0013741 571
6 of 7

SST

WASTE CHARACTERIZATION PROJECT

CORE 16 DATA REPORT

REV. 0

BEST AVAILABLE COPY

APPENDIX D

RADIOCHEMICAL

D1 - INTRODUCTION

Introduction to Radioanalytical Primary Data Package

This section of Core 9 Primary Data Package contains primary or "raw" data collected during preparation and analysis of Core 9 radiochemistry samples. Samples are transferred to the radiochemistry group for analysis with laboratory numbers (i.e., 89-XXXX or 90-XXXX). The radchem group assigns an additional number. The new number is used to track radchem samples with the laboratory sample number. However, data are reported according to the original laboratory sample number. Thus, tracking analytical information within this data package for a specific sample will require a knowledge of both numbers. The correlation between the two numbering systems are provided in Table D-1.

Primary analytical data are separated according to methodology. In each case instrument calibration, control, and sample analysis data are segregated. Much of the analytical information is listed on the Sample Traveler card. Assessment of this information will require in-depth knowledge of the methodology.

D2 - LABORATORY ANALYST

SIGNATURE LIST

RADIOCHEMICAL LABORATORY ANALYST SIGNATURE LIST

Analyst Name	Initials	Written Name	Initials
Nevada L. Abbey	NLA	Nevada L Abbey	N.LA
* ~~Dale V. Archer~~	DVA		
David L. Baldwin	DLB	David L Baldwin	DLB
Rebecca J. Barrington	RJB	Rebecca J. Barrington	RJB
Diana L. Bellofatto	DLB	Diana L Bellofatto	DLB
Robert E. Brinson	REB	Robert E. Brinson	REB
Jeffery M. Deal	JMD	Jeffery M. Deal	J.M.D.
Larry R. Greenwood	LRG	Larry R. Greenwood	LRG
Clark O. Harvey	COH	Clark O Harvey	COH
Fredrick E. Holt	FEH	Fred E. Holt	FEH
James H. Kaye	JHK	James H. Kaye	J.H.K.
Lloyd S. Kellogg	LSK	Lloyd S Kellogg	LSK
Anne E. Kozelisky	AEK	Anne E Kozelisky	AEK
* ~~Tapas C. Maiti~~	TCM		
Patricia J. Raney	PJR	Patricia J. Raney	PJR
Jean M. Ruggles	JMR	Jean M. Ruggles	JR
Shannon W. Thompson	SWT	[illegible]	ST
Malin R. Weiler	MRW	Malin R Weiler	MRW

* No longer in this group. JJ Schlotman 2-8-91

D3 - TABLE D1:

RADIOCHEMICAL SERIAL NO.

VS CUSTOMER NO.

TABLE D1: Radiochemical Serial No. vs Customer No.

SST Customer Number	Radiochemical Serial No.
90-3617-A-1	542-90
90-3617-A-2	543-90
90-3617-A-3	544-90
90-3619-A-1	547-90
90-3619-A-2	548-90
90-3619-A-3	549-90
90-4178-A-1	607-90
90-4178-A-2	608-90
90-4178-A-3	609-90
90-4180-C-1	590-90
90-4180-C-2	591-90
90-4180-C-5	593-90

D4 - GEA ANALYSIS

D04-001

GEA

PRIMARY DATA PACKAGE

D04-002

SST

GEA DATA COVER SHEET

Sample Number: 90-3617-A-1/2/3 90-4178-A-1/2/3
90-3618-A-1/2 90-4179-A-1/2
90-3619-A-1/2/3 90-4180-A-1/2/5
90-3620-A-1/2

Procedure: HTA-4-9

Pipet Calibration LRB#: BNW 52327

Equipment (M&TE#): WB 61069

System Calibration LRB#: BNW 52327

Control Data LRB#: BNW 52327

9112170795

GEA

SUMMARY DATA REPORTS

D04-004

SST DATA RESULTS FOR CORE 16 - GEA DATA

Cognizant Scientist: _____ Date of final review: 10/19/90

Secondary Reviewer: L. Greenwood 10/19/90 PNL Procedure Nos: HTA-4-9

Primary Data Location: Rm 25 / Bldg 325

Customer No.	Counting Time	Cs-137 uCi/g-wet 662 keV	+/- % error	Cs-134 uCi/g-wet Avg peaks	+/- % error	Co-60 uCi/g-wet Avg peaks	+/- % error	Additional Nuclides Nuclide	Energy keV	uCi/g-wet	+/- % error
SEGMENT 3											
90-3617-A-1	100 min.	15.86	0.17	0.0258	8.70	0.6418	0.79	Am-241	59.54	1.12E-02	40.65
								Ce-144	133.54	3.96E-02	36.27
90-3617-A-2	100 min.	14.42	0.18	---		1.244	0.57	Am-241	59.54	1.21E-02	36.58
								Ce-144	133.54	7.02E-02	20.14
90-3617-A-3	15 hr.	0.08878	0.89	0.0020	11.42	0.0815	0.77	Am-241	59.54	1.27E-03	21.63
								Eu-154	Avg peaks	4.18E-03	6.73
								Gd-153	Avg peaks	6.23E-03	4.48
								Ce-144	133.54	2.70E-03	35.06
90-3618-A-1	100 min.	14.03	0.19	0.006513	32.72	0.6863	0.78	Gd-153	Avg peaks	1.32E-02	28.69
								Ce-144	133.54	4.69E-02	33.74
90-3618-A-2	100 min.	15.2	0.18	0.0182	14.58	0.9515	0.65	Am-241	59.54	1.53E-02	34.89
								Gd-153	Avg peaks	1.45E-02	28.99
								Ce-144	133.54	3.07E-02	47.22
90-3619-A-1	100 min.	11.24	0.21	0.0057	22.27	0.0646	2.58	Gd-153	Avg peaks	1.25E-02	30.83
								Ce-144	133.54	6.39E-02	25.25
90-3619-A-2	100 min.	11.2	0.2	0.009016	12.06	0.1316	1.67	Am-241	59.54	1.77E-02	24.07
								Ce-144	133.54	9.62E-02	15.82
90-3619-A-3	15 hr.	2.366	0.15	0.0133	4.42	0.5283	0.29	Am-241	59.54	2.38E-03	29.25
								Eu-154	Avg peaks	8.61E-03	7.52
								Gd-153	Avg peaks	1.06E-02	7.5
								Ce-144	Avg peaks	6.10E-03	5.15
90-3620-A-1	100 min.	11.06	0.21	0.0030	33.40	0.1008	2.04	Ce-144	133.54	3.98E-02	35.06
90-3620-A-2	100 min.	12.23	0.19	0.0106	15.64	0.4495	0.9	Ce-144	133.54	4.29E-02	28.61
								Am-241	59.54	1.03E-02	37.40

COMPOSITE

Customer No.	Counting Time	Cs-137 uCi/g-wet 662 keV	+/- % error	Eu-154 uCi/g-wet Avg peaks	+/- % error	Eu-155 uCi/g-wet Avg peaks	+/- % error	Nuclide	Energy keV	uCi/g-wet	+/- % error
90-4178-A-1	100 min.	14.03	0.17	0.01265	11.23	0.01392	22.4	Co-60	Avg peaks	8.59E-03	7.24
								Ce-144	133.54	7.20E-02	20.11
								Am-241	59.54	1.27E-02	32.72
90-4178-A-2	100 min.	14.3	0.19	0.02017	9.58	0.01159	31.7	Co-60	Avg peaks	1.62E-02	5.68
								Ce-144	133.54	5.72E-02	29.65
								Am-241	59.54	2.48E-02	22.73
90-4178-A-3	15 hr.	0.6771	0.28	0.005827	5.79	0.003755	14.9	Co-60	Avg peaks	2.09E-02	1.64
								Cs-134	Avg peaks	1.26E-02	2.02
								Ce-144	133.54	4.26E-03	25.79
								Gd-153	97.25	3.81E-03	13.1
								Am-241	59.54	3.45E-03	13.48
90-4179-A-1	100 min.	14.16	0.16	0.01039	11.42	---		Co-60	Avg peaks	5.90E-03	8.95
								Ce-144	133.54	5.51E-02	24.81
								Am-241	59.54	1.01E-02	38.67
90-4179-A-2	100 min.	14.28	0.16	0.04909	6	---		Co-60	Avg peaks	3.21E-01	0.96
								Cs-134	Avg peaks	1.21E-02	14.71
								Ce-144	133.54	1.27E-01	12.51
								Eu-152	Avg peaks	2.52E-02	30.88
								Gd-153	Avg peaks	6.90E-02	6.79
								Am-241	59.54	2.46E-02	19.18
90-4180-C-1	100 min.	7.635	0.11	---		---					
90-4180-C-2	100 min.	7.405	0.11	---		---		Cs-134	Avg peaks	7.38E-04	19.58
90-4180-C-5	16 hr.	0.0148	0.91	---		---		Co-60	Avg peaks	7.73E-04	4.43
								Cs-134	Avg peaks	1.03E-04	20.97

PLEASE NOTE THE FOLLOWING:

Nuclides identified, but having stated counting errors greater than 50% have been omitted.

Expressed errors are one-sigma counting (acquired data) errors only, we

estimate that our combined sample handling and calibration errors are 5%.

GEA

ANALYTICAL REPORT CARDS

AND/OR

SAMPLE PREP DATA SHEETS

D04-007

GEA ANALYSIS

A Nuclear Data 9900 Germanium detector system is used to do the Gamma Energy Analysis (GEA) for SST samples. In most cases, a radiochemistry ANALYTICAL REPORT card accompanies each sample. This card has a card serial number, the date the sample was received into the radiochemistry laboratory, work package number, a radiochemistry lab serial number, customer identification number, a 325A Hot Cell sample identification number, the constituent requested (i.e., GEA), and the results. The balance ID number and the BNW laboratory record book (LRB) number that holds the pipet calibration data are noted in the "Serial No." column. A copy of the pipet calibration is provided under separate cover. The M&TE number of the ND9900 system and the BNW laboratory record book (LRB) which holds the calibration data and the daily control data and plots are included in the "Constituent" column. The grams of material per aliquot is calculated from the SAMPLE PREP DATA SHEET provided from the 325B Hot Cells. This value is recorded on the ANALYTICAL REPORT card and/or on the SAMPLE PREP DATA SHEET.

Each printout contains a peak search, a nuclide identification (NID) report, and a list of unidentified energy lines. The reported nuclides and activities are taken from the nuclide identification report. The nuclide ID algorithm parameters are conservatively adjusted, such that nuclides having a borderline occurrence probability should be accepted. Using this format, occasionally the NID algorithm lists false positive IDs which may be eliminated after review by cognizant scientist.

VAX/VMS Nuclide Identification Report V2.5 Generated 10-OCT-1990 15:21:19

Configuration : DUSC:[USER]T8651.CNF;3
Analyses by : PEAK V1.0,PEAKEFF V2.2,ENBACK V1.3,NID/DEP V2.2,WTMEAN V1
Sample title : T8651 SST 542-90 90-3617-A-1
Deposition Date : 25-SEP-1990 00:00:00 Deposition Period: 17-NOV-1858 00:00:00
Sample date : 25-SEP-1990 00:00:00 Acquisition date : 25-SEP-1990 07:53:42
Sample ID : T8651 542-90 SST Sample quantity : 2.11500E-02 G
Sample type : 10 ML SCV Sample geometry : T2SCV
Detector name : TRACK Detector geometry: T2SCV
Elapsed live time: 0 01:40:00.00 Elapsed real time: 0 01:40:30.21 0.5%
Energy tolerance : 1.30 Half life ratio : 8.00
Errors propagated: No Systematic Error : 0.00 %
Efficiency type : Empirical Efficiencies at : Peak Energy
Abundance limit : 60.00 WTM error limit : 3.00

Nuclide Line Activity Report

Nuclide Type: natural

Nuclide	Energy	%Abn	%Eff	Uncorrected uCi/G	Decay Corr uCi/G	1-Sigma %Error	Status
K-40	1460.83	10.67*	2.696E-01	8.652E-03	8.652E-03	63.56	OK

Final Mean for 1 Valid Peaks = 8.652E-03+/- 5.499E-03 (63.56%)

Nuclide Type: fission

Nuclide	Energy	%Abn	%Eff	Uncorrected uCi/G	Decay Corr uCi/G	1-Sigma %Error	Status
CO-57	122.06	85.95*	2.694E+00	6.088E-03	6.094E-03	28.90	OK
	136.47	10.33	2.545E+00	0.000E+00	0.000E+00	0.00	Absent

Final Mean for 1 Valid Peaks = 6.094E-03+/- 1.761E-03 (28.90%)

Nuclide	Energy	%Abn	%Eff	Uncorrected uCi/G	Decay Corr uCi/G	1-Sigma %Error	Status
CS-134	563.24	8.38	6.598E-01	0.000E+00	0.000E+00	0.00	Absent
	569.32	15.40	6.527E-01	0.000E+00	0.000E+00	0.00	Absent
	604.71	97.60*	6.145E-01	2.731E-02	2.732E-02	15.04	OK
	795.87	85.40	4.706E-01	2.520E-02	2.521E-02	10.66	OK
	801.95	8.73	4.670E-01	0.000E+00	0.000E+00	0.00	Absent

Final Mean for 2 Valid Peaks = 2.584E-02+/- 2.249E-03 (8.70%)

Nuclide	Energy	%Abn	%Eff	Uncorrected uCi/G	Decay Corr uCi/G	1-Sigma %Error	Status
CS-137	661.66	85.20*	5.622E-01	1.586E+01	1.586E+01	0.17	OK

Final Mean for 1 Valid Peaks = 1.586E+01+/- 2.728E-02 (0.17%)

Nuclide	Energy	%Abn	%Eff	Uncorrected uCi/G	Decay Corr uCi/G	1-Sigma %Error	Status
CE-144	80.10	1.13	2.818E+00	0.000E+00	0.000E+00	0.00	Absent
	133.54	11.10*	2.577E+00	3.955E-02	3.958E-02	36.27	OK

Final Mean for 1 Valid Peaks = 3.958E-02+/- 1.436E-02 (36.27%)

Nuclide	Energy	%Abn	%Eff	Uncorrected uCi/G	Decay Corr uCi/G	1-Sigma %Error	Status
EU-155	86.54	32.80	2.865E+00	1.268E-02	1.268E-02	31.77	OK
	105.31	21.84*	2.834E+00	0.000E+00	0.000E+00	0.00	Absent

Final Mean for 1 Valid Peaks = 1.268E-02+/- 4.028E-03 (31.77%)

Sample ID : T8651 542-90 SST Acquisition date : 25-SEP-1990 07:53:42

Nuclide Type: fission

Nuclide	Energy	%Abn	%Eff	Uncorrected uCi/G	Decay Corr uCi/G	1-Sigma %Error	Status
AM-241	59.54	35.90*	2.306E+00	1.123E-02	1.123E-02	40.65	OK

Final Mean for 1 Valid Peaks = 1.123E-02+/- 4.566E-03 (40.65%)

Nuclide Type: activation

Nuclide	Energy	%Abn	%Eff	Uncorrected uCi/G	Decay Corr uCi/G	1-Sigma %Error	Status
CO-60	1173.24	99.90	3.290E-01	6.436E-01	6.437E-01	1.13	OK
	1332.50	99.98*	2.930E-01	6.398E-01	6.399E-01	1.11	OK

Final Mean for 2 Valid Peaks = 6.418E-01+/- 5.088E-03 (0.79%)

Sample ID : T9651 542-90 SST Acquisition date : 25-SEP-1990 07:53:42

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides
0	37.12*	6375	21944	1.49	49.22	47	7	4.4		
0	59.20	437	13842	1.37	79.27	78	5	40.7		AM-241
0	86.67*	559	13756	1.87	115.92	114	5	31.8		EU-155
0	122.21	659	16024	2.18	164.66	162	5	28.9		CO-57
0	133.48	531	16279	1.31	178.35	177	5	36.3		CE-144
5	184.93*	2176	35228	3.43	246.97	242	32	16.6	5.97E+00	
5	188.23	3195	61276	4.26	251.38	242	32	18.2		
5	191.72	5750	70236	4.71	256.03	242	32	11.2		
5	197.90*	2467	57677	3.70	264.28	242	32	21.1		
0	377.86	151	11804	0.71	504.26	503	6	115.5		
0	383.08	368	11942	2.28	511.23	509	6	47.2		
0	396.97	319	12521	2.16	529.75	528	6	55.7		
0	473.91	676	15568	2.66	632.34	630	6	29.5		
0	586.91	135	2240	1.34	783.00	781	6	56.3		
0	604.58	769	3645	2.31	806.55	802	10	15.6		CS-134
0	661.42*	356761	4209	1.98	882.33	875	15	0.2		CS-137
0	770.45	67	491	1.98	1027.66	1025	7	57.0		
0	795.50	476	622	1.87	1061.04	1058	8	10.7		CS-134
0	1117.49	59	424	2.02	1490.14	1488	7	61.1		
0	1173.22*	5931	529	2.32	1564.39	1558	14	1.1		CO-60
0	1274.13	96	72	2.21	1699.49	1691	16	25.9		
0	1332.75*	5801	148	2.48	1778.92	1770	15	1.1		CO-60
0	1365.98	16	13	1.63	1821.18	1817	9	54.3		
0	1384.98	31	24	12.36	1846.49	1831	24	59.3		
0	1449.78	1	13	0.10	1932.80	1927		7758.0		
0	1460.05*	12	7	1.05	1946.48	1942	9	63.6		K-40
0	1529.58	17	12	5.82	2039.68	2034	12	57.4		
0	1584.47	10	4	1.19	2112.19	2107	11	61.9		

T9651

Obs. not used in rpt.

D04-011

? Sensi

VAX/VMS Nuclide Identification Report V2.5 Generated 26-SEP-1990 12:14:31

onfiguration : DUB0:[USER]T8651.CNF;3
nalyses by : PEAK V16.0,PEAKEFF V2.2,ENBACK V1.3,NID/DEP V2.2,WTMEAN V1
Sample title : T8651 SST 542-90 90-3617-A-1
Deposition Date : 25-SEP-1990 00:00:00 Deposition Period: 17-NOV-1858 00:00:00
Sample date : 25-SEP-1990 00:00:00 Acquisition date : 25-SEP-1990 07:53:42
Sample ID : T8651 542-90 SST Sample quantity : 2.11500E-02 G
Sample type : 10 ML SCV Sample geometry : T2SCV
Detector name : TRACK Detector geometry: T2SCV
Elapsed live time: 0 01:40:00.00 Elapsed real time: 0 01:40:30.21 0.5%
Energy tolerance : 1.00 Half life ratio : 8.00
Errors propagated: No Systematic Error : 0.00 %
Efficiency type : Empirical Efficiencies at : Peak Energy
Abundance limit : 75.00 WTM error limit : 3.00

Nuclide Line Activity Report

Nuclide Type: natural

Nuclide	Energy	%Abn	%Eff	Uncorrected uCi/G	Decay Corr uCi/G	1-Sigma %Error	Status
~~K-40~~	1460.83	10.67*	2.696E-01	1.066E-02	1.066E-02	51.70	OK

Final Mean for 1 Valid Peaks = 1.066E-02+/- 5.510E-03 (51.70%)

Nuclide Type: activation

Nuclide	Energy	%Abn	%Eff	Uncorrected uCi/G	Decay Corr uCi/G	1-Sigma %Error	Status
CO-60	1173.24	99.90	3.290E-01	6.436E-01	6.437E-01	1.13	OK
	1332.50	99.98*	2.930E-01	6.399E-01	6.400E-01	1.11	OK

Final Mean for 2 Valid Peaks = 6.418E-01+/- 5.088E-03 (0.79%)

Nuclide Type: fission

Nuclide	Energy	%Abn	%Eff	Uncorrected uCi/G	Decay Corr uCi/G	1-Sigma %Error	Status
CS-134	563.24	8.38	6.598E-01	0.000E+00	0.000E+00	0.00	Absent
	569.32	15.40	6.527E-01	0.000E+00	0.000E+00	0.00	Absent
	604.71	97.60*	6.145E-01	2.731E-02	2.732E-02	15.04	OK
	795.87	85.40	4.706E-01	2.520E-02	2.521E-02	10.66	OK
	801.95	8.73	4.670E-01	0.000E+00	0.000E+00	0.00	Absent

Final Mean for 2 Valid Peaks = 2.584E-02+/- 2.249E-03 (8.70%)

CS-137	661.66	85.20*	5.622E-01	1.586E+01	1.586E+01	0.17	OK

Final Mean for 1 Valid Peaks = 1.586E+01+/- 2.728E-02 (0.17%)

AM-241	59.54	35.90*	2.304E+00	1.258E-02	1.258E-02	41.88	OK

Final Mean for 1 Valid Peaks = 1.258E-02+/- 5.268E-03 (41.88%)

D04-012

Post-NID Peak Search Report
Sample ID : T8651 542-90 SST

Acquisition date : 25-SEP-1990 07:53:42

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides
0	37.12*	6371	21944	1.49	49.82	47	7	4.4		
0	59.13	488	16588	1.40	79.18	77	6	41.9		AM-241
0	c 123.21	659	16024	2.18	164.66	163	5	28.9		
0	604.58	769	3645	2.31	806.55	802	10	15.0		CS-134
0	661.42*	356765	4209	1.98	882.33	875	15	0.2		CS-137
0	795.50	476	662	1.87	1061.04	1058	8	10.7		CS-134
0	1173.22*	9931	529	2.32	1564.39	1558	14	1.1		CO-60
0	c 1274.63	96	92	2.21	1699.49	1691	16	25.9		
0	1332.75*	8802	148	2.48	1776.92	1770	15	1.1		CO-60
0	1460.05*	14	7	1.05	1946.48	1942	9	51.7		K-40

VAX/VMS Peak Search Report V1.7 Generated 26-SEP-1990 12:14:12

Configuration : DUB0:[USER]T8651.CNF;3
Analyses by : PEAK V16.0,ENBACK V1.3
Sample title : T8651 SST 542-90 90-3617-A-1
Deposition Date : 25-SEP-1990 00:00:00 Deposition Period: 17-NOV-1858 00:00:00
Sample date : 25-SEP-1990 00:00:00 Acquisition date : 25-SEP-1990 07:53:42
Sample ID : T8651 542-90 SST Sample quantity : 2.11500E-02 G
Sample type : 10 ML SCV Sample geometry : T2SCV
Detector name : TRACK Detector geometry: T2SCV
Elapsed live time: 0 01:40:00.00 Elapsed real time: 0 01:40:30.21 0.5%
Start energy : 29.76 End energy : 3074.55
Sensitivity : 5.00 Gaussian : 10.00
Critical level : No

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	37.12*	6371	21944	1.49	49.82	47	7	1.06E+00	4.4	
2	0	59.13	488	16588	1.40	79.18	77	6	8.14E-02	41.9	
3	0	123.21	659	16024	2.18	164.66	163	5	1.10E-01	28.9	
4	0	604.58	769	3645	2.31	806.55	802	10	1.28E-01	15.0	
5	0	661.42*	356765	4209	1.98	882.33	875	15	5.95E+01	0.2	
6	0	795.50	476	662	1.87	1061.04	1058	8	7.93E-02	10.7	
7	0	1173.22*	9931	529	2.32	1564.39	1558	14	1.66E+00	1.1	
8	0	1274.63	96	92	2.21	1699.49	1691	16	1.60E-02	25.9	
9	0	1332.75*	8802	148	2.48	1776.92	1770	15	1.47E+00	1.1	
10	0	1460.05*	14	7	1.05	1946.48	1942	9	2.40E-03	51.7	

VAX/VMS Nuclide Identification Report V2.5 Generated 10-OCT-1990 15:22:22

Configuration : DUB0:[USER]T8652.CNF;1
Analyses by : PEAK V16.0,PEAKEFF V2.2,ERBACK V1.3,NID/DEP V2.2,WTMEAN V1
Sample title : T8652 SST 543-90 90-3617-A-2
Deposition Date : 25-SEP-1990 00:00:00 Deposition Period: 17-NOV-1858 00:00:00
Sample date : 25-SEP-1990 00:00:00 Acquisition date : 25-SEP-1990 09:51:45
Sample ID : T8652 543-90 SST Sample quantity : 2.10480E-02 G
Sample type : 10 mL SCV Sample geometry : T2SCV
Detector name : TRACK Detector geometry: T2SCV
Elapsed live time: 0 01:40:00.00 Elapsed real time: 0 01:40:29.51 0.5%
Energy tolerance : 1.30 Half life ratio : 8.00
Errors propagated: No Systematic Error : 0.00 %
Efficiency type : Empirical Efficiencies at : Peak Energy
Abundance limit : 60.00 WTM error limit : 3.00

Nuclide Line Activity Report

OBE not used

Nuclide Type: natural

Nuclide	Energy	%Abn	%Eff	Uncorrected uCi/G	Decay Corr uCi/G	1-Sigma %Error	Status
K-40	1460.83	10.67*	2.695E-01	1.077E-02	1.077E-02	87.48	OK

Final Mean for 1 Valid Peaks = 1.077E-02+/- 9.422E-03 (87.48%)

Nuclide Type: activation

Nuclide	Energy	%Abn	%Eff	Uncorrected uCi/G	Decay Corr uCi/G	1-Sigma %Error	Status
CO-60	1173.24	99.90	3.290E-01	1.245E+00	1.246E+00	0.81	OK
	1332.50	99.98*	2.930E-01	1.243E+00	1.243E+00	0.79	OK

Final Mean for 2 Valid Peaks = 1.244E+00+/- 7.035E-03 (0.57%)

Nuclide Type: fission

Nuclide	Energy	%Abn	%Eff	Uncorrected uCi/G	Decay Corr uCi/G	1-Sigma %Error	Status
CS-137	661.66	85.20*	5.622E-01	1.442E+01	1.442E+01	0.18	OK

Final Mean for 1 Valid Peaks = 1.442E+01+/- 2.631E-02 (0.18%)

Nuclide	Energy	%Abn	%Eff	Uncorrected uCi/G	Decay Corr uCi/G	1-Sigma %Error	Status
CE-144	80.10	1.13	2.818E+00	0.000E+00	0.000E+00	0.00	Absent
	133.5[illegible]	11.10*	2.575E+00	7.016E-02	7.024E-02	20.14	OK

Final Mean for 1 Valid Peaks = 7.024E-02+/- 1.415E-02 (20.14%)

Nuclide	Energy	%Abn	%Eff	Uncorrected uCi/G	Decay Corr uCi/G	1-Sigma %Error	Status
[illegible]	88.94	32.80	2.860E+00	8.038E-03	8.040E-03	57.02	OK
	105.31	21.84*	2.834E+00	0.000E+00	0.000E+00	0.00	Absent

Final Mean for 1 Valid Peaks = 8.040E-03+/- 4.584E-03 (57.02%)

Nuclide	Energy	%Abn	%Eff	Uncorrected uCi/G	Decay Corr uCi/G	1-Sigma %Error	Status
AM-241	59.5[illegible]	35.8*	[illegible]	[illegible]	1.212E-02	36.58	OK

Final Mean for 1 Valid Peaks = [illegible] 4.432E-03 (36.58%)

D04-015

Post-HID Peak Search Report Page 2
Sample ID [illegible] Gamma Data [illegible]

I	Energy	Area	Background	FWHM	Channel	Left	Rw	%Err	Fit	Nuclides
0	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	7	[illegible]		
0	45.51-	[illegible]	[illegible]	[illegible]	[illegible]	60	5	162.5		
0	59.58	472	[illegible]	[illegible]	[illegible]	71	5	36.[illegible]		AM-241
0	85.70	352	15029	2.27	114.62	113	5	57.0		EU-155
0	133.73	937	[illegible]	2.08	178.69	177	5	20.1		CE-144
0	186.31+	695	27186	1.74	248.22	244	7	39.2		
0	[illegible]	413	24734	1.22	257.26	257	6	60.3		
0	410.85	242	10382	1.38	548.26	546	5	63.5		
0	[illegible]	255	16133	2.19	620.52	618	6	79.3		
0	661.41+	312786	4973	1.69	[illegible]	875	15	0.2		CS-137
0	[illegible]	31	[illegible]	[illegible]	[illegible]	[illegible]	5	54.2		
0	[illegible]	[illegible]	931	2.27	[illegible]	[illegible]	15	3.8		CO-60
0	[illegible]	55	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		
[illegible]	[illegible]	[illegible]	193	[illegible]	[illegible]	[illegible]	16	6.0		[illegible]
0	[illegible]	[illegible]	33	[illegible]	[illegible]	[illegible]	11	[illegible]		[illegible]
0	[illegible]	[illegible]	15	[illegible]	[illegible]	2167	10	78.1		
0	1637.33	10	7	[illegible]	[illegible]	[illegible]	4	42.4		
0	1817.62	4	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		
0	[illegible]	11	0	1.54	[illegible]	[illegible]	10	[illegible]		
0	1951.39	12	7	1.42	2400.72	2575	9	47.7		
0	2039.62	10	4	[illegible]	2718.18	[illegible]	7	55.1		
0	2218.44	9	1	2.35	2756.13	[illegible]	8	43.8		
0	2245.67	6	5	1.98	2922.42	[illegible]	7	78.4		
3	2513.86	24	14	2.94	3349.37	3345	17	38.9	1.38E+00	
3	2518.05	25	10	4.49	3354.84	3345	17	54.8		

PUBLICATION UNCLASSIFIED

D04-016

Pscan

VAX/VMS Nuclide Identification Report V2.5 Generated 26-SEP-1990 12:13:55

Configuration : DUB0:[USER]T8652.CNF;1
Analuser by : PEAK V16.0.PEAKEFF V2.2.EMBACK V1.3.NID/DEP V2.2.WTMEAN V1
Sample title : T8652 SST 543-90 90-3617-A-2
Deposition Date : 25-SEP-1990 00:00:00 Deposition Period: 17-NOV-1858 00:00:00
Sample date : 25-SEP-1990 00:00:00 Acquisition date : 25-SEP-1990 09:51:45
Sample ID : T8652 543-90 SST Sample quantity : 2.10480E-02 G
Sample type : 10 ML SCV Sample geometry : T2SCV
Detector name : TRACK Detector geometry: T2SCV
Elapsed live time: 0 01:40:00.00 Elapsed real time: 0 01:40:29.51 0.5%
Energy tolerance : 1.00 Half life ratio : 8.00
Errors propagated: No Systematic Error : 0.00 %
Efficiency type : Empirical Efficiencies at : Peak Energy
Abundance limit : 75.00 WTM error limit : 3.00

Nuclide Line Activity Report

Nuclide Type: activation

Nuclide	Energy	%Abn	%Eff	Uncorrected uCi/G	Decay Corr uCi/G	1-Sigma %Error	Status
CO-60	1173.24	99.90	3.290E-01	1.245E+00	1.246E+00	0.81	OK
	1332.50	99.98*	2.930E-01	1.243E+00	1.243E+00	0.79	OK

Final Mean for 2 Valid Peaks = 1.244E+00+/- 7.035E-03 (0.57%)

Nuclide Type: fission

Nuclide	Energy	%Abn	%Eff	Uncorrected uCi/G	Decay Corr uCi/G	1-Sigma %Error	Status
CS-137	661.66	85.20*	5.622E-01	1.442E+01	1.442E+01	0.18	OK

Final Mean for 1 Valid Peaks = 1.442E+01+/- 2.631E-02 (0.18%)

CE-144	80.10	1.13	2.818E+00	0.000E+00	0.000E+00	0.00	Absent
	133.54	11.10*	2.575E+00	7.016E-02	7.024E-02	20.14	OK

Final Mean for 1 Valid Peaks = 7.024E-02+/- 1.415E-02 (20.14%)

Post-NID Peak Search Report
Sample ID : T8652 543-90 SST

Acquisition date : 25-SEP-1990 09:51:45

t	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides
0	37.08*	6118	20595	1.46	49.77	47	7	4.4		
0	133.73	937	15547	2.08	178.69	177	5	20.1		CE-144
0	661.41*	322791	4973	1.99	882.30	875	15	0.2		CS-137
0	1173.19*	19124	931	2.29	1564.34	1558	15	0.8		CO-60
0	1332.72*	17011	193	2.45	1776.88	1769	16	0.8		CO-60
3	2513.86	24	14	2.94	3349.27	3345	17	38.9	1.38E+00	
3	2518.05	26	10	4.49	3354.84	3345	17	54.8		

VAX/VMS Peak Search Report V1.7 Generated 26-SEP-1990 12:13:38

Configuration : DUB0:[USER]T8652.CNF;1
Analyses by : PEAK V16.0.ENBACK V1.3
Sample title : T8652 SST 543-90 90-3617-A-2
Deposition Date : 25-SEP-1990 00:00:00 Deposition Period: 17-NOV-1858 00:00:00
Sample date : 25-SEP-1990 00:00:00 Acquisition date : 25-SEP-1990 09:51:45
Sample ID : T8652 543-90 SST Sample quantity : 2.10480E-02 G
Sample type : 10 ML SCV Sample geometry : T2SCV
Detector name : TRACK Detector geometry: T2SCV
Elapsed live time: 0 01:40:00.00 Elapsed real time: 0 01:40:29.51 0.5%
Start energy : 29.76 End energy : 3074.55
Sensitivity : 5.00 Gaussian : 10.00
Critical level : No

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	37.08*	6118	20595	1.46	49.77	47	7	1.02E+00	4.4	
2	0	133.73	937	15547	2.08	178.69	177	5	1.56E-01	20.1	
3	0	661.41*	322791	4973	1.99	882.30	875	15	5.38E+01	0.2	
4	0	1173.19*	19124	931	2.29	1564.34	1558	15	3.19E+00	0.8	
5	0	1332.72*	17011	193	2.45	1776.88	1769	16	2.84E+00	0.8	
6	3	2513.86	24	14	2.94	3349.27	3345	17	3.97E-03	38.9	1.38E+00
7	3	2518.05	26	10	4.49	3354.84	3345	17	4.26E-03	54.8	

OBO

VAX/VMS Nuclide Identification Report V2.5 Generated 10-OCT-1990 15:23:01

onfiguration : DUB0:[USER]T8658.CNF;1
nalyses by : PEAK V16.0,PEAKEFF V2.2,CNBACK V1.3,NID/DEP V2.2,WTMEAN V1
Sample title : T8658 SST 544-90 90-3617-A-3
Deposition Date : 26-SEP-1990 00:00:00 Deposition Period: 17-NOV-1858 00:00:00
Sample date : 26-SEP-1990 00:00:00 Acquisition date : 26-SEP-1990 15:00:32
Sample ID : T8658 544-90 SST Sample quantity : 2.11000E-02 G
Sample type : 10 ML SCV Sample geometry : T2SCV
Detector name : TRACK Detector geometry: T2SCV
Elapsed live time: 0 15:00:00.00 Elapsed real time: 0 15:00:07.49 0.0%
Energy tolerance : 1.30 Half life ratio : 8.00
Errors propagated: No Systematic Error : 0.00 %
Efficiency type : Empirical Efficiencies at : Peak Energy
Abundance limit : 60.00 WTM error limit : 3.00

Nuclide Line Activity Report

Nuclide Type: activation

Nuclide	Energy	%Abn	%Eff	Uncorrected uCi/G	Decay Corr uCi/G	1-Sigma %Error	Status
~~NA-22~~	511.00	180.00	7.291E-01	5.318E-05	5.322E-05	304.03	OK
	1274.53	99.94*	3.051E-01	1.179E-03	1.180E-03	16.56	<<WTM Reject

Final Mean for 1 Valid Peaks = 5.322E-05+/- 1.618E-04 (304.03%)

CO-60	1173.24	99.90	3.289E-01	8.114E-02	8.116E-02	1.12	OK
	1332.50	99.98*	2.930E-01	8.170E-02	8.172E-02	1.08	OK

Final Mean for 2 Valid Peaks = 8.145E-02+/- 6.308E-04 (0.77%)

~~MO-99~~	72.87	6.30*	2.713E+00	0.000E+00	0.000E+00	0.00	Absent
	279.19	81.46	1.375E+00	2.922E-04	2.963E-04	55.20	OK

Final Mean for 1 Valid Peaks = 2.963E-04+/- 1.636E-04 (55.20%)

Nuclide Type: natural

Nuclide	Energy	%Abn	%Eff	Uncorrected uCi/G	Decay Corr uCi/G	1-Sigma %Error	Status
~~K-40~~	1460.83	10.67*	2.695E-01	1.147E-03	1.147E-03	158.88	OK

Final Mean for 1 Valid Peaks = 1.147E-03+/- 1.823E-03 (158.88%)

Nuclide Type: fission

Nuclide	Energy	%Abn	%Eff	Uncorrected uCi/G	Decay Corr uCi/G	1-Sigma %Error	Status
~~CS-137~~	122.06	85.95*	2.689E+00	2.051E-03	2.056E-03	7.85	OK
INT	136.47	10.33	2.545E+00	0.000E+00	0.000E+00	0.00	Absent

Final Mean for 1 Valid Peaks = 2.056E-03+/- 1.615E-04 (7.85%)

Sample ID : T8658 544-90 SST Acquisition date : 26-SEP-1990 15:00:32

Nuclide Type: fission

Nuclide	Energy	%Abn	%Eff	Uncorrected uCi/G	Decay Corr uCi/G	1-Sigma %Error	Status
~~RU-106~~	511.86	20.40*	7.291E-01	4.693E-04	4.701E-04	304.03	OK
	621.93	9.94	5.974E-01	0.000E+00	0.000E+00	0.00	Absent
	1050.41	1.56	3.637E-01	0.000E+00	0.000E+00	0.00	Absent
Final Mean for 1 Valid Peaks = 4.701E-04+/- 1.429E-03 (304.03%)							
CS-134	563.24	8.38	6.598E-01	0.000E+00	0.000E+00	0.00	Absent
	569.32	15.40	6.527E-01	0.000E+00	0.000E+00	0.00	Absent
	604.71	97.60*	6.145E-01	1.852E-03	1.853E-03	15.62	OK
	795.87	85.40	4.706E-01	2.280E-03	2.282E-03	16.57	OK
	801.95	8.73	4.670E-01	0.000E+00	0.000E+00	0.00	Absent
Final Mean for 2 Valid Peaks = 2.012E-03+/- 2.298E-04 (11.42%)							
CS-137	661.66	85.20*	5.622E-01	8.878E-02	8.878E-02	0.89	OK
Final Mean for 1 Valid Peaks = 8.878E-02+/- 7.881E-04 (0.89%)							
~~EU-155~~	80.10	1.13	2.818E+00	0.000E+00	0.000E+00	0.00	Absent
	133.54	11.10*	2.571E+00	2.694E-03	2.700E-03	35.06	OK
Final Mean for 1 Valid Peaks = 2.700E-03+/- 9.465E-04 (35.06%)							
EU-154	123.07	40.42	2.689E+00	4.361E-03	4.362E-03	7.85	OK
	247.93	6.84	1.546E+00	4.119E-03	4.120E-03	46.79	OK
	591.76	4.83	6.279E-01	0.000E+00	0.000E+00	0.00	Absent
	692.40	1.69	5.376E-01	0.000E+00	0.000E+00	0.00	Absent
	723.30	19.98	5.152E-01	5.112E-03	5.113E-03	27.73	OK
	756.90	4.33	4.934E-01	0.000E+00	0.000E+00	0.00	Absent
	873.20	12.09	4.312E-01	0.000E+00	0.000E+00	0.00	Absent
	996.30	10.34	3.817E-01	0.000E+00	0.000E+00	0.00	Absent
	1004.76	17.90	3.786E-01	5.579E-03	5.581E-03	35.92	OK
	1274.51	34.40*	3.051E-01	3.426E-03	3.427E-03	16.56	OK
	1596.50	1.83	2.481E-01	0.000E+00	0.000E+00	0.00	Absent
Final Mean for 5 Valid Peaks = 4.180E-03+/- 2.813E-04 (6.73%)							
~~EU-155~~	86.54	32.80	2.865E+00	1.268E-03	1.268E-03	23.28	OK
	105.31	21.84*	2.834E+00	0.000E+00	0.000E+00	0.00	Absent
Final Mean for 1 Valid Peaks = 1.268E-03+/- 2.953E-04 (23.28%)							
AM-241	59.54	35.90*	2.315E+00	1.267E-03	1.267E-03	21.63	OK
Final Mean for 1 Valid Peaks = 1.267E-03+/- 2.741E-04 (21.63%)							

Sample ID : T8658 544-90 SST Acquisition date : 26-SEP-1990 15:00:32

Nuclide Type: ACTIVATION

Nuclide	Energy	%Abn	%Eff	Uncorrected uCi/G	Decay Corr uCi/G	1-Sigma %Error	Status
CD-153	97.43	27.60*	2.870E+00	6.263E-03	6.280E-03	5.13	OK
	103.18	19.60	2.845E+00	6.049E-03	6.065E-03	9.18	OK

Final Mean for 2 Valid Peaks = 6.226E-03+/- 2.787E-04 (4.48%)

t	Energy	Area	Bkgnd	FWHM	Channel	Left	Fw	%Err	Fit	Nuclides
5	37.29*	2090	4001	2.98	50.04	47	13	5.6	2.38E+01	
5	41.32	6269	6421	2.73	55.42	47	13	2.7		
0	47.23*	1470	5326	2.35	63.31	60	8	9.4		
0	59.41	444	3432	1.92	79.56	77	6	21.6		AM-241
5	86.65*	502	4489	1.96	115.89	111	9	23.3	1.03E+00	EU-155
4	97.36	2091	3750	1.54	130.17	121	13	5.1	6.92E-01	GD-153
0	103.28	1422	5360	1.52	138.07	134	8	9.2		GD-153
0	122.74	1998	6463	2.23	164.03	159	10	7.9		CO-57
										EU-154
0	134.09	324	4537	1.57	179.17	176	7	35.1		CE-144
0	144.72	237	3640	2.85	193.34	191	6	41.0		
0	248.36	184	2889	3.99	331.57	329	6	46.8		EU-154
0	278.74	138	2263	1.32	372.09	370	6	55.2		HG-203
0	344.29	101	2084	1.53	459.50	456	7	75.3		
0	489.40	40	1152	1.89	653.00	652	6	138.2		
6	510.63*	29	1681	2.59	681.30	676	12	304.0	1.19E+00	NA-22
										RU-106
6	513.16	97	990	1.39	684.67	676	12	56.3		
0	595.75*	8	604	1.98	794.78	793	5	560.8		
0	604.59	468	1387	1.73	806.57	802	10	15.6		CS-134
0	661.50*	17926	1205	1.99	882.43	877	11	0.9		CS-137
0	723.53	222	994	2.39	965.12	961	10	27.7		EU-154
0	779.36	72	837	1.52	1039.54	1035	8	70.1		
0	795.54	386	1039	2.13	1061.10	1057	10	16.6		CS-134
0	973.16	186	890	3.31	1297.82	1294	9	30.7		
0	1005.25	159	927	2.21	1340.59	1337	9	35.9		EU-154
0	1173.29*	11240	860	2.32	1564.48	1556	17	1.1		CO-60
0	1274.74	152	128	2.04	1699.64	1695	10	16.6		EU-154
0	1299.47	23	69	1.50	1732.58	1730	7	63.7		
0	1332.85*	10089	267	2.58	1777.05	1769	18	1.1		CO-60
0	1409.63	27	78	2.17	1879.32	1874	12	67.1		
0	1460.38*	14	66	1.91	1946.92	1940	14	158.9		K-40
0	1610.20	12	10	0.74	2146.45	2144	5	56.8		
0	1965.15	23	16	4.37	2619.05	2615	10	48.5		
0	2091.25	20	28	2.19	2786.91	2779	16	66.5		
0	2545.09	8	3	2.78	3390.82	3388	7	48.9		
0	2580.77	12	2	1.71	3438.29	3435	7	47.8		
0	2682.23	12	6	1.61	3573.26	3571	7	48.8		
0	2810.97	13	5	1.23	3744.48	3739	11	43.2		
0	2945.78	2	6	0.81	3923.78	3922	5	256.6		
0	2952.30	6	6	1.54	3932.44	3929	7	91.7		

VAX/VMS Nuclide Identification Report V2.5 Generated 27-SEP-1990 07:18:01

Configuration : DUB0:[USER]T8658.CNF;1
Analyses by : PEAK V16.0,PEAKEFF V2.2,ENBACK V1.3,NID/DEP V2.2,WTMEAN V1
Sample title : T8658 SST 544-90 90-3617-A-3
Deposition Date : 26-SEP-1990 00:00:00 Deposition Period: 17-NOV-1858 00:00:00
Sample date : 26-SEP-1990 00:00:00 Acquisition date : 26-SEP-1990 15:00:32
Sample ID : T8658 544-90 SST Sample quantity : 2.11000E-02 G
Sample type : 10 ML SCV Sample geometry : T2SCV
Detector name : TRACK Detector geometry: T2SCV
Elapsed live time: 0 15:00:00.00 Elapsed real time: 0 15:00:07.49 0.0%
Energy tolerance : 1.00 Half life ratio : 8.00
Errors propagated: No Systematic Error : 0.00 %
Efficiency type : Empirical Efficiencies at : Peak Energy
Abundance limit : 75.00 WTM error limit : 3.00

Nuclide Line Activity Report

Nuclide Type: activation

Nuclide	Energy	%Abn	%Eff	Uncorrected uCi/G	Decay Corr uCi/G	1-Sigma %Error	Status
NA-22	511.00	180.00	7.290E-01	5.068E-04	5.071E-04	35.47	OK
	1274.53	99.94*	3.051E-01	1.179E-03	1.180E-03	16.56	OK

Final Mean for 2 Valid Peaks = 8.158E-04+/- 1.323E-04 (16.22%)

CO-60	1173.24	99.90	3.289E-01	8.114E-02	8.117E-02	1.12	OK
	1332.50	99.98*	2.930E-01	8.179E-02	8.181E-02	1.07	OK

Final Mean for 2 Valid Peaks = 8.150E-02+/- 6.303E-04 (0.77%)

Nuclide Type: natural

Nuclide	Energy	%Abn	%Eff	Uncorrected uCi/G	Decay Corr uCi/G	1-Sigma %Error	Status
~~K-40~~	1460.83	10.67*	2.695E-01	3.158E-03	3.158E-03	58.74	OK

Final Mean for 1 Valid Peaks = 3.158E-03+/- 1.855E-03 (58.74%)

Nuclide Type: fission

Nuclide	Energy	%Abn	%Eff	Uncorrected uCi/G	Decay Corr uCi/G	1-Sigma %Error	Status
~~CO-57~~	122.06	85.95*	2.689E+00	2.051E-03	2.056E-03	7.85	OK
	136.47	10.33	2.545E+00	0.000E+00	0.000E+00	0.00	Absent

Final Mean for 1 Valid Peaks = 2.056E-03+/- 1.615E-04 (7.85%)

CS-134	563.24	8.38	6.598E-01	0.000E+00	0.000E+00	0.00	Absent
	569.32	15.40	6.527E-01	0.000E+00	0.000E+00	0.00	Absent
	604.71	97.60*	6.145E-01	1.852E-03	1.853E-03	15.62	OK
	795.87	85.40	4.706E-01	2.280E-03	2.282E-03	16.57	OK
	801.95	8.73	4.670E-01	0.000E+00	0.000E+00	0.00	Absent

Final Mean for 2 Valid Peaks = 2.012E-03+/- 2.298E-04 (11.42%)

Nuclide Type: fission

Nuclide	Energy	%Abn	%Eff	Uncorrected uCi/G	Decay Corr uCi/G	1-Sigma %Error	Status
CS-137	661.66	85.20*	5.622E-01	8.898E-02	8.899E-02	0.89	OK
	Final Mean for 1 Valid Peaks = 8.899E-02+/- 7.879E-04 (0.89%)						
CE-144	80.10	1.13	2.818E+00	0.000E+00	0.000E+00	0.00	Absent
	133.54	11.10*	2.571E+00	2.694E-03	2.700E-03	35.06	OK
	Final Mean for 1 Valid Peaks = 2.700E-03+/- 9.465E-04 (35.06%)						
EU-155	86.54	32.80	2.862E+00	1.733E-03	1.733E-03	20.32	OK
	105.31	21.84*	2.833E+00	1.244E-03	1.244E-03	32.39	OK
	Final Mean for 2 Valid Peaks = 1.521E-03+/- 2.652E-04 (17.43%)						
AM-241	59.54	35.90*	2.315E+00	1.267E-03	1.267E-03	21.63	OK
	Final Mean for 1 Valid Peaks = 1.267E-03+/- 2.741E-04 (21.63%)						

Nuclide Type: ACTIVATION

Nuclide	Energy	%Abn	%Eff	Uncorrected uCi/G	Decay Corr uCi/G	1-Sigma %Error	Status
D-153	97.43	27.60*	2.870E+00	6.153E-03	6.170E-03	5.29	OK
	103.18	19.60	2.846E+00	6.816E-03	6.835E-03	6.65	OK
	Final Mean for 2 Valid Peaks = 6.396E-03+/- 2.650E-04 (4.14%)						

Post-NID Peak Search Report
Sample ID : T8658 544-90 SST

Acquisition date : 26-SEP-1990 15:00:32

.	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides
5	37.29*	2052	4001	2.98	50.04	47	13	5.8	2.38E+01	
5	41.32	6269	6421	2.73	55.42	47	13	2.7		
0	47.23*	1459	5326	2.35	63.31	60	8	9.5		
0	59.41	444	3432	1.92	79.56	77	6	21.6		AM-241
0	74.17*	89	5206	2.85	99.25	96	8	147.9		
0	85.97	686	5772	2.97	114.99	111	9	20.3		EU-155
2	97.36	2055	3808	1.53	130.17	126	18	5.3	5.54E-01	GD-153
2	103.18	1603	3690	1.58	137.94	126	18	6.7		GD-153
2	105.39	324	3645	1.43	140.89	126	18	32.4		EU-155
0	122.74	1998	6463	2.23	164.03	159	10	7.9		CO-57
0	134.09	324	4537	1.57	179.17	176	7	35.1		CE-144
0	510.76*	280	2008	2.87	681.47	676	12	35.5		NA-22
0	604.59	468	1387	1.73	806.57	802	10	15.6		CS-134
0	661.50*	17967	1205	1.99	882.43	877	11	0.9		CS-137
0	723.53	222	994	2.39	965.12	961	10	27.7		
0	795.54	386	1039	2.13	1061.10	1057	10	16.6		CS-134
0	1005.31	116	972	2.07	1340.66	1336	9	49.1		
0	1173.29*	11241	860	2.32	1564.48	1556	17	1.1		CO-60
0	1274.74	152	128	2.04	1699.64	1695	10	16.6		NA-22
0	1332.85*	10100	267	2.58	1777.05	1769	18	1.1		CO-60
0	1409.63	27	78	2.17	1879.32	1874	12	67.1		
0	1460.38*	38	66	1.91	1946.92	1940	14	58.7		K-40

VAX/VMS Peak Search Report V1.7 Generated 27-SEP-1990 07:17:39

Configuration : DUB0:[USER]T8658.CNF;1
Analyses by : PEAK V16.0,ENBACK V1.3
Sample title : T8658 SST 544-90 90-3617-A-3
Deposition Date : 26-SEP-1990 00:00:00 Deposition Period: 17-NOV-1858 00:00:00
Sample date : 26-SEP-1990 00:00:00 Acquisition date : 26-SEP-1990 15:00:32
Sample ID : T8658 544-90 SST Sample quantity : 2.11000E-02 G
Sample type : 10 ML SCV Sample geometry : T2SCV
Detector name : TRACK Detector geometry: T2SCV
Elapsed live time: 0 15:00:00.00 Elapsed real time: 0 15:00:07.49 0.0%
Start energy : 29.76 End energy : 3074.55
Sensitivity : 5.00 Gaussian : 10.00
Critical level : No

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	5	37.29*	2052	4001	2.98	50.04	47	13	3.80E-02	5.8	2.38E+01
2	5	41.32	6269	6421	2.73	55.42	47	13	1.16E-01	2.7	
3	0	47.23*	1459	5326	2.35	63.31	60	8	2.70E-02	9.5	
4	0	59.41	444	3432	1.92	79.56	77	6	8.22E-03	21.6	
5	0	74.17*	89	5206	2.85	99.25	96	8	1.64E-03	147.9	
6	0	85.97	686	5772	2.97	114.99	111	9	1.27E-02	20.3	
7	2	97.36	2055	3808	1.53	130.17	126	18	3.80E-02	5.3	5.54E-01
8	2	103.18	1603	3690	1.58	137.94	126	18	2.97E-02	6.7	
9	2	105.39	324	3645	1.43	140.89	126	18	6.01E-03	32.4	
10	0	122.74	1998	6463	2.23	164.03	159	10	3.70E-02	7.9	
11	0	134.09	324	4537	1.57	179.17	176	7	6.00E-03	35.1	
12	0	510.76*	280	2008	2.87	681.47	676	12	5.19E-03	35.5	
3	0	604.59	468	1387	1.73	806.57	802	10	8.67E-03	15.6	
14	0	661.50*	17967	1205	1.99	882.43	877	11	3.33E-01	0.9	
15	0	723.53	222	994	2.39	965.12	961	10	4.11E-03	27.7	
16	0	795.54	386	1039	2.13	1061.10	1057	10	7.15E-03	16.6	
17	0	1005.31	116	972	2.07	1340.66	1336	9	2.14E-03	49.1	
18	0	1173.29*	11241	860	2.32	1564.48	1556	17	2.08E-01	1.1	
19	0	1274.74	152	128	2.04	1699.64	1695	10	2.81E-03	16.6	
20	0	1332.85*	10100	267	2.58	1777.05	1769	18	1.87E-01	1.1	
21	0	1409.63	27	78	2.17	1879.32	1874	12	5.08E-04	67.1	
22	0	1460.38*	38	66	1.91	1946.92	1940	14	7.09E-04	58.7	

Nuclide Type: fission

Nuclide	Energy	%Abn	%Eff	Uncorrected uCi/G	Decay Corr uCi/G	1-Sigma %Error	Status
CS-137	661.66	85.20*	5.622E-01	1.403E+01	1.403E+01	0.19	OK
Final Mean for 1 Valid Peaks = 1.403E+01+/- 2.601E-02 (0.19%)							
CE-144	80.10	1.13	2.818E+00	0.000E+00	0.000E+00	0.00	Absent
	133.54	11.10*	2.579E+00	4.680E-02	4.686E-02	33.74	OK
Final Mean for 1 Valid Peaks = 4.686E-02+/- 1.581E-02 (33.74%)							
EU-155	86.54	32.80	2.865E+00	7.725E-03	7.727E-03	57.11	OK
	105.31	21.84*	2.834E+00	0.000E+00	0.000E+00	0.00	Absent
Final Mean for 1 Valid Peaks = 7.727E-03+/- 4.413E-03 (57.11%)							

VAX/VMS Nuclide Identification Report V2.5 Generated 10-OCT-1990 15:24:21

Configuration : DUB0:[USER]T8653.CNF;1
Analyses by : PEAK V16.0,PEAKEFF V2.2,ENBACK V1.3,NID/DEP V2.2,WTMEAN V1
Sample title : T8653 SST 545-90 90-3618-A-1
eposition Date : 25-SEP-1990 00:00:00 Deposition Period: 17-NOV-1858 00:00:00
ample date : 25-SEP-1990 00:00:00 Acquisition date : 25-SEP-1990 12:02:08
ample ID : T8653 545-90 SST Sample quantity : 2.06390E-02 G
Sample type : 10 ML SCV Sample geometry : T2SCV
Detector name : TRACK Detector geometry: T2SCV
Elapsed live time: 0 01:40:00.00 Elapsed real time: 0 01:40:26.40 0.4%
Energy tolerance : 1.30 Half life ratio : 8.00
Errors propagated: No Systematic Error : 0.00 %
Efficiency type : Empirical Efficiencies at : Peak Energy
Abundance limit : 60.00 WTM error limit : 3.00

Nuclide Line Activity Report

Nuclide Type: activation

Nuclide	Energy	%Abn	%Eff	Uncorrected uCi/G	Decay Corr uCi/G	1-Sigma %Error	Status
NA-22	511.00	180.00	7.268E-01	3.204E-03	3.205E-03	62.85	OK
	1274.53	99.94*	3.050E-01	5.943E-03	5.945E-03	31.67	OK
Final Mean for 2 Valid Peaks = 4.667E-03+/- 1.375E-03 (29.47%)							
CO-60	1173.24	99.90	3.290E-01	6.809E-01	6.810E-01	1.14	OK
	1332.50	99.98*	2.930E-01	6.910E-01	6.912E-01	1.08	OK
Final Mean for 2 Valid Peaks = 6.863E-01+/- 5.376E-03 (0.78%)							

D04-028

Nuclide Type: fission

Nuclide	Energy	%Abn	%Eff	Uncorrected uCi/G	Decay Corr uCi/G	1-Sigma %Error	Status
CO-57	122.06	85.95*	2.687E+00	6.534E-03	6.543E-03	29.67	OK

Post-NID Peak Search Report
Sample ID : T8653 545-90 SST

Acquisition date : 25-SEP-1990 12:02:08

.t	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides
0	37.02*	5004	20167	1.46	49.69	47	7	5.3		
0	41.32	342	15498	2.31	55.42	54	6	57.9		
0	47.56	585	12399	2.46	63.75	62	5	28.8		
0	86.71*	333	14509	0.98	115.76	113	6	57.1		EU-155
0	97.36	472	12309	1.05	130.18	129	5	35.5		GD-153
0	103.06	345	12428	1.27	137.78	136	5	48.8		GD-153
0	122.97	691	16578	2.28	164.33	162	6	29.7		CO-57
0	133.33	614	16951	1.65	178.15	176	6	33.7		CE-144
0	344.01	438	10112	1.65	459.12	457	6	36.8		
0	512.21	192	5718	2.10	683.41	681	6	62.9		NA-22
										RU-106
0	604.64	149	2688	1.17	806.64	803	8	60.6		CS-134
0	661.42*	308022	3829	1.97	882.33	875	15	0.2		CS-137
0	795.54	135	720	1.85	1061.09	1057	9	38.3		CS-134
0	1108.10	28	489	1.72	1477.62	1477	6	129.9		
0	1173.17*	10253	625	2.34	1564.32	1556	17	1.1		CO-60
0	1275.14	83	112	3.03	1700.17	1695	16	31.7		NA-22
0	1316.41	14	56	2.09	1755.15	1753	7	93.7		
0	1332.75*	9276	117	2.50	1776.91	1770	15	1.1		CO-60
0	1407.71	17	14	2.08	1876.76	1871	11	57.2		
0	1564.96	10	11	2.24	2086.20	2081	11	86.0		
0	1707.12	2	7	0.80	2275.51	2275	7	291.5		
0	1713.20	8	2	1.53	2283.62	2281	7	60.5		
0	1822.72	8	11	2.02	2429.43	2421	13	119.2		
0	1964.25	7	5	2.25	2617.85	2611	9	80.2		
0	2119.54	9	0	1.24	2824.56	2819	11	45.2		
0	2165.21	9	0	1.09	2885.33	2881	10	33.3		

V Sensi

VAX/VMS Nuclide Identification Report V2.5 Generated 25-SEP-1990 13:58:30

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 nfiguration     : DUB0:[USER]T8653.CNF;1
 alyses by       : PEAK V16.0,PEAKEFF V2.2,ENBACK V1.3,NID/DEP V2.2,WTMEAN V1
Sample title     : T8653 SST 545-90 90-3618-A-1
Deposition Date  : 25-SEP-1990 00:00:00 Deposition Period: 17-NOV-1858 00:00:00
Sample date      : 25-SEP-1990 00:00:00 Acquisition date : 25-SEP-1990 12:02:08
Sample ID        : T8653 545-90 SST     Sample quantity  : 2.06390E-02 G
Sample type      : 10 ML SCV            Sample geometry  : T2SCV
Detector name    : TRACK                Detector geometry: T2SCV
Elapsed live time: 0 01:40:00.00        Elapsed real time: 0 01:40:26.40   0.4%
Energy tolerance :     1.00             Half life ratio  :     8.00
Errors propagated: No                   Systematic Error :     0.00 %
Efficiency type  : Empirical            Efficiencies at  : Peak Energy
Abundance limit  :    75.00             WTM error limit  :     3.00
```

Nuclide Line Activity Report

Nuclide Type: activation

Nuclide	Energy	%Abn	%Eff	Uncorrected uCi/G	Decay Corr uCi/G	1-Sigma %Error	Status
CO-60	1173.24	99.90	3.290E-01	6.809E-01	6.810E-01	1.14	OK
	1332.50	99.98*	2.930E-01	6.911E-01	6.913E-01	1.08	OK

Final Mean for 2 Valid Peaks = 6.864E-01+/- 5.376E-03 (0.78%)

Nuclide Type: fission

Nuclide	Energy	%Abn	%Eff	Uncorrected uCi/G	Decay Corr uCi/G	1-Sigma %Error	Status
CS-137	661.66	85.20*	5.622E-01	1.403E+01	1.403E+01	0.19	OK

Final Mean for 1 Valid Peaks = 1.403E+01+/- 2.601E-02 (0.19%)

CE-144	80.10	1.13	2.818E+00	0.000E+00	0.000E+00	0.00	Absent
	133.54	11.10*	2.579E+00	4.680E-02	4.686E-02	33.74	OK

Final Mean for 1 Valid Peaks = 4.686E-02+/- 1.581E-02 (33.74%)

Post-NID Peak Search Report
Sample ID : T8653 545-90 SST

Acquisition date : 25-SEP-1990 12:02:08

..	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides
0	37.02*	5000	20167	1.46	49.69	47	7	5.3		
0	97.36	472	12309	1.05	130.18	129	5	35.5		
0	133.33	614	16951	1.65	178.15	176	6	33.7		CE-144
0	661.42*	308027	3829	1.97	882.33	875	15	0.2		CS-137
0	795.54	135	720	1.85	1061.09	1057	9	38.3		
0	1173.17*	10253	625	2.34	1564.32	1556	17	1.1		CO-60
0	1275.14	83	112	3.03	1700.17	1695	16	31.7		
0	1332.75*	9277	117	2.50	1776.91	1770	15	1.1		CO-60

VAX/VMS Peak Search Report V1.7 Generated 25-SEP-1990 13:58:13

Configuration : DUB0:[USER]T8653.CNF;1
Analyses by : PEAK V16.0,ENBACK V1.3
Sample title : T8653 SST 545-90 90-3618-A-1
Deposition Date : 25-SEP-1990 00:00:00 Deposition Period: 17-NOV-1858 00:00:00
Sample date : 25-SEP-1990 00:00:00 Acquisition date : 25-SEP-1990 12:02:08
Sample ID : T8653 545-90 SST Sample quantity : 2.06390E-02 G
Sample type : 10 ML SCV Sample geometry : T2SCV
Detector name : TRACK Detector geometry: T2SCV
Elapsed live time: 0 01:40:00.00 Elapsed real time: 0 01:40:26.40 0.4%
Start energy : 29.76 End energy : 3074.55
Sensitivity : 5.00 Gaussian : 10.00
Critical level : No

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	37.02*	5000	20167	1.46	49.69	47	7	8.33E-01	5.3	
2	0	97.36	472	12309	1.05	130.18	129	5	7.86E-02	35.5	
3	0	133.33	614	16951	1.65	178.15	176	6	1.02E-01	33.7	
4	0	661.42*	308027	3829	1.97	882.33	875	15	5.13E+01	0.2	
5	0	795.54	135	720	1.85	1061.09	1057	9	2.24E-02	38.3	
6	0	1173.17*	10253	625	2.34	1564.32	1556	17	1.71E+00	1.1	
7	0	1275.14	83	112	3.03	1700.17	1695	16	1.38E-02	31.7	
8	0	1332.75*	9277	117	2.50	1776.91	1770	15	1.55E+00	1.1	

VAX/VMS Nuclide Identification Report V2.5 Generated 10-OCT-1990 15:25:32

Configuration : DUB0:[USER]T8655.CNF;1
Analyses by : PEAK V16.0,PEAKEFF V2.2,ENBACK V1.3,NID/DEP V2.2,WTMEAN V1
Sample title : T8655 SST 546-90 90-3618-A-2
Deposition Date : 26-SEP-1990 00:00:00 Deposition Period: 17-NOV-1858 00:00:00
Sample date : 26-SEP-1990 00:00:00 Acquisition date : 26-SEP-1990 09:15:34
Sample ID : T8655 546-90 SST Sample quantity : 2.04400E-02 G
Sample type : 10 ML SCV Sample geometry : T2SCV
Detector name : TRACK Detector geometry: T2SCV
Elapsed live time: 0 01:40:00.00 Elapsed real time: 0 01:40:29.23 0.5%
Energy tolerance : 1.30 Half life ratio : 8.00
Errors propagated: No Systematic Error : 0.00 %
Efficiency type : Empirical Efficiencies at : Peak Energy
Abundance limit : 60.00 WTM error limit : 3.00

Nuclide Line Activity Report

2.0B0. not used

Nuclide Type: natural

Nuclide	Energy	%Abn	%Eff	Uncorrected uCi/G	Decay Corr uCi/G	1-Sigma %Error	Status
K-40	1460.83	10.67*	2.694E-01	1.527E-02	1.527E-02	61.74	OK

Final Mean for 1 Valid Peaks = 1.527E-02+/- 9.431E-03 (61.74%)

Nuclide Type: fission

Nuclide	Energy	%Abn	%Eff	Uncorrected uCi/G	Decay Corr uCi/G	1-Sigma %Error	Status
CO-57	122.06	85.95*	2.690E+00	7.706E-03	7.714E-03	26.72	OK
	136.47	10.33	2.545E+00	0.000E+00	0.000E+00	0.00	Absent

Final Mean for 1 Valid Peaks = 7.714E-03+/- 2.061E-03 (26.72%)

CS-134	563.24	8.38	6.598E-01	0.000E+00	0.000E+00	0.00	Absent
	569.32	15.40	6.527E-01	0.000E+00	0.000E+00	0.00	Absent
	604.71	97.60*	6.143E-01	1.933E-02	1.933E-02	20.16	OK
	795.87	85.40	4.708E-01	1.721E-02	1.722E-02	21.04	OK
	801.95	8.73	4.670E-01	0.000E+00	0.000E+00	0.00	Absent

Final Mean for 2 Valid Peaks = 1.820E-02+/- 2.653E-03 (14.58%)

CS-137	661.66	85.20*	5.622E-01	1.520E+01	1.520E+01	0.18	OK

Final Mean for 1 Valid Peaks = 1.520E+01+/- 2.729E-02 (0.18%)

CE-144	80.10	1.13	2.818E+00	0.000E+00	0.000E+00	0.00	Absent
	133.54	11.10*	2.582E+00	3.064E-02	3.067E-02	47.22	OK

Final Mean for 1 Valid Peaks = 3.067E-02+/- 1.448E-02 (47.22%)

AM-241	59.54	35.90*	2.301E+00	1.529E-02	1.529E-02	34.89	OK

Final Mean for 1 Valid Peaks = 1.529E-02+/- 5.334E-03 (34.89%)

Sample ID : T9655 546-90 SST Acquisition date : 26-SEP-1990 09:15:34

Nuclide Type: activation

Nuclide	Energy	%Abn	%Eff	Uncorrected uCi/G	Decay Corr uCi/G	1-Sigma %Error	Status
CO-60	1173.24	99.90	3.290E-01	9.439E-01	9.440E-01	0.93	OK
	1332.50	99.98*	2.930E-01	9.564E-01	9.565E-01	0.91	OK

Final Mean for 2 Valid Peaks = 9.503E-01+/- 6.197E-03 (0.65%)

Nuclide Type: ACTIVATION

Nuclide	Energy	%Abn	%Eff	Uncorrected uCi/G	Decay Corr uCi/G	1-Sigma %Error	Status
CD-153	97.43	27.60*	2.871E+00	2.275E-02	2.278E-02	24.83	OK
	103.18	19.60	2.848E+00	1.302E-02	1.303E-02	53.99	OK

Final Mean for 2 Valid Peaks = 1.895E-02+/- 4.409E-03 (23.26%)

Sample ID : T8655 546-90 SST Acquisition date : 26-SEP-1990 09:15:34

't	Energy	Area	Bkgnd	FWHM	Channel	Left	Fw	%Err	Fit	Nuclides
0	37.09*	5909	21622	1.50	49.78	47	7	4.6		
0	41.65	494	13801	1.51	55.86	54	5	36.2		
0	47.06*	542	16588	2.49	63.08	61	6	37.7		
0	59.07	573	15719	2.37	79.10	77	6	34.9		AM-241
0	73.84*	274	16061	1.76	98.81	97	6	73.2		
0	97.04	818	15915	2.13	129.75	128	6	24.8		GD-153
0	102.81	330	14025	1.13	137.44	136	5	54.0		GD-153
0	109.50	313	19426	2.26	146.37	143	7	74.7		
0	122.63	808	18413	1.37	163.88	162	6	26.7		CO-57
0	133.04	398	15629	1.36	177.77	176	5	47.2		CE-144
0	191.63	12786	115083	13.65	255.91	243	32	8.0		
0	475.27	703	13540	1.98	634.15	632	6	26.7		
0	604.80	526	3308	1.97	806.84	803	9	20.2		CS-134
0	661.42*	330393	4452	1.98	882.33	875	15	0.2		CS-137
0	712.94	44	733	2.25	951.00	949	7	104.4		
0	795.20	314	1145	1.58	1060.64	1058	10	21.0		CS-134
0	837.22	70	717	1.43	1116.66	1114	6	61.5		
0	846.33	85	548	2.11	1128.79	1127	5	43.6		
0	963.63*	87	844	1.51	1285.12	1283	6	55.3		
0	1173.20*	14075	636	2.32	1564.36	1559	14	0.9		CO-60
0	1274.93	95	98	3.40	1699.89	1696	12	24.0		
0	1292.27	25	77	1.11	1722.99	1720	10	75.8		
0	1332.74*	12714	130	2.44	1776.90	1770	15	0.9		CO-60
0	1408.77	17	25	1.87	1878.18	1874	9	60.8		
0	1446.82	2	9	1.38	1928.86	1923	7	221.3		
0	1449.29	10	3	0.89	1932.15	1930	6	44.4		
0	1460.82*	20	8	3.48	1947.51	1941	15	61.7		K-40
0	1475.86	12	5	2.03	1967.54	1965	7	52.7		
0	1529.41	4	14	1.55	2038.86	2033	8	165.0		
0	1717.07	7	4	0.99	2288.76	2288	6	66.5		
0	1721.21	2	6	0.58	2294.28	2293	5	228.0		
0	1744.47	11	5	1.30	2325.25	2320	12	58.9		
0	1771.62	11	2	2.42	2361.40	2358	7	41.2		
0	1827.63	2	20	6.29	2435.97	2432	12	498.9		
0	2141.10	3	5	1.85	2853.24	2852	5	104.3		

VAX/VMS Nuclide Identification Report V2.5 Generated 26-SEP-1990 11:04:24

onfiguration : DUB0:[USER]T8655.CNF;1
nalyses by : PEAK V16.0,PEAKEFF V2.2,ENBACK V1.3,NID/DEP V2.2,WTMEAN V1
Sample title : T8655 SST 546-90 90-3618-A-2
Deposition Date : 26-SEP-1990 00:00:00 Deposition Period: 17-NOV-1858 00:00:00
Sample date : 26-SEP-1990 00:00:00 Acquisition date : 26-SEP-1990 09:15:34
Sample ID : T8655 546-90 SST Sample quantity : 2.04400E-02 G
Sample type : 10 ML SCV Sample geometry : T2SCV
Detector name : TRACK Detector geometry: T2SCV
Elapsed live time: 0 01:40:00.00 Elapsed real time: 0 01:40:29.23 0.5%
Energy tolerance : 1.00 Half life ratio : 8.00
Errors propagated: No Systematic Error : 0.00 %
Efficiency type : Empirical Efficiencies at : Peak Energy
Abundance limit : 75.00 WTM error limit : 3.00

Nuclide Line Activity Report

Nuclide Type: natural

Nuclide	Energy	%Abn	%Eff	Uncorrected uCi/G	Decay Corr uCi/G	1-Sigma %Error	Status
~~K-40~~	1460.83	10.67*	2.694E-01	1.735E-02	1.735E-02	54.39	OK

Final Mean for 1 Valid Peaks = 1.735E-02+/- 9.437E-03 (54.39%)

uclide Type: fission

Nuclide	Energy	%Abn	%Eff	Uncorrected uCi/G	Decay Corr uCi/G	1-Sigma %Error	Status
CO-57	122.06	85.95*	2.690E+00	7.706E-03	7.714E-03	26.72	OK
	136.47	10.33	2.545E+00	0.000E+00	0.000E+00	0.00	Absent

Final Mean for 1 Valid Peaks = 7.714E-03+/- 2.061E-03 (26.72%)

CS-134	563.24	8.38	6.598E-01	0.000E+00	0.000E+00	0.00	Absent
	569.32	15.40	6.527E-01	0.000E+00	0.000E+00	0.00	Absent
	604.71	97.60*	6.143E-01	1.933E-02	1.933E-02	20.16	OK
	795.87	85.40	4.708E-01	1.721E-02	1.722E-02	21.04	OK
	801.95	8.73	4.670E-01	0.000E+00	0.000E+00	0.00	Absent

Final Mean for 2 Valid Peaks = 1.820E-02+/- 2.653E-03 (14.58%)

CS-137	661.66	85.20*	5.622E-01	1.520E+01	1.520E+01	0.18	OK

Final Mean for 1 Valid Peaks = 1.520E+01+/- 2.729E-02 (0.18%)

AM-241	59.54	35.90*	2.301E+00	1.529E-02	1.529E-02	34.89	OK

Final Mean for 1 Valid Peaks = 1.529E-02+/- 5.334E-03 (34.89%)

Sample ID : T8655 546-90 SST Acquisition date : 26-SEP-1990 09:15:34

Nuclide Type: activation

Nuclide	Energy	%Abn	%Eff	Uncorrected uCi/G	Decay Corr uCi/G	1-Sigma %Error	Status
CO-60	1173.24	99.90	3.290E-01	9.439E-01	9.440E-01	0.93	OK
	1332.50	99.98*	2.930E-01	9.589E-01	9.590E-01	0.92	OK

Final Mean for 2 Valid Peaks = 9.515E-01+/- 6.226E-03 (0.65%)

Nuclide Type: ACTIVATION

Nuclide	Energy	%Abn	%Eff	Uncorrected uCi/G	Decay Corr uCi/G	1-Sigma %Error	Status
GD-153	97.43	27.60*	2.871E+00	1.524E-02	1.526E-02	32.11	OK
	103.18	19.60	2.847E+00	1.222E-02	1.223E-02	65.94	OK

Final Mean for 2 Valid Peaks = 1.445E-02+/- 4.188E-03 (28.99%)

Post-NID Peak Search Report
Sample ID : T8655 546-90 SST

Acquisition date : 26-SEP-1990 09:15:34

t	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides
0	37.09*	5905	21622	1.50	49.78	47	7	4.6		
0	41.65	494	13801	1.51	55.86	54	5	36.2		
0	59.07	573	15719	2.37	79.10	77	6	34.9		AM-241
0	97.01	548	13524	1.88	129.71	129	5	32.1		GD-153
0	102.88	309	16813	1.12	137.54	135	6	65.9		GD-153
0	122.63	808	18413	1.37	163.88	162	6	26.7		CO-57
0	604.80	526	3308	1.97	806.84	803	9	20.2		CS-134
0	661.42*	330397	4452	1.98	882.33	875	15	0.2		CS-137
0	795.20	314	1145	1.58	1060.64	1056	10	21.0		CS-134
0	1173.20*	14075	636	2.32	1564.36	1559	14	0.9		CO-60
0	1274.93	95	98	3.40	1699.89	1696	12	24.0		
0	1332.73*	12747	132	2.44	1776.90	1768	17	0.9		CO-60
0	1460.82*	23	8	3.48	1947.51	1941	15	54.4		K-40

VAX/VMS Peak Search Report V1.7 Generated 26-SEP-1990 11:04:06

Configuration : DUB0:[USER]T8655.CNF;1
Analyses by : PEAK V16.0,ENBACK V1.3
Sample title : T8655 SST 546-90 90-3618-A-2
Deposition Date : 26-SEP-1990 00:00:00 Deposition Period: 17-NOV-1858 00:00:00
Sample date : 26-SEP-1990 00:00:00 Acquisition date : 26-SEP-1990 09:15:34
Sample ID : T8655 546-90 SST Sample quantity : 2.04400E-02 G
Sample type : 10 ML SCV Sample geometry : T2SCV
Detector name : TRACK Detector geometry: T2SCV
Elapsed live time: 0 01:40:00.00 Elapsed real time: 0 01:40:29.23 0.5%
Start energy : 29.76 End energy : 3074.55
Sensitivity : 5.00 Gaussian : 10.00
Critical level : No

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	37.09*	5905	21622	1.50	49.78	47	7	9.84E-01	4.6	
2	0	41.65	494	13801	1.51	55.86	54	5	8.23E-02	36.2	
3	0	59.07	573	15719	2.37	79.10	77	6	9.55E-02	34.9	
4	0	97.01	548	13524	1.88	129.71	129	5	9.13E-02	32.1	
5	0	102.88	309	16813	1.12	137.54	135	6	5.16E-02	65.9	
6	0	122.63	808	18413	1.37	163.88	162	6	1.35E-01	26.7	
7	0	604.80	526	3308	1.97	806.84	803	9	8.76E-02	20.2	
8	0	661.42*	330397	4452	1.98	882.33	875	15	5.51E+01	0.2	
9	0	795.20	314	1145	1.58	1060.64	1056	10	5.23E-02	21.0	
10	0	1173.20*	14075	636	2.32	1564.36	1559	14	2.35E+00	0.9	
11	0	1274.93	95	98	3.40	1699.89	1696	12	1.58E-02	24.0	
12	0	1332.73*	12747	132	2.44	1776.90	1768	17	2.12E+00	0.9	
13	0	1460.82*	23	8	3.48	1947.51	1941	15	3.77E-03	54.4	

VAX/VMS Nuclide Identification Report V2.5 Generated 17-OCT-1990 11:00:40

```
Configuration     : DUB0:[USER]T8656.CNF;2
Analyses by       : PEAK V16.0,PEAKEFF V2.2,ENBACK V1.3,NID/DEP V2.2,WTMEAN V1
Sample title      : T8656 SST 547-90 90-3619-A-1
Deposition Date   : 26-SEP-1990 00:00:00 Deposition Period: 17-NOV-1858 00:00:00
Sample date       : 26-SEP-1990 00:00:00 Acquisition date : 26-SEP-1990 11:05:15
Sample ID         : T8656 547-90 SST     Sample quantity  : 2.00200E-02 G
Sample type       : 10 ML SCV            Sample geometry  : T2SCV
Detector name     : TRACK                Detector geometry: T2SCV
Elapsed live time: 0 01:40:00.00         Elapsed real time: 0 01:40:19.19   0.3%
Energy tolerance :     1.30              Half life ratio  :     8.00
Errors propagated: No                    Systematic Error :     0.00 %
Efficiency type  : Empirical             Efficiencies at  : Peak Energy
Abundance limit  :    60.00              WTM error limit  :     3.00
```

Nuclide Line Activity Report

Nuclide Type: natural

Nuclide	Energy	%Abn	%Eff	Uncorrected uCi/G	Decay Corr uCi/G	1-Sigma %Error	Status
K-40	1460.83	10.67*	2.692E-01	1.880E-02	1.880E-02	20.41	OK

Final Mean for 1 Valid Peaks = 1.880E-02+/- 3.837E-03 (20.41%)

Nuclide Type: activation

Nuclide	Energy	%Abn	%Eff	Uncorrected uCi/G	Decay Corr uCi/G	1-Sigma %Error	Status
CO-60	1173.24	99.90	3.290E-01	6.396E-02	6.397E-02	3.68	OK
	1332.50	99.98*	2.930E-01	6.521E-02	6.522E-02	3.63	OK

Final Mean for 2 Valid Peaks = 6.459E-02+/- 1.669E-03 (2.58%)

ZR-95	724.20	44.10	5.152E-01	4.461E-03	4.485E-03	30.67	OK
	756.73	54.50*	4.939E-01	2.466E-03	2.479E-03	54.02	OK

Final Mean for 2 Valid Peaks = 3.455E-03+/- 9.596E-04 (27.77%)

Nuclide Type: fission

Nuclide	Energy	%Abn	%Eff	Uncorrected uCi/G	Decay Corr uCi/G	1-Sigma %Error	Status
CS-134	563.24	8.38	6.598E-01	0.000E+00	0.000E+00	0.00	Absent
	569.32	15.40	6.527E-01	0.000E+00	0.000E+00	0.00	Absent
	604.71	97.60*	6.150E-01	7.366E-03	7.370E-03	36.67	OK
	795.87	85.40	4.707E-01	5.192E-03	5.194E-03	27.49	OK
	801.95	8.73	4.670E-01	0.000E+00	0.000E+00	0.00	Absent

Final Mean for 2 Valid Peaks = 5.669E-03+/- 1.263E-03 (22.27%)

S-137	661.66	85.20*	5.622E-01	1.124E+01	1.124E+01	0.21	OK

Final Mean for 1 Valid Peaks = 1.124E+01+/- 2.349E-02 (0.21%)

Sample ID : T8656 547-90 SST Acquisition date : 26-SEP-1990 11:05:15

Nuclide Type: fission

Nuclide	Energy	%Abn	%Eff	Uncorrected uCi/G	Decay Corr uCi/G	1-Sigma %Error	Status
CE-144	80.10	1.13	2.818E+00	0.000E+00	0.000E+00	0.00	Absent
	133.54	11.10*	2.580E+00	6.384E-02	6.392E-02	25.25	OK
	Final Mean for 1 Valid Peaks = 6.392E-02+/- 1.614E-02 (25.25%)						
AM-241	59.54	35.90*	2.331E+00	6.631E-03	6.631E-03	66.90	OK
	Final Mean for 1 Valid Peaks = 6.631E-03+/- 4.436E-03 (66.90%)						

Nuclide Type: ACTIVATION

Nuclide	Energy	%Abn	%Eff	Uncorrected uCi/G	Decay Corr uCi/G	1-Sigma %Error	Status
GD-153	97.43	27.60*	2.870E+00	1.292E-02	1.294E-02	36.36	OK
	103.18	19.60	2.842E+00	1.166E-02	1.168E-02	57.94	OK
	Final Mean for 2 Valid Peaks = 1.253E-02+/- 3.862E-03 (30.83%)						

VAX/VMS Peak Search Report V1.7 Generated 17-OCT-1990 12:30:56

Configuration : MCA0:[USER]ADC3$1
Analyses by : PEAK V16.0,ENBACK V1.3
Sample title : T8657 SST 548-90 90-3619-A-2
Deposition Date : 26-SEP-1990 00:00:00 Deposition Period: 17-NOV-1858 00:00:00
Sample date : 26-SEP-1990 00:00:00 Acquisition date : 26-SEP-1990 13:06:22
Sample ID : T8657 548-90 SST Sample quantity : 2.22000E-02 G
Sample type : 10 ML SCV Sample geometry : T2SCV
Detector name : TRACK Detector geometry: T2SCV
Elapsed live time: 0 01:40:00.00 Elapsed real time: 0 01:40:21.41 0.4%
Start energy : 22.26 End energy : 3074.55
Sensitivity : 2.00 Gaussian : 10.00
Critical level : No

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	37.09*	4439	16738	1.44	49.78	47	7	7.40E-01	5.4	
2	0	41.47	295	12685	1.12	55.62	54	6	4.91E-02	61.0	
3	0	46.87*	336	12400	1.46	62.83	61	6	5.59E-02	52.8	
4	0	59.28	724	11824	1.59	79.38	77	6	1.21E-01	24.1	
5	0	75.50*	208	10065	1.61	101.02	99	5	3.47E-02	72.8	
6	0	86.06	244	12170	1.91	115.10	113	6	4.06E-02	71.9	
7	0	97.62	392	12125	1.48	130.52	128	6	6.53E-02	44.8	
8	0	104.63	343	10289	2.48	139.87	138	5	5.72E-02	44.6	
9	0	121.98	227	11582	1.24	163.02	162	5	3.79E-02	70.8	
10	0	133.26	1355	16328	1.46	178.06	175	7	2.26E-01	15.8	
11	0	143.56	296	13661	2.95	191.80	190	6	4.93E-02	62.8	
12	0	148.94	217	11632	1.86	198.98	197	5	3.61E-02	74.9	
13	0	160.86	274	13674	2.86	214.88	212	6	4.57E-02	67.7	
14	0	185.36*	335	18035	1.14	247.54	246	6	5.58E-02	63.2	
15	0	192.23	272	15870	1.04	256.71	255	5	4.54E-02	69.9	
16	0	208.53	266	16582	1.83	278.46	276	6	4.43E-02	77.2	
17	0	263.96	299	12605	4.20	352.38	349	7	4.98E-02	62.5	
18	0	291.74	142	7671	1.47	389.42	387	5	2.36E-02	93.4	
19	0	295.97	151	9150	2.24	395.07	393	6	2.52E-02	99.8	
20	0	360.76	248	8266	2.56	481.46	479	6	4.13E-02	58.7	
21	0	365.72	299	8287	2.41	488.07	486	6	4.99E-02	48.7	
22	0	369.85	212	8523	1.51	493.58	492	6	3.54E-02	69.3	
23	0	387.92	215	10186	0.96	517.68	515	7	3.59E-02	78.1	
24	0	414.43	76	9913	1.43	553.03	553	6	1.27E-02	207.7	
25	0	420.38	238	10106	2.69	560.96	559	6	3.97E-02	66.7	
26	0	443.13	164	9427	0.98	591.29	589	5	2.74E-02	89.3	
27	0	459.90	178	12511	2.09	613.66	612	6	2.97E-02	99.6	
28	0	468.53	252	14605	1.73	625.16	623	7	4.19E-02	80.3	
29	5	472.57	343	5808	1.70	630.56	629	9	5.72E-02	29.5	4.66E+00
30	5	474.83	1003	14468	2.55	633.56	629	9	1.67E-01	21.1	
31	0	500.42	103	4388	2.03	667.68	666	5	1.72E-02	97.1	
32	0	511.33*	152	4701	1.88	682.22	680	6	2.53E-02	72.3	
33	0	517.18	116	4271	1.93	690.03	688	6	1.93E-02	89.7	
34	0	533.94	218	3205	2.28	712.37	710	6	3.63E-02	41.7	
35	0	539.66	169	3262	1.45	720.00	717	7	2.82E-02	57.1	
36	0	553.32	67	1808	1.55	738.21	736	5	1.11E-02	98.2	
37	0	585.00	134	1974	3.11	780.44	778	8	2.24E-02	58.5	
38	0	604.41	235	1586	2.30	806.33	804	7	3.92E-02	29.2	
39	0	609.27*	37	1401	0.91	812.81	811	6	6.16E-03	160.6	
40	0	620.16	68	1163	2.25	827.32	826	5	1.13E-02	76.4	

Sample ID : T8657 548-90 SST Acquisition date : 26-SEP-1990 13:06:22

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
41	0	650.35	41	1619	1.83	867.57	864	6	6.77E-03	159.6	
42	0	661.45*	264424	2774	1.97	882.37	875	15	4.41E+01	0.2	
43	0	682.25	21	107	3.21	910.09	907	7	3.43E-03	91.0	
44	0	696.14	53	127	1.61	928.61	925	7	8.77E-03	40.4	
45	0	722.17	31	145	0.92	963.30	959	8	5.18E-03	68.7	
46	0	753.40	10	91	1.91	1004.93	1002	6	1.71E-03	163.4	
47	0	757.51	14	100	0.78	1010.41	1007	6	2.32E-03	125.1	
48	0	795.69	178	117	1.62	1061.30	1058	8	2.96E-02	13.8	
49	0	802.33*	70	107	3.92	1070.16	1066	9	1.16E-02	32.3	
50	0	810.62	61	137	1.94	1081.20	1076	10	1.02E-02	37.5	
51	0	817.98	24	172	4.12	1091.01	1089	10	3.92E-03	114.6	
52	0	825.59	54	130	4.84	1101.15	1098	9	8.93E-03	45.7	
53	9	855.62	17	90	1.74	1141.17	1139	8	2.79E-03	91.3	3.96E+00
54	9	857.49	16	105	1.95	1143.67	1139	8	2.71E-03	110.9	
55	0	878.81	21	160	2.21	1172.08	1170	7	3.57E-03	100.7	
56	0	890.57	9	134	0.98	1187.75	1187	6	1.44E-03	219.3	
57	0	915.12	27	167	1.31	1220.47	1217	7	4.52E-03	83.9	
58	0	949.85	48	192	4.79	1266.76	1263	9	7.93E-03	53.2	
59	0	972.43	73	148	2.65	1296.85	1293	10	1.22E-02	35.9	
60	0	1003.41	54	153	3.63	1338.13	1334	9	9.00E-03	44.7	
61	0	1023.31	45	113	5.00	1364.64	1361	9	7.49E-03	49.6	
62	0	1033.08	24	139	2.75	1377.66	1375	8	4.05E-03	87.4	
63	0	1053.45	15	107	1.76	1404.81	1401	7	2.50E-03	122.1	
64	0	1072.25	14	127	1.82	1429.86	1426	9	2.39E-03	152.7	
65	0	1087.62	21	161	3.38	1450.35	1446	10	3.48E-03	114.3	
66	0	1118.58	9	77	1.28	1491.59	1490	6	1.44E-03	167.9	
67	0	1173.24*	2147	92	2.31	1564.42	1558	15	3.58E-01	2.4	
68	3	1237.83	9	8	1.60	1650.47	1648	12	1.43E-03	57.0	1.28E+00
69	3	1241.98	8	12	1.60	1656.00	1648	12	1.37E-03	72.6	
70	0	1274.96	45	24	1.66	1699.93	1695	12	7.50E-03	31.7	
71	0	1290.73	13	13	0.94	1720.95	1716	9	2.13E-03	58.6	
72	0	1312.85	9	14	2.04	1750.40	1746	9	1.43E-03	106.6	
73	2	1324.19	21	20	2.59	1765.51	1760	26	3.46E-03	47.0	9.09E-01
74	2	1332.77*	1874	15	2.42	1776.94	1760	26	3.12E-01	2.4	
75	0	1363.57	8	5	2.71	1817.97	1815	7	1.40E-03	56.2	
76	0	1389.16	5	5	2.04	1852.06	1849	9	7.69E-04	108.7	
77	0	1429.06	6	1	1.42	1905.20	1902	7	9.68E-04	54.6	
78	0	1454.64	2	8	1.93	1939.27	1936	7	2.89E-04	272.1	
79	10	1459.77*	8	0	3.49	1946.11	1943	22	1.25E-03	69.3	8.04E-01
80	10	1463.75	11	0	3.81	1951.41	1943	22	1.79E-03	91.1	
81	0	1476.56	9	1	3.16	1968.47	1965	8	1.43E-03	49.5	
82	0	1507.00	3	9	0.86	2009.01	2002	12	5.42E-04	168.5	
83	0	1532.04	7	8	5.75	2042.37	2038	10	1.23E-03	78.9	
84	0	1555.47	3	4	2.02	2073.57	2072	5	5.00E-04	106.1	
85	0	1620.89	13	0	5.25	2160.69	2156	14	2.17E-03	27.7	
86	0	1635.66	14	0	8.23	2180.36	2171	19	2.33E-03	43.2	
87	0	1716.12	4	2	1.03	2287.50	2285	7	5.93E-04	84.7	
88	0	1751.55	2	1	1.10	2334.67	2334	4	2.50E-04	115.5	
89	0	1757.24	4	0	1.10	2342.25	2339	6	6.67E-04	50.0	
90	0	1869.19	5	2	1.32	2491.31	2488	7	8.02E-04	55.0	

VAX/VMS Peak Search Report V1.7 Generated 17-OCT-1990 15:13:00

Configuration : MCA0:[USER]ADC3$1
Analyses by : PEAK V16.0,ENBACK V1.3
Sample title : T8656 SST 547-90 90-3619-A-1
Deposition Date : 26-SEP-1990 00:00:00 Deposition Period: 17-NOV-1858 00:00:00
Sample date : 26-SEP-1990 00:00:00 Acquisition date : 26-SEP-1990 11:05:15
Sample ID : T8656 547-90 SST Sample quantity : 2.00200E-02 G
Sample type : 10 ML SCV Sample geometry : T2SCV
Detector name : TRACK Detector geometry: T2SCV
Elapsed live time: 0 01:40:00.00 Elapsed real time: 0 01:40:19.19 0.3%
Start energy : 22.26 End energy : 3074.55
Sensitivity : 2.00 Gaussian : 10.00
Critical level : No

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	5	32.16*	9144	1675	1.30	43.20	40	15	1.52E+00	1.6	8.76E+01
2	5	33.75	7087	4673	1.70	45.33	40	15	1.18E+00	2.6	
3	5	36.58*	7581	9238	1.70	49.09	40	15	1.26E+00	2.4	
4	0	40.82	121	11361	1.28	54.75	54	6	2.01E-02	140.8	
5	0	47.03*	161	9460	1.13	63.04	62	5	2.69E-02	91.1	
6	0	59.48	317	8839	1.31	79.65	78	5	5.29E-02	45.1	
7	0	85.60*	163	9056	0.96	114.48	113	5	2.71E-02	88.2	
8	0	91.32*	82	8940	1.68	122.12	120	5	1.36E-02	174.0	
9	0	97.35	455	10697	2.11	130.16	128	6	7.58E-02	36.4	
10	0	103.68	296	9247	1.31	138.61	137	5	4.94E-02	49.1	
11	0	110.82	303	11281	2.32	148.12	146	6	5.05E-02	56.0	
12	0	122.56	331	10158	1.72	163.79	162	5	5.51E-02	46.1	
13	0	133.22	813	15083	1.51	178.01	175	7	1.35E-01	25.2	
14	0	186.67*	363	16365	1.57	249.30	247	6	6.04E-02	55.8	
15	0	228.79	138	12443	1.57	305.47	303	6	2.30E-02	129.1	
16	0	241.53	253	9307	3.27	322.47	321	5	4.21E-02	57.7	
17	0	266.55	108	7806	1.05	355.83	355	5	1.80E-02	123.4	
18	0	298.23	272	9440	2.34	398.08	395	7	4.53E-02	60.4	
19	0	302.76	236	8080	2.34	404.12	402	6	3.93E-02	61.0	
20	0	309.58	147	8001	1.83	413.22	412	6	2.44E-02	97.1	
21	0	335.06	231	7608	2.02	447.19	445	6	3.85E-02	60.2	
22	0	343.55	271	8775	1.73	458.51	455	7	4.51E-02	57.7	
23	0	418.76	86	10615	0.89	558.81	558	7	1.43E-02	200.5	
24	0	434.94	187	9820	1.09	580.38	578	6	3.12E-02	84.0	
25	0	457.35	136	11176	1.05	610.26	608	6	2.27E-02	123.5	
26	0	470.28	263	11281	2.33	627.49	625	6	4.39E-02	64.0	
27	0	557.24*	54	1817	0.76	743.44	741	6	9.02E-03	124.9	
28	0	587.99	80	1784	2.53	784.44	782	8	1.33E-02	92.3	
29	0	604.10	197	1604	1.88	805.91	803	8	3.28E-02	36.7	
30	0	612.81	60	1192	2.00	817.52	815	6	9.97E-03	92.2	
31	0	620.16	134	1813	2.96	827.32	824	9	2.24E-02	58.0	
32	0	645.09	81	1110	2.20	860.56	859	5	1.35E-02	62.6	
33	0	661.47*	239193	2313	1.96	882.38	875	15	3.99E+01	0.2	
34	0	695.43	46	146	3.47	927.66	924	13	7.72E-03	59.6	
35	6	721.55	19	41	2.14	962.48	960	11	3.14E-03	59.8	2.60E+00
36	6	723.66	40	50	1.76	965.28	960	11	6.73E-03	36.1	
37	0	741.01	17	72	4.89	988.42	984	9	2.86E-03	97.7	
38	0	747.74	41	73	3.86	997.39	993	10	6.81E-03	42.9	
39	0	756.16	30	68	2.47	1008.61	1004	9	4.92E-03	54.0	
40	0	765.36	15	74	0.83	1020.87	1019	8	2.49E-03	101.3	

Sample ID : T8656 547-90 SST Acquisition date : 26-SEP-1990 11:05:15

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
41	0	779.87	20	73	2.14	1040.21	1037	7	3.33E-03	75.5	
42	0	795.30	93	134	2.11	1060.78	1057	11	1.55E-02	27.5	
43	0	802.96*	56	61	5.02	1070.99	1067	9	9.27E-03	32.5	
44	0	814.40	8	39	1.90	1086.23	1085	5	1.32E-03	131.7	
45	0	826.42	13	62	2.26	1102.26	1100	7	2.19E-03	113.2	
46	0	843.79	20	66	1.41	1125.41	1122	9	3.27E-03	87.4	
47	0	853.95	12	62	1.39	1138.95	1137	7	1.98E-03	118.9	
48	0	861.23	12	72	1.56	1148.64	1146	7	2.00E-03	125.1	
49	0	865.70	8	57	0.78	1154.60	1153	5	1.33E-03	144.6	
50	0	873.36	34	71	2.29	1164.81	1161	9	5.59E-03	53.5	
51	0	878.54	19	64	2.09	1171.72	1170	7	3.20E-03	73.4	
52	0	891.98	23	75	2.50	1189.63	1186	8	3.91E-03	71.7	
53	0	926.59	7	66	0.65	1235.76	1233	6	1.24E-03	185.3	
54	0	951.45	8	111	0.85	1268.88	1266	8	1.28E-03	237.5	
55	0	961.86*	17	65	2.96	1282.75	1281	6	2.82E-03	81.5	
56	0	980.09	17	90	3.58	1307.06	1301	10	2.88E-03	108.4	
57	0	990.25	10	50	2.02	1320.59	1315	7	1.65E-03	131.6	
58	0	1004.47	41	107	5.03	1339.54	1334	12	6.76E-03	54.1	
59	6	1038.59	30	30	2.91	1385.01	1382	12	4.97E-03	37.7	1.69E+00
60	6	1043.06	18	30	2.91	1390.96	1382	12	2.98E-03	60.6	
61	0	1050.51	20	51	3.43	1400.89	1397	8	3.35E-03	74.3	
62	0	1071.59	30	59	1.66	1428.98	1424	9	4.97E-03	53.1	
63	0	1080.95	19	45	2.55	1441.45	1439	6	3.18E-03	59.0	
64	0	1086.26	17	43	2.48	1448.53	1446	7	2.76E-03	74.3	
65	0	1114.51	7	54	1.37	1486.17	1482	7	1.24E-03	169.2	
66	0	1152.58	26	31	5.70	1536.89	1533	10	4.34E-03	47.1	
67	0	1173.23*	934	55	2.05	1564.40	1558	14	1.56E-01	3.7	
68	0	1183.90	15	16	4.66	1578.62	1573	11	2.51E-03	68.7	
69	0	1191.36	10	12	2.71	1588.55	1586	6	1.61E-03	72.3	
70	0	1205.10	7	10	0.82	1606.87	1603	8	1.23E-03	91.2	
71	10	1211.20	7	6	1.80	1614.99	1613	11	1.14E-03	61.4	1.01E+00
72	10	1215.91	6	8	1.80	1621.27	1613	11	9.17E-04	95.5	
73	0	1226.91	12	17	5.98	1635.92	1631	14	2.04E-03	87.6	
74	0	1274.66	50	8	2.06	1699.53	1695	13	8.35E-03	20.0	
75	0	1302.03	6	7	2.22	1736.00	1733	7	1.00E-03	83.7	
76	0	1332.78*	849	16	2.26	1776.95	1769	16	1.42E-01	3.6	
77	0	1387.02	4	4	1.27	1849.21	1845	7	5.97E-04	115.7	
78	0	1395.52	4	1	1.58	1860.53	1857	7	6.56E-04	84.8	
79	0	1399.75	7	2	2.51	1866.17	1864	6	1.20E-03	50.9	
80	0	1409.73	11	0	3.36	1879.45	1875	16	1.83E-03	59.6	
81	0	1462.07	24	0	3.78	1949.17	1943	15	4.00E-03	20.4	
82	0	1595.11	6	1	1.60	2126.36	2123	8	9.29E-04	47.5	
83	0	1623.13	2	1	1.10	2163.67	2163	6	2.50E-04	197.2	
84	0	1630.30	13	2	1.22	2173.22	2168	12	2.14E-03	30.1	
85	0	1714.36	2	5	1.25	2285.15	2280	7	4.13E-04	128.1	
86	0	1800.83	7	0	2.55	2400.29	2396	9	1.17E-03	37.8	
87	0	2322.13	6	0	1.80	3094.17	3088	12	1.00E-03	40.8	
88	0	2444.76	6	0	0.93	3257.33	3252	14	1.00E-03	40.8	

VAX/VMS Nuclide Identification Report V2.5 Generated 11-OCT-1990 15:08:59

Configuration : MCA0:[USER3]ADC3#1
Analyses by : PEAK V16.0,PEAKEFF V2.2,ENBACK V1.3,NID/DEF V2.2
ample title : T8656 SST 547-90 90-3617-A-1
Deposition Date : 26-SEP-1990 00:00:00 Deposition Period: 17-NOV-1858 00:00:00
Sample date : 26-SEP-1990 00:00:00 Acquisition date : 26-SEP-1990 11:05:15
Sample ID : T8656 547-90 SST Sample quantity : 2.00200E-02 G
Sample type : 10 ML SCV Sample geometry : T2SCV
Detector name : TRACK Detector geometry: T2SCV
Elapsed live time: 0 01:40:00.00 Elapsed real time: 0 01:40:19.19 0.3%
Energy tolerance : 1.10 Half life ratio : 8.00
Errors propagated: No Systematic Error : 0.00 %
Efficiency type : Empirical Efficiencies at : Peak Energy
Abundance limit : 80.00

Nuclide Line Activity Report

Nuclide Type: fission

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected uCi/G	Decay Corr uCi/G	1-Sigma %Error
CO-57	122.06	331	85.95*	2.691E+00	3.219E-03	3.223E-03	46.10
	136.47	------	10.33	2.545E+00	------ Line Not Found		------
NB-95	765.79	23	99.79*	4.877E-01	1.071E-03	1.082E-03	59.04
CS-134	563.24	------	8.38	6.598E-01	------ Line Not Found		------
	569.32	------	15.40	6.527E-01	------ Line Not Found		------
	604.71	197	97.60*	6.150E-01	7.366E-03	7.370E-03	36.67
	795.87	93	85.40	4.707E-01	5.192E-03	5.194E-03	27.49
	801.95	56	8.73	4.665E-01	3.073E-02	3.075E-02	32.53
S-137	661.66	239193	85.20*	5.622E-01	1.124E+01	1.124E+01	0.21
CE-144	80.10	74	1.13	2.812E+00	5.224E-02	5.230E-02	224.25
	133.54	813	11.10*	2.500E+00	6.384E-02	6.392E-02	25.25
EU-154	123.07	331	40.42	2.691E+00	6.845E-03	6.846E-03	46.10
	247.93	------	6.84	1.549E+00	------ Line Not Found		------
	591.70	------	4.83	6.279E-01	------ Line Not Found		------
	692.40	------	1.69	5.376E-01	------ Line Not Found		------
	723.30	40	19.92	5.151E-01	8.831E-03	8.832E-03	36.07
	756.90	43	4.33	4.940E-01	4.528E-02	4.528E-02	52.38
	873.20	39	12.09	4.313E-01	1.697E-02	1.697E-02	53.04
	996.30	------	10.34	3.817E-01	------ Line Not Found		------
	1004.76	41	17.90	3.789E-01	1.346E-02	1.346E-02	54.05
	1274.51	50	34.40*	3.051E-01	1.075E-02	1.075E-02	19.77
	1596.50	------	1.83	2.481E-01	------ Line Not Found		------
AM-241	59.54	317	35.90*	2.318E+00	8.580E-03	8.580E-03	45.10

Nuclide Type: activation

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected uCi/G	Decay Corr uCi/G	1-Sigma %Error
CO-60	1173.24	934	99.90	3.290E-01	6.396E-02	6.397E-02	3.68
	1332.50	849	99.98*	2.930E-01	6.521E-02	6.522E-02	3.63
~~ZN-65~~	1115.55	7	50.70*	3.446E-01	9.594E-04	9.608E-04	169.24
~~ZR-95~~	724.20	40	44.10	5.151E-01	4.001E-03	4.022E-03	36.07
	756.73	43	54.50*	4.940E-01	3.597E-03	3.617E-03	52.38

D04-046

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Sample ID : T3656 547-90 SST Acquisition date : 26-SEP-1990 11:05:15

Nuclide Type: ACTIVATION

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected uCi/G	Decay Corr uCi/G	1-Sigma %Error
GD-153 ✓	97.43	455	27.60*	2.870E+00	1.292E-02	1.294E-02	36.36
	103.18	296	19.60	2.843E+00	1.196E-02	1.198E-02	49.07

Sample ID : T8656 547-90 SST Acquisition date : 26-SEP-1990 11:05:15

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Fw	%Err	Fit	Nuclides
5	32.16*	9144	1675	1.30	43.20	40	15	1.6	8.76E+01	
5	33.75	7087	4673	1.70	45.33	40	15	2.6		
5	36.58*	7581	9238	1.70	49.09	40	15	2.4		
0	40.82	121	11361	1.28	54.75	54	6	140.8		
0	47.03*	161	9460	1.13	63.04	62	5	91.1		
0	50.41	166	9157	1.18	67.55	66	5	87.5		
0	59.48	317	8839	1.31	79.65	78	5	45.1		AM-241
0	62.78*	109	8819	0.83	84.05	83	5	130.4		
0	79.55	74	10834	0.93	106.42	104	6	224.3		CE-144
0	85.61*	148	10882	0.93	114.51	113	6	111.2		
0	91.67*	192	8926	4.50	122.58	121	5	73.8		
0	97.35	455	10697	2.11	130.16	128	6	36.4		GD-153
0	103.68	296	9247	1.31	138.61	137	5	49.1		GD-153
0	110.82	303	11281	2.32	148.12	146	6	56.0		
0	122.56	331	10158	1.72	163.79	162	5	46.1		CO-57
										EU-154
0	133.22	813	15083	1.51	178.01	175	7	25.2		CE-144
0	166.31	173	12466	1.41	222.14	220	6	101.7		
10	187.15	1920	12794	4.87	249.94	247	17	9.1	3.11E+00	
10	190.38	547	15740	1.56	254.25	247	17	37.0		
10	192.48	567	18716	1.74	257.05	247	17	40.4		
0	202.15	166	15950	1.03	269.94	268	6	121.1		
0	206.16	307	15317	0.93	275.29	273	6	64.1		
0	215.72	287	16198	2.64	288.03	286	7	74.1		
0	220.03	210	11077	1.61	293.78	292	5	76.2		
0	224.29	356	12803	4.46	299.47	297	6	50.6		
0	228.79	138	12443	1.57	305.47	303	6	129.1		
0	241.69	262	11149	2.68	322.68	320	6	64.4		
0	251.58	162	10372	1.48	335.87	333	6	99.9		
0	262.69	299	10999	2.18	350.68	348	7	59.1		
0	266.55	108	7806	1.05	355.83	355	5	123.4		
0	289.28	123	8336	2.34	386.14	385	6	117.7		
0	298.23	272	9440	2.34	398.08	395	7	60.4		
0	302.76	236	8080	2.34	404.12	402	6	61.0		
0	309.58	147	8001	1.83	413.22	412	6	97.1		
0	316.97	158	7855	1.96	423.07	421	6	89.2		
0	335.06	231	7600	2.02	447.19	445	6	60.2		
0	343.32	285	7538	1.63	458.21	456	6	48.4		
0	379.20	208	9184	2.48	506.05	503	7	76.9		
0	391.96	124	6833	3.24	523.07	522	5	100.3		
0	401.48	71	8259	2.12	535.77	533	6	204.0		
0	410.85	363	15815	5.33	548.26	544	11	67.3		
0	418.76	86	10615	0.89	558.81	558	7	200.5		
0	427.05	261	10788	2.51	569.86	567	7	66.6		
0	434.94	187	9820	1.09	580.38	578	6	84.0		
0	457.35	136	11176	1.05	610.26	608	6	123.5		
0	470.28	263	11281	2.33	627.49	625	6	64.0		
0	475.79	626	10883	3.42	634.84	632	7	28.0		
0	530.72	100	3027	2.35	708.08	706	6	88.8		
0	539.44	84	2636	1.16	719.70	717	6	97.5		
0	551.17	67	1955	1.33	735.35	734	6	106.2		

Sample ID : T8656 547-90 SST Acquisition date : 26-SEP-1990 11:05:15

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw %Err	Fit	Nuclides
0	557.24*	54	1017	0.76	743.44	741	6124.9		
0	577.66	21	1213	1.84	770.66	770	5249.6		
0	588.52	117	1524	2.63	785.14	782	7 57.2		
0	597.40*	39	1010	1.79	796.98	795	5124.9		
0	604.10	197	1604	1.88	805.91	803	8 36.7		CS-134
0	612.81	60	1192	2.00	817.52	815	6 92.2		
0	620.09	150	1800	3.07	827.23	823	9 51.6		
0	625.57	26	995	1.84	834.54	833	5183.6		
0	636.10	32	1205	1.10	848.57	847	6171.1		
0	644.93	104	1305	2.26	860.35	858	6 55.9		
0	661.47*	239193	2313	1.96	882.38	875	15 0.2		CS-137
0	695.43	46	146	3.47	927.66	924	13 59.6		
6	721.55	19	41	2.14	962.48	960	11 59.8	2.60E+00	
6	723.66	40	50	1.76	965.28	960	11 36.1		EU-154
									ZR-95
7	736.07	10	23	2.34	981.83	980	8 72.2	2.91E+00	
7	738.35	12	52	2.34	984.87	980	8113.6		
7	742.17	19	21	1.83	989.96	988	31 38.3	1.43E+00	
7	748.75	45	126	4.44	998.73	988	31 67.7		
7	756.04	43	91	3.34	1008.44	988	31 52.4		ZR-95
									EU-154
0	766.15	23	57	0.89	1021.92	1019	7 59.0		NB-95
0	778.21	24	62	3.26	1038.00	1035	7 60.7		
0	787.84	12	49	1.90	1050.83	1049	5 92.1		
0	795.30	93	134	2.11	1060.78	1057	11 27.5		CS-134
0	802.96*	56	61	5.02	1070.99	1067	9 32.5		CS-134
0	814.40	8	39	1.90	1086.23	1085	5131.7		
0	826.42	13	62	2.26	1102.26	1100	7113.2		
8	837.59	15	59	1.76	1117.14	1113	15102.6	2.29E+00	
8	843.44	22	38	1.66	1124.94	1113	15 50.4		
0	853.95	12	62	1.39	1138.95	1137	7118.9		
0	861.23	12	72	1.56	1148.64	1146	7125.1		
0	865.70	8	57	0.78	1154.60	1153	5144.6		
0	872.92	39	99	2.30	1164.23	1158	11 53.8		EU-154
0	878.54	19	64	2.09	1171.72	1170	7 73.4		
0	891.98	23	75	2.50	1189.63	1186	8 71.7		
0	918.06	28	96	4.72	1224.39	1220	10 69.7		
0	925.01	39	73	4.50	1233.66	1230	9 46.8		
0	946.59	11	76	3.34	1262.41	1260	7147.5		
0	952.05	17	144	4.90	1269.68	1266	11145.1		
0	957.91	19	48	1.60	1277.50	1276	5 65.0		
0	961.86*	17	65	2.96	1282.75	1281	6 81.5		
0	980.09	17	96	3.58	1307.06	1301	10108.4		
0	990.25	10	50	2.02	1320.59	1315	7131.6		
0	1004.47	41	107	5.03	1339.54	1334	12 54.1		EU-154
0	1019.05	19	65	5.09	1358.97	1355	10 84.7		
0	1027.33	12	55	1.48	1370.00	1367	8122.4		
6	1038.59	30	30	2.91	1385.01	1382	12 37.7	1.69E+00	
6	1043.06	18	30	2.91	1390.96	1382	12 60.6		
0	1050.51	20	51	3.43	1400.89	1397	8 74.3		
0	1058.14	21	52	1.28	1411.06	1407	8 64.2		

Sample ID : T8656 547-90 SST Acquisition date : 26-SEP-1990 11:05:15

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides
0	1071.59	30	59	1.66	1428.98	1424	9	53.1		
0	1080.95	19	45	2.55	1441.45	1439	6	59.0		
0	1086.26	17	43	2.40	1448.53	1446	7	74.3		
0	1099.79	10	75	2.87	1466.55	1461	10	161.2		
0	1114.51	7	54	1.37	1486.17	1482	7	169.2		ZN-65
0	1122.26	8	17	0.69	1496.50	1495	4	90.7		
0	1137.04	11	50	0.95	1516.19	1512	9	133.6		
0	1152.58	26	31	5.70	1536.89	1533	10	47.1		
0	1173.23*	934	55	2.05	1564.40	1558	14	3.7		CO-60
0	1183.11	10	19	4.56	1577.57	1574	11	87.5		
0	1191.36	10	12	2.71	1588.55	1586	6	72.3		
0	1205.52	10	12	0.84	1607.43	1604	9	66.5		
10	1211.20	7	6	1.80	1614.99	1613	11	61.4	1.01E+00	
10	1215.91	6	8	1.80	1621.27	1613	11	95.5		
0	1224.42	5	16	0.75	1632.60	1627	9	168.0		
0	1228.97	10	7	0.83	1638.67	1636	9	66.8		
0	1236.96	2	2	1.18	1649.32	1648	4	154.7		
0	1274.66	50	8	2.06	1699.53	1695	13	20.0		EU-154
0	1296.40	2	7	1.99	1728.50	1727	7	302.3		
0	1302.03	6	7	2.22	1736.00	1733	7	83.7		
0	1309.73	4	8	1.30	1746.25	1743	8	141.4		
0	1332.78*	849	16	2.26	1776.95	1769	16	3.6		CO-60
0	1360.59	2	1	0.65	1814.00	1812	6	207.8		
0	1364.93	4	1	1.02	1819.79	1817	7	76.1		
0	1387.02	4	4	1.27	1849.21	1845	7	115.7		
0	1395.52	4	1	1.58	1860.53	1857	7	84.8		
0	1399.75	7	2	2.51	1866.17	1864	6	50.9		
0	1409.73	11	0	3.36	1879.45	1875	16	59.6		
0	1445.92	3	0	1.10	1927.67	1925	6	57.7		
0	1462.07	24	0	3.78	1949.17	1943	15	20.4		
0	1472.15	5	0	1.50	1962.60	1959	9	44.7		
0	1483.96	9	0	3.74	1978.33	1973	12	33.3		
0	1564.24	8	0	3.23	2085.25	2081	10	35.4		
0	1595.11	6	1	1.60	2126.36	2123	8	47.5		
0	1602.02	2	1	1.98	2135.56	2133	6	86.6		
0	1623.13	2	1	1.10	2163.67	2163	6	197.2		
0	1630.30	13	2	1.22	2173.22	2168	12	30.1		
0	1643.65	9	0	4.47	2191.00	2186	12	57.7		
0	1679.55	2	3	1.18	2238.80	2237	5	128.1		
0	1714.36	2	5	1.25	2285.15	2280	7	128.1		
0	1768.32	7	0	1.10	2357.00	2351	14	37.8		
0	1800.83	7	0	2.55	2400.29	2396	9	37.8		
0	1973.79	2	1	1.98	2630.56	2627	7	86.6		
0	2206.48	4	1	1.84	2940.26	2937	8	83.3		
0	2322.13	6	0	1.80	3094.17	3088	12	40.8		
0	2344.30	3	0	1.10	3123.67	3120	9	57.7		
0	2444.76	6	0	0.93	3257.33	3252	14	40.8		

VAX/VMS Peak Search Report V1.7 Generated 11-OCT-1990 15:08:43

Configuration : MCA0:[USER]ADC3$1
Analyses by : PEAK V16.0,ENBACK V1.3
Sample title : T8656 SST 547-90 90-3619-A-1
Deposition Date : 26-SEP-1990 00:00:00 Deposition Period: 17-NOV-1858 00:00:00
Sample date : 26-SEP-1990 00:00:00 Acquisition date : 26-SEP-1990 11:05:15
Sample ID : T8656 547-90 SST Sample quantity : 2.00200E-02 G
Sample type : 10 ML SCV Sample geometry : T2SCV
Detector name : TRACK Detector geometry: T2SCV
Elapsed live time: 0 01:40:00.00 Elapsed real time: 0 01:40:19.19 0.3%
Start energy : 22.26 End energy : 3074.55
Sensitivity : 1.50 Gaussian : 10.00
Critical level : No

Pk.	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	5	32.16*	9144	1675	1.30	43.20	40	15	1.52E+00	1.6	8.76E+01
2	5	33.75	7087	4673	1.70	45.33	40	15	1.18E+00	2.6	
3	5	36.58*	7581	9238	1.70	49.09	40	15	1.26E+00	2.4	
4	0	40.82	121	11361	1.20	54.75	54	6	2.01E-02	140.8	
5	0	47.03*	161	9460	1.13	63.04	62	5	2.69E-02	91.1	
6	0	50.41	166	9157	1.13	67.55	66	5	2.76E-02	87.5	
7	0	59.48	317	8039	1.31	79.65	78	5	5.29E-02	45.1	
8	0	62.78*	109	8819	0.83	84.05	83	5	1.81E-02	130.4	
9	0	79.55	74	10834	0.93	106.42	104	6	1.23E-02	224.3	
10	0	85.61*	148	10882	0.93	114.51	113	6	2.47E-02	111.2	
11	0	91.67*	192	8926	4.50	122.58	121	5	3.21E-02	73.8	
12	0	97.35	455	10697	2.11	130.16	128	6	7.58E-02	36.4	
13	0	103.68	296	9247	1.31	138.61	137	5	4.94E-02	49.1	
14	0	110.82	303	11281	2.32	148.12	146	6	5.05E-02	56.0	
15	0	122.56	331	10158	1.72	163.79	162	5	5.51E-02	46.1	
16	0	133.22	913	15083	1.51	178.01	175	7	1.35E-01	25.2	
17	0	166.31	173	12466	1.41	222.14	220	6	2.89E-02	101.7	
18	10	187.15	1920	12794	4.87	249.94	247	17	3.20E-01	9.1	3.11E+00
19	10	190.38	547	15740	1.56	254.25	247	17	9.12E-02	37.0	
20	10	192.48	567	16016	1.74	257.05	247	17	9.45E-02	40.4	
21	0	202.15	166	15950	1.03	269.94	268	6	2.76E-02	121.1	
22	0	206.16	307	15317	0.93	275.29	273	6	5.11E-02	64.1	
23	0	215.72	287	16198	2.64	288.03	286	7	4.78E-02	74.1	
24	0	220.03	210	11077	1.61	293.78	292	5	3.49E-02	76.2	
25	0	224.29	356	12803	4.46	299.47	297	6	5.94E-02	50.6	
26	0	228.79	138	12443	1.57	305.47	303	6	2.30E-02	129.1	
27	0	241.69	262	11149	2.68	322.68	320	6	4.36E-02	64.4	
28	0	251.58	162	10372	1.48	335.87	333	6	2.70E-02	99.9	
29	0	262.69	299	10999	2.18	350.68	348	7	4.98E-02	59.1	
30	0	266.55	108	7806	1.05	355.83	355	5	1.80E-02	123.4	
31	0	289.28	123	8336	2.34	386.14	385	6	2.05E-02	117.7	
32	0	298.23	272	9440	2.34	398.08	395	7	4.53E-02	60.4	
33	0	302.76	236	8080	2.34	404.12	402	6	3.93E-02	61.0	
34	0	309.58	147	8001	1.83	413.22	412	6	2.44E-02	97.1	
35	0	316.97	158	7855	1.96	423.07	421	6	2.63E-02	89.2	
36	0	335.06	231	7608	2.02	447.19	445	6	3.85E-02	60.2	
37	0	343.32	285	7538	1.63	458.21	456	6	4.75E-02	48.4	
38	0	379.20	208	9184	2.48	506.05	503	7	3.46E-02	76.9	
39	0	391.96	124	6833	3.24	523.07	522	5	2.06E-02	100.3	
40	0	401.48	71	8259	2.12	535.77	533	6	1.18E-02	204.0	

Sample ID : T8656 547-90 SST Acquisition date : 26-SEP-1990 11:05:15

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
41	0	410.85	363	15815	5.33	548.26	544	11	6.06E-02	67.3	
42	0	418.76	86	10615	0.89	558.81	558	7	1.43E-02	200.5	
43	0	427.05	261	10788	2.51	569.86	567	7	4.35E-02	66.6	
44	0	434.94	187	9820	1.09	580.38	578	6	3.12E-02	84.0	
45	0	457.35	136	11176	1.05	610.26	608	6	2.27E-02	123.5	
46	0	470.28	263	11281	2.33	627.49	625	6	4.39E-02	64.0	
47	0	475.79	626	10883	3.42	634.84	632	7	1.04E-01	28.0	
48	0	530.72	100	3027	2.35	708.08	706	6	1.67E-02	88.8	
49	0	539.44	84	2636	1.16	719.70	717	6	1.40E-02	97.5	
50	0	551.17	67	1955	1.33	735.35	734	6	1.12E-02	106.2	
51	0	557.24*	54	1817	0.76	743.44	741	6	9.02E-03	124.9	
52	0	577.66	21	1213	1.84	770.66	770	5	3.49E-03	249.6	
53	0	588.52	117	1524	2.63	785.14	782	7	1.95E-02	57.2	
54	0	597.40*	39	1010	1.79	796.98	795	5	6.56E-03	124.9	
55	0	604.10	197	1604	1.88	805.91	803	8	3.28E-02	36.7	
56	0	612.81	60	1192	2.00	817.52	815	6	9.97E-03	92.2	
57	0	620.09	150	1800	3.07	827.23	823	9	2.49E-02	51.6	
58	0	625.57	26	995	1.84	834.54	833	5	4.33E-03	183.6	
59	0	636.10	32	1205	1.10	848.57	847	6	5.37E-03	171.1	
60	0	644.93	104	1305	2.26	860.35	858	6	1.74E-02	55.9	
61	0	661.47*	239193	2313	1.96	882.38	875	15	3.99E+01	0.2	
62	0	695.43	46	146	3.47	927.66	924	13	7.72E-03	59.6	
63	6	721.55	19	41	2.14	962.48	960	11	3.14E-03	59.8	2.60E+00
64	6	723.66	40	50	1.76	965.28	960	11	6.73E-03	36.1	
65	7	736.07	10	23	2.34	981.83	980	8	1.66E-03	72.2	2.91E+00
66	7	738.35	12	52	2.34	984.87	980	8	2.06E-03	113.6	
67	7	742.17	19	21	1.83	989.96	988	31	3.15E-03	38.3	1.43E+00
68	7	748.75	45	126	4.44	998.73	988	31	7.45E-03	67.7	
69	7	756.04	43	91	3.34	1008.44	988	31	7.17E-03	52.4	
70	0	766.15	23	57	0.89	1021.92	1019	7	3.86E-03	59.0	
71	0	778.21	24	62	3.26	1038.00	1035	7	3.99E-03	60.7	
72	0	787.84	12	49	1.90	1050.83	1049	5	2.00E-03	92.1	
73	0	795.30	93	134	2.11	1060.78	1057	11	1.55E-02	27.5	
74	0	802.96*	56	61	5.02	1070.99	1067	9	9.27E-03	32.5	
75	0	814.40	8	39	1.90	1086.23	1085	5	1.32E-03	131.7	
76	0	826.42	13	62	2.26	1102.26	1100	7	2.19E-03	113.2	
77	8	837.57	15	59	1.76	1117.14	1113	15	2.42E-03	102.6	2.29E+00
78	8	843.44	22	38	1.66	1124.94	1113	15	3.67E-03	50.4	
79	0	853.95	12	62	1.39	1138.95	1137	7	1.98E-03	118.9	
80	0	861.27	12	72	1.56	1148.64	1146	7	2.00E-03	125.1	
81	0	865.70	8	57	0.78	1154.60	1153	5	1.33E-03	144.6	
82	0	872.92	39	99	2.30	1164.23	1158	11	6.55E-03	53.8	
83	0	878.54	19	64	2.09	1171.72	1170	7	3.20E-03	73.4	
84	0	891.98	23	75	2.50	1189.63	1186	8	3.91E-03	71.7	
85	0	918.06	28	90	4.72	1224.39	1220	10	4.67E-03	69.7	
86	0	925.01	39	73	4.50	1233.66	1230	9	6.47E-03	46.8	
87	0	946.59	11	76	3.34	1262.41	1260	7	1.89E-03	147.5	
88	0	952.05	17	144	4.90	1269.68	1266	11	2.83E-03	145.1	
89	0	957.91	19	48	1.60	1277.50	1276	5	3.20E-03	65.0	
90	0	961.86*	17	65	2.96	1282.75	1281	6	2.82E-03	81.5	
91	0	980.09	17	90	3.58	1307.06	1301	10	2.88E-03	108.4	
92	0	990.25	10	50	2.02	1320.59	1315	7	1.65E-03	131.6	
93	0	1004.47	41	107	5.03	1339.54	1334	12	6.76E-03	54.1	
94	0	1019.05	19	65	5.09	1358.97	1355	10	3.17E-03	84.7	

Sample ID : T8656 547-90 SST Acquisition date : 26-SEP-1990 11:05:15

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
95	0	1027.33	12	55	1.48	1370.00	1367	8	2.05E-03	122.4	
96	6	1038.59	30	30	2.91	1385.01	1382	12	4.97E-03	37.7	1.69E+00
97	6	1043.06	18	30	2.91	1390.96	1382	12	2.98E-03	60.6	
98	0	1050.51	20	51	3.43	1400.89	1397	8	3.35E-03	74.3	
99	0	1058.14	21	52	1.28	1411.06	1407	8	3.57E-03	64.2	
100	0	1071.59	30	59	1.66	1428.98	1424	9	4.97E-03	53.1	
101	0	1080.95	19	45	2.55	1441.45	1439	6	3.18E-03	59.0	
102	0	1086.26	17	43	2.48	1448.53	1446	7	2.76E-03	74.3	
103	0	1099.79	10	75	2.87	1466.55	1461	10	1.67E-03	161.2	
104	0	1114.51	7	54	1.37	1486.17	1482	7	1.24E-03	169.2	
105	0	1122.26	8	17	0.69	1496.50	1495	4	1.26E-03	90.7	
106	0	1137.04	11	50	0.95	1516.19	1512	9	1.75E-03	133.6	
107	0	1152.58	26	31	5.70	1536.89	1533	10	4.34E-03	47.1	
108	0	1173.23*	934	55	2.05	1564.40	1558	14	1.56E-01	3.7	
109	0	1183.11	10	19	4.56	1577.57	1574	11	1.72E-03	87.5	
110	0	1191.36	10	12	2.71	1588.55	1586	6	1.61E-03	72.3	
111	0	1205.52	10	12	0.84	1607.43	1604	9	1.72E-03	66.5	
112	10	1211.20	7	6	1.80	1614.99	1613	11	1.14E-03	61.4	1.01E+00
113	10	1215.91	6	8	1.80	1621.27	1613	11	9.17E-04	95.5	
114	0	1224.42	5	16	0.75	1632.60	1627	9	7.78E-04	168.0	
115	0	1228.97	10	7	0.88	1638.67	1636	9	1.62E-03	66.8	
116	0	1236.96	2	2	1.18	1649.32	1648	4	2.64E-04	154.7	
117	0	1274.66	50	8	2.06	1699.53	1695	13	8.35E-03	20.0	
118	0	1296.40	2	7	1.99	1728.50	1727	7	3.33E-04	302.3	
119	0	1302.03	6	7	2.22	1736.00	1733	7	1.00E-03	83.7	
20	0	1309.73	4	8	1.30	1746.25	1743	8	6.67E-04	141.4	
21	0	1332.78*	849	16	2.26	1776.95	1769	16	1.42E-01	3.6	
122	0	1360.59	2	1	0.65	1814.00	1812	6	2.78E-04	207.8	
123	0	1364.93	4	1	1.02	1819.79	1817	7	6.22E-04	76.1	
124	0	1387.02	4	4	1.27	1849.21	1845	7	5.97E-04	115.7	
125	0	1395.52	4	1	1.58	1860.53	1857	7	6.56E-04	84.8	
126	0	1399.75	7	2	2.51	1866.17	1864	6	1.20E-03	50.9	
127	0	1409.73	11	0	3.36	1879.45	1875	16	1.83E-03	59.6	
128	0	1445.92	3	0	1.10	1927.67	1925	6	5.00E-04	57.7	
129	0	1462.07	24	0	3.78	1949.17	1943	15	4.00E-03	20.4	
130	0	1472.15	5	0	1.50	1962.60	1959	9	8.33E-04	44.7	
131	0	1483.96	9	0	3.74	1978.33	1973	12	1.50E-03	33.3	
132	0	1564.24	8	0	3.23	2085.25	2081	10	1.33E-03	35.4	
133	0	1595.11	6	1	1.60	2126.36	2123	8	9.29E-04	47.5	
134	0	1602.02	2	1	1.98	2135.56	2133	6	3.33E-04	86.6	
135	0	1623.13	2	1	1.10	2163.67	2163	6	2.50E-04	197.2	
136	0	1630.30	13	2	1.22	2173.22	2168	12	2.14E-03	30.1	
137	0	1643.65	9	0	4.47	2191.00	2186	12	1.50E-03	57.7	
138	0	1679.55	2	3	1.18	2238.80	2237	5	3.33E-04	128.1	
139	0	1714.36	2	5	1.25	2285.15	2280	7	4.13E-04	128.1	
140	0	1768.32	7	0	1.10	2357.00	2351	14	1.17E-03	37.8	
141	0	1800.83	7	0	2.55	2400.29	2396	9	1.17E-03	37.8	
142	0	1973.79	2	1	1.98	2630.56	2627	7	3.33E-04	86.6	
143	0	2206.48	4	1	1.84	2940.26	2937	8	6.00E-04	83.3	
144	0	2322.13	6	0	1.80	3094.17	3088	12	1.00E-03	40.8	
145	0	2344.30	3	0	1.10	3123.67	3120	9	5.00E-04	57.7	
46	0	2444.76	6	0	0.93	3257.33	3252	14	1.00E-03	40.8	

VAX/VMS Nuclide Identification Report V2.5 Generated 26-SEP-1990 13:01:09

```
Configuration     : DUB0:[USER]T8656.CNF;2
Analyses by       : PEAK V16.0,PEAKEFF V2.2,ENBACK V1.3,NID/DEP V2.2,WTMEAN V1
Sample title      : T8656 SST 547-90 90-3619-A-1
Deposition Date   : 26-SEP-1990 00:00:00 Deposition Period: 17-NOV-1858 00:00:00
Sample date       : 26-SEP-1990 00:00:00 Acquisition date : 26-SEP-1990 11:05:15
Sample ID         : T8656 547-90 SST     Sample quantity  : 2.00200E-02 G
Sample type       : 10 ML SCV            Sample geometry  : T2SCV
Detector name     : TRACK                Detector geometry: T2SCV
Elapsed live time: 0 01:40:00.00         Elapsed real time: 0 01:40:19.19   0.3%
Energy tolerance :     1.00              Half life ratio  :     8.00
Errors propagated: No                    Systematic Error :     0.00 %
Efficiency type  : Empirical             Efficiencies at  : Peak Energy
Abundance limit  :    75.00              WTM error limit  :     3.00
```

Nuclide Line Activity Report

Nuclide Type: activation

Nuclide	Energy	%Abn	%Eff	Uncorrected uCi/G	Decay Corr uCi/G	1-Sigma %Error	Status
CO-60	1173.24	99.90	3.290E-01	6.397E-02	6.398E-02	3.68	OK
	1332.50	99.98*	2.930E-01	6.531E-02	6.532E-02	3.63	OK

Final Mean for 2 Valid Peaks = 6.464E-02+/- 1.669E-03 (2.58%)

uclide Type: fission

Nuclide	Energy	%Abn	%Eff	Uncorrected uCi/G	Decay Corr uCi/G	1-Sigma %Error	Status
CS-137	661.66	85.20*	5.622E-01	1.124E+01	1.124E+01	0.21	OK

Final Mean for 1 Valid Peaks = 1.124E+01+/- 2.349E-02 (0.21%)

CE-144	80.10	1.13	2.818E+00	0.000E+00	0.000E+00	0.00	Absent
	133.54	11.10*	2.580E+00	6.384E-02	6.392E-02	25.25	OK

Final Mean for 1 Valid Peaks = 6.392E-02+/- 1.614E-02 (25.25%)

Post-NID Peak Search Report
Sample ID : T8656 547-90 SST

Acquisition date : 26-SEP-1990 11:05:15

.t	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides
0	37.11*	4061	15092	1.43	49.81	47	7	5.6		
0	97.35	455	10697	2.11	130.16	128	6	36.4		
0	133.22	813	15083	1.51	178.01	175	7	25.2		CE-144
0	661.47*	239198	2313	1.96	882.38	875	15	0.2		CS-137
0	795.30	93	134	2.11	1060.78	1057	11	27.5		
0	1173.23*	934	55	2.05	1564.40	1558	14	3.7		CO-60
0	1274.66	50	8	2.06	1699.53	1695	13	20.0		
0	1332.78*	850	16	2.26	1776.95	1769	16	3.6		CO-60

VAX/VMS Peak Search Report V1.7 Generated 26-SEP-1990 13:00:52

Configuration : DUB0:[USER]T8656.CNF;2
Analyses by : PEAK V16.0,ENBACK V1.3
Sample title : T8656 SST 547-90 90-3619-A-1
Deposition Date : 26-SEP-1990 00:00:00 Deposition Period: 17-NOV-1858 00:00:00
Sample date : 26-SEP-1990 00:00:00 Acquisition date : 26-SEP-1990 11:05:15
Sample ID : T8656 547-90 SST Sample quantity : 2.00200E-02 G
Sample type : 10 ML SCV Sample geometry : T2SCV
Detector name : TRACK Detector geometry: T2SCV
Elapsed live time: 0 01:40:00.00 Elapsed real time: 0 01:40:19.19 0.3%
Start energy : 29.76 End energy : 3074.55
Sensitivity : 5.00 Gaussian : 10.00
Critical level : No

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	37.11*	4061	15092	1.43	49.81	47	7	6.77E-01	5.6	
2	0	97.35	455	10697	2.11	130.16	128	6	7.58E-02	36.4	
3	0	133.22	813	15083	1.51	178.01	175	7	1.35E-01	25.2	
4	0	661.47*	239198	2313	1.96	882.38	875	15	3.99E+01	0.2	
5	0	795.30	93	134	2.11	1060.78	1057	11	1.55E-02	27.5	
6	0	1173.23*	934	55	2.05	1564.40	1558	14	1.56E-01	3.7	
7	0	1274.66	50	8	2.06	1699.53	1695	13	8.35E-03	20.0	
8	0	1332.78*	850	16	2.26	1776.95	1769	16	1.42E-01	3.6	

VAX/VMS Nuclide Identification Report V2.5 Generated 10-OCT-1990 15:26:05

Configuration : DUB0:[USERJT8656.CNF;2
Analyses by : PEAK V16.0,PEAKEFF V2.2,ENBACK V1.3,NID/DEP V2.2,WTMEAN V1
Sample title : T8656 SST 547-90 90-3619-A-1
Deposition Date : 26-SEP-1990 00:00:00 Deposition Period: 17-NOV-1858 00:00:00
Sample date : 26-SEP-1990 00:00:00 Acquisition date : 26-SEP-1990 11:05:15
Sample ID : T8656 547-90 SST Sample quantity : 2.00200E-02 G
Sample type : 10 ML SCV Sample geometry : T2SCV
Detector name : TRACK Detector geometry: T2SCV
Elapsed live time: 0 01:40:00.00 Elapsed real time: 0 01:40:19.19 0.3%
Energy tolerance : 1.30 Half life ratio : 8.00
Errors propagated: No Systematic Error : 0.00 %
Efficiency type : Empirical Efficiencies at : Peak Energy
Abundance limit : 60.00 WTM error limit : 3.00

Nuclide Line Activity Report

Nuclide Type: natural

Nuclide	Energy	%Abn	%Eff	Uncorrected uCi/G	Decay Corr uCi/G	1-Sigma %Error	Status
~~K-40~~	1460.83	10.67*	2.692E-01	1.880E-02	1.880E-02	20.41	OK

Final Mean for 1 Valid Peaks = 1.880E-02+/- 3.837E-03 (20.41%)

Nuclide Type: activation

Nuclide	Energy	%Abn	%Eff	Uncorrected uCi/G	Decay Corr uCi/G	1-Sigma %Error	Status
CO-60	1173.24	99.90	3.290E-01	6.396E-02	6.397E-02	3.68	OK
	1332.50	99.98*	2.930E-01	6.521E-02	6.522E-02	3.63	OK

Final Mean for 2 Valid Peaks = 6.459E-02+/- 1.669E-03 (2.58%)

~~ZR-95~~	724.20	44.10	5.152E-01	4.461E-03	4.485E-03	30.67	OK
Int	756.73	54.50*	4.939E-01	2.466E-03	2.479E-03	54.02	OK

Final Mean for 2 Valid Peaks = 3.455E-03+/- 9.596E-04 (27.77%)

Nuclide Type: fission

Nuclide	Energy	%Abn	%Eff	Uncorrected uCi/G	Decay Corr uCi/G	1-Sigma %Error	Status
CS-134	563.24	8.38	6.578E-01	0.000E+00	0.000E+00	0.00	Absent
	569.32	15.40	6.527E-01	0.000E+00	0.000E+00	0.00	Absent
	604.71	97.60*	6.150E-01	7.366E-03	7.370E-03	36.67	OK
	795.87	85.40	4.707E-01	5.192E-03	5.194E-03	27.49	OK
	801.95	8.73	4.670E-01	0.000E+00	0.000E+00	0.00	Absent

Final Mean for 2 Valid Peaks = 5.669E-03+/- 1.263E-03 (22.27%)

CS-137	661.66	85.20*	5.622E-01	1.124E+01	1.124E+01	0.21	OK

Final Mean for 1 Valid Peaks = 1.124E+01+/- 2.349E-02 (0.21%)

D04-057

Sample ID : T8656 547-90 SST Acquisition date : 26-SEP-1990 11:05:15

Nuclide Type: fission

Nuclide	Energy	%Abn	%Eff	Uncorrected uCi/G	Decay Corr uCi/G	1-Sigma %Error	Status
CE-144	80.10	1.13	2.813E+00	0.000E+00	0.000E+00	0.00	Absent
	133.54	11.10*	2.580E+00	6.384E-02	6.392E-02	25.25	OK
Final Mean for 1 Valid Peaks = 6.392E-02+/- 1.614E-02 (25.25%)							
AM-241	59.54	35.90*	2.331E+00	6.631E-03	6.631E-03	66.90	OK
Final Mean for 1 Valid Peaks = 6.631E-03+/- 4.436E-03 (66.90%)							

Nuclide Type: ACTIVATION

Nuclide	Energy	%Abn	%Eff	Uncorrected uCi/G	Decay Corr uCi/G	1-Sigma %Error	Status
GD-153	97.43	27.60*	2.870E+00	1.292E-02	1.294E-02	36.36	OK
	103.18	19.60	2.942E+00	1.166E-02	1.168E-02	57.94	OK
Final Mean for 2 Valid Peaks = 1.253E-02+/- 3.862E-03 (30.83%)							

.	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides
0	37.11*	4065	15092	1.43	49.81	47	7	5.6		
0	59.79	247	10686	1.24	80.06	77	6	66.9		AM-241
0	97.35	455	10697	2.11	130.16	128	6	36.4		GD-153
0	103.81	289	11083	1.36	138.78	136	6	57.9		GD-153
0	133.22	813	15083	1.51	178.01	175	7	25.2		CE-144
0	186.54*	418	19168	1.95	249.12	247	7	54.9		
0	276.44	258	8762	1.01	369.02	366	6	58.1		
0	302.76	236	8080	2.34	404.12	402	6	61.0		
0	604.10	197	1604	1.88	805.91	803	8	36.7		CS-134
0	645.09	81	1110	2.20	860.56	859	5	62.6		
0	661.47*	239193	2313	1.96	882.38	875	15	0.2		CS-137
0	695.43	46	146	3.47	927.66	924	13	59.6		
3	720.56	29	59	2.45	961.16	957	14	50.4	2.34E+00	
3	723.62	45	47	1.77	965.23	957	14	30.7		ZR-95
0	756.16	30	68	2.47	1008.61	1004	9	54.0		ZR-95
0	795.30	93	134	2.11	1060.78	1057	11	27.5		CS-134
0	843.79	20	66	1.41	1125.41	1122	9	87.4		
0	861.23	12	72	1.56	1148.64	1146	7	125.1		
0	1173.23*	934	55	2.05	1564.40	1558	14	3.7		CO-60
0	1228.97	10	7	0.88	1638.67	1636	9	66.8		
0	1274.66	50	8	2.06	1699.53	1695	13	20.0		
0	1302.03	6	7	2.22	1736.00	1733	7	83.7		
0	1332.78*	949	16	2.26	1776.95	1769	16	3.6		CO-60
0	1462.07	24	0	3.78	1949.17	1943	15	20.4		K-40

VAX/VMS Nuclide Identification Report V2.5 Generated 17-OCT-1990 15:22:19

onfiguration	: MCA0:[USER]ADC3$1		
nalyses by	: PEAK V16.0,PEAKEFF V2.2,NID/DEP V2.2,WTMEAN V1.3		
Sample title	: T8657 SST 548-90 90-3619-A-2		
Deposition Date	: 26-SEP-1990 00:00:00	Deposition Period:	17-NOV-1858 00:00:00
Sample date	: 26-SEP-1990 00:00:00	Acquisition date :	26-SEP-1990 13:06:22
Sample ID	: T8657 548-90 SST	Sample quantity :	2.22000E-02 G
Sample type	: 10 ML SCV	Sample geometry :	T2SCV
Detector name	: TRACK	Detector geometry:	T2SCV
Elapsed live time:	0 01:40:00.00	Elapsed real time:	0 01:40:21.41 0.4%
Energy tolerance :	1.20	Half life ratio :	8.00
Errors propagated:	No	Systematic Error :	0.00 %
Efficiency type :	Empirical	Efficiencies at :	Peak Energy
Abundance limit :	70.00	WTM error limit :	3.00

Nuclide Line Activity Report

Nuclide Type: activation

Nuclide	Energy	%Abn	%Eff	Uncorrected uCi/G	Decay Corr uCi/G	1-Sigma %Error	Status
NA-22	511.00	180.00	7.281E-01	3.525E-03	3.526E-03	48.17	OK
	1274.53	99.94*	3.051E-01	2.995E-03	2.996E-03	31.74	OK

Final Mean for 2 Valid Peaks = 3.123E-03+/- 8.298E-04 (26.57%)

CO-60	1173.24	99.90	3.290E-01	1.329E-01	1.330E-01	2.37	OK
	1332.50	99.98*	2.930E-01	1.302E-01	1.302E-01	2.36	OK

Final Mean for 2 Valid Peaks = 1.316E-01+/- 2.201E-03 (1.67%)

Nuclide Type: natural

Nuclide	Energy	%Abn	%Eff	Uncorrected uCi/G	Decay Corr uCi/G	1-Sigma %Error	Status
K-40	1460.83	10.67*	2.696E-01	1.276E-02	1.276E-02	28.33	OK

Final Mean for 1 Valid Peaks = 1.276E-02+/- 3.614E-03 (28.33%)

Nuclide Type: fission

Nuclide	Energy	%Abn	%Eff	Uncorrected uCi/G	Decay Corr uCi/G	1-Sigma %Error	Status
CO-57	122.06	85.95*	2.696E+00	1.992E-03	1.995E-03	70.84	OK
	136.47	10.33	2.545E+00	0.000E+00	0.000E+00	0.00	Absent

Final Mean for 1 Valid Peaks = 1.995E-03+/- 1.413E-03 (70.84%)

CS-134	563.24	8.38	6.598E-01	0.000E+00	0.000E+00	0.00	Absent
	569.32	15.40	6.527E-01	0.000E+00	0.000E+00	0.00	Absent
	604.71	97.60*	6.147E-01	7.957E-03	7.961E-03	29.25	OK
	795.87	85.40	4.705E-01	8.980E-03	8.984E-03	13.76	OK
	801.95	8.73	4.668E-01	3.587E-02	3.588E-02	31.14	OK

Final Mean for 3 Valid Peaks = 9.016E-03+/- 1.087E-03 (12.06%)

Sample ID : T8657 548-90 SST Acquisition date : 26-SEP-1990 13:06:22

nuclide Type: fission

Nuclide	Energy	%Abn	%Eff	Uncorrected uCi/G	Decay Corr uCi/G	1-Sigma %Error	Status
CS-137	661.66	85.20*	5.622E-01	1.121E+01	1.121E+01	0.20	OK
	Final Mean for 1 Valid Peaks = 1.121E+01+/- 2.230E-02 (0.20%)						
CE-144	80.10	1.13	2.818E+00	0.000E+00	0.000E+00	0.00	Absent
	133.54	11.10*	2.580E+00	9.602E-02	9.616E-02	15.82	OK
	Final Mean for 1 Valid Peaks = 9.616E-02+/- 1.521E-02 (15.82%)						
~~EU-155~~	86.54	32.80	2.862E+00	5.267E-03	~~5.268E-03~~	~~71.92~~	OK
	105.31	21.84*	2.838E+00	1.123E-02	~~1.123E-02~~	~~44.59~~	OK
	Final Mean for 2 Valid Peaks = 7.440E-03+/- 3.022E-03 (40.62%)						
AM-241	59.54	35.90*	2.310E+00	1.773E-02	1.773E-02	24.07	OK
	Final Mean for 1 Valid Peaks = 1.773E-02+/- 4.266E-03 (24.07%)						

Nuclide Type: ACTIVATION

Nuclide	Energy	%Abn	%Eff	Uncorrected uCi/G	Decay Corr uCi/G	1-Sigma %Error	Status
~~CO-58~~	810.75	99.50*	4.623E-01	2.692E-03	2.707E-03	37.47	OK
	Final Mean for 1 Valid Peaks = 2.707E-03+/- 1.015E-03 (37.47%)						

Sample ID : T8657 548-90 SST Acquisition date : 26-SEP-1990 13:06:22

.	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides
0	37.09	4466	16738	1.44	49.78	47	7	5.4		
0	41.47	295	12685	1.12	55.62	54	6	61.0		
0	46.87	344	12400	1.46	62.83	61	6	51.6		
0	59.28	724	11824	1.59	79.38	77	6	24.1		AM-241
0	75.50	269	10065	1.61	101.02	99	5	56.3		
0	86.06	244	12170	1.91	115.10	113	6	71.9		EU-155
0	97.62	392	12125	1.48	130.52	128	6	44.8		
0	104.63	343	10289	2.48	139.87	138	5	44.6		EU-155
0	121.98	227	11582	1.24	163.02	162	5	70.8		CO-57
0	133.26	1355	16328	1.46	178.06	175	7	15.8		CE-144
0	143.56	296	13661	2.95	191.80	190	6	62.8		
0	148.94	217	11632	1.86	198.98	197	5	74.9		
0	160.86	274	13674	2.86	214.88	212	6	67.7		
0	185.36	355	18035	1.14	247.54	246	6	59.7		
0	192.23	272	15870	1.04	256.71	255	5	69.9		
0	208.53	266	16582	1.83	278.46	276	6	77.2		
0	263.96	299	12605	4.20	352.38	349	7	62.5		
0	291.74	142	7671	1.47	389.42	387	5	93.4		
0	295.97	151	9150	2.24	395.07	393	6	99.8		
0	360.76	248	8266	2.56	481.46	479	6	58.7		
0	365.72	299	8287	2.41	488.07	486	6	48.7		
0	369.85	212	8523	1.51	493.58	492	6	69.3		
0	387.92	215	10186	0.96	517.68	515	7	78.1		
0	414.43	76	9913	1.43	553.03	553	6	207.7		
0	420.38	238	10106	2.69	560.96	559	6	66.7		
0	443.13	164	9427	0.98	591.29	589	5	89.3		
0	459.90	178	12511	2.09	613.66	612	6	99.6		
0	468.53	252	14605	1.73	625.16	623	7	80.3		
5	472.57	343	5808	1.70	630.56	629	9	29.5	4.66E+00	
5	474.83	1003	14468	2.55	633.56	629	9	21.1		
0	500.42	103	4388	2.03	667.68	666	5	97.1		
0	511.33	228	4701	1.88	682.22	680	6	48.2		NA-22
0	517.18	116	4271	1.93	690.03	688	6	89.7		
0	533.94	218	3205	2.28	712.37	710	6	41.7		
0	539.66	169	3262	1.45	720.00	717	7	57.1		
0	553.32	67	1808	1.55	738.21	736	5	98.2		
0	585.00	134	1974	3.11	780.44	778	8	58.5		
0	604.41	235	1586	2.30	806.33	804	7	29.2		CS-134
0	609.27	40	1401	0.91	812.81	811	6	147.5		
0	620.16	68	1163	2.25	827.32	826	5	76.4		
0	650.35	41	1619	1.83	867.57	864	6	159.6		
0	661.45	264641	2774	1.97	882.37	875	15	0.2		CS-137
0	682.25	21	107	3.21	910.09	907	7	91.0		
0	696.14	53	127	1.61	928.61	925	7	40.4		
0	722.17	31	145	0.92	963.30	959	8	68.7		
0	753.40	10	91	1.91	1004.93	1002	6	163.4		
0	757.51	14	100	0.78	1010.41	1007	6	125.1		
0	795.69	178	117	1.62	1061.30	1058	8	13.8		CS-134
0	802.33	72	107	3.92	1070.16	1066	9	31.1		CS-134
0	810.62	61	137	1.94	1081.20	1076	10	37.5		CO-58
9	817.98	24	172	4.12	1091.01	1089	10	114.6		

Sample ID : T8657 548-90 SST Acquisition date : 26-SEP-1990 13:06:22

ι	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides
0	825.59	54	130	4.84	1101.15	1098	9	45.7		
9	855.62	17	90	1.74	1141.17	1139	8	91.3	3.96E+00	
9	857.49	16	105	1.95	1143.67	1139	8	110.9		
0	878.81	21	160	2.21	1172.08	1170	7	100.7		
0	890.57	9	134	0.98	1187.75	1187	6	219.3		
0	915.12	27	167	1.31	1220.47	1217	7	83.9		
0	949.85	48	192	4.79	1266.76	1263	9	53.2		
0	972.43	73	148	2.65	1296.85	1293	10	35.9		
0	1003.41	54	153	3.63	1338.13	1334	9	44.7		
0	1023.31	45	113	5.00	1364.64	1361	9	49.6		
0	1033.08	24	139	2.75	1377.66	1375	8	87.4		
0	1053.45	15	107	1.76	1404.81	1401	7	122.1		
0	1072.25	14	127	1.82	1429.86	1426	9	152.7		
0	1087.62	21	161	3.38	1450.35	1446	10	114.3		
0	1118.58	9	77	1.28	1491.59	1490	6	167.9		
0	1173.24	2153	92	2.31	1564.42	1558	15	2.4		CO-60
3	1237.83	9	8	1.60	1650.47	1648	12	57.0	1.28E+00	
3	1241.98	8	12	1.60	1656.00	1648	12	72.6		
0	1274.96	45	24	1.66	1699.93	1695	12	31.7		NA-22
0	1290.73	13	13	0.94	1720.95	1716	9	58.6		
0	1312.85	9	14	2.04	1750.40	1746	9	106.6		
2	1324.19	21	20	2.59	1765.51	1760	26	47.0	9.09E-01	
2	1332.77	1880	15	2.42	1776.94	1760	26	2.4		CO-60
0	1363.57	8	5	2.71	1817.97	1815	7	56.2		
3	1389.16	5	5	2.04	1852.06	1849	9	108.7		
0	1429.06	6	1	1.42	1905.20	1902	7	54.6		
0	1454.64	2	8	1.93	1939.27	1936	7	272.1		
10	1459.77	18	0	3.49	1946.11	1943	22	28.3	8.04E-01	K-40
10	1463.75	11	0	3.81	1951.41	1943	22	91.1		
0	1476.56	9	1	3.16	1968.47	1965	8	49.5		
0	1507.00	3	9	0.86	2009.01	2002	12	168.5		
0	1532.04	7	8	5.75	2042.37	2038	10	78.9		
0	1555.47	3	4	2.02	2073.57	2072	5	106.1		
0	1620.89	13	0	5.25	2160.69	2156	14	27.7		
0	1635.66	14	0	8.23	2180.36	2171	19	43.2		
0	1716.12	4	2	1.03	2287.50	2285	7	84.7		
0	1751.55	2	1	1.10	2334.67	2334	4	115.5		
0	1757.24	4	0	1.10	2342.25	2339	6	50.0		
0	1869.19	5	2	1.32	2491.31	2488	7	55.0		

VAX/VMS Nuclide Identification Report V2.5 Generated 10-OCT-1990 15:26:36

Configuration : DUB0:[USER]T8657.CNF;1
Analyses by : PEAK V16.0,PEAKEFF V2.2,ENBACK V1.3,NID/DEP V2.2,WTMEAN V1
Sample title : T8657 SST 548-90 90-3619-A-2
Deposition Date : 26-SEP-1990 00:00:00 Deposition Period: 17-NOV-1858 00:00:00
Sample date : 26-SEP-1990 00:00:00 Acquisition date : 26-SEP-1990 13:06:22
Sample ID : T8657 548-90 SST Sample quantity : 2.22000E-02 G
Sample type : 10 ML SCV Sample geometry : T2SCV
Detector name : TRACK Detector geometry: T2SCV
Elapsed live time: 0 01:40:00.00 Elapsed real time: 0 01:40:21.41 0.4%
Energy tolerance : 1.30 Half life ratio : 8.00
Errors propagated: No Systematic Error : 0.00 %
Efficiency type : Empirical Efficiencies at : Peak Energy
Abundance limit : 60.00 WTM error limit : 3.00

Nuclide Line Activity Report

Sens. 3.3
DBO. not used

Nuclide Type: fission

Nuclide	Energy	%Abn	%Eff	Uncorrected uCi/G	Decay Corr uCi/G	1-Sigma %Error	Status
~~CO-57~~	122.06	85.95*	2.696E+00	1.992E-03	1.995E-03	70.84	OK
	136.47	10.33	2.545E+00	0.000E+00	0.000E+00	0.00	Absent
	Final Mean for 1 Valid Peaks = 1.995E-03+/- 1.413E-03 (70.84%)						
CS-134	563.24	8.38	6.598E-01	0.000E+00	0.000E+00	0.00	Absent
	569.32	15.40	6.527E-01	0.000E+00	0.000E+00	0.00	Absent
	604.71	97.60*	6.147E-01	7.957E-03	7.961E-03	29.25	OK
	795.87	85.40	4.705E-01	8.980E-03	8.984E-03	13.76	OK
	801.95	8.73	4.670E-01	0.000E+00	0.000E+00	0.00	Absent
	Final Mean for 2 Valid Peaks = 8.759E-03+/- 1.092E-03 (12.47%)						
CS-137	661.66	85.20*	5.622E-01	1.120E+01	1.120E+01	0.20	OK
	Final Mean for 1 Valid Peaks = 1.120E+01+/- 2.230E-02 (0.20%)						
CE-144	80.10	1.13	2.818E+00	0.000E+00	0.000E+00	0.00	Absent
	133.54	11.10*	2.580E+00	9.602E-02	9.616E-02	15.82	OK
	Final Mean for 1 Valid Peaks = 9.616E-02+/- 1.521E-02 (15.82%)						
AM-241	59.54	35.90*	2.316E+00	1.438E-02	1.438E-02	25.78	OK
	Final Mean for 1 Valid Peaks = 1.438E-02+/- 3.709E-03 (25.78%)						

Nuclide Type: ACTIVATION

Nuclide	Energy	%Abn	%Eff	Uncorrected uCi/G	Decay Corr uCi/G	1-Sigma %Error	Status
~~CO-58~~	810.75	99.50*	4.623E-01	2.692E-03	2.707E-03	37.47	OK
	Final Mean for 1 Valid Peaks = 2.707E-03+/- 1.015E-03 (37.47%)						

Sample ID : T8657 548-90 SST Acquisition date : 26-SEP-1990 13:06:22

Nuclide Type: activation

Nuclide	Energy	%Abn	%Eff	Uncorrected uCi/G	Decay Corr uCi/G	1-Sigma %Error	Status
CO-60	1173.24	99.90	3.290E-01	1.326E-01	1.326E-01	2.38	OK
	1332.50	99.98*	2.930E-01	1.298E-01	1.298E-01	2.37	OK

Final Mean for 2 Valid Peaks = 1.312E-01+/- 2.202E-03 (1.68%)

t	Energy	Area	Bkgnd	FWHM	Channel	Left	Fw	%Err	Fit	Nuclides
0	37.09*	4439	16738	1.44	49.78	47	7	5.4		
0	46.87*	336	12400	1.46	62.83	61	6	52.8		
0	59.43	589	9925	1.45	79.59	78	5	25.8		AM-241
0	97.62	392	12125	1.48	130.52	128	6	44.8		
0	121.98	227	11582	1.24	163.02	162	5	70.8		CO-57
0	133.26	1355	16328	1.46	178.06	175	7	15.8		CE-144
0	185.36*	335	18035	1.14	247.54	246	6	63.2		
0	393.94	205	8985	2.13	525.71	524	6	73.2		
0	468.53	252	14605	1.73	625.16	623	7	80.3		
5	472.57	343	5808	1.70	630.56	629	9	29.5	4.66E+00	
5	474.83	1003	14468	2.55	633.56	629	9	21.1		
0	585.00	134	1974	3.11	780.44	778	8	58.5		
6	604.41	235	1586	2.30	806.33	804	7	29.2		CS-134
0	661.45*	264424	2774	1.97	882.37	875	15	0.2		CS-137
0	696.14	53	127	1.61	928.61	925	7	40.4		
0	795.69	178	117	1.62	1061.30	1058	8	13.8		CS-134
0	810.62	61	137	1.94	1081.20	1076	10	37.5		CO-58
0	1173.24*	2147	92	2.31	1564.42	1558	15	2.4		CO-60
0	1237.99	9	9	1.37	1650.68	1648	5	60.5		
0	1274.96	45	24	1.66	1699.93	1695	12	31.7		
0	1312.85	9	14	2.04	1750.40	1746	9	106.6		
2	1324.19	21	20	2.59	1765.51	1760	26	47.0	9.09E-01	
2	1332.77*	1874	15	2.42	1776.94	1760	26	2.4		CO-60
0	1363.57	8	5	2.71	1817.97	1815	7	56.2		
0	1463.58	32	0	4.69	1951.19	1943	22	42.3		
0	1620.89	13	0	5.25	2160.69	2156	14	27.7		
0	1635.66	14	0	8.23	2180.36	2171	19	43.2		

VAX/VMS Nuclide Identification Report V2.5 Generated 26-SEP-1990 14:59:10

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Configuration     : DUB0:[USER]T8657.CNF;1
Analyses by       : PEAK V16.0,PEAKEFF V2.2,ENBACK V1.3,NID/DEP V2.2,WTMEAN V1
Sample title      : T8657 SST 548-90 90-3619-A-2
Deposition Date   : 26-SEP-1990 00:00:00 Deposition Period: 17-NOV-1858 00:00:00
Sample date       : 26-SEP-1990 00:00:00 Acquisition date : 26-SEP-1990 13:06:22
Sample ID         : T8657 548-90 SST     Sample quantity  : 2.22000E-02 G
Sample type       : 10 ML SCV            Sample geometry  : T2SCV
Detector name     : TRACK                Detector geometry: T2SCV
Elapsed live time: 0 01:40:00.00         Elapsed real time: 0 01:40:21.41   0.4%
Energy tolerance :     1.00              Half life ratio  :     8.00
Errors propagated: No                    Systematic Error :     0.00 %
Efficiency type  : Empirical             Efficiencies at  : Peak Energy
Abundance limit  :    75.00              WTM error limit  :     3.00
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Nuclide Line Activity Report

Nuclide Type: activation

Nuclide	Energy	%Abn	%Eff	Uncorrected uCi/G	Decay Corr uCi/G	1-Sigma %Error	Status
CO-60	1173.24	99.90	3.290E-01	1.326E-01	1.326E-01	2.38	OK
	1332.50	99.98*	2.930E-01	1.316E-01	1.316E-01	2.39	OK

Final Mean for 2 Valid Peaks = 1.321E-01+/- 2.227E-03 (1.69%)

uclide Type: fission

Nuclide	Energy	%Abn	%Eff	Uncorrected uCi/G	Decay Corr uCi/G	1-Sigma %Error	Status
CS-134	563.24	8.38	6.598E-01	0.000E+00	0.000E+00	0.00	Absent
	569.32	15.40	6.527E-01	0.000E+00	0.000E+00	0.00	Absent
	604.71	97.60*	6.147E-01	7.957E-03	7.961E-03	29.25	OK
	795.87	85.40	4.705E-01	8.980E-03	8.984E-03	13.76	OK
	801.95	8.73	4.670E-01	0.000E+00	0.000E+00	0.00	Absent

Final Mean for 2 Valid Peaks = 8.759E-03+/- 1.092E-03 (12.47%)

CS-137	661.66	85.20*	5.622E-01	1.120E+01	1.120E+01	0.20	OK

Final Mean for 1 Valid Peaks = 1.120E+01+/- 2.230E-02 (0.20%)

CE-144	80.10	1.13	2.818E+00	0.000E+00	0.000E+00	0.00	Absent
	133.54	11.10*	2.580E+00	9.602E-02	9.616E-02	15.82	OK

Final Mean for 1 Valid Peaks = 9.616E-02+/- 1.521E-02 (15.82%)

AM-241	59.54	35.90*	2.316E+00	1.438E-02	1.438E-02	25.78	OK

Final Mean for 1 Valid Peaks = 1.438E-02+/- 3.709E-03 (25.78%)

Post-NID Peak Search Report
Sample ID : T8657 548-90 SST

Acquisition date : 26-SEP-1990 13:06:22

.	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides
0	37.09*	4435	16738	1.44	49.78	47	7	5.4		
0	59.43	589	9925	1.45	79.59	78	5	25.8		AM-241
0	97.62	392	12125	1.48	130.52	128	6	44.8		
0	133.26	1355	16328	1.46	178.06	175	7	15.8		CE-144
5	472.57	343	5808	1.70	630.56	629	9	29.5	4.66E+00	
5	474.83	1003	14468	2.55	633.56	629	9	21.1		
0	604.41	235	1586	2.30	806.33	804	7	29.2		CS-134
0	661.45*	264428	2774	1.97	882.37	875	15	0.2		CS-137
0	795.69	178	117	1.62	1061.30	1058	8	13.8		CS-134
0	1173.24*	2147	92	2.31	1564.42	1558	15	2.4		CO-60
0	1274.96	45	24	1.66	1699.93	1695	12	31.7		
0	1332.80*	1900	26	2.42	1776.99	1770	16	2.4		CO-60

VAX/VMS Peak Search Report V1.7 Generated 26-SEP-1990 14:58:53

Configuration : DUB0:[USER]T8657.CNF;1
Analyses by : PEAK V16.0,ENBACK V1.3
Sample title : T8657 SST 548-90 90-3619-A-2
Deposition Date : 26-SEP-1990 00:00:00 Deposition Period: 17-NOV-1858 00:00:00
Sample date : 26-SEP-1990 00:00:00 Acquisition date : 26-SEP-1990 13:06:22
Sample ID : T8657 548-90 SST Sample quantity : 2.22000E-02 G
Sample type : 10 ML SCV Sample geometry : T2SCV
Detector name : TRACK Detector geometry: T2SCV
Elapsed live time: 0 01:40:00.00 Elapsed real time: 0 01:40:21.41 0.4%
Start energy : 29.76 End energy : 3074.55
Sensitivity : 5.00 Gaussian : 10.00
Critical level : No

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	37.09*	4435	16738	1.44	49.78	47	7	7.39E-01	5.4	
2	0	59.43	589	9925	1.45	79.59	78	5	9.82E-02	25.8	
3	0	97.62	392	12125	1.48	130.52	128	6	6.53E-02	44.8	
4	0	133.26	1355	16328	1.46	178.06	175	7	2.26E-01	15.8	
5	5	472.57	343	5808	1.70	630.56	629	9	5.72E-02	29.5	4.66E+00
6	5	474.83	1003	14468	2.55	633.56	629	9	1.67E-01	21.1	
7	0	604.41	235	1586	2.30	806.33	804	7	3.92E-02	29.2	
8	0	661.45*	264428	2774	1.97	882.37	875	15	4.41E+01	0.2	
9	0	795.69	178	117	1.62	1061.30	1058	8	2.96E-02	13.8	
10	0	1173.24*	2147	92	2.31	1564.42	1558	15	3.58E-01	2.4	
11	0	1274.96	45	24	1.66	1699.93	1695	12	7.50E-03	31.7	
12	0	1332.80*	1900	26	2.42	1776.99	1770	16	3.17E-01	2.4	

VAX/VMS Nuclide Identification Report V2.5 Generated 10-OCT-1990 15:27:07

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Configuration     : DUB0:[USER]T8662.CNF;1
Analyses by       : PEAK V16.0,PEAKEFF V2.2,ENBACK V1.3,NID/DEP V2.2,WTMEAN V1
Sample title      : T8662 SST 549-90 90-3419-A-3 SYS BLK
Deposition Date   : 27-SEP-1990 00:00:00 Deposition Period: 17-NOV-1858 00:00:00
Sample date       : 27-SEP-1990 00:00:00 Acquisition date : 27-SEP-1990 13:57:44
Sample ID         : T8662 549-90 SST     Sample quantity  : 2.11100E-02 G
Sample type       : 10 ML SCV            Sample geometry  : T2SCV
Detector name     : TRACK                Detector geometry: T2SCV
Elapsed live time: 0 15:00:00.00         Elapsed real time: 0 15:00:57.87   0.1%
Energy tolerance :     1.30              Half life ratio  :     8.00
Errors propagated: No                    Systematic Error :     0.00 %
Efficiency type  : Empirical             Efficiencies at  : Peak Energy
Abundance limit  :    60.00              WTM error limit  :     3.00
```

Nuclide Line Activity Report

Nuclide Type: activation

Nuclide	Energy	%Abn	%Eff	Uncorrected uCi/G	Decay Corr uCi/G	1-Sigma %Error	Status
~~NA-22~~	511.00	180.00	7.275E-01	5.798E-05	5.802E-05	693.55	<<WTM Reject
	1274.53	99.94*	3.050E-01	3.089E-03	3.091E-03	13.36	<<WTM Reject

Nuclide failed weighted mean test

CO-60	1173.24	99.90	3.288E-01	5.268E-01	5.270E-01	0.42	OK
	1332.50	99.98*	2.928E-01	5.294E-01	5.296E-01	0.41	OK

Final Mean for 2 Valid Peaks = 5.283E-01+/- 1.546E-03 (0.29%)

Nuclide Type: natural

Nuclide	Energy	%Abn	%Eff	Uncorrected uCi/G	Decay Corr uCi/G	1-Sigma %Error	Status
~~K-40~~	1460.83	10.67*	2.693E-01	1.525E-03	1.525E-03	164.40	OK

Final Mean for 1 Valid Peaks = 1.525E-03+/- 2.506E-03 (164.40%)

Nuclide Type: fission

Nuclide	Energy	%Abn	%Eff	Uncorrected uCi/G	Decay Corr uCi/G	1-Sigma %Error	Status
~~CO-57~~	122.06	85.95*	2.688E+00	3.732E-03	3.740E-03	10.31	OK
	136.47	10.33	2.545E+00	0.000E+00	0.000E+00	0.00	Absent

Final Mean for 1 Valid Peaks = 3.740E-03+/- 3.856E-04 (10.31%)

~~RU-106~~	511.86	20.40*	7.275E-01	5.116E-04	5.124E-04	693.55	OK
	621.93	9.94	5.974E-01	0.000E+00	0.000E+00	0.00	Absent
	1050.41	1.56	3.637E-01	0.000E+00	0.000E+00	0.00	Absent

Final Mean for 1 Valid Peaks = 5.124E-04+/- 3.554E-03 (693.55%)

D04-070

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Sample ID : T8662 549-90 SST Acquisition date : 27-SEP-1990 13:57:44

Nuclide Type: fission

Nuclide	Energy	%Abn	%Eff	Uncorrected uCi/G	Decay Corr uCi/G	1-Sigma %Error	Status
CS-134	563.24	8.38	6.595E-01	1.332E-02	1.333E-02	41.12	OK
	569.32	15.40	6.528E-01	1.869E-02	1.871E-02	20.12	OK
	604.71	97.60*	6.141E-01	1.280E-02	1.281E-02	5.93	OK
	795.87	85.40	4.702E-01	1.342E-02	1.343E-02	7.24	OK
	801.95	8.73	4.664E-01	2.442E-02	2.444E-02	31.72	OK
Final Mean for 5 Valid Peaks = 1.325E-02+/- 5.858E-04 (4.42%)							
CS-137	661.66	85.20*	5.618E-01	2.366E+00	2.366E+00	0.15	OK
Final Mean for 1 Valid Peaks = 2.366E+00+/- 3.633E-03 (0.15%)							
CE-144	80.10	1.13	2.816E+00	7.813E-02	7.830E-02	26.70	OK
	133.54	11.10*	2.576E+00	6.047E-02	6.060E-02	5.24	OK
Final Mean for 2 Valid Peaks = 6.100E-02+/- 3.142E-03 (5.15%)							
EU-154	123.07	40.42	2.688E+00	7.935E-03	7.937E-03	10.31	OK
	247.93	6.84	1.552E+00	1.356E-02	1.356E-02	44.95	OK
	591.70	4.83	6.279E-01	0.000E+00	0.000E+00	0.00	Absent
	692.40	1.69	5.376E-01	0.000E+00	0.000E+00	0.00	Absent
	723.30	19.98	5.153E-01	1.332E-02	1.333E-02	21.80	OK
	756.90	4.33	4.934E-01	0.000E+00	0.000E+00	0.00	Absent
	873.20	12.09	4.312E-01	0.000E+00	0.000E+00	0.00	Absent
	996.30	10.34	3.817E-01	0.000E+00	0.000E+00	0.00	Absent
	1004.76	17.90	3.784E-01	9.471E-03	9.473E-03	44.38	OK
	1274.51	34.40*	3.050E-01	8.975E-03	8.977E-03	13.36	OK
	1596.50	1.83	2.481E-01	0.000E+00	0.000E+00	0.00	Absent
Final Mean for 5 Valid Peaks = 8.606E-03+/- 6.468E-04 (7.52%)							
~~EU-155~~	86.54	32.80	2.863E+00	4.280E-03	4.282E-03	16.70	OK
	105.31	21.84*	2.834E+00	0.000E+00	0.000E+00	0.00	Absent
Final Mean for 1 Valid Peaks = 4.282E-03+/- 7.151E-04 (16.70%)							
AM-241	59.54	35.90*	2.324E+00	2.379E-03	2.379E-03	29.25	OK
Final Mean for 1 Valid Peaks = 2.379E-03+/- 6.957E-04 (29.25%)							

Nuclide Type: ACTIVATION

Nuclide	Energy	%Abn	%Eff	Uncorrected uCi/G	Decay Corr uCi/G	1-Sigma %Error	Status
GD-153	97.43	27.60*	2.870E+00	1.019E-02	1.022E-02	9.47	OK
	103.18	19.60	2.845E+00	1.122E-02	1.125E-02	12.25	OK
Final Mean for 2 Valid Peaks = 1.056E-02+/- 7.923E-04 (7.50%)							

Sample ID : T8662 549-90 SST Acquisition date : 27-SEP-1990 13:57:44

t	Energy	Area	Bkgnd	FWHM	Channel	Left	Fw	%Err	Fit	Nuclides
4	36.76	9603	32100	1.28	49.34	47	12	3.1	8.03E+01	
4	41.33	6818	42448	2.22	55.43	47	12	5.4		
0	47.28	2310	34125	2.79	63.38	61	6	12.7		
0	59.62	837	26126	1.51	79.83	78	5	29.2		AM-241
0	75.25*	399	26062	1.49	100.68	99	5	62.1		
0	79.97	1049	30818	1.60	106.98	105	6	26.7		CE-144
0	86.32	1695	31482	2.33	115.45	113	6	16.7		EU-155
0	97.39	3405	36660	1.67	130.21	127	7	9.5		GD-153
0	103.30	2640	37532	1.65	138.10	135	7	12.3		GD-153
0	122.82	3636	45931	1.81	164.14	161	8	10.3		CO-57
										EU-154
0	133.59	7293	46457	1.78	178.50	175	8	5.2		CE-144
0	185.54*	290	33858	4.50	247.78	246	5	95.2		
0	247.42	607	29236	1.41	330.31	328	6	44.9		EU-154
0	310.55	580	21004	2.60	414.51	412	6	39.8		
0	475.75	1233	25624	2.93	634.79	632	7	21.8		
6	511.75*	32	15741	2.00	682.79	679	8	693.6	6.15E-01	RU-106
0	563.47	311	6393	1.68	751.74	749	6	41.1		CS-134
0	569.20	793	8141	2.51	759.39	756	8	20.1		CS-134
0	604.98	3236	9514	2.10	807.09	803	10	5.9		CS-134
0	661.90*	477743	12048	2.67	882.97	876	15	0.2		CS-137
0	696.40	300	3776	2.12	928.95	926	7	34.5		
0	723.37	579	4704	2.55	964.90	961	9	21.8		EU-154
0	796.22	2272	6476	2.17	1062.01	1057	11	7.2		CS-134
0	803.07*	419	5239	1.79	1071.13	1068	9	31.7		CS-134
0	898.07	144	4418	1.99	1197.75	1195	6	74.0		
0	1005.79	271	4745	2.45	1341.30	1338	8	44.4		EU-154
0	1107.92	230	4034	2.42	1477.39	1475	7	46.5		
0	1174.01*	72973	4237	2.55	1565.44	1558	16	0.4		CO-60
0	1275.47	397	619	1.58	1700.61	1695	11	13.4		EU-154
0	1333.65*	65375	916	2.67	1778.12	1770	18	0.4		CO-60
0	1409.08	103	185	2.07	1878.59	1872	14	29.8		
0	1461.46*	18	149	2.50	1948.36	1941	13	164.4		K-40
0	1631.15	40	132	9.64	2174.35	2168	17	77.3		
0	1737.09	8	64	0.71	2315.41	2312	11	206.1		
0	1782.28	87	136	11.53	2375.59	2365	27	43.9		
0	1868.20	46	75	3.61	2489.98	2482	17	49.9		
0	2514.72	143	131	6.57	3350.42	3340	19	22.8		
0	2556.83	30	9	8.08	3406.44	3396	21	44.7		
0	2824.42	8	10	1.50	3762.38	3757	10	98.2		
0	2910.96	8	2	1.91	3877.47	3875	5	51.0		
0	2947.13	5	19	1.34	3925.57	3921	14	274.9		
0	2991.79	9	7	3.06	3984.95	3979	11	66.6		

VAX/VMS Nuclide Identification Report V2.5 Generated 28-SEP-1990 08:21:43

Configuration : DUB0:[USER]T8662.CNF;1
Analyses by : PEAK V16.0,PEAKEFF V2.2,ENBACK V1.3,NID/DEP V2.2,WTMEAN V1
Sample title : T8662 SST 549-90 90-3619-A-3 SYS BLK
Deposition Date : 27-SEP-1990 00:00:00 Deposition Period: 17-NOV-1858 00:00:00
Sample date : 27-SEP-1990 00:00:00 Acquisition date : 27-SEP-1990 13:57:44
Sample ID : T8662 549-90 SST Sample quantity : 2.11100E-02 G
Sample type : 10 ML SCV Sample geometry : T2SCV
Detector name : TRACK Detector geometry: T2SCV
Elapsed live time: 0 15:00:00.00 Elapsed real time: 0 15:00:57.87 0.1%
Energy tolerance : 1.00 Half life ratio : 8.00
Errors propagated: No Systematic Error : 0.00 %
Efficiency type : Empirical Efficiencies at : Peak Energy
Abundance limit : 75.00 WTM error limit : 3.00?
Nuclide Line Activity Report

Nuclide Type: activation

Nuclide	Energy	%Abn	%Eff	Uncorrected uCi/G	Decay Corr uCi/G	1-Sigma %Error	Status
NA-22	511.00	180.00	7.275E-01	3.060E-04	3.062E-04	130.92	<<WTM Reject
	1274.53	99.94*	3.050E-01	3.089E-03	3.091E-03	13.36	<<WTM Reject

Nuclide failed weighted mean test

Nuclide Type: natural

Nuclide	Energy	%Abn	%Eff	Uncorrected uCi/G	Decay Corr uCi/G	1-Sigma %Error	Status
~~K-40~~	1460.83	10.67*	2.693E-01	3.536E-03	3.536E-03	71.55	OK

Final Mean for 1 Valid Peaks = 3.536E-03+/- 2.530E-03 (71.55%)

Nuclide Type: fission

Nuclide	Energy	%Abn	%Eff	Uncorrected uCi/G	Decay Corr uCi/G	1-Sigma %Error	Status
CO-57	122.06	85.95*	2.688E+00	3.732E-03	3.740E-03	10.31	OK
	136.47	10.33	2.545E+00	0.000E+00	0.000E+00	0.00	Absent

Final Mean for 1 Valid Peaks = 3.740E-03+/- 3.856E-04 (10.31%)

CS-134	563.24	8.38	6.598E-01	0.000E+00	0.000E+00	0.00	Absent
	569.32	15.40	6.528E-01	1.869E-02	1.871E-02	20.12	OK
	604.71	97.60*	6.141E-01	1.280E-02	1.281E-02	5.93	OK
	795.87	85.40	4.702E-01	1.342E-02	1.343E-02	7.24	OK
	801.95	8.73	4.670E-01	0.000E+00	0.000E+00	0.00	Absent

Final Mean for 3 Valid Peaks = 1.318E-02+/- 5.909E-04 (4.48%)

CS-137	661.66	85.20*	5.618E-01	2.367E+00	2.367E+00	0.15	OK

Final Mean for 1 Valid Peaks = 2.367E+00+/- 3.633E-03 (0.15%)

D04-073

Sample ID : T8662 549-90 SST Acquisition date : 27-SEP-1990 13:57:44

Nuclide Type: fission

Nuclide	Energy	%Abn	%Eff	Uncorrected uCi/G	Decay Corr uCi/G	1-Sigma %Error	Status
CE-144	80.10	1.13	2.816E+00	7.813E-02	7.830E-02	26.70	OK
	133.54	11.10*	2.576E+00	6.047E-02	6.060E-02	5.24	OK

Final Mean for 2 Valid Peaks = 6.100E-02+/- 3.142E-03 (5.15%)

AM-241	59.54	35.90*	2.324E+00	2.379E-03	2.379E-03	29.25	OK

Final Mean for 1 Valid Peaks = 2.379E-03+/- 6.957E-04 (29.25%)

Nuclide Type: ACTIVATION

Nuclide	Energy	%Abn	%Eff	Uncorrected uCi/G	Decay Corr uCi/G	1-Sigma %Error	Status
GD-153	97.43	27.60*	2.870E+00	1.019E-02	1.022E-02	9.47	OK
	103.18	19.60	2.845E+00	1.122E-02	1.125E-02	12.25	OK

Final Mean for 2 Valid Peaks = 1.056E-02+/- 7.923E-04 (7.50%)

Post-NID Peak Search Report
Sample ID : T8662 549-90 SST

Acquisition date : 27-SEP-1990 13:57:44

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides
4	36.76*	9325	32100	1.28	49.34	47	12	3.2	8.03E+01	
4	41.33	6818	42448	2.22	55.43	47	12	5.4		
0	47.28*	2227	34125	2.79	63.38	61	6	13.3		
0	59.62	837	26126	1.51	79.83	78	5	29.2		AM-241
0	75.04*	354	31378	1.40	100.40	99	6	80.5		
0	79.97	1049	30818	1.60	106.98	105	6	26.7		CE-144
0	86.51*	1193	26526	2.03	115.71	114	5	20.8		
0	97.39	3405	36660	1.67	130.21	127	7	9.5		GD-153
0	103.30	2640	37532	1.65	138.10	135	7	12.3		GD-153
0	122.82	3636	45931	1.81	164.14	161	8	10.3		CO-57
0	133.59	7293	46457	1.78	178.50	175	8	5.2		CE-144
0	184.50	157	26382	0.76	246.40	245	4	146.0		
6	511.75*	169	15741	2.00	682.79	679	8	130.9	6.15E-01	
0	569.20	793	8141	2.51	759.39	756	8	20.1		CS-134
0	604.98	3236	9514	2.10	807.09	803	10	5.9		CS-134
0	661.90*	477785	12048	2.07	882.97	876	15	0.2		CS-137
0	723.37	579	4704	2.55	964.90	961	9	21.8		
0	796.22	2272	6476	2.17	1062.01	1057	11	7.2		CS-134
0	1174.01*	72975	4237	2.55	1565.44	1558	16	0.4		
0	1275.47	397	619	1.58	1700.61	1695	11	13.4		
0	1333.65*	65386	916	2.67	1778.12	1770	18	0.4		
0	1409.08	103	185	2.07	1878.59	1872	14	29.8		
0	1461.46*	43	149	2.50	1948.36	1941	13	71.6		K-40
0	2947.13	5	19	1.34	3925.57	3921	14	274.9		

VAX/VMS Peak Search Report V1.7 Generated 28-SEP-1990 08:21:24

Configuration : DUB0:[USER]T8662.CNF;1
Analyses by : PEAK V16.0,ENBACK V1.3
Sample title : T8662 SST 549-90 90-3619-A-3 SYS BLK
Deposition Date : 27-SEP-1990 00:00:00 Deposition Period: 17-NOV-1858 00:00:00
Sample date : 27-SEP-1990 00:00:00 Acquisition date : 27-SEP-1990 13:57:44
Sample ID : T8662 549-90 SST Sample quantity : 2.11100E-02 G
Sample type : 10 ML SCV Sample geometry : T2SCV
Detector name : TRACK Detector geometry: T2SCV
Elapsed live time: 0 15:00:00.00 Elapsed real time: 0 15:00:57.87 0.1%
Start energy : 29.76 End energy : 3074.55
Sensitivity : 5.00 Gaussian : 10.00
Critical level : No

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	4	36.76*	9325	32100	1.28	49.34	47	12	1.73E-01	3.2	8.03E+01
2	4	41.33	6818	42448	2.22	55.43	47	12	1.26E-01	5.4	
3	0	47.28*	2227	34125	2.79	63.38	61	6	4.12E-02	13.3	
4	0	59.62	837	26126	1.51	79.83	78	5	1.55E-02	29.2	
5	0	75.04*	354	31378	1.40	100.40	99	6	6.56E-03	80.5	
6	0	79.97	1049	30818	1.60	106.98	105	6	1.94E-02	26.7	
7	0	86.51*	1193	26526	2.03	115.71	114	5	2.21E-02	20.8	
8	0	97.39	3405	36660	1.67	130.21	127	7	6.31E-02	9.5	
9	0	103.30	2640	37532	1.65	138.10	135	7	4.89E-02	12.3	
10	0	122.82	3636	45931	1.81	164.14	161	8	6.73E-02	10.3	
11	0	133.59	7293	46457	1.78	178.50	175	8	1.35E-01	5.2	
12	0	184.50	157	26382	0.76	246.40	245	4	2.90E-03	146.0	
13	6	511.75*	169	15741	2.00	682.79	679	8	3.13E-03	130.9	6.15E-01
14	0	569.20	793	8141	2.51	759.39	756	8	1.47E-02	20.1	
15	0	604.98	3236	9514	2.10	807.09	803	10	5.99E-02	5.9	
16	0	661.90*	477785	12048	2.07	882.97	876	15	8.85E+00	0.2	
17	0	723.37	579	4704	2.55	964.90	961	9	1.07E-02	21.8	
18	0	796.22	2272	6476	2.17	1062.01	1057	11	4.21E-02	7.2	
19	0	1174.01*	72975	4237	2.55	1565.44	1558	16	1.35E+00	0.4	
20	0	1275.47	397	619	1.58	1700.61	1695	11	7.35E-03	13.4	
21	0	1333.65*	65386	916	2.67	1778.12	1770	18	1.21E+00	0.4	
22	0	1409.08	103	185	2.07	1878.59	1872	14	1.90E-03	29.8	
23	0	1461.46*	43	149	2.50	1948.36	1941	13	7.94E-04	71.6	
24	0	2947.13	5	19	1.34	3925.57	3921	14	8.49E-05	274.9	

VAX/VMS Nuclide Identification Report V2.5 Generated 10-OCT-1990 15:27:49

Configuration : DUB0:[USER]T8659.CNF;1
Analyses by : PEAK V16.0,PEAKEFF V2.2,ENBACK V1.3,NID/DEP V2.2,WTMEAN V1
Sample title : T8659 SST 550-90 90-3620-A-1
Deposition Date : 27-SEP-1990 00:00:00 Deposition Period: 17-NOV-1858 00:00:00
Sample date : 27-SEP-1990 00:00:00 Acquisition date : 27-SEP-1990 08:11:40
Sample ID : T8659 550-90 SST Sample quantity : 2.02700E-02 G
Sample type : 10 ML SCV Sample geometry : T2SCV
Detector name : TRACK Detector geometry: T2SCV
Elapsed live time: 0 01:40:00.00 Elapsed real time: 0 01:40:19.16 0.3%
Energy tolerance : 1.30 Half life ratio : 8.00
Errors propagated: No Systematic Error : 0.00 %
Efficiency type : Empirical Efficiencies at : Peak Energy
Abundance limit : 60.00 WTM error limit : 3.00

Nuclide Line Activity Report

Nuclide Type: activation

Nuclide	Energy	%Abn	%Eff	Uncorrected uCi/G	Decay Corr uCi/G	1-Sigma %Error	Status
~~MN-52~~	511.00	180.00	7.286E-01	2.427E-03	2.428E-03	63.76	OK
	1274.53	99.94*	3.052E-01	1.106E-03	1.106E-03	36.09	OK
Final Mean for 2 Valid Peaks = 1.188E-03+/- 3.866E-04 (32.53%)							
CO-60	1173.24	99.90	3.289E-01	1.002E-01	1.002E-01	2.93	OK
	1332.50	99.98*	2.930E-01	1.014E-01	1.014E-01	2.83	OK
Final Mean for 2 Valid Peaks = 1.008E-01+/- 2.053E-03 (2.04%)							

Nuclide Type: fission

Nuclide	Energy	%Abn	%Eff	Uncorrected uCi/G	Decay Corr uCi/G	1-Sigma %Error	Status
~~RU-106~~	511.86	20.40*	7.286E-01	2.141E-02	2.143E-02	63.76	OK
	621.93	9.94	5.974E-01	0.000E+00	0.000E+00	0.00	Absent
	1050.41	1.56	3.637E-01	0.000E+00	0.000E+00	0.00	Absent
Final Mean for 1 Valid Peaks = 2.143E-02+/- 1.366E-02 (63.76%)							
CS-134	563.24	8.38	6.598E-01	0.000E+00	0.000E+00	0.00	Absent
	569.32	15.40	6.527E-01	0.000E+00	0.000E+00	0.00	Absent
	604.71	97.60*	6.141E-01	4.994E-03	4.995E-03	41.52	OK
	795.87	85.40	4.708E-01	2.370E-03	2.371E-03	47.69	OK
	801.95	8.73	4.670E-01	0.000E+00	0.000E+00	0.00	Absent
Final Mean for 2 Valid Peaks = 2.972E-03+/- 9.928E-04 (33.40%)							
CS-137	661.66	85.20*	5.622E-01	1.106E+01	1.106E+01	0.21	OK
Final Mean for 1 Valid Peaks = 1.106E+01+/- 2.316E-02 (0.21%)							
I-144	80.10	1.13	2.818E+00	0.000E+00	0.000E+00	0.00	Absent

D04-077

Sample ID : T8659 550-90 SST Acquisition date : 27-SEP-1990 08:11:40

Nuclide Type: fission

Nuclide	Energy	%Abn	%Eff	Uncorrected uCi/G	Decay Corr uCi/G	1-Sigma %Error	Status
	133.54	11.10*	2.580E+00	3.976E-02	3.980E-02	35.06	OK
Final Mean for 1 Valid Peaks = 3.980E-02+/- 1.395E-02 (35.06%)							
AM-241	59.54	35.90*	2.295E+00	8.830E-03	8.830E-03	50.09	OK
Final Mean for 1 Valid Peaks = 8.830E-03+/- 4.423E-03 (50.09%)							

Post-NID Peak Search Report
Sample ID : T8659 550-90 SST

Acquisition date : 27-SEP-1990 08:11:40

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides
0	37.02*	4439	14397	1.51	49.69	47	7	5.0		
0	44.24	191	9099	1.67	59.32	58	5	75.4		
0	58.91	327	10600	1.36	78.89	77	6	50.1		AM-241
0	123.97	281	10085	1.27	165.68	164	5	54.0		
0	133.18	513	12713	1.14	177.95	176	6	35.1		CE-144
0	188.80	1493	30488	4.87	252.14	248	11	22.7		
0	203.98	633	15393	2.74	272.38	270	6	31.4		
0	511.02*	143	3584	1.41	681.82	680	5	63.8		NA-22
										RU-106
0	604.97	135	1181	1.40	807.07	805	6	41.5		CS-134
0	661.45*	238296	2289	1.98	882.36	875	15	0.2		CS-137
0	706.48	28	72	2.31	942.38	940	7	57.3		
0	795.16	43	112	2.71	1060.59	1056	9	47.7		CS-134
0	1173.25*	1482	95	2.58	1564.43	1557	14	2.9		CO-60
0	1274.47	15	6	1.50	1699.28	1697	6	36.1		NA-22
0	1332.82*	1336	35	2.41	1777.02	1770	13	2.8		CO-60
0	1596.06	13	0	5.58	2127.62	2121	14	27.7		

VAX/VMS Nuclide Identification Report V2.5 Generated 27-SEP-1990 09:52:45

Configuration : DUB0:[USER]T8659.CNF;1
Analyses by : PEAK V16.0,PEAKEFF V2.2,ENBACK V1.3,NID/DEP V2.2,WTMEAN V1
Sample title : T8659 SST 550-90 90-3620-A-1
Deposition Date : 27-SEP-1990 00:00:00 Deposition Period: 17-NOV-1858 00:00:00
Sample date : 27-SEP-1990 00:00:00 Acquisition date : 27-SEP-1990 08:11:40
Sample ID : T8659 550-90 SST Sample quantity : 2.02700E-02 G
Sample type : 10 ML SCV Sample geometry : T2SCV
Detector name : TRACK Detector geometry: T2SCV
Elapsed live time: 0 01:40:00.00 Elapsed real time: 0 01:40:19.16 0.3%
Energy tolerance : 1.00 Half life ratio : 8.00
Errors propagated: No Systematic Error : 0.00 %
Efficiency type : Empirical Efficiencies at : Peak Energy
Abundance limit : 75.00 WTM error limit : 3.00

Nuclide Line Activity Report

Nuclide Type: activation

Nuclide	Energy	%Abn	%Eff	Uncorrected uCi/G	Decay Corr uCi/G	1-Sigma %Error	Status
CO-60	1173.24	99.90	3.289E-01	1.002E-01	1.002E-01	2.93	OK
	1332.50	99.98*	2.930E-01	1.014E-01	1.015E-01	2.83	OK

Final Mean for 2 Valid Peaks = 1.009E-01+/- 2.053E-03 (2.04%)

Nuclide Type: fission

Nuclide	Energy	%Abn	%Eff	Uncorrected uCi/G	Decay Corr uCi/G	1-Sigma %Error	Status
CS-137	661.66	85.20*	5.622E-01	1.106E+01	1.106E+01	0.21	OK

Final Mean for 1 Valid Peaks = 1.106E+01+/- 2.316E-02 (0.21%)

CE-144	80.10	1.13	2.818E+00	0.000E+00	0.000E+00	0.00	Absent
	133.54	11.10*	2.581E+00	3.352E-02	3.355E-02	36.15	OK

Final Mean for 1 Valid Peaks = 3.355E-02+/- 1.213E-02 (36.15%)

Post-NID Peak Search Report
Sample ID : T8659 550-90 SST

Acquisition date : 27-SEP-1990 08:11:40

t	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides
0	37.02*	4435	14397	1.51	49.69	47	7	5.0		
0	133.15	432	10689	1.05	177.91	177	5	36.2		CE-144
0	661.45*	238301	2289	1.98	882.36	875	15	0.2		CS-137
0	1173.25*	1482	95	2.58	1564.43	1557	14	2.9		CO-60
0	1274.47	15	6	1.50	1699.28	1697	6	36.1		
0	1332.82*	1337	35	2.41	1777.02	1770	13	2.8		CO-60

VAX/VMS Peak Search Report V1.7 Generated 27-SEP-1990 09:52:28

Configuration : DUB0:[USER]T8659.CNF;1
naluses by : PEAK V16.0.ENBACK V1.3
ample title : T8659 SST 550-90 90-3620-A-1
Deposition Date : 27-SEP-1990 00:00:00 Deposition Period: 17-NOV-1858 00:00:00
Sample date : 27-SEP-1990 00:00:00 Acquisition date : 27-SEP-1990 08:11:40
Sample ID : T8659 550-90 SST Sample quantity : 2.02700E-02 G
Sample type : 10 ML SCV Sample geometry : T2SCV
Detector name : TRACK Detector geometry: T2SCV
Elapsed live time: 0 01:40:00.00 Elapsed real time: 0 01:40:19.16 0.3%
Start energy : 29.76 End energy : 3074.55
Sensitivity : 5.00 Gaussian : 10.00
Critical level : No

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	37.02*	4435	14397	1.51	49.69	47	7	7.39E-01	5.0	
2	0	133.15	432	10689	1.05	177.91	177	5	7.20E-02	36.2	
3	0	661.45*	238301	2289	1.98	882.36	875	15	3.97E+01	0.2	
4	0	1173.25*	1482	95	2.58	1564.43	1557	14	2.47E-01	2.9	
5	0	1274.47	15	6	1.50	1699.28	1697	6	2.53E-03	36.1	
6	0	1332.82*	1337	35	2.41	1777.02	1770	13	2.23E-01	2.8	

VAX/VMS Nuclide Identification Report V2.5 Generated 12-OCT-1990 16:05:30

Configuration	: DUB0:[USER]T8660.CNF;1		
Analyses by	: PEAK V16.0,PEAKEFF V2.2,ENBACK V1.3,NID/DEP V2.2,WTMEAH V1		
Sample title	: T8660 SST 551-90 90-3620-A-2		
Deposition Date	: 27-SEP-1990 00:00:00	Deposition Period:	17-NOV-1858 00:00:00
Sample date	: 27-SEP-1990 00:00:00	Acquisition date :	27-SEP-1990 09:53:39
Sample ID	: T8660 551-90 SST	Sample quantity :	2.28700E-02 G
Sample type	: 10 ML SCV	Sample geometry :	T2SCV
Detector name	: TRACK	Detector geometry:	T2SCV
Elapsed live time:	0 01:40:00.00	Elapsed real time:	0 01:40:25.30 0.4%
Energy tolerance :	1.00	Half life ratio :	8.00
Errors propagated:	No	Systematic Error :	0.00 %
Efficiency type :	Empirical	Efficiencies at :	Peak Energy
Abundance limit :	70.00	WTM error limit :	3.00

Nuclide Line Activity Report

Nuclide Type: activation

Nuclide	Energy	%Abn	%Eff	Uncorrected uCi/G	Decay Corr uCi/G	1-Sigma %Error	Status
~~NA-22~~	511.00	180.00	7.276E-01	1.700E-03	1.700E-03	91.59	OK
	1274.53	99.94*	3.052E-01	5.963E-03	5.965E-03	21.25	OK
	Final Mean for 2 Valid Peaks = 4.266E-03+/- 9.830E-04 (23.04%)						
CO-60	1173.24	99.90	3.290E-01	4.585E-01	4.585E-01	1.26	OK
	1332.50	99.98*	2.930E-01	4.407E-01	4.408E-01	1.29	OK
	Final Mean for 2 Valid Peaks = 4.495E-01+/- 4.054E-03 (0.90%)						

Nuclide Type: natural

Nuclide	Energy	%Abn	%Eff	Uncorrected uCi/G	Decay Corr uCi/G	1-Sigma %Error	Status
~~K-40~~	1460.83	10.67*	2.694E-01	6.726E-03	6.726E-03	71.19	OK
	Final Mean for 1 Valid Peaks = 6.726E-03+/- 4.788E-03 (71.19%)						

Nuclide Type: fission

Nuclide	Energy	%Abn	%Eff	Uncorrected uCi/G	Decay Corr uCi/G	1-Sigma %Error	Status
~~CO-57~~	122.06	85.95*	2.686E+00	5.182E-03	5.188E-03	33.32	OK
	136.47	10.33	2.545E+00	0.000E+00	0.000E+00	0.00	Absent
	Final Mean for 1 Valid Peaks = 5.188E-03+/- 1.729E-03 (33.32%)						
CS-134	563.24	8.38	6.598E-01	0.000E+00	0.000E+00	0.00	Absent
	569.32	15.40	6.527E-01	0.000E+00	0.000E+00	0.00	Absent
	604.71	97.60*	6.144E-01	9.408E-03	9.412E-03	30.42	OK
	795.87	85.40	4.707E-01	1.124E-02	1.125E-02	18.16	OK
	801.95	8.73	4.670E-01	0.000E+00	0.000E+00	0.00	Absent
	Final Mean for 2 Valid Peaks = 1.063E-02+/- 1.663E-03 (15.64%)						

Sample ID : T8660 551-90 SST Acquisition date : 27-SEP-1990 09:53:39

Nuclide Type: fission

Nuclide	Energy	%Abn	%Eff	Uncorrected uCi/G	Decay Corr uCi/G	1-Sigma %Error	Status
CS-137	661.66	85.20*	5.622E-01	1.223E+01	1.223E+01	0.19	OK
Final Mean for 1 Valid Peaks = 1.223E+01+/- 2.303E-02 (0.19%)							
CE-144	80.10	1.13	2.818E+00	0.000E+00	0.000E+00	0.00	Absent
	133.54	11.10*	2.577E+00	4.282E-02	4.287E-02	28.61	OK
Final Mean for 1 Valid Peaks = 4.287E-02+/- 1.227E-02 (28.61%)							
AM-241	59.54	35.90*	2.320E+00	1.034E-02	1.034E-02	37.40	OK
Final Mean for 1 Valid Peaks = 1.034E-02+/- 3.868E-03 (37.40%)							

Sample ID : T8660 551-90 SST
Acquisition date : 27-SEP-1990 09:53:39

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides
0	37.03*	5447	18659	1.46	49.71	47	7	4.6		
0	48.20	426	12048	3.35	64.60	63	5	39.0		
0	59.52	437	11674	2.45	79.70	78	5	37.4		AM-241
0	85.94	266	11967	1.23	114.94	114	5	61.8		
0	96.48	215	11797	1.56	129.01	128	5	75.8		
0	122.97	607	16312	1.36	164.34	162	6	33.3		CO-57
0	133.48	622	13769	1.61	178.35	177	5	28.6		CE-144
0	186.52*	405	21112	2.33	249.09	247	6	56.7		
0	472.13	421	13795	1.28	629.97	628	6	44.2		
0	511.67*	113	4665	1.90	682.68	681	5	91.6		NA-22
0	604.72	286	2469	2.27	806.74	803	8	30.4		CS-134
0	661.42*	297517	3428	1.99	882.32	875	15	0.2		CS-137
10	795.40	229	462	1.89	1060.91	1055	12	18.2	2.11E+00	CS-134
10	797.66	32	338	1.48	1063.92	1055	12	103.1		
0	961.94*	85	567	2.71	1282.86	1280	7	48.1		
0	1173.21*	7650	289	2.42	1564.38	1559	13	1.3		CO-60
0	1274.35	92	50	2.20	1699.12	1693	13	21.2		NA-22
0	1332.74*	6555	89	2.54	1776.91	1770	15	1.3		CO-60
0	1378.44	10	6	2.13	1837.78	1835	10	76.8		
0	1460.85*	10	3	1.98	1947.54	1943	10	71.2		K-40
0	1588.52	6	4	1.50	2117.59	2114	6	73.7		
0	1861.69	4	4	1.82	2481.32	2478	6	107.8		

VAX/VMS Peak Search Report V1.7 Generated 12-OCT-1990 16:05:14

Configuration : DUB0:[USER]T8660.CNF;1
Analyses by : PEAK V16.0.ENBACK V1.3
Sample title : T8660 SST 551-90 90-3620-A-2
eposition Date : 27-SEP-1990 00:00:00 Deposition Period: 17-NOV-1858 00:00:00
ample date : 27-SEP-1990 00:00:00 Acquisition date : 27-SEP-1990 09:53:39
Sample ID : T8660 551-90 SST Sample quantity : 2.28700E-02 G
Sample type : 10 ML SCV Sample geometry : T2SCV
Detector name : TRACK Detector geometry: T2SCV
Elapsed live time: 0 01:40:00.00 Elapsed real time: 0 01:40:25.30 0.4%
Start energy : 29.76 End energy : 3074.55
Sensitivity : 3.30 Gaussian : 10.00
Critical level : No

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	37.03*	5447	18659	1.46	49.71	47	7	9.08E-01	4.6	
2	0	48.20	426	12048	3.35	64.60	63	5	7.10E-02	39.0	
3	0	59.52	437	11674	2.45	79.70	78	5	7.29E-02	37.4	
4	0	85.94	266	11967	1.23	114.94	114	5	4.43E-02	61.8	
5	0	96.48	215	11797	1.56	129.01	128	5	3.58E-02	75.8	
6	0	122.97	607	16312	1.36	164.34	162	6	1.01E-01	33.3	
7	0	133.48	622	13769	1.61	178.35	177	5	1.04E-01	28.6	
8	0	186.52*	405	21112	2.33	249.09	247	6	6.75E-02	56.7	
9	0	472.13	421	13795	1.28	629.97	628	6	7.01E-02	44.2	
10	0	511.67*	113	4665	1.90	682.68	681	5	1.88E-02	91.6	
11	0	604.72	286	2469	2.27	806.74	803	8	4.77E-02	30.4	
12	0	661.42*	297517	3428	1.99	882.32	875	15	4.96E+01	0.2	
13	10	795.40	229	462	1.89	1060.91	1055	12	3.82E-02	18.2	2.11E+00
14	10	797.66	32	338	1.48	1063.92	1055	12	5.33E-03	103.1	
15	0	961.94*	85	567	2.71	1282.86	1280	7	1.41E-02	48.1	
16	0	1173.21*	7650	289	2.42	1564.38	1559	13	1.27E+00	1.3	
17	0	1274.35	92	50	2.20	1699.12	1693	13	1.54E-02	21.2	
18	0	1332.74*	6555	89	2.54	1776.91	1770	15	1.09E+00	1.3	
19	0	1378.44	10	6	2.13	1837.78	1835	10	1.68E-03	76.8	
20	0	1460.85*	10	3	1.98	1947.54	1943	10	1.64E-03	71.2	
21	0	1588.52	6	4	1.50	2117.59	2114	6	9.25E-04	73.7	
22	0	1861.69	4	4	1.82	2481.32	2478	6	5.94E-04	107.8	

VAX/VMS Nuclide Identification Report V2.5 Generated 16-OCT-1990 10:40:32

Configuration : DUB0:[USERJT8663.CNF:1
Analyses by : PEAK V16.0,PEAKEFF V2.2,ENBACK V1.3,NID/DEP V2.2,WTMEAN V1
Sample title : T8663 SST 607-90 90-4178-A-1 TK110B CORE 16 COMPOSITE
Deposition Date : 28-SEP-1990 00:00:00 Deposition Period: 17-NOV-1858 00:00:00
Sample date : 28-SEP-1990 00:00:00 Acquisition date : 28-SEP-1990 10:15:43
Sample ID : T8663 607-90 SST Sample quantity : 2.44400E-02 G
Sample type : 10 ML SCV Sample geometry : T2SCV
Detector name : TRACK Detector geometry: T2SCV
Elapsed live time: 0 01:40:00.00 Elapsed real time: 0 01:40:29.35 0.5%
Energy tolerance : 1.30 Half life ratio : 8.00
Errors propagated: No Systematic Error : 0.00 %
Efficiency type : Empirical Efficiencies at : Peak Energy
Abundance limit : 60.00 WTM error limit : 3.00

Nuclide Line Activity Report

Nuclide Type: fission

Nuclide	Energy	%Abn	%Eff	Uncorrected uCi/G	Decay Corr uCi/G	1-Sigma %Error	Status
~~TB-57~~	122.06	85.95*	2.693E+00	4.525E-03	4.531E-03	33.63	OK
	136.47	10.33	2.545E+00	0.000E+00	0.000E+00	0.00	Absent
Final Mean for 1 Valid Peaks = 4.531E-03+/- 1.524E-03 (33.63%)							
CS-137	661.66	85.20*	5.623E-01	1.403E+01	1.403E+01	0.17	OK
Final Mean for 1 Valid Peaks = 1.403E+01+/- 2.377E-02 (0.17%)							
CE-144	80.10	1.13	2.818E+00	0.000E+00	0.000E+00	0.00	Absent
	133.54	11.10*	2.578E+00	7.194E-02	7.202E-02	20.11	OK
Final Mean for 1 Valid Peaks = 7.202E-02+/- 1.448E-02 (20.11%)							
EU-154	123.07	40.42	2.693E+00	9.623E-03	9.624E-03	33.63	OK
	247.93	6.84	1.549E+00	0.000E+00	0.000E+00	0.00	Absent
	591.70	4.83	6.279E-01	0.000E+00	0.000E+00	0.00	Absent
	692.40	1.69	5.376E-01	0.000E+00	0.000E+00	0.00	Absent
	723.30	19.98	5.152E-01	1.503E-02	1.503E-02	28.54	OK
	756.90	4.33	4.934E-01	0.000E+00	0.000E+00	0.00	Absent
	873.20	12.09	4.317E-01	1.423E-02	1.423E-02	37.31	OK
	996.30	10.34	3.817E-01	1.277E-02	1.277E-02	49.99	OK
	1004.76	17.90	3.788E-01	1.587E-02	1.588E-02	32.31	OK
	1274.51	34.40*	3.052E-01	1.255E-02	1.255E-02	16.00	OK
	1596.50	1.83	2.481E-01	0.000E+00	0.000E+00	0.00	Absent
Final Mean for 6 Valid Peaks = 1.265E-02+/- 1.420E-03 (11.23%)							
EU-155	86.54	32.80	2.864E+00	1.177E-02	1.177E-02	30.66 ?	OK
	105.31	21.84*	2.836E+00	2.042E-02	2.043E-02	30.72 ?	OK
Final Mean for 2 Valid Peaks = 1.392E-02+/- 3.128E-03 (22.47%)							
AM-241	59.54	35.90*	2.312E+00	1.269E-02	1.269E-02	32.72	OK
Final Mean for 1 Valid Peaks = 1.269E-02+/- 4.152E-03 (32.72%)							

D04-087

Sample ID : T8663 607-90 SST Acquisition date : 28-SEP-1990 10:15:43

Nuclide Type: activation

Nuclide	Energy	%Abn	%Eff	Uncorrected uCi/G	Decay Corr uCi/G	1-Sigma %Error	Status
CO-60	1173.24	99.90	3.289E-01	8.077E-03	8.079E-03	11.79	OK
	1332.50	99.98*	2.930E-01	8.974E-03	8.976E-03	9.16	OK

Final Mean for 2 Valid Peaks = 8.593E-03+/- 6.225E-04 (7.24%)

Sample ID : T8663 607-90 SST Acquisition date : 28-SEP-1990 10:15:43

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides
0	36.97*	7143	23857	1.50	49.62	47	7	4.0		
0	46.96*	405	19232	1.76	62.95	61	6	54.2		
0	59.33	571	15302	1.45	79.45	78	5	32.7		AM-241
0	86.60*	600	14856	1.42	115.82	114	5	30.7		EU-155
0	104.84	686	17588	1.86	140.16	138	6	30.7		EU-155
0	122.30	568	15968	1.84	163.44	162	5	33.6		CO-57
										EU-154
0	133.39	1117	19599	1.65	178.23	176	6	20.1		CE-144
0	186.63	386	25168	1.47	249.24	247	6	64.8		
0	621.90	230	2306	1.74	829.64	826	8	36.9		
0	661.37*	364758	3455	1.99	882.25	875	15	0.2		CS-137
0	696.98	40	100	1.63	929.72	926	8	49.1		
0	723.52	84	99	1.76	965.11	959	13	28.5		EU-154
0	795.25	35	109	1.05	1060.72	1054	12	62.1		
0	872.05	40	50	1.48	1163.07	1158	11	37.3		EU-154
0	996.38	27	41	2.67	1328.76	1324	10	50.0		EU-154
0	1004.73	58	58	2.95	1339.88	1335	16	32.3		EU-154
0	1173.30*	144	32	2.05	1564.50	1558	13	11.8		CO-60
0	1274.51	72	7	2.62	1699.34	1693	13	16.0		EU-154
0	1286.21	7	4	2.35	1714.92	1713	6	63.0		
0	1332.78*	143	2	2.35	1776.96	1772	10	9.2		CO-60
0	1408.85	8	5	1.75	1878.29	1874	8	72.5		

VAX/VMS Nuclide Identification Report V2.5 Generated 9-OCT-1990 14:13:20

Configuration : DUB0:[USERJT8663.CNF:1
Analyses by : PEAK V16.0,PEAKEFF V2.2,ENBACK V1.3,NID/DEP V2.2,WTMEAN V1
Sample title : T8663 SST 607-90 90-4178-A-1 TK110B CORE 16 COMPOSITE
Deposition Date : 28-SEP-1990 00:00:00 Deposition Period: 17-NOV-1858 00:00:00
Sample date : 28-SEP-1990 00:00:00 Acquisition date : 28-SEP-1990 10:15:43
Sample ID : T8663 607-90 SST Sample quantity : 2.44400E-02 G
Sample type : 10 ML SCV Sample geometry : T2SCV
Detector name : TRACK Detector geometry: T2SCV
Elapsed live time: 0 01:40:00.00 Elapsed real time: 0 01:40:29.35 0.5%
Energy tolerance : 1.00 Half life ratio : 8.00
Errors propagated: No Systematic Error : 0.00 %
Efficiency type : Empirical Efficiencies at : Peak Energy
Abundance limit : 70.00 WTM error limit : 3.00

Nuclide Line Activity Report

Nuclide Type: fission

Nuclide	Energy	%Abn	%Eff	Uncorrected uCi/G	Decay Corr uCi/G	1-Sigma %Error	Status
~~CO-57~~	122.06	85.95*	2.693E+00	4.525E-03	4.531E-03	33.63	~~OK~~
Eu-	136.47	10.33	2.545E+00	0.000E+00	0.000E+00	0.00	Absent
	Final Mean for 1 Valid Peaks = 4.531E-03+/- 1.524E-03 (33.63%)						
CS-137	661.66	85.20*	5.623E-01	1.403E+01	1.403E+01	0.17	OK
	Final Mean for 1 Valid Peaks = 1.403E+01+/- 2.377E-02 (0.17%)						
~~CE-144~~	80.10	1.13	2.818E+00	0.000E+00	0.000E+00	0.00	Absent
	133.54	11.10*	2.578E+00	7.194E-02	7.202E-02	20.11	~~OK~~
	Final Mean for 1 Valid Peaks = 7.202E-02+/- 1.448E-02 (20.11%)						
EU-154	123.07	40.42	2.693E+00	9.623E-03	9.624E-03	33.63	OK
	247.93	6.84	1.549E+00	0.000E+00	0.000E+00	0.00	Absent
	591.70	4.83	6.279E-01	0.000E+00	0.000E+00	0.00	Absent
	692.40	1.69	5.376E-01	0.000E+00	0.000E+00	0.00	Absent
	723.30	19.98	5.152E-01	1.503E-02	1.503E-02	28.54	OK
	756.90	4.33	4.934E-01	0.000E+00	0.000E+00	0.00	Absent
	873.20	12.09	4.312E-01	0.000E+00	0.000E+00	0.00	Absent
	996.30	10.34	3.817E-01	1.277E-02	1.277E-02	49.99	OK
	1004.76	17.90	3.788E-01	1.587E-02	1.588E-02	32.31	OK
	1274.51	34.40*	3.052E-01	1.255E-02	1.255E-02	16.00	OK
	1596.50	1.83	2.481E-01	0.000E+00	0.000E+00	0.00	Absent
	Final Mean for 5 Valid Peaks = 1.252E-02+/- 1.474E-03 (11.77%)						
EU-155	86.54	32.80	2.864E+00	1.177E-02	1.177E-02	30.66	OK
	105.31	21.84*	2.836E+00	2.042E-02	2.043E-02	30.72	OK
	Final Mean for 2 Valid Peaks = 1.392E-02+/- 3.128E-03 (22.47%)						
M-241	59.54	35.90*	2.312E+00	1.269E-02	1.269E-02	32.72	OK
	Final Mean for 1 Valid Peaks = 1.269E-02+/- 4.152E-03 (32.72%)						

Sample ID : T8663 607-90 SST Acquisition date : 28-SEP-1990 10:15:43

Nuclide Type: activation

Nuclide	Energy	%Abn	%Eff	Uncorrected uCi/G	Decay Corr uCi/G	1-Sigma %Error	Status
CO-60 ✓	1173.24	99.90	3.289E-01	8.077E-03	8.079E-03	11.79	OK
	1332.50	99.98*	2.930E-01	8.974E-03	8.976E-03	9.16	OK

Final Mean for 2 Valid Peaks = 8.593E-03+/- 6.225E-04 (7.24%)

Sample ID : T8663 607-90 SST
Acquisition date : 28-SEP-1990 10:15:43

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides
0	36.97*	7143	23857	1.50	49.62	47	7	4.0		
0	46.96*	405	19232	1.76	62.95	61	6	54.2		
0	59.33	571	15302	1.45	79.45	78	5	32.7		AM-241
0	86.60*	600	14856	1.42	115.82	114	5	30.7		EU-155
0	104.84	686	17588	1.86	140.16	138	6	30.7		EU-155
0	122.30	568	15968	1.84	163.44	162	5	33.6		CO-57
										EU-154
0	133.39	1117	19599	1.65	178.23	176	6	20.1		CE-144
0	186.63	386	25168	1.47	249.24	247	6	64.8		
0	621.90	230	2306	1.74	829.64	826	8	36.9		
0	661.37*	364758	3455	1.99	882.25	875	15	0.2		CS-137
0	696.98	40	100	1.63	929.72	926	8	49.1		
0	723.52	84	99	1.76	965.11	959	13	28.5		EU-154
0	795.25	35	109	1.05	1060.72	1054	12	62.1		
0	872.05	40	50	1.48	1163.07	1158	11	37.3		
0	996.38	27	41	2.67	1328.76	1324	10	50.0		EU-154
0	1004.73	58	58	2.95	1339.88	1335	16	32.3		EU-154
0	1173.30*	144	32	2.05	1564.50	1558	13	11.8		CO-60
0	1274.51	72	7	2.62	1699.34	1693	13	16.0		EU-154
0	1286.21	7	4	2.35	1714.92	1713	6	63.0		
0	1332.78*	143	2	2.35	1776.96	1772	10	9.2		CO-60
0	1408.85	8	5	1.75	1878.29	1874	8	72.5		

VAX/VMS Peak Search Report V1.7 Generated 9-OCT-1990 14:13:03

Configuration : DUB0:[USER]T8663.CNF;1
Analyses by : PEAK V16.0.ENBACK V1.3
Sample title : T8663 SST 607-90 90-4178-A-1 TK110B CORE 16 COMPOSITE
Deposition Date : 28-SEP-1990 00:00:00 Deposition Period: 17-NOV-1858 00:00:00
Sample date : 28-SEP-1990 00:00:00 Acquisition date : 28-SEP-1990 10:15:43
Sample ID : T8663 607-90 SST Sample quantity : 2.44400E-02 G
Sample type : 10 ML SCV Sample geometry : T2SCV
Detector name : TRACK Detector geometry: T2SCV
Elapsed live time: 0 01:40:00.00 Elapsed real time: 0 01:40:29.35 0.5%
Start energy : 29.76 End energy : 3074.55
Sensitivity : 3.30 Gaussian : 10.00
Critical level : No

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	36.97*	7143	23857	1.50	49.62	47	7	1.19E+00	4.0	
2	0	46.96*	405	19232	1.76	62.95	61	6	6.75E-02	54.2	
3	0	59.33	571	15302	1.45	79.45	78	5	9.52E-02	32.7	
4	0	86.60*	600	14856	1.42	115.82	114	5	1.00E-01	30.7	
5	0	104.84	686	17588	1.86	140.16	138	6	1.14E-01	30.7	
6	0	122.30	568	15968	1.84	163.44	162	5	9.47E-02	33.6	
7	0	133.39	1117	19599	1.65	178.23	176	6	1.86E-01	20.1	
8	0	186.63	386	25168	1.47	249.24	247	6	6.44E-02	64.8	
9	0	621.90	230	2306	1.74	829.64	826	8	3.84E-02	36.9	
10	0	661.37*	364758	3455	1.99	882.25	875	15	6.08E+01	0.2	
11	0	696.98	40	100	1.63	929.72	926	8	6.69E-03	49.1	
12	0	723.52	84	99	1.76	965.11	959	13	1.40E-02	28.5	
13	0	795.25	35	109	1.05	1060.72	1054	12	5.81E-03	62.1	
14	0	872.05	40	50	1.48	1163.07	1158	11	6.72E-03	37.3	
15	0	996.38	27	41	2.67	1328.76	1324	10	4.56E-03	50.0	
16	0	1004.73	58	58	2.95	1339.88	1335	16	9.73E-03	32.3	
17	0	1173.30*	144	32	2.05	1564.50	1558	13	2.40E-02	11.8	
18	0	1274.51	72	7	2.62	1699.34	1693	13	1.19E-02	16.0	
19	0	1286.21	7	4	2.35	1714.92	1713	6	1.08E-03	63.0	
20	0	1332.78*	143	2	2.35	1776.96	1772	10	2.38E-02	9.2	
21	0	1408.85	8	5	1.75	1878.29	1874	8	1.32E-03	72.5	

VAX/VMS Nuclide Identification Report V2.5 Generated 16-OCT-1990 10:41:04

Configuration : DUB0:[USER]T8664.CNF;1
Analyses by : PEAK V16.0,PEAKEFF V2.2,ENBACK V1.3,NID/DEP V2.2,WTMEAN V1
Sample title : T8664 608-90 90-4178-A-2 TK110B CORE 16 COMPOSITE
Deposition Date : 28-SEP-1990 00:00:00 Deposition Period: 17-NOV-1858 00:00:00
Sample date : 28-SEP-1990 00:00:00 Acquisition date : 28-SEP-1990 11:58:00
Sample ID : T8664 608-90 SST Sample quantity : 1.83700E-02 G
Sample type : 10 ML SCV Sample geometry : T2SCV
Detector name : TRACK Detector geometry: T2SCV
Elapsed live time: 0 01:40:00.00 Elapsed real time: 0 01:40:22.82 0.4%
Energy tolerance : 1.30 Half life ratio : 8.00
Errors propagated: No Systematic Error : 0.00 %
Efficiency type : Empirical Efficiencies at : Peak Energy
Abundance limit : 60.00 WTM error limit : 3.00

Nuclide Line Activity Report

Nuclide Type: natural

Nuclide	Energy	%Abn	%Eff	Uncorrected uCi/G	Decay Corr uCi/G	1-Sigma %Error	Status
~~K-40~~	1460.83	10.67*	2.696E-01	2.536E-03	2.536E-03	201.57	OK

Final Mean for 1 Valid Peaks = 2.536E-03+/- 5.113E-03 (201.57%)

Nuclide Type: fission

Nuclide	Energy	%Abn	%Eff	Uncorrected uCi/G	Decay Corr uCi/G	1-Sigma %Error	Status
~~CO-57~~	122.06	85.95*	2.689E+00	7.408E-03	7.418E-03	28.06	OK
	136.47	10.33	2.545E+00	0.000E+00	0.000E+00	0.00	Absent

Final Mean for 1 Valid Peaks = 7.418E-03+/- 2.082E-03 (28.06%)

CS-137	661.66	85.20*	5.622E-01	1.430E+01	1.430E+01	0.19	OK

Final Mean for 1 Valid Peaks = 1.430E+01+/- 2.733E-02 (0.19%)

CE-144	80.10	1.13	2.818E+00	0.000E+00	0.000E+00	0.00	Absent
	133.54	11.10*	2.581E+00	5.708E-02	5.716E-02	29.65	OK

Final Mean for 1 Valid Peaks = 5.716E-02+/- 1.695E-02 (29.65%)

EU-154	123.07	40.42	2.689E+00	1.575E-02	1.575E-02	28.06	OK
	247.93	6.84	1.549E+00	0.000E+00	0.000E+00	0.00	Absent
	591.70	4.83	6.279E-01	0.000E+00	0.000E+00	0.00	Absent
	692.40	1.69	5.376E-01	0.000E+00	0.000E+00	0.00	Absent
	723.30	19.98	5.159E-01	2.569E-02	2.570E-02	22.63	OK
	756.90	4.33	4.938E-01	3.440E-02	3.441E-02	48.30	OK
	873.20	12.09	4.314E-01	2.731E-02	2.731E-02	24.83	OK
	996.30	10.34	3.817E-01	2.299E-02	2.299E-02	34.72	OK
	1004.76	17.90	3.787E-01	2.119E-02	2.119E-02	27.06	OK
	1274.51	34.40*	3.051E-01	1.828E-02	1.828E-02	16.08	OK
	1596.50	1.83	2.481E-01	0.000E+00	0.000E+00	0.00	Absent

Final Mean for 7 Valid Peaks = 2.017E-02+/- 1.932E-03 (9.58%)

Sample ID : T8664 608-90 SST Acquisition date : 28-SEP-1990 11:58:00

Nuclide Type: fission

Nuclide	Energy	%Abn	%Eff	Uncorrected uCi/G	Decay Corr uCi/G	1-Sigma %Error	Status
EU-155	86.54	32.80	2.865E+00	1.222E-02	1.222E-02	34.78	OK
	105.31	21.84*	2.839E+00	9.709E-03	9.711E-03	75.77	OK

Final Mean for 2 Valid Peaks = 1.159E-02+/- 3.680E-03 (31.74%)

AM-241	59.54	35.90*	2.314E+00	2.481E-02	2.481E-02	22.73	OK

Final Mean for 1 Valid Peaks = 2.481E-02+/- 5.641E-03 (22.73%)

Nuclide Type: activation

Nuclide	Energy	%Abn	%Eff	Uncorrected uCi/G	Decay Corr uCi/G	1-Sigma %Error	Status
CO-60	1173.24	99.90	3.290E-01	1.675E-02	1.675E-02	7.67	OK
	1332.50	99.98*	2.930E-01	1.569E-02	1.569E-02	8.44	OK

Final Mean for 2 Valid Peaks = 1.624E-02+/- 9.223E-04 (5.68%)

Sample ID : T8664 608-90 SST Acquisition date : 28-SEP-1990 11:58:00

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides
0	36.96*	5443	18864	1.52	49.60	47	7	4.6		
0	59.39	841	14169	1.41	79.53	78	6	22.7		AM-241
0	74.09*	262	13792	0.95	99.14	97	6	71.1		
0	86.72*	468	11534	2.19	115.98	114	5	34.8		EU-155
0	104.45	245	13763	1.22	139.63	138	6	75.8		EU-155
0	122.77	698	15062	1.94	164.06	162	6	28.1		CO-57
										EU-154
0	133.10	667	15494	1.51	177.85	176	6	29.6		CE-144
0	204.62	288	12156	1.27	273.24	272	4	54.5		
0	456.94	259	13236	1.79	609.71	608	6	70.3		
2	657.63	395	1678	2.24	877.27	875	15	17.5	8.21E+00	
2	661.40*	279300	1474	1.94	882.29	875	15	0.2		CS-137
0	722.63	108	88	1.72	963.92	958	13	22.6		EU-154
0	756.23	30	52	1.45	1008.70	1006	8	48.3		EU-154
0	795.28	62	48	3.42	1060.76	1057	9	25.7		
0	872.69	58	50	1.18	1163.92	1161	8	24.8		EU-154
0	884.82	23	33	2.57	1180.09	1176	9	55.7		
0	996.36	37	32	2.20	1328.73	1325	8	34.7		EU-154
0	1004.94	59	41	1.67	1340.17	1335	11	27.1		EU-154
0	1173.23*	224	12	2.15	1564.40	1560	12	7.7		CO-60
0	1274.69	78	19	2.66	1699.58	1691	14	16.1		EU-154
0	1332.70*	187	11	1.98	1776.85	1771	12	8.4		CO-60
0	1459.90*	3	6	1.59	1946.29	1941	11	201.6		K-40

VAX/VMS Nuclide Identification Report V2.5 Generated 9-OCT-1990 14:12:43

Configuration : DUB0:[USERJT3664.CNF:1
nalyses by : PEAK V16.0,PEAKEFF V2.2,CNBACK V1.3,NID/DEP V2.2,WTMEAN V1
Sample title : T8664 608-90 90-4178-A-2 TK110B CORE 16 COMPOSITE
Deposition Date : 28-SEP-1990 00:00:00 Deposition Period: 17-NOV-1858 00:00:00
Sample date : 28-SEP-1990 00:00:00 Acquisition date : 28-SEP-1990 11:58:00
Sample ID : T8664 608-90 SST Sample quantity : 1.83700E-02 G
Sample type : 10 ML SCV Sample geometry : T2SCV
Detector name : TRACK Detector geometry: T2SCV
Elapsed live time: 0 01:40:00.00 Elapsed real time: 0 01:40:22.82 0.4%
Energy tolerance : 1.00 Half life ratio : 8.00
Errors propagated: No Systematic Error : 0.00 %
Efficiency type : Empirical Efficiencies at : Peak Energy
Abundance limit : 70.00 WTM error limit : 3.00

Nuclide Line Activity Report

Nuclide Type: natural

Nuclide	Energy	%Abn	%Eff	Uncorrected uCi/G	Decay Corr uCi/G	1-Sigma %Error	Status
~~K-40~~	1460.83	10.67*	2.696E-01	2.536E-03	2.536E-03	201.57	OK

Final Mean for 1 Valid Peaks = 2.536E-03+/- 5.113E-03 (201.57%)

'uclide Type: fission

Nuclide	Energy	%Abn	%Eff	Uncorrected uCi/G	Decay Corr uCi/G	1-Sigma %Error	Status
~~CO-57~~	122.06	85.95*	2.689E+00	7.408E-03	7.418E-03	28.06	~~OK~~
	136.47	10.33	2.545E+00	0.000E+00	0.000E+00	0.00	Absent

Final Mean for 1 Valid Peaks = 7.418E-03+/- 2.082E-03 (28.06%)

CS-137 661.66 85.20* 5.622E-01 1.430E+01 1.430E+01 0.19 OK

Final Mean for 1 Valid Peaks = 1.430E+01+/- 2.733E-02 (0.19%)

~~CE-144~~	80.10	1.13	2.818E+00	0.000E+00	0.000E+00	0.00	Absent
	133.54	11.10*	2.581E+00	5.708E-02	5.716E-02	29.65	~~OK~~

Final Mean for 1 Valid Peaks = 5.716E-02+/- 1.695E-02 (29.65%)

EU-154	123.07	40.42	2.689E+00	1.575E-02	1.575E-02	28.06	OK
	247.93	6.84	1.549E+00	0.000E+00	0.000E+00	0.00	Absent
	591.70	4.83	6.279E-01	0.000E+00	0.000E+00	0.00	Absent
	692.40	1.69	5.376E-01	0.000E+00	0.000E+00	0.00	Absent
	723.30	19.98	5.159E-01	2.569E-02	2.570E-02	22.63	OK
	756.90	4.33	4.938E-01	3.440E-02	3.441E-02	48.30	OK
	873.20	12.09	4.314E-01	2.731E-02	2.731E-02	24.83	OK
	996.30	10.34	3.817E-01	2.299E-02	2.299E-02	34.72	OK
	1004.76	17.90	3.787E-01	2.119E-02	2.119E-02	27.06	OK
	1274.51	34.40*	3.051E-01	1.828E-02	1.828E-02	16.08	OK
	1596.50	1.83	2.481E-01	0.000E+00	0.000E+00	0.00	Absent

Final Mean for 7 Valid Peaks = 2.017E-02+/- 1.932E-03 (9.58%)

Sample ID : T8664 608-90 SST Acquisition date : 28-SEP-1990 11:58:00

uclide Type: fission

Nuclide	Energy	%Abn	%Eff	Uncorrected uCi/G	Decay Corr uCi/G	1-Sigma %Error	Status
EU-155	86.54	32.80	2.865E+00	1.222E-02	1.222E-02	34.78	OK
	105.31	21.84*	2.839E+00	9.709E-03	9.711E-03	75.77	OK

Final Mean for 2 Valid Peaks = 1.159E-02+/- 3.680E-03 (31.74%)

AM-241	59.54	35.90*	2.314E+00	2.481E-02	2.481E-02	22.73	OK

Final Mean for 1 Valid Peaks = 2.481E-02+/- 5.641E-03 (22.73%)

Nuclide Type: activation

Nuclide	Energy	%Abn	%Eff	Uncorrected uCi/G	Decay Corr uCi/G	1-Sigma %Error	Status
CO-60	1173.24	99.90	3.290E-01	1.675E-02	1.675E-02	7.67	OK
	1332.50	99.98*	2.930E-01	1.569E-02	1.569E-02	8.44	OK

Final Mean for 2 Valid Peaks = 1.624E-02+/- 9.223E-04 (5.68%)

Sample ID : T8664 608-90 SST Acquisition date : 28-SEP-1990 11:58:00

't	Energy	Area	Bkgnd	FWHM	Channel	Left	Fw	%Err	Fit	Nuclides
0	36.96*	5443	18864	1.52	49.60	47	7	4.6		
0	59.39	841	14169	1.41	79.53	78	6	22.7		AM-241
0	74.09*	262	13792	0.95	99.14	97	6	71.1		
0	86.72*	468	11534	2.19	115.98	114	5	34.8		EU-155
0	104.45	245	13763	1.22	139.63	138	6	75.8		EU-155
0	122.77	698	15062	1.94	164.06	162	6	28.1		CO-57
										EU-154
0	133.10	667	15494	1.51	177.85	176	6	29.6		CE-144
0	204.62	288	12156	1.27	273.24	272	4	54.5		
0	456.94	259	13236	1.79	609.71	608	6	70.3		
2	657.63	395	1678	2.24	877.27	875	15	17.5	8.21E+00	
2	661.40*	279300	1474	1.94	882.29	875	15	0.2		CS-137
0	722.63	108	88	1.72	963.92	958	13	22.6		EU-154
0	756.23	30	52	1.45	1008.70	1006	8	48.3		EU-154
0	795.28	62	48	3.42	1060.76	1057	9	25.7		
0	872.69	58	50	1.18	1163.92	1161	8	24.8		EU-154
0	884.82	23	33	2.57	1180.09	1176	9	55.7		
0	996.36	37	32	2.20	1328.73	1325	8	34.7		EU-154
0	1004.94	59	41	1.67	1340.17	1335	11	27.1		EU-154
0	1173.23*	224	12	2.15	1564.40	1560	12	7.7		CO-60
0	1274.69	78	19	2.66	1699.58	1691	14	16.1		EU-154
0	1332.70*	187	11	1.98	1776.85	1771	12	8.4		CO-60
0	1459.90*	3	6	1.59	1946.29	1941	11	201.6		K-40

VAX/VMS Peak Search Report V1.7 Generated 9-OCT-1990 14:12:26

Configuration : DUB0:[USER]T8664.CNF;1
Analyses by : PEAK V16.0.ENBACK V1.3
Sample title : T8664 608-90 90-4178-A-2 TK110B CORE 16 COMPOSITE
Deposition Date : 28-SEP-1990 00:00:00 Deposition Period: 17-NOV-1858 00:00:00
Sample date : 28-SEP-1990 00:00:00 Acquisition date : 28-SEP-1990 11:58:00
Sample ID : T8664 608-90 SST Sample quantity : 1.83700E-02 G
Sample type : 10 ML SCV Sample geometry : T2SCV
Detector name : TRACK Detector geometry: T2SCV
Elapsed live time: 0 01:40:00.00 Elapsed real time: 0 01:40:22.82 0.4%
Start energy : 29.76 End energy : 3074.55
Sensitivity : 3.30 Gaussian : 10.00
Critical level : No

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	36.96*	5443	18864	1.52	49.60	47	7	9.07E-01	4.6	
2	0	59.39	841	14169	1.41	79.53	78	6	1.40E-01	22.7	
3	0	74.09*	262	13792	0.95	99.14	97	6	4.36E-02	71.1	
4	0	86.72*	468	11534	2.19	115.98	114	5	7.80E-02	34.8	
5	0	104.45	245	13762	1.22	139.63	138	6	4.09E-02	75.8	
6	0	122.77	698	15062	1.94	164.06	162	6	1.16E-01	28.1	
7	0	133.10	667	15494	1.51	177.85	176	6	1.11E-01	29.6	
8	0	204.62	288	12156	1.27	273.24	272	4	4.80E-02	54.5	
9	0	456.94	259	13236	1.79	609.71	608	6	4.32E-02	70.3	
10	2	657.63	395	1678	2.24	877.27	875	15	6.58E-02	17.5	8.21E+00
11	2	661.40*	279300	1474	1.94	882.29	875	15	4.66E+01	0.2	
12	0	722.63	108	88	1.72	963.92	958	13	1.80E-02	22.6	
13	0	756.23	30	52	1.45	1008.70	1006	8	5.00E-03	48.3	
14	0	795.28	62	48	3.42	1060.76	1057	9	1.04E-02	25.7	
15	0	872.69	58	50	1.18	1163.92	1161	8	9.68E-03	24.8	
16	0	884.82	23	33	2.57	1180.09	1176	9	3.75E-03	55.7	
17	0	996.36	37	32	2.20	1328.73	1325	8	6.17E-03	34.7	
18	0	1004.94	59	41	1.67	1340.17	1335	11	9.76E-03	27.1	
19	0	1173.23*	224	12	2.15	1564.40	1560	12	3.74E-02	7.7	
20	0	1274.69	78	19	2.66	1699.58	1691	14	1.30E-02	16.1	
21	0	1332.70*	187	11	1.98	1776.85	1771	12	3.12E-02	8.4	
22	0	1459.90*	3	6	1.59	1946.29	1941	11	4.96E-04	201.6	

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VAX/VMS Nuclide Identification Report V2.5 Generated 16-OCT-1990 10:42:40

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Configuration     : DUB0:[USER]T8675.CNF;2
Analyses by       : PEAK V16.0,PEAKEFF V2.2,ENBACK V1.3,NID/DEP V2.2,WTMEAN V1
Sample title      : T8675 SST 609-90 90-4178-A-3 SYS BLK
 eposition Date   : 1-OCT-1990 00:00:00  Deposition Period: 17-NOV-1858 00:00:00
 ample date       : 1-OCT-1990 00:00:00  Acquisition date : 1-OCT-1990 14:44:57
Sample ID         : T8675 609-90 SST     Sample quantity  : 2.14100E-02 G
Sample type       : 10 ML SCV            Sample geometry  : T2SCV
Detector name     : TRACK                Detector geometry: T2SCV
Elapsed live time: 0 15:00:00.00         Elapsed real time: 0 15:00:15.39   0.0%
Energy tolerance :     1.30              Half life ratio  :     8.00
Errors propagated: No                    Systematic Error :     0.00 %
Efficiency type  : Empirical             Efficiencies at  : Peak Energy
Abundance limit  :    60.00              WTM error limit  :     3.00
```

Nuclide Line Activity Report

Nuclide Type: activation

Nuclide	Energy	%Abn	%Eff	Uncorrected uCi/G	Decay Corr uCi/G	1-Sigma %Error	Status
NA-22	511.00	180.00	7.295E-01	4.947E-04	4.950E-04	53.59	OK
	1274.53	99.94*	3.051E-01	1.867E-03	1.868E-03	12.19	OK
	Final Mean for 2 Valid Peaks = 1.286E-03+/- 1.727E-04 (13.44%)						
CO-60	1173.24	99.90	3.289E-01	2.087E-02	2.088E-02	2.35	OK
	1332.50	99.98*	2.930E-01	2.081E-02	2.082E-02	2.28	OK
	Final Mean for 2 Valid Peaks = 2.085E-02+/- 3.412E-04 (1.64%)						

Nuclide Type: fission

Nuclide	Energy	%Abn	%Eff	Uncorrected uCi/G	Decay Corr uCi/G	1-Sigma %Error	Status
CO-57	122.06	85.95*	2.689E+00	2.860E-03	2.867E-03	7.83	OK
	136.47	10.33	2.545E+00	0.000E+00	0.000E+00	0.00	Absent
	Final Mean for 1 Valid Peaks = 2.867E-03+/- 2.244E-04 (7.83%)						
CS-134	563.24	8.38	6.604E-01	1.112E-02	1.113E-02	26.51	OK
	569.32	15.40	6.526E-01	1.008E-02	1.009E-02	18.11	OK
	604.71	97.60*	6.145E-01	1.179E-02	1.180E-02	3.52	OK
	795.87	85.40	4.706E-01	1.314E-02	1.315E-02	2.52	OK
	801.95	8.73	4.671E-01	1.254E-02	1.255E-02	16.57	OK
	Final Mean for 5 Valid Peaks = 1.256E-02+/- 2.537E-04 (2.02%)						
CS-137	661.66	85.20*	5.622E-01	6.771E-01	6.771E-01	0.28	OK
	Final Mean for 1 Valid Peaks = 6.771E-01+/- 1.897E-03 (0.28%)						
CE-144	80.10	1.13	2.818E+00	0.000E+00	0.000E+00	0.00	Absent
	133.54	11.10*	2.575E+00	4.268E-03	4.278E-03	25.79	OK
	Final Mean for 1 Valid Peaks = 4.278E-03+/- 1.103E-03 (25.79%)						

Sample ID : T8675 609-90 SST Acquisition date : 1-OCT-1990 14:44:57

Nuclide Type: fission

Nuclide	Energy	%Abn	%Eff	Uncorrected uCi/G	Decay Corr uCi/G	1-Sigma %Error	Status
EU-154	123.07	40.42	2.689E+00	6.081E-03	6.083E-03	7.83	OK
	247.93	6.84	1.554E+00	7.657E-03	7.659E-03	39.86	OK
	591.70	4.83	6.279E-01	0.000E+00	0.000E+00	0.00	Absent
	692.40	1.69	5.376E-01	1.972E-02	1.973E-02	40.98	OK
	723.30	19.98	5.155E-01	7.755E-03	7.756E-03	16.64	OK
	756.90	4.33	4.934E-01	0.000E+00	0.000E+00	0.00	Absent
	873.20	12.09	4.311E-01	4.509E-03	4.510E-03	31.91	OK
	996.30	10.34	3.822E-01	7.063E-03	7.065E-03	39.81	OK
	1004.76	17.90	3.788E-01	4.089E-03	4.090E-03	28.34	OK
	1274.51	34.40*	3.051E-01	5.423E-03	5.424E-03	12.19	OK
	1596.50	1.83	2.481E-01	0.000E+00	0.000E+00	0.00	Absent

Final Mean for 8 Valid Peaks = 5.827E-03+/- 3.376E-04 (5.79%)

EU-155	86.54	32.80	2.861E+00	3.754E-03	3.755E-03	14.94	OK
	105.31	21.84*	2.834E+00	0.000E+00	0.000E+00	0.00	~~Absent~~

non-reported multiplet (034 keV)

Final Mean for 1 Valid Peaks = 3.755E-03+/- 5.609E-04 (14.94%)

AM-241	59.54	35.90*	2.312E+00	3.451E-03	3.451E-03	13.48	OK

Final Mean for 1 Valid Peaks = 3.451E-03+/- 4.652E-04 (13.48%)

Nuclide Type: ACTIVATION

Nuclide	Energy	%Abn	%Eff	Uncorrected uCi/G	Decay Corr uCi/G	1-Sigma %Error	Status
GD-153	97.43	27.60*	2.870E+00	3.801E-03	3.811E-03	13.10	OK
	103.18	19.60	2.842E+00	5.960E-03	5.976E-03	14.62	OK

Final Mean for 2 Valid Peaks = 4.344E-03+/- 4.334E-04 (9.98%)

Sample ID : T8675 609-90 SST Acquisition date : 1-OCT-1990 14:44:57

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides
3	36.70	2837	8146	1.28	49.26	47	13	5.3	2.32E+01	
8	41.45	3203	14363	2.85	55.59	47	13	7.4		
0	47.84	614	9105	2.02	64.12	62	6	24.9		
0	59.34	1225	9502	2.04	79.46	76	7	13.5		AM-241
0	85.80	1507	14029	3.27	114.75	110	10	14.9		EU-155
0	97.25	1288	9799	1.35	130.03	127	7	13.1		GD-153
0	103.84	1420	12771	3.32	138.81	135	9	14.6		GD-153
0	122.72	2828	14328	1.75	164.00	160	9	7.8		CO-57
										EU-154
0	133.72	522	7892	1.48	178.67	177	5	25.8		CE-144
3	189.57	2576	32057	4.76	253.16	242	28	17.1	1.19E+01	
3	196.96*	947	26763	4.76	263.02	242	28	37.9		
3	199.11	792	16347	4.76	265.89	242	28	29.0		
0	247.13	348	7499	1.58	329.93	328	6	39.9		EU-154
0	437.18	289	6071	2.49	583.37	581	6	43.5		
0	475.08	886	8922	4.63	633.89	630	9	19.7		
0	510.42*	278	5290	4.25	681.02	676	11	53.6		NA-22
0	562.73	263	1692	1.22	750.76	748	7	26.5		CS-134
0	569.38	433	1863	1.61	759.63	756	8	18.1		CS-134
0	604.56	3024	2245	1.94	806.52	801	11	3.5		CS-134
0	661.43*	138732	2040	1.96	882.34	875	15	0.3		CS-137
0	692.52	77	306	1.84	923.78	920	7	41.0		EU-154
0	723.09	342	600	1.72	964.53	958	14	16.6		EU-154
3	795.54	2259	333	2.12	1061.10	1055	21	2.5	1.43E+00	CS-134
3	801.72*	219	319	2.04	1069.34	1055	21	16.6		CS-134
0	845.99	57	230	2.69	1128.34	1126	6	46.4		
4	870.73	53	324	1.91	1161.31	1158	10	65.9	2.76E+00	
4	873.22	101	293	1.76	1164.63	1158	10	31.9		EU-154
0	883.39	64	325	1.03	1178.18	1175	8	51.0		
0	953.57	43	304	2.38	1271.72	1269	7	69.4		
0	983.78	32	203	2.16	1311.97	1310	6	74.7		
0	995.05	119	461	3.62	1326.99	1321	13	39.8		EU-154
0	1004.58	119	307	2.23	1339.69	1336	8	28.3		EU-154
0	1112.34	61	228	3.06	1483.28	1480	8	45.6		
0	1173.27*	2934	314	2.42	1564.46	1557	16	2.4		CO-60
0	1274.93	243	147	2.46	1699.90	1693	14	12.2		EU-154
										NA-22
0	1332.80*	2608	108	2.61	1776.98	1771	16	2.3		CO-60
0	1365.70	93	40	2.37	1820.81	1816	13	20.0		
0	1646.32	15	23	0.87	2194.55	2193	9	67.1		
0	1744.59	38	32	10.06	2325.40	2315	20	46.9		
0	1807.53	19	6	1.41	2409.21	2406	7	40.3		
0	1859.41	8	11	1.25	2478.28	2475	6	68.3		
0	1965.32	42	9	7.94	2619.28	2610	17	28.5		
0	2270.44	3	32	0.89	3025.39	3018	11	408.6		
0	2425.56	6	12	0.81	3231.79	3229	9	103.0		
0	2622.09	12	13	1.52	3493.25	3491	8	72.9		
3	2660.25	15	0	3.00	3544.01	3541	17	28.9	1.80E+00	
3	2664.54	9	0	3.00	3549.73	3541	17	76.9		
0	2736.44	14	0	2.32	3645.36	3641	8	30.3		
0	2779.54	44	0	17.61	3702.68	3688	32	23.6		

Post NID Peak Search Report Reconstructed

Sample ID : T8675 609-90 SST Acquisition date : 1-OCT-1990 14:44:57

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides
0	2842.76	8	3	1.98	3786.77	3784	6	61.0		

VAX/VMS Nuclide Identification Report V2.5 Generated 9-OCT-1990 12:03:12

Configuration : DUB0:[USER]T8675.CNF;2
Analyses by : PEAK V16.0,PEAKEFF V2.2,ENBACK V1.3,NID/DEP V2.2,WTMEAN V1
Sample title : T8675 SST 609-90 90-4178-A-3 SYS BLK
Deposition Date : 1-OCT-1990 00:00:00 Deposition Period: 17-NOV-1859 00:00:00
Sample date : 1-OCT-1990 00:00:00 Acquisition date : 1-OCT-1990 14:44:57
Sample ID : T8675 609-90 SST Sample quantity : 2.14100E-02 G
Sample type : 10 ML SCV Sample geometry : T2SCV
Detector name : TRACK Detector geometry: T2SCV
Elapsed live time: 0 15:00:00.00 Elapsed real time: 0 15:00:15.39 0.0%
Energy tolerance : 1.00 Half life ratio : 8.00
Errors propagated: No Systematic Error : 0.00 %
Efficiency type : Empirical Efficiencies at : Peak Energy
Abundance limit : 70.00 WTM error limit : 3.00

Nuclide Line Activity Report

Nuclide Type: activation

Nuclide	Energy	%Abn	%Eff	Uncorrected uCi/G	Decay Corr uCi/G	1-Sigma %Error	Status
~~NA-22~~ β	511.00	180.00	7.295E-01	4.947E-04	4.950E-04	53.59	~~OK~~
154Eu	1274.53	99.94*	3.051E-01	1.867E-03	1.868E-03	12.19	~~OK~~

Final Mean for 2 Valid Peaks = 1.286E-03+/- 1.727E-04 (13.44%)

CO-60	1173.24	99.90	3.289E-01	2.087E-02	2.088E-02	2.35	OK
	1332.50	99.98*	2.930E-01	2.081E-02	2.082E-02	2.28	OK

Final Mean for 2 Valid Peaks = 2.085E-02+/- 3.412E-04 (1.64%)

Nuclide Type: fission

Nuclide	Energy	%Abn	%Eff	Uncorrected uCi/G	Decay Corr uCi/G	1-Sigma %Error	Status
~~CR-51~~	122.06	85.95*	2.689E+00	2.860E-03	2.867E-03	7.83	~~OK~~
Eu	136.47	10.33	2.545E+00	0.000E+00	0.000E+00	0.00	Absent

~~Final Mean for 1 Valid Peaks = 2.867E-03+/- 2.244E-04 (7.83%)~~

CS-134	563.24	8.38	6.604E-01	1.112E-02	1.113E-02	26.51	OK
	569.32	15.40	6.526E-01	1.008E-02	1.009E-02	18.11	OK
	604.71	97.60*	6.145E-01	1.179E-02	1.180E-02	3.52	OK
	795.87	85.40	4.706E-01	1.314E-02	1.315E-02	2.52	OK
	801.95	8.73	4.671E-01	1.254E-02	1.255E-02	16.57	OK

Final Mean for 5 Valid Peaks = 1.256E-02+/- 2.537E-04 (2.02%)

CS-137	661.66	85.20*	5.622E-01	6.771E-01	6.771E-01	0.28	OK

Final Mean for 1 Valid Peaks = 6.771E-01+/- 1.897E-03 (0.28%)

~~CE-144~~	80.10	1.13	2.818E+00	0.000E+00	0.000E+00	0.00	Absent
	133.54	11.10*	2.575E+00	4.268E-03	4.278E-03	25.79	~~OK~~

Final Mean for 1 Valid Peaks = 4.278E-03+/- 1.103E-03 (25.79%)

Sample ID : T8675 609-90 SST Acquisition date : 1-OCT-1990 14:44:57

Nuclide Type: fission

Nuclide	Energy	%Abn	%Eff	Uncorrected uCi/G	Decay Corr uCi/G	1-Sigma %Error	Status
EU-154	123.07	40.42	2.689E+00	6.081E-03	6.083E-03	7.83	OK
	247.93	6.84	1.549E+00	0.000E+00	0.000E+00	0.00	Absent
	591.70	4.83	6.279E-01	0.000E+00	0.000E+00	0.00	Absent
	692.40	1.69	5.376E-01	1.972E-02	1.973E-02	40.98	OK
	723.30	19.98	5.155E-01	7.755E-03	7.756E-03	16.64	OK
	756.90	4.33	4.934E-01	0.000E+00	0.000E+00	0.00	Absent
	873.20	12.09	4.312E-01	0.000E+00	0.000E+00	0.00	Absent
	996.30	10.34	3.817E-01	0.000E+00	0.000E+00	0.00	Absent
	1004.76	17.90	3.788E-01	4.089E-03	4.090E-03	28.34	OK
	1274.51	34.40*	3.051E-01	5.423E-03	5.424E-03	12.19	OK
	1596.50	1.83	2.481E-01	0.000E+00	0.000E+00	0.00	Absent

Final Mean for 5 Valid Peaks = 5.862E-03+/- 3.522E-04 (6.01%)

AM-241	59.54	35.90*	2.312E+00	3.451E-03	3.451E-03	13.48	OK

Final Mean for 1 Valid Peaks = 3.451E-03+/- 4.652E-04 (13.48%)

Nuclide Type: ACTIVATION

Nuclide	Energy	%Abn	%Eff	Uncorrected uCi/G	Decay Corr uCi/G	1-Sigma %Error	Status
GD-153	97.43	27.60*	2.870E+00	3.801E-03	3.811E-03	13.10	OK
	103.18	19.60	2.842E+00	5.513E-03	5.528E-03	15.83	OK

Final Mean for 2 Valid Peaks = 4.233E-03+/- 4.335E-04 (10.24%)

VAX/VMS Nuclide Identification Report V2.5 Generated 9-OCT-1990 12:12:02

Configuration : DUB0:[USER]T8675.CNF;2
Analyses by : PEAK V16.0,PEAKEFF V2.2,ENBACK V1.3,NID/DEF V2.2,WTMEAN V1
Sample title : T8675 SST 609-90 90-4178-A-3 SYS BLK
Deposition Date : 1-OCT-1990 00:00:00 Deposition Period: 17-NOV-1858 00:00:00
Sample date : 1-OCT-1990 00:00:00 Acquisition date : 1-OCT-1990 14:44:57
Sample ID : T8675 609-90 SST Sample quantity : 2.14100E-02 G
Sample type : 10 ML SCV Sample geometry : T2SCV
Detector name : TRACK Detector geometry: T2SCV
Elapsed live time: 0 15:00:00.00 Elapsed real time: 0 15:00:15.39 0.0%
Energy tolerance : 1.00 Half life ratio : 8.00
Errors propagated: No Systematic Error : 0.00 %
Efficiency type : Empirical Efficiencies at : Peak Energy
Abundance limit : 70.00 WTM error limit : 3.00

Post-NID Peak Search Report

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides
8	36.70	2837	8146	1.28	49.26	47	13	5.3	2.32E+01	
8	41.45	3203	14363	2.85	55.59	47	13	7.4		
0	47.59	613	9286	1.86	63.78	61	6	25.0		
0	59.34	1225	9502	2.04	79.46	76	7	13.5		AM-241
0	85.65	1303	12784	3.22	114.55	110	9	15.9		
0	97.25	1288	9799	1.35	130.03	127	7	13.1		GD-153
0	103.80	1314	12886	2.97	138.77	134	9	15.8		GD-153
0	122.72	2828	14328	1.75	164.00	160	9	7.8		CO-57
										EU-154
0	133.72	522	7892	1.48	178.67	177	5	25.8		CE-144
0	510.42*	278	5290	4.25	681.02	676	11	53.6		NA-22
0	562.73	263	1692	1.22	750.76	748	7	26.5		CS-134
0	569.38	433	1863	1.61	759.63	756	8	18.1		CS-134
0	604.56	3024	2245	1.94	806.52	801	11	3.5		CS-134
0	661.43*	138732	2040	1.96	882.34	875	15	0.3		CS-137
0	692.52	77	306	1.84	923.78	920	7	41.0		EU-154
0	723.09	342	600	1.72	964.53	958	14	16.6		EU-154
3	795.54	2259	333	2.12	1061.10	1055	21	2.5	1.43E+00	CS-134
3	801.72*	219	319	2.04	1069.34	1055	21	16.6		CS-134
0	1004.58	119	307	2.23	1339.69	1336	8	28.3		EU-154
0	1173.27*	2934	314	2.42	1564.46	1557	16	2.4		CO-60
0	1274.93	243	147	2.46	1699.90	1693	14	12.2		EU-154
										NA-22
0	1332.80*	2608	108	2.61	1776.98	1771	16	2.3		CO-60
0	1365.70	93	40	2.37	1820.81	1816	13	20.0		

VAX/VMS Nuclide Identification Report V2.5 Generated 16-OCT-1990 10:41:34

Configuration	: DUB0:[USER]T8665.CNF;1		
Analyses by	: PEAK V16.0.PEAKEFF V2.2,ENBACK V1.3,NID/DEP V2.2,WTMEAN V1		
Sample title	: T8665 610-90 90-4179-A-1 TK110B CORE 16 COMPOSITE		
Deposition Date	: 28-SEP-1990 00:00:00	Deposition Period:	17-NOV-1858 00:00:00
Sample date	: 28-SEP-1990 00:00:00	Acquisition date :	28-SEP-1990 14:35:39
Sample ID	: T8665 610-90 SST	Sample quantity :	2.74600E-02 G
Sample type	: 10 ML SCV	Sample geometry :	T2SCV
Detector name	: TRACK	Detector geometry:	T2SCV
Elapsed live time:	0 01:40:00.00	Elapsed real time:	0 01:40:33.27 0.6%
Energy tolerance :	1.30	Half life ratio :	8.00
Errors propagated:	No	Systematic Error :	0.00 %
Efficiency type :	Empirical	Efficiencies at :	Peak Energy
Abundance limit :	60.00	WTM error limit :	3.00

Nuclide Line Activity Report

Nuclide Type: natural

Nuclide	Energy	%Abn	%Eff	Uncorrected uCi/G	Decay Corr uCi/G	1-Sigma %Error	Status
~~K-40~~	1460.83	10.67*	2.694E-01	8.040E-03	8.040E-03	57.90	OK

Final Mean for 1 Valid Peaks = 8.040E-03+/- 4.655E-03 (57.90%)

Nuclide Type: fission

Nuclide	Energy	%Abn	%Eff	Uncorrected uCi/G	Decay Corr uCi/G	1-Sigma %Error	Status
~~CO-57~~	122.06	85.95*	2.689E+00	5.375E-03	5.384E-03	26.97	OK
	136.47	10.33	2.545E+00	0.000E+00	0.000E+00	0.00	Absent

Final Mean for 1 Valid Peaks = 5.384E-03+/- 1.452E-03 (26.97%)

~~RU-106~~	511.86	20.40*	7.266E-01	2.920E-02	2.923E-02	51.07	OK
	621.93	9.94	5.974E-01	0.000E+00	0.000E+00	0.00	Absent
	1050.41	1.56	3.637E-01	0.000E+00	0.000E+00	0.00	Absent

Final Mean for 1 Valid Peaks = 2.923E-02+/- 1.493E-02 (51.07%)

CS-137	661.66	85.20*	5.623E-01	1.416E+01	1.416E+01	0.16	OK

Final Mean for 1 Valid Peaks = 1.416E+01+/- 2.250E-02 (0.16%)

CE-144	80.10	1.13	2.818E+00	0.000E+00	0.000E+00	0.00	Absent
	133.54	11.10*	2.577E+00	5.504E-02	5.513E-02	24.81	OK

Final Mean for 1 Valid Peaks = 5.513E-02+/- 1.368E-02 (24.81%)

EU-154	123.07	40.42	2.689E+00	1.143E-02	1.143E-02	26.97	OK
	247.93	6.84	1.549E+00	0.000E+00	0.000E+00	0.00	Absent
	591.70	4.83	6.279E-01	0.000E+00	0.000E+00	0.00	Absent
	692.40	1.69	5.376E-01	0.000E+00	0.000E+00	0.00	Absent
	723.30	19.98	5.158E-01	1.028E-02	1.029E-02	28.73	OK

Sample ID : T8665 610-90 SST Acquisition date : 28-SEP-1990 14:35:39

Nuclide Type: fission

Nuclide	Energy	%Abn	%Eff	Uncorrected uCi/G	Decay Corr uCi/G	1-Sigma %Error	Status
	756.90	4.33	4.931E-01	7.316E-03	7.317E-03	162.03	OK
	873.20	12.09	4.314E-01	6.970E-03	6.971E-03	67.33	OK
	996.30	10.34	3.813E-01	1.208E-02	1.208E-02	49.04	OK
	1004.76	17.90	3.788E-01	0.000E+00	0.000E+00	0.00	Absent
	1274.51	34.40*	3.052E-01	1.047E-02	1.047E-02	14.93	OK
	1596.50	1.83	2.481E-01	0.000E+00	0.000E+00	0.00	Absent

Final Mean for 6 Valid Peaks = 1.039E-02+/- 1.187E-03 (11.42%)

~~EU-155~~	86.54	32.80	2.863E+00	1.336E-02	1.336E-02	29.44	OK
	105.31	21.84*	2.834E+00	0.000E+00	0.000E+00	0.00	Absent

Final Mean for 1 Valid Peaks = 1.336E-02+/- 3.934E-03 (29.44%)

AM-241	59.54	35.90*	2.312E+00	1.014E-02	1.014E-02	38.67	OK

Final Mean for 1 Valid Peaks = 1.014E-02+/- 3.922E-03 (38.67%)

Nuclide Type: activation

Nuclide	Energy	%Abn	%Eff	Uncorrected uCi/G	Decay Corr uCi/G	1-Sigma %Error	Status
CO-60	1173.24	99.90	3.290E-01	6.180E-03	6.181E-03	12.69	OK
	1332.50	99.98*	2.931E-01	5.672E-03	5.674E-03	12.61	OK

Final Mean for 2 Valid Peaks = 5.904E-03+/- 5.287E-04 (8.95%)

Post-NID Peak Search Report
Sample ID : T8665 610-90 SST Acquisition date : 28-SEP-1990 14:35:39

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides
0	36.98*	8537	26386	1.55	49.63	47	7	3.5		
0	43.77	517	17897	2.13	58.69	57	5	39.0		
0	59.32	513	17234	1.46	79.43	78	5	38.7		AM-241
0	86.32	765	20033	1.58	115.44	113	6	29.4		EU-155
0	122.75	757	18178	1.90	164.04	162	5	27.0		CO-57
										EU-154
0	133.53	960	22389	1.37	178.42	176	6	24.8		CE-144
0	187.66	724	28758	2.70	250.62	248	6	37.2		
0	308.82	331	13559	0.91	412.20	410	6	56.2		
0	512.37	264	7169	1.32	683.61	681	6	51.1		RU-106
0	540.13	245	4362	1.50	720.63	718	6	43.2		
0	661.37*	413440	3828	1.99	882.26	875	15	0.2		CS-137
0	694.34	69	132	2.53	926.21	922	11	35.6		
0	722.76	65	72	1.53	964.09	960	9	28.7		EU-154
0	757.34	10	75	0.80	1010.18	1007	7	162.0		EU-154
0	795.68	62	84	2.37	1061.29	1056	13	36.0		
0	872.63	22	64	1.51	1163.85	1160	9	67.3		EU-154
0	884.55	31	46	1.71	1179.73	1176	9	46.7		
0	997.47	29	32	2.12	1330.21	1326	9	49.0		EU-154
0	1003.32	19	61	3.94	1338.01	1334	12	94.3		
0	1008.90	8	21	0.81	1345.44	1345	7	123.0		
0	1173.24*	124	27	2.98	1564.42	1559	12	12.7		CO-60
0	1229.16	5	4	1.52	1638.92	1637	5	73.2		
0	1274.18	67	6	2.39	1698.90	1692	12	14.9		EU-154
0	1332.53*	101	13	1.70	1776.62	1770	13	12.6		CO-60
0	1346.58	1	2	0.89	1795.35	1794	4	138.5		
0	1350.32	4	4	0.92	1800.32	1798	6	99.0		
0	1461.12*	14	9	1.68	1947.90	1942	13	57.9		K-40

VAX/VMS Nuclide Identification Report V2.5 Generated 9-OCT-1990 13:07:07

Configuration : DUB0:[USER]T8665.CNF;1
Analyses by : PEAK V16.0,PEAKEFF V2.2,ENBACK V1.3,NID/DEP V2.2,WTMEAN V1
Sample title : T8665 610-90 90-4179-A-1 TK110B CORE 16 COMPOSITE
eposition Date : 28-SEP-1990 00:00:00 Deposition Period: 17-NOV-1858 00:00:00
Sample date : 28-SEP-1990 00:00:00 Acquisition date : 28-SEP-1990 14:35:39
Sample ID : T8665 610-90 SST Sample quantity : 2.74600E-02 G
Sample type : 10 ML SCV Sample geometry : T2SCV
Detector name : TRACK Detector geometry: T2SCV
Elapsed live time: 0 01:40:00.00 Elapsed real time: 0 01:40:33.27 0.6%
Energy tolerance : 1.00 Half life ratio : 3.00
Errors propagated: No Systematic Error : 0.00 %
Efficiency type : Empirical Efficiencies at : Peak Energy
Abundance limit : 70.00 WTM error limit : 3.00

Nuclide Line Activity Report

Nuclide Type: natural

Nuclide	Energy	%Abn	%Eff	Uncorrected uCi/G	Decay Corr uCi/G	1-Sigma %Error	Status
~~K-40~~	1460.83	10.67*	2.694E-01	8.040E-03	8.040E-03	57.90	~~OK~~

Final Mean for 1 Valid Peaks = 8.040E-03+/- 4.655E-03 (~~57.90%~~)

Nuclide Type: fission

Nuclide	Energy	%Abn	%Eff	Uncorrected uCi/G	Decay Corr uCi/G	1-Sigma %Error	Status
~~CO-57~~	122.06	85.95*	2.689E+00	5.375E-03	5.384E-03	26.97	~~OK~~
Eu	136.47	10.33	2.545E+00	0.000E+00	0.000E+00	0.00	Absent

Final Mean for 1 Valid Peaks = 5.384E-03+/- 1.452E-03 (26.97%)

CS-137	661.66	85.20*	5.623E-01	1.416E+01	1.416E+01	0.16	OK

Final Mean for 1 Valid Peaks = 1.416E+01+/- 2.250E-02 (0.16%)

~~CE-144~~	80.10	1.13	2.818E+00	0.000E+00	0.000E+00	0.00	Absent
	133.54	11.10*	2.577E+00	5.504E-02	5.513E-02	24.81	~~OK~~

Final Mean for 1 Valid Peaks = 5.513E-02+/- 1.368E-02 (24.81%)

EU-154	123.07	40.42	2.689E+00	1.143E-02	1.143E-02	26.97	OK
	247.93	6.84	1.549E+00	0.000E+00	0.000E+00	0.00	Absent
	591.70	4.83	6.279E-01	0.000E+00	0.000E+00	0.00	Absent
	692.40	1.69	5.376E-01	0.000E+00	0.000E+00	0.00	Absent
	723.30	19.98	5.158E-01	1.028E-02	1.029E-02	28.73	OK
	756.90	4.33	4.931E-01	7.316E-03	7.317E-03	162.03	OK
	873.20	12.09	4.314E-01	6.970E-03	6.971E-03	67.33	OK
	996.30	10.34	3.817E-01	0.000E+00	0.000E+00	0.00	Absent
	1004.76	17.90	3.788E-01	0.000E+00	0.000E+00	0.00	Absent
	1274.51	34.40*	3.052E-01	1.047E-02	1.047E-02	14.93	OK
	1596.50	1.83	2.481E-01	0.000E+00	0.000E+00	0.00	Absent

Final Mean for 5 Valid Peaks = 1.032E-02+/- 1.211E-03 (11.73%)

Sample ID : T8665 610-90 SST Acquisition date : 28-SEP-1990 14:35:39

Nuclide Type: fission

Nuclide	Energy	%Abn	%Eff	Uncorrected uCi/G	Decay Corr uCi/G	1-Sigma %Error	Status
AM-241	59.54	35.90*	2.312E+00	1.014E-02	1.014E-02	38.67	OK

Final Mean for 1 Valid Peaks = 1.014E-02+/- 3.922E-03 (38.67%)

Nuclide Type: activation

Nuclide	Energy	%Abn	%Eff	Uncorrected uCi/G	Decay Corr uCi/G	1-Sigma %Error	Status
CO-60	1173.24	99.90	3.290E-01	6.180E-03	6.181E-03	12.69	OK
	1332.50	99.98*	2.931E-01	5.672E-03	5.674E-03	12.61	OK

Final Mean for 2 Valid Peaks = 5.904E-03+/- 5.287E-04 (8.95%)

Sample ID : T8665 610-90 SST Acquisition date : 28-SEP-1990 14:35:39

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides
0	36.98*	8537	26386	1.55	49.63	47	7	3.5		
0	43.77	517	17897	2.13	58.69	57	5	39.0		
0	59.32	513	17234	1.46	79.43	78	5	38.7		AM-241
0	86.32	765	20033	1.58	115.44	113	6	29.4		
0	122.75	757	18178	1.90	164.04	162	5	27.0		CO-57
										EU-154
0	133.53	960	22389	1.37	178.42	176	6	24.8		CE-144
0	187.66	724	28758	2.70	250.62	248	6	37.2		
0	308.82	331	13559	0.91	412.20	410	6	56.2		
0	512.37	264	7169	1.32	683.61	681	6	51.1		
0	540.13	245	4362	1.50	720.63	718	6	43.2		
0	661.37*	413440	3828	1.99	882.26	875	15	0.2		CS-137
0	694.34	69	132	2.53	926.21	922	11	35.6		
0	722.76	65	72	1.53	964.09	960	9	28.7		EU-154
0	757.34	10	75	0.80	1010.18	1007	7	162.0		EU-154
0	795.68	62	84	2.37	1061.29	1056	13	36.0		
0	872.63	22	64	1.51	1163.85	1160	9	67.3		EU-154
0	884.55	31	46	1.71	1179.73	1176	9	46.7		
0	997.47	29	32	2.12	1330.21	1326	9	49.0		
0	1003.32	19	61	3.94	1338.01	1334	12	94.3		
0	1008.90	8	21	0.81	1345.44	1345	7	123.0		
0	1173.24*	124	27	2.98	1564.42	1559	12	12.7		CO-60
0	1229.16	5	4	1.52	1638.92	1637	5	73.2		
0	1274.18	67	6	2.39	1698.90	1692	12	14.9		EU-154
0	1332.53*	101	13	1.70	1776.62	1770	13	12.6		CO-60
0	1346.58	1	2	0.89	1795.35	1794	4	138.5		
0	1350.32	4	4	0.92	1800.32	1798	6	99.0		
0	1461.12*	14	9	1.68	1947.90	1942	13	57.9		K-40

VAX/VMS Peak Search Report V1.7 Generated 9-OCT-1990 13:06:48

Configuration : DUB0:[USER]T8665.CNF;1
Analyses by : PEAK V16.0.ENBACK V1.3
Sample title : T8665 610-90 90-4179-A-1 TK110B CORE 16 COMPOSITE
Deposition Date : 28-SEP-1990 00:00:00 Deposition Period: 17-NOV-1858 00:00:00
Sample date : 28-SEP-1990 00:00:00 Acquisition date : 28-SEP-1990 14:35:39
Sample ID : T8665 610-90 SST Sample quantity : 2.74600E-02 G
Sample type : 10 ML SCV Sample geometry : T2SCV
Detector name : TRACK Detector geometry: T2SCV
Elapsed live time: 0 01:40:00.00 Elapsed real time: 0 01:40:33.27 0.6%
Start energy : 29.76 End energy : 3074.55
Sensitivity : 3.30 Gaussian : 10.00
Critical level : No

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	36.98*	8537	26386	1.55	49.63	47	7	1.42E+00	3.5	
2	0	43.77	517	17897	2.13	58.69	57	5	8.62E-02	39.0	
3	0	59.32	513	17234	1.46	79.43	78	5	8.55E-02	38.7	
4	0	86.32	765	20033	1.58	115.44	113	6	1.27E-01	29.4	
5	0	122.75	757	18178	1.90	164.04	162	5	1.26E-01	27.0	
6	0	133.53	960	22389	1.37	178.42	176	6	1.60E-01	24.8	
7	0	187.66	724	28758	2.70	250.62	248	6	1.21E-01	37.2	
8	0	308.82	331	13559	0.91	412.20	410	6	5.52E-02	56.2	
9	0	512.37	264	7169	1.32	683.61	681	6	4.40E-02	51.1	
10	0	540.13	245	4362	1.50	720.63	718	6	4.09E-02	43.2	
11	0	661.37*	413440	3828	1.99	882.26	875	15	6.89E+01	0.2	
12	0	694.34	69	132	2.53	926.21	922	11	1.15E-02	35.6	
13	0	722.76	65	72	1.53	964.09	960	9	1.08E-02	28.7	
14	0	757.34	10	75	0.80	1010.18	1007	7	1.59E-03	162.0	
15	0	795.68	62	84	2.37	1061.29	1056	13	1.04E-02	36.0	
16	0	872.63	22	64	1.51	1163.85	1160	9	3.69E-03	67.3	
17	0	884.55	31	46	1.71	1179.73	1176	9	5.08E-03	46.7	
18	0	997.47	29	32	2.12	1330.21	1326	9	4.84E-03	49.0	
19	0	1003.32	19	61	3.94	1338.01	1334	12	3.22E-03	94.3	
20	0	1008.90	8	21	0.81	1345.44	1345	7	1.29E-03	123.0	
21	0	1173.24*	124	27	2.98	1564.42	1559	12	2.06E-02	12.7	
22	0	1229.16	5	4	1.52	1638.92	1637	5	8.43E-04	73.2	
23	0	1274.18	67	6	2.39	1698.90	1692	12	1.12E-02	14.9	
24	0	1332.53*	101	13	1.70	1776.62	1770	13	1.69E-02	12.6	
25	0	1346.58	1	2	0.89	1795.35	1794	4	2.41E-04	138.5	
26	0	1350.32	4	4	0.92	1800.32	1798	6	6.94E-04	99.0	
27	0	1461.12*	14	9	1.68	1947.90	1942	13	2.35E-03	57.9	

Print — no other additional peaks

VAX/VMS Nuclide Identification Report V2.5 Generated 16-OCT-1990 13:53:16

Configuration	: MCA0:[USER]ADC3$1		
Analyses by	: PEAK V16.0,PEAKEFF V2.2,ENBACK V1.3,NID/DEP V2.2		
Sample title	: T8665 610-90 90-4179-A-1 TK110B CORE 16 COMPOSITE		
Deposition Date	: 28-SEP-1990 00:00:00	Deposition Period:	17-NOV-1858 00:00:00
Sample date	: 28-SEP-1990 00:00:00	Acquisition date :	28-SEP-1990 14:35:39
Sample ID	: T8665 610-90 SST	Sample quantity :	2.74600E-02 G
Sample type	: 10 ML SCV	Sample geometry :	T2SCV
Detector name	: TRACK	Detector geometry:	T2SCV
Elapsed live time:	0 01:40:00.00	Elapsed real time:	0 01:40:33.27 0.6%
Energy tolerance :	1.20	Half life ratio :	8.00
Errors propagated:	No	Systematic Error :	0.00 %
Efficiency type :	Empirical	Efficiencies at :	Peak Energy
Abundance limit :	60.00		

Nuclide Line Activity Report

Nuclide Type: natural

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected uCi/G	Decay Corr uCi/G	1-Sigma %Error
K-40	1460.83	14	10.67*	2.694E-01	8.040E-03	8.040E-03	57.90

Nuclide Type: fission

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected uCi/G	Decay Corr uCi/G	1-Sigma %Error
D-57	122.06	549	85.95*	2.694E+00	3.887E-03	3.893E-03	42.95
	136.47	------	10.33	2.545E+00	------ Line Not Found		------
RU-106	511.86	264	20.40*	7.266E-01	2.920E-02	2.923E-02	51.07
	621.93	44	9.94	5.984E-01	1.201E-02	1.202E-02	166.48
	1050.41	------	1.56	3.637E-01	------ Line Not Found		------
CS-134	563.24	------	8.38	6.598E-01	------ Line Not Found		------
	569.32	------	15.40	6.527E-01	------ Line Not Found		------
	604.71	62	97.60*	6.134E-01	1.697E-03	1.698E-03	118.31
	795.87	62	85.40	4.705E-01	2.548E-03	2.550E-03	36.01
	801.95	------	8.73	4.670E-01	------ Line Not Found		------
CS-137	661.66	413440	85.20*	5.623E-01	1.416E+01	1.416E+01	0.16
CE-144	80.10	------	1.13	2.818E+00	------ Line Not Found		------
	133.54	960	11.10*	2.577E+00	5.504E-02	5.513E-02	24.81
EU-154	123.07	549	40.42	2.694E+00	8.266E-03	8.267E-03	42.95
	247.93	345	6.84	1.544E+00	5.358E-02	5.358E-02	62.13
	591.70	------	4.83	6.279E-01	------ Line Not Found		------
	692.40	139	1.69	5.371E-01	2.508E-01	2.508E-01	20.26
	723.30	64	19.98	5.155E-01	1.021E-02	1.021E-02	24.65
	756.90	10	4.33	4.931E-01	7.316E-03	7.317E-03	162.03
	873.20	22	12.09	4.314E-01	6.970E-03	6.971E-03	67.33
	996.30	------	10.34	3.817E-01	------ Line Not Found		------
	1004.76	------	17.90	3.788E-01	------ Line Not Found		------
	1274.51	67	34.40*	3.052E-01	1.047E-02	1.047E-02	14.93
	1596.50	2	1.83	2.481E-01	5.420E-03	5.420E-03	194.37
EU-155	86.54	759	32.80	2.863E+00	1.325E-02	1.326E-02	29.68
	105.31	------	21.84*	2.834E+00	------ Line Not Found		------
-241	59.54	513	35.90*	2.312E+00	1.014E-02	1.014E-02	38.67

Sample ID : T8665 610-90 SST Acquisition date : 28-SEP-1990 14:35:39

Nuclide Type: activation

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected uCi/G	Decay Corr uCi/G	1-Sigma %Error
CO-60	1173.24	124	99.90	3.290E-01	6.180E-03	6.181E-03	12.69
	1332.50	101	99.98*	2.931E-01	5.672E-03	5.674E-03	12.61
ZR-95	724.20	64	44.10	5.155E-01	4.624E-03	4.656E-03	24.65
	756.73	10	54.50*	4.931E-01	5.813E-04	5.853E-04	162.03

Sample ID : T8665 610-90 SST Acquisition date : 28-SEP-1990 14:35:39

ıt	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides
10	32.11*	12946	2872	1.22	43.14	40	15	1.5	7.33E+01	
10	33.53*	13747	7987	2.06	45.04	40	15	1.9		
10	36.56*	14163	14236	1.81	49.07	40	15	1.7		
0	46.01*	2117	45169	7.47	61.69	56	13	20.8		
0	55.00	353	20886	1.18	73.67	72	6	65.4		
0	59.32	513	17234	1.46	79.43	78	5	38.7		AM-241
0	64.37	74	16736	1.22	86.17	85	5	261.7		
0	74.75*	283	16737	1.40	100.02	98	5	69.0		
0	86.32*	759	20033	1.58	115.44	113	6	29.7		EU-155
0	117.25	114	17900	1.27	156.71	155	5	175.6		
0	122.19	549	21958	1.77	163.29	162	6	42.9		CO-57
										EU-154
0	126.48	207	21938	2.17	169.01	167	6	114.0		
0	133.53	960	22389	1.37	178.42	176	6	24.8		CE-144
0	140.31	251	18370	1.43	187.47	186	5	81.0		
0	150.91	102	18270	1.10	201.60	198	5	199.7		
0	156.45	298	21573	1.89	208.99	207	6	78.5		
0	161.10	437	17789	0.95	215.19	213	5	46.1		
10	187.31	8336	35145	14.55	250.15	246	29	3.9	1.04E+01	
10	191.00	2970	83559	6.26	255.07	246	29	23.4		
0	208.21	701	25573	4.07	278.03	276	6	36.4		
0	212.31	269	24714	1.71	283.49	282	6	93.1		
0	216.29	412	23746	1.61	288.80	287	6	59.5		
0	222.33	422	22564	2.84	296.85	294	6	56.4		
0	227.38	383	21397	1.97	303.59	301	6	60.9		
0	232.04	510	20481	3.04	309.80	307	6	44.7		
0	237.57*	317	19758	0.98	317.19	315	6	70.3		
0	243.19	316	18963	2.60	324.67	323	6	69.3		
0	248.72	345	18189	2.67	332.05	330	6	62.1		EU-154
0	254.78	162	17676	0.82	340.14	338	6	130.1		
0	276.68	164	15422	1.02	369.33	367	6	120.7		
0	294.23	356	14354	2.81	392.75	390	6	53.6		
0	308.82	331	13559	0.91	412.20	410	6	56.2		
0	313.16	327	15646	1.35	417.99	415	7	64.2		
0	319.87	328	15710	1.25	426.93	424	7	63.6		
0	336.98	312	13024	2.43	449.76	447	6	58.3		
0	348.47	186	10883	1.64	465.07	464	5	84.6		
0	369.19	288	15431	2.22	492.71	490	7	71.7		
0	376.35	64	13507	1.91	502.25	501	6	286.0		
0	400.61	95	14443	1.86	534.60	532	6	200.7		
0	417.97	412	18004	2.36	557.75	555	7	54.4		
0	421.36	128	13107	1.43	562.27	562	5	134.9		
0	428.11	175	13576	1.83	571.28	569	5	100.2		
0	448.97	126	21631	1.15	599.09	597	7	193.8		
0	462.37	180	16420	1.70	616.95	616	5	107.3		
0	470.46	186	16040	1.31	627.74	626	5	102.3		
0	473.91	754	17361	2.95	632.33	630	6	28.0		
0	494.92	263	8757	2.74	660.35	658	6	57.2		
0	499.73	184	9629	0.92	666.76	663	7	90.4		
0	512.37	264	7169	1.32	683.61	681	6	51.1		RU-106
0	518.30	102	6489	1.95	691.53	689	6	126.4		

Sample ID : f8665 610-90 SST Acquisition date : 28-SEP-1990 14:35:39

t	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides
0	527.67	152	5705	2.30	704.01	701	6	78.9		
0	539.39	149	5127	1.37	719.64	718	7	80.2		
0	550.98	251	3321	2.74	735.10	733	6	37.3		
0	559.05*	59	2991	1.55	745.85	744	6	148.8		
0	605.64	62	2127	0.86	807.96	806	6	118.3		CS-134
0	620.97	44	2105	2.01	828.41	827	6	166.5		RU-106
0	661.37*	413440	3828	1.99	882.26	875	15	0.2		CS-137
0	693.07	139	117	3.63	924.51	918	15	20.3		EU-154
6	721.06	6	39	1.13	961.82	960	9	191.9	4.98E+00	
6	723.09	64	56	1.81	964.52	960	9	24.7		EU-154
										ZR-95
7	729.30	11	27	1.25	972.81	971	10	71.8	2.33E+00	
7	733.03	8	45	1.25	977.78	971	10	133.8		
0	737.70	10	76	0.99	984.00	981	8	156.6		
0	748.41	14	51	2.79	998.28	995	7	95.0		
0	757.34	10	75	0.80	1010.18	1007	7	162.0		ZR-95
										EU-154
0	762.48	17	89	5.47	1017.04	1013	10	118.2		
0	769.98	27	66	2.64	1027.03	1023	9	61.4		
0	778.62	12	62	1.96	1038.54	1034	9	118.8		
0	795.68	62	84	2.37	1061.29	1056	13	36.0		CS-134
0	804.07	11	30	1.53	1072.47	1070	5	79.8		
0	809.20	22	70	6.04	1079.30	1075	11	83.9		
0	829.58	15	40	1.29	1106.47	1103	6	76.3		
0	840.53	10	38	0.91	1121.07	1119	7	113.7		
0	860.42	7	42	2.16	1147.57	1144	7	162.0		
0	872.63	22	64	1.51	1163.85	1160	9	67.3		EU-154
0	884.55	31	46	1.71	1179.73	1176	9	46.7		
0	895.82	15	82	5.36	1194.75	1186	15	146.3		
0	912.01	18	34	4.39	1216.32	1212	8	66.2		
0	922.70	27	71	7.14	1230.57	1223	17	88.7		
0	936.29	44	50	7.63	1248.69	1243	15	47.1		
0	946.32	7	19	1.28	1262.05	1260	5	115.0		
0	960.39	9	26	0.94	1280.80	1277	7	106.3		
0	972.90	27	30	3.92	1297.47	1293	10	49.7		
0	983.21	9	29	2.49	1311.22	1309	8	118.6		
0	1003.01	30	47	4.06	1337.60	1335	11	54.2		
0	1008.90	8	21	0.81	1345.44	1345	7	123.0		
0	1028.10	3	31	0.58	1371.03	1365	10	394.4		
0	1039.10	17	37	6.55	1385.68	1379	15	94.1		
0	1090.17	8	23	1.87	1453.73	1450	9	133.9		
0	1097.29	6	15	1.16	1463.23	1459	8	147.7		
0	1101.91	13	8	2.16	1469.38	1466	8	62.0		
0	1112.87	10	29	2.43	1483.99	1479	9	103.2		
0	1130.25	10	42	10.86	1507.14	1498	19	142.1		
0	1154.19	27	10	4.69	1539.04	1531	14	41.4		
0	1173.24*	124	27	2.98	1564.42	1559	12	12.7		CO-60
0	1181.00	2	9	1.31	1574.75	1573	6	279.5		
0	1190.75	8	11	2.24	1587.75	1582	11	100.3		
0	1229.16	5	4	1.52	1638.92	1637	5	73.2		
0	1234.16	3	5	1.24	1645.58	1643	6	144.5		

Post-NID Peak Search Report (continued) Page : 5
Sample ID : T8665 610-90 SST Acquisition date : 28-SEP-1990 14:35:39

t	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides
0	1238.75	9	2	3.17	1651.70	1648	8	59.8		
0	1248.39	6	5	2.96	1664.54	1660	8	87.9		
0	1274.18	67	6	2.39	1698.90	1692	12	14.9		EU-154
0	1323.29	13	11	3.80	1764.31	1758	12	65.6		
0	1332.53*	101	13	1.70	1776.62	1770	13	12.6		CO-60
0	1346.58	1	2	0.89	1795.35	1794	4	138.5		
0	1350.32	4	4	0.92	1800.32	1798	6	99.0		
7	1360.24	5	4	1.82	1813.54	1809	14	72.4	2.56E-01	
7	1365.09	4	4	1.82	1819.99	1809	14	82.5		
0	1400.15	10	0	4.11	1866.70	1863	10	40.3		
0	1406.20	2	4	1.14	1874.75	1873	6	174.3		
0	1461.12*	14	9	1.68	1947.90	1942	13	57.9		K-40
0	1489.64	3	6	4.65	1985.90	1979	10	119.8		
0	1494.83	5	0	1.50	1992.80	1989	9	77.8		
0	1561.45	2	4	1.06	2081.53	2079	7	212.6		
0	1565.93	1	4	0.68	2087.50	2085	5	259.4		
0	1591.55	3	5	0.87	2121.62	2117	8	145.0		
0	1596.57	2	3	1.20	2128.31	2124	6	194.4		EU-154
0	1691.71	4	0	2.25	2255.00	2252	6	72.9		
0	1712.38	2	3	0.66	2282.51	2280	8	154.5		
0	1725.32	4	0	0.93	2299.75	2296	7	50.0		
0	1731.54	5	3	0.70	2308.03	2304	9	70.0		
0	1750.79	6	0	1.73	2333.67	2329	9	40.8		
0	1757.68	6	0	0.93	2342.83	2339	9	40.8		
0	1821.80	19	0	10.30	2428.21	2415	28	43.4		
0	1838.51	11	0	6.00	2450.45	2443	17	30.2		
0	2070.66	2	1	3.37	2759.50	2758	7	183.4		
0	2075.20	2	2	0.81	2765.54	2764	5	108.9		
0	2179.23	6	0	1.41	2904.00	2898	13	40.8		

VAX/VMS Peak Search Report V1.7 Generated 16-OCT-1990 13:52:59

onfiguration : MCA0:[USER]ADC3$1
nalyses by : PEAK V16.0,ENBACK V1.3
Sample title : T8665 610-90 90-4179-A-1 TK110B CORE 16 COMPOSITE
Deposition Date : 28-SEP-1990 00:00:00 Deposition Period: 17-NOV-1858 00:00:00
Sample date : 28-SEP-1990 00:00:00 Acquisition date : 28-SEP-1990 14:35:39
Sample ID : T8665 610-90 SST Sample quantity : 2.74600E-02 G
Sample type : 10 ML SCV Sample geometry : T2SCV
Detector name : TRACK Detector geometry: T2SCV
Elapsed live time: 0 01:40:00.00 Elapsed real time: 0 01:40:33.27 0.6%
Start energy : 22.26 End energy : 3074.55
Sensitivity : 1.70 Gaussian : 10.00
Critical level : No

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	10	32.11*	12946	2872	1.22	43.14	40	15	2.16E+00	1.5	7.33E+01
2	10	33.53*	13747	7987	2.06	45.04	40	15	2.29E+00	1.9	
3	10	36.56*	14163	14236	1.81	49.07	40	15	2.36E+00	1.7	
4	0	46.01*	2117	45169	7.47	61.69	56	13	3.53E-01	20.8	
5	0	55.00	353	20886	1.18	73.67	72	6	5.89E-02	65.4	
6	0	59.32	513	17234	1.46	79.43	78	5	8.55E-02	38.7	
7	0	64.37	74	16736	1.22	86.17	85	5	1.24E-02	261.7	
8	0	74.75*	283	16737	1.40	100.02	98	5	4.71E-02	69.0	
9	0	86.32*	759	20033	1.58	115.44	113	6	1.26E-01	29.7	
10	0	117.25	114	17900	1.27	156.71	155	5	1.90E-02	175.6	
11	0	122.19	549	21958	1.77	163.29	162	6	9.15E-02	42.9	
12	0	126.48	207	21938	2.17	169.01	167	6	3.46E-02	114.0	
13	0	133.53	960	22389	1.37	178.42	176	6	1.60E-01	24.8	
14	0	140.31	251	18370	1.43	187.47	186	5	4.18E-02	81.0	
15	0	150.91	102	18270	1.10	201.60	198	5	1.70E-02	199.7	
16	0	156.45	298	21573	1.89	208.99	207	6	4.96E-02	78.5	
17	0	161.10	437	17789	0.95	215.19	213	5	7.28E-02	46.1	
18	10	187.31	8336	35145	14.55	250.15	246	29	1.39E+00	3.9	1.04E+01
19	10	191.00	2970	83559	6.26	255.07	246	29	4.95E-01	23.4	
20	0	208.21	701	25573	4.07	278.03	276	6	1.17E-01	36.4	
21	0	212.31	269	24714	1.71	283.49	282	6	4.48E-02	93.1	
22	0	216.29	412	23746	1.61	288.80	287	6	6.87E-02	59.5	
23	0	222.33	422	22564	2.84	296.85	294	6	7.04E-02	56.4	
24	0	227.38	383	21397	1.97	303.59	301	6	6.39E-02	60.9	
25	0	232.04	510	20481	3.04	309.80	307	6	8.50E-02	44.7	
26	0	237.57*	317	19758	0.98	317.19	315	6	5.28E-02	70.3	
27	0	243.19	316	18963	2.60	324.67	323	6	5.26E-02	69.3	
28	0	248.72	345	18189	2.67	332.05	330	6	5.75E-02	62.1	
29	0	254.78	162	17676	0.82	340.14	338	6	2.70E-02	130.1	
30	0	276.68	164	15422	1.02	369.33	367	6	2.73E-02	120.7	
31	0	294.23	356	14354	2.81	392.75	390	6	5.93E-02	53.6	
32	0	308.82	331	13559	0.91	412.20	410	6	5.52E-02	56.2	
33	0	313.16	327	15646	1.35	417.99	415	7	5.44E-02	64.2	
34	0	319.87	328	15710	1.25	426.93	424	7	5.46E-02	63.6	
35	0	336.98	312	13024	2.43	449.76	447	6	5.20E-02	58.3	
36	0	348.47	186	10883	1.64	465.07	464	5	3.09E-02	84.6	
37	0	369.19	288	15431	2.22	492.71	490	7	4.81E-02	71.7	
38	0	376.35	64	13507	1.91	502.25	501	6	1.07E-02	286.0	
39	0	400.61	95	14443	1.86	534.60	532	6	1.58E-02	200.7	
40	0	417.97	412	18004	2.36	557.75	555	7	6.87E-02	54.4	

Sample ID : T8665 610-90 SST Acquisition date : 28-SEP-1990 14:35:39

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
41	0	421.36	128	13107	1.43	562.27	562	5	2.14E-02	134.9	
42	0	428.11	175	13576	1.83	571.28	569	5	2.92E-02	100.2	
43	0	448.97	126	21631	1.15	599.09	597	7	2.11E-02	193.8	
44	0	462.37	180	16420	1.70	616.95	616	5	3.00E-02	107.3	
45	0	470.46	186	16040	1.31	627.74	626	5	3.11E-02	102.3	
46	0	473.91	754	17361	2.95	632.33	630	6	1.26E-01	28.0	
47	0	494.92	263	8757	2.74	660.35	658	6	4.38E-02	57.2	
48	0	499.73	184	9629	0.92	666.76	663	7	3.06E-02	90.4	
49	0	512.37	264	7169	1.32	683.61	681	6	4.40E-02	51.1	
50	0	518.30	102	6489	1.95	691.53	689	6	1.69E-02	126.4	
51	0	527.67	152	5705	2.30	704.01	701	6	2.54E-02	78.9	
52	0	539.39	149	5127	1.37	719.64	718	7	2.48E-02	80.2	
53	0	550.98	251	3321	2.74	735.10	733	6	4.19E-02	37.3	
54	0	559.05*	59	2991	1.55	745.85	744	6	9.76E-03	148.8	
55	0	605.64	62	2127	0.86	807.96	806	6	1.03E-02	118.3	
56	0	620.97	44	2105	2.01	828.41	827	6	7.25E-03	166.5	
57	0	661.37*	413440	3828	1.99	882.26	875	15	6.89E+01	0.2	
58	0	693.07	139	117	3.63	924.51	918	15	2.31E-02	20.3	
59	6	721.06	6	39	1.13	961.82	960	9	1.04E-03	191.9	4.98E+00
60	6	723.09	64	56	1.81	964.52	960	9	1.07E-02	24.7	
61	7	729.30	11	27	1.25	972.81	971	10	1.81E-03	71.8	2.33E+00
62	7	733.03	8	45	1.25	977.78	971	10	1.31E-03	133.8	
63	0	737.70	10	76	0.99	984.00	981	8	1.59E-03	156.6	
64	0	748.41	14	51	2.79	998.28	995	7	2.32E-03	95.0	
65	0	757.34	10	75	0.80	1010.18	1007	7	1.59E-03	162.0	
66	0	762.48	17	89	5.47	1017.04	1013	10	2.78E-03	118.2	
67	0	769.98	27	66	2.64	1027.03	1023	9	4.46E-03	61.4	
68	0	778.62	12	62	1.96	1038.54	1034	9	2.04E-03	118.8	
69	0	795.68	62	84	2.37	1061.29	1056	13	1.04E-02	36.0	
70	0	804.07	11	30	1.53	1072.47	1070	5	1.90E-03	79.8	
71	0	809.20	22	70	6.04	1079.30	1075	11	3.58E-03	83.9	
72	0	829.58	15	40	1.29	1106.47	1103	6	2.48E-03	76.3	
73	0	840.53	10	38	0.91	1121.07	1119	7	1.72E-03	113.7	
74	0	860.42	7	42	2.16	1147.57	1144	7	1.17E-03	162.0	
75	0	872.63	22	64	1.51	1163.85	1160	9	3.69E-03	67.3	
76	0	884.55	31	46	1.71	1179.73	1176	9	5.08E-03	46.7	
77	0	895.82	15	82	5.36	1194.75	1186	15	2.49E-03	146.3	
78	0	912.01	18	34	4.39	1216.32	1212	8	3.02E-03	66.2	
79	0	922.70	27	71	7.14	1230.57	1223	17	4.55E-03	88.7	
80	0	936.29	44	50	7.63	1248.69	1243	15	7.34E-03	47.1	
81	0	946.32	7	19	1.28	1262.05	1260	5	1.10E-03	115.0	
82	0	960.39	9	26	0.94	1280.80	1277	7	1.49E-03	106.3	
83	0	972.90	27	30	3.92	1297.47	1293	10	4.44E-03	49.7	
84	0	983.21	9	29	2.49	1311.22	1309	8	1.50E-03	118.6	
85	0	1003.01	30	47	4.06	1337.60	1335	11	5.02E-03	54.2	
86	0	1008.90	8	21	0.81	1345.44	1345	7	1.29E-03	123.0	
87	0	1028.10	3	31	0.58	1371.03	1365	10	4.41E-04	394.4	
88	0	1039.10	17	37	6.55	1385.68	1379	15	2.81E-03	94.1	
89	0	1090.17	8	23	1.87	1453.73	1450	9	1.25E-03	133.9	
90	0	1097.29	6	15	1.16	1463.23	1459	8	1.06E-03	147.7	
91	0	1101.91	13	8	2.16	1469.38	1466	8	2.17E-03	62.0	
92	0	1112.87	10	29	2.43	1483.99	1479	9	1.65E-03	103.2	
93	0	1130.25	10	42	10.86	1507.14	1498	19	1.61E-03	142.1	
94	0	1154.19	27	10	4.69	1539.04	1531	14	4.46E-03	41.4	

Peak Search Report (continued) Page : 3
Sample ID : T8665 610-90 SST Acquisition date : 28-SEP-1990 14:35:39

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
95	0	1173.24*	124	27	2.98	1564.42	1559	12	2.06E-02	12.7	
96	0	1181.00	2	9	1.31	1574.75	1573	6	3.33E-04	279.5	
97	0	1190.75	8	11	2.24	1587.75	1582	11	1.33E-03	100.3	
98	0	1229.16	5	4	1.52	1638.92	1637	5	8.43E-04	73.2	
99	0	1234.16	3	5	1.24	1645.58	1643	6	5.35E-04	144.5	
100	0	1238.75	9	2	3.17	1651.70	1648	8	1.55E-03	59.8	
101	0	1248.39	6	5	2.96	1664.54	1660	8	9.85E-04	87.9	
102	0	1274.18	67	6	2.39	1698.90	1692	12	1.12E-02	14.9	
103	0	1323.29	13	11	3.80	1764.31	1758	12	2.11E-03	65.6	
104	0	1332.53*	101	13	1.70	1776.62	1770	13	1.69E-02	12.6	
105	0	1346.58	1	2	0.89	1795.35	1794	4	2.41E-04	138.5	
106	0	1350.32	4	4	0.92	1800.32	1798	6	6.94E-04	99.0	
107	7	1360.24	5	4	1.82	1813.54	1809	14	7.66E-04	72.4	2.56E-01
108	7	1365.09	4	4	1.82	1819.99	1809	14	6.72E-04	82.5	
109	0	1400.15	10	0	4.11	1866.70	1863	10	1.67E-03	40.3	
110	0	1406.20	2	4	1.14	1874.75	1873	6	3.70E-04	174.3	
111	0	1461.12*	14	9	1.68	1947.90	1942	13	2.35E-03	57.9	
112	0	1489.64	3	6	4.65	1985.90	1979	10	5.43E-04	119.8	
113	0	1494.83	5	0	1.50	1992.80	1989	9	8.33E-04	77.8	
114	0	1561.45	2	4	1.06	2081.53	2079	7	3.06E-04	212.6	
115	0	1565.93	1	4	0.68	2087.50	2085	5	2.00E-04	259.4	
116	0	1591.55	3	5	0.87	2121.62	2117	8	5.14E-04	145.0	
117	0	1596.57	2	3	1.20	2128.31	2124	6	2.50E-04	194.4	
18	0	1691.71	4	0	2.25	2255.00	2252	6	6.67E-04	72.9	
19	0	1712.38	2	3	0.66	2282.51	2280	8	3.89E-04	154.5	
120	0	1725.32	4	0	0.93	2299.75	2296	7	6.67E-04	50.0	
121	0	1731.54	5	3	0.70	2308.03	2304	9	8.61E-04	70.0	
122	0	1750.79	6	0	1.73	2333.67	2329	9	1.00E-03	40.8	
123	0	1757.68	6	0	0.93	2342.83	2339	9	1.00E-03	40.8	
124	0	1821.80	19	0	10.30	2428.21	2415	28	3.17E-03	43.4	
125	0	1838.51	11	0	6.00	2450.45	2443	17	1.83E-03	30.2	
126	0	2070.66	2	1	3.37	2759.50	2758	7	3.89E-04	183.4	
127	0	2075.20	2	2	0.81	2765.54	2764	5	3.61E-04	108.9	
128	0	2179.23	6	0	1.41	2904.00	2898	13	1.00E-03	40.8	

VAX/VMS Nuclide Identification Report V2.5 Generated 9-OCT-1990 13:07:46

Configuration	: DUB0:[USER]T8667.CNF;2		
Analyses by	: PEAK V16.0,PEAKEFF V2.2,ENBACK V1.3,NID/DEP V2.2,WTMEAN V1		
Sample title	: T8667 611-90 90-4179-A-2 TK110B CORE 16 COMPOSITE SST		
Deposition Date	: 1-OCT-1990 00:00:00	Deposition Period:	17-NOV-1858 00:00:00
Sample date	: 1-OCT-1990 00:00:00	Acquisition date :	1-OCT-1990 07:29:30
Sample ID	: T8667 611-90 SST	Sample quantity :	2.76300E-02 G
Sample type	: 10 ML SCV	Sample geometry :	T2SCV
Detector name	: TRACK	Detector geometry:	T2SCV
Elapsed live time:	0 01:40:00.00	Elapsed real time:	0 01:40:36.12 0.6%
Energy tolerance :	1.00	Half life ratio :	8.00
Errors propagated:	No	Systematic Error :	0.00 %
Efficiency type :	Empirical	Efficiencies at :	Peak Energy
Abundance limit :	70.00	WTM error limit :	3.00

Nuclide Line Activity Report

Nuclide Type: activation

Nuclide	Energy	%Abn	%Eff	Uncorrected uCi/G	Decay Corr uCi/G	1-Sigma %Error	Status
~~Na-22~~	511.00	180.00	7.289E-01	8.001E-03	8.003E-03	27.52	OK
154	1274.53	99.94*	3.052E-01	1.457E-02	1.458E-02	11.04	OK
	Final Mean for 2 Valid Peaks = 1.229E-02+/- 1.299E-03 (10.57%)						
CO-60	1173.24	99.90	3.290E-01	3.261E-01	3.261E-01	1.35	OK
	1332.50	99.98*	2.930E-01	3.165E-01	3.166E-01	1.38	OK
	Final Mean for 2 Valid Peaks = 3.213E-01+/- 3.101E-03 (0.96%)						
EU-152	121.78	28.42	2.690E+00	8.041E-02	8.041E-02	9.08	<<WTM Reject
	244.70	7.49	1.569E+00	0.000E+00	0.000E+00	0.00	Absent
	344.28	26.58	1.102E+00	1.200E-02	1.200E-02	98.49	OK
	778.90	12.96	4.801E-01	0.000E+00	0.000E+00	0.00	Absent
	964.13	14.47	3.936E-01	2.330E-02	2.331E-02	50.93	OK
	1085.91	9.91	3.529E-01	0.000E+00	0.000E+00	0.00	Absent
	1112.12	13.54	3.454E-01	7.289E-02	7.289E-02	28.84	OK
	1408.01	20.87*	2.787E-01	1.740E-02	1.740E-02	18.28	<<WTM Reject
	Final Mean for 3 Valid Peaks = 2.520E-02+/- 7.779E-03 (30.88%)						

Nuclide Type: fission

Nuclide	Energy	%Abn	%Eff	Uncorrected uCi/G	Decay Corr uCi/G	1-Sigma %Error	Status
~~CS-137~~	122.06	85.95*	2.690E+00	2.659E-02	2.661E-02	9.08	~~OK~~
Eu	136.47	10.33	2.545E+00	0.000E+00	0.000E+00	0.00	Absent
	Final Mean for 1 Valid Peaks = 2.661E-02+/- 2.417E-03 (9.08%)						
CS-134	563.24	8.38	6.598E-01	0.000E+00	0.000E+00	0.00	Absent
	569.32	15.40	6.527E-01	0.000E+00	0.000E+00	0.00	Absent
	604.71	97.60*	6.144E-01	1.033E-02	1.033E-02	27.08	OK

Sample ID : T8667 611-90 SST Acquisition date : 1-OCT-1990 07:29:30

Nuclide Type: fission

Nuclide	Energy	%Abn	%Eff	Uncorrected uCi/G	Decay Corr uCi/G	1-Sigma %Error	Status
	795.87	85.40	4.708E-01	1.328E-02	1.328E-02	17.35	OK
	801.95	8.73	4.670E-01	0.000E+00	0.000E+00	0.00	Absent
	Final Mean for 2 Valid Peaks = 1.209E-02+/- 1.779E-03 (14.71%)						
CS-137	661.66	85.20*	5.623E-01	1.428E+01	1.428E+01	0.16	OK
	Final Mean for 1 Valid Peaks = 1.428E+01+/- 2.264E-02 (0.16%)						
~~CE-144~~	80.10	1.13	2.818E+00	0.000E+00	0.000E+00	0.00	Absent
	133.54	11.10*	2.581E+00	1.268E-01	1.269E-01	12.51	~~OK~~
	Final Mean for 1 Valid Peaks = 1.269E-01+/- 1.588E-02 (12.51%)						
EU-154	123.07	40.42	2.690E+00	5.654E-02	5.654E-02	9.08	OK
	247.93	6.84	1.549E+00	0.000E+00	0.000E+00	0.00	Absent
	591.70	4.83	6.279E-01	0.000E+00	0.000E+00	0.00	Absent
	692.40	1.69	5.376E-01	0.000E+00	0.000E+00	0.00	Absent
	723.30	19.98	5.158E-01	5.373E-02	5.373E-02	17.98	OK
	756.90	4.33	4.934E-01	0.000E+00	0.000E+00	0.00	Absent
	873.20	12.09	4.313E-01	4.802E-02	4.802E-02	24.85	OK
	996.30	10.34	3.815E-01	5.582E-02	5.583E-02	34.60	OK
	1004.76	17.90	3.788E-01	4.601E-02	4.601E-02	20.52	OK
	1274.51	34.40*	3.052E-01	4.234E-02	4.234E-02	11.04	OK
	1596.50	1.83	2.481E-01	0.000E+00	0.000E+00	0.00	Absent
	Final Mean for 6 Valid Peaks = 4.909E-02+/- 2.945E-03 (6.00%)						
AM-241	59.54	35.90*	2.309E+00	2.475E-02	2.475E-02	19.18	OK
	Final Mean for 1 Valid Peaks = 2.475E-02+/- 4.749E-03 (19.18%)						

Nuclide Type: ACTIVATION

Nuclide	Energy	%Abn	%Eff	Uncorrected uCi/G	Decay Corr uCi/G	1-Sigma %Error	Status
GD-153	97.43	27.60*	2.870E+00	6.387E-02	6.394E-02	8.68	OK
	103.18	19.60	2.845E+00	8.147E-02	8.156E-02	10.73	OK
	Final Mean for 2 Valid Peaks = 6.899E-02+/- 4.687E-03 (6.79%)						

Sample ID : T8667 611-90 SST Acquisition date : 1-OCT-1990 07:29:30

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides
4	36.57	9127	18382	1.47	49.09	47	13	2.4	3.77E+01	
4	40.97	6804	43651	2.46	54.96	47	13	6.3		
0	46.96*	2174	28894	2.73	62.94	60	7	13.1		
0	59.25	1258	22947	1.73	79.34	77	6	19.2		AM-241
0	74.84*	614	21976	1.85	100.14	98	6	38.5		
0	86.27	1476	22046	1.85	115.38	113	6	16.1		
0	97.12	3104	25172	1.82	129.86	127	7	8.7		GD-153
0	103.42	2786	29088	1.81	138.26	135	8	10.7		GD-153
0	112.46	357	22130	0.99	150.32	148	6	66.2		
0	122.60	3771	34928	1.85	163.84	160	9	9.1		CO-57
										EU-154
0	133.08	2228	27285	1.79	177.82	175	7	12.5		CE-144
0	190.65	16460	131277	13.69	254.61	241	30	6.5		
0	344.42	215	16179	1.30	459.68	457	7	98.5		EU-152
0	474.64	975	17455	2.03	633.31	631	6	21.6		
0	510.77*	644	10140	3.42	681.48	678	8	27.5		NA-22
0	604.63	380	3360	1.75	806.62	803	8	27.1		CS-134
0	622.37	299	3099	2.24	830.27	827	8	32.8		
0	661.27*	419663	5012	2.02	882.13	875	15	0.2		CS-137
0	722.70	340	792	1.89	964.00	957	14	18.0		EU-154
0	795.23	327	731	2.15	1060.69	1056	12	17.4		CS-134
0	839.52	57	433	2.21	1119.71	1117	7	64.2		
4	870.32	47	252	1.59	1160.77	1159	10	50.0	3.40E+00	
4	872.96	154	461	1.66	1164.28	1159	10	24.8		EU-154
0	963.50*	81	514	2.20	1284.95	1281	8	50.9		EU-152
0	996.89	135	549	3.53	1329.45	1325	10	34.6		EU-154
0	1004.77	191	442	1.80	1339.94	1337	8	20.5		EU-154
0	1111.84	209	621	4.48	1482.61	1477	14	28.8		EU-152
0	1173.10*	6573	255	2.40	1564.23	1559	13	1.3		CO-60
0	1274.42	273	109	2.80	1699.21	1692	17	11.0		EU-154
										NA-22
0	1332.66*	5689	95	2.47	1776.79	1769	15	1.4		CO-60
0	1407.69	62	14	2.81	1876.74	1869	13	18.3		
0	1442.23	5	8	1.00	1922.75	1920	6	112.5		
0	1568.31	9	4	1.09	2090.67	2087	8	59.8		
0	1597.80	15	17	2.17	2129.94	2124	14	62.8		
0	2157.44	1	1	1.27	2875.00	2873	5	121.2		
0	2161.67	8	0	1.44	2880.63	2878	6	48.0		
0	2511.98	15	10	3.14	3346.78	3339	14	74.7		

VAX/VMS Peak Search Report V1.7 Generated 9-OCT-1990 13:07:28

Configuration : DUB0:[USER]T8667.CNF;2
Analyses by : PEAK V16.0,ENBACK V1.3
Sample title : T8667 611-90 90-4179-A-2 TK110B CORE 16 COMPOSITE SST
Deposition Date : 1-OCT-1990 00:00:00 Deposition Period: 17-NOV-1858 00:00:00
Sample date : 1-OCT-1990 00:00:00 Acquisition date : 1-OCT-1990 07:29:30
Sample ID : T8667 611-90 SST Sample quantity : 2.76300E-02 G
Sample type : 10 ML SCV Sample geometry : T2SCV
Detector name : TRACK Detector geometry: T2SCV
Elapsed live time: 0 01:40:00.00 Elapsed real time: 0 01:40:36.12 0.6%
Start energy : 29.76 End energy : 3074.55
Sensitivity : 3.30 Gaussian : 10.00
Critical level : No

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	4	36.57	9127	18382	1.47	49.09	47	13	1.52E+00	2.4	3.77E+01
2	4	40.97	6804	43651	2.46	54.96	47	13	1.13E+00	6.3	
3	0	46.96*	2174	28894	2.73	62.94	60	7	3.62E-01	13.1	
4	0	59.25	1258	22947	1.73	79.34	77	6	2.10E-01	19.2	
5	0	74.84*	614	21976	1.85	100.14	98	6	1.02E-01	38.5	
6	0	86.27	1476	22046	1.85	115.38	113	6	2.46E-01	16.1	
7	0	97.12	3104	25172	1.82	129.86	127	7	5.17E-01	8.7	
8	0	103.42	2786	29088	1.81	138.26	135	8	4.64E-01	10.7	
9	0	112.46	357	22130	0.99	150.32	148	6	5.95E-02	66.2	
10	0	122.60	3771	34928	1.85	163.84	160	9	6.28E-01	9.1	
11	0	133.08	2228	27285	1.79	177.82	175	7	3.71E-01	12.5	
12	0	190.65	16460	131277	13.69	254.61	241	30	2.74E+00	6.5	
13	0	344.42	215	16179	1.30	459.68	457	7	3.59E-02	98.5	
14	0	474.64	975	17455	2.03	633.31	631	6	1.63E-01	21.6	
15	0	510.77*	644	10140	3.42	681.48	678	8	1.07E-01	27.5	
16	0	604.63	380	3360	1.75	806.62	803	8	6.33E-02	27.1	
17	0	622.37	299	3099	2.24	830.27	827	8	4.99E-02	32.8	
18	0	661.27*	419663	5012	2.02	882.13	875	15	6.99E+01	0.2	
19	0	722.70	340	792	1.89	964.00	957	14	5.66E-02	18.0	
20	0	795.23	327	731	2.15	1060.69	1056	12	5.46E-02	17.4	
21	0	839.52	57	433	2.21	1119.71	1117	7	9.51E-03	64.2	
22	4	870.32	47	252	1.59	1160.77	1159	10	7.83E-03	50.0	3.40E+00
23	4	872.96	154	461	1.66	1164.28	1159	10	2.56E-02	24.8	
24	0	963.50*	81	514	2.20	1284.95	1281	8	1.36E-02	50.9	
25	0	996.89	135	549	3.53	1329.45	1325	10	2.25E-02	34.6	
26	0	1004.77	191	442	1.80	1339.94	1337	8	3.19E-02	20.5	
27	0	1111.84	209	621	4.48	1482.61	1477	14	3.48E-02	28.8	
28	0	1173.10*	6573	255	2.40	1564.23	1559	13	1.10E+00	1.3	
29	0	1274.42	273	109	2.80	1699.21	1692	17	4.54E-02	11.0	
30	0	1332.66*	5689	95	2.47	1776.79	1769	15	9.48E-01	1.4	
31	0	1407.69	62	14	2.81	1876.74	1869	13	1.03E-02	18.3	
32	0	1442.23	5	8	1.00	1922.75	1920	6	7.63E-04	112.5	
33	0	1568.31	9	4	1.09	2090.67	2087	8	1.50E-03	59.8	
34	0	1597.80	15	17	2.17	2129.94	2124	14	2.56E-03	62.8	
35	0	2157.44	1	1	1.27	2875.00	2873	5	1.94E-04	121.2	
36	0	2161.67	8	0	1.44	2880.63	2878	6	1.33E-03	48.0	
37	0	2511.98	15	10	3.14	3346.78	3339	14	2.47E-03	74.7	

VAX/VMS Nuclide Identification Report V2.5 Generated 16-OCT-1990 10:42:07

```
Configuration     : DUB0:[USER]T8667.CNF;2
Analyses by       : PEAK V16.0,PEAKEFF V2.2,ENBACK V1.3,NID/DEP V2.2,WTMEAN V1
Sample title      : T8667 611-90 90-4179-A-2 TK110B CORE 16 COMPOSITE SST
 eposition Date   : 1-OCT-1990 00:00:00  Deposition Period: 17-NOV-1858 00:00:00
 ample date       : 1-OCT-1990 00:00:00  Acquisition date : 1-OCT-1990 07:29:30
Sample ID         : T8667 611-90 SST     Sample quantity  : 2.76300E-02 G
Sample type       : 10 ML SCV            Sample geometry  : T2SCV
Detector name     : TRACK                Detector geometry: T2SCV
Elapsed live time: 0 01:40:00.00         Elapsed real time: 0 01:40:36.12   0.6%
Energy tolerance :     1.30              Half life ratio  :     8.00
Errors propagated: No                    Systematic Error :     0.00 %
Efficiency type  : Empirical             Efficiencies at  : Peak Energy
Abundance limit  :    60.00              WTM error limit  :     3.00
```

Nuclide Line Activity Report

Nuclide Type: activation

Nuclide	Energy	%Abn	%Eff	Uncorrected uCi/G	Decay Corr uCi/G	1-Sigma %Error	Status
NA-22	511.00	180.00	7.289E-01	8.001E-03	8.003E-03	27.52	OK
	1274.53	99.94*	3.052E-01	1.457E-02	1.458E-02	11.04	OK
	Final Mean for 2 Valid Peaks = 1.229E-02+/- 1.299E-03 (10.57%)						
CO-60	1173.24	99.90	3.290E-01	3.261E-01	3.261E-01	1.35	OK
	1332.50	99.98*	2.930E-01	3.165E-01	3.166E-01	1.38	OK
	Final Mean for 2 Valid Peaks = 3.213E-01+/- 3.101E-03 (0.96%)						
EU-152	121.78	28.42	2.690E+00	8.041E-02	8.041E-02	9.08	<<WTM Reject
	244.70	7.49	1.569E+00	0.000E+00	0.000E+00	0.00	Absent
	344.28	26.58	1.102E+00	1.200E-02	1.200E-02	98.49	OK
	778.90	12.96	4.801E-01	0.000E+00	0.000E+00	0.00	Absent
	964.13	14.47	3.936E-01	2.330E-02	2.331E-02	50.93	OK
	1085.91	9.91	3.529E-01	0.000E+00	0.000E+00	0.00	Absent
	1112.12	13.54	3.454E-01	7.289E-02	7.289E-02	28.84	OK
	1408.01	20.87*	2.787E-01	1.740E-02	1.740E-02	18.28	<<WTM Reject
	Final Mean for 3 Valid Peaks = 2.520E-02+/- 7.779E-03 (30.88%)						

Nuclide Type: fission

Nuclide	Energy	%Abn	%Eff	Uncorrected uCi/G	Decay Corr uCi/G	1-Sigma %Error	Status
CO-57	122.06	85.95*	2.690E+00	2.659E-02	2.661E-02	9.08	OK
	136.47	10.33	2.545E+00	0.000E+00	0.000E+00	0.00	Absent
	Final Mean for 1 Valid Peaks = 2.661E-02+/- 2.417E-03 (9.08%)						
RU-106	511.86	20.40*	7.289E-01	7.060E-02	7.064E-02	27.52	OK
	621.93	9.94	5.970E-01	8.227E-02	8.232E-02	32.80	OK
	1050.41	1.56	3.637E-01	0.000E+00	0.000E+00	0.00	Absent
	Final Mean for 2 Valid Peaks = 7.463E-02+/- 1.578E-02 (21.14%)						

Sample ID : T8667 611-90 SST Acquisition date : 1-OCT-1990 07:29:30

Nuclide Type: fission

Nuclide	Energy	%Abn	%Eff	Uncorrected uCi/G	Decay Corr uCi/G	1-Sigma %Error	Status
CS-134	563.24	8.38	6.598E-01	0.000E+00	0.000E+00	0.00	Absent
	569.32	15.40	6.527E-01	0.000E+00	0.000E+00	0.00	Absent
	604.71	97.60*	6.144E-01	1.033E-02	1.033E-02	27.08	OK
	795.87	85.40	4.708E-01	1.328E-02	1.328E-02	17.35	OK
	801.95	8.73	4.670E-01	0.000E+00	0.000E+00	0.00	Absent
Final Mean for 2 Valid Peaks = 1.209E-02+/- 1.779E-03 (14.71%)							
CS-137	661.66	85.20*	5.623E-01	1.428E+01	1.428E+01	0.16	OK
Final Mean for 1 Valid Peaks = 1.428E+01+/- 2.264E-02 (0.16%)							
CE-144	80.10	1.13	2.818E+00	0.000E+00	0.000E+00	0.00	Absent
	133.54	11.10*	2.581E+00	1.268E-01	1.269E-01	12.51	OK
Final Mean for 1 Valid Peaks = 1.269E-01+/- 1.588E-02 (12.51%)							
EU-154	123.07	40.42	2.690E+00	5.654E-02	5.654E-02	9.08	OK
	247.93	6.84	1.549E+00	0.000E+00	0.000E+00	0.00	Absent
	591.70	4.83	6.279E-01	0.000E+00	0.000E+00	0.00	Absent
	692.40	1.69	5.376E-01	0.000E+00	0.000E+00	0.00	Absent
	723.30	19.98	5.158E-01	5.373E-02	5.373E-02	17.98	OK
	756.90	4.33	4.934E-01	0.000E+00	0.000E+00	0.00	Absent
	873.20	12.09	4.313E-01	4.802E-02	4.802E-02	24.85	OK
	996.30	10.34	3.815E-01	5.582E-02	5.583E-02	34.60	OK
	1004.76	17.90	3.788E-01	4.601E-02	4.601E-02	20.52	OK
	1274.51	34.40*	3.052E-01	4.234E-02	4.234E-02	11.04	OK
	1596.50	1.83	2.479E-01	5.525E-02	5.525E-02	62.81	OK
Final Mean for 7 Valid Peaks = 4.913E-02+/- 2.934E-03 (5.97%)							
EU-155	86.54	32.80	2.863E+00	2.562E-02	2.563E-02	16.11	OK
	105.31	21.84*	2.834E+00	0.000E+00	0.000E+00	0.00	Absent
Final Mean for 1 Valid Peaks = 2.563E-02+/- 4.129E-03 (16.11%)							
AM-241	59.54	35.90*	2.309E+00	2.475E-02	2.475E-02	19.18	OK
Final Mean for 1 Valid Peaks = 2.475E-02+/- 4.749E-03 (19.18%)							

Nuclide Type: ACTIVATION

Nuclide	Energy	%Abn	%Eff	Uncorrected uCi/G	Decay Corr uCi/G	1-Sigma %Error	Status
GD-153	97.43	27.60*	2.870E+00	6.387E-02	6.394E-02	8.68	OK
	103.18	19.60	2.845E+00	8.147E-02	8.156E-02	10.73	OK
Final Mean for 2 Valid Peaks = 6.899E-02+/- 4.687E-03 (6.79%)							

Sample ID : T8667 611-90 SST Acquisition date : 1-OCT-1990 07:29:30

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides
4	36.57	9127	18382	1.47	49.09	47	13	2.4	3.77E+01	
4	40.97	6804	43651	2.46	54.96	47	13	6.3		
0	46.96*	2174	28894	2.73	62.94	60	7	13.1		
0	59.25	1258	22947	1.73	79.34	77	6	19.2		AM-241
0	74.84*	614	21976	1.85	100.14	98	6	38.5		
0	86.27	1476	22046	1.85	115.38	113	6	16.1		EU-155
0	97.12	3104	25172	1.82	129.86	127	7	8.7		GD-153
0	103.42	2786	29088	1.81	138.26	135	8	10.7		GD-153
0	112.46	357	22130	0.99	150.32	148	6	66.2		
0	122.60	3771	34928	1.85	163.84	160	9	9.1		CO-57
										EU-154
0	133.08	2228	27285	1.79	177.82	175	7	12.5		CE-144
0	190.65	16460	131277	13.69	254.61	241	30	6.5		
0	344.42	215	16179	1.30	459.68	457	7	98.5		EU-152
0	474.64	975	17455	2.03	633.31	631	6	21.6		
0	510.77*	644	10140	3.42	681.48	678	8	27.5		NA-22
										RU-106
0	604.63	380	3360	1.75	806.62	803	8	27.1		CS-134
0	622.37	299	3099	2.24	830.27	827	8	32.8		RU-106
0	661.27*	419663	5012	2.02	882.13	875	15	0.2		CS-137
0	722.70	340	792	1.89	964.00	957	14	18.0		EU-154
0	795.23	327	731	2.15	1060.69	1056	12	17.4		CS-134
0	839.52	57	433	2.21	1119.71	1117	7	64.2		
4	870.32	47	252	1.59	1160.77	1159	10	50.0	3.40E+00	
4	872.96	154	461	1.66	1164.28	1159	10	24.8		EU-154
0	963.50*	81	514	2.20	1284.95	1281	8	50.9		EU-152
0	996.89	135	549	3.53	1329.45	1325	10	34.6		EU-154
0	1004.77	191	442	1.80	1339.94	1337	8	20.5		EU-154
0	1111.84	209	621	4.48	1482.61	1477	14	28.8		EU-152
0	1173.10*	6573	255	2.40	1564.23	1559	13	1.3		CO-60
0	1274.42	273	109	2.80	1699.21	1692	17	11.0		EU-154
										NA-22
0	1332.66*	5689	95	2.47	1776.79	1769	15	1.4		CO-60
0	1407.69	62	14	2.81	1876.74	1869	13	18.3		
0	1442.23	5	8	1.00	1922.75	1920	6	112.5		
0	1568.31	9	4	1.09	2090.67	2087	8	59.8		
0	1597.80	15	17	2.17	2129.94	2124	14	62.8		EU-154
0	2157.44	1	1	1.27	2875.00	2873	5	121.2		
0	2161.67	8	0	1.44	2880.63	2878	6	48.0		
0	2511.98	15	10	3.14	3346.78	3339	14	74.7		

VAX/VMS Nuclide Identification Report V2.5 Generated 16-OCT-1990 14:18:43

Configuration	: MCA0:[USER]ADC3$1		
Analyses by	: PEAK V16.0,PEAKEFF V2.2,ENBACK V1.3,NID/DEP V2.2		
Sample title	: T8667 611-90 90-4179-A-2 TK110B CORE 16 COMPOSITE SST		
Deposition Date	: 1-OCT-1990 00:00:00	Deposition Period:	17-NOV-1858 00:00:00
Sample date	: 1-OCT-1990 00:00:00	Acquisition date :	1-OCT-1990 07:29:30
Sample ID	: T8667 611-90 SST	Sample quantity :	2.76300E-02 G
Sample type	: 10 ML SCV	Sample geometry :	T2SCV
Detector name	: TRACK	Detector geometry:	T2SCV
Elapsed live time:	0 01:40:00.00	Elapsed real time:	0 01:40:36.12 0.6%
Energy tolerance :	1.20	Half life ratio :	8.00
Errors propagated:	No	Systematic Error :	0.00 %
Efficiency type :	Empirical	Efficiencies at :	Peak Energy
Abundance limit :	60.00		

Nuclide Line Activity Report

Nuclide Type: activation

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected uCi/G	Decay Corr uCi/G	1-Sigma %Error
NA-22	511.00	449	180.00	7.283E-01	5.588E-03	5.590E-03	35.36
	1274.53	273	99.94*	3.052E-01	1.457E-02	1.458E-02	11.04
CO-60	1173.24	6573	99.90	3.290E-01	3.261E-01	3.261E-01	1.35
	1332.50	5689	99.98*	2.930E-01	3.165E-01	3.166E-01	1.38
EU-152	121.78	3771	28.42	2.690E+00	8.041E-02	8.041E-02	9.08
	244.70	------	7.49	1.569E+00	------ Line Not Found		------
	344.28	215	26.58	1.102E+00	1.200E-02	1.200E-02	98.49
	778.90	35	12.96	4.807E-01	9.093E-03	9.094E-03	90.16
	964.13	102	14.47	3.937E-01	2.912E-02	2.912E-02	44.33
	1085.91	------	9.91	3.529E-01	------ Line Not Found		------
	1112.12	209	13.54	3.454E-01	7.289E-02	7.289E-02	28.84
	1408.01	62	20.87*	2.787E-01	1.740E-02	1.740E-02	18.28

Nuclide Type: fission

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected uCi/G	Decay Corr uCi/G	1-Sigma %Error
CO-57	122.06	3771	85.95*	2.690E+00	2.659E-02	2.661E-02	9.08
	136.47	348	10.33	2.532E+00	2.167E-02	2.169E-02	69.72
RU-106	511.86	449	20.40*	7.283E-01	4.931E-02	4.934E-02	35.36
	621.93	345	9.94	5.972E-01	9.483E-02	9.490E-02	31.10
	1050.41	60	1.56	3.636E-01	1.733E-01	1.734E-01	67.38
CS-134	563.24	------	8.38	6.598E-01	------ Line Not Found		------
	569.32	------	15.40	6.527E-01	------ Line Not Found		------
	604.71	380	97.60*	6.144E-01	1.033E-02	1.033E-02	27.08
	795.87	327	85.40	4.708E-01	1.328E-02	1.328E-02	17.35
	801.95	------	8.73	4.670E-01	------ Line Not Found		------
CS-137	661.66	419663	85.20*	5.623E-01	1.428E+01	1.428E+01	0.16
CE-144	80.10	304	1.13	2.813E+00	1.560E-01	1.561E-01	66.91
	133.54	2228	11.10*	2.581E+00	1.268E-01	1.269E-01	12.51
EU-154	123.07	3771	40.42	2.690E+00	5.654E-02	5.654E-02	9.08
	247.93	411	6.84	1.553E+00	6.309E-02	6.309E-02	54.08
	591.70	91	4.83	6.284E-01	4.869E-02	4.869E-02	87.99
	692.40	44	1.69	5.378E-01	7.841E-02	7.842E-02	62.84

Sample ID : T8667 611-90 SST Acquisition date : 1-OCT-1990 07:29:30

Nuclide Type: fission

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected uCi/G	Decay Corr uCi/G	1-Sigma %Error
	723.30	340	19.98	5.158E-01	5.373E-02	5.373E-02	17.98
	756.90	34	4.33	4.937E-01	2.570E-02	2.570E-02	112.10
	873.20	154	12.09	4.313E-01	4.802E-02	4.802E-02	24.85
	996.30	135	10.34	3.815E-01	5.582E-02	5.583E-02	34.60
	1004.76	191	17.90	3.788E-01	4.601E-02	4.601E-02	20.52
	1274.51	273	34.40*	3.052E-01	4.234E-02	4.234E-02	11.04
	1596.50	------	1.83	2.481E-01	------ Line Not Found		------
EU-155	86.54	1470	32.80	2.863E+00	2.552E-02	2.552E-02	16.18
	105.31	------	21.84*	2.834E+00	------ Line Not Found		------
AM-241	59.54	1258	35.90*	2.309E+00	2.475E-02	2.475E-02	19.18

Nuclide Type: ACTIVATION

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected uCi/G	Decay Corr uCi/G	1-Sigma %Error
CO-58	810.75	42	99.50*	4.628E-01	1.492E-03	1.497E-03	91.73
GD-153	97.43	3104	27.60*	2.870E+00	6.387E-02	6.394E-02	8.68
	103.18	2786	19.60	2.845E+00	8.147E-02	8.156E-02	10.73

Sample ID : T8667 611-90 SST Acquisition date : 1-OCT-1990 07:29:30

t	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides
0	32.20*	16940	19167	1.55	43.25	40	8	1.8		
4	36.57*	9099	18382	1.47	49.09	47	13	2.4	3.77E+01	
4	40.97	6807	43651	2.46	54.96	47	13	6.3		
4	47.00*	2016	28575	2.13	63.00	60	11	14.1	3.00E+00	
4	49.60	334	35862	2.62	66.47	60	11	104.0		
0	59.25	1258	22947	1.73	79.34	77	6	19.2		AM-241
0	74.84*	614	21976	1.85	100.14	98	6	38.5		
0	79.63	304	18276	2.21	106.52	105	5	66.9		CE-144
0	86.27*	1470	22046	1.85	115.38	113	6	16.2		EU-155
0	97.12	3104	25172	1.82	129.86	127	7	8.7		GD-153
0	103.42	2786	29088	1.81	138.26	135	8	10.7		GD-153
0	112.51	293	18491	0.94	150.38	149	5	70.1		
0	122.60	3771	34928	1.85	163.84	160	9	9.1		EU-152
										CO-57
										EU-154
0	133.08	2228	27285	1.79	177.82	175	7	12.5		CE-144
0	137.66	348	23291	0.82	183.92	182	6	69.7		CO-57
0	142.37	175	19753	2.30	190.21	189	5	120.6		
0	157.74	423	18905	1.51	210.71	209	5	49.2		
0	161.52	222	22682	2.40	215.76	215	6	107.5		
0	191.66	10089	116608	13.14	255.95	246	25	9.1		
0	204.98	539	32377	3.51	273.72	271	7	55.5		
0	216.16	439	29331	2.12	288.63	286	7	64.9		
0	224.19	506	23254	1.72	299.34	297	6	48.0		
0	247.23	411	19532	1.54	330.06	328	6	54.1		EU-154
0	263.90	198	17665	2.13	352.29	351	6	106.2		
0	268.71	295	17159	2.24	358.71	356	6	70.6		
0	299.84	286	14668	2.48	400.23	398	6	67.7		
0	320.58	102	11728	1.93	427.89	427	5	159.4		
0	327.49	127	14062	3.25	437.10	436	6	147.9		
0	344.42	215	16179	1.30	459.68	457	7	98.5		EU-152
0	352.21	244	13736	2.02	470.06	468	6	76.2		
0	369.52	266	11488	1.45	493.15	491	5	60.9		
0	373.59	173	13933	1.28	498.57	497	6	108.1		
0	396.79	220	14965	1.45	529.51	528	6	88.0		
0	402.07	175	15246	2.08	536.55	535	6	112.0		
0	425.56	104	16927	0.76	567.87	567	6	199.2		
0	457.49	223	23287	0.86	610.44	609	7	114.0		
0	463.31	93	17191	1.26	618.21	617	5	209.8		
0	470.19	294	20079	1.02	627.38	625	6	76.3		
0	474.64	975	17455	2.03	633.31	631	6	21.6		
0	502.97	408	8420	4.10	671.08	669	6	35.8		
0	511.22*	449	8957	3.21	682.09	679	7	35.4		NA-22
										RU-106
0	516.03	292	7085	2.64	688.49	686	6	46.7		
0	519.23	141	5670	0.78	692.77	692	5	80.8		
0	534.89	83	5259	1.96	713.65	712	6	139.3		
0	570.71	62	2324	1.38	761.40	760	5	118.9		
0	582.25*	73	2670	2.06	776.78	774	6	111.9		
0	591.19	91	2522	1.36	788.70	787	6	88.0		EU-154
0	604.63	380	3360	1.75	806.62	803	8	27.1		CS-134

Sample ID : T8667 611-90 SST Acquisition date : 1-OCT-1990 07:29:30

t	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides
0	615.31	137	2648	1.41	820.85	818	7	64.1		
0	622.15	345	3454	2.28	829.98	826	9	31.1		RU-106
0	634.76	34	2055	1.75	846.78	846	5	200.7		
0	661.27*	419663	5012	2.02	882.13	875	15	0.2		CS-137
0	683.56	11	349	0.78	911.83	910	6	268.5		
0	688.04	35	399	0.76	917.81	915	7	100.3		
0	692.15	44	306	2.08	923.29	922	5	62.8		EU-154
0	697.19	89	450	3.81	930.00	926	8	44.7		
7	705.01	34	265	1.83	940.43	938	7	77.8	6.20E+00	
7	706.24	21	377	1.83	942.07	938	7	164.2		
0	713.54	52	444	1.96	951.81	949	8	72.8		
0	722.70	340	792	1.89	964.00	957	14	18.0		EU-154
0	748.84	63	409	1.71	998.85	996	8	59.6		
0	756.48	34	489	1.40	1009.04	1005	8	112.1		EU-154
0	777.86	35	364	2.16	1037.53	1035	6	90.2		EU-152
0	785.52	100	471	1.82	1047.74	1043	9	41.5		
0	795.23	327	731	2.15	1060.69	1056	12	17.4		CS-134
0	809.66	42	472	2.20	1079.91	1077	8	91.7		CO-58
0	814.99	48	297	2.57	1087.02	1085	6	60.8		
0	822.24	51	411	2.34	1096.69	1094	7	67.7		
0	828.94	22	372	1.41	1105.61	1102	6	143.6		
0	839.52	57	433	2.21	1119.71	1117	7	64.2		
0	843.68	28	371	1.90	1125.27	1124	6	113.1		
0	865.23	24	472	1.21	1153.98	1151	7	152.5		
4	870.32	47	252	1.59	1160.77	1159	10	50.0	3.40E+00	
4	872.96	154	461	1.66	1164.28	1159	10	24.8		EU-154
0	884.96	29	351	1.30	1180.28	1179	5	101.5		
0	953.43	93	703	3.90	1271.53	1268	9	53.1		
0	963.19*	102	557	2.23	1284.54	1282	9	44.3		EU-152
0	972.20	10	371	1.14	1296.54	1296	6	322.9		
0	977.45	58	334	2.61	1303.53	1301	6	53.4		
0	983.33	22	373	2.47	1311.37	1309	6	138.4		
0	996.89	135	549	3.53	1329.45	1325	10	34.6		EU-154
0	1004.77	191	442	1.80	1339.94	1337	8	20.5		EU-154
0	1010.21	14	345	1.40	1347.19	1346	6	222.9		
0	1044.52	8	375	1.65	1392.91	1390	7	433.1		
0	1050.61	60	457	3.04	1401.02	1398	9	67.4		RU-106
0	1084.33	85	608	6.96	1445.96	1441	12	60.2		
0	1096.33	18	244	1.31	1461.95	1459	5	140.6		
0	1104.03	85	487	0.79	1472.21	1467	10	51.3		
0	1111.84	209	621	4.48	1482.61	1477	14	28.8		EU-152
0	1124.16	51	294	3.49	1499.02	1496	9	65.0		
0	1137.64	45	321	3.68	1516.99	1513	10	76.5		
0	1159.01	39	137	2.82	1545.46	1543	6	51.4		
0	1173.10*	6573	255	2.40	1564.23	1559	13	1.3		CO-60
0	1183.75	13	152	1.35	1578.42	1575	9	174.6		
0	1207.27	23	96	2.26	1609.75	1606	8	79.3		
0	1213.85	13	73	0.92	1618.53	1616	7	113.1		
0	1225.02	43	89	5.66	1633.40	1629	11	45.0		
0	1240.34	11	22	1.85	1653.81	1652	5	74.7		

Sample ID : T8667 611-90 SST Acquisition date : 1-OCT-1990 07:29:30

t	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides
0	1274.42	273	109	2.80	1699.21	1692	17	11.0		EU-154 NA-22
0	1314.80	5	42	2.17	1753.00	1752		6204.8		
0	1323.08	13	59	1.49	1764.04	1761		7101.4		
0	1332.66*	5689	95	2.47	1776.79	1769	15	1.4		CO-60
0	1366.18	9	45	6.43	1821.45	1807		18197.1		
0	1407.69	62	14	2.81	1876.74	1869	13	18.3		EU-152
0	1413.42	7	3	2.38	1884.37	1882	6	67.8		
0	1423.66	3	10	1.29	1898.01	1896		7190.3		
0	1442.23	5	8	1.00	1922.75	1920		6112.5		
0	1459.09	9	13	2.95	1945.21	1940	11	87.9		
0	1493.62	12	6	3.20	1991.19	1988	8	54.5		
0	1503.50	5	4	2.55	2004.35	2002	6	97.0		
0	1507.83	3	4	1.25	2010.11	2007		7190.1		
0	1511.71	4	3	0.76	2015.29	2013	5	86.3		
0	1515.84	6	6	0.94	2020.78	2018	8	85.8		
0	1548.70	11	0	3.19	2064.55	2061	8	47.2		
0	1568.31	9	4	1.09	2090.67	2087	8	59.8		
0	1582.27	5	5	2.18	2109.26	2106	7	93.4		
0	1597.80	15	17	2.17	2129.94	2124	14	62.8		
0	1612.12	6	10	1.02	2149.01	2145		10109.0		
0	1634.87	8	6	1.27	2179.31	2175	10	77.3		
0	1650.13	3	3	0.71	2199.62	2198		7143.3		
0	1654.59	2	6	1.20	2205.56	2204		7170.1		
0	1685.79	10	4	5.57	2247.11	2242	11	63.7		
0	1691.35	4	7	0.90	2254.52	2253		8137.0		
0	1710.98	6	2	0.88	2280.66	2276	8	47.1		
0	1716.00	6	0	1.80	2287.33	2284	8	78.2		
0	1723.32	11	0	1.10	2297.09	2292	13	42.2		
0	1740.15	3	8	4.34	2319.50	2316		9188.7		
0	1751.23	2	4	1.45	2334.25	2334		5238.9		
0	1798.50	4	1	0.86	2397.19	2394		7101.8		
0	1803.77	5	3	3.46	2404.21	2401	8	66.0		
0	1844.92	14	4	4.94	2458.99	2454	12	48.7		
0	1862.74	7	0	1.12	2482.71	2480	7	67.5		
0	1866.88	2	4	0.86	2488.23	2486		5161.5		
0	1872.04	2	4	2.30	2495.09	2492		6146.1		
0	1884.13	4	6	3.47	2511.19	2507		8120.0		
0	1889.03	3	7	1.41	2517.72	2515		11168.2		
0	1922.35	13	0	3.54	2562.08	2556	15	49.3		
0	1977.88	3	2	0.76	2636.00	2635	4	88.2		
0	1985.33	4	6	2.32	2645.91	2643		8153.4		
0	2023.53	4	1	1.06	2696.77	2693	7	94.2		
0	2027.44	3	2	0.80	2701.96	2699		6157.1		
0	2061.59	3	1	2.12	2747.42	2745		7134.4		
0	2082.89	3	1	1.31	2775.77	2774	4	68.8		
0	2108.65	5	2	1.58	2810.05	2806	9	65.7		
0	2148.25	3	4	1.73	2862.76	2858		7140.9		
0	2157.44	1	1	1.27	2875.00	2873		5121.2		
0	2162.09	5	3	1.33	2881.18	2877	7	88.9		
)	2191.62	4	12	7.02	2920.49	2913		12198.9		

Sample ID : T8667 611-90 SST Acquisition date : 1-OCT-1990 07:29:30

↓	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides
0	2213.44	4	2	2.24	2949.53	2946	8	88.9		
0	2232.96	6	0	1.80	2975.50	2971	10	58.3		
0	2297.86	16	0	11.99	3061.88	3051	21	25.0		
0	2385.88	5	0	0.75	3179.00	3171	14	44.7		
0	2511.98	15	10	3.14	3346.78	3339	14	74.7		
0	2517.63	8	1	1.02	3354.29	3352	7	53.7		
0	2573.19	5	0	1.50	3428.20	3420	16	44.7		
0	2621.69	3	2	1.74	3492.72	3490	6	71.4		

VAX/VMS Peak Search Report V1.7 Generated 16-OCT-1990 14:18:24

onfiguration : MCA0:[USER]ADC3$1
nalyses by : PEAK V16.0_ENBACK V1.3
Sample title : T8667 611-90 90-4179-A-2 TK110B CORE 16 COMPOSITE SST
Deposition Date : 1-OCT-1990 00:00:00 Deposition Period: 17-NOV-1858 00:00:00
Sample date : 1-OCT-1990 00:00:00 Acquisition date : 1-OCT-1990 07:29:30
Sample ID : T8667 611-90 SST Sample quantity : 2.76300E-02 G
Sample type : 10 ML SCV Sample geometry : T2SCV
Detector name : TRACK Detector geometry: T2SCV
Elapsed live time: 0 01:40:00.00 Elapsed real time: 0 01:40:36.12 0.6%
Start energy : 22.26 End energy : 3074.55
Sensitivity : 1.70 Gaussian : 10.00
Critical level : No

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	32.20*	16940	19167	1.55	43.25	40	8	2.82E+00	1.8	
2	4	36.57*	9099	18382	1.47	49.09	47	13	1.52E+00	2.4	3.77E+01
3	4	40.97	6807	43651	2.46	54.96	47	13	1.13E+00	6.3	
4	4	47.00*	2016	28575	2.13	63.00	60	11	3.36E-01	14.1	3.00E+00
5	4	49.60	334	35862	2.62	66.47	60	11	5.56E-02	104.0	
6	0	59.25	1258	22947	1.73	79.34	77	6	2.10E-01	19.2	
7	0	74.84*	614	21976	1.85	100.14	98	6	1.02E-01	38.5	
8	0	79.63	304	18276	2.21	106.52	105	5	5.07E-02	66.9	
9	0	86.27*	1470	22046	1.85	115.38	113	6	2.45E-01	16.2	
10	0	97.12	3104	25172	1.82	129.86	127	7	5.17E-01	8.7	
11	0	103.42	2786	29088	1.81	138.26	135	8	4.64E-01	10.7	
12	0	112.51	293	18491	0.94	150.38	149	5	4.88E-02	70.1	
13	0	122.60	3771	34928	1.85	163.84	160	9	6.28E-01	9.1	
14	0	133.08	2228	27285	1.79	177.82	175	7	3.71E-01	12.5	
15	0	137.66	348	23291	0.82	183.92	182	6	5.79E-02	69.7	
16	0	142.37	175	19753	2.30	190.21	189	5	2.92E-02	120.6	
17	0	157.74	423	18905	1.51	210.71	209	5	7.04E-02	49.2	
18	0	161.52	222	22682	2.40	215.76	215	6	3.70E-02	107.5	
19	0	191.66	10089	116608	13.14	255.95	246	25	1.68E+00	9.1	
20	0	204.98	539	32377	3.51	273.72	271	7	8.98E-02	55.5	
21	0	216.16	439	29331	2.12	288.63	286	7	7.31E-02	64.9	
22	0	224.19	506	23254	1.72	299.34	297	6	8.44E-02	48.0	
23	0	247.23	411	19532	1.54	330.06	328	6	6.85E-02	54.1	
24	0	263.90	198	17665	2.13	352.29	351	6	3.31E-02	106.2	
25	0	268.71	295	17159	2.24	358.71	356	6	4.92E-02	70.6	
26	0	299.84	286	14668	2.48	400.23	398	6	4.76E-02	67.7	
27	0	320.58	102	11728	1.93	427.89	427	5	1.71E-02	159.4	
28	0	327.49	127	14062	3.25	437.10	436	6	2.11E-02	147.9	
29	0	344.42	215	16179	1.30	459.68	457	7	3.59E-02	98.5	
30	0	352.21	244	13736	2.02	470.06	468	6	4.07E-02	76.2	
31	0	369.52	266	11488	1.45	493.15	491	5	4.44E-02	60.9	
32	0	373.59	173	13933	1.28	498.57	497	6	2.88E-02	108.1	
33	0	396.79	220	14965	1.45	529.51	528	6	3.67E-02	88.0	
34	0	402.07	175	15246	2.08	536.55	535	6	2.91E-02	112.0	
35	0	425.56	104	16927	0.76	567.87	567	6	1.73E-02	199.2	
36	0	457.49	223	23287	0.86	610.44	609	7	3.72E-02	114.0	
37	0	463.31	93	17191	1.26	618.21	617	5	1.56E-02	209.8	
38	0	470.19	294	20079	1.02	627.38	625	6	4.91E-02	76.3	
39	0	474.64	975	17455	2.03	633.31	631	6	1.63E-01	21.6	
40	0	502.97	408	8420	4.10	671.08	669	6	6.80E-02	35.8	

Sample ID : T8667 611-90 SST Acquisition date : 1-OCT-1990 07:29:30

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
41	0	511.22*	449	8957	3.21	682.09	679	7	7.49E-02	35.4	
42	0	516.03	292	7085	2.64	688.49	686	6	4.86E-02	46.7	
43	0	519.23	141	5670	0.78	692.77	692	5	2.35E-02	80.8	
44	0	534.89	83	5259	1.96	713.65	712	6	1.39E-02	139.3	
45	0	570.71	62	2324	1.38	761.40	760	5	1.03E-02	118.9	
46	0	582.25*	73	2670	2.06	776.78	774	6	1.22E-02	111.9	
47	0	591.19	91	2522	1.36	788.70	787	6	1.51E-02	88.0	
48	0	604.63	380	3360	1.75	806.62	803	8	6.33E-02	27.1	
49	0	615.31	137	2648	1.41	820.85	818	7	2.28E-02	64.1	
50	0	622.15	345	3454	2.28	829.98	826	9	5.75E-02	31.1	
51	0	634.76	34	2055	1.75	846.78	846	5	5.65E-03	200.7	
52	0	661.27*	419663	5012	2.02	882.13	875	15	6.99E+01	0.2	
53	0	683.56	11	349	0.78	911.83	910	6	1.88E-03	268.5	
54	0	688.04	35	399	0.76	917.81	915	7	5.84E-03	100.3	
55	0	692.15	44	306	2.08	923.29	922	5	7.29E-03	62.8	
56	0	697.19	89	450	3.81	930.00	926	8	1.48E-02	44.7	
57	7	705.01	34	265	1.83	940.43	938	7	5.72E-03	77.8	6.20E+00
58	7	706.24	21	377	1.83	942.07	938	7	3.52E-03	164.2	
59	0	713.54	52	444	1.96	951.81	949	8	8.69E-03	72.8	
60	0	722.70	340	792	1.89	964.00	957	14	5.66E-02	18.0	
61	0	748.84	63	409	1.71	998.85	996	8	1.04E-02	59.6	
62	0	756.48	34	489	1.40	1009.04	1005	8	5.62E-03	112.1	
63	0	777.86	35	364	2.16	1037.53	1035	6	5.79E-03	90.2	
64	0	785.52	100	471	1.82	1047.74	1043	9	1.66E-02	41.5	
65	0	795.23	327	731	2.15	1060.69	1056	12	5.46E-02	17.4	
66	0	809.66	42	472	2.20	1079.91	1077	8	7.02E-03	91.7	
67	0	814.99	48	297	2.57	1087.02	1085	6	7.97E-03	60.8	
68	0	822.24	51	411	2.34	1096.69	1094	7	8.50E-03	67.7	
69	0	828.94	22	372	1.41	1105.61	1102	6	3.61E-03	143.6	
70	0	839.52	57	433	2.21	1119.71	1117	7	9.51E-03	64.2	
71	0	843.68	28	371	1.90	1125.27	1124	6	4.61E-03	113.1	
72	0	865.23	24	472	1.21	1153.98	1151	7	3.93E-03	152.5	
73	4	870.32	47	252	1.59	1160.77	1159	10	7.83E-03	50.0	3.40E+00
74	4	872.96	154	461	1.66	1164.28	1159	10	2.56E-02	24.8	
75	0	884.96	29	351	1.30	1180.28	1179	5	4.81E-03	101.5	
76	0	953.43	93	703	3.90	1271.53	1268	9	1.55E-02	53.1	
77	0	963.19*	102	557	2.23	1284.54	1282	9	1.70E-02	44.3	
78	0	972.20	10	371	1.14	1296.54	1296	6	1.62E-03	322.9	
79	0	977.45	58	334	2.61	1303.53	1301	6	9.67E-03	53.4	
80	0	983.33	22	373	2.47	1311.37	1309	6	3.74E-03	138.4	
81	0	996.89	135	549	3.53	1329.45	1325	10	2.25E-02	34.6	
82	0	1004.77	191	442	1.80	1339.94	1337	8	3.19E-02	20.5	
83	0	1010.21	14	345	1.40	1347.19	1346	6	2.26E-03	222.9	
84	0	1044.52	8	375	1.65	1392.91	1390	7	1.25E-03	433.1	
85	0	1050.61	60	457	3.04	1401.02	1398	9	1.01E-02	67.4	
86	0	1084.33	85	608	6.96	1445.96	1441	12	1.42E-02	60.2	
87	0	1096.33	18	244	1.31	1461.95	1459	5	2.94E-03	140.6	
88	0	1104.03	85	487	0.79	1472.21	1467	10	1.42E-02	51.3	
89	0	1111.84	209	621	4.48	1482.61	1477	14	3.48E-02	28.8	
90	0	1124.16	51	294	3.49	1499.02	1496	9	8.46E-03	65.0	
91	0	1137.64	45	321	3.68	1516.99	1513	10	7.42E-03	76.5	
92	0	1159.01	39	137	2.82	1545.46	1543	6	6.46E-03	51.4	
93	0	1173.10*	6573	255	2.40	1564.23	1559	13	1.10E+00	1.3	
94	0	1183.75	13	152	1.35	1578.42	1575	9	2.14E-03	174.6	

Sample ID : T8667 611-90 SST Acquisition date : 1-OCT-1990 07:29:30

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
95	0	1207.27	23	96	2.26	1609.75	1606	8	3.92E-03	79.3	
96	0	1213.85	13	73	0.92	1618.53	1616	7	2.25E-03	113.1	
97	0	1225.02	43	89	5.66	1633.40	1629	11	7.16E-03	45.0	
98	0	1240.34	11	22	1.85	1653.81	1652	5	1.91E-03	74.7	
99	0	1274.42	273	109	2.80	1699.21	1692	17	4.54E-02	11.0	
100	0	1314.80	5	42	2.17	1753.00	1752	6	8.79E-04	204.8	
101	0	1323.08	13	59	1.49	1764.04	1761	7	2.22E-03	101.4	
102	0	1332.66*	5689	95	2.47	1776.79	1769	15	9.48E-01	1.4	
103	0	1366.18	9	45	6.43	1821.45	1807	18	1.51E-03	197.1	
104	0	1407.69	62	14	2.81	1876.74	1869	13	1.03E-02	18.3	
105	0	1413.42	7	3	2.38	1884.37	1882	6	1.13E-03	67.8	
106	0	1423.66	3	10	1.29	1898.01	1896	7	5.36E-04	190.3	
107	0	1442.23	5	8	1.00	1922.75	1920	6	7.63E-04	112.5	
108	0	1459.09	9	13	2.95	1945.21	1940	11	1.47E-03	87.9	
109	0	1493.62	12	6	3.20	1991.19	1988	8	2.07E-03	54.5	
110	0	1503.50	5	4	2.55	2004.35	2002	6	8.15E-04	97.0	
111	0	1507.83	3	4	1.25	2010.11	2007	7	4.92E-04	190.1	
112	0	1511.71	4	3	0.76	2015.29	2013	5	5.83E-04	86.3	
113	0	1515.84	6	6	0.94	2020.78	2018	8	9.51E-04	85.8	
114	0	1548.70	11	0	3.19	2064.55	2061	8	1.83E-03	47.2	
115	0	1568.31	9	4	1.09	2090.67	2087	8	1.50E-03	59.8	
116	0	1582.27	5	5	2.18	2109.26	2106	7	8.42E-04	93.4	
117	0	1597.80	15	17	2.17	2129.94	2124	14	2.56E-03	62.8	
118	0	1612.12	6	10	1.02	2149.01	2145	10	9.79E-04	109.0	
119	0	1634.87	8	6	1.27	2179.31	2175	10	1.35E-03	77.3	
120	0	1650.13	3	3	0.71	2199.62	2198	7	5.37E-04	143.3	
121	0	1654.59	2	6	1.20	2205.56	2204	7	4.06E-04	170.1	
122	0	1685.79	10	4	5.57	2247.11	2242	11	1.59E-03	63.7	
123	0	1691.35	4	7	0.90	2254.52	2253	8	7.20E-04	137.0	
124	0	1710.98	6	2	0.88	2280.66	2276	8	1.00E-03	47.1	
125	0	1716.00	6	0	1.80	2287.33	2284	8	1.00E-03	78.2	
126	0	1723.32	11	0	1.10	2297.09	2292	13	1.83E-03	42.2	
127	0	1740.15	3	8	4.34	2319.50	2316	9	4.52E-04	188.7	
128	0	1751.23	2	4	1.45	2334.25	2334	5	2.59E-04	238.9	
129	0	1798.50	4	1	0.86	2397.19	2394	7	6.17E-04	101.8	
130	0	1803.77	5	3	3.46	2404.21	2401	8	8.75E-04	66.0	
131	0	1844.92	14	4	4.94	2458.99	2454	12	2.30E-03	48.7	
132	0	1862.74	7	0	1.12	2482.71	2480	7	1.17E-03	67.5	
133	0	1866.88	2	4	0.86	2488.23	2486	5	3.61E-04	161.5	
134	0	1872.04	2	4	2.30	2495.09	2492	6	4.07E-04	146.1	
135	0	1884.13	4	6	3.47	2511.19	2507	8	7.08E-04	120.0	
136	0	1889.03	3	7	1.41	2517.72	2515	11	5.67E-04	168.2	
137	0	1922.35	13	0	3.54	2562.08	2556	15	2.17E-03	49.3	
138	0	1977.88	3	2	0.76	2636.00	2635	4	5.00E-04	88.2	
139	0	1985.33	4	6	2.32	2645.91	2643	8	6.33E-04	153.4	
140	0	2023.53	4	1	1.06	2696.77	2693	7	6.67E-04	94.2	
141	0	2027.44	3	2	0.80	2701.96	2699	6	4.28E-04	157.1	
142	0	2061.59	3	1	2.12	2747.42	2745	7	5.00E-04	134.4	
143	0	2082.89	3	1	1.31	2775.77	2774	4	5.42E-04	68.8	
144	0	2108.65	5	2	1.58	2810.05	2806	9	8.81E-04	65.7	
145	0	2148.25	3	4	1.73	2862.76	2858	7	4.29E-04	140.9	
146	0	2157.44	1	1	1.27	2875.00	2873	5	1.94E-04	121.2	
147	0	2162.09	5	3	1.33	2881.18	2877	7	8.44E-04	88.9	
148	0	2191.62	4	12	7.02	2920.49	2913	12	6.04E-04	198.9	

Sample ID : T8667 611-90 SST Acquisition date : 1-OCT-1990 07:29:30

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
149	0	2213.44	4	2	2.24	2949.53	2946	8	5.93E-04	88.9	
150	0	2232.96	6	0	1.80	2975.50	2971	10	1.00E-03	58.3	
151	0	2297.86	16	0	11.99	3061.88	3051	21	2.67E-03	25.0	
152	0	2385.88	5	0	0.75	3179.00	3171	14	8.33E-04	44.7	
153	0	2511.98	15	10	3.14	3346.78	3339	14	2.47E-03	74.7	
154	0	2517.63	8	1	1.02	3354.29	3352	7	1.32E-03	53.7	
155	0	2573.19	5	0	1.50	3428.20	3420	16	8.33E-04	44.7	
156	0	2621.69	3	2	1.74	3492.72	3490	6	5.22E-04	71.4	

VAX/VMS Nuclide Identification Report V2.5 Generated 21-SEP-1990 09:18:10

Configuration : DUB0:[USER]T8636.CNF;1
Analuses bu : PEAK V16.0,PEAKEFF V2.2,ENBACK V1.3,NID/DEP V2.2,WTMEAN V1
Sample title : T8636 SST 590-90 90-4180-C-1
Deposition Date : 21-SEP-1990 07:00:00 Deposition Period: 17-NOV-1858 00:00:00
Sample date : 21-SEP-1990 07:00:00 Acquisition date : 21-SEP-1990 07:32:49
Sample ID : T8636 590-90 Sample quantity : 0.10531 G
Sample type : 10 ML SCV Sample geometry : T2SCV
Detector name : TRACK Detector geometry: T2SCV
Elapsed live time: 0 01:40:00.00 Elapsed real time: 0 01:41:06.34 1.1%
Energy tolerance : 1.00 Half life ratio : 8.00
Errors propagated: No Systematic Error : 0.00 %
Efficiency type : Empirical Efficiencies at : Peak Energy
Abundance limit : 75.00 WTM error limit : 3.00

Nuclide Line Activity Report

Nuclide Type: fission

Nuclide	Energy	%Abn	%Eff	Uncorrected uCi/G	Decay Corr uCi/G	1-Sigma %Error	Status
CS-137	661.66	85.20*	5.623E-01	7.635E+00	7.635E+00	0.11	OK

Final Mean for 1 Valid Peaks = 7.635E+00+/- 8.433E-03 (0.11%)

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides
1	37.15*	15648	48731	1.51	49.87	47	7	2.7		
0	45.31	2989	64117	4.15	60.75	56	11	16.5		
5	185.88*	4292	34835	5.38	248.24	246	27	6.3	2.69E+01	
5	189.04	11647	105614	7.62	252.46	246	27	5.7		
5	199.86	5617	109782	7.38	266.88	246	27	11.7		
0	471.76	884	32160	2.22	629.73	628	5	30.7		
0	661.36*	855079	7985	2.01	882.24	875	15	0.1		CS-137
0	694.09	167	195	3.29	925.88	917	20	21.1		
0	795.43	47	45	1.37	1060.96	1057	9	30.6		
0	924.79	16	12	1.55	1233.36	1230	8	46.1		
0	1051.45	34	10	7.54	1402.15	1393	19	28.0		
0	1322.92	39	8	1.45	1763.83	1760	8	19.6		

?

VAX/VMS Peak Search Report V1.7 Generated 21-SEP-1990 09:17:54

Configuration : DUB0:[USER]T8636.CNF;1
Analyses by : PEAK V16.0,ENBACK V1.3
Sample title : T8636 SST 590-90 90-4180-C-1
Deposition Date : 21-SEP-1990 07:00:00 Deposition Period: 17-NOV-1858 00:00:00
Sample date : 21-SEP-1990 07:00:00 Acquisition date : 21-SEP-1990 07:32:49
Sample ID : T8636 590-90 Sample quantity : 0.10531 G
Sample type : 10 ML SCV Sample geometry : T2SCV
Detector name : TRACK Detector geometry: T2SCV
Elapsed live time: 0 01:40:00.00 Elapsed real time: 0 01:41:06.34 1.1%
Start energy : 29.76 End energy : 3074.55
Sensitivity : 5.00 Gaussian : 10.00
Critical level : No

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	37.15*	15648	48731	1.51	49.87	47	7	2.61E+00	2.7	
2	0	45.31	2989	64117	4.15	60.75	56	11	4.98E-01	16.5	
3	5	185.88*	4292	34835	5.38	248.24	246	27	7.15E-01	6.3	2.69E+01
4	5	189.04	11647	105614	7.62	252.46	246	27	1.94E+00	5.7	
5	5	199.86	5617	109782	7.38	266.88	246	27	9.36E-01	11.7	
6	0	471.96	884	32160	2.22	629.73	628	5	1.47E-01	30.7	
7	0	661.36*	855079	7985	2.01	882.24	875	15	1.43E+02	0.1	
8	0	694.09	167	195	3.29	925.88	917	20	2.78E-02	21.1	
9	0	795.43	47	45	1.37	1060.96	1057	9	7.77E-03	30.6	
10	0	924.79	16	12	1.55	1233.36	1230	8	2.61E-03	46.1	
11	0	1051.45	34	10	7.54	1402.15	1393	19	5.58E-03	28.0	
12	0	1322.92	39	8	1.45	1763.83	1760	8	6.53E-03	19.6	

VAX/VMS Nuclide Identification Report V2.5 Generated 10-OCT-1990 15:28:58

```
Configuration     : DUB0:[USER]T8636.CNF;1
 nalyses by       : PEAK V16.0,PEAKEFF V2.2,ENBACK V1.3,NID/DEP V2.2,WTMEAN V1
 ample title      : T8636 SST 590-90 90-4180-C-1
Deposition Date   : 21-SEP-1990 07:00:00 Deposition Period: 17-NOV-1858 00:00:00
Sample date       : 21-SEP-1990 07:00:00 Acquisition date : 21-SEP-1990 07:32:49
Sample ID         : T8636 590-90         Sample quantity  : 0.10531 G
Sample type       : 10 ML SCV            Sample geometry  : T2SCV
Detector name     : TRACK                Detector geometry: T2SCV
Elapsed live time: 0 01:40:00.00         Elapsed real time: 0 01:41:06.34   1.1%
Energy tolerance :     1.3C              Half life ratio  :     8.00
Errors propagated: No                    Systematic Error :     0.00 %
Efficiency type  : Empirical             Efficiencies at  : Peak Energy
Abundance limit  :    60.00              WTM error limit  :     3.00
```

Nuclide Line Activity Report

Nuclide Type: natural

Nuclide	Energy	%Abn	%Eff	Uncorrected uCi/G	Decay Corr uCi/G	1-Sigma %Error	Status
K-40	1460.83	10.67*	2.675E-01	6.581E-04	6.581E-04	109.32	OK

Final Mean for 1 Valid Peaks = 6.581E-04+/- 7.195E-04 (109.32%)

Nuclide Type: fission

Nuclide	Energy	%Abn	%Eff	Uncorrected uCi/G	Decay Corr uCi/G	1-Sigma %Error	Status
CS-137	661.66	85.20*	5.623E-01	7.635E+00	7.635E+00	0.11	OK

Final Mean for 1 Valid Peaks = 7.635E+00+/- 8.433E-03 (0.11%)

	Energy	Area	Back	FWHM	Centroid	Chan	Sw	%Err	Fit	Nuclides
0	37.15*	15652	40731	1.58	[illegible]	[illegible]	7	3.7		
0	45.31*	2721	64117	4.15	69.73	[illegible]	11	16.6		
0	74.48*	687	38519	1.51	79.26	[illegible]	5	39.4		
0	128.05	309	42612	2.05	171.11	159	6	53.6		
5	185.08*	4293	34835	5.38	240.24	[illegible]	27	6.3	2.65E+01	
5	189.04	11847	105614	7.62	252.46	248	27	5.7		
5	199.86	5617	109792	7.39	266.09	246	27	11.7		
0	330.11	517	26798	2.15	440.59	438	6	50.4		
0	336.28	479	27202	1.38	448.82	446	6	55.5		
0	471.96	884	32160	2.22	629.73	628	5	30.7		
0	475.50	1258	33540	2.38	634.46	632	6	23.4		
0	661.36*	855075	7985	2.01	882.24	875	15	0.1		CS-137
0	694.09	167	195	3.29	925.88	917	20	21.1		
0	771.35	20	14	3.11	1028.85	1026	7	42.1		
0	795.43	47	45	1.37	1060.76	1057	9	30.6		
0	924.79	16	12	1.55	1233.36	1230	8	46.1		
0	968.39	14	12	2.02	1291.46	1286	10	61.2		
0	1000.40	4	13	0.73	1334.11	1334	7	141.4		
0	1031.00	14	5	1.06	1374.90	1372	9	43.1		
0	1051.45	34	10	2.54	1402.15	1393	19	23.0		
0	1106.12	4	9	1.01	1474.98	1472	7	126.3		
0	1198.47	5	5	2.17	1598.03	1594	8	77.8		
0	1322.92	39	8	1.45	1763.33	1760	8	19.6		
0	1460.09*	4	0	1.42	1946.53	1942	11	109.3		K-40

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VAX/VMS Nuclide Identification Report V2.5 Generated 10-OCT-1990 15:29:27

Configuration	: DUB0:[USER]T8637.CNF;1		
Analyses by	: PEAK V16.0,PEAKEFF V2.2,ENBACK V1.3,NID/DEP V2.2,WTMEAN V1		
Sample title	: T8637 SST 591-90 90-4180-C-2		
Deposition Date	: 21-SEP-1990 09:00:00	Deposition Period:	17-NOV-1958 00:00:00
Sample date	: 21-SEP-1990 09:00:00	Acquisition date :	21-SEP-1990 09:19:08
Sample ID	: T8637 591-90 SST	Sample quantity :	0.11075 G
Sample type	: 10 ML SCV	Sample geometry :	T2SCV
Detector name	: TRACK	Detector geometry:	T2SCV
Elapsed live time:	0 01:40:00.00	Elapsed real time:	0 01:41:07.64 1.1%
Energy tolerance :	1.30	Half life ratio :	8.00
Errors propagated:	No	Systematic Error :	0.00 %
Efficiency type :	Empirical	Efficiencies at :	Peak Energy
Abundance limit :	60.00	WTM error limit :	3.00

Nuclide Line Activity Report

Nuclide Type: activation

Nuclide	Energy	%Abn	%Eff	Uncorrected uCi/G	Decay Corr uCi/G	1-Sigma %Error	Status
CO-60	1173.24	99.90	3.289E-01	9.538E-05	9.538E-05	100.75	OK
	1332.50	99.98*	2.931E-01	1.382E-04	1.382E-04	65.31	OK

Final Mean for 2 Valid Peaks = 1.181E-04+/- 6.579E-05 (55.69%)

Nuclide Type: fission

Nuclide	Energy	%Abn	%Eff	Uncorrected uCi/G	Decay Corr uCi/G	1-Sigma %Error	Status
CS-134	563.24	8.38	6.598E-01	0.000E+00	0.000E+00	0.00	Absent
	569.32	15.40	6.527E-01	0.000E+00	0.000E+00	0.00	Absent
	604.71	97.60*	6.149E-01	1.751E-03	1.751E-03	40.38	OK
	795.87	85.40	4.708E-01	6.937E-04	6.938E-04	21.27	OK
	801.95	8.73	4.670E-01	0.000E+00	0.000E+00	0.00	Absent

Final Mean for 2 Valid Peaks = 7.379E-04+/- 1.445E-04 (19.58%)

CS-137	661.66	85.20*	5.623E-01	7.405E+00	7.405E+00	0.11	OK

Final Mean for 1 Valid Peaks = 7.405E+00+/- 8.092E-03 (0.11%)

Sample ID : T8637 591-90 SST Acquisition date : 21-SEP-1990 09:19:08

t	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides
0	37.18*	15941	49730	1.49	49.90	47	7	2.7		
0	47.45	1544	67840	6.25	63.60	59	11	32.6		
0	74.83*	795	37251	2.21	100.12	98	6	38.6		
7	187.25	9663	54823	6.03	250.07	247	27	3.9	3.52E+01	
7	197.57*	6313	185913	6.03	263.83	247	27	16.6		
7	202.72	3226	56236	6.03	270.70	247	27	11.6		
0	417.22	410	32411	0.93	556.75	555	6	69.7		
0	472.41	1219	38892	1.22	630.33	628	6	25.7		
0	604.23	258	4203	2.03	806.08	804	6	40.4		CS-134
0	661.39*	872098	7855	2.01	882.28	875	15	0.1		CS-137
7	692.97	120	100	3.22	924.38	918	24	20.8	1.60E+00	
7	696.75	117	136	5.94	929.42	918	24	33.5		
0	728.94	22	23	2.73	972.33	969	7	43.9		
0	795.07	69	38	1.39	1060.47	1055	11	21.3		CS-134
2	880.25	12	6	1.73	1174.01	1172	13	50.8	2.46E+00	
2	884.42	25	14	1.94	1179.56	1172	13	36.6		
0	937.76	17	20	2.49	1250.64	1248	11	70.9		
0	1050.82	13	8	2.10	1401.31	1398	8	49.3		
0	1073.45	6	11	0.89	1431.45	1429	7	111.2		
0	1173.34*	8	11	1.48	1564.56	1561	9	100.8		CO-60
0	1268.69	7	1	1.05	1691.58	1689	7	50.2		
0	1323.59	44	20	3.08	1764.72	1759	11	23.8		
0	1332.25*	10	5	1.44	1776.26	1773	9	65.3		CO-60

VAX/VMS Nuclide Identification Report V2.5 Generated 21-SEP-1990 11:02:59

Configuration	: DUB0:[USER]T8637.CNF;1		
Analyses by	: PEAK V16.0,PEAKEFF V2.2,ENBACK V1.3,NID/DEP V2.2,WTMEAN V1		
Sample title	: T8637 SST 591-90 90-4180-C-2		
Deposition Date	: 21-SEP-1990 09:00:00	Deposition Period:	17-NOV-1858 00:00:00
Sample date	: 21-SEP-1990 09:00:00	Acquisition date :	21-SEP-1990 09:19:08
Sample ID	: T8637 591-90 SST	Sample quantity :	0.11075 G
Sample type	: 10 ML SCV	Sample geometry :	T2SCV
Detector name	: TRACK	Detector geometry:	T2SCV
Elapsed live time:	0 01:40:00.00	Elapsed real time:	0 01:41:07.64 1.1%
Energy tolerance :	1.00	Half life ratio :	8.00
Errors propagated:	No	Systematic Error :	0.00 %
Efficiency type :	Empirical	Efficiencies at :	Peak Energy
Abundance limit :	75.00	WTM error limit :	3.00

Nuclide Line Activity Report

Nuclide Type: fission

Nuclide	Energy	%Abn	%Eff	Uncorrected uCi/G	Decay Corr uCi/G	1-Sigma %Error	Status
CS-137	661.66	85.20*	5.623E-01	7.405E+00	7.405E+00	0.11	OK

Final Mean for 1 Valid Peaks = 7.405E+00+/- 8.092E-03 (0.11%)

D04-147

Post-NID Peak Search Report
Sample ID : T8637 591-90 SST

Acquisition date : 21-SEP-1990 09:19:08

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides
0	37.18*	15937	49730	1.49	49.90	47	7	2.7		
0	186.49*	1323	58667	2.11	249.06	247	6	28.9		
0	472.06	1732	45246	2.23	629.87	627	7	20.5		
0	661.39*	872103	7855	2.01	882.28	875	15	0.1		CS-137
7	692.97	120	100	3.22	924.38	918	24	20.8	1.60E+00	
7	696.75	117	136	5.94	929.42	918	24	33.5		
0	795.07	69	38	1.39	1060.47	1055	11	21.3		
0	882.57	37	20	5.65	1177.10	1172	13	34.7		
0	1050.82	13	8	2.10	1401.31	1398	8	49.3		
0	1323.59	44	20	3.08	1764.72	1759	11	23.8		
0	1332.25*	11	5	1.44	1776.26	1773	9	57.9		

VAX/VMS Peak Search Report V1.7 Generated 21-SEP-1990 11:02:42

Configuration : DUB0:[USER]T8637.CNF;1
Analyses by : PEAK V16.0.ENBACK V1.3
Sample title : T8637 SST 591-90 90-4180-C-2
Deposition Date : 21-SEP-1990 09:00:00 Deposition Period: 17-NOV-1858 00:00:00
Sample date : 21-SEP-1990 09:00:00 Acquisition date : 21-SEP-1990 09:19:08
Sample ID : T8637 591-90 SST Sample quantity : 0.11075 G
Sample type : 10 ML SCV Sample geometry : T2SCV
Detector name : TRACK Detector geometry: T2SCV
Elapsed live time: 0 01:40:00.00 Elapsed real time: 0 01:41:07.64 1.1%
Start energy : 29.76 End energy : 3074.55
Sensitivity : 5.00 Gaussian : 10.00
Critical level : No

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	37.18*	15937	49730	1.49	49.90	47	7	2.66E+00	2.7	
2	0	186.49*	1323	50667	2.11	249.06	247	6	2.21E-01	28.9	
3	0	472.06	1732	45246	2.23	629.87	627	7	2.89E-01	20.5	
4	0	661.39*	872103	7855	2.01	882.28	875	15	1.45E+02	0.1	
5	7	692.97	120	100	3.22	924.38	918	24	2.00E-02	20.8	1.60E+00
6	7	696.75	117	136	5.94	929.42	918	24	1.95E-02	33.5	
7	0	795.07	69	38	1.39	1060.47	1055	11	1.14E-02	21.3	
8	0	882.57	37	20	5.65	1177.10	1172	13	6.12E-03	34.7	
9	0	1050.82	13	8	2.10	1401.31	1398	8	2.17E-03	49.3	
10	0	1323.59	44	20	3.08	1764.72	1759	11	7.31E-03	23.8	
11	0	1332.25*	11	5	1.44	1776.26	1773	9	1.87E-03	57.9	

VAX/VMS Nuclide Identification Report V2.5 Generated 10-OCT-1990 15:29:58

Configuration : DUB0:[USER]T8654.CNF;1
nalyses by : PEAK V16.0,PEAKEFF V2.2,ENDACK V1.3,NID/DEP V2.2,WTMEAN V1
ample title : T8654 SST 593-90 90-4180-C-5
Deposition Date : 25-SEP-1990 00:00:00 Deposition Period: 17-NOV-1853 00:00:00
Sample date : 25-SEP-1990 00:00:00 Acquisition date : 25-SEP-1990 13:59:28
Sample ID : T8654 593-90 SST Sample quantity : 0.10757 G
Sample type : 10 ML SCV Sample geometry : T2SCV
Detector name : TRACK Detector geometry: T2SCV
Elapsed live time: 0 16:00:00.00 Elapsed real time: 0 16:00:04.60 0.0%
Energy tolerance : 1.30 Half life ratio : 8.00
Errors propagated: No Systematic Error : 0.00 %
Efficiency type : Empirical Efficiencies at : Peak Energy
Abundance limit : 60.00 WTM error limit : 3.00

Nuclide Line Activity Report

Nuclide Type: natural

Nuclide	Energy	%Abn	%Eff	Uncorrected uCi/G	Decay Corr uCi/G	1-Sigma %Error	Status
K-40	1460.83	10.67*	2.695E-01	1.330E-05	1.380E-05	2281.44	OK

Final Mean for 1 Valid Peaks = 1.380E-05+/- 3.149E-04 (******%)

Nuclide Type: activation

Nuclide	Energy	%Abn	%Eff	Uncorrected uCi/G	Decay Corr uCi/G	1-Sigma %Error	Status
CO-60	1173.24	99.90	3.289E-01	7.608E-04	7.611E-04	6.34	OK
	1332.50	99.98*	2.930E-01	7.857E-04	7.859E-04	6.19	OK

Final Mean for 2 Valid Peaks = 7.734E-04+/- 3.426E-05 (4.43%)

ZN-65	1115.55	50.70*	3.443E-01	3.576E-05	3.585E-05	112.68	OK

Final Mean for 1 Valid Peaks = 3.585E-05+/- 4.040E-05 (112.63%)

Nuclide Type: fission

Nuclide	Energy	%Abn	%Eff	Uncorrected uCi/G	Decay Corr uCi/G	1-Sigma %Error	Status
RU-106	511.86	20.40*	7.262E-01	5.629E-04	5.638E-04	34.16	OK
	621.93	9.94	5.974E-01	0.000E+00	0.000E+00	0.00	Absent
	1050.41	1.56	3.637E-01	0.000E+00	0.000E+00	0.00	Absent

Final Mean for 1 Valid Peaks = 5.638E-04+/- 1.926E-04 (34.16%)

CS-134	563.24	8.38	6.598E-01	0.000E+00	0.000E+00	0.00	Absent
	569.32	15.40	6.530E-01	5.086E-04	5.090E-04	33.78	OK
	604.71	97.60*	6.149E-01	8.124E-05	8.131E-05	34.59	OK
	795.87	85.40	4.707E-01	1.145E-04	1.146E-04	30.20	OK
	801.95	8.73	4.666E-01	4.137E-04	4.141E-04	68.47	OK

Final Mean for 4 Valid Peaks = 1.029E-04+/- 2.159E-05 (20.97%)

Sample ID : T8654 593-90 SST Acquisition date : 25-SEP-1990 13:59:28

Nuclide Type: fission

Nuclide	Energy	%Abn	%Eff	Uncorrected uCi/G	Decay Corr uCi/G	1-Sigma %Error	Status
CS-137	661.66	85.20*	5.622E-01	1.476E-02	1.476E-02	0.91	OK

Final Mean for 1 Valid Peaks = 1.476E-02+/- 1.348E-04 (0.91%)

Post-NID Peak Search Report
Sample ID : T8654 593-90 SST

Acquisition date : 25-SEP-1990 13:59:20

t	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides
0	37.38*	374	2382	1.81	50.16	47	8	26.1		
0	92.91*	15	2547	1.72	124.23	121	7	598.4	3.79E-01	
0	185.73*	78	3656	1.62	248.04	244	9	147.1		
10	512.67	191	1049	2.42	684.01	675	19	34.2	1.24E+00	RU-106
0	569.03	117	424	1.79	759.16	755	9	33.8		CS-134
0	604.17	112	443	2.19	806.00	803	8	34.6		CS-134
0	661.46*	16204	597	1.95	882.37	875	15	0.9		CS-137
0	795.38	106	237	2.80	1060.89	1056	11	30.2		CS-134
0	802.64*	39	158	3.12	1070.56	1066	9	68.5		CS-134
0	962.58*	27	141	1.84	1283.72	1280	9	95.8		
0	1005.54	36	64	2.21	1340.96	1338	7	46.5		
0	1115.78	14	86	1.06	1487.86	1485	8	112.7		ZN-65
0	1173.26*	573	130	2.42	1564.45	1559	13	6.3		CO-60
0	1232.86	19	40	1.93	1643.84	1640	8	63.8		
0	1245.03	30	43	6.31	1660.06	1655	11	52.4		
0	1332.82*	528	69	2.53	1777.01	1772	14	6.2		CO-60
0	1392.44	21	36	6.36	1856.43	1851	12	71.9		
0	1460.59*	1	43	2.90	1947.20	1941	14	*****		K-40
0	1593.41	31	23	1.42	2124.10	2120	9	36.5		
0	1787.25	10	21	0.89	2382.21	2380	8	91.4		
0	1861.45	7	14	1.25	2481.00	2478	6	93.9		
0	2142.81	17	15	6.68	2855.53	2849	15	80.4		
0	2173.02	32	4	6.69	2895.74	2889	15	32.2		
0	2195.95	30	9	6.86	2926.26	2921	12	32.4		
0	2317.58	2	20	5.73	3088.12	3085	11	375.3		
0	2477.64	17	16	0.78	3301.08	3294	15	67.1		
0	2627.53	12	14	2.16	3500.49	3497	8	64.5		
0	2709.56	8	2	0.90	3609.60	3607	5	51.7		

VAX/VMS Nuclide Identification Report V2.5 Generated 26-SEP-1990 08:33:34

onfiguration : DUB0:[USER]T8654.CNF;1
nalyses by : PEAK V16.0,PEAKEFF V2.2,ENBACK V1.3,NID/DEP V2.2,WTMEAN V1
Sample title : T8654 SST 593-90 90-4180-C-5
Deposition Date : 25-SEP-1990 00:00:00 Deposition Period: 17-NOV-1858 00:00:00
Sample date : 25-SEP-1990 00:00:00 Acquisition date : 25-SEP-1990 13:59:28
Sample ID : T8654 593-90 SST Sample quantity : 0.10757 G
Sample type : 10 ML SCV Sample geometry : T2SCV
Detector name : TRACK Detector geometry: T2SCV
Elapsed live time: 0 16:00:00.00 Elapsed real time: 0 16:00:04.60 0.0%
Energy tolerance : 1.00 Half life ratio : 8.00
Errors propagated: No Systematic Error : 0.00 %
Efficiency type : Empirical Efficiencies at : Peak Energy
Abundance limit : 75.00 WTM error limit : 3.00

Nuclide Line Activity Report

Nuclide Type: natural

Nuclide	Energy	%Abn	%Eff	Uncorrected uCi/G	Decay Corr uCi/G	1-Sigma %Error	Status
K-40	1460.83	10.67*	2.695E-01	4.082E-04	4.082E-04	78.89	OK

Final Mean for 1 Valid Peaks = 4.082E-04+/- 3.221E-04 (78.89%)

uclide Type: activation

Nuclide	Energy	%Abn	%Eff	Uncorrected uCi/G	Decay Corr uCi/G	1-Sigma %Error	Status
CO-60	1173.24	99.90	3.289E-01	7.625E-04	7.628E-04	6.30	OK
	1332.50	99.98*	2.930E-01	8.033E-04	8.036E-04	5.97	OK

Final Mean for 2 Valid Peaks = 7.832E-04+/- 3.395E-05 (4.33%)

Nuclide Type: fission

Nuclide	Energy	%Abn	%Eff	Uncorrected uCi/G	Decay Corr uCi/G	1-Sigma %Error	Status
CS-134	563.24	8.38	6.598E-01	0.000E+00	0.000E+00	0.00	Absent
	569.32	15.40	6.527E-01	0.000E+00	0.000E+00	0.00	Absent
	604.71	97.60*	6.149E-01	8.124E-05	8.131E-05	34.59	OK
	795.87	85.40	4.707E-01	1.145E-04	1.146E-04	30.20	OK
	801.95	8.73	4.670E-01	0.000E+00	0.000E+00	0.00	Absent

Final Mean for 2 Valid Peaks = 9.455E-05+/- 2.183E-05 (23.08%)

CS-137	661.66	85.20*	5.622E-01	1.480E-02	1.480E-02	0.91	OK

Final Mean for 1 Valid Peaks = 1.480E-02+/- 1.348E-04 (0.91%)

Post-NID Peak Search Report
Sample ID : T8654 593-90 SST

Acquisition date : 25-SEP-1990 13:59:28

t	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides
0	37.38*	334	2382	1.81	50.16	47	8	29.5		
9	72.94*	21	2576	1.84	97.60	94	11	431.8	3.79E-01	
0	92.91*	6	2547	1.72	124.23	121	7	*****		
10	512.67	191	1049	2.42	684.01	675	19	34.2	1.24E+00	
0	604.17	112	443	2.19	806.00	803	8	34.6		CS-134
0	661.46*	16248	597	1.95	882.37	875	15	0.9		CS-137
0	795.38	106	237	2.80	1060.89	1056	11	30.2		CS-134
0	1173.26*	574	130	2.42	1564.45	1559	13	6.3		CO-60
0	1332.82*	540	69	2.53	1777.01	1772	14	6.0		CO-60
0	1460.59*	27	43	2.90	1947.20	1941	14	78.9		K-40
0	2627.53	12	14	2.16	3500.49	3497	8	64.5		

VAX/VMS Peak Search Report V1.7 Generated 26-SEP-1990 08:33:17

onfiguration : DUB0:[USER]T8654.CNF;1
nalyses by : PEAK V16.0,ENBACK V1.3
Sample title : T8654 SST 593-90 90-4180-C-5
Deposition Date : 25-SEP-1990 00:00:00 Deposition Period: 17-NOV-1858 00:00:00
Sample date : 25-SEP-1990 00:00:00 Acquisition date : 25-SEP-1990 13:59:28
Sample ID : T8654 593-90 SST Sample quantity : 0.10757 G
Sample type : 10 ML SCV Sample geometry : T2SCV
Detector name : TRACK Detector geometry: T2SCV
Elapsed live time: 0 16:00:00.00 Elapsed real time: 0 16:00:04.60 0.0%
Start energy : 29.76 End energy : 3074.55
Sensitivity : 5.00 Gaussian : 10.00
Critical level : No

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	37.38*	334	2382	1.81	50.16	47	8	5.80E-03	29.5	
2	9	72.94*	21	2576	1.84	97.60	94	11	3.67E-04	431.8	3.79E-01
3	0	92.91*	6	2547	1.72	124.23	121	7	1.01E-04	*****	
4	10	512.67	191	1049	2.42	684.01	675	19	3.32E-03	34.2	1.24E+00
5	0	604.17	112	443	2.19	806.00	803	8	1.94E-03	34.6	
6	0	661.46*	16248	597	1.95	882.37	875	15	2.82E-01	0.9	
7	0	795.38	106	237	2.80	1060.89	1056	11	1.83E-03	30.2	
8	0	1173.26*	574	130	2.42	1564.45	1559	13	9.97E-03	6.3	
9	0	1332.82*	540	69	2.53	1777.01	1772	14	9.37E-03	6.0	
10	0	1460.59*	27	43	2.90	1947.20	1941	14	4.67E-04	78.9	
11	0	2627.53	12	14	2.16	3500.49	3497	8	2.05E-04	64.5	

9 1 1 2 1 7 5 0 9 4 8

Date: Aug 21 1990

Analyst: [illegible] 6-3089 P7-22

Review: [illegible]

SAMPLE PREP DATA SHEET
325-B Hot Cells)

Core ID: TK10A, C16

Segment(s): 3

☐ Composite

☐ Prehomogenized ☑ Homogenized

COC#275

	325-A ID	ALO ID	Analyte or Analysis	Sample Wt Wet (g)	Sample Wt Dry (g)	Percent Solids	Water Wt (g)	Total Vol (ml)	Spike ID	Spike Vol (ml)	Dilution Factor	Diluent Matrix	Pipet Calib (ml)	Miscellaneous
542	NA	90-3617-A1	GEA	0.5321				250			none			(Ni Fasions)
543	↓	90-3617-A2	"	0.5295				250			↓			
544	↓	90-3617-A3	"	—				250						Reagent Blank
545	NA	90-3613-A1	GEA	0.5171	(+)			250						
546	↓	90-3618-A2	"	0.5121				250			↓			
	also	^{90}Sr,	^{129}I,	^{99}Tc,		Pu+								
						HTA-4-15								
						HTA-4-5								

via alpha counting: Am, Np, ^{239}Pu, ^{150}U → Mass Spec

D04-156

90-3618 A1 } These Sample get GEA only !!!
90-3618 A2 }

9 1 1 2 1 0 0 9 4 9

Date: Aug. 23 1990

Analyst: [illegible]
6-3089 P7-22

Review: [illegible]

SAMPLE PREP DATA SHEET
325-B Hot Cells)

Core ID: TK110B, C16

Segment(s): 5

☐ Composite

☐ Prehomogenized ☑ Homogenized

CoC # 277

325-A ID	ALO ID	Analyte or Analysis	Sample Wt Wet (g)	Sample Wt Dry (g)	Percent Solids	Water Wt (g)	Total Vol (ml)	Spike ID	Spike Vol (ml)	Dilution Factor	Diluent Matrix	Pipet Calib (ml)	Miscellaneous
NA	90-3620-A-1	GEA ~~ICP~~ mkt 5-15-16	0.5017				250				none		
↓	90-3620-A-2	GEA	0.5561				250				↓		
↓	90-3620-A-3	GEA	–				250						Reagent Blank
NA	90-3620-A1	GEA	0.5078				250						
↓	90-3620-A2	GEA	0.5729				250						
also	Tc, U, Sr, I, Fe,			Pu +	Pu, U		→ via Mass Spec						
				HTA-4-15 HTA-4-5	N: Fusions								

Samples 90-3620 A1 + 90-3620 A2 get GEA Only!

D04-157

9 1 1 2 1 0 0 9 5 0

Date: 9-11-90

Analyst: [signature] 6-3089 P7-22

Review: [signature]

SAMPLE PREP DATA SHEET
325-B Hot Cells)

Core ID: TK128, C16

Segment(s): Composite

☑ Composite
☐ Prehomogenized
☑ Homogenized

COC #293

325-A ID	ALO ID	Analyte or Analysis	Sample Wt Wet (g)	Sample Wt Dry (g)	Percent Solids	Water Wt (g)	Total Vol (ml)	Spike ID	Spike Vol (ml)	Dilution Factor	Diluent Matrix	Pipet Calib (ml)	Miscellaneous
607 90 NA	90-4178-A-1	C-EA	0.6025			20	250						
608	90-4178-A-2	"	0.4527				250						
609	90-4178-A-3	"	—	P. 125			250						reagent blank
610	90-4178-A1	"	0.6768				250						
611	90-4178-A-2	"	0.6811				250						
		M&TE # 36006-01-016								BNW	52917		

D04-158

Date: 9-11-90

Analyst: [signature] 6-3089 P7-22

Review: [signature]

SAMPLE PREP DATA SHEET
325-B Hot Cells)

Core ID: Tk-28, C16

Segment(s): Composite

☑ Composite
☐ Prehomogenized
☑ Homogenized

COC#293

325-A ID	ALO ID	Analyte or Analysis	Sample Wt Wet (g)	Sample Wt Dry (g)	Percent Solids	Water Wt (g)	Total Vol (ml)	Spike ID	Spike Vol (ml)	Dilution Factor	Diluent Matrix	Pipet Calib (ml)	Miscellaneous
90 NA	90-4173-A-1	CEA	0.6025				250						
608	90-4172-A-2		0.4527				250						
609	90-4173-A-3		—	P. 125			250						reagent blank
610	90-4173-A-1		0.6768				250						
611	90-4173-A-2		0.6811				250						
		M&TE # 36006-01-016								BNW	52917		

D04-159

ANALYTICAL REPORT 100057

Customer: SST
Date Received: 8-21-90
Work Order No: Ma20 37

ID & A.L.Q.: 542 -90

Description: 90-3617-A-1
TK1106
Core 1b
Segment 3

Analysis: GSA
Procedure: MIA-4-9

Results

0.5321g + 250mL - 2(4.9688)
BNW 53645 p. 52 53
2.8 9/14/90 COH 7/24/90

$\frac{0.5321g}{250mL} \cdot (2 \cdot 4.9688) = 0.02115\ g/kg$

Calculations

Calculations _____ Date 9/25/90
Reviewed L.R. Shermanski Date 10/19/90
Counting Information
By _____
Date 9/25/90 M. & T.E. WB61069
Log Book: BNW5346 p. 138
BNW52327

TI-SST-100

ANALYTICAL REPORT 100058

Customer: SST
Date Received: 8-21-90
Work Order No: Ma20 37

ID & A.L.Q.: 543 -90

Description: 90-3617-A-2
TK1106
Core 1b
Segment 3

Analysis: GSA
Procedure: MIA-4-9

Results

0.5295g + 250mL - 2(4.9688)
BNW 53645 p. 52 53
2.8 9/14/90 COH 7/24/90

$\frac{0.5295g}{250mL} \cdot 2 \cdot 4.9688mL = 0.02104g$

Calculations

Calculations _____ Date 9/25/90
Reviewed L.R. Shermanski Date 10/19/90
Counting Information
By _____
Date 9/25/90 M. & T.E. WB61069
Log Book: BNW5346 p. 138
BNW52327

TI-SST-102

ANALYTICAL REPORT 100061

Customer: SST
Date Received: 8-21-90
Work Order No: Ma20 37

ID & A.L.Q.: 544 -90

Description: 90-3617-A-3
TK1106
Core 1b
Segment 3

Analysis: GSA
Procedure: MIA-4-9

Results

0.5015 mL
BNW 53645 p. 52
2.8 9/14/90 COH

2(4.9688)
BNW 53645 p. 51
COH 7/24/90

$\frac{(0.5321 + 0.5295)/2}{250mL} \cdot (2 \cdot 4.9688) = 0.02109g$

Calculations

Calculations _____ Date 9/26/90
Reviewed L.R. Shermanski Date 10/19/90
Counting Information
By _____
Date 9/26/90 M. & T.E. WB61069
Log Book: BNW5346 p. 138
BNW52327

TI-SST-102

$\frac{4.9688}{2.9376}$

D04-160

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ANALYTICAL REPORT 100093

Customer: SST
Date Received: 8-21-90
Work Order No: M620[illegible]
ID & A.L.D.: 545 -90

Description: 90-3618-A-1
TK1108
Core 1a
Segment 3

Analysis: GSA
Procedure: HTA-4-9

Results

0.5171g + 250mL - 2(4.9892 mL)
BNW 53645 p.52
KJB 9/14

$\frac{0.5171g}{250mL}(2 \cdot 4.9892mL) = 2.06896-2$

Calculations

Calculations [signature] Date 9/25/90
Reviewed [signature] Date 10/19/90
Counting Information
By [signature]
Date 9/25/90 N. & T.E. WBC1069
Log Book: BNW52327 p. 138

TI-SST-102

ANALYTICAL REPORT 100094

Customer: SST
Date Received: 8-21-90
Work Order No: M620[illegible]
ID & A.L.D.: 546 -90

Description: 90-3618-A-2
TK1108
Core 1a
Segment 3

Analysis: GSA
Procedure: HTA-4-9

Results

0.5121g + 250mL - 2(4.9892 mL)
BNW 53645 p.52
KJB 9/19/90

$\frac{0.5121g}{250mL}(2 \cdot 4.9892mL) = 0.02044g$

Calculations

Calculations [signature] Date 9/26/90
Reviewed [signature] Date 10/19/90
Counting Information
By [signature]
Date 9/26/90 N. & T.E. WBC1069
Log Book: BNW52327 p. 138

TI-SST-102

4.1892
94754

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D04-161

ANALYTICAL REPORT

100095

Customer: SST
Date Received: 8-21-90
Work Order No: MA20 37

ID & A.L.O.: 549 -90

Description: 90-3619-A-1
TK110B
Core 1b
Segment 65 1-25-91

Analysis: GSM
Procedure: HTA-4-9

Results

0.5017g + Cont. - 2(4.9892 ml)
BNW 53645 p.52
RJB 9/19/90

$\frac{0.5017g}{250ml}(2 \cdot 4.9892ml) = 0.02002g$

Calculations

Calculations Date 9/26/90
Reviewed L. R. Greenwood Date 10/19/90
Counting Information
By
Date 9/26/90 M. & T.E. WB 6/069
Log Book: p. 138
BNW 52327

TI - SST - 102

ANALYTICAL REPORT

100107

Customer: SST
Date Received: 8-21-90
Work Order No: MA20 37

ID & A.L.O.: 548 -90

Description: 90-3619-A-2
TK110B
Core 1b
Segment 65 1-25-91

Analysis: GSM
Procedure: HTA-4-9

Results

0.5561g + Cont. - 2(4.9892 ml)
BNW 53645 p.52
RJB 9/19/90

$\frac{0.5561g}{250ml}(2 \cdot 4.9892ml) = 0.02220g$

Calculations

Calculations Date 9/26/90
Reviewed L. R. Greenwood Date 10/19/90
Counting Information
By
Date 9/26/90 M. & T.E. WB 6/069
Log Book: p. 138
BNW 52327

TI - SST - 103

ANALYTICAL REPORT

100119

Customer: SST
Date Received: 8-21-90
Work Order No: MA20 37

ID & A.L.O.: 549 -90

Description: 90-3619-A-3
TK110B
Core 1b
Segment 65 1-25-91

Analysis: GSM
Procedure: HTA-4-9

Results

Cont. - 2(4.9892) ml
BNW 53645 p.52
RJB 9/19/90

$\frac{\left(\frac{0.5017 + 0.5561}{2}\right)g}{250mL}(2 \cdot 4.9892mL) = 0.02111g$

Calculations

Calculations Date 9/27/90
Reviewed L. R. Greenwood Date 10/19/90
Counting Information
By
Date 9/27/90 M. & T.E. WB 6/069
Log Book: p. 138
BNW 52327

TI - SST - 103

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D04-162

ANALYTICAL REPORT 100131

Customer: SST
Date Received: 8-21-90
Work Order No: M620 37

ID & A.L.Q.: 550 -90

Description: 90-3620-A-1
TX1108
Core 16
Segment 5 1-25-91

Analysis: GSA
Procedure: MTA-4-9

0.5076g + 250mL - 2(4.9892)mL
BNW 53645 p.52
RJB 9/19/90

$\frac{0.5076g}{250mL}(2 \cdot 4.9892mL) = 0.02027g$

Calculations

Results

Calculations _____ Date 9/27/90

Reviewed L. R. Shermerhorn Date 10/19/90

Counting Information

By _____

Date 9/27/90 M. & T.E. 1486/1009

Log Book: ~~BNW 52340~~ p. 135
BNW 52327

TF-SST-103

ANALYTICAL REPORT 100132

Customer: SST
Date Received: 8-21-90
Work Order No: M620 37

ID & A.L.Q.: 551 -90

Description: 90-3620-A-2
TX1108
Core 16
Segment 5 1-25-91

Analysis: GSA
Procedure: MTA-4-9

0.5729g + 250mL - 2(4.9892mL)
BNW 53645 p.52
RJB 9/19/90

$\frac{0.5729g}{250mL}(2 \cdot 4.9892mL) = 0.02287$

Calculations

Results

Calculations _____ Date 9/27/90

Reviewed L. R. Shermerhorn Date 10/19/90

Counting Information

By _____

Date 9/27/90 M. & T.E. 1486/1009

Log Book: ~~BNW 52340~~ p. 135
BNW 52327

TF-SST-103

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D04-163

9112150956

GRAVIMETRIC REPORT 100382

Customer: SST
Date Received: 9-11-90
Work Order No: MaDu 37

ID & A.L.O.: au7 -90

Description: 90-4178-A-1
Tk1108
Core 1a
Seq COMPOSITE

Analysis: GSA
Procedure: MTA-4-9

Results

Sw52917 p. 125: 0.6025g ÷ 25mL - 2(5.0715 mL)
BNW 53645 p.58
Rfbarrington 9/26/90

$\frac{0.6025g}{25mL}(2 \cdot 5.0715mL) = 0.02444g$

Calculations

Calculations [signature] Date 9/26/90
Reviewed L R Greenwood Date 10/19/90
Counting Information
By [signature]
Date 9/26/90 M. & T.E. WB61069
Log Book: Sw 53327 p. 138

TI 104

T8663

GRAVIMETRIC REPORT 100375

Customer: SST
Date Received: 9-11-90
Work Order No: MaDu 38

ID & A.L.O.: au6 -90

Description: 90-4178-A-2
Tk1108
Core 1a
Seq COMPOSITE

Analysis: GSA
Procedure: MTA-4-9

Results

Sw52917 p. 125: 0.4527g ÷ 25mL - 2(5.0715 mL)
BNW 53645 p.58
Rfbarrington 9/26/90

$\frac{0.4527g}{25mL}(2 \cdot 5.0715mL) = 0.01837g$

Calculations

Calculations [signature] Date 9/26/90
Reviewed L. R. Greenwood Date 10/19/90
Counting Information
By [signature]
Date 9/26/90 M. & T.E. WB61069
Log Book: Sw 53327 p. 138

TI 104

T8664

GRAVIMETRIC REPORT 100387

Customer: SST
Date Received: 9-11-90
Work Order No: MaDu 39

ID & A.L.O.: au7 -90

Description: 90-4178-A-3
Tk1108
Core 1a
Seq COMPOSITE

Analysis: GSA
Procedure: MTA-4-9

Results

Sw52917 p. 125: 25mL - 2(5.0715 mL)
BNW 53645 p.58
Rfbarrington 9/26/90

$\frac{\left(\frac{(.6025 + .4527)g}{2}\right)}{25mL}(2 \cdot 5.0715mL) = 0.02141g$

Calculations

Calculations [signature] Date 9/26/90
Reviewed L R. Greenwood Date 10/19/90
Counting Information
By [signature]
Date 10-1-90 M. & T.E. WB61069
Log Book: Sw 53327 p. 139

TI 104

T8675

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D04-164

ANALYTICAL REPORT 100399

Customer: SST
Date Received: 9-11-90
Work Order No: M2C37

ID & A.L.D.: 810 -90

Description: 90-4179-A-1
TK1108
Core 16
Seq COMPOSITE

Analysis: GSA
Procedure: HIA-4-9

Results

BNW52917 p. 125: 0.6768g ÷ 250mL = 2(5.0715 mL)

$\frac{0.6768g}{250mL}(2 \cdot 5.0715mL) =$

BNW 53645 p.58
Rybarington 9/26/90

0.02746 g

Calculations

Calculations [signature] Date 9/28/90

Reviewed L. R. Greenwood Date 10/19/90

Counting Information

By [signature]

Date 9/28/90 M. & T.E. NB61064

Log Book: BNW52327 p. 139

TI 107

T8665

ANALYTICAL REPORT 100400

Customer: SST
Date Received: 9-11-90
Work Order No: M2C37

ID & A.L.D.: 811 -90

Description: 90-4179-A-2
TK1106
Core 16
Seq COMPOSITE

Analysis: GSA
Procedure: HIA-4-9

Results

BNW52917 p. 125: 0.6811g ÷ 250mL = 2(5.0715 mL)

$\frac{0.6811g}{250mL}(2 \cdot 5.0715mL) =$

BNW 53645 p.59
Rybarington 9/26/90

0.02763g

Calculations

Calculations [signature] Date 9/28/90

Reviewed L. R. Greenwood Date 10/19/90

Counting Information

By [signature] SV = $\frac{0.6811}{250} \cdot 10.1430 = 0.02763g$

Date 10-1-90 M. & T.E. NB61064

Log Book: BNW52327 p. 139

TI 101

T8667

POOR COPY RECEIVED

D04-165

ANALYTICAL REPORT 100306

Customer: SST
Date Received: 9-5-90
Work Order No: M6U39

ID & A.L.O.: 590-90

Description: 90-4160-C-1
TK1106
Core 1a
Segment CCM

Analysis: USM
Procedure: MTA-4-9

Results

Calculations: 2.0691g + 194.8843g 2(4.9688) → LSV

BNW 53645 p. 53

correction for P_H^{22} H_2O

CO Mass % / 100

Calculations: 4.9688 / 2 = 9.9376 mL 2.0691 g / (194.8843 g / 3.99777 g/mL) = 9.9376 mL ⇒ 0.105309 g/Alig.

Calculations: [signature] Date 9/25/90

Reviewed: [signature] Date 10/19/90

Counting Information

By [signature]

Date 9/26/90 M. & T.E. WB61069

Log Book: BNW 53237 p. 118

TI-SST-105

ANALYTICAL REPORT 100318

Customer: SST
Date Received: 9-5-90
Work Order No: M6U39

ID & A.L.O.: 591-90

Description: 90-4160-C-2
TK1106
Core 1b
Segment CCM

Analysis: GSA
Procedure: MTA-4-9

Results

2.1978g + 196.7724g 2(4.9688) → LSV = 9.9376 mL Aliquot

BNW 53645 p. 53

correction for P_H^{22} H_2O

CO Mass % / 100

Calculations

2.1978g ÷ (196.7724 / 0.49777 g/mL) = 9.9376 mL = 0.110748 g / Aliquot

Calculations [signature] Date 9/25/90

Reviewed [signature] Date 10/19/90

Counting Information

By [signature]

Date 9/26/90 M. & T.E. WB61069

Log Book: BNW 53237 p. 118

TI-SST-105

ANALYTICAL REPORT Blank 100331

Customer: SST
Date Received: 9-5-90
Work Order No: M6U39

ID & A.L.O.: 593-90

Description: 90-4160-C-5
TK1106
Core 1b
Segment CCM

Analysis: GSA
Procedure: MTA-4-9

Results

197.5712g 2(4.9688) → LSV = 9.9376 mL Aliquot

BNW 53645 p. 53

CO Mass % / 100

Calculations

[(2.0691 + 2.1978) / 2 g] / (197.5712 g × 0.49777 g/mL) = 9.9376 mL = 0.10757 g/Alig.

Calculations [signature] Date 9/25/90

Reviewed [signature] Date 10/19/90

Counting Information

By [signature]

Date 9/26/90 M. & T.E. WB61069

Log Book: BNW 53237 p. 118

TI-SST-105

POOR COPY RECEIVED

D04-166

GEA

CALIBRATION DATA

D04-167

AMERS - SST

[illegible] Calibration Report V1.1 Generated 29-Mar-1990 11:29:47

Configuration : [illegible]
Analyzed By : [illegible] V1.0
Detector Name : Energy Calib Time: 29-Mar-1990 11:29:46
Efficiency Tape : Spline Effeng Calib Time: 29-Mar-1990 11:29:46
Detector Geometry: 1250CV Unit: keV

Energy Calibration Report

Energy = -0.2177 + 0.2692*Channel + 3.1305E-0704(Channel**2)

Nbr	Centroid Channel	True Energy	Computed Energy	Difference
1	117.34	88.00	87.89	0.107
2	163.00	122.00	122.03	-0.028
3	221.33	165.00	165.07	-0.068
4	372.50	279.00	279.10	-0.101
5	522.72	391.70	391.68	0.017
6	685.78	514.00	513.97	0.034
7	882.50	661.65	661.58	0.065
8	1197.63	898.00	897.94	0.065
9	1564.36	1173.00	1173.14	-0.144
10	1776.62	1332.50	1332.67	0.015
11	2047.18	1836.00	1835.98	0.015

Fwhm Calibration Report

Fwhm = 0.7391 + 3.7173E-02*(Energy**1/2)

Nbr	Energy	True Fwhm	Computed Fwhm	Difference
1	88.00	1.32	1.09	0.233
2	122.00	1.06	1.15	-0.087
3	165.00	1.45	1.22	0.231
4	279.00	1.17	1.36	-0.187
5	391.70	1.41	1.47	-0.061
6	514.00	1.44	1.58	-0.170
7	661.65	1.65	1.70	-0.047
8	898.00	1.78	1.85	-0.070
9	1173.00	1.98	2.01	-0.029
10	1332.50	2.07	2.10	-0.030
11	1836.00	2.36	2.13	0.229

Efficiency Calibration Report

Nbr	Energy (*)	Measured Efficiency	Efficiency Error
1	88.00	2.6798E-02	1.0225E-03
2	122.00	2.6903E-02	6.2686E-04
3	165.00	2.2611E-02	8.8003E-04
4	279.00	1.3983E-02	2.3659E-03
5	391.70	9.7073E-03	4.5478E-04
6	514.00	6.6860E-03	3.1967E-04
7	661.65	5.7973E-03	1.7986E-04
8	898.00	4.2490E-03	1.6427E-04
9	1173.00	3.3055E-03	2.7004E-05
10	1332.50	2.9225E-03	2.3629E-05
11	1836.00	2.2628E-03	6.2047E-05

Approved by: [signature] Approval Date: 5.7.90

BNW 52327, pg 128
[illegible]

BNW LABORATORY NOTEBOOK NO. 52327
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VAX/VMS Peak Search Report V1.2 Generated 29-MAR-1990 12:50:00

AMERS-SST

Configuration : RCA0:[USER]ABC301
Analyses by : PEAK V16.0,PEAKEFF V2.2
Sample title. : T0055 AMERS. STD OCT.44 90/270/25 IN 10ML SCV
Sample date : Acquisition date : 5-DEC-1989 13:48:14
Sample ID : T0055 OCT.44 STD Sample quantity : 1.0640 G
Sample type : 10ML SCV Sample geometry : T2SCV
Detector name : TRACK Detector geometry: T2SCV
Elapsed live time: 0 15:00:00.00 Elapsed real time: 0 15:05:50.43 0.62
Start energy : 14.77 End energy : 3074.31
Sensitivity : 5.00 Gaussian : 10.00
Critical level : No

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	%Eff	Cts/Sec	%Err	Fit
1	4	21.52	1431899	387455	1.51	29.00	3.41E-02	2.65E+01	0.1	1.54E+04
2	4	24.43	557653	238721	1.51	32.89	7.89E-02	1.03E+01	0.2	
3	0	31.84	165010	249177	1.74	42.76	3.19E-01	3.06E+00	0.6	
4	0	36.60	42348	130704	2.12	49.11	5.62E-01	7.84E-01	1.5	
5	0	51.88	3417	90471	1.53	69.50	1.50E+00	6.33E-02	13.3	
6	0	65.95	3975	209373	2.72	88.28	2.19E+00	7.36E-02	20.6	
7	0	75.17	1413	114754	1.09	100.58	2.48E+00	2.62E-02	36.1	
8	0	87.89	509918	223771	1.32	117.54	2.78E+00	9.44E+00	0.2	
9	0	122.03	297745	175728	1.04	163.08	2.67E+00	5.51E+00	0.3	
10	0	136.48	35093	149940	1.35	182.35	2.55E+00	6.50E-01	2.0	
11	0	165.87	99991	165828	1.45	221.55	2.25E+00	1.85E+00	0.8	
12	0	255.21	4173	93522	1.30	340.72	1.52E+00	7.73E-02	11.7	
13	0	279.10	2677	78917	1.17	372.58	1.39E+00	4.96E-02	16.7	
14	0	310.38	2399	67672	1.56	414.30	1.24E+00	4.44E-02	17.3	
15	0	391.68	84320	95289	1.41	522.72	9.65E-01	1.56E+00	0.8	
16	0	475.35	1675	58690	2.71	634.29	7.85E-01	3.10E-02	23.0	
17	0	513.97	15032	48195	1.41	685.78	7.23E-01	2.78E-01	2.6	
18	2	658.32	1988	32009	1.90	878.23	5.63E-01	3.68E-02	14.5	2.14E+01
19	2	661.59	825224	29150	1.53	882.60	5.60E-01	1.53E+01	0.1	
20	0	813.91	2364	32051	2.12	1085.63	4.59E-01	4.38E-02	12.7	
21	0	821.42	1403	33018	2.02	1095.65	4.55E-01	2.60E-02	21.6	
22	0	897.94	91548	68604	1.77	1197.63	4.19E-01	1.70E+00	0.7	
23	0	1173.14	541002	32305	1.98	1564.36	3.29E-01	1.00E+01	0.2	
24	9	1325.23	3860	10041	4.90	1766.98	2.95E-01	7.15E-02	9.4	4.36E+01
25	9	1332.46	478532	3616	2.04	1776.62	2.94E-01	8.86E+00	0.1	
26	0	1835.98	50653	1234	2.55	2447.18	2.17E-01	9.38E-01	0.5	
27	0	2505.21	1974	100	3.20	3337.85	1.54E-01	3.66E-02	2.6	
28	0	2614.73	35	15	3.59	3483.54	1.46E-01	6.47E-04	31.6	
29	0	2733.86	381	23	3.23	3642.00	1.38E-01	7.06E-03	5.9	

VAX/VMS Calibration Report V1.1 Generated 29-MAR-1990 11:41:04

Configuration : RCA0:[USER]ABC301
Analyses by : CALIBRATE V1.3,PEAK V16.0,PEAKEFF V2.2
Detector Name : Energy Calib Time: 29-MAR-1990 11:39:46
Efficiency type : Empirical Effncy Calib Time: 29-MAR-1990 11:41:03
Detector Geometry: T2SCV Shelf : #2

Efficiency Calibration Report

Eff = exp(a2 + a3*x + a4*x**2 + a5*x**3 + a6*x**4 + a7*x**5), x=ln(a1/energy)

a1	a2	a3	a4	a5	a6	a7
962.0	-5.538	0.9885	6.4414E-02	8.9861E-02	-5.6399E-02	0.0000E+00

Average Deviation = 1.61 % Reduced Chi-Square = 0.780

Nbr	Energy ()	Measured Efficiency	Efficiency Error	Computed Efficiency	Diff/ /Error
1	88.00	2.6798E-02	1.0225E-03	2.6984E-02	-0.18
2	122.00	2.6903E-02	6.2684E-04	2.6747E-02	0.25
3	165.00	2.2411E-02	8.8803E-04	2.2554E-02	-0.16
4	279.00	1.3985E-02	2.3659E-03	1.3891E-02	0.04
5	391.70	9.7073E-03	4.5478E-04	9.6481E-03	0.13
6	514.00	6.6860E-03	3.1967E-04	7.2298E-03	-1.70
7	661.65	5.7510E-03	1.7041E-04	5.5997E-03	0.85
8	898.00	4.2490E-03	1.6427E-04	4.1910E-03	0.35
9	1173.00	3.3055E-03	2.7004E-05	3.2926E-03	0.48
10	1332.50	2.9199E-03	2.3000E-05	2.9364E-03	-0.70
11	1836.00	2.2052E-03	6.2891E-05	2.1721E-03	0.53

BNWS2327
Pg 129

Approved by: [signature] Approval Date: 2/12/92

Project No. _____ Date of Work _____
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D04-169

5 2 3 2 7 SEP 11 '90

Print Time : 29-MAR-1990 13:37:34.50
Certificate file name : DUB4:[USER]AMERS-SST.CER;1
Certificate title : OCT.44 RB/270/25
Certificate date : 1-OCT-1988 04:00:00.00
Certificate quantity : 1.06400E+00

BNW 52327
Pg 130

Rcd	Nuclide	Halflife	CAL/ INIT	Energy	Rate	%Abun	Activity (uCi)
1	Co-109	462.000	Yes	88.00	6.3200E+02	3.61	4.7316E-01
2	Co-57	271.700	No	122.00	5.7800E+02	85.50	1.0271E-02
3	Ce-139	137.500	No	165.80	6.8100E+02	79.90	2.3036E-02
4	Hg-203	46.600	No	279.00	2.0190E+03	81.50	6.6954E-02
5	Sn-113	115.100	No	391.70	2.0230E+03	64.20	8.5165E-02
6	Sr-85	64.000	No	514.00	3.9210E+03	99.20	1.0483E-01
7	Cs-137	30.17Y	No	661.65	2.5660E+03	85.10	8.1494E-02
8	Y-88	106.600	No	898.00	6.1710E+03	93.20	1.7895E-01
9	Co-60	5.27Y	No	1173.00	3.3270E+03	99.86	9.0045E-02
10	Co-60	5.27Y	No	1332.50	3.3310E+03	99.98	9.0045E-02
11	Y-88	106.600	Yes	1836.00	6.5790E+03	99.36	1.7896E-01

VAX/VMS Nuclide Identification Report V2.5 Generated 29-MAR-1990 14:41:54

Configuration : DUB0:[USER]T2SCV-FRED.CMF;1
Analyses by : PEAK V16.0,PEAKEFF V2.2,NID V2.2
Sample title : T8055 AMERS. STD OCT.44 RB/270/25 IN 10ML SCV
Sample date : Acquisition date : 5-DEC-1989 13:48:14
Sample ID : T8055 OCT.44 STD Sample quantity : 1.0640 G
Sample type : 10ML SCV Sample geometry : T2SCV
Detector name : TRACK Detector geometry: T2SCV
Elapsed live time: 0 15:00:00.00 Elapsed real time: 0 15:05:50.43 0.6%
Energy tolerance : 0.50 Half life ratio : 15.00
Errors propagated: No Systematic Error : 0.00 %
Efficiency type : Empirical Efficiencies at : Peak Energy
Abundance limit : 50.00

Nuclide Line Activity Report

Nuclide Type: fission

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected uCi/G	Decay Corr uCi/G	1-Sigma %Error
CO-57	122.06	297745	85.60*	2.675E+00	6.110E-03	1.836E-02	0.31
	136.47	35093	11.10	2.550E+00	5.831E-03	1.754E-02	1.99
SR-85	514.00	15032	99.27*	7.230E-01	9.852E-04	9.838E-02	2.58
Y-88	898.02	91548	91.29	4.191E-01	1.125E-02	1.052E-01	0.66
	1836.13	50653	99.34*	2.172E-01	1.104E-02	1.017E-01	0.47
CO 109	88.03	509918	3.79*	2.697E+00	2.344E-01	4.535E-01	0.21
SN-113	391.69	84320	64.00*	9.649E-01	6.423E-03	8.681E-02	4.77
CS-137	661.65	825224	85.00*	5.600E-01	8.155E-02	8.379E-02	0.12
CE-139	165.85	99991	79.90*	2.255E+00	2.611E-03	2.301E-02	0.00

Nuclide Type: activation

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected uCi/G	Decay Corr uCi/G	1-Sigma %Error
CO-60	1173.21	541082	99.90	3.292E-01	7.739E-02	9.437E-02	0.15
	1332.47	478532	100.00*	2.934E-01	7.664E-02	8.951E-02	0.15
HG-203	279.19	2677	81.50*	1.389E+00	1.113E-04	6.597E-02	16.72

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2636 South Clearbrook Drive
Arlington Heights, Illinois 60005-4692
(312) 593-6300

Amersham

TRACEABILITY TO NBS

This product satisfies the quality assurance requirements of USNRC Regulatory Guide 4.15, Revision 1, February 19, 1979, for achieving NBS traceability, as defined in NCRP 58 (1985), through Amersham's participation in the USCEA/NBS Measurements Assurance Program of the Nuclear Power Industry.

278004A
2/18/88

Amersham International plc
Amersham UK

BRITISH CALIBRATION SERVICE
Approval No. 0146

Description Product code: QCY.44 Solution number: RB/270/25

This mixed radionuclide gamma-ray reference standard consists of a solution in 4M HCl of the nine radionuclides listed below.

Measurement and Accuracy Reference time: 1200 GMT on 1 October 1988

Mass of solution: 5.3264 grams Density: 1.065 g/ml at 20°C

Parent radionuclide	Gamma-ray energy (MeV)	Gamma-rays per second per gram of solution	Random uncertainty	Systematic uncertainty	Overall uncertainty
Cadmium-109	0.088	632	± 0.1 %	± 3.7 %	± 3.8 %
Cobalt-57	0.122	578	± 0.3 %	± 2.0 %	± 2.3 %
Cerium-139	0.166	681	± 0.3 %	± 3.5 %	± 3.8 %
Mercury-203	0.279	2019	± 0.2 %	± 2.0 %	± 2.2 %
Tin-113	0.392	2023	± 0.4 %	± 4.2 %	± 4.6 %
Strontium-85	0.514	3921	± 0.2 %	± 1.7 %	± 1.9 %
Caesium-137	0.662	2566	± 0.5 %	± 2.6 %	± 3.1 %
Yttrium-88	0.898	6171	± 0.2 %	± 3.6 %	± 3.8 %
Cobalt-60	1.173	3327	± 0.3 %	± 0.5 %	± 0.8 %
Cobalt-60	1.333	3331	± 0.3 %	± 0.5 %	± 0.8 %
Yttrium-88	1.836	6579	± 0.2 %	± 2.6 %	± 2.8 %

Purity At the reference time the solution also contained the following impurities:

Cobalt-56 equal to 5.6×10^{-7} microcuries per gram
Cobalt-58 equal to 1.6×10^{-7} microcuries per gram
Selenium-75 equal to 3.2×10^{-7} microcuries per gram
Zinc-65 equal to 1.1×10^{-6} microcuries per gram

Remarks Further details, including composition of the solution, methods of measurement, decay scheme assumptions, decay tables and definitions of uncertainties, are given in the data sheet accompanying this certificate.

This product meets the quality assurance requirements of NRC Regulatory Guide 4.15 for achieving explicit NBS traceability as defined in NCSLPS0 (1985).

Approved Signatory

G D H Parker

Amersham

D04-172

9112120964

GEA

DAILY CONTROL DATA

D04-173

BNW-52327
1
7-17-87

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	LABORATORY RECORD BOOK NUMBER BNW- 52327	This document consists of ..... pages, copy no. .....
	TITLE (INDICATE SUBJECT CONTENT) Track Detector Daily Controls, Standards and Maintenance Notes	

AUTHOR - DIVISION AND DEPARTMENT
F.E. Holt
Materials & Chemical Sciences Center
Chemical Sciences Center

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54-1100-005(10-84)

9111210996

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Entered by F.E. Holt

This book is used to record the daily standard control counts (counts/second) for the TRACK detector, the date and analysts initials.

Personnel authorized to make entries include:

F.E. Holt 7/22/87 FEH

Mark M. McBurney 7-22-87 MM
George E. Meadows 10-27-88 GEM
Shannon Thompson 8/1/89 [illegible]
Anne E. Hopkins 2/22/90 AEH

Personnel authorized to review this LRB include:
George E. Meadows 10-27-88
M.G. Weiler 10-27-88
Fred E. Holt 9-27-90
Reviews
Reviewed pages 1-105 George E. Meadows 10-27-88
Reviewed pages 106-112 George E. Meadows 3-21-89
Larry R. Greenwood 10-31-90 LRG

A brief history of this counting system, calibration data and checks and control data are included.

7-24-87
FEH

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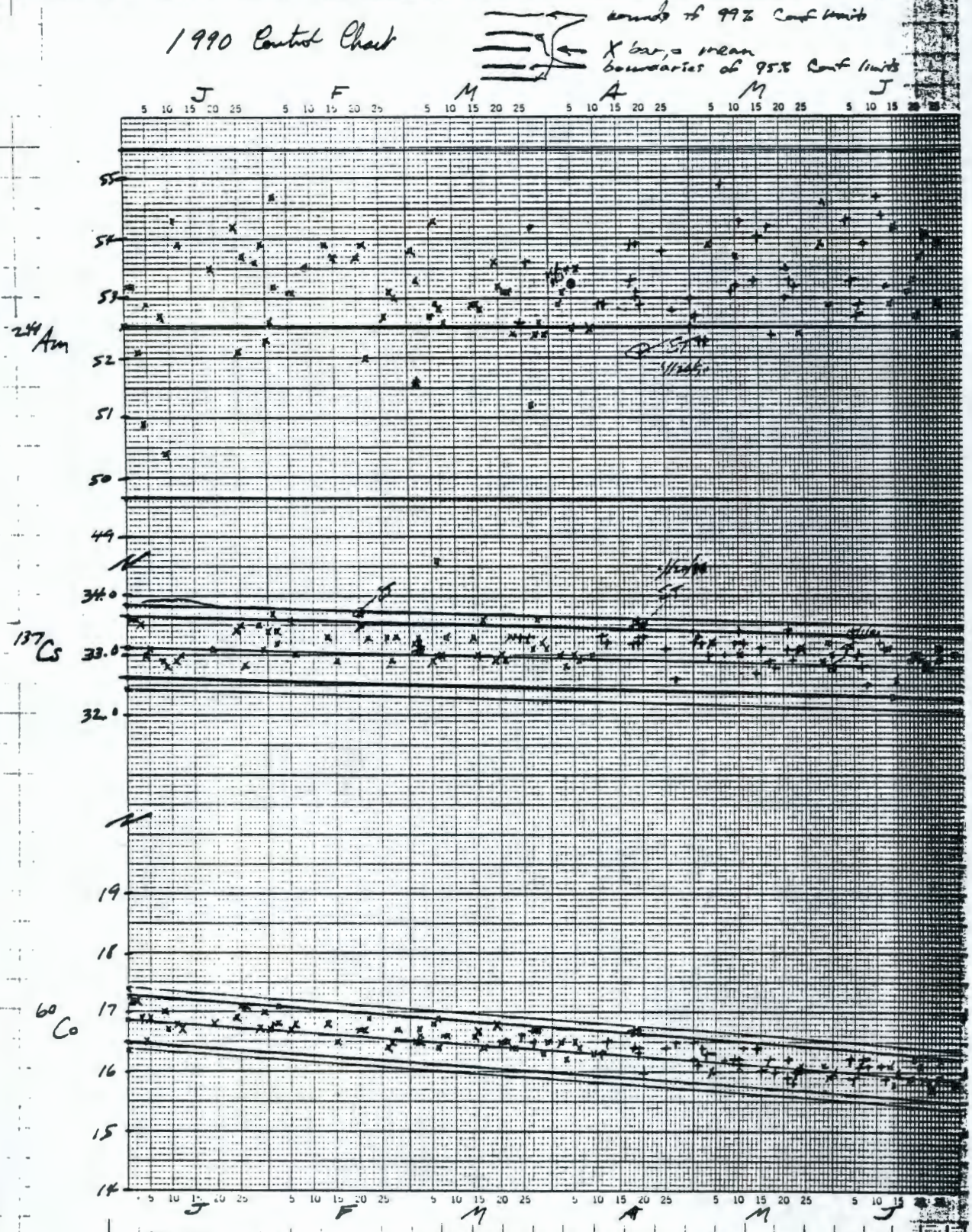
D04-176

9111210509968

1990 Control Chart



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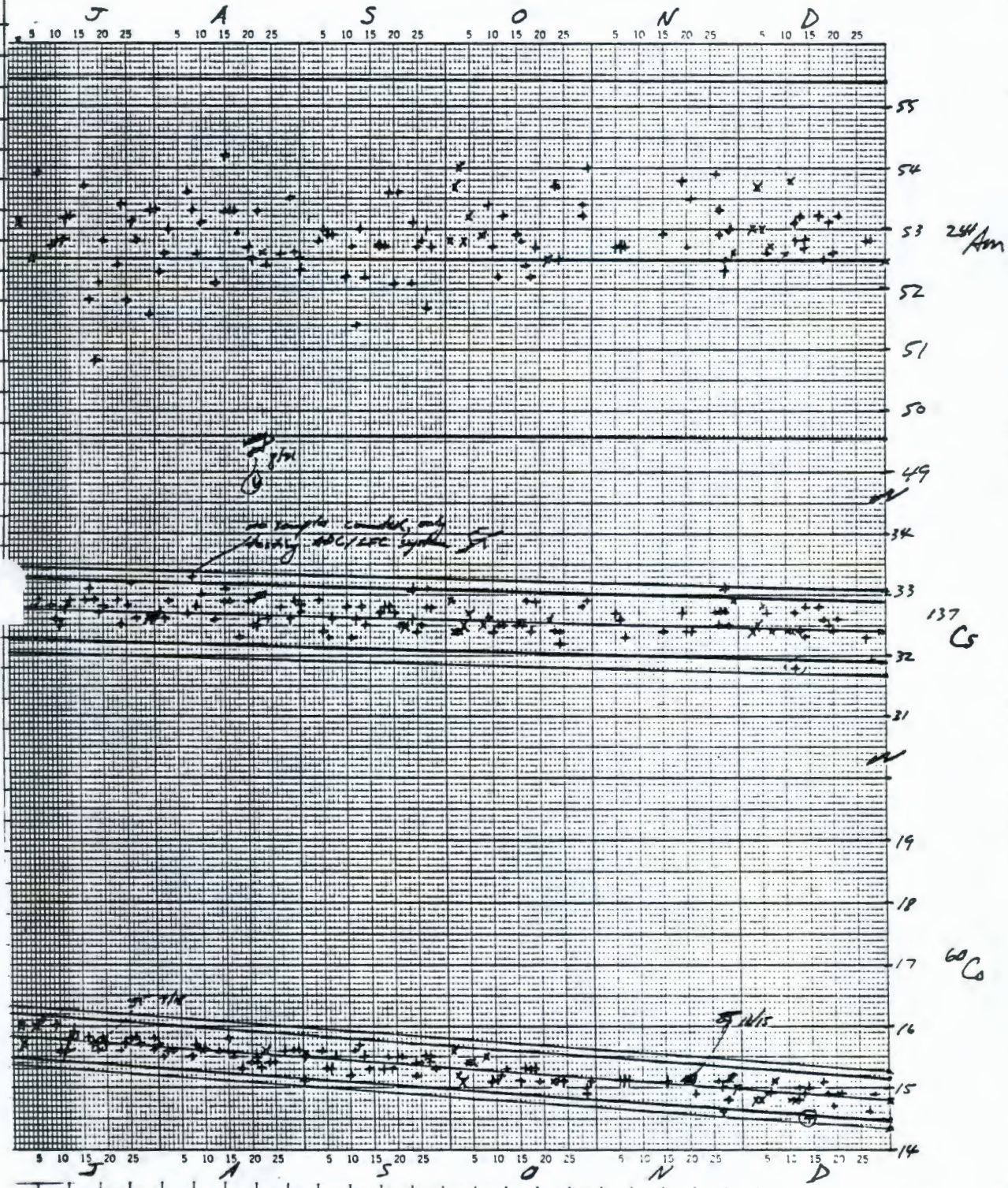
D04-177



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D04-178

September 1990 "Track Detector" Control Data
for source MS-130-1 @ T6 for 15 min. ET.

Record: Acquisition date/time, peak energy, and cps/peak

Date	Time	^{241}Am energy	^{241}Am cps	^{137}Cs energy	^{137}Cs cps	^{60}Co energy	^{60}Co cps	Initials of the analyst or data recorder
9/4	7:50	59.78	52.8	661.78	32.9	1332.66	15.6	ST
9/5	8:21	59.75	53.0	661.77	32.4	1332.66	15.3	ST
9/6	8:08	59.77	52.9	661.76	32.3	1332.62	15.3	ST
9/7	7:48	59.79	52.9	661.79	32.6	1332.64	15.5	ST
9/10	10:49	59.29	52.2	661.66	32.8	1332.95	15.2	ST / power out 9/11; redone ΔNIM-[illegible]
9/11	8:55	59.60	52.7	661.63	32.3	1332.54	15.1	ST
9/12	8:08	59.67	51.4	661.62	32.6	1332.54	15.7	ST
9/13	9:06	59.63	53.0	661.66	32.8	1332.55	15.5	ST
9/14	11:53	59.66	52.2	661.68	32.5	1332.44	15.3	ST
9/17	9:12	59.70	52.7	661.68	32.7	1332.52	15.3	ST
9/18	9:01	59.74	52.7	661.75	32.8	1332.62	15.5	ST
9/19	10:55	59.71	53.6	661.74	32.8	1332.62	15.3	ST
9/20	8:15	59.68	52.1	661.92	32.7	1333.01	15.5	ST
9/21	7:41	59.70	53.6	661.68	32.5	1332.54	15.5	ST
9/24	8:13	59.67	53.1	661.71	Baseline RC 33.1	1332.61	15.2	ST
9/24	8:46	59.67	52.1	661.72	32.6	1332.63	15.4	ST
9/25	7:14	59.67	52.7	661.72	32.4	1332.63	15.3	ST
9/26	8:34	59.68	52.8	661.71	32.5	1332.63	15.5	ST
9/27	7:18	59.59	53.0	661.68	RC-OFF 33.1	1332.65	15.5	ST
" RC	7:50	59.67	51.7	661.68	32.8	1332.66	15.4	ST
9/28	8:31	59.70	52.9	662.23	32.0	OFF 1333.65	15.1	ST
RC	9:38	59.53	52.7	661.63	32.8	1332.58	15.3	ST

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October 1990 "Track Detector" Control Data
for source MS130-1 @ T6 for 15 min LT.

Record: Acquisition date/time, peak energy, and cps/peak.

		241 Am 59.5±0.5 ~~59.5±0.4~~ ~~59.5±0.4~~ ~~59.5±0.4~~ ~~59.5±0.4~~ ~~59.5±0.4~~ ~~59.5±0.4~~ ~~59.5±0.4~~ ST		137 Cs		60 Co 1332.5 ± ~~0.75~~ ± 1.0 ST		Initials of the analyst or data recorder
DATE	Time	energy	cps	energy	cps	energy	cps	Analyst
11/1/90	0631	59.46	52.8	661.58	32.9	1332.58	15.6	AEK
11/2/90	0636	59.55	53.7	661.56	32.4	1332.50	15.2	AEK
11/3/90	0630	59.56	54.0	661.56	32.4	1332.47	15.1	AEK
11/4/90	0625	59.61	52.8	661.55	32.5	1332.46	15.4	AEK power outage GAIN ↑
11/5/90	0751	59.49	53.2	661.42	32.7	1332.25	15.4	AEK
11/8/90	0728	59.42	52.9	661.33	32.5	1332.15	15.5	AEK
10/9	0734	59.47	53.4	661.58	32.6	1332.61	15.1	ST Δ gain again.
10/10	10:24	59.43	52.7	661.67	32.4	1332.80	15.1	ST
10/11	8:23	59.44	52.2	661.63	32.5	1332.76	15.2	ST
10/12	9:28	59.41	53.2	661.57	32.5	1332.59	15.3	ST
15	8:24	59.44	52.9	661.52	32.5	1332.51	15.1	ST
16	8:09	59.40	52.8	661.59	32.5	1332.69	15.3	ST
10/17	8:32	59.40	52.4	661.57	32.9	1332.70	15.3	ST
10/18	9:18	59.40	52.2	661.56	32.4	1332.62	15.3	ST
10/19	8:03	59.41	52.7	661.61	32.5	1332.73	15.1	ST
10/22	0638	59.37	52.5	661.54	32.6	1332.63	15.1	AEK
10/23	0640	59.46	53.7	661.57	32.4	1332.68	15.1	ST/AEK
10/24	10:09	59.38	52.5	661.55	32.2	1332.64	15.1	ST/AEK

10/25 & 10/26 Cables from track detector/preamp to modules were lengthened, and placed in a non-exposed metal sheath to meet safety regs.

No analyses 10/25 - 10/28 inclusive; gain changed 10/29.

10/29	9:48	59.27	53.0	660.48	32.4	1330.50	15.1	ST before gain was reset.
"	10:41	59.38	53.2	661.68	32.8	1332.89	14.9	ST after the Δ.
BC	13:09	59.32	53.4	661.58	32.4	1332.78	15.0	ST
10/30	10:38	59.43	54.0	661.70	32.8	1332.93	15.1	ST

Project No. _____ Date of Work _____

Entered By _____ Date _____

Disclosed To and Understood By

Signed 1. _____ Date _____

2. _____ Date _____

PACIFIC NORTHWEST LABORATORY
RECEIVED
APR 15 1988
BATTELLE TECH. INFO.

BNW-52825
1-
4-15-88

RECEIVED
APR 19 1988
W.Y. MATSUMOTO

THIS BOOK IS INTENDED TO BE USED FOR RECORDING RESEARCH PERFORMED FOR THE U.S. DEPARTMENT OF ENERGY UNDER BNW'S OPERATING CONTRACT EY-76-C-06-1830

M32950

	LABORATORY RECORD BOOK NUMBER BNW- 52825	This document consists of ..... pages, copy no. .....
	TITLE (INDICATE SUBJECT CONTENT) CONTROL AND CALIBRATION DATA FOR GE ALPHA SCINTILLATION COUNTER.	
AUTHOR - DIVISION AND DEPARTMENT W.Y. MATSUMOTO	L.S. KELLOGG.	
BATTELLE NORTHWEST		
CHEMICAL SCIENCES		
PERIOD COVERED FROM 5/1/88	TO	

Route To	P. R. No.	Location	Route Date	Signature & Date
W.Y. Matsumoto	31006	325	APR 15 1988	W.Y. Matsumoto 4/21/88
L.S. KELLOGG	30706	325	MAR 29 1989	L.S. Kellogg 3-29-89

9112100973

D04-181

ENTERED BY WY MATSUMOTO 4/21/88 1

THIS LRB WILL BE USED TO RECORD ROUTINE CONTROL SOURCE COUNTING DATA AND CALIBRATION COUNTING DATA FOR THE GE ALPHA SCINTILLATION COUNTER - NORTH WALL ROOM 326.

BNW 52825 MATE WA42546

PERSONS AUTHORIZED TO MAKE ENTRIES INCLUDE:

W.Y. MATSUMOTO	W. Y. Matsumoto	4/21/88	wym
J.M. RUGGLES	J.M. Ruggles	4/28/88	JR
M.R. WEILER	M. R. Weiler	3/16/89	MRW
~~A.C. LEAE~~			
L.S. KELLOGG	L S Kellogg	9-16-88	LSK
K.J. CARSON	Kathleen J. Carson	4/5/89	KJC
T.C. MAITI	Tapas Chandra Maiti	3/23/90	TCM
J.S. SCHMITT	Jackie S Schmitt	6/4/90	JSS
J.H. KAYE	James H. Kaye	6/27/90	J.H.

PERSONS AUTHORIZED TO REVIEW ENTRIES INCLUDE:

ALL PERSONS AUTHORIZED TO MAKE ENTRIES EXCEPT FOR REVIEW OF A PERSON'S OWN ENTRIES.

W.Y. MATSUMOTO	W. Y. Matsumoto	3/20/89	wym
J.M. RUGGLES	J.M. Ruggles	5/8/89	JR
M.R. WEILER	M. R. Weiler	3/27/89	MRW
L.S. KELLOGG	L S Kellogg	3/27/89	LSK
A.E. KOZELISKY	Anne E Kozelisky	1-2-90	AEK
L.R. Greenwood	L. R. Greenwood	9-27-90	LRG

Project No. N/A Date of Work As indicated

Entered By W.Y. Matsumoto Date 4/21/88, 3/20/89

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2. _____ Date _____

D04-182

9112175074

G. E. Alpha Scintillation Counter (A.S.C.)
Daily Control Standard and Background Counts

Date	Time	Minute	Source	Total Counts	Analyst		Date	Time	Minute	Source	Total Counts
9/17/90	0637	10	VII SW	24166	HLK	HLK	10/9/90	0645	900	A	170 = 0.189
9/17/90	0707	10	VII SW	23873 RC	HLK	HLK	10/10/90	0613	10	VII W	23950
9/17/90	~~0735~~ 1434	900	A	176 = 0.196	HLK	HLK	10/10/90	0625	900	A	174 = 0.193
9/18/90	0635	10	VII W	23960	HLK	HLK	10/11/90	0625	10	VII NW	23760
9/18/90	0703	900	A	160 = 0.178	HLK	HLK	10/11/90	0641	900	A	171 = 0.190
9/19/90	0624	10	VII NW	23541	HLK	HLK	10/15/90	0632	10	VII N	23980
9/19/90	0640	10	VII NW	23838 RC	HLK	HLK	10/15/90	0728	900	A	202 = 0.224
9/19/90	0714	900	A	163 = 0.181	HLK	HLK	T 10/16/90	0624	10	VII NE	23679
9/20/90	0626	10	VII N	23686	HLK	HLK	10/16/90 RC	~~0657~~ 1953	900	A	178 = 0.198
9/20/90	0639	900	A	162 = 0.180	HLK	HLK	10/17/90	0623	10	VII E	23733
9/21/90	0648	10	VII NE	23611	HLK	HLK	10/17/90 RC	~~0624~~ 1835	900	A	194 = 0.216
9/21/90	~~0709~~ 1424	900	A	178 = 0.198	HLK	HLK	10/18/90	0625	10	VII SE	23853
9/24/90	0626	10	VII E	26383	HLK	HLK	10/18/90	0638	900	A	170 = 0.189
9/24/90	0650	900	A	176 = 0.196	HLK	HLK	10/19/90	0633	10	VII B	23711
9/25/90	0632	10	VII SE	23862	HLK	HLK	10/19/90	0720	900	A	193 = 0.215
9/25/90	0643	900	A	190 =	HLK	HLK	10/22/90	0622	10	VII SW	23498
9/26/90	0621	10	VII S	23622	HLK	HLK	10/22/90	0640	900	A	180 = 0.200
9/26/90	0636	900	A	171 = 0.190	HLK	HLK	T 10/23/90	0633	10	VII W	23991
9/27/90	0637	10	VII SW	24002	HLK	HLK	10/23/90	0648	900	A	167 = 0.186
9/27/90	0706	900	A	171 = 0.190	HLK	[illegible]	10/24/90	0621	10	VII NW	23912
9/28/90	0628	10	VII W	23844	HLK	[illegible]	10/24/90	0634	900	A	155 = 0.172
9/28/90	0642	900	A	185 = .206	HLK	HLK	10/25/90	0630	10	VII N	23796
10/1/90	0727	10	VII NW	23946	[illegible]	HLK	10/25/90 TSS	~~0725~~ 1800	900	A	152 = 0.169
10/1/90	0849	900	A	194 = .216	[illegible]		10/26/90	0900	10	VII NE	23726
10/2/90	0637	10	VII ~~SW~~ N	23666	[illegible]	HLK	10/26/90	1440	900	A	189 = ~~23768~~ 0.210 RC 10-29-90
10/2/90	0719	900	A	191 = 0.212	[illegible]	HLK	10/29/90	0722	10	VII E	23908
10/3/90	0625	10	VII NE	23878	HLK	HLK	10/29/90	~~0757~~ 1805	900	A	193 = 0.213
10/3/90	0641	900	A	173 = 0.192	HLK	JSS	T 10/30/90	0947	10	VII SW	23924
10/4/90	0623	10	VII E	24096	[illegible]	HLK	10/30/90	1525	900	A	163 = 0.181
10/4/90	0634	10	VII E	RC 23759	[illegible]	HLK	10/31/90	0719	10	VII SE	24077
10/4/90	0652	900	A	Power outage	[illegible]	HLK	10/31/90	0734	900	A	179 = .198
10/5/90	0602	10	VII SE	23978	[illegible]	HLK	11/1/90	0733	10	VII S	23634
10/5/90	0618	900	A	170 = 0.189	[illegible]	HLK	11/1/90	0759	900	A	195 = 0.217
10/8/90	0633	10	VII S	24031	HLK	HLK	11/2/90	0726	10	VII SW	23991
10/8/90	0703	900	A	170 = 0.189	HLK	HLK	11/2/90	0741	900	A	171 = 0.190
10/9/90	0632	10	VII SW	23640	HLK	HLK	11/5/90	0727	10	VII W	23777

Project No. _____ Date of Work _____

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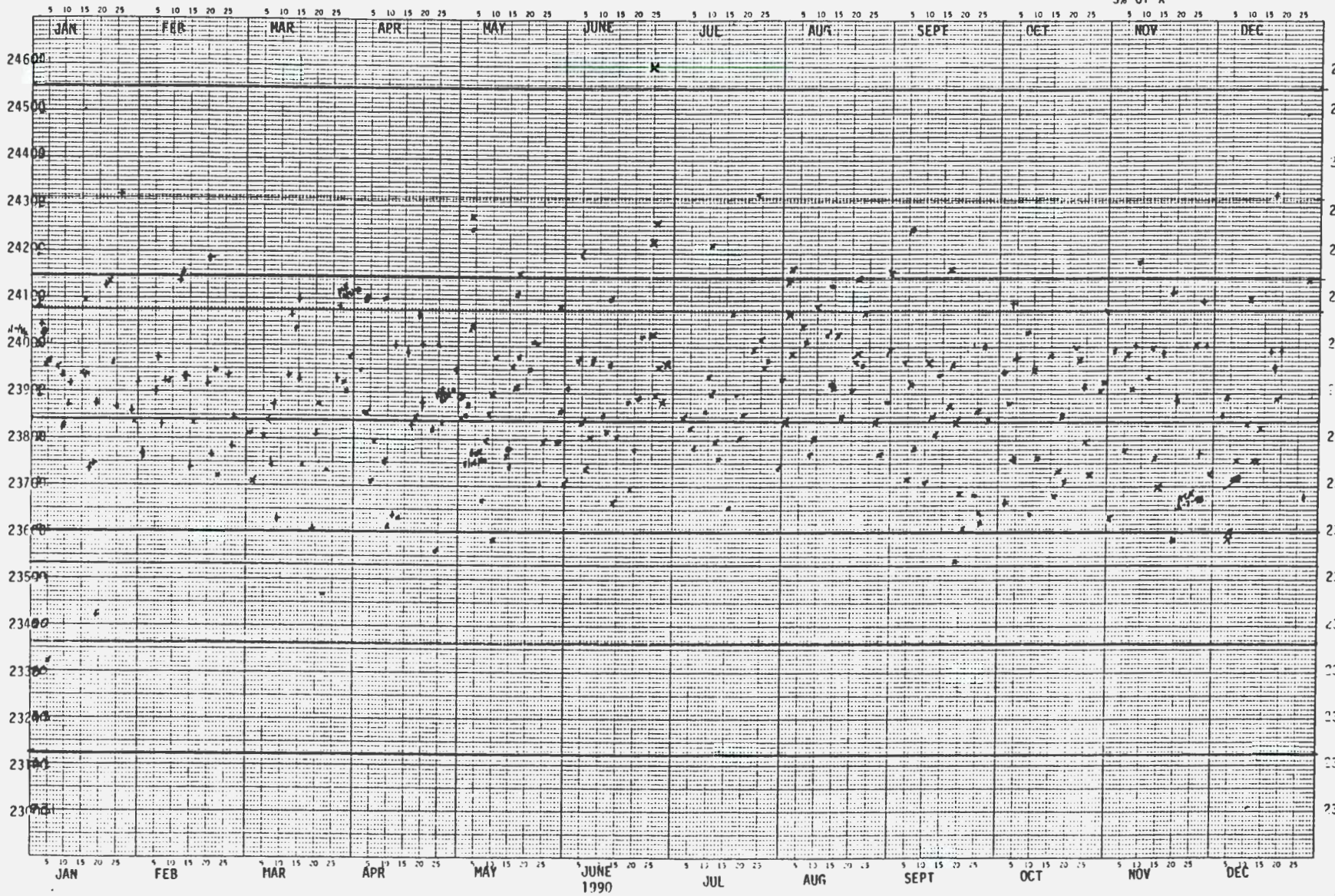
9112150975

GE ALPHA SCINTILLATION CONTROL CHART

239PU 7/8 " PLATE

— $\bar{X}$
— 95% Confidence Level
— 1% of $\bar{X}$
— 2% of $\bar{X}$
— 3% of $\bar{X}$

5 p. 15



07.48
17.83
78.75
17.15
55.55
4-89
10.06
07.48
17.54
78.46
16.86
55.26
1-90
YEARS
39.38
07.47
46.85
77.77
16.17
54.56
31-90
YEARS

D04-184

BNW 548625 p 44

D5 - ALPHA ANALYSIS

D05–001

TOTAL ALPHA

PRIMARY DATA PACKAGE

D05–002

SST

TOTAL ALPHA DATA COVER SHEET

Sample Number: NO ANALYSES REQUESTED FOR TOTAL ALPHA

Procedure: Method-A Cation Column, HTA-4-22 (+329 ship)

Pipet Calibration LRB#: 52327

Equipment (M&TE#): PAC #1 WM00579, PAC #2 WM00582, SAC #1 WA82314, #2 WA82315, #3 WA82316, #4 WA82317, #5 WA82318, #6 WA82319, #7 WA42546

System Calibration LRB#: PACs HEDL-N-3219
SACs HEDL-N-3430
HEDL-N-3431
BNW 52343

Control Data LRB#: PACs BNW 52341
SACs BNW 52343
BNW 52825

SST

ALPHA ENERGY ANALYSIS DATA COVER SHEET

Sample Number: 90-3617-A-1/2/3
90-3619-A-1/2/3
90-4178-A-1/2/3
90-4180-C-1/2/5

Procedure: NP-237, HTA-4-14
AM-241, HTA-4-35
PU-239+240, HTA-4-15

Pipet Calibration LRB#: BNW 52327

Equipment (M&TE#): PAC #1 WM00579, PAC #2 WM00582, SAC #1 WA82314, #2 WA82315, #3 WA82316, #4 WA82317, #5 WA82318, #6 WA82319, #7 WA42546, #8 WA42546
LUDLUM WA94744

System Calibration LRB#: PACs HEDL-N-3219
SACs HEDL-N-3430
HEDL-N-3431
BNW 52343

Control Data LRB#: PACs BNW 52341
SACs BNW 52342
BNW 52343

TOTAL ALPHA

ALPHA ENERGY ANALYSIS

(Pu-238, 239/240

Np-237, Am-241)

SUMMARY DATA REPORTS

D05-005

TOTAL ALPHA ANALYSIS

Proportional Alpha Counters (PAC) or Zinc Sulfide Scintillation Alpha Counters (SAC). A radiochemistry ANALYTICAL REPORT card accompanies each sample. This card has a card serial number, the date the sample was received into the radiochemistry laboratory, work package number, a radiochemistry lab serial number, customer identification number, the 325A Hot Cell sample identification number, the constituent requested (i.e., total alpha), and the results. The balance ID number, BNW laboratory record book (LRB) number that holds the pipet calibration data, and the M&TE number of the alpha counting system are noted in the "Serial No." column. This number cross references to the LRB that contains the calibration data and the daily control data. A copy of the pipet calibration is provided under separate cover. The procedure number used to perform the Total Alpha analysis is noted in the "Constituent" column.

The volume of the aliquot taken from the sample solution (the dissolved fusion or the water leach) is written under the "SERIAL NUMBER" of the card on the right side of the card. This volume is used in the separation procedure which is a cation column procedure. The second aliquot (if any) is the volume of eluate and the third volume is the portion of the eluate evaporated on the stainless steel disk (or dish) that is then alpha counted. If only one volume appears then that volume is evaporated firectly on the disk or dish and then alpha counted. The mass of sample sludge aliquot and the volume of solution used in the dissolution of the fusion or the water leach is written below the sample aliquot volumes.

On the bottom half of the card under "DATA" is the hand calculation of the data. This follows from the procedure. The corrected count rate, sample volume, counter efficiency, sample weight and volume of solution of fusion or water leach are incorporated. Final results are given in disintegrations per gram.

On the back side of the card (xeroxed on the bottom half of page) is the counting raw data. The counter number and efficiency, date counted, total counts, time counted, calculated count rate, background counts per minute and the calculated corrected count rate are listed. If the sample was counted a second time the counter number, efficiency for that counter and the M&TE number for that counter are written above the header "ALPHA COUNTING DATA".

TOTAL ALPHA DATA

Customer No.	Tot alpha dpm/g	+/- % error
Segment 3		
90-3617-A-1	Not Requested	
90-3617-A-2	"	
90-3617-A-3	"	
Segment 5		
90-3619-A-1	Not Requested	
90-3619-A-2	"	
90-3619-A-3	"	
Composite		
90-4178-A-1	Request Cancelled	
90-4178-A-2	"	
90-4178-A-3	"	
90-4180-C-1	"	
90-4180-C-2	"	
90-4180-C-5	"	

ALPHA ENERGY ANALYSIS OF Pu and Np

Customer No.	Pu 239&240 dpm/g	+/- % error	Pu 238 dpm/g	+/- % error	Np 237 dpm/g	+/- % error
Segment 3						
90-3617-A-1	2.22E+05	5.6	1.80E+04	10.9	<70	
90-3617-A-2	2.12E+05	4.2	1.04E+04	12.8	<150	
90-3617-A-3	9.28E+02	8.7	1.67E+03	8.0	<79	
Segment 5						
90-3619-A-1	2.10E+05	5.9	7.83E+03	16.0	<87	
90-3619-A-2	2.68E+05	5.3	2.56E+04	10.4	<66	
90-3619-A-3	4.84E+03	8.0	6.24E+03	8.0	<58	
Composite						
90-4178-A-1	2.55E+05	5.0	1.46E+04	7.0	<59	
90-4178-A-2	2.80E+05	4.0	1.66E+04	7.0	<75	
90-4178-A-3	9.98E+02	8.0	2.23E+03	7.0	<86	
90-4180-C-1	3.45E+03	5.9	8.11E+01	10.0	<16	
90-4180-C-2	3.37E+03	5.9	1.01E+02	10.4	<15	
90-4180-C-5	2.41E+01	30.3	4.51E+01	27.6	<16	

ALPHA ENERGY ANALYSIS OF Am AND Cm

Customer No.	Am 241 dpm/g	+/- % error	Cm-243&244 dpm/g	+/- % error
Segment 3				
90-3617-A-1	2.16E+04	8.6	1.27E+04	13.1
90-3617-A-2	1.63E+04	8.3	5.02E+03	11.2
90-3617-A-3	3.74E+03	15.0	3.24E+03	15.0
Segment 5				
90-3619-A-1	1.88E+04	11.0	5.14E+03	15.6
90-3619-A-2	1.53E+04	11.5	1.69E+03	23.8
90-3619-A-3	1.09E+04	10.9	9.17E+03	10.9
Composite				
90-4178-A-1	2.91E+04	9.1	1.27E+03	12.2
90-4178-A-2	4.53E+04	8.1	5.43E+03	9.4
90-4178-A-3	1.63E+04	11	1.04E+04	11
90-4180-C-1	424	19.5		
90-4180-C-2	6.13	15		
90-4180-C-5	<51.3			

TOTAL ALPHA

ANALYTICAL REPORT CARDS

D05-010

ANALYTICAL REPORT 100307

Customer: SST
Date Received: 9-5-90
Work Order No: M620,38

ID & A.L.O.: 590 -90

Description: 90-4180-C-1
TK1168
Core 16
Segment COM

Analysis: Total alpha
Procedures: MTA-4-22 (+329 Snip)

2.0676g + 194.8643g

12/31/90

Concelled / Jones
Pu ~ 24 dpm/g
per NO NP
Am ~ 12 dpm/g

Results

Calculations _____ Date _____

Reviewed _____ Date _____

Counting Information

By _____

M. & T.E.	WWX5	W42546	WA
Log Book:	BWW62347 p _	BWW62825 p _	BWW62343 p _
Instrument	P.A.C. - _	G.E. ASC.	Ludlum - _
Eff. Factor	0.50	0.37927	0.4
Date	__/__/__	__/__/__	__/__/__
Total Counts			
Minutes			
Counts/Minute			
Background			
Corrected C/M			

ANALYTICAL REPORT 100319

Customer: SST
Date Received: 9-5-90
Work Order No: M620,38

ID & A.L.O.: 591 -90

Description: 90-4180-C-2
TK1108
Core 16
Segment COM

Analysis: Total alpha
Procedures: MTA-4-22 (+329 Snip)

2.1976g + 196.7726g

12/31/90

Concelled / Jones
Pu ~ 27 dpm/g
per NO NP
Am ~ 20 dpm/g

Results

Calculations _____ Date _____

Reviewed _____ Date _____

Counting Information

By _____

M. & T.E.	WWX5	W42546	WA
Log Book:	BWW62347 p _	BWW62825 p _	BWW62343 p _
Instrument	P.A.C. - _	G.E. ASC.	Ludlum - _
Eff. Factor	0.50	0.37927	0.4
Date	__/__/__	__/__/__	__/__/__
Total Counts			
Minutes			
Counts/Minute			
Background			
Corrected C/M			

ANALYTICAL REPORT 100332

Customer: SST
Date Received: 9-5-90
Work Order No: M620,38

ID & A.L.O.: 593 -90

Description: 90-4180-C-5
TK1108
Core 16
Segment COM

Analysis: Total alpha
Procedures: MTA-4-22 (+329 Snip)

197.5712g

12/31/90

Concelled / Jones
Pu ~ .24 dpm/g

Results

Calculations _____ Date _____

Reviewed _____ Date _____

Counting Information

By _____

M. & T.E.	WWX5	W42546	WA
Log Book:	BWW62347 p _	BWW62825 p _	BWW62343 p _
Instrument	P.A.C. - _	G.E. ASC.	Ludlum - _
Eff. Factor	0.50	0.37927	0.4
Date	__/__/__	__/__/__	__/__/__
Total Counts			
Minutes			
Counts/Minute			
Background			
Corrected C/M			

ALPHA ENERGY ANALYSIS

Proportional Alpha Counters (PAC) or Zinc Sulfide Scintillation Alpha Counters (SAC). A radiochemistry ANALYTICAL REPORT card accompanies each sample. This card has a card serial number, the date the sample was received into the radiochemistry laboratory, work package number, a radiochemistry lab serial number, customer identification number, the 325A Hot Cell sample identification number, the constituent requested (i.e., Am-241, Pu-239 & 240 or Np-237), and the results. The balance ID number, BNW laboratory record book (LRB) number that holds the pipet calibration data, and the M&TE number of the alpha counting system are noted in the "Serial No." column. This number cross references to the LRB that contains the calibration data and the daily control data. A copy of the pipet calibration is provided under separate cover. The procedure number used to perform the Total Alpha analysis is noted in the "Constituent" column.

The volume of the aliquot taken from the sample solution (the dissolved fusion or the water leach) is written under the "SERIAL NUMBER" of the card on the right side of the card. This volume is used in the separation procedure which is an ion exchange column and/or a solvent extraction procedure. The second aliquot is the volume of eluate or solvent and the third volume is the portion of the eluate or solvent evaporated on the stainless steel disk that is then alpha counted. After total alpha counting the disk in then put on the AEA system and relative abundances of the alpha peaks are calculated. The mass of sample sludge aliquot and the volume of solution used in the dissolution of the fusion or the water leach is written below the sample aliquot volumes.

On the bottom half of the card under "DATA" is the hand calculation of the data. This follows from the procedure. The corrected count rate, sample volume, counter efficiency, analysts recovery, fraction of isotope, sample weight and volume of solution of fusion or water leach are incorporated. Final results are given in disintegrations per gram.

On the back side of the card (xeroxed on the bottom half of page) is the counting raw data. The counter number and efficiency, date counted, total counts, time counted, calculated count rate, background counts per minute and the calculated corrected count rate are listed. If the sample was counted a second time the counter number, efficiency for that counter and the M&TE number for that counter are written above the header "ALPHA COUNTING DATA".

ANALYTICAL REPORT

100060

Customer: 201
Date Received: 8-21-90
Work Order No: 9[illegible]

ID & Number: 542-90

Descriptions: 90-3617-A-1
Tailing
Core 1a
Segment 3

Analysis: Ra-241
Procedure: HIA-4-35

Results

A_{241} = 2.16E+4 ± 96%

C_{241} = 2.63E+4 ± 131%

TI-587-102

0.5ml + 5ml — [0.9972 ml] BNW 53645 P.57 — 1000λ → 500λ — [0.4971 ml] — 100λ — [0.0995 ml] BNW 53645 P.61

Calculations

$$\frac{16.50}{0.5062}\left(\frac{0.4971\ (250)}{(0.0995)(0.9972)(0.5321)}\right) = 7.6727\ E{+}4$$

Calculations: [signature] Date 10-15-90

Reviewed: [signature] Date 10-16-90

Counting Information

By [signature]

N. & I.E.				
Log Book				
Instrument	P.A.L. - 1			
Eff. Factor	0.5062	0.5321		
Date	10/2/90	/ /	/ /	/ /
Total Counts	2797			
Minutes				
Counts/Minute	17.96			
Background				
Corrected C/M	12.50			

(14) 542-90 90-3617-A-1 10/31/90

TN-1750 P H A
LI= 64585 A1

64585 64585	0	2500	0	512	34816	0	0	
0	0	0	0	0	0	0	0	2
8	1	0	4	1	3	3	1	2
16	3	3	1	1	3	0	1	3
24	3	3	2	2	3	2	1	1
32	2	3	3	2	3	4	1	2
40	3	2	3	3	4	1	2	0
48	5	4	1	6	0	2	2	3
56	4	2	3	2	3	1	3	[illegible]
[illegible]	4	4	4	0	2	3	2	4
72	4	3	1	0	3	1	4	4
80	5	4	5	2	5	5	4	2
88	5	4	11	8	3	[illegible]	5	0
96	1	5	3	5	7	8	[illegible]	4
104	0	0	0	4	8	3	3	8
112	10	13	0	5	8	7	13	14
120	10	17	14	13	10	14	10	9
128	7	9	20	14	19	18	[illegible]	[illegible]
136	17	17	14	11	20	19	17	22
144	11	7	31	23	22	24	25	17
152	25	17	15	16	26	33	33	27
160	24	35	32	25	24	27	34	43
168	36	38	29	41	37	42	[illegible]	33
176	42	35	47	64	54	52	54	58
184	78	82	67	69	78	69	85	81
192	102	96	96	127	120	139	138	161
200	187	221	226	222	237	296	[illegible]	[illegible]
208	188	81	43	39	42	42	40	43
216	41	50	35	41	34	51	51	53
224	64	70	68	63	79	82	95	92
232	191	140	123	167	133	171	219	141
240	16	47	36	32	14	17	[illegible]	19
248	33	24	18	22	24	33	28	26
256	34	25	42	43	49	60	50	77
264	78	80	101	76	69	27	2	1
272	0	0	0	0	1	1	0	[illegible]
[illegible]	0	1	0	0	1	0	1	1
288	0	0	1	1	0	1	1	0
296	0	0	0	0	0	0	0	0
304	0	0	0	0	0	0	0	0
312	0	0	0	0	0	0	0	0
320	0	0	0	0	0	0	0	0
328	0	0	0	0	0	0	0	0
336	0	0	0	0	0	0	0	0
344	0	0	0	0	0	0	0	0
[illegible]	0	0	0	0	0	0	0	0

1949 − 114 − 8 = 1827 ± .11

1206 − 44 − 6 = 1156 ± .123 ± .118

591 − 0 − 0 = 591 ± .45 ± .42

3571

$\frac{A^{241}}{A^{241+4}}$ = .049

Adj A^{241} = 1156 − (.049)(1827) = 1089 ± .282

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D05-013

9111210989

ANALYTICAL REPORT 100072

Customer: SSI
Date Received: 6-21-90
Work Order No: M620-48

ID ~~L-A-L-D-A~~ 543-90

Description: 90-3617-4-2
TK1108
Core 1a
Segment 3

Analysis: Am-241
Procedure: HIA-4-35

1000λ → 500λ → 100λ
[0.9972 ml] [0.4971 ml] 0.0995 ml
BNW 53645 P.59 BNW 53645 P.61

10/24/90

Calculations

$$\frac{9.75}{0.5051}\left(\frac{(0.4971)(250)}{(0.0995)(0.9972)(0.5295)}\right) = 4.5660\ E+4\ d/m/g$$

Calculations [signature] Date 10-15-90

Reviewed R. Rainington Date 1-16-91

Counting Information

By [signature]

M. & T.E.			
Log book			
Instrument	P.H.C. - 2	G.E. ASC.	Lucitum -
Eff. Factor	0.5001	0.3721	0.4
Date	10/31/90	/ /	/ /
Total Counts	1137		
Minutes	100		
Counts/Minute	11.37		
Background	7.62		
Corrected C/M	4.75		

TS-557-102

(12) 543-90 90-3617-4-2 10/31/90

Am

IN-1750 P H A
LT= 64585 RT= 64585
64585 64585 0 1536 0 512 34816 0

	0	0	0	0	0	0	1	0
8	2	2	1	2	1	0	0	0
16	0	1	0	1	2	0	0	0
24	0	1	1	0	0	0	2	1
32	0	1	0	0	1	1	0	1
40	0	1	2	1	2	5	1	2
48	1	1	1	1	1	3	1	1
56	1	2	2	4	0	1	2	1
64	2	1	0	4	0	1	0	3
[illegible]	2	1	1	1	1	3	1	1
80	1	2	0	4	2	4	2	3
88	4	5	0	1	3	4	2	1
96	1	4	5	2	3	4	2	4
104	0	3	5	4	1	3	4	3
112	7	4	4	5	2	3	5	4
120	0	6	3	0	3	5	3	4
128	6	7	6	8	8	7	8	11
136	8	8	5	5	13	12	[illegible]	0
144	10	5	4	12	9	7	12	7
152	10	20	12	5	11	14	11	11
160	15	20	11	17	16	21	17	16
168	17	22	13	28	24	22	25	27
176	21	28	27	34	28	32	28	27
184	30	31	24	25	37	47	25	53
192	45	49	52	59	66	83	77	98
200	107	134	151	158	183	189	198	210
208	162	68	32	19	13	8	7	15
216	20	28	20	20	28	23	24	34
224	47	29	44	49	51	49	70	67
232	85	91	101	133	141	189	156	133
240	57	43	15	12	6	7	5	6
248	5	7	6	6	3	11	8	11
256	11	13	10	14	19	25	37	34
264	39	48	50	37	21	1	0	0
272	0	0	1	0	0	0	0	0
280	0	0	0	0			0	0
288	0	0	0	0	0	0	1	0
296	0	0	0	0	0	0	0	0
304	0	0	0	0	0	0	0	1
312	0	0	0					

$\frac{Pu^{239}}{Pu^{239+240}} = .081$

1385 − 31 − 3 = 1351 .509

1029 − 16 − 2 = 1011.0 .331 ±6.2% .199 ±6.2%

291 − 0 0 = 291

2653

Pu^{239} Adjusted Am^{241} = 1011 − (1351)(.049) = 945 = .1356

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D05-014

ANALYTICAL REPORT 100084

Customer: 331
Date Received: 8-21-90
Work Order No: H020 43

ID: 544-90

Description: 90-3617-A-3
Tailing
Core 10
Segment 3

Analysis: HW-241
Procedure: HW-4-35

Results

Am^{241} = 3.74 E+3 dpm/gram wet ± 15%

Cm^{244} = 3.28 E+3 dpm/gram wet ± 15%

TF-357-10L

based on one wt of sample based

Cont. - [0.9974 ml] BNW 53645 P.57 (1000λ) [0.4971 ml] (500λ) 0.0995 ml] (100λ) BNW 53645 P.61

Calculations

$\frac{1.246}{0.4209}\left(\frac{0.4971\ (250)}{(0.0995)(0.9972)}\right) = 3.7098\ E+3$ d/m/aliquot

÷ .5208 = 6995.3 E+3 dpm/gram wet

× .556 = 3.9441 E+3 ± 15%

3.2812 E+3 ± 15%

Calculations Anna L Kopitsky / Calloway Date 10-15-90 11/15/90

Reviewed Date

Counting Information

By John Ruggles

M. & T.E.	HW40	HW2546	HW 2345
Log Book	HW40/341	HW5/825	HW2345 P.67
Instrument	P.B.C.	G.E. ASC.	Ludlum - L
Eff. Factor	0.50	0.37921	0.4209
Date	/ /	/ /	10/3/90
Total Counts			700
Minutes			500
Counts/Minute			1.458
Background			.273
Corrected C/M			1.246

(50)

(4) 11/1/90 90-3617-A-3

544-90

KT= 1750 KT= 146574

1750 1750	2	0	0	312	34015	0	0	
0	0	0	0	0	0	0	0	0
8	0	0	0	0	0	0	0	0
16	1	0	0	2	0	0	0	0
24	0	1	3	0	0	0	0	0
32	0	0	1	0	1	0	0	0
40	0	1	0	[illegible]	[illegible]	3	0	0
48	3	3	0	1	0	0	1	1
56	3	0	1	0	1	1	3	3
64	0	0	1	2	0	0	0	0
72	0	0	2	3	0	0	1	0
80	0	1	0	1	1	2	1	2
88	0	1	1	2	1	0	0	1
96	2	1	3	1	1	2	1	1
104	1	3	4	3	3	1	3	0
112			2	1	2	0	1	1
120	2	1	4	1	3	3	3	1
128	3	2	4	1	3	2	3	3
136	1	3	4	3	2	3	4	3
144	2	3	0	3	2	3	4	3
152	3	5	3	5	4	3	3	4
160	10	8	8	3	3	2	6	5
168	5	9	3	3	7	6	6	2
176	8	2	2	4	6	9	3	0
184	8	9	6	12	9	13	7	9
192	10	9	6	11	18	10	14	7
200	13	17	20	13	14	14	18	21
208	13	12	8	16	9	14	13	14
216	14	13	21	16	[illegible]	10	20	18
224	26	19	24	17	19	30	43	30
232	49	49	47	49	53	41	18	13
240	11	6	11	7	9	5	5	8
248	6	9	7	7	[illegible]	11	14	17
256	23	22	20	35	39	42	30	35
264	32	21	3	0	0	0	0	0
272	0	0	1	0	1	0	0	0
280	0	0	0	0	0	1	0	0
288	0	1	0	0	0	0	0	0
296	0	0	0	0	0	0	0	0
304	0	0	0	0	0	0	0	0
312	0	0	0	0	0	0	0	0
320	0	0			0	0	0	0
328	0	0	0	0	0	0	0	0
336	0	0	0	0	0	0	0	0
344	0	0	0	0	0	0	0	0
352	0	0	0	0	0	0	0	0
360	0	0	0	0	0			

$\frac{Pu^{239}}{Pu^{239+240}}$ = 1.258

367 - 21 - 7 = 337 .556 .563 ± 11.6%

272 - 0 0 = 272 .447 ± 11.6?

609
609

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D05-015

RADIOCHEMICAL REPORT

100098

Customer: SSI
Date Received: 8-21-90
Date Work Rec'd: 8-21-90

ID & A.L.Q.: 547-90

Description: 90-3619-41
INLOW
Core 10
Segment 41

Analysis Am-241
Procedure: HW-4-30

Results

Am^{241} = 4.99 E+4 dpm/unit wt
± 12%

$Cm^{243+244}$ = 5.14 E+3 dpm/unit wt
± 15%

TS-9.5-103

Calculations

$\frac{8.15}{0.5062}\left(\frac{0.4971\ (250)}{(0.0995)(0.9972)(0.5017)}\right) = 4.0195\ E+4$ dpm/g

Am^{241} = .460 = 1.9911 E+4 ± 11% dpm/g wet wt

$Cm^{243+244}$ = .128 = 5.1499 E+3 ± 16% dpm/g

Calculations Nancy Ethridge / Co Harvey Date 8-15-90 / 11/16/90

Reviewed R. Barrington Date 1-21-91

Counted by Jeni Ruggles

N.A.A. I.D.				
Log Book				
Instrument				
Eff. Factor				
Date				
Total Counts				
Minutes				
Counts/Minute				
Background				
Corrected C/M				

10 547-90 90-3619-41

Am

0	0	0	0					
8	1	0	3					
16	1	3	1					
24	0	2	1					
32	0	1	1					
40	2	2	0					
48	0	1	1	3				
		4	2	2				
64	0	0	1	1				
72	1	1	3	1				
80	3	0	2	1				
88	1	3	2	0			2	4
96	2	2	2	2		3	2	1
104	1	2	3	2	3	5	1	2
112	2	3	8	4	3	3	3	8
120	5	3	4	3	3	5	.	3
128	4	6	5	6	6	8	11	6
136	8	9	8	8	9	14	6	11
144	10	6	15	14	12	8	6	8
152	14	17	10	7	10	7	12	10
160	11	13	22	13	8	14	26	14
168	19	11	20	22	14	13	20	19
176	19	19	26	23	25	25	15	11
184	22	28	30	35	25	47	33	41
192	43	40			57	42	59	66
200	87	73	73	73	77	115	96	73
208	60	30	28	28	21	19	29	25
216	28	22	27	28	22	31	28	36
224	33	30	43	37	33	68	71	73
232	86	100	123	125	132	137	74	49
240	25	15	9	6	18	7	5	9
248	8	9	5	11	5	10	7	8
256	15	15	22	19	23	32	30	18
264			18	7	0	0	0	0
272	0	0	1	0	0	1	0	0
280	0	0	0	0	0	0	0	0
288	0	0	0	0	1	0	0	0
296	0	0	0	0	0	0	0	0
304	0	1	0	0	0	0	0	0
312	0	0	0	0	0	0	0	0
320	0	0	0	0	0	0	0	0
328	0	0	0	0	0	0	0	0
	0	0	0	0				

241 Am
243+244 Cm

$\frac{Am^{241}}{Am^{243+244}}$ = .037

759 - 61 - 4 = ~~692~~ 694

954 - 28 - 6 = ~~820~~ 820 / ~~126~~ 126
~~.476~~ .470 ± 2.0%

- 224 - 0 - 0 = 224
.128 ± 12.1%

~~1744~~ 1738

Am^{241} = 794 - (694)(.037) = 794 - (694)(.037) = 102
= 794 - (694)(.037) = 102
.460

0.957

ANALYTICAL REPORT

Customer: SSI
Date Received: 8-21-90
Work Order No: 90-548

ID & A.L.I.D.: 548-90

Description: 90-3619-A-2
Tallow
Core 1a
Segment .85 cm
11/23/91

Analysis: Am-241
Procedure: HIA-4-35

Results

Am^{241} = 1.53E-09 dpm/g
± 16%

$Cm^{243+244}$ = 1.69E-08 dpm/g
± 22.7%

TI-357-103

Calculations

$\frac{7.9}{0.5051}\left(\frac{0.4971\ (250)}{(0.0995)(0.4971)(0.4361)}\right) = 3.2552\ E+4$ dpm/g

Am^{241} K = 1.82E+04 dpm/g

Calculations: Anne E. Hopkins, Co-Worker Date 10-15-90 / 10/31/90

Reviewed: R. Livingston Date 10-31-90

Counting Information

By: John Ruyle

M. & I.E.	MA0545	MA2546		
Log book	MA0541 p 41	MA0545 p	MA2546 p	
Instrument	P.H.C. - 21	P.H.C.		
Eff. factor	0.3051	0.3421		
Date	10/31/90	/ /	/ /	/ /
Total Counts	889			
Minutes	100			
Counts/Minute	8.89			
Background	1.39			
Corrected C/M	7.5			

H 548-90 90-3619-A-2 10/31/90

Am

IN-1750 P M A
LI= 64585 KI= 64585
64585 64585 0 1024 0 512 34816 0 0

0	0	0	0	0	0	0	0	0
8	0	0	2	0	1	1	0	0
16	0	0	0	0	0	0	0	0
24	0	1	4	0	0	2	0	0
32	0	1	0	0	4	0	0	1
40	3	0	0	0	0	1	2	0
48	1	.		2	2	1	0	2
56	1	0	1	3	1	1	2	2
64	2	0	2	0	0	4	1	4
72	2	0	2	1	0	3	0	1
80	4	1	2	1	1	4	4	0
88	3	3	1	1	2	1	1	2
96	2	2	1	8	7	7	2	3
104	2	2	2	7	3	1	4	4
112	4	6	4	4	5	2	2	3
.		4	1	4	2	4	3	7
128	3	6	5	6	3	4	5	11
136	7	4	8	4	5	2	8	6
144	15	6	15	10	5	15	7	9
152	5	10	5	12	10	15	8	15
160	10	15	14	17	12	10	13	18
168	13	25	13	19	18	15	19	19
176	19	23	19	30	23	28	21	34
184	20	29	37	36	30	35	[illegible]	[illegible]
192	42	42	44	49	50	62	53	65
200	84	87	88	86	101	120	104	93
208	42	27	17	31	19	36	23	24
216	30	33	45	35	27	41	41	40
224	35	43	44	46	63	72	67	69
232	90	123	133	114	110	68	44	27
240	10	8	5	4	5	1	2	1
248	3	7	3	1	2	3	2	3
256	2	3	11	7	10	3	1	8
264	8	2	0	0	0	0	0	0
272	0	0	0	0	0	0	0	0
280	0	0	0	0	0	0	0	0
288	0	0	0	0	0	0	0	0
296	0	0	0	0	0	0	0	0
304	0	0	0	0	0	0	0	0
312	0	0	0	0	0	0	0	

$\frac{Am^{241}}{Am^{241+243}}$ = .065

735 - 65 - 8 = 662 / .937

780 - 4 - 3 = 773 / .511 ± 7.1%

79 - 0 - 0 = 79 / .052 ± 22%

1514

Am^{241} adj for Am^{239}
= 773 - (.065)(662) = 710 / .469

D05-017

100454

250 ml

ANALYTICAL REPORT

1000λ → 500λ — 100λ

[0.9981 ml] [0.4964 ml 0.0999 ml]

BNW 53645 P.63 BNW 53645 P.65

Customer: SST
Date Received: 8-21-90
Work Order No: M620948

ID & A.L.O.: 549-90

Description: 90-3619-A-3
TK1108
Core 10
Segment 2.5

Analysis: Am-241
Procedure: HTA-4-35

Calculations

$\frac{3.517}{.4132}$ $\frac{(0.4964)(250)}{(0.9981)(0.0999)(0.5239)}$

.582 Am241 / .458 Cm244 = 1.0356E+4 ± 100% 4/2 wet wt

= 9.1735E+3 ± 100% 4/2 wet wt

Results

Am^{241} = 1.07E+4 ± 100% 4/2 wet wt

$Cm^{243+244}$ = 9.17E+3 ± 100% 4/2 wet wt

TE-257-103

based on one wt of samples here

Calculations E. C. Harvey Date 11/13/90

Reviewed R. Barrington Date 1-21-91

Counting Information

By Anne E. Hylinsky

R. & T.E.	M6005	M642546	M592318
Log Book:	BNW0234	BNW0202	BNW0243
Instrument	P.A.C. -	G.E. ASC.	Ludlum - 5
Eff. Factor	0.50	0.3727	0.4132
Date	/ /	/ /	10/15/90
Total Counts			1436
Minutes			250
Counts/Minute			5.744
Background			2.230
Corrected C/M			3.517

(13) ÷ 5.2

(13) 11.1.90 90-3619-A-3

549-90

TN-1750 P H A
LT= 10605 RT= /0131

1	2048	0	512	34816	0	0		
0	0	0	0	0	0	0	0	2
8	0	0	0	0	0	0	1	0
16	0	0	1	1	0	0	0	0
24	0	1	2	0	1	0	0	0
32	0	0	0	0	1	1	0	0
40	0	0	0	1	0	1	0	1
48	0	1	0	1	1	0	1	0
56	1	0	1	0	0	1	0	1
64	0	2	0	0	0	0	1	1
72	2	0	0	0	0	0	1	2
80	1	1	0	1	3	1	1	0
88	0	0	0	0	1	1	1	1
96	1	0	1	2	0	1	1	2
104	[illegible]	[illegible]	1	2	2	1	1	0
112	3	1	0	1	1	0	2	1
120	3	2	2	0	1	3	4	0
128	1	1	4	5	1	3	1	1
136	4	[illegible]	[illegible]	3	3	1	3	1
144	1	4	1	2	3	4	1	2
152	3	1	3	2	1	2	5	4
160	5	3	2	2	5	7	3	6
168	3	1	6	4	2	5	1	5
176	[illegible]	6	3	9	6	9	7	3
184	8	3	2	7	10	11	5	8
192	4	9	14	11	13	17	18	15
200	9	14	11	11	17	16	19	20
208	21	[illegible]	17	19	8	21	18	15
216	22	19	24	21	21	25	23	28
224	20	26	36	32	31	57	46	71
232	78	85	84	80	83	82	42	17
240	14	17	10	13	19	14	11	16
248	20	16	25	18	24	19	27	31
256	27	25	44	67	64	58	63	72
264	60	35	11	1	0	0	0	0
272	0	2	0	0	0	0	0	0
280	1	[illegible]	[illegible]	0	0	0	0	0
288	1	0	0	0	0	0	0	0
296	0	0	0	0	0	0	0	0
304	0	0	0	0	0	0	0	0
312	0	0	0	0	0	0	0	0
320	0	0	0	0	0	0	0	0

592 - 42 - 7 = 543

.542 ± 7.0%

.458 - 0 - 0 .458

1000

D05-018

ANALYTICAL REPORT 100122

Customer: [illegible]
Date Received: [illegible]-90
Work Order No: [illegible]48

ID & No.: 549-90

Description: 90-3617-A-3 - SAKO
[illegible]
[illegible]
Segment [illegible]

Analysis: Am-241
Procedure: MIA-4-35

Results

1000λ [0.9972 ml] BNW 53645 P.57 + 100λ [0.1006 ml] BNW 53645 P.59 — 5.56×10^4 dpm/ml Am-241 → 500λ — 100λ [0.4971 ml 0.0995 ml] BNW 53645 P.61

Sample analyzed [illegible] [illegible] 10/2/90

Calculations

$$\frac{571.6}{.5062}\cdot\frac{(0.4971)}{(0.1006)(0.0995)} = 5.017\ E+4 = 90.2\%$$

Calculations [signature] Date 11/12/90

Reviewed [signature: R. Barrington] Date 1-21-91

Counting Information

By [signature]

ID & Date	[illegible]	[illegible]	[illegible]
Log Book:	[illegible] p [illegible]	[illegible] p __	[illegible]2343 p __
Instrument	[illegible] - [illegible]	[illegible]	[illegible] - __
Eff. Factor	[illegible]	0.3792[illegible]	0.4___
Date	10/03/90	__/__/__	__/__/__
Total Counts	[illegible]32		
Minutes	[illegible]		
Counts/Minute	[illegible]		
Background	[illegible]		
Corrected C/M	[illegible]		

② 549-90 Am 10-3-90
90-3617-A-3

0	0	0	0	0	0	0	0	0
8	0	0	0	0	0	[illegible]	[illegible]	[illegible]
16	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	6
24	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	10	6	6
32	[illegible]	10	[illegible]	[illegible]	11	[illegible]	[illegible]	6
40	[illegible]	[illegible]	11	[illegible]	[illegible]	[illegible]	[illegible]	10
48	[illegible]	[illegible]	[illegible]	[illegible]	16	[illegible]	[illegible]	[illegible]
56	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	16
64	11	[illegible]	[illegible]	[illegible]	[illegible]	10	11	16
72	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	16	[illegible]
80	[illegible]	10	[illegible]				[illegible]	[illegible]
[illegible]								[illegible]

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D05-019

ANALYTICAL REPORT

100366

Customer: SST
Date Received: 9-11-90
Work Order No: 90204-98

ID & A.L.O.: 607-90

Description: 90-4178-A-1
TK1108
Core 1a
Seg COMPOSITE

Analysis: Am-241
Procedure: NTA-4-35

BNWS2917 p. 125: 0.6025g + 250mL -

1.0019 mL - 0.5032 mL - 0.1005 mL
Diana K Bellofatto 12/13/90
BNW 5 5045 pg 98 + 100

Calculations
$\frac{7.37}{7.39}\left(\frac{.5032)(250)}{(.5050)(1.0019)(0.1006)(.6025)}\right)$

.958 / Am 241 = 2.907 E +4 ± 8.1 %

.042 / Am = 1.2745 E+3 ± 12.2 %

Calculations L. O. Harvey Date 1-28-91

Reviewed K Harrington Date 1-29-91

Counting Information By

	A. & T.E.		
Log Book	WNW5 BNW5234T p51	WNW6 BNW5235 p	WN BNW5234T p
Instrument	P.A.C. - 2	G.E. NSC.	Ludlum -
Eff. Factor	0.50 50	0.37927	0.4
Date	12/14/90	/ /	/ /
Total Counts	585		
Minutes	100		
Counts/Minute	2.55		
Background	1.21		
Corrected C/M	2.55		

KB 1-29-91

607-90

0	0	0	0	0	0	0	20	11
8	10	14	[illegible]	[illegible]	14	14	13	17
13	17	22	7	7	12	18	18	18
24	19	16	19	13	16	19	21	19
32	19	14	17	13	15	16	22	17
40	20	17	23	19	22	24	24	17
48	28	23	22	20	23	23	28	17
56	29	17	23	1	29	38	28	27
64	22	23	29	32	30	28	28	24
72	22	28	28	29	28	17	30	37
80	33	27	30	23	21	25	28	30
88	38	28	23	32	32	39	38	49
96	32	33	39	38	32	38	43	40
104	38	40	49	40	37	39	31	46
112	37	47	45	31	37	50	58	48
120	60	55	77	58	31	32	60	49
128	37	33	37	33	37	60	71	60
136	38	71	71	60	68	32	64	78
144	37	0	77	78	73	73	77	69
152	81	68	100	58	73	92	60	73
160	83	78	101	78	87	123	119	94
168	108	113	101	87	128	127	128	113
176	128	113	128	108	121	138	137	138
184	123	137	133	144	138	133	137	148
192	153	178	155	153	157	163	163	167
200	177	186	184	162	207	168	174	176
208	238	218	217	217	238	207	238	232
216	238	238	274	271	288	271	322	348
224	327	307	374	398	378	337	307	337
232	388	791	1148	1332	1792	2074	2277	2057
240	1207	327	308	243	117	51	13	15
248	12	7	12	28	18	11	32	32
256	31	28	28	33	32	38	31	38
264	38	72	88	103	92	28	0	0
272	1	0	0	0	1	0	0	0
280	0	0	1	2	0	0	1	1
288	0	1	2	1	0	1	1	0
296	1	0	0	0	2	0	0	0
304	1	0	0	0	1	0	0	0
312	0	0	0	0	0	0	0	0
320	0	0	0	0	0	0	0	0
328								

12 PMO - 33 - 19 = 12718
.9577
± 1.7%

565 - 0 - 0 = 565
.0423
± 8%

13353

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D05-020

9111210 50296

MANHATTAN REPORT

100378

Customer: SST
Date Received: 9-11-90
Work Order No: M20418

ID & A.L.O.: 608-90

Description: 90-4178-A-2
TK1108
Core 16
Seg COMPOSITE

Analysis: Am-241
Procedure: HTA-4-35

Results
4.636+4
2σ/Mean ±8.1%
5.43 6+3
Cm ±9.4%

BMG2917 p. 125: 0.4527g + 250mL -
1.0019 ml + 0.5032 ml - 0.1005ml
Diana Gallegos 12/13/90
BNW 52645 pg 93 + 100

Calculations
(0.5032) (250) / (.5050) (1.0019) (0.1005) (.4527)
Calculations
Date
Reviewed R. Barrington
Date 1-29-91
Counting Information
By

N. & T.E.	MM5924	MM2546	MM
Log Book	BMG2341 p51	BMG2825 p	BMG2343 p
Instrument	P.A.C. - 2	G.E. ABC	Ludlum -
Eff. Factor	0.3050	0.37927	0.4
Date	12/14/90	/ /	/ /
Total Counts	1074		
Minutes	1800		
Counts/Minute	1.77		
Background	1.51		
Corrected C/M	.26		

Correction in error 1-29-91 CGF

360	0	1	0	0	0	0	0	

(16)

608-90 90-4178-A-2
16-17/30 F M M
LIB 30374 AIR 30303
30374 30370 0 3303 0 30313 0 0

0	0	0	0	0	0	0	7	11
8	10	14	11	8	10	12	10	10
16	9	14	10	11	14	11	16	12
24	9	15	23	11	18	22	12	19
32	10	11	13	11	10	13	13	17
40	10	13	12	12	17	20	21	21
48	20	11	29	29	17	15	19	13
56	14	18	19	17	17	17	25	24
64	20	21	29	27	21	30	20	21
72	27	17	20	31	20	37	20	20
80	30	32	23	23	32	20	39	34
88	32	40	32	37	32	30	32	27
96	34	39	27	44	33	43	40	47
104	30	37	40	44	41	42	39	33
112	33	40	27	40	41	33	47	39
120	33	38	33	46	37	42	58	40
128	47	33	77	32	38	37	81	68
136	63	63	73	58	87	74	79	67
144	72	82	87	80	71	77	77	83
152	100	78	78	76	73	110	118	78
160	120	137	107	107	121	100	113	149
168	110	120	110	139	123	144	131	140
176	158	144	172	107	130	172	130	189
184	150	160	139	197	180	177	205	225
192	207	270	229	210	223	237	284	233
200	230	238	237	287	287	337	327	314
208	314	350	330	332	301	361	387	413
216	423	480	400	439	501	528	560	558
224	615	660	652	677	736	834	883	1014
232	1113	1243	1477	1087	1623	1733	2100	1938
240	110	77	303	237	110	70	71	32
248	40	32	73	30	33	13	30	74
256	103	110	124	123	157	182	177	214
264	177	227	220	211	133	52	6	1
272	1	1	2	1	3	2	3	3
280	1	2	3	4	2	4	2	4
288	2	3	8	10	3	6	7	3
296	4	2	1	0	1	0	1	0
304	4	1	0	7	7	13	0	0
312	2	3	3	1	0	2	0	0
320	1	0	0	0	0	2	1	0
328	0	0	0	0	0	0	0	0
336	1	1	0	0	0	1	0	3
344	2	0	2	2	0	0	0	4
352	3	2	3	2	1	2	3	2

1337 1 168 - 38 = 13165 .125 ±12%

1572 -3 -5 = 1564 .107 ±5%

~~14779~~
14749

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D05-021

Customer: SST
Date Received: 9-11-90
Work Order No: No20 A8

ID & A.L.O.: 609-90

Description: 90-4178-A-3
TK1106
Core 16
Seq COMPOSITE

Analysis: Am-241
Procedure: HTA-4-35

Results
Am^{241}
1.6329E+4 dpm/g
±11% cok 1-29-91
Cm^{244}
1.0356E+4 dpm/g
±11% cok 1-28-91

ANALYTICAL REPORT

100390

Bm52917 p. 125: 250mL -

1.0019 ml - 0.5032 ml - 0.1005 ml
Diana L Bellofatto 12/13/90
BNW 53,445 pg 98 +100

Calculations

$$\frac{569\ (0.5032)\ (250)}{(.52)\ (1.0019)\ (0.1005)\ (5276)} \times \frac{.612}{Am^{241}} = 1.6329E+4 \pm 11\%$$

$$\frac{.388}{Cm} = 1.0356E+4 \pm 11\%$$

Calculations L O Heavey Date 1-28-91

Reviewed R. Barrington Date 1-29-91

Counting Information

By Anne E Higbie

R. & T.E.	WW05-2	WW2546	WW
Log Book	Bm52941 p 51	Bm52825 p	Bm52943 p
Instrument	P.A.C. - 2	B.E. ASC.	Ludlum -
Eff. Factor	0.5050	0.37977	0.4
Date	12/14/90	/ /	/ /
Total Counts	720		
Minutes	100		
Counts/Minute	7.20		
Background	5.51		
Corrected C/M	1.69		

(6) 10-2

609-90 90-4178-A-3 L-(15)

00374	00379	0	3072	0	512	34816	0	0
0	0	0	0	0	0	0	2	5
8	11	5	10	0	16	1	4	7
13	11	1	0	7	1	0	0	7
24	0	7	7	7	5	0	7	13
32	12	9	9	0	9	8	0	10
40	11	16	12	13	8	2	11	13
48	11	12	17	0	10	7	13	10
56	11	2	0	7	17	20	14	10
64	16	17	10	13	13	7	13	17
72	13	21	17	15	15	10	18	21
80	11	18	21	17	21	18	24	33
88	20	23	23	3	22	27	30	28
96	29	28	23	30	31	28	34	29
104	34	29	31	21	34	19	30	43
112	31	43	30	23	30	34	32	48
120	31	30	33	40	31	38	33	33
128	41	30	37	37	37	47	33	43
136	31	31	-	32	31	43	37	34
144	43	37	33	37	38	31	32	32
152	38	32	43	43	37	37	46	32
160	70	61	58	63	58	73	70	70
168	70	32	70	72	61	70	100	32
176	83	73	77	113	101	108	112	87
184	74	111	110	129	107	102	73	117
192	108	102	114	108	110	105	99	115
200	134	123	119	118	148	138	130	122
208	132	137	140	147	170	117	135	132
216	101	107	103	143	113	200	172	499
224	271	499	229	291	331	379	397	903
232	113	397	37	1043	1031	1125	880	527
240	250	110	73	77	73	70	77	88
248	79	83	112	103	113	119	130	137
256	499	439	399	392	341	337	313	377
264	379	393	377	109	11	1	1	0
272	1	1	1	3	2	2	3	0
280	0	1	1	2	4	1	2	4
288	3	3	3	2	0	1	0	3
296	0	0	0	1	0	1	1	2
304	1	1	2	2	3	0	1	0
312	1	0	0	0	0	0	0	0
320	0	0	0	0	2	0	0	0
328	0	0	2	1	0	0	1	0
336	1	2	0	0	0	0	2	0
344	2	2	1	0	1	0	2	2
352	0	0	1	0	0	0	0	0

7147 - 222 - 56 = 6869
.612
± 2.5%

4860 - 2 - 3 = 4355
.388
± 30%
11224

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D05-022

9111210998

ρ H2O @ 22.5°C = .99676

→ 195.5173g

ANALYTICAL REPORT

100309

Customer: SST
Date Received: 9-5-90
Work Order No: m20-[illegible]

2.0676g + 194.6643g

1000λ [0.9995 l-ml] → 500λ [0.4964 ml] → 100λ [0.0999 ml]

BNW 53645 P.63

BNW 53645 P.65

10/8/90

ID & A.L.I.D.: 590-90

Description: 9V-4180-C-1
TK1168
Core 1b
Segment CDM

Analysis: Am-241
Procedure: MTA-4-35

Calculations

$$\frac{1.094}{0.4209}\left(\frac{0.4964\ (195.5173)(0.0}{(0.0999)(0.9921)(2.06698)}\right) = 1.2318E+3\ dpm/g$$

$$\times .347 = 4.2398\ E+2\ dpm/g\ wet\ wt$$

when finished

Results

Am^{241} = 4.24E+2 dpm/g wet wt ± 19.5%

Calculations Bruce E Hopkins / [illegible] Date 10-16-90 / 11/7/90

Reviewed [illegible] Date 1-16-91

Counting Information

By Bruce E Hopkins

M. & T.E. Log Book:	WW3 BNG2341 p	WA2248 BNG2825 p	WA82314 BNG2343 p120
Instrument Eff. Factor	P.A.C. - 0.50	Gr.E. ASC. 0.37927	Ludlum - 1 0.4209
Date	/ /	/ /	10/15/90
Total Counts			591
Minutes			450
Counts/Minute			1.291
Background			0.149
Corrected C/M			1.096

TI-SST-906

(10) 11/1/90 90-4180-C-1

590-90 Am

0	0	0	0	0	0	0	1	0
8	0	0	0	0	1	0	0	0
16	0	1	1	2	2	0	0	1
24	[illegible]		0	1	1	1	0	0
32	1	0	0	1	0	2	1	0
40	2	1	0	0	0	0	0	1
48	1	0	0	0	0	1	1	0
56	1	0	2	0	2	0	0	0
64	0	0	0	1	1	0	0	1
72	0	1	1	1	0	1	0	1
80	0	0	0	2	1	2	1	0
88	0	1	1	1	3	0	0	[illegible]
[illegible]	1	2	3	2	1	1	1	0
104	2	0	1	2	0	2	2	1
112	2	2	4	0	1	1	1	4
120	0	1	1	0	3	2	2	2
128	4	0	2	4	2	0	3	0
136	2	1	1	3	1	3	2	2
144	1	1	3	1	2	3	3	2
152	4	5	2	1	3	3	2	5
160	3	3	2	4	4	2	4	[illegible]
[illegible]	2	3	3	3	7	4	4	7
176	4	4	2	4	8	10	11	4
184	8	8	9	4	9	9	8	9
192	11	11	11	10	22	13	22	17
200	17	20	23	33	27	24	37	19
208	3	4	1	3	3	3	1	2
216	2	2	4	4	7	0	5	1
224	11	5	9	8	3	12	8	15
232	13	13	15	16	14	8	9	[illegible]
[illegible]	0	0	0	1	1	0	0	1
248	0	0	0	1	0	0	0	0
256	0	0	0	1	1	1	0	1
264	0	0	0	0	0	0	0	0
272	0	0	0	0	0	0	0	0
280	0	0	0	0	0	0	0	0
288	0	0	0	0	0	0	0	0
296	0	0	0	0	0	0	0	0
304	0	0	0	0	0	0	0	[illegible]
[illegible]	0	0	0	0	0	0	0	0
320	0	0	0	0	0	0	0	0
328	0	0	0	0	0			

199 - 7 - 10 = 182

106 - 0 - 3 = 103

285

$\frac{Pa^{238}}{Pa^{238+240}} = .023$

Am^{241} adjustment for Pa^{238}

= 103 - (182)(.023) = 99

.347 ± 19%

D05-023

ANALYTICAL REPORT 100321

Customer: SST
Date Received: 9-5-90
Work Order No: M620-18

ID & A.L.O.: 591-90

Description: 90-4180-C-2
TK1108
Core 1o
Segment COM

Analysis: Am-241
Procedure: HTA-4-35

2.1978g + 196.7726g
P H₂O @ 22.5°C
= .99676
= 197.4122 mL

1000λ [0.9981 ml] BNW 53645 P.63
500λ [~~0.4 ml~~ 0.4964 ml] 100λ [0.0999 ml] BNW 53645 P.65
10/8/90

Results

Calculations

$$\frac{0.574}{0.4191}\left(\frac{0.4964\ (196.7726)}{(0.0999)(0.9981)(2.1978)}\right) = \div .99676 = 6.1275\ \text{d/m/g wet wt}$$

6.1075 ~~6.1047~~ E+2 d/m/g
6.1274 ~~6.1245~~ d/m/gm wet wt
± 15%

100% Am

Calculations Anne E Kyckbirby Date 10-16-90

Reviewed L. C. Harvey Diana L. Bollfa Date 11/5/90 1-16-91

Counting Information

By Anne E Kyckbirby

M. & T.E.	WM005	WM2546	WA 92319
Log Book:	BNW52347 p	BNW52825 p	BNW52343 p/30
Instrument	P.R.C. -	G.E. ASC.	Ludlum - 12
Eff. Factor	0.30	0.37927	0.4191
Date	/ /	/ /	10/15/90
Total Counts			337
Minutes			450
Counts/Minute	.	.	0.787
Background	.	.	~~0.136~~ 0.210 MK 10-15-90
Corrected C/M	.	.	0.574

(12) ± 15%

6.12 d/m / g wet wt ± 15%

TI-SST-105

(15) 11/1/90 90-4180-C-2

591-90

IN-1750 F M H
LI= 10603 KI= 76137
10603 10603 1 1558 0 312 34010 0 0

0	0	0	0	0	0	0	0	0
8	0	1	1	0	1	2	1	1
16	0	0	0	0	0	0	0	0
24	0	1	0	0	0	1	1	0
32	0	0			0	0	0	0
40	0	1	0	0	0	0	0	2
48	0	1	0	0	0	0	2	0
56	0	0	1	0	0	0	0	0
64	0	0	0	1	0	0	0	0
72	0	0	0	0	1	1	0	1
80	0	0	1	0	1	0	1	1
88	1	0	2	0	0	0	0	0
96	0	1	0	0	0	0	1	0
104	0		0	1	0	1	1	0
112	1	3	0	2	1	0	1	0
120	1	1	0	4	0	1	2	1
128	1	0	0	0	1	1	1	1
136	0	2	3	0	1	1	0	0
144	2	2	0	1	0	3	1	0
152	2	2	3	2	1	3	1	1
160	3	1	0	1	3	1	1	0
168	2	2	3	5	1	2	0	2
176	4	[illegible]	[illegible]	3	2	0	4	3
184	4	3	5	1	1	0	4	3
192	1	2	5	2	2	3	5	5
200	8	4	3	5	3	0	7	1
208	0	3	3	4	4	1	3	4
216	[illegible]	0	4	1	3	2	10	3
224	5	4	0	7	9	8	10	8
232	7	9	14	21	28	23	24	13
240	10	7	1	2	1	0	0	0
248	0	[illegible]	0	0	0	0	0	0
256	0	0	1	0	0	0	1	1
264	1	2	0	2	0	0	0	0
272	0	0	0	0	0	0	0	0
280	0	0	0	0	0	0	0	0
288	0	0	0	1	0	0	1	0
296	0	0	0	0	0	0	0	0
304	0	0	0	0	0	0	0	0
312	0	0	0	0	0	0	0	0
320	0	[illegible]	0	0	0	0	0	0
328	0	0	0	0	0	0	0	0
336	0	0	0	0	0	0	0	0
344	0	0	0	0	0	0	0	0
352	0	0	0	0	0	0	0	0
360	[illegible]	0	0	0	0	0	0	0

142 -

D05-024

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ρH_2O @ 22.5°C = .9976

ANALYTICAL REPORT

100334

197.5712g = 199.2134 ml → 1000λ [0.9981 ml] BNW 53645 P.63 → 500λ [0.4964 ml] BNW 53645 P.65 → 100λ [0.0999 ml]

Customer: SST
Date Received: 9-5-90
Work Order No: Ma20 1-6

ID & A.L.O.: 593 -90 :

Description: 90-4180-C-5
TK1109
Core 16
Segment CDM

Analysis: Am-241
Procedure: HTA-4-35

Results

Am^{241} = < 5.13 E+1 pCi/g wet wt

Calculations

< .049 ~~0.023~~ = $\frac{(.4964)(199.2134)}{(0.4328)(2.1338)(.7791)}$ = < 5.1289 E+1 pCi/g wet wt

Calculations _____ Date 11/19/90

Reviewed _____ Date 1-20-91

Counting Information

By _____

M. & T.E.	MW005	MW2546	MW 93316
Log Book:	BNW52347 p _	BNW52825 p _	BNW52343 p 120
Instrument	P. Ac. - _	Gre. Asc.	Ludlum - 3
Eff. Factor	0.50	0.37927	0.4328
Date	__/__/__	__/__/__	10/15/90
Total Counts			150
Minutes			150
Counts/Minute			0.999
Background			0.946
Corrected C/M			0.053

for results of spiked sample see card 100453 in TC Multi recovery folder

TI-557-105

based on one wt's of sample used

D05-025

ANALYTICAL REPORT 100062

Customer: 331
Date Received: 8-21-90
Work Order No: MAW98
ID & M.L.O.: 545-90
Description: 90-331-MW-2 Filtrate Lake Ia Segment 3
Analysis: Np-237
Procedure: MIM-4-14

Sample Volume: 2.0308 ml - 0.9896 ml - 0.500 ml
BNW 53645 pg 55+60
Luana X Bellofatto 9/28/90

$$< \left(\frac{.06}{.0490}\right)\frac{(0.9896)(250)}{(.4163)(2.0308)(0.500)(.5321)(.949)} = < \frac{67.54}{57.75} \text{ d/m/g wet wt}$$

COH 11-27-90

Results
< 7.0 E+1 d/m/g wet wt
< ~~1.4 E+3~~
COH 11-27-90

Calculations G. O. Harvey Date 11/28/90
Reviewed R. Barrington Date 1-21-91
Counting Information
By Peter Ruggles

< ~~based on 3√BG (1.03) = 1.43 E+3~~ COH

M. & T.E.	BNW5	BN4246	BN4744
Log Book	BN02341 p	BN02343 p	BN02345 p 163
Instrument	P.M.T.	D.E. Hsu	Lucitus - 2
Eff. Factor	0.30	0.3/7.1	0.4163
Date			10/1/90
Total Counts			46
Minutes			450
Counts/Minute			0.13
Background			.167
Corrected C/M			0.046

< 3 $\sqrt{.167 / 450}$ = .006

TI-SST-105

ANALYTICAL REPORT 100074

Customer: 331
Date Received: 8-21-90
Work Order No: MAW98
ID & M.L.O.: 545-90
Description: 90-331-MW-2 Filtrate Lake Ia Segment 3
Analysis: Np-237
Procedure: MIM-4-14

Sample Volume: ~~2.0308~~ 250 mL
2.0308 ml - 0.9896 ml - 0.500 ml
BNW 53645 pg 55+60
Luana X Bellofatto 9/28/90

$$(.094)\frac{(0.9896)(250)}{(.4328)(2.0308)(0.500)(.5275)(.949)} = 1.0529 \text{ E+2 d/m/mL}$$

± 71.7 %

Results
1.05E+2 d/m/mL
~~< 1.9 E+0~~
COH 11/28/90

Calculations G. O. Harvey Date 11/28/90
Reviewed R. Barrington Date 1-21-91
Counting Information
By Peter Ruggles

< ~~based on 3√BG (1.03) =~~ COH

M. & T.E.	BNW5	BN4246	BN4723/6
Log Book	BN02341 p	BN02343 p	BN02345 p 163
Instrument	P.M.T.	D.E. Hsu	Lucitus - 3
Eff. Factor	0.30	0.3/7.1	0.4328
Date			10/1/90
Total Counts			173
Minutes			210
Counts/Minute			0.403
Background			.113
Corrected C/M			0.046

= < ~~1.97 E+3~~

TI-SST-102

ANALYTICAL REPORT 100086

Customer: 331
Date Received: 8-21-90
Work Order No: MAW98
ID & M.L.O.: 545-90
Description: 90-331-MW-2 Filtrate Lake Ia Segment 3
Analysis: Np-237
Procedure: MIM-4-14

Sample Volume:
2.0308 ml - 0.9896 ml - 0.500 ml
BNW 53645 pg 55+60
Luana X Bellofatto 9/28/90

$$< \left(\frac{.070}{.069}\right)\frac{(0.9896)\ 250}{(.4205)(2.0308)(0.500)(.744)(.5304)} = < \frac{79.3}{\cancel{77.3}} \text{ d/m/g wet wt}$$

COH 11-27-90

Results
< 7.9 E+1 d/m/g wet wt
~~< 1.8 E+3~~
COH 11-27-90

Calculations G. O. Harvey Date 11/28/90
Reviewed R. Barrington Date 1-21-91
Counting Information
By Peter Ruggles

Less than based on 3√BG (1.03) = .071 COH ~~< 1.97 E+3~~

M. & T.E.	BNW5	BN4246	BN4723/7
Log Book	BN02341 p	BN02343 p	BN02345 p 163
Instrument	P.M.T.	D.E. Hsu	Lucitus - 4
Eff. Factor	0.30	0.3/7.1	0.4205
Date			10/1/90
Total Counts			157
Minutes			450
Counts/Minute			0.349
Background			.272
Corrected C/M			0.077

TI-SST-102

based on ave wt of samples fixed

D05-026

Customer: SSI
Date Received: 8-21-90
Work Order No: MA0498

ID & A.L.D.: 547 -90

Description: 90-3619-A-1
TK1108
Core 1a
Segment 1

Analysis: Np-237
Procedure: MTA-4-14

Results

TR d/m / g wet wt
= 16%
CoH 12-21-90

< 9.76E+1 d/m
CoH 11/21/90 g wet wt

TI .55-103

U.Solv + Cont -
2.0308 ml - 0.9896 ml - 0.500 ml
BNW 53645 pg 55+60
Luana Y Bellizatto 9/28/90

Calculations

$$< \frac{0.07}{0.063} \frac{(0.9996)(250)}{(.4135)(2.0308)(0.500)(.5017)(.949)} = \frac{86.6}{77.968} \text{ d/m / g wet wt}$$

= 86.6 d/m / g wet wt

Calculations K. O. Harvey Date 11/29/90
Reviewed R. Barrington Date 1-21-91
Counting Information
By John Kuzyla

Less than based on $3\sqrt{BKG}$ = 0.07

= < 1.9E+1
CoH 11-21-90

H. V.L.E.	1000	1000	1223
Log Amp	0.0001 μ	0.0001 μ	0.0115 μ
Instrument	P.M.T. -	D.E. Mod.	Cell No. - 6
Eff. Factor	V.Sv	V.3/72	V.4/92
Date	/ /	/ /	10/1/90
Total Counts			153
Minutes			280
Counts/Minute			0.373
Background			.266
Corrected C/M			0.063

Customer: SSI
Date Received: 8-21-90
Work Order No: MA0498

ID & A.L.D.: 548 -90

Description: 90-3619-A-2
TK1108
Core 1a
Segment 2

Analysis: Np-237
Procedure: MTA-4-14

Results

< 66E+1 d/m
CoH 12/21/90 g wet wt

TI-SST-103

U.Solv + Cont -
2.0308 ml - 0.9896 ml - 0.500 ml
BNW 53645 pg 55+60
Luana Y Bellizatto 9/28/90

Calculations

$$< \frac{0.06}{0.037} \frac{(0.9996)(250)}{(.4197)(2.0308)(0.500)(0.5561)(.949)} = < 66.0 \text{ d/m / g wet wt}$$

CoH 11-21-90
= 67%

Calculations K. O. Harvey Date 11/29/90
Reviewed R. Barrington Date 1-21-91
Counting Information
By John Kuzyla

Less than based on $3\sqrt{BKG}$ < = 0.06

= < 1.8E+1 d/m / g wet wt
CoH 11/21/90

H. V.L.E.	1000	1000	1219
Log Amp	0.0001 μ	0.0001 μ	0.0115 μ
Instrument	P.M.T. -	D.E. Mod.	Cell No. - 6
Eff. Factor	V.Sv	V.3/72	V.4/92
Date	/ /	/ /	10/1/90
Total Counts			177
Minutes			280
Counts/Minute			0.632
Background			.167
Corrected C/M			0.027

Customer: SSI
Date Received: 8-21-90
Work Order No: MA0498

ID & A.L.D.: 549 -90

Description: 90-3619-A-3
TK1108
Core 1a
Segment 5 5

Analysis: Np-237
Procedure: MTA-4-14

Results

< 5.8E+1 d/m
CoH 11-21-90 g wet wt

TI-SST-103

Cont -
2.0308 ml - 0.9896 ml - 0.500 ml
BNW 53645 pg 55+60
Luana Y Bellizatto 9/28/90

Calculations

$$< \frac{0.05}{0.015} \frac{(0.9996)(250)}{(.4163)(2.0308)(0.500)(0.5289)(.949)} = < 58.3 \text{ d/m / g wet wt}$$

CoH 11-21-90

Calculations K. O. Harvey Date 11/29/90
Reviewed R. Barrington Date 1-21-91
Counting Information
By Lucian Kuzyla

Less than based on $3\sqrt{BKG}$ = .05 CoH 11-21-90

H. V.L.E.	1000	1000	1224
Log Amp	0.0001 μ	0.0001 μ	0.0115 μ
Instrument	P.M.T. -	D.E. Mod.	Cell No. - 2
Eff. Factor	V.Sv	V.3/72	V.4/63
Date	/ /	/ /	10/2/90
Total Counts			
Minutes			280
Counts/Minute			0.37
Background			.137
Corrected C/M			0.233

based on air wt sample based

D05-027

ANALYTICAL REPORT 100388

Customer: SST
Date Received: 9-11-90
Work Order No: M20445

ID & A.L.O.: 007-90

Description: 90-4178-A-1
TK1108
Core 1b
Seq COMPOSITE

Analysis: Np-237
Procedure: HTA-4-14

Results

< 5.9E+1 dpm/g wet wt

TI-SST-104

BNWL2917 p. 125: 0.5027g + 25mL -

2(1.0067mL) - 1.0037mL = 495.84

Lucinda K. Mallefette 1-2-91

BNW 53645 pg 102-105

Calculations

$$< .06 \frac{(1.0037)(250)}{(.4209)(2.0134)(.49584)(0.6025)} = < 5.947E+1 \frac{dpm}{g}$$

Calculations L. O. Harvey Date 1-21-91

Reviewed T. Barrington Date 1-22-91

Counting Information

By Sean Kuyper

M. & T.E.	WA05	WA2546	WA 72314
Log Book:	BNWL2341 p _	BNWL2825 p _	BNWL2345 p 26
Instrument	P.A.C. - _	G.E. ASC.	Ludlum - 2
Eff. Factor	0.50 _	0.37927	0.4
Date	__/__/__	__/__/__	01/03/91
Total Counts			25
Minutes			720
Counts/Minute			.036
Background			.022
Corrected C/M			0.014

< .06

ANALYTICAL REPORT 100389

Customer: SST
Date Received: 9-11-90
Work Order No: M20445

ID & A.L.O.: 008-90

Description: 90-4178-A-2
TK1108
Core 1b
Seq COMPOSITE

Analysis: Np-237
Procedure: HTA-4-14

Results

< 7.5E+1 dpm/g wet wt

TI-SST-104

BNWL2917 p. 125: 0.4527g + 25mL - 418.54

2(1.0067mL) - 1.0037mL = 415.54

Lucinda K. Mallefette 1-2-91

BNW 53645 pg 102-105

Calculations

$$< .056 \frac{(1.0037)(250)}{(.4163)(2.0134)(.49584)(.4527)} = < 74.789$$

Calculations L. O. Harvey Date 1-21-91

Reviewed T. Barrington Date 1-22-91

Counting Information

By Sean Kuyper

M. & T.E.	WA05	WA2546	WA 72314
Log Book:	BNWL2341 p _	BNWL2825 p _	BNWL2345 p 26
Instrument	P.A.C. - _	G.E. ASC.	Ludlum - 2
Eff. Factor	0.50 _	0.37927	0.4
Date	__/__/__	__/__/__	01/03/91
Total Counts			30
Minutes			720
Counts/Minute			.042
Background			.022
Corrected C/M			0.020

< .056

ANALYTICAL REPORT 100390

Customer: SST
Date Received: 9-11-90
Work Order No: M20445

ID & A.L.O.: 009-90

Description: 90-4178-A-3
TK1108
Core 1b
Seq COMPOSITE

Analysis: Np-237
Procedure: HTA-4-14

Results

< 8.6E+1 dpm/g wet wt

TI-SST-104

BNWL2917 p. 125: 25mL -

2(1.0067mL) - 1.0037mL = [illegible]

Lucinda K. Mallefette 1-3-91

BNW 53645 pg 102-105

Calculations

$$< .078 \frac{(1.0037)(250)}{(.4328)(2.0134)(.49584)(.5276)} = < 85.857 \frac{dpm}{g}$$

Calculations L. O. Harvey Date 1-21-91

Reviewed T. Barrington Date 1-22-91

Counting Information

By Sean Kuyper

M. & T.E.	WA05	WA2546	WA 72314
Log Book:	BNWL2341 p _	BNWL2825 p _	BNWL2345 p 26
Instrument	P.A.C. - _	G.E. ASC.	Ludlum - 3
Eff. Factor	0.50 _	0.37927	0.4
Date	__/__/__	__/__/__	01/03/91
Total Counts			42
Minutes			720
Counts/Minute			.058
Background			.022
Corrected C/M			.036

based on avg wt of sample filtered < .078

D05-028

ρ H2O @ 225°C
= .99676

ANALYTICAL REPORT

100311

Customer: SST
Date Received: 9-5-90
Work Order No: M0204[illegible]

ID & A.L.O.: 590 -90

Description: 90-4160-C-1
TK1108
Core 1a
Segment CDM

Analysis: Np-237
Procedure: MTA-4-14

Results

1.6E+1 < ~~2.03E+2~~ d/m/g wet wt
CoH 11-29-90

Diverse + 194.0342 = 195.5178 mL

2.0308 mL − 0.9896 mL − 0.500 mL
BNW 53645 pg 55 + 60
Arana Z Billyatta 9/28/90

Calculations

< (0.07 / ~~0.098~~) (0.9896) (195.5178 / ~~197.4122~~) / (2.0308)(0.500)(.4228)(.949)(2.0698) = < ~~27.167~~ d/m/g wet wt
CoH 11-29-90 — CoH 11/28/90

Calculations L. O. Harvey Date 11/28/90

Reviewed R. Barrington Date 1-21-91

Counting Information

By Dave Rayglen

Less than based on 3√BKG (.07) = .07 cpm
= ~~362~~ d/m/g wet wt
CoH 11-27-90

M. & T.E.	WW05	WW4346	WW 2316
Log Book:	BWO2341 p	BWO2345 p	BWO2343 p
Instrument	P.A.C. -	G.E. ASC.	Ludlum - 3
Eff. Factor	0.50	0.37927	0.4228
Date	/ /	/ /	11 2 90
Total Counts			125
Minutes			720
Counts/Minute			0.17
Background			0.21
Corrected C/M			−0.04

TI- 55T- 105

ρ H2O @ 225°C
= .99676

ANALYTICAL REPORT

100323

Customer: SST
Date Received: 9-5-90
Work Order No: M0204[illegible]

ID & A.L.O.: 591 -90

Description: 90-4160-C-2
TK1108
Core 1a
Segment CDM

Analysis: Np-237
Procedure: MTA-4-14

Results

1.5E+1 < ~~2.50E+2~~ d/m/g wet wt
CoH 11-29-90

2.1976g + 196.772g = 197.4122 mL

2.0308 mL − 0.9896 mL − 0.500 mL
BNW 53645 pg 55 + 60
Arana Z Billyatta 9/28/90

Calculations

< (0.07 / ~~0.062~~) (0.9896) 197.4122 / (0.4268)(2.0308)(0.500)(2.1978)(.949) = < ~~13.40~~ d/m/g wet wt
CoH 11-29-90

Calculations L. O. Harvey Date 11/28/90

Reviewed R. Barrington Date 1-21-91

Counting Information

By Dave Rayglen

Less Than based on 3√BKG (.07) = 0.07
= ~~350~~ d/m/g wet wt

M. & T.E.	WW05	WW4346	WW 5237
Log Book:	BWO2341 p	BWO2345 p	BWO2343 p
Instrument	P.A.C. -	G.E. ASC.	Ludlum - 4
Eff. Factor	0.50	0.37927	0.4262
Date	/ /	/ /	101 2 90
Total Counts			32
Minutes			720
Counts/Minute			0.05
Background			0.21
Corrected C/M			0.04

TI- 55T- 105

ρ H2O @ 225°C
.99676

ANALYTICAL REPORT

100330

Customer: SST
Date Received: 9-5-90
Work Order No: M0204[illegible]

ID & A.L.O.: 593 -90

Description: 90-4160-C-5
TK1108
Core 1a
Segment CDM

Analysis: Np-237
Procedure: MTA-4-14

Results

< 1.6E+1 ~~2.17E+2~~ d/m/g wet wt
CoH 11-29-90

197.5712g = 198.2134 mL

2.0308 mL − 0.9896 mL − 0.500 mL
BNW 53645 pg 55 + 60
Arana Z Billyatta 9/28/90

Calculations

< (0.07 / ~~0.064~~) (0.9896) (198.2134) / (0.4132)(2.0308)(0.500)(2.1358)(.949) = < ~~14.167~~ d/m/g wet wt
CoH 11/29/90

Calculations L. O. Harvey Date 11/28/90

Reviewed R. Barrington Date 1-21-91

Counting Information

By Dave Rayglen

Less Than based on 3√BKG (.07) = .07 cpm
~~362~~ d/m/g wet wt
CoH 11-29-90

M. & T.E.	WW05	WW4346	WW 5237
Log Book:	BWO2341 p	BWO2345 p	BWO2343 p
Instrument	P.A.C. -	G.E. ASC.	Ludlum - 5
Eff. Factor	0.50	0.37927	0.4232
Date	/ /	/ /	101 2 90
Total Counts			44
Minutes			720
Counts/Minute			0.06
Background			0.04
Corrected C/M			0.02

TI- 55T-105

based on one out of samples leached

D05-029

100063

MINERAL REPORT

Customer: SSI
Date Received: 8-21-90
Work Order No: [illegible]

ID & A.L.I.D.: 542-90

Description: 90-3617-A-1
Tailing
Core 1a
Segment 3

Analysis: Pu-239+240
Procedure: HLW-4-15

2(1.0040) → 2(1.0113) − 2(.99947)

BNW 53645 P, 24, 67

COK

Calculations

$$\frac{244.85}{.5062} \quad \frac{2(1.0113)\ (250)}{(2.0080)(0.9948)(0.5812)}$$

.925 → = 2.128 E+5 $Pu^{239+240}$

.075 → = 1.725 E+4 Pu^{238}

Σ 100%

Calculations L O Hanny Date 10/17/90

Reviewed R J Barrington Date 11-16-91

Counting Information

Corrected for mild → .957

Pl. & I.D.	BNW 79	BNW 46	BN
Log Book	BNW 241 p 58	BNW 240 p	BNW 243 p
Instrument	Pulse - L	~~G.E. Pac~~ Pac-1	Ludlum -
Eff. Factor	0.5062	0.5812	0.4
Date	9/28/90	10/1/90	/ /
Total Counts	2503	24237	
Minutes	10	100	
Counts/Minute	247.45	242.37	
Background	1.95	1.93	
Corrected C/M	244.85	240.44	

$Pu^{239+240}$ = 2.2265 E+5 ± 5.6% gr wet wt

Pu^{238} = 1.506 E+4 ± 10.9%

$Pu^{239+240}$ = 2.2286 E+5

Pu^{238} = 1.5025 E+4

II-357-102

542-90
90-3617-A-1 Pu 10-3-90

			0	0	0	0	0	0
		0	0	0	0	0	0	0
	0	0	0	0	0	1	2	0
		0	1	1	0	0	0	1
		0	0	0	0	0	0	1
	0	0	1	0	0	1	1	1
		0	1	1	1	1	0	2
	0	2	1	0	0	0	1	0
	1	0	0	0	1	0	1	2
	1	1	1	0	0	1	0	0
	1	0	0	0	0	2	1	0
	1	1	0	1	0	0	1	1
	1	2	1	0	0	1	2	0
	0	1	0	1	1	2	0	0
	1	1	1	1	1	0	4	2
	1	1	0	0	2	0	0	0
	1	0	0	1	0	10	0	0
	1	0	1	1	0	0	1	4
	1	0	0	0	1	0	1	1
	1	1	1	1	2	0	2	0
	14	10	10	14	11	7	10	11
	10	12	20	17	10	20	24	10
	10	21	21	17	30	30	28	24
	40	37	37	30	40	33	37	32
	31	39	30	31	04	40	01	07
	71	109	1.1	130	140	130	277	230
	40	330	42	242	300	370	270	270
	1	1	1	1	1	0	1	0
	0	1	0		0	1	1	17
	1	17	10	10	13	47	49	47
	11	01	39	40	04	02	32	0
	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0
	0	0	0	0	0	1	0	0
	0	0	0	0	0	0	1	0
	0	0	0			0	1	0
	0	1				0	0	1
						0	0	0
	1		0	1	1	0	1	0
				1	1	0	0	0
	1	0	0	1	1	0	0	0
			0	0		0	0	0

5054-11-0 .925 5043

410-0-0 .075 410

5452

POOR COPY RECEIVED

D05-030

9111217510006

ANALYTICAL REPORT 100075

Customer: 561
Date Received: 9-21-90
Work Order No: 543-90

ID # A.L.O.: 543-90

Description: 90-3617-A-2
INILOW
Core 1a
Segment 3

Analysis: Pu-239+240
Procedure: NIA-4-15

Results

$Pu^{239+240}$ = 2.12E+5 dpm/g ± 4.2%

Pu^{238} = 1.04E+4 dpm/g ± 12.0%

TL-537-102

Calculations

$$\frac{(325.90)}{.5062} \quad \frac{2.0230 \quad (250)}{(2.005)(.7774)(0.5255)(357)}$$

Calculations L O Hanny

Date 1-16-91

Reviewed R Pennington

Date 1-16-91

Counting Information

By Jan Rugher

R. & F.E.	NMA577	NMA546	NA
Log Books	NMA241 p42	NMA540 p	NMA243 p
Instrument	Panel - 1	Det. Area	Leaden -
Eff. Factor	0.3062	0.3947	0.4
Date	10/1/90	/ /	/ /
Total Counts	2473		
Minutes	100		
Counts/Minute	24.73		
Background	1.73		
Corrected C/M	22.99		

(4) 543-90
90-3617-A-2 Pu 10-3-90

Id-1750 P h A
L.I.= 5362 W14 5362

5362	5362	0	1530	0	512	34816	0	0
0	0	0	0	0	0	0	0	0
8	0	0	0	2	1	1	0	4
16	1	-	0	1	1	1	0	0
24	3	4	0	0	1	1	1	1
32	2	2	1	0	2	0	0	0
40	1	1	0	2	1	1	2	1
48	1	3	4	1	3	2	2	0
56	4	3	1	1	4	0	1	1
64	4	3	1	2	3	1	0	1
72	1	2	2	0	2	3	1	0
80	4	0	3	1	2	1	0	.
88	3	2	1	0	0	0	4	3
96	.	.	4	.	1	.	.	1
104	.	.	.	.	1	1	4	2
112	.	.	.	.	1	2	2	3
120	.	.	3	0	3	3	3	3
128	4	3	4	2	4	.	4	0
136	4	0	1	3	3	2	3	0
144	3	2	.	2	2	4	0	1
152	2	2	.	.	13	13	7	4
160	0	.	0	7	12	10	.	12
168	1	11	14	17	7	15	17	14
176	16	11	11	16	22	17	18	24
184	27	27	27	.	39	41	40	30
192	19	41	.	.	27	27	60	70
200	.	.	121	101	1	1	300	420
208	.	.	121	.	.	120	127	11
216	0	3	0	.	2	2	3	2
224	.	.	.	.	2	2	2	0
232	.	.	1	18	18	19	20	18
240	1	1	.	.	.	.	.	0
248	0	0	.	.	0	0	0	0
256	.	.	.	.	0	0	0	0
264	.	.	.	0	0	0	0	0
272	.	.	.	.	0	0	0	0
280	.	0	.	.	0	0	0	0
288	.	0	.	.	0	0	0	0
296	.	0	.	.	0	0	0	0
304	.	0	.	.	0	0	0	0
312	.	0	.	.	0	0	0	0
320	.	.	.	.	.	.	.	.
328	.	.	.	.	.	.	.	.
336	.	.	.	.	.	.	.	.
344	.	.	.	.	.	.	.	.
352	.	.	.	.	.	.	.	.
360	.	.	.	.	.	.	.	.
368	.	.	.	.	.	.	.	.
376	.	.	.	.	.	.	.	.
384	.	.	.	.	.	.	.	.
392	.	.	.	.	.	.	.	.
400	.	.	.	.	.	.	.	.
408	.	.	.	.	.	.	.	.
416	.	.	.	.	.	.	.	.
424	.	.	.	.	.	.	.	.
432	.	.	.	.	.	.	.	.
440	.	.	.	.	.	.	.	.
448	.	.	.	.	.	.	.	.
456	.	.	.	.	.	.	.	.
464	.	.	.	.	.	.	.	.
472	.	.	.	.	.	.	.	.
480	.	.	.	.	.	.	.	.
488	.	.	.	.	.	.	.	.
496	.	.	.	.	.	.	.	.
504	.	.	.	.	.	.	.	.
512	.	.	.	.	.	.	.	.
520	.	.	.	.	.	.	.	.
528	.	.	.	.	.	.	.	.
536	.	.	.	.	.	.	.	.
544	.	.	.	.	.	.	.	.
552	.	.	.	.	.	.	.	.
560	.	.	.	.	.	.	.	.
568	.	.	.	.	.	.	.	.
576	.	.	.	.	.	.	.	.
584	.	.	.	.	.	.	.	.
592	.	.	.	.	.	.	.	.
600	.	.	.	.	.	.	.	.
608	.	.	.	.	.	.	.	.
616	.	.	.	.	.	.	.	.
624	.	.	.	.	.	.	.	.
632	.	.	.	.	.	.	.	.
640	.	.	.	.	.	.	.	.
648	.	.	.	.	.	.	.	.
656	.	.	.	.	.	.	.	.
664	.	.	.	.	.	.	.	.
672	.	.	.	.	.	.	.	.
680	.	.	.	.	.	.	.	.
688	.	.	.	.	.	.	.	.
696	.	.	.	.	.	.	.	.
704	.	.	.	.	.	.	.	.
712	.	.	.	.	.	.	.	.
720	.	.	.	.	.	.	.	.
728	.	.	.	.	.	.	.	.
736	.	.	.	.	.	.	.	.
744	.	.	.	.	.	.	.	.
752	.	.	.	.	.	.	.	.
760	.	.	.	.	.	.	.	.
768	.	.	.	.	.	.	.	.
776	.	.	.	.	.	.	.	.
784	.	.	.	.	.	.	.	.
792	.	.	.	.	.	.	.	.
800	.	.	.	.	.	.	.	.
808	.	.	.	.	.	.	.	.
816	.	.	.	.	.	.	.	.
824	.	.	.	.	.	.	.	.
832	.	.	.	.	.	.	.	.
840	.	.	.	.	.	.	.	.
848	.	.	.	.	.	.	.	.
856	.	.	.	.	.	.	.	.
864	.	.	.	.	.	.	.	.
872	.	.	.	.	.	.	.	.
880	.	.	.	.	.	.	.	.
888	.	.	.	.	.	.	.	.
896	.	.	.	.	.	.	.	.
904	.	.	.	.	.	.	.	.
912	.	.	.	.	.	.	.	.
920	.	.	.	.	.	.	.	.
928	.	.	.	.	.	.	.	.
936	.	.	.	.	.	.	.	.
944	.	.	.	.	.	.	.	.
952	.	.	.	.	.	.	.	.
960	.	.	.	.	.	.	.	.
968	.	.	.	.	.	.	.	.
976	.	.	.	.	.	.	.	.
984	.	.	.	.	.	.	.	.
992	.	.	.	.	.	.	.	.
1000	.	.	.	.	.	.	.	.
1008	.	.	.	.	.	.	.	.
1016	.	.	.	.	.	.	.	.
1024	.	.	.	.	.	.	.	.

± 2.8

.953

5062-1-0 5068

.047 : 424

250 250

5308

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D05-031

ANALYTICAL REPORT 100087

Customer: SSI
Date Received: 6-21-90
Work Order No: 90-2093

ID & A.L.O.I.: 544-90

Description: 90-3617-A-3
Tallow
Core 16
Segment 3

Analysis: Pu-239+240
Procedure: HIA-4-15

Results

$Pu^{239+240}$ = 9.27E+2 d/g/gram ± 1.7%

R^{238} = 1.67E+3 ± 20%

TI-SST-102

Calculations

$$\frac{2.208}{.4209} \quad \frac{(2.0230)\ 250}{(2.0080)(1.0007)(0.5308)(.957)}$$

Calculations L O Harvey Date 6/21/90

Reviewed T Barrington Date 7-16-91

Counting Information

By John Hughes

N. & I.E.	MA046 p2	MA046	MA923/4
Log Books	MA0291 p42	MA0290 p	MA0293 p42
Instrument	P.A.C. - 2	G.E. HSC.	Ludlum - 2
Err. Factor	v.5v51	v.5/421	v.1209
Date	10/1/90	/ /	10/2/90
Total Counts	4074		1157
Minutes	100		400
Counts/Minute	4.07		2.90
Background	1.87		0.142
Corrected C/M	2.37		2.758

64

R^{238} = 1.67E+3 ± 20%

$Pu^{239+240}$ = 9.27E+2 d/g ± 1.7%

based on one wt of sample taken

#2 L 10 10-8-90 544-90
90-3617 A-3

IN-1750 P M A
LT= 44086 RT= 240694
44086 44086 3 512 0 512 34816 0 0

0	0	0	0	0	0	0	0	
8	0	0	1	1	0	0	0	0
16	0	0	0	0	0	0	0	0
24	0	0	0	0	0	0	1	0
32	0	0	0	0	0	0	0	1
40	0	0	0	0	0	0	0	0
48	0	0	0	0	0	0	1	1
56	0	0	0	0	0	0	0	0
64	0	0	0	0	0	0	0	1
72		0	0	0	0	0	0	0
80	2	0	0	0	1	1	0	0
88	0	0	0	0	0	0	0	1
96	0	0	0	0	0	0	0	0
104	0	0	1	0	0	0	0	0
112	1	0	0	0	0	0	0	0
120	1	0	1	0	0	0	0	0
128	2	0	1	0	0	0	0	0
136	0	1			0	0	0	0
144	0	0	0	2	0	1	0	0
152	0	0	2	0	0	0	0	0
160	0	1	2	0	0	0	0	
168	1	0	1	2	0	0	0	0
176	0	2	1	2	1	2	1	2
184	1	2	4	2	2	5	3	3
192	6	1	1	6	13	9	10	20
200	34	30	52	118	130	138	245	
	55	130	19	1	1	1	1	5
216	1	4	4	2	2	1	4	4
224	2	3	6	19	18	25	40	65
232	89	[illegible]	[illegible]	[illegible]	[illegible]	467	587	
240	67	0	2	1	0	0	0	0
248	0	0	0	1	0	0	0	0
256	0	0	0	0	0	0	0	0
264	0	0	0	0	0	0	0	0
272	0			0	0	0	0	0
280	0	0	0	0	0	0	0	0
288	0	0	0	0	0	0	0	0
296	0	0	0	0	0	0	2	0
304	0	0	0	0	0	0	0	0
312	0	0	0	0	0	0	0	0
320	0	0	0	0	0	0	0	0
328	0	0	0	0	0	0	0	0
336	1	0	0			1	1	0
344	0	0	0	0	0	0	0	0
352	0	0	0	0	0	0	0	0
360	0	0	0	0	0	0	0	0

1418 - 3 - 4 = 1411

2536 - 0 - 0 = 2536

3947

.357 ±52

.643 ±39

D05-032

ANALYTICAL REPORT

100101

Customer: SSI
Date Received: 9-21-90
Work Order No: 90-3619

ID & A.L.G.: 547-90

Description: 90-3619-A-1
TK1108
Core 1a
Segment 2.5

Analysis: Pu-239+240, Pu-
Procedure: HIA-4-15

Results

Calculations

Calculations

Reviewed

Counting Information

Log Book			
Instrument	P.A.C. - 2	G.E. HPGe	Lucitum -
Eff. Factor	0.3467	0.37927	0.4
Date	10/1/90	/ /	/ /
Total Counts	21102		
Minutes	100		
Counts/Minute	211.02		
Background	1.62		
Corrected C/M	209.37		

547-90 Pu 10-3-90
90-3619-A-1

0	0	0	0	0	0	0	0	0
8	0	0	0	0	2	0	0	0
16	0	1	0	0	1	0	1	1
24	0	1	1	1	2	0	0	0
32	2	1	1	0	0	0	0	1
40	0	2	0	1	2	0	2	2
48	1	1	0	0	1	1	1	1
56	0	1	1	0	1	1	1	0
64	2	3	1	2	0	1	1	0
72	2	0	1	0	1	1	1	3
80	1	2	4	3	2	3	2	2
88	0	3	2	1	1	1	3	2
96	2	0	3	3	1	1	2	2
104	4	1	1	2	4	0	3	3
112	3	4	6	3	1	7	3	2
120	4	3	3	0	1	0	4	7
128	3	3	6	4	5	6	8	9
136	6	7	7	6	6	6	6	4
144	3	9	5	5	9	13	11	19
152	6	9	12	16	15	16	13	21
160	12	17	14	17	22	11	21	31
168	20	25	27	28	27	33	36	29
176	30	29	31	35	42	44	33	29
184	37	33	51	50	52	69	61	73
192	65	71	86	79	97	112	114	135
200	141	170	234	221	399	422	483	507
208	800	893	757	427	75	9	3	4
216	0	0	0	2	3	1	2	7
224	3	3	4	9	1	3	3	9
232	13	1	17	20	1	3	20	28
240	1	1	0	0	0	0	0	0
248	0	0	0	0	0	0	0	0
256	0	0	0	0	0	0	0	0
264	0	0	0	0	0	0	0	0
272	0	0	0	0	0	0	0	0
280	0	0	0	0	0	0	0	0
288	0	0	0	0	0	0	0	0
296	0	0	0	0	0	0	0	0
304	0	0	0	0	0	0	0	0
312	0	0	0	0	0	0	0	0

4470 - 0 = 4467

166 - 0 = 166

4633

D05-033

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ANALYTICAL REPORT 100113

Customer: SSI
Date Received: 8-21-90
Work Order No: [illegible]

ID # A.L.A.: 548-90

Description: 90-3619-A-2
Thitle
Core 10
Segment J 5

Analysis: Pu-239+240
Procedure: HIA-4-15

Results

$Pu^{239+240}$ = 268 ± 5 4n/2 net wt
± 5.7%

Pu^{238} 2.56E+4 4n/2 net wt
± 10.4%

TI-337-03

v. Stoly + Ovel -

2(1.0040) → 2(1.0115) − 1.0007

840 53645 p 57, 59

CO4

CO Harvey 8/21/90

Calculations

$$\frac{317.72}{.5051}\ \frac{(2.0230)(250)}{(2.0080)(.5561)(.957)(1.00)}\ \frac{(.98)\ Pu\ 239+240}{\text{[illegible]}} = \frac{2.654 \times 10^{5}}{\text{[illegible]}}\ 4n/2 \pm 5.5\%$$

$$= 2.557 \times 10^{4} \pm 10.2\%$$

Calculations: Clark O Harvey Date 11/12/90

Reviewed: R Barrington Date 1-21-91

Counting Information

By: [illegible]

N/B T.E.	MM40 P2	MM2546	MA
Log Book	MM0.2341 p 41	MM0.2345 p	MM0.2343 p
Instrument	F.A.C. - 2	G.E. ASC.	Lucilux -
Err. Factor	0.3451	0.3792	0.4
Date	11/1/90	/ /	/ /
Total Counts	3172		
Minutes	10		
Counts/Minute	317.2		
Background	1.61		
Corrected C/M	315.72		

(3) 548-90 Pu 10-3-90
90-3619-A-2

4623-20 = 4603 .913 ±2.9

437-0- 437 .087 ±.44

5040

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D05-034

ANALYTICAL REPORT

100125

Customer: SSI
Date Received: 8-21-90
Work Order No: [illegible]

ID & A.L.I.D.: 549-90

Description: 90-3619-A-3
Inline
Core 1a
Segment 3

Analysis: Pu-239+240
Procedure: HIA-4-15

Calculations

$\frac{11.26}{.5062}$ $\frac{2.023}{2.004}$ $\frac{200}{(.9994)(.5289)(.957)}$

$\frac{(.957)}{A_{239+240}}$ = 4.940 E+3 ±7% 4/6 g ashed

$\frac{(.957)}{A_{238}}$ = 6.2355 E+3 ±7% "

Results

P_u 239+240 4.94E+3 dpm/g ashed ±7%

P_u 238 6.24 E+3 ±7%

TI-SST-123

Calculations L O Harvey Date 11/13/90

Reviewed Counting Information R Barrington Date 1-21-91

By [illegible]

Nuclide I.D.	Pu239	Pu240	Pu
Log Books	[illegible]	[illegible]	[illegible]
Instrument	P.A.C. - 1	G.E. ABC	Ludlum -
Eff. Factor	0.3062	0.3792	0.4
Date	10/1/90	/ /	/ /
Total Counts	1979		
Minutes	180		
Counts/Minute	11.00		
Background	1.73		
Corrected C/M	11.26		

6.00 based on average wt samples fwd

NEA 12 549-90

10-8-90 90-3619-A-2

IN-1750 P H A
LI= 44080 KI= 240374

44080	44080	3	1330	0	512	34010	0	0
0			0			0	0	2
8			0	0	1	0	0	1
16	1	3	2	2	3	0	1	3
24	1	1	0	2	3	2	0	0
32	0	0	0	1	1	1	2	0
40		1	2	0	0	0	1	1
48	0	1	2	1	1	0	0	0
56	2	0	0	0	0	2	1	0
64	1	1			1	0	3	1
72		1	0		2	1	3	0
80	0	0	1	2	1	1	2	1
88	3	1	1	2	3	0	2	2
96	0	1	0	2	0	3	3	2
104	2	1			2	5	1	0
112	1	3	1	4	3	4	3	1
120	3	4	2	1	1	2	3	2
128	3	3	3	0			0	1
136	5	7	5		5		4	7
144	2	10	7	12	5	6	10	7
152	8	11	14	11	13	5	11	13
160	12	10	7	10	14	18	13	16
168	12	18	23	25			26	19
176	24	24	27	21	27	27	31	31
184	34	36	29	53	35	57	44	63
192	74	71	78	77	118	122	132	177
200	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	832
208		309	152	26	22	23	19	27
216	39	38	31	34	41	49	44	52
224	21	70	103	117	141	139	166	247
232	333	477	605	707	845	865	1177	1[illegible]
		64	2	0	0	0	0	1
248	0	0	0	0	0	0	0	1
256	0	0	0	0	0	0	0	0
264	0	1	0	1	0	0	0	0
[illegible]		0			0	0	1	0
280	0	0	1	0	0	0	0	0
288	0	1	0	0	0	0	0	0
296	0	0	1	0	0	0	1	0
304	0			0	0	0	0	1
312	0	0	0	0	0	0	0	0
320	0	0	0	0	0	0	0	0
328	0	0	0	0	0	0	0	0

.437 ±29%

4858 - 64 - 11 = 4793

.563 ±25%

6166 - 0 - 7 = 6159

10942

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D05-035

ANALYTICAL REPORT

100369

Customer: SST
Date Received: 9-11-90
Work Order No: M6204

ID & A.L.O.: 607-90

Description: 90-4178-A-1
TK1108
Core 16
Seg COMPOSITE

Analysis: Pu-239+ 240
Procedure: HTA-4-15 (+ Isol)

BNW 52917 p. 125: 0.6025g + 250mL - 2.0361ml → 2.0409ml - 1000.70 glass
BNW 53645 p.72 BNW 53645 p.78

Results

$Pu^{239+240}$ = 2.55 E+5 dpm/g wet wt
± 5%

Pu^{237} = 1.46 E+4 dpm/g wet wt
± 7%

Calculations

$$\frac{301.60}{0.5051} \frac{(2.0409)(250)}{(3.1000)(2.0361)(0.6025)} = 2.4819\ E+6\ dpm/g$$

$$\frac{2.4819\ E+6}{.719} = 3.5546\ E+6\ dpm/g \pm 4.6\%$$

$$\frac{3.5546\ E+6}{2.7042} = 1.458\ E+5 \pm 6.7\%$$

Calculations Diane E Kopelsky / Lea Harvey Date 11-2-90

Reviewed R. Barrington Date 1-21-91

Counting Information

By Diane E Kopelsky

M. & T.E.	MW005 Rev2	W42546	MA
Log Book:	BNW52741 p5	BNW52825 p	BNW52343 p
Instrument	P.A.C. - 2	G.E. ASC.	Lucitum -
Eff. Factor	0.3451	0.37927	0.4
Date	10/25/90	/ /	/ /
Total Counts	3033		
Minutes	10		
Counts/Minute	303.30	.	.
Background	1.70	.	.
Corrected C/M	301.60	.	.

TE-SST-104

607-90 SST C16 90-4178-A-1 Pu (4) 11-26-90

TN-1750 P H A

LT= 19288 RT= 19290

19288 19290 0 1536 0 512 34816 0 0

0	0	0	0	0	0	0	0	0
8	0	0	0	2	2	1	3	3
16	2	2	6	3	3	5	2	2
24	2	3	5	1	3	8	7	5
32	2	1	3	5	3	5	7	0
40	5	1	4	5	3	2	2	5
48	9	3	0	6	5	5	3	4
56	1	4	3	3	5	2	3	5
64	8	2	0	6	3	1	4	7
72	6	6	3	6	3	2	2	4
80	7	2	8	4	8	3	5	11
88	6	4	3	7	9	9	6	3
96	6	6	12	12	8	8	9	7
104	9	8	12	7	5	11	8	6
112	11	8	5	11	7	16	13	14
120	8	11	7	12	11	18	16	13
128	19	17	13	7	7	14	17	23
136	13	22	16	17	21	17	22	20
144	30	24	23	27	22	25	19	19
152	36	34	34	35	23	30	41	29
160	40	37	39	43	44	42	39	53
168	57	48	60	60	65	74	84	71
176	76	82	98	111	85	101	116	93
184	117	128	153	145	163	161	185	193
192	220	232	239	284	329	346	406	472
200	519	620	696	949	1087	1326	1730	2342
208	2725	3177	3854	4672	4871	3788	1290	176
216	10	12	21	9	25	24	23	27
224	25	29	31	37	30	52	49	52
232	66	71	70	97	131	180	175	243
240	198	230	245	155	32	4	0	0
248	0	0	0	0	0	0	0	0
256	0	1	1	1	0	0	1	0
264								

27159 - 37 - 32 = 27090
.946
± 6.2%

1557 - 0 - 1 = 1556
.054
± 5%

28646

D05-036

ANALYTICAL REPORT 100381

Customer: SST
Date Received: 9-11-90
Work Order No: Ma20-98

ID & A.L.O.: 608 -90

Description: 90-4178-A-2
TK1108
Core 1a
Seq COMPOSITE

Analysis: Pu-239+ 240
Procedure: HTA-4-15 (+ Iso)

Results

$Pu^{239+240}$ = 2.90 E+5 d/m / 2 unit wt
± 4%

Pu^{238} = 1.66 E+4 d/m / 2 unit wt
± 7%

TE-SST-104

BW52917 p. 125: 0.4527g + 25mL - 2.0361 ml → 2.0409 ml - 1000.70 A
BW03645 p.72 BW03645 p.75 glass

Rpennington 10/22/90

Calculations

$$\frac{245.62}{.5051} \frac{(2.0409)(250)}{(2.0361)(1.0007)(0.4527)(.919)}$$

.944 = 2.797 E+6 ± 3.4%

.056 = 1.659 E+4 ± 6.7%

Calculations L O Kearney Date 11-2-90

Reviewed R Pennington Date 1-21-91

Counting Information

By Dan Quigley

M. & T.E.	MW00572	MW42546	NA
Log Book:	BW52347 p.57	BW53825 p.	BW52343 p.
Instrument	P.A.C. - 2	G.E. ASC.	Ludlum -
Eff. Factor	0.5051	0.37927	0.4
Date	11/25/90	/ /	/ /
Total Counts	20409		
Minutes	100		
Counts/Minute	204.09		
Background	1.46		
Corrected C/M	202.63		

608-90 SST C16 90-4178-A-2 Pu

11-28-90

TN-1750 P H A
LT= 16838 RT= 16838

16838	16838	0	2048	0	512	34816	0	0
0	0	0	0	0	0	0	0	0
8	0	0	3	4	3	4	7	5
16	5	5	7	5	7	5	7	6
24	9	2	7	11	7	9	7	12
32	4	2	5	7	6	4	6	4
40	4	3	4	12	8	10	9	9
48	2	7	5	8	5	6	11	4
56	10	7	5	7	14	6	6	7
64	8	8	12	11	7	7	8	8
72	13	7	7	8	8	14	11	11
80	10	7	7	12	8	12	6	20
88	10	14	10	8	13	11	8	14
96	11	16	11	6	15	10	16	6
104	13	10	9	13	12	17	13	18
112	14	13	19	11	14	13	14	16
120	13	12	11	12	14	11	14	18
128	8	8	16	24	13	15	15	11
136	23	20	13	18	12	24	12	23
144	21	21	26	20	19	21	25	20
152	22	32	29	25	25	29	37	21
160	28	20	23	34	28	33	31	33
168	35	38	34	39	49	38	52	37
176	45	61	49	56	56	57	66	66
184	74	90	90	100	111	104	127	138
192	170	193	208	248	301	376	404	479
200	528	632	776	950	1141	1406	1683	2011
208	2336	2719	3082	3244	2305	818	116	5
216	11	10	11	13	16	11	8	17
224	14	23	24	23	24	44	41	54
232	51	66	76	97	132	163	159	157
240	166	174	54	6	0	0	0	0
248	0	0	1	0	0	0	0	0
256	0	0	0	0	0	0	0	0
264	0	0	1	0	0	0	0	0
272	0	0	0	0	0	0	1	1
280	0	0	0	1	0	0	0	0
288	0	0	0	0	0	0	0	0
296	0	0	0	0	0	0	0	0

18796 - 26 - 51 = 19679
.944 ± 4.4%

1124 - 0 - 8 = 1116
.056 ± 5.9%

19795

D05-037

ANALYTICAL REPORT

100393

Customer: SST
Date Received: 9-11-90
Work Order No: M6204

ID & A.L.O.: 609 -90

Description: 90-4178-4-3
TK1108
Core 16
Seg COMPOSITE

Analysis: Pu-239+ 240
Procedure: HTA-4-15 (+ Iso)

Results

$Pu^{239+240}$ = 7.99E+4 d/m/g
± 9%

Pu^{237} = 2.23E+4 d/m/g
± 7%

TE-237- 104

BNW52917 p. 125, 250mL - 2.0361 mL → 2.0409 mL - 1000.70 ×
0.4326 + 0.4327 / 2 → BNW53645 p.72 BNW53645 p.75

Calculations

$$\frac{2.585}{0.4132}\left(\frac{(2.0409)(250)}{(1.097)(2.0361)((0.4326+0.4327)/2)}\right) = 2.9693\ E+4\ d/m/g$$

2.9693E+4 / .309 = 7.99 E+4 d/m/g

2.9693E+4 / .691 = 2.23 E+4 d/m/g

Calculations Anne E. Kozlowski / Cathy
Date 11-5-90 / 12/31/91

Reviewed R. Bonington
Date 1-21-91

Counting Information

By Anne E. Kozlowski

M. & T.E.	M4005	M4254	M 92319
Log Books	BNW52741 p.51	BNW52825 p.	BNW52743 p.44
Instrument	P.A.C. - 2	G.E. ABC.	Ludlum - 5
Eff. Factor	0.5057	0.37927	0.4132
Date	10/23/90	/ /	10/25/90
Total Counts	3278		1327
Minutes	100		60
Counts/Minute	5.78		2.587
Background	1.81		0.362
Corrected C/M	3.62		2.225
	12		6

L06-90 SST C16 90-4178-4-3 Pu 15 11-26-90

IN-1750 P n m
L14 18056 K14 411274

REBAUN NO.=	0							
114	0	2	1	2	0	3	0	0
122	0	0	0	2	2	1	1	1
130	1	1	1	3	2	1	0	4
138	2	0	3	1	0	4	1	3
146	0	3	3	4	1	3	2	3
154	3	7	3	3	1	3	6	4
162	2	2	3	3	6	4	9	9
170	8	7	8	4	3	7	7	7
178	11	6	6	10	8	12	9	15
186	7	10	15	27	21	12	28	22
194	21	23	34	37	44	62	67	85
202	141	132	182	232	327	377	437	372
210	217	34	6	1	3	11	3	10
218	8	11	11	12	22	11	22	20
226	27	27	36	35	38	75	123	201
234	277	435	611	837	820	1083	943	288
242	0	0	2	1	0	0	0	0
250	0	0	0	0	0	0	2	0
258	0	1	0	0	0	0	0	0
266	0	0	0	0	0	0	0	0
274	0	0	0	1	0	0	0	0
282	0	0	0	0	0	1	0	0
290	0	0	0	0	0	0	0	0
298	0	0	0					

9337 -23 - 26 = 2288
.309
± 9.2%

5116 -0 -10 = 5106
.691
± 2.7%

7394

PH2O @ 22.5°C
= 95676 → 195.5178 ANALYTICAL REPORT 100312

Customer: SST
Date Received: 9-5-90
Work Order No: M620 48

2.0699g + 194.8643g

2(1.0040) → 2(1.0115) − .0007 slope

BWW 53645 P 54.54
COW

ID & A.L.O.: 590 -90

Description: 90-4180-C-1
TK1108
Core 16
Segment CCM

Analysis: Pu-239+ 240
Procedures: HTA-4-15 (+ Iso)

Calculations

$$\frac{17.93}{.5051}\ \frac{(2.0230)(195.5178)}{(2.0080)(1.0007)(2.0678)(.757)}$$

.977 $P_u^{239+240}$ = 3.446 E+3 d/m ± 5.9% % unc

.023 P_u^{238} = 9.113 E+1 d/m ± 10.1% %

Results

$P_u^{239+240}$ = 3.45E+3 d/m ± 5.9% % unc

P_u^{238} = 9.11E+1 d/m ± 10.1% % unc

TF-SST-105

Calculations L O Harvey Date 1/16/90

Reviewed Denise L Bellofatto Date 1-16-91

Counting Information

By Jean Reigle

N. & T.E.	MMX0502	MM42546	MA
Log Book:	MM62347 p 42	MM62825 p	MM62343 p
Instrument	P.A.C. - 2	G.E. ASC.	Ludlum -
Eff. Factor	0.50	0.37927	0.4
Date	1/01/90	/ /	/ /
Total Counts	792		
Minutes	102		
Counts/Minute	7.76		
Background	1.43		
Corrected C/M	12.23		

(16)

296	0	1	0	0	0	0	2	1
304	1	1	0	0	0	1		

ASA 16 590-90
10-8-90 90-4180-C-1

IN-1750 P H A
LI= 44086 KI= 240694
44086 44086 3 3584 0 312 34610 0 0

		0	0	0	0	0	1	1
8	1	0	1	2	0	0	0	0
16	2	1	2	1	0	1	1	0
24	0	0	0	0	0	1	0	1
32	0	0		0		1	3	1
40	3	2	2	0	2	0	0	0
48	0	1	2	3	0	0	0	1
56	1	1	0	0	1	0	1	1
64	0	1	0			0	1	0
72	2	2	0	1	0	1	1	1
80	2	3	0	1	0	0	1	1
88	0	0	4	2	0	1	1	1
96	1	0	1	0	0	1	0	0
104	1	3	1	2	1	1	2	1
112	0	3	3	2	1	1	4	0
120	1	2	3	4	2	4	3	3
128	3	4	0	3	3			5
136	3	3	0	0	1	3	5	8
144	4	4	10	8	7	9	7	7
152	10	7	7	18	10	8	15	13
160	15	23	17	13	14	21	2	23
168	25		28	27	32	33	29	38
176	30	36	38	33	47	55	48	72
184	67	75	73	90	78	115	118	133
192	148	179	194	210	231	302	426	454
200			1185	1317	2189	2747	3645	5029
208	5420	3992	1152	142	8	0	0	7
216	5	8	7	14	11	14	24	23
224	24	15	8	0	0	10	10	11
232	34	33	0	43		30	113	123
240	92	26	1	0	0	0	0	0
248	0	0	1	1	0	1	2	6
256	5	8	2	0	0	0	0	1
264	0	0	1			0	0	0
272	0	0	0	0	0	0	0	0
280	0	0	0	1	0	2	1	3
288	1	1	0	2	0	0	0	0
296	1	0	0	1	1	0	0	
	2	3	6	1	3	1	3	1
312	2	0	1	0	0	0	0	0
320	0	0	0	0	0	0	0	0
328	0	0	0	0	0	0		
336	1	0	0	1	1	1	3	1
344	2	6	1	0	2	2	1	0

.977 × 26

25724 − 20 − 19 = 25685

.023 × 26

616 − 0 − 19 = 597

26282

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D05-039

ρ H₂O @ 22.5°C
= .99626 → 197.4122 ANALYTICAL REPORT

100324

2.1978g + 196.772bg

2(1.0040) → 2(1.0115) − 0.9994

BBW 53645 p 54, 59

COW

Customer: SST
Date Received: 9-5-90
Work Order No: Ma20455

ID & A.L.O.: 591 -90

Description: 90-4180-C-2
TK1108
Core 16
Segment CDM

Analysis: Pu-239+ 240
Procedure: HTA-4-15 (+ 1sa)

Results

$R_{239+240}$ = 3.37E+3 d/m/g ± 5.9% g wet wt

R_{238} = 1.016E+2 d/m/g ±10.2% g wet wt

TI-95T-155

Calculations

$$\frac{18.50}{.5051}\,\frac{(2.0230)\,(197.4122)}{(2.0080)\,(.9994)\,(2.1978)\,(.957)}$$

.971 → $R_{239+240}$ = 3.365 E+3 d/m/g ± 5.9% g wet wt

.029 → R_{238} = 1.005 E+2 ± 10.2%

Calculations K. O. Hanny Date 11/6/90

Reviewed Diana Z. Bollinger Date 1-16-91

Counting Information

By Dan Kugler

N. & T.E.	MA005.12	MA42546	MA
Log Books	BMB52341 p 22	BMB52825 p	BMB52343 p
Instrument	P.A.C. - 2	G.E. ASC.	Ludlum -
Eff. Factor	0.5057	0.37927	0.4
Date	10/1/90	/ /	/ /
Total Counts	2018		
Minutes	100		
Counts/Minute	20.18		
Background	1.66		
Corrected C/M	18.52		

(14) 1.50

AEA 14 591-90
10-8-90 90-4180-C-2

IA-1750 F M M
[illegible] = 240694

44080 44080 3 2560 0 512 34816 0 0

0	0	0	0	0	0	0	0	1
8	1	1	1	1	2	1	2	1
16	1	2	1	1	3			5
24	0	1	1	3	1	3	1	4
32	1	2	2	2	4	1	3	1
40	0	1	2	0	2	2	1	1
48	1	0	0	3	4	4	3	2
56		2	0	2	0	1	5	1
64	4	1	1	2	5	3	4	2
72	2	2	4	4	5	3	2	1
80	2	2	1	1	3	2	3	3
	1	3	2	4	2	3	3	6
96	2	2	1	2	4	2	3	4
104	3	3	3	2	3	0	4	1
112	2	2	3	1	2	3	4	4
120	1	4			0	6	5	6
128	0	5	3	2	8	5	8	6
136	10	8	7	3	5	7	10	9
144	12	5	8	10	12	13	13	14
152	16	1		14	16	15	19	16
160	16	22	16	23	12	18	20	19
168	24	20	23	33	17	33	28	30
176	47	47	52	46	52	57	49	47
184	53	53	72	77	77	77	77	110
192	131	132	178	179	242	311	405	521
200	728	923	1277	1630	1998	2517	3234	3562
208	2874	1320	312	49	9	4	2	1
216	4	4	2	3	3			14
224	7	8	11	13	16	18	14	26
232	36	48	33	79	79	79	102	82
240	33	28	2	0	0	0	0	0
248	0	0	0	0	0			0
256		0	1	0	0	0	0	0
264	0	0	1	0	0	0	0	0

.971 ± 4.4%

18462 − 13 − 36 = 18423

.029 ± 4.1%

565 − 0 − 20 = 545

18968

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D05-040

ρ HW e 2252
= .99676
A 97.2134 ~ ANALYTICAL REPORT

100337

Customer: SST
Date Received: 9-5-90
Work Order No: M6204

197.5712g

2(1.0040) → 2(1.0115) ~ 1.0007
84 ~ 58645 ρ 54, 59
Cert

ID & A.L.O.: 593-90

Description: 90-4160-C-5
TK110B
Core 16
Segment CDN

Analysis: Pu-239+240
Procedures: HTA-4-15 (+ Iso)

Results

239+240
R = 24.1 d/g
± 3.78% 1σ counting

R 238
= 45.1 d/g
± 12.6% 1σ counting

based on counting at sample location
TI-SST-105

Calculations

$$\frac{.298}{.4209} \quad \frac{2.0230}{2.008} \quad \frac{197.2134}{(1.0007)(2.1235)(.957)}$$

(.248) / A 239+240 = 24.078 d/g ± 3.78% 1σ counting
(.652) / A 238 = 45.81 " ± 12.6%

G O Harvey 9/27/90

Calculations G O Harvey Date 11/2/91
Reviewed Diana L Bellizzatto Date 1-16-91
Counting Information
By Jim Kuykendall

N. & T.E.	MN005	MA2546	MA 0016
Log Book	BM62347 p	BM62825 p	BM62343 p/0
Instrument	P.A.C. -	G.E. ASC.	Ludlum - 1
Eff. Factor	0.50	0.37927	0.4209
Date	/ /	/ /	10/1/90
Total Counts			2213
Minutes			480
Counts/Minute			.52
Background			.32
Corrected C/M			2.20

(12)

AEA 13
10-8-90
593-90
90-4160-C-5

IA-1750 C H M
RI= 240694

44086 44086 3 2048 0 512 34816 0 0

0	0	0	0	0	0	0	0	0	0
8	0	0	0	0	0	0	0	0	0
16	0	0	0	0	0	0	0	0	0
24		0	0	0	0	0	0	0	0
32	0	0	1	0	0	0	0	0	0
40	0	0	1	0	1	0	0	0	0
48	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0
64	0	0	0	0	0	0	0	0	0
72	0	0	0	0	0	0	0	0	0
80	0	0	0	0	0	0	0	0	0
88	0	0	0	0	1	0	0	0	0
96	0	0	0	0	0	0	0	0	0
104	0	0	0	0	0	0	0	0	0
112	0	0	0	0	0	0	0	0	0
120	0	0		0	0	0	0	0	0
128	0	0	0	0	0	0	1	0	0
136	0	0	0	0	0	0	0	0	0
144	0	0	0	0	0	0	0	0	0
152	0	0	0	0	0	0	0	0	0
160	1	0	1	0	0	0	0	0	0
168	0	0	0	1	2	0	1	0	1
176	3	0	1	1	0	1	0	3	0
184	1	0	1	0		3	2	2	
192	3	2	2	3	4	2	4	8	
200	10	9	11	14	17	16	21	25	
208	22	3	1	0	0	4	0		
216	2	3	3	1	4	3	2	1	
224	4	4	7	1	4	2	7	8	
232	22	25	28	27	46	44	49	15	
240	1	0	0	0	0	0	0	0	
248	0	0	0	0	0	0	0	0	
256	1	0	0	0	0	0			
264	0	0	0	0	0	0	0	0	
272	0	0	0	0	0	0	0	0	
280	0	0	0	0	0	0	0	0	
288	0		0	0	0	0	0	0	
296	0	0	1	0	1	1	0	0	
304	0	0	0	0	1	0	0	0	
312	0	0	0	0	0	0	0	0	
320		0	0	0	0	0	0	0	
328	0	0	0	0	0	0	0	0	
336	0	0	0	0	1	0	1	0	
344	0	1	0	0	1	0	0	0	
352	0		0	0	0	0	0	0	
360	0	0	0	0	0	0	0	0	

.248 ± 19.0%
133 - 3 - 6 = 124
.652 ± 14.1
255 - 0 - 23 = 232
356

D05-041

TOTAL ALPHA

CALIBRATION DATA

FOR

PROPORTIONAL ALPHA COUNTERS (PAC)

D05–042

HEDL-N-3219
P1

Tot & Calibration
PA 1 + 2

U.S. DEPARTMENT OF COMMERCE
NATIONAL BUREAU OF STANDARDS
WASHINGTON, D.C. 20234

REPORT OF CALIBRATION

PLUTONIUM-239 SOLUTION
submitted by
U.S. TESTING CORPORATION
Richland, Washington

The sample, identified as T-1350-1, consisted of a flame-sealed glass ampoule containing 4.0585 grams of a solution, said to be plutonium-239 in 4.291 M HNO_3.

The alpha-particle emission rate per gram of this solution was determined by liquid-scintillation counting. Counting samples were prepared by quantitatively transferring aliquants of the source material into vials containing 10 milliliters of an emulsion scintillator.

The alpha-particle-emission rate per gram of this solution, due to plutonium-239 and alpha-particle-emitting impurities, as of October 1979, was

$$*1.97_6 \times 10^3\ \alpha s^{-1} g^{-1} \pm 1.0_5\%*.$$

The uncertainty in this value, 1.0_5 percent, is the linear sum of 0.3_5 percent, which is the limit of the random error at the 99-percent confidence level (4.032 S_m, where S_m is the standard error computed from 6 determinations), and 0.7 percent, which is the estimated upper limit of conceivable systematic errors.

For the Director,

W. B. Mann

W. B. Mann, Principal Scientist
Radioactivity Group
Center for Radiation Research

P.O. No. P-8213
November 27, 1979

D05-043

Hanford Engineering
Development Laboratory

P.O. BOX 1970 RICHLAND, WA 99352

HEDL-N-3219
P2

July 24, 1979

Radioactivity Standard T-1350
High Purity Plutonium-239

This radioactivity standard consists of plutonium-239 in a nominal four grams of solution in a flame-sealed glass ampoule. Twenty individual, serially numbered standards were prepared; their respective amounts of solution are as follows:

T-1350-1	4.0585	grams	T-1350-11	4.1040	grams
-2	4.2157	"	-12	4.1209	"
-3	4.3091	"	-13	3.9944	"
-4	4.0277	"	-14	4.0784	"
-5	4.1596	"	-15	4.0933	"
-6	4.3244	"	-16	3.9688	"
-7	4.1664	"	-17	4.1800	"
-8	4.0974	"	-18	4.3587	"
-9	4.0434	"	-19	4.2665	"
-10	3.9786	"	-20	4.0233	"

The solution is 4.291 molar nitric acid; its density is 1.126 grams per milliliter at 23.1 °C.

Nominal total alpha activity of the solution as of July 20, 1979 was

$$2.0 \times 10^3 \ s^{-1} g^{-1}$$

This radioactivity standard was prepared from plutonium oxide material obtained from Oak Ridge National Laboratory on June 18, 1979, batch number 277-AA. Plutonium isotopic composition, as stated by Oak Ridge National Laboratory for the basic material and as measured at HEDL by the Applied Chemistry and Analysis subsection upon the standard solution, is as follows:

	ORNL assay %	HEDL weight %
Pu-238	<1.2 ppm	0.00053
Pu-239	99.9985	99.998
Pu-240	12.6 ppm	0.00128
Pu-241	0.9 ppm	0.00015
Pu-242	1.4 ppm	<0.0002
Pu-244	2 ppm	nd

This radioactivity standard was prepared at the Hanford Engineering Development Laboratory, Chemical Engineering Department, Chemistry and Analysis Section.

Radiochemistry

of PAC81 & 82 [illegible] from T=1360 count data and NBS certification 7/24/79

NBS certified value $= 1.97_6 \times 10^3 \ \alpha\, s^{-1} g^{-1} = 1.0_5\%$ (99% cl)

$= 1.97_6 \times 10^3 \pm 20._7 \ \alpha\, s^{-1} g^{-1}$ (99% cl)

$= (1.97_6 \times 10^3 \pm 20._7)(\ldots) = 1.18_5 \times 10^5 \pm 1.2_4 \times 10^3 \ \alpha\, m^{-1} g^{-1}$ (99% cl)

$(1.18_5 \times 10^5 \pm 1.2_4 \times 10^3)(1.1261 \pm 0.0014) = 1.33_4 \times 10^5 \pm 1.4_6 \times 10^3$ d/m/g

geometry, uncertainty in calibration : $\pm 0.05\%$ (99% cl) [taken from cell program data]

12% adjust of T=1360, absolute activity

$= (1.33_4 \times 10^5 \pm 1.4_6 \times 10^3)(0.02493 \pm 0.00005)$

$= 3.32_4 \times 10^3 \pm \sqrt{(1.33_4 \times 10^5)^2 (2.49 \times 10^{-2})^2 + (1.33_4 \times 10^5)^2 (5 \times 10^{-5})^2}$

$= 3.32_4 \times 10^3 \pm 35._5$ d/m 0d 1979 (99% cl)

adjust of T=1360, absolute activity

$= (1.33_4 \times 10^5 \pm 1.4_6 \times 10^3)(0.02490 \pm 0.00005)$

$= 3.32_1 \times 10^3 \pm \sqrt{(1.33_4 \times 10^5)^2 (2.49 \times 10^{-2})^2 + (1.33_4 \times 10^5)^2 (5 \times 10^{-5})^2}$

$= 3.32_1 \times 10^3 \pm 35._4$ d/m 0d 1979 (99% cl)

Set 1:

1663.4 / (3324 ± 36) = 0.50043 ± 0.00545

1702.0 / (") = ~~[illegible]~~ Achung standard

1679.7 / (") = 0.50551 ± 0.00545

1671.8 / (") = 0.50294 ± 0.00544

1663.0 / (3324 ± 35) = 0.50677 ± 0.00534

1669.7 / (") = 0.50479 ± 0.00536

1664.9 / (") = 0.50665 ± 0.00536

1660.2 / (") = ~~[illegible]~~ Achung standard

$\Sigma(6) = 3.03739 \pm \sqrt{(.00545)^2 + (.00545)^2 + (.00545)^2 + (.00534)^2 + (.00536)^2 + (.00536)^2}$

$= 3.03739 \pm 0.01324$

$\bar{F} = \dfrac{3.03739 \pm 0.01324}{6} = \boxed{0.5062_1 \pm 0.002_{20}}$ AHP ±1

[illegible] = .4902

Δ = 3.1627%

1728.4 / (3324 ± 36) = ~~[illegible]~~ Achung standard

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$$.3603 \pm \sqrt{(.00547)^2 + (.00544)^2 + (.00547)^2 + (.00534)^2 + (.00536)^2 + (.00534)^2 + (.00529)^2}$$

$$.3603 \pm 0.01424$$

$$\frac{.3603 \pm 0.01424}{7} = \boxed{0.50514 \pm 0.002_{03}}$$

AUP #2

[illegible] .01453

[illegible] 2.94%

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TOTAL ALPHA

CALIBRATION DATA

FOR

SCINTILLATION ALPHA COUNTERS (SAC)

D05-047

Ludlum SAC Calibration data
1-6

BNW 52343
Page 5
Jean Langdon

[redacted]

T-1350 NBS Calibration Summary 10/27/88

24.90ul 3321 ± 35 d/m
24.92ul 3324 ± 35 d/m

24.90ul $\bar{X}_4$ 1405.70_8 cpm
$\bar{X}_4$ 1402.16_8 cpm
$\bar{X}_8$ 1403.93_8 cpm

3321 d/m ÷ 1403.93_8 cpm = 2.3655 d/c = 0.4227

24.92ul $\bar{X}_4$ 1384.71_8 cpm
24.92ul $\bar{X}_4$ 1387.86_8 cpm

$\bar{X}_8$ 1386.29_3 cpm

3324 d/m ÷ 1386.29_3 cpm = 2.3978 d/c = 0.4171

$\bar{X}_2$ = 0.4199

L. S. Kellogg
L. S. Kellogg

BNW LABORATORY NOTEBOOK NO.
52343

CHIEF, CIVIL DEFENSE RESEARCH CENTER
MAY 04 '89

D05-048

9 1 1 2 1 0 2 5

SAMPLE: Sirikwa-1, L-1

COLLECTED BY: [illegible]

COUNTED BY: [illegible]

REMARKS: NBS [illegible] Lot 239 [illegible] Date 11/20/88 [illegible] 92

24.90A 3321 ± 35 cpm Operating Voltage = 2.4

24.93A 3324 ± 35 cpm

SAMPLE NUMBER	DATE 19 88	INST. NO.	INT. (MIN.) T	RECORDER READING SCALE DIV.	TOTAL COUNTS N	RECORDED RATE R = N/T	COINC. CORR'N. C	BGD B	NET RATE X=R−B+C	GEOMETRY G	DISINTEGRATION RATE d/m
24.90A 1	11-27	1	10'	+	13458			14.2			
2				+	14074			"			
3				+	14127						
4				+	14085						
				+	$\bar{x}_1$ 14058.5				$\bar{x}_1$ = 1405 7/2 cpm		
				+					$\bar{x}_1$ 1402.10/2 cpm		
24.93A 1				+	14108				$\bar{x}_1$ = 1403 93/2 cpm		
2				+	13570						
3				+	13885						
4	11-28			+	13832			.57			
				+	$\bar{x}_1$ 13848.75				$\bar{x}_1$ = 1384 7/2 cpm		
				+					$\bar{x}_1$ = 1387 8/2 cpm		
Std, Antico 1				+	10071				$\bar{x}_1$ = 1386 29/2 cpm		
2				+	10205						
3				+	10035						
4				+	9900						
5				+	10037						
6				+	9909						
7				+	10157						
8				+	10155						
9				+	10340						
10				+	9964						
				+	$\bar{x}_{10}$ 10047.5						
				+							
				+							

BNW LABORATORY NOTEBOOK NO. [illegible]

WORLD FOR PATZ RECORDS CENTER

MAY 04 1989

BN-1700-133 (10-87) BECK, DENVER, COLO

D05-049

Book 53
Page 44
Jerri Kingsley
Page 2 of 2

BATTELLE-NORTHWEST
RICHLAND, WASHINGTON

ALPHA COUNTER DATA SHEET

SAMPLE Fuller-1, R-1
SUBMITTED BY Ed Kellogg
COUNTED BY Jerri Kingsley

REMARKS NBS 1350 Pu 239 standard
24901 3321 ± 35 dpm Operating Voltage 2.4
24921 3324 ± 35 dpm

SAMPLE NUMBER		DATE 10 88	INST. NO.	INT. (MIN.) T	RECORDER READING SCALE OF:	TOTAL COUNTS N	RECORDED RATE R = N/T	COINC. CORR'N. C	BGD B	NET RATE X = R − B + C	GEOMETRY %	DISINTEGRATION RATE d/m
24901	1	10-28	1	10	+	14001			157			
	2				+	13798						
	3				+	13886						
	4				+	14401						
					+	$\bar{X}$ 14023.25				$\bar{X}$ 1402.16 ± cpm		
					+							
					+							
					+							
24921	1				+	13967						
	2				+	13757						
	3				+	13817						
	4				+	13980						
					+	$\bar{X}$ 13880.25				$\bar{X}$ 1387.86 ± cpm		
					+							
					+							
					+							
					+							
					+							
					+							
					+							
					+							
					+							
					+							
					+							
					+							

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D05-050

9 1 1 2 1 1 0 3 7

[redacted]

SUBMITTED BY [illegible]

COUNTED BY [illegible]

REMARKS 3.0 24.902 = 3321 ± 95 cpm

24.922 = 3324 ± 95 cpm

SAMPLE NUMBER	DATE 19 87	INST. NO.	INT. (MIN.) T	RECORDER READING SCALE OF:	TOTAL COUNTS N	RECORDED RATE R = N/T	COINC. CORR'N. C	BGD B	NET RATE X = R − B + C	GEOMETRY G	DISINTEGRATION d.p.m.
T1350 24.902 1	0905 1-22	2	10	+	14206		3321	± [illegible]	6.1 ± 2.3	70 ml	0.1217
2	0915			+	13850		3324	13[illegible]	[illegible] ± 2.0	50 ml	0.1155
3	0928			+	14037					4π	X = 0.115
4	1003			+	14099						
				+	X 14048			X	14047 cpm		
				+				X	13974 cpm		
T1350 24.922 1	1014			+	13947			X	1401.1 cpm		
2	1028			+	13653						
3	1039			+	12614			X	1374.8 cpm		
4	1049			+	13779	—		X	1389.7 cpm		
				+	X 13748				X 1382.25 cpm		
				+							
R.J. Daily Control 1	1100			+	9724						
2	1111			+	9821						
3	1121			+	9752						
4	1133			+	9810						
5	1144			+	9766						
6	1154			+	9952						
7	1205			+	9843						
8	1218			+	9875						
9	1227			+	9894						
10	1247			+	9831		± 207 ± [illegible]				
				+	X 9826.8	± 31 ± 99	[illegible]				
				+							
				+							

MS-1300-133 (1-86) [illegible]

D05-051

[redacted] ZnS Alpha Scintillation Counter 4/26/85 [illegible]

Standard Counts
NBS-71350 Pu239 Std Source See HEPL-N-325 page 43

24.902 33213 35 dlm
24.922 33245 35 dlm

NBS 71350		Counts (10 min)	
24.902	#1	14562	
	2	14439	
	3	14504	
	4	14505	$\bar{x}_4$ = 14488
24.922	#1	14536	
	2	14424	
	3	14267	
	4	14454	$\bar{x}_4$ = 14353
L-3 Standard Repetition Counts	1	10282	
	2	10249	
	3	9905	
	4	10170	
	5	10366	
	6	10120	
	7	10346	
	8	10257	
	9	10037	9210 26
	10	9933	$\bar{x}_{10}$ = 10162 332 3100 32105 16
24.902	#1	14367	
	2	14365	
	3	14436	
	4	14516	$\bar{x}_4$ = 14425
24.922	#1	14570	
	2	14142	
	3	14080	
	4	14188	$\bar{x}_4$ = 14345

TN 1350 NBS CALIBRATION SUMMARY 01/22/87

24.90> 3321 ± 35 d/m
24.92> 3324 ± 35 d/m

24.90> $\overline{X}_4$ 1404.8 cpm
$\overline{X}_4$ 1397.4 cpm
$\overline{X}_2$ 1401.1 cpm

3321 d/m ÷ 1401.1 cpm = 2.370 d/c or 0.4219 Eff.

24.92> $\overline{X}_4$ 1374.8 cpm
$\overline{X}_4$ 1389.7 cpm
$\overline{X}_2$ 1382.25 cpm

3324 d/m ÷ 1382.25 cpm = 2.405 d/c or 0.4158 Eff.

$\overline{X}_2$ 0.4188_5

102

TN1350 NBS Calibration Summary 4/26/85 [illegible]

24.60 J 3321 ± 35 dkm
24.60 J 3324 ± 35 dkm

24.60 J $\bar{x}_4$ = 14488 cm
$\bar{y}_4$ = 14435 cm
$\bar{x}_8$ = 1445.7 cm

3321 dkm ÷ 1445.7 cm = 2.297 d/c = .4353 eff

24.62 $\bar{x}_4$ 1435.3 cm
$\bar{y}_4$ 1434.5 cm
$\bar{x}_8$ 1434.9 cm

3324 ÷ 1434.9 cm = 2.325 d/c = .4302 Eff
.4378 eff

WESTINGHOUSE HANFORD COMPANY
(HEDL)

ALPHA COUNTER DATA SHEET

SAMPLE [redacted]

SUBMITTED BY [illegible]

COUNTED BY [illegible]

REMARKS: 24630 Page 1 of 2

SAMPLE NUMBER	DATE 19 87	INST. NO.	INT. (HRS.) T	RECORDER READING SCALE DIV.	TOTAL COUNTS H	RECORDED RATE R = H/T	COINC. CORR'N. C	BGD B	NET RATE X = R − B + C	GEOMETRY S	DISINTEGRATION RATE d.s.
T1350 24920 1	8/27	4	.10		14244			.151			
2					14333						
3					14384						
4					14447	$\bar{x}_1$ = 1437.20			$\bar{x}_1$ = 1437.3 c/m		
									$\bar{x}_1$ = 1432.35 c/m		
									$\bar{x}_1$ = 1438.75 c/m		
T1350 24920 1					14199						
2					13973						
3					14030						
4					14013	$\bar{x}_0$ = 1403.25			$\bar{x}_0$ = 1405.375 c/m		
									$\bar{x}_1$ = 1399.75 c/m		
									$\bar{x}_8$ = 1405.25 c/m		
Daily Control 1					10262						
2					10223						
3					10313						
4					10579						
5					10194						
6					10455						
7					10283						
8					10262						
9					10357						
10					10381	$\bar{x}_1$ = 10339.9 ± 3.2 ± 1.1 = 10			212.3 σ		

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HOLTEC CORP. NO.
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D05-055

9 1 1 2 1 1 3 1 0 3 2

WESTINGHOUSE HANFORD COMPANY
(HEDL)

ALPHA COUNTER DATA SHEET

SAMPLE [illegible]

SUBMITTED BY [illegible]

COUNTED BY [illegible]

REMARKS: NH=3.0

Page 2 of 2

SAMPLE NUMBER	DATE 10 87	INST. NO.	INT. (MIN.) T	RECORDER READING SCALE OF:	TOTAL COUNTS N	RECORDED RATE R = N/T	COINC. CORR'N. C	BGD B	NET RATE R = R − B + C	GEOMETRY G	DISINTEGRATION RATE d/m
T1310 2/92 1	8:28	4	10		14200			151			
2					14259						
3					14324						
4					14411	$\bar{R}$ 14323.5			$\bar{R}_1$ 14332	35 cpm	
T1310 2/92 1					14033						
2					14003						
3					14032	—					
4					13895	$\bar{R}$ = 13921.75			$\bar{R}_1$ = 13921.75	35 cpm	

Example

$\bar{R}_{10}$ 10335.9 ± 32 ± 101 = 10610

$\sqrt{x^2 + x^2}$

10610

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Page 2 of 2

D05-056

Gathered 4/8/87 [illegible]

T1350 NBS Calibration Summary 8/28/87

24.90L 3321 ± 35 d/m
24.92L 3324 ± 35 d/m

24.90L $\bar{x}_4$ 1435.2 c/m
$\bar{x}_4$ 1432.4 c/m
$\bar{x}_8$ 1433.8 c/m

3321 d/m ÷ 1433.8 c/m = 2.3162 d/c = 0.4317

24.92L $\bar{x}_4$ 1405.4 c/m
$\bar{x}_4$ 1399.2 c/m
$\bar{x}_8$ 1402.3 c/m

3324 d/m ÷ 1402.3 c/m = 2.3704 d/c = 0.4219

$\bar{x}$ = 0.4218

BNW 52343
Page 2

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4/27/85

[redacted] ZnS Alpha Scintillation Counter
Standard Counts

NBS TI350 Pu 239 Standard Source See HEDL-N 3215 page 1-3

24.90d 33213 ± 50 dpm
24.62d 33245 ± 35 dpm

NBS TI350		Counts (10 minutes)	
24.90d	#1	13927	
	2	13845	
	3	13722	
	4	14016	$\bar{x}_4$ = 13877
24.62d	#1	13541	
	2	13543	
	3	13670	
	4	13744	$\bar{x}_4$ = 13644
L-5 Control Repetition Counts	#1	10091	
	2	10102	
	3	10295	
	4	10177	
	5	10154	
	6	10157	
	7	10166	
	8	10274	
	9	10215	$\bar{x}$ 212 26
	10	10220	$\bar{x}_{10}$ = 10169 ± 32 = 101 ± 3/10 1σ
24.90d	#1	13901	
	2	13860	
	3	13858	
	4	13868	$\bar{x}_4$ = 13847
24.62d	#1	13733	
	2	13452	
	3	13644	
	4	13436	$\bar{x}_4$ = 13566

T1350 NGS Calibration Summary (L-5) 4/27/85.

24.50 J 3321 ± 25 d/m
24.62 J 3324 ± 35 d/m

24.50 J

$\bar{x}_y$ = 13877 c/m
$\bar{x}_4$ = 13843 c/m
$\bar{x}_B$ = 1366.2 c/m

3321 d/m ÷ 1366.6 c/m = 2.356 d/c or .4374 Eff

24.62 J

$\bar{x}_y$ = 1362.4 c/m
$\bar{x}_4$ = 1356.6 c/m
$\bar{x}_B$ = 1355.5 c/m

3324 ± 35 ÷ 1355.5 c/m = 2.455 d/c or .4690 Eff

$\bar{x}_c$ = .4432 Eff

[redacted] Bi S Alpha Scin Tilelin Counter
Standard Counts

4/26/85 [illegible]

NBS 77350 Pu 235 Standard Source See [illegible] N. 3219 pages 1-3

24.902 3321 dpm
24.921 3324 dpm

NBS 77350		10 minute Count	
24.902	#1	14255	
	2	14070	
	3	14025	
	4	14002	$\bar{x}_1$ = 14088
24.921	#1	14032	
	2	13923	
	3	13680	
	4	14006	$\bar{x}_4$ = 13910
L-6 Control Repetitive Counts	#1	10477	
	2	10275	
	3	10352	
	4	10348	
	5	10183	
	6	10277	
	7	10230	
	8	10360	
	9	10150	
	10	10328	$\bar{x}_{10}$ = 10298 ± 32 = 101 : 106 (212) 16
24.902	#1	13905	
	2	13675	
	3	13906	
	4	14312	$\bar{x}_4$ = 13949
24.921	#1	14123	
	2	13687	
	3	13895	
	4	13617	$\bar{x}_4$ = 13832

4/26/85

Summary T1350 NBS Standard Calibration (L-6)

24.50J 3321 ± 35 d/m
24.52J 3324 ± 35 d/m

24.50J $\bar{x}_4$ = 1408.8 c/m
$\bar{x}_5$ = 1394.5 c/m
$\bar{x}_8$ = 1401.9 c/m

3321 d/m ÷ 1401.9 c/m = 2.369 d/c ~ .4221 Eff

24.52J $\bar{x}_4$ = 1391.0 c/m
$\bar{x}_5$ = 1383.2 c/m
$\bar{x}_8$ = 1387.1 c/m

3324 d/m ÷ 1387.1 c/m = 2.396 d/c ~ .4173 Eff
$\bar{x}_6$ = .4197 Eff

ALPHA ENERGY ANALYSIS

CALIBRATION DATA

D05-062

ALPHA ENERGY DETECTORS

CALIBRATION CHECKS

Sixteen detectors are used for alpha energy analysis (AEA). An electrodeposited source containing Np-237, Pu-239, and AM-241 with an activity of 44.6 dpm is counted on each detector. The activity of the calibration source is low in order to not contaminate the detectors, so counts from 2 days to a week are taken to obtain adequate counting statistics. This data is used to check the gain (energy vs. channel number) and the resolution of each detector. If the gain deviates significantly from normal, adjustments are made as necessary with the corresponding amplifier and the calibration source rectified. Printouts of spectra taken with the calibration source are kept in Room 971 in the 325 Bldg. All of the detectors are checked in this was so during a given year each detector is checked approximately 3-5 times.

The AEA detectors are not used for quantitative measurements, but rather to determine ratios of the alpha emitters present (such as the ratio of Pu-238 to Pu-239 & 240). The total alpha counting rate is obtained in a separate count with a promotional alpha counter, and control checks on these are run daily. This is a combined with the ratio information to give a quantitative estimate for each alpha emitter in a given sample.

TOTAL ALPHA

DAILY CONTROL DATA

FOR

PROPORTIONAL DATA COUNTERS (PAC)

D05-064

BNW-52341
1-
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1432954

LABORATORY RECORD BOOK NUMBER BNW- 52341	This document consists of ..... pages, copy no. .....
TITLE (INDICATE SUBJECT CONTENT) Alpha Proportional Counters PAC-1 and PAC-2 Daily Control Standard Counts and Background Counts	
AUTHOR - DIVISION AND DEPARTMENT A.C. Leaf Materials and Chemical Science Center Chemical Science Department	
PERIOD COVERED FROM	TO

Route To	P. R. No.	Location	Route Date	Signature & Date
AC LEAF	30969	325	JUL 17 1987	
L S Kellogg	30706	325	8-31-88	L S Kellogg

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D05-065

54-1100-005(10-84)

Entered by R. C. Leif 7/20/87 1

This book is to be used to record the date, daily control standard count, background counts for the Proportional Alpha Counters PAC-1 and PAC-2 along with the analysts initials.

Personnel authorized to make entries include:

R. C. Leif	7/20/87	RCL		
Jim Hughes	7/20/87	JH		
Anne E Kopelinsky	7/21/87	AEK	10-17-89 AEK	
W. Y. Matsumoto	12/18/87	WYM		
R. E. Bryson	2/11/88	RB	Nagas Chandra Mainli	2/5/90
Katherine J Conry	8/10/88	KJC	James H. Kaye	6/22/90
Nevada Lorelley	10-25-88	N. LA	Clark O'Haring	6/26/90

Persons Authorized to Review LRK

R Chen	6/14/88	RCh	L. R. Greenwood 9-18-90
L S Kellogg	9-20-88	LSK	
M C Walsh	3-27-89	MCW	
Virginia L Dunn	7-14-89	VLD	
[illegible]	12/29/89	SWT	
Anne E Kopelinsky	1-2-90	AEK	

Reviews

Pages 1 – 12	by R Chen	6/10/88
Pages 13 – 14	L S Kellogg	9-20-88
Pages 15 – 18	M C Walsh	3-27-89
pages 29 - 31	Anne E Kopelinsky	1-2-90

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D05-066

CONTROL CHART GENERATION PROGRAM

COUNTING SYSTEM: P.A.C.-1 WM00579 PROPORTIONAL ALPHA COUNTER
DATA FROM FILE PAC190.CON
CONTROL NUCLIDE: PU
NUCLIDE HALF LIFE: 24360 YEARS

NUMERICAL DATA INPUT SUMMARY

POINT	COUNT DATE	COUNT [C/M]
1	11- 6-90	27620.40
2	11- 6-90	27531.80
3	11- 6-90	27681.90
4	11- 6-90	27629.90
5	11- 6-90	27687.40
6	11- 7-90	27579.20
7	11- 7-90	27616.40
8	11- 7-90	27696.30
9	11- 7-90	27660.60
10	11- 7-90	27666.90
11	11- 8-90	27589.30
12	11- 8-90	27561.90
13	11- 8-90	27714.10
14	11- 8-90	27584.60
15	11- 8-90	27624.30

NUMBER OF DATA POINTS: 15
X BAR: 27629.67
SUM OF COUNT RATES: 414445.00
SUM OF COUNT RATE SQUARES: 11451000000.00
STANDARD DEVIATION: 54.76
[CHI SQUARE]/N: 1.014810
REFERENCE DATE: 11- 6-90

THE STANDARD DEVIATION AT THE 2 SIGMA CONFIDENCE LEVEL IS 109.52

THE 2 SIGMA CONFIDENCE LEVEL LIMITS ARE	27520.15	27739.19
THE 1% X BAR LIMITS ARE	27353.37	27905.97
THE 2% X BAR LIMITS ARE	27077.08	28182.26
THE 3% X BAR LIMITS ARE	26800.78	28458.56
THE REFERENCE DATE IS		11- 6-90

THE X BAR OF THE DATA POINTS IS 27629.66
THE STANDARD DEVIATION AT THE 2 SIGMA CONFIDENCE LEVEL IS 109.52

THE 2 SIGMA CONFIDENCE LEVEL LIMITS ARE	27520.13	27739.18
THE 1% X BAR LIMITS ARE	27353.36	27905.95
THE 2% X BAR LIMITS ARE	27077.06	28182.25
THE 3% X BAR LIMITS ARE	26800.77	28458.55
THE REFERENCE DATE IS		11-12-90

THE DECAY INTERVAL MEASURED FROM THE EXISTING CONTROLS DATE IS .164275E-01 YEARS

THE X BAR OF THE DATA POINTS IS 27629.23
THE STANDARD DEVIATION AT THE 2 SIGMA CONFIDENCE LEVEL IS 109.52

THE 2 SIGMA CONFIDENCE LEVEL LIMITS ARE	27519.71	27738.75
THE 1% X BAR LIMITS ARE	27352.93	27905.52
THE 2% X BAR LIMITS ARE	27076.64	28181.81
THE 3% X BAR LIMITS ARE	26800.35	28458.10
THE REFERENCE DATE IS		5-31-91

THE DECAY INTERVAL MEASURED FROM THE EXISTING CONTROLS DATE IS .564009 YEARS

CONTROL CHART GENERATION PROGRAM

COUNTING SYSTEM: P.A.C.-2 WM00582 PROPORTIONAL ALPHA COUNTER
CONTROL NUCLIDE: PU
NUCLIDE HALF LIFE: 24119 YEARS (per NDS Volume 40)

NUMERICAL DATA INPUT SUMMARY

POINT	COUNT DATE	COUNT [C/M]
1	11-14-90	27763.90
2	11-14-90	27840.50
3	11-14-90	27720.10
4	11-14-90	27726.30
5	11-14-90	27734.10
6	11-15-90	27753.90
7	11-15-90	27716.40
8	11-15-90	27850.30
9	11-15-90	27874.90
10	11-16-90	27815.20
11	11-16-90	27778.80
12	11-16-90	27685.80
13	11-16-90	27809.20
14	11-16-90	27784.10

NUMBER OF DATA POINTS:	14
X BAR:	27775.26
SUM OF COUNT RATES:	388854.00
SUM OF COUNT RATE SQUARES:	10800500000.00
STANDARD DEVIATION:	55.43
[CHI SQUARE]/N:	1.023050
REFERENCE DATE:	11-14-90

THE STANDARD DEVIATION AT THE 2 SIGMA CONFIDENCE LEVEL IS 110.85

THE 2 SIGMA CONFIDENCE LEVEL LIMITS ARE	27664.40	27886.11
THE 1% X BAR LIMITS ARE	27497.50	28053.01
THE 2% X BAR LIMITS ARE	27219.75	28330.76
THE 3% X BAR LIMITS ARE	26942.00	28608.51
THE REFERENCE DATE IS		11-14-90

THE X BAR OF THE DATA POINTS IS 27774.82
THE STANDARD DEVIATION AT THE 2 SIGMA CONFIDENCE LEVEL IS 110.85

THE 2 SIGMA CONFIDENCE LEVEL LIMITS ARE	27663.97	27885.67
THE 1% X BAR LIMITS ARE	27497.08	28052.57
THE 2% X BAR LIMITS ARE	27219.33	28330.32
THE 3% X BAR LIMITS ARE	26941.58	28608.07
THE REFERENCE DATE IS		5-31-91

THE DECAY INTERVAL MEASURED FROM THE EXISTING CONTROLS DATE IS .542106 YEARS

Proportional Alpha Counters (P.A.C.)
Daily Control Standard Counts and Backgrounds

Date	P.A.C.-1 100 min Bkg	P.A.C.-1 10 min Bkg	P.A.C.-1 10 min Count	P.A.C.-2 100 min Bkg	P.A.C.-2 10 min Bkg	P.A.C.-2 10 min Count	Analyst	Analyst	Date	P.A.C.-1 100 min Bkg	P.A.C.-1 10 min Bkg	P.A.C.-1 10 min Count	P.A.C.-2 100 min Bkg	P.A.C.-2 10 min Bkg	P.A.C.-2 10 min Count
7/31/90	0.92	0.9	273220	1.70	1.8	279569	HK	HK	9/10/90	1.68	1.4	274655	1.78	1.2	278206
8/1/90	0.93	0.8	273573	1.92	2.4	278698	HK	HK	9/10/90						277655 RC
8/2/90	0.91	0.8	273901	1.93	1.3	278556	HK	HK	9/11/90	1.61	1.3	273434	1.81	2.0	277880
8/3/90	1.02	1.0	274779	1.68	0.7	278795	HK	HK	9/11/90						279272 RC
8/6/90	0.91	1.1	273387	2.03	2.3	278591	HK	HK	9/12/90	Note: Main Tank valve was closed. No gas flow					
8/7/90	0.90	0.9	274744	1.88	1.9	279023	HK	HK	9/12/90	1.90	1.5	273861	1.74	1.6	278307
8/8/90	1.02	1.8	274739	1.71	1.5	278751	HK	HK	9/12/90						278504 RC
8/9/90	0.95	1.0	274697	1.68	1.5	278016 RC	HK	HK	9/13/90	1.76	1.8	273843	1.51	1.0	278544
8/9/90						279345	HK	HK	9/14/90	1.64	1.6	273930	1.64	1.3	279684
8/10/90	0.77	1.3	274218	1.90	2.1	279061	HK	HK	9/17/90	1.47	1.6	275211	1.83	1.4	279469
8/13/90	1.07	1.0	275117	1.99	1.6	279623	HK	HK	9/18/90	1.82	2.0	273757	1.81	2.1	278871
8/14/90	1.62	0.8	274874	1.88	2.2	278898	HK	HK	9/19/90	1.73	1.9	273954	1.87	1.2	278453
8/15/90	1.22	0.8	274507	2.14	2.4	278328 RC	HK	HK	9/20/90	1.54	1.0	274401	1.93	2.0	279583
8/15/90						279147	HK	HK	9/21/90	1.75	1.5	274312	1.80	2.0	278739
8/16/90	0.94	1.4	274660	1.97	2.1	279354	HK	HK	9/24/90	1.58	1.9	274106	1.32	1.9	278932
8/17/90	0.95	0.8	274908	2.09	3.0	279505	HK	HK	9/25/90	1.72	1.3	274949	1.76	1.3	278402
8/20/90	0.99	1.1	274253	1.98	2.0	279036	HK	HK	9/26/90	1.85	1.4	273996	1.76	1.4	278843
8/21/90	1.11	0.8	274073	1.72	1.2	278031 RC	HK	HK	9/27/90	1.61	1.1	274063	1.65	1.7	278617
8/21/90						278325	HK	HK	9/28/90	1.75	1.3	274598	2.05	1.8	278920
8/22/90	0.92	1.2	274549	1.71	1.4	279533	HK	[illegible]	10/1/90	1.93	1.6	273264	1.63	1.7	278020
8/23/90	1.06	1.1	274499	1.56	1.3	279593	HK	[illegible]	10/1/90						RC 278282
8/24/90	1.09	0.7	274744	1.56	2.1	278778	HK	[illegible]	10/2/90	1.46	1.9	274276	1.54	1.7	279924
8/27/90	0.90	1.0	274812	1.56	1.2	278501	HK	[illegible]	10/3/90	1.60	1.5	274626 HK	1.71	1.6	278405
8/28/90	0.83	1.2	274316	1.52	1.1	278873	HK	HK	10/3/90	1.60	1.5	274626	1.71	1.6	279513
8/29/90	1.00	1.4	275291	1.65	2.1	278303 RC	HK	[illegible]	10/4/90	1.69	1.9	270631	1.74	2.1	278521
8/29/90						279090	HK	[illegible]	10/4/90	Plate burned		273406			RC 278062 RC 278491
8/30/90	0.88	1.2	273717	1.67	1.6	278042 RC	HK	HK	10/4/90	Power outage					
8/30/90						279205	HK	HK	10/5/90	1.66	1.7	275513	1.70	1.5	278473
9/4/90	1.49	0.8	274352	1.81	2.3	278863	HK	HK	10/8/90	1.90	1.3	274288	1.73	1.4	279001
9/5/90	1.11	2.0	275584	2.37	2.8	278128	HK	HK	10/9/90	1.79	2.1	274957	1.49	1.2	278451
9/5/90	0.87					278688	HK	HK	10/10/90	1.95	1.7	270585 RC	1.86	1.1	278419
9/6/90	1.82	1.7	273947	1.70	1.9	278635	HK	HK	10/10/90			272977			
9/7/90	1.51	1.6	273708	1.66	1.2	279215	HK	HK	10/11/90	1.81	2.0	273659	1.72	2.1	277986 RC
9/9/90	Power Outage ~1330 PST. ON ~1400						HK	HK	10/11/90						278059

Project No. _____ Date of Work _____

Entered By _____ Date Irene Kaplinsky 11-14-90

Disclosed To and Understood By

Signed 1. _____ Date _____

2. _____ Date _____

P. A. C. - 2		
	10 min Bkg	10 min Count
8	1.2	278206
		277655
11	2.0	277880
		279272
Forced Nozzle flow		
4	1.6	278307
		278504
1	1.0	278544
2	1.3	279603
3	1.4	279469
1	2.1	278871
2	[illegible]	278453
3	2.0	279583
4	2.0	278739
5	1.9	278932
6	1.3	278402
6	1.4	278843
5	1.7	278647
5	1.8	278920
8	1.7	278620
		278082
7	1.7	279924
8	1.6	278405
1	1.6	279583
4	2.1	278561
		278065
		278491
2	1.5	278473
3	1.4	279001
4	1.9	278459
6	1.1	279419
5	2.1	277986
		278039
Copy 11-14-90		

Expired 8-27-90 Jane E. Hoyle

Page: 49
LRB No.: BNW 5294

The following provides evidence of surveillance and/or technical reviews of this LRB in accordance with MG 4.3. When completed, this sheet is to be inserted into the LRB each month.

SURVEILLANCE REVIEWS
(Monthly for Impact Level I or II LRB entries by the Line Manager or delegate, and, if appropriate, by the Project Manager):

Pages Reviewed: Page 44 9-26-90 through page 48 8-27-90
Date Reviewed: 9-18-90
Basis of Review: Check for legibility, completeness, traceability of entries, and a sample of requirements (1-14) of MG 4.3.
Results:
Legibility and completeness of data meets requirements

Reviewer's Dated Signature: L. R. Greenwood

TECHNICAL REVIEWS
(Monthly reviews for Impact Level I or II LRB entries and prior to Project close out by a technically competent individual):

Pages Reviewed:
Date of Review:
Objective/Approach of Review: To determine (check one or more):
✓ 1) adequacy/appropriateness of methodology
✓ 2) if inferences and conclusions are soundly based
3) if data reduction and/or calculations are correct
4) other (specify):

Results/Conclusions:
Control chart limits questionable - now being reviewed.

Reviewer's Dated Signature: L. R. Greenwood.

Project No. _____ Date of Work _____
Entered By _____ Date _____
Disclosed To and Understood By D05-070
Signed 1. _____ Date _____
2. _____ Date _____

Page: 50
LRB No.: BNW52341

The following provides evidence of surveillance and/or technical reviews of this LRB in accordance with MG 4.3. When completed, this sheet is to be inserted into the LRB each month.

SURVEILLANCE REVIEWS
(Monthly for Impact Level I or II LRB entries by the Line Manager or delegate, and, if appropriate, by the Project Manager):

Pages Reviewed: Page 48 8-28-90 through 9-27-90
Date Reviewed: 9-27-90
Basis of Review: Check for legibility, completeness, traceability of entries, and a sample of requirements (1-14) of MG 4.3.
Results:
Data entries meet requirements.

Reviewer's Dated Signature: F.R. Greenwood

TECHNICAL REVIEWS
(Monthly reviews for Impact Level I or II LRB entries and prior to Project close out by a technically competent individual):

Pages Reviewed: Same as above.
Date of Review:
Objective/Approach of Review: To determine (check one or more):
✓ 1) adequacy/appropriateness of methodology
✓ 2) if inferences and conclusions are soundly based
✓ 3) if data reduction and/or calculations are correct
__ 4) other (specify):

Results/Conclusions:
control charts correct.
Methodology meets requirements.

Reviewer's Dated Signature: F.R. Greenwood

Entered 9-27-90 Hence Effectively

Project No. _____ Date of Work _____
Entered By _____ Date _____
Disclosed To and Understood By
Signed 1. _____ Date _____
2. _____ Date _____

BNF

Date
10/15/90
10/16/90
10/17/90
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11/14/90
11/15/90
11/16/90
11/19/90
11/20/90

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Proportional Alpha Counters (P.A.C.)
Daily Control Standard Counts and Backgrounds

Date	P.A.C. - 1 100 min Bkg	P.A.C. - 1 10 min Bkg	P.A.C. - 1 10 min Count	P.A.C. - 2 100 min Bkg	P.A.C. - 2 10 min Bkg	P.A.C. - 2 10 min Count	Analyst		Date	P.A.C. - 1 100 min Bkg	P.A.C. - 1 10 min Bkg	P.A.C. - 1 10 min Count	P.A.C. - 2 100 min Bkg	P.A.C. - 2 10 min Bkg	P.A.C. - 2 10 min Count
10/15/90	1.80	2.0	275511	1.86	2.3	278836	HK	[illegible]	11-20-90	0.53	0.5	276810	Dur	g Serv	ice
10/16/90	1.81	1.8	274871	1.73	2.0	278529	HK	[illegible]	11-26-90	0.63	0.4	276236		"	
10/17/90	1.83	1.5	276337	1.72	1.6	278500	HK	[illegible]	11-27-90	0.55	0.3	273064			
10/18/90	1.92	1.6	275651	1.71	1.6	277741	HK	[illegible]	11-27-90			272319		"	
10/19/90	1.74	2.0	274693	1.82	1.2	278353	HK	[illegible]	11-27-90			274082		"	
10/19/90						278914	HK	HK	11/27/90			275462		"	
10/22/90	1.74	2.2	274850	1.63	2.1	278190	[illegible]	HK	11/28/90	0.53	0.0	276546		"	
10/22/90						278255	[illegible]	[illegible]	11/29/90	0.53	0.3	276468		"	
10/23/90	1.88	1.8	276006	1.70	1.0	277766	[illegible]	HK	11/30/90	0.64	0.5	276634		"	
10/23/90			274934			278134	[illegible]	[illegible]	12/3/90	0.73	0.2	276307		"	
10/24/90	1.51	1.7	273306	1.86	2.8	276958	[illegible]	HK	12/4/90	0.75	1.3	275962		"	
10/24/90						278081	[illegible]	HK	12/5/90	0.53	0.6	276072		"	
10/25/90	1.71	1.3	273713	2.06	1.4	277947	HK	HK	12/6/90	0.52	0.2	277139	1.42	1.8	276374
10/25/90						278524	HK	HK	12/6/90						279193
10/26/90	1.59	0.6	274066	2.85	2.6	278967	HK	HK	12/7/90	0.54	0.5	275658	1.68	1.3	277884
10/29/90	1.45 cleaned	1.3	275298	3.15 cleaned	3.8	279510	HK	HK	12/10/90	0.44	0.6	276602	1.29	1.6	277183
10/30/90	1.63	1.8	275423	1.63	1.7	279018	HK	HK	12/11/90	0.52	1.2	276728	1.40	1.4	277275
10/30/90	Pedestal removed & cleaned.			Regasketed pedestal.			HK	HK	12/12/90	0.60	0.7	276867	1.56	1.9	276940
10/31/90	1.01	1.1	268381	1.29	0.7	99288	[illegible]	HK	12/13/90	0.62	0.4	275929	1.51	1.1	277862
10/31/90			270564				HK	HK	12/14/90	0.56	0.3	275497	1.51	1.1	277201
10/31/90	New gasket Maintenance performed			New gasket Maintenance performed			HK	[illegible]	12/17/90	0.57	0.7	275728	1.37	0.9	276987
10/31/90	Maintenance performed			Out-of-service			HK	[illegible]	12/18/90	0.63	0.7	273349	1.53	1.2	277376
11/1/90	Out-of-service				"		HK	HK	12/19/90	0.77	0.0	275875	1.69	1.8	276104
11/5/90	0.56	0.4	275661		"		HK	HK	12/19/90						276992
11/5/90	OUT-OF-SERVICE				"		HK	[illegible]	12/20/90	0.50	0.5	276157	1.46	1.6	277080
11/6/90		"			"		HK	[illegible]	12/27/90	0.39	0.5	275783	1.56	1.3	276870
11/12/90	0.52	0.3	276074		"		HK	[illegible]	12/27/90			276284			
11/13/90	0.66	0.7	276512		"		HK	[illegible]	1/2/91	0.49	0.7	275781	1.50	1.7	276078
11/14/90	0.52	0.3	275185		"		[illegible]	[illegible]	1/2/91						277552
11/14/90			275426		"		HK	[illegible]	1/3/91	0.48	0.4	275314	1.44	1.0	276760
11/15/90	0.50	0.5	276444		"		HK	[illegible]	1/4/91	0.50	0.3	273700	1.52	1.5	276302
11/16/90	0.43	0.6	276238		"		[illegible]	[illegible]	1/5/91			275444			276806
11/19/90	0.50	0.4	276548				[illegible]	HK	1/7/91	0.51	0.3	275250	1.56	1.8	276698
11/20/90	0.53	0.5	272005		"		[illegible]	[illegible]	1/8/91	0.65	0.3	276187	1.44	1.2	276288

Project No. _____ Date of Work _____

Entered By _____ Date _____

Disclosed To and Understood By

Signed 1. _____ Date _____

2. _____ Date _____

D05-072

Page: 52
LRB No.: BNW52341

The following provides evidence of surveillance and/or technical reviews of this LRB in accordance with MG 4.3. When completed, this sheet is to be inserted into the LRB each month.

SURVEILLANCE REVIEWS
(Monthly for Impact Level I or II LRB entries by the Line Manager or delegate, and, if appropriate, by the Project Manager):

Pages Reviewed: 48 9-28-90 through page 51 10-31-90
Date Reviewed:
Basis of Review: Check for legibility, completeness, traceability of entries, and a sample of requirements (1-14) of MG 4.3.
Results:

Data entries meet requirements.

Reviewer's Dated Signature: L. R. Greenwood 10/31/90

TECHNICAL REVIEWS
(Monthly reviews for Impact Level I or II LRB entries and prior to Project close out by a technically competent individual):

Pages Reviewed: Same as above.
Date of Review:
Objective/Approach of Review: To determine (check one or more):
- ✓ 1) adequacy/appropriateness of methodology
- __ 2) if inferences and conclusions are soundly based
- __ 3) if data reduction and/or calculations are correct
- __ 4) other (specify):

Results/Conclusions:

Data meet requirements

Reviewer's Dated Signature: L. R. Greenwood 10/31/90

Entered 10-31-90 Anne E. Stapleton

Project No. _____ Date of Work _____
Entered By _____ Date _____
Disclosed To and Understood By
Signed 1. _____ Date _____
2. _____ Date _____

11-2-90 Mike Tesky performed maintenance on PAC-1 WM00579. Pole Zero was checked. A high (500 mR) beta source was used to check the Beta plateau/Window. The instrument is set to count NO Beta. The instruments' pedestal and grounding plates were all cleaned and greased.

Anne Etzelsky

11-5-90 The high voltage plateau was checked following the daily control. Anne Etzelsky

11-5-90 High Voltage Plateau check resulted in Reset of Plateau to 2450. Anne Etzelsky

Performed efficiency and control chart determinations 11-6 through 11-12.

12-6-90 P.A.C.-2 High Voltage Plateau check performed following pedestal removal/cleaning, maintenance, beta plateau/window check, pole zero check, etc.

Efficiency and control chart data counts performed on 11-14 through 11-19.

New control charts and system operational 12-6-90.

Project No. _____ Date of Work _____

Entered By _____ Date _____

Disclosed To and Understood By

Signed 1. _____ Date _____

2. _____ Date _____

D05-074

BNW52341 p. 54

CONTROL CHART EXTENSION PROGRAM

COUNTING SYSTEM: PAC #1 WM00579
CONTROL NUCLIDE: PU
NUCLIDE HALF LIFE: 24360 YEARS
NO. OF DATA POINTS: 10

THE EXISTING CONTROL LIMITS UPON WHICH THE EXTENSION IS BASED ARE:

THE X BAR OF THE DATA POINTS IS		27398.10
THE STANDARD DEVIATION AT THE 2 SIGMA CONFIDENCE LEVEL IS		449.27
THE 2 SIGMA CONFIDENCE LEVEL LIMITS ARE	26948.83	27847.37
THE 1% X BAR LIMITS ARE	27124.12	27672.08
THE 2% X BAR LIMITS ARE	26850.14	27946.06
THE 3% X BAR LIMITS ARE	26576.16	28220.04
THE REFERENCE DATE IS		7-25-84

THE X BAR OF THE DATA POINTS IS		27393.54
THE STANDARD DEVIATION AT THE 2 SIGMA CONFIDENCE LEVEL IS		449.20
THE 2 SIGMA CONFIDENCE LEVEL LIMITS ARE	26944.34	27842.73
THE 1% X BAR LIMITS ARE	27119.60	27667.47
THE 2% X BAR LIMITS ARE	26845.67	27941.41
THE 3% X BAR LIMITS ARE	26571.73	28215.34
THE REFERENCE DATE IS		6- 1-90

THE DECAY INTERVAL MEASURED FROM THE EXISTING CONTROLS DATE IS 5.85091 YEARS

THE X BAR OF THE DATA POINTS IS		27392.76
THE STANDARD DEVIATION AT THE 2 SIGMA CONFIDENCE LEVEL IS		449.18
THE 2 SIGMA CONFIDENCE LEVEL LIMITS ARE	26943.58	27841.94
THE 1% X BAR LIMITS ARE	27118.83	27666.69
THE 2% X BAR LIMITS ARE	26844.91	27940.61
THE 3% X BAR LIMITS ARE	26570.98	28214.54
THE REFERENCE DATE IS		6- 1-91

THE DECAY INTERVAL MEASURED FROM THE EXISTING CONTROLS DATE IS 6.85025 YEARS

Entered 11-13-90 [illegible]

New control chart data effective 11-12-90.

Project No. _____ Date of Work _____
Entered By _____ Date _____
Disclosed To and Understood By
Signed 1. _____ Date _____
2. _____ Date _____

D05-075

9 1 1 2 1 1 1 0 5 2

Entered 11-13-90 Anne E Kozelsky

BATTELLE-NORTHWEST
RICHLAND, WASHINGTON

ALPHA COUNTER DATA SHEET

SAMPLE

SUBMITTED BY

COUNTED BY Anne E Kozelsky

REMARKS P.A.C.-1 WM00579 High Voltage Plateau Check (following potential removal/cleaning, maintenance, Beta Plateau (Window) check, Pot Zero check, etc.)

SAMPLE NUMBER	DATE 19	INST. NO.	INT. (MIN.) T	RECORDER READING SCALE OF:	TOTAL COUNTS N	RECORDED RATE R = N/T	COINC. CORR'N. C	BGD B	NET RATE X = R − B + C	GEOMETRY %	DISINTEGRATION RATE d/m
2350	11-5			+	275884						
2400				+	276958						
2450				+	276490						
2500				+	275322						
2550				+	275827						
2600				+	275804						
2700				+	279217						
2800				+	301107						
2300				+	276130						
2250				+	270042						
2200				+	270466						
2150				+	265464						
2100				+	259460						
2050				+	250583						
2000	11-6			+	245158						
1950	"			+	220784						
2750	"			+	298410						
				+							
				+							

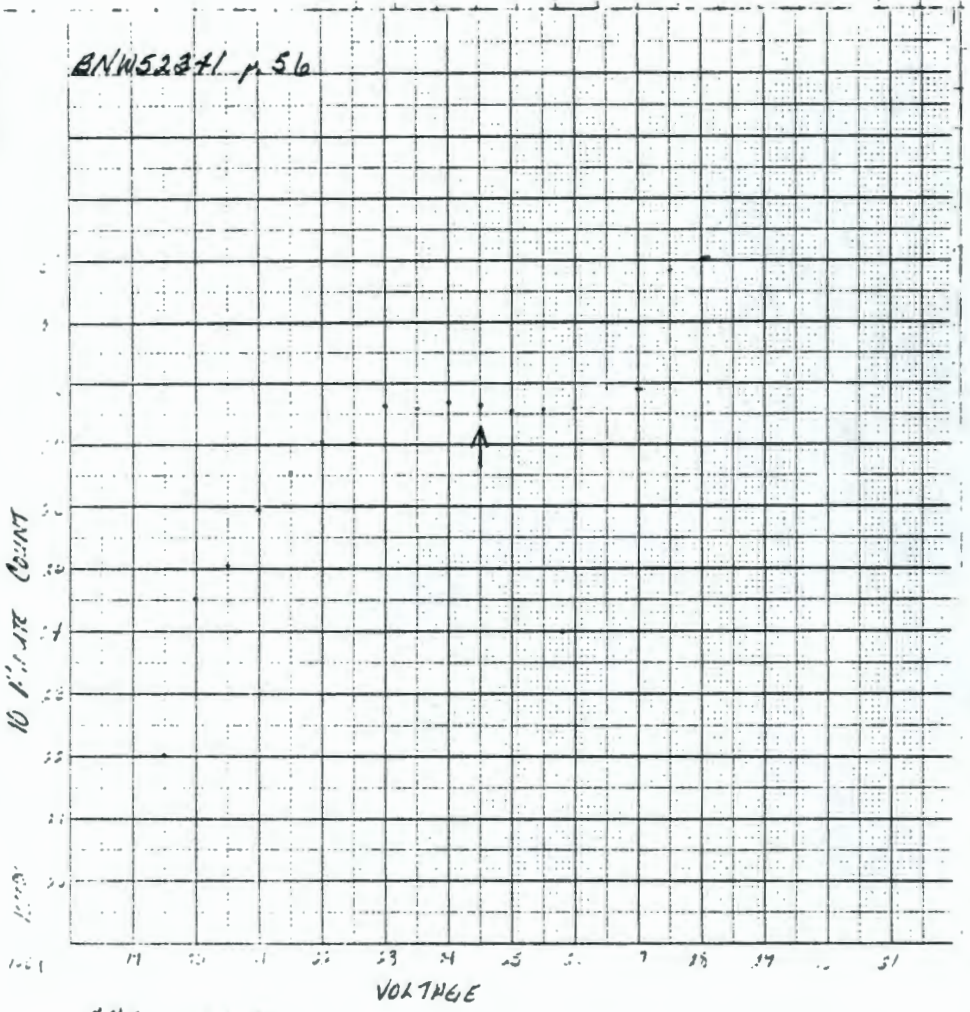
BNWS2341, 55

D05-076

55

Entered 11-13-90 Anne E Hyslop

BNW52271 p.56



P.H.C.-1 11-6-90

Project No. _____ Date of Work _____

Entered By _____ Date _____

Disclosed To and Understood By

Signed 1. _____ Date _____

2. _____ Date _____

D05-077

9 1 1 2 1 3 5 1 0 5 4

Entered 11-13-90 Anne E Fitzkosky

BATTELLE-NORTHWEST
RICHLAND, WASHINGTON

ALPHA COUNTER DATA SHEET

BNWL5234 H.57

SAMPLE: Control Source for R.A.C.-1

SUBMITTED BY:

COUNTED BY: Anne E Fitzkosky

REMARKS: R.A.C.-1 KM00579

HV = 2450

SAMPLE NUMBER	DATE 19 90	INST. NO.	INT. (MIN.) T	RECORDER READING SCALE OF: +	TOTAL COUNTS N	RECORDED RATE R = N/T	COINC. CORR'N. C	BGD B	NET RATE X = R − B + C	GEOMETRY %	DISINTEGRATION RATE d/m
	11-6 1000		10	+	276204						
	1100			+	275318						
	1255			+	276819						
	1409			+	276299						
	1511			+	276874						
	11-7 0749		10	+	275792						
	1024			+	276164						
	1300			+	276963						
	1404			+	276606						
	1519			+	2766669						
	11-8 0734			+	275893						
	1150			+	275619						
	1340			+	277141						
	1433			+	275846						
	1500			+	276243						
				+							
				+							

DOS-078

57

Entered 11-14-90 June E Hoylesky

58 ONWI-523A1 p. 58

BATTELLE-NORTHWEST
RICHLAND, WASHINGTON

ALPHA COUNTER DATA SHEET

SAMPLE: I.A.C.-1 WM00579
SUBMITTED BY:
COUNTED BY: June E Hoylesky

REMARKS: Voltage 2450
Efficiency Determination

SAMPLE NUMBER		DATE 19 90	INST. NO.	INT. (MIN.) T	RECORDER READING SCALE OF:	TOTAL COUNTS N	RECORDED RATE R = N/T	COINC. CORR'N. C	BGD B	NET RATE X = R − B+C	GEOMETRY %	DISINTEGRATION RATE d/m
21.90λ	1	11/7		10	+	16736						
	2				+	16887						
	3				+	16982						
	4				+	17030						
					+							
21.92λ	1				+	16877						
	2				+	16797						
	3				+	16832						
	4				+	17025						
					+							
					+							
					+							
					+							
					+							
					+							
21.90λ	1	11/9			+	17037						
	2				+	16705						
	3	11/12			+	17033						
	4				+	17039						
					+							
21.92λ	1				+	16856						
	2				+	16942						
	3				+	16761						
	4				+	17057						
					+							

BB-1700-132 (10-67) ARO-OL RICHLAND, WASH

BNW52341 page 59

P.A.C.-1 WM00579

High Voltage 2450

T1350 NBS Calibration Summary

24.90μL 3321 ± 35.4 d/m
24.92μL 3324 ± 35.5 d/m
} HEDL-N-3219 page 3

24.90μL $\bar{X}_4$ 1690.8750 c/m

$\bar{X}_4$ 1695.3500 c/m

$\bar{X}_8$ 1693.1125 c/m ± 44.1981 c/m

3321 d/m ÷ 1693.1125 c/m = 1.9615

d/c = 0.5098 ± 2.82%

24.92μL $\bar{X}_4$ 1688.2750 c/m

$\bar{X}_4$ 1690.4000 c/m

$\bar{X}_8$ 1689.3375 c/m ± 35.4788 c/m

3324 d/m ÷ 1689.3375 c/m = 1.9676

d/c = 0.5082 ± 1.14%

$\bar{X}_2$ = 0.5090 ± 2.15%

Reviewed L S Kellogg date 11-13-90

Entered 11-14-90 Anne T Taylor

LRB No.: BNW 52341 page 60

SURVEILLANCE AND TECHNICAL REVIEW

(Monthly for (PNL) Impact Level I or II LRB entries by the Line Manager or delegate, and, if appropriate, by the Project Manager. In addition, Technical Review required prior to Project close out.):

Pages Reviewed: 51 11-1-90 through 11-30-90 and pages 53-59.

Basis of Surveillance Review is to check for legibility, completeness, traceability of entries, and a sample of requirements (1-14) of MG 4.3.

Objective/Approach of Technical Review is to determine (check one or more):

- X adequacy/appropriateness of methodology
- X if inferences and conclusions are soundly based
- X if data reduction and/or calculations are correct
- __ other (specify): _____

Results/Conclusions: Data entries and methodology meet requirements.

Initialed 11-30-90 where I left off

Reviewer L. R. Greenwood Date 11/30/90

Project No. _____ Date of Work _____

Entered By _____ Date _____

Disclosed To and Understood By

Signed 1. _____ Date _____

2. _____ Date _____

D05-081

9112110057

BNW52341 p 61

CONTROL CHART EXTENSION PROGRAM

COUNTING SYSTEM: PAC #2 WM00582
CONTROL NUCLIDE: PU
NUCLIDE HALF LIFE: 24360 YEARS
NO. OF DATA POINTS: 10

THE EXISTING CONTROL LIMITS UPON WHICH THE EXTENSION IS BASED ARE:

THE X BAR OF THE DATA POINTS IS		27953.30
THE STANDARD DEVIATION AT THE 2 SIGMA CONFIDENCE LEVEL IS		106.00
THE 2 SIGMA CONFIDENCE LEVEL LIMITS ARE	27847.30	28059.30
THE 1% X BAR LIMITS ARE	27673.77	28232.83
THE 2% X BAR LIMITS ARE	27394.23	28512.37
THE 3% X BAR LIMITS ARE	27114.70	28791.90
THE REFERENCE DATE IS		7-23-84

THE X BAR OF THE DATA POINTS IS		27948.64
THE STANDARD DEVIATION AT THE 2 SIGMA CONFIDENCE LEVEL IS		105.98
THE 2 SIGMA CONFIDENCE LEVEL LIMITS ARE	27842.66	28054.62
THE 1% X BAR LIMITS ARE	27669.16	28228.13
THE 2% X BAR LIMITS ARE	27389.67	28507.61
THE 3% X BAR LIMITS ARE	27110.18	28787.10
THE REFERENCE DATE IS		6- 1-90

THE DECAY INTERVAL MEASURED FROM THE EXISTING CONTROLS DATE IS 5.85639 YEARS

THE X BAR OF THE DATA POINTS IS		27947.85
THE STANDARD DEVIATION AT THE 2 SIGMA CONFIDENCE LEVEL IS		105.98
THE 2 SIGMA CONFIDENCE LEVEL LIMITS ARE	27841.87	28053.83
THE 1% X BAR LIMITS ARE	27668.37	28227.33
THE 2% X BAR LIMITS ARE	27388.89	28506.80
THE 3% X BAR LIMITS ARE	27109.41	28786.28
THE REFERENCE DATE IS		6- 1-91

THE DECAY INTERVAL MEASURED FROM THE EXISTING CONTROLS DATE IS 6.85572 YEARS

New CONTROL CHART DATA EFFECTIVE 12-6-90.

Project No. _____ Date of Work _____

Entered By _____ Date _____

Disclosed To and Understood By

Signed 1. _____ Date _____

2. _____ Date _____

9 1 1 2 1 0 1 0 5 9

Entered 12-6-90 Steve E Kazlisky

BNW523 #1, p. 62

BATTELLE-NORTHWEST
RICHLAND, WASHINGTON

ALPHA COUNTER DATA SHEET

SAMPLE

SUBMITTED BY

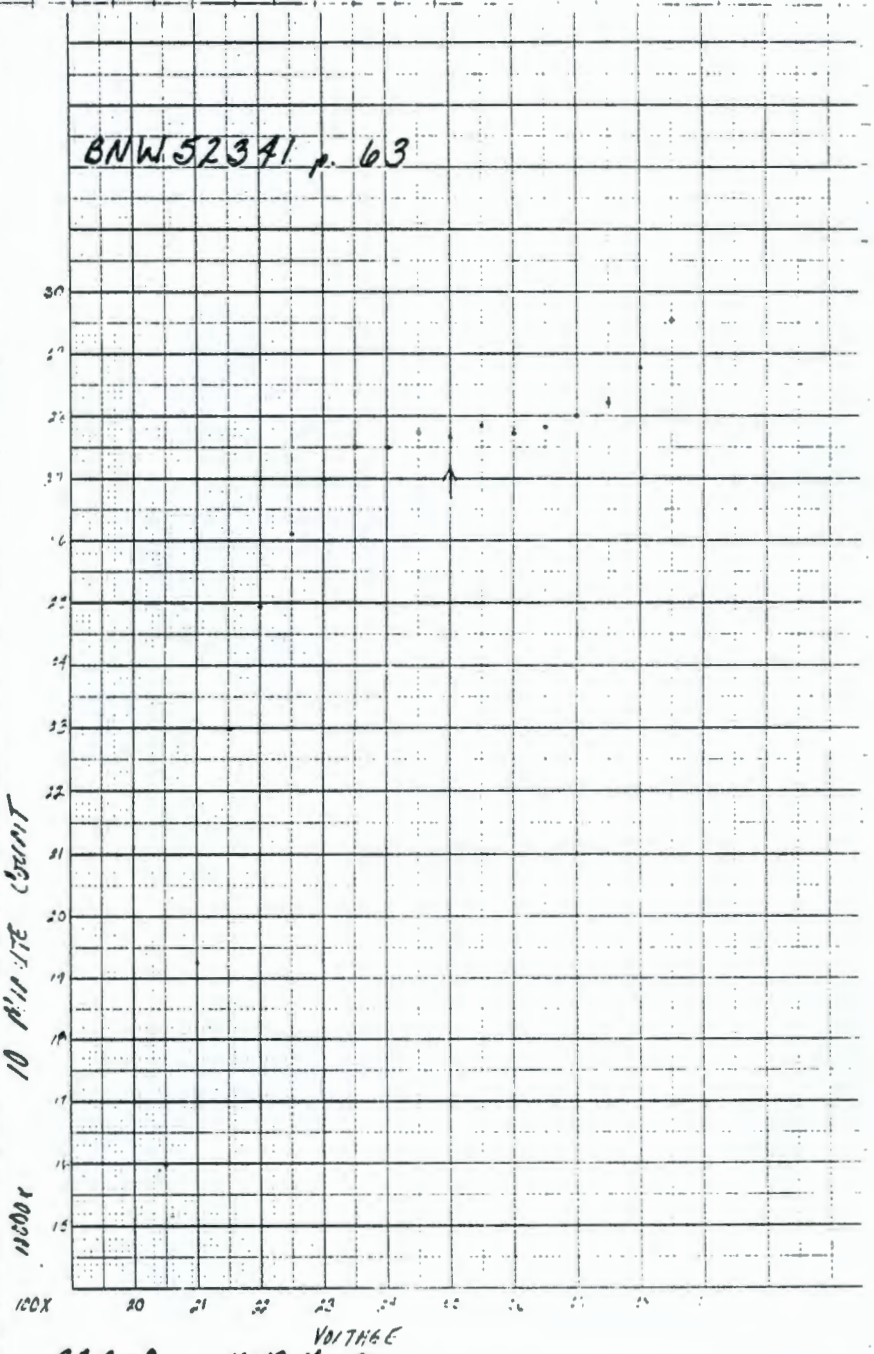
COUNTED BY Steve C Kazlisky

REMARKS P.A.C.-2 WM00582 High Voltage Plateau Check (following pedestal removal/cleaning, maintenance, Beta Plateau/Window check, Pb Brick check, etc.)

SAMPLE NUMBER	DATE 19 90	INST. NO.	INT. (MIN.) T	RECORDER READING SCALE OF:	TOTAL COUNTS N	RECORDED RATE R = N/T	COINC. CORR'N. C	BGD B	NET RATE X = R − B + C	GEOMETRY %	DISINTEGRATION RATE d/m
2400	11-13		10	+	271954						
2450				+	277400						
2500				+	276700						
2550				+	278403						
2600				+	277167						
2650				+	278172						
2700				+	280119						
2750				+	282293						
2800				+	287846						
2850				+	295504						
				+							
2950				+	275000						
2300				+	269935						
2250				+	261054						
2200				+	249488						
2150				+	229864						
2100	11-14			+	192445						
2050				+	159628						
				+							
				+							

D05-083

BNW 52341 p. 63



P.A.C.-2 11-13, 14-90

Entered 12-6-90 Jane E. Kozlowski

Project No. _____ Date of Work _____

Entered By _____ Date _____

Disclosed To and Understood By

Signed 1. _____ Date _____

2. _____ Date _____

D05-084

Entered 12-6-90 Anne E Hyslop

G1

BWN52341 p. 64

BATTELLE-NORTHWEST RICHLAND, WASHINGTON	ALPHA COUNTER DATA SHEET
SAMPLE	REMARKS P.A.C.-2 WTM00582
SUBMITTED BY	Voltage 2500
COUNTED BY	Efficiency Determination

SAMPLE NUMBER	DATE 19 90	INST. NO.	INT. (MIN.) T	RECORDER READING SCALE OF:	TOTAL COUNTS N	RECORDED RATE R = N/T	COINC. CORR'N. C	BGD B	NET RATE X = R − B + C	GEOMETRY %	DISINTEGRATION RATE d/m
24.90λ 1	11-14		10	+	16818						
2				+	16966						
3				+	~~16570~~						
1				+	16815						
RC 3				+	16772						
24.92λ 1				+	16779						
2				+	16718						
3				+	16850						
4				+	16789						
				+							
24.90λ 1	11-16			+	16771						
2				+	16914						
3				+	16853						
4				+	16675						
				+							
24.92 1	11-19			+	16840						
2				+	16625						
3				+	16700						
4				+	16572						
				+							

D05-085

BNW52341 page 65

P.A.C.-2 WM00582

High Voltage 2500

T1350 NBS Calibration Summary

24.90μL 3321 ± 35.4 d/m
24.92μL 3324 ± 35.5 d/m
} HEDL-N-3219 page 3

24.90μL $\bar{X}_4$ 1684.2750 c/m

$\bar{X}_4$ 1680.3250 c/m

$\bar{X}_8$ 1682.3000 c/m ± 6.25 c/m

3321 d/m ÷ 1682.3000 c/m = 1.9741

c/d = 0.5066 ± 1.13%

24.92μL $\bar{X}_4$ 1678.4000 c/m

$\bar{X}_4$ 1668.4250 c/m

$\bar{X}_8$ 1673.4125 c/m ± 6.89 c/m

3324 d/m ÷ 1673.4125 c/m = 1.9864

c/d = 0.5034 ± 1.1%

$\bar{X}_2$ = 0.5050 ± 1.6%

Reviewed L S Kellogg date 11/20/90

Entered 12-6-90 Anne E Hayden

Entered 12-6-90 Anne E. Kozelsky

BATTELLE-NORTHWEST
RICHLAND, WASHINGTON

ALPHA COUNTER DATA SHEET

SAMPLE: Control Source for P.A.C.-2
SUBMITTED BY:
COUNTED BY: Anne E. Kozelsky

REMARKS: P.A.C.-2 WM100582
HV= 2500

SAMPLE NUMBER	DATE 19	INST. NO.	INT. (MIN.) T	RECORDER READING SCALE OF:	TOTAL COUNTS N	RECORDED RATE R = N/T	COINC. CORR'N. C	BGD B	NET RATE X = R − B + C	GEOMETRY %	DISINTEGRATION RATE d/m
	11-14 1348		10	+	277639						
	1443			+	278405						
	1500			+	277201						
	1510			+	277263						
	1521			+	277341						
	11-15 0943			+	277539						
	0944			+	277164						
	0945			+	278503						
	1047			+	278749						
	1140			+	274888	Not used in Control Chart Generation					
	11-16 0250			+	278152						
	0955			+	277788						
	1305			+	276858						
	1333			+	278092						
	1343			+	277841						
				+							
				+							

BNW 52341 p. 66

D05-087

LRB No.: BNW 52341 page 67

SURVEILLANCE AND TECHNICAL REVIEW

(Monthly for (PNL) Impact Level I or II LRB entries by the Line Manager or delegate, and, if appropriate, by the Project Manager. In addition, Technical Review required prior to Project close out.):

Pages Reviewed: 51 12-3-90 → 12-27-90 and pages 61-66.

Basis of Surveillance Review is to check for legibility, completeness, traceability of entries, and a sample of requirements (1-14) of MG 4.3.

Objective/Approach of Technical Review is to determine (check one or more):

- ✓ adequacy/appropriateness of methodology
- ✓ if inferences and conclusions are soundly based
- ✓ if data reduction and/or calculations are correct
- __ other (specify): _____

Results/Conclusions: Data entries and methodology meet requirements.

Reviewer LR Greenwood Date 1/2/91

Entered 1-2-91 Anne E. Fowler

9112210564

Project No. _____ Date of Work _____

Entered By _____ Date _____

Disclosed To and Understood By

Signed 1. _____ Date _____

2. _____ Date _____

Proportional Alpha Counters (P.A.C.)

BNW52341 p. 68 Daily Control Standard Counts and Backgrounds

Date	P.A.C.-1 100 min Bkg	P.A.C.-1 10 min Bkg	P.A.C.-1 10 min Count	P.A.C.-2 100 min Bkg	P.A.C.-2 10 min Bkg	P.A.C.-2 10 min Count	Analyst	Date	P.A.C.-1 100 min Bkg	P.A.C.-1 10 min Bkg	P.A.C.-1 10 min Count	P.A.C.-2 100 min Bkg	P.A.C.-2 10 min Bkg	P.A.C.-2 10 min Count
1/8/91 RC						RC 276659	HK							
1/9/91	0.52	0.6	275246	1.55	2.0	278136	[illegible]							
1/10/91	0.52	0.5	276492	1.72	1.8	276820	[illegible]							
1/11/91	0.52	0.6	275269	1.87	1.0	276492	HK							
1/12/91	0.85	0.4		1.61	1.7	RC 277630	HK							
1/14/91	0.85	0.4	275573	1.61	1.7	276937	[illegible]							
1/15/91	0.57	0.6	275736	1.70	1.3	276752	[illegible]							
1/16/91	0.70	0.5	276615	1.89	1.9	277004	[illegible]							
1/17/91	0.50	0.5	275223	2.05	2.5	276863	[illegible]							
1/18/91	0.56	0.6	275444	1.36	1.4	27823	[illegible]							
1/21/91	0.48	0.5	273227	1.28	1.9	275585	[illegible]							
1/21/91			RC 274920			RC 276801	[illegible]							
1/22/91	0.68	0.1	274706	1.54	2.1	276971	[illegible]							
1/23/91	0.53	0.7	275343	1.46	0.9	276801	[illegible]							
1/24/91	0.71	0.7	275808	1.45	1.8	27681	[illegible]							
1/25/91	0.58	0.3	274121	1.30	1.2	274939	HK							
1/25/91			RC 276180			RC 276570	HK							
1/25/91						RC 275848	HK							
1/28/91	0.49	0.5	274788	1.55	2.5	276023	[illegible]							
1/28/91			275845			277048	[illegible]							
Peaks warmer on last peak					1/28/91									
1/29/91	0.50	0.3	275575	1.50	1.3	277008	[illegible]							

Project No. _____ Date of Work _____

Entered By _____ Date _____

Disclosed To and Understood By

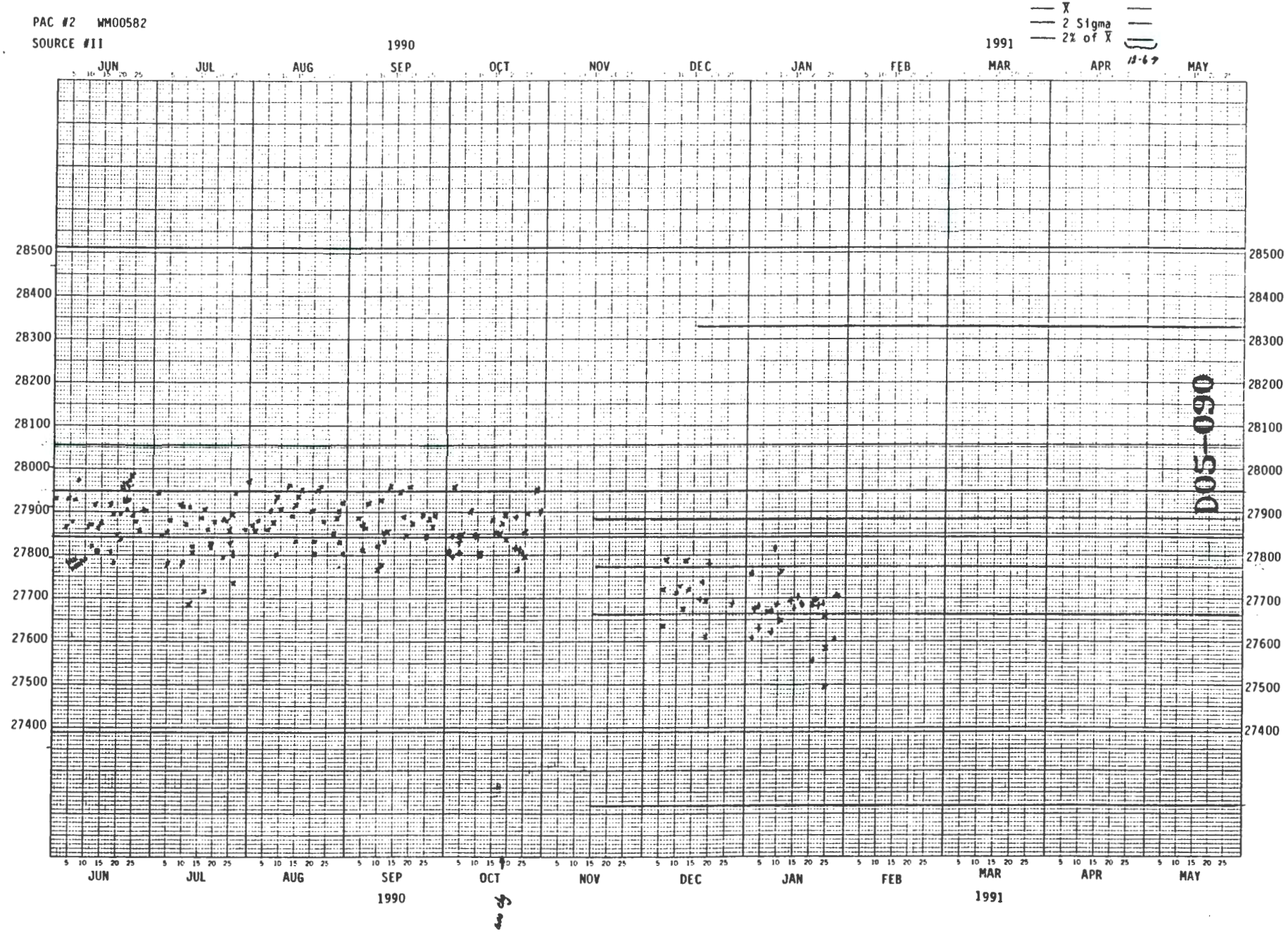
Signed 1. _____ Date _____

2. _____ Date _____

D05-089

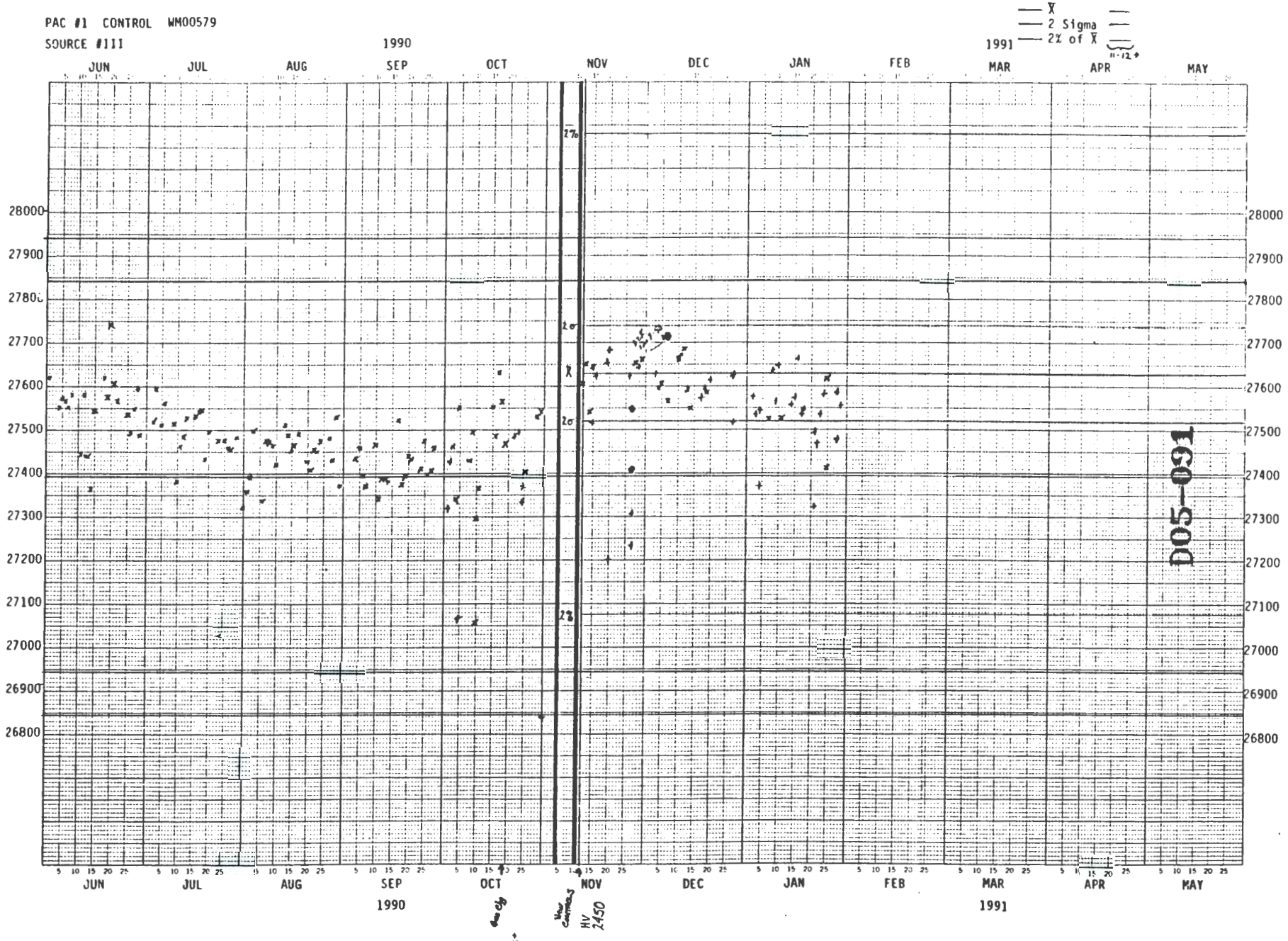
PAC #2 WM00582

SOURCE #II



PAC #1 CONTROL WM00579

SOURCE #111



D05-091

TOTAL ALPHA

DAILY CONTROL DATA

FOR

SCINTILLATION ALPHA COUNTERS (SAC)

D05-092

1-
7-17-87

PACIFIC NORTHWEST LABORATORY BATTELLE MEMORIAL INSTITUTE
JUL 17 1987

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H 33954

LABORATORY RECORD BOOK NUMBER BNW- 52343	This document consists of ..... pages, copy no. .....
TITLE (INDICATE SUBJECT CONTENT) Lucum (SAC) Daily Control and Calibration	
AUTHOR - DIVISION AND DEPARTMENT A.C. Leaf, Materials and Chemical Science Center, Chemical Sciences Department	
PERIOD COVERED FROM	TO

Route To	P. R. No.	Location	Route Date	Signature & Date
ACLEAF	30969	325	JUL 17	
L S Kellogg	30706	325	8-31-88	L S Kellogg

Document Number	Series	Classification	
BNW-52343	—	UNCLASSIFIED	138409

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D05-093

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54-1100-005(10-84)

S12960

9112251069

Entered by A. C. Leaf 7/20/87

This book is to be used as a record book containing the date, daily control standard counts, background counts and analysts initials doing the counting for the Ludlum Scintillation Alpha Counters (SAC) L-1 through L-6. Original calibrations and previous daily standard control counts are located in WHC numbered notebook HEDC-N-3430 and HEDC-N-3431.

Personnel authorized to make entries include:

A.C. Leaf	7-20/87	ACL	Nevada Lois Abbey	10/25/88	N.L.A
Jack Keyfer	7-20-87	JK	James H. Kaye	J.H.	6/22/90
Anne E. Kopelsky	7-21-87	AEK	10-17-89	AEK	
W. Y. Matsumoto	12/18/87	WYM	Clark O'Harry	COH	6/26/90
R. E. Brewer	2/11/88	RB			
Katherine J. Cann	8/10/88	KJC	L. S. Kellogg	9-16-88	

Persons Authorized to review LRB

A. Chief	6/10/88	ACL
L. S. Kellogg	9/16/88	LSK
M. R. Weiss	3-27-89	MRW
Virginia L. Dunn	7/17/89	VLD
L. R. Greenwood	9-27-90	LRG

Reviews

Pages 1-28	by ACLeaf	6/10/88
Pages 29-31	L. S. Kellogg	9-20-88
Pages 32-45	M. R. Weiss	3-27-89

BNW LABORATORY NOTEBOOK NO 52343

COPIED FOR PNL RECORDS CENTER MAY 04 '89

Project No. _____ Date of Work _____

Entered By _____ Date _____

Disclosed To and Understood By

D05-094

Signed 1. _____ Date _____

2. _____ Date _____

Ludlum ZnS Scintillation Alpha Counters (S.A.C.)
Daily Control Standard Counts and Backgrounds

Date	Ludlum-1 10 mn Count	Ludlum-1 900 min Bkg	Ludlum-2 10 mn Count	Ludlum-2 900 min Bkg	Ludlum-3 10 mn Count	Ludlum-3 900 min Bkg	Ludlum-4 10 mn Count	Ludlum-4 900 min Bkg	Ludlum-5 10 mn Count	Ludlum-5 900 min Bkg	Ludlum-6 10 mn Count	Ludlum-6 900 min-Bkg
9/20/90	Recalibration in Review				9984	.297	10719	.297	10440	.264	Recalibration	
9/20/90					RC 10164		RC 10410		RC 10309		in Review	
9/21/90					10165	.284	10428	.282	10340	.282		
9/21/90									RC 10060			
9/24/90					10224	.304	10368	.300	10279	.251		
9/24/90									RC 10502			
9/24/90									RC 10282			
9/25/90					10442	.308	10297	.310	10363	.247		
9/25/90					RC 10089				RC 10269			
9/26/90					10187	.286	10426	.284	10333	.230		
9/26/90									RC 10195			
9/27/90	9835	.190	9307	.142	10396	.256	10428	.244	10227	.248	10164	.199
9/27/90	RC 9959		RC 9476		RC 10295							
9/27/90					RC 10166							
9/28/90	9993	.211	9427	.154	10319	.267	10457	.256	10152	.278	10249	.176
9/28/90					RC 10212		RC 10607					
9/28/90							RC 10579					
9/28/90							RC 10312					
10/1/90	10095	.203	9570	.167	10154	.268	10570	.272	10224	.256	10167	.167
10/1/90	RC 9990 ~~10097~~						RC 10312					
10/3/90	10016	.192	9433	.137	10096	.241	10255	.291	10257	.244	10090	.172
10/3/90	10066	.212	9585	.139	10027	.274	10376	.279	10376	.243		.180
10/3/90					RC 10164				RC 10376			
10/3/90									RC 10374			
10/4/90	10046	.200	9433	.139	10151	.283	10575	.278	10286	.258	10256	.174
10/4/90							RC 10268		RC 10231			
POWER OUTAGE												
10/5/90	9867	Rs .205	9413	Rs .147	10089	Rs .285	10421	Rs .275	16499	Rs .256	10157	Rs .171
10/5/90									RC 16455			
10/5/90		~~.214~~		.130	RC 10-8-90	.247		out of CONTROL	RC 16248			
10/8/90	9858	.214	9604	.130	10188	.247	10276	.301	OUT OF Service		10127	.188
10/8/90			RC 9549									
10/9/90	10110	.218	9576	.140	9983	.246	10261	.291			10383	.198
10/9/90	RC 10189				RC 10230						RC 10263	
10/9/90	10068	.228	9549	.144	9983	.256	10304	.291			10126	.168
					RC 10124							

Project No. _____ Date of Work _____

Entered By _____ Date _____

Disclosed To and Understood By

Signed 1. _____ Date _____

2. _____ Date _____

D05-095

Page: 119
LRB No.: BNW52343

The following provides evidence of surveillance and/or technical reviews of this LRB in accordance with MG 4.3. When completed, this sheet is to be inserted into the LRB each month.

SURVEILLANCE REVIEWS
(Monthly for Impact Level I or II LRB entries by the Line Manager or delegate, and, if appropriate, by the Project Manager):

Pages Reviewed: Page 116 8-28-90 through page 118 9-27-90
Date Reviewed: 9-27-90
Basis of Review: Check for legibility, completeness, traceability of entries, and a sample of requirements (1-14) of MG 4.3.
Results:
Data entries meet requirements.

Reviewer's Dated Signature: L.R. Greenwood

TECHNICAL REVIEWS
(Monthly reviews for Impact Level I or II LRB entries and prior to Project close out by a technically competent individual):

Pages Reviewed: Same as above
Date of Review:
Objective/Approach of Review: To determine (check one or more):
✓ 1) adequacy/appropriateness of methodology
__ 2) if inferences and conclusions are soundly based
✓ 3) if data reduction and/or calculations are correct
__ 4) other (specify):

Results/Conclusions:
Methodology meets requirements.

Reviewer's Dated Signature: L.R. Greenwood

Entered 9-27-90 Steve Espelund

Project No. _____ Date of Work _____

Entered By _____ Date _____

Disclosed To and Understood By

D05-096

Signed 1. _____ Date _____

2. _____ Date _____

Ludlum ZnS Scintillation Alpha Counters (S.A.C.)
Daily Control Standard Counts and Backgrounds

Date	Ludlum-1 10 mn Count	Ludlum-1 900 min Bkg	Ludlum-2 10 mn Count	Ludlum-2 900 min Bkg	Ludlum-3 10 mn Count	Ludlum-3 900 min Bkg	Ludlum-4 10 mn Count	Ludlum-4 900 min Bkg	Ludlum-5 10 mn Count	Ludlum-5 900 min Bkg	Ludlum-6 10 mn Count	Ludlum-6 900 min Bkg	An
10/11/90	9980	.217	9334	.138	10136	.246	10458	.289			10214	.186	HEK
10/11/90			RC 9453				RC 10436						HEK
10/15/90	10079	.197	9675	.136	10183	.266	10513	.306	10091	.230	10464	.210	HEK
10/15/90			RC 9362				RC 10660				RC 10274		HEK
10/15/90			RC 9558				RC 10477						HEK
10/16/90	10130	.204	9467	.146	10022	.251	10325	.294	10325	.236	10194	.188	HEK
10/16/90	RC 9925				RC 10073				RC 10223				HEK
10/17/90	10052	.214	9666	.132	10084	.270	10387	.290	10287	.244	10236	.172	HEK
10/17/90			RC 9636						RC 10420				HEK
10/17/90									RC 10205				HEK
10/18/90	9916	.224	9597	.166	10147	.281	10297	.286	10316	.249	10116	.203	HEK
10/18/90			RC 9616						RC 10165				HEK
10/19/90	10043	.211	9612	.146	10023	.282	10284	.301	10203	.256	10089	.208	HEK
10/19/90			RC 9670										HEK
10/22/90	9941	.210	9459	.144	10036	.230	10434	.337	10005	.228	10297	.217	[illegible]
10/22/90					RC 10168				RC 10258		RC 10187		[illegible]
10/23/90	10211	.223	9319	.140	9998	.290	10279	.316	10119	.233	10105	.180	[illegible]
10/23/90	RC 9933		RC 9428		RC 10066								[illegible]
10/24/90	9943	.214	9392	.152	10036	.254	10436	.314	10186	.249	10240	.193	[illegible]
10/24/90			RC 9519										[illegible]
10/25/90	10072	.221	9799	.164	10124	.279	10544	.308	10130	.262	10190	.190	HEK
10/25/90			RC 9549				RC 10417						HEK
10/26/90	10080	.212	9442	.149	10087	.286	10528	.272	10343	.254	10297	.179	HEK
10/26/90							RC 10339		RC 10337				HEK
10/29/90	9935	.211	9444	.183	10272	.272	10347	.288	10212	.263	10371	.213	HEK
10/29/90					RC 10334						RC 10348		HEK
10/30/90	9911	.239	9661	.164	10181	.266	10328	.274	10238	.262	10129	.172	HEK
10/30/90			RC HEK	10-31-90									HEK
10/31/90	10000	.191	9448	.139	10047	.230	10580	.269	10299	.252	10163	.183	[illegible]
10/31/90					RC 10191		RC 10336		RC 10307				[illegible]
11/1/90	10045	.186	9381	.139	10206	.259	10432	.298	10228	.248	10253	.183	HEK
11/1/90			RC 9560										HEK
11/2/90	9901	.210	9504	.136	10027	.281	10342	.264	10083	.250	10232	.193	HEK
11/2/90					RC 10068								HEK

Project No. _____ Date of Work _____

Entered By _____ Date _____

Disclosed To and Understood By **D05-097**

Signed 1. _____ Date _____

2. _____ Date _____

9 1 1 1 1 1 0 7 3

Ludlum ZnS Scintillation Alpha Counters (S.A.C.)
Daily Control Standard Counts and Backgrounds

Date	Ludlum-1 10 min Count	Ludlum-1 900 min Bkg	Ludlum-2 10 min Count	Ludlum-2 900 min Bkg	Ludlum-3 10 min Count	Ludlum-3 900 min Bkg	Ludlum-4 10 min Count	Ludlum-4 900 min Bkg	Ludlum-5 10 min Count	Ludlum-5 900 min Bkg	Ludlum-6 10 min Count	Ludlum-6 900 min Bkg	Analyst
12/3/90	9921	.146	9552	.116	10084	.262	10245	.299	10160	.223	10320	.207	[illegible]
12/3/90											RC 10400		[illegible]
12/4/90	9972	.189	9463	.127	10153	.280	10534	.280	10197	.253	10193	.206	HLK
12/4/90							RC 10303						HLK
12/5/90	9982	.197	9600	.146	10296	.308	10487	.289	10227	.228	10160	.224	HLK
12/5/90			RC 9524		RC 10223		RC 10468						HLK
12/6/90	10028	.164	9620	.113	10098	.300	10290	.299	10067	.261	10254	.211	HLK
12/6/90			RC 9642										HLK
12/7/90	9709	.216	9635	.144	10154	.282	10237	.300	10190	.249	10158	.210	HLK
12/7/90	RC 9941		RC 9620										HLK
12/10/90	9943	.230	9468	.163	10348	.293	10389	.301	10064	.227	10249	.192	HLK
12/10/90					RC 10271								HLK
12/11/90	9961	.203	9594	.152	10134	.262	10526	.300	10184	.233	10443	.220	HLK
12/11/90							RC 10469				RC 10156		HLK
12/12/90	10233	.189	9640	.136	9909	.252	10292	.317	10226	.230	10311	.193	HLK
12/12/90	RC 10140		RC 9532		RC 10006						RC 10210		HLK
12/13/90	9985	.189	9487	.159	10056	.279	10465	.293	10271	.223	10155	.197	HLK
12/13/90					RC 9978		RC 10360						HLK
12/14/90	9904	.164	9575	.169	10152	.261	10585	.307	10199	.226	10163	.203	HLK
12/14/90							RC 10436						HLK
12/17/90	10033	.202	9416	.137	10246	.230	10432	.318	10254	.242	10353	.184	[illegible]
12/17/90											RC 10203		[illegible]
12/18/90	9955	.232	9446	.142	10067	.243	10572	.307	10365	.234	10117	.196	[illegible]
12/18/90							RC 10424		RC 10265				[illegible]
12/19/90	10039	.229	9494	.141	10055	.271	10282	.309	10256	.234	10243	.189	HLK
12/20/90	10000	.233	9660	.157	10059	.273	10442	.308	10304	.239	10207	.197	[illegible]
12/20/90			RC 9451				RC 10361		RC 10272				[illegible]
12/21/90	9977	.236	9369	.154	9996	.245	10569	.283	10196	.217	10188	.212	[illegible]
12/21/90			RC 9558		RC 10023		RC 10411						[illegible]
1/2/91	10011	.233	9523	.153	9926	.317	10172	.318	10235	.243	10048	.183	[illegible]
1/2/91					RC 10072		RC 10320						[illegible]
1/3/91	9830	.212	9532	.159	10177	.307	10535	.263	10076	.276	10206	.203	[illegible]
1/3/91	RC 9935						RC 10434						[illegible]
1/4/91	10321	.214	9663	.153	10093	.224	10444	.270	10206	.248	10263	.198	[illegible]

Project No. _____ Date of Work _____

Entered By _____ Date _____

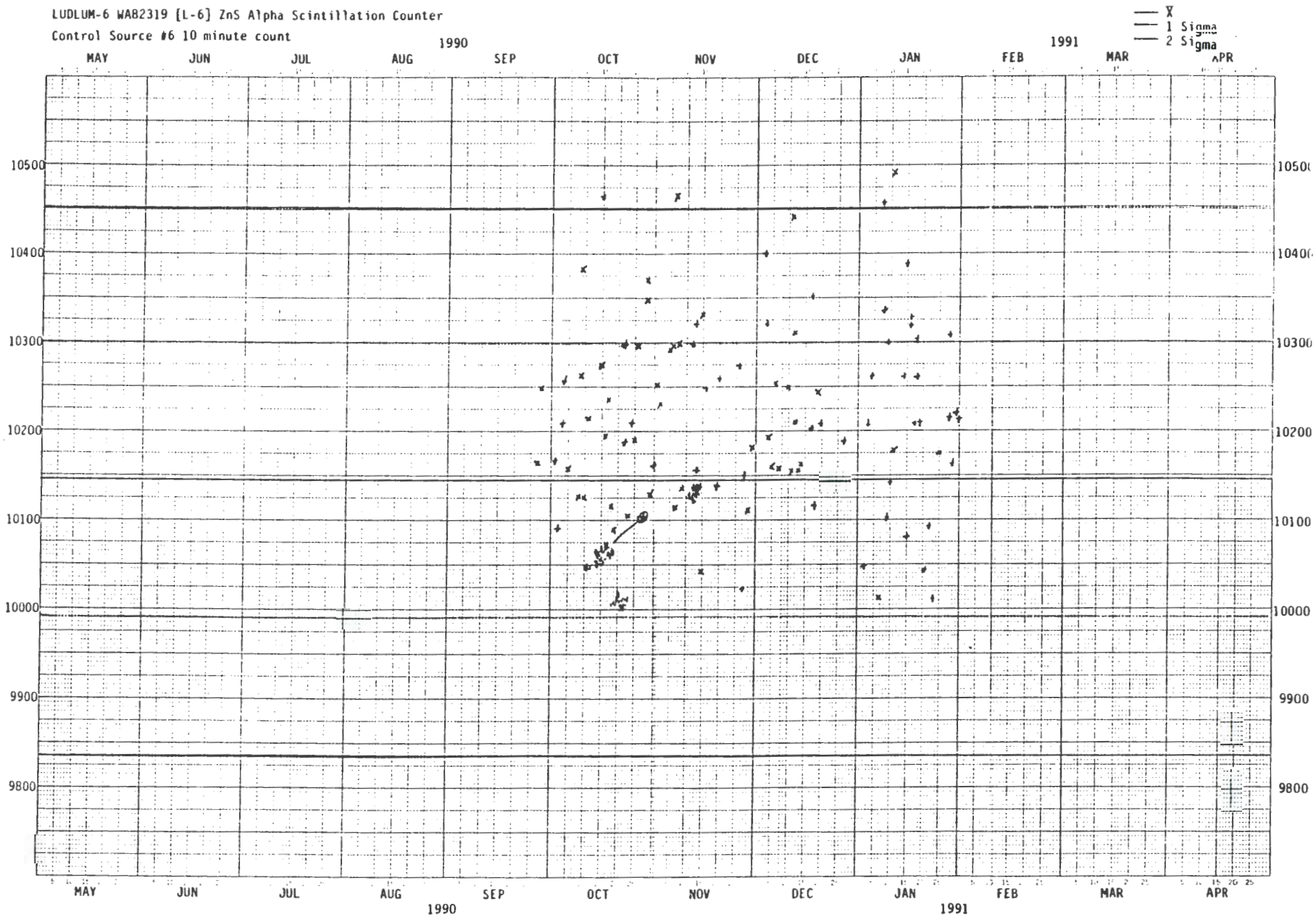
Disclosed To and Understood By

Signed 1. _____ Date _____

2. _____ Date _____

LUDLUM-6 WAB2319 [L-6] ZnS Alpha Scintillation Counter

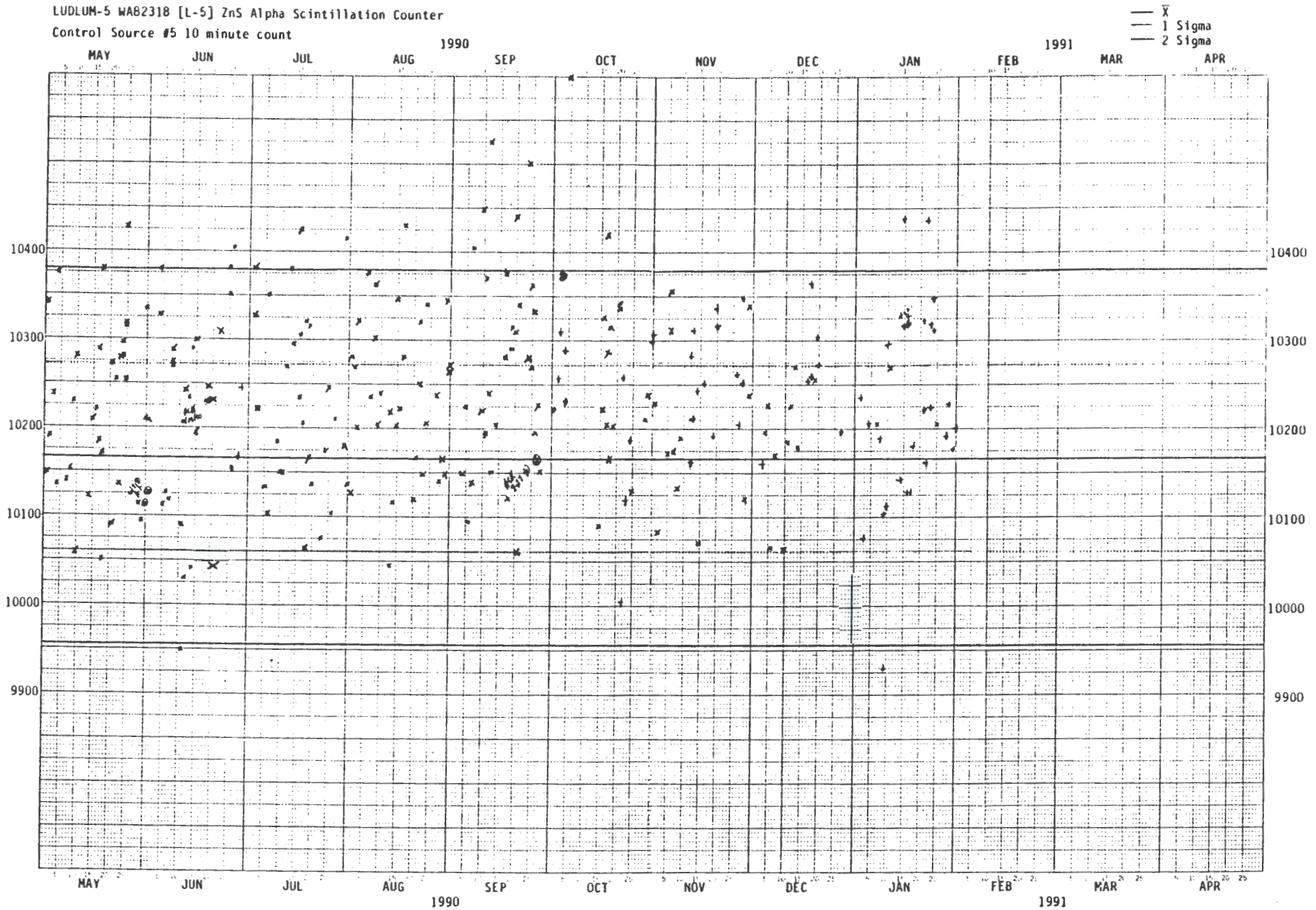
Control Source #6 10 minute count



D05-099

LUDLUM-5 WA82318 [L-5] ZnS Alpha Scintillation Counter

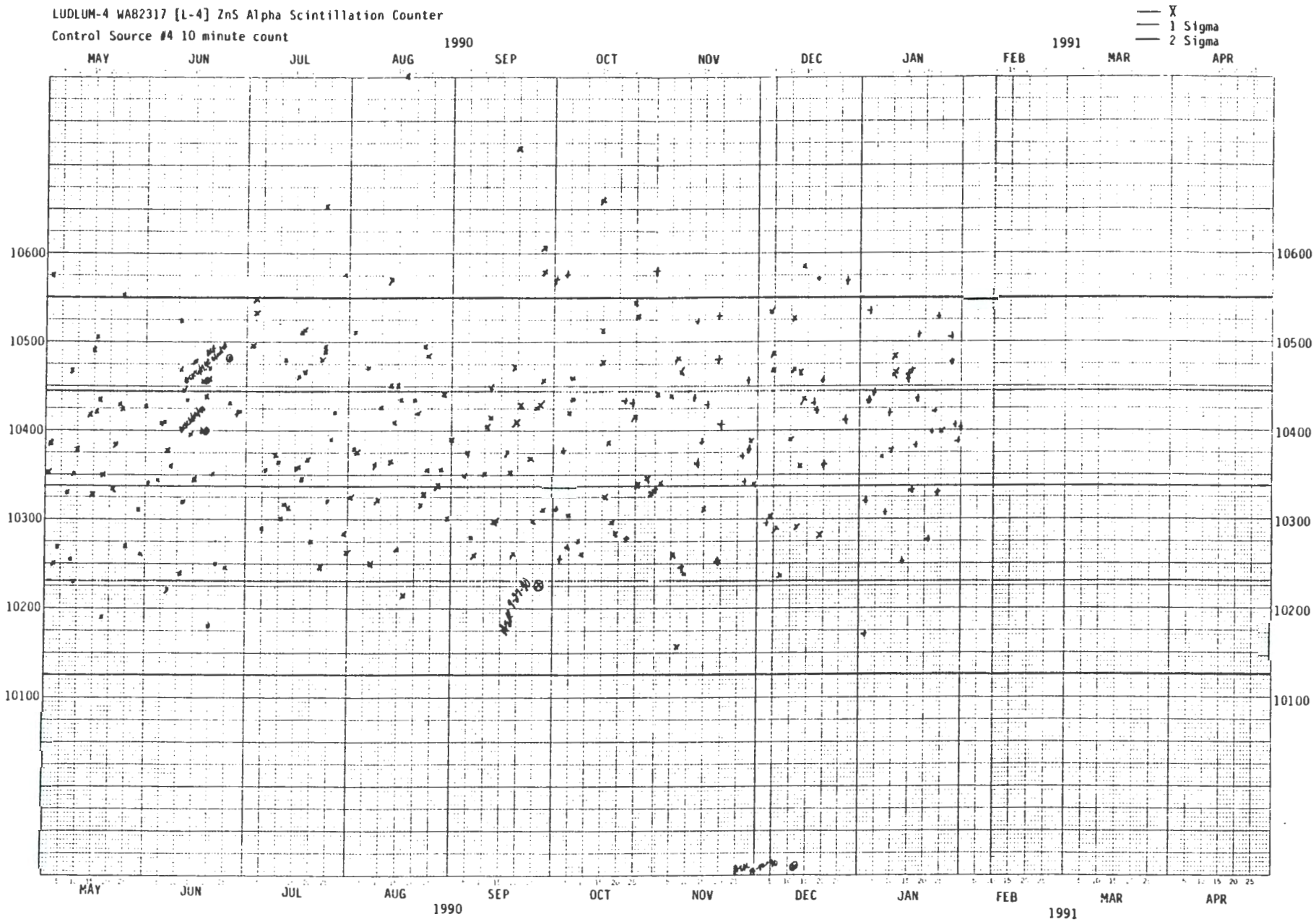
Control Source #5 10 minute count



D05-100

LUDLUM-4 WA82317 [L-4] ZnS Alpha Scintillation Counter

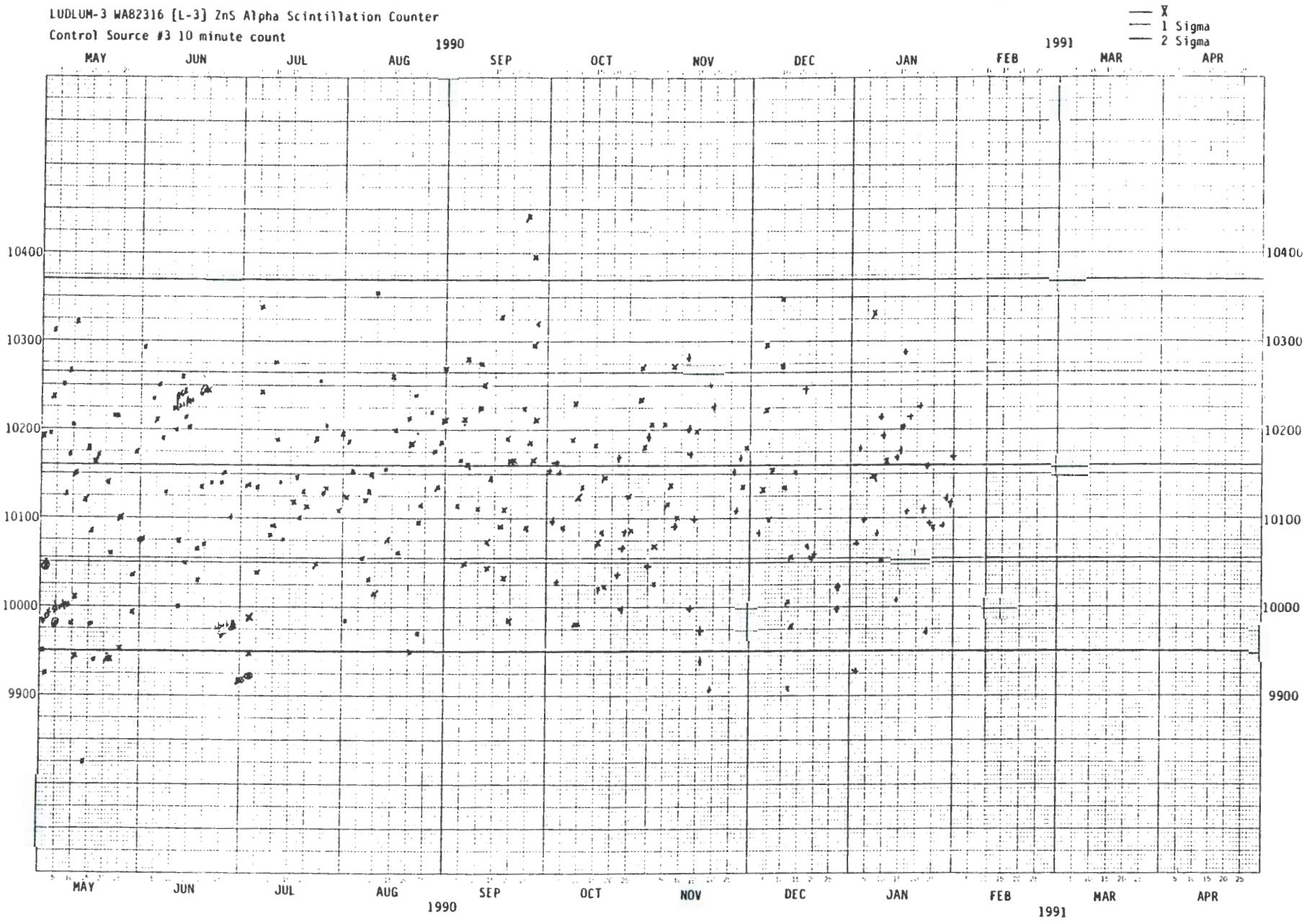
Control Source #4 10 minute count



D05-101

LUDLUM-3 WA82316 [L-3] ZnS Alpha Scintillation Counter

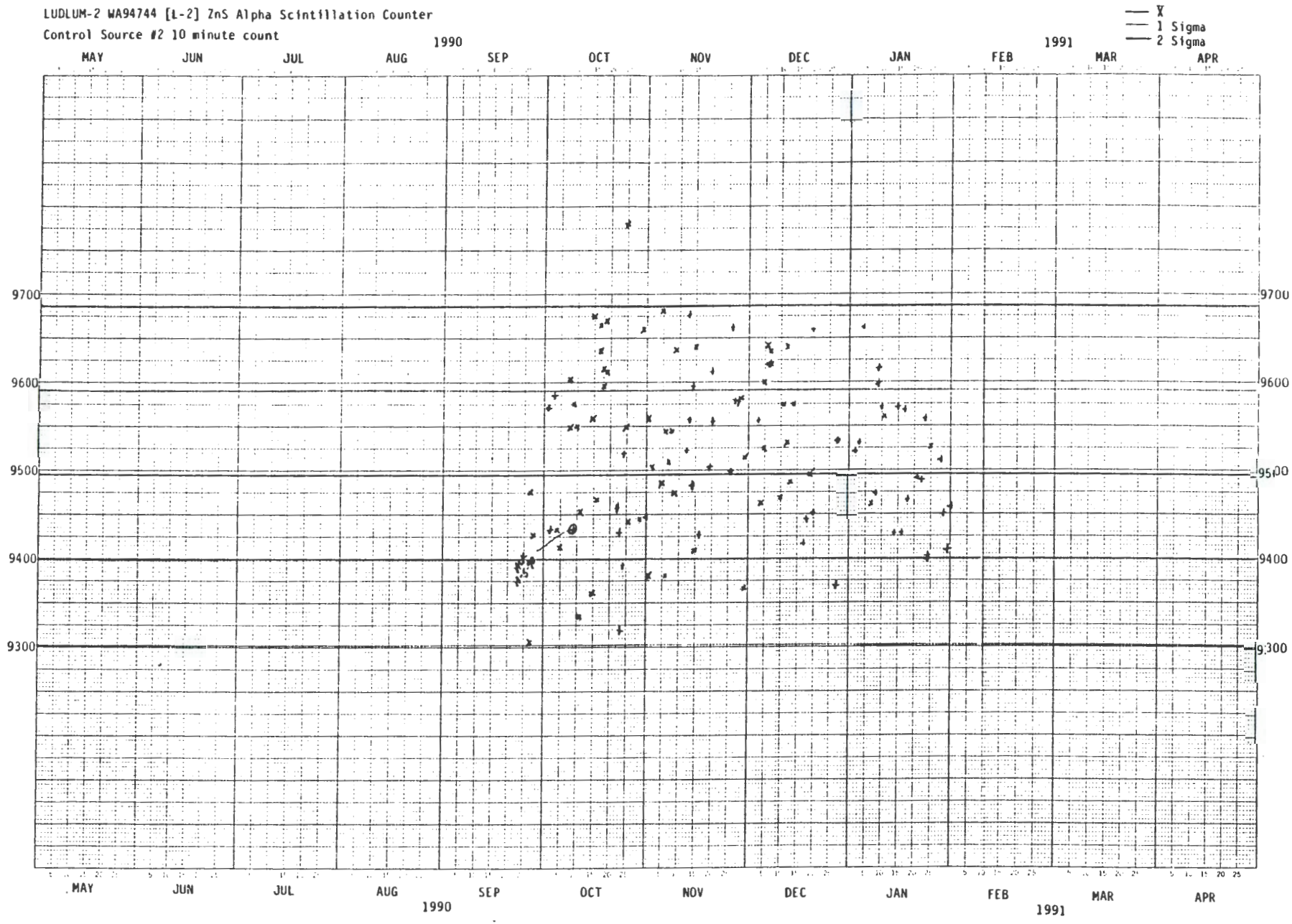
Control Source #3 10 minute count



D05-102

LUDLUM-2 WA94744 [L-2] ZnS Alpha Scintillation Counter

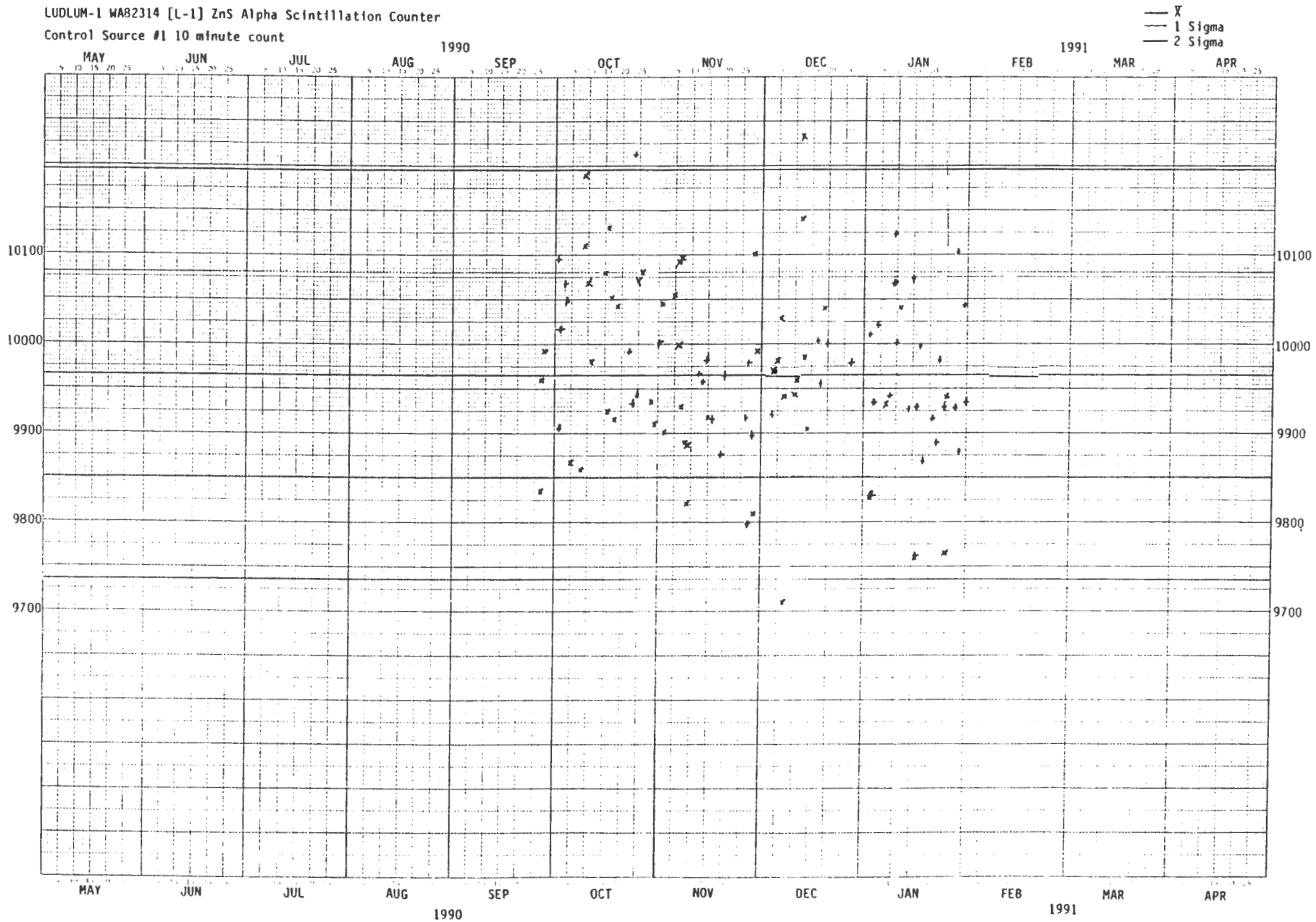
Control Source #2 10 minute count



D05-103

LUDLUM-1 WA82314 [L-1] ZnS Alpha Scintillation Counter

Control Source #1 10 minute count



D05-104

D6 - BETA ANALYSIS

D06-001

TOTAL BETA
Tc-99
Sr-90

PRIMARY DATA PACKAGE

D06-002

SST

TOTAL BETA DATA COVER SHEET

Sample Number: 90-3617-A-1/2/3
90-3619-A-1/2/3
90-4178-A-1/2/3
90-4180-C-1/2/5

Procedure: HTA-4-23, HTA-4-8

Pipet Calibration LRB#: BNW 52327

Equipment (M&TE#): #1 W700873, #2 W700878

System Calibration LRB#: BNW 52626

Control Data LRB#: BNW 52342

SST

Tc-99 DATA COVER SHEET

Sample Number: 90-3617-A-1/2/3
90-3619-A-1/2/3
90-4178-A-1/2/3
90-4180-C-1/2/5

Procedure: HTA-4-12, HTA-4-23, HTA-4-8

Pipet Calibration LRB#: BNW 52327

Equipment (M&TE#): #1 W700873, #2 W700878

System Calibration LRB#: BNW 52342

Control Data LRB#: BNW 52342

Analysts Spike Recovery
Average File Location: 325 Bldg. Room 971

SST

Sr-90 DATA COVER SHEET

Sample Number: 90-3617-A-1/2/3
90-3619-A-1/2/3
90-4178-A-1/2/3
90-4180-A-1/2/5

Procedure: HTA-4-11, HTA-4-23, HTA-4-8

Pipet Calibration LRB#: BNW 52327

Equipment (M&TE#): #1 W700873, #2 W700878

System Calibration LRB#: BNW 52342

Control Data LRB#: BNW 52342, 52626

Analysts Spike Recovery
Average File Location: 325 Bldg. Rm. 971

9112160935

TOTAL BETA
Tc-99
Sr-90

SUMMARY DATA REPORTS

D06-006

Total Beta, Sr-90, Tc-99 and DATA

Customer No.	Tot beta (dpm/g) @Sr90-Y90	+/- % error	Sr-90 dpm/g	+/- % error	Tc-99 dpm/g	+/- % error
Segment 3						
90-3617-A-1	3.89E+07	2.7	3.01E+06	7.5	4.38E+04	7.9
90-3617-A-2	3.71E+07	2.7	2.24E+06	8.0	3.96E+04	8.5
90-3617-A-3	6.83E+05	4.3	3.13E+05	13.0	<7.25E+03	
Segment 5						
90-3619-A-1	2.56E+07	2.9	1.13E+06	10.0	1.39E+04	22
90-3619-A-2	2.68E+07	2.9	1.03E+06	10.0	1.51E+04	18
90-3619-A-3	9.45E+06	3.0	2.00E+06	10.0	<8.13E+03	
Composite						
90-4178-A-1	6.17E+07	4.0	1.58E+07		2.62E+04	9
90-4178-A-2	6.97E+07	5.0	1.43E+07		2.38E+04	14
90-4178-A-3	2.49E+06	4.0	3.80E+05		<2.61E+03	
90-4180-C-1	1.73E+07	2.8	1.44E+04		3.57E+04	4
90-4180-C-2	1.76E+07	2.8	2.21E+03		3.43E+04	3.5
90-4180-C-5	4.34E+04	3.4	3.48E+03		<1.42E+03	

TOTAL BETA
Tc-99
Sr-90

ANALYTICAL REPORT CARDS

D06-008

TOTAL BETA ANALYSIS

Total beta analysis for SST samples is accomplished by using proportional beta counters. A Radiochemistry ANALYTICAL REPORT card accompanies each sample. This card has a card serial number, the date the sample was received into the radiochemistry laboratory, work package number, a radiochemistry lab serial number, customer identification number, the 325A Hot Cell sample identification number, the constituent requested (i.e., total beta), and the results. The balance ID number, BNW laboratory record book (LRB) number that holds the pipet calibration data, and the M&TE number of the beta counting system are noted in the "Serial No." column. A copy of the pipet calibration is provided under separate cover. The beta counter M&TE number cross references to the LRB that contains the calibration data and the daily control data. The total beta procedure number used for this analysis is noted in the "Constituent" column.

The volume of the aliquot taken from the sample solution (the dissolved fusion or the water leach) is written under the carD "SERIAL NUMBER" on the right side of the card. The second aliquot (if any) is the dilution of the first volume and the third volume is the portion of the dilution evaporated on the dish that is then beta counted. If only one volume appears then that volume is evaporated directly on the dish and then beta counted. The mass of sample sludge aliquot and the volume of solution used in the dissolution of the fusion or the water leach is written below the sample aliquot volumes.

The hand calculation of the data is located on the bottom half of the card under "DATA". This calculation comes from the procedure. The corrected count rate, sample volume, counter efficiency, sample weight and volume of solution of fusion or water leach are incorporated. If a "CCL=" is given then a coincidence counting loss is calculated and factored into the final results. Final results are given in disintegrations per gram.

On the back side of the card (xeroxed on the bottom half of page) is the counting raw data. The counter number and efficiency, date counted, total counts, time counted, calculated count rate, background counts per minute and the calculated corrected count rate are listed.

ANALYTICAL REPORT 100059

Customer: 331
Date Received: 8-21-90
Work Order No: MAW39

ID # A.L.U.: 343 -TV

Description: TV-331/-M-1
Inlive
Core 1a
Segment 3

Analysis: Total Beta
Procedure: MIW-4-23

Results

3.37 E+7 d/m/g wet wt
± 27%
as $Sr Y^{90}$

TI-SST-102

0.5214 + Dil - 0.1011 ml
BNW 83645 p.52
RJB 9/19/90

Calculations
$4296.70 (1.95)\left(\frac{250}{(0.1011)(0.5321)}\right) = 3.8937$ E+7 d/m/g Calculated as $Sr Y^{90}$.
± 2.7 %

Calculations Anne E Kozelisky Date 9-25-90
Reviewed G O Harvey Date 9-26-90
Counting Information
By Anne E Kozelisky
M. & I.E.: W/WB/8
Log Book: BW0536 p. 95
Instrument P.B.L. # 2 D/L Sensitivity 1.95

Date	9/20/90
Total Counts	43254
Minutes	10
Counts/Minute	4325.40
Background	29.70
Corrected C/M	4296.70

ANALYTICAL REPORT 100071

Customer: 331
Date Received: 8-21-90
Work Order No: MAW39

ID # A.L.U.: 343 -TV

Description: TV-331/-M-2
Inlive
Core 1a
Segment 3

Analysis: Total Beta
Procedure: MIW-4-23

Results

3.71 E+7 d/m/g wet wt
± 27%
as $Sr Y^{90}$

TI-SST-102

0.5214 + Dil 9-10-90 - 250 ml - 0.1011 ml
BNW 83645 p.52
RJB 9/19/90

Calculations
$4076.60 (1.95)\left(\frac{250}{(0.1011)(0.5195)}\right) = 3.7124$ E+7 d/m/g Calculated as $Sr Y^{90}$
± 27%

Calculations Anne E Kozelisky Date 9-25-90
Reviewed G O Harvey Date 9-26-90
Counting Information
By Anne E Kozelisky
M. & I.E.: W/WB/8
Log Book: BW0536 p. 95
Instrument P.B.L. # 2 D/L Sensitivity 1.95

Date	9-20-90
Total Counts	41053
Minutes	10
Counts/Minute	4105.30
Background	28.70
Corrected C/M	4076.60

ANALYTICAL REPORT 100083

Customer: 331
Date Received: 8-21-90
Work Order No: MAW39

ID # A.L.U.: 344 -TV

Description: TV-331/-M-3
Inlive
Core 1a
Segment 3

Analysis: Total Beta
Procedure: MIW-4-23

Results

6.83 E+5 d/m/g wet wt
± 4.3%
based on average wet or Smart based.

TI-SST-102

Dil - 500x
0.5015 ml
BNW 83645 p.52
RJB 9/19/90

Calculations
$373.10 (1.95)\left(\frac{250}{0.5015}\right) = 3.6268$ E+5 d/m/g Calculated as $Sr Y^{90}$
÷ .5308 g = 6.8328 E+5 d/m/g
± 4.3%

Calculations Anne E Kozelisky Date 9-25-90
Reviewed G O Harvey Date 9-26-90
Counting Information
By Anne E Kozelisky
M. & I.E.: W/WB/8
Log Book: BW0536 p. 95
Instrument P.B.L. # 2 D/L Sensitivity 1.95

Date	9-20-90
Total Counts	4013
Minutes	10
Counts/Minute	401.30
Background	28.20
Corrected C/M	373.10

D06-010

100097

Date Received: 9-1-90
Work Order No.: 39

Description: Initial
Date In
Sequent 5
Date 1/25/91

Analysis: Total Beta
Procedure: Alm-4-3

Results

2.56 E+7 d/m/g wet wt
± 2.9 %
as Sr-Y90

TE-SST-103

Calibration: 0.1011 ml
BNW 53645 p.52
RJB 9/19/90

Calculations
$2665.10 (1.95) \left(\frac{250}{(0.1011)(0.5517)}\right) = 2.5615 E+7$ d/m/g Calculated as Sr-Y90
= 2.9 %

Calculations: Anne E Kopelsky Date 9-25-90
Reviewed: G O Harvey Date 9-26-90
Counting Information
By: Anne E Kopelsky
N. & I.E.: N/WO: 8
Log Book: BNW 53645 p. 95

Instrument: Protec # 2 D/C 2 STV 1.95

Date	9-20-90
Total Counts	26738
Minutes	10
Counts/Minute	2673.8
Background	8.70
Corrected C/M	2665.10

A1 + A2 4% x B15 Sr
A2 21% Yi in Sr
BIK Conformance with Sr

100104

Date Received: 9-1-90
Work Order No.: 39

Description: Initial
Date In
Sequent 5
Date 1/25/91

Analysis: Total Beta
Procedure: Alm-4-3

Results

2.68E+7 d/m/g wet wt
± 2.7 %
as Sr-Y90

TE-SST-103

Calibration: 0.1011 ml
BNW 53645 p.52
RJB 9/19/90

Calculations
$3086.30 (1.95) \left(\frac{250}{(0.1011)(0.5561)}\right) = 2.6761 E+7$ d/m/g Calculated as Sr-Y90
± 2.7 %

Calculations: Anne E Kopelsky Date 9-25-90
Reviewed: G. O. Harvey Date 9-26-90
Counting Information
By: Anne E Kopelsky
N. & I.E.: N/WO: 8
Log Book: BNW 53645 p. 95

Instrument: Protec # 2 D/C 2 STV 1.95

Date	9-20-90
Total Counts	31150
Minutes	10
Counts/Minute	3115.0
Background	28.70
Corrected C/M	3086.30

D06-011

RADIOCHEMICAL REPORT 100121

Instrument: 551
Date Received: 8-21-90
Work Order No: M620 39

ID & Method: 547-90

Description: 90-3612-H-5
Tissue
Core 1:
Segment 5-5
Drill 1/2 [illegible]

Analysis: Total Beta
Procedure: HTA-4-23

Results

9.45 E+6 d/m
± 2% ½ wet

TI-SST-103

Dual - 500 ml
500 λ
0.5015 ml
BNW 52645 p.52
ZB 8/19/90

Calculations
5190.76 (1.95) (250 / 0.5015) = 9.9972 E+6 d/m/tank Calculated as 3-1-90
÷ .5287 g = 9.4483 E+6 d/m/g wet wt
± 2.8%
based on average wet wt of Sampler liner

Calculations Anne E Hyclisky Date 9-25-90

Reviewed G O Kenney Date 9-26-90

Counting Information

By Anne E Hyclisky

M. & T.E.: W/WB/8
Log Book: BWG2342 p. 95

Instrument F.B.C. # 2 W/C Sr/Y 1.95

Date	9-21-90
Total Counts	51683
Minutes	10
Counts/Minute	5143.8
Background	28.04
Corrected C/M	5190.76

based on av wt of Sampler liner

RADIOCHEMICAL REPORT 100237

Instrument: SST
Date Received: 8-21-90
Work Order No: M620 39

ID & Method: 547-90

Description: 90-3612 A-6

Analysis: Total Beta
Procedure: HTA-4-23

Results

2 50 ml - 1/2
① 100 λ aliquot from glass sample vial
② 100 λ " " plastic " "

9/27/90 CAH

Calculations
(1126.20) (1.87) 250/.1 = 5.265 E+6 verifies original analysis
(936.8) (1.87) 250/.1 = 4.38 E+6

Calculations _____ Date _____

Reviewed _____ Date _____

Counting Information

By Anne E Hyclisky

M. & T.E.: W/WB/3
Log Book: BWG2342 p. 95

Instrument F.B.C. # 1 W/C Sr/Y 1.87

	Plastic	Glass
Date	9-27-90	9-27-90
Total Counts	9659	11593
Minutes	10	10
Counts/Minute	965.90	1159.3
Background	29.10	29.10
Corrected C/M	936.80	1126.20

plastic vial was counted aliquot received from the hot cell

D06-012

ANALYTICAL REPORT 100364

Customer: SSI
Date Received: 9-11-90
Work Order No: M6239

ID & A.L.O.: 507-90

Description: 90-4176-M-1
Tk1106
Core 1a
Seg Composite

Analysis: Total Beta
Procedure: MA-4-23

Results

6.17 E+7 dpm/g wet wt
± 4% as Sr/Y 90

BNW 52917 p. 125: 0.0259 + 250 mL - 0.0206 ml
BNW 53645 p.59

0.0197 ml
BNW 53645 pg 60
Ruona & Kellogg

Calculations Rbarrington 9/26/90 9/28/90

$1567.4\,(1.87)\left(\frac{250}{(0.0197)(0.6025)}\right) = 6.1736\ E+7$ d/m/g Calculated as Sr/Y 90
± 3.5 %

Calculations Anne E Kopelsky Date 9-28-90
Reviewed L O Harvey Date 10-10-90
Counting Information
By Anne E Kopelsky
M. & T.E.: M70087
Log Book: BNW 52342 p. 95

Instrument	F.B.C. # 1 (0.0206)	d/c Sr90 1.87 (0.0197)
Date	9-28-90	9-28-90
Total Counts	16021	15974
Minutes	10	10
Counts/Minute	1602.1	1597.4
Background	30.00	30.00
Corrected C/M	1572.10	1567.4

TI 104

ANALYTICAL REPORT 100377

Customer: SSI
Date Received: 9-11-90
Work Order No: M6239

ID & A.L.O.: 508-90

Description: 90-4176-M-2
Tk1106
Core 1b
Seg Composite

Analysis: Total Beta
Procedure: MA-4-23

Results

6.97 E 7 dpm/g wet wt
± 4% as Sr/Y 90

BNW 52917 p. 125: 0.4527g + 250 mL - 0.0206 ml
BNW 53645 p.59

0.0197 ml
BNW 53645 pg 60
Ruona & Kellogg

Calculations Rbarrington 9/26/90 9/28/90

$1328.7\,(1.87)\left(\frac{250}{(0.0197)(0.4527)}\right) = 6.9852\ E+7$ d/m/g Calculated as Sr/Y 90
± 3.6 %

Calculations Anne E Kopelsky Date 9-28-90
Reviewed L O Harvey Date 10-10-90
Counting Information
By Anne E Kopelsky
M. & T.E.: M70087
Log Book: BNW 52342 p. 95

Instrument	F.B.C. # 1 (0.0206)	d/c Sr90 1.87 (0.0197)
Date	9-28-90	9-28-90
Total Counts	10237	13387
Minutes	10	10
Counts/Minute		1338.7
Background	30.00	30.00
Corrected C/M		1308.7

TI 104

ANALYTICAL REPORT 100240

Customer: ~~AC Harvey~~ SST
Date Received: 9-11-90
Work Order No: M6239

ID & A.L.O.: 608-90

Description: 90-4178-M-1
replate
direct

Analysis: Total Beta
Procedure: MA-4-23

Results

7.40 E+7 dpm/g wet wt
± 4% as Sr/Y 90

0.0203 ml direct

Rbarrington 10/9/90

CALCULATIONS

$1455.20\,(1.87)\left(\frac{1}{0.0203}\right) = 1.3905\ E+5$ d/m/aliquot Calculated as Sr/Y 90

$\times\ \frac{250}{4.22} = 7.4028\ E+7$ dpm/g
± 3.6%

Calculations Anne E Kopelsky Date 10-15-90
Reviewed L O Harvey Date 10/22/90
Counting Information
By Anne E Kopelsky
M. & T.E.: M70087
Log Book: BNW 52342 p. 95

Instrument F.B.C. # 1 d/c Sr90 1.87

Date	10-9-90
Total Counts	14926
Minutes	10
Counts/Minute	1492.6
Background	37.40
Corrected C/M	1455.20

Conforms original analysis

TI 104

D06-013

ANALYTICAL REPORT

100389

Customer: SST
Date Received: 9-11-90
Work Order No: Ma2039

ID & A.L.D.: 009 -4v

Description: 9v-4176-4-3
TK1108
Core 1b
Seg COMPOSITE

Analysis: Total beta
Procedure: MFA-4-22

Results

2.49E+6 dpm / g wet wt

± 5%

BNW 52917 p. 122: 25ml - 0.5029 ml
BNW 53645
p. 58

0.0993 ml
BNW 53645 pg 60
Rosana Ethylette
9/28/90

Calculations R. Barrington 9/26/90

$$279.0\,(1.87)\left(\frac{258}{(0.0993)(1)}\right) = 1.3135\,E+6 \text{ d/m/ml}$$

Calculated as Sr/Y 90

$$\div \frac{\cancel{258}}{.5276} = 2.4896\,E+6$$

± 5%

Calculations Nancy Etzkhaity Date 9-28-90

Reviewed L. O. Lowry Date 10-16-90

Counting Information

by Nancy Etzkhaity

9-28-90 Counted for several minutes. Too many counts for a blank. Sent back for replating

M. & T.E.: 2/wc/3
Log Book: BNW52342 p. 95

Instrument P.N.C. # 1 d/c Sr90 1.87

Date	9-28-90
Total Counts	3090
Minutes	10
Counts/Minute	309.0
Background	30.0
Corrected C/M	279.0

TI 104

based on aw wt of sample fused = .5276 g

D06-014

ANALYTICAL REPORT

100308

Customer: SST
Date Received: 9-5-90
Work Order No: Ma20,39

ID & A.L.O.: 590 -90

Description: 90-4160-C-1
TK1106
Core 1a
Segment COM

Analysis: Total beta
Procedure: HTA-4-23

Results

1.73 E+7 d/m/g wet wt
± 28%
as Sr y 90

TI-SST-105

2.0698g + 194.6643g
P 40 @ 225°C
= .99676

0.1006
BNW 53845
Sr Y
COM

Calculations
9829.13 (1.87) (194.9943 / (0.1006)(2.0698)) = ~~1.7209 d/m/g~~ Calculated as Sr Y 90
÷ .99676 = 1.7257 E+7 d/m/g
± 2.8%

Calculations Anne E Kozlicky Date 9-25-90
Reviewed G O Harvey Date 9-26-90
Counting Information
By Anne E Kozlicky
M. & T.E.: w700673
Log Book: BNW62342 p. 95

Instrument P.B.C. # 1 d/c Sr Y 90 1.87

Date	9-21-90
Total Counts	98579
Minutes	10
Counts/Minute	9857.9
Background	28.77
Corrected C/M	9829.13

ANALYTICAL REPORT

100320

Customer: SST
Date Received: 9-5-90
Work Order No: Ma20,39

ID & A.L.O.: 591 -90

Description: 90-4160-C-2
TK1106
Core 1a
Segment COM

Analysis: Total beta
Procedure: HTA-4-23

Results

1.76 E+7 d/m/g wet wt
± 2.8%
as Sr y 90

TI-SST-105

P 40 @ 225°C
= .99676
2.1978g + 196.7726g

0.1006
BNW 53646 Sr Y
COM

Calculations
10558.53 (1.87) (196.7726 / (0.1006)(2.1978)) = 1.7572 E+7 ~~d/m/g~~ Calculated as Sr Y 90
÷ .99676 = 1.7629 E+7 d/m/g
± 2.8%

Calculations Anne E Kozlicky Date 9-25-90
Reviewed G O Harvey Date 9-26-90
Counting Information
By Anne E Kozlicky
M. & T.E.: w700673
Log Book: BNW62342 p. 95

Instrument P.B.C. # 1 d/c Sr Y 90 1.87

Date	9-21-90
Total Counts	105222
Minutes	10
Counts/Minute	10522.2
Background	28.77
Corrected C/M	10553.23

ANALYTICAL REPORT

100333

Customer: SST
Date Received: 9-5-90
Work Order No: Ma20,39

ID & A.L.O.: 593 -90

Description: 90-4160-C-3
TK1106
Core 1a
Segment COM

Analysis: Total beta
Procedure: HTA-4-23

Results

4.34 E+4 d/m/g wet wt
± 34%
@ Sr y 90

TI-SST-105

P 40 @ 225°C
= .99676
197.5712g

0.4996
BNW 53643
Sr Y
COM

Calculations
124.68 (1.87) (197.5712 / 0.4996) = 9.2202 E+4 ~~d/m/g~~ Calculated as Sr Y 90
÷ .99676 = 9.2502 E+4 d/m/g
÷ 2.1288 = 4.3351 E+4 d/m/g wet wt
± 34%

Calculations Anne E Kozlicky Date 9-25-90
Reviewed G O Harvey Date 9-26-90
Counting Information
By Anne E Kozlicky
M. & T.E.: ~~[illegible]~~ MK 9-21-90 W700873
Log Book: BNW62342 p. 95

Instrument P.B.C. # 1 d/c Sr Y 90 1.87

Date	9-21-90
Total Counts	15345
Minutes	100
Counts/Minute	153.45
Background	28.77
Corrected C/M	124.68

D06-015

Tc-99 BETA ANALYSIS

Tc-99 beta analysis for SST samples is accomplished by using proportional beta counters (of which we have 2). A Radiochemistry ANALYTICAL REPORT card accompanies each sample. This card has the date the sample was received into the radiochemistry laboratory, work package number, serial no. (a consecutive number system used in the lab), the constituent requested (Tc-99 in this case), and the results. Under the "Serial no." the balance ID number and the BNW laboratory record book (LRB) number that holds the pipet calibration data for that volume of sample aliquot used in this analysis is logged. A copy of the pipet calibration is provided under separate cover. The M&TE number of the beta counting system is located under the pipet calibration LRB. This number cross references to the LRB that contains the calibration data and the daily control data. Under the "Constituent" and Tc-99 is the procedure used in this analysis.

The volume of the aliquot taken from the sample solution (the dissolved fusion or the water leach) is written under the "SERIAL NUMBER" of the card on the right side of the card. The second volume is the amount of solvent that the first volume is extracted into and the third volume is the portion of the solvent evaporated on the dish that is then beta counted. The mass of sample sludge aliquot and the volume of solution used in the dissolution of the fusion or the water leach is written below the sample aliquot volumes.

On the bottom half of the card under "DATA" is the hand calculation of the data. This follows from the procedure. The corrected count rate, sample volume, counter efficiency, analysts yield, sample weight and volume of solution of fusion or water leach are incorporated. If a "CCL=" is given then a coincidence counting loss is calculated and factored into the final results. Final results are given in disintegrations per gram.

On the back side of the card (xeroxed on the bottom half of page) is the counting raw data. The counter number and efficiency, date counted, total counts, time counted, calculated count rate, background counts per minute and the calculated corrected count rate are listed.

MINERALOGIC REPORT 100085

Customer: 331
Date Received: 8-21-90
Work Order No: Mark 41

ID & M.E.W.: 344-90

Description: 90-361/-M-3
INILWB
Lot # 1C
Segment 3

Analysis: IC-77
Procedure: MIN-4-1.

Results

4.38E+4 d/m/g wet wt
± 7.9%

TI-SST-102

Comm: 2.0308 ml - 5.0623 ml - 2(0.9944 ml)
BNW 53645 pg 55+56
Luana L Billyatte 9/21/90

Calculations:
$23.95(2.74)\left(\frac{250\ (5.0628)}{2(0.9944)(2.0308)(0.5321)}\right) = 3.8484\ E+4$ d/m/g
Le factor ÷ .879 = 4.378 E+4
± 7.9%

Calculations: Anne E Kopchinsky Date 9-25-90
Reviewed: C O Harvey Date 9-25-90
Counting Interpretation
By: Anne E Kopchinsky
M. & T.E.: W/WOR
Log Book: BNOL34 p. 95

Instrument: P.B.L. # 2 W.C. IC-77 2.74

Date	9-25-90
Total Counts	5530
Minutes	100
Counts/Minute	55.50
Background	31.65
Corrected C/M	23.85

MINERALOGIC REPORT 100077

Customer: 331
Date Received: 8-21-90
Work Order No: Mark 41

ID & M.E.W.: 343-90

Description: 90-361/-M-3
INILWB
Lot # 1C
Segment 3

Analysis: IC-77
Procedure: MIN-4-1.

Results

3.76E+4 d/m/g wet wt
± 7.5%

TI-SST-102

Comm: AEK 9-10-90 250 ml -
2.0308 ml - 5.0623 ml - 2(0.9944 ml)
BNW 53645 pg 55+56
Luana L Billyatte 9/21/90

Calculations:
$21.45(2.74)\left(\frac{250\ (5.0623)}{2(0.9944)(2.0308)(0.5245)}\right) = 3.4781\ E+4$ d/m/g
÷ .879 = 3.957 E+4
± 7.5%

Calculations: Anne E Kopchinsky Date 9-25-90
Reviewed: C O Harvey Date 9-25-90
Counting Interpretation
By: Anne E Kopchinsky
M. & T.E.: W/WOR
Log Book: BNOL34 p. 95

Instrument: P.B.L. # 2 W.C. IC-77 2.74

Date	9-25-90
Total Counts	5010
Minutes	100
Counts/Minute	50.10
Background	28.65
Corrected C/M	21.45

MINERALOGIC REPORT 100084

Customer: 331
Date Received: 8-21-90
Work Order No: Mark 41

ID & M.E.W.: 344-90

Description: 90-361/-M-3
INILWB
Lot # 1C
Segment 3

Analysis: IC-77
Procedure: MIN-4-1.

Results

< 7.25E+3 d/m/g wet wt

TI-SST-102

Comm: 2.0308 ml - 5.0623 ml - 2(0.9944 ml)
BNW 53645 pg 55+56
Luana L Billyatte 9/21/90

Calculations:
~~$\cancel{4.5(2.39)\left(\frac{250\ (5.0623)}{2(0.9944)(2.0308)}\right)}$ ~~ ~~212.0795~~ d/m/ml
Cont Blank
$< 4.5\ (2.39)\ \frac{(250)(5.0623)}{2(0.9944)(2.0308)(.8250)(.879)} = < 7.248\ E+3$

Calculations: Anne E Kopchinsky Date 9-25-90
Reviewed: C O Harvey Date 9-25-90
Counting Interpretation
By: Anne E Kopchinsky
M. & T.E.: W/WOR
Log Book: BNOL34 p. 95

Instrument: P.B.L. # 1 W.C. IC-77 2.39

Date	9-25-90
Total Counts	2938
Minutes	100
Counts/Minute	29.38
Background	21.77
Corrected C/M	0.39

< 4.5

based on one wt of sample used

D06-017

ANALYTICAL REPORT 100103

Customer: 551
Date Received: 8-21-90
Work Order No: M6W41

ID & M.L.U.: 548-90

Description: TV-301T-M-2
Inlet
Core Id
Segment 5

Analysis: IC-77
Procedure: HIM-9-12

Results

1.376 E+4 d/m
3.222 g wet

Volume Used -
2.0308 ml - 5.0623 ml - 2(0.9944 ml)
BNW 53645 pg 55+56
Anania Y Bellofatto 9/21/90

Calculations
7.15 (2.74) (250 (5.0623) / 2(0.9944)(2.0308)(0.5017)) = 1.2236 E+4 d/m/g
Recovery ÷ .877 = 1.372 E+4
3.222

Calculations Anne E Kopchik Date 9-25-90
Reviewed C O Harvey Date 9-25-90
Counting Information
By Anne E Kopchik
M. & I.E.: W/WB/8
Log Book: BNOL342 p. 95

Instrument P.B.L. # 2 D/C IC-77 2.74

Date	9-24-90
Total Counts	3484
Minutes	100
Counts/Minute	34.84
Background	27.69
Corrected C/M	7.15

TI-551-103

ANALYTICAL REPORT 100115

Customer: 551
Date Received: 8-21-90
Work Order No: M6W41

ID & M.L.U.: 548-90

Description: TV-301T-M-2
Inlet
Core Id
Segment 5

Analysis: IC-77
Procedure: HIM-9-12

Results

1.51 E+4 d/m
3.158 g wet wt

Volume Used -
2.0308 ml - 5.0623 ml - 2(0.9944 ml)
BNW 53645 pg 55+56
Anania Y Bellofatto 9/21/90

Calculations
8.57 (2.74) (250 (5.0623) / 2(0.9944)(2.0308)(0.5561)) = 1.3231 E+4 d/m/g
Recovery ÷ .877 = 1.505 E+4
3.158

Calculations Anne E Kopchik Date 9-25-90
Reviewed C O Harvey Date 9-25-90
Counting Information
By Anne E Kopchik
M. & I.E.: W/WB/8
Log Book: BNOL342 p. 95

Instrument P.B.L. # 2 D/C IC-77 2.74

Date	9-24-90
Total Counts	2626
Minutes	100
Counts/Minute	26.26
Background	27.69
Corrected C/M	8.57

TI-551-103

ANALYTICAL REPORT 100127

Customer: 551
Date Received: 8-21-90
Work Order No: M6W41

ID & M.L.U.: 548-90

Description: TV-301T-M-3
Inlet
Core Id
Segment 5

Analysis: IC-77
Procedure: HIM-9-12

Results

< 8.13 E+3 d/m
g wet wt

Volume Used -
2.0308 ml - 5.0623 ml - 2(0.9944 ml)
BNW 53645 pg 55+56
Anania Y Bellofatto 9/21/90

Calculations
~~0.81 (2.74) (250 (5.0623) / 2(0.9944)(2.0308)) = 605.1489 d/m/g wet wt~~
< .44 (2.74) (250)(5.0623) / (2(0.9944)(2.0308)(.5277)(.877)) = < 8.1268 E+3

Calculations Anne E Kopchik Date 9-25-90
Reviewed C O Harvey Date 9-25-90
Counting Information
By Anne E Kopchik
M. & I.E.: W/WB/8
Log Book: BNOL342 p. 95

Instrument P.B.L. # 2 D/C IC-77 2.74

Date	9/24/90
Total Counts	2850
Minutes	100
Counts/Minute	28.50
Background	27.69
Corrected C/M	0.81

<4.4

TI-551-103

based on amt of sample used

D06-018

ANALYTICAL REPORT 100371

Customer: SST
Date Received: 9-11-90
Work Order No: Ma2041

ID & A.L.O.: 009-90

Description: 90-4178-A-1
TK1108
Core 1a
Seq COMPOSITE

Analysis: Tc-99
Procedure: HTA-4-12

Results

2.62E+4 d/m/g wet wt
57%

BWG2917 p. 125: 0.4527g + 250mL -
2.0224 mL - 5.0339 mL - 2(0.9905 mL)
BNW 53045 pg 66+67
[illegible] 10/10/90

Calculations
$18.33(2.74)\left(\frac{5.0339\ (250)}{2(0.9905)(2.0224)(0.4527)}\right) = 2.6178\ E+4$ d/m/g
± 9.2%

Calculations [illegible] Date 10-15-90
Reviewed L O Harvey Date 10/17/90
Counting Information
By [illegible]
M. & T.E.: W70687
Log Book: BWG2342 p. 95

Instrument F.B.C. # 2 d/c Tc-99 2.74

Date	10-11-90
Total Counts	4923
Minutes	100
Counts/Minute	49.23
Background	30.90
Corrected C/M	18.33

TI 104

ANALYTICAL REPORT 100383

Customer: SST
Date Received: 9-11-90
Work Order No: Ma2041

ID & A.L.O.: 008-90

Description: 90-4178-A-2
TK1108
Core 1a
Seq COMPOSITE

Analysis: Tc-99
Procedure: HTA-4-12

Results

2.38E+4 d/m/g wet wt
±14%

BWG2917 p. 125: 0.4527g + 250mL -
2.0224 mL - 5.0339 mL - 2(0.9905 mL)
BNW 53045 pg 66+67
[illegible] 10/10/90

Calculations
$12.5(2.74)\left(\frac{5.0339\ (250)}{2(0.9905)(2.0224)(0.4527)}\right) = 2.3759\ E+4$ d/m/g
± 13.8%

Calculations [illegible] Date 10-15-90
Reviewed L O Harvey Date 10/17/90
Counting Information
By [illegible]
M. & T.E.: W70687
Log Book: BWG2342 p. 95

Instrument F.B.C. # 2 d/c Tc-99 2.74

Date	10-11-90
Total Counts	4340
Minutes	100
Counts/Minute	43.40
Background	30.90
Corrected C/M	12.50

TI 104

ANALYTICAL REPORT 100395

Ave wt of samples fused = .5276

Customer: SST
Date Received: 9-11-90
Work Order No: Ma2041

ID & A.L.O.: 009-90

Description: 90-4178-A-3
TK1108
Core 1a
Seq COMPOSITE

Analysis: Tc-99
Procedure: HTA-4-12

Results

< 2.61E+3 d/m/g wet wt

BWG2917 p. 125: 250mL -
2.0224 mL - 5.0339 mL - 2(0.9905 mL)
BNW 53045 pg 66+67
[illegible] 10/10/90

Calculations
~~1.74~~ $(2.74)\left(\frac{5.0339\ (250)}{2(0.9905)(2.0224)}\right)$ ~~0.5276~~ ~~[illegible]~~ ave weight
< 46
ave weight
detection limit
< 2.6163 d/m/g wet wt

Calculations [illegible] Date 10-15-90
Reviewed L O Harvey Date 10/17/90
Counting Information
By [illegible]
M. & T.E.: W70687
Log Book: BWG2342 p. 97

Instrument F.B.C. # 2 d/c Tc-99 2.74

Date	10-15-90
Total Counts	2932
Minutes	100
Counts/Minute	29.32
Background	28.35
Corrected C/M	0.97

TI 104

based on average wt of samples fused

D06-019

ρ H2O @ 225°C
= .77676

ANALYTICAL REPORT

100314

Customer: SST
Date Received: 9-5-90
Work Order No: M2U41

ID & A.L.O.: 590-40

Description: 90-4160-C-1
TK1106
Core 1a
Segment CDM

Analysis: Tc-99
Procedure: NTA-4-12

2.1078g + 194.5043g = 195.5121 mL

2.0308 mL - 5.0623 mL - 2(0.9944 mL)

BNW 53645 pg 55 + 56

Liana T. Billingatto 9/21/90

Calculations ~~110.99 (2.39) (194.5043 (5.0623)) / (2(0.9944)(2.0308)(2.0698))~~ = ~~3.1315 E+4 d/m/g~~ 9-25-90

110.99 (2.39) ((194.5043)(5.0623)) / (2(0.9944)(2.0308)(2.0698)(.77676)(.877)) = ~~3.577~~ 2.573 E+4 d/m/g ± 3.5%

Calculations Anne E Kopchsky Date 9-25-90

Reviewed C O Harvey Date 9-25-90

Counting Information

By Anne E Kopchsky

M. & T.E.: W/W873
Log Book: BNW5342 p. 95

Instrument F.b.C. # 1 a/c Tc-99 2.39

Date	9-24-90
Total Counts	1903
Minutes	100
Counts/Minute	19.03
Background	29.04
Corrected C/M	110.99

TI-SST-105

3.57 E+4 d/m / g wet wt
± 4%

ρ H2O @ 225°C
= .77676

ANALYTICAL REPORT

100326

Customer: SST
Date Received: 9-5-90
Work Order No: M2U41

ID & A.L.O.: 591-40

Description: 90-4160-C-2
TK1106
Core 1a
Segment CDM

Analysis: Tc-99
Procedure: NTA-4-12

2.1978g + 196.7720g = 197.4122 mL

2.0308 mL - 5.0623 mL - 2(0.9944 mL)

BNW 53645 pg 55 + 56

Liana T. Billingatto 9/21/90

Calculations ~~112.18 (2.39) (196.7720 (5.0623)) / (2(0.9944)(2.0308)(2.1978))~~ = ~~3.0037 E+4 d/m/g~~ 9-25-90

(112.18) (2.39) ((197.4122)(5.0623)) / (2(0.9944)(2.0308)(2.1978)(.877)) = 3.434 E+4 d/m/g ± 3.5%

Calculations Anne E Kopchsky Date 9-25-90

Reviewed C O Harvey Date 9-25-90

Counting Information

By Anne E Kopchsky

M. & T.E.: W/W873
Log Book: BNW5342 p. 95

Instrument F.b.C. # 1 a/c Tc-99 2.39

Date	9-24-90
Total Counts	1412
Minutes	100
Counts/Minute	14.12
Background	29.04
Corrected C/M	112.18

TI-SST-105

3.43 E+4 d/m / g wet wt
± 3.5%

ρ H2O @ 225°C
= .77676

ANALYTICAL REPORT

100334

Customer: SST
Date Received: 9-5-90
Work Order No: M2U41

ID & A.L.O.: 593-40

Description: 90-4160-C-3
TK1106
Core 1a
Segment CDM

Analysis: Tc-99
Procedure: NTA-4-12

197.5712g = 198.2134 mL

2.0363 mL - 5.0623 mL - 2(0.9944 mL)

BNW 53645 pg 55 + 56

Liana T. Billingatto 9/21/90

Calculations

< 4.5 (2.39) ((5.0623)(198.2134)) / (2(0.9944)(2.0363)(2.1138)(.877)) = < 1.4246 E+3

Calculations C O Harvey Date 9-25-90

Reviewed K Barrington Date 1-16-90

Counting Information

By Anne E Kopchsky

M. & T.E.: W/W873
Log Book: BNW5342 p. 95

Instrument F.b.C. # 1 a/c Tc-99 2.39

Date	9-25-90
Total Counts	29.19
Minutes	100
Counts/Minute	29.19
Background	29.49
Corrected C/M	-0.30

< 4.5

Less than Background based on one wt Sample Loaded

TI-SST-105

< 1.425 E+3 d/m / g wet wt

D06-020

Sr-90 BETA ANALYSIS

Proportional beta counters are used to perform the Sr-90 beta analysis. A Radiochemistry ANALYTICAL REPORT card accompanies each sample. This card has a card serial number, the date the sample was received into the radiochemistry laboratory, work package number, a radiochemistry lab serial number, customer identification number, the 325A Hot Cell sample identification number, the constituent requested (i.e., Sr-90), and the results. The balance ID number, BNW laboratory record book (LRB) number that holds the pipet calibration data, and the M&TE number of the proportional beta counting system are noted in the "Serial No." column. The M&TE number cross references to the LRB that contains the calibration data and the daily control data. A copy of the pipet calibration is provided under separate cover. The Sr-90 procedure number used for this analysis is noted in the "Constituent" column.

The volume of the aliquot taken from the sample solution (the dissolved fusion or the water leach) is written under the "SERIAL NUMBER" of the card on the right side of the card. The Sr-90 separation procedure is a cation exchange separation. The second volume, 10 ml, is the eluate diluted to 10 ml with deionized water and the third volume is the portion of the dilution evaporated on the dish that is then beta counted. Time, T_0, is recorded under the volumes. This is the time of the separation (i.e. yttrium from strontium). The mass of sample sludge aliquot and the volume of solution used in the dissolution of the fusion or the water leach is written below the sample aliquot volumes.

On the bottom half of the card under "DATA" is the hand calculation of the data. Also, the time, T_1, of the first count and T_2, of the second count are noted (two counts are needed to determine the ingrowth of yttrium). This follows from the procedure. The corrected count rate, sample volume, counter efficiency, analysts yield, sample weight and volume of solution of fusion or water leach are incorporated. If a "CCL=" is given then a coincidence counting loss is calculated and factored into the final results. Final results are given in disintegrations per gram.

On the back side of the card (xeroxed on the bottom half of page) is the counting raw data. The counter number and efficiency, date counted, total counts, time counted, calculated count rate, background counts per minute and the calculated corrected count rate are listed.

ANALYTICAL REPORT

100064

Location: 221
Date Received: 9-21-90
Work Order No: 90-3617-44

ID & A.L.O.: 54.-90

Description: 90-3617/90-1
Active
Core Ic
Segment 3

Analysis: Sr-90
Procedure: ALW4-11

Results
Coff 1/1/90
~~9.935~~ dpm/g
3.01 E6
± 2.2 %

TF-55F-1 02

Volume / Dilution - 0.4971 ml - 10 ml - 2(0.5 ml)

Carla N. Bellegarde 10-4-90
BNW 53645 pg 60 + 64 To 1107

Calculations: G. O. Harvey Date 10/17/90
Reviewed: R. Barrington Date 1-16-91
Verified by Data Review
By: Anne E. Hayslip
Ok to I.C.: 10/18/8
Log book: Section p. 95

Instrument: P.B.L. # 2 d.c. 1.94

		PST		PST
Date	Time	10 4 90	1328	10 8 90	0946
Total counts		1682		2694
Minutes		10		10
Counts/Minute		168.20		269.40
Background		28.99		29.18
Corrected C/M		139.21		240.22

SPREADSHEET FOR CALCULATION OF Sr-90 BETA ACTIVITY

Date calculated		17-Oct-90	
Enter Radiochem Sample Number (XXXX) - G3		542-90	
Enter Log-In Number ('89-XXXX) - G4		90-3617-A-1	
TIME 0 DD-MMM-YY HH:MM::SS - F6,G6 4-oct-90		10:07	
Enter weight of sample fused in hot cell (g) - G7		0.5321 +/-	0.0027
Enter volume of solution after fusion (ml) - G8		250 +/-	0.1250
TIME 1 DD-MMM-YY HH:MM::SS - F6,G6 4-oct-90		13:58	
Enter total counts observed at T(1) - G10		1682	
Enter count time in minutes - G11		10	
Enter background (c/m) - G12		28.99 +/-	0.54
Calculated corrected count rate - G13		139 +/-	4
Calculated time elapsed from T(0) to T(1), hrs. - G14		3.8500	
Calculated Y decay for T(1) - G15		0.9592	
TIME 2 DD-MMM-YY HH:MM::SS - F6,G6 8-oct-90		8:46	
Enter total counts observed at T(2) - G17		2694	
Enter count time in minutes - G18		10	
Enter background (c/m) - G19		29.18 +/-	0.54
Calculated corrected count rate - G20		240 +/-	5
Calculated time elapsed from T(0) to T(2), hrs. - G21		94.6500	
Calculated Y decay for T(2) - G22		0.3593	
Enter %vol error then volume- G23 (1st cut)	0.7	0.4971 +/-	0.0035
of sample in next cell in- G24 (2nd vol)	0.5	10 +/-	0.0500
mls - G25 (on disk)	0.5	1 +/-	0.0050
Calculated volume of solution counted (ml) - G26		0.0497 +/-	4.95E-04
Enter D/C efficiency for detector for Y-90 - G27		1.84 +/-	0.0460
Analyst's recovery - G28		0.973 +/-	0.0564

Signature G. O. Harvey

CALCULATION OF Sr-90 BETA ACTIVITY

Calulate the Y-90 counts at equilibrium:

Y = [cnts at T(2)- cnts at T(1)]/
[exp -(ln2*(T(1)-T(0))/64.1) - exp -(ln2*(T(2)-T(0))/64.1)]

Y (cpm) = (G20-G13)/(G15-G22)

Y (cpm) = 108 +/- 7 4.0%

cpm/ml = Count rate Y (cpm) x efficiency (dpc) x recovery / sa. volume (ml)

cpm/ml = B39*G27*G28/(G26) dpm/g = cpm/ml*G8/G7

cpm/ml 6.41E+03 +/- 4.82E+02 7.5%

dpm/g = 3.01E+06 +/- 2.27E+05 7.5%

det lim (cpm) = (G19+G12)/2+(3*bkg err)/(G15-G22) = 52.30 cpm

det lim = 9.35E+05 dpm/g OR 1.99E+03 dpm/ml

D06-022

ANALYTICAL REPORT 100076

ACK 9-10-90
250 ml - 0.4971 ml - 10 ml - 2(0.5 ml)

Date Received: 8-21-90
Work Order No: M6U-44

ID & R.L.U.: 543-90

Description: 90-3617-A-2
Active
Core 1a
Segment 3

Analysis: Sr-90
Procedure: MW4-11

Results

0.4971 dpm/g

22456

± 9%

Luana Z. Bickford 10-4-90
BNW 53245 pg 6d + 6.4 To 1106

Calculations

Calculations L. O. Harvey Date 10/17/90

Reviewed Lillington Date 1-16-91

Counting Information

By Anne E. Hopkins

M. & I.E. W/W/S

Log Book: BNW/W p. 95

Instrument	P.B.L. # 2		U.L.T-90 1.54	
Date . Time	10/4/90	1410 PST	10/3/90	0303 PST
Total Counts	1467		2215	
Minutes	10		10	
Counts/Minute	146.70		221.50	
Background	27.99		29.19	
Corrected C/M	118.71		192.32	

TI-SST-102

SPREADSHEET FOR CALCULATION OF Sr-90 BETA ACTIVITY

Date calculated	17-Oct-90	
Enter Radiochem Sample Number (XXXX) - G3	543-90	
Enter Log-In Number ('89-XXXX) - G4	90-3617-A-2	
TIME 0 DD-MMM-YY HH:MM::SS - F6,G6 4-oct-90	10:06	
Enter weight of sample fused in hot cell (g) - G7	0.5295 +/-	0.0026
Enter volume of solution after fusion (ml) - G8	250 +/-	0.1250
TIME 1 DD-MMM-YY HH:MM::SS - F6,G6 4-oct-90	14:10	
Enter total counts observed at T(1) - G10	1467	
Enter count time in minutes - G11	10	
Enter background (c/m) - G12	28.99 +/-	0.54
Calculated corrected count rate - G13	118 +/-	4
Calculated time elapsed from T(0) to T(1), hrs. - G14	4.0667	
Calculated Y decay for T(1) - G15	0.9570	
TIME 2 DD-MMM-YY HH:MM::SS - F6,G6 8-oct-90	8:58	
Enter total counts observed at T(2) - G17	2215	
Enter count time in minutes - G18	10	
Enter background (c/m) - G19	29.18 +/-	0.54
Calculated corrected count rate - G20	192 +/-	5
Calculated time elapsed from T(0) to T(2), hrs. - G21	94.8667	
Calculated Y decay for T(2) - G22	0.3585	
Enter Xvol error then volume- G23 (1st cut) 0.7	0.4971 +/-	0.0035
of sample in next cell in- G24 (2nd vol) 0.5	10 +/-	0.0500
mls - G25 (on disk) 0.5	1 +/-	0.0050
Calculated volume of solution counted (ml) - G26	0.0497 +/-	4.95E-04
Enter D/C efficiency for detector for Y-90 - G27	1.84 +/-	0.0460
Analyst's recovery - G28	0.973 +/-	0.0564

Signature L. O. Harvey

CALCULATION OF Sr-90 BETA ACTIVITY

Calulate the Y-90 counts at equilibrium:

Y = [cnts at T(2)- cnts at T(1)]/
[exp -(ln2*(T(1)-T(0))/64.1) - exp -(ln2*(T(2)-T(0))/64.1)]

Y (cpm) = (G20-G13)/(G15-G22)

Y (cpm) = 125 +/- 6 4.9%

dpm/ml = Count rate Y (cpm) x efficiency (dpc) x recovery / sa. volume (ml)

dpm/ml = B39*G27*G28/(G26)dpm/g = dpm/ml*G8/G7

cpm/ml 4.74E+03 +/- 3.82E+02 8.1%

dpm/g = 2.24E+06 +/- 1.81E+05 8.1%

det lim (cpm) = (G19+G13)/2+(3*bkg err)/(G15-G22) = 52.42 cpm

det lim = 9.42E+05 dpm/g OR 1.99E+03 dpm/ml

D06-023

100088

Customer: DOE
Date Received: 9-21-90
Work Order No: R0490
ID & R.L.U.: 544-90

Description: 90-3617-A-3
Active
Core 1c
Segment 3

Analysis: Sr-90
Procedure: RLW-4-11

Results

3.13E5 dpm/g
± 13%

TI-557-102

Sample: 0.9978 ml - 10 ml - 2(0.5 ml)
Liana L Sellegatti 10-4-90
BNW 556.45 pg 0001-1.4 To 1105
Calculations

Calculations L. O. Harvey Date 10/17/90
Reviewed R. Barrington Date 1-16-91
Counting Information
by Anne E Zyglitsky
R. & L.L. W/WB/8
Log Book WB2414 p. 95

Instrument	P.B.L. #2	B/C 1-90 1.34 PST
Date / Time	10 8 90 0923	10 8 90 0946
Total Counts	602	813
Minutes	10	10
Counts/Minute	60.20	81.30
Background	28.99	29.18
Net Counts C/M	31.21	52.12

based on amt of sample fused = 0.5290

SPREADSHEET FOR CALCULATION OF Sr-90 BETA ACTIVITY

```
Date calculated                                          17-Oct-90
Enter Radiochem Sample Number (XXXX) - G3                544-90
Enter Log-In Number ('89-XXXX) - G4                      90-3617-A-3
     TIME 0  DD-MMM-YY HH:MM::SS - F6,G6   4-oct-90  10:05
Enter weight of sample fused in hot cell (g) - G7          0.529 +/-  0.0026
Enter volume of solution after fusion (ml) - G8              250 +/-  0.1250
     TIME 1  DD-MMM-YY HH:MM::SS - F6,G6   4-oct-90  14:23
Enter total counts observed at T(1) - G10                    602
Enter count time in minutes - G11                             10
Enter background (c/m) - G12                               28.99 +/-     0.54
Calculated corrected count rate  - G13                        31 +/-        3
Calculated time elapsed from T(0) to T(1), hrs. - G14    4.3000
Calculated Y decay for T(1) - G15                        0.9546
     TIME 2  DD-MMM-YY HH:MM::SS - F6,G6   8-oct-90  9:44
Enter total counts observed at T(2) - G17                    813
Enter count time in minutes - G18                             10
Enter background (c/m) - G19                               29.18 +/-     0.54
Calculated corrected count rate  - G20                        52 +/-        3
Calculated time elapsed from T(0) to T(2), hrs. - G21   95.6500
Calculated Y decay for T(2) - G22                        0.3555
Enter %vol error then volume- G23 (1st cut)       0.7    0.9978 +/-  0.0070
   of sample in next cell in- G24 (2nd vol)       0.5        10 +/-  0.0500
   mls                      - G25 (on disk)      0.5         1 +/-  0.0050
Calculated volume of solution counted (ml) - G26         0.0998 +/-9.93E-04
Enter D/C efficiency for detector for Y-90 - G27           1.84 +/-  0.0460
Analyst's recovery - G28                                  0.973 +/-  0.0564
```

Signature L. O. Harvey

CALCULATION OF Sr-90 BETA ACTIVITY

Calulate the Y-90 counts at equilibrium:

```
 Y =     [cnts at T(2)- cnts at T(1)]/
    [exp -(ln2*(T(1)-T(0))/64.1) - exp -(ln2*(T(2)-T(0))/64.1)]

Y (cpm) = (G20-G13)/(G15-G22)

Y (cpm) =        35    +/-          4     11.0%

dpm/ml = Count rate Y (cpm) x efficiency (dpc) x recovery / sa. volume (ml)

dpm/ml = B39*G27*G28/(G26)dpm/g = dpm/ml*G8/G7

dpm/ml     6.61E+02 +/-     8.41E+01     12.7%

dpm/g =    3.13E+05 +/-     3.98E+04     12.7%

det lim (cpm) = (G19+G12)/2+(3*bkg err)/(G15-G22) =       52.37 cpm

det lim = 4.69E+05 dpm/g          OR          9.92E+02 dpm/ml
```

D06-024

ANALYTICAL REPORT

100102

Standard run on sand # 100769 in D. L. Bellofatto standard file.

Weight + Cone. - 0.4971 ml - 10 ml - 5 (0.5 ml)

Luma L. Bellofatto 10-4-90

BNW 536645 pg 00061 - 64 To 1166

Calculations L. O. Harvey Date 10/17/90

Reviewed R. Barrington Date 1-21-91

Results

1.13 E+6 dpm / g wet wt

± 10%

TI-SST-103

SPREADSHEET FOR CALCULATION OF Sr-90 BETA ACTIVITY

Date calculated	17-Oct-90	
Enter Radiochem Sample Number (XXXX) - G3	547-90	cont
Enter Log-In Number ('89-XXXX) - G4	90-3619-A-1	
TIME 0 DD-MMM-YY HH:MM::SS - F6,G6 4-oct-90	10:06	
Enter weight of sample fused in hot cell (g) - G7	0.5017 +/-	0.0025
Enter volume of solution after fusion (ml) - G8	250 +/-	0.1250
TIME 1 DD-MMM-YY HH:MM::SS - F6,G6 4-oct-90	14:23	
Enter total counts observed at T(1) - G10	1015	
Enter count time in minutes - G11	10	
Enter background (c/m) - G12	29.62 +/-	0.54
Calculated corrected count rate - G13	72 +/-	3
Calculated time elapsed from T(0) to T(1), hrs. - G14	4.2833	
Calculated Y decay for T(1) - G15	0.9547	
TIME 2 DD-MMM-YY HH:MM::SS - F6,G6 8-oct-90	8:58	
Enter total counts observed at T(2) - G17	1365	
Enter count time in minutes - G18	10	
Enter background (c/m) - G19	28.46 +/-	0.53
Calculated corrected count rate - G20	108 +/-	4
Calculated time elapsed from T(0) to T(2), hrs. - G21	94.8667	
Calculated Y decay for T(2) - G22	0.3585	
Enter %vol error then volume- G23 (1st cut) 0.7	0.4971 +/-	0.0035
of sample in next cell in- G24 (2nd vol) 0.5	10 +/-	0.0500
mls - G25 (on disk) 0.5	1 +/-	0.0050
Calculated volume of solution counted (ml) - G26	0.0497 +/-	4.95E-04
Enter D/C efficiency for detector for Y-90 - G27	1.81 +/-	0.0453
Analyst's recovery - G28	0.973 +/-	0.0564

Signature L. O. Harvey

CALCULATION OF Sr-90 BETA ACTIVITY

Calulate the Y-90 counts at equilibrium:

Y = [cnts at T(2)- cnts at T(1)]/
[exp -{ln2*(T(1)-T(0))/64.1} - exp -{ln2*(T(2)-T(0))/64.1}]

Y (cpm) = (G20-G13)/(G15-G22)

Y (cpm) = 61 +/- 5 8.1%

dpm/ml = Count rate Y (cpm) x efficiency (dpc) x recovery / sa. volume (ml)

dpm/ml = B39*G27*G28/(G26) dpm/g = dpm/ml*G8/G7

dpm/ml 2.27E+03 +/- 2.35E+02 10.4%

dpm/g = 1.13E+06 +/- 1.17E+05 10.4%

det lim (cpm) = (G19+G12)/2+(3*bkg err)/(G15-G22) = 52.54 cpm

det lim = 9.80E+05 dpm/g OR 1.97E+03 dpm/ml

D06-025

WORK SHEET REPORT

Received: 551
Date Received: 8-21-90
Work Order No: RW44

ID & A.L.O.: 548-90

Description: Fuel Element
Inlus
Lot 10
Segment 5

BMT 1/29/91

Analysis: Sr-90
Procedure: RW-4-11

Results

1.0356 dpm/g wet wt
±10%

TI-SST-103

Weight Fuel - 0.4971 ml - 10 ml - 2(0.5 ml)

Liana & Bellofatto 10-4-90

BNW 53645 pg 60 + 64 To 1107

Calculations

Batch standard run on card # 100769 in Dr. Bellofatto standard file 100114

Calculations L. O. Harvey Date 10/17/91

Reviewed R. Barrington Date 1-21-91
Counting Info Added

By Anne E. Egelsky

M. & I.C. W/WW/3
Log Book: BNW-542 p. 95

Instrument P.B.L. # 1 W/C 1-TU 1.31

	PST	PST	AST	AST
Date Time	8 4 90	4:35	8 4 90	9:40
Total Counts	982		1335	
Minutes	10		10	
Counts/Minute	98.2		133.5	
Background	29.62		28.46	
Corrected C/M	68.58		105.04	

SPREADSHEET FOR CALCULATION OF Sr-90 BETA ACTIVITY

Date calculated		17-Oct-90	
Enter Radiochem Sample Number (XXXX) - G3		548-90	
Enter Log-In Number ('89-XXXX) - G4		90-3619-A-2	
TIME 0 DD-MMM-YY HH:MM::SS - F6,G6 4-oct-90 10:07			
Enter weight of sample fused in hot cell (g) - G7		0.5561 +/-	0.0028
Enter volume of solution after fusion (ml) - G8		250 +/-	0.1250
TIME 1 DD-MMM-YY HH:MM::SS - F6,G6 4-oct-90 14:35			
Enter total counts observed at T(1) - G10		982	
Enter count time in minutes - G11		10	
Enter background (c/m) - G12		29.62 +/-	0.54
Calculated corrected count rate - G13		69 +/-	3
Calculated time elapsed from T(0) to T(1), hrs. - G14		4.4667	
Calculated Y decay for T(1) - G15		0.9528	
TIME 2 DD-MMM-YY HH:MM::SS - F6,G6 8-oct-90 9:4			
Enter total counts observed at T(2) - G17		1335	
Enter count time in minutes - G18		10	
Enter background (c/m) - G19		28.46 +/-	0.53
Calculated corrected count rate - G20		105 +/-	4
Calculated time elapsed from T(0) to T(2), hrs. - G21		94.9500	
Calculated Y decay for T(2) - G22		0.3582	
Enter %vol error then volume- G23 (1st cut)	0.7	0.4971 +/-	0.0035
of sample in next cell in- G24 (2nd vol)	0.5	10 +/-	0.0500
mls - G25 (on disk)	0.5	1 +/-	0.0050
Calculated volume of solution counted (ml) - G26		0.0497 +/-	4.95E-04
Enter D/C efficiency for detector for Y-90 - G27		1.81 +/-	0.0453
Analyst's recovery - G28		0.973 +/-	0.0564

Signature L. O. Harvey

CALCULATION OF Sr-90 BETA ACTIVITY

Calulate the Y-90 counts at equilibrium:

Y = [cnts at T(2)- cnts at T(1)]/
[exp -(ln2*(T(1)-T(0))/64.1) - exp -(ln2*(T(2)-T(0))/64.1)]

Y (cpm) = (G20-G13)/(G15-G22)

Y (cpm) = 61 +/- 5 7.9%

dpm/ml = Count rate Y (cpm) x efficiency (dpc) x recovery / sa. volume (ml)

dpm/ml = D39*G27*G28/(G26) dpm/g = dpm/ml*G8/G7

dpm/ml 2.29E+03 +/- 2.34E+02 10.2%

dpm/g = 1.03E+06 +/- 1.05E+05 10.2%

det lim (cpm) = (G19+G12)/2+(3*pkg err)/(G15-G22) = 52.68 cpm

det lim = 8.86E+05 dpm/g OR 1.97E+03 dpm/ml

D06-026

ANALYTICAL REPORT

Batch standard number 100126 card # 10069 in Dr. Bellofatto standard file.

2.0207 ml - 10 ml - 2(0.5003 ml)

Luana L. Bellofatto 1-3-91

BNW 53645 pg 106+107 To 1050 1-4-91

Calculations

Results

200 E+6 dpm

Calculations E. C. Harvey Date 1-10-91

Reviewed R. Barrington Date 1-22-91

Instrument

Date

Total Counts

Minutes

Counts/Minute

Background

Corrected C/M

TJ-SSF-103 based on aver wts of samples fused

SPREADSHEET FOR CALCULATION OF Sr-90 BETA ACTIVITY

Date calculated	21-Jan-91	
Enter Radiochem Sample Number (XXXX) - G3	549-90	
Enter Log-In Number ('89-XXXX) - G4	90-3619-A-3	
TIME 0 DD-MMM-YY HH:MM::SS - F6,G6 4-Jan-91	10:50	
Enter weight of sample fused in hot cell (g) - G7	0.5289 +/-	0.0026
Enter volume of solution after fusion (ml) - G8	250 +/-	0.1250
TIME 1 DD-MMM-YY HH:MM::SS - F6,G6 4-Jan-91	13:41	
Enter total counts observed at T(1) - G10	4427	
Enter count time in minutes - G11	10	
Enter background (c/m) - G12	29.78 +/-	0.55
Calculated corrected count rate - G13	413 +/-	7
Calculated time elapsed from T(0) to T(1), hrs. - G14	2.8500	
Calculated Y decay for T(1) - G15	0.9697	
TIME 2 DD-MMM-YY HH:MM::SS - F6,G6 8-Jan-91	8:19	
Enter total counts observed at T(2) - G17	7101	
Enter count time in minutes - G18	10	
Enter background (c/m) - G19	30.15 +/-	0.55
Calculated corrected count rate - G20	680 +/-	8
Calculated time elapsed from T(0) to T(2), hrs. - G21	93.4833	
Calculated Y decay for T(2) - G22	0.3639	
Enter %vol error then volume- G23 (1st out) 0.2	2.0207 +/-	0.0040
of sample in next cell in- G24 (2nd vol) 0.05	10 +/-	0.0050
mls - G25 (on disk) 0.5	1.0006 +/-	0.0050
Calculated volume of solution counted (ml) - G26	0.2022 +/-	1.09E-03
Enter D/C efficiency for detection for Y-90 - G27	1.81 +/-	0.0453
Analyst's recovery - G28	0.934 +/-	0.0542

Signature E. C. Harvey

CALCULATION OF Sr-90 BETA ACTIVITY

Calulate the Y-90 counts at equilibrium:

Y = [cnts at T(2)- cnts at T(1)]/
[exp -(ln2*(T(1)-T(0))/64.1) - exp -(ln2*(T(2)-T(0))/64.1)]

Y (cpm) = (G20-G13)/(G15-G22)

Y (cpm) = 44[illegible] +/- 11 8.4%

dpm/ml = Count rate Y (cpm) x efficiency (dpm) x recovery / sa. volume (ml)

dpm/ml = B39*G27*G28/(G26)dpm/g = dpm/ml*G8/G7

dpm/ml 4.83E+03 +/- 2.07E+03 6.8%

dpm/g = 3.04E+06 +/- 1.30E+05 6.8%

det lim (cpm) = (G10-G12)/2+(3*sq rt G10)/(G15-G22) = 53.30 cpm

det lim = 3.41E+05 dpm/g 9% 5.11E+02 dpm/ml

POOR COPY RECEIVED

D06-027

Customer: SST
Date Received: 9-11-90
Work Order No: [illegible]

ID & A.I.D.: 607-90

Description: 90-4178-A-1
TA1166
Core 15
Seg COMPOSITE

Analysis: Sr-90
Procedure: MA-4-11

Results

1.43E+7 dpm/g

TI-SST-104

Numerical Report

100370

0.5009 ml - 10ml -

BNWD 53645 pg 106-107 To 1049

Calculations

See attachment

Calculations L. C. Hovey Date 1-9-91

Reviewed R. Barrington Date 1-15-91

Counting Information

By

M. & I.E. [illegible]

Log Book: [illegible] p. [illegible]

Instrument [illegible]

Date [illegible]
Total Counts [illegible]
Minutes [illegible]
Counts/Minute [illegible]
Background [illegible]
Corrected C/M [illegible]

SPREADSHEET FOR CALCULATION OF Sr-90 BETA ACTIVITY

Date calculated		10-Jan-91	
Enter Radiochem Sample Number (XXXX) - G3		607-90	
Enter Log-In Number ('89-XXXX) - G4		90-4178-A-1	
TIME 0 DD-MMM-YY HH:MM::SS - F6,G6	4-Jan-91	10:49	
Enter weight of sample fused in not cell (g) - G7		0.6025 +/-	0.0030
Enter volume of solution after fusion (ml) - G8		250 +/-	0.1250
TIME 1 DD-MMM-YY HH:MM::SS - F6,G6	4-Jan-91	14:09	
Enter total counts observed at T(1) - G10		8899	
Enter count time in minutes - G11		10	
Enter background (c/m) - G12		29.78 +/-	0.55
Calculated corrected count rate - G13		860 +/-	9
Calculated time elapsed from T(0) to T(1), hrs. - G14		3.3333	
Calculated Y decay for T(1) - G15		0.9646	
TIME 2 DD-MMM-YY HH:MM::SS - F6,G6	8-Jan-91	8:38	
Enter total counts observed at T(2) - G17		14262	
Enter count time in minutes - G18		10	
Enter background (c/m) - G19		30.15 +/-	0.55
Calculated corrected count rate - G20		1396 +/-	12
Calculated time elapsed from T(0) to T(2), hrs. - G21		93.8167	
Calculated Y decay for T(2) - G22		0.3626	
Enter %vol error then volume- G23 (1st cut)	0.7	0.5009 +/-	0.0035
of sample in next cell in- G24 (2nd vol)	0.05	10 +/-	0.0050
mls - G25 (on disk)	0.5	1.0006 +/-	0.0050
Calculated volume of solution counted (ml) - G26		0.0501 +/-	4.32E-04
Enter D/C efficiency for detector for Y-90 - G27		1.81 +/-	0.0453
Analyst's recovery - G28		0.934 +/-	0.0542

Signature L. C. Hovey

CALCULATION OF Sr-90 BETA ACTIVITY

Calulate the Y-90 counts at equilibrium:

Y = [cnts at T(2)- cnts at T(1)]/
[exp -(ln2*(T(1)-T(0))/64.1) - exp -(ln2*(T(2)-T(0))/64.1)]

Y (cpm) = (G20-G13)/(G15-G22)

Y (cpm) = 890 +/- 15 1.7%

dpm/ml = Count rate Y (cpm) x efficiency (dpc) x recovery / sa. volume (ml)

dpm/ml = B39*G27*G28/(G26) dpm/g = dpm/ml*G8/G7

dpm/ml 3.44E+04 +/- 2.27E+03 6.6%

dpm/g = 1.43E+07 +/- 9.45E+05 6.6%

det lim (cpm) = (G10+G12)/2+(3*pkg err)/(G15-G22) = 53.63 cpm

det lim = 8.60E+05 dpm/g OR 2.07E+03 dpm/ml

D06-028

MANUFACTURE REPORT

100382

Customer: SST
Date Received: 9-11-91
Work Order No: 608-44

ID & A.L.O.: 608-90

Description: 90-4178-A-2
TA1108
Core 1s
Seq COMPOSITE

Analysis: Sr-90
Procedure: MA-4-11

Results

1.5 E+7 c/m

See attached

TI-SST-104

Sample 2917 p. 125: 0.5009 g + 25 ml
0.5009 ml - 10 ml - [illegible]
[illegible] 1-4-91
BNW 53645 pg 106 [illegible] To 1049
Calculations

Calculations G. O. Harvey Date 1-9-91
Reviewed R. Barrington Date 1-15-91
Counting Information
By [illegible]
M. & T.E. [illegible]
Log Book: Book 2342 p. [illegible]

Instrument F.B.C. # [illegible] G/C 1-90 1.8 [illegible]

Date / Time	[illegible]	[illegible]
Total Counts	[illegible]	[illegible]
Minutes	10	10
Counts/Minute	[illegible]	[illegible]
Background	[illegible]	[illegible]
Corrected C.M	[illegible]	[illegible]

SPREADSHEET FOR CALCULATION OF Sr-90 BETA ACTIVITY

Date calculated		09-Jan-90	
Enter Radiochem Sample Number (XXXX) - G3		608-90 -	
Enter Log-In Number ('89-XXXX) - G4		90-4178-A-2 -	
TIME 0 DD-MMM-YY HH:MM::SS - F6,G6 4-Jan-91		10:49 -	
Enter weight of sample fused in hot cell (g) - G7		0.4527 +/-	0.0023
Enter volume of solution after fusion (ml) - G8		250 +/-	0.1250
TIME 1 DD-MMM-YY HH:MM::SS - F6,G6 4-Jan-91		14:20	
Enter total counts observed at T(1) - G10		7744 -	
Enter count time in minutes - G11		10 -	
Enter background (c/m) - G12		29.78 +/-	0.55
Calculated corrected count rate - G13		745 +/-	9
Calculated time elapsed from T(0) to T(1), hrs. - G14		3.5167	
Calculated Y decay for T(1) - G15		0.9627	
TIME 2 DD-MMM-YY HH:MM::SS - F6,G6 8-Jan-91		8:42 -	
Enter total counts observed at T(2) - G17		12177 -	
Enter count time in minutes - G18		10 -	
Enter background (c/m) - G19		30.15 +/-	0.55
Calculated corrected count rate - G20		1188 +/-	11
Calculated time elapsed from T(0) to T(2), hrs. - G21		93.8833	
Calculated Y decay for T(2) - G22		0.3623	
Enter %vol error then volume- G23 (1st cut)	0.7	0.5009 +/-	0.0035
of sample in next cell in- G24 (2nd vol)	0.05	10 +/-	0.0050
mls - G25 (on disk)	0.5	1.0006 +/-	0.0050
Calculated volume of solution counted (ml) - G26		0.0501 +/-	4.32E-04
Enter D/C efficiency for detector for Y-90 - G27		1.81 +/-	0.0453
Analyst's recovery - G28		0.934 +/-	0.0542

Signature G. O. Harvey

CALCULATION OF Sr-90 BETA ACTIVITY

Calulate the Y-90 counts at equilibrium:

Y = [cnts at T(2)- cnts at T(1)]/
[exp -(ln2*(T(1)-T(0))/64.1) - exp -(ln2*(T(2)-T(0))/64.1)]

Y (cpm) = (G20-G13)/(G15-G22)

Y (cpm) = 738 +/- 14 1.9%

dpm/ml = Count rate Y (cpm) x efficiency (dpc) x recovery / sa. volume (ml)

dpm/ml = B39*G27*G28/(G26)dpm/g = dpm/ml*G8/G7

dpm/ml 2.85E+04 +/- 1.90E+03 6.7%

dpm/g = 1.58E+07 +/- 1.05E+06 6.7%

det lim (cpm) = (G19+G12)/2+(3*bkg err)/(G15-G22) = 53.78 cpm

det lim = 1.15E+06 dpm/g OR 2.08E+03 dpm/ml

D06-029

100394

Customer: EST
Date Received: 7-11-90
Work Order No: 44

ID & A.L.O.: ovh 90

Description: 90-4178-A-3
Tritiub
Core 1:
Seq COMPOSITE

Analysis: Sr-90
Procedure: mlm-4-11

Results

3.8 FHS

See attachment

Calculations H. O. Harvey Date 1-7-91

Reviewed: R. Barrington Date 1-15-91

by

Instrument

Date Time
Total Counts
Minutes
Counts/Minute
Background
Corrected C/M

TJ-027-104

2.0207 ml - 10 ml - 2(0.0003 ml)

BNW 53645 pg 1016-1104 To 1049

SPREADSHEET FOR CALCULATION OF Sr-90 BETA ACTIVITY

Date calculated		09-Jan-90	
Enter Radiochem Sample Number (XXXX) - G3		609-90 -	
Enter Log-In Number ('89-XXXX) - G4		90-4178-A-3 -	
TIME 0 DD-MMM-YY HH:MM::SS - F6,G6	4-Jan-91	10:49 -	
Enter weight of sample fused in hot cell (g) - G7		0.5276 +/-	0.0026
Enter volume of solution after fusion (ml) - G8		250 +/-	0.1250
TIME 1 DD-MMM-YY HH:MM::SS - F6,G6	4-Jan-91	14:09 -	
Enter total counts observed at T(1) - G10		1074 -	
Enter count time in minutes - G11		10 -	
Enter background (c/m) - G12		29.74 +/-	0.55
Calculated corrected count rate - G13		78 +/-	3
Calculated time elapsed from T(0) to T(1), hrs. - G14		3.3333	
Calculated Y decay for T(1) - G15		0.9646	
TIME 2 DD-MMM-YY HH:MM::SS - F6,G6	8-Jan-91	8:38	
Enter total counts observed at T(2) - G17		1568	
Enter count time in minutes - G18		10	
Enter background (c/m) - G19		29.61 +/-	0.54
Calculated corrected count rate - G20		127 +/-	4
Calculated time elapsed from T(0) to T(2), hrs. - G21		93.8167	
Calculated Y decay for T(2) - G22		0.3626	
Enter %vol error then volume- G23 (1st cut)	0.2	2.0207 +/-	0.0040
of sample in next cell in- G24 (2nd vol)	0.05	10 +/-	0.0050
mls - G25 (on disk)	0.5	1.0006 +/-	0.0050
Calculated volume of solution counted (ml) - G26		0.2022 +/-	1.09E-03
Enter D/C efficiency for detector for Y-90 - G27		1.84 +/-	0.0460
Analyst's recovery - G28		0.934 +/-	0.0542

Signature H. O. Harvey

CALCULATION OF Sr-90 BETA ACTIVITY

Calulate the Y-90 counts at equilibrium:

Y = [cnts at T(2)- cnts at T(1)]/
[exp -(ln2*(T(1)-T(0))/64.1) - exp -(ln2*(T(2)-T(0))/64.1)]

Y (cpm) = (G20-G13)/(G15-G22)

Y (cpm) = 82 +/- 5 6.3%

dpm/ml = Count rate Y (cpm) x efficiency (dpc) x recovery / sa. volume (ml)

dpm/ml = B39*G27*G28/(G26)dpm/g = dpm/ml*G8/G7

dpm/ml 8.02E+02 +/- 7.17E+01 8.9%

dpm/g = 3.80E+05 +/- 3.40E+04 9.0%

det lim (cpm) = (G19+G12)/2+(3*bkg err)/(G15-G22) = 53.13 cpm

det lim = 2.45E+05 dpm/g OR 5.18E+02 dpm/ml

D06-030

Customer: SST
Date Received: 1-5-91
Work Order No: M6D014

ID & A.L.D.: 590-90

Description: 90-4180-C-1
TA:106
Core 1a
Segment COM

Analysis: Sr-90
Procedure: MIN-4-11

Results

1.44 E+4 dpm/g wet

see attachment

TS-SST 105

100315

Calculations

~~G0995 ml - 10 ml - 4 A (0.1966 ml)~~ 2.0207 ml - 10 ml - 2(0.5003)
Luana L. Bellofatto 10/10/90
BNW 53645 pg 094 70
To 1050 1/4/91
BNW 53645 pg 106+107

Calculations C. O. Harvey Date 1-9-91
Reviewed R. Pennington Date 1-16-91
Counting Instrument
By C. O. Harvey
M. & T.E. 2K700877 p 101
Log Book: BNW2342 p. 97

Instrument P.B.C. # 2 a/c 1-90 1.8

Date / Time	1/8/91 0702 PST	1/8/91 1300 PST
Total Counts	464	370
Minutes	10	10
Counts/Minute	46.4	37.0
Background	39.61	29.74
Corrected C/M	7.24	7.26
	1679	

Count too low Recount

SPREADSHEET FOR CALCULATION OF Sr-90 BETA ACTIVITY

Date calculated		09-Jan-90	
Enter Radiochem Sample Number (XXXX) - G3		590-90	
Enter Log-In Number ('89-XXXX) - G4		90-4180-C-1	
TIME 0 DD-MMM-YY HH:MM::SS - F6,G6 4-Jan-91		10:50	
Enter weight of sample fused in hot cell (g) - G7		2.0698 +/-	0.0103
Enter volume of solution after fusion (ml) - G8		195.5178 +/-	0.0978
TIME 1 DD-MMM-YY HH:MM::SS - F6,G6 4-Jan-91		13:17	
Enter total counts observed at T(1) - G10		370	
Enter count time in minutes - G11		10	
Enter background (c/m) - G12		29.74 +/-	0.55
Calculated corrected count rate - G13		7 +/-	2
Calculated time elapsed from T(0) to T(1), hrs. - G14		2.4500	
Calculated Y decay for T(1) - G15		0.9739	
TIME 2 DD-MMM-YY HH:MM::SS - F6,G6 8-Jan-91		7:56	
Enter total counts observed at T(2) - G17		464	
Enter count time in minutes - G18		10	
Enter background (c/m) - G19		29.61 +/-	0.54
Calculated corrected count rate - G20		17 +/-	2
Calculated time elapsed from T(0) to T(2), hrs. - G21		93.1000	
Calculated Y decay for T(2) - G22		0.3654	
Enter %vol error then volume- G23 (1st cut)	0.2	2.0207 +/-	0.0040
of sample in next cell in- G24 (2nd vol)	0.05	10 +/-	0.0050
mls - G25 (on disk)	0.5	1.0006 +/-	0.0050
Calculated volume of solution counted (ml) - G26		0.2022 +/-	1.09E-03
Enter D/C efficiency for detector for Y-90 - G27		1.84 +/-	0.0460
Analyst's recovery - G28		0.934 +/-	0.0542

Signature C. O. Harvey

CALCULATION OF Sr-90 BETA ACTIVITY

Calulate the Y-90 counts at equilibrium:

Y = [cnts at T(2)- cnts at T(1)]/
[exp -(ln2*(T(1)-T(0))/64.1) - exp -(ln2*(T(2)-T(0))/64.1)]

Y (cpm) = (G20-G13)/(G15-G22)

Y (cpm) = 16 +/- 3 19.1%

dpm/ml = Count rate Y (cpm) x efficiency (dpc) x recovery / sa. volume (ml)

dpm/ml = B39*G27*G28/(G26)dpm/g = dpm/ml*G8/G7

dpm/ml 1.53E+02 +/- 3.07E+01 20.1%

dpm/g = 1.44E+04 +/- 2.90E+03 20.1%

det lim (cpm) = (G19+G12)/2+(3*bkg err)/(G15-G22) = 52.57 cpm

det lim = 4.84E+04 dpm/g OR 5.12E+02 dpm/ml

D06-031

Customer: SST
Date Received: 9-5-91
Work Order No: N0L0[illegible]
ID & M.L.O.: 591-90
Description: 90-4180-C-2
TK110B
Core 1b
Segment C&M

Analysis: Sr-90
Procedure: HTA-4-11

Results

2.21E+3 dpm/g

TT-SST-105

100325

2.0207ml - 10ml - 2(0.5003ml)

1/4/91 To 1050

BNW 53645 pg 106 + 107

Calculations

See attachment

Calculations [signature] Date 1-10-91

Reviewed [signature] Date 1-16-91

Counting Information

By [signature]

M. & T.E. [illegible]

Log Book: [illegible] p. [illegible] - 101

Instrument P.B.C. # 3 d/c 1-40 1.8

Date / Time	10/12/90 [illegible]	1/4/91 1050	1/8/91 0800 PST	
Total Counts	320	377	391	
Minutes	10	10	10	
Counts/Minute	[illegible]	37.7	39.1	
Background	28.90	29.74	29.61	
Corrected C/M	[illegible]	7.96	9.49	

Count + low re run [illegible]

SPREADSHEET FOR CALCULATION OF Sr-90 BETA ACTIVITY

Date calculated		10-Jan-91	
Enter Radiochem Sample Number (XXXX) - G3		591-90	
Enter Log-In Number ('89-XXXX) - G4		90-4180-C-2	
TIME 0 DD-MMM-YY HH:MM::SS - F6,G6	4-Jan-91	10:50	
Enter weight of sample fused in hot cell (g) - G7		2.1978 +/-	0.0110
Enter volume of solution after fusion (ml) - G8		197.4122 +/-	0.0987
TIME 1 DD-MMM-YY HH:MM::SS - F6,G6	4-Jan-91	13:29	
Enter total counts observed at T(1) - G10		377	
Enter count time in minutes - G11		10	
Enter background (c/m) - G12		29.74 +/-	0.55
Calculated corrected count rate - G13		8 +/-	2
Calculated time elapsed from T(0) to T(1), hrs. - G14		2.6500	
Calculated Y decay for T(1) - G15		0.9718	
TIME 2 DD-MMM-YY HH:MM::SS - F6,G6	8-Jan-91	8:08	
Enter total counts observed at T(2) - G17		391	
Enter count time in minutes - G18		10	
Enter background (c/m) - G19		29.61 +/-	0.54
Calculated corrected count rate - G20		9 +/-	2
Calculated time elapsed from T(0) to T(2), hrs. - G21		93.3000	
Calculated Y decay for T(2) - G22		0.3646	
Enter %vol error then volume- G23 (1st cut)	0.2	2.0207 +/-	0.0040
of sample in next cell in- G24 (2nd vol)	0.05	10 +/-	0.0050
mls - G25 (on disk)	0.5	1.0006 +/-	0.0050
Calculated volume of solution counted (ml) - G26		0.3022 +/-	1.09E-03
Enter D/C efficiency for detector for Y-90 - G27		1.84 +/-	0.0460
Analyst's recovery - G28		0.934 +/-	0.0542

Signature [signature]

CALCULATION OF Sr-90 BETA ACTIVITY

Calulate the Y-90 counts at equilibrium:

Y = [cnts at T(2)- cnts at T(1)]/
[exp -(ln2*(T(1)-T(0))/64.1) - exp -(ln2*(T(2)-T(0))/64.1)]

Y (cpm) = (G20-G13)/(G15 G22)

Y (cpm) = 3 +/- 3 114.1%

cpm/ml = Count rate Y (cpm) x efficiency (cpc) x recovery / sa. volume (ml)

dpm/ml = B39*G27*G28/(G26)dpm/g = dpm/ml*G8/G7

dpm/ml 2.46E+01 +/- 2.81E+01 114.3%

dpm/g = 2.21E+03 +/- 2.52E+03 114.3%

det lim (cpm) = (G19+G13)/2+(3*bkg err)/(G15-G22) = 52.68 cpm

det lim = 4.61E+04 dpm/g OR 5.13E+02 dpm/ml

D06-032

Customer: SST
Date Received: 1-5-91
Work Order No: M020 44

ID & A.L.O.: 593-90

Description: 90-4180-C-5
Tailing
Core to
Segment 00m

Analysis: Sr-90
Procedure: MA-4-11

Results

3.48E+3 dpm/g wet wt

See attachment

TF-SST-105

ANALYTICAL REPORT

100338

~~0.9765 mL - 10 mL = (0.4766 mL)~~ DLB 1-3-91 2.0207 mL - 10 mL - 2(5003 mL)

Luana J. Billingatte DLB 1-3-91 1/4/91 To 1050

~~BNW 53645 pg 104 + 70~~ BNW 53645 pg 106 + 107

Calculations

See attachment

Calculations G. C. Harvey Date 1-2-91

Reviewed Counting Information R. Barrington Date 1-16-91

By G. O. Harvey / Ron Rhyne

N. & T.E. 9/16/78 / 7/10/78

Log Book: BNW 53642 p. 92 BNW 53642 p. 101 PAC 2 Lk 490-1.84

Instrument F.B.C. # 1 W/C Y-90 1.61

Date / Time	10/12/78 1426 PST	1/4/91 1244 PST	1-8-91 0844 PST
Total Counts	377	355	377
Minutes	10	10	10
Counts/Minute		35	37
Background	36 .62	29.74	29.61
Corrected C/M		5.76	8.09

Count to low error

based on average wt of Samples Index

SPREADSHEET FOR CALCULATION OF Sr-90 BETA ACTIVITY

Date calculated		09-Jan-90	
Enter Radiochem Sample Number (XXXX) - G3		593-90	
Enter Log-In Number ('89-XXXX) - G4		90-4180-C-5	
TIME 0 DD-MMM-YY HH:MM::SS - F6,G6	4-Jan-91	10:50	
Enter weight of sample fused in hot cell (g) - G7		2.1338 +/-	0.0107
Enter volume of solution after fusion (ml) - G8		198.2134 +/-	0.0991
TIME 1 DD-MMM-YY HH:MM::SS - F6,G6	4-Jan-91	13:41	
Enter total counts observed at T(1) - G10		355	
Enter count time in minutes - G11		10	
Enter background (c/m) - G12		29.74 +/-	0.55
Calculated corrected count rate - G13		6 +/-	2
Calculated time elapsed from T(0) to T(1), hrs. - G14		2.8500	
Calculated Y decay for T(1) - G15		0.9697	
TIME 2 DD-MMM-YY HH:MM::SS - F6,G6	8-Jan-91	8:19	
Enter total counts observed at T(2) - G17		377	
Enter count time in minutes - G18		10	
Enter background (c/m) - G19		29.61 +/-	0.54
Calculated corrected count rate - G20		8 +/-	2
Calculated time elapsed from T(0) to T(2), hrs. - G21		93.4833	
Calculated Y decay for T(2) - G22		0.3639	
Enter %vol error then volume- G23 (1st cut)	0.2	2.0207 +/-	0.0040
of sample in next cell in- G24 (2nd vol)	0.05	10 +/-	0.0050
mls - G25 (on disk)	0.5	1.0006 +/-	0.0050
Calculated volume of solution counted (ml) - G26		0.2022 +/-	1.09E-03
Enter D/C efficiency for detector for Y-90 - G27		1.84 +/-	0.0460
Analyst's recovery - G28		0.934 +/-	0.0542

Signature G. O. Harvey

CALCULATION OF Sr-90 BETA ACTIVITY

Calulate the Y-90 counts at equilibrium:

Y = [cnts at T(2)- cnts at T(1)]/
[exp -(ln2*(T(1)-T(0))/64.1) - exp -(ln2*(T(2)-T(0))/64.1)]

Y (cpm) = (G20-G13)/(G15-G22)

Y (cpm) = 4 +/- 3 73.1%

dpm/ml = Count rate Y (cpm) x efficiency (dpc) x recovery / sa. volume (ml)

dpm/ml = B39*G27*G28/(G26)dpm/g = dpm/ml*G8/G7

dpm/ml 3.75E+01 +/- 2.75E+01 73.4%

dpm/g = 3.48E+03 +/- 2.56E+03 73.4%

det lim (cpm) = (G19+G12)/2+(3*bkg err)/(G15-G22) = 52.80 cpm

det lim = 4.78E+04 cpm/g OR 5.14E+02 dpm/ml

D06-033

TOTAL BETA
Tc-99
Sr-90

CALIBRATION DATA

FOR

PROPORTIONAL BETA COUNTER

D06–034

22 Entered 3/16/88 [illegible]

Sr/Y90 Std Amersham 5.7.24 57/36/15 See page 20-21

Primary dilution

0.1200 mCi Sr90/g × 2.22×10^6 dpm/g = 2.664×10^5 d/m/g (−3.8%) 1200 EST 25 Sep 87 / 0400 PST 15 Sep 87

Correct decay to 1200 PST 17 March 88 = 184.33 days

184.33 days ÷ 365.25 = .5046 years T½ = 28.65.3 years

$\frac{N}{N_0} = e^{-\lambda t}$, $\frac{(\ln 2)(.5046)}{28.65}$ = .98784

2.664×10^5 dpm/g × .98784 = 2.6316×10^5 dpm/g (−1.33%)

Balance: 360-06-03-003 Exp 6-20-88

RS-5 Primary Dilution: 27.6858 — Total weight of dilution: Bottle 47.6453

2 Sml vial flush Tare: 22.7203 — Tare: 22.7203

14.9655 g — 24.9250

4.9655 g × 2.6316×10^5 dpm/g ÷ 24.9250 = 5.243×10^4 d/m/g Sr90 17 March 88

4.9655 g × 2.6316×10^5 dpm/g ÷ 25.103 ml = 5.2269×10^4 ± 63 (−.13%) dpm/ml

Prepare Sr/Y source using 5 mm pipette 100.01 and 100.03 ml Ba Search for Sr/Y90 calibration using 5.2269×10^4 ± 63 d/m/ml Sr90

[redacted] See page 23 for back for data

BNW LABORATORY NOTEBOOK NO. 52626 — COPIED FOR PNL RECORDS CENTER NOV 11 '88

BNW 52626

Project No. ____ Date of Work ____

Entered By ____ Date ____

Dictated To and Understood ____

D06-035

ANALYTICAL LABORATORIES DATA — GAMMA COUNTER DATA SHEET

SAL: Sr90 std

SUBMITTED BY: See RNW5262b pp20-22

COUNTER BY: [signature]

REMARKS: Sr90 = 2.265 ±1.0 x 10^5 dpm/ml (3 std dev) Pipets (1,3,5,7,8) 100 µl, pipets (2,4,6,9,10) 100.06 µl

Sr+48 = 1.045 ±.004 x 10^5 dpm/ml

SAMPLE NUMBER	DATE 10/82	TIME	INST. NO.	SHELF NO.	ABSOR. mg/cm²	INT. (MIN) T	RECORDER READING SCALE OF	TOTAL COUNTS N	RECORDED RATE R = N/T	COINC. CORR'N C	BGD B	NET RATE R-B+C	NORMALIZING RATE N.F.	NORMALIZED RATE COUNTS/MIN.
Sr4-1	3x7	0948	2	1	0	20	+	108325	5416.25		52.43	5383.82		
Sr4-2		1019					+	108423	5421.15			5413.73		
Sr4-3		1020					+	108190	5409.5			5377.08		
Sr4-4		1159					+	108735	5436.75			5404.33		
Sr4-5		1222			52 826		+	107070	5353.5			5321.08		
Sr4-6		1245		Pr 65		BNW	+	107463	5373.15			5340.23		
Sr4-7		1323					+	107010	5350.5			5318.08		
Sr4-8		1344					+	107703	5385.15			5352.73		
Sr4-9		1407					+	107185	5359.25			5326.83		
Sr4-10		1521 ~~0800~~					+	107664	5383.2			5350.78		
							+							
							+		$\bar{x}_5$ (1,3,5,7,8) =			5345.38 ± 33		
							+		$\bar{x}_5$ (2,4,6,9,10) =			5372.46 ± 34		
		Average volume of pipets =				100.01 µl	+		$\bar{x}_{10}$ (1,3,4,5,6,7,8,9,10)			5358.92 ± 34		
						100.06 µl	+							
					$\bar{y}_2$ =	100.035	+							
							+							
		.100035 ml x	1.045 ±.004 x 10^5 dpm/ml =			1.04548 ±50 x 10^4 dpm plated			dle = 1.04548 ±50 x 10^4 / 5358.92 ±34			±.7942 1.951 / 5.05	dle Sr-Y90	
							+							
							+							
							+							
							+							
							+							
							+							

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D06-036

9 1 1 2 1 1 1 1 7

BATTELLE-NORTHWEST
RICHLAND, WASHINGTON

ANALYTICAL LABORATORIES – BETA AND GAMMA COUNTER DATA SHEET

SAMPLE: S.Y.90 Shd

SUBMITTED BY: See Book 52626 PP 26-32

COUNTED BY: Glenn Kingsley

REMARKS: $5.90 \pm 2.7269 \times 10^4$ ±2.67 per unit dl/ml, Plate (1,3,5,7,9) 100.01ml, plate (2,4,6,8,10) 100.16ml

$5v + 490 = 1.045 \times 10^5$ dl/ml ±50 dl/ml

SAMPLE NUMBER	DATE 1988	TIME	INST. NO.	SHELF NO.	ABSOR. mg/cm²	INT. (MIN) T	RECORDER READING SCALE DF	TOTAL COUNTS N	RECORDED RATE R = N/T	COINC. CORR'N C	BGD B	NET RATE X=R-B+C	NORMALIZING RATE N.F.	NORMALIZED RATE COUNTS/MIN
S.Y-1	3-17	0824	1	1	0	20	+	113424	5696.2		3460	5661.54		
S.Y-2		0845					+	118164	5858.2			5823.54		
S.Y-3		0911					+	112191	5609.55			5574.89		
S.Y-4		0932					+	112750	5637.5			5602.84		
S.Y-5		0953					+	110702	5535.1			5500.44		
S.Y-6		1019					+	112249	5612.45			5577.79		
S.Y-7		1039					+	111389	5569.45			5534.79		
S.Y-8		1105					+	112631	5631.55			5596.89		
S.Y-9		1159					+	112439	5621.95			5587.29		
S.Y-10		1222					+	111126	5591.3			5556.64		
							+							
							+		$\bar{x}_5$(1,3,5,7,9) =			5571.79 ± 61		
							+		$\bar{x}_5$(2,4,6,8,10) =			5591.54 ± 25		
							+		$\bar{x}_{10}$(1,2,3,4,5,6,7,8,9,10) =			5581.67 ± 45		
							+							
							+							
							+							
							+							
							+							
							+							
							+							
							+							
							+							

Average volume of plates 100.01 + 100.16 / 2 = 100.085 ml

±50 ±50 ±50

1.045×10^5 dl/ml = 1.0454×10^4 dl/plate dl/c = $1.0454 \times 10^4 \div 5581.67$ = 1.873 dl/c ±.018

BNW LABORATORY NOTEBOOK NO. 52626

SUPID FOR PNL ACCOMS CHECK NOV 11 '88

BNW 52626 p.24

D06-037

Amersham

MARKETING COMMUNICATIONS

TRACEABILITY TO NBS

The radiation measurement value reported for this product is the result of measurement procedures which are considered to be "NBS traceable" and which satisfy requirements outlined in Regulatory Guide 4.15, Revision 1, February 1979. These claims are supported by the following considerations:

1) Many direct activity measurement intercomparisons have been made between Amersham and NBS over a period of many years. Some specific examples that illustrate the magnitude of the work which has occurred are listed below:

   a) Randomly selected samples of each production batch of the QCY.44, QCY.46, and QCD.1 mixed radionuclide products are measured by NBS and a Report of Traceability issued to Amersham. During the period 1978 through 1984, 65 separate solution standards and point sources have been intercompared in this manner.

   b) Amersham participates in intercomparison exercises with NBS which involve single nuclides in standardized solution form. During the period 1983 through 1984, nuclides which were intercompared in this manner included Cs-137/Ba-137m, Sr-89 and Ba-133. In addition, 17 separate nuclides have been intercompared during the period 1971 through 1982, and repeat intercomparisons of some of these nuclides at different times bring the total to 24.

   c) To further strengthen Amersham's direct links to NBS, it is planned, for the period 1985 through 1987, to carry out intercomparison exercises between NBS and Amersham which will include the following radionuclides:

i)	Am-241	alpha	reference source
ii)	Ni-63	beta	solution
iii)	C-14	beta	solution
iv)	Cl-36	beta	solution
v)	Sr-90	beta	solution
vi)	Pm-147	beta	solution
vii)	Tl-204	beta	solution
viii)	Ba-133	gamma	point source
ix)	Am-241	gamma	point source
x)	I-129	beta	solution

These comparisons will be in addition to the mixed nuclide standard intercomparisons.

BNW 52626 P9

BNW LABORATORY NOTEBOOK NO. 52626

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9 1 1 2 1 2 3 1 1 1 9

B ELLE-NORTHWEST
RICHLAND, WASHINGTON

ANALYTICAL LAB ORIES – BETA AND GAMMA COUNTER DATA SHEET

SAMPLE: Tc-99 calibration

SUBMITTED BY

COUNTED BY

REMARKS: Tc99 Secondary Std 1.4013 x10⁵ ± 5.74x10⁴ dpm/ml BNW52626 p8-10
(1-2-3-5-7-8) 100.01 µl glass pipet, (2-4-6-8-10) 100.04 glass, calib pipet
(11-12-13-14-15) 100.15 µl automatic pipet BNW52626 p11, applied in 1ml H2O, "blind" sh

SAMPLE NUMBER	DATE 10 88	TIME		SHELF NO.	ABSOR. mg/cm²	INT. (MIN) T	RECORDER READING SCALE OF	TOTAL COUNTS N	RECORDED RATE R = N/T	COINC. CORR'N C	BGD B	NET RATE X=R-B±C	NORMALIZING RATE N.F.	NORMALIZED RATE COUNTS/MIN
Tc 1	3-11			1	0	20	+	103044	5152.2		31.16	5121.04		
Tc 2							+	104092	5204.6			5173.44		
Tc 3							+	100812	5040.6			5009.44		
Tc 4							+	103064	5153.2			5122.04		
Tc 5							+	103198	5159.9			5128.74		
Tc 6							+	102430	5121.5			5090.34		
Tc 7							+	103996	5199.8			5168.64		
Tc 8							+	102653	5132.65			5101.45		
Tc 9							+	103624	5181.2			5150.04		
Tc 10							+	101174	5058.7			5027.54		
							+				$\bar{X}_{10}$ =	5109.27 ± 55		
							+	Average pipet volume = 100.04 µl						
							+	100.04 µl x 1.4013 x10⁵ ± 5.74x10⁴ dpm/ml = 1.4019 x10⁷ ± 5.74x10⁴ dpm						
							+	1.4019 x10⁷ ± 57 dpm ÷ 5109.27 ± 55 cpm = 2.744 ± .032 dpm/cpm						
							+							
Tc 11							+	99837	4991.85		31.16	4960.69		
Tc 12							+	100381	5019.05			4987.89		
Tc 13							+	103251	5162.55			5131.39		
Tc 14							+	102177	5108.85			5077.69		
Tc 15							+	101908	5095.4			5064.24		
							+							
							+							
							+							
							+							
							+							

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5 2 6 2 6 BNW
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NOV 11 '88

D06-039

BN-1700-003 (10-87)

Amersham

MARKETING COMMUNICATIONS

TRACEABILITY TO NBS

The radiation measurement value reported for this product is the result of measurement procedures which are considered to be "NBS traceable" and which satisfy requirements outlined in Regulatory Guide 4.15, Revision 1, February 1979. These claims are supported by the following considerations:

1) Many direct activity measurement intercomparisons have been made between Amersham and NBS over a period of many years. Some specific examples that illustrate the magnitude of the work which has occurred are listed below:

   a) Randomly selected samples of each production batch of the QCY.44, QCY.46, and QCD.1 mixed radionuclide products are measured by NBS and a Report of Traceability issued to Amersham. During the period 1978 through 1984, 65 separate solution standards and point sources have been intercompared in this manner.

   b) Amersham participates in intercomparison exercises with NBS which involve single nuclides in standardized solution form. During the period 1983 through 1984, nuclides which were intercompared in this manner included Cs-137/Ba-137m, Sr-89 and Ba-133. In addition, 17 separate nuclides have been intercompared during the period 1971 through 1982, and repeat intercomparisons of some of these nuclides at different times bring the total to 24.

   c) To further strengthen Amersham's direct links to NBS, it is planned, for the period 1985 through 1987, to carry out intercomparison exercises between NBS and Amersham which will include the following radionuclides:

i)	Am-241	alpha	reference source
ii)	Ni-63	beta	solution
iii)	C-14	beta	solution
iv)	Cl-36	beta	solution
v)	Sr-90	beta	solution
vi)	Pm-147	beta	solution
vii)	Tl-204	beta	solution
viii)	Ba-133	gamma	point source
ix)	Am-241	gamma	point source
x)	I-129	beta	solution

These comparisons will be in addition to the mixed nuclide standard intercomparisons.

BNW 52626 P9

BNW LABORATORY NOTEBOOK NO. 52626

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D06-040

Amersham International plc
Amersham UK

RS-1

BRITISH CALIBRATION SERVICE
Approval No. 0146

Technetium calibration absolutely standardized radioactive solution

Description	Principal radionuclide: Technetium-99	Product code:	TC2.64
		Solution number:	56/60/12

Measurement

Reference time:	1200 GMT on 1 January 1987	
Radioactive concentration of Technetium-99:	12.54	microcuries per gram of solution
which is equivalent to:	464	kilobecquerels per gram of solution
Mass of solution:	5.0299	grams
Total activity of Technetium-99:	63.1	microcuries
which is equivalent to:	2.33	megabecquerels

Method of measurement used (see reverse of the certificate): K

Accuracy

Overall uncertainty in the radioactive concentration quoted above: ± 1.20 % ± 1.3 % ± 0.49 %

Random uncertainty: ± 0.43 % Systematic uncertainty: ± 0.77 %

Overall uncertainty is defined on the reverse of the certificate.

Radionuclidic Purity

The estimated activities of any radioactive impurities are listed below expressed as percentages of the activity of the principal radionuclide at the reference time.

Other radionuclides less than 0.01 %

Chemical Composition

0.01M NH_4OH containing 740 micrograms of technetium per ml as ammonium pertechnetate

Physical Data

Recommended half life: $(2.13 \pm 0.05) \times 10^5$ years

100% beta particle emission.

BNW
52626 i
p8

Remarks

This product meets the quality assurance requirements of NRC Regulatory Guide 4.15 for achieving implicit NBS traceability as defined in NCRP 58 (1985).

BNW LABORATORY NOTEBOOK NO. 52626

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Approved signatory

A.G. Tuck

Amersham

D06-041

TOTAL BETA

Tc-99
Sr-90

DAILY CONTROL DATA

D06-042

BNW-52342
1-
7-17-87

JUL 17 1937
BATTELLE MEMORIAL INSTITUTE PACIFIC NORTHWEST LABORATORY RICHLAND, WASH.

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M13295U

LABORATORY RECORD BOOK NUMBER BNW- 52342	This document consists of ..... pages, copy no. .....
TITLE (INDICATE SUBJECT CONTENT) Beta Counters, Daily Control Standards and Backgrounds	
AUTHOR - DIVISION AND DEPARTMENT A.C. LEAF Materials and Chemical Sciences Center Chemical Sciences Department	
PERIOD COVERED FROM TO	

Route To	P. R. No.	Location	Route Date	Signature & Date
AC LEAF	30969	325	JUL 17	
L S Kellogg	30706	325	8-31-88	L S Kellogg

Document Number	Series	Classification	
BNW-52342	—	UNCLASSIFIED	147984

LABORATORY RECORD BOOK. AC LEAF. JULY 17, 1987.

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D06-043

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Signature of Recipient	Date

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Entered by D.C. Leaf 7/20/87 1

This book is to be used to record the daily standard control counts and background counts for the beta counters BPC-1 and BPC-2 and the date and analyst initials.

Personnel authorized to make entries include:

D.C. Leaf	7-20-87	DCL	Eugene L Dunn	7-14-89	EWD
Jean Kegler	7-20-87	JK	Marjorie Chandler Miller	3/20/90	[illegible]
Anne E Kozelsky	7-21-87	AEK	10-17-89 AEK		
W.Y. Matsumoto	12/9/87	WYM	James H. Kaye	6/28/90	J.K.
R.E. Bernier Jr.	2/11/88	RB	Clark O Harney	10/12/90	COH
Katherine Lamy	8/10/88	KJL			
Nevada Lou Alley	10-25-88	NLA			
Linda S Kellogg	9-16-88	LSK			

Persons authorized to review LRB:

DC Leaf	6/10/88	DCL
L S Kellogg	9-16-88	LSK
M C Weber	3-27-89	MCW
Anne E Kozelsky	1-2-90	AEK
L.R. Greenwood	9-27-90	LRG

Reviews

Pages 1 – 47	D C Leaf	6/10/88
Page 48 - 49	L S Kellogg	9-22-88
Pages 50 - 62	M C Weber	3-27-89

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Entered By _____ Date _____

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D06-044

Signed 1. _____ Date _____

2. _____ Date _____

BNW52342
page 95

Proportional Beta Counters P.B.C.-1 and P.B.C.-2
Daily Control Standard Counts and Backgrounds

	Beta Counter #1 (P.B.C.-1)				Beta Counter #2 (P.B.C.-2)				
DATE	100 min bkg	10 min bkg	^{90}SrY 10 minute COUNT	^{99}Tc 10 minute COUNT	100 min bkg	10 min bkg	^{90}SrY 10 minute COUNT	^{99}Tc 10 minute COUNT	Analyst
9/13/90	28.36	27.6	152550	111042	28.14	26.3	144718	96327	HK
9/13/90							RC 145648		HK
9/14/90	27.98	29.3	152359	111114	28.70	29.4	145869	98761	HK
9/14/90								RC 95562	HK
9/14/96								RC 95745	HK
9/17/90	29.95	26.7	152110	110487	28.36	29.0	145565	96163	HK
9/18/90	28.73	28.5	151984	110605	29.40	29.2	145546	98497	HK
9/18/90								RC 95736	HK
9/19/90	29.34	27.9	152167	110646	28.78	27.8	145514	96153	HK
9/20/90	29.15	25.4	152814	110938	28.70	28.7	144807	95911	HK
9/20/90							RC 144787		HK
9/21/90	28.77	25.3	152402	111091	28.04	27.1	145298	95853	HK
9/22/90	29.04	26.8	152855	111291	27.69	25.0	145279	95329	HK
9/22/90								RC 95935	HK
9/25/90	29.49	29.4	152353	111060	28.69	28.6	144745	95727	HK
9/25/90							RC 145257	RC 96077	HK
9/26/90	30.17	27.1	152267	110426	28.78	23.9	145326	96215	HK
9/27/90	29.10	25.9	152377	110954	28.32	28.1	145860	95975	HK
9/28/90	30.00	28.9	152217	110486	28.53	29.8	145371	95566	HK
9/28/90								RC 95635	HK
10/1/90	28.30	29.4	152241	110977	28.21	26.7	145211	96142	[illegible]
10/1/90							RC 145463		[illegible]
10/3/90	29.38	28.4	151977	111111	29.01	29.7	145128	96144	[illegible]
10/3/90	28.01	28.1	152605	110752	28.98	29.9	145296	95694	HK
10/3/90								RC 96171	HK
10/4/90	29.42	30.0	152556	110300	28.49	29.7	145328	95963	[illegible]
10/5/90	30.53	30.6	152024	111086	28.86	29.6	144798	96058	HK
10/5/90							RC 144916		HK
10/8/90	28.46	25.4	151957	111066	29.18	26.5	144963	95472	HK
10/8/90								RC 95912	HK
10/9/90	27.90	28.2	152160	110900	28.08	28.6	144959	96219	HK
10/10/90	29.37	30.2	152452	111272	28.17	28.4	144993	95921	HK
/90	27.24	29.0	151525 RC 152008	110998	30.90	29.3	145505	96088	HK HK

Project No. _____ Date of Work _____

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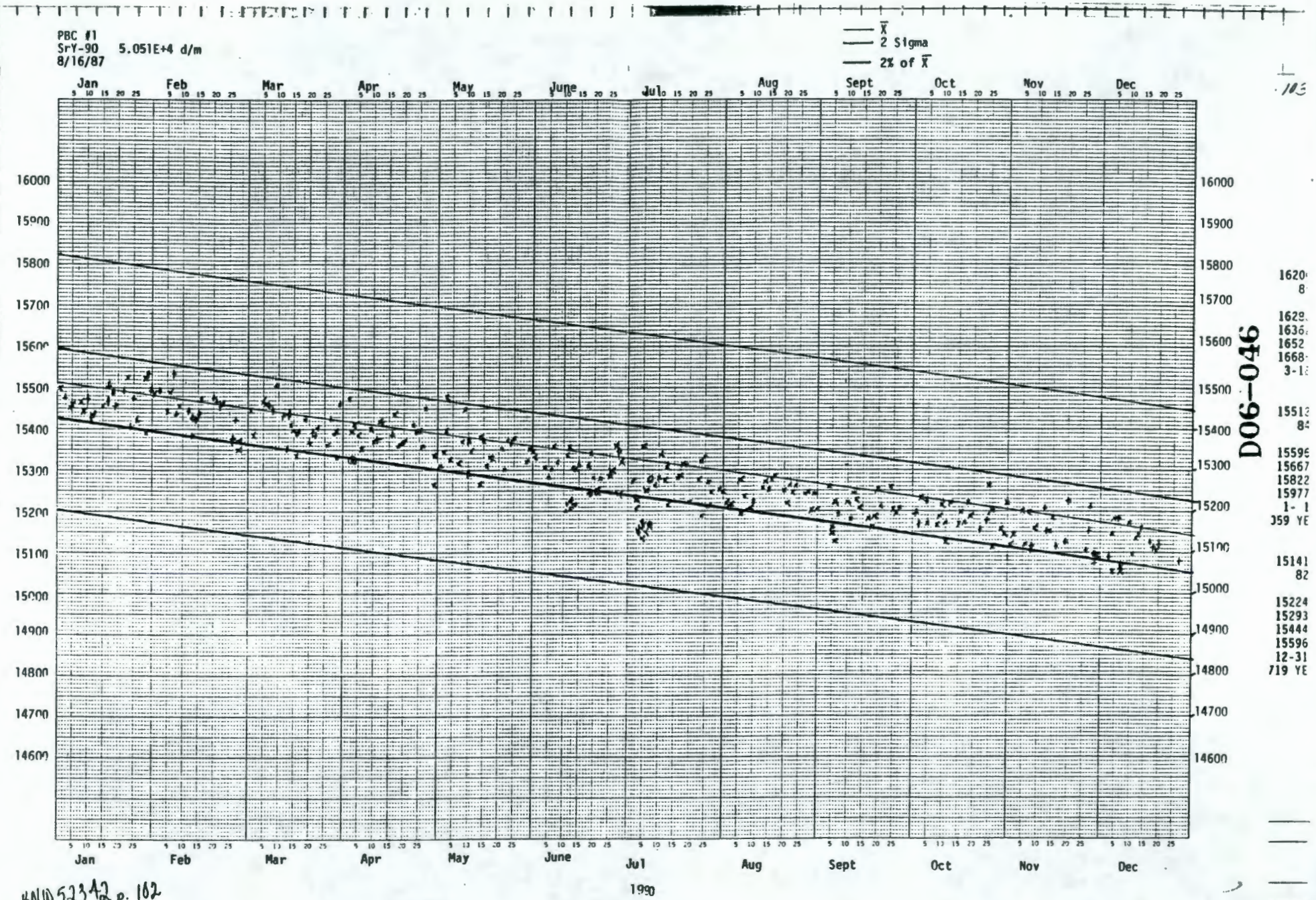
D06-045

102

PBC #1
SrY-90 5.051E+4 d/m
8/16/87



D06-046

BNW 52342 p. 102

BNW52342 p 103

CONTROL CHART EXTENSION PROGRAM

COUNTING SYSTEM: PBC #1
CONTROL NUCLIDE: 90-SRY
NUCLIDE HALF LIFE: 28.6 YEARS

THE EXISTING CONTROL LIMITS UPON WHICH THE EXTENSION IS BASED ARE:

THE X BAR OF THE DATA POINTS IS		16200.00
THE STANDARD DEVIATION AT THE 2 SIGMA CONFIDENCE LEVEL IS		88.00
THE 2 SIGMA CONFIDENCE LEVEL LIMITS ARE	16112.00	16288.00
THE 1% X BAR LIMITS ARE	16038.00	16362.00
THE 2% X BAR LIMITS ARE	15876.00	16524.00
THE 3% X BAR LIMITS ARE	15714.00	16686.00
THE REFERENCE DATE IS		3-18-88

THE X BAR OF THE DATA POINTS IS		15512.01
THE STANDARD DEVIATION AT THE 2 SIGMA CONFIDENCE LEVEL IS		84.26
THE 2 SIGMA CONFIDENCE LEVEL LIMITS ARE	15427.75	15596.27
THE 1% X BAR LIMITS ARE	15356.89	15667.13
THE 2% X BAR LIMITS ARE	15201.77	15822.25
THE 3% X BAR LIMITS ARE	15046.65	15977.37
THE REFERENCE DATE IS		1- 1-90

THE DECAY INTERVAL MEASURED FROM THE EXISTING CONTROLS DATE IS 1.79059 YEARS

THE X BAR OF THE DATA POINTS IS		15141.83
THE STANDARD DEVIATION AT THE 2 SIGMA CONFIDENCE LEVEL IS		82.25
THE 2 SIGMA CONFIDENCE LEVEL LIMITS ARE	15059.58	15224.08
THE 1% X BAR LIMITS ARE	14990.41	15293.25
THE 2% X BAR LIMITS ARE	14838.99	15444.67
THE 3% X BAR LIMITS ARE	14687.58	15596.08
THE REFERENCE DATE IS		12-31-90

THE DECAY INTERVAL MEASURED FROM THE EXISTING CONTROLS DATE IS 2.78719 YEARS

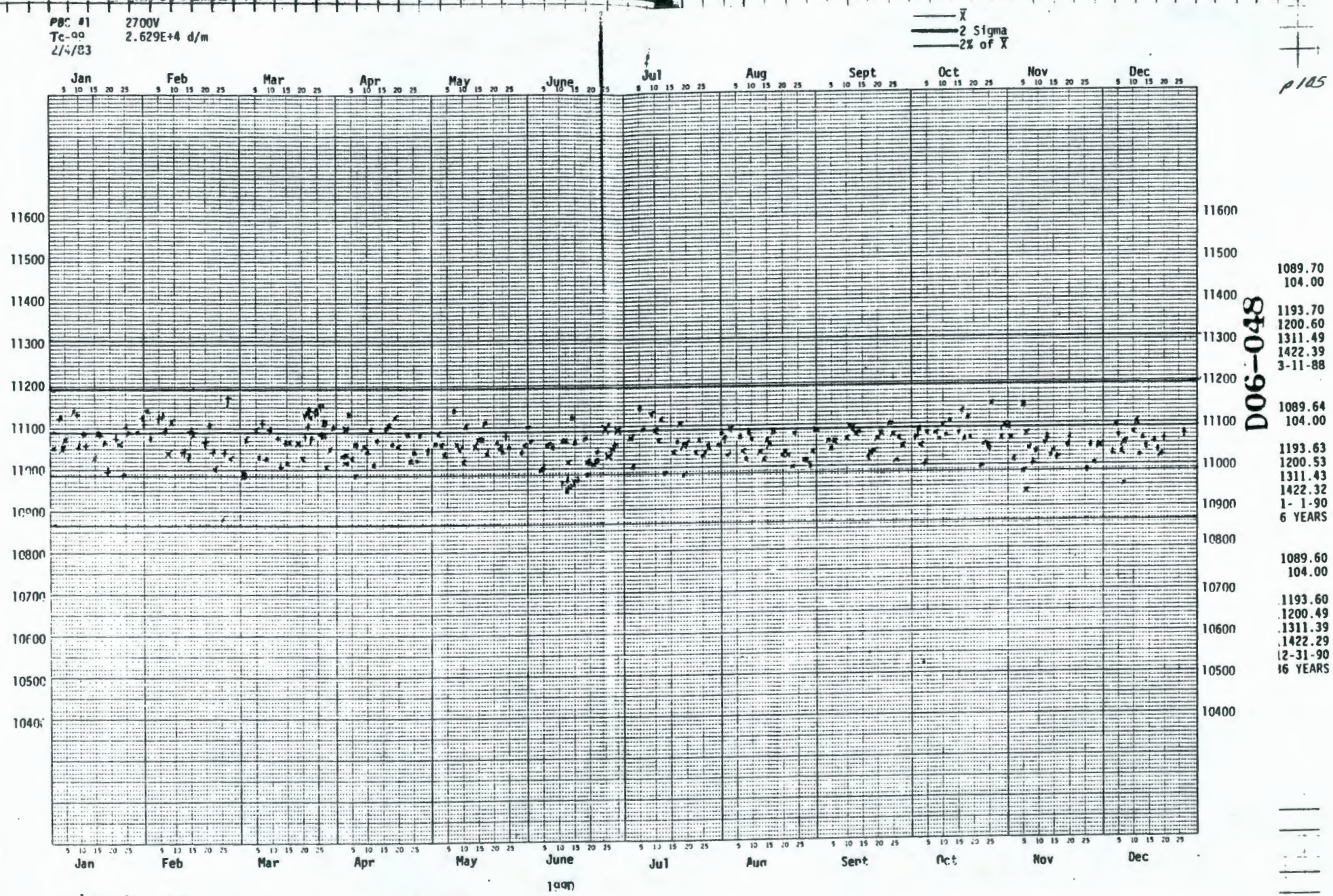
Entered 12-21 Steve Engelhardt

Project No. _____ Date of Work _____
Entered By _____ Date _____
Disclosed To and Understood By
Signed 1. _____ Date _____
2. _____ Date _____

D06-047

104

PBC #1 2700V
Tc-99 2.629E+4 d/m
2/4/83



p 105

D06-048

Entered 1-2-91 Diane Stockley

CA(W)52342 p 104

9 1 2 1 5 1 1 2 8

BNW52342 p105

CONTROL CHART EXTENSION PROGRAM

COUNTING SYSTEM: PBC #1
CONTROL NUCLIDE: 99-TC
NUCLIDE HALF LIFE: 213000 YEARS

THE EXISTING CONTROL LIMITS UPON WHICH THE EXTENSION IS BASED ARE:

THE X BAR OF THE DATA POINTS IS		11089.70
THE STANDARD DEVIATION AT THE 2 SIGMA CONFIDENCE LEVEL IS		104.00
THE 2 SIGMA CONFIDENCE LEVEL LIMITS ARE	10985.70	11193.70
THE 1% X BAR LIMITS ARE	10978.80	11200.60
THE 2% X BAR LIMITS ARE	10867.91	11311.49
THE 3% X BAR LIMITS ARE	10757.01	11422.39
THE REFERENCE DATE IS		3-11-88

THE X BAR OF THE DATA POINTS IS		11089.64
THE STANDARD DEVIATION AT THE 2 SIGMA CONFIDENCE LEVEL IS		104.00
THE 2 SIGMA CONFIDENCE LEVEL LIMITS ARE	10985.64	11193.63
THE 1% X BAR LIMITS ARE	10978.74	11200.53
THE 2% X BAR LIMITS ARE	10867.84	11311.43
THE 3% X BAR LIMITS ARE	10756.95	11422.32
THE REFERENCE DATE IS		1- 1-90

THE DECAY INTERVAL MEASURED FROM THE EXISTING CONTROLS DATE IS 1.80976 YEARS

THE X BAR OF THE DATA POINTS IS		11089.60
THE STANDARD DEVIATION AT THE 2 SIGMA CONFIDENCE LEVEL IS		104.00
THE 2 SIGMA CONFIDENCE LEVEL LIMITS ARE	10985.60	11193.60
THE 1% X BAR LIMITS ARE	10978.70	11200.49
THE 2% X BAR LIMITS ARE	10867.81	11311.39
THE 3% X BAR LIMITS ARE	10756.91	11422.29
THE REFERENCE DATE IS		12-31-90

THE DECAY INTERVAL MEASURED FROM THE EXISTING CONTROLS DATE IS 2.80636 YEARS

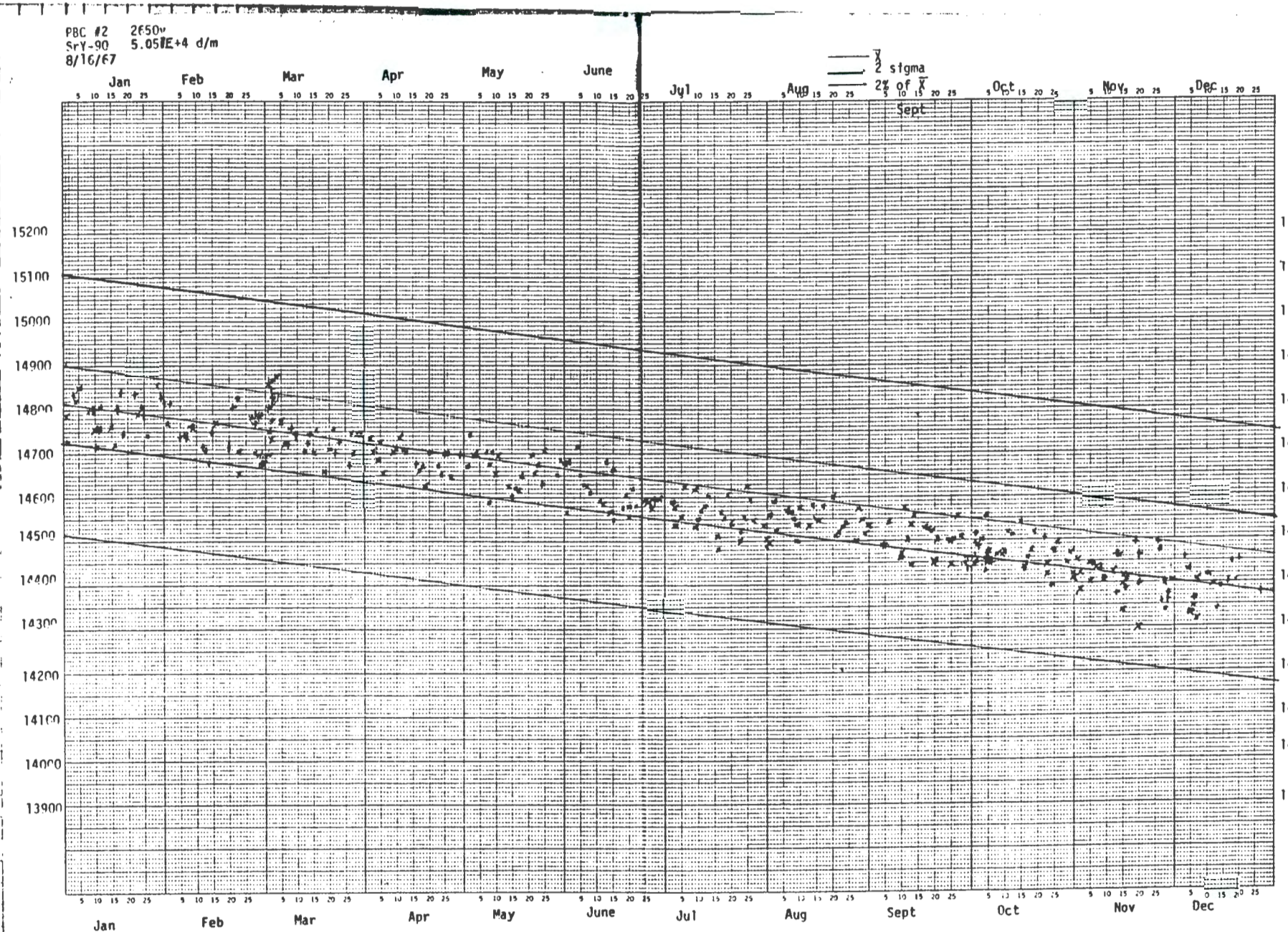
Entered 12-91 Marc E. Bjerke

Project No. _____ Date of Work _____
Entered By _____ Date _____
Disclosed To and Understood By
Signed 1. _____ Date _____
2. _____ Date _____

D06-049

106

PBC #2 2E50v
SrY-90 5.05E+4 d/m
8/16/67



BNW523-42 p. 106

1990

D06-050

BNW523

RE:

1.79059

2.78719

Entered 1-2-91 Anne Engelhardt

CONTROL CHART EXTENSION PROGRAM

ANL052342p
107

COUNTING SYSTEM: PBC #2
CONTROL NUCLIDE: 90-SRY
NUCLIDE HALF LIFE: 28.6 YEARS

THE EXISTING CONTROL LIMITS UPON WHICH THE EXTENSION IS BASED ARE:

THE X BAR OF THE DATA POINTS IS		15469.50
THE STANDARD DEVIATION AT THE 2 SIGMA CONFIDENCE LEVEL IS		92.00
THE 2 SIGMA CONFIDENCE LEVEL LIMITS ARE	15377.50	15561.50
THE 1% X BAR LIMITS ARE	15314.81	15624.19
THE 2% X BAR LIMITS ARE	15160.11	15778.89
THE 3% X BAR LIMITS ARE	15005.42	15933.58
THE REFERENCE DATE IS		3-18-88

THE X BAR OF THE DATA POINTS IS		14812.53
THE STANDARD DEVIATION AT THE 2 SIGMA CONFIDENCE LEVEL IS		88.09
THE 2 SIGMA CONFIDENCE LEVEL LIMITS ARE	14724.44	14900.63
THE 1% X BAR LIMITS ARE	14664.41	14960.66
THE 2% X BAR LIMITS ARE	14516.28	15108.79
THE 3% X BAR LIMITS ARE	14368.16	15256.91
THE REFERENCE DATE IS		1- 1-90

THE DECAY INTERVAL MEASURED FROM THE EXISTING CONTROLS DATE IS 1.79059 YEARS

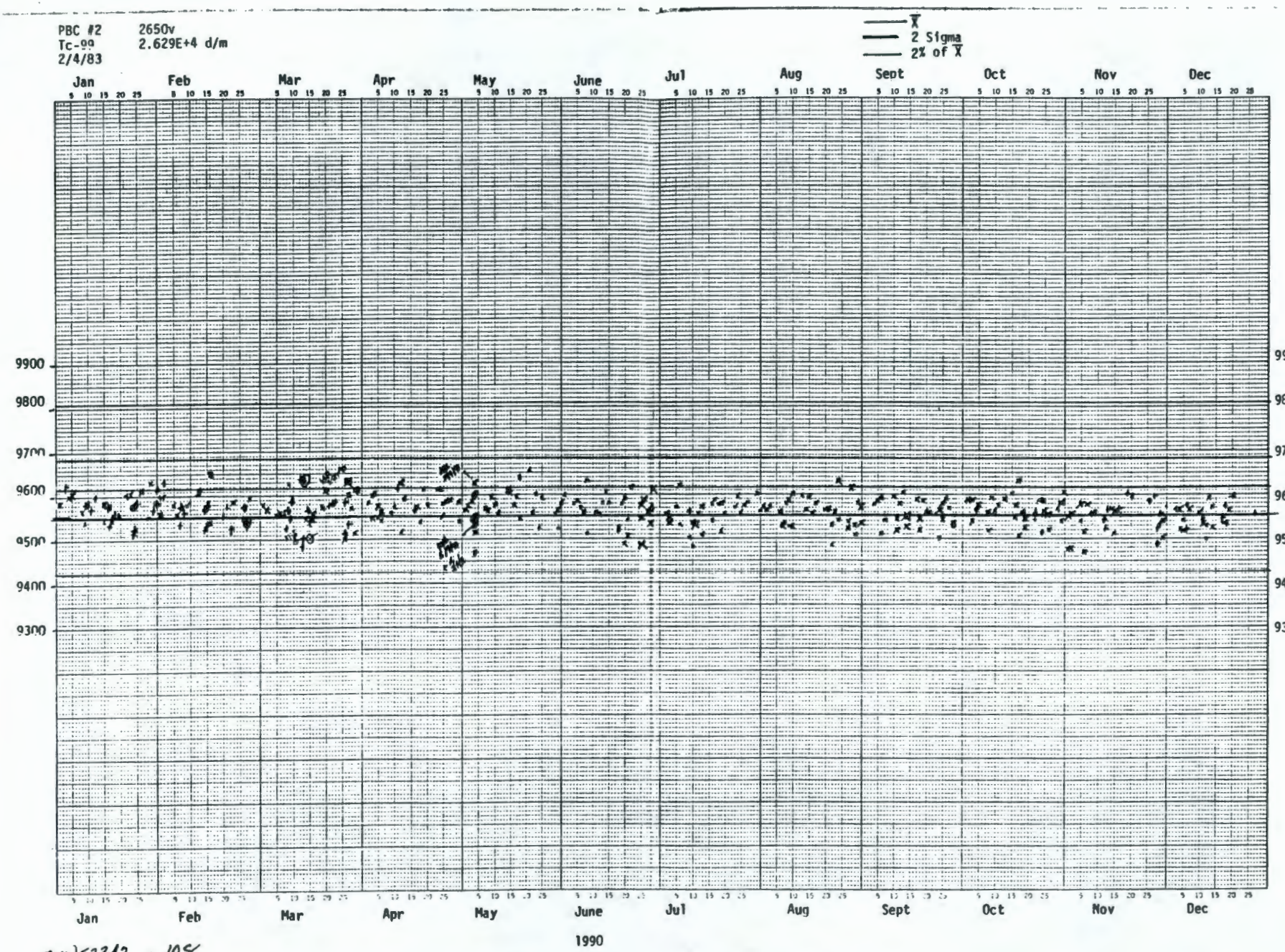
THE X BAR OF THE DATA POINTS IS		14459.05
THE STANDARD DEVIATION AT THE 2 SIGMA CONFIDENCE LEVEL IS		85.99
THE 2 SIGMA CONFIDENCE LEVEL LIMITS ARE	14373.06	14545.04
THE 1% X BAR LIMITS ARE	14314.46	14603.64
THE 2% X BAR LIMITS ARE	14169.87	14748.23
THE 3% X BAR LIMITS ARE	14025.27	14892.82
THE REFERENCE DATE IS		12-31-90

THE DECAY INTERVAL MEASURED FROM THE EXISTING CONTROLS DATE IS 2.78719 YEARS

Entered 1-2-91 [illegible]

Project No. _____ Date of Work _____
Entered By _____ Date _____
Disclosed To and Understood By D06-051
Signed 1. _____ Date _____
2. _____ Date _____

PBC #2 2650v
Tc-99 2.629E+4 d/m
2/4/83



ARE:

9617.
66.

9683.
9713.
9809.
9906.
3-11-

9617.5
66.0

9683.5
9713.7
9809.5
9906.2
1- 1-9
1.80976 YEAR

9617.5
66.0

9683.5
9713.6
9809.8
9906.0
12-31-9
2.80636 YEAR

D06-052

BNW52342 p. 108

9112151132

BNW52312 p 109

CONTROL CHART EXTENSION PROGRAM

COUNTING SYSTEM: PBC #2
CONTROL NUCLIDE: 99-TC
NUCLIDE HALF LIFE: 213000 YEARS

THE EXISTING CONTROL LIMITS UPON WHICH THE EXTENSION IS BASED ARE:

THE X BAR OF THE DATA POINTS IS		9617.60
THE STANDARD DEVIATION AT THE 2 SIGMA CONFIDENCE LEVEL IS		66.00
THE 2 SIGMA CONFIDENCE LEVEL LIMITS ARE	9551.60	9683.60
THE 1% X BAR LIMITS ARE	9521.42	9713.78
THE 2% X BAR LIMITS ARE	9425.25	9809.95
THE 3% X BAR LIMITS ARE	9329.07	9906.13
THE REFERENCE DATE IS		3-11-88

THE X BAR OF THE DATA POINTS IS		9617.54
THE STANDARD DEVIATION AT THE 2 SIGMA CONFIDENCE LEVEL IS		66.00
THE 2 SIGMA CONFIDENCE LEVEL LIMITS ARE	9551.54	9683.54
THE 1% X BAR LIMITS ARE	9521.37	9713.72
THE 2% X BAR LIMITS ARE	9425.19	9809.89
THE 3% X BAR LIMITS ARE	9329.02	9906.07
THE REFERENCE DATE IS		1- 1-90

THE DECAY INTERVAL MEASURED FROM THE EXISTING CONTROLS DATE IS 1.80976 YEARS

THE X BAR OF THE DATA POINTS IS		9617.51
THE STANDARD DEVIATION AT THE 2 SIGMA CONFIDENCE LEVEL IS		66.00
THE 2 SIGMA CONFIDENCE LEVEL LIMITS ARE	9551.51	9683.51
THE 1% X BAR LIMITS ARE	9521.34	9713.69
THE 2% X BAR LIMITS ARE	9425.16	9809.86
THE 3% X BAR LIMITS ARE	9328.99	9906.04
THE REFERENCE DATE IS		12-31-90

THE DECAY INTERVAL MEASURED FROM THE EXISTING CONTROLS DATE IS 2.80636 YEARS

Initial 1-2-91 Anne Stoffelsky

Project No. _____ Date of Work _____

Entered By _____ Date _____

Disclosed To and Understood By D06-053

Signed 1. _____ Date _____

2. _____ Date _____

CONTROL CHART GENERATION PROGRAM

COUNTING SYSTEM: P.B.C.-1 W700873 PROPORTIONAL BETA COUNTER
CONTROL NUCLIDE: SRY-90
NUCLIDE HALF LIFE: 28.5 YEARS

NUMERICAL DATA INPUT SUMMARY

POINT	COUNT DATE	COUNT [C/M]
1	8- 7-90	15236.30
2	8-14-90	15272.10
3	8-21-90	15218.80
4	8-28-90	15247.10
5	9- 4-90	15259.20
6	9-11-90	15180.70
7	9-18-90	15161.70
8	9-25-90	15205.80
9	10- 2-90	15168.30
10	10- 9-90	15188.60
11	10-16-90	15198.50
12	10-23-90	15181.50
13	10-30-90	15144.40
14	11- 6-90	15093.00
15	11-13-90	15150.20
16	11-20-90	15226.30
17	11-27-90	15150.90
18	12- 4-90	15053.40
19	12-11-90	15095.20
20	12-18-90	15101.40

NUMBER OF DATA POINTS:	20
X BAR:	15243.96
SUM OF COUNT RATES:	304879.00
SUM OF COUNT RATE SQUARES:	4647590000.00
STANDARD DEVIATION:	35.59
[CHI SQUARE]/N:	0.791088
REFERENCE DATE:	8- 7-90

THE STANDARD DEVIATION AT THE 2 SIGMA CONFIDENCE LEVEL IS 71.18

THE 2 SIGMA CONFIDENCE LEVEL LIMITS ARE	15172.78	15315.13
THE 1% X BAR LIMITS ARE	15091.52	15396.39
THE 2% X BAR LIMITS ARE	14939.08	15548.83
THE 3% X BAR LIMITS ARE	14786.64	15701.27
THE REFERENCE DATE IS		8- 7-90

THE X BAR OF THE DATA POINTS IS 15095.47
THE STANDARD DEVIATION AT THE 2 SIGMA CONFIDENCE LEVEL IS 70.48

THE 2 SIGMA CONFIDENCE LEVEL LIMITS ARE	15024.98	15165.95
THE 1% X BAR LIMITS ARE	14944.51	15246.42
THE 2% X BAR LIMITS ARE	14793.56	15397.38
THE 3% X BAR LIMITS ARE	14642.60	15548.33
THE REFERENCE DATE IS		1- 1-91

THE DECAY INTERVAL MEASURED FROM THE EXISTING CONTROLS DATE IS .402473 YEARS

THE X BAR OF THE DATA POINTS IS 14733.00
THE STANDARD DEVIATION AT THE 2 SIGMA CONFIDENCE LEVEL IS 68.79

THE 2 SIGMA CONFIDENCE LEVEL LIMITS ARE	14664.21	14801.79
THE 1% X BAR LIMITS ARE	14585.67	14880.33
THE 2% X BAR LIMITS ARE	14438.34	15027.66
THE 3% X BAR LIMITS ARE	14291.01	15174.99
THE REFERENCE DATE IS		1- 1-92

THE DECAY INTERVAL MEASURED FROM THE EXISTING CONTROLS DATE IS 1.40181 YEARS

CONTROL CHART GENERATION PROGRAM

COUNTING SYSTEM: P.B.C.-1 W700873 PROPORTIONAL BETA COUNTER
CONTROL NUCLIDE: TC-99
NUCLIDE HALF LIFE: 211100 YEARS

NUMERICAL DATA INPUT SUMMARY

POINT	COUNT DATE	COUNT [C/M]
1	8- 7-90	11037.10
2	8-14-90	11017.50
3	8-21-90	11034.70
4	8-28-90	11013.30
5	9- 4-90	11062.10
6	9-11-90	11095.90
7	9-18-90	11031.80
8	9-25-90	11076.50
9	10- 2-90	11081.70
10	10- 9-90	11062.60
11	10-16-90	11129.40
12	10-23-90	11049.60
13	10-30-90	11095.20
14	11- 6-90	10938.00
15	11-13-90	11064.30
16	11-20-90	11057.50
17	11-27-90	11042.70
18	12- 4-90	11094.60
19	12-11-90	11100.20
20	12-18-90	11032.60

NUMBER OF DATA POINTS:	20
X BAR:	11055.87
SUM OF COUNT RATES:	221117.00
SUM OF COUNT RATE SQUARES:	2444680000.00
STANDARD DEVIATION:	41.20
[CHI SQUARE]/N:	1.454690
REFERENCE DATE:	8- 7-90

THE STANDARD DEVIATION AT THE 2 SIGMA CONFIDENCE LEVEL IS 82.41

THE 2 SIGMA CONFIDENCE LEVEL LIMITS ARE	10973.47	11138.28
THE 1% X BAR LIMITS ARE	10945.31	11166.43
THE 2% X BAR LIMITS ARE	10834.76	11276.99
THE 3% X BAR LIMITS ARE	10724.20	11387.55
THE REFERENCE DATE IS		8- 7-90

THE X BAR OF THE DATA POINTS IS 11055.86
THE STANDARD DEVIATION AT THE 2 SIGMA CONFIDENCE LEVEL IS 82.41

THE 2 SIGMA CONFIDENCE LEVEL LIMITS ARE	10973.45	11138.26
THE 1% X BAR LIMITS ARE	10945.30	11166.42
THE 2% X BAR LIMITS ARE	10834.74	11276.98
THE 3% X BAR LIMITS ARE	10724.18	11387.53
THE REFERENCE DATE IS		1- 1-91

THE DECAY INTERVAL MEASURED FROM THE EXISTING CONTROLS DATE IS .402473 YEARS

THE X BAR OF THE DATA POINTS IS 11055.82
THE STANDARD DEVIATION AT THE 2 SIGMA CONFIDENCE LEVEL IS 82.41

THE 2 SIGMA CONFIDENCE LEVEL LIMITS ARE	10973.42	11138.23
THE 1% X BAR LIMITS ARE	10945.26	11166.38
THE 2% X BAR LIMITS ARE	10834.71	11276.94
THE 3% X BAR LIMITS ARE	10724.15	11387.50
THE REFERENCE DATE IS		1- 1-92

THE DECAY INTERVAL MEASURED FROM THE EXISTING CONTROLS DATE IS 1.40181 YEARS

CONTROL CHART GENERATION PROGRAM

COUNTING SYSTEM: P.B.C.-2 W700878 PROPORTIONAL BETA COUNTER
CONTROL NUCLIDE: SRY-90
NUCLIDE HALF LIFE: 28.5 YEARS

NUMERICAL DATA INPUT SUMMARY

POINT	COUNT DATE	COUNT [C/M]
1	8- 7-90	14564.90
2	8-14-90	14581.10
3	8-21-90	14511.50
4	8-28-90	14573.60
5	9- 4-90	14493.70
6	9-11-90	14577.20
7	9-18-90	14525.20
8	9-25-90	14445.80
9	10- 2-90	14483.80
10	10- 9-90	14467.80
11	10-16-90	14431.40
12	10-23-90	14421.70
13	10-30-90	14469.40
14	11- 6-90	14443.60
15	11-13-90	14377.50
16	11-20-90	14397.70
17	11-27-90	14343.90
18	12- 4-90	14429.80
19	12-11-90	14416.90
20	12-18-90	14446.10

NUMBER OF DATA POINTS: 20
X BAR: 14534.25
SUM OF COUNT RATES: 290685.00
SUM OF COUNT RATE SQUARES: 4224920000.00
STANDARD DEVIATION: 41.37
[CHI SQUARE]/N: 1.113670
REFERENCE DATE: 8- 7-90

THE STANDARD DEVIATION AT THE 2 SIGMA CONFIDENCE LEVEL IS 82.73

THE 2 SIGMA CONFIDENCE LEVEL LIMITS ARE	14451.52	14616.98
THE 1% X BAR LIMITS ARE	14388.91	14679.59
THE 2% X BAR LIMITS ARE	14243.57	14824.94
THE 3% X BAR LIMITS ARE	14098.22	14970.28
THE REFERENCE DATE IS		8- 7-90

THE X BAR OF THE DATA POINTS IS 14392.68
THE STANDARD DEVIATION AT THE 2 SIGMA CONFIDENCE LEVEL IS 81.93

THE 2 SIGMA CONFIDENCE LEVEL LIMITS ARE	14310.75	14474.60
THE 1% X BAR LIMITS ARE	14248.75	14536.60
THE 2% X BAR LIMITS ARE	14104.82	14680.53
THE 3% X BAR LIMITS ARE	13960.90	14824.46
THE REFERENCE DATE IS		1- 1-91

THE DECAY INTERVAL MEASURED FROM THE EXISTING CONTROLS DATE IS .402473 YEARS

THE X BAR OF THE DATA POINTS IS 14047.08
THE STANDARD DEVIATION AT THE 2 SIGMA CONFIDENCE LEVEL IS 79.96

THE 2 SIGMA CONFIDENCE LEVEL LIMITS ARE	13967.12	14127.04
THE 1% X BAR LIMITS ARE	13906.61	14187.55
THE 2% X BAR LIMITS ARE	13766.14	14328.02
THE 3% X BAR LIMITS ARE	13625.67	14468.49
THE REFERENCE DATE IS		1- 1-92

THE DECAY INTERVAL MEASURED FROM THE EXISTING CONTROLS DATE IS 1.40181 YEARS

CONTROL CHART GENERATION PROGRAM

COUNTING SYSTEM: P.B.C.-2 W700878 PROPORTIONAL BETA COUNTER
CONTROL NUCLIDE: TC-99
NUCLIDE HALF LIFE: 211100 YEARS

NUMERICAL DATA INPUT SUMMARY

POINT	COUNT DATE	COUNT [C/M]
1	8- 7-90	9533.00
2	8-14-90	9565.30
3	8-21-90	9566.20
4	8-28-90	9615.60
5	9- 4-90	9578.40
6	9-11-90	9544.90
7	9-18-90	9520.30
8	9-25-90	9544.00
9	10- 2-90	9585.40
10	10- 9-90	9593.80
11	10-16-90	9547.70
12	10-23-90	9556.80
13	10-30-90	9540.20
14	11- 6-90	9517.10
15	11-13-90	9567.00
16	11-20-90	9592.00
17	11-27-90	9588.80
18	12- 4-90	9521.70
19	12-11-90	9544.80
20	12-18-90	9532.30

NUMBER OF DATA POINTS: 20
X BAR: 9557.77
SUM OF COUNT RATES: 191155.00
SUM OF COUNT RATE SQUARES: 1827030000.00
STANDARD DEVIATION: 27.83
[CHI SQUARE]/N: 0.766691
REFERENCE DATE: 8- 7-90

THE STANDARD DEVIATION AT THE 2 SIGMA CONFIDENCE LEVEL IS 55.67

THE 2 SIGMA CONFIDENCE LEVEL LIMITS ARE	9502.10	9613.44
THE 1% X BAR LIMITS ARE	9462.19	9653.35
THE 2% X BAR LIMITS ARE	9366.62	9748.93
THE 3% X BAR LIMITS ARE	9271.04	9844.50
THE REFERENCE DATE IS		8- 7-90

THE X BAR OF THE DATA POINTS IS 9557.76
THE STANDARD DEVIATION AT THE 2 SIGMA CONFIDENCE LEVEL IS 55.67

THE 2 SIGMA CONFIDENCE LEVEL LIMITS ARE	9502.09	9613.43
THE 1% X BAR LIMITS ARE	9462.18	9653.34
THE 2% X BAR LIMITS ARE	9366.60	9748.91
THE 3% X BAR LIMITS ARE	9271.03	9844.49
THE REFERENCE DATE IS		1- 1-91

THE DECAY INTERVAL MEASURED FROM THE EXISTING CONTROLS DATE IS .402473 YEARS

THE X BAR OF THE DATA POINTS IS 9557.73
THE STANDARD DEVIATION AT THE 2 SIGMA CONFIDENCE LEVEL IS 55.67

THE 2 SIGMA CONFIDENCE LEVEL LIMITS ARE	9502.06	9613.40
THE 1% X BAR LIMITS ARE	9462.15	9653.30
THE 2% X BAR LIMITS ARE	9366.57	9748.88
THE 3% X BAR LIMITS ARE	9271.00	9844.46
THE REFERENCE DATE IS		1- 1-92

THE DECAY INTERVAL MEASURED FROM THE EXISTING CONTROLS DATE IS 1.40181 YEARS

D7 - TOTAL URANIUM BY

LASER FLUOROMETRY

URANIUM

PRIMARY DATA PACKAGE

D07-001

SST

TOTAL URANIUM DATA COVER SHEET

Sample Number: 90-3617-A-1/2/3
90-3619-A-1/2/3
90-4178-A-1/2/3
90-4180-C-1/2/5

Procedure: HTA-4-16

Pipet Calibration LRB#: BNW 52327

Equipment (M&TE#): WA 52164

System Control LRB#: BNW 52442
BNW 53645

URANIUM

SUMMARY DATA PACKAGE

D07–003

URANIUM DATA

Customer No.	Uranium ug/g wet wt.	+/- % error
Segment 3		
90-3617-A-1	104	
90-3617-A-2	108	
90-3617-A-3	<1.4	
Segment 5		
90-3619-A-1	48.5	
90-3619-A-2	48.0	
90-3619-A-3	2.2	
Composite		
90-4178-A-1	136	
90-4178-A-2	148	
90-4178-A-3	4.5	
90-4180-C-1	0.6	
90-4180-C-2	0.6	
90-4180-C-5	0.02	

URANIUM

ANALYTICAL REPORT CARDS

D07–005

TOTAL URANIUM ANALYSIS

A Scintrex UA-3 laser-excited fluorescence instrument is used for the total uranium analysis for SST samples. A Radiochemistry ANALYTICAL REPORT card accompanies each sample. This card has a card serial number, the date the sample was received into the radiochemistry laboratory, work package number, a radiochemistry lab serial number, customer identification number, the 325A Hot Cell identification number, the constituent requested (i.e., uranium), and the results. The balance ID number and BNW laboratory record book (LRB) number that holds the pipet calibration data are noted in the "Serial No." column. A copy of the pipet calibration is provided under separate cover. The M&TE number of the laser fluorometer is listed in the "Customer Ident." column. This number cross references to the LRB that contains the daily control data. The Uranium procedure used for this analysis is noted in the "Constituent" column.

The volume of the aliquot taken from the sample solution (the dissolved fusion or the water leach) is written under the "SERIAL NUMBER" of the card on the right side of the card along with the initial meter reading. The U procedure is a standard addition method so the second volume is the volume of standard added (and its concentration) along with its meter reading. The mass of sample sludge aliquot and the volume of solution used in the dissolution of the fusion or the water leach is written below the sample aliquot volumes.

On the bottom half of the card under "DATA" is the hand calculation of the data. This follows from the procedure. The initial and final meter readings, sample volume, std volume and concentration, sample weight and volume of solution of fusion or water leach are incorporated. Final results are given in ug or mg per gram.

ANALYTICAL REPORT 100060

Customer: SST
Date Received: 8-21-90
Work Order No: Ma2040

ID & A.L.O.: 544-90

Description: 90-3017-A-1
TA1106
Core 16
Segment 3

Analysis: U Laser
Procedure: HTA-4-16

Results

104 ug/g wet wt

Calculations

Sample .1008 g R_1 .33
0.0202 ml 1.0002 ug/ml R_2 .63

Calculations .33 / (.63 - .33) × (0.0202)(1.0002) / 0.1006 × 250 / .524 = 103.8 ug/g

Calculations T. O. Harvey Date 10/12/90

Reviewed Counting Information R Barrington Date 1-15-91

By

Date ____ N. & T.E. WA 52164

Log Book: BMC3045 p. 25, 35
BMW 52442 P. 86

TI-SST-102

ANALYTICAL REPORT 100078

Customer: SST
Date Received: 8-21-90
Work Order No: Ma2040

ID & A.L.O.: 543-90

Description: 90-3017-A-2
TA1106
Core 16
Segment 3

Analysis: U Laser
Procedure: HTA-4-16

Results

108 ug/g wet wt

0.5295g + ~~290ml~~ 250 ml - ACK 9-10-90

0.1008 ml Sample R_1 = .34
0.0202 mL 1.0002 ug/ml R_2 = .64

Calculations

$$\frac{.34}{.64-.34} \frac{(1.0002)(0.0202)(250)}{(0.1006)(.5295)} = 107.5 \text{ ug/gm}$$

Calculations T. O. Harvey Date 10/12/90

Reviewed Counting Information R Barrington Date 1-15-91

By

Date ____ N. & T.E. WA 52164

Log Book: BMC3045 p. 25, 35
BMW 52442 P. 86

TI-SST-102

ANALYTICAL REPORT 100090

Customer: SST
Date Received: 8-21-90
Work Order No: Ma2040

ID & A.L.O.: 544-90

Description: 90-3017-A-3
TA1106
Core 16
Segment 3

Analysis: U Laser
Procedure: HTA-4-16

Results

< 1.4 ug/g wet wt

0.4996 ml Sample R_1 0.01
0.0202 ml 1.0002 ug/ml R_2 0.26

Calculations

$$< \frac{.02}{.26 - .01} \frac{(1.0002)(0.0202)(250)}{(0.4996)(.5308)} < 1.411 \text{ ug/g}$$

Calculations T. O. Harvey Date 10/12/90

Reviewed Counting Information R Barrington Date 1-15-91

By

Date ____ N. & T.E. WA 52164

Log Book: BMC3045 p. 25, 35
BMW 52442 P. 86

TI-SST-102

POOR COPY RECEIVED

based on an wt of sample fresh

D07-007

MINERTECH REPORT 100104

Customer: 551
Date Received: 8-21-90
Work Order No: MOUV40

ID & A.L.O.: 547-90

Description: 90-3619-1
TK11W
Core 1a
Segment 15
Analysis: U Laser
Procedures: MTA-4-1a

Results

48.5 µg/g wet wt

Weight: 1 Gram
0.1006 ml Sample R. .16
0.0202 ml 1.0002 µg/ml R. .49

Calculations

$$\frac{.16}{.49-.16}\ \frac{(1.0002)(0.0202)(250)}{(0.1006)(0.5017)} = 48.5\ \mu g/g$$

Calculations G O Harvey Date 10/12/90
Reviewed R J Barrington Date 1-21-91
Counting Information
By
Date 10/12/90 M. & I.L. WA 32164
Log Book: 0003045 p. 54, 55
BMD 32442 R 96

TE-SST-103

MINERTECH REPORT 100116

Customer: 551
Date Received: 8-21-90
Work Order No: MOUV40

ID & A.L.O.: 548-90

Description: 90-3619-2
TK11W
Core 1a
Segment 15
Analysis: U Laser
Procedures: MTA-4-1a

Results
~~47.90~~ 1-21-91
~~47.97~~ KB 1-21-91
~~76.5~~ µg/g wet wt

Weight: 1 Gram
0.1006 ml Sample R. .17
0.0202 ml 1.0002 µg/ml R. .49

Calculations

$$\frac{.17}{.49-.17}\ \frac{(1.0002)(0.0202)(250)}{(0.1006)(0.5561)} = 47.97\ \mu g/g$$

Calculations G O Harvey Date 10/12/90
Reviewed R J Barrington Date 1-21-91
Counting Information
By
Date 10/12/90 M. & I.L. WA 32164
Log Book: 0003045 p. 54, 55
BMD 32442 R 96

TE-SST-102

MINERTECH REPORT 100128

Customer: 551
Date Received: 8-21-90
Work Order No: MOUV40

ID & A.L.O.: 549-90

Description: 90-3619-3
TK11W
Core 1a
Segment 18
Analysis: U Laser
Procedures: MTA-4-1a

Results

2.2 µg/g wet wt

Weight: 1 Gram
0.4996 ml Sample R .04
0.0202 ml 1.0002 µg/ml R. .39

Calculations

$$\frac{.04}{.39-.04}\ \frac{(1.0002)(0.0202)(250)}{(0.4996)(0.5287)} = 2.2\ \mu g/g$$

Calculations G O Harvey Date 10/12/90
Reviewed R J Barrington Date 1-21-91
Counting Information
By
Date 10/12/90 M. & I.L. WA 32164
Log Book: 0003045 p. 54, 55
BMD 32442 R 96

TE-SST-103

based on wet wt of sample taken

ANALYTICAL REPORT BNW52442 p.88 100372

Customer: SST
Date Received: 9-11-90
Work Order No: Ma2040

ID & A.L.O.: 607 -90

Description: 90-4178-4-1
TK110B
Core 1a
Seq COMPOSITE

Analysis: U Laser
Procedure: HTA-4-1a (+ Iso)

Results
B 4.43 E+2
C. 1.34 E+2
D. 1.32 E+2

$\bar{X}_3$ 1.36 E+2 mg/l wet wt
CoHarvey 1-2-91

TI-104

BNW52917 p. 125: 0.6025g + 25mL - 0.10022 ml

(A) Sample 0.02035 ml | Spike 0.02035 ml of 1.00634 mg U/ml | $R_1 = 0.38$, $R_2 = 0.52$

(B) 0.02035 ml | 0.02035 ml of 1.00634 mg U/ml | $R_1 = 0.12$, $R_2 = 0.47$

R.Barrington 11-7-90 BNW 53645 p.86+87

Calculations

(A) $\frac{0.38}{0.52-0.38}\frac{(0.02035)(1.00634\ mg/ml)(250)}{(0.10022\ ml)(0.6025\ g)} = 2.28E+2$ mg/l 1-2-91

(B) $\frac{0.12}{0.47-0.12}\frac{(0.02035\ ml)(1.00634\ mg/ml)(250\ ml)}{(0.02035\ ml)(0.6025\ g)} = 1.41E+2$

(C) $\frac{0.12}{0.49-0.12}\frac{(0.02139)(1.00235)(250)}{(0.02139)(0.6025)} = 1.34E+2$

(D) $\frac{0.40}{0.67-0.40}\frac{(0.02139)(1.00235)(250)}{(0.02139)(0.1005)} = 1.32E+2$

Calculations R.Barrington Date 1-16-91

Reviewed Counting Information Co Harvey Date 1-16-91

additional samples run to verify results.

By

Date 11-7-90 M. & T.E. WA52164

Log Book: BNW 52442 p. 88

(C) 0.02139 ml sample $R_1 = 0.12$
0.02139 ml of 1.00235 mg U/ml $R_2 = 0.49$
BNW 53645 p.109+110

(D) 0.1005 ml sample $R_1 = 0.40$
0.02139 ml of 1.00235 mg U/ml $R_2 = 0.67$

ANALYTICAL REPORT BNW 52442 p.88 100384

Customer: SST
Date Received: 9-11-90
Work Order No: Ma2040

ID & A.L.O.: 608 -90

Description: 90-4178-4-2
TK110B
Core 1a
Seq COMPOSITE

Analysis: U Laser
Procedure: HTA-4-1a (+ Iso)

Results
1.48 E+2 mg/l wet wt

BNW52917 p. 125: 0.4527g + 25mL -
Sample 0.02035 ml $R_1 = 0.08$
0.02035 ml of 1.00634 mg U/ml $R_2 = 0.38$
BNW 53645 p.87

R.Barrington 11-7-90

Calculations

$\frac{.08}{.38-.08}\frac{(.02035)(1.00634)(250)}{(.02035)(.4527)} = 1.48\ E+2$ mg/l wet wt

Calculations Co Harvey Date 11/16/90

Reviewed Counting Information R.Barrington Date 1-21-91

By

Date 11-7-90 M. & T.E. WA 52164

Log Book: BNW 52442 p. 88

TI 104

ANALYTICAL REPORT BNW52442 p.88 100396

Customer: SST
Date Received: 9-11-90
Work Order No: Ma2040

ID & A.L.O.: 609 -90

Description: 90-4178-4-3
TK110B
Core 1a
Seq COMPOSITE

Analysis: U Laser
Procedure: HTA-4-1a (+ Iso)

Results
~~[illegible]~~ 4.5 mg/l wet wt
CoH 1-23-91

BNW52917 p. 125: 25mL -
Sample 0.02035 ml $R_1 = 0.03$
0.02035 ml of 0.1004 mg U/ml $R_2 = 0.35$
BNW 53645 p.86

R.Barrington 11-7-90

Calculations

$\frac{.03}{.35-.03}\frac{(.02035)(.1004)(250)}{(.02035)(.5276)} = 4.46$ mg/gm wet wt

Calculations Co Harvey Date 11/16/90

Reviewed Counting Information R.Barrington Date 1-21-91

By

Date 11-7-90 M. & T.E. WA 52164

Log Book: BNW 52442 p. 88

TI 104

D07-009

ρ H2O @ 22°C

.77676 ANALYTICAL REPORT 100315

Customer: SST
Date Received: 9-5-90
Work Order No: M20 40

ID & A.L.O.: 591 -90

Description: 90-4180-C-1
Tx1108
Core 16
Segment COM

Analysis: U Laser
Procedure: HTA-4-16 (+ Iso)

Results
0.6 µg/g wet wt

2.1976g + 196.7726g = 198.5702g

0.1006 mL Sample R_1 .17

0.0202 mL 0.1002 µg/mL R_2 .67

BNW 52442 P 86
BNW 53645 P 54,55 Cott 10/12/90

Calculations

$$\frac{.17}{.67-.17}\ \frac{(0.0202)(0.1002)(198.5702)}{(0.1006)(2.0978)} = 0.63\ \mu g/g$$

Calculations C O Harvey Date 10/12/90

Reviewed Diana L Bellofatto Date 1-16-91
Counting Information

By _____

Date 10/12/90 M. & T.E. WA 52164

Log Book: BNW 52442 p. 86
BNW 53645 P. 54,55

TI-SST-105

ρ H2O @ 22°C

.77676 ANALYTICAL REPORT 100327

Customer: SST
Date Received: 9-5-90
Work Order No: M20 40

ID & A.L.O.: 591 -90

Description: 90-4180-C-2
Tx1108
Core 16
Segment COM

Analysis: U Laser
Procedure: HTA-4-16 (+ Iso)

Results
0.6 µg/g wet wt

2.1976g + 196.7726g = 197.4122 mL

0.1006 mL Sample R_1 .17

0.0202 mL 0.1002 µg/mL R_2 .67

BNW 52442 P 86 BNW 53645 P 54,55 Cotterry 10/12/90

Calculations

$$\frac{.17}{.67-.17}\ \frac{(0.0202)(0.1002)(197.4122)}{(0.1006)(2.1978)} = 0.57\ \mu g/g$$

Calculations C O Harvey Date 10/12/90

Reviewed Diana L Bellofatto Date 1-16-1991
Counting Information

By _____

Date 10/12/90 M. & T.E. WA 52164

Log Book: BNW 52442 p. 86

TI-SST-105

ρ H2O @ 22°C

.77676 ANALYTICAL REPORT 100340

Customer: SST
Date Received: 9-5-90
Work Order No: M20 40

ID & A.L.O.: 593 -90

Description: 90-4180-C-5
Tx1108
Core 16
Segment COM

Analysis: U Laser
Procedure: HTA-4-16 (+ Iso)

Results
0.02 µg/g wet wt

197.5712g = 198.2134

0.4996 mL Sample R_1 .03

0.0202 mL 0.1002 µg/mL R_2 .50

BNW 52442 P 86 BNW 53645 P 54,55 C O Harvey 10/12/90

Calculations

$$\frac{.03}{.50-.03}\ \frac{(0.0202)(0.1002)(198.2134)}{(0.4996)(2.1338)} = 0.02\ \mu g/g$$

Calculations C O Harvey Date 10/12/90

Reviewed Diana L Bellofatto Date 1-16-91
Counting Information

By _____

Date 10/12/90 M. & T.E. WA 52164

Log Book: BNW 52442 p. 86

TI-SST-105

based on average wt sample leached

URANIUM

NBS CERTIFICATION

FOR

STANDARD ADDITION METHOD

D07-011

Copy of NBS Certificate of Analysis
U-960

U. S. Department of Commerce
Frederick B. Dent
Secretary

National Bureau of Standards
Certificate of Analysis
Standard Reference Material 960
Uranium Metal

Uranium Assay ..... 99.975 ± 0.017 Weight Percent

This metal standard of natural isotopic composition is issued as a primary assay standard for uranium determinations. The value of the atomic weight of this material is 238.0289 as determined at NBS by thermal ionization mass spectrometry.

The uranium assay is based on the constant-current coulometric reduction of uranyl ion with electrogenerated titanous ion in 7M sulfuric acid. The value of the assay has been corrected for 43 ppm of iron and 4 ppm of vanadium which are the titratable impurities present in the metal. The certified value, 99.975 weight percent, represents the mean of 21 determinations. The precision of the method, expressed in terms of the standard deviation of a single determination is 0.008 percent. The estimated value of the uncertainty of the mean assay is 0.006 percent. This figure includes the estimates of all known sources of error inherent in this determination: the random error since percent, 0.004 percent (the 95 percent confidence interval for the mean based on 20 degrees of freedom), and an additional 0.002 percent error term as an allowance for all known possible sources of systematic error. An overall mean balance of 99.9970 percent is obtained when the estimate of total impurities present in the material (223 ppm) is taken into account.

The uncertainty ascribed to the certified assay value is the 95 percent confidence interval for a single determination.

The metal as received will contain a significant amount of surface oxide. In sampling the material, the oxide was removed from the uranium sample just prior to weighing. The metal surface was cleaned by the procedure outlined on the back of this certificate.

This material was prepared by the United States Atomic Energy Commission. I specimen were analyzed by the AEC Paducah Laboratory, Paducah, Kentucky. Assay of the material was performed by G. Marlowe and E. S. Lee, the iron content was determined polarographically by K. J. Meinschad, and the atomic weight was determined by isotopic ratio measurements performed by K. L. Garner, all of the NBS Analytical Chemistry Division.

The overall direction and coordination of the technical measurements leading to the certification were performed under the chairmanship of W. M. Shinkle.

The technical and support aspects involved in the preparation, certification, and issuance of this Standard Reference Material were coordinated through the Office of Standard Reference Materials by W. P. Reed.

Washington, D.C. 20234
May 12, 1972

J. Paul Cali, Chief
Office of Standard Reference Materials

(over)

Subscribed To and Verified at ..... Date .....
Signed 1. ..... Date .....
2. .....

D07-012

148

Brown Copy of U 960 std. [illegible] from [illegible] M.C. Butler [illegible] "U [illegible] Method Davis [illegible] std. titrant prep." Page 75

2/1/86 NBS DICHROMATE FOR VOL URANIUM 636 TITRATOR
3.7312 g NBS 136 a $K_2Cr_2O_7$

$$T_V = \frac{(3.7312)(119.014)(.9993)\,10^3}{(1000)\,(49.0317)} = \underline{9.05526}\ \text{mg U eq/ml}$$

3/17/86 NBS DICHROMATE FOR VOL URANIUM 636 TITRATOR
7.4746 g NBS 136 a $K_2Cr_2O_7$

$$TV = \frac{(7.4746)(119.014)(.9993)\,10^3}{(2000)\,(49.0317)} = \underline{9.07007}\ \text{mg U eq/ml}$$

6/28/85 NBS SRM 949 Low Pu Assay
weight .52866
.49995
1.02861 g

Dissolved w/ 3M HCl
[illegible] H_2SO_4
[illegible] w/ NH_4HSO_4

Bottle Tare 20.7449
Bottle + Solution 125.0946
net Solution 104.3396

$$\frac{1020.61 \times .77163}{104.3396} = \underline{9.7780}\ \text{mg Pu/g solution} \qquad \frac{9.7780}{2.0286} = \underline{\underline{4.77423}}\ \text{mg Pu/g}$$

* Adjusted for bias - See NBS certificate

10/15/85 NBS Dichromate for Vol Uranium 636 titrator
7.4658 g NBS 136 a $K_2Cr_2O_7$

$$T_V = \frac{(7.4658)(119.014)(.9993)\,10^3}{(2000)\,(49.0317)} = \underline{9.05939}\ \text{mg U eq/ml}$$

10/17/85 NBS 960 U Std
Treated with 4N HNO_3 until clear, H_2O [illegible]
12.5719 g NBS 960 metal

Bottle Tare 279.2112
636 + Solution 964.7733

$$\frac{(12.5719)(.9993)\,10^3}{(964.7733 - 279.2112)} = \underline{26.54088}\ \text{mg U/g solution}$$

Discrepancy Tp and Uncertainty by:
Signed 1. _____ Date _____
2. _____ Date _____

38

Entered 6/13/88

U standard prep 35.960 6/13/88 2.5 = 40.88 mg/g

Pipet 12 500 λ standard 74.0764
100 ml tare 73.5389
.5371

Balance 364-06-05
Expires 9/15/88

.5371 g x 26.5 = 14.255 mg U/100 ml = 142.551 mg/ml

Pipet #13 .9982 ml - 100 ml = 1.423 mg U/ml

1 ml = 11.3 = 0.1285 mg U/ml

Pipet #13 + U (.9982) = (11.0712)

U Analyzer Check 6/13/88

100λ	.1285	.148					
10λ	1.423	.305	.148	× 10/100 ×	.423 =	.1256 ÷ .1285 =	98% recovery
			.305 - .143				
100λ	.1285	.145	.145	× 10/100 ×	1.423 =	.1274 ÷ .1285 =	99% recovery
10λ	1.423	.307	.307 - .145				
100λ	.1285	.142	.142	× 10/100 ×	.423 =	.1203 ÷ .1285 =	94% recovery
10λ	1.423	.310	.310 - .142				
100λ	.1285	.145	.145	× 10/100 ×	1.423 =	.1165 ÷ .1285 =	91% recovery
100	1.423	.322	.322 - .145				
100λ	.1285	.155	.155	× 10/100 ×	1.423 =	.1260 ÷ .1285 =	98% recovery
10λ	1.423	.330	.330 - .155				
100λ	.1285	.157	.157	× 10/100 ×	.423 =	.1309 ÷ .1285 =	101% recovery
10	1.423	.319	.319 - .157				

Σ = .1286 ± .1285 = 97% ± 5%

Entered 6/14/88

U Analyzer Check

100λ	.1285	.145	.145	× 10/100 ×	1.423 =	.1186 ÷ .1285 =	92% recovery
10λ	1.423	.319	.319 - .145				

Project No. _____ Date of Work _____

Entered By _____ Date _____

Disclosed To and Understood By _____

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ENW

52442

D07-014

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Received 2-26-90
U.O # 93100

National Institute of Standards & Technology

RECEIVED
MAR 07 1990
F.M NEWCOMER • PO

Certificate of Analysis

Standard Reference Material 3164

Spectrometric Standard Solution

Uranium

Malin's #
CS-562

This Standard Reference Material (SRM) is intended for use in atomic absorption spectrometry, optical emission (plasma) spectrometry, spectrophotometry, or any other analytical technique that requires aqueous standard solutions for calibrating instruments. SRM 3164 is a single element solution prepared gravimetrically to contain 10.00 mg/mL of uranium with a nitric acid concentration (V/V) of 10 percent. The certified value is based on a gravimetric procedure, i.e., weight per volume composition of high-purity uranium oxide (U_3O_8) dissolved in NIST high-purity reagents.

Metal	Concentration (mg/mL)	Source Purity,%	Acid Conc.(V/V) Approximate
U	10.00 ± 0.03	NBL-CRM 129 (SRM 950b 99.968%*)	HNO_3, 10%

* The total impurities in CRM-129 (SRM 950b) were determined by spectrochemical analysis and are estimated to be less than 50 µg/g.

Procedures for Storage and Use

Stability: This certificate is valid for one year from the shipping date provided the SRM solution is kept tightly capped and stored under normal laboratory conditions. NIST will monitor the stability of representative solutions from this SRM lot and if any changes occur that invalidate this certification, NIST will notify purchasers.

Preparation of Working Standard Solutions: The SRM solution should be brought to 22 ± 1 °C before use. All glass or plastic surfaces coming into contact with the SRM must have been previously cleaned. A working standard solution can be prepared from the SRM solution by serial dilution. Dilutions should be made with certified volumetric class A flasks and 5 or 10 mL class A pipets. All volumetric transfers of solutions should be performed using a proven analytical technique. Each dilution should be acidified with an appropriate high-purity acid and diluted to calibrated volume using high-purity water. The stability of the working standard solution will depend on the final acid concentration; therefore, care should be exercised to ensure that the final acid concentration of the dilution closely approximates that of the SRM. To achieve the highest accuracy, the analyst should prepare daily working solutions from 100 µg/mL dilutions of the original SRM solution.

Notice to Users: The same acid mixture as listed on the SRM certificate should be used in making appropriate dilutions and working standards. For some instrumental techniques, small differences in acid type and concentration of the SRM and sample may lead to erroneous results.

Gaithersburg, MD 20899
January 19, 1990

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

(over)

D07-015

SRM 3164 was prepared by T.C. Rains of the NIST Inorganic Analytical Research Division. Inductively coupled lasma atomic emission spectrometry analyses were made by T.A. Butler and T.C. Rains.

The technical and support aspects involved in the preparation, certification, and issuance of this Standard Reference Material were coordinated through the Office of Standard Reference Materials by J.C. Colbert.

D07-016

URANIUM

DAILY CONTROL DATA

D07-017

BNW-52442
1-
8-31-87

AUG 31 1987

THIS BOOK IS INTENDED TO BE USED FOR RECORDING RESEARCH SUPPORTED ENTIRELY BY BATTELLE MEMORIAL INSTITUTE OR ITS SUBSIDIARIES.

M329564

LABORATORY RECORD BOOK NUMBER	This document consists of
BNW- 52442	..... pages, copy no. .....

TITLE (INDICATE SUBJECT CONTENT)
Calibration Records, pipets balances, pHmeters etc.
Uranium Analyzer Checks, Uranium Standard Make-ups - Uranium Analyzer Used in this book

AUTHOR - DIVISION AND DEPARTMENT
WA 52164
P.J. Rang 1-16-90

PERIOD COVERED FROM 9-9-87 TO

Route To	P. R. No.	Location	Route Date	Signature & Date
A C LEAF	30969	325	SEP 1 1987	
L S Kellogg	30706	325	8-31-88	L S Kellogg 8-31-88

Document Number	Series	Classification	
BNW-52442	--	UNCLASSIFIED	147991

LABORATORY RECORD BOOK. AC LEAF. AUGUST 31, 1987.

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I have received personally the document listed above and I assume full responsibility for its safe handling, storage and transmittal elsewhere in accordance with existing security regulations.

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D07-018

54-1100-005(10-84)

812060

Entered by BChief 9/9/87

This book will contain calibration records for pipets, balances, pH meters, etc. Records will be as used and not on a routine basis. Uranium Uranium Analyzer Evaluated in this book is WA 52164
PJ Ramey 1-16-90

Personnel authorized to make entries in book:

BChief	9/9/87	BCh
Luana L Bellofatto	9-11-87	DLB
George E. Meadows	9/14/87	GEM
Jolene Eggen	11/18/87	JE
Katherine J Cunn	4/22/88	KJC
A S Kelley	4-31-88	ASK
Jean Ruggles	10-07-88	J
Mapas Chandra Maiti	4/25/89	TCM
N.L. Abbey	5-23-89	NLA
P.J. Ramey	5-26-89	PJR
Virginia L Dunn	7-7-89	VLD
E O Harvey	3-7-90	EOH
R Barrington	11-6-90	RJB

Personnel authorized to review this ~~RBB~~ VAB

Luana L Bellofatto	DLB	5/23/89
Nevada L Abbey	NLA	5-23-89
George E. Meadows	GEM	5/23/89
Barbara M Gillespie	BMG	1-24-90

BNW
52442

Project No. _____ Date of Work _____

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D07-019

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8-27-90 Preperation of Uranium Working Standards

working standards were made from secondary standard prepared on 2-27-90 from NIST std # 3164. See (page 78 this book) at a concentration of 99.62 µg/ml

standards prepared by diluting the following volumes to 100 mL with 0.1 M HNO_3

Hi standard 1.0025 mL (1.0025)(99.62)/100 = 0.9987 µg/mL

Lo standard 0.1008 mL (0.1008)(99.62)/100 = 0.1004 µg/mL

CO Harvey

9/21/90 Preperation of Uranium Working Standards

working standards were prepared from "Secondary Standard" prepared on 2-27-90 from NIST standard # 3164. (See page 78 this book) at a concentration of 99.62 µg/mL

working standard prepared by diluting the follow volumes to 100 mL with 0.1 M. HNO_3

Hi standard 1.0040 mL (1.0040 mL)(99.62 µg/mL)/100 mL = 1.0002 µg/

Lo standard 0.1006 mL (0.1006 mL)(99.62 µg/mL)/100 mL = 0.1002 µg/
pipet cal.to BHW 53645 P 54

C O Harvey

Project No. _____ Date of Work _____

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9/21/90 Instrument check

87

0.010 mL Hi std Reading R_1 .27 $\frac{.27}{.54-.27}$ $\frac{(0.1006)(0.1002)}{0.010}$ = 1.0080 µg/mL

0.1006 mL Lo std Reading R_2 .54

100.78%

0.1006 mL Lo Std Reading R_1 .26 $\frac{.26}{.52-.26}$ $\frac{(0.010)(1.0002)}{0.1006}$ = .0994

0.010 Hi-Std " R_2 .52

99.2%

Cont

10/22/90 Preparation of Uranium Working Standards

working standards were prepared from "Secondary Standard" prepared on 2-27-90 from NIST Standard # 3164 (See Page 78 This Book) at a concentration of 99.62 µg/ml

working standard prepared by diluting the following volumes to 100mL (volumetric flask) with 0.1 M. HNO_3

Hi standard 0.9991 mL $\frac{(0.9991\,mL)(99.62)}{100\,mL}$ = 0.9953 µg/mL

Lo Standard 0.1001 mL $\frac{(0.1001\,mL)(99.62\,\mu g/mL)}{100\,mL}$ = 0.0997 µg/mL

P.pet Calibration
77 + 69 on Page 76 BNW 53645

10-22-90 PJ Ramey ↓ ↑ G O Harvey

Uranium Analyzer Check Using Clark's Stds and Uranium Sensitivity (~500)

Lo Std: Lo Range
0.0200 mL of 0.0997 µg/ml – R_1 = 0.04
0.0200 " " – R_2 = 0.08

Hi Std - Lo Range - P.J. Ramey
0.0200 mL of 0.9953 µg/ml = R_1 = 0.33
0.0200 " " " " = R_2 = 0.66

$\frac{0.33}{0.66-0.33} \times 0.0997 \times \frac{0.0200}{0.0200}$ = 0.0997 µg U/mL – 100%

Project No. _____ Date of Work _____

Entered By _____ Date _____

Disclosed To and Understood By

D07-021

Signed 1. _____ Date _____

2. _____ Date _____

10-22-90 - Changed Uranium Analyzer Sensitivity from ~500 to ~658
P J Ramey

Lo Std.

Old Std

0.0200 ml of ~~1.0002~~ 0.1002 mg U/ml (PJR 10-22-90) - $R_1 = 0.35$, $R_2 = 0.68$ $\frac{0.35}{0.68-0.35} \times \frac{0.1002 \text{ mg U}}{\text{ml}} \times \frac{0.0200}{0.0200} = 0.1063$ 106.1%

New Std

0.0200 ml of 0.0997 mg U/ml - $R_1 = 0.33$, $R_2 = 0.64$ $\frac{0.33}{0.64-0.33} \times 0.0997 \frac{\text{mg U}}{\text{ml}} \times \frac{0.0200}{0.0200} = 0.1061$ 106.5%

Hi Std

Old Std

PJR 10-22-90 ~~0.0200 ml of 1.0002~~ 0.0200 ml of 1.0002 mg U/ml - $R_1 = 0.28$, $R_2 = 0.58$ $\frac{0.28}{0.58-0.28} \times \frac{1.0002 \text{ mg U}}{\text{ml}} \times \frac{0.0200}{0.2001} = 0.0933$ 93.6%

New Std

0.200 ml of ~~0.1002~~ 0.0997 (PJR-10-22-90) mg U/ml - $R_1 = 0.28$, $R_2 = 0.56$ $\frac{0.28}{0.56-0.28} \times \frac{0.9953 \text{ mg U}}{\text{ml}} \times \frac{0.0200}{0.2001} = 0.0995$ 99.5%

0.0200 ml - ~~1.0002~~ 0.9953 (PJR 10-22-90)

Pipet Calibration - BNW 53645, p 77 for 10-22-90, PJ Ramey

11-6-90 Preparation of Uranium Working Standards

Working standards were prepared from secondary standard prepared on 2-27-90 from NIST standard # 3164 (see page 78 of this LRB) at a concentration of 99.62 µg U/ml.
Working standards were prepared by diluting the following volumes to 100 ml with 0.1 M HNO_3.

Low Standard

0.10042 $\frac{(0.10042 \text{ ml})(99.62 \text{ µg/ml})}{100 \text{ ml}} = 0.10004 \text{ µg/ml}$

BNW 53645 p.86

High Standard

1.00252 $\frac{(1.00252 \text{ ml})(99.62 \text{ µg/ml})}{100 \text{ ml}} = 1.0063 \text{ µg/ml}$

BNW 53645 p. 86

RJ Barrington

Project No. _____ Date of Work _____

Entered By _____ Date _____

Disclosed To and Understood By

Signed 1. _____ Date _____

2. _____ Date _____

D8 - IODINE 129

BY GAMMA SPECTROMETRY

D08–001

I-129

PRIMARY DATA PACKAGE

D08-002

SST

I-129 DATA COVER SHEET

Sample Number: 90-3617-A-1/2/3
90-3619-A-1/2/3
90-4178-A-1/2/3
90-4180-C-1/2/5

Procedure: 7-40.17
7-40.15

Pipet Calibration LRB#: BNW 52327

Equipment (M&TE#): WA 44163

System Calibration LRB#: BNW 52626

Control Data LRB#: BNW 52344

9112105163

I-129

SUMMARY DATA REPORTS

D08–004

I-129 DATA

Customer No.	I-129 dpm/g	+/- % error
Segment 3		
90-3617-A-1	<160	
90-3617-A-2	<160	
90-3617-A-3	<160	
Segment 5		
90-3619-A-1	<178	
90-3619-A-2	<150	
90-3619-A-3	<169	
Composite		
90-4178-A-1	<290	
90-4178-A-2	<170	
90-4178-A-3	<150	
90-4180-C-1	<27	
90-4180-C-2	<26	
90-4180-C-5	<27	

I-129

ANALYTICAL REPORT CARDS

D08–006

I-129 GAMMA ANALYSIS

A ND-66 GeLi well detector system is used to perform the I-129 analysis. A Radiochemistry ANALYTICAL REPORT card accompanies each sample. This card has a card serial number, the date the sample was received into the radiochemistry laboratory, work package number, a radiochemistry lab serial number, customer identification number, the 325A Hot Cell sample identification number, the constituent requested (i.e., I-129), and the results. The balance ID number, BNW laboratory record book (LRB) number that holds the pipet calibration data, and the M&TE number of the ND-66 GeLi well detector system is noted in the "Serial No." column. A copy of the pipet calibration is provided under separate cover. The system M&TE number cross references to the LRB that contains the calibration data and the daily control data. The I-129 procedure number used for this analysis is noted in the "Constituent" column.

The volume of the aliquot taken from the sample solution (the dissolved fusion or the water leach) is written under the "SERIAL NUMBER" of the card on the right side of the card. The second volume is volume of KI carrier used and its LRB reference. The mass of sample sludge aliquot and the volume of solution used in the dissolution of the fusion or the water leach is written below the sample aliquot volumes. Below this is the calculated weight of carrier recovered.

On the bottom half of the card under "DATA" is the hand calculation of the data. This follows from the procedure. The yield of the carrier is calculated from the concentration of carrier added and the resulting weight of carrier through the separation. The calculation incorporates the net counts in the I-129 peak (minus the bkg due to carrier), the count time, sample volume, AgI self absorption factor, efficiency factor, yield of carrier, the sample weight and volume of solution of fusion or water leach.

9112251167

ANALYTICAL REPORT 100061

Customer: SSI
Date Received: 8-21-90
Work Order No: 10061 42

ID & R.L.D.: 342 -90

Description: 90-SSI/M-1
IN1106
Core 1c
Segment 3

Analysis: I-127
Procedure: 7-40.X517
LAZ 12/17/90

Results

< 160 dpm/g

TI- SST- 102

0.5321g + 25mL - 5ml sample + 1ml I carrier (~~1.308g~~ 10 mg/ml DK7 XI) → 2ml
[5.0265ml] BNW 53645 Pg 42
BNW 52626 p 39
[1.0104 ml] BNW 53645, Pg 44 → [1.9860ml] BNW 53645, Pg 45

16.21 mg/g I recovered ≈ 31.3%

J.K. Kelly 9/12/90
2m GW counter 3763

Calculations

$$\frac{(4.53)(2.65)(1.0062)(250)}{(5.0265)(.873)(.441)(.5321)} \rightarrow < 160 \text{ dpm/g}$$

Calculations L S Kellogg Date 9-26-90

Reviewed M O Hanney Date 10-10-90

Counting Information

By Anne E Kaplinsky

Date 9/11/90 M. & I.E. WA44463

Log Book: BNW52548 p. 53

D08-008

L1 GW3756 1-129 SST 542-90 90-3617-A-1 TK110B Core 16 Segment 3
GEL1: 16 HOUR COUNT 09/11/90 1311 PST

Anne E Hogeboom

ACOGRP	1	ADC	2	12-SEP-90	06:17:55
TOTAL	0		0	11-SEP-90	13:11:00
LIVE	16:00:00		16:00:00		
REAL	00:00:00		16:00:00		
QUAD	0.000	SLOPE	1.000	ZERO	0.000

18 -	21:	865	0	906
21 -	37:	2998	40	2958
37 -	42:	828	0	870
88 -	97:	1527	497	1030

18:	250	230	182							
21:	203									
21:	203	203	187	176	177	193	171	175	205	178
31:	160	174	198	168	126	159	145			
37:	145	127	143	157						
41:	111	145								
88:	102	124	117							
91:	129	250	282	199	123	97	104			

12-SEP-90 06:18:18 ND66/ND76 AUTOMATIC PEAK SEARCH (V2)

ID:
ACQ DATE:11-SEP-90 13:11:00

SRCH LIMITS:	1.000	TO	100.000	KEV	
KEV /CH	1.000	ZERO	0.000	QUAD	0.000E+00
FWHM(0)	2.0000	FWHM/KEV	0.0000		
SENS	5.0000				
LT	57600	CT	57600		

PN	ENERGY	AREA	BKGND	FWHM	LEFT	PW	CTS/SEC	ZER
1M	18.16	745	1316	3.19	11	14	0.013	7.80
2	46.69	124	798	2.22	43	7	0.002	33.45
3	63.50	94	768	1.56	60	7	0.002	42.95
4	92.96	437	884	2.52	89	8	0.008	10.75

PEAK SEARCH DONE

1:	0	0	0	0	0	0	0	0	0	1
11:	12	40	77	63	90	99	249	250	230	182
21:	203	203	187	176	177	193	171	175	205	178
31:	160	174	198	168	126	159	145	127	143	157
41:	111	145	127	119	125	171	154	125	101	122
51:	95	124	134	106	118	105	106	121	139	111
61:	107	112	170	140	114	108	95	111	111	121
71:	106	123	129	149	149	134	141	137	125	123

D08-009

ANALYTICAL REPORT 100073

Customer: SSI
Received: 8-21-90
Work Order No: H6C942

ID & H.L.U.: 543-90 ; -4)

Description: 90-3517-H-2
IR1108
Core 1a
Segment 3

Analysis: I-129
Procedure: 7-40.15

Results

< 160 dpm/g

TI-SST-102

Volume: ~~240mL~~ ACK 9-10-90 250mL 5ml sample + 1ml I carrier (10mg/ml I⁻) → 2ml
BNW 528626 pg 81
[5.0265ml]
BNW 53645 Pg 42

[1.010 4 ml] → [1.056ml]
BNW 53645, Pg 44 BNW 53645, pg 45

16.00 mg/g I recovered ≈ 85.6% J.K. Fadley 9/12/90

Calculations

$$\frac{(< .53)(2.65)(1.005)(250)}{(5.0265)(.856)(.941)(.5245)} \rightarrow 41646 \text{ E2}$$

Calculations L J Kellogg Date 9-26-90

Reviewed G O Harvey Date 10-10-90

Counting Information

Note: Sample contains precipitates.

By Anne E Hoyebisky

Date 9/12/90 H. & I.E. WAA4163

Log Book: BNW52348 p. 53

D08-010

GW3758 1-129 SST 543-90 90-3617-A-2 TA110R Core 16 Segment 3 M62042
GELI: 16 HOUR COUNT 09/12/90 0644 PST

Anne Etzkorn

ACOGRP	1	ADC	2	13-SEP-90	06:15:52
TOTAL	0		0	12-SEP-90	06:44:00
LIVE	16:00:00		16:00:00		
REAL	00:00:00		16:00:00		
QUAD	0.000	SLOPE	1.000	ZERO	0.000

1 -	100:	12045	7095	4950
1 -	2048:	51967	47871	4096
11 -	24:	2010	708	1302
43 -	49:	937	143	794
56 -	64:	1123	0	1188
60 -	66:	913	35	878
89 -	96:	1315	431	884
656 -	667:	431	287	144
1326 -	1338:	74	9	65

13-SEP-90 06:16:12 ND66/ND76 AUTOMATIC PEAK SEARCH (V2)

ID:
ACQ DATE:12-SEP-90 06:44:00
SRCH LIMITS:1326.000 TO 1338.000 KEV
KEV /CH 1.000 ZERO 0.000 QUAD 0.000E+00
FWHM(0) 2.0000 FWHM/KEV 0.0000
SENS 5.0000
LT 57600 CT 57600

PN	ENERGY	AREA	BKGND	FWHM	LEFT	FW	CTS/SEC	XER

PEAK SEARCH DONE

1:	0	0	0	0	0	0	0	0	0	0
11:	14	50	64	83	99	77	196	234	231	213
21:	200	187	190	172	173	167	153	182	166	178
31:	168	184	154	140	133	140	147	133	147	151
41:	121	108	127	127	133	166	173	111	100	127
51:	90	114	115	123	104	117	106	102	129	128
61:	104	114	176	147	121	123	105	90	107	95
71:	97	105	102	140	142	121	123	147	129	126
81:	106	101	122	118	152	134	125	115	117	126
91:	148	229	294	166	131	104	100	96	101	99
101:	88	110	83	91	93	105	90	109	89	90
111:	91	122	110	103	103	99	100	92	113	97
121:	115	105	92	99	95	113	97	103	91	109
131:	108	106	110	95	108	100	97	98	116	106
141:	117	92	126	132	115	95	108	88	97	103
151:	87	94	114	105	107	120	95	81	101	104
161:	117	95	112	105	92	93	109	97	93	94
171:	97	100	115	78	103	94	98	92	87	80
181:	84	93	99	113	154	245	136	85	88	107
191:	91	91	82	100	86	81	83	97	108	97

D08-011

ANALYTICAL REPORT

100085

Customer: SSI
Received: 6-21-90
Order No: M620 42

ID & R.L.O.: 544 -90

Description: 90-3617-A-3
1k110B
(Plasma) Core 1a
Segment 3

Analysis: I-129
Procedure: 7-40.15

Results

< 160 cpm/g

TI-SST-102

20mL - 5.0 sample + 10mg/ml I carrier → 20mL
[5.0265 mL] BNW 53645 pg 42 [1.0104 mL] BNW 53645 pg 44 → [20.096 mL] BNW 53645, pg 45

Hg I recovered as 80.6% Sandra K. Facey 9/12/90

Calculations

$$\frac{(<.53)(2.65)(1.0038)(20.0)}{(5.0265)(.806)(.941)(.5308)} \rightarrow <1.624 E2$$

Calculations L. S. Kellogg Date 8-26-90

Reviewed L. O. Gorny Date 10-10-90

Counting Information

Note: Sample Contains precipitates

By Anne E. Kozlosky

Date 9/13/90 M. & I.E. WAAA163

Log Book: BNW 53468 p. 53

based on ave wt of Samples Saved

GW3761 I-129 SST 544-90 90-3617-A-3 TK110B Core 16 Segment 3 M62042
GELI: 16 HOUR COUNT 09/13/90 0746 PST

Anne Etzkorn

ACQGRP	1	ADC	2	14-SEP-90	06:24:31
TOTAL	0		0	13-SEP-90	07:46:15
LIVE	16:00:00		16:00:00		
REAL	00:00:00		16:00:00		
QUAD	0.000	SLOPE	1.000	ZERO	0.000

1 -	2048:	53109	52085	1024
24 -	37:	2442	258	2184
27 -	35:	1623	219	1404

14-SEP-90 06:24:40 ND66/ND76 AUTOMATIC PEAK SEARCH (V2)

ID:

ACQ DATE:13-SEP-90		07:46:15			
SRCH LIMITS:	1.000	TO	2048.000	KEV	
KEV /CH	1.000	ZERO	0.000	QUAD	0.000E+00
FWHM(0)	2.0000	FWHM/KEV	0.0000		
SENS	5.0000				
LT	57600	CT	57600		

PN	ENERGY	AREA	BKGND	FWHM	LEFT	PW	CTS/SEC	%ER
1M	18.92	916	1360	3.25	10	17	0.016	6.58
2U	30.94	218	1565	4.11	26	10	0.004	26.54
3d	43.00	44	494	1.00	42	9	0.001	73.01
4d	46.00	248	1152	2.46	42	9	0.004	20.37
5d	60.00	16	446	1.00	59	9	0.000	188.33
6d	64.00	198	844	1.50	59	9	0.003	21.93
7	93.05	354	1215	2.24	88	10	0.006	14.90
8U	185.76	225	1188	2.13	180	12	0.004	22.67
9U	238.48	186	658	1.99	234	9	0.003	20.84
10U	339.41	49	388	2.83	336	8	0.001	58.62
11d	511.00	586	494	2.96	503	16	0.010	6.77
12d	515.00	22	208	0.85	503	16	0.000	95.13
13M	661.29	414	182	2.39	656	11	0.007	6.74
14M	704.46	39	232	7.82	698	16	0.001	57.51
15M	1460.96	73	80	3.58	1451	20	0.001	20.91

PEAK SEARCH DONE

1:	0	0	0	0	0	0	0	0	0	0
11:	9	53	62	66	72	40	213	269	239	192
21:	190	188	169	165	189	160	159	166	193	209
31:	181	219	187	156	153	158	147	146	140	112
41:	128	124	145	130	136	188	158	130	112	112
51:	126	112	145	125	107	104	109	122	112	119
61:	88	124	160	191	134	92	104	100	118	108
71:	130	122	123	136	162	144	119	124	127	104
81:	98	102	111	130	145	118	138	133	108	112
91:	172	237	280	169	136	112	110	90	101	103
101:	99	92	98	98	107	91	101	114	98	117

D08-013

ANALYTICAL REPORT 100099

Customer: 551
Date Received: 8-21-90
Work Order No: M620 42

ID & R.L.U.: 541 -90

Description: 90-5514-n-1
INIIVB
Lure 10
Segment 3 5

Analysis: I-129
Procedure: I-40.15

Results

< 1.78 E +2 d/m / g wet wt

Volume + Source -

5.0992 ml sample + 1.0039 ml carrier → 2.0172 ml final vol.
BNW 53645 pg 48 — 10.00 ml I⁻ BNW 53645 pg 69 — BNW 52626 pg 84 — BNW 53645 pg 69

J. K. Fadley 10/12/90 — 14.55 mg AgI recov.

Calculations

$$< \frac{(.51)(2.65)(.947)(250)}{(5.0992)(.786)(.9428)(.5017)} = < 1.7768\ E+2\ d/m / g\ wet\ wt$$

Calculations: L. O. Harvey — Date 12-5-80

Reviewed: L. S. Mullaney — Date 1-18-90

Counting Information

By: Anne E. Kozlicky

Date 10-17-90 N. & I.D. 0H14163

Log Book: BNW 5234 p. 58

^{35}TI 103

D08-014

GW3797 SST 547-90 90-3619-A-1 TK110R Core 16 Segment 3 I-129 m62042
: 16 Hour Count 10/17/90 1257 PST

Anne E Kozelisky

ACQGRP	1	ADC	2	18-OCT-90	06:19:29
TOTAL	0		0	17-OCT-90	12:57:00
LIVE	16:00:00		16:00:00		
REAL	00:00:00		16:00:00		
QUAD	0.000	SLOPE	1.000	ZERO	0.000

18-OCT-90 06:19:35 ND66/ND76 AUTOMATIC PEAK SEARCH (V2)

ID:					
ACQ DATE:17-OCT-90		12:57:00			
SRCH LIMITS:	1.000	TO	2048.000	KEV	
KEV /CH	1.000	ZERO	0.000	QUAD	0.000E+00
FWHM(0)	2.0000	FWHM/KEV	0.0000		
SENS	5.0000				
LT	57600	CT	57600		

PN	ENERGY	AREA	BKGND	FWHM	LEFT	PW	CTS/SEC	%ER
1M	18.34	924	1296	3.87	10	16	0.016	6.42
2	46.00	148	1094	2.19	42	9	0.003	32.66
3M	62.89	193	923	2.96	59	9	0.003	23.40
4U	84.09	98	576	2.85	82	5	0.002	40.02
5	92.91	358	984	1.63	89	8	0.006	13.47
6M	185.65	374	1239	2.04	179	14	0.006	14.28
7M	239.32	368	1380	3.00	229	20	0.006	15.20
8	511.24	479	384	2.84	505	13	0.008	7.37
9M	660.90	218	298	2.61	653	17	0.004	13.09
10	714.90	41	100	2.94	711	8	0.001	37.86
11U	1001.00	19	64	3.14	997	8	0.000	63.81
12	1191.45	22	39	1.90	1189	7	0.000	45.45
13M	1346.79	14	65	4.42	1338	10	0.000	85.71
14M	1462.84	44	120	3.61	1448	24	0.001	38.30

PEAK SEARCH DONE

1:	0	0	0	0	0	0	0	0	0	2
11:	15	40	76	91	66	23	273	257	238	218
21:	193	166	189	163	160	159	166	177	169	148
31:	154	188	153	148	128	150	145	128	141	142
41:	131	127	129	135	146	183	161	133	112	116
51:	98	103	128	117	115	111	85	114	95	124
61:	97	146	135	177	132	100	110	127	90	112
71:	118	117	126	135	145	115	147	122	109	118
81:	93	96	133	141	160	134	134	113	131	114
91:	140	223	330	174	115	115	96	96	129	89
101:	123	90	90	102	98	101	118	87	106	114
111:	107	109	116	110	94	95	102	110	106	109
121:	90	101	97	116	96	112	97	105	103	86
131:	106	98	112	107	93	110	91	126	105	103
141:	103	87	100	149	115	94	113	101	102	115
151:	100	93	92	109	89	111	109	100	105	92
161:	99	107	100	113	104	110	90	94	103	95

$17260 \left(\frac{1}{2}\right)(250) = 153$
$\div 960 = .159$ c/m

$\bar{x}$ Blks = 167

~~÷ 960 = .174 c/m~~

~~BLKS~~ Blks for 10/15 & 10/17
$\bar{x}$ = < .51 CPM

D08-015

ANALYTICAL REPORT 100111

Customer: SSI
Date Received: 8-21-90
Work Order No: M6200 12

ID & A.L.U.: 548 -90

Description: 90-3619-A-2
1K11V6
Core 1a
Segment #5

Analysis: 1-129
Procedure: 7-40.15

Results

< 1.50 E+2 dpm / g wet wt

U.Solv + Cont -
5.0992 ml sample + 1.0039 ml carrier → 2.0172 ml solution
BNW 53645 pg 68 BNW 53645 pg 69 BNW 53645 pg 69
BNW 52626 pg 31
10.00 mg/ml I-

J.L. Tinley 10/12/90

14.99 mg AgI recovered

Calculations

$$< \frac{(.49)(2.65)(10)(250)}{(5.0992)(.810)(.7428)(.5561)} = < 1.499\ E+2 \ \frac{dpm}{g\ wet\ wt}$$

Calculations L. O. Harvey Date 12-5-91

Reviewed L. S. Kellogg Date 1-18-91

Counting Information

By Anne E. Hoyelsky

Date 10-18-90 M. & I.E. WHM163

Log Book: BNW2574 p. 58

TI SOT 103

D08-016

GW3904 SST 548-90 90-3619-A-2 TK1108 Core 16 Segment 3 M62042 I-129
: 16 Hour Count 10/22/90 0715 PST

Anne E Kozelsky

ACQGRP	1	ADC	2	23-OCT-90	06:28:53
TOTAL	0		0	22-OCT-90	07:15:14
LIVE	16:00:00		16:00:00		
REAL	00:00:00		16:00:00		
QUAD	0.000	SLOPE	1.000	ZERO	0.000

1 -	100:	11914	7014	4900
24 -	37:	2241	0	2303
27 -	35:	1416	89	1327

$1012 - \frac{13}{4}(27) = 31$

$1416 - \frac{3}{2}(327) = -60$

1:	0	0	0	0	0	0	0	0	0	2
11:	20	56	84	60	64	71	256	242	206	197
21:	185	177	173	181	168	173	161	168	159	143
31:	171	174	170	136	134	155	148	125	137	141
41:	126	119	129	117	120	166	153	112	101	106
51:	102	106	118	102	111	101	114	100	118	120
61:	99	135	170	148	110	99	106	99	115	109
71:	110	116	128	123	132	168	149	133	118	108
81:	114	99	105	143	144	114	126	118	107	110
91:	133	234	270	192	108	94	110	106	124	98

$\bar{X}$ Blanks 167

for Blank 10/19 + 10/24

< .49

24:	181	168	173	161	168	159	143
31:	171	174	170	136	134	155	148

27:	161	168	159	143	
31:	171	174	170	136	134

23-OCT-90 06:30:00 ND66/ND76 AUTOMATIC PEAK SEARCH (V2)

ID:

ACQ DATE:22-OCT-90		07:15:14			
SRCH LIMITS:	1.000	TO	2048.000	KEV	
KEV /CH	1.000	ZERO	0.000	QUAD	0.000E+00
FWHM(0)	2.0000	FWHM/KEV	0.0000		
SENS	5.0000				
LT	57600	CT	57600		

PN	ENERGY	AREA	BKGND	FWHM	LEFT	PW	CTS/SEC	%ER
1M	18.20	782	1360	3.28	10	16	0.014	7.57
2	46.77	106	805	2.01	43	7	0.002	39.08
3M	62.68	209	1095	2.37	58	11	0.004	23.44
4M	73.00	46	662	1.55	71	11	0.001	80.46
5M	76.00	224	1356	3.06	71	11	0.004	24.19
6	92.80	444	804	2.58	89	8	0.008	10.20
7	196.05	283	930	2.66	181	10	0.005	16.36
8M	239.40	198	876	1.48	233	12	0.003	22.30
9M	352.93	123	395	2.00	348	10	0.002	24.57
10	511.22	510	431	3.27	504	15	0.009	7.26
11U	661.82	129	205	2.07	657	10	0.002	18.00
12M	908.79	91	170	8.75	901	20	0.002	22.81
13M	1461.12	128	29	2.40	1452	19	0.002	10.65

D08-017

ANALYTICAL REPORT 100123

Customer: SSI
Date Received: 8-21-90
Work Order No: 8820 92

ID & M.L.U.: 549 -90

Description: 90-3017-A-3
TK1108
Core 1b
Segment 85

Analysis: 1-129
Procedure: 7-40.15

Comm -
5.0992 ml sample + 1.0039 ml carrier → 2.0172 ml solution
GNW 53645 pg 68 GNW 53645 pg 69 GNW 53645 pg 69
GNW 52626 pg 89 13.92 mg Ag I recovered

J. K. Fedin 10/12/90

Calculations

$$< \frac{(.49)(2.65)(.995)(250)}{(5.0992)(.752)(.7428)(.5284)} = < 1.689 E+2 \frac{dpm}{g\ wet\ wt}$$

Results

$< 1.69 E+2$ dpm/g wet wt

Calculations L. O. Harvey Date 12-5-90

Reviewed L. D. Kellogg Date 1-18-91

Counting Information

By Anne E. Kyckelsky

Date 10-23-90 M. & I.E. WA44163

Log Book: GNW 53645 p. 58

TI-SET-103

based on ave wt of samples fusec

D08-018

GW3806 SST 549-90 90-3619-A-3 TK110B Core 16 Segment 3 M62042 I-129
: 16 Hour Count 10/23/90 1004 PST

Anne E Hazlitt

ACQGRP	1	ADC	2	24-OCT-90	06:19:08
TOTAL	0		0	23-OCT-90	10:04:21
LIVE	16:00:00		16:00:00		
REAL	00:00:00		16:00:00		
QUAD	0.000	SLOPE	1.000	ZERO	0.000

1 -	100:	12374	6974	5400
24 -	37:	2250	87	2163
27 -	35:	1441	105	1336

1:	0	0	0	0	0	0	0	0	0	1
11:	19	49	61	63	77	107	303	298	241	198
21:	216	193	161	161	194	181	164	168	148	183
31:	158	191	152	144	133	125	148	118	124	132
41:	119	126	120	122	129	179	161	121	111	114
51:	124	121	118	122	101	115	122	122	116	128
61:	127	122	164	193	115	101	94	101	113	97
71:	117	119	109	159	134	154	152	139	112	100
81:	96	124	139	122	137	114	125	135	137	110
91:	136	231	295	192	146	108	96	105	94	108

24:	161	194	181	164	168	148	183
31:	158	191	152	144	133	125	148

27:	164	168	148	183
31:	158	191	152	144	133

$1941 - \frac{12}{4}(383) = 177$

27-35 26-36

$1441 - \frac{9}{2}(302) = 64$

$1683 - \frac{10}{4}(383) = 733$

$\div 96' = .243$ c/m

T Blanks for 10/19 & 10/26
$= < .49$ c/m

24-OCT-90 06:19:37 ND66/ND76 AUTOMATIC PEAK SEARCH (V2)

ID:
ACQ DATE:23-OCT-90 10:04:21

SRCH LIMITS:	1.000	TO	2048.000	KEV	
KEV /CH	1.000	ZERO	0.000	QUAD	0.000E+00
FWHM(0)	2.0000	FWHM/KEV	0.0000		
SENS	5.0000				
LT	57600	CT	57600		

PN	ENERGY	AREA	BKGND	FWHM	LEFT	FW	CTS/SEC	%ER
1M	18.28	887	1260	3.07	11	14	0.015	6.58
2	46.34	133	810	2.02	43	7	0.002	31.48
3M	69.69	99	1652	3.99	70	14	0.002	58.92
4d	89.00	130	892	3.82	86	14	0.002	33.65
5d	93.00	690	1382	1.88	86	14	0.012	8.52
6U	145.96	47	1060	2.42	139	10	0.001	99.04
7U	186.32	238	1040	2.16	181	10	0.004	20.23
8U	238.86	73	688	1.60	235	8	0.001	52.14
9U	296.91	57	448	1.69	292	8	0.001	54.16
10M	511.07	650	270	3.59	504	15	0.011	5.31
11d	558.00	8	276	1.20	553	11	0.000	295.80
12d	561.00	12	118	1.00	553	11	0.000	131.23
13M	608.94	108	182	1.75	604	11	0.002	20.12

D08-019

BNW 52917 Pg 25 0.6025g → 250 mL

ANALYTICAL REPORT

Vial #2

100911

Net Wgt.

0.01777g

Customer: SST
Date Received: 9-11-90
Work Order No: 04620
ID & H.L.D.: 607-90
90-4178-A-1
Description: TK 110B-016-Composite

Samp. 1.9803 ml BNW 54042 pg 4
KI vol. 1 1.01130 ml BNW 54042 pg 5
KI: 1.308g KI BNW 52626 pg 89

MDel 1-21-91

Carrier 96 % recovery
94.42

Calculations

$$<.50\ cpm \frac{(2.65)(1.012)(250)}{(1.9803)(.96)(1.007)(.6025)} = < 290 \frac{dpm}{g}$$

Analysis: 1-31
Procedure: 7-10.17

Results

Calculations G. O. Harvey Date 1-29-91

Reviewed Date

Counting Information

By Jean Ruggles

Date 1/23/91 M. & T.E. 44 4463

Log Book No. 52344 p. 62

D08-020

SST

GW3898 607-90 1291 01/23/91 0837 PST M45322

90-478-A-1
TK 110B-E16 - COMPOSITE

Anne Etheridge

ACQGRP	1	ADC	2	24-JAN-91	07:51:39
TOTAL	0		0	23-JAN-91	08:34:59
LIVE	16:00:00		16:00:00		
REAL	00:00:00		16:00:00		
QUAD	0.000	SLOPE	1.000	ZERO	0.000

24-JAN-91 07:51:52 ND66/ND76 AUTOMATIC PEAK SEARCH (V2)

ID:					
ACQ DATE:23-JAN-91		08:36:59			
SRCH LIMITS:	1.000	TO	2048.000	KEV	
KEV /CH	1.000	ZERO	0.000	QUAD	0.000E+00
FWHM(0)	2.0000	FWHM/KEV	0.0000		
SENS	5.0000				
LT	57600	CT	57600		

PN	ENERGY	AREA	BKGND	FWHM	LEFT	FW	CTS/SEC	%ER
1M	17.21	804	1337	1.95	10	14	0.014	7.34
2M	63.42	146	781	2.00	60	7	0.003	28.31
3M	75.83	307	1150	3.99	70	11	0.005	16.63
4d	88.00	118	686	1.78	86	14	0.002	32.71
5d	93.00	466	1650	1.83	86	14	0.008	13.17
6	122.27	62	820	1.81	118	8	0.001	66.54
7	185.76	265	1005	2.07	181	10	0.005	18.00
8M	238.85	225	1128	1.51	231	16	0.004	22.14
9U	352.68	115	445	2.00	347	10	0.002	27.57
10	511.34	656	319	4.10	505	13	0.011	5.48
11d	659.00	8	168	0.56	656	12	0.000	231.84
12d	662.00	212	264	2.73	656	12	0.004	12.83
13M	1041.00	8	140	2.70	1038	14	0.000	212.13
14M	1352.39	38	24	1.48	1349	8	0.001	24.40
15M	1460.96	45	55	2.25	1456	10	0.001	27.67

PEAK SEARCH DONE

10 -	23:	2141	804	1337
60 -	66:	927	147	780
70 -	80:	1457	308	1149
86 -	99:	2105	474	1631
118 -	125:	882	62	820
181 -	190:	1270	265	1005
231 -	246:	1353	225	1128
347 -	356:	560	115	445
505 -	517:	975	657	318
656 -	667:	413	155	258
1038 -	1051:	148	8	140
1349 -	1356:	62	38	24
1456 -	1465:	100	45	55
1 -	100:	12902	8452	4450

D08-021

ANALYTICAL REPORT

100379

Customer: SST
Date Received: 9-11-90
Work Order No: M62042

ID & A.L.O.: 608 -90

Description: 90-4178-A-2
TK110B
Core 16
Seg COMPOSITE

Analysis: I-129
Procedure: 7-40.15

BNW52917 p. 125: 0.4527g + 250mL -
5.089 ml sample + 1.0090 ml carrier → 2.0078 ml
BNW 53645 pg 66 BNW 53645 pg 68 BNW 53645 pg 69
10 mg/ml I 15.70 mg/g I recovered

J. Fadoff 10/11/90

Calculations

$$<(.48)\frac{(2.65)(1.004)(250)}{(5.089)(.9428)(.848)(.4527)} = <1.7\cancel{334}\,E\,2 \ \frac{dpm}{g\ wet\ wt}$$

Results

<1.7 E+2 dpm/g wet wt

Calculations C O Harvey Date 12/5/90

Reviewed L D Kellogg Date 1-18-91

Counting Information

By Anne E Kozlinsky

Date 10-15-90 M. & T.E. WAA1163

Log Book: BNW52914 p. 58

TI 104

D08-022

GW3792 SST 608-90 XXXXXX 90-4178-A-2 TK110B Core 16 Segment COMPOSITE I-129 M62042
: 16 HOUR COUNT 10/15/90 0806 PST

Anne E Kaplinsky

ACOGRP	1	ADC	2	16-OCT-90	06:16:17
TOTAL	0		0	15-OCT-90	08:06:00
LIVE	16:00:00		16:00:00		
REAL	00:00:00		16:00:00		
QUAD	0.000	SLOPE	1.000	ZERO	0.000

16-OCT-90 06:16:34 ND66/ND76 AUTOMATIC PEAK SEARCH (V2)

ID:
ACQ DATE:15-OCT-90 08:06:00

SRCH LIMITS:	1.000	TO	2048.000	KEV	
KEV /CH	1.000	ZERO	0.000	QUAD	0.000E+00
FWHM(0)	2.0000	FWHM/KEV	0.0000		
SENS	5.0000				
LT	57600	CT	57600		

PN	ENERGY	AREA	BKGND	FWHM	LEFT	PW	CTS/SEC	%ER
1M	19.85	1177	1380	5.55	8	20	0.020	5.33
2M	31.05	264	1350	5.05	27	10	0.005	20.62
3M	47.54	143	1320	2.11	41	11	0.002	36.89
4M	62.54	209	1313	5.90	57	13	0.004	25.48
5	92.82	365	1362	2.25	87	12	0.006	15.23
6d	186.00	370	1374	2.54	180	12	0.006	15.09
7d	189.00	22	552	1.60	180	12	0.000	152.53
8U	239.11	193	572	1.96	235	8	0.003	18.95
9M	510.69	535	539	3.28	500	22	0.009	7.51
10d	662.00	292	174	3.20	657	10	0.005	8.66
11d	665.00	16	52	1.00	657	10	0.000	68.47
12M	998.54	24	102	1.72	995	12	0.000	62.92
13M	1460.67	84	67	2.25	1451	19	0.001	17.58

$\bar{x}$ [illegible] 137

PEAK SEARCH DONE

1:	0	0	0	0	0	0	0	0	0	1
11:	10	53	58	79	59	76	247	271	233	220
21:	205	203	166	208	1166	164	138	164	185	157
31:	176	201	173	154	134	132	147	122	152	127
41:	135	115	134	115	131	179	186	128	119	116
51:	105	121	122	114	106	89	97	108	129	108
61:	105	121	150	162	127	90	100	120	105	118
71:	121	114	134	116	146	134	125	117	102	118
81:	99	115	139	132	141	125	125	115	121	126
91:	116	236	288	196	101	109	92	102	114	112
101:	94	91	96	104	99	87	107	80	89	103
111:	106	117	114	98	89	89	96	98	118	93
121:	97	102	104	97	91	109	91	102	100	96
131:	98	104	94	127	100	112	111	113	99	126
141:	97	100	139	123	119	115	119	108	91	102
151:	97	112	100	105	98	100	105	100	107	87
161:	69	89	104	87	106	91	108	97	113	91

1997 - $\frac{12}{4}$(673) = 15

[37 - 35] · (2.4 x 10)

1132 - $\frac{9}{2}$(296) = 150

[1673 - (150) - 323]

= .34 CPM

$\bar{x}$ BKG [illegible] 10/15
2.48

D08-023

ANALYTICAL REPORT 100391

Customer: SST
Date Received: 9-11-90
Work Order No: M6202 42

ID & A.L.O.: 609 -90

Description: 90-4178-A-3
TK1108
Core 16
Seg COMPOSITE

Analysis: I-129
Procedure: 7-40.15

Results

< 1.5 E+2 d/m / g wet wt

BNW52917 p. 125: 250mL -

5.0871 ml sample + 1.0090 ml carrier → 2.0078 ml NaCN
BNW 53645 pg 66 BNW 53645 pg 68 BNW 53645 pg 69
10 mg/ml I

J. Fadey 10/11/90

15.81 mg Hg I recovered

Calculations

$$< \frac{(.48)(2.65)(1.004)(250)}{(5.087)(.955)(.9438)(.5276)} < 1.475\ E+2\ d/m/g\ wet\ wt$$

Calculations L. O. Harvey Date 12-5-90

Reviewed L. S. Kellogg Date 1-18-91

Counting Information

By Anne E. Kozelisky

Date 10-16-90 M. & T.E. WAA4163

Log Book: BNW52344 p. 58

based on ave wt of samples fused

D08-024

GW3794 SST 609-90 90-4178-A-3 TK110B Core 16 Segment COMPOSITE I-129 M62042
: 16 HOUR COUNT 10/16/90 1348 PST

Anne C Hazelwood

ACOGRP	1	ADC	2	17-OCT-90	06:18:12
TOTAL	0		0	16-OCT-90	13:48:00
LIVE	16:00:00		16:00:00		
REAL	00:00:00		16:00:00		
QUAD	0.000	SLOPE	1.000	ZERO	0.000

17-OCT-90 06:18:17 ND66/ND76 AUTOMATIC PEAK SEARCH (V2)

ID:
ACO DATE:16-OCT-90 13:48:00

SRCH LIMITS:	1.000	TO	2048.000	KEV	
KEV /CH	1.000	ZERO	0.000	QUAD	0.000E+00
FWHM(0)	2.0000	FWHM/KEV	0.0000		
SENS	5.0000				
LT	57600	CT	57600		

PN	ENERGY	AREA	BKGND	FWHM	LEFT	PW	CTS/SEC	ZER
1M	18.63	1032	1368	3.35	9	18	0.018	5.95
2M	61.03	177	1302	2.72	57	12	0.003	29.79
3d	93.00	444	1848	2.27	87	12	0.008	14.49
4d	97.00	38	408	1.00	87	12	0.001	76.90
5	185.77	261	935	2.19	181	10	0.005	17.69
6M	238.67	259	640	2.87	234	10	0.004	15.15
7d	505.00	32	68	1.00	504	14	0.001	40.50
8d	511.00	746	304	3.17	504	14	0.013	4.93
9M	584.30	63	132	3.00	581	8	0.001	28.70
10M	661.57	265	130	2.28	657	10	0.005	8.65
11M	1460.26	87	32	3.06	1453	16	0.002	14.12

PEAK SEARCH DONE

1:	0	0	0	0	0	0	0	0	0	4
11:	23	45	94	71	56	107	289	260	244	189
21:	190	159	157	174	186	152	181	162	141	133
31:	150	195	178	154	147	132	141	100	122	126
41:	143	129	114	111	143	140	170	126	104	101
51:	109	106	130	122	103	97	95	117	114	128
61:	112	146	159	171	105	109	101	122	113	115
71:	113	107	109	114	131	137	133	124	113	100
81:	110	125	116	138	142	135	144	128	97	128
91:	157	212	280	192	111	116	123	100	106	94
101:	97	109	82	96	114	118	101	103	102	110
111:	104	126	110	102	94	103	109	98	119	105
121:	110	100	118	116	124	94	106	80	116	115
131:	109	101	116	115	104	103	107	90	86	122
141:	101	104	110	126	111	96	97	90	102	110
151:	105	116	96	106	104	107	98	102	105	103
161:	103	104	112	110	90	86	88	93	97	90
171:	99	88	106	86	96	87	120	95	84	96
181:	88	96	86	93	165	223	166	94	86	99

1911 - (13/572) = 175

[37 - 31] = 26
144 - (23 - 26)(7/2) = 163
÷ 960 = .170 cpm

X̄ Blanks = 167

X̄ Blanks for 10/11 v 10/15
< .48 cpm

D08-025

β free @ 22.5°
- 99% ANALYTICAL REPORT

10031

Customer: SST
Date Received: 9-5-90
Work Order No: M6204~~2~~

ID & A.L.O.: 590 -90

Description: 90-4180-C-1
TK1108
Core 16
Segment COM

Analysis: I-129
Procedure: 7-40.15

2.0698g + 194.8843g = 195.5178 ml

5.0992 ml sample + 1.0039 ml carrier (10mg/ml I⁻) → 2.0172 ml final sol.
BNW 53645 pg 68 | BNW 53645 pg 69 | BNW 53645 pg 69
BNW 52626 pg 81

J.K. Fadeiz 10/12/90

18.44 mg Ag I recc

Calculations

$$< \frac{(.51)(2.65)(1.016)(195.5178)}{(5.0992)(.997)(.9424)(2.0698)} = < 27.06 \ \frac{dpm}{g \text{ wet wt}}$$

Calculations G O Harvey Date 12-5-90

Reviewed L S Kellogg Date 2-18-91

Counting Information

By Hans E Kozlowski

Date 10-24-90 M. & T.E. WH-M163

Log Book: BNW 53744 p. 58

Results

< 27 dpm / g wet wt

TE-SST-103

D08-026

GW3908 SST 590-90 90-4180-C-1 TK110B Core 16 Segment COM M62042 I-129
: 16 Hour Count 10/24/90 0655 PST

Anne Etzenhiser

ACQGRP	1	ADC	2	25-OCT-90	06:20:06
TOTAL	0		0	24-OCT-90	06:55:31
LIVE	16:00:00		16:00:00		
REAL	00:00:00		16:00:00		
QUAD	0.000	SLOPE	1.000	ZERO	0.000

1 -	100:	12677	7077	5600
24 -	37:	2284	93	2191
27 -	35:	1473	110	1363

1:	0	0	0	0	0	0	0	0	0	3
11:	10	63	123	160	133	118	301	243	216	214
21:	195	173	195	175	176	175	165	177	153	167
31:	171	178	174	150	138	147	138	148	120	142
41:	138	119	112	133	119	166	154	130	93	105
51:	99	100	126	135	123	95	110	104	155	99
61:	117	118	174	160	133	105	130	125	133	129
71:	112	137	123	143	141	140	130	123	123	103
81:	120	113	127	118	140	106	129	119	135	115
91:	158	248	302	211	131	126	85	110	117	112
24:	175	176	175	165	177	153	167			
31:	171	178	174	150	138	147	138			
27:	165	177	153	167						
31:	171	178	174	150	138					

$1471 - \frac{3}{7}(85 \cdot 1) = 3$

$1473 - \frac{1}{2}(312) = 69$

$1455 - \left(\frac{1}{2}\right)(85) = 915$

$\bar{X}$ Blanks = 167

< for Blank 10-19 + 10-24
< .57

25-OCT-90 06:21:12 ND66/ND76 AUTOMATIC PEAK SEARCH (V2)

ID:
ACQ DATE:24-OCT-90 06:55:31
SRCH LIMITS: 1.000 TO 2048.000 KEV
KEV /CH 1.000 ZERO 0.000 QUAD 0.000E+00
FWHM(0) 2.0000 FWHM/KEV 0.0000
SENS 5.0000
LT 57600 CT 57600

PN	ENERGY	AREA	BKGND	FWHM	LEFT	FW	CTS/SEC	%ER
1	17.29	210	668	1.33	16	4	0.004	18.72
2U	46.33	189	718	2.70	43	7	0.003	21.33
3	53.94	96	582	2.67	51	6	0.002	36.98
4U	63.33	192	714	2.40	60	7	0.003	20.96
5M	92.94	610	1020	2.64	88	10	0.011	8.44
6M	184.79	336	1384	2.13	178	16	0.006	16.58
7M	238.56	127	1328	1.49	230	17	0.002	41.54
8M	349.09	74	977	2.18	342	21	0.001	60.86
9	511.31	418	437	2.73	505	13	0.007	8.60
10M	582.64	76	252	3.31	578	12	0.001	31.69
11M	609.53	92	180	2.41	605	10	0.002	23.11
12M	661.52	195	231	2.54	655	14	0.003	13.14
13M	1459.21	24	124	3.98	1451	19	0.000	68.72

D08-027

ρ H_2O @ 22.5°C
= .99676

ANALYTICAL REPORT

100522

Customer: SST
Date Received: 9-5-90
Work Order No: M6204 2

ID & A.L.O.: 591 -90

Description: 90-4180-C-2
TK110B
Core 16
Segment COM

Analysis: I-129
Procedure: 7-40.15

2.1978g + 196.772bg = 197.4122 mL

5.0992 ml sample + 1.0039 ml carrier → 2.0172 ml original vol.
BNW 53645 pg 68 — 10 mg/ml I⁻ BNW 53645 pg 69 — BNW 53645 pg 69

J.K. Fedor 10/12/90 — BNW 52626 pg 89 — 18.39 mg Ag I recov.

Calculations

$$< \frac{(.51)(2.65)(1.016)(197.4122)}{(5.0992)(.994)(.9428)(2.1978)} = < 25.81 \ \frac{dpm}{g \text{ wet wt}}$$

Results

$< 26 \ \frac{dpm}{g \text{ wet wt}}$

Calculations G. O. Harvey Date 12-5-90

Reviewed L. L. Kellogg Date 1-18-91

Counting Information

By Steve E. Kaltenbach

Date 10-25-90 M. & T.E. WAA4163

Log Book: BNW 52344 p. 58

TI-SST-105

D08-028

GW3810 SST 591-90 90-4180-C-2 TK110B Core 16 Segment COM M62042 I-129
: 16 Hour Count 10/25/90 0744 PST

ACQGRP	1	ADC	2	26-OCT-90	06:19:18
TOTAL	0		0	25-OCT-90	07:44:34
LIVE	16:00:00		16:00:00		
REAL	00:00:00		16:00:00		
QUAD	0.000	SLOPE	1.000	ZERO	0.000

1 -	100:	12640	8840	3800
24 -	37:	2302	181	2121
27 -	35:	1492	52	1440

1:	0	0	0	0	0	0	0	0	0	2
11:	12	50	130	184	104	76	259	264	237	211
21:	205	164	176	158	179	168	169	161	176	160
31:	173	172	187	143	151	160	145	158	144	118
41:	127	138	108	150	135	181	178	139	97	116
51:	135	119	116	123	102	110	135	98	101	124
61:	118	134	166	170	116	107	107	103	110	123
71:	134	121	140	141	190	128	168	119	105	129
81:	120	113	114	136	137	120	114	119	100	121
91:	135	228	311	179	132	104	96	124	104	76

24:	158	179	168	169	161	176	160
31:	173	172	187	143	151	160	145

27:	169	161	176	160	
31:	173	172	187	143	151

$168 - \frac{12}{2}(3/3) = 87$

$\bar{X}$ Blank 164 = .17 cm

Blanks for 10/19 - 10/26
< .51 cm

26-OCT-90 06:19:47 ND66/ND76 AUTOMATIC PEAK SEARCH (V2)

ID:
ACQ DATE:25-OCT-90 07:44:34
SRCH LIMITS: 1.000 TO 2048.000 KEV
KEV /CH 1.000 ZERO 0.000 QUAD 0.000E+00
FWHM(0) 2.0000 FWHM/KEV 0.0000
SENS 5.0000
LT 57600 CT 57600

PN	ENERGY	AREA	BKGND	FWHM	LEFT	PW	CTS/SEC	%ER
1	13.46	190	299	1.86	11	5	0.003	14.60
2d	17.00	202	676	0.79	15	8	0.004	19.52
3d	21.00	100	638	1.00	15	8	0.002	37.09
4U	46.65	98	1144	2.28	42	9	0.002	49.84
5d	60.00	44	406	1.00	59	9	0.001	66.49
6d	64.00	152	848	1.18	59	9	0.003	28.28
7M	74.61	322	1736	3.20	68	16	0.006	19.13
8	93.06	450	1075	1.96	88	10	0.008	11.33
9M	185.84	337	1092	2.36	180	12	0.006	14.90
10M	240.01	150	936	3.46	233	12	0.003	29.98
11d	292.00	10	222	1.00	291	8	0.000	213.07
12d	296.00	76	366	1.56	291	8	0.001	37.40
13d	352.00	156	340	2.79	347	9	0.003	18.53
14d	507.00	26	108	1.00	506	11	0.000	59.83
15d	511.00	782	282	4.15	506	11	0.014	4.69

D08-029

ρ H2O @22.5°C
= .91676

ANALYTICAL REPORT

Customer: SST
Date Received: 9-5-90
Work Order No: M62012

ID & A.L.O.: 593 -90

Description: 90-4180-C-5
TK110B
Core 16
Segment COM

Analysis: I-129
Procedure: 7-40.15

197.5712g → 198.2134 ml
5.0992 ml sample + 1.0039 ml carrier → 2.0172 ml final
BNW 53645 pg 68
10 mg/ml I-
BNW 53645 pg 69
BNW 53645 pg 6
BNW 52626 pg 89
18.45 mg AgIrec

N.A. Fadeff 10/12/90

Calculations

$$< \frac{(.52)(2.65)(1.016)(198.2134)}{(5.0992)(.997)(.9428)\ 2.1338} = < 27.13 \ \frac{dpm}{g\ wet\ wt}$$

Ag wt gram

Calculations N. O. Fadeff Date 12-5-90

Reviewed L. S. Kellogg Date 1-18-91

Counting Information

By Diane E. Kazebsky

Date 10-29-90 M. & T.E. 1144163

Log Book: BNW52344 p. 58

Results

< 27 dpm / g wet wt

TI-SST-105

based on ave wt sample leached

D08-030

GW3814 SST 593-90 90-4180-C-5 TK1108 Core 16 Segment COM M62042 I-129
: 16 Hour Count 10/29/90 0825 pst

Anne E Fogelberg

ACQGRP	1	ADC	2	30-OCT-90	07:16:57
TOTAL	0		0	29-OCT-90	08:25:00
LIVE	16:00:00		16:00:00		
REAL	00:00:00		16:00:00		
QUAD	0.000	SLOPE	1.000	ZERO	0.000

1 -	100:	12460	7560	4900
24 -	37:	2361	0	2401
27 -	35:	1501	3	1498

1:	0	0	0	0	0	0	0	0	1	2
11:	7	50	90	97	95	84	230	257	229	212
21:	210	214	183	188	179	197	199	177	173	165
31:	158	198	165	132	134	141	155	152	131	142
41:	135	135	143	113	132	165	179	134	115	118
51:	101	107	111	129	113	98	103	104	125	124
61:	103	121	137	150	119	120	108	111	101	115
71:	105	99	119	128	148	137	137	134	118	122
81:	126	108	140	116	130	113	132	129	103	106
91:	157	277	301	206	121	109	107	113	105	98

24:	188	179	197	199	177	173	165
31:	158	198	165	132	134	141	155

27:	199	177	173	165	
31:	158	198	165	132	134

30-OCT-90 07:17:25 ND66/ND76 AUTOMATIC PEAK SEARCH (V2)

ID:
ACQ DATE:29-OCT-90 08:25:00

SRCH LIMITS:	1.000	TO	2048.000	KEV	
KEV /CH	1.000	ZERO	0.000	QUAD	0.000E+00
FWHM(0)	2.0000	FWHM/KEV	0.0000		
SENS	5.0000				
LT	57600	CT	57600		

PN	ENERGY	AREA	BKGND	FWHM	LEFT	PW	CTS/SEC	%ER
1M	18.30	879	1448	4.30	10	16	0.015	6.99
2d	43.00	20	536	1.00	42	9	0.000	165.23
3d	47.00	124	968	1.28	42	9	0.002	36.60
4	93.07	436	1180	2.54	88	10	0.008	12.13
5d	182.00	28	360	1.00	181	10	0.000	97.68
6d	186.00	454	932	2.28	181	10	0.008	10.60
7d	239.00	178	912	2.74	234	11	0.003	25.14
8d	242.00	72	378	1.25	234	11	0.001	39.97
9d	352.00	60	636	1.10	347	11	0.001	60.83
10d	356.00	28	190	1.00	347	11	0.000	72.14
11M	511.58	599	392	4.01	503	17	0.010	6.21
12d	580.00	6	84	1.00	579	8	0.000	219.85
13d	583.00	44	148	2.09	579	8	0.001	41.91
14M	610.19	94	259	3.26	603	14	0.002	26.32
15d	658.00	54	156	1.63	654	16	0.001	35.43
16d	662.00	420	288	2.50	654	16	0.007	7.51
17	677.96	27	72	2.11	675	6	0.000	48.43
18M	1461.01	80	39	2.67	1455	13	0.001	15.71
19M	1925.93	30	36	19.75	1916	24	0.001	33.67

PEAK SEARCH DONE

1:	0	0	0	0	0	0	0	0	1	2
11:	7	50	90	97	95	84	230	257	229	212
21:	210	214	183	188	179	197	199	177	173	165
31:	158	198	165	132	134	141	155	152	131	142
41:	135	135	143	113	132	165	179	134	115	118
51:	101	107	111	129	113	98	103	104	125	124
61:	103	121	137	150	119	120	108	111	101	115
71:	105	99	119	128	148	137	137	134	118	122
81:	126	108	140	116	130	113	132	129	103	106
91:	157	277	301	206	121	109	107	113	105	98

[26-35]
$156 - \frac{9}{2}(3.13) = 155.5$

$\bar{x}$ blnk = 167
÷ 960 = .174 cpm

Blank Lv 10-26 = < .52%

D08-031

I-129

CALIBRATION DATA

D08-032

1—
12-21-87

DEC 21

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Material and Chemical Science Center
Chemical Science Department

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L S Kellogg	30706	325	4-31-88	L S Kellogg 4-31-88

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D08-033

54-1100-008(10-84)

9112171193

Entered 5/19/88 by DCherf

Dilution of Sn113m – See Certificate page 87

Balance 360-06-03-003 Exp 6-2088

Daily check 1.0000 g = 1.00001 g

Vol flask = 66.8204 g

Vol flask + Std = 72.0098 g

Vol flask + Std + 2M HCl dilution = 170.1550 g

72.0098	flask + std
66.8204	flask
5.1894 g	std

5.1894 g × 30.2 μCi/g × 2.22×10⁶ dpm/μCi ÷ 100 ml = 3.479 ×10⁶ dpm/ml

170.1550 g	flask + std + dilution
66.8204 g	flask
103.3346 g	Dilution

5.1894 g × 30.2 μCi/g × 2.22×10⁶ dpm/μCi ÷ 103.3346 g = 3.367 ×10⁶ dpm/g

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D08-034

9112105194

Entered 5/20/88 by DCheaf

Preparation of new KI carrier for I125 analysis

Weigh 1.308 g KI diluted to 100 ± .08 ml

Balance 360-06-01-009 Exp 6-20-88

Std weight 10 g weighed 10.000

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D08-035

9112120351195

Entered 5/26/88 by [illegible]

Recalibration of GeLi Well for I129 using KI carrier
P89 for carrier preparation

I129 Std 2.158×10^4 dpm/ml BNW 52626 pages 65-66

HTA-4-41 Step 1) 1.0022 ml carrier BNW 52514 p9 ≡ 18.54 mg AgI
.1004 ml I129 Std BNW 52514 p9 ≡ 2.1666×10^3 dpm
10 ml H_2O
1 ml $KMnO_4$ .2 M
1 ml 10% H_2SO_4

BNW
52626

Step 2-4
Steps 18-37
Steps 39-40

Weights of AgI

#1	.02608	#2	.02600	#3	.02570
	.00845		.00800		.00812
	.01763		.01800		.01758
#4	.02585	#5	.02640	#6	.02638
	.00810		.00815		.00819
	.01775		.01825		.01819

Summary of dc factors using KI carrier [illegible] p91-93

#1	2.939
#2	2.901
#3	2.906
#4	2.857
#5	2.898
#6	2.869
$\bar{x}_b$ =	2.895 ± .029
	± 1%

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D08-036

9112173196

Entered 5/26/88 by Ochenf

Data for I125 d/c calibration of Gelli Well Page 90

15mg AgI

1291 #1 05/23/88 0732 PST
2.1667 x10⁶ d/m

BNW LABORATORY NOTEBOOK NO. 52626

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1	ADC	2	23-MAY-88	08:32:04
1.000	ZERO	0.000	23-MAY-88	07:32:00
0		0		
01:00:00		01:00:00		
00:00:00		01:00:00		

1291 KI-1 5/23/88 0732 P

52626
p91

100:	60843	60643	200
37:	50828	45564	5264
35:	48147	32154	15993

0	0	0	0	0	0	0	0	1	0
5	16	20	14	12	88	191	256	458	646
585	743	643	479	465	716	(1196	2876	9235	15418
8382	2457	2477	3748	2358)	748	273	476	1576	2433
1122	219	41	20	8	11	12	8	6	11
5	3	6	4	7	11	7	8	11	10
8	9	11	10	14	10	5	11	5	7
3	8	9	3	4	10	10	3	3	6
5	5	13	8	8	10	7	7	4	8
7	15	19	18	11	4	3	9	6	4

479	465	716	1196	2876	9235	15418
8382	2457	2477	3748	2358	748	273

1196	2876	9235	15418	
8382	2457	2477	3748	2358

±.5%
48147 - 6587 = 41559 counts
Counts corrected to 15mg AgI
41559 counts × 1.012 = 42058 counts
42058 counts / 60 minutes = 700.96 counts/min
700.96 × 18.50 / 17.63 = 735.6 cpm corrected to yield 737.1
d/e = 2.1667×10⁶ dpm / 735.6 cpm = 2.945 d/e
737.1 2.939

15mg AgI
91 KI #2 05/23/88 0833 PST
2.1667 x10⁶ d/m

1	ADC	2	23-MAY-88	09:42:41
1.000	ZERO	0.000	23-MAY-88	08:33:00
0		0		
01:00:00		01:00:00		
00:00:00		01:00:00		

91 KI-2 5/23/88 0833 P

BNW
52626
p91

00:	62784	62584	200
37:	52619	47054	5565
35:	49753	33072	16681

0	0	0	0	0	0	0	0	0	1
2	10	33	44	16	87	169	273	466	697
618	758	689	491	549	707	(1289	3136	9664	15240
8935	2832	2522	3717	2418)	815	304	502	1513	2305
1167	286	42	16	6	7	6	8	14	6
5	7	6	10	6	10	4	6	12	15
12	5	8	14	6	6	7	8	8	7
11	14	4	9	7	15	10	10	9	6
7	10	6	5	16	12	10	11	7	10
4	10	13	9	9	2	5	5	10	4

491	549	707	1289	3136	9664	15240
8935	2832	2522	3717	2418	815	304

1289	3136	9664	15240	
8935	2832	2522	3717	2418

±.5%
49753 - 6849 = 42904 counts
corrected counts to 15mg AgI
1.014 × 42904 = 43505 counts
43505 counts / 60 minutes = 725.08 cpm
18.50 / 18.00 × 725.18 = 745.3 cpm corrected for yield 746.8
d/e = 2.1667×10⁶ / 746.8 = 2.901 d/e

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BNW
~~52626~~ 9

D08-037

9112251197

2

Entered 5/26/88 by DCheaf

Calibration data for I129 d/c factor for Well P90

17.68 mg AgI

GW2773 129I KI-3 05/23/88 0944 PST

2.1667 $\times 10^3$ dpm

ACQGRP	1	ADC	2	23-MAY-88	10:44:05
KEV	1.000	ZERO	0.000	23-MAY-88	09:44:00
TOTAL	0		0		
LIVE	01:00:00		01:00:00		
REAL	00:00:00		01:00:00		

BNW

GW2773 129I KI-3 5/23/88 0944 P

52626-1

p92

1 -	100:	61514	61314	200
24 -	37:	51652	46094	5558
27 -	35:	48832	32236	16596

1:	0	0	0	0	0	0	0	0	0	0
11:	2	6	1	10	17	93	204	222	466	644
21:	408	685	670	526	540	699	(1252	3094	9529	14971
31:	8641	2787	2547	3525	2436)	787	268	476	1534	2215
41:	1209	272	52	11	5	8	14	9	7	7
51:	7	8	8	6	4	10	4	4	10	15
61:	10	6	8	10	8	5	5	9	5	6
71:	6	10	8	11	8	12	7	7	8	5
81:	4	8	14	3	3	9	10	8	11	7
91:	7	19	18	12	14	5	8	12	8	4

24:	526	540	699	1252	3094	9529	14971
31:	8641	2787	2547	3525	2436	787	268

27:	1252	3094	9529	14971
31:	8641	2787	2547	3525	2436

48832 - 6687 = 42145 counts (2.5%)

Correct counts to 15 mg AgI

1.0124 × 42145 = 42668 counts

42668 counts / 60 minutes = 711.1 counts

15.57 / 17.68 × 711.1 = 745.69 c/m corrected for yi

d/c = 2.1667 × 10³ dpm / 745.69 = 2.906 d/c

Adam 5/26/88

17.75 mg AgI

GW2774 129I KI 04 05/23/88 1045 PST

2.1667 dpm

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ACQGRP	1	ADC	2	23-MAY-88	11:50:06
KEV	1.000	ZERO	0.000	23-MAY-88	10:45:00
TOTAL	0		0		
LIVE	01:00:00		01:00:00		
REAL	00:00:00		01:00:00		

BNW

52626-1

GW2774 129I KI-4 5/23/88 1045 P

p92

1 -	100:	61939	61739	200
24 -	37:	52049	46708	5341
27 -	35:	49394	32771	16623

1:	0	0	0	0	0	0	0	0	0	1
11:	6	21	20	21	31	85	174	227	423	698
21:	559	723	663	454	475	663	(1252	3013	9479	15713
31:	8737	2520	2430	3808	2442)	754	309	(441	1551	2364
41:	1158	237	34	12	7	11	10	10	2	9
51:	4	9	7	3	3	5	5	8	13	8
61:	13	8	7	11	10	6	9	12	5	6
71:	5	4	12	9	6	6	5	9	9	8
81:	6	3	5	11	16	6	3	4	4	6
91:	13	18	15	19	8	6	4	10	4	4

24:	454	475	663	1252	3013	9479	15713
31:	8737	2520	2430	3808	2442	754	309

2:	1252	3013	9479	15713
	8737	2520	2430	3808	2442

49394 - 6376.5 = 43017 (20.5%)

Correct to 15 mg AgI

1.01375 × 43017 = 43565 counts

43565 counts / 60 minutes = 726.09 dpm

15.57 / 17.75 × 726.09 dpm = 758.41 dpm

Corrected for yield

d/c = 2.1667 dpm / 758.41 dpm = 2.857 d/c

Disposed

Signed 1.

2.

D08-038

BNW

52626-1

Date

Date

9112105198

Calibration data for I129 d/c factor for GeLi Well p90

18.25mg AgI

12775 129I KI #5 05/23/88 1161 PST

2.1667 dlm

Z

ACCGRP	1	ADC	2	23-MAY-88	12:57:19
KEV	1.000	ZERO	0.000	23-MAY-88	11:50:59
TOTAL	0		0		

LIVE 01:00:00 01:00:00
REAL 00:00:00 01:00:00
GW2775 129I KI-5 5/23/88 1151 P

BNW

52626

p93

1 -	100:	63161	62961	200
24 -	37:	52896	47968	4928
27 -	35:	50167	33693	16474

1:	0	0	0	0	0	0	0	0	0	1
11:	1	13	13	12	4	81	182	269	461	709
21:	687	705	721	453	541	713	(1300	3043	9958	16032
31:	8559	2502	2597	3815	2361)	771	251	485	1626	2423
41:	1125	227	57	10	8	12	4	14	7	6
51:	7	7	7	7	5	10	12	8	10	9
61:	11	7	11	11	5	4	4	3	13	3
71:	4	4	11	8	13	9	7	7	12	9
81:	7	4	6	8	5	14	7	10	3	11
91:	10	8	15	11	8	9	8	8	8	4

24:	453	541	713	1300	3043	9958	16032
31:	8559	2502	2597	3815	2361	771	251

27:	1300	3043	9958	16032
31:	8559	2502	2597	3815	2361

±.55%

50167 − 6678 = 43489 counts

Corrected to 15mg AgI

1.0255 × 43489 = 44452 counts

$\frac{44452 \text{ counts}}{60 \text{ minutes}}$ = 735.87 dlm

$\frac{18.54}{18.25}$ × 735.87 = 747.56 dlm

corrected for yield

$\frac{d}{a} = \frac{2.1667 \text{ dlm}}{747.56 \text{ dlm}}$ = 2.898 d/c

18.19mg AgI

W2776 129I KI #6 05/23/88 1258 PST

2.1667 m³ dlm

ACCGRP	1	ADC	2	23-MAY-88	14:01:01
KEV	1.000	ZERO	0.000	23-MAY-88	12:58:00
TOTAL	0		0		

LIVE 01:00:00 01:00:00
REAL 00:00:00 01:00:00
GW2776 129I KI-6 5/23/88 1258 P

BNW

52626

p93

BNW LABORATORY NOTEBOOK NO. 52626

COPIED RECORD NOV

1 -	100:	63357	63007	350
24 -	37:	52882	47849	5033
27 -	35:	50215	33862	16353

1:	0	0	0	0	0	0	0	0	0	0
11:	1	15	26	24	18	82	170	243	479	697
21:	669	827	726	463	523	705	(1221	3010	9907	14288
31:	8385	2424	2657	3910	2413)	720	256	483	1702	2408
41:	1098	245	39	14	10	17	5	9	9	9
51:	11	7	5	10	6	9	4	10	12	13
61:	14	9	15	23	4	5	8	6	5	7
71:	9	11	7	11	3	6	10	11	12	8
81:	9	5	9	8	9	9	6	11	4	7
91:	10	14	23	15	4	10	7	7	5	7

24:	463	523	705	1221	3010	9907	16288
31:	8385	2424	2657	3910	2413	720	256

27:	1221	3010	9907	16288
31:	8385	2424	2657	3910	2413

±.34%

50215 − 6413.5 = 43802 counts

Corrected to 15mg AgI

1.0145 × 43802 = 44,457 counts

$\frac{44457 \text{ counts}}{60 \text{ minutes}}$ = 740.95 counts

$\frac{18.54}{18.19}$ × 740.95 = 755.2 dlm

$\frac{d}{a} = \frac{2.1667 \text{ m}^3 \text{ dlm}}{755.2 \text{ dlm}}$ = 2.869 d/c

Project No.

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2.

Date of Work

Date

Date

Date

BNW

52626

D08-039

9112135199

I-129

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D08–040

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L S Kellogg	30706	325	8-31-88	L S Kellogg

Number	Series	Classification	
BNW-52344	—	UNCLASSIFIED	147986

LABORATORY RECORD BOOK. AC LEAF. JULY 17. 1987.

BATTELLE MEMORIAL INSTITUTE PACIFIC NORTHWEST LABORATORY TO BE RETAINED BY RECIPIENT

Date	P/R No.	Name	Area	Bldg.	Field Route No.
8-26-88	30706	LS KELLOGG P7-20		325	

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Signature of Recipient	Date

Received For Recipient By	Returned To File	Date

D08-041

60-008(10-84)

912969

front & loose guards trouble

Entered by A.C. Leaf 7/22/87 1

This book is to be used to record the daily standard control counts for the N066 GeLi well detector including ^{241}Am, ^{137}Cs and ^{60}Co
MATE WA4463

Personnel authorized to make entries include:

A.C. Leaf	7/22/87	ACL	Nevada Lois Chaney	10-26-88	NLA
Anne E Kogelsky	7/23/87	AEK	N.R. Weiler	2-14-89	NRW
Jose Kuzyfer	7/23/87	JK	Anne E Kogelsky	10-17-89	AEK
R.E. Johnson Jr.	2/10/88	RJ	Dayna C. Marsh	6-25-90	DCM
Katherine Carr	8/10/88	KJC			

Persons authorized to review LKB

A C Leaf	6/10/88	ACL
S.S. Kellogg	9-20-88	SSK
N.R. Weiler	3-27-89	NRW
Jose Kuzyfer	3-27-89	JK
Anne E Kogelsky	1-2-90	AEK
L.R. Greenwood	9-18-90	LRG

Reviews

Pages 1-13	by ACLeaf	6/10/88
Page 14-16	S.S. Kellogg	9-20-88
Page 17-27	N.R. Weiler	3-27-89
Page 26,	Jose Kuzyfer	3-27-89
Page 26-30		
Page 31-33		
Page 34-37	Anne E Kogelsky	1-2-90

Project No. _____ Date of Work _____
Entered By _____ Date _____
Disclosed To and Understood By
Signed 1. _____ Date _____
2. _____ Date _____

D08-042

MS5-1 CONTROL SOURCE
ND66 Ge(Li)Well
Twenty Data Points

DATE	241AM	137CS	60CO
08/01/88	189902	61565	21739
08/08/88	189467	61411	21694
08/15/88	190241	61903	21870
08/26/88	189154	61866	21510
09/01/88	189492	61351	21184
09/07/88	189769	61631	21891
09/14/88	189266	61654	21566
09/24/88	189483	61503	21330
10/03/88	189620	61753	21654
10/07/88	189721	61352	21534
10/19/88	189557	61459	21268
10/25/88	189821	61335	21112
10/31/88	188123	61250	21077
11/07/88	187878	61409	21182
11/15/88	189533	61211	20967
11/22/88	190480	61507	20967
11/30/88	190416	61236	21080
12/05/88	189901	61307	21063
12/08/88	189585	61515	20932
12/12/88	189469	61636	20871

Entered by Jim Ruggles 1/9/90

BNW 52344
Page 38
Jim Ruggles

BNW LABORATORY NOTEBOOK NO. 52344

COPIED FOR PNL RECORDS CENTER AUG 23 '90

9112171512 03

CONTROL CHART GENERATION PROGRAM

COUNTING SYSTEM: ND-66 GE(LI) WELL SYSTEM
CONTROL NUCLIDE: MS5-1 MIXED SOURCE: AM-241
NUCLIDE HALF LIFE: 432.2 YEARS

NUMERICAL DATA INPUT SUMMARY

NUMBER OF DATA POINTS:	20
X BAR:	189553.10
SUM OF COUNT RATES:	3791061.95
SUM OF COUNT RATE SQUARES:	718614258875.49
REFERENCE DATE:	8- 1-88

THE STANDARD DEVIATION AT THE 95% CONFIDENCE LEVEL IS		1244.94
THE 95% CONFIDENCE LEVEL LIMITS ARE	188308.15	190798.04
THE 1% X BAR LIMITS ARE	187657.57	191448.63
THE 2% X BAR LIMITS ARE	185762.04	193344.16
THE 3% X BAR LIMITS ARE	183866.51	195239.69
THE REFERENCE DATE IS		8- 1-88
THE X BAR OF THE DATA POINTS IS		189425.79
THE STANDARD DEVIATION AT THE 95% CONFIDENCE LEVEL IS		1244.11
THE 95% CONFIDENCE LEVEL LIMITS ARE	188181.68	190669.90
THE 1% X BAR LIMITS ARE	187531.53	191320.05
THE 2% X BAR LIMITS ARE	185637.28	193214.30
THE 3% X BAR LIMITS ARE	183743.02	195108.56
THE REFERENCE DATE IS		1- 1-89

THE DECAY INTERVAL MEASURED FROM THE EXISTING CONTROLS DATE IS .4189 YEARS

THE X BAR OF THE DATA POINTS IS		189123.29
THE STANDARD DEVIATION AT THE 95% CONFIDENCE LEVEL IS		1242.12
THE 95% CONFIDENCE LEVEL LIMITS ARE	187881.17	190365.41
THE 1% X BAR LIMITS ARE	187232.06	191014.52
THE 2% X BAR LIMITS ARE	185340.83	192905.75
THE 3% X BAR LIMITS ARE	183449.60	194796.98
THE REFERENCE DATE IS		12-31-89

THE DECAY INTERVAL MEASURED FROM THE EXISTING CONTROLS DATE IS 1.4155 YEARS

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Page 37

BNW LABORATORY BOOK NO. 52344
PREPARED FOR PNL KEWALO CENTER
AUG 23 '90

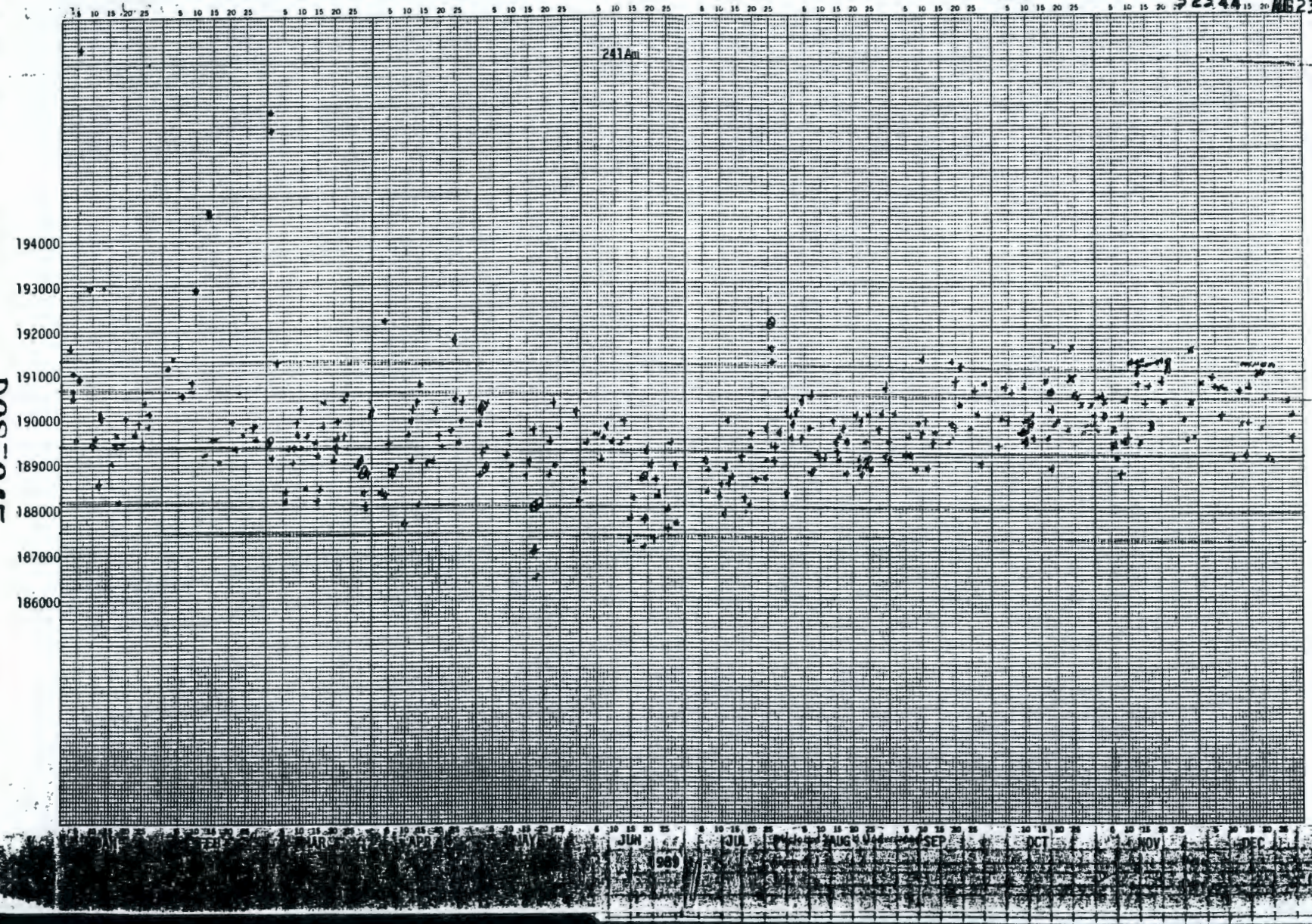
D08-044

COUNTING SYSTEM: ND-66 GE(Li) WELL
CONTROL NUCLIDE: 241Am of MS5-1 241Am+137Cs+60Co 59.5 Kev
NUCLIDE HALF LIFE: 432.2 YEARS 0.5 (NUCLEAR DATA SHEETS 1/78)

— X̄
— 95% Confidence Level
— 1% of X̄

RHW LABORATORY NOTEBOOK NO. 52344

COPIED FROM PNL RECORDS CENTER AUG 23 '80



D08-045

CONTROL CHART GENERATION PROGRAM

COUNTING SYSTEM: ND-66 GE(LI) WELL SYSTEM
CONTROL NUCLIDE: MS5-1 MIXED SOURCE: CS-137
NUCLIDE HALF LIFE: 30.17 YEARS

NUMERICAL DATA INPUT SUMMARY

NUMBER OF DATA POINTS:	20
X BAR:	61768.50
SUM OF COUNT RATES:	1235370.03
SUM OF COUNT RATE SQUARES:	76307659830.92
REFERENCE DATE:	8- 1-88

THE STANDARD DEVIATION AT THE 95% CONFIDENCE LEVEL IS		402.92
THE 95% CONFIDENCE LEVEL LIMITS ARE	61365.58	62171.42
THE 1% X BAR LIMITS ARE	61150.82	62386.19
THE 2% X BAR LIMITS ARE	60533.13	63003.87
THE 3% X BAR LIMITS ARE	59915.45	63621.55
THE REFERENCE DATE IS		8- 1-88

THE X BAR OF THE DATA POINTS IS		61176.89
THE STANDARD DEVIATION AT THE 95% CONFIDENCE LEVEL IS		399.06
THE 95% CONFIDENCE LEVEL LIMITS ARE	60777.83	61575.95
THE 1% X BAR LIMITS ARE	60565.12	61788.66
THE 2% X BAR LIMITS ARE	59953.35	62400.42
THE 3% X BAR LIMITS ARE	59341.58	63012.19
THE REFERENCE DATE IS		1- 1-89

THE DECAY INTERVAL MEASURED FROM THE EXISTING CONTROLS DATE IS .4189 YEARS

THE X BAR OF THE DATA POINTS IS		59792.06
THE STANDARD DEVIATION AT THE 95% CONFIDENCE LEVEL IS		390.03
THE 95% CONFIDENCE LEVEL LIMITS ARE	59402.03	60182.09
THE 1% X BAR LIMITS ARE	59194.14	60389.98
THE 2% X BAR LIMITS ARE	58596.22	60987.90
THE 3% X BAR LIMITS ARE	57998.30	61585.82
THE REFERENCE DATE IS		12-31-89

THE DECAY INTERVAL MEASURED FROM THE EXISTING CONTROLS DATE IS 1.4155 YEARS

Future 1/1/90
Future 12/31/90
From Hogan's notebook

BNW 5.2344
Page 41
John Ruzicka

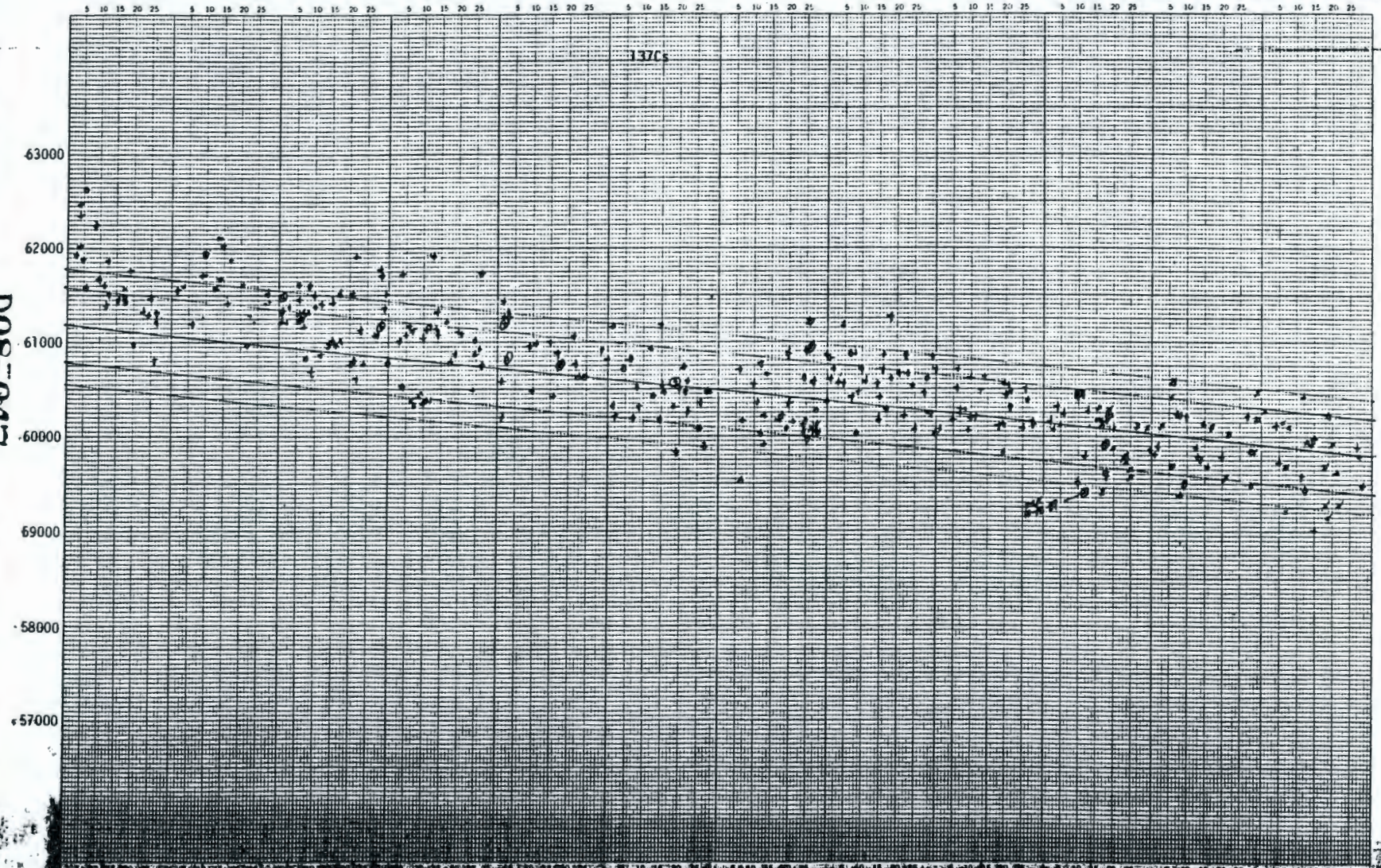
BNW LABORATORY NOTEBOOK NO. 5.2344
PROPERTY OF PNL RECORDS CENTER
AUG 23 '90

9 1 1 2 1 1 1 2 0 7

COUNTING SYSTEM: ND-66 GE(L1) WELL
CONTROL NUCLIDE: 137Cs of MS5-1 241Am+137Cs+60Co 662 Kev (661.4)
NUCLIDE HALF LIFE: 30.17 YEARS

— X
— 95% Confidence Level
— 1% of X

LABORATORY NOTEBOOK NO 5 2 3 4 4 RECORDS CENTER AUG 23 '90



DO8-047

CONTROL CHART GENERATION PROGRAM

COUNTING SYSTEM: ND-66 GE(LI) WELL SYSTEM
CONTROL NUCLIDE: MS5-1 MIXED SOURCE: CO-60
NUCLIDE HALF LIFE: 5.271 YEARS

NUMERICAL DATA INPUT SUMMARY

NUMBER OF DATA POINTS:	20
X BAR:	21865.94
SUM OF COUNT RATES:	437318.81
SUM OF COUNT RATE SQUARES:	9562890846.09
REFERENCE DATE:	8- 1-88

THE STANDARD DEVIATION AT THE 95% CONFIDENCE LEVEL IS		340.74
THE 95% CONFIDENCE LEVEL LIMITS ARE	21525.20	22206.68
THE 1% X BAR LIMITS ARE	21647.28	22084.60
THE 2% X BAR LIMITS ARE	21428.62	22303.26
THE 3% X BAR LIMITS ARE	21209.96	22521.92
THE REFERENCE DATE IS		8- 1-88

THE X BAR OF THE DATA POINTS IS		20694.00
THE STANDARD DEVIATION AT THE 95% CONFIDENCE LEVEL IS		322.48
THE 95% CONFIDENCE LEVEL LIMITS ARE	20371.53	21016.48
THE 1% X BAR LIMITS ARE	20487.06	20900.94
THE 2% X BAR LIMITS ARE	20280.12	21107.88
THE 3% X BAR LIMITS ARE	20073.18	21314.82
THE REFERENCE DATE IS		1- 1-89

THE DECAY INTERVAL MEASURED FROM THE EXISTING CONTROLS DATE IS .4189 YEARS

THE X BAR OF THE DATA POINTS IS		18152.15
THE STANDARD DEVIATION AT THE 95% CONFIDENCE LEVEL IS		282.87
THE 95% CONFIDENCE LEVEL LIMITS ARE	17869.29	18435.02
THE 1% X BAR LIMITS ARE	17970.63	18333.67
THE 2% X BAR LIMITS ARE	17789.11	18515.20
THE 3% X BAR LIMITS ARE	17607.59	18696.72
THE REFERENCE DATE IS		12-31-89

THE DECAY INTERVAL MEASURED FROM THE EXISTING CONTROLS DATE IS 1.4155 YEARS

BNd 52344
Page 43
Jim Rugfed

52344 AUG 23 '90

D08-048

9 1 1 2 1 0 1 2 0 9

COUNTING SYSTEM: ND-66 GE(LI) WELL
CONTROL NUCLIDE: 60Co of MS5-1 241Am+137Cs+60Co 1332.5 Kev
NUCLIDE HALF LIFE: 5.271 YEARS

— X
— 95% Confidence Level
— 2% of $\bar{X}$
— 1% of $\bar{X}$

LABORATORY NOTEBOOK NO 52344

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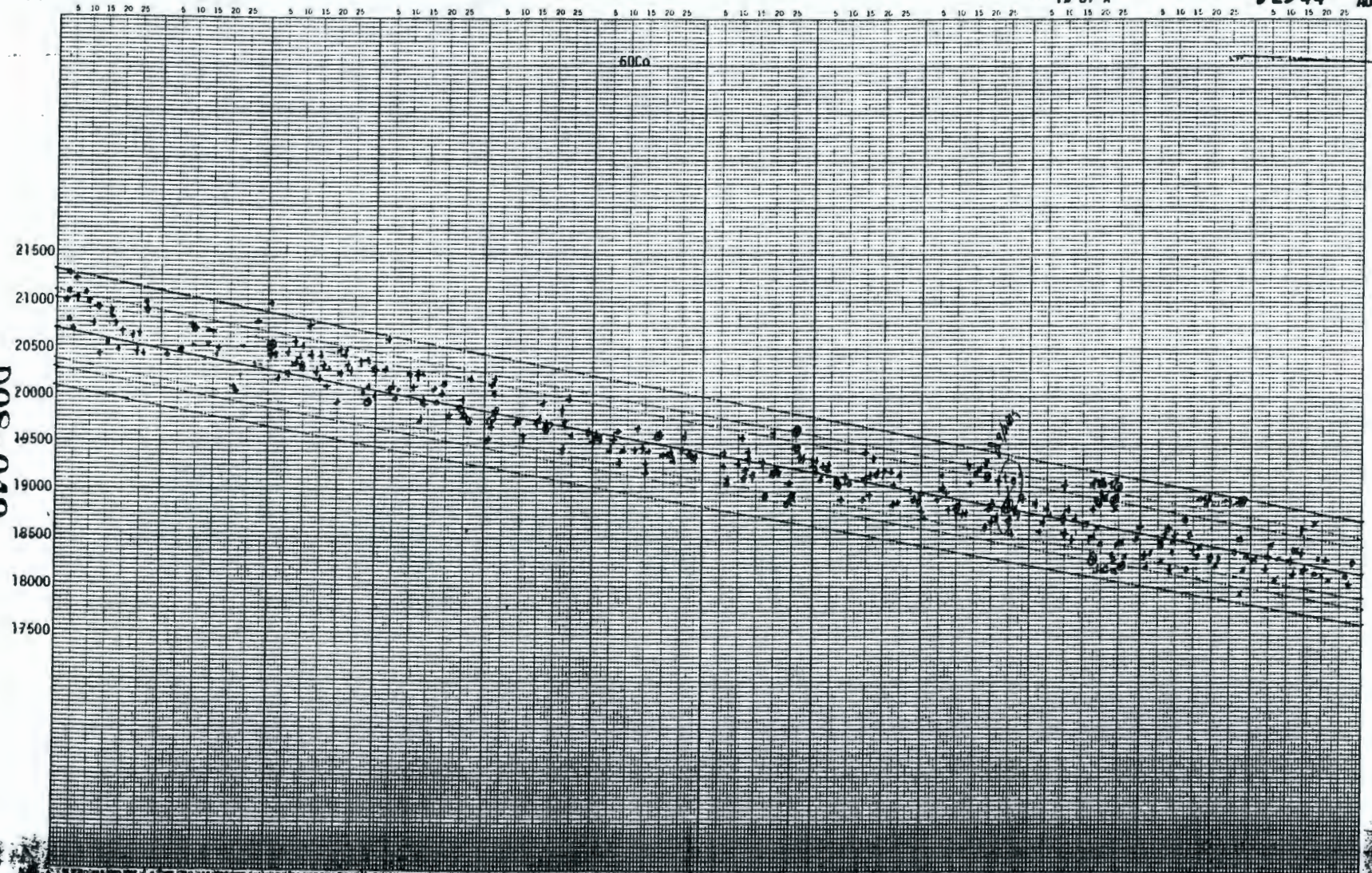
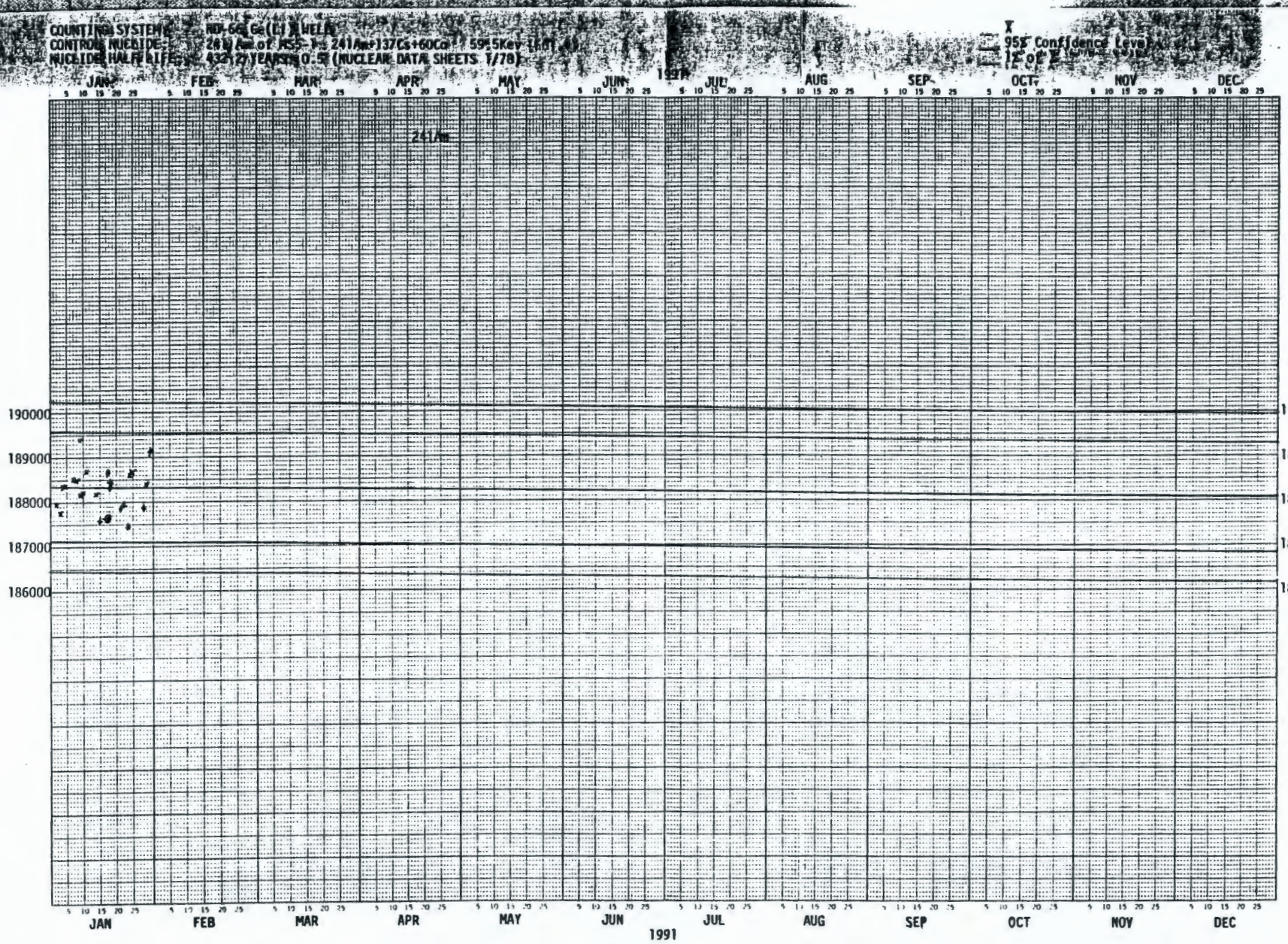


D08-049

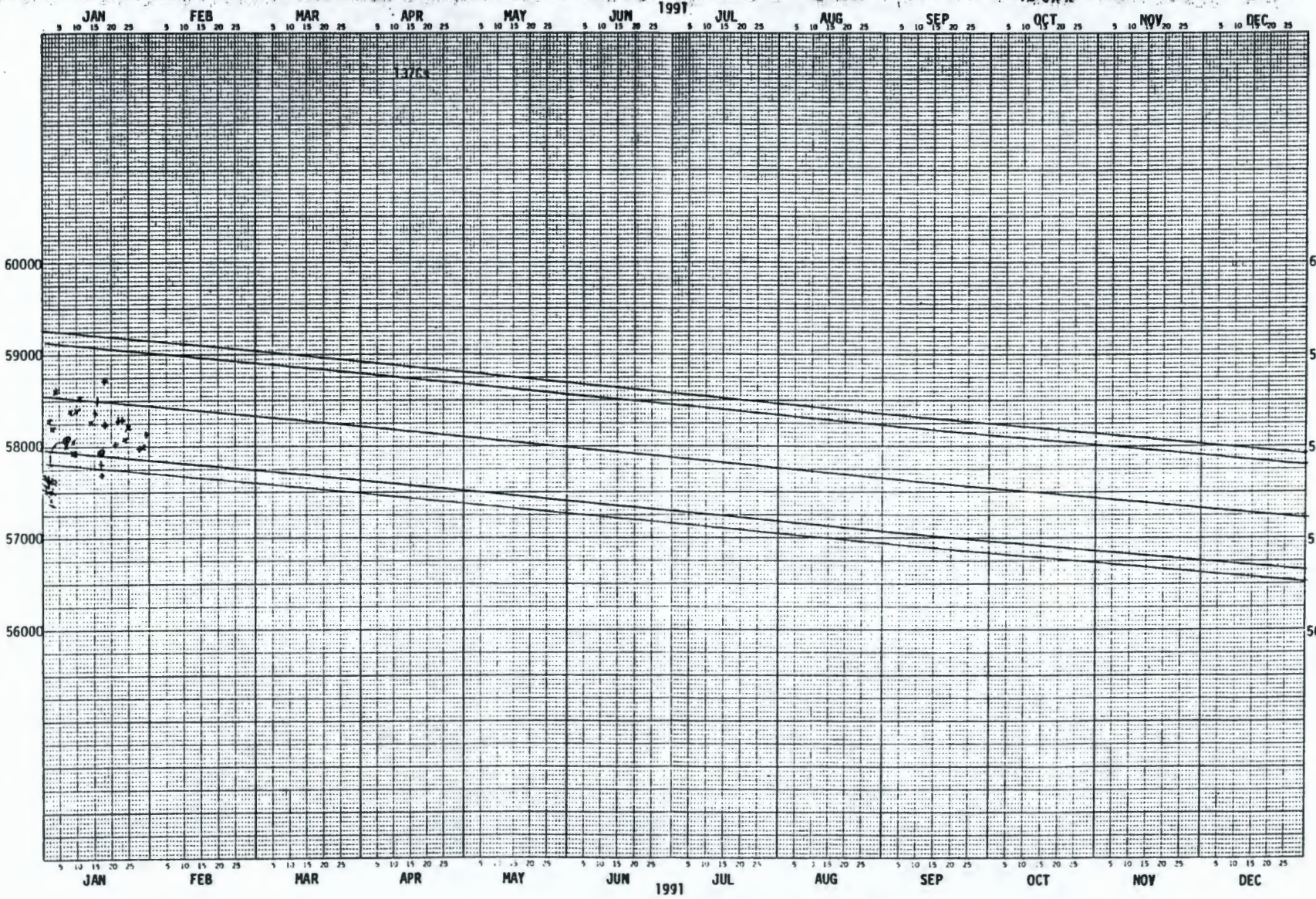


47 2730

K+E 1 YEAR 10 DAYS X 10 DIVISIONS KEUFFEL & ESSER CO.

D08-050

9 1 1 2 1 5 1 2 1 0



D08-051

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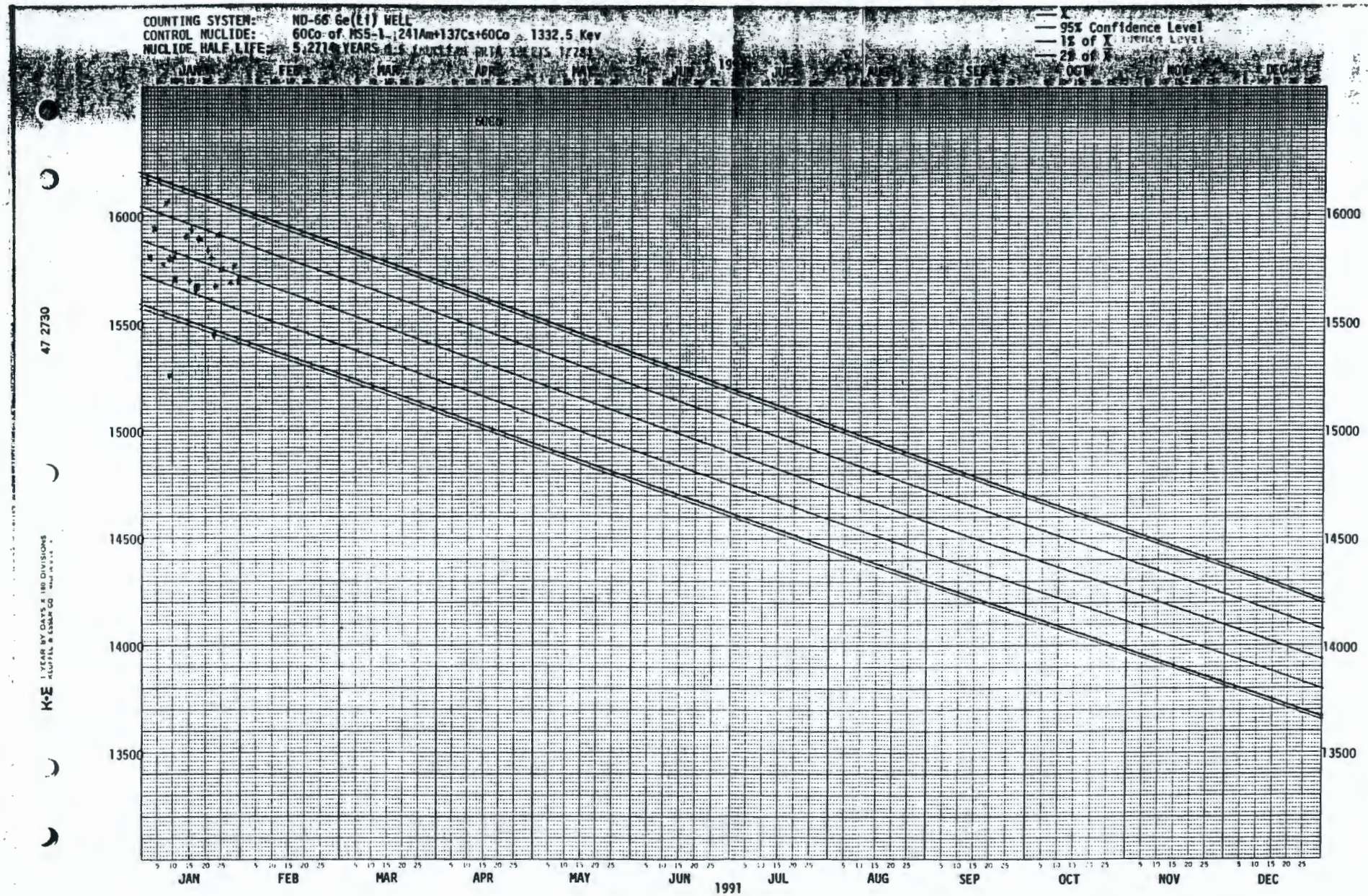

D08-052

9 1 1 2 1 1 2 1 2

CONTROL CHART GENERATION PROGRAM

COUNTING SYSTEM: ND-66 GE(LI) WELL
CONTROL NUCLIDE: AM-241
NUCLIDE HALF LIFE: 432.2 YEARS

NUMERICAL DATA INPUT SUMMARY

POINT	COUNT DATE	COUNT [C/M]
1	8- 7-90	18749.60
2	8-14-90	18736.00
3	8-21-90	18847.20
4	8-28-90	18887.30
5	9- 4-90	18888.70
6	9-11-90	18772.00
7	9-18-90	18771.00
8	9-25-90	18885.50
9	10- 2-90	18768.10
10	10- 9-90	18954.00
11	10-16-90	18896.10
12	10-23-90	18862.60
13	10-30-90	18853.10
14	11- 6-90	18875.70
15	11-13-90	18836.50
16	11-20-90	18862.30
17	11-27-90	18860.40
18	12- 4-90	18901.70
19	12-11-90	18798.70
20	12-18-90	18851.20

NUMBER OF DATA POINTS: 20
X BAR: 18848.39
SUM OF COUNT RATES: 376968.00
SUM OF COUNT RATE SQUARES: 7105300000.00
STANDARD DEVIATION: 58.27
[CHI SQUARE]/N: 1.717740
REFERENCE DATE: 8- 7-90

THE STANDARD DEVIATION AT THE 95% CONFIDENCE LEVEL IS 121.96
THE STANDARD DEVIATION AT THE 1 SIGMA CONFIDENCE LEVEL IS 58.27

THE 95% CONFIDENCE LEVEL LIMITS ARE	18726.44	18970.35
THE 1 SIGMA CONFIDENCE LEVEL LIMITS ARE	18790.12	18906.66
THE 1% X BAR LIMITS ARE	18659.91	19036.88
THE 2% X BAR LIMITS ARE	18471.43	19225.36
THE 3% X BAR LIMITS ARE	18282.94	19413.85
THE REFERENCE DATE IS		8- 7-90

THE X BAR OF THE DATA POINTS IS 18836.23
THE STANDARD DEVIATION AT THE 95% CONFIDENCE LEVEL IS 121.88
THE STANDARD DEVIATION AT THE 1 SIGMA CONFIDENCE LEVEL IS 58.23

THE 95% CONFIDENCE LEVEL LIMITS ARE	18714.35	18958.11
THE 1 SIGMA CONFIDENCE LEVEL LIMITS ARE	18778.00	18894.46
THE 1% X BAR LIMITS ARE	18647.87	19024.59
THE 2% X BAR LIMITS ARE	18459.51	19212.96
THE 3% X BAR LIMITS ARE	18271.15	19401.32
THE REFERENCE DATE IS		1- 1-91

THE DECAY INTERVAL MEASURED FROM THE EXISTING CONTROLS DATE IS .402473 YEARS

THE X BAR OF THE DATA POINTS IS 18806.15
THE STANDARD DEVIATION AT THE 95% CONFIDENCE LEVEL IS 121.69
THE STANDARD DEVIATION AT THE 1 SIGMA CONFIDENCE LEVEL IS 58.14

THE 95% CONFIDENCE LEVEL LIMITS ARE	18684.47	18927.84
THE 1 SIGMA CONFIDENCE LEVEL LIMITS ARE	18748.01	18864.29
THE 1% X BAR LIMITS ARE	18618.09	18994.21
THE 2% X BAR LIMITS ARE	18430.03	19182.27
THE 3% X BAR LIMITS ARE	18241.97	19370.33
THE REFERENCE DATE IS		12-31-91

THE DECAY INTERVAL MEASURED FROM THE EXISTING CONTROLS DATE IS 1.39907 YEARS

D08-053

9112150213

CONTROL CHART GENERATION PROGRAM

COUNTING SYSTEM: ND-66 GE(LI) WELL
CONTROL NUCLIDE: CS-137
NUCLIDE HALF LIFE: 30.174 YEARS

NUMERICAL DATA INPUT SUMMARY

POINT	COUNT DATE	COUNT [C/M]
1	8- 7-90	5860.40
2	8-14-90	5885.80
3	8-21-90	5963.90
4	8-28-90	5867.50
5	9- 4-90	5918.40
6	9-11-90	5901.50
7	9-18-90	5929.20
8	9-25-90	5833.70
9	10- 2-90	5861.20
10	10- 9-90	5904.10
11	10-16-90	5935.50
12	10-23-90	5938.80
13	10-30-90	5881.20
14	11- 6-90	5902.10
15	11-13-90	5872.10
16	11-20-90	5858.50
17	11-27-90	5862.00
18	12- 4-90	5830.10
19	12-11-90	5867.40
20	12-18-90	5829.10

NUMBER OF DATA POINTS: 20
X BAR: 5909.77
SUM OF COUNT RATES: 118195.00
SUM OF COUNT RATE SQUARES: 698531000.00
STANDARD DEVIATION: 34.73
[CHI SQUARE]/N: 1.937300 OUT OF LIMITS
REFERENCE DATE: 8- 7-90

THE STANDARD DEVIATION AT THE 95% CONFIDENCE LEVEL IS 72.68

THE 95% CONFIDENCE LEVEL LIMITS ARE	5837.09	5982.45
THE 1% X BAR LIMITS ARE	5850.67	5968.87
THE 2% X BAR LIMITS ARE	5791.58	6027.97
THE 3% X BAR LIMITS ARE	5732.48	6087.06
THE REFERENCE DATE IS		8- 7-90

THE X BAR OF THE DATA POINTS IS 5855.38
THE STANDARD DEVIATION AT THE 95% CONFIDENCE LEVEL IS 72.01

THE 95% CONFIDENCE LEVEL LIMITS ARE	5783.37	5927.40
THE 1% X BAR LIMITS ARE	5796.83	5913.94
THE 2% X BAR LIMITS ARE	5738.28	5972.49
THE 3% X BAR LIMITS ARE	5679.72	6031.05
THE REFERENCE DATE IS		1- 1-91

THE DECAY INTERVAL MEASURED FROM THE EXISTING CONTROLS DATE IS .402473 YEARS

THE X BAR OF THE DATA POINTS IS 5722.86
THE STANDARD DEVIATION AT THE 95% CONFIDENCE LEVEL IS 70.38

THE 95% CONFIDENCE LEVEL LIMITS ARE	5652.47	5793.24
THE 1% X BAR LIMITS ARE	5665.63	5780.08
THE 2% X BAR LIMITS ARE	5608.40	5837.31
THE 3% X BAR LIMITS ARE	5551.17	5894.54
THE REFERENCE DATE IS		12-31-91

THE DECAY INTERVAL MEASURED FROM THE EXISTING CONTROLS DATE IS 1.39907 YEARS

CONTROL CHART GENERATION PROGRAM

COUNTING SYSTEM: ND-66 GE(LI) WELL
CONTROL NUCLIDE: CO-60
NUCLIDE HALF LIFE: 5.2714 YEARS

NUMERICAL DATA INPUT SUMMARY

POINT	COUNT DATE	COUNT [C/M]
1	8- 7-90	1651.60
2	8-14-90	1650.40
3	8-21-90	1656.20
4	8-28-90	1658.70
5	9- 4-90	1658.80
6	9-11-90	1662.60
7	9-18-90	1635.90
8	9-25-90	1626.60
9	10- 2-90	1634.30
10	10- 9-90	1654.70
11	10-16-90	1653.90
12	10-23-90	1662.40
13	10-30-90	1616.50
14	11- 6-90	1621.80
15	11-13-90	1628.90
16	11-20-90	1623.80
17	11-27-90	1600.60
18	12- 4-90	1599.20
19	12-11-90	1604.90
20	12-18-90	1606.70

NUMBER OF DATA POINTS:	20
X BAR:	1674.97
SUM OF COUNT RATES:	33499.40
SUM OF COUNT RATE SQUARES:	56114800.00
STANDARD DEVIATION:	15.07
[CHI SQUARE]/N:	1.287660
REFERENCE DATE:	8- 7-90

THE STANDARD DEVIATION AT THE 95% CONFIDENCE LEVEL IS 31.55

THE 95% CONFIDENCE LEVEL LIMITS ARE	1643.42	1706.52
THE 1% X BAR LIMITS ARE	1658.22	1691.72
THE 2% X BAR LIMITS ARE	1641.47	1708.47
THE 3% X BAR LIMITS ARE	1624.72	1725.22
THE REFERENCE DATE IS		8- 7-90

THE X BAR OF THE DATA POINTS IS 1588.63
THE STANDARD DEVIATION AT THE 95% CONFIDENCE LEVEL IS 29.92

THE 95% CONFIDENCE LEVEL LIMITS ARE	1558.71	1618.55
THE 1% X BAR LIMITS ARE	1572.75	1604.52
THE 2% X BAR LIMITS ARE	1556.86	1620.40
THE 3% X BAR LIMITS ARE	1540.97	1636.29
THE REFERENCE DATE IS		1- 1-91

THE DECAY INTERVAL MEASURED FROM THE EXISTING CONTROLS DATE IS .402473 YEARS

THE X BAR OF THE DATA POINTS IS 1393.51
THE STANDARD DEVIATION AT THE 95% CONFIDENCE LEVEL IS 26.24

THE 95% CONFIDENCE LEVEL LIMITS ARE	1367.27	1419.76
THE 1% X BAR LIMITS ARE	1379.58	1407.45
THE 2% X BAR LIMITS ARE	1365.64	1421.38
THE 3% X BAR LIMITS ARE	1351.71	1435.32
THE REFERENCE DATE IS		12-31-91

THE DECAY INTERVAL MEASURED FROM THE EXISTING CONTROLS DATE IS 1.39907 YEARS

POOR COPY RECEIVED

53

Date	Time	Gross Counts 0-2048	Gamma Energy, Isotopes & Net Cts 59.5 Am 241	661.7 Cs 137	1332.5 Co 60	Analyst	Analyst	Date	Time	Gamma Energy, Isotopes & Net Counts 0-2048	59.5 Am 241	661.7 Cs 137	1332.5 Co 60
8/24/90	0619	948420	188167	58220	16748	HCK	HCK	8/23/90	0708	947888	188239	58995	16753
8/24/90	0622	946458	187364	RC 58445	16526	HCK	HCK	8/24/90	0620	950920	188720	59504	16748
8/24/90	0629	951066	RC 186511	RC 58483	16924	HCK	HCK	8/27/90	0627	951358	188418	59034	16525
8/27/90	0604	949674	RC 188580	RC 59062	16669	HCK	HCK	8/28/90	0641	949302	188873	58675	16587
8/28/90	0617	952415	188540	59299	16769	HCK	HCK	8/29/90	0620	947879	188420	58472	16730
8/29/90	0619	952483	188009	58822	16799	HCK	HCK	8/30/90	0649	952146	189528	59086	16825
8/30/90	0606	951496	188658	RC 58725	16978	HCK	HCK	8/31/90	0615	949998	187993	58999	16670
8/31/90	0622	948966	187284	RC 58292	16555	HCK	HCK	9/4/90	0630	949397	188887	59184	16588
9/4/90	0645	951669	RC 187946	RC 58593	16350	HCK	HCK	9/5/90	0616	948959	188514	58999	16616
9/5/90	0621	951730	188702	58951	17006	HCK	HCK	9/6/90	0621	949117 HCK	189921	59408	16597
9/6/90	0639	950767	189397	58384	16671	HCK	HCK	9/7/90	0620	948668	189000	58519	16628
9/7/90	0601	951838	188781	RC 58779	16791	HCK	HCK	9/10/90	0644	946705	188920	58905	16490
9/10/90	0619	951113	188255	58635	16697	HCK	HCK	9/11/90	0649	947436	187720	RC 59015	16626
9/11/90	0620	952169	188567	59673	16666	HCK	HCK	9/11/90	0631	947216	188383	59047	16571
9/11/90	0617	949884	188304	58577	16607	HCK	HCK	9/12/90	0626	947642	188037	59148	16722
9/12/90	0652	951817	188195	58827	16706	HCK	HCK	9/13/90	0622	948138	187926	58790	16617
9/13/90	0642	952419	188475	58483	16542	HCK	HCK	9/14/90	0643	949915	189111	59176	16572
9/14/90	0620	948517	187496	58604	16516	HCK	HCK	9/17/90	0639	947321	187675	58894	16632
9/17/90	0636	950618	RC 188183	58632	RC 16879	HCK	HCK	9/17/90	0700	948817	RC 189035	59087	16735
9/17/90	0617	946970	187033	58354	16430	HCK	HCK	9/18/90	0623	947260	187710	59242	16359
9/18/90	0631	948991	RC 188574	RC 58869	RC 16725	HCK	HCK	9/18/90	0640	948503	RC 188487	58576	16303
9/18/90	0619	948998	187393	59067	16754	HCK	HCK	9/19/90	0618	947240	188416	59494	16520
9/19/90	0629	948306	RC 187447	58633	16788	HCK	HCK	9/20/90	0620	948314	189092	58621	16470
9/19/90	0607	950228	RC 188150	58722	16663	HCK	HCK	9/21/90	0640	948431	188925	58763	16532
9/20/90	0622	951314	188535	58754	16789	HCK	HCK	9/24/90	0652	947301	188105	58597	16679
9/20/90	0638	949909	187835	58425	16681	HCK	HCK	9/25/90	0624	945856	188856	58337	16266
9/21/90	0617	946546	187360	58458	16504	HCK	HCK	9/26/90	0617	945085	187656	58483	16305
9/21/90	0635	949375	RC 187868	58440	RC 16405	HCK	HCK	9/26/90	0644	946796	RC 189070	58939	16406
9/25/90	0617	949556	188273	58439	16493	HCK	HCK	9/27/90	0630	945660	188552	58673	16380
9/26/90	0619	946779	187708	58044	16439	HCK	HCK	9/28/90	0622	945791	188598	58821	16341
9/26/90	0638	948713	RC 188311	RC 58568	16625	HCK	HCK						
9/27/90	0618	949140	187690	58585	16459	HCK	HCK						
9/27/90	0634	948914	RC 187944	58797	16610	HCK	HCK						
9/28/90	0622	946448	188358	59035	16835	HCK	HCK						
9/28/90	0636	949825	188472	59639	16562	HCK	HCK						
9/28/90	0620	948725	188174	58749	16777	HCK	HCK						

Counter & Power Fail Power Failure.

BNW LABORATORY NOTEBOOK NO. 52344

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Project No. _____ Date of Work _____

Entered By _____ Date _____

Disclosed To and Understood By

Signed 1. Anne E. Kelly 9-28-90 Date _____

2. _____ Date _____

D08-056

front & back signature

9112175112216

54

Page: 54
LRB No.: BNW5234

The following provides evidence of surveillance and/or technical reviews of this LRB in accordance with MG 4.3. When completed, this sheet is to be inserted into the LRB each month.

SURVEILLANCE REVIEWS
(Monthly for Impact Level I or II LRB entries by the Line Manager or delegate, and, if appropriate, by the Project Manager):

Pages Reviewed: 51 6-26-90 through page 53 7-25-90
Date Reviewed: 9-18-90
Basis of Review: Check for legibility, completeness, traceability of entries, and a sample of requirements (1-14) of MG 4.3.

Results:
Legibility and completeness of data meets requirements

Reviewer's Dated Signature: L.R. Greenwood

TECHNICAL REVIEWS
(Monthly reviews for Impact Level I or II LRB entries and prior to Project close out by a technically competent individual):

Pages Reviewed:
Date of Review:
Objective/Approach of Review: To determine (check one or more):
✓ 1) adequacy/appropriateness of methodology
✓ 2) if inferences and conclusions are soundly based
✓ 3) if data reduction and/or calculations are correct
__ 4) other (specify):

Results/Conclusions:
Control data methodology meets requirements.

Reviewer's Dated Signature: L.R. Greenwood

Verified 9/25/90 Shane Hayling

Project No. _____ Date of Work _____
Entered By _____ Date _____
Disclosed To and Understood By
Signed 1. _____ Date _____
2. _____ Date _____

D08-052

It is to be noted that all subsequent pages containing control data shall have the following header in either handwritten or typed format:

Germanium-Lithium Well Detector (Ge[Li])
Daily Control Standard Counts

DATE	TIME	GROSS COUNTS 0-2048	GAMMA ENERGY, Isotopes & Net Cts 59.1 Am 241	661.7 Cs 137	1332.5 Co 60	ANALYST	DATE	TIME	GAMMA ENERGY, Isotopes & Net Cts 59.1 Am 241	661.7 Cs 137	1332.5 Co 60	GROSS COUNTS 0-2048

The typed format shall include the L.R.C. number and the page number.

Germanium-Lithium Well Detector (Ge[Li])
Daily Control Standard Counts

Date	Time	Gross Counts 0-2048	Gamma Energy, Isotope & Net Counts 59.1 Am241	661.7 Cs137	1332.5 Co60	Analyst	Date	Time	Gross Counts 0-2048	Gamma Energy, Isotope & Net Counts 59.1 Am241	661.7 Cs137	1332.5 Co60

Entered by Anne E. Kozelsky 7/30/90

Approved by Gretchen K. Gerber, QE
July 30, 1990

Project No. _____ Date of Work _____
Entered By _____ Date _____
Disclosed To and Understood By
Signed 1. _____ Date _____
2. _____ Date _____

D08-058

From 4 loose pieces of text & data

Page: 56
LRB No.: BNW 52344

The following provides evidence of surveillance and/or technical reviews of this LRB in accordance with MG 4.3. When completed, this sheet is to be inserted into the LRB each month.

SURVEILLANCE REVIEWS
(Monthly for Impact Level I or II LRB entries by the Line Manager or delegate, and, if appropriate, by the Project Manager):

Pages Reviewed: Page 53 7-26-90 through page 53 8-27-90
Date Reviewed: 9-18-90
Basis of Review: Check for legibility, completeness, traceability of entries, and a sample of requirements (1-14) of MG 4.3.

Results:

Legibility and completeness of data meets requirements.

Reviewer's Dated Signature: L.R. Greenwood

TECHNICAL REVIEWS
(Monthly reviews for Impact Level I or II LRB entries and prior to Project close out by a technically competent individual):

Pages Reviewed: Same as above
Date of Review:
Objective/Approach of Review: To determine (check one or more):
✓ 1) adequacy/appropriateness of methodology
✓ 2) if inferences and conclusions are soundly based
✓ 3) if data reduction and/or calculations are correct
___ 4) other (specify):

Results/Conclusions:

Control data methodology meets requirements.

Reviewer's Dated Signature: L.R. Greenwood

Entered 8-29-90 Anne E. Kolodoff

Project No. _____ Date of Work _____
Entered By _____ Date _____
Disclosed To and Understood By
Signed 1. _____ Date _____
2. _____ Date _____

D08-059

9112119

Page: 57
LRB No.: BNW52344

The following provides evidence of surveillance and/or technical reviews of this LRB in accordance with MG 4.3. When completed, this sheet is to be inserted into the LRB each month.

SURVEILLANCE REVIEWS
(Monthly for Impact Level I or II LRB entries by the Line Manager or delegate, and, if appropriate, by the Project Manager):

Pages Reviewed: Page 53 8-28-90 through page 53 9-27-90
Date Reviewed: 9-27-90
Basis of Review: Check for legibility, completeness, traceability of entries, and a sample of requirements (1-14) of MG 4.3.
Results:
Data entries meet requirements.

Reviewer's Dated Signature: L.R. Greenwood

TECHNICAL REVIEWS
(Monthly reviews for Impact Level I or II LRB entries and prior to Project close out by a technically competent individual):

Pages Reviewed: Same as above.
Date of Review:
Objective/Approach of Review: To determine (check one or more):
✓ 1) adequacy/appropriateness of methodology
✓ 2) if inferences and conclusions are soundly based
✓ 3) if data reduction and/or calculations are correct
__ 4) other (specify):

Results/Conclusions:
methodology meets requirements.

Reviewer's Dated Signature: L.R. Greenwood

Initialed 9-27-90 Ahmed Tayebi

Project No. ____ Date of Work ____
Entered By ____ Date ____
Disclosed To and Understood By
Signed 1. ____ Date ____
2. ____ Date ____

DOS-060

9112120

BNH52344 p. 58

58

Germanium-Lithium Well Detector (Ge-Li)
Daily Control Standard Counts

Date	Time	Gross Counts	Gamma Energy, Isotope & Net Counts: 59.5 Am241	cat. 1 Cs137	1332.5 Co60	Initials		Date	Time	Gross Counts	Gamma Energy, Isotope & Net Counts: 59.5 Am241	cat. 1 Cs137	1332.5 Co60
10/1/90	0622	946894	188691	58204	16242	HK	HK	11/12/90	0742	943714	188841	58690	16431
* 10/2/90	0635	944396	187681	58612	16343	HK	HK	11/13/90	* 0716	942245	188365	58721	16289
10/2/90	0704	944995	RC 187577	58447	16274	HK	HK	11/14/90	0718	940677	188330	58298	16266
10/2/90	0720	944098	RC 188426	58734	16125	HK	HK	11/15/90	0721	942008	188960	59100	16161
10/3/90	0617	941038	187977	58517	16423	HK	HK	11/16/90	0721	941847	188206	58112	16188
10/4/90	0621	945313	188986	58860	16520	HK	HK	11/18/90	0727	942488	188841	58079	16231
Source counts													
10/5/90	0719	946259	188626	59267	16522	HK	HK	11/20/90	* 0720	941566	188623	58585	16228
10/8/90	0624	947523	189081	58799	16461	HK	HK	11/26/90	0717	940986	188190	58493	15902
* 10/9/90	0620	944644	189510	59041	16547	HK	HK	11/27/90	* 0738	940319	187604	58620	16006
10/10/90	0606	945244	188308	58800	16373	HK	HK	11/28/90	0722	941093	187831	59200	16228
10/11/90	0618	946739	188383	58698	16177	HK	HK	11/29/90	0714	938061	188701	58627	16183
10/15/90	0623	943873	187912	58804	16597	HK	HK	11/30/90	0900	939187	187709	58369	16093
* 10/16/90	0641	946152	188961	59355	16539	HK	HK	11/30/90	RC 0930	940995	RC 188185	58650	16158
10/17/90	0639	946661	188318	59851	16349	HK	HK	12/3/90	RC 0727	938083	187618	58392	15936
10/18/90	0643	944739	188746	58895	16154	HK	HK	12/4/90	RC 0745	933550	RC 188453	58635	16118
10/19/90	0647	946410	188757	59470	16501	HK	HK	12/4/90	* 0819	933562	189017	58301	15992
10/22/90	0630	949662	189039	59211	16357	HK	HK	12/5/90	0732	939257	188823	58967	15977
* 10/23/90	0709	945920	188626	59388	16624	HK	HK	12/6/90	0751	939924	187370	58677	15991
10/23/90	0739	946147	188536	59296	RC 16389	HK	HK	12/10/90	RC 0816	940145	188200	58658	16013
10/24/90	0634	945075	188877	58737	16286	HK	HK	12/7/90	0724	937325	188343	58617	15956
10/25/90	0650	944618	188721	58532	16241	HK	HK	12/7/90	RC 0748	939045	188750	58108	RC 16236
10/26/90	0651	944456	187907	59443	16396	HK	HK	12/10/90	0743	939243	188718	58665	16188
10/29/90	0737	945256	188779	58987	16462	HK	HK	12/11/90	* 0726	937451	187787	58674	16099
* 10/30/90	0740	944642	188531	58812	16165	HK	HK	12/12/90	0721	939715	189157	58989	16166
10/31/90	0714	943426	188396	58539	16178	HK	HK	12/13/90	0722	938752	188715	58908	15961
11/1/90	0746 0815	945674	189277	58535	16193	HK	HK	12/14/90	0715	937600	189012	58604	15957
11/2/90	0720	944656	188723	58961	16027	HK	HK	12/17/90	0737	936162	188195	58276	16028
11/5/90	0752	943535	188019	58478	16784	HK	HK	12/18/90	* 0729	935753	188512	58291	16067
11/5/90	0811	944371	188649	58831	RC 16439	HK	HK	12/19/90	1027	937809	187709	58874	15813
* 11/6/90	0718	946187	188757	59021	16218	HK	HK	12/19/90	RC 1048	938596	RC 188120	58993	15958
11/7/90	0724	943794	188038	58167	16396	HK	HK	12/20/90	0742	937793	188527	58459	15911
11/8/90	0718	940862	187632	58607	16377	HK	HK	12/27/90	0724	936117	188341	58336	15866
11/8/90	0730	942537	RC 189048	58267	16205	HK	HK	12/27/90	1010	933823	187718	58549	16041
11/9/90	0709	943886	189270	59013	15884	HK	HK	12/31	0729	937750	187956	58279	16155
11/9/90	0723	944164	189463	58663	RC 16205	HK	HK	1/3/91	0732	936046	187776	58199	15805

Project No. _____ Date of Work _____

Entered By _____ Date _____

Disclosed To and Understood By

Signed 1. _____ Date _____

2. _____ Date _____

D08-061

Page: 59
LRB No.: BNW 52344

The following provides evidence of surveillance and/or technical reviews of this LRB in accordance with MG 4.3. When completed, this sheet is to be inserted into the LRB each month.

SURVEILLANCE REVIEWS
(Monthly for Impact Level I or II LRB entries by the Line Manager or delegate, and, if appropriate, by the Project Manager):

Pages Reviewed: 53 9-28-90 through page 58 10-31-90
Date Reviewed:
Basis of Review: Check for legibility, completeness, traceability of entries, and a sample of requirements (1-14) of MG 4.3.
Results:

Data entries meet req.

Reviewer's Dated Signature: L. Greenwood 10/31/90

TECHNICAL REVIEWS
(Monthly reviews for Impact Level I or II LRB entries and prior to Project close out by a technically competent individual):

Pages Reviewed: Same as above
Date of Review:
Objective/Approach of Review: To determine (check one or more):
✓ 1) adequacy/appropriateness of methodology
✓ 2) if inferences and conclusions are soundly based
✓ 3) if data reduction and/or calculations are correct
— 4) other (specify):

Results/Conclusions:

methodology meets req.

Reviewer's Dated Signature: L. Greenwood 10/31/90

Entered 10-31-90 Above Entry

Project No. _____ Date of Work _____
Entered By _____ Date _____
Disclosed To and Understood By
Signed 1. _____ Date _____
2. _____ Date _____

D08-062

LRB No.: BNW 52344 page 60

SURVEILLANCE AND TECHNICAL REVIEW

(Monthly for (PNL) Impact Level I or II LRB entries by the Line Manager or delegate, and, if appropriate, by the Project Manager. In addition, Technical Review required prior to Project close out.):

Pages Reviewed: 58 11-1-90 through 11-30-90.

Basis of Surveillance Review is to check for legibility, completeness, traceability of entries, and a sample of requirements (1-14) of MG 4.3.

Objective/Approach of Technical Review is to determine (check one or more):

- ✓ adequacy/appropriateness of methodology
- ✓ if inferences and conclusions are soundly based
- ✓ if data reduction and/or calculations are correct
- ___ other (specify): ___

Results/Conclusions: Data entries and methodology meet requirements.

Reviewer L. R. Greenwood Date 11/30/90

Signed 11-30-90 thru Entry 11

Project No. ___ Date of Work ___

Entered By ___ Date ___

Disclosed To and Understood By

Signed 1. ___ Date ___

2. ___ Date ___

LRB No.: BNW 52344 page 61

SURVEILLANCE AND TECHNICAL REVIEW

(Monthly for (PNL) Impact Level I or II LRB entries by the Line Manager or delegate, and, if appropriate, by the Project Manager. In addition, Technical Review required prior to Project close out.):

Pages Reviewed: 58 12-3-90 → 12-27-90

Basis of Surveillance Review is to check for legibility, completeness, traceability of entries, and a sample of requirements (1-14) of MG 4.3.

Objective/Approach of Technical Review is to determine (check one or more):

- ✓ adequacy/appropriateness of methodology
- ✓ if inferences and conclusions are soundly based
- ✓ if data reduction and/or calculations are correct
- ___ other (specify): ___

Results/Conclusions: Data entries and methodology meet requirements.

Reviewer L. R. Greenwood Date 1/2/91

Initial 1-3-91 Mark Copeland

Project No. ___ Date of Work ___

Entered By ___ Date ___

Disclosed To and Understood By

Signed 1. ___ Date ___

2. ___ Date ___

D08-064

9111215124

62

Germanium-Lithium Well Detector (Ge-Li)
Daily Control Standard Counts

Date	Time	Gross Counts	Net Counts				Date	Time	Gross Counts	Gamma Energy, Isotope & Net Counts			
1/4/91	0730	937414	188378	58606	15942	HK							
1/5/91	0745	938143	188511	58018	15777	HK							
1/6/91	0751	936679	188498	58379	16060	HK							
1/8/91	0721	937574	189393	58054	15257	HK							
1/9/91	0738	936578	188166	57921	15795	HK							
1/10/91	0818	935353	188205	58397	15800	HK							
1/11/91	0743	937678	188698	58524	15702	HK							
1/14/91	0725	933778	188171	58260	15903	HK							
1/15/91	0721	933443	187579	58364	15797	R							
1/16/91	0816	932348	187673	58500	15938	R							
1/17/91	0710	933174	188441	57811	15647	R							
1/17/91	1040	933374	188664	57691	15676	R							
1/17/91	0910	931533	187607	57918	15271	R							
1/18/91	0723	934446	188307	58128	15772	R							
1/18/91	0745	933836	188449	58244	15883	R							
1/21/91	0830	934321	187841	58011	15838	R							
1/22/91	0832	934418	187907	58245	15802	R							
1/23/91	0821	933834	187417	57283	15276	R							
1/24/91	0804	933464	188606	58075	15913	HK							
1/25/91	0841	934263	188677	58216	15748	HK							
1/28/91	0857	931246	187785	57973	15281	R							
1/29/91	0758	931957	188391	57981	15769	HK							
1/31/91	0721	930645	187158	58146	15700	R							

Project No. _____ Date of Work _____

Entered By _____ Date _____

Disclosed To and Understood By

Signed 1. _____ Date _____

2. _____ Date _____

D08-065

9111210225

BNW52341 p. 63

MX5-1 CONTROL SOURCE
ND66 Ge(Li)Well
Twenty Data Points

Point #	Date	241Am	137Cs	60Co
1	8-1-89	189539	60842	19373
2	8-4-89	190358	61173	19280
3	8-10-89	189104	60730	19075
4	8-23-89	189919	60888	18834
5	9-5-89	189172	60169	18920
6	9-10-89	189845	60223	18750
7	9-20-89	189769	60633	18696
8	9-29-89	190729	60115	18903
9	10-3-89	189956	60018	18550
10	10-11-89	189901	60437	18813
11	10-23-89	189716	59774	18347
12	10-30-89	190273	60098	18524
13	11-6-89	189742	60435	18440
14	11-8-89	190020	59379	18177
15	11-17-89	189766	60111	18433
16	11-27-89	189981	60224	18381
17	12-1-89	190751	60274	18289
18	12-12-89	190569	59413	18381
19	12-15-89	190327	59968	18170
20	12-27-89	190323	59891	18109

Entered 1-4-91 Anne E. Fitzpatrick

Project No. _____ Date of Work _____
Entered By _____ Date _____
Disclosed To and Understood By
Signed 1. _____ Date _____
2. _____ Date _____

D08-066

9111210261226

9 1 1 2 1 1 1 2 2 7

COUNTING SYSTEM: 241Am of HSS 1 = 241Am+137Cs+60Co 59.5 Kev

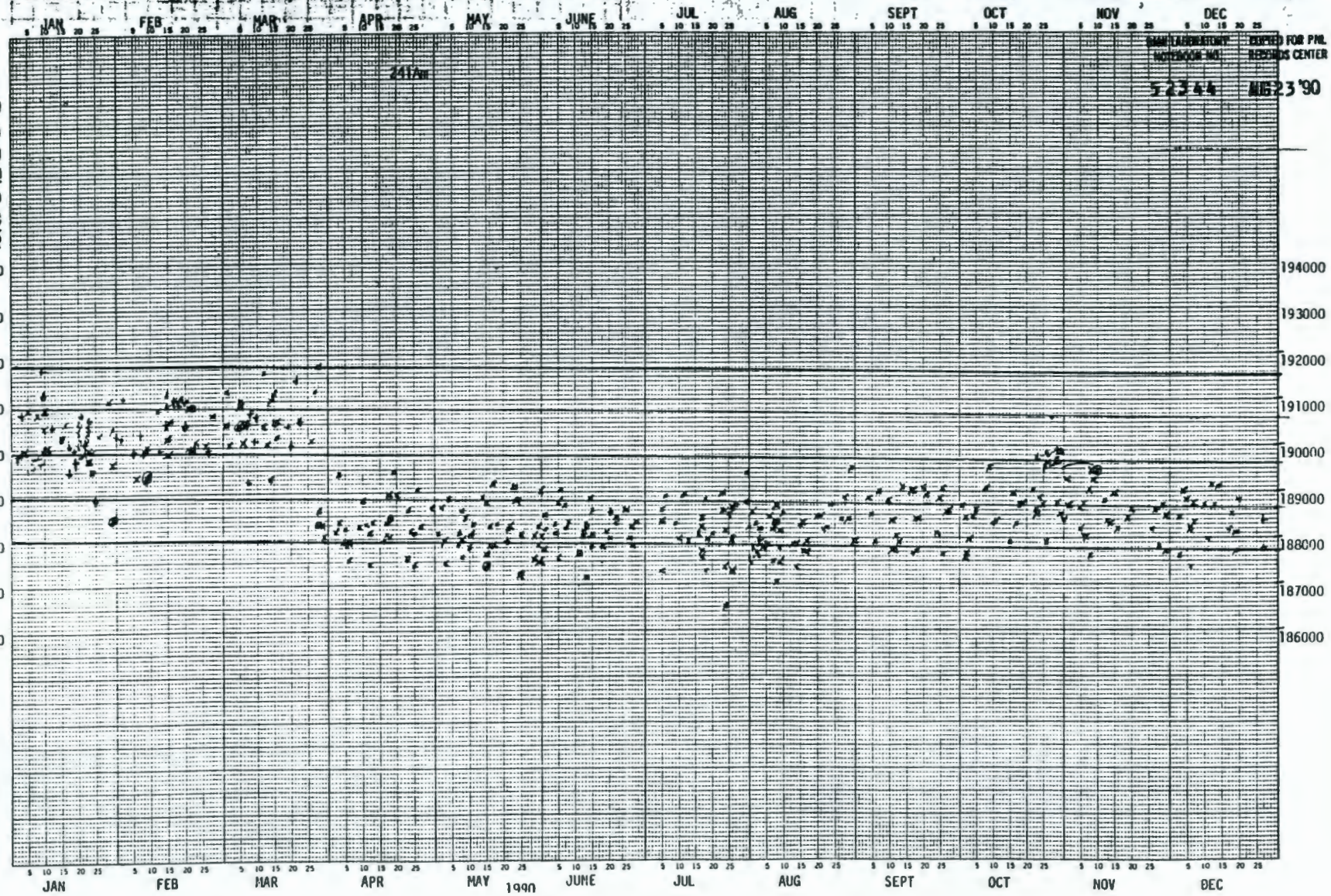
CONTROL NUCLIDE: 241Am

NUCLIDE HALF LIFE: 432.2 YEARS ± 0.5 (NUCLEAR DATA SHEETS 1/78)

95% Confidence Level ±

1% of X

N005234



PNL LABORATORY NOTEBOOK NO. 52344

COPIED FOR PNL RECORDS CENTER AUG 23 '90

984.

191034.
191950.
193851.
195751.
8- 1

189922.
983.

190906.
191821.
193720.
195620
1- 1
S .4189 YEARS

189619.
982

190601
191515.
193411.
195307
12-31
S 1.4155 YEA

D08-067

BNW05234 p. 65

CONTROL CHART GENERATION PROGRAM

COUNTING SYSTEM: ND-66 GE(LI) WELL SYSTEM
CONTROL NUCLIDE: MS5-1 MIXED SOURCE:AM-241
NUCLIDE HALF LIFE: 432.2 YEARS

NUMERICAL DATA INPUT SUMMARY

NUMBER OF DATA POINTS:	20
X BAR:	190050.04
SUM OF COUNT RATES:	3801000.84
SUM OF COUNT RATE SQUARES:	722384573971.01
REFERENCE DATE:	8- 1-89

THE STANDARD DEVIATION AT THE 95% CONFIDENCE LEVEL IS		984.43
THE 95% CONFIDENCE LEVEL LIMITS ARE	189065.61	191034.47
THE 1% X BAR LIMITS ARE	188149.54	191950.54
THE 2% X BAR LIMITS ARE	186249.04	193851.04
THE 3% X BAR LIMITS ARE	184348.55	195751.54
THE REFERENCE DATE IS		8- 1-89

THE X BAR OF THE DATA POINTS IS		189922.40
THE STANDARD DEVIATION AT THE 95% CONFIDENCE LEVEL IS		983.77
THE 95% CONFIDENCE LEVEL LIMITS ARE	188938.63	190906.17
THE 1% X BAR LIMITS ARE	188023.18	191821.62
THE 2% X BAR LIMITS ARE	186123.96	193720.84
THE 3% X BAR LIMITS ARE	184224.73	195620.07
THE REFERENCE DATE IS		1- 1-90

THE DECAY INTERVAL MEASURED FROM THE EXISTING CONTROLS DATE IS .4189 YEARS

THE X BAR OF THE DATA POINTS IS		189619.11
THE STANDARD DEVIATION AT THE 95% CONFIDENCE LEVEL IS		982.20
THE 95% CONFIDENCE LEVEL LIMITS ARE	188636.91	190601.31
THE 1% X BAR LIMITS ARE	187722.92	191515.30
THE 2% X BAR LIMITS ARE	185826.73	193411.49
THE 3% X BAR LIMITS ARE	183930.54	195307.68
THE REFERENCE DATE IS		12-31-90

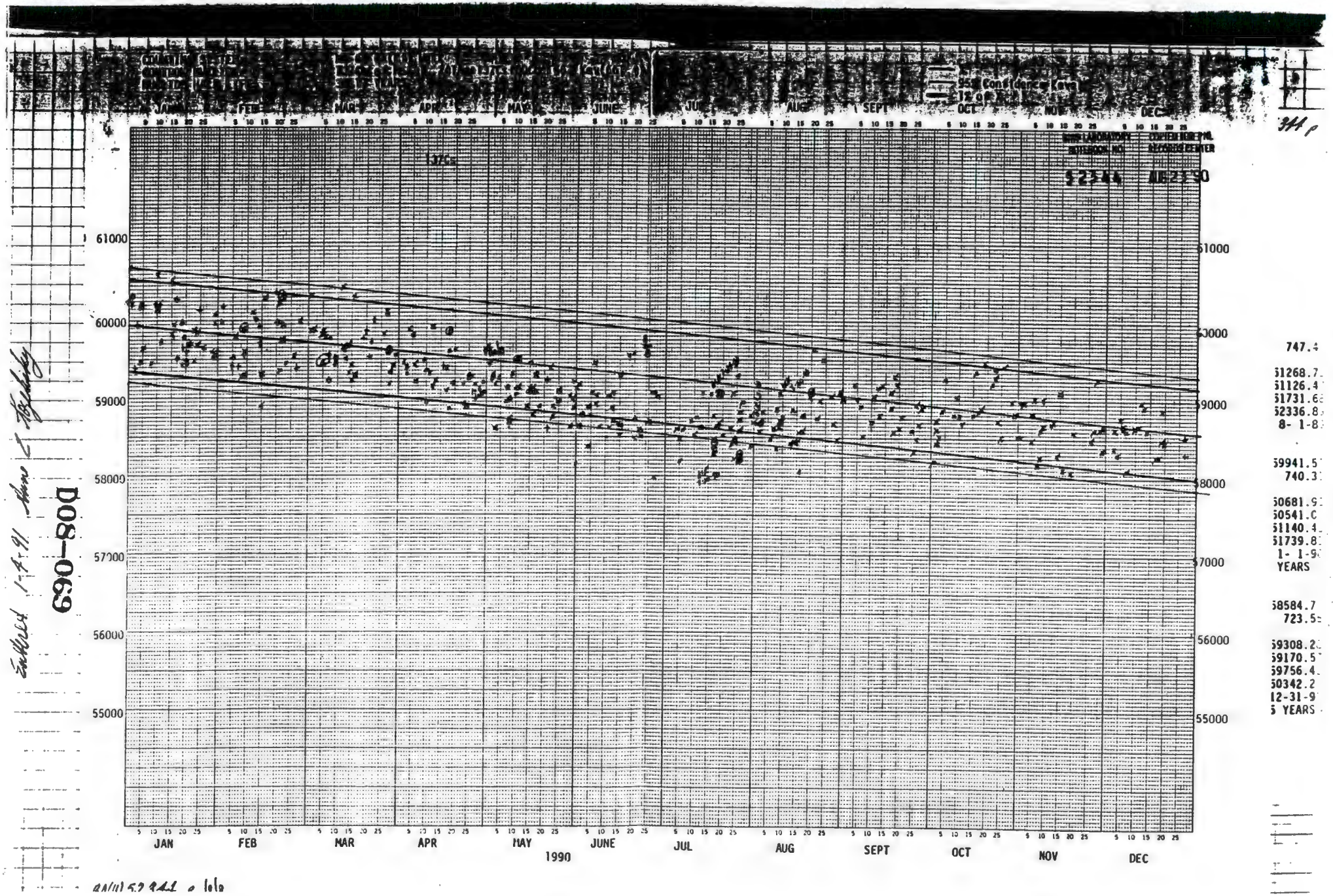
THE DECAY INTERVAL MEASURED FROM THE EXISTING CONTROLS DATE IS 1.4155 YEARS

Initial 1-9 Hour E Fields

Project No. _____ Date of Work _____
Entered By _____ Date _____
Disclosed To and Understood By
Signed 1. _____ Date _____
2. _____ Date _____

D08-068

9 1 1 2 1 1 1 1 2 9



Entered 1-4-91

DOE-690

BNR52344 p. 67

CONTROL CHART GENERATION PROGRAM

COUNTING SYSTEM: ND-66 GE(LI) WELL SYSTEM
CONTROL NUCLIDE: MS5-1 MIXED SOURCE:CS-137
NUCLIDE HALF LIFE: 30.17 YEARS

NUMERICAL DATA INPUT SUMMARY

NUMBER OF DATA POINTS:	20
X BAR:	60521.25
SUM OF COUNT RATES:	1210425.09
SUM OF COUNT RATE SQUARES:	73258867720.30
REFERENCE DATE:	8- 1-89

THE STANDARD DEVIATION AT THE 95% CONFIDENCE LEVEL IS		747.47
THE 95% CONFIDENCE LEVEL LIMITS ARE	59773.78	61268.73
THE 1% X BAR LIMITS ARE	59916.04	61126.47
THE 2% X BAR LIMITS ARE	59310.83	61731.68
THE 3% X BAR LIMITS ARE	58705.62	62336.89
THE REFERENCE DATE IS		8- 1-89

THE X BAR OF THE DATA POINTS IS		59941.59
THE STANDARD DEVIATION AT THE 95% CONFIDENCE LEVEL IS		740.31
THE 95% CONFIDENCE LEVEL LIMITS ARE	59201.27	60681.90
THE 1% X BAR LIMITS ARE	59342.17	60541.00
THE 2% X BAR LIMITS ARE	58742.76	61140.42
THE 3% X BAR LIMITS ARE	58143.34	61739.83
THE REFERENCE DATE IS		1- 1-90

THE DECAY INTERVAL MEASURED FROM THE EXISTING CONTROLS DATE IS .4189 YEARS

THE X BAR OF THE DATA POINTS IS		58584.72
THE STANDARD DEVIATION AT THE 95% CONFIDENCE LEVEL IS		723.55
THE 95% CONFIDENCE LEVEL LIMITS ARE	57861.17	59308.28
THE 1% X BAR LIMITS ARE	57998.88	59170.57
THE 2% X BAR LIMITS ARE	57413.03	59756.42
THE 3% X BAR LIMITS ARE	56827.18	60342.26
THE REFERENCE DATE IS		12-31-90

THE DECAY INTERVAL MEASURED FROM THE EXISTING CONTROLS DATE IS 1.4155 YEARS

Entered 1-4-91 Jane E Taylor

3 " from 4th loose page of reference data

Project No. _____ Date of Work _____
Entered By _____ Date _____
Disclosed To and Understood By
Signed 1. _____ Date _____
2. _____ Date _____

9 1 1 2 1 1 5 1 2 3 1

WORKPLACE GOP

WC Weimer

95% Confidence Level
1σ or X
2σ or X

JAN FEB MAR APR MAY JUN 1990 JUL AUG SEP OCT NOV DEC

18500
18000
17500
17000
16500
16000
15500

WORK UNCERTAINTY WORKBOOK NO. 52344 AUG 23 '90

297
19421
19315
19506
19697
8- 1
18099
281
1838
1828
1846
1864
1- 1
IS .4189 YEA
1587
24
1612
1603
1619
1635
12-3
IS 1.4155 YE

008-021

Entered 1-4-91 Anne E Hyslop

BNW5231A p. 69

CONTROL CHART GENERATION PROGRAM

COUNTING SYSTEM: ND-66 GE(LI) WELL SOURCE
CONTROL NUCLIDE: MS5-1 MIXED SOURCE: CO-60
NUCLIDE HALF LIFE: 5.271 YEARS

NUMERICAL DATA INPUT SUMMARY

NUMBER OF DATA POINTS:	20
X BAR:	19124.18
SUM OF COUNT RATES:	382483.60
SUM OF COUNT RATE SQUARES:	7315069277.16
REFERENCE DATE:	8- 1-89

THE STANDARD DEVIATION AT THE 95% CONFIDENCE LEVEL IS		297.64
THE 95% CONFIDENCE LEVEL LIMITS ARE	18826.54	19421.82
THE 1% X BAR LIMITS ARE	18932.94	19315.42
THE 2% X BAR LIMITS ARE	18741.70	19506.66
THE 3% X BAR LIMITS ARE	18550.45	19697.90
THE REFERENCE DATE IS		8- 1-89

THE X BAR OF THE DATA POINTS IS		18099.19
THE STANDARD DEVIATION AT THE 95% CONFIDENCE LEVEL IS		281.68
THE 95% CONFIDENCE LEVEL LIMITS ARE	17817.51	18380.88
THE 1% X BAR LIMITS ARE	17918.20	18280.18
THE 2% X BAR LIMITS ARE	17737.21	18461.18
THE 3% X BAR LIMITS ARE	17556.22	18642.17
THE REFERENCE DATE IS		1- 1-90

THE DECAY INTERVAL MEASURED FROM THE EXISTING CONTROLS DATE IS .4189 YEARS

THE X BAR OF THE DATA POINTS IS		15876.06
THE STANDARD DEVIATION AT THE 95% CONFIDENCE LEVEL IS		247.09
THE 95% CONFIDENCE LEVEL LIMITS ARE	15628.98	16123.15
THE 1% X BAR LIMITS ARE	15717.30	16034.82
THE 2% X BAR LIMITS ARE	15558.54	16193.58
THE 3% X BAR LIMITS ARE	15399.78	16352.34
THE REFERENCE DATE IS		12-31-90

THE DECAY INTERVAL MEASURED FROM THE EXISTING CONTROLS DATE IS 1.4155 YEARS

Entered 1-4-91 Anne L. Taylor

Project No. _____ Date of Work _____
Entered By _____ Date _____
Disclosed To and Understood By
Signed 1. _____ Date _____
2. _____ Date _____

9111210231232

D9 - TRITIUM

TRITIUM (H-3)

PRIMARY DATA PACKAGE

D09–002

SST

H-3 DATA COVER SHEET

Sample Number: 90-4180-C-1/2/5

Procedure: PNL-SP-30

Pipet Calibration LRB#: BNW 52920

Equipment (M&TE#): HW 523058

System Calibration LRB#: NA

TRITIUM (H-3)

SUMMARY DATA REPORTS

D09-004

H-3 DATA

Customer No.	H-3 dpm/g	+/- % error
Composite		
90-4180-C-1	1.58E+04	6.4
90-4180-C-2	1.04E+04	6.2
90-4180-C-5	1.24E+03	16

9112121237

TRITIUM (H-3)

ANALYTICAL REPORT CARDS

D09-006

TRITIUM ANALYSIS

A liquid scintillation counting (LSC) system is used to complete the Tritium analysis. A Radiochemistry ANALYTICAL REPORT card accompanies each sample. This card has a card serial number, the date the sample was received into the radiochemistry laboratory, work package number, a radiochemistry lab serial number, customer identification number, the 325A Hot Cell sample identification number, the constituent requested (i.e., tritium), and the results. The BNW laboratory record book (LRB) number that holds the pipet calibration data for that volume of sample aliquot used in this analysis is noted in the "Serial No." column. A copy of the pipet calibration is provided under separate cover. The M&TE number of the LSC system is located on the cover sheet to the H-3 analysis. Calibration of the system, using blanks and standards, is completed every time a sample set is run . The tritium procedure used for this analysis is noted in the "Constituent" column.

The volume of the aliquot taken from the sample solution (the dissolved fusion or the water leach) is written under the "SERIAL NUMBER" of the card on the right side of the card. The second aliquot is the dilution of the first volume (to 10 ml) and the third volume is the portion of the dilution counted in the scintillation vial with 19 ml of scintillation cocktail.

On the bottom half of the card under "DATA" is the hand calculation of the data. This follows from the procedure. The corrected count rate, sample volume, calculated LSC system efficiency, sample weight and volume of solution of water leach are incorporated. Final results are given in disintegrations per gram.

The additional sheets attached are the counts of each channel of all the blanks (2), water washes (2) and standard (4) on one page and the 5 samples counted on the second page. The counts are averaged for final results.

9 1 1 2 1 3 1 2 4 0

Date: Sept. 5 1990

Analyst: [illegible] 6-3089 P1-22

Review: [illegible]

SST

SAMPLE PREP DATA SHEET
325-B Hot Cells)

Core ID: TK 110B C 16

Segment(s): Com

☑ Composite

☐ Prehomogenized ☐ Homogenized

CoC #286

325-A ID	ALO ID	Analyte or Analysis	Sample Wt Wet (g)	Sample Wt Dry (g)	Percent Solids	Water Wt (g)	Total Vol (ml)	Spike ID	Spike Vol (g)	Dilution Factor	Diluent Matrix	Pipet Calib (ml)	Miscellaneous
(1) 1-22-91 AdB 590-90 NA	90-4180C1	GEA*	2.0698			194.8843			<100 dpm/ml total alpha				Sample
(2) 591-90	90-4180C2		2.1978			196.7726			<100 **	"	"	"	Sample dup.
592-90	90-4180C3		1.0426			91.6868			10.00				Union Spike sample
(3) 593-90	90-4180C5		—			~~199.5897~~ 197.5112			<100 dpm/ml total alpha				blank

*See test instruction TI-SST-105 for complete list of analytes required.

** C-3 TOTAL SAMPLE [redacted] CONCENTRATION = 1.0426 g sample → 101.6868 g of H_2O + spike

D09-008

POOR COPY RECEIVED

(1) 590-90 90-4180C1 10 ml wet + 10 ml sample. (2) dup same wts

(2) 591-90 90-4180C2 10 ml water + 10 ml sample same wts 2nd is dup

(3) 593-90 90-4180C5 10 ml water + 10 ml sample $\bar{x}$ = 10.2021 ml 1.2271 ml/ml B dup S = 0.0341 ml pipet 25

	(1)	(2)	(2)		(3)	
1st distilled	10 mls	10 mls	1st distilled	10 ml	1st	12 ml
2nd time distilled	8 mls	9 mls	2nd time distilled	9 ml	2nd	9 ml
Will count	1 ml	Will count 1 ml	Will count	1 ml	Will count	1 ml

590-90 A

Sample	water	1st distillation	2nd distillation	
10.2021ml +	10.2021ml,	10ml	8ml	— counted 4ml

B

Same	1st distilled	2nd distilled	
	10ml	9mls	— counted 4ml dup

591.90 A

D09-009

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1-25-90

1-22-91 ^3H counting 33T samples

std calibration 1.87 E6 @ 3-12-88 [illegible] (Lois 1-29-91) 3-12-90

std decay 1046 d ∴ .8507 (1.87+6) → 1.6079+6 dpm/ml 3-12-88/1-22-91

3968 d ∴ (.54160)(1.898+6) → 1.02730+6 " 3-12-88/1-22-91

50λ .0444 → 5.6168 (3.5104) R2 8.0%

100λ .0443 → 5.1485 (3.3235) R2 5.4077 ∴ d/c 5.41 ± 6.0%

R2 5.5% (3.4572)

all Pb 4.46 1-25-91

540-90 A+B 2.0698 g + 194.8843 g H2O ~23% ∴ 195.3652 ml

38 (A) $\frac{(117.89-12.84)(5.41)(195.3652)(20.4042)}{(10.2021)(4.0101)(2.0698)}$ → 2.6741+4 dpm/g *

39 (B) $\frac{(102.44-12.84)\ \ (\ \ )\ \ (\ \ )}{(\ \ )\ \ (\ \ )\ \ (\ \ )}$ → 2.2819+4 dpm/g *

$\boxed{* \ \frac{3.16}{5.41}}$ (.6390)

2.4780 E+4 dpm/g ± 6.4% → 1.5842+4 1.7849+4

541-90 A+B 2.1478 g + 196.7726 @ ~23% ∴ 197.2582 ml

40 (A) $\frac{(79.66-12.84)(5.41)(197.2582)(20.4042)}{(10.2021)(4.0101)(2.1478)}$ → 1.6218+4 ~~1.6190+4~~ dpm/g * CoA 1-29-91

41 (B) Sample contaminated

1.6218 E+4 dpm/g ± 6.2% → 1.0368+4

543-90 (Blank) 197.5212 g H2O ∴ 198.0588

42 (A) $\frac{(20.57-12.84)(5.41)(198.0588)(20.4042)}{(10.2021)(4.0101)(2.1338)}$ → 1.9234+3 dpm/avg g *

avg wt 540/541

43 (B) $\frac{(20.71-12.87)(\ \ )\ \ (\ \ )}{(\ \ )\ \ (\ \ )\ \ (\ \ )}$ → 1.9585+3 dpm/avg g *

1.9409 E+3 dpm/g ± 16.0% → 1.2408+3

* assuming no ^{14}C contribution

Calculations L D Kellogg 1-25-90 1-29-91

Reviewed L O Harvey 1-28-91

Recalibration of 329 ^3H std W73 by MR Weiler 1.0215+6 ± 1.748+4 dpm/ml @ 10:23

(this value is 2.06% lower than the 1.898+6 3-12-88 decayed to 1-22-91 that was used

Battelle
Pacific Northwest Laboratories

3000 TRI CARB

MATRIX:
- [ ] 16-2 BIO
- [ ] 16-2 RAO
- [ ] 21-4 RAO
- [x] OTHER 19ml Optifluor + 4ml sample

CONTROL SETTINGS:
HV _____

GAIN:
RED _____ GREEN _____

WINDOW SETTINGS:
RED _____ GREEN _____

WINDOW WIDTH:
A _____ B _____
C _____ D _____

EXT. STD.:
- [ ] ON
- [ ] OFF

COUNTING DATE(S): 1-22-91

ISOTOPE(S): H^3

TIME BASE SELECTOR SWITCH:
- [ ] .01 MIN.
- [ ] .1 SEC.

OPERATOR'S INITIALS:
15:10 ON NKA OFF _____

POS.	SAMPLE DESIGNATION	SAMPLE ALIQUOT	DATE-TIME SAMPLED	LOG. NO.	DATE-TIME RECEIVED	REMARKS
31	Beckman B11680					
32	Beckman C277066					
33	Beckman H277092					
34	Blank-1					
35	Blank 2					
36	Standard	50 λ				
37	Standard	100 λ				
38	590-90 90-4180 C1	4ml			590-90	
39	"				"	
40	591-90 90-4180 - C2	4ml			591-90	
41	" "				"	
42	593-90 90-4180-C5				593-90	
43	" "				"	
44	Kimwipes				For Jeff	
stop						

BD-1700-124 (11-71)

D09-011

9112121243

POOR COPY RECEIVED

1-14-91 for new alpha & beta curve determination
D Z Fowler Bal # W466022 H_2O temp. 22°C vol factor: 1.00221

pipet # 10A-19 100 λ

5.4988	5.5980	5.6970	5.7959	$\bar{X}$: 1.00221 × 0.09898 = 0.0992 ml
5.4000	5.4988	5.5980	5.6970	S: 1.00221 × 0.0002 = 0.0002
0.0988	0.0992	0.0990	0.0989	

pipet # 4A-5 50 λ

5.8452	5.8936	5.9420	5.9906	$\bar{X}$ 1.00221 × 0.0494 = 0.0495 ml
5.7959	5.8452	5.8936	5.9420	S: 1.00221 × 0.0001 = 0.0001 ml
0.0493	0.0494	0.0494	0.0496	

Diana Z. Fowler 1-14-91

1-15-91 N L Albery for [illegible] Alpha & beta
Balance W466022
water temp 22°C
vol factor 1.00221
pipet 4A-12 1000 λ

6.3353	7.3260	8.3200	9.3350	$\bar{X}$ 1.00221 × 1.0197 = 1.0197 ml
5.3009	6.3353	7.3260	8.3200	S: 0.0102 × 1.00221 = 0.0108 ml
1.0344	1.0007	1.0070	1.0050	N L Albery 1-15-91

1-22-91 N L Albery for [illegible] samples H³ for water ct
Balance W466022 water temp 21°C vol factor 1.00198
pipet # 5067-40-18 (1ml)

39.0330	47.2090	55.4130	63.6242
28.9768	39.0330	47.2090	55.4130
10.1416	10.1656	10.2040	10.2112

$\bar{X}$ 10.1517 × 1.00198 = 10.2041 ml
S 0.0341 × 1.00198 = 0.0341 ml N L A 1-22-91

[illegible] for H³ [illegible]
pipet # 5423 1000

[illegible]	20.9830	21.9916	[illegible]
[illegible]	19.9830	20.9830	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]

$\bar{X}$ [illegible] × 1.00198 = [illegible] ml
S 0.0040 × 1.00198 = 0.0040 ml N L A 1-22-91

N L Albery 1-22-91

1-22-91 N L Abbey M³ 33 r waters [illegible]
Balance W466022 water temp: 21°C vol fac for: 1.00198
Pipet 50x 50690-40-7 for std

5.5154	6.5653	5.6140	5.6637
5.4664	5.5154	5.5653	5.6140
0.0490	0.0499	0.0487	0.0497

$\bar{x}$ = 0.0493g × 1.00198 = 0.0494mls
s = 0.0006g × 1.00198 = 0.0006ml N L Abbey 1-22-91

Pipet 100x 101-17 for std

5.6648	5.7638	5.8629	5.9624
5.5661	5.6648	5.7638	5.8629
0.0987	0.0990	0.0991	0.0995

$\bar{x}$ = 0.0991g × 1.00198 = 0.0993ml
s = 0.0003g × 1.00198 = 0.0003ml N L Abbey 1-22-91

Pipet 30-4 4mls for Samples M³

22.8648	26.8539	30.8441	34.8296
18.8210	22.8648	26.8539	30.8441
4.0438	3.9891	3.9902	3.9855

$\bar{x}$ = 4.0032g × 1.00198 = 4.0101ml
s = 0.0278g × 1.00198 = 0.0279ml N L Abbey 1-22-91

D09-013

Balance [illegible] [water temp 21C] [vol factor: 1.00198]

Dispo - 50690.40.18 10mls

A - 22-91 SST + [illegible] 1/3 waters NA

590-90 SST TR116B C16 90-4180-C1 Sept 5 1990

used 10ml of water + 10ml of sample (One A) (One dup B) $\bar{x}$ = 10.2021ml s = 0.0341ml

1st distilled over 10mls, 2nd distilled over 8ml, I will count 4mls.

NJ 1-22-91

B 590-90 SST dup

1st distilled 10ml 2nd distilled 9ml will count 4ml

591-90 90-4180 C2 A

1st distilled 10ml 2nd distilled 9mls will count 4mls

B dup

1st distilled 10mls 2nd distilled 9ml will count 4mls 4ml

	1st distilled	2nd distilled	will count
593 90 A	12ml	9ml	4ml
- dup B	12	8ml	4mls

POOR COPY RECEIVED

00904

SST LB 1.22.91 ON 15:10 100 min counts N.J.A.

PROG 1 USER 1

CNT CH 12 1 TIMES
CSS 1 TIMES
SCR =2/1
AQC =NO
RCM =NO
CALC= 1
PST = 100.00 MIN
QCF = 0 H#
CH 1 1.00 2 SIGMA %
.0 LSR
.0 BKG
.00 2 SIGMA B
0 LL
397 UL
CH 2 1.00 2 SIGMA %
.0 LSR
.0 BKG
.00 2 SIGMA B
180 LL
397 UL

SAMP	POS	CH	CPM	2S%	TIME	ELTIME	SCR	
	31	1	12.24	5.71	100.00	101.08	.851	Beckman B11080 Blank
		2	10.42	6.19				
	32	1	4682.80	.99	8.55	109.85	.999	Beckman C299066 C-14 std
		2	4680.81	.99				
	33	1	29822.14	.94	1.49	111.48	.902	Beckman H 277092 H3 std
		2	26908.05	.99				
	34	1	13.26	5.49	100.00	212.33	.919	Lois - Blank-1 Deep H_2O
		2	12.19	5.72				
	35	1	12.52	5.65	100.00	313.18	.924	Lois - Blank-2 Deep H_2O
		2	11.58	5.87				
	36	1	14154.40	.86	3.75	317.10	.754	50% standard → 5.6282
		2	10680.00	.99				
	37	1	30726.16	.87	1.72	318.97	.759	100% standard → 5.1938
		2	23326.74	.99				
	38	1	117.89	1.84	100.00	420.12	.883	90-4180-C1 590-90 A
		2	104.16	1.95				
	39	1	102.49	1.97	100.00	521.24	.887	B
		2	90.92	2.09				
1	40	1	79.86	2.23	100.00	622.32	.818	90-4180-C2 591-90 A
		2	65.23	2.47				

6/2 5.411 ± 6.8%

00905

SAMP	POS	CH	CPM	2S%	TIME	ELTIME	SCR	
1	41	1	2676.36	.99	15.06	637.76	.992	B
		2	2656.57	.99				
1	42	1	20.57	4.40	100.00	738.61	.887	90-4180-C5 593-90 A
		2	18.26	4.68				
1	43	1	20.71	4.39	100.00	839.50	.873	B
		2	18.10	4.70				
1	44	1	8.64	6.80	100.00	940.32	.936	Kimwipe for Soff (RPT)
		2	8.09	7.03				

N.L. Alley 1-23-91

1.89 E2 dpm/pad @ 3-15-88
∴ 1042 d decay = .8507
.0005 uCi → 7.5651 E4
.0002 → 1.5950 E5

D09-015

D-10 - CARBON 14 ANALYSIS

D10-001

C-14

PRIMARY DATA PACKAGE

D10-002

SST

C-14 DATA COVER SHEET

Sample Number: 90-4180-C-1/2/5

Procedure: 7-40.42

Process LRB#: BNW 53268

Equipment (M&TE#): WA 82507

C14

SUMMARY DATA REPORTS

D10-004

C-14 DATA

Customer No.	C-14 uCi/g	+/- % error
Composite		
90-4180-C-1	3.96E-03	20
90-4180-C-2	5.58E-04	20
90-4180-C-5	<5.4E-05	20

C-14

PRIMARY DATA REPORTS

D10-006

CARBON 14 ANALYSIS

Carbon 14 analysis for SST samples is accomplished by using liquid scintillation counting. A record of the carbon separation is in a laboratory record book. The volume of solution used in the separation and the system blanks, process blanks, system standards and process standards along with the samples are logged into this LRB.

Calibration of the system is done every time a sample set is run using equipment blanks and standards. These determine the yield recovery of standard. All calculations are recorded in the LRB that contains the sample separations.

Attached are the printouts from the instrument showing counts in each position for the blanks, standards and samples.

To: SST Project Management Office
Date: 1/3/91
From: D.L. Baldwin DLB Baldwin

cc: RT Steele

Re: Carbon-14 Analytical Results for SST Core 16.

This work is done by the hot persulfate oxidation method, Test Procedure 7-40.42, rev. 0, "Determination of Carbon-14 in Radioactive Liquids, Soils and Sludges". The M&TE No. for liquid scintillation counting is WA82507 and the M&TE No. for weights is WB69133 or 087306-90. The data is located in LRB BNW 53268 pp 78, 85-86, 89. NIST C-14 standard, No. X-52-5, is used as internal standard for determination of %Recovery and C-14 standard W-16-1 is used for determination of counting efficiency. The estimated error is ± 20%.

The samples were analyzed in duplicate. The reported result in μCi/g, is based on the wt of the original sample, before water leaching.

sample ID	Wt (g)	C-14 (μCi/g)
90-4180-C-1	2.0698	3.96×10^{-3}
C-2	2.1978	5.58×10^{-4}
C-5	blank	$<5.4 \times 10^{-5}$

Example calculation

$$\frac{(37.4-5.7) \times 1.279 \text{ d/c} \times 15\text{ml}/2.018\text{ml} \times (194.884\text{g}/2.069\text{g}) \times 10^6}{2.0176 \text{ ml} \times 2.22\text{e}+12 \times 0.773 \text{ \%Recov} \times 2.0698 \text{ g}}$$

$$= 3.96 \times 10^{-3} \ \mu\text{Ci/g}$$

Note: An assumption must be made to equate volume (ml) of the leached liquid mixture to weight (g) of the leached liquid mixture. There is probably little error involved since very little sample is dissolved into the DI water.

C-14

LABORATORY RECORD BOOK PAGE

AND

INSTRUMENT PRINTOUTS

D10–009

BNW-53268
3-9-89

PACIFIC NORTHWEST LABORATORY
ISSUED
MAR 09 1989
BATTELLE RECORDS MGMT.

THIS BOOK IS INTEDNDED TO BE USED FOR RECORDING RESEARCH PERFORMED FOR THE U.S. DEPARTMENT OF ENERGY UNDER BNW'S OPERATING CONTRACT EY-76-C-06-1830.

M32950

LABORATORY RECORD BOOK NUMBER BNW- 53268	This document consists of ..... pages, copy no. .....
TITLE (INDICATE SUBJECT CONTENT) DEVELOPMENT OF TOC ANALYSIS OF TANK SLUDGE	
AUTHOR - DIVISION AND DEPARTMENT D. L. BALDWIN	
PERIOD COVERED FROM	TO

Route To	P. R. No.	Location	Route Date	Signature & Date
DL BALDWIN	3C314	P7-22	3-9-89	D L Baldwin 7/24/89

D10-010

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CELL 2 BALANCE	WB69133		
CELL 6 BALANCE	087306-90		
PERSONS AUTHORIZED TO MAKE ENTRIES			
DL BALDWIN	DL Baldwin	5/22/89	
KH Pool	Karl Pool	5/31/89	
W.R. LARSON	W Larson	5/31/89	
D.V. ARCHER	D.V. Archer	1-10-90	
G.A. ROYS	G.A. Roys	2-8-90	
PERSONS AUTHORIZED TO REVIEW			
D.V. ARCHER	D.V. Archer	2-8-90	
RECORD OF REVIEWS			
pgs. 1-26	D.V. Archer	2-8-90	

DATE 12/28

TO Dave FROM FUH

Core 16 (90-4180)

C1 = 2.0698 g sampl; 194.8843 g. DI water.

C2 = 2.1978 g. sampl 196.7726 g DIW

C5 = Blank (no sampl) 197.5712 g DIW

BNW 53268 p 78

"... FAST, BUT SAFETY FIRST"

10/29/90

^{14}C Hot Persulfate Run

② Balance.

used 2 g. Persulfate.
@ 20 mg. $CaCO_3$ as carrier.

	Run Id	Spl. Size	100λ P.pet.	1 ml. P.pet
	BIK. 1	—		
	BIK. 2	—		
	STD. 1	.1001 ml.		
	STD. 2	.1001 ml.	~~.09978 $\bar{x}$ = .9977~~	1.0068 $\bar{x}$ = 1.0061
105AW 1-2 Sup.	90-6842 #1	1.0088 ml.	~~.09985 s = .0009~~	10/29/90 1.0053 s = .0008
	90-6842 #2	1.0088 ml.	~~.09968 .09% 10/29/90~~	1.0070 .08%
Core 16 Comp. H_2O Leach	90-4180 #1	2.0176 ml.	~~.09989 .09972~~	1.0059 1.0055
			~~Adj = 1.0004 ml~~	~~Adj = 1.0058 ml~~
	90-4180 #2	2.0176 ml	.0999 $\bar{x}$ = .0998	
	90-4180 BIK	5.0440 ml.	.0995 s = .0007	
			.0989 .67%	
	BIK. 3	—	.1006	
	STD. 3	.1001 ml.	.1003 Adj. .1001 ml	

Project No. _____ Date of Work _____

Entered By [signature] Date _____

Disclosed To and Understood By

Signed 1. _____ Date _____

2. _____ Date _____

D10-012

Carbon-14 Calculations from p. 78-79

NOTE: Now using 'Channel B', 4-156 keV; this minimizes the chemiluminescence problem, as the noise occurs in the first 0-3 keV. The C-14 Standard must be re-calculated, otherwise there is no change in procedure.
— D L Baldwin

Example of chemiluminescence problem:

		1st Std Ch. A	1st Std Ch B	2nd Std ch A	2nd Std Ch B
	1st count	2420	2064	1050	805
10/30	2nd count	2272	2047	840	779
	3rd count	2254	2058	867	787
	4th count	2248	2068	863	786
	1st Count	1054	782	1300	998
10/30	2nd Count	878	756	1156	1001
	3rd Count	853	758	1129	1005
	4th Count	841	757	1147	1032
	1st count	2432	2233	2258	2085
12/10	2nd count	2438	2249	2246	2071
	3rd count	2424	2229	2254	2077

Using Channel 'B' (4-156 keV) 12-18-90

	cpm
Blank	45.9
New Std 'A'	11020
New Std 'B'	10849

$\bar{x}$ = 10934 cpm

$d/c = \frac{13925 (\frac{50}{50\lambda})}{10934 \times \frac{50}{5a2}} = 1.279$ (channel B)

(78.2 % Eff) (ch B)
(Expected to be lower)

DST + SST } Batch Run on 10/29/90 + 10/30/90 (Using channel B)

BLK sys	37.9
BLK 1	11.7
BLK 2	5.7

} use 5.7

STD 1 2068 $\frac{(2068 - 5.7) \times 1.279 \; d/c \times \frac{1000}{.1001} \times \frac{15}{2.018} \times 100}{27850 \text{ dpm}} = 70.3\%$

STD 2 786 (786 − 5.7) ... = 26.6 % do not use!

Project No. _____ Date of Work _____
Entered By D L Baldwin Date 12/27/90
Disclosed To and Understood By
Signed 1. _____ Date _____
2. _____ Date _____

D10-013

BLK 3 0.5
BLK 4 5.6
STD 3 2480 $\frac{(2480-5.6) \times 1.279 \frac{g}{cc} \times \frac{1000}{1.001} \times \frac{15}{2.018} \times 100}{27850 \text{ dpm}} = 84.4\%$

$x_1 + x_3$ AVG = 77.3 %

90-6847 105 AW 1-2 SUP #1 33.1, 33.1 } 33.1 $\frac{(33.1-5.7) \times 1.279 \times \frac{15}{2.018}}{1.0088 \text{ ml} \times 2.22\times10^{12} \times .773} = 1.51 \times 10^{-10}$ Ci/ml

#2 25.6, 21.5 } 23.5 (23.5-5.7) " " = 9.77×10^{-11} Ci/ml

90-4180 Core 16 #1 37.1, 37.7 } 37.4 $\frac{(37.4-5.7) \times 1.279 \times \frac{15}{2.018}}{2.0176 \text{ ml} \times 2.22\times10^{12} \times .773} = 8.70 \times 10^{-11}$ Ci/ml

#2 10.6, 10.8 } 10.7 (10.7-5.7) " " = 1.37×10^{-11} Ci/ml

BLK 1.40, 0.50 } 0.95 $\frac{<(0.95-5.7) \times 1.279 \times \frac{15}{2.018}}{5.0440 \text{ ml} \times 2.22\times10^{12} \times .773} = < 1.1 \times 10^{-12}$ Ci/ml

Development Work Batch Run on ~~10/30~~ 11/14 12-27-90 (Using Ch.B)

Stds were no good, use stds on p 84

BLK 14.0 (Ch B)

STD 1 3050 $\frac{(3050-14) \times 1.279 \times \frac{15}{2.018} \times 0.1 \times 100}{27850} = 103.6\%$
no carrier

STD 2 3055 = 103.8 %
50 mg carrier

STD 3 1705 = 57.7 %
100 mg carrier

STD 4 1670 = 56.5 %
50 mg carrier

Project No. _____ Date of Work _____
Entered By D L Baldwin Date 12-27-90
Disclosed To and Understood By
Signed 1. _____ Date _____
2. _____ Date _____

Recalculation of 90-4180 Core 16 to per wt Basis

~~90-4180 #1 8.70 x 10^-11 Ci/ml x~~

In order to convert from Ci/ml to Ci/g of original sample, a simplifying assumption must be made. It is: 1 g liquid mixture = 1 ml liquid mixture. This should be very close, since little sample actually dissolved into the DI water.

90-4180 #1 $\frac{8.70 \times 10^{-11}\ Ci/ml \times \frac{194.8843g}{2.0698g}}{2.0698\ g\ Sample} = 3.96 \times 10^{-9}\ Ci/g$

#2 $\frac{1.37 \times 10^{-11}\ Ci/ml \times \frac{196.7726g}{2.1978g}}{2.1978g} = 5.58 \times 10^{-10}\ Ci/g$

#5 $\frac{< 1.1 \times 10^{-12}\ Ci/ml \times \frac{197.5712}{2}}{2} = 5.43 \times 10^{-11}\ Ci/g$

Robertson

90-7488 1258, 1621 } 1439 $\frac{(1439-37.4) \times 1.279 \times \frac{15}{2.018}}{.1295g \times 2.22 \times 10^{12} \times 1.04} = 4.46 \times 10^{-8}\ Ci/g$

90-7489 722, 824 } 773 $\frac{(773-30.7) \times 1.279 \times \frac{15}{2.018}}{.1218g \times 2.22 \times 10^{12} \times 1.04} = 2.51 \times 10^{-8}\ Ci/g$

STD 3 2966 $\frac{(2966-30.7) \times 1.279 \times \frac{1000}{.0971} \times \frac{15}{2.018} \times 100}{27570\ dpm} = 104\ \%$

BATCH Run on 11/26/90

BLK 1	98.8	
BLK 2	65.3	
STD 1	2969	$\frac{(2969-65.3) \times 1.279 \times \frac{1000}{.0972} \times \frac{15}{2.018} \times 100}{27570\ dpm} = 103.0\ \%$
STD 2	3110	$\frac{(3110-65.3) \times 1.279 \times \frac{1000}{.0972} \times \frac{15}{2.018} \times 100}{27570\ dpm} = 108.0\ \%$

x100 = 96.6%

x100 = 111.5%

g = 104.0%

~~< 8.1 x10^-10 Ci/g~~

< 9.5 x10^-10 Ci/g

~ 4.2 x10^-10 Ci/g

6 samples

< 8.1 x10^-10 Ci/g

< 9.5 x10^-10 Ci/g

4.2 x10^-10 Ci/g

3.2 x10^-10 Ci/g

— CONT —

Project No. _____ Date of Work _____

Entered By D. L. Baldwin Date 1-6-91

Disclosed To and Understood By

Signed 1. _____ Date _____

2. _____ Date _____

D10-015

9111210262

D-11 - U AND Pu ISOTOPIC ANALYSIS

BY MASS SPECTROMETRY

D11–001

U OR PU

MASS SPECTROMETER

PRIMARY DATA PACKAGE

D11-002

SST

U OR PU MASS SPEC ISOTOPICS DATA COVER SHEET

Sample Number: REQUEST FOR ANALYSES CANCELLED

Procedure: 2-30.6

Pipet Calibration LRB#: NA

Equipment (M&TE#): HW 467148, 467806

Control Data LRB#: BNW 53338 & 53337

U OR PU

MASS SPECTROMETER

SUMMARY DATA REPORTS

D11-004

No Data Reported for Core 16

Request for Analyses Cancelled

U OR PU

MASS SPECTROMETER

ANALYTICAL RESULTS

D11-006

Pu AND U MASS SPEC ANALYSIS

Mass spec isotopic analysis of Pu and U is accomplished by using either a single stage or triple stage mass spectrometer. A MASS SPECTROMETER ANALYSIS REQUEST sheet accompanies each sample. This sheet has the date the sample was submitted to the mass spec laboratory, mass spec no., work package number, serial no. (a consecutive number system used in the radioanalytical lab), customer number and any pertinent remarks. The mass spectrometer data sheet is produced after an analysis scan. The data sheet is self explanatory. An NBS traceable std is scanned on that instrument each day that an analysis in run.

ANALYTICAL REPORT 100317

Customer: SST
Date Received: 9-5-90
Work Order No: Ma20-47

ID & A.L.O.: 590 -90

Description: 90-4180-C-1
TK1108
Core 1a
Segment CDM

Analysis: U Iso.
Procedure:

Results

2.0696g + 194.6845g

Calculations

Request Cancelled / BH 11-13-90

Calculations _____ Date _____

Reviewed _____ Date _____

Counting Information

By _____

Date _____ M. & T.E. _____

Log Book: BMW _____ p. __

ANALYTICAL REPORT 100329

Customer: SST
Date Received: 9-5-90
Work Order No: Ma20-47

ID & A.L.O.: 591 -90

Description: 90-4180-C-2
TK1108
Core 1a
Segment CDM

Analysis: U Iso.
Procedure:

Results

2.1978g + 196.772mg

Calculations

Request Cancelled / BH 11-13-90

Calculations _____ Date _____

Reviewed _____ Date _____

Counting Information

By _____

Date _____ M. & T.E. _____

Log Book: BMW _____ p. __

ANALYTICAL REPORT 100342

Customer: SST
Date Received: 9-5-90
Work Order No: Ma20-47

ID & A.L.O.: 593 -90

Description: 90-4180-C-5
TK1108
Core 1b
Segment CDM

Analysis: U Iso.
Procedure:

Results

197.5712g

Calculations

Request Cancelled / BH 11-13-90

Calculations _____ Date _____

Reviewed _____ Date _____

Counting Information

By _____

Date _____ M. & T.E. _____

Log Book: BMW _____ p. __

ANALYTICAL REPORT 100316

Customer: SST
Date Received: 9-5-90
Work Order No: Ma20-47

ID & A.L.O.: 590 -90

Description: 90-4160-C-1
TK1106
Core 1a
Segment CUM

Analysis: Pu Iso.
Procedure:

Results

2.1679g + 196.3649g

Cancelled
Request / BG 11-13-91

Calculations

Calculations _____ Date _____

Reviewed _____ Date _____
Counting Information

By _____

M. & T.E. Log Book:	mWW5 bWm5234T p	m42546 bWm52825 p	mA bWm52343 p
Instrument Eff. Factor	P.A.C. - 0.50	G.E. ASC. 0.37927	Ludlum - 0.4
Date	/ /	/ /	/ /
Total Counts			
Minutes			
Counts/Minute			
Background			
Corrected C/M			

ANALYTICAL REPORT 100328

Customer: SST
Date Received: 9-5-90
Work Order No: Ma20-47

ID & A.L.O.: 591 -90

Description: 90-4160-C-2
TK1106
Core 1a
Segment CUM

Analysis: Pu Iso.
Procedure:

Results

2.1978g + 196.772bg

Cancelled
Request / BG 11-13-91

Calculations

Calculations _____ Date _____

Reviewed _____ Date _____
Counting Information

By _____

M. & T.E. Log Book:	mWW5 bWm5234T p	m42546 bWm52825 p	mA bWm52343 p
Instrument Eff. Factor	P.A.C. - 0.50	G.E. ASC. 0.37927	Ludlum - 0.4
Date	/ /	/ /	/ /
Total Counts			
Minutes			
Counts/Minute			
Background			
Corrected C/M			

ANALYTICAL REPORT 100341

Customer: SST
Date Received: 9-5-90
Work Order No: Ma20-47

ID & A.L.O.: 593 -90

Description: 90-4160-C-5
TK1106
Core 1a
Segment CUM

Analysis: Pu Iso.
Procedure:

Results

197.5712g

Cancelled
Request / BG 11-13-91

Calculations

Calculations _____ Date _____

Reviewed _____ Date _____
Counting Information

By _____

M. & T.E. Log Book:	mWW5 bWm5234T p	m42546 bWm52825 p	mA bWm52343 p
Instrument Eff. Factor	P.A.C. - 0.50	G.E. ASC. 0.37927	Ludlum - 0.4
Date	/ /	/ /	/ /
Total Counts			
Minutes			
Counts/Minute			
Background			
Corrected C/M			

Hanford Engineering Development Laboratory

MASS SPECTROMETER ANALYSIS REQUEST

LAB NO. 542-90	SAMPLE INFORMATION SAMPLE CONTENT WEIGHT	MASS SPEC. NO. 140038
DATE REC'D. 8/21/90	SAMPLE VOLUME 5ml ~5	SAMPLE (ELEMENT) U Iso.
CUSTOMER SST/Harvey	SPIKE VOLUME / SPIKE IDENT.	SAMPLE + SPIKE
CUST. SAMPLE IDENT. 90-3617-A-1 TK110B Core 10 Segment 3	ATOM RATIOS /8 ☐ WEIGHT % ☐ ATOM %	TECHNICIAN [signature] DATE: 11-14-90
WORK ORDER No. M62047		APPROVAL 11-14-90 [signature]

REMARKS
M&TE: 467806
Log Book: 53337 Page: 31

DATA

SD-7340-018 (6-72)

D11-010

ANALYTICAL REPORT 100068

Customer: SST
Date Received: 6-21-90
Work Order No: M620-47

ID & A.L.O.: 542-90

Description: 90-3617-A-1
TK1106
Core 16
Segment 3

Analysis: U Iso.
Procedure: MS-SOP-4.5.5

Results

0.5221g + 250mL -

Calculations:

See attached mass Spec analysis Sheet

Calculations G. O. Harvey Date _____

Reviewed _____ Date _____

Covering Information

By _____

Date _____ M. & T.E. _____

Log Book: Bwl _____ p. __

MASS SPECTROMETER LABORATORIES

CHEMISTRY AND ANALYSIS
325 BUILDING

SINGLE STAGE (MTE Id. 467806)

MS NO: 1190038 RUN NO: MASS DISC. FACTOR: 0.0015
SAMPLE ID.: TK1108 Core 16 Seg 3 RUN DATE: 11-16-90
CUSTOMER: SST/Harvey ANALYST: RE Brinson
LAB NO.: 542-90 SAMPLE LOG-IN NO.: 90-3619

REFERENCE MASS: 238

MEASURED MASSES:

234	235	236	238

RATIOS:

0.000068	0.006861	0.000186	1.000000
0.000058	0.006790	0.000250	1.000000
0.000063	0.006770	0.000266	1.000000
0.000079	0.006691	0.000242	1.000000
0.000115	0.006791	0.000217	1.000000
0.000058	0.006594	0.000219	1.000000
0.000065	0.006773	0.000240	1.000000
0.000104	0.006817	0.000231	1.000000
0.000116	0.006798	0.000178	1.000000

MEAN RATIO FOR EACH ISOTOPE IS:

0.000081	0.006765	0.000226	1.000000

STANDARD DEVIATION OF RATIO FOR EACH ISOTOPE IS:

0.000024	0.000078	0.000029	0.000000

95% CONFIDENCE LEVEL FOR EACH ISOTOPE IS:

0.000019	0.000060	0.000022	0.000000

NO SCANS REJECTED AT THE 95% LEVEL

MASS	ATOM %	MASS %
234	0.00801	0.00787
235	0.67175	0.66334
236	0.02240	0.02221
238	99.29785	99.30657

Hanford Engineering Development Laboratory

MASS SPECTROMETER ANALYSIS REQUEST

LAB NO. 543-90	SAMPLE INFORMATION SAMPLE CONTENT WEIGHT	MASS SPEC. NO. 1190039
DATE REC'D. 8/21/90	SAMPLE VOLUME 5ml ~5	SAMPLE (ELEMENT) U Iso.
CUSTOMER SST/Harvey	SPIKE VOLUME / SPIKE IDENT.	SAMPLE + SPIKE
CUST. SAMPLE IDENT. 90-3617-A-2 TK110B Core Segment 3	ISOTOPE RATIOS /8 ☐ WEIGHT % ☐ ATOM %	TECHNICIAN DATE 11/19/90
WORK ORDER NO. M62047		APPROVAL 11-19-90

REMARKS
M&TE 467806
Log BooK: 53337 Page: 31

DATA

BD-7340-018 (8-72)

D11-012

ANALYTICAL REPORT 100080

Customer: SST
Date Received: 8-21-90
Work Order Nos: MA20 ±7

ID & A.L.O.: 543 -90

Description: 90-3617-A-2
TK1108
Core 16
Segment 3

Analysis: U Iso.
Procedure: Fla-Rad + JT

0.5299g + ~~2tons~~ 250 mL - AAE 9-10-90

Calculations

See attached Sheet

Results

Calculations G. O. Harvey Date 1-24-9

Reviewed _____ Date _____

Counting Information

By _____

Date _____ M. & T.E. _____

Log Book: Bwa _____ p. ___

MASS SPECTROMETER LABORATORIES

CHEMISTRY AND ANALYSIS
325 BUILDING

SINGLE STAGE (MTE Id. 467806)

MS NO: 1190039 RUN NO:
SAMPLE ID.: TK1108 Core 16 Seg 3
CUSTOMER: SST/Harvey
LAB NO.: 543-90

MASS DISC. FACTOR: 0.0015
RUN DATE: 11-16-90
ANALYST: RE Brinson
SAMPLE LOG-IN NO.: 90-3617

REFERENCE MASS: 238

MEASURED MASSES:

234	235	236	238
RATIOS:			
0.000104	0.007050	0.000149	1.000000
0.000108	0.007088	0.000146	1.000000
0.000108	0.007323	0.000176	1.000000
0.000102	0.007189	0.000148	1.000000
0.000100	0.007231	0.000188	1.000000
0.000119	0.007267	0.000184	1.000000
0.000130	0.007272	0.000176	1.000000
0.000078	0.007021	0.000177	1.000000
0.000112	0.007247	0.000166	1.000000

MEAN RATIO FOR EACH ISOTOPE IS:

0.000107	0.007187	0.000168	1.000000

STANDARD DEVIATION OF RATIO FOR EACH ISOTOPE IS:

0.000014	0.000108	0.000016	0.000000

95% CONFIDENCE LEVEL FOR EACH ISOTOPE IS:

0.000011	0.000083	0.000012	0.000000

NO SCANS REJECTED AT THE 95% LEVEL

MASS	ATOM %	MASS %
234	0.01060	0.01042
235	0.71343	0.70450
236	0.01665	0.01651
238	99.25933	99.26857

D11-013

MASS SPECTROMETER LABORATORIES

CHEMISTRY AND ANALYSIS
325 BUILDING

SINGLE STAGE (MTF Id. 467806)

MS NO: 9509016 RUN NO: MASS DISC. FACTOR: 0.0015
SAMPLE ID.: U Std NBS-950 RUN DATE: 11-16-90
CUSTOMER: ANALYST: RE Brinson
LAB NO.: SAMPLE LOG-IN NO.:

REFERENCE MASS: 238

MEASURED MASSES:

234	235	236	238

RATIOS:

0.000055	0.007251	0.000025	1.000000
0.000057	0.007157	0.000031	1.000000
0.000061	0.007258	0.000054	1.000000
0.000090	0.007133	0.000005	1.000000
0.000075	0.007317	0.000124	1.000000
0.000079	0.007337	0.000008	1.000000
0.000073	0.007162	0.000056	1.000000
0.000084	0.007310	0.000025	1.000000
0.000079	0.007392	0.000021	1.000000

MEAN RATIO FOR EACH ISOTOPE IS:

0.000073	0.007269	0.000039	1.000000

STANDARD DEVIATION OF RATIO FOR EACH ISOTOPE IS:

0.000012	0.000096	0.000036	0.000000

95% CONFIDENCE LEVEL FOR EACH ISOTOPE IS:

0.000009	0.000073	0.000029	0.000000

CYCLE # 5 REJECTED AT THE 95% LEVEL
DUE TO THE 236/ 238 RATIO

MEAN RATIO FOR EACH ISOTOPE IS:

0.000072	0.007263	0.000029	1.000000

STANDARD DEVIATION OF RATIO FOR EACH ISOTOPE IS:

0.000013	0.000100	0.000019	0.000000

95% CONFIDENCE LEVEL FOR EACH ISOTOPE IS:

0.000011	0.000084	0.000016	0.000000

MASS	ATOM %	MASS %
234	0.00718	0.00706
235	0.72094	0.71192
236	0.00278	0.00276
238	99.26910	99.27826

D11-014

Hanford Engineering Development Laboratory

MASS SPECTROMETER ANALYSIS REQUEST

LAB NO. 547-90	SAMPLE INFORMATION SAMPLE CONTENT WEIGHT	MASS SPEC. NO. 1190040
DATE REC'D. 8/21/90	SAMPLE VOLUME	SAMPLE (ELEMENT) U Iso.
CUSTOMER SST/Harvey	5ml ~2 SPIKE VOLUME / SPIKE IDENT.	SAMPLE + SPIKE
CUST. SAMPLE IDENT. 90-3619-A-A TK110B Core 16	ATOM RATIOS /8 ☐ WEIGHT %	TECHNICIAN DATE: 11-19-90
WORK ORDER NO. M62047	☐ ATOM %	APPROVAL 11-19-90

REMARKS
M&TE: 467806
LOG Book: 51117 Page: 31

DATA

BD-7340-018 (8-72)

D11-015

ANALYTICAL REPORT 100106

Customer: SST
Date Received: 8-1-90
Work Order Not Recd 97

ID & M.E.D.: 547-90

Description: 90-3619-1
TK110B
Core 16
Segment 3

Analysis: U Isot.
Procedure: PHL 1120-203

Results

Calculations See attached mass Spec analysis Sheet

Calculations L O Harvey Date 11-21-9

Reviewed _____ Date _____

Condition Information

By _____

Date _____ M. & I.E. _____

Log Book No. _____ Pg. ___

MASS SPECTROMETER LABORATORIES

CHEMISTRY AND ANALYSIS
325 BUILDING

SINGLE STAGE (MTE Id. 467806)

MS NO: 1190040 RUN NO: MASS DISC. FACTOR: 0.0015
SAMPLE ID.: TK110B Core 16 Seg 3 RUN DATE: 11-16-90
CUSTOMER: SST/Harvey ANALYST: RE Brinson
LAB NO.: 547-90 SAMPLE LOG-IN NO.: 90-3619

REFERENCE MASS: 238

MEASURED MASSES:

234	235	236	238
RATIOS:			
0.000100	0.008860	0.000240	1.000000
0.000073	0.009181	0.000276	1.000000
0.000098	0.008995	0.000251	1.000000
0.000098	0.008964	0.000243	1.000000
0.000102	0.008772	0.000260	1.000000
0.000085	0.009019	0.000251	1.000000
0.000122	0.008934	0.000300	1.000000
0.000101	0.009117	0.000221	1.000000
0.000102	0.008882	0.000247	1.000000

MEAN RATIO FOR EACH ISOTOPE IS:

0.000098	0.008969	0.000254	1.000000

STANDARD DEVIATION OF RATIO FOR EACH ISOTOPE IS:

0.000013	0.000127	0.000023	0.000000

95% CONFIDENCE LEVEL FOR EACH ISOTOPE IS:

0.000010	0.000098	0.000018	0.000000

NO SCANS REJECTED AT THE 95% LEVEL

MASS	ATOM %	MASS %
234	0.00968	0.00952
235	0.88865	0.87755
236	0.02520	0.02499
238	99.07647	99.08794

Hanford Engineering Development Laboratory

MASS SPECTROMETER ANALYSIS REQUEST

LAB NO. 548-90	SAMPLE INFORMATION SAMPLE CONTENT WEIGHT	MASS SPEC. NO. 11 90041
DATE REC'D. 8/21/90	SAMPLE VOLUME 5ml	SAMPLE (ELEMENT) U Iso.
CUSTOMER SST/Harvey	SPIKE VOLUME / SPIKE IDENT.	SAMPLE + SPIKE
CUST. SAMPLE IDENT. 90-3619-A-2 TK110B Core 16 Segment 3	ATOM RATIOS /8 ☐ WEIGHT % ☐ ATOM %	TECHNICIAN [signature] DATE 11-19-90
WORK ORDER NO. M62047		APPROVAL 11-19-90 [signature]

REMARKS
M&TE 467806
Log Book: 5133 Page: 31

DATA

BD-7340-016 (8-72)

D11-017

ANALYTICAL REPORT 100118

Customer: SSI
Date Received: 8-21-90
Work Order No: [illegible]47

ID & A.L.I.D.: 548-90

Description: 90-3619-[illegible]
TK110B
Core 16
Segment 3

Analysis: U Iso.
Procedure: [illegible]

Results

U.S.Only + Total

Calculations

See attached mass Spec analysis Sheet

Calculations [illegible] Date 1-24-91

Reviewed _____ Date _____

Counting Information

By _____

Date _____ M. & T.E. _____

Log Book: Gen_____ p. __

MASS SPECTROMETER LABORATORIES

CHEMISTRY AND ANALYSIS
325 BUILDING

SINGLE STAGE (MTE Id. 467806)

MS NO: 1190041 RUN NO: MASS DISC. FACTOR: 0.0015
SAMPLE ID.: TK110B Core 16 Seg 3 RUN DATE: 11-16-90
CUSTOMER: SST/Harvey ANALYST: RE Brinson
LAB NO.: 548-90 SAMPLE LOG-IN NO.: 90-3619

REFERENCE MASS: 238

MEASURED MASSES:

234	235	236	238
RATIOS:			
0.000213	0.020667	0.000391	1.000000
0.000218	0.020781	0.000353	1.000000
0.000205	0.020615	0.000359	1.000000
0.000221	0.020740	0.000376	1.000000
0.000226	0.020741	0.000369	1.000000
0.000204	0.020717	0.000395	1.000000
0.000215	0.020716	0.000372	1.000000
0.000214	0.020568	0.000362	1.000000
0.000195	0.020470	0.000377	1.000000

MEAN RATIO FOR EACH ISOTOPE IS:

0.000212	0.020668	0.000373	1.000000

STANDARD DEVIATION OF RATIO FOR EACH ISOTOPE IS:

0.000010	0.000100	0.000014	0.000000

95% CONFIDENCE LEVEL FOR EACH ISOTOPE IS:

0.000007	0.000077	0.000011	0.000000

NO SCANS REJECTED AT THE 95% LEVEL

MASS	ATOM %	MASS %
234	0.02080	0.02045
235	2.02383	1.99884
236	0.03650	0.03620
238	97.91888	97.94451

D11-018

MASS SPECTROMETER LABORATORIES

CHEMISTRY AND ANALYSIS
325 BUILDING

SINGLE STAGE (MTE Id. 467806)

MS NO: 9509016 RUN NO: MASS DISC. FACTOR: 0.0015
SAMPLE ID.: U Std NBS-950 RUN DATE: 11-16-90
CUSTOMER: ANALYST: RE Brinson
LAB NO.: SAMPLE LOG-IN NO.:

REFERENCE MASS: 238

MEASURED MASSES:

234	235	236	238

RATIOS:

0.000055	0.007351	0.000025	1.000000
0.000057	0.007157	0.000031	1.000000
0.000061	0.007258	0.000054	1.000000
0.000090	0.007133	0.000005	1.000000
0.000075	0.007317	0.000124	1.000000
0.000079	0.007337	0.000008	1.000000
0.000073	0.007162	0.000056	1.000000
0.000084	0.007310	0.000025	1.000000
0.000079	0.007392	0.000021	1.000000

MEAN RATIO FOR EACH ISOTOPE IS:

0.000073	0.007269	0.000039	1.000000

STANDARD DEVIATION OF RATIO FOR EACH ISOTOPE IS:

0.000012	0.000096	0.000036	0.000000

95% CONFIDENCE LEVEL FOR EACH ISOTOPE IS:

0.000009	0.000073	0.000028	0.000000

CYCLE # 5 REJECTED AT THE 95% LEVEL
DUE TO THE 236/ 238 RATIO

MEAN RATIO FOR EACH ISOTOPE IS:

$\sigma = 0.0010$

0.000072	0.007263	0.000028	1.000000

STANDARD DEVIATION OF RATIO FOR EACH ISOTOPE IS:

0.000013	0.000100	0.000019	0.000000

95% CONFIDENCE LEVEL FOR EACH ISOTOPE IS:

0.000011	0.000084	0.000016	0.000000

MASS	ATOM %	MASS %
234	0.00718	0.00706
235	0.72094	0.71192
236	0.00278	0.00276
238	99.26910	99.27826

D11-019

ANALYTICAL REPORT

100092

Customer: SSI
Date Received: 8-21-90
Work Order No: M0204

ID & A.L.O.: 544-90

Description: 90-3617-W-3
Tk1108
Core 1a
Segment 3

Analysis: U Iso.
Procedure:

Results

Comm -

Calculations

Report Cancelled too low / BY 11-13-90

Calculations _____ Date _____

Reviewed _____ Date _____

Counting Information

By _____

Date _____ M. & I.E. _____

Log Book: CAM _____ p. __

ANALYTICAL REPORT

100091

Customer: SSI
Date Received: 8-21-90
Work Order No: M0204

ID & A.L.O.: 544-90

Description: 90-3617-W-3
Tk1108
Core 1a
Segment 3

Analysis: Pu Iso.
Procedure:

Results

Comm -

Calculations

Report Cancelled too low / BY 11-13-90

Calculations _____ Date _____

Reviewed _____ Date _____

Counting Information

By _____

M. & I.E.	[illegible]	[illegible]	[illegible]
Log Book:	[illegible] p	[illegible] p	[illegible] p
Instrument Eff. Factor	P.M.C. - 0.30	U.E. mod. 0.3792	Lumium - 0.4
Date	__/__/__	__/__/__	__/__/__
Total Counts			
Minutes			
Counts/Minute			
Background			
Corrected C/M			

D11-020

D-12 - PIPET CALIBRATION DATA

PIPETTE CALIBRATION

PRIMARY DATA PACKAGE

D12-002

SST

PIPETTE CALIBRATION DATA COVER SHEET

Sample Number: 90-3617-A-1/2/3
90-3619-A-1/2/3
90-4178-A-1/2/3
90-4180-C-1/2/5

Pipet Calibration LRB#: BNW 52327

Pipette Calibration for:		
	Total Alpha	X
	Total Beta	X
	I-129	X
	Tc-99	X
	Sr-90	X
	Uranium	X
	Pu, Am, Np AEA	X

9112171312985

BNW-53645
12-21-89

PACIFIC NORTHWEST LABORATORY
ISSUED
DEC 21 1989
BATTELLE RECORDS MGMT.

THIS BOOK IS INTEDNDED TO BE USED FOR RECORDING RESEARCH PERFORMED FOR THE U.S. DEPARTMENT OF ENERGY UNDER BNW'S OPERATING CONTRACT EY-76-C-06-1830.

1132950

	LABORATORY RECORD BOOK NUMBER BNW- 53645	This document consists of ..... pages, copy no. .....
	TITLE (INDICATE SUBJECT CONTENT)	
AUTHOR - DIVISION AND DEPARTMENT		
PERIOD COVERED FROM	TO	

Route To	P. R. No.	Location	Route Date	Signature & Date
JH Kaye	30828	P7-22	12-21-89	

D12-004

Description of Work

1

The entries in this book contain the raw data used to calibrate pipets used for the radiochemical analyses. Balance # 360-06-01-018 (Calibrations #) - Property # WA33277 was or is used for all entries. Daily accuracy checks are made by weighing a 30g weight and recording the reading before calibration weighing are made. Room temperature equilibrated distilled water is weighed using five (5) aliquots and weights are averaged. Room temperature is rounded to the nearest °C, recorded, then an appropriate correction factor is applied to the average calibration weight to get the calibrated volume. Correction factors at the different temperatures come from Smithsonian tables compiled from various authors.

This calibration record is also used to cross reference the uranium standard make-ups and laser analyzer checks recorded in BNW52442. The dates on the uranium analytical cards (Method HTA-4-16) can be cross referenced to this book for pipet calibrations. The same date can be used to cross reference uranium analyzer checks in BNW52442 and standard make-ups as those entries are also in date order. Fresh uranium standards are made from a concentrated stock solution (~~traceable~~ OQR 6-21-90) traceable to NIST standards and are made at a 2 week frequency for this method. Hence standard make-ups for a specific uranium analyzer check will be found within a few pages before that uranium analyzer check record is found.

Concur GKGerke, DE 23/90 → Periodically other balances may be used, when balances other than WA 33277 are used the information shall be specified with the accompanying data. Diana L Sellotatto 8/23/90

Project No. _____ Date of Work _____

Entered By P. J. Farley Date 6-21-90

Disclosed To and Understood By

D12-005

Signed 1. _____ Date _____

2. _____ Date _____

2

Personnel Authorized TO MAKE ENTRIES IN THIS LRB ARE:

Name	Initial	Date
Patricia J Raney	PJR	6-21-90
Wayne Dillman	WD	6-22-90
Tapas Chandra Maiti	TCM	6-25-90
Anne E Kozelsky	AEK	6/26/90
Clark O Harvey	COH	7/23/90
Linda Fahey	SKF	8/7/90
Rebecca J. Barrington	RJB	8-13-90
Diana L Billotte	DLB	8-13-90
Alexy M. Deal	AMD.	1-10-91

Personnel Authorized to Review this LRB:

Name	Initial	Date
Clark O Harvey	COH	10/31/90

6-28-90 Additional space for Review Info, p150-152

Laboratory Record Book Reviews:

Name	Initial	Date

Project No. _____ Date of Work _____

Entered By P.J. Raney Date 6-21-90

Disclosed To and Understood By

Signed 1. _____ Date _____

2. _____ Date _____

Pipet Record (cont.)

BNW53645
8 4

LABORATORY PIPETS

Pipet No.	Volume or Volume Range	Room No.	Date In Service	Date Out of Service
~~68~~	~~0-1 ml~~	~~309~~	~~12-14-89~~	4-30-90
69	10 λ	"	12-14-89	
70	100λ-1000λ	309	3-20-90	
71	10-100λ	309	"	
72	0-5 ml	309	"	
73	200λ	"	"	
RAMIN 12/88; 8/16/88 74	5000λ (1000λ)	309	4-6-90	
75	50λ	"	4-10-90	
76	0-1 ml	"	4-30-90	6/4/90 Discarded during cleaning operation 309
77	0-1 ml	307	5-22-90	
78	1000λ	309	6-4-90	
RAMIN 79	1-10 ml	309	8/8/90	
80	10-100 ml	500	8/10/90	
81	1-5 ml	500	8/10/90	
82	500λ	309 ~~416~~ BJR 8-22-90	8-22-90	
83	100λ	416	8-22-90	
84	1000λ	309	9-27-90	
85	10-100 μl	327	10-29-90	
86	0-5 ml	309	11-21-90	
87	0-20 μl	327	12-3-90	

Project No. _____ Date of Work 2/6

Entered By P. J. Ramey Date 6-~~6~~-90 BJR

Disclosed To and Understood By

Signed 1. _____ Date _____

2. _____ Date _____

D12-007

9112170512 9

Date	Pipette #	Wt	Name
9/19/90 30g = 30.0000 25°C vol factor = 1.00294 Diana L Bellofatto	#33 1 ml	0.9998 0.9970 0.9993 0.9993 0.9955 4.9812 ÷ 5 x 1.00294 = 0.9972 ml	

53

9-20-90 Wt Check 30g = 30.0000 25°C Vol Factor = 1.00294	#78 @1 ml	0.9968 0.9949 0.9938 0.9925 0.9983 4.9763 ÷ 5 x 1.00294 = 0.9982 ml	P. J Raney
		4.9951 4.9681 4.9510 4.9510 4.9973 24.8125 x 1.00294 ÷ 5 = 4.9771 ml	P J Raney

@ 25°C vol factor 1.00294	#39 @ 5 ml	4.9501 4.9500 4.9643 4.9536 4.9533 24.7713 ÷ 5 x 1.00294 = 4.9688	G O Harvey
	#4 @ 1.0 ml	0.1000 0.1001 0.0994 0.1020 0.1006 0.5021 ÷ 5 x 1.00294 = 0.1007	G O Harvey

Project No. _____ Date of Work _____

Entered By _____ Date _____

Disclosed To and Understood By **D12-008**

Signed 1. _____ Date _____

2. _____ Date _____

54

Date	Pipet	weights	
9/21/86 30g wt = 30.0001 Temp 24°c vol factor 1.00268	#69 @ 100 ml	0.1000 0.1007 0.1009 0.1000 0.1003	CO Harvey
		0.5019 ÷5 x 1.00268 = 0.1006	
	92 500 ml	0.4969 0.4988 0.4999 0.4971 0.4995	CO Harvey
		2.4912 ÷5 x 1.00268 = 0.4996	
	77 @ 1000 ml	0.9990 0.9998 1.0039 1.0012 1.0028	CO Harvey
		5.0067 ÷5 x 1.00268 = 1.0040	
9 21-90 30g Wt = 30.0001 Temp = 24°C Vol. Factor = 1.00268	#41 20λ	0.0198 0.0192 0.0201 0.0190 0.0202	P. J. Kenny
		0.0983 ÷5 x 1.00268 = 0.0197 ml	
	#37	0.0995 0.1003 0.1002 0.1000 0.1000	P. J. Kenny
		0.5000 ÷5 x 1.00268 = 0.1003	

Project No. _____ Date of Work _____

Entered By _____ Date _____

Disclosed To and Understood By

Signed 1. _____ Date _____

2. _____ Date _____

Date	Pipet #	Wts	Name
9-21-90	#78		
30g = 30.0001	@ 1000λ	0.9926	
temp = 24°C		0.9939	
Vol Factor = 1.00268		0.9905	
		0.9897	
		0.9905	
		4.9572 ÷ 5 × 1.00268 = 0.9941 mL	

9/21/90 — #67 @ 20 uL — @ 25°C — vol factor 1.00294

0.0201
.0192
0.0207
0.0200
0.0206
0.1006 ÷ 5 × 1.00294 = 0.0202 mL

C O Harvey

#67 @ 10 uL

0.0100
0.0099
0.0099
0.0100
0.0099
0.0497 ÷ 5 × 1.00294 = 0.00997

C O Harvey

9/21/90
30g wt check = 30.0001
24°C vol. factor = 1.00268
Diana L Bellofatto

#2 2mL

2.0154
2.0292
2.0277
2.0303
2.0242
10.1268 ÷ 5 × 1.00268 = 2.0308 mL

Project No. _____ Date of Work _____
Entered By _____ Date _____
Disclosed To and Understood By
Signed 1. _____ Date _____
2. _____ Date _____

D12-010

9/21/90
30g wt check = 30.0001
24°C vol check = 1.00268
Diana L Bellofatto

8
100λ

0.0980
0.0991
0.0988
0.0993
0.0990
0.4942 ÷ 5 x 1.00268 = 0.0991 ml

9/21/90
25°C vol factor = 1.00294
Diana L Bellofatto

2
5ml

5.0488
5.0570
5.0446
5.0448
5.0420
25.2372 ÷ 5 x 1.00294 = 5.0623 ml

9/21/90
25°C vol factor = 1.00294
Diana L Bellofatto

33
1 ml

0.9872
0.9923
0.9920
0.9931
0.9928
4.9574 ÷ 5 x 1.00294 = 0.9944 ml

9/24/90
30g = 30.0000g
24°C
vol factor 1.00268
Rebecca Pearrington

#
66
100λ

0.0994
0.1020
0.1006
0.0996
0.1013
0.5029 ÷ 5 x 1.00268 = ~~0.2~~ 0.1009 ml

9/24/90 RP

Project No. _____ Date of Work _____
Entered By _____ Date _____
Disclosed To and Understood By
Signed 1. _____ Date _____
2. _____ Date _____

DATE	PIPETTE #	WEIGHT
9/24/90	#32	5.0688
30g = 30.000	5ml	5.0505
24°C		5.0670
vol factor = 1.00268		5.0543
Rebecca Barrington		5.0589

57

25.2995 ÷ 5 x 1.00268 = 5.0735ml

@ 25°C	# 10	0.0497
vol factor 1.00294	0 50uL	0.0504
		0.0503
		0.0500
		0.0503

C O Harvey

0.2507 ÷ 5 x 1.00294 = 0.0503 mL

9/25/90	#33	0.9747
30g = 30.000g	1ml	0.9737
25°C		0.9956
vol factor = 1.00294		0.9630
		0.9787

Rebecca Barrington

4.8859 ÷ 5 x 1.00294 = 0.9801 ml

9/26/90	#78	0.9968
30g = 29.9999g		0.9910
		0.9958
		0.9924
25°C		0.9923
Vol. factor = 1.00294		4.9713

Kmaidi

÷ 5 x 1.00294 = 0.9972 ml

Project No. _____ Date of Work _____

Entered By _____ Date _____

Disclosed To and Understood By

D12-012

Signed 1. _____ Date _____

2. _____ Date _____

DATE	Pipet #	weight
9/26	64	4.9790
	@ 5ml	4.9854
at 25°c		4.9870
vol factor 1.00294		4.9831
		4.9859
		24.9204 ÷5 x 1.00294 = 4.7787

CO Harvey

9/26 #32
30g = 30.0000g 5ml
25°C
vol factor 1.00294

Rebecca Barrington

5.0609
5.0639
5.0433
5.0575
5.0579
25.2834 ÷5x 1.00294 = 5.0715ml

9/26 #82
500m

RyBarrington

0.5021
0.5014
0.5008
0.5012
0.5014
2.5069 ÷5x1.00294=0.5029 ml

9/26 #1
100m

RyBarrington

0.1073
0.1031
0.1078
0.1090
0.1071
~~1.0372 ÷ 5x1.00294 =~~
0.5343 ÷ 5x 1.00294 = 0.1072ml

Project No. _____ Date of Work _____
Entered By _____ Date _____
Disclosed To and Understood By
Signed 1. _____ Date _____
2. _____ Date _____

DATE	PIPETTE#	WEIGHT
9/26	#66 20λ	0.0204
Rybarrington		0.0210
		0.0202
		0.0204
		0.0206
		0.1026 ÷5x1.00294 = 0.0206ml

59

9/27/90 Wt. cu 30g = 30.0000g	#4 100λ	0.1001
		0.1004 Emarti
		0.1003
24°C Vol. factor = 1.00268		0.1002
		0.1005
		0.5015 ÷5
		x 1.00268 = 0.1006ml
9/27/90 24°C vol factor = 1.00268	#8 100λ	Anne E Hazelwood
		0.1005
		0.1000
		0.0994
		0.0995
		0.0995
		0.4989 ÷5 x 1.00268 = 0.1000 48ml
9/27/80 24°C	# 33 @ 1mL	1.0086
		1.0119
		1.0085
		1.0077 G Ottavy
		1.0075
		5.0442 ÷5 x 1.00268 = 1.0115
"	# 66 100μL	.0997
		.0998
		.1000
		.0998 G Ottavy
		.1002
		.4995 ÷5 x 1.00268 = 0.1002

Project No. _____ Date of Work _____

Entered By _____ Date _____

Disclosed To and Understood By

Signed 1. _____ Date _____

2. _____ Date _____

D12-014

9/28/90
wt check 30g = 30.0000
24°C vol factor = 1.00268
Liana Bellofatto

#19
1ml

0.9865
0.9871
0.9883
0.9860
0.9870
4.9349 ÷ 5 X 1.00268 = 0.9896 ml

9/28/90
24°C vol factor = 1.00268
Liana L Bellofatto

#10
30ml

0.0194
0.0196
0.0200
0.0195
0.0198
0.0983 ÷ 5 X 1.00268 = 0.0197 ml

9/28/90
20.1mg to above
Liana L Bellofatto

#11
100ml

0.0994
0.0990
0.0990
0.0991
0.0989
0.4954 ÷ 5 X 1.00268 = 0.0993 ml

9/28/90
26°C vol. factor = 1.00320
Liana L Bellofatto

#8
100ml

0.0980
0.0987
0.0980
0.0984
0.0982
0.4913 ÷ 5 X 1.00320 = 0.0986 ml

Project No. _____ Date of Work _____
Entered By _____ Date _____
Disclosed To and Understood By
Signed 1. _____ Date _____
2. _____ Date _____

9/28/90 #19 0.9953
same as above 1 ml 0.9940
Ruana L Bellofatto 0.9917
0.9986
0.9936
4.9732 ÷ 5 × 1.00320 = 0.9978 ml

9/28/90 #19 0.4950
Ruana L Bellofatto 500 µl 0.4955
same as above 0.4956
0.4965
0.4952
2.4778 ÷ 5 × 1.00320 = 0.4971 ml

10/1/90 # 78
Wt. ck. 30g 500λ
= 30.0019g 0.4955
0.4960
0.4961
0.4952
24°C Vol. factor 0.4962
= 1.00268 2.4790 ÷ 5 × 1.00268 = 0.4971 ml

Emanuli

#4
100λ
0.0990
0.0992
0.0992
24°C Vol. factor 0.0989
= 1.00268 0.0998
0.4961 ÷ 5 × 1.00268 = 0.0995 ml

Emanuli

Project No. _____ Date of Work _____
Entered By _____ Date _____
Disclosed To and Understood By
Signed 1. _____ Date _____
2. _____ Date _____

10-1-90 (cont.)
@ 25°C vol factor = 1.00294

#19
125 λ

0.1255
0.1244
0.1257
0.1250 same E Hagelberg
0.1243
0.6299 ÷5 x 1.00294 = 0.12535 ml

10-1-90
same

#8
100 λ

0.1006
0.1008
0.0992
0.0999 same E Hagelberg
0.0996
0.5001 ÷5 x 1.00294 = 0.10031 ml

10-1-90
same

#75
50 λ

0.0494
0.0493
0.0495
0.0494 same E Hagelberg
0.0497
0.2473 ÷5 x 1.00294 = 0.04961 ml

10-2-90
30g wt = 30.0001
Temp 24°C
vol factor 1.00268

#4
@ 100 ul

0.0998
0.0999 C O Harvey
0.1000
0.1002
0.1001
0.5000 ÷ 5 x 1.00268 = ~~0.100~~ 0.1003 ml

#66
@ 20 ul

0.0199
0.0200
0.0201 C O Harvey
0.0202
0.0198
0.1000 ÷ 5 x 1.00268 = 0.02005

Project No. _____ Date of Work _____
Entered By _____ Date _____
Disclosed To and Understood By
Signed 1. _____ Date _____
2. _____ Date _____

Date	Pipet #	Weight
10/3/90	#78	
Wt. CK 30g	1000λ	
= 30.0001g	0.9963	
	0.9970	
	0.9955	
	0.9938	
24°C Vol. factor	0.9948	
= 1.00268	4.9774	÷5 × 1.00268 = 0.9931 ml

Emaiti

	#4	
	100λ	0.0993
		0.0999
		0.0990
		0.0998
24°C Vol. factor		0.0998
= 1.00268		0.4978 ÷5 × 1.00268 = 0.0993 ml

Emaiti

10-3-90	#8	0.1008
25°C Vol factor = 1.00294	100λ	0.0997
		0.0999
		0.0999
		0.0994
		0.4997 ÷5 × 1.00294 = 0.10023 ml

Anne E Kyekeky

	#75	0.0500
	50λ	0.0492
		0.0492
		0.0490
		0.0491
		0.2465 ÷5 × 1.00294 = 0.049445 ml

Anne E Kyekeky

Project No. _____ Date of Work _____

Entered By _____ Date _____

Disclosed To and Understood By

Signed 1. _____ Date _____

2. _____ Date _____

D12-018

DATE	PIPETTER #	WEIGHT
10/4/90 30g = 29.9998 25°C vol factor = 1.00294 RJBarrington	#32 5ml	5.0303 5.0365 5.0560 5.0381 5.0633 25.2242 ÷ 5 x 1.00294 = 5.0597 ml
10/4/90 30g = 29.9998 25°C vol factor = 1.00294 RJBarrington	#8 100λ	0.1013 0.1005 0.1003 0.1007 0.1009 0.5037 ÷ 5 x 1.00294 = 0.1010 ml
10-4-90 30g = 29.9998 25°C vol. factor = 1.00294 Linda L. Billofatto	#3 1ml	0.9929 0.9958 0.9921 0.9932 0.9953 4.9693 ÷ 5 x 1.00294 = 0.9968 ml
10-4-90 30g = 29.9998 25°C vol. factor = 1.00294 Linda L. Billofatto	#3 100λ	0.0992 0.0991 0.0993 0.0995 0.0991 0.4962 ÷ 5 x 1.00294 = 0.0995 ml
10-4-90 30g = 29.9998 25°C vol. factor = 1.00294 Linda L. Billofatto	#19 500λ	0.4995 0.4998 0.4990 0.4979 0.4965 2.4927 ÷ 5 x 1.00294 = 0.5000 ml

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DATE	PIPETTE #	WEIGHT
10-4-90		
30g = 29.9998	# 10	0.01
25°C vol. factor = 1.00294	10λ	0.0101
Diaria L Bellofatto		0.0102
		0.01
		0.0102
		0.0505 ÷ 5 x 1.00294 = 0.0101 ml

65

10-8-90	# 53	0.2007
30g = 30.0000g	200λ	0.2001
24°C		0.2006
vol factor 1.00268		0.2010
RJBarrington		0.2003
		1.0027 ÷ 5 x 1.00268 = 0.2011 ml

10-8-90	# 1	0.1026
		~~0.1078~~
	100λ	0.1016
		0.1057
		0.1026
RJBarrington		0.1060 — 0.1040 ml
		RJB 10/16/90 ~~0.7196~~ ÷ 5 x 1.00268 = ~~0.1443 ml~~ RJB 10/16/90
		0.5185

10/8/90	# 78	
30g = 29.9993 gm	500λ	
	0.4941	
	0.4948	
24°C Vol. factor	0.4945	
= 1.00268	0.4947	
	0.4952	
	2.4754	÷ 5 x 1.00268 = 0.4944 ml

	# 4	
24°C Vol. factor	1 mλ	
= 1.00268	0.0997	
	0.0998	
	0.0999	
	0.0993	
	0.0995	
	0.4982	÷ 5 x 1.00268 = 0.0999 ml

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DATE	PIPETTE #	WEIGHT
10-8-90	# 82	0.5017
30g = 29.9998 g	500λ	0.5010
24°C		0.5007
vol factor = 1.00268		0.5006
RJBarrington		0.5017
		2.5057 ÷ 5 x 1.00268 = 0.5025 ml
10-9-90	# 32	5.0722
30g = 29.9998 g	5ml	5.0800
24°C		5.0744
vol factor = 1.00268		5.0753
RJBarrington		5.0750
		25.3769 ÷ 5 x 1.00268 = 5.089 ml
10-9-90	# 14	0.1009
RJBarrington	100λ	0.1000
		0.1001
		0.1002
		0.1002
		0.5014 ÷ 5 x 1.00268 = 0.1005 ml
10-9-90	# 66	0.0198
RJBarrington	20λ	0.0201
		0.0206
		0.0210
		0.0199
		0.1014 ÷ 5 x 1.00268 = 0.0203 ml
10-9-90	# 19	
Liana Lisellopitto	1ml	0.9896
		0.9887
		0.9872
		0.9874
		0.9866
		4.9395 ÷ 5 x 1.00268 = 0.9905 ml

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D12-021

9 1 1 2 1 0 1 7 0 3

10-9-90
Diana L Bellofatto

#2
2 ml

2.0273
2.0152
2.0150
2.0165
2.0134
10.0874 ÷ 5 × 1.00268 = 2.0229 ml

10-9-90
Diana L Bellofatto

#2
5 ml

5.0368
5.0268
5.0124
5.0148
5.0113
25.1021 ÷ 5 × 1.00268 = 5.0339 ml

10-9-90
Diana L Bellofatto

#3
100 λ

0.0985
0.0989
0.0992
0.0994
0.0994
0.4954 ÷ 5 × 1.00268 = 0.0993 ml

10-10-90
30 g = 30.0002 g
24°C
vol. factor = 1.00268
R Barrington

#63
1 ml

1.0162
1.0146
1.0135
1.0116
1.0119
5.0578 ÷ 5 × 1.00268 = 1.0143

10-10-90
30 g = 30.0003
24°C
vol factor = 1.00268
R Barrington

#63
500 λ

0.5020
0.5029
~~0.5007~~ RB
0.5031
0.5033
0.5032
2.5145 ÷ 5 × 1.00268 = 0.5042

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D12-022

68

DATE	PIPETTE #	WEIGHT
10-11-90	#32	5.1121
30g = 30.0002	5ml	5.1026
24°C		5.0640
vol factor = 1.00268		5.0694
R. Barrington		5.0797
		25.4278 ÷ 5 × 1.00268 = 5.09922
10/9/90	#46	1.00648
0.1g = 0.1000	1ml	1.0053
24°C		1.0038
balance #362-06-01-039		1.0091
Rm 416		1.0065
J.K. Hadley		5.0313 ÷ 5 × 1.00268 = 1.0090
	#37	0.09991
	0.1ml	0.09992
J.K. Hadley		0.10116
		0.09981
		0.10137
		0.5022 ÷ 5 × 1.00268 = 0.10067
10/10/90	#33	0.09857
0.1g = 0.1000	0.1ml	0.09917
24°C		0.09920
balance #362 06 01-039		0.09929
Rm 416		0.09920
J.K. Hadley		0.4954 ÷ 5 × 1.00268 = 0.09936
	#46	1.00560
	1.0ml	1.00823
J.K. Hadley		1.00761
		1.00767
		1.00605
		5.0352 ÷ 5 × 1.00268 = 1.0097

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9920

10/11/90
0.1g = 0.1000
24°C
balance # 362-06-01-039
Rm 4/6
J. K. Fadeff

#46
1.0ml

1.0033
1.0015
1.0022
0.9969
1.0023
5.0062 ÷ 5 X 1.00268 = 1.0039

J. K. Fadeff

#83
0.1ml

0.09929
0.09934
0.09929
0.09896
0.09954
0.49642 ÷ 5 X 1.00268 = 0.09955 ✓

10/11/90
30g = 30.0002
24°C vol. factor = 1.00268
Deana L Bellizzatto

#2
2ml

2.0070
2.0156
2.0167
2.0162
2.0109
10.0664 ÷ 5 X 1.00268 = 2.0187 ml

10/11/90
Deana L Bellizzatto

#8
100λ

0.0987
0.0988
0.0985
0.0984
0.0988
0.4932 ÷ 5 X 1.00268 = 0.0989 ml

10/12/90
0.1g = 0.09999
balance # 362 06 01 038
Rm 4/6
J. K. Fadeff
T = 24°

#46
1ml

1.00361
1.00447
1.00425
1.00466
1.00369
5.02247 ÷ 5 X 1.00268 = 1.0036

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D12-024

10-12-90
30 g = 29.9998
25°C cal factor = 1.00294
Liana L Bellofatto

#82
500λ

0.4949
0.4954
0.4953
0.4943
0.4959
2.4758 ÷ 5 x 1.00294 = 0.4966 ml

10-12-90
Liana L Bellofatto

#14
100λ

0.0983
0.0993
0.0995
0.0996
0.0998
0.4965 ÷ 5 x 1.00294 = 0.0996 ml

10-12-90
Liana L Bellofatto

#19
1 ml

0.9986
0.9933
0.9928
0.9944
0.9931
4.9722 ÷ 5 x 1.00294 = 0.9974 ml

10-12-90
Liana L Bellofatto

#2
5 ml

5.0844
5.0569
5.0484
5.0398
5.0317
25.2612 ÷ 5 x 1.00294 = 5.0671 ml

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Date	Pipette #	Weight
	#66	0.0977
10/15/90	100λ	0.0972
30g = 30.0002g		0.0980
24°C vol factor = 1.00268		0.0977
RJBarrington		0.0979
		0.4885 ÷ 5 x 1.00268 = 0.0980 ml

10/10/90		0.0998
24°C Vol factor = 1.00268	#4	0.0995
	100λ	0.0993
		0.0999
		0.0991
		0.4976 ÷ 5 x 1.00268 = 0.09979

10/15/90	#82	
30g = 30.0002g	500λ	0.4980
25°C		0.4971
vol factor = 1.00294		0.4953
		0.4956
RJBarrington		0.4956
		2.4816 ÷ 5 x 1.00294 = 0.4978 ml

10-15-90	#26	0.0098
	10λ	0.0100
		0.0096
RJBarrington		0.0097
		0.0094
		0.0485 ÷ 5 x 1.00294 = 0.0097 ml

10-15-90	#66	0.0199
	20λ	0.0195
		0.0198
RJBarrington		0.0197
		0.0198
		0.0987 ÷ 5 x RJB 1.00294 = 0.0198 ml

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D12-026

Date	Pipette #	Weight
10-16-90 30g = 30.0003g 24°C vol factor 1.00268 RJBarrington	# 33, 1ml	1.0075 1.0049 1.0051 1.0058 1.0049 5.0282 ÷ 5 x 1.00268 = 1.0083 ml
10-16-90 RJBarrington	#66, 100λ	0.0957 0.0962 0.0960 0.0962 0.0953 0.4794 ÷ 5 x 1.00268 = 0.0961 ml
10-16-90 RJBarrington	#2, 2ml	2.0340 2.0238 2.0288 2.0320 2.0349 10.1535 ÷ 5 x 1.00268 = 2.0361 ml
10-16-90 RJBarrington	#41, 20λ RJB	0.0201 0.0204 0.0199 0.0201 0.0197 0.1002 ÷ 5 x 1.00268 = 0.0201 ml
10/16/90 30g = 30.0003g 24°C volume factor = 1.00268 Diana L Bellofatto	# 19 1ml	1.0045 1.0041 1.0047 1.0033 1.0040 5.0206 ÷ 5 x 1.00268 = 1.0068 ml

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Date	Pipette #	Weight
10/16/90	#8	0.0989
30g = 30.0003	100λ	0.0995
24°C		0.1002
volume factor 1.00268		0.1000
Diana L Bellofatto		0.1000
K Barrington		0.4986 ÷ 5 x 1.00268 = 0.0999 ml

10-17-90	#2	2.0380
30g = 30.0001g	2ml	2.0283
24°C		2.0308
vol factor = 1.00268		2.0285
K Barrington		2.0398
		10.1654 ÷ 5 x 1.00268 = 2.0385 ml

#78
100λ

0.9955
0.9942
0.9952
0.9962
0.9965
1.9776

Vol. factor
24°C = 1.00268

÷5 x 1.00268 = 0.9932 ml

#4
100λ

0.0991
0.0996
0.0994
0.0993
0.0994
0.4968

24°C Vol. factor = 1.00268

÷5 x 1.00268 = 0.099[illegible] ml

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D12-028

10/17/90
24°C vol factor = 1.00268 #19
Diana & Gallagher 1 mL

0.9844
0.9906
0.9893
0.9853
0.9887
4.9383 ÷ 5 x 1.00268 = 0.9903 mL

10/17/90 #74
Diana & Gallagher 5 mL

5.0001
5.0066
5.0091
5.0144
5.0210
25.0512 ÷ 5 x 1.00268 = 5.0237 mL

10/18/90 # 64
CO Harvey @ 2 mL
30g = 29.9997
Temp 24°c
vol factor 1.00268

1.9879
1.9878
1.9916
1.9920
1.9845 ✓
1.9920
11.9358 ÷ 6 x 1.00268 = 1.9946 mL

10/19/90 #79
CO Harvey @ 10 mL
30g = 30.0003
Temp 24°c
vol factor 1.00268

10.0772
10.0350
10.0412
10.0382
10.0485
50.2401 ÷ 5 x 1.00268 = 10.0749 mL

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D12-029

10/19/90
25°c vol factor 1.00294
G O Harvey

Pipet #26 @ 10 µL

0.0097
0.0096
0.0096
0.0097
0.0097
0.0493 ÷ 5 × 1.00294 = 0.0097 mL

10/18/90
C O Harvey

14 @ 100 µL

0.0982
0.0980
0.0985
0.0979
0.0985
0.4911 ÷ 5 × 1.00294 = 0.0985 mL

10/22/90
30g wtchk = 30.0003g
24°C Vol factor = 1.00268

#8 100λ

0.0997
0.0996
0.0997
0.0995
0.0995
0.4980 ÷ 5 × 1.00268 = 0.09987 mL = 0.0999 mL

10/22/90
30g = 30.0002g
25°C vol factor = 1.00294
K Barrington

2 2 ml

2.0367
2.0311
2.0425
2.0342
2.0303
10.1748 ÷ 5 × 1.00294 = 2.0409 ml

24°C Vol. factor = 1.00268

#4 25λ

0.0243
0.0241
0.0245
0.0246
0.0243
0.1218 ÷ 5 × 1.00268 = 0.0244 ml

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D12-030

Date	Pipet #	weights
10/22/90	# 77	0.9979
Temp 25°C	@ 1.0 mL	0.9959
vol factor = 1.00294		0.9955
		0.9958
		0.9956
		4.9807 ÷ 5 × 1.00294 = 0.9991 mL

Cotterry

	# 69	0.0991
	@ 100 µL	0.0999
		0.1000
		0.1000
		0.1001
		0.4991 ÷ 5 × 1.00294 = 0.1001

G O Harvey

	~~#42~~ call #67	0.0194
	@ 20 µL	0.0201
		0.0200
		0.0201
		0.0200
		0.0996 ÷ 5 × 1.00294 = 0.0200

G O Harvey

10-22-90	#19	1.0136
25°C Vol factor = 1.00294	1 ml	1.0122
		1.0066
		1.0165
		1.0066
		5.0545 ÷ 5 × 1.00294 = 1.01387 ml

Anne Hopkins

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Date	Pipet #	Wt.	Name
10-22-90	#67 @ 20λ	0.0198	P J Loney 77
30g = 30.0002		0.0203	
Vol. Factor = 1.00294 (25°C)		0.0200	
		0.0200	
		0.0198	
		1.0999 ÷ 5 × 1.00294 = 0.0200 ml	
	#38	0.2017	P J Loney
	200λ	0.2021	
		0.2001	
		0.1974	
		0.1961	
		0.9977 ÷ 5 × 1.00294 = ~~0.2001~~ 0.2001 ml 10-22-90	

10-22-90		
30g = 30.0002	#66	0.1001
25°C	100λ	0.1006
vol factor 1.00294		0.1009
		0.1006
R Barrington		0.1000
		0.5022 ÷ 5 × 1.00294 = 0.1007 ml

10/23/90	# 64	2.9845
30g = 2.0003	@ 3mL	2.9802
Temp 25°c		2.9831
Vol factor 1.00294		2.9798
		2.9800
		14.9076 ÷ 5 × 1.00294 = 2.9903 ml

10-23-90	#66	0.1011
30g = 30.0003g	100λ	0.1016
~~24°C~~ 25°C		0.1005
vol factor = 1.00294		0.0998
R Barrington		0.1003
		0.5033 ÷ 5 × 1.00294 = 0.1010 ml

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D12-032

78

DATE	PIPETTE #	WEIGHT
10-23-90 30g = 30.0003 g 25°C vol factor = 1.00294 RJBarrington	#82 500λ	0.5015 0.5012 0.5013 0.4998 0.4988 2.5026 ÷ 5 × 1.00294 = 0.5020 ml
10-23-90 30g = 30.0003 g 25°C vol factor = 1.00294 RJBarrington	#2 3.5 ml	3.5678 3.5765 3.5705 3.5715 3.5674 17.8477 ÷ 5 × 1.00294 = 3.5800 ml 17.8537 ← cont 10/30/90 → 3.5812 this error is not significant for any analysis using this value cont
10-23-90 30g = 30.0003 g 25° Vol. factor = 1.00294	#78 500λ	0.4948 0.4952 0.4948 0.4973 0.4961 2.4782 ÷ 5 × 1.00294 = 0.4971 ml
25° Vol. factor = 1.00294	#4 100λ	0.0987 0.0985 0.0991 0.0983 0.0984 0.493 ÷ 5 × 1.00294 = 0.0989 ml

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D12-033

DATE	PIPETTE #	WEIGHT
10-23-90	#26	0.0095
30g = 30.0003g	10λ	0.0098
25°C		0.0098
vol factor = 1.00294		0.0099
RJBarrington		0.0096
		0.0486 ÷ 5 x 1.00294 = 0.0097ml
10-23-90	#33	1.0032
	1ml	0.9970
		1.0005
		1.0008
RJBarrington		0.9963
		4.9978 ÷ 5 x 1.00294 = 1.0025ml
10-24-90	#75	0.0490
30g = 30.0003g	50λ	0.0494
24°C		0.0495
vol factor = 1.00268		0.0493
RJBarrington		0.0497
		0.2469 ÷ 5 x 1.00268 = 0.0495ml
10-24-90	#33	0.9735
	1ml	0.9714
		0.9802
RJBarrington		0.9798
		0.9804
		4.8853 ÷ 5 x 1.00268 = 0.9797ml
10-24-90	#2	1.9930
	2ml	2.0273
		2.0249
RJBarrington		2.0219
		2.0206
		10.0877 ÷ 5 x 1.00268 = 2.0229ml

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Date	Pipet #	Weight
10/24/90		
30g = 30.0001g	#78	0.4951
	500λ	0.4953
		0.4953
		0.4959
24°C Vol. factor		0.4975
= 1.00268		2.4791 ÷5 × 1.00268
		= 0.4971 ml
	#4	0.0989
	100λ	0.0998
24°C Vol. factor		0.0999
= 1.00268		0.0994
		0.0993
		0.4973 ÷5 × 1.00268
		= 0.0997 ml
10-24-90	#66	0.0202
30g = 29.9998g	20λ	0.0200
24°C		0.0203
vol factor = 1.00268		0.0198
RJBarrington		0.0197
		0.1000 ÷5 × 1.00268 = 0.0201 ml
10-24-90	#14	0.0992
	100λ	0.0993
		0.1001
RJBarrington		0.1005
		~~0.0999~~ RJB
		~~0.5191~~ ÷5 × 1.00268 = ~~0.1041 ml~~ RJB
		0.4990 0.1001 ml

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Date	Pipet #	Weight	
10/25/90			
30g = 30.0002g	#78 500λ	0.4941	Emarti
		0.4947	
25°C Vol. factor = 1.00294		0.4936	
		0.4950	
		0.4966	
		2.4740	÷5 × 1.00294 = 0.4963 mL
	#4 100λ	0.0980	
		0.0999	Emarti
25°C Vol. factor = 1.00294		0.0994	
		0.0994	
		0.0995	
		0.4962	÷5 × 1.00294 = 0.0995 mL
10/26/90	#79	10.0322	
30g = 30.0002	@ 10.0mL	10.0414	
Temp 24°C		10.0492	G Harvey
Vol factor = 1.00268		10.0477	
		10.0450	
		10.0405	
		60.2560	÷6 × 1.00268 = 10.0696
10/29/90	#95	0.0991	
30g = 30.0003	@ 100 uL	0.0995	
Temp 24°C		0.1000	
Vol factor 1.00268		0.0998	G Harvey
		0.1003	
		0.0999	
		0.5986	÷6 × 1.00268 = 0.1000 mL

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D12-036

DATE	PIPETTE #	WEIGHT
10-29-90	#33	0.9971
30g = 30.0003g	1ml	0.9977
24°C		1.0010
vol factor 1.00268		0.9928
RyBarrington		1.0079
		4.9965 ÷ 5 x 1.00268 = 1.0020ml
10-29-90	#75	0.0508
	50λ	0.0494
		0.0496
RyBarrington		0.0497
		0.0493
		0.2480 ÷ 5 x 1.00268 = 0.0497ml
10-29-90	#2	5.0912
	5ml	5.0733
		5.0695
RyBarrington		5.0724
		5.0693
		25.3759 ÷ 5 x 1.00268 = 5.089 ml

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10-30-90 BALANCE WA33277; 360-06-01-018; Mettler A30

REPLACED TODAY. NEW BALANCE:

Type: SARTORIUS RESEARCH WR-6007-n89023 SN#39080058

Code #: 360-06-01-026

Property #:

Put IN SERVICE 10-30-90.

DATE	PIPETTE #	WEIGHT
10-30-90	#82	0.49450g
30g = 29.99973 g	500λ	0.49430g
24°C		0.49621 g
Vol factor 1.00268		0.49504g
RJBarrington		0.49621g
		2.47626g ÷5x1.00268 = 0.49658 ml
10-31-90	#66	0.10011
	100λ	0.10013
		0.10007
		0.10011
RJBarrington		~~0.1000~~ RJB
		0.10010
		0.50052 ÷5x1.00268 = 0.10037 ml
10-31-90	#1	1.00182
	1ml	1.00049
		0.99810
RJBarrington		0.99915
		0.99850
		4.99806 ÷5x1.00268 = 1.00229 ml

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Page: 84
LRB No.: BNW5536 45

The following provides evidence of surveillance and/or technical reviews of this LRB in accordance with MG 4.3. When completed, this sheet is to be inserted into the LRB each month.

SURVEILLANCE REVIEWS
(Monthly for Impact Level I or II LRB entries by the Line Manager or delegate, and, if appropriate, by the Project Manager):

Pages Reviewed: 1-83
Date Reviewed:
Basis of Review: Check for legibility, completeness, traceability of entries, and a sample of requirements (1-14) of MG 4.3.

Results:
entries are legible and complete

Reviewer's Dated Signature: L O Harvey 10/31/90

TECHNICAL REVIEWS
(Monthly reviews for Impact Level I or II LRB entries and prior to Project close out by a technically competent individual):

Pages Reviewed: 1-83
Date of Review:
Objective/Approach of Review: To determine (check one or more):
- X 1) adequacy/appropriateness of methodology
- X 2) if inferences and conclusions are soundly based
- X 3) if data reduction and/or calculations are correct
- ___ 4) other (specify):

Results/Conclusions:

Reviewer's Dated Signature: L O Harvey 10/31/90

Entered 10-31-90 Mine Engineering

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D12-038

DATE	PIPETTE #	WEIGHT
11-5-90	#69	0.10071g
30g = 29.99986g	100λ	0.10013g
24°C		0.09995g
vol factor = 1.00268		0.09972g
RJBarrington		0.10044g
		0.50095g ÷ 5 x 1.00268 = 0.10046ml
11-5-90	#33	1.00218g
	1ml	0.99288g
RJBarrington		0.96462g
		0.98840g
		0.98451g
		4.93259g ÷ 5 x 1.00268 = 0.98916ml
11-5-90	#67	0.02172
	20λ	0.02032
RJBarrington		0.02005
		0.01982
		0.01993
		0.10184 ÷ 5 x 1.00268 = 0.02042 ml
11-5-90	# 79	
	@ 10mL	10.0249
		10.0193 60 Harvey
		10.0225
		10.0219
		10.0345
		50.1271 ÷ 5 x 1.00268 = 10.0523
11-6-90	# 85	0.09902
30g = 29.99972	@ 100uL	0.09827
Temp		0.09939 60 Harvey
23°C		0.09893
vol factor = 1.00244		0.09886
		0.49637 ÷ 5 x 1.00244 = 0.09952

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D12-039

DATE	PIPETTE #	WEIGHT
11-6-90	#26	0.01002
30g = 29.99972 g	10 λ	0.00988
24°C vol factor = 1.00268		0.01002
		0.00980
RJBarrington		0.00981
		0.04953 ÷ 5 x 1.00268 = 0.00993 ml
11-6-90	#67	0.01979
	20 λ	0.01985
		0.02000
RJBarrington		0.02031
		0.02050
		0.10045 ÷ 5 x 1.00268 = 0.02014 ml
11-6-90	#33	0.10007
	100 λ	0.10059
		0.10010
RJBarrington		0.09976
		0.10024
		0.50076 ÷ 5 x 1.00268 = 0.10042 ml
11-6-90	~~#69~~ RJB 11-7-90 #77	0.99711
	1 ml	0.99977
		0.99910
RJBarrington		1.00008
		1.00313
		4.99919 ÷ 5 x 1.00268 = 1.00252 ml
11-7-90	#69	0.09996
30g = 29.99977 g	100 λ	0.09991
24°C ~~RJB~~		0.09978
vol factor = 1.00268		0.09998
		0.10011
RJBarrington		0.49974 ÷ 5 x 1.00268 = 0.10022 ml

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DATE	PIPETTE #	WEIGHT
11-7-90	#67 20λ	0.02070
		0.02019
		0.02028
RJBarrington		0.01994
3ml		0.02036
		0.10147 ÷ 5 x 1.00268 = 0.02035ml
11-8-90	# 69 100λ	~~0.099~~ RJB 11-8-90
30g = 29.99974g		0.10029
24°C vol factor 1.00268		0.10003
		0.10061
RJBarrington		0.10010
		0.10064
		0.50167 ÷ 5 x 1.00268 = 0.10060ml
11-8-90	#67 20λ	0.01953
		0.01969
RJBarrington		0.02025
		0.02004
		0.02031
		0.09982 ÷ 5 x 1.00268 = 0.02002ml
11-8-90	#33 1ml	1.01126
		1.00488
RJBarrington		1.00394
		1.00390
		1.00281
		5.02679 ÷ 5 x 1.00268 = 1.00805ml

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DATE	PIPETTE #	WEIGHT
11-12-90 30g = 29.99968g 24°C volume factor = 1.00268 R Barrington	#33 1ml	1.00583 1.01175 1.00620 1.00483 1.01056 5.03917 ÷ 5 x 1.00268 = 1.01053 ml
11-12-90 R Barrington	#67 20λ	0.01928 0.01996 0.02023 0.01953 0.01968 0.09868 ÷ 5 x 1.00268 = 0.01979 ml
11-12-90 25°C Vol factor 1.00294	#79 e 5.0 ml	4.95170 4.97075 4.97681 4.9838 cont 4.97572 ~~24.85588~~ cont 11/12/90 24.85878 ÷ 5 x 1.00294 = ~~5.97490~~ cont 14/12/90 4.94637 C Harvey
11-12-90 25° C vol factor 1.00294 R Barrington	#66 100λ	0.09941 0.09913 0.10035 0.10010 0.09975 0.49874 ÷ 5 x 1.00294 = 0.10004 ml

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D12-042

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Date	Pipet	Weight
11-12-90	95	
25°C	@ 50mL	0.04936
vol factor 1.00294		0.04936
		0.04947
		0.04936
		0.04923
		0.24678 ÷5 × 1.00294 = 0.04950

Collarway

3ml

11-13-90	#10	0.04945
24°C vol factor = 1.00268	50λ	0.04917
29.99961 wt check		0.04934
Liana L Bellofatto		0.04911
		0.04929
		0.24616 ÷5 × 1.00268 = 0.04952 ml

11-13-90	#10	0.09928
same as above	100λ	0.09936
Liana L Bellofatto		0.09904
		0.09899
		0.09924
		0.49591 ÷5 × 1.00268 = 0.0994 ml

11-14-90	#5	0.09823
24°C vol. factor = 1.00268	100λ	0.09812
29.99949 wt check		0.09858
Liana L Bellofatto		0.09865
		0.09864
		0.49222 ÷ 5 × 1.00268 = 0.09871 ml

11-14-90	Hudet	5.03367
24°C vol. factor = 1.00268	5ml	5.02500
Liana L Bellofatto		5.02516
		5.02306
		5.02513
		25.09552 ÷ 5 × 1.00268 = 5.0326 ml

ml

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D12-043

DATE	PIPETTE #	WEIGHT
11-15-90 30g = 30.00020 g 24°C vol factor 1.00268 R J Barrington	#66 100λ	0.11039 0.10460 0.10064 0.10036 0.10057 0.51656 ÷ 5 x 1.00268 = 0.10359 ml
11-15-90 R J Barrington	#1 1ml	1.00551 1.00350 0.99915 1.00612 1.00361 5.01789 ÷ 5 x 1.00268 = 1.00627 ml
11-19-90 30g = 30.00017g. 24°C - Vol Factor = 1.00268	#37 - 100x	0.09989 0.09952 0.09979 0.10008 0.10013 0.49941 ÷ 5 X 1.00268 = 0.1001 ml PJ Ramey PJR 11-19-90
	#41 - 20x	0.02025 0.02000 0.01977 0.01960 0.01964 0.09926 ÷ 5 X 1.00268 = 0.0991 ml PJ Ramey
11-19-90 24°C Vol factor = 1.00268	#41 20λ	0.02013 0.01984 0.01982 0.01962 0.01984 0.09925 ÷ 5 x 1.00268 = 0.0199 ml Anne E Kozlinsky

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11-15-90
30g = 30.00020g
24°C vol factor = 1.00268
Luana L Bellofatto

blue dot
5 ml

5.01574
4.96785
4.96372
4.96018
4.96707
24.87456 ÷ 5 × 1.00268 = 4.9833 ml

11-20-90
30g = 29.99999
24°C vol. factor = 1.00268
Luana L Bellofatto

#79
10 ml

9.99996
9.98262
9.97553
9.97036
9.97084
49.89931 ÷ 5 × 1.00268 = 10.0066 ml

11-20-90
Luana L Bellofatto

#79
100λ

0.10048
0.10055
0.10043
0.10053
0.10079
0.50278 ÷ 5 × 1.00268 = 0.1005 ml

11/20/90
@ 25°C
vol factor 1.00284

#85

0.04910
0.04900
0.04938
0.04944
0.04921
0.24613 ÷ 5 × 1.00284 = 0.04937

C O Harvey

11/21/90
@ 24°C
Vol. Factor

#78 @ 1ml

0.99643
0.99330
0.99305
0.99091
0.99292
4.96661 ÷ 5 × 1.00268 = 0.9964 ml

C O Harvey

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D12-045

Date	Pipet #	WT	Name
1/21/90			
24°C Vol. Factor = 1.00268	I 37 - 100λ	0.10070	P. J. Ramey
		0.09960	
		0.09923	
		0.10017	
		0.09970	
		0.4994 ÷ 5 X 1.00268 = 0.1001 ml.	
	#86 - 0-5ml @ 5ml.	4.96240	P. J. Ramey
		4.99047	
		4.95807	
		4.91490	
		4.90018	
		24.72602 ÷ 5 X 1.00268 = 4.9585 ml.	
11-26-90			
30g = 29.9991g.	# 28	0.48778 g	
23°C	500λ	0.49300g	
vol factor = 1.00244		0.48954g	
		0.48717g	
K. Barrington		0.48741g	
		2.44490 g ÷ 5 x 1.00244 = 0.49017 ml	
11-26-90	#66	0.10008g	
	100λ	0.09977g	
		0.10036g	
K. Barrington		0.10072g	
		0.10026g	
		0.50119g ÷ 5 x 1.00244 = 0.10048ml	

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DATE	PIPETTE#	WEIGHT
11/26/90	#79 10ml	10.60212g 10.66159g 10.65980g 10.66069g 10.67443g 53.25863g ÷ 5 × 1.00244 = 10.67772
	RJBarrington	
11/26/90	#2 5ml	5.04111g 5.03370g 5.02279g 5.03846g 5.02970g 25.16576g ÷ 5 × 1.00244 = 5.04543ml
	RJBarrington	
11/26/90	85 @ 100uL	0.09835 0.09887 0.09880 0.09927 0.09928 0.09900 0.59357 ÷ 6 × 1.00268 = 0.09919
@ 24°C vol factor 1.00268		G O Harvey
11-26-90	#67 20λ	0.01950 0.02017 0.01980 0.01993 0.01930 0.09870 ÷ 5 × 1.00268 = 0.01979ml
24°C vol factor 1.00268		
	RJBarrington	

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D12-047

DATE	PIPETTE#	WEIGHT
30g = 29.99996 g 24°C volfactor 1.00268 11-27-90 RJBarrington	#1 1ml	0.99519 g 0.99576 g 0.99783 g 1.00118 g 0.99768 g 4.98764 g ÷ 5 x 1.00268 = 1.00020 ml
11-27-90 RJBarrington	#66 100λ	0.09955 g 0.09979 g 0.09998 g 0.09993 g 0.10011 g 0.49936 g ÷ 5 x 1.00268 = 0.10014 ml
11-27-90 RJBarrington	#67 20λ	0.01978 0.01989 0.02012 0.02062 0.01976 0.10017 ÷ 5 x 1.00268 = 0.02009 ml
11-28-90 30g = 29.99923 g 29°C Vol Factor = 1.00244	#78 1ml	0.99389 0.99225 0.99186 0.99145 0.99263 4.96208 ÷ 5 x 1.00244 = 0.9948
	#37 - 100λ	0.10019 0.10096 0.10042 0.10012 0.10168 0.50337 ÷ 5 x 1.00244 = 0.1009 ml

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DATE	PIPETTE #	WEIGHT
11-28-90	#19	1.01314
30g = 29.99983	1ml	1.00186
24°C vol factor 1.00268		1.00658
		1.01198
RyBarrington		1.01425

5.04781 ÷ 5x 1.00268 = 1.01227ml

00020ml

11-29-90	#78	0.99748
30g = 29.99998	1ml	0.98912
23°C vol. factor = 1.00244		0.98214
		0.98887
		0.98773

4.94734 ÷ 5 x 1.00244 = 0.9919ml

214ml

11-30-90	#33	1.00681
	@ 1mL	1.00282
temp		1.00098
23 °C		1.00113
		1.00091

5.01265 ÷ 5 x 1.00244 = 1.0050

ml

250 uL motorized Rainin pipet in multi dispense mode
Set at 10 uL

0.0102
0.01043
0.01015
0.01074
0.01052

0.05204 ÷ 5 x 1.00244 = 0.0104

48

9ml

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D12-049

DATE	PIPETTE #	WEIGHT
12-3-90	#66	0.09947
30g = 29.99997g	100λ	0.10067
23°C		0.10043
vol factor 1.00244		0.10124
		0.10231
R Barrington		0.50412 ÷ 5 x 1.00244 = 0.10074

12-3-90	#79 10ml	10.0351
		10.0197
		10.0438
R Barrington		10.0327
		10.0404
		50.1717 ÷ 5 x 1.00244 = 10.0588 ml

12-3-90	87 @ 10ml	0.00971
23° C		0.00940
vol factor 1.00244	87	0.00995 C O Harvey
		0.00977
		0.00980
		0.04863 ÷ 5 X 1.00244 = 0.00974

"	85 @ 100 ul	0.09822
		0.09960
		0.09975
		0.10012 C O Harvey
		0.09916
		0.49685 ÷ 5 X 1.00244 = 0.09961

	79 @ 5ml	4.95213
		4.97451 C O Harvey
		4.96720
		4.97290
		4.97440
		24.84114 ÷ 5 X 1.00244 = 4.98035

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DATE	PIPETTE#	WEIGHT
12-3-90	#1	0.99434
30g = 29.99997g	1ml	0.99482
23°C		0.99400
vol factor 1.00244		0.99407
RJBarrington		0.99446
		4.97169 ÷ 5 × 1.00244 = 0.99676 ml

12-4-90		
30g = 29.99973g	#32	5.04012
23°C	5mlo	5.03910
vol factor 1.00244		5.0351
		5.0277
RJBarrington		5.0209
		25.16292 ÷ 5 × 1.00244 = 5.04486 ml

12-5-90	#1	1.00445
30g = 29.99961g	1ml	1.00271
23°C vol factor 1.00244		1.00303
		1.00389
RJBarrington		1.00200
		5.01608 ÷ 5 × 1.00244 = 1.00566 ml

11-~~23~~ 30-90	#19	1.00043
wt check 29.9998	1ml	1.00533
23°C vol factor = 1.00244		1.00553
Diana L Bellofatto		1.00363
		1.00355
		5.01753 ÷ 5 × 1.00244 = 1.0060

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Date	Pipette #	Weight
12-7-90 wt check 24.99959 23°C vol factor : 1.00244 Diana A. Kellizatte	#8 100λ	0.09842 0.09885 0.09960 0.09933 0.09951 0.49571 ÷ 5 X 1.00244 = 0.09938
12-7-90 wt check 29.99959 23°C vol. factor = 1.00244 Diana A. Kellizatte	#19 1 ml	0.99940 1.00138 0.99916 0.99816 0.99916 4.99726 ÷ 5 X 1.00244 = 1.0019 ml
12-10-90 wt check 29.99977 24°c vol factor 1.00268	# 85 @ 100 uL	0.09918 0.09939 0.10039 0.09940 0.10065 0.49901 ÷ 5 X 1.00268 = 0.10007 CO Harvey
12-11-90 wt check 29.99967 Temp 25°c vol factor 1.00294	# 64 @ 5 mL	4.98306 4.99044 4.97132 4.97304 4.97013 24.87799 ÷ 5 X 1.00294 = 4.99023 CO Harvey

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D12-052

Date	Pipette #	Weight
12-12-90 30g = 29.99952 g 24°C vol factor = 1.00268 RJBarrington	#26 10λ	0.00970 0.00976 0.01005 0.00982 0.00989 0.04922 ÷ 5 x 1.00268 = 0.00987 ml
12-12-90 30g = 29.99952 g 24°C vol factor = 1.00268 RJBarrington	#1 1 ml	0.99029 0.99211 0.98741 0.98847 RJB ~~1.0~~ 1.02180 4.98008 ÷ 5 x 1.00268 = 0.99869 ml
12-12-90 RJBarrington	#79 10 ml	10.0450 10.0204 10.0245 10.0326 10.0712 50.1937 ÷ 5 x 1.00268 = 10.0656 ml
12-12-90 RJBarrington	#53 200λ	0.19709 0.19977 0.20155 0.20145 0.19961 0.99947 ÷ 5 x 1.00268 = 0.20043 ml
12-12-90 RJBarrington	#28 500λ	0.49277 0.49084 0.48863 0.48889 0.49046 ~~2.45102~~ 2.45159 ÷ 5 x 1.00268 = 0.49163 ml

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DATE	Pipette #	Weight
12-12-90	#8-100λ	0.09890
wt ck 30g = 29.99952g	Tank Car	0.09866
24° C Vol factor = 1.00268	Am, GSA, Sr	0.09850
		0.09838 Anne E Hagelsky
		0.09818
		0.49262 ÷ 5 x 1.00268 = 0.09879 ml
12-12-90		
24°c	# 33	1.00078
	@ 1000 ml	1.00345
		1.00637
		1.00636
		1.00029
		5.01725 ÷ 5 x 1.00268 = 1.0061 ml
12-13-90	#19	0.50185
wt check: 30.00032g	500λ	0.50299
24°C vol factor = 1.00268		0.50103
Diana L Bellofatto		0.50179
		0.50169
		2.50935 ÷ 5 x 1.00268 = 0.5032 ml
12-13-90	#10	0.09948
24°C = 1.00268	100λ	0.09958
Diana L Bellofatto		0.10056
		0.10073
		0.10081
		0.50116 ÷ 5 x 1.00268 = 0.1005 ml
12-13-90	#10	
24°C = 1.00268	50λ	0.05015
Diana L Bellofatto		0.05010
		0.05045
		0.05012
		0.05013
		0.25095 ÷ 5 x 1.00268 = 0.0503 ml

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DATE	PIPETTE #	Weights
30 12-13-90	#28	0.48305
30g = 30.0002g	500λ	0.48343
24°C		0.48581
Vol factor 1.00268		0.48825
RJBarrington		0.48866
		2.4292 ÷ 5 x 0.48714 ml

12-13-90	#1	0.99820
	1ml	0.99151
		0.98642
RJBarrington		0.99526
		0.99032
		4.96171 ÷ 5 x 1.00268 = 0.99500ml

12-14-90	blue dot	5.00980
30g = 30.00015	5 ml	4.99711
24°C vol. factor = 1.00268		4.99067
Diana L		4.99015
		4.99450
		24.98223 ÷ 5 x 1.00268 = 5.0098ml

12-14-90	#32	2.13507
30g = 30.00015g	2ml	2.00395
24°C vol factor 1.00268		2.00910
		2.00286
Rebecca Barrington		2.00256
		10.15354 ÷ 5 x 1.00268 = 2.03615ml

12-14-90	#10	0.09999
24°C vol factor = 1.00268	100λ	0.10031
Diana L Bellofatto		0.10033
		0.10029
		0.10011
		0.50103 ÷ 5 x 1.00268 = 0.1005ml

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12-14-90
30g = 30.00015g
24°C vol. factor = 1.00268

#79
9ml

8.96746
8.98202
8.99125
9.00066
9.00472
44.94611 ÷ 5 X 1.00268 = 9.0133 ml

12-17-90
30g wt check = 30.00026
24°C vol. factor = 1.00268

#19
1ml

1.00129
1.00652
1.00506
1.00411
1.00330
5.02028 ÷ 5 X 1.00268 = 1.0067 ml

12-17-90
24°C vol. factor = 1.00268

#10
100λ

0.09984
0.10022
0.10010
0.10035
0.10000
0.50051 ÷ 5 X 1.00268 = 0.1004 ml

12-17-90
25°c
vol factor 1.00294

#85
100λ

0.09922
0.09989
0.10009
0.09937
0.09953
0.49810 ÷ 5 X 1.00294 = 0.09991

CO Harvey

#87
10λ

0.00982
.00970
.00967
~~.00982~~ .00952
.00963
.04834 ÷ 5 X 1.00294 = 0.09696

Cel Harvey

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Date	Pipette #	Weight
12-17-90	#33	0.99529
30g = 30.00026 g	1ml	1.00502
25°C vol factor 1.00294		0.99410
		1.00369
RJBarrington		1.00160g
		4.99970 g ÷ 5 x 1.00294 = 1.00288 ml

12-17-90	#79	8.99466
	9ml	8.9604
		9.0000
RJBarrington		9.0066
		8.9939
		44.9556 ÷ 5 x 1.00294 = 9.0175 ml

12-18-90	#28	0.48743
30g = 30.00012 g	500λ	0.48738
25°C vol. factor 1.00294		0.48705
		0.48760
RJBarrington		0.48990
		2.43936 ÷ 5 x 1.00294 = 0.48931 ml

12-18-90	#14	0.09972
	100λ	0.09973
		0.09938
RJBarrington		0.09953
		0.09940
		0.49776 ÷ 5 x 1.00294 = 0.09984 ml

12-18-90	#79	6.97423
25°c	@ 7mL	6.96886
vol factor 1.00294		6.97892
		6.97600
		6.97810
		34.87611 ÷ 5 x 1.00294 = 6.99573

G O Harvey

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12-18-90
30g wt check = 30.00012
25°C vol factor = 1.00294
Lucania 2° ~~Bibl~~ Sulfate

79
9ml

8.61970
8.63414
8.81532
8.71767
8.77940

43.56623 ÷ 5 x 1.00294 = 8.7388ml

12-18-90
25°C vol factor
Lucania 2° ~~Bibl~~ Sulfate

19
1ml

0.99547
1.00030
0.99756
0.99836
0.99397

4.98566 ÷ 5 x 1.00294 = 1.00006ml

12/19/90
30g wt check = 27.77995
24° C
vol factor 1.00268

28
500 µL

0.47848
0.48029
0.47687
0.47414
0.47158

2.38138 ÷ 5 x 1.00268 = 0.47755

C O Harvey

12/19/90

14
100 µL

0.09799
0.09992
0.09999
0.09770
0.10000

0.49760 ÷ 5 x 1.00268 = 0.09983

C O Harvey

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12/19/90	Pipet #	Weight
24°c		
vol factor 1.00268	32	2.00349
	@ 2.0mL	1.99945
		2.00624
		2.00150
		2.00163
		10.01231 ÷ 5 × 1.00268 = 2.00783

C O Harvey

12/27/90		
30g wt check = 30.00003	#74	5.01548
Temp 24°C	@5mL	4.98507
vol factor 1.00268		4.98416
		5.01108
		4.99863
		24.99444 ÷ 5 × 1.00268 = 5.01229

C O Harvey

12/31/90	#19	1.00331
30g wt check = 29.99983	1mL	1.00337
23°C vol factor = 1.00244		1.00103
Diana L Billingsley		0.99925
		0.99927
		5.00633 ÷ 5 × 1.00244 = 1.0037 mL

1-2-91	#10	0.10055
30g wt = 29.99983	100λ	0.10059
24°C vol factor = 1.00268		0.10099
		0.10114
		0.10098
		0.50438 ÷ 5 × 1.00268 = 0.1012 mL

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D12-059

1-3-91 DLB 1-3-91
30g wt check = 29.99983
23°C vol. factor = 1.00244
Diana & Bellofatto

#10
100λ

0.09952
0.10035
0.10069
0.10079
0.10083
0.50218 ÷ 5 X 1.00244 = 0.1007 ml

1-3-91
23°C vol factor = 1.00244
Diana & Bellofatto

blue dot
2 ml

2.02065
2.01480
2.01674
2.01322
2.01354
10.07895 ÷ 5 X 1.00244 = 2.0207 ml

1-3-91
23°C vol. factor
Diana & Bellofatto

#19
500λ

0.49994
0.49955
0.49985
0.49977
0.49930
2.49841 ÷ 5 X 1.00244 = 0.5009 ml

1-3-91
23°C vol factor
Diana & Bellofatto

#19
1 ml

1.00919
1.00461
1.00295
1.00076
1.00056
5.01307 ÷ 5 X 1.00244 = 1.0061 ml

1-3-91
23°C vol factor = 1.00244
Diana & Bellofatto

blue dot
5 ml

5.01419
5.02320
5.02365
5.01826
5.02641
25.10571 ÷ 5 X 1.00244 = 5.0334 ml

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1-3-91
23°C vol. factor = 1.00244
Deana L Bellofatto

#79
9 ml

8.98728
8.98058
8.98464
8.99334
8.98323
44.92907 ÷ 5 x 1.00244 = 9.0077 ml

1-4-91
22°C vol factor = 1.00221
30g wt. check = 29.99985
Deana L Bellofatto

#10
10λ

0.00988
0.01004
0.01014
0.01011
0.01030
0.05047 ÷ 5 x 1.00221 = 0.0101 ml

1-4-91
23°C vol factor = 1.00244
Deana L Bellofatto

#19
500λ

0.49805
0.49903
0.49970
0.49972
0.49901
2.49551 ÷ 5 x 1.00244 = 0.5003 ml

1-4-91
23°C vol factor = 1.00244
Deana L Bellofatto

#10
100λ

0.09861
0.09943
0.09919
0.10000
0.10046
0.49807 ÷ 5 x 1.00244 = 0.0999 ml

1-4-91
23°C vol factor = 1.00244
Deana L Bellofatto

#19
1 ml

1.00484
1.00155
1.00064
1.00200
1.00262
5.01165 ÷ 5 x 1.00244 = 1.0048 ml

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D12-061

Date	Pipette #	Weight
1-7-91	#33	1.01243
30g = 29.99992g	1ml	1.00412
23°C vol factor = 1.00244		0.99820
		1.00530
L Barrington		0.99855
		5.01860 ÷ 5 x 1.00244 = 1.00617ml
1-7-91	#69	0.10003
	100λ	0.09970
		0.10059
L Barrington		0.09900
		0.10022
		~~5.51844~~ ÷ 5 x 1.00244 = 0.10015ml
		0.49954
1-7-91	#19	1.00482
23°C vol factor = 1.00244	1ml	1.00783
Kwaina & Bellofatto		1.00934
		1.01039
		1.01004
		5.04242 ÷ 5 x 1.00244 = 1.0109ml
1-7-91		
23°C vol. factor = 1.00244	#10	0.09974
Kwaina & Bellofatto	100λ	0.10035
		0.10009
		0.10075
		0.10076
		0.50169 ÷ 5 x 1.00244 = 0.1006 ml
1-7-91	#10	0.04965
23°C vol factor = 1.00244	50λ	0.05013
Kwaina & Bellofatto		0.04997
		0.04995
		0.04993
		0.24963 ÷ 5 x 1.00244 = 0.0500 ml

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1-7-91
23°C vol. factor = 1.00244
Diana L Bellofatto

#10
20λ

0.01994
0.02013
0.02015
0.02002
0.02028
0.10052 ÷ 5 x 1.00244 = 0.0202 ml

1-7-91
23°C vol. factor = 1.00244
Diana L Bellofatto

blue dot
2ml

2.00459
2.01674
2.01740
2.01755
2.01780
10.07408 ÷ 5 x 1.00244 = 2.0197 ml

1-3-91
23°C vol factor = 1.00244
30g wt check = 29.99993
Diana L Bellofatto

#10
100λ

0.09764
0.09839
0.09813
0.09807
0.09890
0.49113 ÷ 5 x 1.00244 = 0.0985 ml

1-8-91
23°C vol factor = 1.00244
Diana L Bellofatto

#19
500λ

0.50003
0.50034
0.50079
0.50012
0.49809
2.49935 ÷ 5 x 1.00244 = 0.501 ml

1-8-91
30g = 29.99993 g
23°C vol factor = 1.00244
RyBarrington

#30
20λ

0.02143
0.02141
0.02148
0.02100
0.02139
0.10671 ÷ 5 x 1.00244 = 0.02139

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Date	Pipette #	Weight
1-8-91 30 g = 29.99993 g 23°C vol factor = 1.00244 RJ Barrington	#33 1 ml	0.99866 0.99849 0.99875 0.99960 0.99945 4.99495 ÷ 5 x 1.00244 = ~~1.00148~~ 1.00143 ml RJB 1-8-91
1-8-91 RJ Barrington	#69 100 λ	0.10068 0.09994 0.09995 0.10072 0.09999 0.50128 ÷ 5 x 1.00244 = 0.10060 ml
1-9-91 30 g = 29.99998 22°C = 1.00221 DL Bellofatto	#10 100 λ	0.09921 0.10023 0.10057 0.10061 0.10088 0.5015 ÷ 5 x 1.00221 = 0.1005 ml
1-9-91 DL Bellofatto	#19 1 ml	1.00834 1.00800 1.00763 1.00719 1.00553 5.03669 ÷ 5 x 1.00221 = ~~1.00~~ 1.010 ml 1-9-91
1-9-91 DL Bellofatto	blue dot 5 ml	5.04465 5.04971 5.03800 5.04129 5.02642 25.20007 ÷ 5 x 1.00221 = 5.0511 ml

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1-9-91
22°C vol factor = 1.00221
D L Bellofatto

#F1
500λ

0.49910
0.49919
0.49903
0.49883
0.49878
2.49493 ÷ 5 × 1.00221 = 0.5000 ml

1-9-91
D L Bellofatto

#10
10λ

0.00973
0.00987
0.01004
0.01010
0.01000
0.04974 ÷ 5 × 1.00221 = 0.0010 ml

1-9-91
D L Bellofatto

#10
50λ

0.04953
0.04985
0.04980
0.04965
0.04996
0.24884 ÷ 5 × 1.00221 = 0.04983 ml

1-10-91
30g = 29.99993
22°C = 1.00221
J. M. Reel

#78

0.99620
0.99278
0.98647
0.98706
0.98791
4.95042 ÷ 5 × 1.00221 = 0.99237 ml

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1-10-91
30g = 29.99993
22°C = 1.00221
J. M. Deal

#64 4.99594
5ml 4.95817
4.92538
4.93410
4.94772
24.76131 ÷ 5 X 1.00221 = 4.96321 ml

1-10-91
23°C = 1.00244

#78 0.49775
500λ 0.50005
0.49654
0.49697
0.49944
2.49075 ÷ 5 X 1.00244 = 0.499365

1-10-91
23°C = 1.00244
Luana X Kilbyatte

#19 1.00179
1ml 0.99973
0.99003
0.99107
0.99968
4.9723 ÷ 5 X 1.00244 = 0.9969 ml

1-10-91
Luana X Kilbyatte

#19 0.49351
500λ 0.49403
0.49383
0.49466
0.49455
2.47058 ÷ 5 X 1.00244 = 0.4953 ml

1-10-91
Luana X Kilbyatte

#10 0.00976
10λ 0.01004
0.01007
0.01025
0.01034
0.05056 ÷ 5 X 1.00244 = 0.0101 ml

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1-10-91
23°C vol factor = 1.00244
Diana L Bellofatto

#10
100λ

0.09956
0.09994
0.10012
0.10006
0.10002
0.4115 ÷ 5 x 1.00244 = 0.1001 ml

1-11-91
23°C vol factor = 1.00244
30 g = 29.99994
Diana L Bellofatto

#10
50λ

0.04887
0.04937
0.04965
0.04954
0.04936
0.24729 ÷ 5 x 1.00244 = 0.0496 ml

1-11-91
Diana L Bellofatto

#10
100λ

0.09907
0.09968
0.09938
0.09948
0.09994
0.49755 ÷ 5 x 1.00244 = 0.0998 ml

1-11-91
Diana L Bellofatto

#19
500λ

0.49657
0.49785
0.49607
0.49582
0.49597
2.48228 ÷ 5 x 1.00244 = 0.4977 ml

1-14-91
24°C vol factor = 1.00268
30 g = 30.00013

#19
1 ml

1.00654
1.00720
1.00744
1.00703
1.00724
5.03545 ÷ 5 x 1.00268 = 1.0098 ml

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D12-067

1-15-91
30g = 30.00005g
23°C vol factor: 1.00244

Anne Estachesky
(Sequential)

#4
50λ

0.04958
0.04952
0.04949
0.04936
0.04928
0.24723 ÷ 5 x 1.00244 = 0.04957 ml

[(σ/x̄)*100]
% Variance = 0.6 %

#82
500λ

0.49940
0.49518
0.49293
0.49564
0.49313
2.97658 ÷ 5 x 1.00244 = 0.49652 ml

1.3 %

#16
2 ml

2.01945
2.01808
2.01571
2.01511
2.00800
10.07635 ÷ 5 x 1.00244 = 2.02019 ml

0.6 %

1-15-91
23°C vol Factor 1.00244

J. M. Deal

#33
100λ - 1000λ
@ 1000λ

0.99414
0.99079
0.98793
0.99305
0.98281
4.93872 ÷ 5 x 1.00244 = 0.99015

1-15-91
Deana L. Gillespie

#10
100λ

0.09933
0.09984
0.10006
0.09980
0.10003
0.49906 ÷ 5 x 1.00244 = 0.1001 ml

1-17-91
30g = 30.00003g
23°C vol factor = 1.00244
Deana L. Gillespie

#19
1 ml

1.00722
1.00673
1.00540
1.00375
1.00270
5.0258 ÷ 5 x 1.00244 = 1.0076 ml

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1-17-91
30g = 30.00003
23°C vol. factor = 1.00244
Liana L Bellofatto

#19
500λ

0.50054
0.50102
0.50160
0.50129
0.49955
2.504 ÷ 5 x 1.00244 = 0.5020 ml

1-17-91
Liana L Bellofatto

#10
100λ

0.09942
0.10037
0.10037
0.10039
0.10043
~~1.4043~~ 0.50098 ÷ 5 x 1.00244 = 0.1004 ml
DLB 1-17-91

1-18-91
30g = 30.00007
23°C vol factor = 1.00244
Liana L Bellofatto

#19
1 ml

0.97059
0.96992
0.97220
0.96910
0.97409
4.8562 ÷ 5 x 1.00244 = 0.9736 ml

1-18-91
Liana L Bellofatto

#10
100λ

0.09990
0.10054
0.10023
0.10044
0.10020
0.50131 ÷ 5 x 1.00244 = 0.1005 ml

1-18-91
Liana L Bellofatto

blue dot
5 ml

5.05322
5.03183
5.02518
5.02846
5.01163
25.15692 ÷ 5 x 1.00244 = 5.0437 ml

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1-21-91 #84
30g = 30.00018 1-mL
22°C vol factor = 1.00221

Anne E Kyshity

1.00134
1.00290
1.00042
1.00203
0.99995
5.00724 ÷ 5 x 1.00221 = 1.003666 mL

$\frac{1.00290 - 0.99995}{1.001448} = 0.3\ \%$

23°C vol factor = 1.00244 #37
100λ

Anne E Kyshity

0.09899
0.09908
0.09982
0.09959
0.09931
0.49679 ÷ 5 x 1.00244 = 0.09920 mL

$\frac{0.09931 - 0.09859}{0.098958} \times 100 = 0.7\ \%$

1-21-91 #19
23°C vol factor = 1.00244 1mL

1.00319
1.00301
1.00486
1.00354
1.00207
5.01667 ÷ 5 x 1.00244 = 1.0058 mL

1-22-91 #
30g = 30.00008 g 69
23°C vol factor 1.00244 100λ

RJBarrington

0.10032
0.10035
0.10073
0.10093
0.10075
0.50308 ÷ 5 x 1.00244 = 0.100862 mL

1-22-91 #69
50λ

RJBarrington

0.05236
0.05009
0.05018
0.05042
0.04993
0.25298 ÷ 5 x 1.00244 = 0.05072 mL

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Date	Pipette #	Weight
1-22-91	#67 20λ	0.01988
		0.01973
		0.02038
		0.01967
		0.02033
		0.09999 ÷ 5 x 1.00244 = 0.02005 ml
Kj Barrington		
1-22-91	# 1ml	0.99779
		0.99843
		0.99513
		0.99764
		0.99687
		4.98586 ÷ 5 x 1.00244 = 0.99961 ml
Kj Barrington		
1-21-91	# 10 100λ	0.10045
23°C vol. factor = 1.00244		0.10074
Diana L Bellofatto		0.10031
		0.10073
		0.10094
		0.50317 ÷ 5 X 1.00244 = 0.1009 ml
1-21-91	blue dot 2 ml	2.02051
23°C vol factor = 1.00244		2.01894
Diana L Bellofatto		2.01360
		2.01636
		2.01510
		10.08451 ÷ 5 X 1.00244 = 2.02 ml
1-22-91	#19 1ml	1.00267
23°C		1.00425
wt check = 30.00008		1.00280
Diana L Bellofatto		1.01044
		1.00796
~~on sample card the amou~~ DLB 1-22-91		* 5.02812 ÷ 5 X 1.00244 = 1.0081 ml

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D12-071

1-22-91 blue dot
23°C vol factor = 1.00244 4.52 ml
Diana L Bellofatto

4.54878
4.53901
4.53195
4.52921
4.53211
* 22.68106 ÷ 5 X 1.00244 = 4.5473 ml

on sample card this was added 2x's
to get a result of 9.0946 ml

1-22-91 #1D
23°C vol factor = 1.00244 100λ
Diana L Bellofatto

0.09994
0.10039
0.10039
0.10040
0.10062
0.50174 ÷ 5 X 1.00244 = 0.1006 ml

1-22-91 #1D
23°C vol factor = 1.00244 20λ
Diana L Bellofatto

0.01980
0.02002
0.02025
0.01983
0.02046
0.10036 ÷ 5 X 1.00244 = 0.0201 ml

1-23-91 Ind Ele Raison
22°C Vol fac = 1.00221
30g = 30.0008

Anne E Kozelsky
Seg Am

1.00216
1.00271
1.00432 $\frac{1.00537-1.00216}{1.00384} \times 100 = 0.3\%$
1.00465
1.00537
5.01921 ÷ 5 x 1.00221 = 1.00606 ml

1-23-91 # 37
22°C vf = 1.00221 100 λ

Seg Am
Anne E Kozelsky

0.09963 $\frac{0.10020-0.09963}{0.09999} \times 100 = 0.6\%$
0.09984
0.10017
0.10011
0.10020
0.49995 ÷ 5 x 1.00221 = 0.10021

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