	224.2 (upper half)	Solids were gray in color and resembled a saltcake.
4	96-013	1/11/96	1/17/96	1/21/96	0.0	0.0	176.4 (upper half) 139.7 (lower half)	Solids were light gray to gray in color and resembled a saltcake.
5	96-014	1/11/96	1/17/96	1/23/96	0.0	0.0	135.7 (upper half) 181.2 (lower half)	Solids were light gray to gray in color and resembled a saltcake.
6	96-015	1/11/96	1/17/96	1/23/96	0.0	0.0	33.3 (qtr seg: A) 202.2 (qtr seg: B) 49.5 (qtr seg: C)	Solids resembled a saltcake. Quarter segments A and C were light gray in color. Quarter segment B was gray in color.
7	96-016	1/12/96	1/17/96	1/23/96	0.0	88.5	164.6 (upper half) 156.4 (lower half)	Drainable liquid was gray and opaque. Solids were gray in color and resembled a damp saltcake.
8	96-017	1/12/96	1/17/96	1/23/96	0.0	0.0	193.3 (upper half) 77.6 (lower half)	Upper half solids were gray in color and resembled a saltcake. Lower half solids were brown and white in color and resembled a saltcake.
9	96-018	1/12/96	1/17/96	1/23/96	0.0	0.0	232.0 (upper half) 230.1 (lower half)	Solids were black in color and resembled a sludge.
10	96-019	1/12/96	1/17/96	1/23/96	0.0	0.0	210.0 (upper half) 198.8 (lower half)	Solids were black in color and resembled a sludge.
11	96-020	1/13/96	1/17/96	1/24/96	0.0	13.1	300.5 (upper half)	Drainable liquid was clear and light yellow. Solids were gray in color and resembled a saltcake.

Table 3. Sample Receipt and Extrusion Information for Tank 241-S-102, Core 130.

Segment	Sample Number	Date Sampled	Date Received	Date Extruded	Liner Liquid (g)	Drainable Liquid Recovered (g)	Solids Recovered (g)	Sample Description
1	96-042	1/24/96	2/14/96	2/16/96	0.0	0.0	0.0	No drainable liquid or solids were present.
2	96-043	1/24/96	2/14/96	2/16/96	0.0	0.0	139.9 (upper half)	Solids were medium gray in color and resembled a saltcake.
3	96-044	1/24/96	2/14/96	2/16/96	0.0	0.0	245.0 (upper half)	Solids were medium gray in color and resembled a saltcake.
4	96-045	1/24/96	2/14/96	2/16/96	0.0	0.0	184.8 (upper half)	Solids were ranged from gray to white in color and resembled a very fine, crumbly saltcake.
5	96-046	1/26/96	2/14/96	2/16/96	0.0	43.6	53.4 (qtr seg: A) 152.6 (qtr seg: B) 142.9 (qtr seg: C)	Drainable liquid was yellowish/gray in color and opaque. Solids were gray in color and resembled a mixture of sludge and saltcake. Quarter segment A is top wet saltcake; quarter segment B is solid sludge/saltcake; and quarter segment C is solid sludge/saltcake.
6	96-047	1/29/96	2/14/96	2/16/96	0.0	0.0	101.6 (upper half) 32.1 (lower half)	Solids were gray in color and resembled a mixture of sludge and saltcake. The solids were subsampled in half segments.
6A	96-047A	3/7/96	3/8/96	3/14/96	139.0	72.0	122.2 (upper half)	Liner liquid collected was gray and opaque. Drainable liquid collected was gray and opaque. Resembled liner liquid. Solids were gray in color and resembled a wet saltcake.
6B	96-047B	3/7/96	3/8/96	3/14/96	0.0	0.0	290.8 (upper half) 228.0 (lower half)	Solids ranged from light gray to dark gray in color and resembled a damp saltcake.
7	96-048	3/8/96	3/8/96	3/14/96	0.0	0.0	84.7 (upper half)	Solids were blue-gray in color and resembled a damp saltcake.
8	96-049	3/8/96	3/8/96	3/14/96	0.0	0.0	124.4 (upper half)	Solids were dark gray in color and resembled a damp saltcake.
8A	96-049A	3/8/96	3/11/96	3/18/96	0.0	0.0	76.0 (qtr seg: A) 90.4(qtr seg: B) 119.8(qtr seg: C)	Solids were gray and black in color and resembled a mixture of sludge and saltcake.
9	96-050	3/8/96	3/11/96	3/18/96	0.0	0.0	250.4(upper half) 228.9(lower half)	Solids were black in color and resembled a sludge.
10	96-051	3/8/96	3/11/96	3/18/96	0.0	43.4	194.7(upper half) 203.4(lower half)	Drainable liquid collected was black in color and opaque. Solids were black in color and resembled a sludge.
11	96-052	3/8/96	3/11/96	3/18/96	0.0	0.0	30.2(upper half) 148.4(lower half)	Solids were black in color and resembled a mixture of sludge and saltcake.

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Analytical Results

95% Upper Confidence Limit

The Upper Confidence Limit was calculated for each Differential Scanning Calorimetry (DSC) and Total Alpha Activity (AT) result and are presented below. This limit was calculated with a confidence level of 0.95 and degrees of freedom of n-1 by the following formula:

$$\bar{x} + (t\text{-}value) * \frac{s}{\sqrt{n}}$$

where:

$\bar{x}$ = mean,

t-value = 6.314 for two results or 2.92 for three results,

s = standard deviation,

n = number of results.

Differential Scanning Calorimetry (DSC)

The energetics determination was performed by DSC using procedure LA-514-113 Rev. C-1 or LA-514-114 Rev. C-1. The analysis was performed in duplicate on the direct sample. The exothermic energy based on dry weight of sample was calculated for all samples. The average of the TGA results for each subsample was used in the dry weight correction for that subsample.

Nineteen of the forty solid samples exhibited exotherms ranging from 1.51 to 244.4 joules/g on a dry weight basis (1.30 to 142 joules/g wet weight). Four of the six drainable liquid samples submitted for analysis exhibited exotherms ranging from 116.0 to 306.3 joules/g on a dry weight basis (67.8 to 162.0 joules/g wet weight). The field blank result was 0.00 joules/g. No sample results exceeded the action limits for DSC dry weight basis.

Relative percent differences (RPDs) greater than 20% were reported for five of the forty solid samples. The high RPDs were in the range of 22.7% to 79.2%. Sample 96-051 (S96T001433/lower half) has an RPD of 22.7% and a mean value of 136.3 joules/g. A rerun was not requested since the sample is below the action limit and only slightly outside the 20% precision mark. Samples 96-018 (S96T000769/lower half), 96-049A (S96T001430/quarter

segment B), 96-052 (S96T001434/upper half), and 96-043 (S96T001141/upper half) had RPDs of 54.7%, 23.3%, 39.9%, and 79.2% respectively. The high RPDs can be attributed to small exotherms and the heterogenous nature of the samples. A triplicate was run for sample 96-043 with a result of 2.68 joules/g. The sample had a result of 1.51 joules/g which gives an RPD of 55.8%. Reruns were not requested for these samples.

Sample 96-015 (S96T000761/quarter segment A) exhibited a sharp peak at 90°C. This was the result of a loose connection on the DSC and is not considered in the result. Sample 96-047A (S96T001382/drainable liquid) exhibited two exotherms. The result is the summation of the two.

The one-sided upper 95% confidence limit was calculated for each sample and the results are presented in Table 4. The maximum solid result was 260.87 joules/g for 96-019 (S96T000770/upper half). The maximum drainable liquid result was 385.21 joules/g for 96-046 (S96T001125/drainable liquid). Both results are below the action limit of 480 joules/g.

The raw data for the core 125 composites (S96T000777 and S96T000780) are included in the DSC raw data because it was batched with subsamples. The core composite results are not required in this report and will be addressed in the final report.

On the following tables UH refers to upper half, LH refers to lower half, and QS refers to quarter segment.

Table 4: Comparison of Core 125 Solids Dry Weight DSC Results at a 95% Confidence Level

Customer ID	Segment - Portion	LabCore ID	Sample Result	Duplicate Result	Mean	Standard Deviation	95% Upper Confidence Limit (MEAN)
			joules/g	joules/g	joules/g		joules/g
96-011	2 UH	S96T000755	0.00	0.00	0.00	0.00	0.00
96-012	3 UH	S96T000756	0.00	0.00	0.00	0.00	0.00
96-013	4 UH	S96T000757	0.00	0.00	0.00	0.00	0.00
	4 LH	S96T000758	0.00	0.00	0.00	0.00	0.00
96-014	5 UH	S96T000759	48.21	43.52	45.87	3.32	60.67
	5 LH	S96T000760	54.64	51.98	53.31	1.88	61.71
96-015	6 QS:A	S96T000761	0.00	0.00	0.00	0.00	0.00
	6 QS:B	S96T000762	73.24	67.41	70.33	4.12	88.73
	6 QS:C	S96T000763	38.62	40.20	39.41	1.12	44.40
96-016	7 UH	S96T000764	0.00	0.00	0.00	0.00	0.00
	7 LH	S96T000765	0.00	0.00	0.00	0.00	0.00
96-017	8 UH	S96T000766	0.00	0.00	0.00	0.00	0.00
	8 LH	S96T000767	176.90	195.20	186.05	12.94	243.82
96-018	9 UH	S96T000768	48.08	48.91	48.50	0.59	51.12
	9 LH	S96T000769	63.91	36.45	50.18	19.42	136.87
96-019	10 UH	S96T000770	244.40	238.20	241.30	4.38	260.87
	10 LH	S96T000771	212.30	219.00	215.65	4.74	236.80
96-020	11 UH	S96T000772	0.00	0.00	0.00	0.00	0.00

Table 4: Comparison of Core 130 Solids Dry Weight DSC Results at a 95% Confidence Level

Customer ID	Segment - Portion	LabCore ID	Sample Result	Duplicate Result	Mean	Standard Deviation	95% Upper Confidence Limit (MEAN)
			joules/g	joules/g	joules/g		joules/g
96-043	2 UH	S96T001141	1.51	3.49(dup) 2.68(trip)	2.56	1.00	4.24
96-044	3 UH	S96T001145	0.00	0.00	0.00	0.00	0.00
96-045	4 UH	S96T001146	35.71	29.41	32.56	4.45	52.45
96-046	5 QS: A	S96T001147	23.37	26.51	24.94	2.22	34.85
	5 QS: B	S96T001148	0.00	0.00	0.00	0.00	0.00
	5 QS: C	S96T001149	0.00	0.00	0.00	0.00	0.00
96-047	6 UH	S96T001150	0.00	0.00	0.00	0.00	0.00
	6 LH	S96T001151	0.00	0.00	0.00	0.00	0.00
96-047A	6A UH	S96T001386	0.00	0.00	0.00	0.00	0.00
96-047B	6B UH	S96T001399	0.00	0.00	0.00	0.00	0.00
	6B LH	S96T001401	0.00	0.00	0.00	0.00	0.00
96-048	7 UH	S96T001390	0.00	0.00(dup) 0.00(trip)	0.00	0.00	0.00
96-049	8 UH	S96T001409	0.00	0.00	0.00	0.00	0.00
96-049A	8A QS:A	S96T001429	82.89	85.15	84.02	1.60	91.15
	8A QS:B	S96T001430	62.83	49.72	56.28	9.27	97.66
	8A QS:C	S96T001431	19.81	21.49	20.65	1.19	25.95
96-050	9 UH	S96T001441	0.00	0.00	0.00	0.00	0.00
	9 LH	S96T001442	25.77	28.38	27.08	1.85	35.31
96-051	10 UH	S96T001432	108.90	120.40	114.65	8.13	150.96
	10 LH	S96T001433	120.80	151.80	136.30	21.92	234.17
96-052	11 UH	S96T001434	41.39	62.00	51.70	14.57	116.76
	11 LH	S96T001435	0.00	0.00	0.00	0.00	0.00

Table 4: Comparison of Core 125 Liquids Dry Weight DSC Results at a 95% Confidence Level

Customer ID	Segment - Portion	LabCore ID	Sample Result	Duplicate Result	Mean	Standard Deviation	95% Upper Confidence Limit (MEAN)
			joules/mL	joules/mL	joules/mL		joules/mL
FIELD BLANK	FIELD BLANK	S96T000838	0.00	0.00	0.00	0.00	0.00
96-016	7 DL	S96T000773	0.00	0.00	0.00	0.00	0.00
96-020	11 DL	S96T000634	116.00	133.00	124.50	12.02	178.17

Table 4: Comparison of Core 130 Liquids Dry Weight DSC Results at a 95% Confidence Level

Customer ID	Segment - Portion	LabCore ID	Sample Result	Duplicate Result	Mean	Standard Deviation	95% Upper Confidence Limit (MEAN)
			joules/mL	joules/mL	joules/mL		joules/mL
96-046	5 DL	S96T001125	306.30	276.60	291.45	21.00	385.21
96-047A	6A LL	S96T001383	226.90	189.30	208.10	26.59	326.80
	6A DL	S96T001382	222.30	205.20	213.75	12.09	267.73
96-051	10 DL	S96T001437	0.00	0.00	0.00	0.00	0.00

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Thermogravimetric Analysis (TGA)

The percent moisture was determined by TGA using procedure LA-560-112 Rev. B-1 or LA-514-114 Rev. C-1. The analysis was performed in duplicate on direct samples.

The results for the solids ranged from 3.18 to 44.62 percent moisture. The results for the drainable liquid ranged from 44.96 to 65.75 percent moisture. The field blank gave an average result of 99.96 percent moisture.

Some results were determined by summing two or more weight loss steps. Typically weight losses above 200°C were not used in determining the result. The samples exhibiting this behavior show no discernable pattern. More information may be obtained by examining the raw data.

RPDs greater than 20% were reported for five of the forty solid samples. The high RPDs were in the range 24.2% to 164%. Sample 96-047 (S96T001151/lower half) has an RPD of 24.2% and mean result 27.08 percent moisture. A rerun was not requested since the sample is above 17 percent moisture and only slightly outside the 20% precision mark. Samples 96-047A (S96T001386/upper half) and 96-048 (S96T001390/upper half) had RPDs of 37.8% and 164%. The sample of 96-047A was shifted by static electricity; a triplicate was run with a result of 18.91 percent moisture. The duplicate for this sample had a result of 19.37 percent moisture, which results in an RPD of 2.4%. The duplicate of 96-048 was shifted by static electricity; a triplicate was run with a result of 21.72 percent moisture. The sample had a result of 22.81 percent moisture, which results in an RPD of 4.9%. Reruns were not required. Sample 96-015 (S96T000761/quarter segment A) had an RPD of 76.6%. This is the result of a low moisture content in the sample and a rerun was not requested. Sample 96-015 (S96T000763/quarter segment C) resulted in an RPD of 52.9% on the Mettler DSC. The sample was rerun on the Perkin-Elmer DSC and resulted in an RPD of 0.16%. Sample 96-020 (S96T000634/drainable liquid) resulted in an RPD of 42.9%. The sample was rerun and resulted in an RPD of 2.98%.

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Density

The density measurements for all solid samples were determined by performing a bulk density analysis during subsampling using procedure LO-160-103 Rev. B-0. A single determination was made for each sample.

The density of liquid samples is not necessary for safety screen purposes since the total alpha results for liquids do not require correction for density.

The results of the bulk density test ranged from 1.44 g/mL to 1.92 g/mL. The higher bulk density of 1.92 g/mL was used to calculate the solid total alpha activity action limit for the tank.

Total Alpha (AT)

The AT determination was performed in duplicate using procedure LA-508-101 Rev. D-2. The analysis was performed on direct samples for the liquids. Solid samples were prepared for analysis by performing a fusion digest in duplicate, following procedure LA-549-141 Rev. D-0. The fusion digest is indicated with an "F" in the aliquot class (A#) column in Table 6.

The maximum result for the solids was 1.81 μCi/g for the duplicate result of 96-049A (S96T001471/quarter segment B). All of the solids were below the action limit of 32.00 μCi/g (based on a bulk density of 1.92 g/mL). The maximum result for the liquids was 1.21e-2 μCi/mL for the duplicate result of 96-020 (S96T000634/drainable liquid); the sample result was less than 1.46e-2 μCi/mL. All other results were below the detection limit. The field blank result was less than 1.19e-6 μCi/mL.

High RPDs in the range of 26.4% to 85.6% were reported for seven of the forty samples. These were due to low alpha activity. No reruns were requested because the samples were below the action limit. Spike recoveries were outside QC limits for three of the thirteen samples spiked. These were in the range of 62.12% to 75.20%. The low spike recoveries are attributed to matrix interference for these samples; solids on the planchet after drying resulted in self-adsorption.

The 95% upper confidence limits were calculated for each sample and are presented in Table 5. The maximum solid result was 1.94 μCi/g for 96-049A (S96T001471/quarter segment B). This result is below the action limit of 32.00 μCi/g. No confidence limit can be assigned to the liquids due to the below detection limit results.

On the following tables UH refers to upper half, LH refers to lower half, and QS refers to quarter segment.

Table 5: Comparison of Core 125 Solids Total Alpha Results at a 95% Confidence Level

Customer ID	Segment - Portion	LabCore ID	Sample Result	Duplicate Result	Mean	Standard Deviation	95% Upper Confidence Limit (MEAN)
			µCi/g	µCi/g	µCi/g		µCi/g
96-011	2 UH	S96T000861	3.12e-2	3.43e-2	3.28e-2	2.19e-3	4.25e-2
96-012	3 UH	S96T000862	8.30e-3	9.27e-3	8.79e-3	6.86e-4	1.18e-2
96-013	4 UH	S96T000863	8.05e-3	6.62e-3	7.34e-3	1.01e-3	1.18e-2
	4 LH	S96T000864	2.61e-2	2.29e-2	2.45e-2	2.26e-3	3.46e-2
96-014	5 UH	S96T000865	1.07e-2	6.42e-3	8.56e-3	3.03e-3	2.21e-2
	5 LH	S96T000866	1.22e-2	8.45e-3	1.03e-2	2.65e-3	2.22e-2
96-015	6 QS:A	S96T000867	7.31e-3	7.20e-3	7.26e-3	7.78e-5	7.60e-3
	6 QS:B	S96T000868	4.49e-2	3.73e-2	4.11e-2	5.37e-3	6.51e-2
	6 QS:C	S96T000869	7.81e-3	6.55e-3	7.18e-3	8.91e-4	1.12e-2
96-016	7 UH	S96T000870	2.99e-2	3.20e-2	3.10e-2	1.48e-3	3.76e-2
	7 LH	S96T000871	2.29e-2	2.80e-2	2.55e-2	3.61e-3	4.16e-2
96-017	8 UH	S96T000872	8.50e-2	6.52e-2	7.51e-2	1.40e-2	1.38e-1
	8 LH	S96T000873	2.86e-1	2.55e-1	2.71e-1	2.19e-2	3.68e-1
96-018	9 UH	S96T000874	7.67e-1	6.33e-1	7.00e-1	9.48e-2	1.12e+0
	9 LH	S96T000875	2.09e-1	1.72e-1	1.91e-1	2.62e-2	3.07e-1
96-019	10 UH	S96T000876	4.47e-1	4.83e-1	4.65e-1	2.55e-2	5.79e-1
	10 LH	S96T000877	4.93e-1	5.77e-1	5.35e-1	5.94e-2	8.00e-1
96-020	11 UH	S96T000878	<4.45e-2	3.85e-2	NA	NA	NA

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Table 5: Comparison of Core 130 Solids Total Alpha Results at a 95% Confidence Level

Customer ID	Segment - Portion	LabCore ID	Sample Result	Duplicate Result	Mean	Standard Deviation	95% Upper Confidence Limit (MEAN)
			µCi/g	µCi/g	µCi/g		µCi/g
96-043	2 UH	S96T001173	4.06e-2	3.96e-2	4.01e-2	7.07e-4	4.33e-2
96-044	3 UH	S96T001174	1.62e-2	1.53e-2	1.58e-2	6.36e-4	1.86e-2
96-045	4 UH	S96T001175	1.45e-2	1.23e-2	1.34e-2	1.56e-3	2.03e-2
96-046	5 QS: A	S96T001176	4.02e-3	4.45e-3	4.24e-3	3.04e-4	5.59e-3
	5 QS: B	S96T001177	9.37e-3	9.15e-3	9.26e-3	1.56e-4	9.95e-3
	5 QS: C	S96T001178	1.98e-2	2.11e-2	2.05e-2	9.19e-4	2.46e-2
96-047	6 UH	S96T001179	7.77e-2	7.58e-2	7.68e-2	1.34e-3	8.27e-2
	6 LH	S96T001180	8.71e-3	1.15e-2	1.01e-2	1.97e-3	1.89e-2
96-047A	6A UH	S96T001465	2.17e-2	8.69e-3	1.52e-2	9.20e-3	5.63e-2
96-047B	6B UH	S96T001466	1.99e-2	1.30e-2	1.65e-2	4.88e-3	3.82e-2
	6B LH	S96T001467	1.55e-2	1.77e-2	1.66e-2	1.56e-3	2.35e-2
96-048	7 UH	S96T001468	2.38e-2	1.98e-2	2.18e-2	2.83e-3	3.44e-2
96-049	8 UH	S96T001469	2.24e-2	3.37e-2	2.81e-2	7.99e-3	6.37e-2
96-049A	8A QS:A	S96T001470	1.64e-1	1.76e-1	1.70e-1	8.49e-3	2.08e-1
	8A QS:B	S96T001471	1.76e+0	1.81e+0	1.79e+0	3.54e-2	1.94e+0
	8A QS:C	S96T001472	1.96e-1	1.74e-1	1.85e-1	1.56e-2	2.54e-1
96-050	9 UH	S96T001473	1.88e-1	1.61e-1	1.75e-1	1.91e-2	2.60e-1
	9 LH	S96T001474	1.35e-1	1.29e-1	1.32e-1	4.24e-3	1.51e-1
96-051	10 UH	S96T001475	2.47e-1	2.26e-1	2.37e-1	1.48e-2	3.03e-1
	10 LH	S96T001476	5.87e-1	6.16e-1	6.02e-1	2.05e-2	6.93e-1
96-052	11 UH	S96T001477	7.27e-1	6.41e-1	6.84e-1	6.08e-2	9.56e-1
	11 LH	S96T001478	1.23e-1	1.33e-1	1.28e-1	7.07e-3	1.60e-1

Table 5: Comparison of Core 125 Liquids Total Alpha Results at a 95% Confidence Level

Customer ID	Segment - Portion	LabCore ID	Sample Result	Duplicate Result	Mean	Standard Deviation	95% Upper Confidence Limit (MEAN)
			µCi/mL	µCi/mL	µCi/mL		µCi/mL
FIELD BLANK	FIELD BLANK	S96T000838	<1.19e-6	<1.19e-6	NA	NA	NA
96-016	7 DL	S96T000773	<8.41e-3	<1.15e-2	NA	NA	NA
96-020	11 DL	S96T000634	<1.46e-2	1.21e-2	NA	NA	NA

Table 5: Comparison of Core130 Liquids Total Alpha Results at a 95% Confidence Level

Customer ID	Segment - Portion	LabCore ID	Sample Result	Duplicate Result	Mean	Standard Deviation	95% Upper Confidence Limit (MEAN)
			µCi/mL	µCi/mL	µCi/mL		µCi/mL
96-046	5 DL	S96T001125	<1.42e-2	<9.43e-3	NA	NA	NA
96-047A	6A LL	S96T001383	<1.40e-2	<1.54e-2	NA	NA	NA
	6A DL	S96T001382	<1.69e-2	<1.54e-2	NA	NA	NA
96-051	10 DL	S96T001437	<7.28e-3	<1.19e-2	NA	NA	NA

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References

1. WHC-SD-WM-TSAP-074, Rev. 1, "Tank 241-S-102 Push Mode Core Sampling and Analysis Plan", dated January 1, 1996, Westinghouse Hanford Company, Richland, WA 99352.

2. WHC-SD-WM-SP-004, Rev. 2, "Tank Safety Screening Data Quality Objective", dated August 31, 1995, Westinghouse Hanford Company, Richland, WA 99352.

3. NIOSH Pocket Guide to Chemical Hazards, 1994 edition.

ATTACHMENT 1

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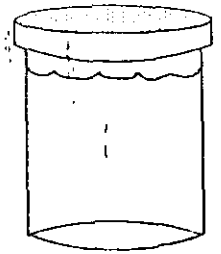

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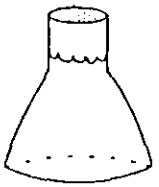

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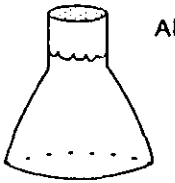

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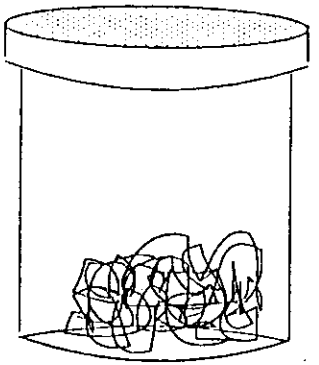

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2-C1

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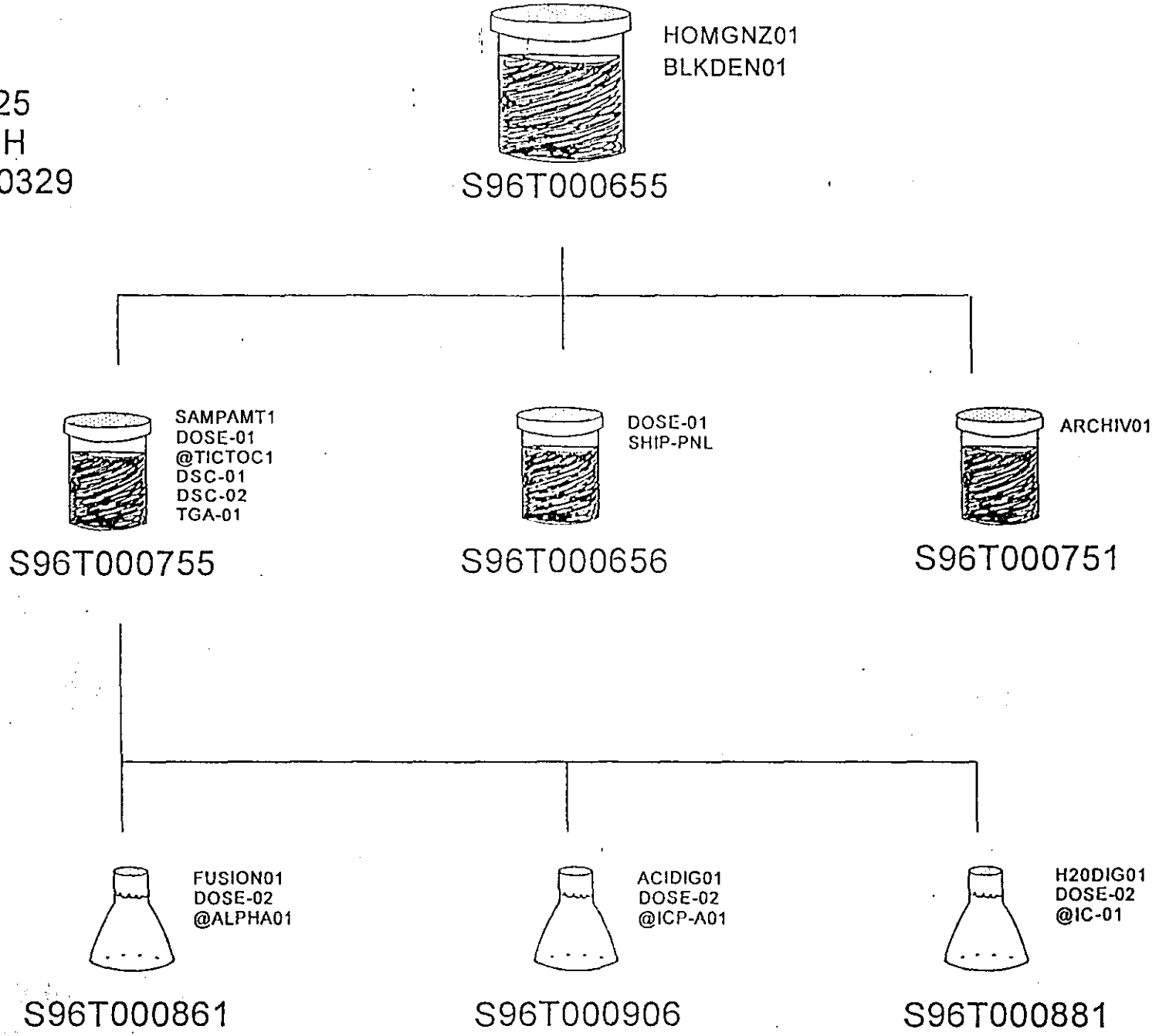

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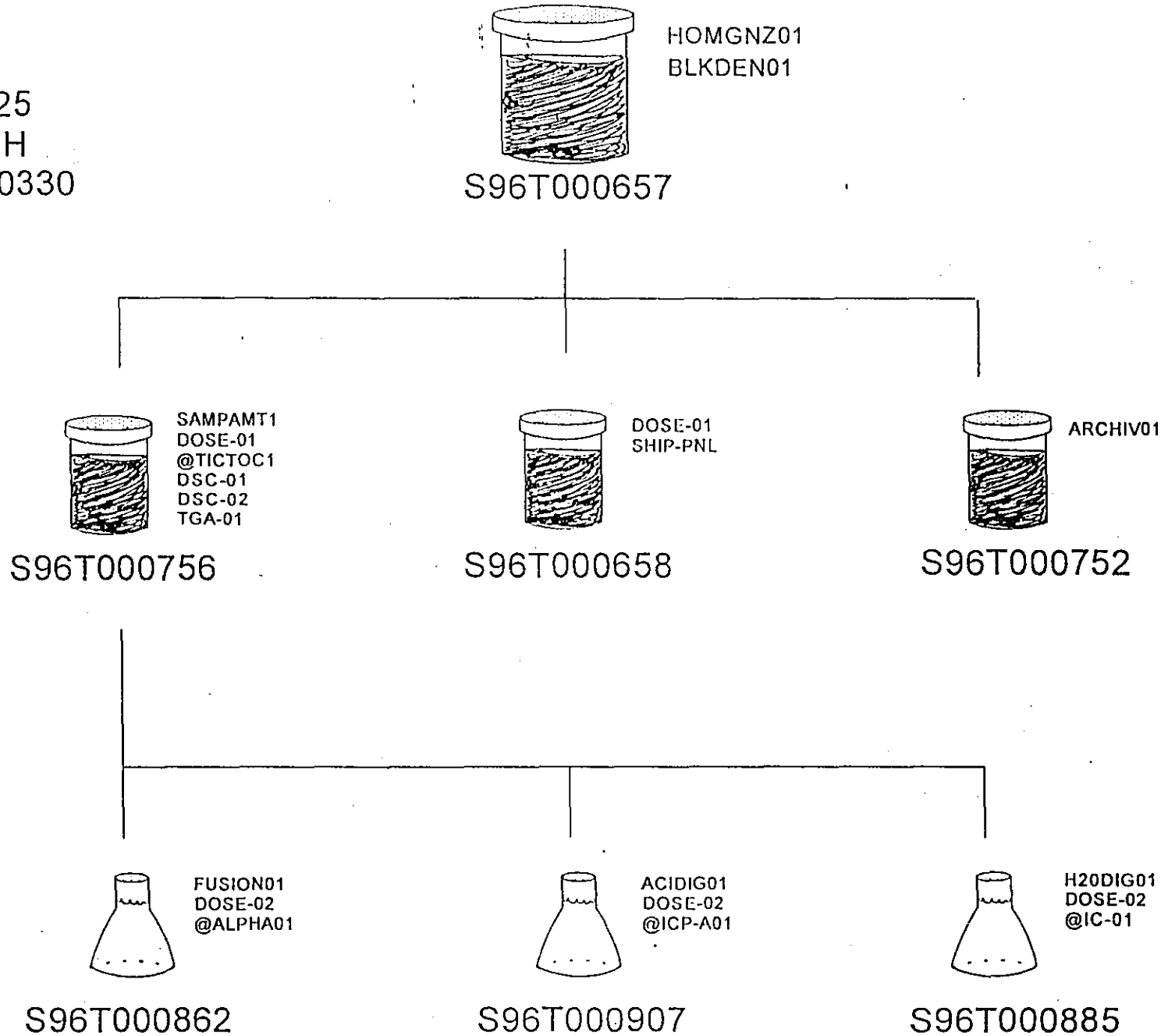
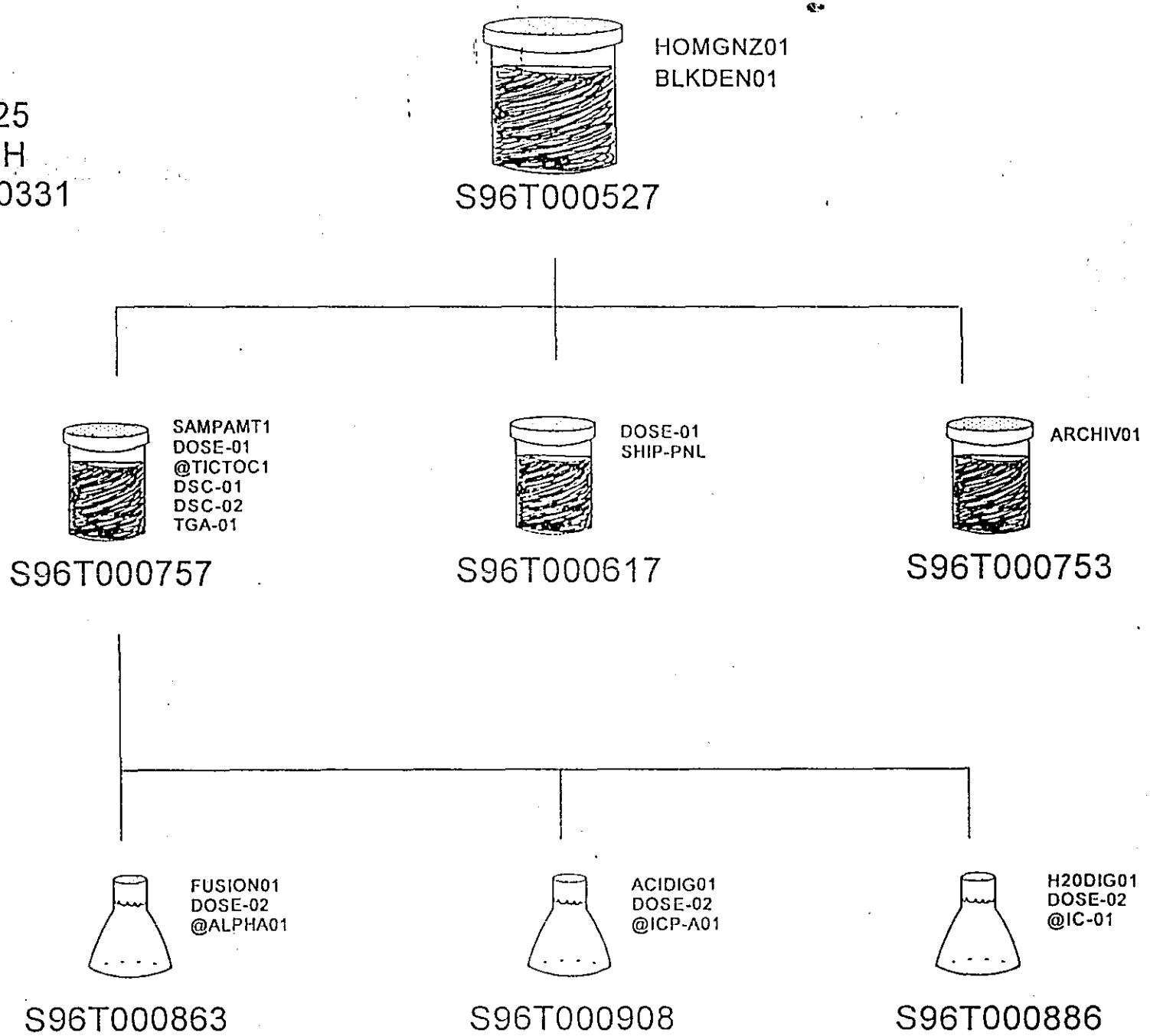
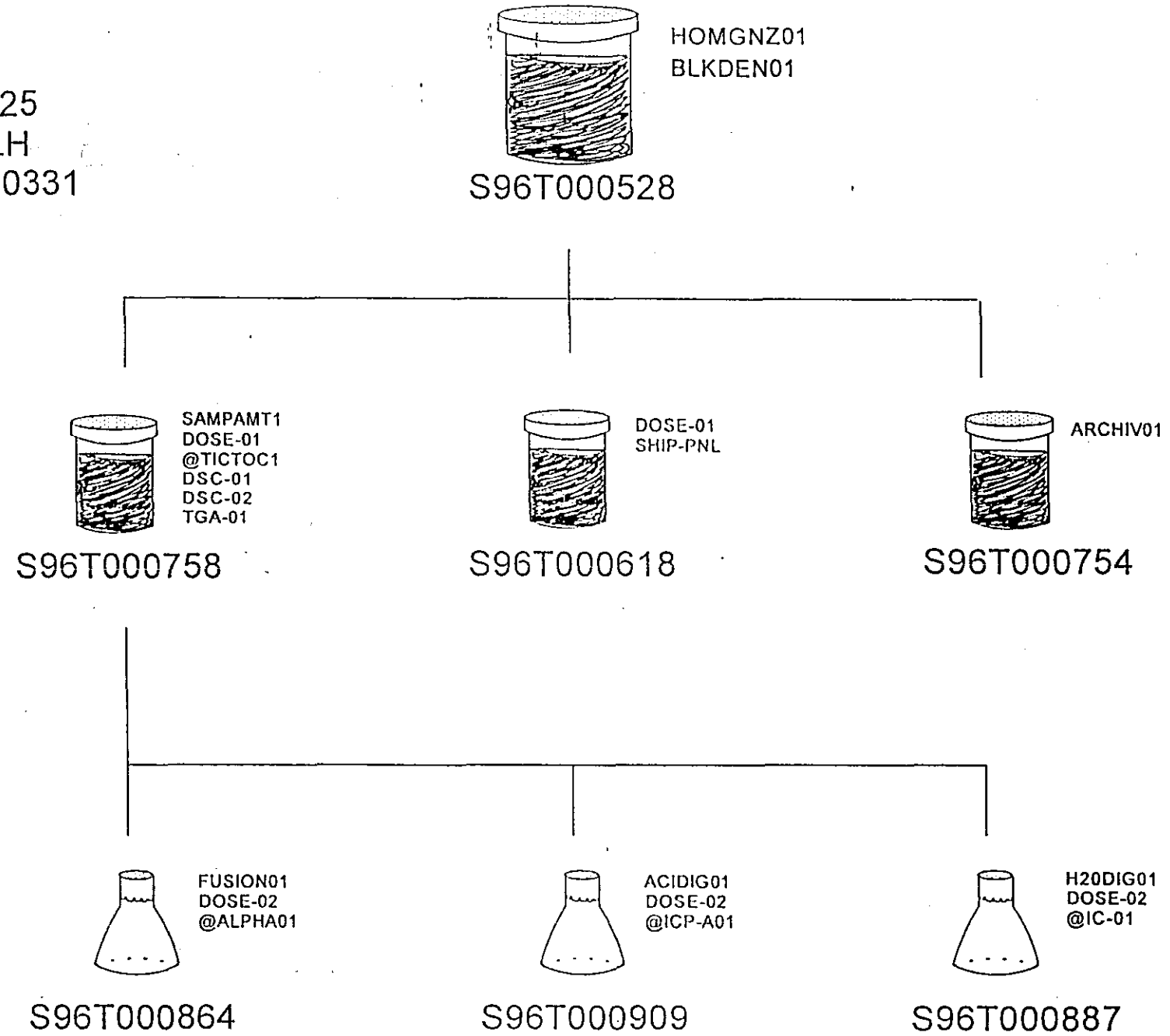
S96T000330



S-102
Core: 125
Seg: 4UH
S96T000331

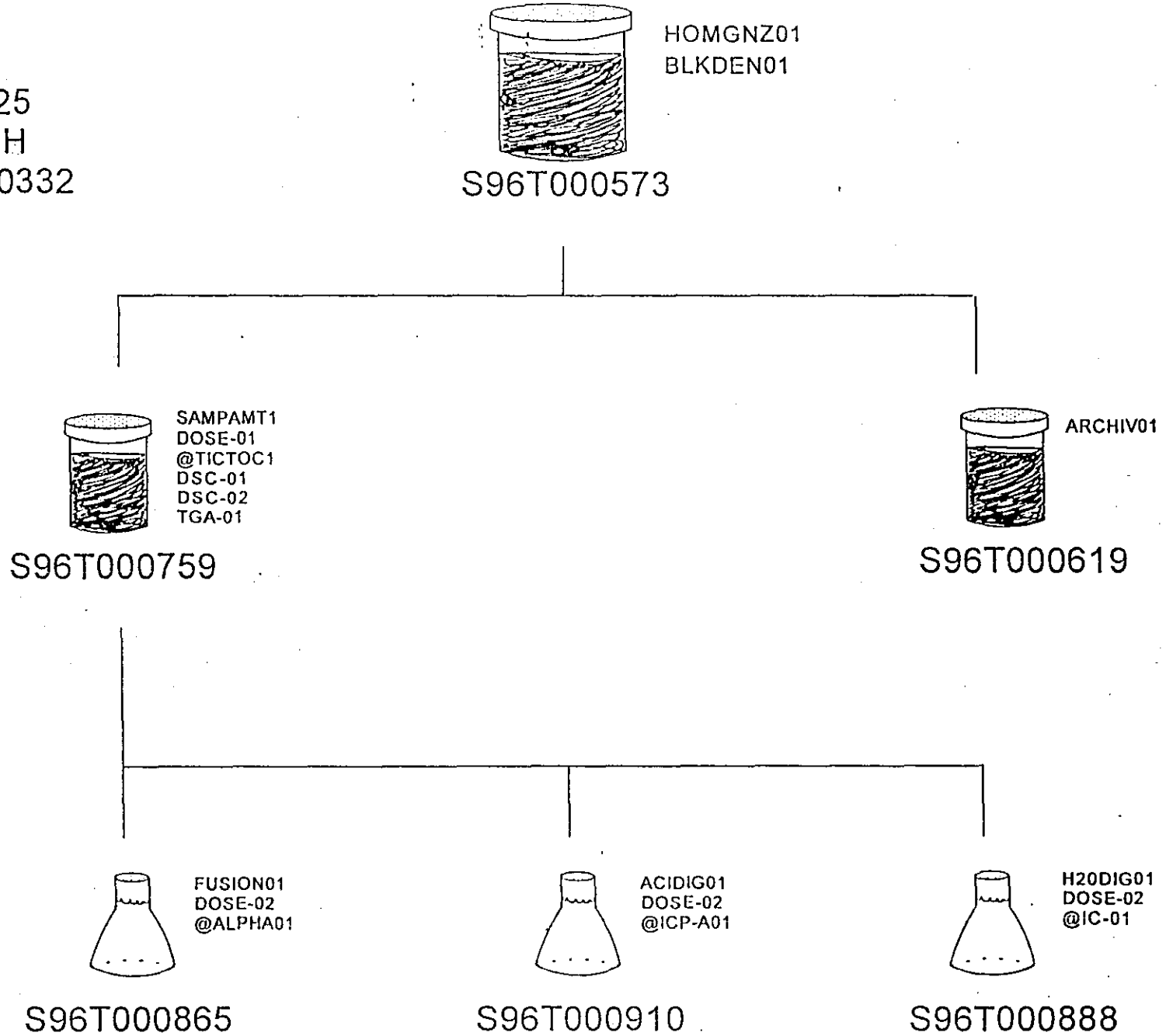


S-102
Core: 125
Seg: 4LH
S96T000331

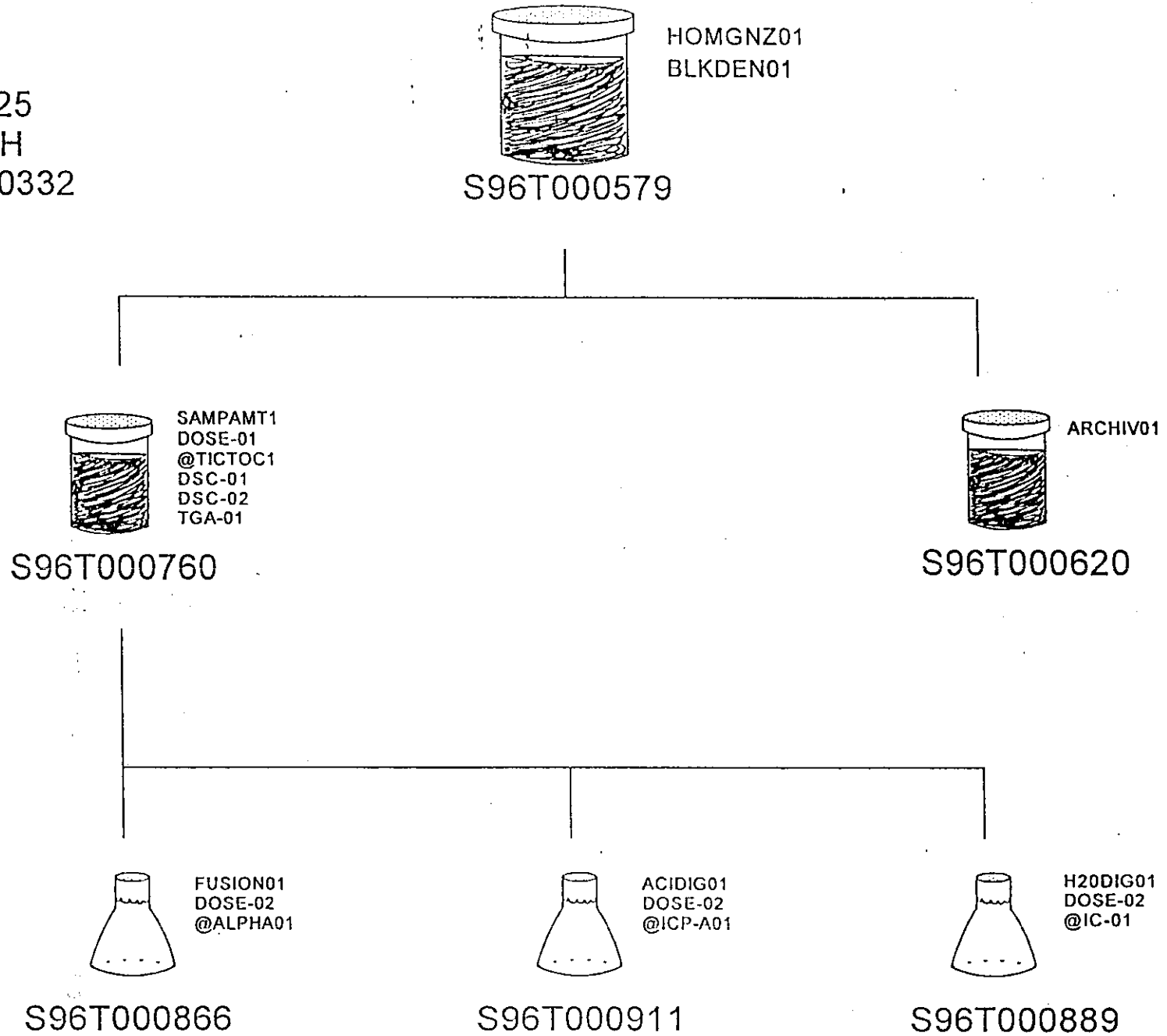


WHC-SD-WM-DP-179, REV. 1

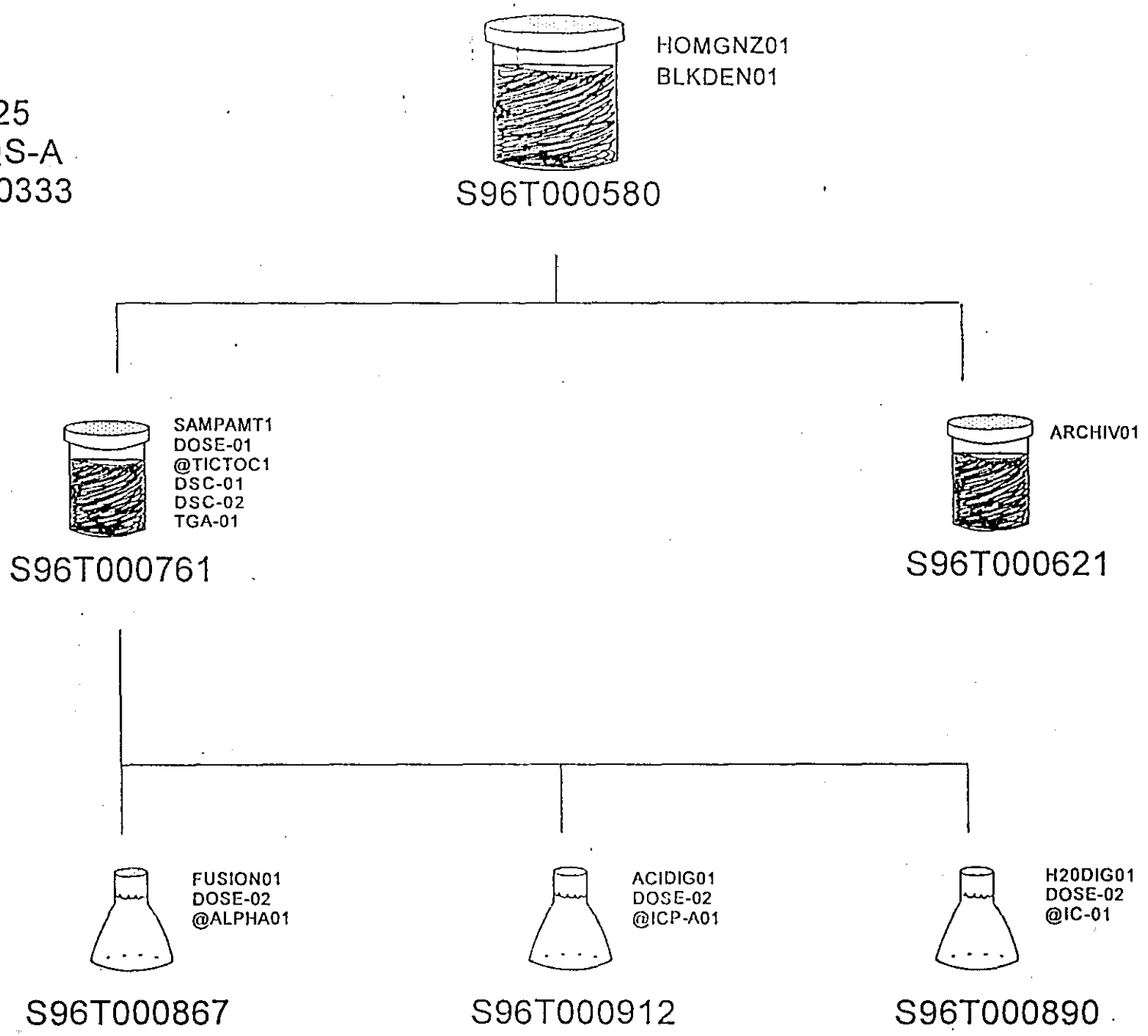
S-102
Core: 125
Seg: 5UH
S96T000332



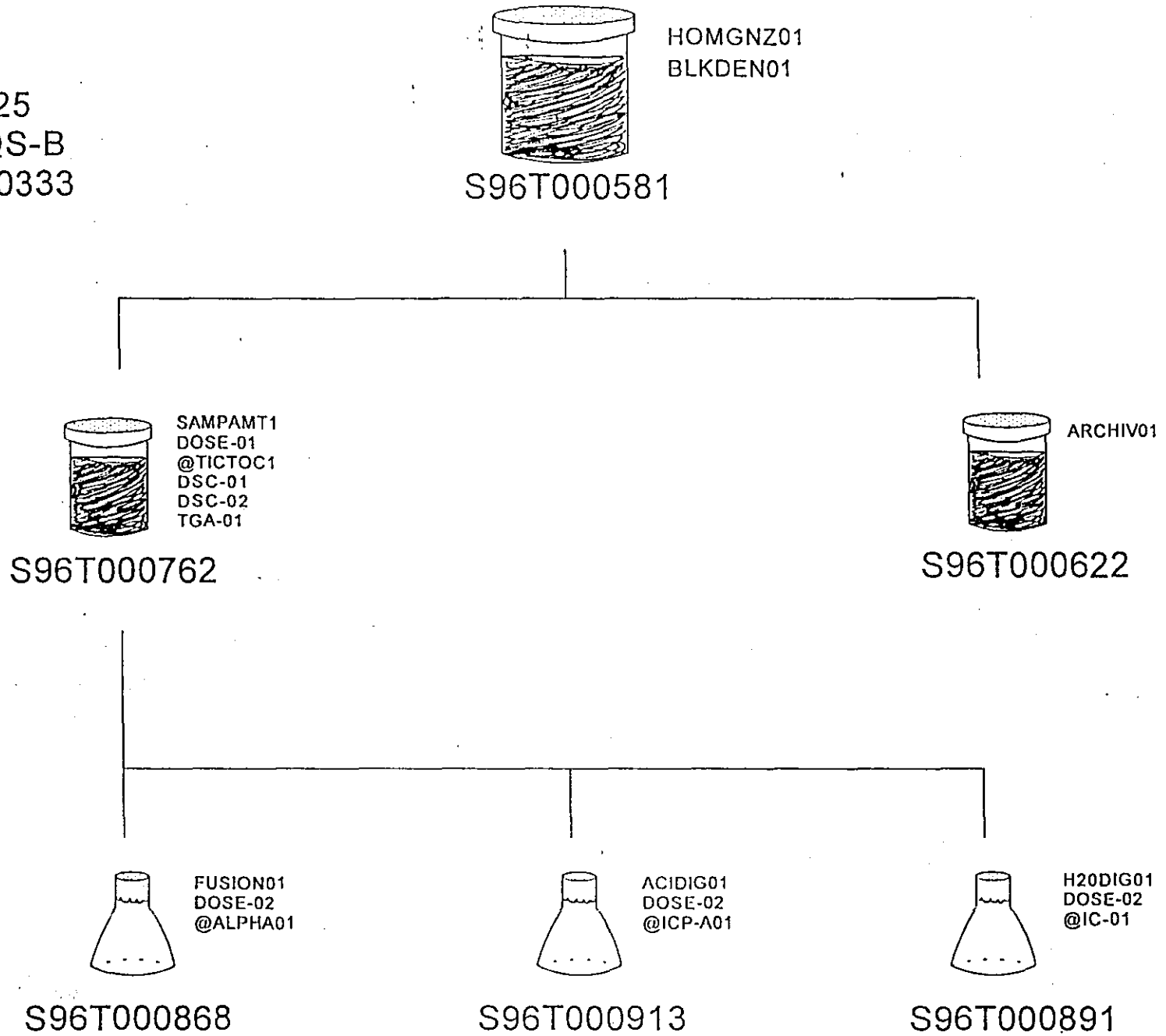
S-102
Core: 125
Seg: 5LH
S96T000332



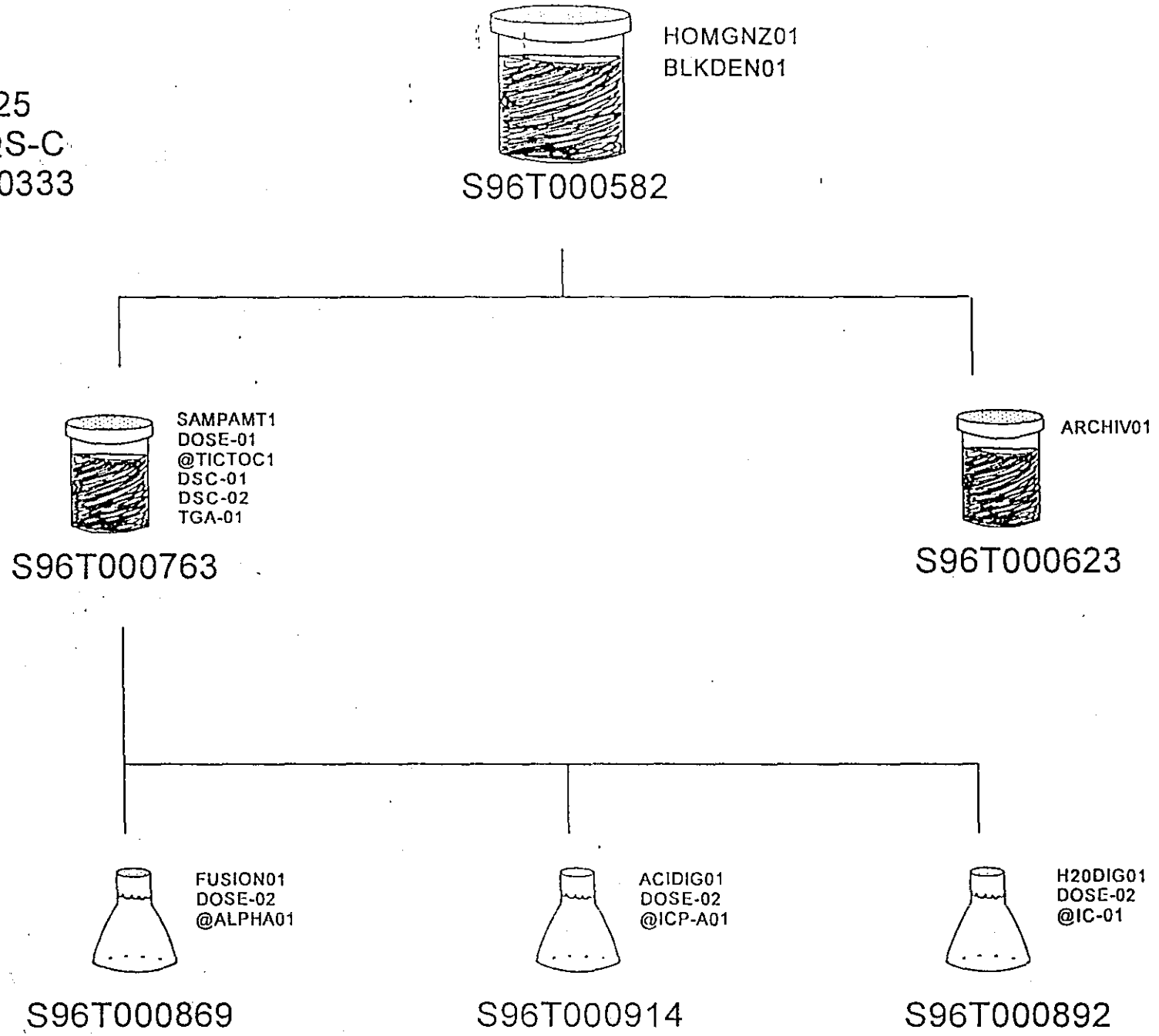
S-102
Core: 125
Seg: 6QS-A
S96T000333



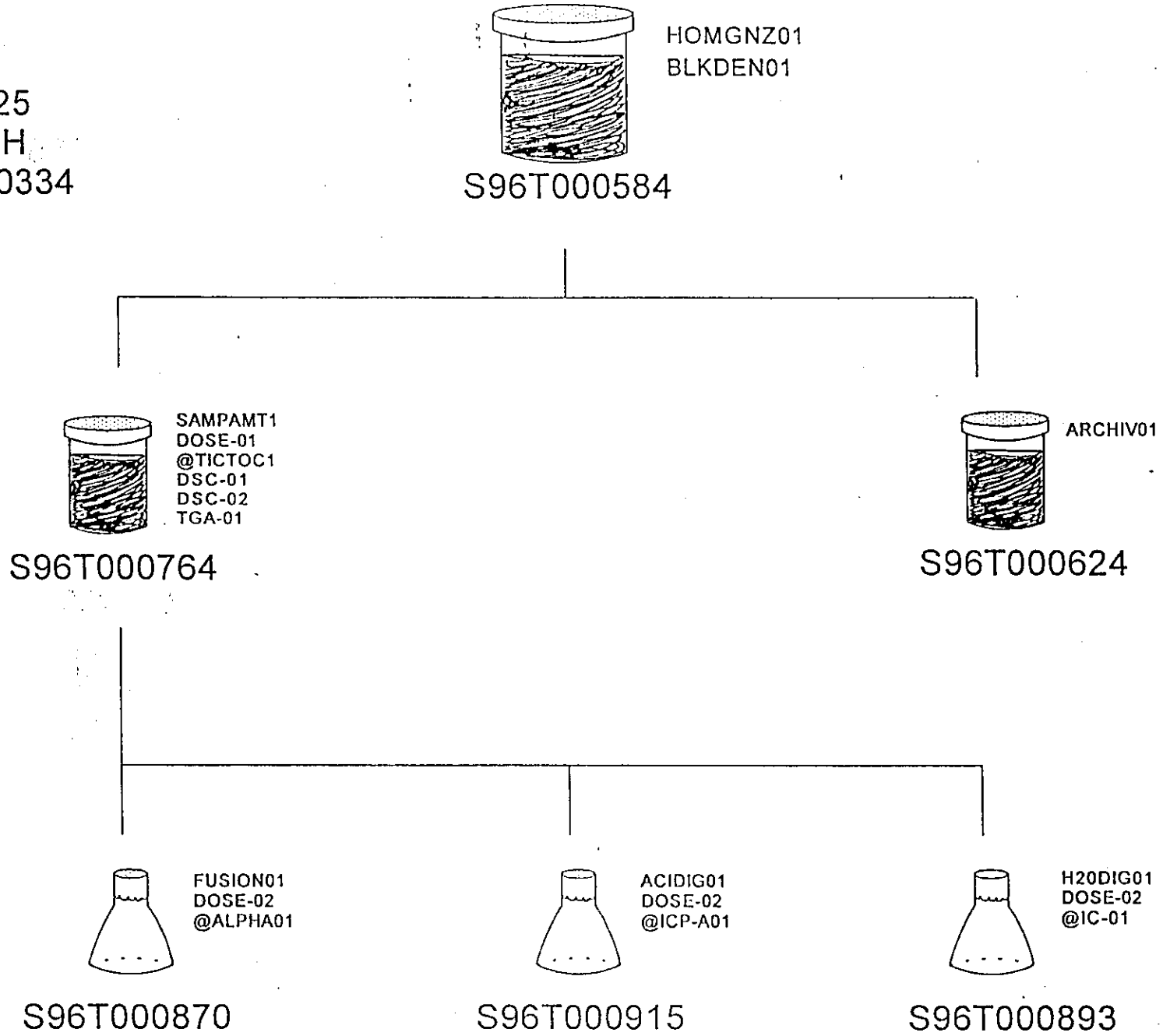
S-102
Core: 125
Seg: 6QS-B
S96T000333



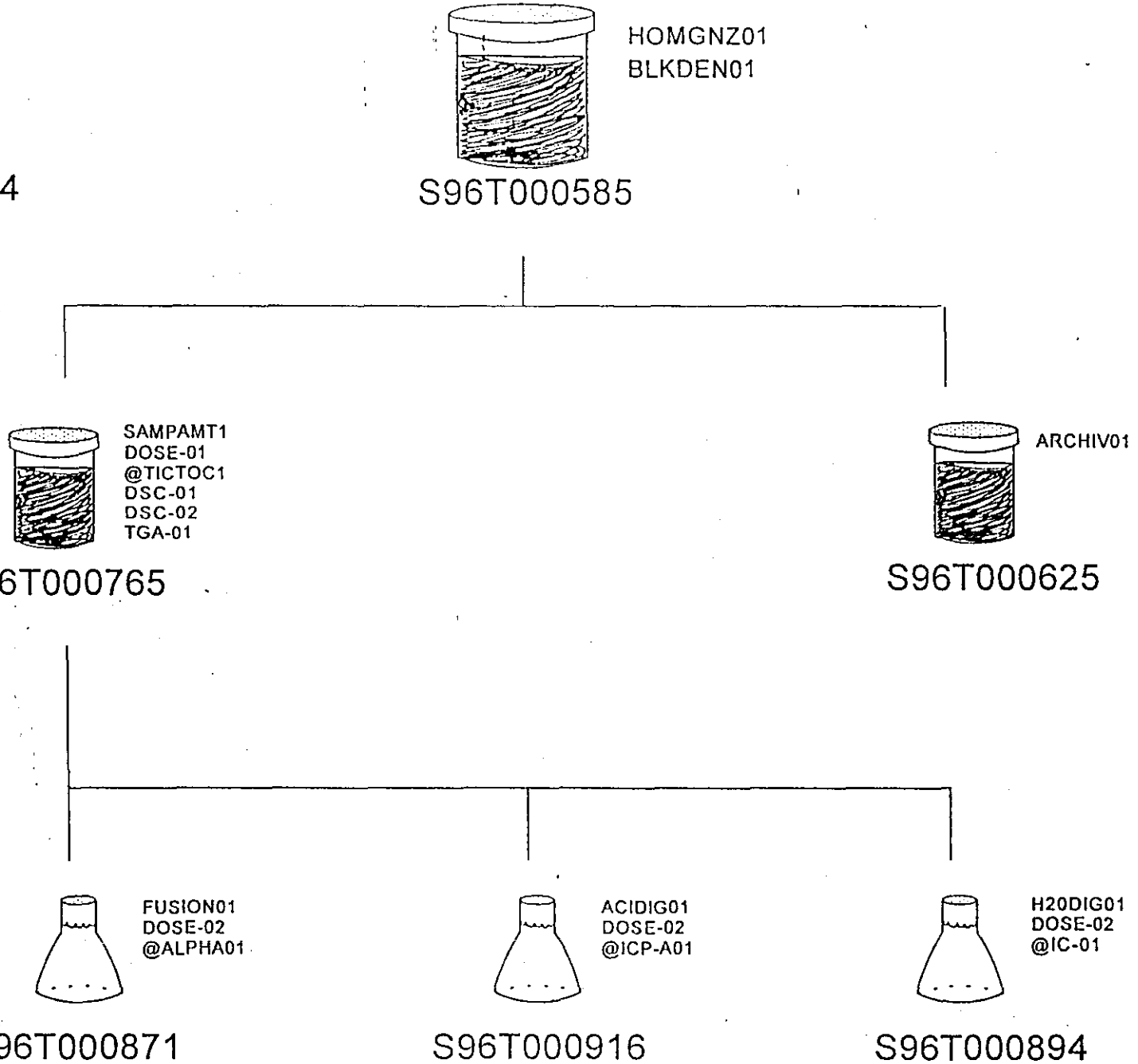
S-102
Core: 125
Seg: 6QS-C
S96T000333



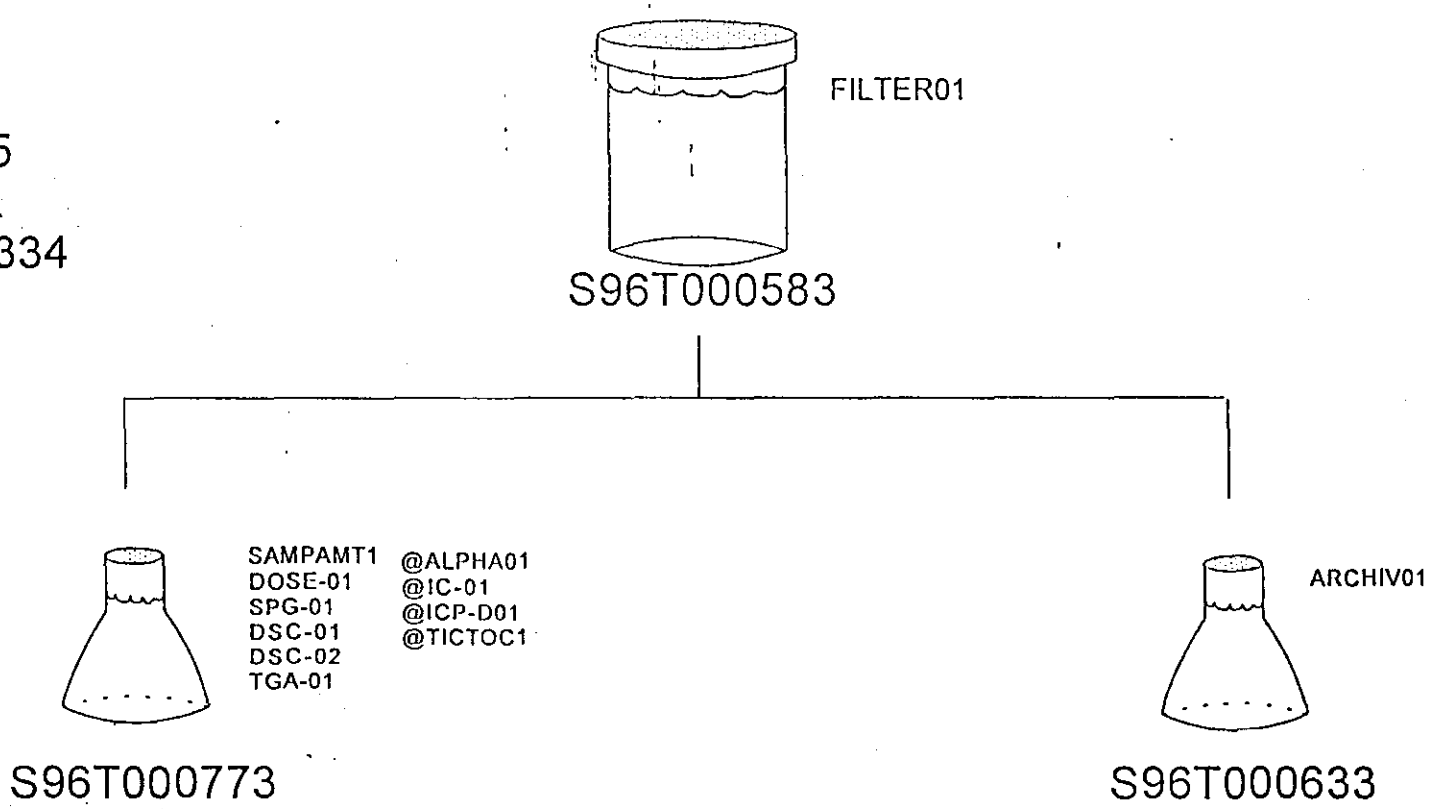
S-102
Core: 125
Seg: 7UH
S96T000334



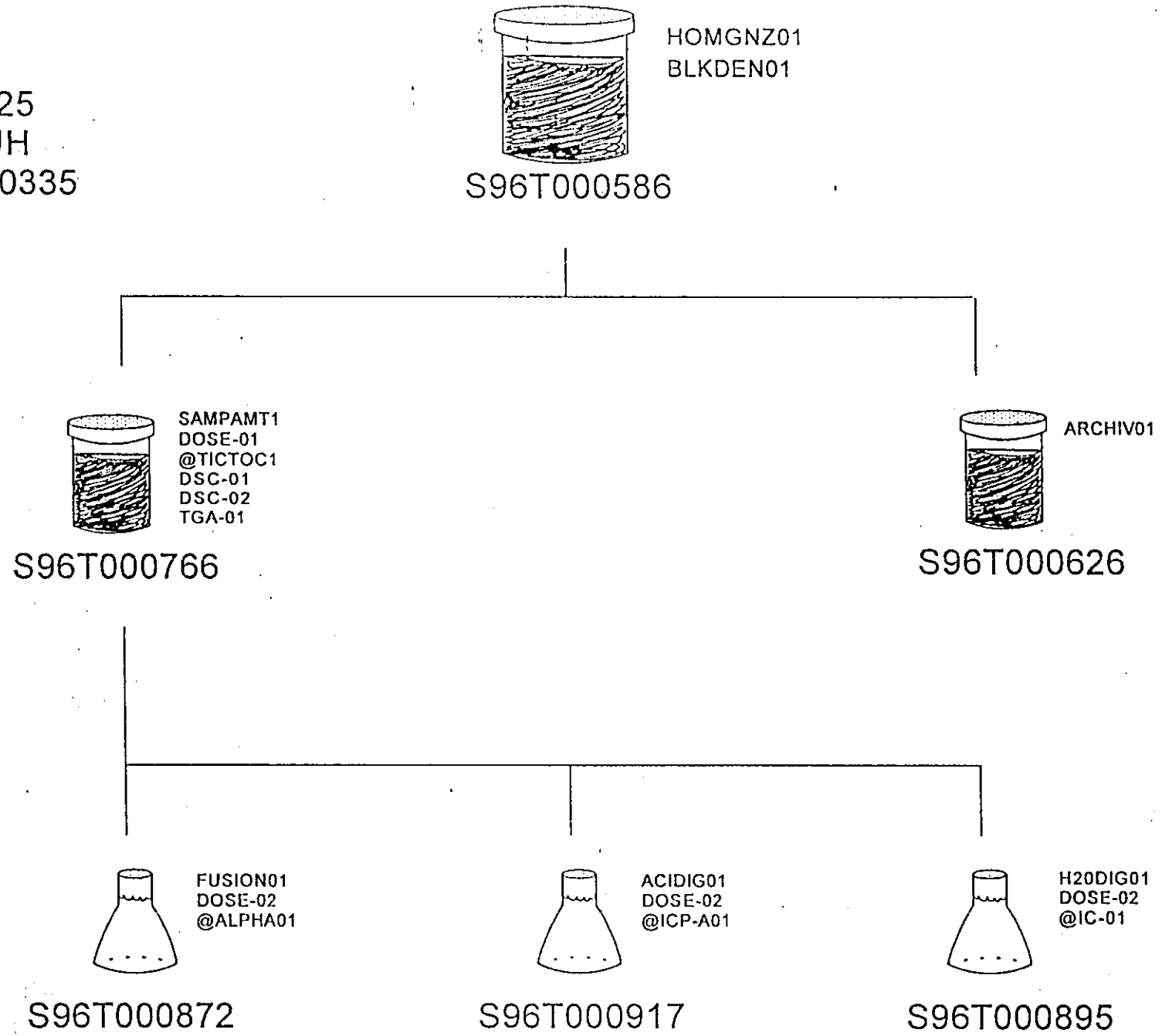
S-102
Core: 125
Seg: 7LH
S96T000334



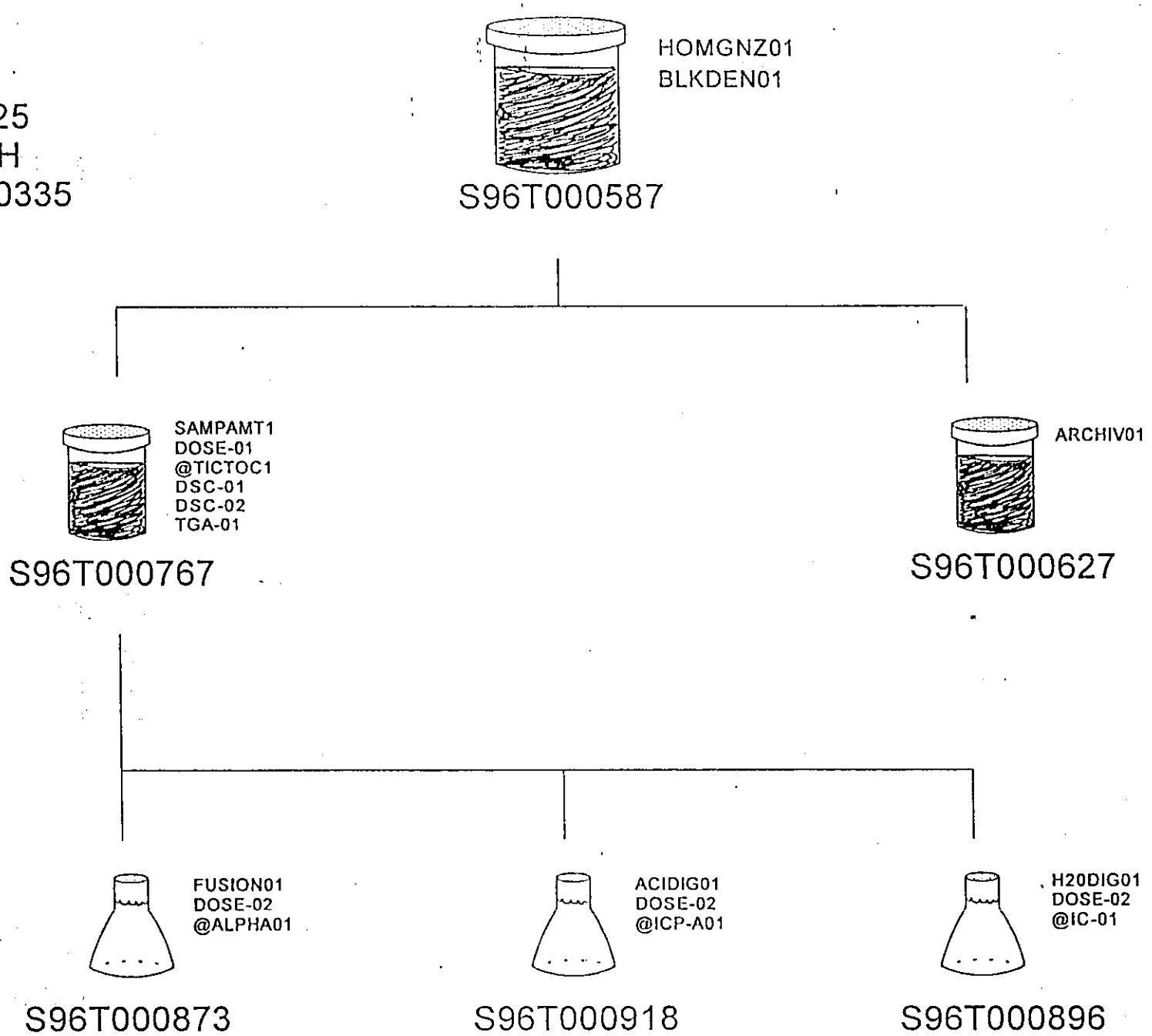
S-102
Core: 125
Seg: 7DL
S96T000334



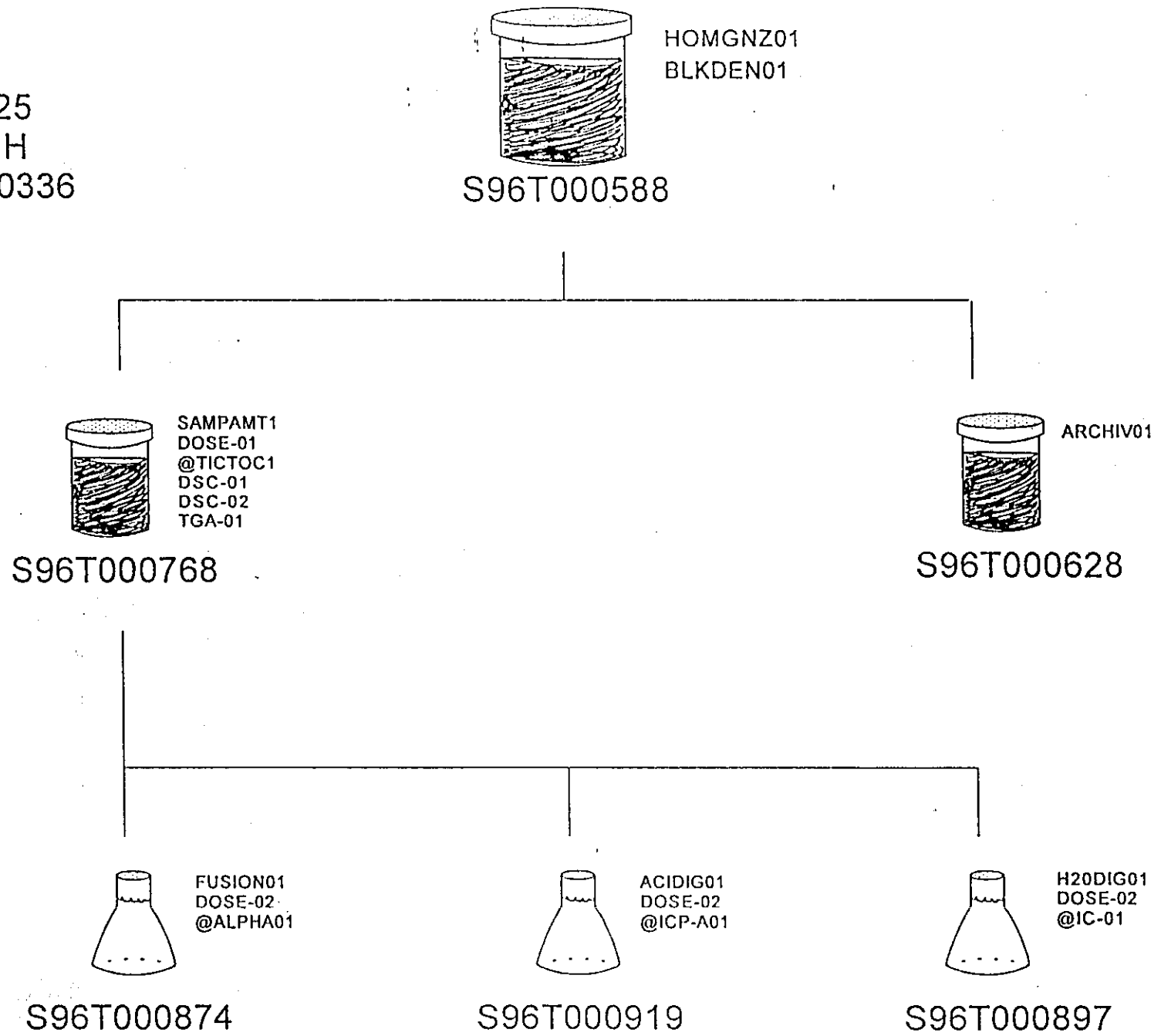
S-102
Core: 125
Seg: 8UH
S96T000335



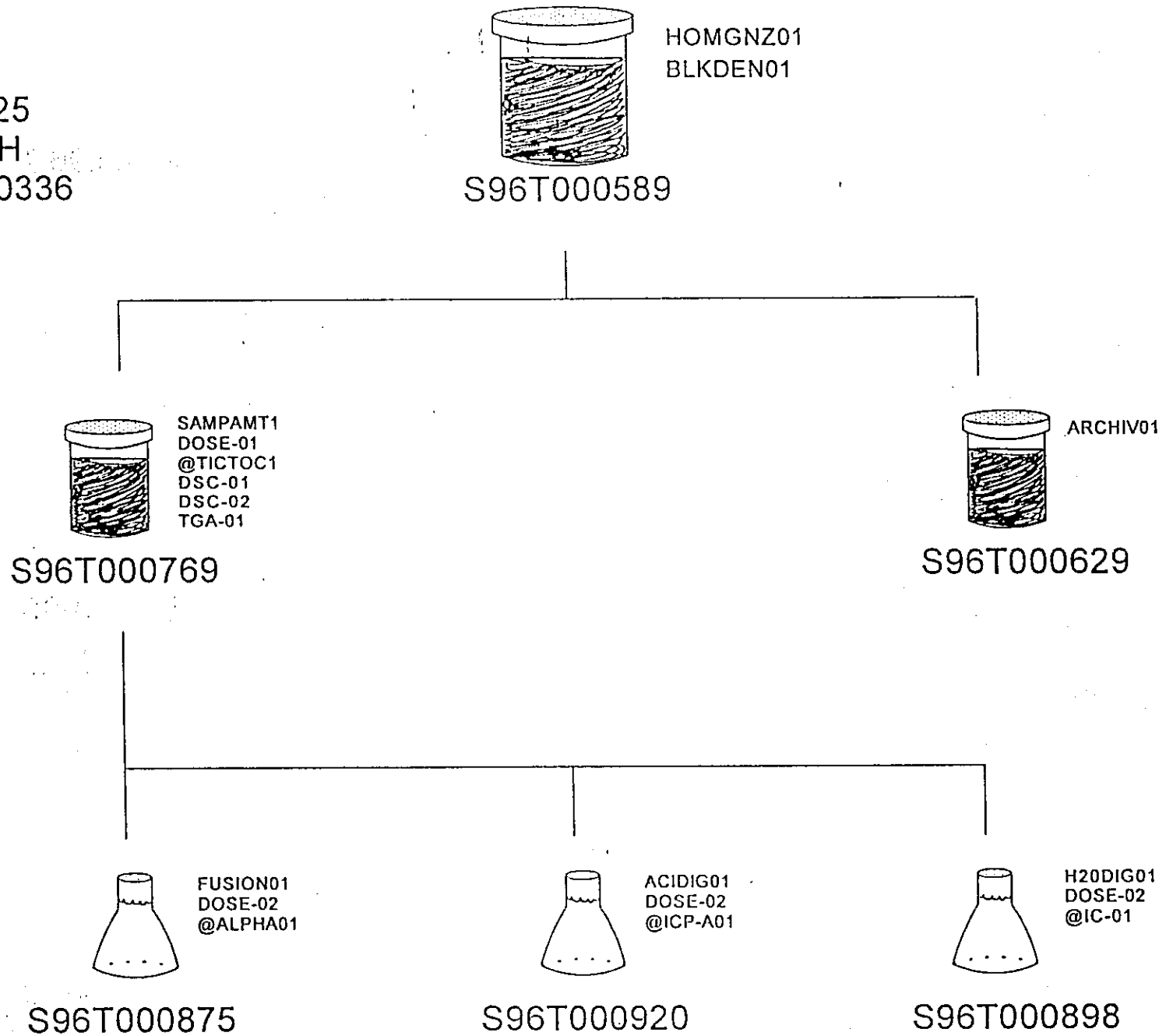
S-102
Core: 125
Seg: 8LH
S96T000335



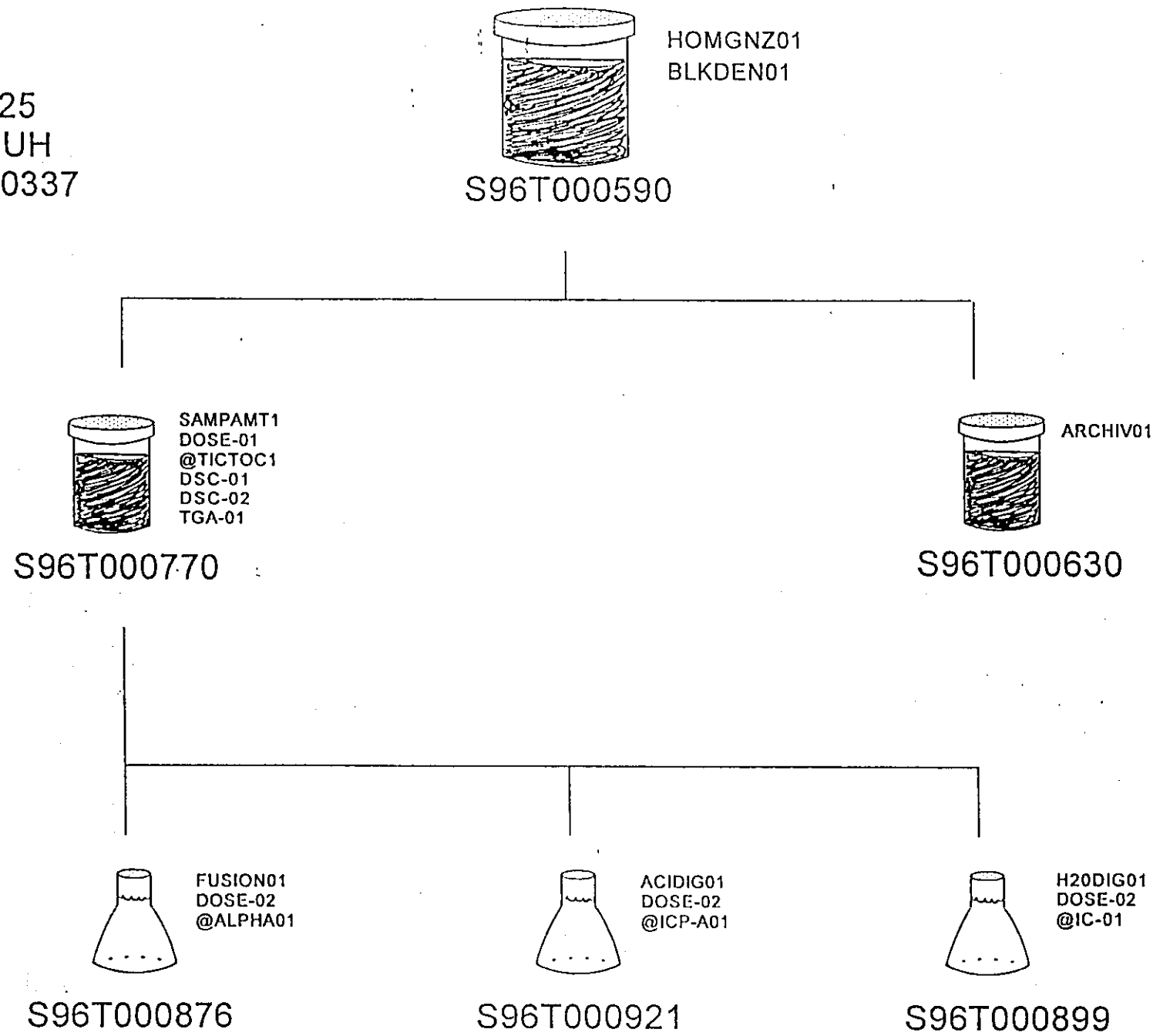
S-102
Core: 125
Seg: 9UH
S96T000336



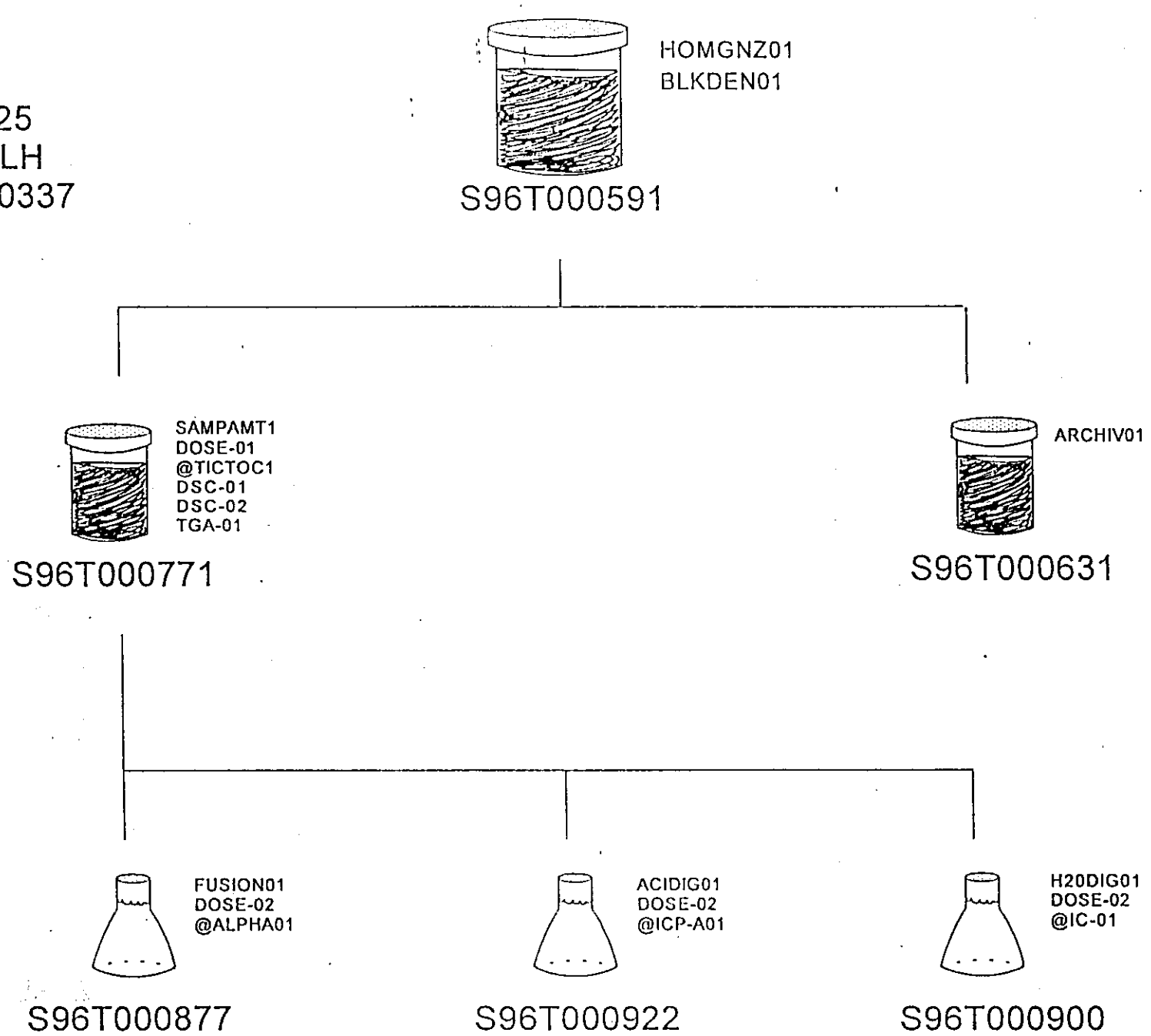
S-102
Core: 125
Seg: 9LH
S96T000336



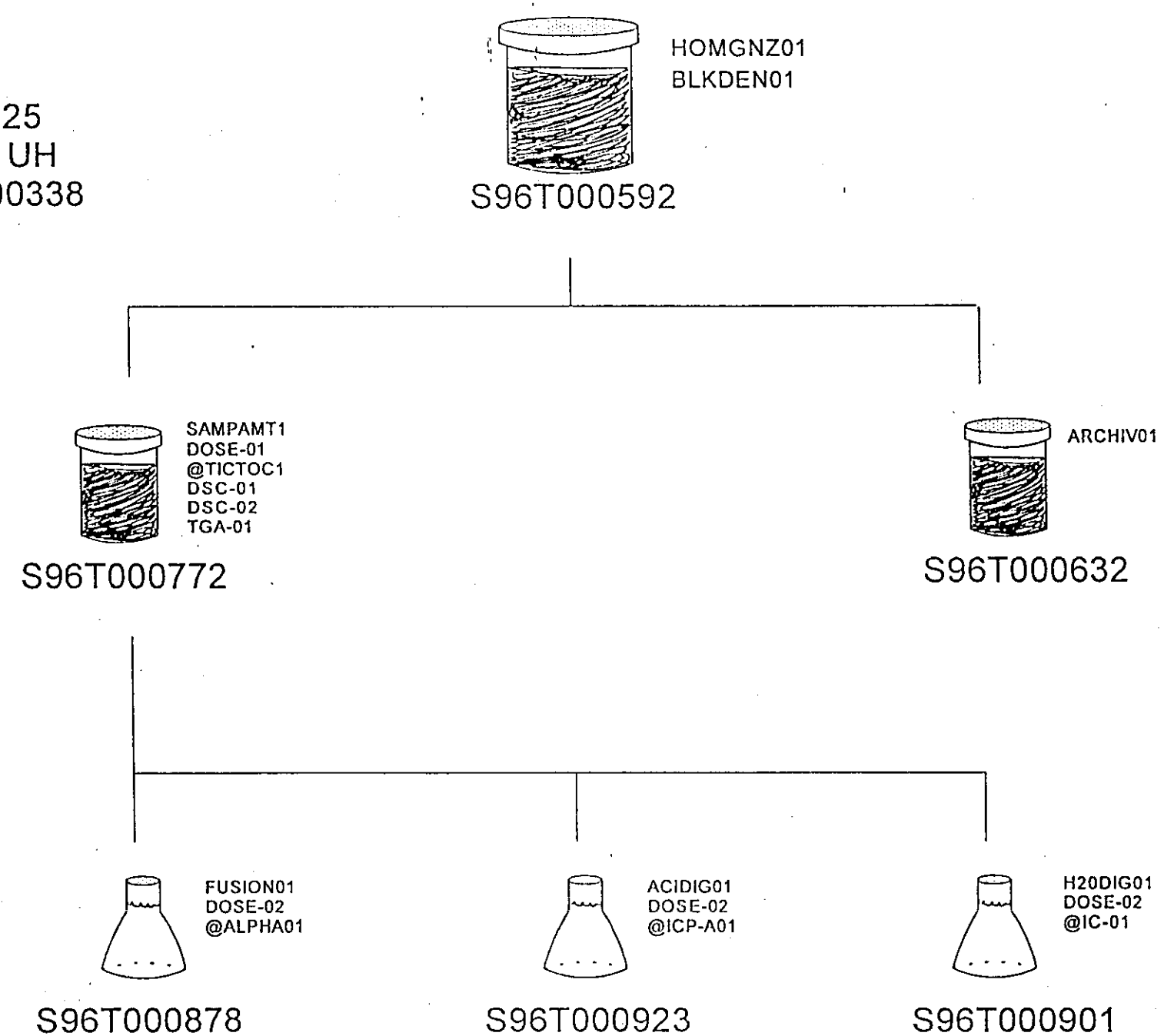
S-102
Core: 125
Seg: 10UH
S96T000337



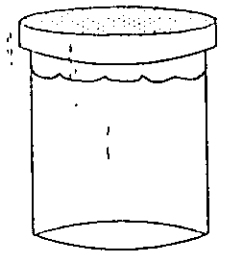
S-102
Core: 125
Seg: 10LH
S96T000337



S-102
Core: 125
Seg: 11UH
S96T000338

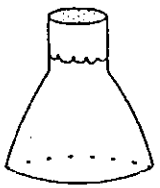


S-102
Core: 125
Seg: 11DL
S96T000338



FILTER01

S96T000593



SAMPAMT1
DOSE-01
SPG-01
DSC-01
DSC-02
TGA-01

@ALPHA01
@IC-01
@ICP-D01
@TICTOC1

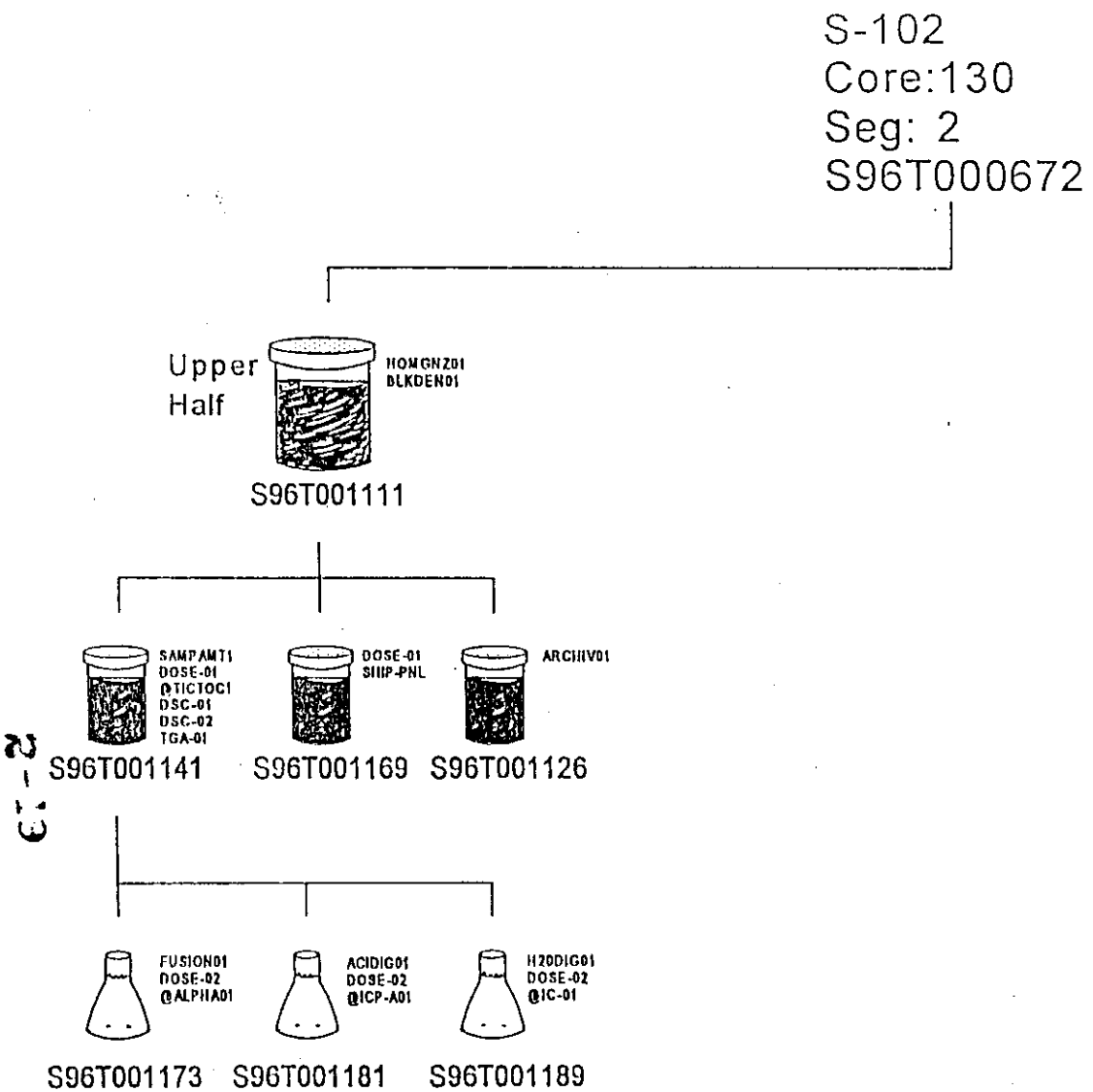
S96T000634

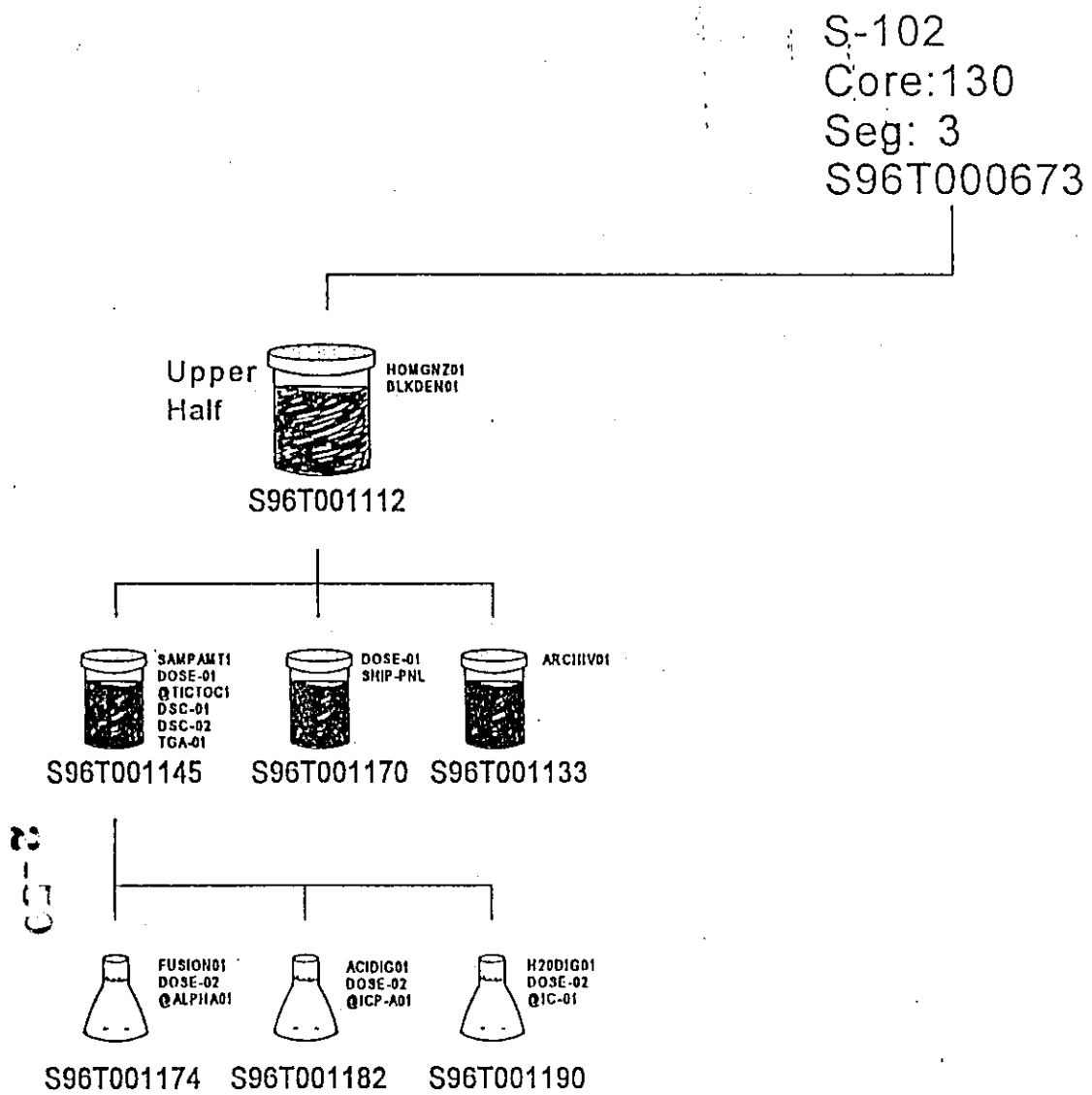
WHC-SD-WM-DP-179, REV. 0

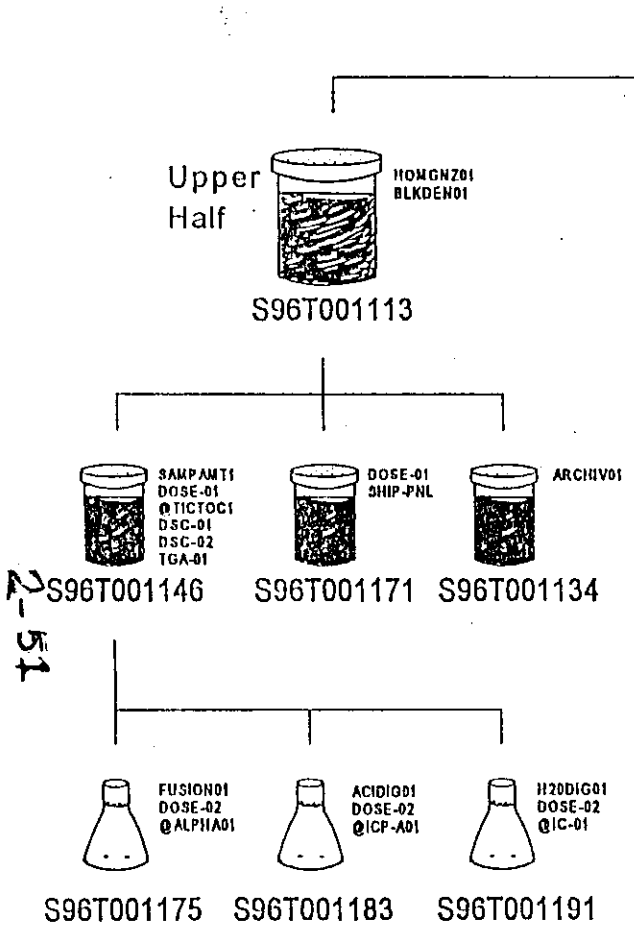
S-102
Core:130
Seg: 1
S96T000671

No Sample

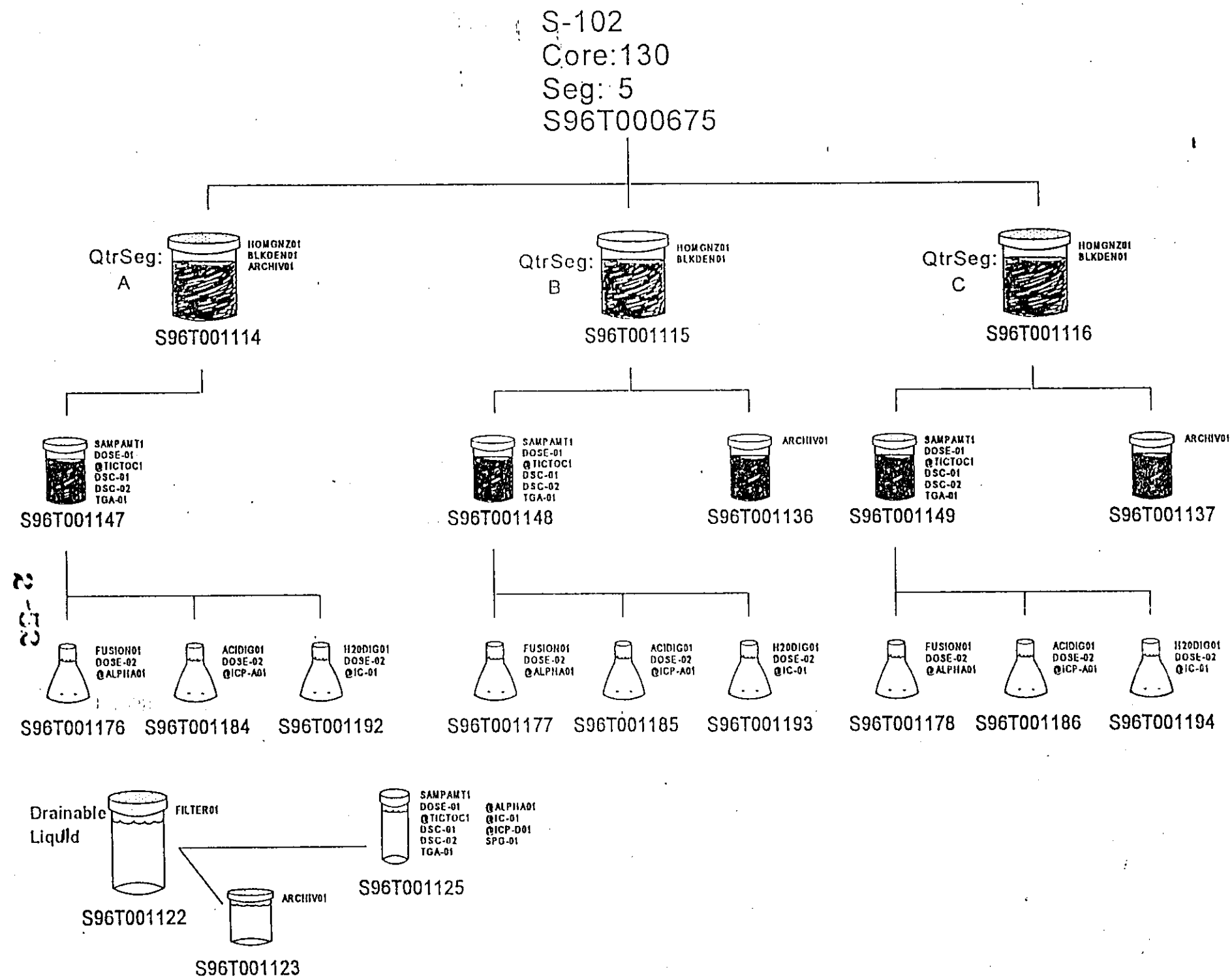
WHC-SD-WM-DP-179, REV. 0

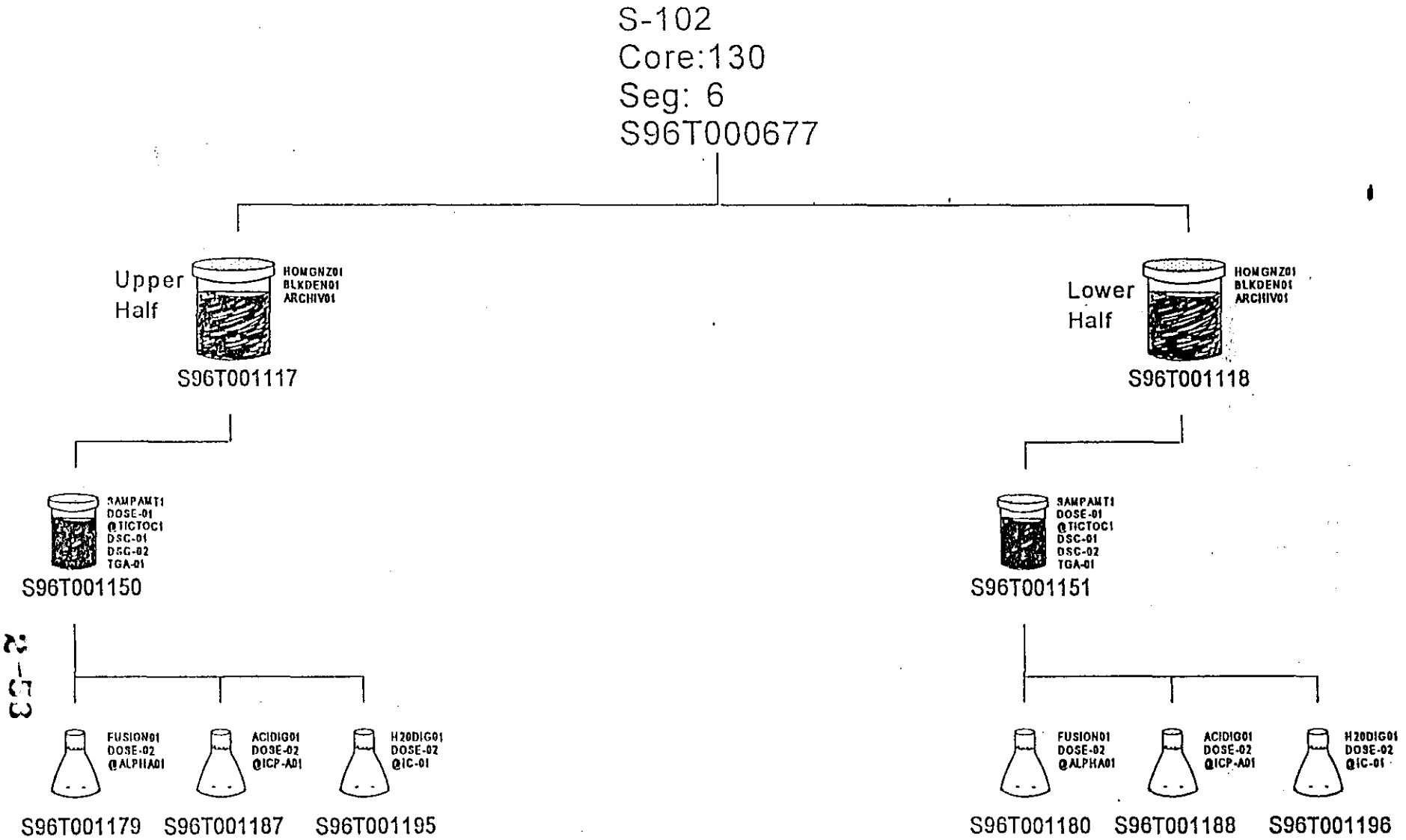


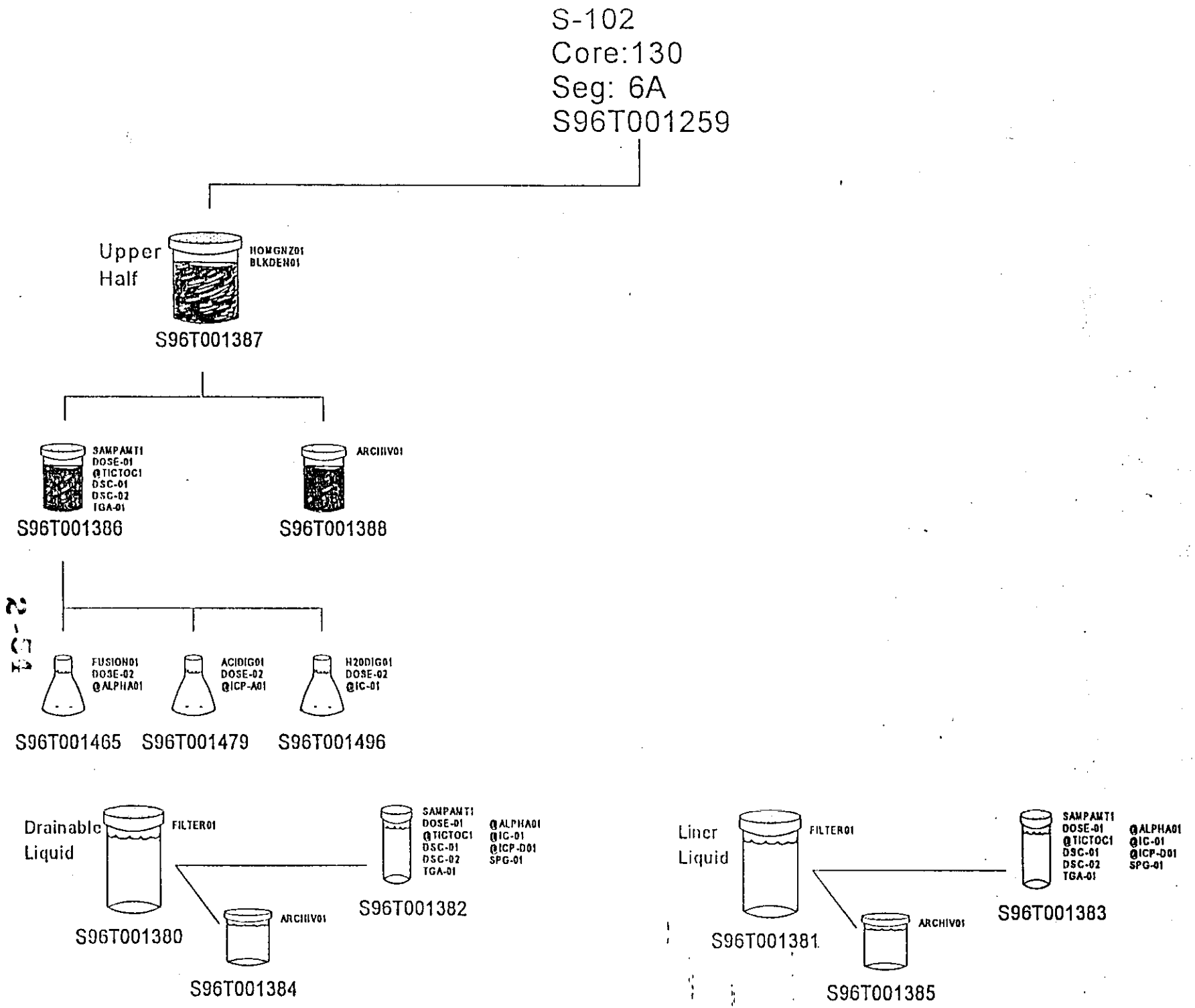

S-102
Core:130
Seg: 3
S96T000673
Upper Half
HOMGNZ01
BLKDEN01
S96T001112
SAMPAMT1
DOSE-01
@TICTOC1
DSC-01
DSC-02
TGA-01
S96T001145
DOSE-01
SHIP-PNL
S96T001170
ARCIIIV01
S96T001133
FUSION01
DOSE-02
@ALPHA01
S96T001174
ACIDIG01
DOSE-02
@ICP-A01
S96T001182
H2ODIG01
DOSE-02
@IC-01
S96T001190

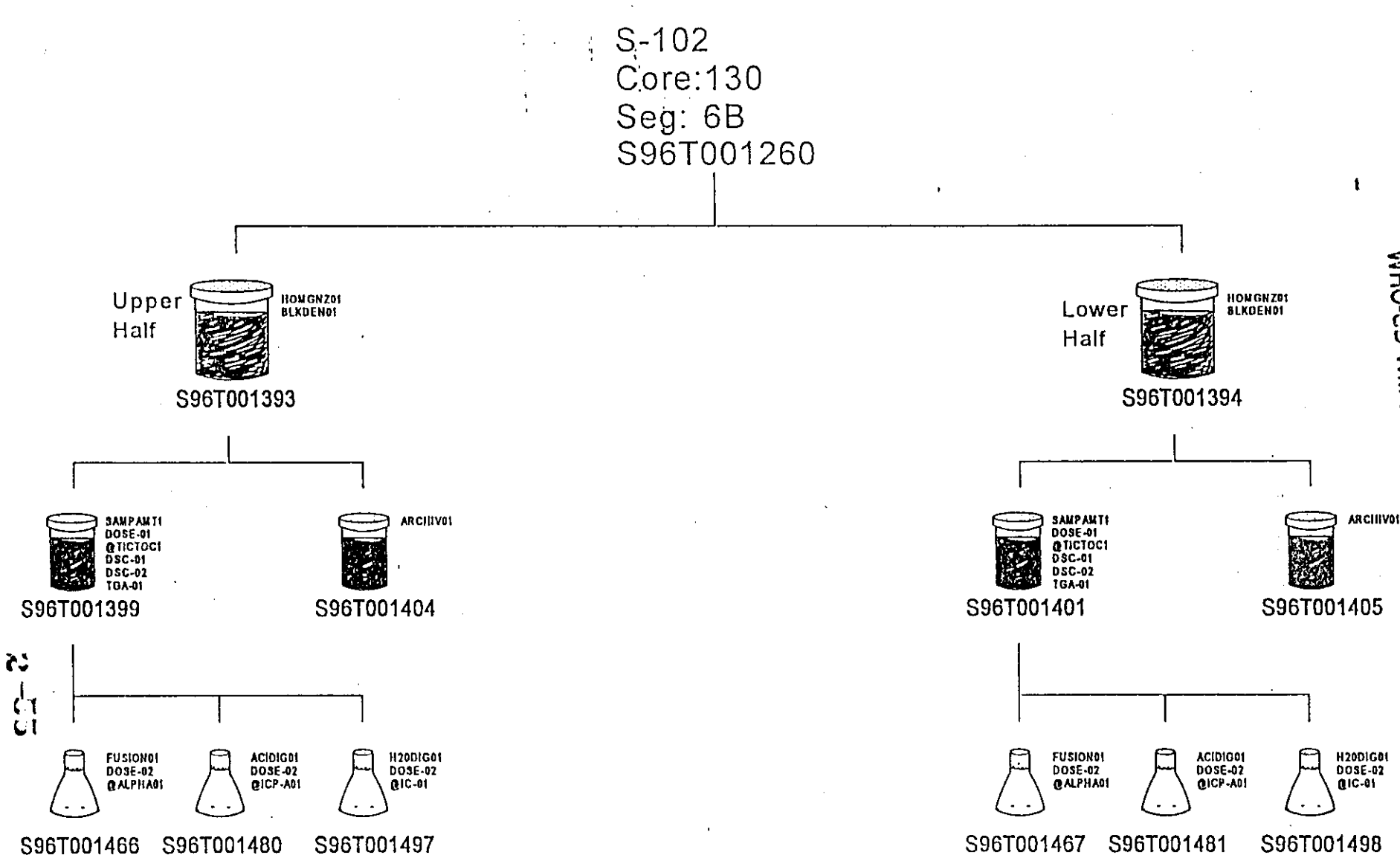

S-102
Core:130
Seg: 4
S96T000674
Upper Half
HOMGNZ01
BLKDEN01
S96T001113
SAMPAMT1
DOSE-01
@TICTOC1
DSC-01
DSC-02
TGA-01
S96T001146
DOSE-01
SHIP-PNL
S96T001171
ARCHIV01
S96T001134
FUSION01
DOSE-02
@ALPHA01
S96T001175
ACIDIG01
DOSE-02
@ICP-A01
S96T001183
H2ODIG01
DOSE-02
@IC-01
S96T001191

2-51

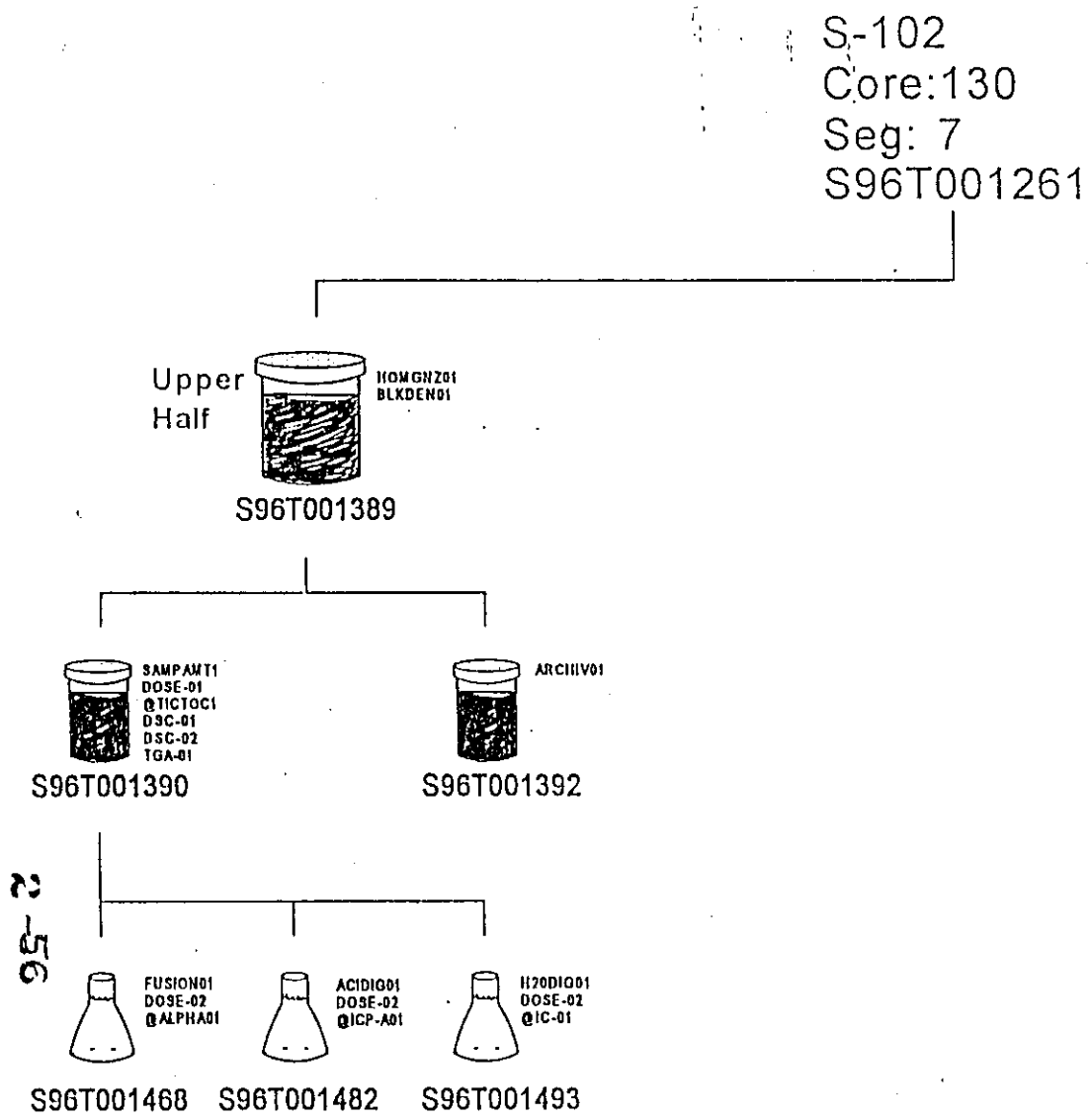

S-102
Core:130
Seg: 5
S96T000675
QtrSeg: A
HOMGNZ01
BLKDEN01
ARCHIV01
S96T001114
QtrSeg: B
HOMGNZ01
BLKDEN01
S96T001115
QtrSeg: C
HOMGNZ01
BLKDEN01
S96T001116
SAMPAMT1
DOSE-01
@TICTOC1
DSC-01
DSC-02
TGA-01
S96T001147
SAMPAMT1
DOSE-01
@TICTOC1
DSC-01
DSC-02
TGA-01
S96T001148
ARCHIV01
S96T001136
SAMPAMT1
DOSE-01
@TICTOC1
DSC-01
DSC-02
TGA-01
S96T001149
ARCHIV01
S96T001137
FUSION01
DOSE-02
@ALPHA01
S96T001176
ACIDIG01
DOSE-02
@ICP-A01
S96T001184
H2ODIG01
DOSE-02
@IC-01
S96T001192
FUSION01
DOSE-02
@ALPHA01
S96T001177
ACIDIG01
DOSE-02
@ICP-A01
S96T001185
H2ODIG01
DOSE-02
@IC-01
S96T001193
FUSION01
DOSE-02
@ALPHA01
S96T001178
ACIDIG01
DOSE-02
@ICP-A01
S96T001186
H2ODIG01
DOSE-02
@IC-01
S96T001194
Drainable Liquid
FILTER01
S96T001122
ARCHIV01
S96T001123
SAMPAMT1
DOSE-01
@TICTOC1
DSC-01
DSC-02
TGA-01
@ALPHA01
@IC-01
@ICP-D01
SPG-01
S96T001125


S-102
Core:130
Seg: 6
S96T000677
Upper Half
HOMGNZ01
BLKDEN01
ARCHIV01
S96T001117
Lower Half
HOMGNZ01
BLKDEN01
ARCHIV01
S96T001118
SAMPAMT1
DOSE-01
@TICTOC1
DSC-01
DSC-02
TGA-01
S96T001150
SAMPAMT1
DOSE-01
@TICTOC1
DSC-01
DSC-02
TGA-01
S96T001151
FUSION01
DOSE-02
@ALPHA01
ACIDIG01
DOSE-02
@ICP-A01
H20DIG01
DOSE-02
@IC-01
S96T001179
S96T001187
S96T001195
FUSION01
DOSE-02
@ALPHA01
ACIDIG01
DOSE-02
@ICP-A01
H20DIG01
DOSE-02
@IC-01
S96T001180
S96T001188
S96T001196

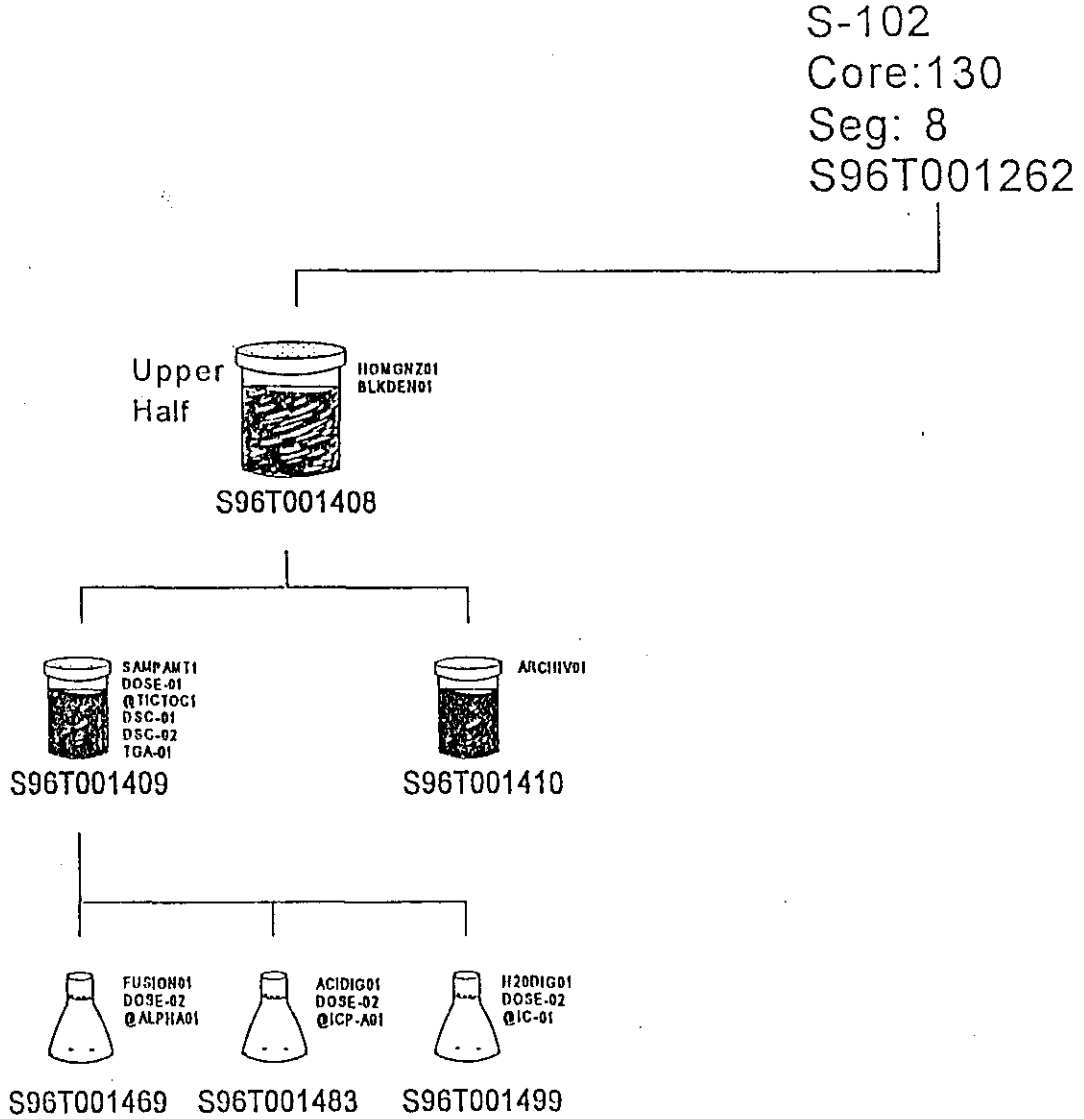

S-102
Core:130
Seg: 6A
S96T001259
Upper Half
HOMGNZ01
BLKDEN01
S96T001387
SAMPAMT1
DOSE-01
@TICTOC1
DSC-01
DSC-02
TGA-01
S96T001386
ARCHIV01
S96T001388
FUSION01
DOSE-02
@ALPHA01
S96T001465
ACIDIG01
DOSE-02
@ICP-A01
S96T001479
H2ODIG01
DOSE-02
@IC-01
S96T001496
Drainable Liquid
FILTER01
S96T001380
ARCHIV01
S96T001384
SAMPAMT1
DOSE-01
@TICTOC1
DSC-01
DSC-02
TGA-01
@ALPHA01
@IC-01
@ICP-D01
SPG-01
S96T001382
Liner Liquid
FILTER01
S96T001381
ARCHIV01
S96T001385
SAMPAMT1
DOSE-01
@TICTOC1
DSC-01
DSC-02
TGA-01
@ALPHA01
@IC-01
@ICP-D01
SPG-01
S96T001383

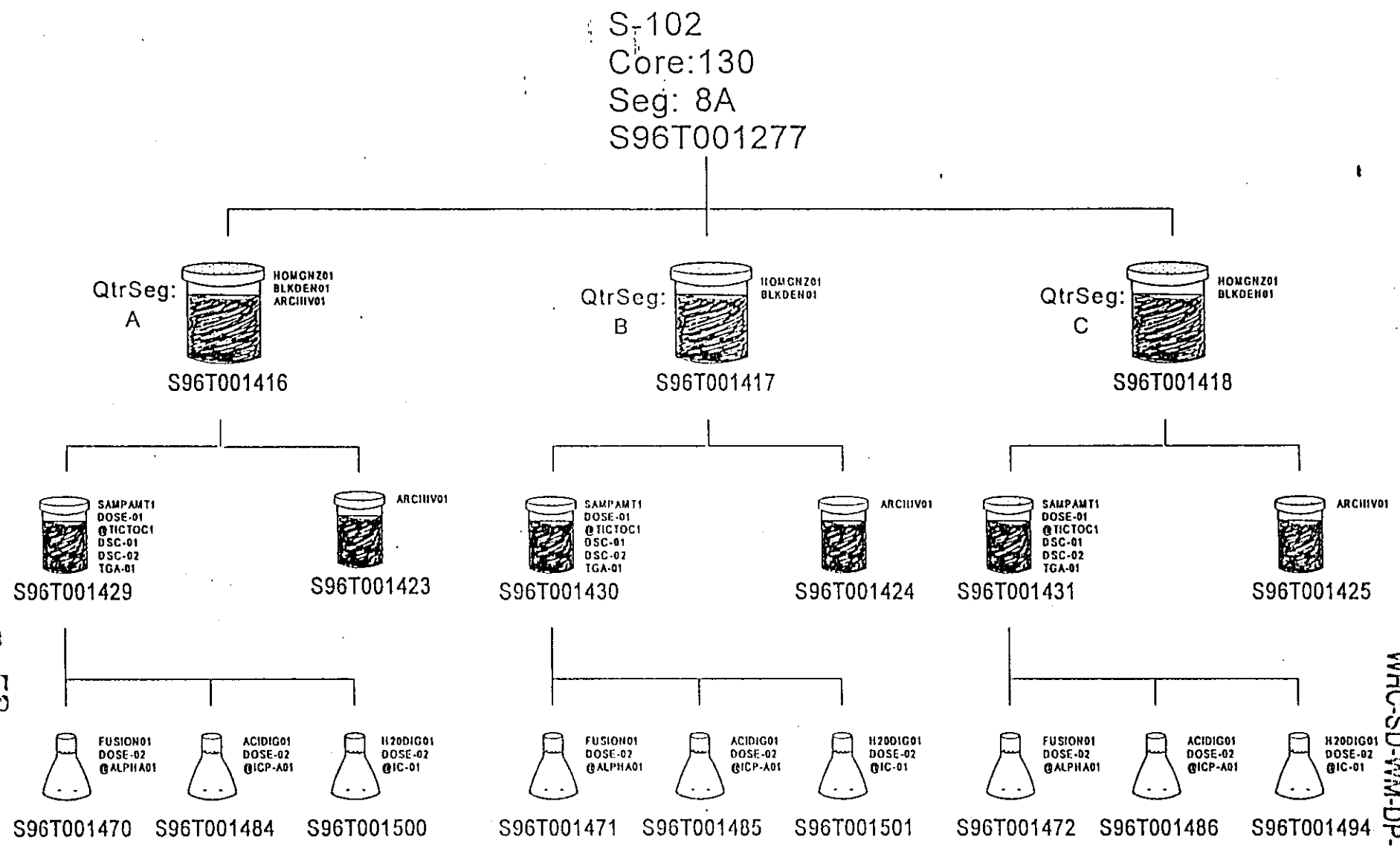

S-102
Core:130
Seg: 6B
S96T001260
Upper Half
HOMGNZ01
BLKDEN01
S96T001393
Lower Half
HOMGNZ01
BLKDEN01
S96T001394
SAMPAMT1
DOSE-01
@TICTOC1
DSC-01
DSC-02
TGA-01
S96T001399
ARCIIIV01
S96T001404
SAMPAMT1
DOSE-01
@TICTOC1
DSC-01
DSC-02
TGA-01
S96T001401
ARCIIIV01
S96T001405
FUSION01
DOSE-02
@ALPHA01
S96T001466
ACIDIG01
DOSE-02
@ICP-A01
S96T001480
H20DIG01
DOSE-02
@IC-01
S96T001497
FUSION01
DOSE-02
@ALPHA01
S96T001467
ACIDIG01
DOSE-02
@ICP-A01
S96T001481
H20DIG01
DOSE-02
@IC-01
S96T001498

WHC-SD-WM-DP-179, REV. 0



WHC-SD-WM-DP-179, REV. 0




S-102
Core:130
Seg: 8A
S96T001277
QtrSeg: A
HOMGNZ01
BLKDEN01
ARCHIV01
S96T001416
QtrSeg: B
HOMGNZ01
BLKDEN01
S96T001417
QtrSeg: C
HOMGNZ01
BLKDEN01
S96T001418
SAMPAMT1
DOSE-01
@TICTOC1
DSC-01
DSC-02
TGA-01
S96T001429
ARCHIV01
S96T001423
SAMPAMT1
DOSE-01
@TICTOC1
DSC-01
DSC-02
TGA-01
S96T001430
ARCHIV01
S96T001424
SAMPAMT1
DOSE-01
@TICTOC1
DSC-01
DSC-02
TGA-01
S96T001431
ARCHIV01
S96T001425
FUSION01
DOSE-02
@ALPHA01
S96T001470
ACIDIG01
DOSE-02
@ICP-A01
S96T001484
H2ODIG01
DOSE-02
@IC-01
S96T001500
FUSION01
DOSE-02
@ALPHA01
S96T001471
ACIDIG01
DOSE-02
@ICP-A01
S96T001485
H2ODIG01
DOSE-02
@IC-01
S96T001501
FUSION01
DOSE-02
@ALPHA01
S96T001472
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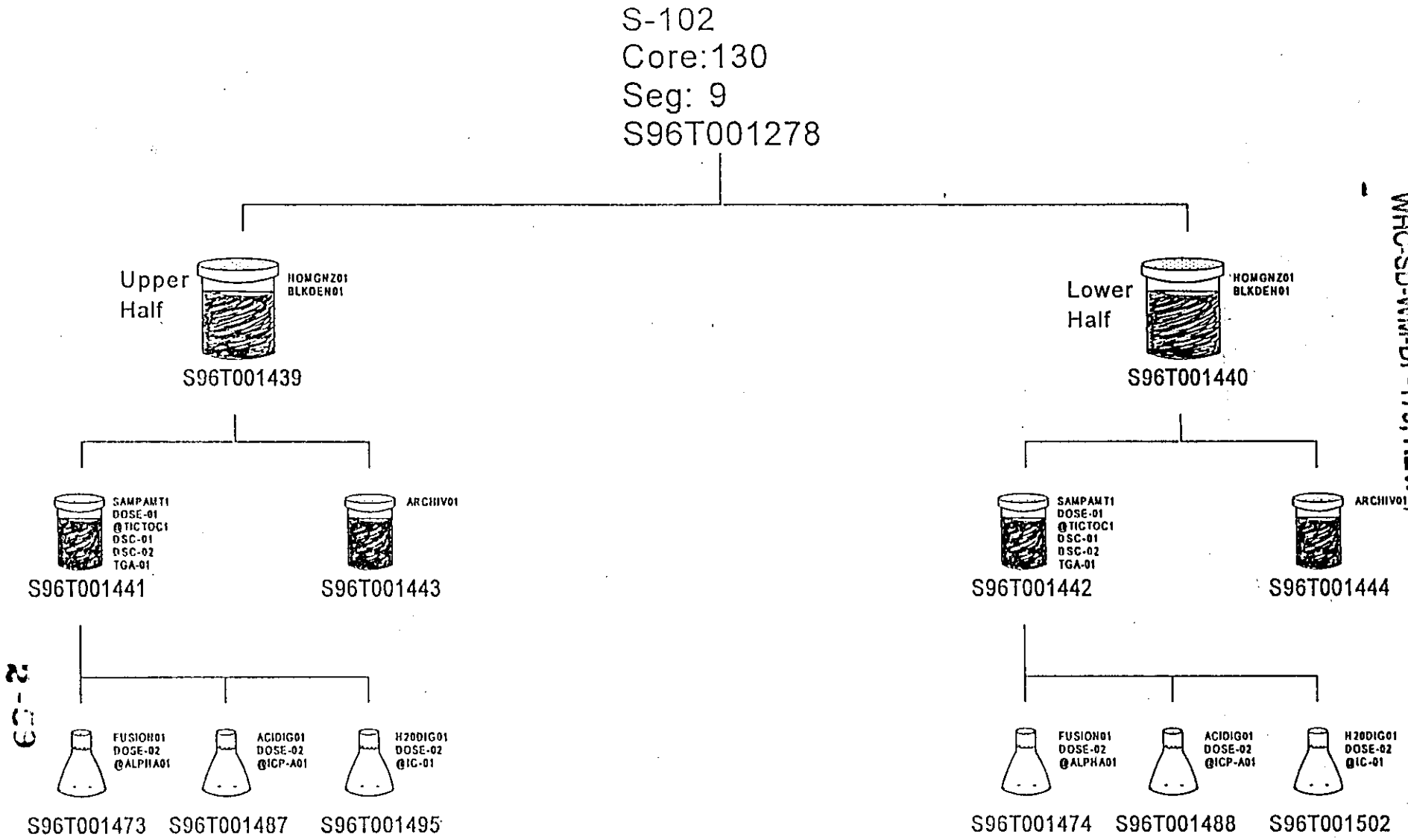
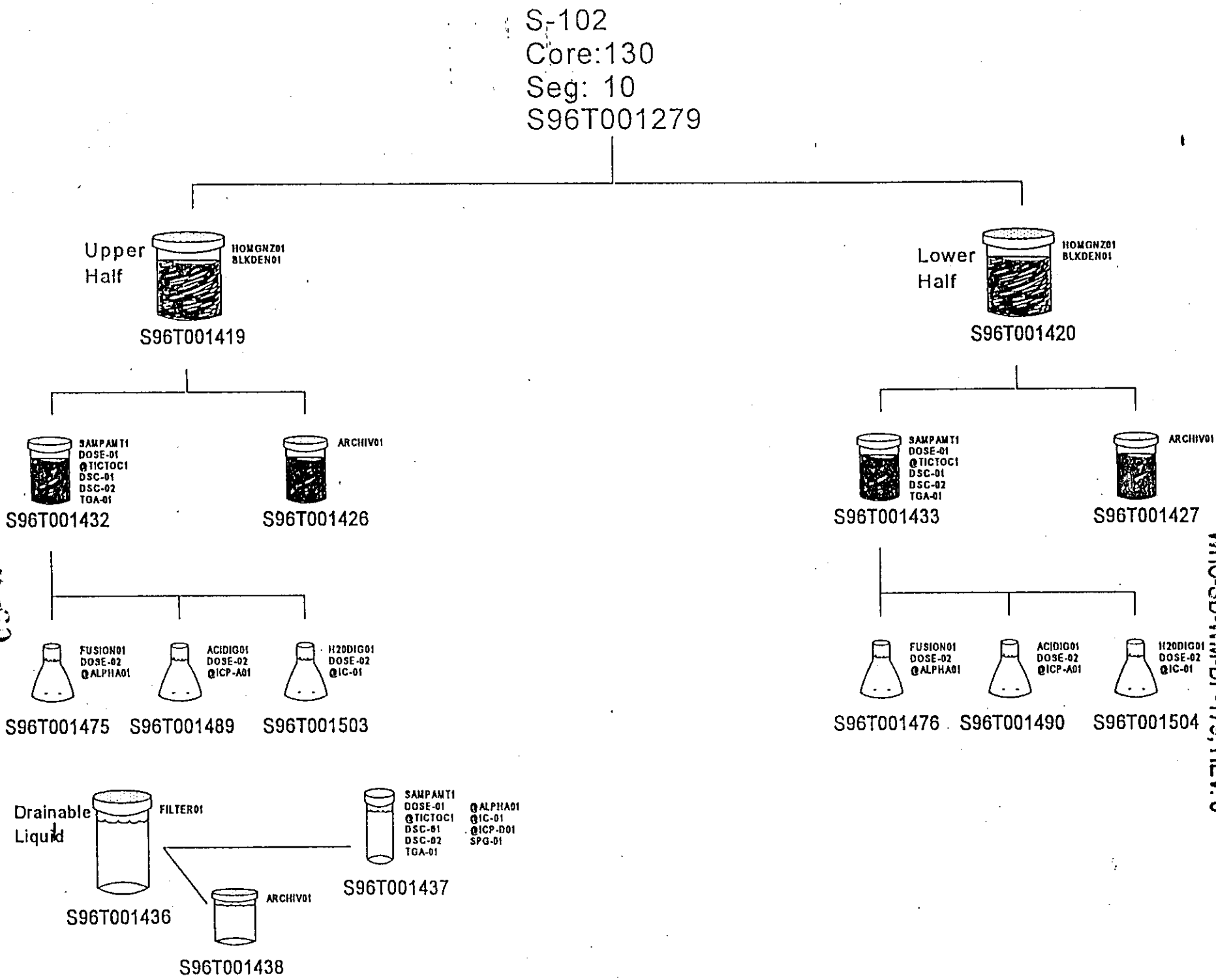
DOSE-02
@ICP-A01
S96T001486
H2ODIG01
DOSE-02
@IC-01
S96T001494


S-102
Core:130
Seg: 9
S96T001278
Upper Half
HOMGNZ01
BLKDEN01
S96T001439
Lower Half
HOMGNZ01
BLKDEN01
S96T001440
SAMPAMT1
DOSE-01
@TICTOC1
DSC-01
DSC-02
TGA-01
S96T001441
ARCHIV01
S96T001443
SAMPAMT1
DOSE-01
@TICTOC1
DSC-01
DSC-02
TGA-01
S96T001442
ARCHIV01
S96T001444
FUSION01
DOSE-02
@ALPHA01
S96T001473
ACIDIG01
DOSE-02
@ICP-A01
S96T001487
H2ODIG01
DOSE-02
@IC-01
S96T001495
FUSION01
DOSE-02
@ALPHA01
S96T001474
ACIDIG01
DOSE-02
@ICP-A01
S96T001488
H2ODIG01
DOSE-02
@IC-01
S96T001502


S-102
Core:130
Seg: 10
S96T001279
Upper Half
HOMGNZ01
BLKDEN01
S96T001419
Lower Half
HOMGNZ01
BLKDEN01
S96T001420
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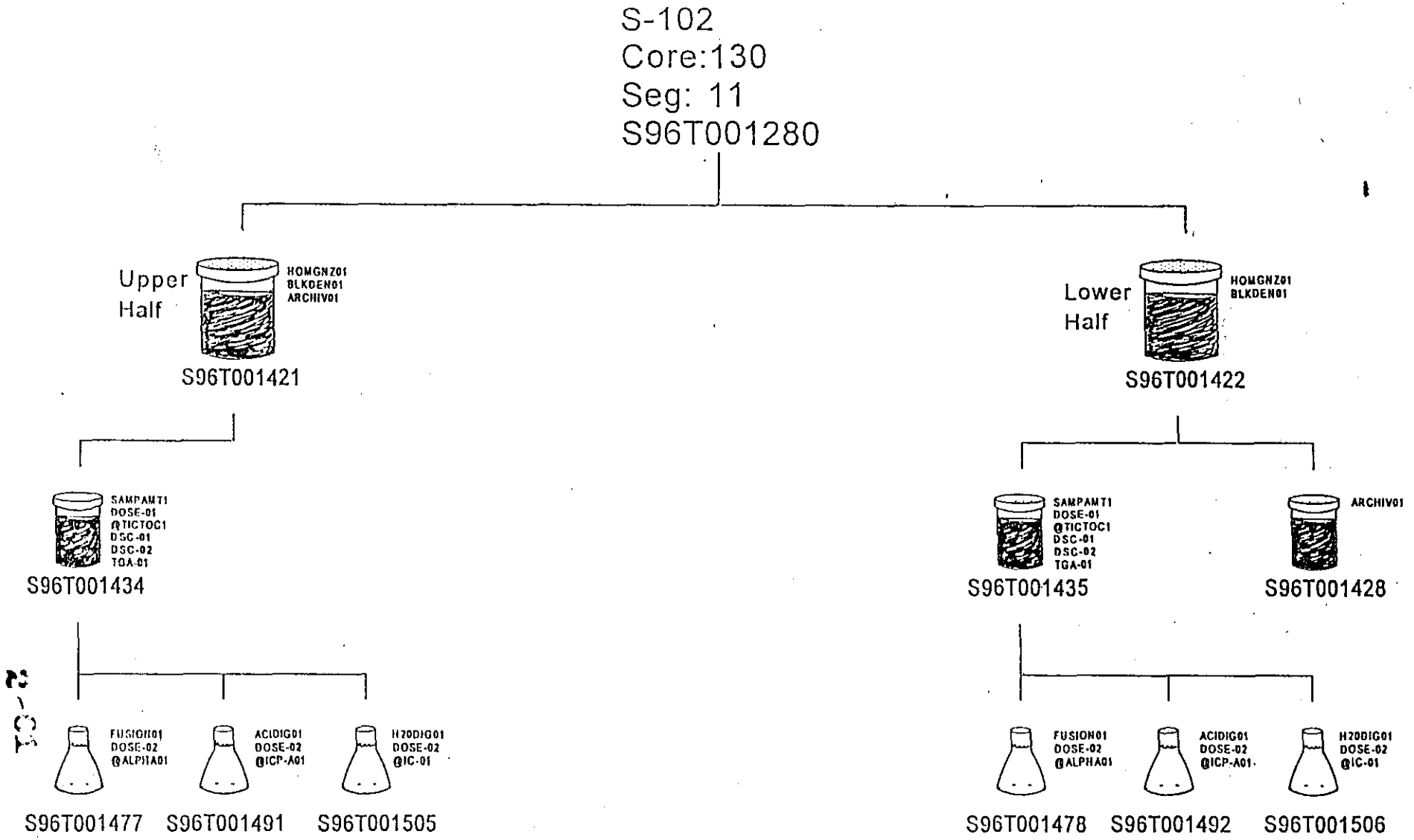
DOSE-01
@TICTOC1
DSC-01
DSC-02
TGA-01
S96T001432
ARCHIV01
S96T001426
SAMPAMT1
DOSE-01
@TICTOC1
DSC-01
DSC-02
TGA-01
S96T001433
ARCHIV01
S96T001427
FUSION01
DOSE-02
@ALPHA01
S96T001475
ACIDIG01
DOSE-02
@ICP-A01
S96T001489
H20DIG01
DOSE-02
@IC-01
S96T001503
FUSION01
DOSE-02
@ALPHA01
S96T001476
ACIDIG01
DOSE-02
@ICP-A01
S96T001490
H20DIG01
DOSE-02
@IC-01
S96T001504
Drainable Liquid
FILTER01
S96T001436
ARCHIV01
S96T001438
SAMPAMT1
DOSE-01
@TICTOC1
DSC-01
DSC-02
TGA-01
@ALPHA01
@IC-01
@ICP-D01
SPG-01
S96T001437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Seg: 11
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Upper Half
HOMGNZ01
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ARCHIV01
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Lower Half
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BLKDEN01
S96T001422
SAMPAMT1
DOSE-01
@TICTOC1
DSC-01
DSC-02
TGA-01
S96T001434
SAMPAMT1
DOSE-01
@TICTOC1
DSC-01
DSC-02
TGA-01
S96T001435
ARCHIV01
S96T001428
FUSION01
DOSE-02
@ALPHA01
S96T001477
ACIDIG01
DOSE-02
@ICP-A01
S96T001491
H2ODIG01
DOSE-02
@IC-01
S96T001505
FUSION01
DOSE-02
@ALPHA01
S96T001478
ACIDIG01
DOSE-02
@ICP-A01
S96T001492
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DOSE-02
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