0012369

SINGLE-SHELL TANK WASTE CHARACTERIZATION FOR TANK 241-U-110 CORE 9

DATA PACKAGE

SECTION

7 OF 10

Pacific Northwest Laboratory		ANALYTICAL REPORT	
Customer SST		Date Received 2-16-90	Work Order No. M620 40
Serial No	Customer Ident	Constituent	Result
115 -90 T1-538-60 MTE No. ------ BNW52920 p.58	90-0304-A-3 110B-C9-5B PJR FUSION	URANIUM LASER 5T 2-16-90 HTA-4-16 M&TE WA52164	6.4 E-1 ug/g wet wt ± 73.4%
Serial Number 103919		P.J. Ramy 2-23-90	Date 3/7/90 / Approval CoH

54-1700-177 (05/89)

SERIAL NUMBER 103919

BLANK

0.0993 ml – R_1 = 0.02

~~0.0098~~ 0.0100 ~~0.0100~~ ml of 0.1424 ug/ml – R_2 = 0.22

0.0100 ml of 0.1424 ug/ml – R_3 = 0.42

Tried 200%

R_2 – R_1 – No Difference

DATA

$$\frac{0.02}{0.22-0.02} \times 0.1424 \frac{ug/l}{ml} \times \frac{\cancel{0.0100}\ \cancel{0.0098}\ \cancel{0.0100}\ PJR}{\cancel{0.0098}\ \cancel{0.0100}} = 0.0014340 \frac{ug/l}{ml} \times \frac{250\ ml}{.5568} = 6.44E-1$$

2-23-90

PJR – 2-23-90

$\frac{0.0100}{0.0993}$

based on ave wt of samples fused

error 73.4 %

(Over)

Pacific Northwest Laboratory		ANALYTICAL REPORT	
Customer SST		Date Received 2-16-90	Work Order No. M62040
Serial No	Customer Ident	Constituent	Result
116 -90 T1-SST-60	90-0305-A-1 110B-C9-55 FUSION	URANIUM LASER	4.68 E+1 $\frac{ug}{g}$ wet wt. ± 10.4%
MTE No. ------ BNW52920 p. 55		HTA-4-16 M&TE WA52164	
Serial Number 103923	P. J. Ramey 2-22-90	Date 3/7/90	Approval CGH

SERIAL NUMBER 103923

0.5778g. + 250ml.

0.0098ml – R_1 = 0.19
0.0098ml – R_2 = 0.44
of 0.1424 $\frac{ugU}{ml}$

$$\frac{0.19}{0.44-0.19} \times 0.1424 \frac{ugU}{ml} \times \frac{0.0098}{0.0098} = 0.10822 \frac{ugU}{ml} \times \frac{250\ mL}{0.5778\ g} = 4.68\ E+1\ \frac{ug}{g}\ \text{wet wt.}$$

error 10.4%

(Over)

54-1700-177 (05/89)

D07-016

Pacific Northwest Laboratory		ANALYTICAL REPORT	
Customer SST		Date Received 2-16-90	Work Order No. M62040
Serial No	Customer Ident	Constituent	Result
117 -90 T1-SST-60 MTE No. _____ BNW52920 p. 55	90-0305-A-2 110B-C9-5B FUSION	URANIUM LASER HTA-4-16 M&TE WA52164	4.27 E+1 ug/g wet wt ± 11.7%
Serial Number 103927		P.J. Ramey 2-22-90	Date 3/7/90 Approval CeH

54-1700-177 (05/89)

SERIAL NUMBER 103927

0.5668g. → 250ml.

0.0098ml – R_1 = 0.17

0.0098ml – R_2 = 0.42

of 0.1424 ug/l/ml.

DATA

$$\frac{0.17}{0.42-0.17} \times 0.1424 \frac{ug/l}{ml} \times \frac{0.0098}{0.0098} = 0.096832 \frac{ug/l}{ml} \times \frac{250\ mL}{0.5668\ g} = 4.27\ E+1\ ug/g\ wet\ wt$$

error 11.7%

8mb 10-21-90

(Over)

Pacific Northwest Laboratory		ANALYTICAL REPORT	
Customer SST		Date Received 2-16-90	Work Order No. M6204O
Serial No	Customer Ident	Constituent	Result
118 -90	90-0305-A-3	URANIUM LASER	3.5E-1 ug/g wet wt.
T1-SST-60	110B-C9-53 FUSION		±14.4%
MTE No. BNW52920 p. 58		HTA-4-16 M&TE WA52164	
Serial Number 103931		P.J. Ramey 2-23-90	Date 3/7/90 Approval COH

54-1700-177 (05/89)

SERIAL NUMBER 103931

BLANK

0.0993 ml – $R_1 = 0.01$

0.0100 ml of 0.1424 ug/ml – $R_2 = 0.19$

0.0100 ml of 0.1424 ug/ml – $R_3 = 0.38$

Tried 200x $R_2 - R_1$ – No Difference

DATA

$$\frac{0.01}{0.19-0.01} \times 0.1424 \frac{ug}{ml} \times \frac{0.0100}{0.0993} = 0.0007967 \frac{ug}{ml} \times \frac{250\ mL}{0.5723\ g} = 3.48E-1\ ug/g\ wet\ wt$$

base on ave. wt of samples.

error 14.4 %

(Over)

D07-018

Pacific Northwest Laboratory		ANALYTICAL REPORT	
Customer SST		Date Received 3-13-90	Work Order No ~~M260~~ M62040 PJR 4-10-90
Serial No	Customer Ident	Constituent	Result
188 -90 TS-SST-67 M&TE 360-06-01-018 BNW52920 p. 96 BNW 52442 pg 79	110B-C9-T 90-1255-A-1 TK110B-C9 Segment COM Ni FUSION	U Laser HTA-4-16 M&TE WA52164	182 ug/g wet wt ± 7.6%
Serial Number 102748		P J Raney 4-10-90	Date 6-6-90 / Approval Colt

54-1700-177 (05/89)

SERIAL NUMBER 102748

0.5560g + 250ml

0.0500 ml – R_1 = 0.30

0.0201 ml – R_2 = 0.60

of 1.0066 ug/ml.

DATA

$$\frac{0.30}{0.60-0.30} \times 1.0066 \frac{ug/l}{ml} \times \frac{0.0201}{0.0500} = 0.40465 \frac{ug/l}{ml} \quad \frac{250}{0.556} = 1.82E+2 \frac{ug}{g\ wet\ wt}$$

± 7.6%

(Over)

D07-019

Pacific Northwest Laboratory		ANALYTICAL REPORT	
Customer SST		Date Received 3-13-90	Work Order No. ~~M260~~ M62040 PJR 4-10-90
Serial No	Customer Ident	Constituent	Result
189 -90 TI-SST-67 M&TE 360-06-01-018 BNW52920 p. 96 BNW 52442 p. 78	110B-C9-T 90-1255-A-2 TK110B-C9 Segment COM Ni FUSION	U Laser HTA-4-16 M&TE WA52164	176 ug/g wet wt ± 7.6 %
Serial Number 102758		P. J. Raney 4-10-90	Date 4/6/90 / Approval Coef

SERIAL NUMBER 102758

0.5749g + 250ml

0.0500 ml $R_1 = 0.30$
0.0201 ml $R_2 = 0.60$
of 1.0066 ug/ml.

DATA

$$\frac{0.30}{0.60-0.30} \times 1.0066 \frac{ug/l}{ml} \times \frac{0.0201}{0.0500} = 0.40465 \frac{ug/l}{ml} \quad \frac{250}{0.5749} = 175.97$$

1.76 E+2 ug/g wet wt

✓ JMS 10-21-90

± 7.6%

(Over)

54-1700-177 (05/89)

☆U.S. GPO: 1989—684-337

Pacific Northwest Laboratory		ANALYTICAL REPORT	
Customer SST		Date Received 3-13-90	Work Order No ~~M260~~ M62040 PJR 4-10-90 + 250ml
Serial No	Customer Ident	Constituent	Result
190 -90 TE-389-67 M&TE 360-06-01-018 BNW52920 p. 96 BNW 5442 pg 78	110B-C9-T 90-1255-A-3 TK110B-C9 Segment CDM Ni FUSION	U Laser HTA-4-16 M&TE WA52164	< 2
Serial Number 102768		PJ Ravey 4-10-90	Date 6-6-90 / Approval COH

SERIAL NUMBER 102768

0.1007 ml – R_1 = 0.00
0.0201 ml – R_2 = 0.22
of 0.0994 ug/ml.

54-1700-177 (05/89)

DATA

$$\frac{\frac{<.03}{-0-}}{\cancel{0.20}\ 0.22 - 0.0} \times 0.0994\ \frac{ug/l}{ml} \times \frac{0.0201}{0.1007} = -0-\ \frac{ug/l}{ml}$$

PJR 4-10-90

$\frac{250}{.5655}$ = < 1.4

✓ BMO 10-21-90

less than based of reading of less than .03

(Over)

D07-021

Pacific Northwest Laboratory		ANALYTICAL REPORT	
Customer SST		Date Received 3-13-90	Work Order No. ~~M260~~ M62040 PJR 4-10-90
Serial No	Customer Ident	Constituent	Result
191 -90 TI-SST-67 M&TE 360-06-01-018 BNW52920 p. 96 BNW 52442 p. 78	110B-C9-B 90-1256-A-1 TK110B-C9 Segment COM Ni FUSION	U Laser HTA-4-16 M&TE WA52164	193 ug/g wet wt ± 7.6 %
Serial Number 102778		P.J. Raney 4-10-90	Date 6-6-90 / Approval CoH

SERIAL NUMBER 102778

0.5252g + 250ml

0.0500 ml - R_1 = 0.29
0.0201 ml - R_2 = 0.58
of 1.0066 ug/ml

DATA

$$\frac{0.29}{0.58-0.29} \times 1.0066 \frac{ug/ml}{} \times \frac{0.0201}{0.0500} = 0.40465 \frac{ug/ml}{} \quad \frac{250}{0.5252} = 1.926E+2$$

± 7.6 %

✓ AMD 10-21-90

(Over)

54-1700-177 (05/89)

☆ U.S. GPO: 1989—004-837

Pacific Northwest Laboratory		ANALYTICAL REPORT	
Customer SST		Date Received 3-13-90	Work Order No. ~~M280~~ M62040 PJR-4-10-90
Serial No	Customer Ident	Constituent	Result
192 -90 TI-SST-67 M&TE 360-06-01-01B BNW52920 p. 96 BNW 52442 pg 78	110B-C9-B 90-1256-A-2 TK110B-C9 Segment COM Ni FUSION	U Laser HTA-4-16 M&TE WA52164	177 ug/g wet wt ± 7.6%
Serial Number 102788		P.J. Raney 4-10-90	Date 6-6-90 / Approval CDH

SERIAL NUMBER 102788

0.5922g + 250ml

0.0500 ml - R_1 = 0.30
0.0201 ml - R_2 = 0.59
of 1.0066 ug/ml

DATA

$$\frac{0.30}{0.59-0.30} \times 1.0066 \frac{ug/ml}{} \times \frac{0.0201}{0.0500} = 0.41861 \frac{ug/ml}{} \times \frac{250}{0.5922} = 1.767E+2 \ ug/g \ wet \ wt$$

± 7.6% BMB 10-21-90

(Over)

54-1700-177 (05/89)

Pacific Northwest Laboratory		ANALYTICAL REPORT	
Customer SST		Date Received 4-6-90	Work Order No. M620 40
Serial No	Customer Ident	Constituent	Result
249 -90	110B-C9-AN 90-1257-C-1	URANIUM LASER	0.77 ug/g wet wt
	H2OLEACH	HTA-4-16	± 15%
BNW52920 p. 132 BNW 52442 MTB	MTB WA 52164		
Serial Number 103209		P J Ramey 5-24-90	Date 6-13-90 / Approval CoG

54-1700-177 (05/89)

☆ U.S. GPO: 1989—694-937

SERIAL NUMBER 103209

2.0799g + 202.0588g. H2O

$2(0.0500\ ml) - R_1 = 0.13$

$0.0201\ ml - R_2 = 0.46$

5-24-90 of 0.09932 ug/ml

@ 22.8°C ρ_{H_2O} = .997585

∴ vol = 202.5480 ml

DATA

$$\frac{0.13}{0.46 - 0.13} \times 0.09932\ \frac{ug/ml}{ml} \times \frac{0.0201}{2(0.0500)} = 0.007864\ \frac{ug/ml}{ml} \times \frac{202.548}{2.0799} \rightarrow 0.7659\ kg/g$$

BJR

calc check

± 15%

BMS 10-21-90

(Over)

D07-024

Pacific Northwest Laboratory		ANALYTICAL REPORT	
Customer SST		Date Received 4-6-90	Work Order No. M620 40
Serial No	Customer Ident	Constituent	Result
250 -90	110B-C9-AN 90-1257-C-2 H2OLEACH	URANIUM LASER HTA-4-16	0.26 ug/g wet wt ±15%
BNW52920 p. 132 BNW 52442 Pg 93	MTE WA 52164		
Serial Number 103219		P. J. Raney 5-24-90	Date 6-13-90 / Approval COH

54-1700-177 (05/89)

SERIAL NUMBER 103219

2.0215g. + 199.0698g. H2O

3(0.1004) − R_1 = 0.13
0.0201 ml − R_2 = 0.46
of 0.09932 ug U/ml.

@ 22.8°C ρ H_2O = .997585
∴ vol = 199.5517 ml

DATA

$$\frac{0.13}{0.46-0.13} \times 0.09932 \frac{ug\,U}{ml} \times \frac{0.0201}{3(0.1004)} = 0.002611 \frac{ug\,U}{ml} \times \frac{199.5517}{2.0215} = 0.2577 \text{ ug U/g}$$

cale check [illegible] 5-24-90

±15% ✓ BMS 10-21-90

39

(Over)

D07-025

URANIUM

NBS CERTIFICATION

FOR

STANDARD ADDITION METHOD

D07–026

5-13-90 GWL

Copy of NBS Certificate of Analysis for U-960

U. S. Department of Commerce
Frederick B. Dent
Secretary

National Bureau of Standards
Richard W. Roberts, Director

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 normal 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 42 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 to this determination: the random error component, 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 mass 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 assaying the material, the oxide was removed from the uranium samples 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. Impurities were analyzed by the AEC Paducah Laboratory, Paducah, Kentucky. Assay of the material was performed by G. Marinenko and E. S. Etz, the iron content was determined polarographically by E. J. Maienthal, and the atomic weight was determined by isotopic ratio measurements performed by E. 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. R. Shields.

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)

LRB 5/4/72

Disclosed To and Understood by:

Signed 1. _____ Date _____

2. _____ Date _____

148

Same Copy of U 960 Std. made up from M.C. Brett's book Titled "Uranium Method Development Stds + titrant prep'n" Page 75

2/1/85 NBS DICHROMATE FOR VOL URANIUM 636 titrator
3.7312 g NBS 136 a $K_2Cr_2O_7$

$$T_V = \frac{(3.7312)(119.019)(.9998)\,10^3}{(1000)\,(49.0217)} = \underline{9.05526}\ \text{mg U eq/ml}$$

3/14/85 NBS DICHROMATE FOR VOL URANIUM 636 TITRATOR
7.4746 g NBS 136 a $K_2Cr_2O_7$

$$TV = \frac{(7.4746)(119.019)(.9998)\,10^3}{(2000)\,(49.0217)} = \underline{9.07007}\ \text{mg U eq/ml}$$

6/28/85 NBS SRM 949 for Pu ASSAY

wgts	.52066
	.49995
	1.02061 g

Dissolved w/ 3M HCl
fumed w/ H_2SO_4
fumed w/ NH_4HSO_4

Bottle Tare	20.7449
Bottle + Solution	125.0845
net Solution	104.3396

$$\frac{1020.61 \times .99963}{104.3396} = \underline{9.7780}\ \text{mg Pu/g Solution} \qquad \frac{9.7780}{2.39.013} = \underline{8.179423\ \text{mg Pu/g}}$$

+ Adjusted for decay - See NBS Certificate

10/15/85 NBS Dichromate for Vol Uranium 636 titrator
7.4658 g NBS 136 a $K_2Cr_2O_7$

$$T_V = \frac{(7.4658)(119.019)(.9998)\,10^3}{(2000)\,(49.0217)} = \underline{9.05939}\ \text{mg U eq/ml}$$

10/17/85 NBS 960 U Std
Treated with 4N HNO_3 until clear, H_2O_2 + acetone, recovery.
12.5719 g NBS 960 metal

Bottle Tare	239.2112
636 + Solution	762.7733

$$\frac{(12.5719)(.99975)\,10^3}{(762.7733 - 239.2112)} = \underline{26.54088}\ \text{mg U/g solution}$$

1 g
U-1085
LB 9 2442 pg 25
LB 5 2442

Disclosed To and Understood by
Signed 1. _____ Date
2. _____ Date

38

Entered 6/13/88 [signature]

U standard prep → NBS 960 6/13/88 26.54088 mg U/g

See Note by P.J. [signature] 1-10-90 on p 2 of this Book

pipet #12 500λ standard 74.0760
100 ml tare 73.5389
.5371

Balance 360-06-05 [illegible] Expires 9/15/88

.5371 g × 26.54088 mg U/g = 14.255 mg U/100 ml = 142.551 µg/ml

pipet #13 .9982 ml − 100 ml = 1.423 µg U/ml
1 ml − 11 ml = 0.1285 µg U/ml
pipet #13 + #6 (.9982 ml) − (11.0712)

See pg. 75 LRBS-442 for [illegible] BNW 1-24-90

U Analyzer Check [signature] 6/13/88

100λ .1285 .143
10λ 1.423 .305 $\frac{.143}{.305-.143} \times \frac{10}{100} \times 1.423 = .1256 \div .1285 = 98\%$ recovery

100λ .1285 .145
0λ 1.423 .307 $\frac{.145}{.307-.145} \times \frac{10}{100} \times 1.423 = .1274 \div .1285 = 99\%$ recovery

100λ .1285 .142
10λ 1.423 .310 $\frac{.142}{.310-.142} \times \frac{10}{100} \times 1.423 = .1203 \div .1285 = 94\%$ recovery

100λ .1285 .145
10λ 1.423 .322 $\frac{.145}{.322-.145} \times \frac{10}{100} \times 1.423 = .1165 \div .1285 = 91\%$ recovery

100λ .1285 .155
10λ 1.423 .330 $\frac{.155}{.330-.155} \times \frac{10}{100} \times 1.423 = .1260 \div .1285 = 98\%$ recovery

100λ .1285 .157
10λ 1.423 .319 $\frac{.157}{.319-.157} \times \frac{10}{100} \times 1.423 = .1379 \div .1285 = 107\%$ recovery

$\bar{x}_c = .1256 \pm 5.8\% \div .1285 = 97.7\% \pm 5.8\%$

Entered 6/14/88 [signature]

U Analyzer check

100λ .1285 .145
10λ 1.423 .319 $\frac{.145}{.319-.145} \times \frac{10}{100} \times 1.423 = .1186 \div .1285 = 92\%$ recovery

Project No. _____ Date of Work _____
Entered By _____ Date _____
Disclosed To and Understood By _____
Signed 1. _____ Date _____
2. _____ Date _____

BNW
52442

Received 2-26-90
J.O # 93100

National Institute of Standards & Technology

RECEIVED
MAR 07 1990
F.M. NEWCOMER - POC

Certificate of Analysis

Standard Reference Material 3164

Spectrometric Standard Solution

Malin's #
CS-562

Uranium

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)

D07-030

SRM 3164 was prepared by T.C. Rains of the NIST Inorganic Analytical Research Division. Inductively coupled plasma 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.

D07-031

URANIUM

DAILY CONTROL DATA

D07–032

BNW-52442
1-
8-31-87

PACIFIC NORTHWEST LABORATORY
AUG 31 1987
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M32954

LABORATORY RECORD BOOK NUMBER
BNW- 52442

This document consists of ..... 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. Ramey 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 01 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.

BATTELLE MEMORIAL INSTITUTE
PACIFIC NORTHWEST LABORATORY
TO BE RETAINED BY RECIPIENT

Copy	Date	P/R No.	Name	Area	Bldg.	Field Route No.
1	8-26-88	30706	LS KELLOGG P7-20		325	

TRANS.TO KELLOGG PER KELLOGG 8-26-88.

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.

Signature of Recipient | Date

Received For Recipient By | Returned To File | Date

54-1100-005(10-84)

D07-033

2-15-90 Uranium Analyzer Check - P.J. Raney 77

102.1%

Hi: - 0.0995 ml of 0.1424 ug/ml = R_1 = 0.29 $\frac{0.29}{0.58-0.29} \times 1.4325 \times \frac{0.0101}{0.0995} = 0.1454$ ug/ml

0.0101 " " 1.4325 " - R_2 = 0.58

Lo: - 0.0101 " " 0.1424 " - R_1 = 0.29 $\frac{0.29}{0.60-0.29} \times 0.1424 \times \frac{0.0101}{0.0101} = 0.1332$ ug/ml

" " " " " R_2 = 0.60

93.55%

2-22-90 - Uranium-Analyzer Check - P.J. Raney

(91.6%)

Hi - 0.1000 ml of 0.1424 ug U/ml - R_1 = 0.26 $\frac{0.26}{0.54-0.26} \times 1.4325 \times \frac{0.0098}{0.1000} = 0.1304$ ug/ml

0.0098 ml of 1.4325 " - R_2 = 0.54

Lo - 0.0098 ml of 0.1424 " - R_1 = 0.27 $\frac{0.27}{0.54-0.27} \times 0.1424 \times \frac{0.0098}{0.0098} = 0.1424$ ug/ml

" " " " - R_2 = 0.54

(100%)

2-23-90 - Uranium Analyzer Check - P.J. Raney

Hi - 0.0993 ml of 0.1424 ug U/ml - R_1 = Not Used on 2-23-90

0.0100 " 1.4325 " - R_2 =

Lo - 0.0098 ml " 0.1424 " - R_1 = 0.27 $\frac{0.27}{0.54-0.27} \times 0.1424 \times \frac{0.0098}{0.0098} = 0.1424$ ug U/ml

" " " " R_2 = 0.54

100%

2-27-90 **New Uranium Std - NIST Std. - P.J. Raney**
10.00 mg/ml in 10% HNO_3
Received 2-26-90 - Certificate of Analysis given to Malin Weiler, 2-27-90 who will log the std. into the section records. Number given CS-562 PJR-9-19-90. We received a plastic bottle with Estimated 50 ml of 10.00 mg U/ml. Spectrometric Solution #3164 Lot # 090801. Chemical Inventory #82 in Rm 309 of 325 Blg, 300 Area.

9-19-90 - Certification of Analysis for this standard may be found on pp. 146 + 147 of this book (BNW 52442)

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2-27-90 P.J. Raney — Secondary Uranium Standard from NIST / Uranium Std #3164 — 10 mg/ml. See p. 77 this book

10 mg/ml = 10,000 ug/ml.
0.9962 ml of 10,000 ug/ml U was diluted to 100 ml in a Vol Flask (100 ml ± 0.08 ml) with 0.1 M. HNO_3 as diluent.

0.9962 ml × 10,000 ug/ml = 100 ml × x ug/ml
∴ Solution is x = 99.62 ug U/ml.

2-27-90 P.J. Raney — New Uranium Std's from Secondary Std described above. Diluent: 0.1 M. HNO_3

Hi – 0.9962 ml × 99.62 ug/ml = 100 ml × x x = 0.99624 ug U/ml

Lo – ~~0.0100~~ 0.1000 ml × 99.62 ug/ml = 100 × x x = ~~0.009962~~ 0.09962 ug U/ml. PJR 2-27-90

2-27-90 P.J. Raney — New Uranium Stds Made from Existing Stock (See BNW52422, p. 38) 0.1 M. HNO_3 Diluent

Hi – 0.9962 ml of 142.551 ug U/ml → Vol. Flask 100 ml = 1.4201 ug U/ml

Lo – ~~0.0100 ml~~ 0.1000 PJR 2-27-90 of 142.551 ug U/ml → Vol Flask 100 ml = 0.14255 ug U/ml.

2-27-90.

2-27-90 P.J. Raney — Uranium Analyzer Check – Using "Old" Standards. Based on BNW52422, p. 38 original stock make-up + pp. 77, 78 Make-ups. PJR 2-27-90

Hi: 0.1000 ml of 0.1426 ug U/ml – R_1 = 0.28
0.0099 " – 1.4201 " – R_2 = 0.57

$\frac{0.28}{0.57-0.28} \times 1.4201 \frac{ug}{ml} \times \frac{0.0099}{0.1000} = 0.1357$ ug/ml 95.2%

Lo: 0.0099 ml of 0.1426 " – R_1 = ~~0.26~~ 0.27 PJR 2-27-90
" – " " – R_2 = 0.56

$\frac{0.27}{0.56-0.27} \times 0.1426 \frac{ug}{ml} \times \frac{0.0099}{0.0099} = 0.1329$ 93.2%

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2-27-90 Uranium Analyzer Check Using "New" Stds Based on NIST Std (2-26-90) see p. 77

Wrong Std Conc.

97.4%

Hi 2(0.1000) ml of 0.1426 mg U/ml - R_1 = 0.36
0.0201 " 1.4201 " - R_2 = 0.73

$\frac{0.36}{0.73-0.36} \times 1.4201 \frac{mg\,U}{ml} \times \frac{0.0201}{2(0.1000)} = 0.1387 \frac{mg\,U}{ml}$

Lo 0.0201 ml of 0.1426 mg U/ml - R_1 = 0.38
" " " " - R_2 = 0.77

$\frac{0.38}{0.77-0.38} \times 0.1426 \frac{mg\,U}{ml} \times \frac{0.0201}{0.0201} = 0.1389 \frac{mg\,U}{ml}$

PJR 2-27-90

2-27-90 Uranium Analyzer Check Using "New" Stds Based on NIST Std. (2-26-90, see pp 77, 78)

97.4%

Hi: 2(0.1000) ml of ~~0.9924~~ 0.09962 mg U/ml - R_1 = 0.36
0.0201 ml of 0.9924 " - R_2 = 0.73

$\frac{0.36}{0.73-0.36} \times 0.9924 \frac{mg\,U}{ml} \times \frac{0.0201}{2(0.1000)} = 0.09704 \frac{mg\,U}{ml}$

Lo: 0.0201 ml of 0.09962 mg U/ml - R_1 = 0.38
" " " " " - R_2 = 0.77

$\frac{0.38}{0.77-0.38} \times 0.09962 \frac{mg\,U}{ml} \times \frac{0.0201}{0.0201} = 0.09707 \frac{mg\,U}{ml}$

97.4%

2-27-90 SET of URANIUM ANALYSES Run Using Both Standard

Old Std. - 56-90 $\frac{0.27}{0.58-0.27} \times 1.4201 \frac{mg\,U}{ml} \times \frac{0.0099}{0.0099} =$ 1.2369 mg U/ml

86.4%

New Std " $\frac{0.27}{0.65-0.27} \times 0.9924 \frac{mg\,U}{ml} \times \frac{0.0201}{0.0099} =$ 1.4316 "

Old Std 57-90 $\frac{0.24}{0.53-0.24} \times 1.4201 \frac{mg\,U}{ml} \times \frac{0.0099}{0.0099} =$ 1.1753 "

90.996 or 91.000%

New Std " $\frac{0.25}{0.64-0.25} \times 0.9924 \frac{mg\,U}{ml} \times \frac{0.0201}{0.0099} =$ 1.2916 "

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(Cont) (Set of Uranium Samples run using both Standards

Old Std 58-90 $\frac{0.34}{0.62-0.34} \times 1.4201 \frac{\mu g U}{ml} \times \frac{0.0099}{0.0201} = 0.84933$ µg U/ml

101.1%

New Std. " $\frac{0.33}{0.72-0.33} \times 0.9924 \frac{\mu g U}{ml} \times \frac{0.0201}{0.0201} = 0.83972$ "

Old Std 59-90 $\frac{0.34}{0.63-0.34} \times 1.4201 \frac{\mu g U}{ml} \times \frac{0.0099}{0.0099} = 1.6649$ "

89.5%

New Std. " $\frac{0.36}{0.75-0.36} \times 0.9924 \frac{\mu g U}{ml} \times \frac{0.0201}{0.0099} = 1.8599$ "

Old Std 60-90 $\frac{0.28}{0.58-0.28} \times 1.4201 \frac{\mu g U}{ml} \times \frac{0.0099}{0.0099} = 1.3254$ "

91.62%

New Std. " $\frac{0.28}{0.67-0.28} \times 0.9924 \frac{\mu g U}{ml} \times \frac{0.0201}{0.0099} = 1.4466$ "

3-5-90 Uranium Analyzer Check Using New Stds
P. J. Roney

94.44%

H: 0.0198 ml of 0.9924 µg U/ml – $R_1 = 0.34$ $\frac{0.34}{0.70-0.34} \times 0.9924 \frac{\mu g U}{ml} \times \frac{0.0198}{0.0198} = 0.9327$
0.0198 " " " " $R_2 = 0.70$

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U Spike Prep.

1ml pipet Calibrated @ 23.5°C (10 weighings) Vol = 0.9939 mL

NITS Standard 3164 10.00 $\frac{mg}{ml}$

Secondary std

0.9939 mL stock diluted to 100.0 mL with 2 N. HNO_3 in volumetric flask

Conc $(10.00)\frac{0.9939}{100.0}$ = ~~.999~~ 9.939×10^{-2} $\frac{mg}{mL}$

High working standard

0.9939 mL of Secondary Standarded diluted TO 100.0 mL with 0.1 N HNO_3 in volumetric Flask

Conc = $\frac{(9.939 \times 10^{-2})(.9939)}{100}$ = $9.878_4 \times 10^{-4}$ $\frac{mg}{mL}$

ie .9878 ug/mL

Readings of above std 20λ; .37 + .37

$\frac{.9878 \text{ ug/ml}}{.37}$ = 2.6697

Readings of std prepared by pat (Conc .9924) 20λ, .37 .37

$\frac{.9924 \text{ ug/ml}}{.37}$ = 2.6822

old High working standard Conc 1.4201 analyzed using the .9878 ug/ml spike

C O Harvey 3/7/90

$\frac{.26}{.63-.26}$ (.9878) $\frac{.0204}{.0100}$ = 1.39_6 = 98.3%

$\frac{.27}{.64-.27}$ " = 1.45_0 = 102.1%

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3-8-90 S. S. Kellogg

The initial implication from the comparison of sample data using the "Old" U standard solution and the New "3114" NIST (NBS) standard is that the Old standard is about 10% low. (pgs 79-80 this book) A new hi working NIST "3114" standard was prepared by CO Harvey (pg 81) and compared with that prepared by PJ Raney (pg 28). Agreement between the two new working hi level standards was found to be within 0.048% (pg 81). This new working standard was then compared with the "Old" working standard previously prepared by PJ Raney and though the two measurements made varied by 3.9% this is within the error in reading the meter. The average of the two values was 100.2%, indicating the "Old" standard solution value is indeed still valid. This now implies that the samples run were not stable, or in retrospect the variations in measurements are no better than the capability of reading the instrument.
All of the calculations made on the samples on pgs 79 and 80 can be made to fall within each others limits by changing one or more readings by 0.01 units.
It is therefore suggested that no U result reported from layer analysis be given an error estimate of < 10% though the error can be considerably larger depending upon the sample reading.

3-23-90 Iodine Carrick Virginia L Dunn
KI American Scientific + Chem #2112382
Tared weight 1.308g (KI) dissolved in 100 ml D-H_2O (vol. flask)
18.10.0 mg I/ml VVD

4-2-90 New Uranarium Stds from Secondary - PJ Raney
Std. made 2-27-90 (See p 78 of this book)
Dilutions Made with 0.1M HNO_3
Hi - 1.0104 ml of 99.62 ug U/ml = 100 ml × x_1 x_1 = 1.0066 ug U/ml
Lo - 0.0998 ml of " " = 100 × x_2 x_2 = 0.09942 "

4-2-90 Uranium Analyzer Check - P. J. Raney
4-2-90 PJR → of 0.0994 ug U/ml
Hi - 2(0.0998) ml - R_1 = 0.30
0.0201 ml of 1.0066 ug U/ml - R_2 = 0.60 $\frac{0.30}{0.60-0.30} \times \frac{1.0066 \text{ ug U}}{\text{ml}} \times \frac{0.0201}{2(0.0998)} = 0.10137 \frac{\text{ug U}}{\text{ml}}$ 101.98%

Lo - 0.0201 ml of 0.0994 ug U/ml - R_1 = 0.32
" " " " - R_2 = 0.64 $\frac{0.32}{0.64-0.32} \times \frac{0.0994 \text{ ug U}}{\text{ml}} \times \frac{0.0201}{0.0201} = 0.0994$ 100%

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D07-039

4-6-90 Uranium Analyzer Check P J Kang 83

Hi - 0.0200 ml of 1.0066 ug U/ml - $R_1 = 0.35$ $\frac{0.35}{0.70-0.35} \times 1.0066 \frac{ug U}{ml} \times \frac{0.0200}{0.0200} = 1.0066$ ug U/ml
" " " " - $R_2 = 0.70$ 100%

Lo - 0.0200 ml of 0.0994 ug U/ml - $R_1 = 0.32$ $\frac{0.32}{0.65-0.32} \times 0.0994 \frac{ug U}{ml} \times \frac{0.0200}{0.0200} = 0.096388$ ug U/ml
" " " " - $R_2 = 0.65$ 96.97%

5/1/90 New Uranium Standards from Secondary Std.
Secondary std prepared 2-27-90 (see page 78 this book)

Hi 0.9923 mL of 99.62 ug U/mL diluted to 100 mL = 0.9885 ug/mL

Lo 0.1004 mL of 99.62 ug/mL diluted to 100 mL = 0.1000 ug/mL

C O Harvey

5-22-90 New Uranium Standards from Secondary Std - PJR
See p. 78 this book. - Diluent - 0.1 M HNO3 - PJR 5-23-90

Hi - 1.0001 ml of 99.62 ug U/ml diluted to 100 ml Vol. Flask = 0.99630 ug U/ml

Lo - 0.0996 ml of 99.62 " " " " " = 0.09922 ug U/ml
Discarded Due to Prep Problems 5-23-90

5-23-90 New Uranium Standards from Secondary Std - PJR
See p. 78 this Book - Diluent - 0.1 M. HNO3

Hi - 1.0043 ml of 99.62 ug U/ml diluted to 100 ml Vol. Flask = 1.0005 ug U/ml

Lo 0.0997 ml of " " " " = 0.09932 ug U/ml

URANIUM ANALYER SENSITIVITY CHANGE

Sensitivity changed from 685 to 720.

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Uranium Analyzer Check - 4-23-90 - P J Raney

Hi - 0.0199 ml of 1.0005 ug U/ml - $R_1 = 0.32$ $\frac{0.32}{0.64-0.32} \times 1.0005 \frac{ug U}{ml} \times \frac{0.0199}{0.0199} = 1.0005$ ug U/ml (100%)
0.0199 ml " " - $R_2 = 0.64$

Uranium Analyzer Check - 4-24-90 P J Raney

Hi - 0.0201 of 1.0005 ug U/ml - $R_1 = 0.35$ $\frac{0.35}{0.70-0.35} \times 1.0005 \frac{ug U}{ml} \times \frac{0.0201}{0.0201} = 1.0005$ ug U/ml (100%)
0.0201 " " " $R_2 = 0.70$

Lo - 0.0201 of 0.09932 " $R_1 = 0.33$ $\frac{0.33}{0.65-0.33} \times 0.09932 \frac{ug U}{ml} \times \frac{0.0201}{0.0201} = 0.10242$ ug U/ml
0.0201 " " $R_2 = 0.65$

P J Raney URANIUM STD MAKE-UP 6-12-90

To Make these stds, secondary std made on 2-27-90 (See p.78 this Book) were diluted with 0.1 M HNO_3 as follows

Hi - 1.0023 ml of 99.62 ug U/ml was diluted to 100 ml (Vol Flask) - Hi std = 0.9985 ug U/ml

Lo - 0.1000 ml of 99.62 " " " " - Lo Std = 0.09962 ug U/ml

6/13/90 PREPARATION of SELENIUM CARRIER SOL'N VL Dunn
BALANCE # 360-06-01-018 for Lab 416
PREPARED from SE METAL ~~pellets~~ shot VLD 6/13/90 EM, Lot # 6311
1.0000 g SELENIUM ~~pellets~~ shot VLD 6/13/90 SCIENCE WEIGHED OUT. PELLETS ~~Added~~ placed 6/13/90 to IN 100 ml vol flask, 5 ml ultrex conc HNO_3 Added, heated on hot plate set to low. Solution cooled to room temp and brought up to volume with 0.5 M HNO_3 and mixed well. ∴ 1.0000 g Se/100 ml or 10.0 mg Se/ml VLD

6-12-90 Uranium Analyzer Check - P J Raney

Hi - 2(0.1000) of 0.09962 ug U/ml - $R_1 = 0.29$ $\frac{0.29}{0.57-0.29} \times 0.9985 \frac{ug U}{ml} \times \frac{0.0203}{2(0.1000)} = 0.10497$ (105.4%)
- 0.0203 ml of 0.9985 ug U/ml $R_2 = 0.57$ (0.28)

Lo - 0.0203 ml of 0.09962 " $R_1 = 0.32$ $\frac{0.32}{0.62-0.32} \times 0.09962 \frac{ug U}{ml} \times \frac{0.0203}{0.0203} = 0.10626$ (106.7%)
" " " $R_2 = 0.62$ (0.30)

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D07-041

Received 2-26-90
J.O # 93100

p.146, BNW52442

National Institute of Standards & Technology

RECEIVED
MAR 07 1990
F.M NEWCOMER - PO

Certificate of Analysis

Standard Reference Material 3164

Spectrometric Standard Solution

Malin's #
CS-562

Uranium

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)

Date

D07-042

SRM 3164 was prepared by T.C. Rains of the NIST Inorganic Analytical Research Division. Inductively coupled plasma 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.

p. 147, BNWS-2442

-2-

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3-13-90 SWM

Copy of NBS Certificate of Analysis for U-960

U. S. Department of Commerce
Frederick B. Dent
Secretary

National Bureau of Standards
Richard W. Roberts, Director

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 normal 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 42 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 to this determination: the random error component, 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 mass 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 assaying the material, the oxide was removed from the uranium samples 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. Impurities were analyzed by the AEC Paducah Laboratory, Paducah, Kentucky. Assay of the material was performed by G. Marinenko and E. S. Etz, the iron content was determined polarographically by E. J. Maienthal, and the atomic weight was determined by isotopic ratio measurements performed by E. 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. R. Shields.

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)

LRB 5442

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D07-044

D8 - IODINE 129

BY GAMMA SPECTROMETRY

I-129

PRIMARY DATA PACKAGE

D08–001

SST

I-129 DATA COVER SHEET

Sample Number: 90-1255-A-1/2/3
90-1256-A-1/2
90-1257-C-1/2

Procedure: 7-40.26, HTA-4-9

Pipet Calibration LRB#: BNW 52920

Equipment (M&TE#): WA 44161

System Calibration LRB#: BNW 52626

Analysts Spike Recovery
Average File Location: 325 Bldg., Rm 971

Control Data LRB#: BNW 52344

I-129

SUMMARY DATA REPORTS

SST DATA RESULTS FOR CORE 9

Customer No.	I-129 dpm/g
Core 9 Composite	
90-1255-A-1	<33
90-1255-A-2	<32
90-1255-A-3	<33
90-1256-A-1	<35
90-1256-A-2	<33
Composite Water Leach	
90-1257-C-1	<9.5
90-1257-C-2	<12

I-129

ANALYTICAL REPORT CARDS

D08–005

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.

Pacific Northwest Laboratory		ANALYTICAL REPORT	
Customer SST		Date Received 3-26-90	Work Order No. M62042
Serial No	Customer Ident	Constituent	Result
BNW52920 pg 83	BLANK II	I-129 MATE WH 4163 BNW52344 p 49 7-40.17	
Serial Number 104290		Date 3/29/90	Approval

SERIAL NUMBER 104290

3/26/90

5 ml D-H_2O

KI CARRIER = 1.0113 ml

1.308 g KI / 100 ml D-H_2O (BNW 52442, pg 82)

Filter # 2) 0.0270 g
0.0080 g
0.0190 g.

DATA

$$\frac{(\cancel{157}\ 317)(2.65)(1.019)}{(960)(5)} = \cancel{9.83\ E-2}\ 1.78\ E-1\ \frac{dpm}{mL}$$

cell 6-7-90 cell 6-7-90

yield adjusted Blank $(\cancel{157}\ 317)(1.019) = \cancel{160}\ 323$ cfs cell 6-7-90

% yield = 101.6%

(Over)

Pacific Northwest Laboratory		ANALYTICAL REPORT	
Customer SST		Date Received 3-13-90	Work Order No. ~~M260~~ M62042
Serial No	Customer Ident	Constituent	Result VLD 3/26/90
188 -90	110B-C9-T 90-1255-A-1 TK110B-C9 Segment COM Ni FUSION	I-129 7-40.17	< 33 dpm / g wet wt
Serial Number 102743		Date 6-7-90	Approval Cock

N 44163
BNW 52344 p 49
M&TE 360-06-01-018
BNW52920 p. 83

54-1700-177 (05/89)

SERIAL NUMBER 102743

0.5560g + 250ml
3/26/90
5.0622ml sample
K.I carrier = 1.0113ml
1.308g KI/100ml D-H2O (BNW52442, pg 82)

Filter #11) 0.0248g
0.0080g
0.0168g

DATA

Sample cts 278
Blank cts 317
Calc < 135 cts

$$< 135 \frac{(2.65)(1.008)(250)}{(960)(5.0622)\ .5560} < 33 \frac{dpm}{g}$$ /amb 10-26-90

% yield = 89.8%

(Over)

D08-008

Pacific Northwest Laboratory		ANALYTICAL REPORT	
Customer SST		Date Received 3-13-90	Work Order No. ~~M260~~ W62042 3/29/90
Serial No	Customer Ident	Constituent	Result
189 -90	110B-C9-T 90-1255-A-2 TK110B-C9 Segment COM Ni FUSION	I-129 7-40.17 MATE WA44/63 BNW 52344 R. 49	< 32 dpm/g wet wt
Serial Number	102753 3/29/90	Date 6-7-90	Approval Cock

SERIAL NUMBER 102753

0.5749g + 250ml

3/26/90

5.0622 ml SAMPLE

KI CARRIER = 1.0113 ml

1.308 g KI/100 ml D-H_2O (BNW52442, pg 82)

FILTER #12) 0.0238 g
0.0080 g
0.0158 g

DATA

Sample cts 248
Blank cts 37
Calc < using 135

$$< 135 \frac{(2.65)(1.004)(250)}{(960)(5.0622)(.5749)} = < 32 \frac{dpm}{g}$$

omb 10-26-90

% yield = 84.5%

(Over)

54-1700-177 (05/89)

D08-009

Pacific Northwest Laboratory		ANALYTICAL REPORT	
Customer SST		Date Received 3-13-90	Work Order No. ~~M260~~ M62042
Serial No	Customer Ident	Constituent	Result VLD 3/29/90
190 -90 M&TE 360-06-01-01B BNW52920 p. 83 WA44163 p. 49	110B-C9-T 90-1255-A-3 TK110B-C9 Segment COM Ni FUSION	I-129 7-40.17 M&TE WA44163	< 33 dpm / g wet wt
Serial Number 102763 [signature] 3/29/90		Date 6-7-90	Approval COLT

54-1700-177 (05/89)

SERIAL NUMBER 102763

_____ + 250ml

3/26/90

5.0622ml Sample

KI CARRIER = 1.0113 ml

1.308g KI/100ml D-H2O (BNW52442, fig 82)

FILTER #13) 0.0242g
0.0079g
0.0163g

DATA

Sample cts 240

Blank cts 317

Calc < 135

$$< 135)\frac{(2.65)(1.006)(250)}{(960)(5.0622)(\cancel{.5587}\ .5656)} = < 33 \frac{dpm}{g\ wet\ wt}$$

VBMB 10-26-90

COLT 6-7-90

based on average wet wt of samples fused

% yield = 87.1%

(Over)

D08-010

Pacific Northwest Laboratory		ANALYTICAL REPORT	
Customer SST		Date Received 3-13-90	Work Order No. ~~M260~~ M62042
Serial No	Customer Ident	Constituent	Result
1.. .0	110B-C9-B 90-1256-A-1 TK110B-C9 Segment COM Ni FUSION	I-129 7-40.17	<35 ~~<18~~ dpm / g wet wt
M&TE 360-06-01-018 BNW52920 p. 83		M&TE WA44163 BNW52344 p.49	
Serial Number	102773	Date 6-7-90	Approval Coll

SERIAL NUMBER 102773

0.5252g + 250ml

3/26/90

5.0622ml sample

KI carrier = 1.0113ml

1.308g KI / 100ml D-H2O (BNW 52442, 15 82)

Filter #14) 0.0248g
0.0079g
0.0169g

DATA

~~Net Counts 232~~
~~yield adjust x 1.007 = 234~~ Coll 6-7-90

~~- yield adjust Blank = 160~~
~~74~~

Sample cts 232
Blank cts 317
Calc < using 135

$$< \frac{\overset{135}{\cancel{(74)}}(2.65)(250)(1.008)}{(960)(5.0622)(.5252)} = < \frac{\cancel{18}\ \cancel{10}\ \text{Coll}}{\text{Coll}}\ \frac{35\ \text{dpm}}{\text{g wet wt}}$$

Coll 6-7-90

✓ BMB 10-26-90

% yield = 90.3%

(Over)

Pacific Northwest Laboratory		ANALYTICAL REPORT	
Customer SST		Date Received 3-13-90	Work Order No. ~~M860~~ M62042 VLD 3/29/90
Serial No	Customer Ident	Constituent	Result
192 -90	110B-C9-B 90-1256-A-2 TK110B-C9 Segment COM Ni FUSION	I-129 7-40.17	< 33 dpm / g wet wt
M&TE 360-06-01-018 BNW52920 p. 83		M&TE WA 44163 BNW 52344 p. 49	
Serial Number 102783		Date 6-6-90	Approval CO4

Virginia L Dunn 3/29/90

54-1700-177 (05/89)

SERIAL NUMBER 102783

0.5922g + 250ml

3/26/90

5.0622ml sample

KI carrier = 1.0113 ml

1.308g KI / 100ml D-H2O (BNW 52442, pg 82)

Filter #15) 0.0245 g
0.0079 g
0.0166 g

DATA

$$< 142 \frac{(2.65)(250)(1.007)}{(960)(5.0622)(.5922)} = < 32.9 \frac{dpm}{g\ wet\ wt}$$ ✓ OMS 10-26-90

% yield = 88.7%

(Over)

Pacific Northwest Laboratory		ANALYTICAL REPORT	
Customer SST		Date Received 4-6-90	Work Order No. M62042
Serial No	Customer Ident	Constituent	Result
49 -90	110B-C9-AN 90-1257-C-1	129IODINE	< 9.5 d/m g wet wt
	H2OLEACH	7-40.17	
BNW52920 p. 99		MATE WA44163 BNW52344 p 49	
Serial Number	103203 [signature] 4/16-90	Date 6-14-90	Approval COH

SERIAL NUMBER 103203

@ 22.5°C ρH2O = .99676

2.0799g + 202.0588g. H2O = 202.7156 ml

5.0785ml sample

KI carrier = 1.0076 ml

(1.308 g KI / 100 ml D-H2O BNW52442, pg 82)

0.0264g
0.0081g
0.0183g

DATA

$< 106.7 + 1.96(.26)106.7 = < 161.07$

$$\frac{161.07}{760}(2.895)\frac{(202.7156)(1.015)}{\cancel{(202.7156)}(2.0799)(5.0785)} = < 9.46$$

COH 6-14-90

BMB 10-26-90

% yield = 98.2%

(Over)

D08-013

Pacific Northwest Laboratory		ANALYTICAL REPORT	
Customer SST		Date Received 4-6-90	Work Order No. M62042
Serial No	Customer Ident	Constituent	Result
250 -90	110B-C9-AN 90-1257-C-2	129IODINE	<12 d/m/g wet wt
	H2OLEACH	7-40.17	
BNW52920 p. 99		MATE WH44163 BNW52344 p.49	
Serial Number 103213	Virginia L. Dunn 4-16-90	Date 6-14-90	Approval CoH

54-1700-177 (05/89)

SERIAL NUMBER 103213

@ 22.5°C ρ_{H_2O} = .99676

2.0215g. + 199.0698g. H2O = 199.7169

5.0785ml sample

KI carrier = 1.0076ml
(1.308g. KI / 100ml D-H2O)
BNW52442, pg 82

0.0270 g.
0.0082 g.
0.0188 g.

DATA

$< 126.67 \; \cancel{(2.895)}_{CoH} + (1.96)(.26)\; 126.67 = 191.22$ cts

$< \left(\frac{191.22}{960}\right)(2.895)\frac{(199.7169)(1.018)}{(2.0215)\;5.0785} = < 11.53 \; \frac{d/m}{g}$ ✓ BMB 10-26-90

% yield = 100.9%

(Over)

GW3558 BACKGROUND GE(LI) WELL 16 HR 03/30/90 1154 PST

Anne E Kozelsky

ACQGRP	1	ADC	2	02-APR-90	08:20:14
KEV	1.000	ZERO	0.000	30-MAR-90	11:53:59
TOTAL	0		0		
LIVE	16:00:00		16:00:00		
REAL	00:00:00		16:00:00		

GW3558 16HR BKGN 3/30/90 1154

1 - 101:	12182	6779	5403
1 - 2048:	51525	46405	5120
24 - 37:	2192	0	2261
27 - 35:	1372	22	1350
56 - 64:	1151	0	1255
86 - 89:	481	29	452
500 - 550:	1774	652	1122
656 - 667:	433	241	192
1326 - 1338:	79	1	78

1:	0	0	0	0	0	0	0	0	0	0
11:	8	31	73	94	89	74	230	235	211	224
21:	187	193	175	175	181	174	172	166	151	144
31:	174	160	140	137	128	142	148	139	126	131
41:	118	141	116	128	130	173	159	139	131	113
51:	111	118	132	120	100	117	101	114	122	119
61:	126	119	171	162	127	114	118	128	90	91
71:	125	110	111	126	147	139	125	126	113	113
81:	112	122	120	110	148	120	121	134	106	127
91:	107	241	280	186	139	88	101	105	114	99
101:	107	92	76	113	102	104	95	105	111	102
111:	126	97	117	105	109	96	93	113	115	101
121:	112	98	101	100	107	90	89	112	95	100
131:	118	95	100	104	124	91	123	98	102	129
141:	97	102	118	113	111	113	112	97	77	109
151:	85	77	123	103	106	95	99	95	97	104
161:	104	92	89	103	100	90	90	75	95	97
171:	81	89	85	96	78	114	85	92	96	116
181:	86	110	95	106	144	208	152	92	94	86
191:	91	93	83	90	94	92	89	97	88	93
201:	85	75	74	74	103	99	98	84	68	85
211:	76	91	82	80	74	82	85	92	77	85
221:	70	88	99	87	90	82	83	69	85	86
231:	81	82	69	82	69	60	85	118	126	115
241:	71	94	78	62	75	78	58	60	76	64
251:	62	85	79	71	70	71	66	83	49	58
261:	59	69	56	70	66	55	59	58	70	68
271:	69	71	69	66	72	57	45	59	69	63
281:	50	63	70	62	56	60	60	48	52	54
291:	73	57	59	51	54	61	63	46	66	55
301:	57	55	48	55	55	64	66	51	48	57
311:	54	55	51	48	73	46	56	51	47	47
321:	54	60	52	63	65	52	66	53	45	59
331:	51	54	50	46	61	57	59	43	70	62
341:	55	45	41	43	52	52	48	47	42	41
351:	70	49	57	41	49	46	49	39	50	43
361:	33	47	50	37	48	44	50	22	36	32
371:	33	33	42	43	48	29	34	46	44	43
381:	38	39	31	59	39	33	37	37	33	41
391:	44	33	46	36	39	35	42	31	39	28

$1869 - (\frac{12}{4})(637) = -112$

D08-015

401:	41	35	41	26	40	44	38	36	27	23
411:	36	37	35	47	33	41	41	43	33	33
421:	28	29	28	33	44	31	30	25	29	28
431:	34	43	33	30	32	28	35	45	38	28
441:	33	42	27	34	31	27	29	42	32	40
451:	30	23	23	33	33	23	31	25	39	16
461:	39	32	29	37	30	32	35	19	40	24
471:	28	34	40	28	24	27	27	30	33	30
481:	33	28	28	25	38	24	30	24	25	23
491:	36	20	27	26	26	30	24	24	37	20
501:	23	34	26	27	29	26	38	44	71	141
511:	✓185	148	81	48	30	24	33	26	25	25
521:	24	25	27	26	23	18	19	22	21	16
531:	16	28	18	28	27	20	12	17	24	23
541:	17	28	19	22	28	23	25	26	24	24
551:	30	21	26	19	20	24	26	35	29	19
561:	23	26	21	29	21	15	17	10	26	29
571:	30	23	26	18	14	21	29	12	17	24
581:	30	32	29	32	23	20	20	26	16	13
591:	24	25	23	21	18	25	27	18	37	25
601:	21	22	28	21	20	16	24	29	33	26
611:	25	27	28	20	22	26	22	23	19	18
621:	16	17	14	13	29	19	20	14	19	8
631:	16	16	14	16	23	10	15	19	16	19
641:	16	16	12	23	11	17	22	25	17	14
651:	10	✓17	25	14	12	14	26	24	27	39
661:	90	✓96	46	22	17	14	18	19	15	21
671:	17	22	17	29	14	19	8	11	17	23
681:	23	13	20	16	26	18	19	13	16	20
691:	14	20	25	25	25	15	19	22	17	17
701:	18	12	26	20	27	22	20	25	19	22
711:	19	21	20	20	9	11	19	21	8	14
721:	16	11	15	15	15	15	24	15	15	17
731:	13	12	15	16	19	17	17	15	12	13
741:	10	11	17	13	18	11	10	14	16	15
751:	17	18	14	9	11	15	15	17	11	11
761:	16	12	18	9	18	10	19	17	10	26
771:	17	19	15	8	8	18	10	19	13	15
781:	11	13	16	15	16	13	11	14	10	14
791:	18	12	8	12	13	14	13	14	9	14
801:	7	10	23	15	17	15	11	11	12	11
811:	9	5	12	9	9	12	11	16	11	18
821:	7	12	16	11	18	9	7	15	15	9
831:	15	15	14	14	10	10	11	13	12	14
841:	14	16	12	13	18	14	15	15	9	8
851:	8	6	14	15	9	18	10	10	9	15
861:	15	8	5	12	7	15	14	10	12	14
871:	11	13	10	14	9	9	6	18	14	9
881:	9	6	11	8	12	17	10	5	12	6
891:	11	21	12	16	14	9	21	10	14	12
901:	13	13	7	15	7	9	7	12	9	12
911:	18	✓24	15	17	12	14	11	7	19	18
921:	6	7	16	11	5	12	7	15	3	4
931:	8	7	13	13	9	8	9	9	9	9
941:	11	9	7	12	11	11	8	12	7	5
951:	4	10	12	8	11	6	9	8	10	11
961:	14	21	14	9	17	17	14	12	14	7
971:	12	12	12	4	13	8	8	16	12	9
981:	11	✓23	11	12	7	5	13	9	8	12

D08-016

1601:	0	4	5	4	4	2	4	1	2	5
1611:	8	4	4	2	8	3	1	0	10	4
1621:	1	4	6	3	3	3	5	10	2	2
1631:	5	4	4	2	3	3	1	4	6	2
1641:	4	9	6	4	5	1	4	5	1	3
1651:	2	4	7	4	4	2	3	1	5	6
1661:	6	3	6	5	0	6	5	2	4	1
1671:	4	10	2	1	5	2	4	8	5	6
1681:	3	7	3	2	6	2	0	6	4	2
1691:	4	4	4	5	7	3	5	2	3	3
1701:	4	2	3	7	2	3	4	1	3	7
1711:	8	6	5	4	2	1	7	2	3	5
1721:	6	6	2	2	5	5	1	6	3	2
1731:	1	3	4	2	3	2	6	2	1	3
1741:	2	9	3	3	3	2	1	6	5	5
1751:	2	5	1	4	4	2	5	1	4	5
1761:	2	3	4	4	6	8	0	5	5	3
1771:	5	3	5	1	2	2	5	2	2	2
1781:	6	2	4	5	1	1	3	2	6	3
1791:	8	3	0	5	4	4	1	4	1	1
1801:	2	1	5	4	2	3	7	3	1	6
1811:	4	3	5	3	3	2	0	5	6	3
1821:	0	3	3	3	3	4	4	2	2	2
1831:	2	2	6	4	0	3	3	2	2	2
1841:	3	3	5	3	3	2	3	2	1	2
1851:	2	3	4	3	3	5	4	3	1	5
1861:	10	5	5	4	0	4	3	1	2	2
1871:	3	4	0	3	2	3	4	2	6	4
1881:	4	5	1	4	3	6	6	2	3	2
1891:	3	4	1	4	3	2	2	2	5	0
1901:	5	2	6	1	4	6	1	4	1	4
1911:	3	2	5	1	4	3	6	1	3	4
1921:	1	3	1	3	2	1	0	3	3	2
1931:	4	3	4	3	5	1	4	5	1	5
1941:	5	1	4	4	0	1	3	2	3	2
1951:	5	3	0	1	2	1	1	6	4	6
1961:	0	2	3	4	7	4	1	4	3	4
1971:	6	4	1	3	3	2	6	3	3	3
1981:	2	3	5	4	3	2	4	1	0	5
1991:	3	2	5	4	5	5	3	4	2	0
2001:	2	4	4	5	5	3	1	5	0	3
2011:	3	7	1	1	2	3	3	2	4	2
2021:	1	4	2	3	4	2	3	4	6	2
2031:	3	1	3	2	2	2	3	5	3	3
2041:	1	1	5	2	6	4	2	5		

D08-018

GW35[illegible] SST BLANK II I-129 M62042 04/25/90 11254 PST 16 HOUR COUNT

Anne E Kozelisky

ACQGRP	1	ADC	2	26-APR-90	06:34:56
KEV	1.000	ZERO	0.000	25-APR-90	12:54:02
TOTAL	0		0		
LIVE	16:00:00		16:00:00		
REAL	00:00:00		16:00:00		

1 - 101:	12476	8184	4292
1 - 2048:	52316	50268	2048
24 - 37:	2258	151	2107
27 - 35:	1510	124	1386
56 - 64:	1164	0	1228
86 - 89:	479	1	478
500 - 550:	1817	644	1173
656 - 667:	453	225	228
1326 - 1338:	80	2	78

1:	0	0	0	0	0	0	0	0	0	1
11:	13	33	92	138	198	118	226	267	204	211
21:	194	174	166	184	164	154	164	167	160	164
31:	163	208	183	157	144	129	117	133	131	149
41:	131	110	108	142	134	171	151	131	123	139
51:	123	104	120	103	127	114	123	102	123	118
61:	134	132	159	159	133	99	108	104	125	104
71:	128	128	111	110	140	128	145	126	98	122
81:	106	116	133	131	146	127	107	133	112	106
91:	133	236	299	189	115	94	101	112	98	101
101:	85	100	99	97	97	106	119	105	106	116
111:	120	124	117	104	111	91	96	92	91	93
121:	99	101	99	105	105	104	105	95	119	107
131:	118	106	90	106	94	90	97	90	114	99
141:	102	112	112	128	100	115	82	101	107	102
151:	102	86	103	90	88	81	87	83	93	93
161:	107	111	100	124	87	96	99	79	106	106
171:	86	78	97	99	100	98	98	95	94	99
181:	103	106	99	87	162	240	145	93	96	96
191:	93	89	77	90	79	103	100	81	93	101
201:	105	82	104	95	90	91	99	83	64	66
211:	81	96	82	94	72	78	75	81	88	78
221:	84	63	87	93	84	85	85	79	105	70
231:	79	83	84	70	84	97	76	108	113	83
241:	93	74	82	51	63	78	62	77	67	85
251:	85	75	68	69	70	68	76	78	55	72
261:	68	67	55	65	63	70	76	68	58	68
271:	67	71	54	43	63	63	60	57	69	71
281:	62	65	55	59	62	45	58	49	53	58
291:	59	79	67	59	57	64	58	51	54	58
301:	64	52	59	66	62	65	59	56	47	54
311:	55	46	56	46	57	52	62	53	60	57
321:	61	56	65	52	61	42	53	63	52	61
331:	41	42	63	52	52	67	49	66	65	49
341:	56	58	48	58	38	51	50	54	34	53
351:	47	44	52	40	54	38	39	51	57	50
361:	39	40	55	40	36	41	45	39	40	42
371:	40	40	45	46	42	44	43	43	48	43
381:	41	33	43	39	47	53	48	33	33	48

$1828 - \frac{412\,(11)}{5} = 317$

$\sqrt{1828 + 1511}\,)(2.326)$

< 135

D08-019

391:	31	38	49	32	33	48	37	48	43	40
401:	33	39	51	42	47	46	33	25	31	39
411:	36	36	37	41	30	31	31	40	37	31
421:	36	43	37	39	35	31	41	34	36	40
431:	30	31	40	36	35	31	33	34	35	41
441:	33	33	37	33	23	34	37	26	38	40
451:	39	29	26	32	30	44	28	27	42	30
461:	27	36	25	45	27	25	31	32	37	32
471:	40	24	36	31	30	34	27	29	24	31
481:	31	23	26	26	24	27	28	23	35	36
491:	22	26	32	31	25	29	35	25	35	24
501:	18	39	31	27	22	25	21	32	69	130
511:	165	152	102	34	36	28	27	17	23	27
521:	21	25	36	30	29	31	29	28	23	21
531:	24	25	30	24	28	21	18	25	22	31
541:	19	30	21	26	30	33	29	18	19	22
551:	28	20	20	28	28	27	23	34	24	20
561:	22	23	15	27	29	28	21	20	25	36
571:	25	22	25	20	24	21	13	25	26	14
581:	26	31	26	24	34	21	23	31	20	25
591:	26	19	21	15	20	20	14	24	18	21
601:	18	19	20	26	25	19	24	29	24	24
611:	18	16	16	13	23	18	24	21	20	18
621:	28	24	18	13	18	19	14	14	13	16
631:	16	19	14	17	25	23	20	18	18	17
641:	13	14	16	18	12	23	25	15	20	15
651:	16	16	26	15	19	21	23	15	19	37
661:	103	89	65	27	20	17	17	13	12	12
671:	26	19	19	19	23	18	12	11	22	18
681:	13	17	17	17	13	22	23	17	13	18
691:	16	21	17	17	18	20	9	15	15	21
701:	18	14	22	19	22	13	30	27	20	13
711:	16	19	9	19	14	11	23	6	21	11
721:	21	12	15	23	16	24	12	15	15	11
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741:	14	15	18	17	17	13	15	13	14	10
751:	23	17	13	14	16	9	17	12	22	14
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771:	13	10	12	10	22	12	14	15	16	17
781:	15	18	7	12	15	14	11	16	15	13
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871:	12	9	4	6	15	7	13	11	9	13
881:	13	4	13	8	9	12	11	14	13	12
891:	7	7	8	9	10	14	14	9	15	5
901:	6	6	11	15	9	10	10	8	7	22
911:	19	16	12	9	9	13	15	10	12	7
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941:	14	11	9	7	11	5	9	10	5	10
951:	14	7	13	7	13	7	8	7	13	7
961:	5	10	5	16	10	17	11	9	25	19
971:	9	9	13	8	8	11	9	10	17	12
981:	5	11	20	11	8	9	11	8	6	11
991:	8	14	11	8	10	9	6	6	13	13
1001:	12	18	10	5	9	9	6	10	13	8

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961:	5	10	5	16	10	17	11	9	25	19
971:	9	9	13	8	8	11	9	10	17	12
981:	5	11	20	11	8	9	11	8	6	11
991:	8	14	11	8	10	9	6	6	13	13
1001:	12	18	10	5	9	9	6	10	13	8
1011:	7	8	14	10	9	11	7	9	6	12
1021:	15	10	7	6	11	5	8	7	7	11
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1071:	11	11	7	12	13	6	4	7	13	7
1081:	9	8	5	13	8	15	13	4	5	8
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1101:	4	14	6	9	8	15	10	6	12	6
1111:	9	8	6	8	10	6	12	8	4	13
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1171:	9	7	9	13	9	9	7	7	6	10
1181:	10	6	10	6	7	2	3	7	9	7
1191:	6	5	5	9	8	7	9	5	4	3
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1241:	7	4	2	3	10	12	10	5	7	4
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1261:	12	6	8	4	5	5	5	7	8	6
1271:	5	7	10	7	7	9	4	10	13	2
1281:	9	10	7	3	6	3	5	6	6	6
1291:	6	7	12	4	7	6	3	7	5	6
1301:	10	9	6	6	8	5	7	3	5	5
1311:	8	6	8	3	8	6	8	5	5	10
1321:	8	6	6	4	3	6	7	5	6	8
1331:	12	7	7	5	6	4	1	6	10	8
1341:	4	2	5	4	6	7	8	4	6	10
1351:	9	6	5	2	2	5	3	8	5	5
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1371:	6	4	5	3	6	7	3	4	3	6
1381:	4	5	6	5	5	8	6	4	6	6
1391:	9	2	3	6	6	6	6	3	5	4
1401:	7	8	12	9	5	6	8	5	6	2
1411:	2	5	3	6	2	5	2	4	6	4
1421:	6	3	6	5	1	7	4	8	5	6
1431:	4	3	8	6	8	7	3	5	2	8
1441:	3	2	8	5	6	5	4	4	5	5
1451:	2	3	2	3	7	5	5	7	12	15
1461:	18	19	5	5	4	2	5	3	2	5
1471:	7	3	8	5	2	2	7	5	2	3
1481:	3	8	3	0	7	2	1	3	5	3
1491:	4	6	6	6	4	1	5	6	3	3
1501:	2	3	10	7	3	2	4	8	5	4
1511:	6	6	2	6	5	9	2	3	4	6
1521:	6	6	6	2	4	2	4	2	5	6
1531:	6	0	5	11	8	6	3	0	6	6
1541:	4	5	9	3	5	2	3	2	3	2
1551:	1	2	6	8	2	4	5	7	3	2
1561:	6	4	3	4	3	3	4	6	6	0
1571:	3	3	6	2	3	3	4	6	7	6
1581:	5	2	8	5	6	6	3	6	7	6
1591:	2	8	6	4	5	8	3	3	5	6

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1461:	18	19	5	5	4	2	5	3	2	5
1471:	7	3	8	5	2	2	7	5	2	3
1481:	3	8	3	0	7	2	1	3	5	3
1491:	4	6	6	6	4	1	5	6	3	3
1501:	2	3	10	7	3	2	4	8	5	4
1511:	6	6	2	6	6	9	2	3	4	6
1521:	6	6	6	2	4	2	4	2	5	6
1531:	6	0	5	11	8	6	3	0	6	6
1541:	4	5	9	3	5	2	3	2	3	2
1551:	1	2	6	8	2	4	5	7	3	2
1561:	6	4	3	4	3	3	4	6	6	0
1571:	3	3	6	2	3	3	4	6	7	6
1581:	5	2	8	5	6	6	3	6	7	6
1591:	2	8	6	4	5	8	3	3	5	6
1601:	2	4	4	5	6	6	7	4	7	5
1611:	6	8	1	5	3	2	4	7	2	6
1621:	1	6	6	5	5	5	3	4	2	5
1631:	4	1	6	4	2	3	8	5	1	2
1641:	4	3	6	3	4	3	2	3	1	2
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1671:	2	4	3	4	0	3	3	4	6	7
1681:	7	4	7	4	1	2	3	1	5	4
1691:	8	4	4	5	1	4	3	5	0	3
1701:	3	2	4	3	3	5	5	2	3	3
1711:	5	3	5	3	2	6	3	5	4	2
1721:	3	4	4	3	2	5	2	4	4	4
1731:	1	3	10	1	6	4	2	3	3	7
1741:	4	2	2	2	2	3	11	5	2	3
1751:	2	1	6	5	1	4	2	3	1	2
1761:	6	3	2	5	5	5	1	1	4	2
1771:	4	7	2	2	3	0	3	4	3	2
1781:	3	2	5	3	2	3	4	5	7	11
1791:	3	1	3	1	3	3	2	4	4	4
1801:	3	1	1	1	3	4	2	4	3	1
1811:	4	4	3	4	1	3	4	3	4	3
1821:	3	5	2	3	8	5	1	2	2	6
1831:	4	2	5	6	1	3	3	3	2	4
1841:	1	1	8	1	4	2	4	5	5	2
1851:	3	2	2	4	4	4	5	1	6	7
1861:	0	8	3	5	6	5	2	6	2	2
1871:	2	2	5	3	4	4	6	4	2	1
1881:	7	0	6	2	2	2	6	2	2	4
1891:	3	2	2	4	5	2	3	4	5	3
1901:	4	3	0	6	5	3	4	2	2	3
1911:	4	2	1	5	0	2	3	2	7	1
1921:	2	6	4	1	6	2	3	2	5	1
1931:	0	2	1	0	4	2	4	0	1	3
1941:	1	6	3	4	2	6	4	2	3	3
1951:	0	1	2	1	2	2	3	0	4	3
1961:	2	3	3	1	2	3	2	1	6	3
1971:	3	6	0	5	0	1	2	4	1	3
1981:	2	4	5	2	1	6	4	4	4	0
1991:	3	6	2	2	0	5	0	3	1	4
2001:	1	2	4	1	3	3	2	3	3	3
2011:	2	4	1	3	2	2	1	5	1	2
2021:	1	3	2	3	5	1	1	5	3	2
2031:	1	4	6	6	3	4	2	2	3	4
2041:	3	3	2	0	2	1	1	2		

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GW3606 SST 250-90 110B-C9-AN 90-1257-C-2 WATER LEACHED I-129 M62042 05/03/90 0857 PST 16 HOUR COUNT

Anne E Hazlitt

ACCGRP	2	ADC	2	04-MAY-90	07:01:59
KEV	1.000	ZERO	0.000	03-MAY-90	08:57:25
TOTAL	0		0		
LIVE	16:00:00		16:00:00		
REAL	00:00:00		16:00:00		

1 -	101:	11944	7248	4696
1 -	2048:	52026	49978	2048
24 -	37:	2187	101	2086
27 -	35:	1421	175	1246
56 -	64:	1100	0	1278
86 -	89:	464	0	472
500 -	550:	1834	177	1657
653 -	667:	440	248	192

1:	0	0	0	0	0	0	0	0	0	0
11:	8	25	61	86	111	71	163	236	229	219
21:	184	193	187	172	147	182	144	140	184	157
31:	179	186	144	154	133	139	126	157	117	132
41:	146	133	124	122	147	171	164	128	86	99
51:	117	112	96	107	121	122	116	95	130	105
61:	117	107	146	162	135	118	91	98	117	124
71:	103	115	100	124	133	136	151	103	110	114
81:	103	111	119	118	119	120	111	117	116	109
91:	138	277	286	186	128	96	96	100	92	98
101:	93	87	81	92	90	92	93	84	98	89
111:	101	114	101	112	106	97	108	95	112	103
121:	109	81	86	101	109	105	84	96	98	107
131:	112	92	95	113	95	106	88	121	87	100
141:	108	105	128	129	113	102	94	95	107	103
151:	84	124	108	119	116	95	112	118	109	83
161:	91	92	131	105	102	97	103	106	105	87
171:	104	94	85	88	79	103	87	82	96	90
181:	96	97	96	116	161	234	167	103	95	89
191:	91	99	88	88	85	79	93	87	95	96
201:	100	78	95	99	106	87	83	78	82	82
211:	91	82	89	91	81	99	74	72	82	76
221:	79	77	85	79	72	67	79	96	77	78
231:	84	82	88	86	69	83	66	131	132	83
241:	97	76	83	82	84	82	70	75	92	64
251:	76	72	66	72	66	61	69	68	68	71
261:	62	75	60	65	59	62	74	66	80	54
271:	74	68	51	67	56	51	56	72	74	65
281:	49	56	61	63	57	56	66	61	78	56
291:	62	61	66	70	57	87	61	62	53	50
301:	56	68	51	68	58	66	57	48	56	60
311:	65	57	42	64	59	61	66	49	54	47
321:	44	56	52	45	35	63	59	48	47	50
331:	49	54	50	43	45	61	58	63	60	41
341:	54	35	46	45	42	45	54	52	45	64
351:	37	51	65	48	50	49	48	49	42	48
361:	33	50	52	49	41	39	44	45	44	40
371:	42	46	39	41	43	32	36	49	42	45

$1560 - \frac{1}{3}(930) = 126.67$

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281:	49	56	61	63	57	56	66	61	78	56
291:	62	61	66	70	57	87	61	62	53	50
301:	56	68	51	68	58	66	57	48	56	60
311:	65	57	42	64	59	61	66	49	54	47
321:	44	56	52	45	35	63	59	48	47	50
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351:	37	51	65	48	50	49	48	49	42	48
361:	33	50	52	49	41	39	44	45	41	40
371:	42	46	39	41	43	32	36	49	42	45
381:	46	51	32	36	47	31	45	37	36	35
391:	34	44	37	39	42	36	33	38	36	42
401:	41	45	38	39	51	39	43	53	42	33
411:	45	30	30	28	40	42	29	40	49	37
421:	34	26	31	40	41	38	36	41	34	40
431:	30	44	43	23	40	28	40	38	33	25
441:	30	34	33	34	38	33	36	40	34	34
451:	33	38	32	26	40	50	30	31	29	28
461:	25	38	36	34	24	41	25	31	37	34
471:	25	35	36	32	33	26	28	28	20	36
481:	30	30	31	22	39	26	23	28	26	25
491:	27	28	23	30	29	34	24	18	19	35
501:	22	34	24	31	31	23	32	30	66	134
511:	187	166	119	59	30	20	21	20	25	22
521:	19	25	27	18	28	28	18	22	32	16
531:	26	18	28	22	19	18	23	23	22	24
541:	19	28	25	21	27	23	26	25	23	30
551:	21	26	17	28	19	30	25	16	33	24
561:	19	19	25	19	14	33	22	18	23	25
571:	16	19	22	16	24	23	16	23	28	18
581:	15	25	30	31	23	21	21	12	21	18
591:	26	17	23	22	31	26	20	20	30	25
601:	27	16	26	16	21	17	23	23	25	19
611:	27	17	15	18	13	24	23	15	20	24
621:	20	21	21	23	28	17	23	19	25	22
631:	16	28	16	17	19	20	23	18	18	27
641:	19	22	17	21	20	16	18	19	19	11
651:	22	16	18	15	17	11	21	19	19	32
661:	83	100	54	38	24	18	21	17	16	13
671:	16	21	17	17	16	26	17	18	17	17
681:	15	12	15	17	17	20	23	21	18	10
691:	11	19	18	21	8	18	15	24	13	21
701:	20	25	17	19	12	17	22	13	12	15
711:	12	17	8	17	24	14	17	25	11	13
721:	20	16	21	15	18	17	17	15	18	19
731:	19	10	14	14	13	9	11	12	12	11
741:	14	15	23	22	13	13	14	17	9	19
751:	21	13	12	11	14	14	15	15	11	13
761:	11	13	13	20	13	19	13	18	10	10
771:	16	16	25	18	13	15	18	25	18	10
781:	13	17	18	9	18	15	16	16	14	14
791:	12	15	12	18	15	6	13	12	10	12
801:	24	15	18	19	16	11	13	10	15	13
811:	13	9	12	9	17	20	11	12	12	14
821:	18	11	11	10	7	15	13	16	15	12
831:	17	14	15	18	12	17	11	16	16	14
841:	11	15	10	8	11	13	22	7	12	7
851:	14	8	9	12	13	11	11	15	9	12
861:	20	12	9	12	7	11	14	9	14	11
871:	7	19	16	14	13	13	15	10	11	10
881:	12	14	10	10	6	15	17	12	16	15
891:	11	14	14	17	14	13	15	8	13	10
901:	15	14	9	10	10	9	14	12	17	17
911:	14	17	13	17	8	12	7	12	9	18
921:	13	9	13	5	6	11	9	6	13	5
931:	11	15	10	13	6	16	10	13	12	14
941:	13	10	12	15	5	6	9	12	14	[illegible]

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761:	11	13	13	20	13	19	13	18	10	10
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781:	13	17	18	9	18	15	16	16	14	14
791:	12	15	12	18	15	6	13	12	10	12
801:	24	15	18	19	16	11	13	10	15	13
811:	13	9	12	9	17	20	11	12	12	14
821:	18	11	11	10	7	15	13	16	15	12
831:	17	14	15	18	12	17	11	16	16	14
841:	11	15	10	8	11	13	22	7	12	7
851:	14	8	9	12	13	11	11	15	9	12
861:	20	12	9	12	7	13	14	9	14	11
871:	7	19	16	14	13	13	15	10	11	10
881:	12	14	10	10	6	15	17	12	16	15
891:	11	14	14	17	14	13	15	8	13	10
901:	15	14	9	10	10	9	14	12	17	17
911:	14	17	13	17	8	12	7	12	9	18
921:	13	9	13	5	6	11	9	6	13	5
931:	11	15	10	13	6	16	10	13	12	14
941:	13	10	12	15	5	6	9	12	14	7
951:	11	11	10	10	8	11	8	9	11	9
961:	10	12	14	9	11	11	8	13	19	14
971:	12	15	11	20	10	6	5	5	3	5
981:	12	13	10	16	9	6	7	7	7	6
991:	15	2	17	18	3	8	10	11	5	9
1001:	17	18	13	11	4	11	14	11	4	9
1011:	15	11	7	5	12	19	8	9	5	12
1021:	11	7	9	12	6	11	16	5	10	10
1031:	12	4	9	12	6	12	12	16	6	11
1041:	6	12	8	12	10	9	14	15	13	6
1051:	9	11	7	8	11	10	7	7	11	8
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1071:	19	10	10	10	7	5	13	7	10	9
1081:	6	6	3	14	6	9	4	10	10	5
1091:	9	8	6	6	11	4	10	13	4	4
1101:	8	9	9	8	11	7	10	13	9	6
1111:	6	7	5	4	4	8	10	8	6	7
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1141:	11	7	5	5	14	12	11	7	6	9
1151:	8	7	5	9	4	10	7	3	6	6
1161:	14	6	8	10	8	13	4	9	7	5
1171:	10	4	8	8	5	7	6	9	3	6
1181:	9	4	6	6	5	7	11	11	10	7
1191:	10	7	9	4	14	8	3	7	8	11
1201:	5	7	5	8	7	11	6	6	7	11
1211:	8	9	13	8	8	9	11	8	14	7
1221:	11	2	8	10	6	5	12	7	4	6
1231:	18	1	6	9	4	10	6	10	8	7
1241:	9	8	7	3	7	4	4	6	6	5
1251:	4	5	8	6	7	7	4	5	8	4
1261:	3	4	9	7	9	3	5	7	4	8
1271:	8	6	5	9	7	9	5	5	3	7
1281:	11	6	8	12	11	4	8	6	3	6
1291:	9	6	10	3	3	8	7	6	6	4
1301:	15	3	4	8	4	8	5	8	7	8
1311:	10	3	12	4	9	6	9	3	5	6
1321:	10	7	9	0	6	3	5	4	8	7
1331:	8	8	6	7	5	7	6	5	8	8
1341:	2	4	4	9	2	5	4	4	5	5
1351:	6	6	3	7	8	6	9	5	6	5
1361:	7	6	6	5	4	4	4	1	9	4
1371:	5	10	7	6	10	4	5	4	6	8
1381:	7	7	6	3	5	6	5	5	6	6
1391:	7	5	7	3	4	7	4	7	4	10
1401:	7	6	7	2	5	6	5	9	6	4
1411:	4	4	6	3	4	10	3	4	4	2
1421:	2	4	7	7	4	6	2	8	3	8
1431:	8	5	3	5	4	5	4	2	7	4

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1391:	7	5	7	3	[illegible]	7	4	7	4	10
1401:	7	6	7	2	5	6	5	9	6	4
1411:	4	4	6	3	4	10	3	4	4	2
1421:	2	4	7	7	4	6	2	8	3	8
1431:	8	5	3	5	4	5	4	2	7	4
1441:	3	8	6	8	10	10	4	4	6	4
1451:	5	3	7	4	2	8	3	3	3	14
1461:	18	19	6	5	5	9	3	3	5	2
1471:	5	3	4	5	4	11	9	6	4	1
1481:	1	8	4	8	8	3	3	3	7	2
1491:	4	4	4	4	5	5	10	5	6	4
1501:	4	2	5	4	4	4	3	3	3	4
1511:	6	7	3	4	6	3	5	7	9	3
1521:	4	5	8	4	4	6	4	7	5	4
1531:	8	2	6	8	5	11	3	2	4	3
1541:	9	10	7	5	7	7	6	6	4	6
1551:	7	4	5	4	7	3	2	5	2	4
1561:	1	5	6	7	3	5	1	1	2	5
1571:	3	3	4	4	4	4	5	7	2	5
1581:	1	6	4	4	8	3	6	4	4	5
1591:	5	5	5	9	3	6	1	1	4	7
1601:	5	7	3	6	4	3	2	5	4	6
1611:	4	3	6	3	4	6	5	3	7	4
1621:	6	5	3	4	3	5	5	3	6	4
1631:	5	2	5	3	8	3	1	5	9	2
1641:	2	3	4	2	3	5	6	7	3	2
1651:	4	2	4	3	9	3	2	4	2	6
1661:	4	3	7	4	3	4	9	0	6	2
1671:	1	2	3	3	3	2	6	2	7	2
1681:	4	5	3	4	3	5	3	1	4	2
1691:	3	5	1	3	1	5	7	3	4	3
1701:	5	3	6	5	2	2	6	4	3	4
1711:	3	3	2	4	3	2	6	6	6	2
1721:	1	2	4	6	1	0	1	2	2	2
1731:	4	4	2	5	2	4	0	3	5	1
1741:	1	4	8	4	5	5	4	4	1	1
1751:	5	6	5	2	5	7	2	1	1	3
1761:	4	3	2	7	7	2	3	3	1	3
1771:	3	4	2	1	5	5	1	7	4	2
1781:	3	3	5	3	6	2	3	6	4	6
1791:	5	2	2	5	3	6	2	1	6	0
1801:	1	6	6	2	1	7	1	5	3	1
1811:	5	6	3	4	3	3	4	2	4	4
1821:	2	5	4	8	2	4	4	8	5	1
1831:	4	1	10	3	8	7	1	4	4	2
1841:	0	0	2	2	1	1	1	8	3	6
1851:	5	2	2	1	3	1	9	1	2	5
1861:	3	3	3	2	2	0	5	1	4	6
1871:	4	4	4	2	4	0	5	4	3	3
1881:	1	6	3	1	2	3	4	4	4	0
1891:	5	2	4	3	4	1	5	4	2	3
1901:	4	5	2	5	5	4	2	2	3	2
1911:	2	3	2	0	2	1	3	3	6	3
1921:	5	3	3	5	2	5	2	1	4	6
1931:	4	5	3	2	1	5	4	4	2	3
1941:	4	3	1	2	7	5	0	1	4	3
1951:	2	1	2	3	3	5	2	3	2	0
1961:	5	4	3	0	4	3	5	5	2	5
1971:	1	4	7	2	6	2	5	1	0	5
1981:	5	4	3	4	4	1	1	4	3	4
1991:	5	3	0	3	5	6	2	7	2	4
2001:	4	1	4	5	4	0	1	5	3	1
2011:	4	0	3	4	6	2	3	3	5	4
2021:	2	5	4	2	3	4	0	2	1	0
2031:	3	3	2	2	5	0	6	3	2	1
2041:	3	3	2	2	1	1	3	2		

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GW3621 SST 249-90 110B-C9-AN 90-1257-C-1 WATER LEACHED I-129 M62042 05/02/90 0933 PST 16 HOUR COUNT

Anne E Lozeleskey

ACOGRP	2	ADC	2	03-MAY-90	06:35:07
KEV	1.000	ZERO	0.000	02-MAY-90	09:33:33
TOTAL	0		0		
LIVE	16:00:00		16:00:00		
REAL	00:00:00		16:00:00		

No peaks after bkgn subtracted.

1 - 101:	12174	7882	4292
1 - 2048:	52964	49892	3072
24 - 37:	2328	123	2205
27 - 35:	1536	2	1534
56 - 64:	1031	82	949
86 - 89:	434	0	448
500 - 550:	1890	564	1326
656 - 667:	480	240	240
1326 - 1338:	78	0	104

1:	0	0	0	0	0	0	0	0	0	0
11:	10	45	80	132	159	131	192	261	214	205
21:	174	168	175	159	167	166	183	178	163	184
31:	172	173	172	153	158	144	156	150	140	144
41:	118	133	134	119	150	154	150	119	97	113
51:	97	108	108	104	102	85	115	103	108	113
61:	108	128	145	126	116	109	97	98	112	114
71:	108	124	111	126	151	139	133	132	118	95
81:	92	131	97	124	153	124	91	119	100	136
91:	135	213	311	176	106	116	93	111	125	108
101:	85	88	112	93	96	101	108	88	97	114
111:	103	90	97	85	126	104	97	90	108	93
121:	96	112	83	100	93	107	102	109	107	104
131:	103	112	94	106	119	111	107	84	111	91
141:	96	118	112	121	130	99	89	91	95	80
151:	105	102	96	101	115	102	124	111	94	103
161:	104	104	99	107	97	104	102	105	110	95
171:	106	111	101	95	116	108	104	94	105	96
181:	104	82	98	101	168	234	176	94	103	109
191:	84	92	96	96	78	91	97	94	96	87
201:	79	96	84	85	94	90	94	70	86	82
211:	83	70	89	95	75	95	85	81	91	95
221:	88	81	56	76	82	76	78	93	69	78
231:	76	58	68	74	73	81	89	86	165	97
241:	74	78	76	74	78	79	75	68	72	86
251:	55	73	70	69	61	61	87	65	71	71
261:	71	74	57	66	54	59	62	71	71	58
271:	59	75	62	78	59	66	56	69	70	69
281:	64	59	74	66	59	75	54	56	48	52
291:	54	71	54	53	58	72	58	68	56	63
301:	56	59	55	52	70	62	53	61	57	58
311:	80	55	38	49	60	63	54	67	54	58
321:	51	51	52	58	54	62	75	43	60	54
331:	49	57	53	55	62	57	53	51	54	57
341:	45	46	44	46	54	52	53	47	54	50
351:	43	43	45	38	47	48	39	42	62	60
361:	36	40	45	40	37	41	49	43	31	32
371:	31	53	40	55	45	46	64	41	43	52
381:	35	45	44	45	53	43	43	35	41	27

$1680 - \frac{10}{3}(472) = 106.67$

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										58
								69	70	69
						75	54	56	48	52
					58	72	58	68	56	63
	56	59	55	52	70	62	53	61	57	58
311:	80	55	38	49	60	63	54	✓67	54	58
321:	51	51	52	58	54	62	✓75	43	60	54
331:	49	57	53	55	62	57	53	51	54	57
341:	45	46	44	46	54	52	53	47	54	50
351:	43	43	45	38	47	48	39	42	62	✓60
361:	36	40	45	40	37	41	49	43	31	32
371:	31	53	40	55	45	46	✓64	41	43	52
381:	35	45	46	45	53	43	43	35	41	27
391:	42	49	34	35	45	44	39	24	40	44
401:	36	37	35	32	33	36	20	48	35	48
411:	35	44	41	36	32	37	39	48	37	39
421:	32	40	38	29	32	37	34	33	23	48
431:	39	33	38	37	30	28	38	43	36	26
441:	36	33	41	29	28	35	32	29	36	41
451:	37	33	42	23	37	24	31	44	29	40
461:	33	41	35	34	36	28	37	29	28	27
471:	34	30	25	27	38	41	33	37	41	23
481:	25	27	31	27	34	28	24	23	31	23
491:	21	28	30	24	25	35	34	27	29	31
501:	24	36	27	25	22	24	32	48	56	120
511:	✓191	174	106	54	34	36	26	21	25	24
521:	27	29	21	28	29	28	23	21	30	24
531:	23	21	27	20	19	24	27	32	26	28
541:	30	23	26	28	19	23	20	26	31	21
551:	23	13	26	16	20	33	18	29	25	25
561:	26	24	25	25	14	27	23	26	24	24
571:	22	22	17	15	19	16	14	29	25	15
581:	22	26	26	25	20	18	23	20	22	17
591:	24	26	16	12	27	24	22	28	16	28
601:	25	25	21	17	20	23	21	24	22	28
611:	15	21	19	16	26	19	25	21	19	21
621:	22	20	18	22	17	14	22	18	18	17
631:	19	12	16	20	17	19	23	15	28	22
641:	16	19	20	17	12	23	12	23	14	27
651:	21	✓26	22	16	13	20	18	16	19	39
661:	89	✓116	73	28	21	21	20	19	22	18
671:	15	16	17	9	12	17	25	19	19	16
681:	20	19	24	19	23	14	17	15	13	16
691:	19	13	18	16	13	18	21	21	21	22
701:	21	13	19	21	20	16	16	22	16	14
711:	16	10	19	17	14	13	22	19	10	12
721:	14	17	20	8	12	23	18	25	16	11
731:	14	14	16	15	12	12	18	19	12	9
741:	17	20	14	15	17	18	13	17	22	11
751:	18	20	14	8	14	16	21	18	12	13
761:	14	10	11	17	20	14	20	16	17	16
771:	15	14	9	17	12	20	12	15	14	15
781:	10	12	14	14	16	18	24	13	11	7
791:	14	22	14	16	15	6	13	19	13	15
801:	15	19	21	13	14	17	15	19	12	7
811:	17	11	11	14	23	19	11	20	15	14
821:	20	18	20	14	12	22	16	8	11	6
831:	9	12	14	15	16	16	13	27	13	10
841:	6	17	15	10	11	18	12	8	11	12
851:	16	7	7	13	6	15	18	9	19	14
861:	16	9	9	14	17	12	6	13	11	11
871:	14	8	8	13	11	12	20	13	15	12
881:	18	20	16	15	13	8	12	10	14	17
891:	16	12	15	14	18	14	4	11	13	9
901:	14	12	11	11	9	26	14	14	15	14
911:	14	18	10	8	7	7	11	10	8	12

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6911	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	14	16	22	14	14
7211	16	10	19	17	14	13	22	19	10	12
7211	14	17	20	8	12	23	18	25	16	11
7411	14	14	16	15	12	12	18	19	12	9
7411	17	20	14	15	17	18	13	17	22	11
7511	18	20	14	8	14	16	21	18	12	13
7611	14	10	11	17	20	14	20	14	17	16
7711	15	14	9	17	12	20	12	15	14	15
7811	10	12	14	14	16	18	24	13	11	7
7911	14	22	14	16	15	6	13	19	13	15
8011	15	19	21	13	14	17	15	19	12	7
8111	17	11	11	14	23	19	11	20	15	14
8211	20	18	20	14	12	22	16	8	11	6
8311	9	12	14	15	16	16	13	27	13	10
8411	6	17	15	10	11	18	12	8	11	12
8511	16	7	7	13	6	15	19	9	19	16
8611	16	9	9	14	17	12	6	13	11	11
8711	14	8	8	13	11	12	20	13	15	12
8811	18	20	16	15	13	8	12	10	14	17
8911	16	12	15	14	18	14	4	11	13	9
9011	14	12	11	11	9	26	14	14	15	14
9111	14	18	10	8	7	7	11	10	8	12
9211	8	8	10	11	17	12	15	13	17	8
9311	11	8	10	16	9	8	10	11	11	11
9411	11	11	17	13	15	7	6	10	15	16
9511	16	10	7	15	9	5	6	15	7	8
9611	13	11	8	8	9	13	10	12	16	19
9711	7	9	11	16	7	6	10	14	18	13
9811	11	5	13	13	15	23	13	4	6	9
9911	11	9	2	10	14	5	15	11	11	12
10011	23	18	15	12	7	9	13	8	16	14
10111	8	14	9	13	9	12	5	11	10	14
10211	9	11	8	9	10	9	9	12	8	11
10311	11	9	11	8	11	7	12	5	8	9
10411	6	8	9	5	12	8	8	19	7	11
10511	5	8	11	6	11	8	6	7	7	13
10611	7	13	6	11	9	15	9	4	5	9
10711	12	13	7	5	12	9	8	12	7	3
10811	7	7	6	13	9	7	12	11	4	5
10911	9	7	12	7	10	15	9	10	12	6
11011	10	8	11	8	12	9	10	4	14	6
11111	15	7	12	12	7	11	6	8	8	4
11211	11	5	14	3	11	8	10	6	6	11
11311	7	8	11	11	11	8	14	9	9	5
11411	10	11	8	12	10	6	6	12	5	7
11511	11	9	10	3	5	7	14	9	4	9
11611	8	6	10	8	9	7	9	12	10	12
11711	9	10	9	6	7	7	11	9	10	7
11811	8	10	6	13	3	13	5	8	9	2
11911	6	9	8	6	7	13	4	12	5	9
12011	7	9	5	11	5	8	6	8	11	8
12111	5	12	5	9	13	8	9	8	7	8
12211	6	9	5	4	6	7	3	11	8	7
12311	7	9	6	10	8	12	10	9	5	8
12411	10	11	12	4	4	13	6	2	3	4
12511	5	3	10	9	8	6	8	7	6	6
12611	8	5	5	5	5	6	5	11	6	7
12711	12	8	7	6	13	7	6	7	12	6
12811	8	10	7	5	9	7	7	4	6	4
12911	3	9	7	4	5	7	3	8	7	7
13011	8	2	5	6	6	10	9	7	5	10
13111	6	5	8	12	6	4	9	9	5	2
13211	10	4	10	10	7	8	7	8	7	8

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1301:	8	2	5	6	6	10	9	7	5	10
1311:	6	5	8	12	6	4	9	9	5	2
1321:	10	6	10	10	3	9	3	8	7	9
1331:	2	4	6	9	6	3	5	7	7	3
1341:	5	7	7	7	3	8	10	2	5	9
1351:	5	7	7	6	8	3	7	4	9	9
1361:	6	7	10	5	10	6	1	12	7	1
1371:	8	6	9	3	1	5	9	7	7	4
1381:	5	10	3	5	7	8	7	7	6	8
1391:	5	4	9	2	5	5	7	4	2	4
1401:	7	7	9	4	4	10	4	3	10	8
1411:	2	5	6	3	0	10	7	6	4	7
1421:	8	11	6	11	4	8	8	6	3	6
1431:	6	8	4	14	2	8	5	7	3	1
1441:	2	5	6	2	7	4	2	6	4	4
1451:	7	5	8	8	5	8	6	8	5	20
1461:	✓ 25	16	12	5	1	5	4	3	3	5
1471:	6	9	7	3	6	2	7	7	6	6
1481:	3	7	7	5	3	4	6	6	3	4
1491:	3	2	7	5	5	2	13	5	2	8
1501:	5	3	8	5	2	3	3	3	7	6
1511:	6	5	2	6	5	4	2	6	2	7
1521:	5	5	6	7	3	1	2	4	6	7
1531:	6	10	6	3	4	2	3	5	4	4
1541:	5	6	1	4	6	7	7	6	3	3
1551:	5	4	8	2	5	8	5	7	11	4
1561:	6	7	5	3	2	5	0	5	2	6
1571:	10	3	6	3	4	4	9	3	7	8
1581:	6	3	5	2	9	5	8	2	7	1
1591:	3	3	7	5	3	6	5	5	4	4
1601:	3	2	3	6	8	5	7	3	5	4
1611:	4	7	3	4	1	6	5	8	4	6
1621:	6	2	5	5	5	4	3	2	3	4
1631:	5	6	7	5	4	2	1	5	5	3
1641:	1	3	8	5	2	6	3	3	4	1
1651:	4	4	7	7	1	9	3	3	2	3
1661:	5	3	6	4	0	2	5	4	5	3
1671:	2	6	3	8	5	6	6	3	4	2
1681:	5	5	2	3	4	4	4	4	6	4
1691:	4	1	6	6	5	4	5	3	2	4
1701:	2	3	3	5	6	6	3	4	4	4
1711:	2	3	5	3	3	3	3	1	5	0
1721:	4	6	2	1	4	4	2	3	4	7
1731:	9	5	5	4	3	3	0	6	4	3
1741:	0	7	5	2	2	4	4	5	1	1
1751:	4	2	4	1	4	3	5	3	4	1
1761:	2	2	2	7	3	8	5	2	3	3
1771:	4	6	3	2	1	4	3	6	4	6
1781:	5	7	5	4	4	3	4	4	1	4
1791:	0	2	1	4	3	3	3	7	2	4
1801:	5	7	2	3	2	3	4	3	4	5
1811:	7	2	5	6	2	4	4	5	3	1
1821:	4	4	8	6	5	6	3	5	3	0
1831:	2	7	3	3	0	3	5	2	3	2
1841:	5	3	4	5	1	7	8	5	6	2
1851:	2	1	5	0	3	2	7	0	4	2
1861:	3	1	4	5	1	3	2	8	4	4
1871:	6	4	4	6	3	1	4	3	2	5
1881:	4	1	5	0	1	4	2	2	2	2
1891:	4	3	4	10	4	3	2	6	3	5

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1901:	3	5	6	2	1	4	3	2	1	7
1911:	2	2	4	2	2	3	4	3	3	3
1921:	2	3	4	3	2	3	4	5	3	0
1931:	0	4	2	3	3	4	3	3	3	0
1941:	4	1	2	1	3	1	1	4	2	4
1951:	4	3	4	1	3	2	3	8	3	2
1961:	1	6	6	2	3	2	4	3	4	5
1971:	5	6	1	5	2	4	2	4	2	4
1981:	4	2	2	4	2	4	2	3	4	0
1991:	6	3	7	2	4	2	1	4	3	3
2001:	5	2	0	2	2	3	4	1	2	3
2011:	3	4	2	4	0	4	5	1	3	1
2021:	2	1	4	1	1	3	4	4	3	4
2031:	1	4	0	3	5	6	2	4	6	3
2041:	2	1	0	1	2	4	3	3		

D08-031

GW3589 SST 192-90 90-1256-A-2 110B-C9-B TK110B-C9 SEGMENT COM NICKEL FUSION 16 HOUR COUNT 04/23/90 0843 PST

Anne Elizabeth

ACQGRP	1	ADC	2	24-APR-90	06:50:14
KEV	1.000	ZERO	0.000	23-APR-90	08:43:00
TOTAL	0		0		
LIVE	16:00:00		16:00:00		
REAL	00:00:00		16:00:00		

1 -	101:	12470	7723	4747
1 -	2048:	52994	47874	5120
24 -	37:	2268	63	2205
27 -	35:	1467	198	1269
56 -	64:	1142	0	1161
86 -	89:	519	0	528
500 -	550:	1855	835	1020
656 -	667:	514	268	246
1326 -	1338:	94	0	123

1:	0	0	0	0	0	0	0	0	0	1
11:	7	27	81	165	153	89	178	252	244	194
21:	212	209	189	174	173	173	155	165	161	169
31:	156	207	166	161	127	140	141	138	135	118
41:	89	109	139	113	143	179	156	150	113	115
51:	111	136	133	133	133	103	93	134	118	117
61:	104	140	178	155	146	100	98	101	108	103
71:	99	116	125	119	138	109	140	131	119	114
81:	105	93	140	139	123	144	123	132	120	115
91:	132	247	267	195	107	97	106	128	127	116
101:	94	98	102	108	90	105	100	116	116	111
111:	82	94	109	96	82	118	97	99	109	89
121:	110	99	119	110	105	104	106	88	122	109
131:	101	111	98	101	124	115	120	103	105	109
141:	111	79	114	119	135	125	102	91	83	101
151:	113	98	102	106	103	105	84	92	83	112
161:	124	100	92	98	110	105	111	104	95	91
171:	87	102	109	86	119	96	106	86	105	103
181:	89	99	82	117	175	195	152	111	103	87
191:	82	111	86	98	93	91	87	91	92	91
201:	75	98	81	77	97	107	85	87	71	88
211:	85	76	67	68	71	102	72	85	104	70
221:	84	92	90	83	102	63	83	84	62	72
231:	83	80	87	76	71	81	79	105	125	87
241:	80	73	76	81	89	58	67	69	62	54
251:	74	69	61	69	69	70	75	75	83	89
261:	64	66	76	62	56	87	69	72	83	77
271:	67	81	65	64	67	81	65	61	62	66
281:	67	57	56	68	48	51	55	78	67	54
291:	68	57	63	66	62	72	62	57	48	64
301:	59	58	55	50	49	51	58	64	50	72
311:	59	53	52	47	67	68	41	55	56	44
321:	38	60	50	51	50	57	55	66	53	51
331:	54	48	62	49	57	38	66	56	74	57
341:	56	37	44	48	48	51	40	36	48	33
351:	37	45	61	32	37	44	41	36	57	36
361:	43	35	46	50	47	41	3[illegible]	38	61	37
								46	44	44

$1780 - (\frac{11}{4})(626) = 56.5$

< 142

D08-032

361:	43	35	46	50	47	41	33	38	61	37
371:	40	34	36	46	50	50	36	46	44	44
381:	42	50	44	39	42	52	34	39	39	39
391:	30	38	38	35	39	37	36	42	40	43
401:	44	29	43	34	42	30	45	50	37	37
411:	36	30	47	40	37	38	41	36	44	30
421:	32	37	31	39	34	33	37	40	21	30
431:	41	37	37	38	43	26	37	41	30	32
441:	26	26	30	33	38	34	38	23	32	30
451:	28	30	32	36	37	41	42	38	27	27
461:	28	27	37	34	26	35	37	32	32	27
471:	41	27	27	38	24	35	29	30	33	28
481:	28	25	26	35	31	23	38	29	34	34
491:	32	27	22	26	31	33	22	28	30	22
501:	25	28	32	32	21	26	32	43	89	139
511:	173	138	107	41	48	30	34	31	25	26
521:	22	33	25	29	22	19	26	26	21	29
531:	25	24	27	18	20	31	26	16	30	25
541:	27	26	13	21	32	18	21	20	23	18
551:	29	22	25	28	18	18	18	26	28	35
561:	21	24	20	22	19	26	20	21	16	26
571:	30	23	23	16	20	21	14	19	18	23
581:	21	26	21	29	23	17	17	16	20	25
591:	14	26	15	14	20	20	16	16	23	22
601:	21	25	24	19	20	15	20	18	23	25
611:	17	18	17	26	16	16	18	21	18	22
621:	16	12	19	27	21	16	17	24	17	26
631:	28	13	19	17	21	15	22	18	14	19
641:	19	17	20	12	19	24	14	16	19	19
651:	19	23	20	12	19	18	16	14	10	55
661:	98	129	76	28	28	19	23	14	17	22
671:	22	15	18	15	27	21	23	11	13	18
681:	16	16	19	15	13	18	13	19	10	15
691:	8	18	19	15	22	12	19	22	15	21
701:	18	20	16	19	21	26	18	11	22	23
711:	9	17	17	14	13	16	17	17	15	14
721:	6	12	16	19	15	16	19	15	15	18
731:	20	15	23	15	13	17	14	15	24	16
741:	21	20	11	12	14	14	13	19	14	15
751:	17	15	9	14	13	22	18	11	12	16
761:	16	11	6	14	18	14	18	19	17	15
771:	12	15	15	19	13	20	11	14	16	11
781:	15	12	10	16	15	10	19	9	21	13
791:	12	14	13	20	12	17	13	16	9	22
801:	12	15	14	9	15	12	16	10	15	15
811:	14	11	11	16	13	11	15	16	7	13
821:	18	11	17	13	15	10	12	13	14	22
831:	18	12	21	12	15	14	17	17	22	17
841:	18	11	11	16	13	12	15	14	19	20
851:	10	15	16	12	8	5	19	14	15	15
861:	22	11	13	10	9	12	13	12	10	9
871:	9	8	14	10	12	15	14	7	9	13
881:	7	14	13	6	16	10	12	14	14	8
891:	6	11	16	9	13	14	13	7	7	15
901:	13	18	16	14	15	9	11	14	12	17
911:	23	14	11	8	8	15	11	11	10	10
921:	12	14	5	13	8	15	13	9	10	17
931:	6	9	11	9	12	10	10	14	11	6

D08-033

9411	7	11	12	8	17	8	11	11	17	10
9511	12	14	12	12	21	9	17	8	8	8
9611	7	8	11	11	10	13	11	18	14	15
9711	19	12	13	12	12	10	15	11	12	10
9811	11	6	8	7	4	22	9	12	9	8
9911	13	15	6	9	10	11	9	8	13	10
10011	17	18	17	13	7	17	9	8	13	9
10111	6	11	7	12	13	7	13	11	9	6
10211	11	8	16	7	7	10	13	9	4	11
10311	10	12	16	13	7	11	7	13	10	6
10411	7	11	15	15	14	14	8	7	6	12
10511	14	8	15	12	14	8	12	7	13	10
10611	7	7	8	11	10	6	4	6	19	9
10711	14	11	8	8	13	6	7	7	9	14
10811	10	12	11	9	7	7	3	7	13	7
10911	9	6	11	9	9	9	3	10	6	12
11011	7	7	7	9	9	4	5	8	8	10
11111	11	11	9	4	9	10	7	6	5	6
11211	12	5	11	16	5	13	9	10	11	13
11311	8	9	6	5	8	10	6	9	10	4
11411	9	6	7	9	5	5	11	8	8	6
11511	7	14	5	4	11	11	10	9	4	2
11611	10	6	6	9	7	11	7	7	10	4
11711	9	8	5	6	9	9	10	10	15	10
11811	9	10	9	4	6	6	4	5	6	8
11911	13	4	10	7	5	8	6	15	9	12
12011	10	11	10	7	9	9	5	6	7	5
12111	3	6	9	5	10	8	8	7	9	8
12211	6	1	7	6	7	6	8	5	4	10
12311	8	8	6	6	7	12	15	11	9	13
12411	7	6	7	14	13	4	9	3	8	10
12511	5	3	15	8	10	9	1	1	4	7
12611	7	3	10	9	9	5	7	11	6	4
12711	7	7	5	12	8	9	6	5	7	3
12811	4	5	8	3	4	7	2	9	9	5
12911	5	4	9	7	4	8	3	9	10	6
13011	3	5	6	3	8	4	5	8	12	9
13111	7	2	12	4	5	5	9	4	2	11
13211	2	6	14	9	5	8	5	8	6	8
13311	8	11	5	8	5	4	7	11	2	3
13411	8	5	2	10	1	2	5	10	11	2
13511	7	5	6	9	8	10	5	2	7	6
13611	7	5	10	2	5	6	6	2	7	8
13711	7	3	8	8	7	6	5	6	8	11
13811	3	3	4	5	5	3	3	4	3	5
13911	7	7	9	8	7	6	8	3	4	3
14011	3	4	6	10	10	6	6	5	1	9
14111	7	4	6	8	3	4	3	3	10	5
14211	5	3	5	6	5	8	8	4	7	6
14311	6	3	9	3	4	2	2	7	2	5
14411	9	5	6	2	7	6	10	4	4	2
14511	6	6	7	8	2	3	7	4	13	14
14611	20	15	6	2	4	5	4	4	4	4
14711	3	7	8	3	7	8	6	8	5	6
14811	3	4	1	6	2	7	7	5	4	5
14911	6	10	5	6	3	5	3	4	4	11
15011	9	6	4	1	6	3	3	0	6	5
15111	5	5	6	3	8	7	4	3	4	2
15211	5	4	4	4	4	2	7	4	4	4
15311	7	1	6	5	1	5	3	2	4	[illegible]
15411	[illegible]									

D08-031

1541:	7	3	6	5	10	1	6	7	4	2
1551:	7	4	5	5	4	5	7	4	4	8
1561:	3	8	4	2	7	7	4	9	3	4
1571:	3	6	3	3	3	3	7	3	5	5
1581:	4	5	5	6	5	5	4	6	7	9
1591:	4	8	8	6	4	1	9	5	7	4
1601:	4	4	5	5	5	2	4	5	6	5
1611:	6	3	3	5	3	4	5	4	9	9
1621:	6	5	5	7	3	5	4	3	3	5
1631:	4	2	0	4	3	4	4	3	1	1
1641:	0	3	5	3	1	3	4	5	5	7
1651:	2	6	2	2	3	6	4	2	5	4
1661:	7	6	7	5	4	3	6	3	5	2
1671:	3	8	1	2	2	4	1	4	2	3
1681:	3	9	7	3	6	1	3	4	3	2
1691:	5	5	5	4	6	7	6	7	3	6
1701:	5	1	3	3	5	4	3	2	4	5
1711:	3	5	2	8	5	9	3	3	3	0
1721:	4	3	1	3	7	5	4	2	1	3
1731:	6	2	5	4	4	4	1	4	6	7
1741:	4	2	5	3	4	3	0	2	2	3
1751:	4	6	3	5	2	4	2	2	4	5
1761:	3	3	1	6	2	11	1	3	4	3
1771:	4	2	2	3	1	7	4	3	2	3
1781:	3	6	3	3	5	3	0	6	3	2
1791:	0	6	3	4	5	1	2	4	2	5
1801:	4	2	3	2	3	2	4	4	3	3
1811:	2	2	6	7	5	5	5	6	7	3
1821:	5	4	6	3	3	4	1	2	2	3
1831:	2	5	5	2	2	3	3	2	1	4
1841:	3	2	3	5	5	5	4	0	3	7
1851:	3	6	3	2	2	3	6	1	2	2
1861:	2	4	5	4	0	1	1	5	8	6
1871:	4	0	3	3	5	2	5	4	3	2
1881:	5	4	4	0	3	4	5	1	3	2
1891:	3	6	2	4	1	8	6	3	2	2
1901:	3	2	2	3	4	1	2	4	9	3
1911:	0	5	7	4	1	5	7	4	3	4
1921:	2	3	4	4	1	1	0	0	2	5
1931:	6	3	2	3	4	2	6	6	3	3
1941:	1	6	1	5	1	3	2	3	5	1
1951:	2	4	3	3	4	3	3	3	2	6
1961:	3	2	2	5	0	3	2	5	3	5
1971:	1	3	5	2	5	5	4	1	1	1
1981:	3	2	4	2	0	3	7	5	0	6
1991:	5	3	1	4	1	2	3	3	2	4
2001:	2	4	1	4	4	1	6	3	5	2
2011:	4	5	2	4	0	0	3	5	2	5
2021:	4	7	2	2	1	4	3	4	1	4
2031:	5	1	3	3	2	3	3	1	3	5
2041:	4	5	4	7	4	5	2	5		

D08-035

GW3585.BBI 191-90 90=1256-A=1 110B-C9-B.BEGMENT.COM NI FUSION
ND 68: 16100:00 4/19/90 0828 PST 129I M62042

Anne Engelhardt

ACCGRP	1	ADC	2	20-APR-90	06128133
KEV	1.000	ZERO	0.000	19-APR-90	08128106
TOTAL	0		0		
LIVE	16100:00		16100:00		
REAL	00:00:00		16100:00		

1 -	101:	12150	7504	4646
1 -	2048:	52406	51382	1024
24 -	37:	2279	0	2408
27 -	35:	1457	152	1305
56 -	64:	1088	0	1251
86 -	89:	465	0	492
500 -	550:	1751	451	1300
656 -	667:	461	197	264
1326 -	1336:	84	0	104

1:	0	0	0	0	0	0	0	0	0	0
11:	5	32	72	100	101	94	184	260	215	185
21:	184	199	199	178	175	165	152	165	174	136
31:	183	196	170	143	138	138	166	128	124	127
41:	135	124	122	134	145	159	165	118	119	116
51:	93	113	125	120	114	109	102	98	107	117
61:	109	121	156	169	115	110	102	105	100	118
71:	101	92	121	150	148	143	133	141	113	94
81:	119	120	115	135	133	130	113	106	116	119
91:	149	225	324	185	110	106	98	109	102	80
101:	92	101	114	105	95	112	100	104	119	106
111:	103	118	105	112	97	99	101	91	93	108
121:	105	103	111	103	105	85	87	88	103	118
131:	101	112	86	119	95	90	82	94	105	104
141:	88	89	118	144	132	102	110	91	75	107
151:	114	91	96	98	90	118	92	83	98	96
161:	101	86	115	129	96	92	97	95	96	102
171:	118	89	107	119	98	103	102	98	107	82
181:	104	89	89	109	183	237	148	106	97	88
191:	87	86	101	81	88	77	101	97	73	82
201:	89	83	98	70	90	93	70	86	105	81
211:	79	89	83	75	89	77	85	76	107	86
221:	86	93	68	74	67	75	92	83	74	78
231:	78	73	72	58	76	88	83	99	155	98
241:	79	67	78	73	59	72	69	69	96	84
251:	73	63	66	77	81	70	71	74	67	70
261:	87	57	61	74	65	70	67	60	87	84
271:	69	76	65	61	59	63	73	59	55	65
281:	70	58	71	67	70	73	54	60	49	64
291:	62	56	52	68	63	70	55	61	60	66
301:	67	56	58	61	46	48	66	64	54	64
311:	65	50	34	67	42	46	19	55	58	46
321:	51	48	55	60	56	65	47	57	54	67
331:	49	53	50	49	38	38	43	50	62	51
341:	47	47	53	47	56	47	53	45	49	51
351:	54	44	54	48	45	43	40	52	50	37
361:	42	45	40	48	40	35	36	34	57	55
371:	50	43	38	47	36	47	43	39	33	46

1761 − ⅓(417) = 232

Blank ch 317

Code 1 K 1 bins 1135

D08-036

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391	43	34	32	43	43	37	44	32	37	49
401	48	43	46	30	36	35	36	38	42	36
411	50	37	41	33	35	47	46	31	40	43
421	35	39	36	42	25	42	35	34	41	34
431	36	41	26	34	32	37	43	24	28	40
441	29	35	39	26	36	45	30	38	29	35
451	40	23	28	26	42	26	39	20	23	31
461	29	29	34	41	34	32	39	42	32	29
471	29	34	37	29	20	38	23	23	38	31
481	31	39	29	30	25	31	26	34	27	39
491	31	31	40	27	33	30	28	27	19	26
501	19	28	34	27	29	28	32	24	78	130
511	161	155	80	50	29	33	18	18	26	26
521	20	23	25	23	34	22	18	24	23	24
531	18	21	22	25	27	22	15	29	32	24
541	26	20	27	22	27	21	27	15	19	25
551	20	16	26	18	25	27	27	25	30	30
561	21	18	16	23	21	22	25	24	23	25
571	23	22	26	19	22	16	18	25	22	25
581	17	30	35	29	19	22	25	23	17	19
591	15	20	20	28	25	25	35	25	27	27
601	26	25	19	25	18	25	24	19	25	21
611	24	21	19	21	18	27	13	22	18	15
621	10	15	16	13	19	15	16	21	29	23
631	24	13	25	27	11	27	19	11	16	21
641	21	19	21	20	26	19	19	18	19	15
651	17	20	12	13	14	20	13	18	26	39
661	102	105	53	21	20	20	24	14	12	13
671	17	20	16	19	18	20	17	18	12	25
681	24	12	14	17	18	14	18	16	14	16
691	10	19	20	17	22	18	20	23	17	22
701	18	19	26	15	23	17	20	13	12	12
711	12	19	24	20	12	18	8	14	18	21
721	12	21	23	11	19	21	25	19	13	17
731	4	19	12	16	22	13	16	11	16	14
741	16	17	13	19	16	8	8	11	22	15
751	15	17	16	15	15	19	18	11	15	17
761	9	12	19	15	15	19	23	23	14	12
771	15	10	16	15	10	17	21	16	16	16
781	11	14	16	17	13	16	20	20	18	7
791	11	16	16	12	17	12	10	13	9	12
801	9	20	11	11	6	11	13	21	11	12
811	25	18	11	19	12	13	14	8	9	19
821	13	7	16	22	8	14	13	9	8	20
831	11	14	13	16	13	22	18	8	14	10
841	7	14	21	11	15	9	17	17	19	8
851	12	9	14	7	14	12	13	8	9	11
861	13	9	16	17	11	12	9	11	11	17
871	11	8	10	16	18	8	11	8	14	15
881	5	12	10	12	13	11	12	12	11	12
891	10	12	11	10	18	9	14	13	8	6
901	12	12	13	10	14	11	15	16	10	20
911	20	15	13	16	10	8	14	13	8	9
921	15	7	12	12	13	14	11	12	13	9
931	4	13	9	12	14	9	7	16	11	13
941	8	13	7	10	8	10	13	10	10	11
951	17	13	8	7	10	14	5	13	10	9

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961	14	12	13	18	13	10	9	11	14	17
971	2	5	5	20	6	12	8	9	8	7
981	16	7	15	10	6	8	8	11	9	2
991	7	12	13	6	12	8	9	6	12	18
1001	16	15	8	14	8	11	11	6	11	9
1011	6	12	6	13	8	9	14	5	5	9
1021	10	9	7	12	10	11	14	14	8	10
1031	3	4	10	5	8	12	5	8	14	10
1041	11	13	11	9	12	16	11	7	6	9
1051	5	15	9	11	4	10	3	17	4	10
1061	4	8	11	11	13	9	12	9	9	10
1071	7	6	10	10	7	8	14	5	10	4
1081	12	8	9	11	11	10	10	14	8	9
1091	8	6	7	15	8	11	7	6	11	12
1101	10	13	2	5	12	17	9	12	9	8
1111	7	10	10	3	11	4	8	8	13	11
1121	11	6	9	9	9	9	11	10	8	6
1131	11	4	11	6	6	4	5	9	6	11
1141	15	8	7	5	8	4	5	6	0	12
1151	7	11	9	6	15	6	8	4	7	15
1161	4	8	6	9	7	4	13	11	12	8
1171	8	12	6	9	10	11	7	13	10	14
1181	13	8	11	8	5	5	6	12	12	11
1191	4	6	10	9	5	4	5	11	5	11
1201	8	5	8	3	7	8	9	5	5	10
1211	8	8	7	6	10	8	9	8	3	3
1221	11	7	10	7	6	7	10	6	8	5
1231	8	7	3	9	6	3	8	11	14	6
1241	9	10	8	9	7	6	8	12	4	6
1251	7	10	4	8	7	2	10	2	7	1
1261	8	11	7	7	3	7	4	6	8	5
1271	7	13	3	6	6	7	6	5	8	7
1281	3	7	6	7	1	3	9	7	10	6
1291	3	4	6	8	6	5	6	8	5	6
1301	7	7	8	3	6	3	7	9	8	5
1311	6	3	6	11	4	4	6	5	11	6
1321	7	3	4	4	8	9	4	7	6	5
1331	4	8	12	10	3	4	5	7	7	6
1341	3	5	6	9	7	6	5	3	7	8
1351	6	7	5	7	4	5	7	5	2	6
1361	5	6	5	3	4	4	7	5	3	7
1371	7	7	3	5	9	5	7	8	2	9
1381	7	6	6	5	7	3	5	5	5	2
1391	3	7	6	8	5	7	8	6	6	3
1401	9	8	8	6	5	6	7	3	7	5
1411	2	8	7	5	7	4	5	1	5	2
1421	5	5	8	6	1	8	2	12	1	0
1431	7	8	3	2	3	4	3	4	8	4
1441	2	3	1	7	5	9	7	7	2	9
1451	4	3	4	4	6	7	3	5	6	19
1461	26	16	10	6	2	6	4	4	5	2
1471	3	9	6	6	7	8	4	3	4	4
1481	7	3	6	4	7	9	3	5	3	7
1491	5	5	4	9	3	3	1	11	4	9
1501	1	1	5	1	2	5	6	5	9	4
1511	6	7	6	8	7	2	2	4	5	3
1521	5	3	4	1	2	5	2	6	4	4
1531	3	5	8	4	6	7	5	8	2	6
1541	8	3	6	2	8	2	2	7	3	3
1551	1	6	5	2	3	5	6	7	3	0

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1561:	5	4	3	3	6	3	6	9	4	5
1571:	2	3	4	3	3	6	4	4	3	9
1581:	3	6	2	2	6	1	5	5	5	6
1591:	3	3	6	5	5	8	3	9	3	2
1601:	0	5	2	3	3	8	5	4	8	1
1611:	2	2	3	3	4	3	6	1	1	4
1621:	3	6	3	2	4	3	3	7	3	3
1631:	2	7	2	6	5	4	3	6	6	3
1641:	6	4	4	3	1	1	6	4	8	4
1651:	5	4	2	2	5	5	4	2	6	5
1661:	4	8	4	2	3	3	2	4	2	7
1671:	6	5	6	4	1	5	0	5	2	6
1681:	3	2	4	4	2	2	2	3	2	6
1691:	3	3	3	3	6	3	6	2	1	3
1701:	6	4	3	2	4	2	3	4	5	5
1711:	5	2	7	4	5	7	5	10	3	5
1721:	1	2	3	0	7	4	5	8	5	6
1731:	3	1	1	3	2	5	4	7	2	5
1741:	0	3	2	3	1	3	4	4	1	1
1751:	2	4	1	2	4	2	9	5	4	4
1761:	8	3	5	7	8	4	9	4	2	4
1771:	3	5	0	5	4	3	3	4	1	1
1781:	5	2	6	3	3	4	3	2	1	8
1791:	5	1	2	6	5	2	1	4	1	6
1801:	3	1	4	5	2	1	2	6	2	3
1811:	4	2	5	0	1	1	2	3	3	4
1821:	5	3	2	2	5	0	2	5	4	5
1831:	1	8	1	4	3	5	6	1	3	6
1841:	1	8	4	3	6	2	1	6	5	2
1851:	3	4	2	6	2	5	2	1	3	1
1861:	1	2	3	2	2	8	0	2	1	2
1871:	3	4	2	3	8	4	3	0	2	2
1881:	2	5	2	4	1	2	3	5	3	2
1891:	2	3	0	1	0	5	4	7	5	3
1901:	6	0	4	5	2	4	1	4	4	3
1911:	1	2	2	1	1	5	3	2	5	2
1921:	9	4	3	3	4	5	4	2	3	1
1931:	5	5	3	4	1	6	0	3	3	5
1941:	4	1	5	1	4	1	0	6	3	2
1951:	6	3	2	6	2	3	2	1	2	1
1961:	3	2	4	7	2	4	2	4	2	8
1971:	3	4	6	3	3	2	2	1	2	0
1981:	2	0	4	4	1	1	3	2	3	3
1991:	5	2	2	2	0	6	5	3	3	3
2001:	4	3	2	3	2	4	3	6	3	4
2011:	5	4	2	2	1	4	2	0	4	2
2021:	3	3	4	4	6	5	1	4	3	2
2031:	1	2	3	3	3	0	2	5	3	1
2041:	6	2	2	3	3	2	3	1		

GW35[illegible] 190190 110B-C9-T 90-1255-A-3 TK110B-C9 SEGMENT COM NI FUSION
1291 SST M62042 04/18/90 0950 PS

Anne E Kozelisky

ACUGRP	1	ADC	2	19-APR-90	06150152
KEV	1.000	ZERO	0.000	18-APR-90	09150123
TOTAL	0		0		
LIVE	16100100		16100100		
REAL	00100100		16100100		

1 - 1011	12443	6939	5504	
1 - 20481	52873	52873	0	
24 - 371	2207	226	1981	
27 - 351	1407	116	1291	
56 - 641	1127	0	1260	
86 - 891	470	0	488	
500 - 5501	1785	383	1402	
656 - 6671	438	192	246	
1326 - 13381	89	0	91	

1:	0	0	0	0	0	0	0	0	0	0
11:	2	38	81	110	162	102	201	262	218	221
21:	185	224	194	166	195	182	173	159	136	170
31:	177	182	163	133	114	140	117	138	129	133
41:	143	113	138	131	140	177	174	119	121	94
51:	108	98	139	105	102	115	109	104	122	111
61:	120	108	173	165	109	94	115	107	110	113
71:	116	109	131	121	125	144	128	122	124	120
81:	121	107	131	135	132	115	118	108	129	147
91:	117	244	315	204	113	106	121	103	116	126
101:	109	95	108	96	100	103	96	85	122	102
111:	116	104	113	94	126	107	96	104	103	102
121:	102	101	107	88	105	120	92	91	102	114
131:	91	100	84	116	98	100	96	112	110	108
141:	123	92	115	115	127	81	84	86	91	102
151:	101	78	98	98	92	103	107	101	90	121
161:	95	98	102	105	101	102	98	101	98	103
171:	121	92	88	84	88	96	113	105	92	91
181:	86	97	99	97	173	250	156	111	105	77
191:	99	106	96	85	97	70	95	93	95	97
201:	101	99	95	102	99	95	89	98	99	82
211:	90	84	96	90	74	87	79	77	68	91
221:	69	81	79	85	89	68	73	70	78	88
231:	72	67	72	64	88	78	66	130	131	95
241:	92	77	86	78	78	61	69	81	78	58
251:	102	59	88	66	75	65	71	83	74	62
261:	61	62	52	73	71	64	65	63	65	64
271:	68	76	53	64	65	63	46	71	59	55
281:	73	68	57	70	64	56	52	61	53	75
291:	53	71	60	71	76	58	69	63	78	78
301:	62	64	57	47	65	69	61	44	56	65
311:	42	58	56	58	50	66	47	55	65	53
321:	53	53	57	45	46	64	45	70	61	64
331:	48	45	47	48	64	52	64	62	43	57
341:	59	51	43	50	62	54	62	29	45	43
351:	51	52	51	39	48	46	43	38	36	38
361:	54	41	38	47	38	42	46	37	40	43
371:	38	50	50	47	41	46	47	46	44	38
381:	31	39	43	31	49	47	37	41	35	38
391:	32	42	42	42	33	40	45	34	44	37

1924 - $\frac{12}{8}$ (421) = 240

Blank 317

Calc < using 135 cts

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391:	32	47	42	42	37	40	45	34	44	37
401:	40	30	46	37	35	39	41	41	42	32
411:	43	39	36	48	42	33	35	42	40	54
421:	37	31	43	24	37	36	26	34	39	48
431:	40	39	27	31	33	41	34	27	39	37
441:	27	35	32	34	34	25	35	29	40	33
451:	33	31	30	28	30	31	37	28	32	35
461:	40	28	24	33	35	35	30	20	28	34
471:	35	33	41	24	44	39	30	32	29	25
481:	22	27	17	30	37	26	26	30	26	30
491:	30	24	21	22	34	34	30	22	29	29
501:	24	21	36	28	28	22	35	36	67	131
511:	190	142	87	48	25	28	32	20	27	15
521:	31	23	19	23	25	16	26	20	28	28
531:	29	25	28	23	19	27	25	21	27	18
541:	20	29	32	28	22	19	23	12	22	26
551:	21	13	25	14	23	24	25	22	34	22
561:	21	23	18	27	12	23	35	28	19	25
571:	20	21	28	22	28	25	21	28	31	22
581:	21	23	41	34	26	19	15	14	23	14
591:	20	16	19	19	24	29	24	19	14	17
601:	16	31	21	35	21	21	20	22	26	28
611:	24	25	19	29	26	23	28	25	26	21
621:	23	15	20	16	19	20	22	15	18	22
631:	24	20	13	18	23	18	16	17	21	15
641:	13	21	22	21	17	14	19	19	21	19
651:	22	23	24	20	16	20	14	21	19	46
661:	79	100	59	21	20	18	21	20	9	18
671:	20	23	24	18	15	17	20	16	18	17
681:	14	18	18	21	15	17	22	16	17	15
691:	14	14	27	22	17	24	20	18	25	16
701:	13	20	15	22	16	18	23	20	14	19
711:	9	10	13	17	15	16	17	18	12	17
721:	10	18	16	16	10	16	23	23	14	14
731:	12	18	14	15	17	16	21	18	12	15
741:	14	22	17	8	11	14	18	19	12	16
751:	25	14	24	16	18	18	10	15	15	22
761:	17	15	16	7	18	13	20	19	13	11
771:	14	13	31	12	15	12	15	15	8	15
781:	12	12	16	13	10	15	17	19	12	20
791:	13	15	15	12	15	15	9	12	8	12
801:	12	12	18	5	8	21	11	17	18	15
811:	7	20	19	9	15	16	11	14	12	12
821:	11	9	5	18	8	8	12	11	9	11
831:	11	14	10	15	9	11	10	12	15	19
841:	18	16	12	13	12	14	13	10	6	6
851:	21	13	10	10	8	13	17	9	7	11
861:	11	6	10	13	10	7	9	11	10	9
871:	10	10	18	14	13	10	7	21	9	15
881:	9	10	10	17	12	7	9	15	8	12
891:	15	10	9	12	9	12	12	15	12	9
901:	10	11	7	13	20	12	10	12	11	17
911:	15	14	6	7	10	12	13	16	11	12
921:	18	10	7	10	13	9	11	5	15	12
931:	14	6	6	16	11	8	13	13	12	10
						8	13	11	8	7

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941	11	9	11	11	15	8	13	11	8	7
951	15	8	8	9	7	15	12	11	10	11
961	8	6	20	6	12	19	13	18	9	15
971	9	11	9	8	13	7	17	18	7	9
981	15	12	7	7	8	11	15	16	12	12
991	8	9	10	12	10	13	13	6	11	12
1001	✓ 23	17	11	9	6	11	8	8	5	7
1011	9	9	9	9	12	12	10	10	8	5
1021	9	8	4	13	10	13	10	8	10	15
1031	13	11	12	8	7	11	5	10	10	9
1041	11	5	3	13	14	10	8	5	11	7
1051	12	14	4	7	8	7	12	8	5	6
1061	8	12	10	6	10	10	8	4	9	11
1071	6	9	3	12	13	11	9	7	5	8
1081	6	7	13	7	7	8	9	11	5	8
1091	8	7	4	8	8	7	8	8	12	3
1101	8	16	6	7	12	4	5	12	4	6
1111	8	4	9	4	9	15	12	9	12	8
1121	9	5	4	13	7	9	6	9	7	4
1131	5	9	9	7	9	10	7	6	7	7
1141	7	3	10	12	8	13	11	6	3	6
1151	10	6	7	9	11	6	9	9	6	11
1161	11	8	5	14	8	7	10	6	6	6
1171	10	9	10	11	8	13	9	9	6	11
1181	7	14	8	8	12	9	6	8	4	4
1191	11	7	7	7	6	10	8	8	6	6
1201	8	6	9	14	8	4	12	4	11	8
1211	9	10	10	5	10	10	8	9	5	7
1221	11	9	6	6	9	8	6	9	6	6
1231	6	13	3	11	6	11	4	10	6	5
1241	4	9	8	8	6	8	7	3	13	2
1251	5	10	5	8	11	13	4	5	5	7
1261	4	9	6	10	9	6	5	9	7	8
1271	8	7	10	9	6	2	3	5	13	8
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1301	6	9	3	12	8	8	6	7	8	5
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1321	5	8	7	10	3	8	3	10	9	10
1331	10	4	4	9	4	7	5	6	3	11
1341	7	11	5	7	7	9	6	6	9	3
1351	13	11	3	4	9	4	7	8	3	5
1361	10	8	6	7	4	5	11	7	6	9
1371	6	7	8	9	4	3	7	7	5	7
1381	5	7	9	5	5	7	3	5	5	3
1391	7	4	3	6	6	7	5	10	6	5
1401	3	5	5	8	8	4	3	9	5	5
1411	5	8	7	5	3	6	7	10	3	7
1421	7	3	4	4	5	4	9	6	4	6
1431	6	5	2	8	5	5	7	6	7	4
1441	6	5	12	7	5	5	3	4	3	10
1451	5	3	9	7	4	2	5	4	8	14
1461	✓ 18	14	5	7	6	3	8	6	6	8
1471	4	7	6	8	8	12	4	2	9	10
1481	3	9	4	8	5	5	4	3	3	4
1491	5	3	6	11	4	5	6	2	6	3
1501	5	4	7	6	4	3	5	10	6	5
1511	3	6	5	7	5	2	4	1	7	4
1521	2	3	6	4	7	4	5	3	8	5

1521	2	3	6	4	7	4	5	3	8	5
1531	3	9	3	3	7	2	7	2	5	3
1541	6	2	12	2	5	2	3	3	3	10
1551	2	4	6	2	3	3	1	7	4	5
1561	4	1	5	4	5	3	7	3	3	6
1571	2	6	2	4	5	2	3	5	3	3
1581	6	5	4	6	5	6	1	7	4	3
1591	5	5	4	6	3	4	3	5	4	7
1601	2	2	1	2	8	9	6	9	10	5
1611	4	6	6	7	4	2	2	4	4	3
1621	7	5	6	2	2	4	5	8	5	4
1631	3	3	7	3	7	1	2	3	3	5
1641	4	6	3	5	5	3	3	4	4	5
1651	4	3	6	5	5	3	7	4	6	4
1661	7	6	3	4	5	3	2	3	8	3
1671	2	4	2	1	7	3	1	2	5	6
1681	5	5	5	2	1	3	3	6	7	4
1691	2	3	4	6	5	5	3	3	4	4
1701	6	4	5	4	7	2	4	3	5	4
1711	1	5	5	3	4	2	5	2	7	2
1721	4	7	2	2	5	4	4	1	4	2
1731	4	4	3	3	2	1	5	2	3	5
1741	3	0	5	3	5	2	0	1	3	3
1751	4	4	3	5	6	3	4	3	1	2
1761	6	5	2	3	4	9	6	5	2	0
1771	2	2	1	3	1	3	4	2	5	6
1781	1	4	4	2	5	5	4	0	5	3
1791	3	3	4	4	6	1	6	4	3	3
1801	1	5	2	4	5	4	1	4	5	6
1811	3	4	4	1	4	0	7	2	4	1
1821	5	4	5	7	3	3	1	5	3	3
1831	1	1	4	4	5	5	5	5	2	4
1841	4	2	1	3	0	3	3	8	3	4
1851	5	2	8	5	1	2	2	4	2	3
1861	2	2	4	4	1	4	5	5	2	3
1871	3	3	2	3	3	1	4	4	5	2
1881	5	3	4	2	1	2	4	4	4	0
1891	3	4	4	3	1	2	4	3	3	4
1901	2	1	2	2	2	6	2	3	3	3
1911	2	4	4	3	4	2	2	5	1	4
1921	1	1	7	2	3	2	3	4	3	1
1931	6	3	1	3	1	3	2	4	1	2
1941	1	3	1	6	3	2	1	2	4	2
1951	3	4	1	4	5	7	0	3	4	1
1961	2	2	3	0	4	4	4	4	5	4
1971	3	3	2	2	4	1	3	4	2	2
1981	2	1	2	3	4	5	1	1	1	4
1991	0	3	2	3	3	4	3	4	2	1
2001	3	4	4	2	4	4	1	4	1	3
2011	3	5	5	0	0	4	3	1	5	3
2021	1	6	2	6	8	2	3	2	2	6
2031	2	1	6	1	4	3	3	3	3	4
2041	0	0	2	2	4	6	1	0		

D08-043

SW3581 BST 189-90 90-1255-A-2 110B-C9-T 7K110B-C9 SEGMENT COM NI RUBION 129 N62042 04/17/90 1105 PST 16 HOUR COUNT

Anne C Kozelsky

ACQGRP	1	ADC	2	18-APR-90	07:13:56
KEV	1.000	ZERO	0.000	17-APR-90	11:04:59
TOTAL	0		0		
LIVE	16:00:00		16:00:00		
REAL	00:00:00		16:00:00		

SW3581 BST 189-90 90-1255-A-2

1 - 101:	12756	8060	4696
1 - 2048:	52664	49594	3072
24 - 37:	2403	44	2359
27 - 35:	1545	128	1417
56 - 64:	1136	0	1327
86 - 89:	490	26	464
500 - 550:	1837	333	1504
656 - 667:	455	275	180
1326 - 1338:	82	0	117

1:	0	0	0	0	0	0	0	0	0	0
11:	8	43	116	230	250	150	217	260	234	224
21:	211	189	177	188	164	191	177	184	184	174
31:	181	188	173	146	138	166	149	138	127	112
41:	123	122	115	131	136	191	175	148	121	116
51:	98	106	114	103	98	119	113	113	120	108
61:	104	125	158	176	109	97	96	97	126	108
71:	104	126	121	119	126	137	150	141	110	96
81:	94	117	130	127	150	120	135	123	112	133
91:	137	245	259	189	121	76	91	106	118	93
101:	93	100	110	101	106	104	105	96	128	89
111:	114	100	127	97	101	89	99	99	88	105
121:	115	102	103	97	87	103	112	90	77	116
131:	108	92	99	121	95	111	92	100	110	111
141:	94	96	110	102	112	109	98	109	103	104
151:	101	92	99	115	99	101	85	114	93	88
161:	107	103	112	102	121	105	104	84	104	112
171:	83	113	96	99	80	107	87	108	96	109
181:	109	113	81	114	140	224	137	106	102	80
191:	87	85	87	104	93	95	92	95	89	90
201:	81	83	85	91	90	105	98	61	90	86
211:	71	76	100	90	101	71	77	88	89	74
221:	91	87	95	77	82	95	68	96	81	67
231:	79	85	72	78	72	71	87	133	141	102
241:	89	73	73	83	86	71	79	68	63	73
251:	68	70	62	74	56	62	68	65	81	65
261:	60	70	72	69	75	54	72	60	65	57
271:	70	62	50	54	59	53	71	61	56	54
281:	51	73	77	59	62	52	53	74	41	67
291:	55	64	68	71	65	77	59	43	58	64
301:	63	62	53	69	52	57	54	53	53	53
311:	55	59	58	41	51	58	61	48	49	60
321:	41	64	43	44	56	60	40	47	47	46
331:	66	41	54	43	50	54	51	68	63	39
341:	47	52	51	43	52	43	57	50	58	59
351:	46	51	44	39	38	36	44	33	47	37

$1902 - \frac{11}{3}(451) = 248$

Blank 317

Calc < 135

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361:	40	40	52	49	41	50	35	42	43	31
371:	41	41	50	48	46	41	42	47	32	47
381:	44	36	36	34	46	36	34	38	44	31
391:	37	37	27	38	41	43	31	44	33	31
401:	31	32	36	41	31	28	42	35	37	35
411:	37	31	30	37	47	42	31	42	31	35
421:	41	35	28	32	34	38	29	35	31	37
431:	34	28	40	36	34	32	32	33	36	34
441:	32	24	21	26	38	33	25	25	38	28
451:	40	37	39	41	36	25	37	25	34	32
461:	34	33	34	32	34	18	32	27	30	40
471:	36	33	33	20	25	35	32	30	31	20
481:	27	23	24	29	25	30	31	28	32	33
491:	22	25	27	22	26	28	27	33	28	36
501:	24	30	25	33	32	43	25	44	64	143
511:	175	163	80	36	22	20	22	13	29	22
521:	21	11	18	29	22	32	25	28	28	38
531:	21	25	27	22	23	33	20	15	35	29
541:	25	29	29	30	24	32	15	17	30	23
551:	27	25	30	27	25	22	23	31	33	23
561:	29	26	26	26	25	32	18	28	27	29
571:	20	24	16	17	20	19	24	14	23	14
581:	25	31	32	33	24	14	18	21	17	28
591:	18	16	15	26	15	20	33	20	22	21
601:	19	16	23	20	27	23	24	22	19	26
611:	23	27	19	21	23	17	24	17	17	16
621:	20	18	20	23	17	20	21	17	20	24
631:	14	23	19	23	15	15	18	17	20	12
641:	15	7	22	19	13	18	15	17	17	21
651:	17	20	9	21	14	15	31	25	16	57
661:	99	108	36	15	20	18	15	17	19	25
671:	21	14	20	15	14	10	22	23	16	24
681:	17	19	18	14	9	12	19	14	18	14
691:	25	20	20	24	17	23	13	22	17	22
701:	19	20	15	14	17	17	18	12	18	16
711:	17	15	11	17	22	21	13	17	13	16
721:	29	16	20	12	15	17	24	24	26	16
731:	17	23	15	15	12	20	12	13	13	13
741:	16	12	11	14	12	13	15	15	15	13
751:	14	15	10	11	14	11	11	13	17	15
761:	22	14	16	10	18	13	17	20	9	15
771:	11	4	10	12	12	17	10	10	14	9
781:	16	18	19	17	19	18	12	15	12	18
791:	8	13	12	17	11	14	16	19	15	15
801:	12	16	14	19	17	13	15	14	16	15
811:	16	10	12	11	11	12	9	15	13	12
821:	14	7	14	13	13	14	15	10	15	9
831:	12	10	8	11	14	10	14	9	8	16
841:	11	19	13	18	12	13	21	18	14	11
851:	12	18	15	16	15	13	16	16	11	13
861:	18	18	9	15	9	16	7	9	14	14
871:	11	13	9	11	12	11	15	15	15	8
881:	17	16	14	20	17	11	13	10	11	12
891:	16	18	8	11	12	17	6	16	16	8
901:	11	10	5	11	8	14	17	18	13	16
911:	25	17	10	12	12	13	9	11	8	15
921:	13	15	6	8	14	14	11	8	12	13
931:	12	12	15	14	9	9	12	9	11	6
941:	7	14	8	8	9	11	8	9	18	4
						9	7	10	8	11

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951:	6	8	10	16	12	9	7	10	8	11
961:	10	6	16	5	6	10	11	10	14	9
971:	9	8	10	8	8	8	5	9	10	5
981:	10	9	4	9	6	11	11	5	9	7
991:	13	10	10	9	8	13	12	10	8	10
1001:	✓ 21	18	10	12	14	7	8	6	7	8
1011:	8	17	14	12	10	12	11	9	9	11
1021:	16	11	10	8	8	8	12	9	7	11
1031:	13	9	7	5	8	4	9	7	12	8
1041:	7	7	11	5	14	9	4	12	12	9
1051:	9	4	9	11	10	9	15	5	10	10
1061:	10	5	10	7	11	8	10	11	3	10
1071:	9	7	9	9	11	8	4	7	11	5
1081:	3	7	9	11	11	6	8	10	15	2
1091:	7	10	13	8	10	11	7	7	12	12
1101:	6	6	6	12	15	11	10	9	12	11
1111:	7	7	7	7	9	7	10	9	10	11
1121:	5	11	4	7	9	6	18	7	10	6
1131:	9	7	13	9	4	4	8	7	12	7
1141:	8	5	5	10	8	6	10	10	7	4
1151:	8	8	4	7	11	10	6	12	7	11
1161:	8	8	10	7	4	8	8	5	9	9
1171:	7	11	8	7	12	3	9	14	10	9
1181:	3	8	12	6	8	7	4	7	12	9
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1201:	5	7	8	11	10	3	8	8	4	6
1211:	6	7	6	7	9	5	6	11	5	7
1221:	6	10	7	6	7	10	7	4	6	7
1231:	5	8	10	9	7	8	8	10	4	7
1241:	8	7	3	10	9	10	2	7	9	8
1251:	7	8	8	5	10	3	6	5	6	12
1261:	4	5	6	6	7	4	2	4	3	8
1271:	6	4	7	5	10	3	6	2	6	6
1281:	7	10	8	7	7	4	7	5	10	9
1291:	5	8	7	5	9	5	6	6	3	11
1301:	7	7	6	5	5	7	5	7	8	4
1311:	10	6	4	12	13	5	6	6	8	4
1321:	3	5	5	2	7	7	6	6	6	4
1331:	5	9	6	7	9	2	4	11	7	1
1341:	7	7	8	8	10	2	4	6	15	4
1351:	1	6	4	7	6	8	4	9	12	8
1361:	4	9	7	5	5	12	11	7	6	6
1371:	10	2	4	5	3	5	15	9	5	2
1381:	7	2	4	3	5	4	8	7	5	4
1391:	5	10	3	3	5	6	5	4	4	6
1401:	4	5	7	5	7	7	3	9	4	3
1411:	7	8	7	5	5	5	6	6	8	4
1421:	5	2	3	6	6	4	4	4	6	2
1431:	5	8	7	9	6	6	7	7	4	10
1441:	7	2	10	5	6	4	6	1	5	5
1451:	2	4	2	4	2	6	4	9	10	13
1461:	✓ 19	8	5	6	6	2	9	9	4	8
1471:	4	5	6	2	6	7	9	4	5	5
1481:	5	5	3	3	2	12	2	8	4	6
1491:	5	5	6	3	2	2	6	1	4	1
1501:	9	4	4	6	4	5	6	6	11	4
1511:	6	4	2	6	4	9	4	2	6	10
1521:	1	7	3	4	2	7	3	5	6	2
1531:	2	3	8	5	8	5	7	6	8	5

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1531:	2	3	8	5	8	5	7	6	8	5
1541:	4	2	4	3	5	2	3	4	3	5
1551:	2	3	6	3	4	6	1	8	6	2
1561:	3	3	5	7	4	8	8	6	3	4
1571:	3	8	1	4	1	4	3	6	5	4
1581:	3	6	5	2	4	2	4	7	3	4
1591:	4	4	6	7	5	7	4	7	5	6
1601:	7	2	5	7	5	5	5	3	5	3
1611:	7	5	2	2	2	3	1	5	6	6
1621:	3	6	2	4	4	1	3	2	3	2
1631:	8	3	0	3	6	3	6	7	3	5
1641:	5	6	4	3	4	5	1	5	4	4
1651:	5	3	2	3	7	1	4	3	2	2
1661:	4	1	1	3	5	4	2	3	3	3
1671:	3	2	2	5	2	3	4	2	3	7
1681:	3	2	1	3	5	6	9	3	4	1
1691:	1	2	5	8	9	4	5	1	5	7
1701:	5	3	1	3	9	3	2	6	6	4
1711:	1	1	3	0	4	9	4	2	2	3
1721:	3	1	1	6	2	8	5	6	3	6
1731:	5	3	3	2	1	3	3	2	2	2
1741:	3	3	6	6	4	2	3	3	3	2
1751:	1	4	3	5	3	2	3	5	3	4
1761:	6	5	7	7	1	9	4	3	5	4
1771:	2	5	7	4	5	5	3	6	4	3
1781:	4	4	3	5	3	3	3	4	2	1
1791:	3	2	4	3	5	4	7	3	1	6
1801:	4	0	7	4	5	2	3	2	6	7
1811:	1	3	2	2	2	0	5	2	2	3
1821:	1	2	5	1	4	4	3	5	4	2
1831:	1	0	3	4	3	4	4	4	2	3
1841:	3	3	3	2	2	1	3	1	2	4
1851:	3	2	3	2	2	4	5	6	3	2
1861:	6	3	1	3	1	7	8	1	5	2
1871:	0	1	4	4	4	3	4	4	4	1
1881:	1	3	4	7	0	7	1	4	4	3
1891:	2	3	2	4	8	4	2	2	5	0
1901:	2	4	5	6	3	5	5	2	1	2
1911:	3	2	4	4	3	5	4	0	0	3
1921:	0	1	1	1	2	5	3	4	4	2
1931:	2	3	1	7	3	2	4	2	4	7
1941:	1	2	4	6	0	3	3	2	4	4
1951:	1	4	4	3	4	3	4	1	2	0
1961:	3	2	2	1	2	2	1	6	4	3
1971:	3	4	6	3	2	1	1	5	7	3
1981:	4	1	5	1	3	4	3	3	4	5
1991:	2	5	4	2	1	3	5	2	3	2
2001:	4	2	1	8	5	3	4	1	3	2
2011:	5	3	3	2	2	4	4	2	2	4
2021:	0	1	1	2	2	5	1	4	1	6
2031:	1	3	2	2	4	2	4	4	7	1
2041:	3	2	5	4	5	1	0	3		

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GW3579 188-90 110B-C9-T 90-1255-A-1 TK110B-C9 SEGMENT COM NI FUSION

GE(LI) WELL 04/16/90 0756 PST 1291 SST M62042

ACQGRP	1	ADC	2	17-APR-90	07:06:12
KEV	1.000	ZERO	0.000	16-APR-90	07:56:00
TOTAL	0		0		
LIVE	16:00:00		16:00:00		
REAL	00:00:00		16:00:00		

GW3579 188-90 04/16/90 0756 PST

1 -	101:	12851	8609	4242
1 -	2048:	53435	50363	3072
24 -	37:	2342	158	2184
27 -	35:	1508	64	1444
56 -	64:	1138	0	1138
86 -	89:	542	20	522
500 -	550:	1760	307	1453
656 -	667:	437	203	234
1326 -	1338:	82	17	65

1:	0	0	0	0	0	0	0	0	0	0
11:	11	24	83	170	202	98	191	261	250	209
21:	233	194	176	166	188	181	161	151	181	172
31:	187	184	169	143	160	153	146	126	155	126
41:	128	126	117	133	133	168	144	122	110	108
51:	122	106	119	122	105	110	116	135	129	98
61:	134	125	148	143	120	115	112	108	75	123
71:	112	111	116	150	144	146	152	114	116	102
81:	132	116	131	165	158	141	135	146	120	119
91:	155	284	284	219	108	110	102	123	122	127
101:	84	110	99	106	130	100	99	116	115	112
111:	108	109	107	114	113	89	121	91	110	114
121:	118	111	89	105	108	108	111	107	115	114
131:	100	119	119	102	116	102	111	100	94	114
141:	108	101	126	117	116	102	101	95	107	91
151:	87	113	124	93	116	99	111	102	92	93
161:	86	84	97	114	106	98	110	98	109	101
171:	94	86	93	100	103	124	101	116	79	93
181:	104	73	86	106	175	216	161	117	76	102
191:	107	96	86	84	82	95	73	82	107	83
201:	92	86	92	79	104	108	78	86	93	94
211:	92	79	78	79	77	83	85	84	96	89
221:	86	68	72	87	82	97	86	76	89	87
231:	76	77	69	82	73	80	96	124	113	107
241:	104	93	72	69	67	66	81	83	70	85
251:	80	55	71	76	62	70	69	79	67	65
261:	63	53	74	61	66	71	57	71	66	58
271:	63	85	65	66	54	74	70	53	63	76
281:	68	49	69	59	54	58	64	55	69	48
291:	43	55	48	68	75	71	74	58	65	62
301:	72	60	49	68	49	58	48	68	63	58
311:	59	52	52	55	39	56	52	52	46	57
321:	58	54	66	44	39	67	53	58	54	61
331:	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

$2030 - \frac{12}{3}(438) = 278$

Blank = 317

Calc < using 115 cts

D08-043

331:	50	48	56	56	47	42	44	74	56	52
341:	47	52	38	53	45	38	54	63	52	43
351:	51	68	65	42	52	36	48	37	41	40
361:	49	43	37	47	49	35	45	47	38	47
371:	47	47	39	35	36	32	45	51	43	31
381:	39	44	50	45	33	31	46	40	33	44
391:	43	43	39	46	42	41	44	45	37	35
401:	45	45	32	43	30	35	29	29	57	41
411:	36	45	31	30	37	37	36	43	28	33
421:	27	36	37	33	34	27	37	35	40	27
431:	26	37	33	39	38	29	34	32	49	40
441:	42	35	38	26	32	38	30	22	38	26
451:	26	27	39	34	27	27	34	31	27	27
461:	38	38	30	26	38	35	38	29	33	31
471:	37	27	34	38	34	32	24	29	42	32
481:	44	20	32	31	33	35	31	31	33	22
491:	44	28	24	34	29	34	30	35	33	34
501:	30	32	23	35	31	28	36	31	57	106
511:	148	158	79	49	33	30	25	28	22	27
521:	26	27	19	25	31	23	23	27	31	26
531:	23	33	27	28	20	17	17	27	16	22
541:	15	27	23	26	20	23	24	29	20	23
551:	22	28	20	21	21	19	23	37	25	23
561:	25	24	23	27	28	22	25	24	13	24
571:	21	25	21	28	20	32	21	17	19	25
581:	27	27	30	32	23	17	22	24	26	13
591:	22	20	21	19	14	20	24	26	24	18
601:	21	24	20	35	23	20	28	28	28	23
611:	22	25	16	15	17	21	16	20	14	18
621:	18	19	15	17	21	18	20	14	21	20
631:	29	18	20	21	20	22	16	25	10	20
641:	27	19	12	15	22	15	19	17	21	18
651:	19	17	20	14	17	19	21	15	23	36
661:	89	88	56	23	26	21	20	12	15	15
671:	16	10	18	17	15	15	14	12	15	19
681:	14	14	18	17	14	18	21	19	21	12
691:	13	17	11	25	17	26	23	18	15	26
701:	20	18	20	22	26	24	21	17	14	20
711:	21	20	13	26	18	16	21	9	12	18
721:	20	15	18	13	12	19	16	18	16	14
731:	17	12	12	17	16	17	16	16	16	17
741:	11	8	17	14	18	13	13	12	12	16
751:	19	16	10	8	16	12	14	13	15	13
761:	15	18	12	12	14	21	27	17	13	13
771:	11	14	12	12	10	10	6	14	16	16
781:	22	12	10	13	12	11	10	14	13	12
791:	22	21	10	11	13	20	15	13	16	17
801:	12	17	8	18	14	11	11	11	14	13
811:	15	15	9	9	12	22	13	12	17	13
821:	6	13	9	11	12	19	18	14	11	14
831:	13	9	11	9	13	15	12	14	19	14
841:	8	23	10	11	7	13	14	16	18	16
851:	13	11	16	15	13	14	9	10	11	13
861:	17	12	9	19	12	11	14	17	11	13
871:	13	10	13	15	18	15	9	11	13	13
881:	10	11	15	21	15	17	12	16	10	16
891:	11	10	14	10	20	10	17	12	10	14
901:	16	10	8	9	4	11	8	10	12	24
911:	20	16	12	9	13	17	8	7	9	8

921:	12	10	6	11	8	8	12	9	10	12
931:	12	10	12	12	5	8	7	17	11	15
941:	7	10	6	15	13	20	9	9	5	14
951:	11	19	7	14	9	13	7	5	9	6
961:	14	9	12	16	9	10	9	12	11	15
971:	15	16	11	8	7	5	9	9	11	6
981:	11	6	14	10	10	11	11	14	9	8
991:	6	9	9	8	9	13	5	14	11	13
1001:	11	8	7	18	6	7	6	12	10	11
1011:	13	9	8	3	8	8	7	10	15	9
1021:	10	14	8	13	10	10	10	10	10	6
1031:	10	12	9	8	8	12	8	9	18	10
1041:	12	12	13	12	11	5	5	13	9	11
1051:	6	8	15	11	9	3	12	10	14	9
1061:	19	3	10	13	9	6	7	10	12	7
1071:	8	15	8	9	13	7	6	5	12	15
1081:	6	10	6	9	7	12	11	8	12	10
1091:	14	7	13	7	11	8	11	10	6	8
1101:	11	8	11	8	10	10	5	9	11	10
1111:	12	3	8	15	5	13	7	8	15	12
1121:	11	10	10	15	3	11	3	7	11	12
1131:	4	1	10	5	10	12	5	14	8	8
1141:	15	6	6	6	9	6	4	8	9	9
1151:	8	8	5	7	2	7	9	9	8	12
1161:	12	5	7	8	9	6	6	8	8	6
1171:	5	14	7	13	9	2	5	7	8	9
1181:	6	5	11	13	5	6	11	9	7	11
1191:	6	14	11	9	9	4	10	7	7	14
1201:	7	6	12	9	5	7	5	7	8	10
1211:	6	4	7	10	6	4	8	8	5	9
1221:	8	12	5	10	5	8	6	7	7	4
1231:	6	10	6	7	7	12	9	6	10	7
1241:	8	9	10	6	5	10	8	7	4	11
1251:	6	6	5	7	8	2	8	7	8	4
1261:	8	7	1	2	11	7	4	9	5	7
1271:	7	2	7	3	5	7	4	6	5	8
1281:	9	7	6	3	6	5	6	5	7	4
1291:	10	11	4	5	6	7	7	4	8	5
1301:	7	6	9	6	6	7	5	4	3	10
1311:	6	9	12	4	6	9	3	6	10	7
1321:	7	2	3	8	7	2	2	11	8	8
1331:	6	7	6	9	6	1	8	8	5	13
1341:	5	9	4	10	7	7	4	5	4	6
1351:	10	1	9	7	8	7	5	4	8	6
1361:	6	4	1	9	5	1	5	3	5	4
1371:	5	6	1	2	2	3	3	7	5	5
1381:	5	7	7	8	5	6	3	2	6	11
1391:	5	8	5	4	5	7	5	5	7	10
1401:	5	7	6	5	6	10	5	7	7	7
1411:	9	5	7	7	6	4	9	8	9	6
1421:	3	1	8	8	6	2	6	7	6	5
1431:	3	8	4	4	4	8	2	3	2	8
1441:	5	8	5	6	4	8	5	5	4	6
1451:	5	6	6	5	8	4	3	6	11	20
1461:	20	15	6	5	6	5	5	9	4	4
1471:	0	9	7	5	3	5	5	1	5	2
1481:	4	1	4	3	4	4	2	6	6	7
1491:	5	3	7	5	8	3	5	4	5	5
1501:	7	5	5	5	5	2	5	4	5	7

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1501:	7	5	5	5	5	2	5	4	5	3
1511:	3	4	4	5	10	4	4	6	5	2
1521:	7	8	2	3	3	4	5	2	2	6
1531:	2	8	6	5	3	1	5	5	6	5
1541:	4	4	6	8	4	4	7	2	5	7
1551:	3	0	2	3	3	4	6	6	6	6
1561:	6	4	3	1	6	6	5	5	1	3
1571:	2	1	5	2	5	3	3	5	2	6
1581:	4	3	7	9	4	3	6	5	4	7
1591:	4	6	7	5	6	6	1	4	5	2
1601:	2	1	4	7	3	10	8	2	5	2
1611:	3	4	5	6	5	3	2	5	5	9
1621:	5	1	5	5	6	6	3	2	6	4
1631:	7	5	4	3	3	3	3	4	5	4
1641:	4	3	5	2	3	7	5	10	5	2
1651:	1	3	4	2	1	3	6	4	5	2
1661:	4	7	2	4	5	0	5	2	4	2
1671:	4	4	6	5	8	3	7	4	3	2
1681:	4	5	3	5	5	2	5	5	4	6
1691:	3	4	6	7	3	2	0	2	4	6
1701:	2	5	3	3	5	6	2	3	6	2
1711:	2	4	3	4	6	3	4	3	2	7
1721:	3	5	3	8	6	4	10	3	4	5
1731:	7	2	4	2	3	3	4	1	6	1
1741:	5	7	2	5	2	1	1	1	3	2
1751:	5	3	4	4	4	4	5	3	4	1
1761:	3	6	3	10	6	6	9	4	6	3
1771:	2	3	7	4	3	5	3	0	6	1
1781:	1	2	5	4	5	2	2	4	3	3
1791:	4	8	1	2	3	1	2	7	4	1
1801:	2	5	3	3	1	4	2	4	4	1
1811:	3	1	0	6	7	3	7	1	4	2
1821:	2	4	7	2	2	4	5	4	4	2
1831:	3	0	2	1	1	5	5	3	2	5
1841:	1	6	7	1	4	2	6	4	1	4
1851:	2	3	8	3	2	2	2	4	3	3
1861:	3	4	6	4	2	3	3	1	5	2
1871:	2	2	6	0	2	9	3	2	3	4
1881:	0	6	1	1	2	4	2	1	2	1
1891:	1	3	5	3	2	2	2	2	4	3
1901:	1	2	1	1	5	3	0	3	5	4
1911:	2	6	0	8	2	4	4	3	2	0
1921:	3	2	2	4	6	4	0	0	3	1
1931:	6	2	4	5	4	2	4	3	3	4
1941:	1	4	5	1	3	1	3	2	4	3
1951:	4	4	1	6	2	3	3	2	5	1
1961:	5	7	7	0	4	4	1	2	0	3
1971:	4	2	1	4	1	1	6	3	1	3
1981:	2	3	5	6	5	2	0	2	3	4
1991:	3	1	3	7	3	1	3	5	4	2
2001:	2	2	3	3	4	4	2	3	2	1
2011:	2	1	8	2	6	2	5	1	6	1
2021:	5	4	2	5	2	2	2	0	2	1
2031:	0	0	2	1	1	5	1	3	1	3
2041:	2	1	5	1	4	3	0	3		

*

D08-051

I-129

CALIBRATION DATA

D08–052

Entered 5/26/88 by [illegible]

[redacted] KI carrier

P89 for carrier preparation

I129 Stnd 2.158 x 10^4 dpm/ml BNW 52626 pages 65-66

HTA-4-41 Step 1) 1.0022 ml carrier BNW 52914 p9 ≡ 18.54 mg AgI

.1004 ml I129 Stn BNW 52914 p9 ≡ 2.1666 x 10^3 dpm

10 ml H_2O

1 ml $KMnO_4$ 2 M

1 ml 10% H_2SO_4

BNW
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Step 2-4

Steps 18-37

Steps 39-40

Weights of AgI

#1	.02608	#2	.02600	#3	.02570
	.00845		.00800		.00802
	.01763		.01800		.01768
#4	.02585	#5	.02640	#6	.02638
	.00810		.00815		.00819
	.01775		.01825		.01819

Summary of dc factors using KI carrier [illegible] p 91-93

#1	2.939
#2	2.901
#3	2.906
#4	2.857
#5	2.898
#6	2.869
$\bar{x}_b$ =	2.895 ± .029

± %

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D08-053

Entered 5/26/88 by Bohny

Outdoor I125 d/c calibration of Geli Well Page 90

BNW LABORATORY NOTEBOOK NO. 52626

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1269 keV

GW2771 1291 KI 01 05/23/88 0732 PST

2.1667 mo/dim

ACCGRP	1	ADC	2	23-MAY-88	08:32:04
REV	1.000	ZERO	0.000	23-MAY-88	07:32:00
TOTAL	0		0		
LIVE	01:00:00		01:00:00		
REAL	00:00:00		01:00:00		

GW2771 1291 KI-1 5/23/88 0732 P

52626

p91

1 -	100:	60843	60643	200
24 -	37:	50828	45564	5264
27 -	35:	48147	32154	15993

11:	0	0	0	0	0	0	0	0	1	0
111:	5	16	20	14	12	88	191	256	458	646
211:	585	743	643	479	465	716	1196	2876	9235	15418
311:	8382	2457	2477	3748	2358	748	273	474	1576	2433
411:	1122	219	41	20	8	11	12	8	6	11
511:	5	5	6	4	7	11	7	8	11	10
611:	8	9	11	10	14	10	5	11	5	7
711:	3	8	9	3	4	10	10	3	3	4
811:	5	5	13	8	8	10	7	7	4	8
911:	7	15	19	18	11	4	3	9	6	4

241:	479	465	716	1196	2876	9235	15418
311:	8382	2457	2477	3748	2358	748	273

271:	1196	2876	9235	15418
311:	8382	2457	2477	3748	2358

±5%

48147 - 6587 = 41557 counts

counts corrected to 15 mg Ag

41557 counts / 1.012 = 42057 counts

42057 counts / 60 minutes = 700.96 counts/min

700.96 × 15.00 / 17.62 = 725.68 dpm corrected to 9/11

d/c = 2.1667 mo/dim / 725.68 dpm / 739.1 = 2.929 d/c

1269 keV

W2772 1291 KI 02 05/23/88 0833 PST

2.1667 mo/dim

CBGRP	1	ADC	2	23-MAY-88	09:42:41
EV	1.000	ZERO	0.000	23-MAY-88	08:33:00
OTAL	0		0		
IVE	01:00:00		01:00:00		
EAL	00:00:00		01:00:00		

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W2772 1291 KI-2 5/23/88 0833 P

p91

1 -	100:	62784	62584	200
24 -	37:	52619	47054	5565
27 -	35:	49753	33072	16681

11:	0	0	0	0	0	0	0	0	0	1
111:	2	10	33	44	16	87	169	273	466	697
211:	618	758	689	491	549	707	1289	3136	9664	15240
311:	8935	2832	2522	3717	2418	813	304	502	1513	2305
411:	1167	284	42	16	6	7	6	8	14	6
511:	5	7	4	10	4	10	4	4	12	15
611:	12	5	8	14	6	6	7	8	8	7
711:	11	14	4	7	7	15	10	10	9	4
811:	7	10	6	5	16	12	10	11	7	10
911:	4	10	13	9	9	2	5	5	10	4

241:	491	549	707	1289	3136	9664	15240
311:	8935	2832	2522	3717	2418	815	304

271:	1289	3136	9664	15240
311:	8935	2832	2522	3717	2418

±5%

49753 - 6849 = 42904 counts

corrected counts to 15 mg Ag

Loss = 42904 - 43575 counts

43575 counts / 60 minutes = 725.68 dpm

15.00 / 17.00 × 725.68 = 768.8 dpm corrected to 9/11

d/c = 2.1667 mo/dim / 768.8 dpm = 2.901 d/c

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D08-054

Entered 5/26/88 by [illegible]

Calibration data for I129 d/c factor for Geel Well P90

17.6 mg Ag I

GM2773 129I KI-3 05/23/88 0944 PST

2.1667 cm³/cm

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

52626-1

GM2773 129I KI-3 5/23/88 0944 P

p92

1 -	100:	61314	61314	200
24 -	37:	51452	44094	5558
27 -	35:	48832	32234	14594

1:	0	0	0	0	0	0	0	0	0	0
11:	2	4	1	10	17	91	204	222	466	444
21:	408	485	670	524	540	499	(1252	3094	9529	14971
31:	8441	2787	2542	3525	2434)	787	268	476	1534	2215
41:	1209	272	52	11	5	8	14	9	7	7
51:	7	8	8	4	4	10	4	4	10	15
61:	10	4	8	10	8	4	5	9	5	4
71:	4	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	9	4

24:	526	540	499	1252	3094	9529	14971
31:	8441	2787	2542	3525	2434	787	268

27:	1252	3094	9529	14971
31:	8441	2787	2542	3525	2434

42832 - 1487 = 42345 counts

Correct counts to 15 mg Ag I

1.0144 × 42345 = 42666 counts

42666 counts / 60 minutes = 711 counts

711 / 17.6 × 2.1667 cm³/cm = 7248 cm³/cm corrected for 15 mg Ag I

d/c = 2.1667 cm³/cm / 7248 cm³/cm = 0.0299 d/c

2.900

17.75 mg Ag I

GM2774 129I KI 94 05/23/88 1045 PST

2.1667 cm³/cm

BNW LABORATORY NOTEBOOK NO.

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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		

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GM2774 129I KI-4 5/23/88 1045 P

p92

1 -	100:	61939	61739	200
24 -	37:	52049	44708	5341
27 -	35:	49394	32771	16623

1:	0	0	0	0	0	0	0	0	0	1
11:	6	21	20	21	31	85	176	227	423	498
21:	559	723	663	454	475	663	(1252	3013	9479	15713
31:	8737	2520	2430	3808	2442)	754	309	1441	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

27:	1252	3013	9479	15713	
	8737	2520	2430	3808	2442

49394 - 61739 = 12345

Correct to 15 mg Ag I

1.01375 × 12345 = 12515 counts

12515 counts / 60 minutes = 208.6 cm³/cm

208.6 / 17.75 × 2.1667 cm³/cm = 25.41 cm³/cm corrected for yield

d/c = 2.1667 cm³/cm / 25.41 cm³/cm = 0.0853 d/c

Discussed in this Notebook by

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Date

D08-055

Calibration data for I125 d/c factor for Gelinkell p90

18.25 mg AgI
GW2775 129I KI 95 05/23/88 1161 PST
2.1667 dlm

ACOGRP	1	ADC	2	23-MAY-88	12:57:19
KEV	1.000	ZERO	0.000	23-MAY-88	11:50:59
TOTAL	0		0		

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p93

LIVE	01:00:00	01:00:00
REAL	00:00:00	01:00:00

GW2775 129I KI-5 5/23/88 1151 P

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	1485	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
241	453	541	713	1300	3043	9958	16032			
311	8559	2502	2597	3815	2361	771	251			
271	1300	3043	9958	16032						
311	8559	2502	2597	3815	2361					

2.55%
50167 − 6678 = 93489 counts
Corrected to 18 mg AgI
1.0525 × 43489 = 44152 counts
44152 counts / 60 minutes = 735.87 dlm
18.54 / 18.25 × 735.87 = 747.56 dlm
corrected for yield
d/a = 2.1667 dlm / 747.56 dlm = 2.898 d/c

18.19 mg AgI
GW2776 129I KI 96 05/23/88 1258 PST
2.1667 dlm

ACOGRP	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		

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52626
p93

...ATORY NOTEBOOK NO. 52626
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GW2776 129I KI-6 5/23/88 1258 P

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	16288
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
241	463	523	705	1221	3010	9907	16288			
311	8385	2424	2657	3910	2413	720	256			
271	1221	3010	9907	16288						
311	8385	2424	2657	3910	2413					

2.54%
50215 − 6413.5 = 43802 counts
Corrected to 18 mg AgI
1.0495 × 43802 = 44,457 counts
44457 counts / 60 minutes = 740.95 counts
18.54 / 18.19 × 740.95 = 755.2 dlm
d/a = 2.1667 dlm / 755.2 dlm = 2.869 d/c

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Entered 5-1-89 by L S Kellogg

Analysis of the 129 I results from the MCC ATP 106 Rad HAD 055 fuel sample received 3-7-89 was done. After completing calculations it was noted that between the a valley to valley fixed calibration, which had used a fixed channel bank for calibrations and calibration (d/c factors) of the detector [E 27-35) - (2.6 x 8)] with d/c of 2.895 there was a 91-93 cm shift the region being used consists essentially of a multiplet 28.4 keV wide with 28.4 keV wide and 28.4 keV long = 13.3%. I felt a slight shift in gain could cause the peak area considerably using the fixed channel bank. A comparison of fixed vs valley to valley was made using the two calibrations noted in the LSD and using the calibration information given below.

EP 27-76 fixed ch. Band d/c	EP 27-96 using valley to valley	EP 50-93 23-95 fixed ch. Band d/c	valley to valley
2.859	2.621	2.938	2.692
2.842	2.624	2.901	2.657
2.892	2.637	2.906	2.667
2.857	2.593	2.897	2.631
2.864	2.609	2.894	2.628
2.866	2.604	2.869	2.626
$\bar{x}$ 2.871	$\bar{x}$ 2.616	$\bar{x}$ 2.895	$\bar{x}$ 2.650
σ 1.23%	σ 1.09%	σ 2.8%	2.51%
S% 0.48%	S 0.59%	S .0%	1.0%

Min valley/fixed 0.5114 91537

Since the calibration agree within a sigma and the fixed calibration value was 2.895 sample 90 I will use 2.650 as the valley to valley d/c

Entered 5-18-89 by L S Kellogg

Specific gravity of the ~ 24 mg in the aliquots a sub dispense was determined. Using the dispensed 10 ml aliq could then be converted to volume to obtain the correct dilution when a calibration aliquot of sample was added.

Calibration of 1 ml pipette & 10 mg/mg Cs 100 — Calibration P-24 mg using pipette & balance

							1.0333	1.0333	$\bar{x}$ 1.0333
0.9980	0.9991	0.9987	0.9934	$\bar{x}$ 0.9944	σ 0.2%		1.0399	1.0422	S 0.21%
0.9996	0.9976	0.9973	0.9934	$\bar{x}$ 0.2%		0.9933	1.0433		P 1.0527

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I-129

DAILY CONTROL DATA

D08–058

BNW-52344
1-
7-17-87

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147295U

	LABORATORY RECORD BOOK NUMBER BNW- 52344	This document consists of ..... pages, copy no. .....
	TITLE (INDICATE SUBJECT CONTENT) ND-66 Daily Standard Control Record and Calibration	

AUTHOR - DIVISION AND DEPARTMENT
A. P. LEAF
Materials and Chemical Science Center
Chemical Sciences Department

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54-1100-005(10-84)

D08-059

Date/Time	Gross Counts 0-2048	Gamma Energy Isotope & Net Counts 59.5 Kev ^{241}Am	662 Kev ^{137}Cs	1332 Kev ^{60}Co	Analyst	
RC 3/9/90 0633	975747	190663	59501	17775	[illegible]	
3/12/90 0809	976524	191643	59660	17769	AEK	
3/12/90 0828	977850	RC 190461	60430	17655	AEK	
3/13/90 0736	976109	190088	59505	17686	AEK	
3/14/90 0744	974642	191031	59336	17900	AEK	
3/14/90 0820	974007	RC 189294	59674	RC 17636	AEK	
3/15/90 0737	976553	190539	59229	17853	AEK	
3/15/90 0801	977494	191161	59424	RC 17650	AEK	
3/16/90 0725	975445	190574	60308	17771	AEK	
3/16/90 0808	974050	190237	RC 59297	17716	AEK	
3/19/90 0744	971637	190411	59767	17543	[illegible]	
3/20/90 0810	973554	190027	59862	17652	[illegible]	
3/21/90 0725	972391	191428	59533	17625	[illegible]	
3/22/90 0724	972752	190509	59708	17670	[illegible]	
3/23/90 0725	974866	190546	60001	17557	[illegible]	
3/26/90 0832	971733	190142	59825	17470	AEK	
3/27/90 0740	973731	191210	60011	17633	AEK	Zero was 60.8, Drain was 1348
3/28/90 0748	971983	191771	59177	17884	AEK	Zero adj to 594, slight Drift adj 1348
RC 3/28/90 0927	969400	188610	59336	17563	AEK	
3/28/90 1009	971080	188163	59609	17660	AEK	Cs & Co peak look perfect
3/29/90 0738	970815	188296	59425	17704	AEK	
3/30/90 0811	970164	188053	59556	17535	AEK	
4/2/90 0831	968743	188159	59452	17615	AEK	
4/3/90 0727	967310	188358	59304	17237	AEK	
4/3/90 RC 0816	968558	189408	59415	RC 17478	AEK	
4/4/90 0653	969814	187915	59898	17371	AEK	
4/5/90 0749	969667	188222	59811	17423	AEK	
4/6/90 0821	968410	187550	59217	17350	AEK	
RC 4/6/90 1239	968602	RC 187925	59420	17451	AEK	
4/9/90 0834	965933	188264	59489	17627	AEK	
4/10/90 0643	965824	188816	58941	17463	AEK	
RC 4/10/90 1047	966889	188836	59715	17289	AEK	
4/11/90 0654	966117	188320	59630	17559	AEK	
4/12/90 0635	963875	187442	59156	17652	AEK	
RC 4/12/90 0651	968064	188122	59921	17267	AEK	

Project No. _____ Date of Work [illegible]

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MNW LABORATORY NOTEBOOK NO. 52344

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Page: 48
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: 35-46
Date Reviewed: 4-12-90
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 daily control data meet requirements

Reviewer's Dated Signature: [signature] 4-12-90

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:
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 adequacy requirements

Reviewer's Dated Signature: [signature] 4-12-90

Entered 4/12/90 [signature]

DATE	TIME
4/13/90	0658
4/16/90	0724
4/17/90	0719
RC 4/17/90	0833
~~RC 4/17/90~~	~~1190~~
4/18/90	0728
RC 4/18/90	0750
4/18/90	0822
4/19/90	0752
4/20/90	0653
4/23/90	0724
4/23/90	0812 ~~0738~~
4/24/90	0738
4/25/90	0644
4/25/90	0840
4/26/90	0655
4/27/90	0715
4/30/90	0731
5/1/90	0733
5/2/90	0818
5/3/90	0734
5/3/90	0752
5/4/90	1332
5/7/90	0721
5/7/90	0743
5/8/90	0713
5/8/90	0847
5/8/90	0902
5/9/90	1304
5/10/90	0726
5/10/90	0744
5/11/90	0731
5/11/90	0755
5/14/90	0722
5/15/90	0727
5/15/90	0811
5/15/90	0825

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52344 AUG 23 '90

DATE	TIME	0-2048	59.5 Kev ^{241}Am	661.7 Kev ^{137}Cs	1332.5 Kev ^{60}Co	Analyst	Remarks
4/13/90	0658	966997	188371	59228	17426	AEK	
4/16/90	0724	965738	187914	59422	17300	[illegible]	
4/17/90	0719	961590	188086	59089	17463	AEK	
RC 4/17/90	0833	965595	188349 AEK 4/17/90	59385	17508	AEK	
~~RC 4/17/90~~	~~1100~~	RC 4/17/90				AEK	
4/18/90	0728	964369	188026	58858	17123	AEK	
RC 4/18/90	0750	965517	188979	59607	RC 17683	AEK	
4/18/90	0822	965484	188445	59851	RC 17619	AEK	
4/19/90	0752	967142	189445	59197	17362	AEK	
4/20/90	0653	966706	188965	59623	17321	AEK	
4/23/90	0724	965840	188634	59185	17183	AEK	
4/23/90	~~0738~~ 0812	964984	187596	58932	RC 17604	AEK	
4/24/90	0738	965426	188158	58871	17418	AEK	
4/25/90	0644	964526	187422	59252	17552	AEK	
4/25/90	0840	967001	RC 188112	59308	17510	AEK	
4/26/90	0655	966618	189057	59271	17475	AEK	
4/27/90	0715	963781	188277	59177	17241	AEK	
4/30/90	0731	965971	188661	59216	17466	AEK	
5/1/90	0733	966262	188134	59442	17525	AEK	
5/2/90	0818	962726	188683	59304	17381	AEK	
5/3/90	0734	961931	187487	59172	17268	AEK	
5/3/90	0752	962366	RC 187962	58602	17139	AEK	
5/4/90	1532	963420	188447	59265	17397	AEK	
5/7/90	0721	959797	187895	58969	17315	AEK	
5/7/90	0743	962603	RC 188128	59292	17174	AEK	
5/8/90	0713	961619	187601	58998	17294	AEK	
5/8/90	0849	962926	RC 187980	58696	17628	AEK	
5/8/90	0902	962665	RC 188590	58733	17143	AEK	
5/9/90	1304	962753	188476	59312	17153	AEK	
5/10/90	0726	963915	187813	59049	17286	AEK	
5/10/90	0744	963266	RC 188071	59129	17379	AEK	
5/11/90	0731	963222	188122	59142	17522	AEK	
5/11/90	0755	964109	188280	59500	RC 17239	AEK	
5/14/90	0722	961736	188901	58837	17229	AEK	
5/15/90	0727	965419	188772	59455	17516	AEK	
5/15/90	0811	960043	187669	59131	RC 17098	AEK	
5/15/90	0825	963239	RC 187395	59087	RC 17317	AEK	

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DU		Gross Counts.	Gamma Energy Isotope & Net Counts					
Date	Time	0-2048	595 Kev Am 241	661.7 Kev Cs 137	1332.5 Kev Co 60	Analyst	Remarks	
5/16/90	0724	964298	187845	58790	17344	AEK		
5/16/90	0800	962516	RC 188267	RC 59132	17283	AEK		
5/17/90	0733	963542	187856	59333	17073	AEK		
5/17/90	0756	963868	RC 187835	59034	RC 17317	AEK		
5/17/90	0818	963599	RC 189188	59071	17003	AEK		
5/18/90	0713	963707	188319	58809	17203	AEK		
5/21/90	0727	961176	188172	58609	17221			
5/21/90	0746	962069	187927	57232	17234			
5/22/90	0734	961658	188259	59387	17071	AEK	Gain adj ↑	
5/23/90	0713	963780	188811	58814	16950	AEK		
5/23/90	0804	961369	189120	58759	RC 17148	AEK		
5/24/90	0718	965228	188344	59253	17205			
5/25/90	0712	961383	187285	59080	16845	AEK		
5/25/90	0744	961795	RC 187236	58948	RC 16918	AEK		
5/25/90	0824	962205	RC 188074	59098	RC 17216	AEK		
5/29/90	0712	960993	188055	58647	17193	AEK		
5/29/90	0727	962932	187560	RC 59035	16942	AEK		
5/30/90	0651	961632	187877	59216	17093	AEK		
5/30/90	0706	960725	RC 187497	58978	17043	AEK		
5/30/90	0720	961120	RC 188272	58839	17020	AEK	Gain adj ↓	
5/31/90	0716	961496	189001	58116	17062	AEK		
5/31/90	0732	960187	188048	RC 59143	17339	AEK		
6/1/90	0657	959312	188193	59175	16990	AEK		
6/1/90	0731	958896	187765	58641	RC 16833	AEK		
6/1/90	0752	960747	188500	58796	RC 17210	AEK		
6/4/90	0759	959111	188314	58327	16994	AEK		
6/4/90	0821	962583	188131	RC 58888	16935	AEK		
6/5/90	0647	958743	187595	58784	17027	AEK		
6/5/90	0701	962075	RC 188756	59067	17168	AEK	Gain adj ↑	
6/6/90	1023	959350	189060	59496	17065			
6/7/90	0818	959926	188716	58921	16767	AEK		
6/7/90	0836	961505	188221	59040	RC 17091	AEK		
6/8/90	0705	958831	188376	58635	17124	AEK		
6/11/90	0716	958478	187668	58639	17071		Gain adj ↑	
RC 6/11/90	0741	960564	187642	59041	16974			
6/12/90	0725	959978	188173	58856	17301			

Date	Time
6/13/90	0717
RC 6/13/90	073
6/14/90	070
6/15/90	0
6/15/90	08
6/15/90	06
6/18/90	073
6/19/90	073
6/20/90	072
6/21/90	080
6/22/90	081
RC 6/22/90	083
6/25/90	07
6/26/90	07
6/27/90	07
RC 6/27/90	07
6/28/90	0
7/5/90	080
7/5/90	082
7/5/90	135
7/6/90	065
7/9/90	062
7/10/90	064
7/11/90	06
7/12/90	06
7/13/90	063
7/16/90	065
7/17/90	062
7/17/90	064
7/17/90	07
7/17/90	083
7/18/90	062
7/18/90	063
7/19/90	061
7/20/90	063
7/23/90	071
7/23/90	07

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AUG 23 '90

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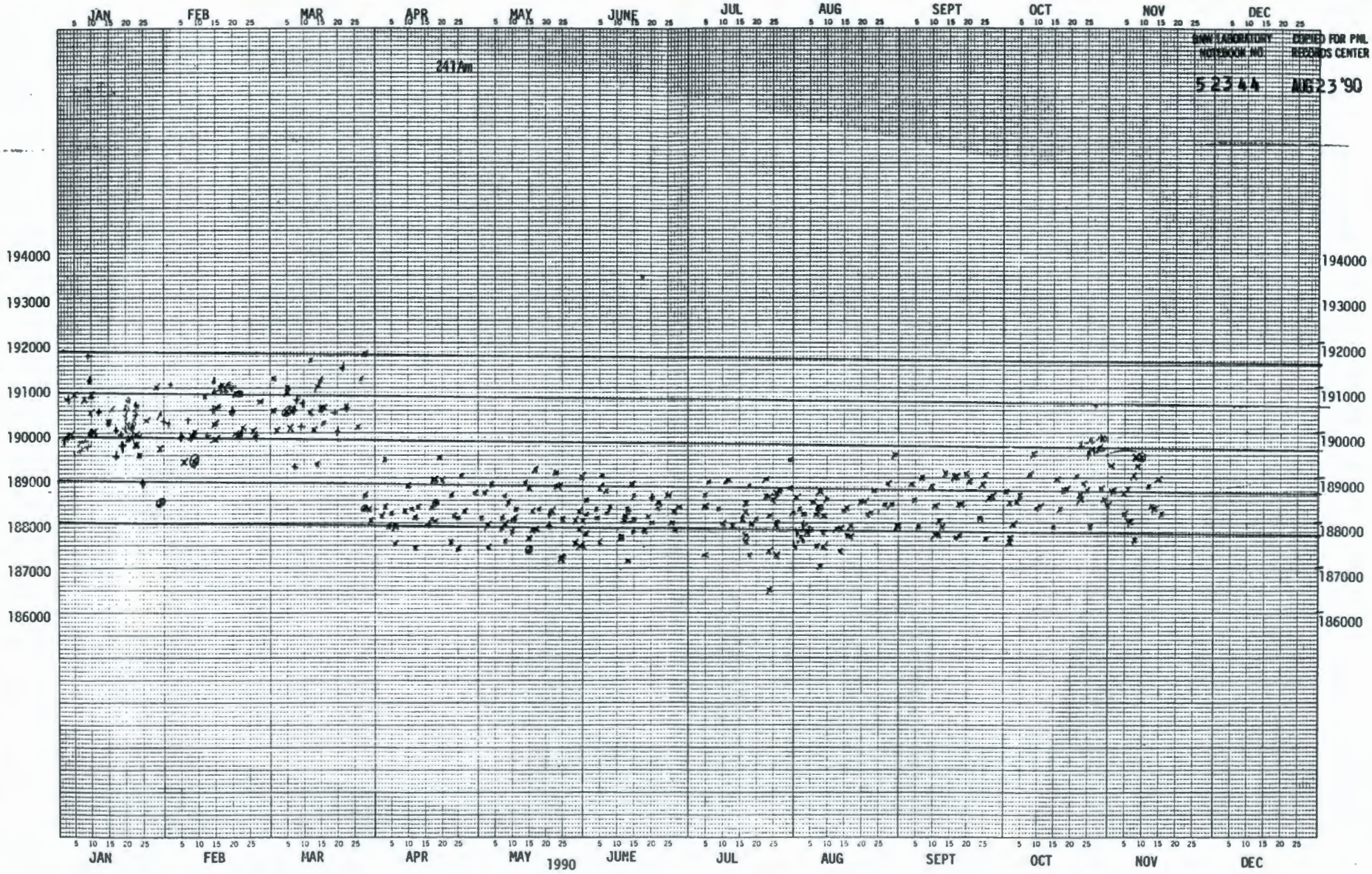
D08-063

COUNTING SYSTEM: ND-66 GE(Li) WELL
CONTROL NUCLIDE: 241 Am of MS5-1 241Am+137Cs+60Co 59.5 Kev
NUCLIDE HALF LIFE: 432.2 YEARS 0.5 (NUCLEAR DATA SHEETS 1/78

— $\bar{X}$
— 95% Confidence Level
— 1% of $\bar{X}$



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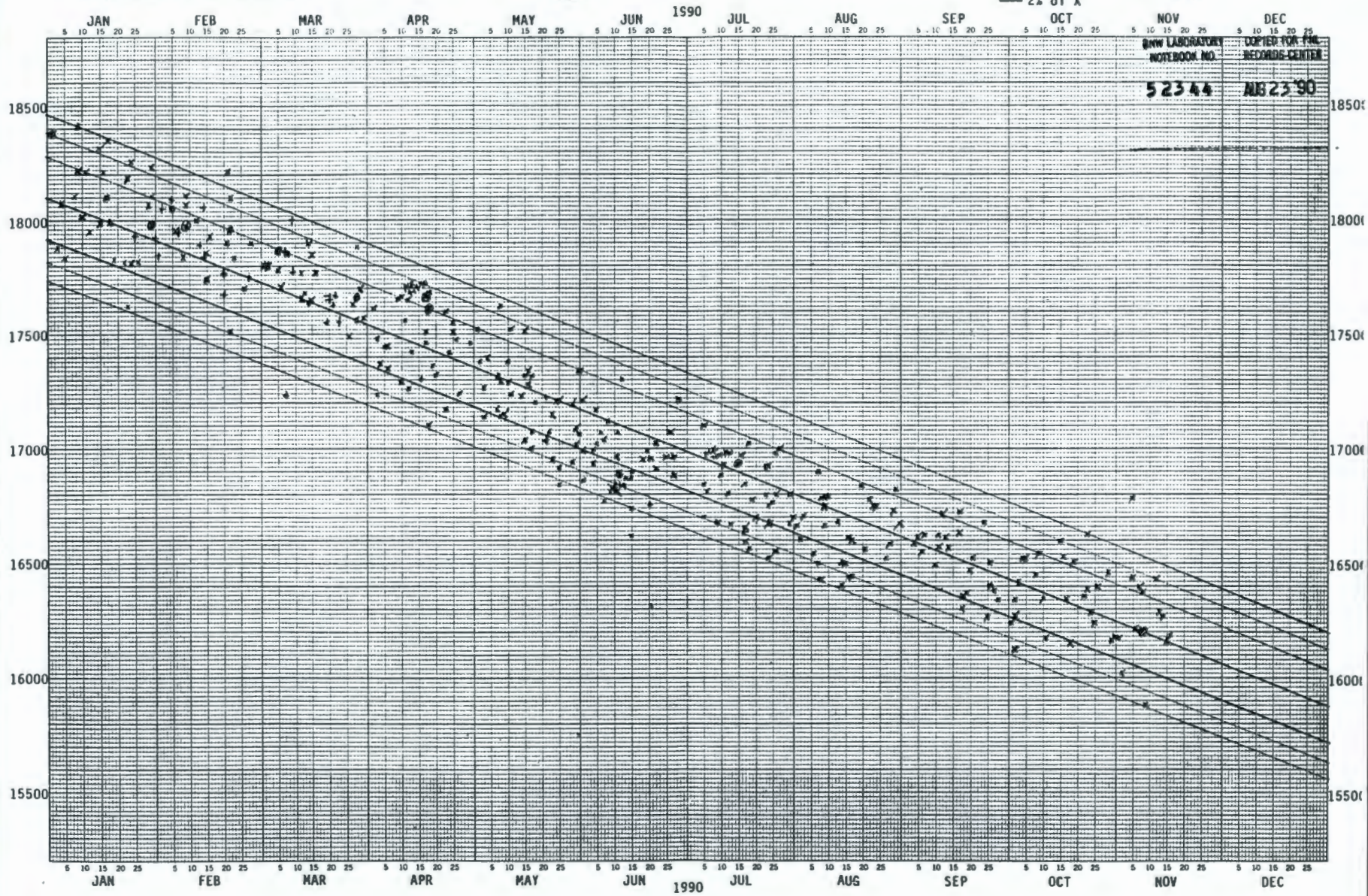
D08-064

47 2730

K+E 1 YEAR BY DAYS X 180 DIVISIONS KEUFFEL & ESSER CO. MADE IN U.S.A.

COUNTING SYSTEM: KD-66 GE(Li) WELL
CONTROL NUCLIDE: 60Co of MS5-1 241Am+137Cs+60Co 1332.5 K
NUCLIDE HALF LIFE: 5.271 YEARS

— X̄
— 95% Confidence Leve
— 1% of X̄
— 2% of X̄



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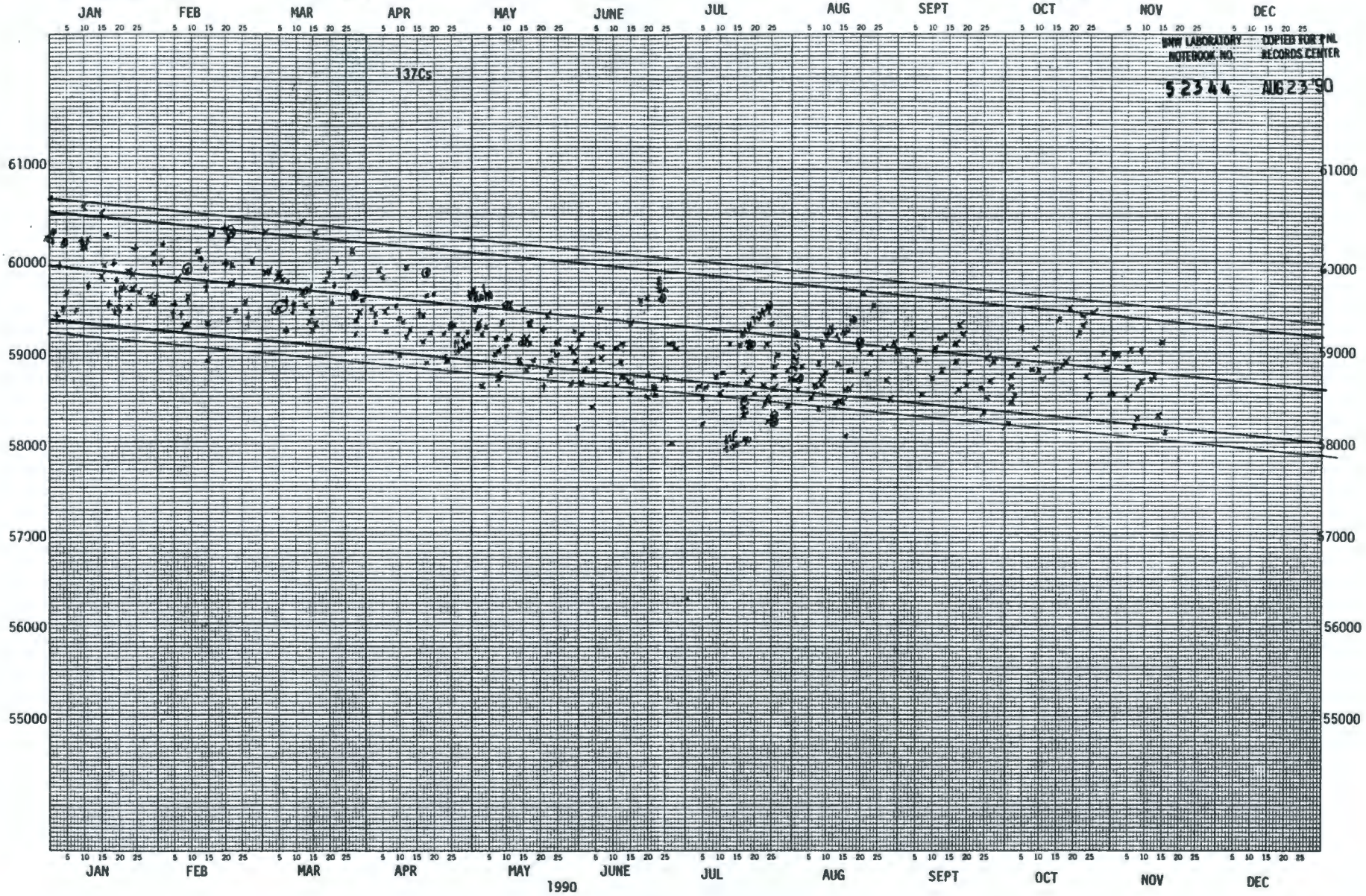
D08-065

COUNTING SYSTEM: ND-66 GE(Li) WELL
CONTROL NUCLIDE: 137Cs of MS5-1 241Am+137Cs+60Co 662 K 1.4)
NUCLIDE HALF LIFE: 30.17 YEARS

— X̄
— 95% Confidence Level
— 1% of X̄



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47 2730

K+E 1 YEAR BY DAYS X 180 DIVISIONS KEUFFEL & ESSER CO. MADE IN U.S.A.

D08-066

D9 - TRITIUM

TRITIUM (H-3)

PRIMARY DATA PACKAGE

D09–001

SST

H-3 DATA COVER SHEET

Sample Number: 90-1255-A-1/2
90-1256-A-1/2
90-1257-C-1/2

Procedure: PNL-SP-30

Pipet Calibration LRB#: BNW 52920

Equipment (M&TE#): HW 523058

System Calibration LRB#: NA

TRITIUM (H-3)

SUMMARY DATA REPORTS

D09–003

SST DATA RESULTS FOR CORE 9

Customer No.	TRITIUM
90-1257-C-1	<8.0E+03 dpm/g
90-1257-C-2	<8.0E+03 dpm/g

TRITIUM (H-3)

ANALYTICAL REPORT CARDS

D09–005

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.

Pacific Northwest Laboratory		ANALYTICAL REPORT	
Customer SST		Date Received 4-6-90	Work Order No. M620 15
Serial No	Customer Ident	Constituent	Result
249 -90 32984g BNW 10A p. per Cal Log page 30 BNW52920 p.____	110B-C9-AN 90-1257-C-1 H2OLEACH	TRITIUM	< 8.0 E3 dpm/g wet wt
Serial Number 103208 N-L Abbey 7-3-90		Date 11-13-90	Approval LSK

54-1700-177 (05/89)

SERIAL NUMBER 103208

@ 25° ρ 0.997044 ∴ H2O

2.0799g + 202.0588g. H2O 202.6579 ml

N.R.A.

A .5022 → 50 - 3.9794 → run in dup

A'

B " " "

B'

DATA

See attached sheet for calculations

(Over)

D09-007

Pacific Northwest Laboratory		ANALYTICAL REPORT	
Customer SST		Date Received 4-6-90	Work Order No. M62015
Serial No	Customer Ident	Constituent	Result
250 -90 32901 g. BNW 10 dp. per Cal. Log page 30 BNW52920 p.____	110B-C9-AN 90-1257-C-2 H2OLEACH	TRITIUM	< 8.1E 3 dpm/g wet wt
Serial Number 103218 N L Abbey 7-3-90		Date 11-14-90	Approval LSK

54-1700-177 (05/89)

SERIAL NUMBER 103218

@25° P 0.997044

2.0215g. + 199.0698g. H2O ∴ H2O - 199.660

A .5022 → 50 - 3.9794 → run in dup.

A'

B

B''

DATA

See attached sheet for calculations

(Over)

D09-008

SST 3H 7-3-90 C9 1257-C1, 1257-C2 : C10 1274-C-1, 1274-C-2 ①

		ch1	ch2				
288) Lois Jessmore check	①-1	14.39	12.89	ch1	$\bar{x}_9$	14.4567	
289)	①-2	15.01	13.64		s_9	0.3733	$\bar{s}_9$ 0.1244 ÷3 = 0.373 ir
292	②-1	14.21	12.92				
293	②-2	14.64	12.79	ch2	$\bar{x}_9$	13.021	
296	③-1	13.83	12.38		s_9	0.3945	$\bar{s}_9$ 0.1315
297	③-2	14.88	13.57				
003	④-1	14.33	12.91				$3* \sqrt{\frac{14.4567}{400} + \frac{14.4567}{400}}$ = 0.7167 cpm
004	④-2	14.17	12.81				
009	⑤-1	12.84	11.76 out side of 3σ				14.4567 + .7167 → 15.70 ch1 [illegible] sample count to be valid
010	⑤-2	14.61	13.03				

^{3}H std 1.89+6 dpm) → @ 3-12-88 49.2λ, 100λ @ 12.321 df = .55792

286	50λ	11866.94 14.46 11852.48	8228.95 13.02 8215.93	5.2065711 1.1852548	→ 4.40294 d/c
					e_2 0.5 Mo
					$\bar{x}_2$ 4.3520
287	100λ	24169.32 14.46 24154.86	16809.24 13.02 16796.22	1.0587515 2.4154486+4	→ 4.38109 d/c

249-90	1257-C-1	110B-C9-AN	H2O leach	2.0799g → 202.6579 ml − .5022 → 50 − 3.9794 df 2.4378+3	
290)	A-1	15.36	13.61	$\bar{x}_4$ 14.88 − 14.45	
291)	A-2	14.52	13.01	s_4	
294	B-1	15.15	13.48	(< 0.75)(4.392)(2.4378+3) → < 8.030 E3 dpm/g	dlc
295	B-2	14.49	13.18		wet wt

250-90	1257-C-2	110B-C9-AN	H2O leach	2.0215g → 199.660 − .5022 → 50 − 3.9794 df 2.4711+3	
298	A-1	14.46	12.87	$\bar{x}_4$ 14.78 − 14.45	
299	A-2	14.80	13.22		
001	B-1	14.85	13.15	<0.75)(4.392)(2.4711+3) → < 8.140 E3 dpm/g	wet wt
002	B-2	15.03	13.40		

254-90	1274-C-1	110B-C10-AN		2.0377g → 203.7251 ml − .5022 → 50 − 3.9794 df 2.5014+3	
005		15.31	13.75	$\bar{x}_4$ 14.76 − 14.45	
006		14.63	13.41	s_4 0.487	
007		14.66	12.92		
008		14.15	12.45	(<0.75)(4.392)(2.5014+3) → < 8.240 E3 dpm/g	wet wt

SST 3H 7-3-90 ②

260-90 1279-C-2 110B-C10-AH 2.1759 → 202.5638 ml → .5022 → 50 - 39794 df 2.3292+3

11)	A-1	15.42	13.84	$\bar{x}_4$ 14.41 -1445
12)	A-2	14.65	13.34	$\bar{y}_4$ 0.4[illegible]
13)	B-1	14.59	13.12	
14)	B-2	14.59	13.21	

(< 0.75)(4.392)(2.3292+3) → < 7.672 E3 dpm/g wet wt

(2) SST samples

Battelle Pacific Northwest Laboratories

3000 TRI CARB

MATRIX:
- [ ] 16-2 BIO
- [ ] 16-2 RAO
- [ ] 21-4 RAO
- [ ] OTHER 19ml Opt.-fluor + 4 mls sample

CONTROL SETTINGS: HV ____

GAIN: RED ____ GREEN ____

WINDOW SETTINGS: RED ____ GREEN ____

WINDOW WIDTH: A ____ B ____ C ____ D ____

COUNTING DATE(S): 7-3-90

ISOTOPE(S): H^3

TIME BASE SELECTOR SWITCH: [ ] .01 MIN. [ ] .1 SEC.

OPERATOR'S INITIALS: 09:07 ON NLA OFF ____

EXT. STD.: [ ] ON [ ] OFF

POS.	SAMPLE DESIGNATION	SAMPLE ALIQUOT	DATE-TIME SAMPLED	LOG. NO.	DATE-TIME RECEIVED	REMARKS
010	Loisglassware H_2 ck - 2 (5)		7.2.90		5 @ water check	
011	Sa. 260-90A - 1		4-10-90		260-90A	
012	" - 2		↓		"	
013	Sa 260-90B - 1				260-90B	
014	" - 2				"	
Stop button						
	Balance 45Y289 in 10A 327 Bldg					
	water temp: 20°C vol factor 1.00177					
	pipet for stds:					
	pipet 5A-2 50x = $\bar{x}$ 0.0492 ml					
	S = 0.0002 ml					
	pipet 5A3 100x = $\bar{x}$ 0.1000 ml					
	S = 0.0003 ml					
	For samples:					
	pipet 50-690-40-17 (1 to 5 ml) used 4 mls.					
	$\bar{x}$ = 3.9794 ml.					
	S = 0.0182 ml.					

BD-1700-124 (11-71)

(1) SST Samples

Battelle Pacific Northwest Laboratories

3000 TRI CARB

MATRIX:
- [ ] 16-2 BIO
- [ ] 16-2 RAO
- [ ] 21-4 RAO
- [ ] OTHER 19ml Optifluor + 4ml's sample.

COUNTING DATE(S): 7-3-90

ISOTOPE(S): H3

TIME BASE SELECTOR SWITCH: [ ] .01 MIN. [ ] .1 SEC.

OPERATOR'S INITIALS: 09:07 ON NJA OFF

CONTROL SETTINGS: HV

GAIN: RED GREEN

WINDOW SETTINGS: RED GREEN

WINDOW WIDTH: A B C D

EXT. STD.: [ ] ON [ ] OFF

POS.	SAMPLE DESIGNATION	SAMPLE ALIQUOT	DATE-TIME SAMPLED	LOG. NO.	DATE-TIME RECEIVED	REMARKS
281	Beckman B11080					
282	Beckman C277066					
283	Beckman H277092					
284	Blank-1					
285	Blank-2					
286	Standard	50 ↓				
287	Standard	100 ↓				
288	Lois glassware H_2O ck (1)		7-2-90		1G water check	
289	" "		↓		"	
290	Sa 249-90 A - 1		4-6-90		249-90 A	
291	" - 2		↓		"	
292	Lois glassware H_2O ck (2)		7-2-90		2G water check	
293	" "		↓		"	
294	Sa. 249-90-B - 1		4-6-90		249-90 B	distilled 2 times
295	" - 2		↓		"	"
296	Lois glassware H_2O ck (3)		7-2-90		3G water check	
297	" "		↓		"	
298	Sa. 250-90 A - 1		4-6-90		250-90 A	
299	" - 2		↓		"	
001	Sa. 250-90 B - 1		↓		250-90 B	
002	" - 2		↓		"	
003	Lois glassware H_2O ck (4)		7-2-90		4G water check	
004	" "		↓		"	
005	Sa 259-90 A - 1		4-10-90		259-90 A	distilled 2 times
006	" " - 2		↓		"	
007	Sa 259-90 B - 1		↓		259-90-B	
008	" - 2		↓		"	
009	Lois glassware H_2O ck (5) - 1		7-2-90		5G water check	

BD-1700-124 (11-71)

D09-012

00534

PROG 1 USER 1

CI CH 12 1 TIMES
CSS 1 TIMES
SCR =2/1
AUC =NO
RCM =NO
CALC= 1
PST = 100.00 MIN
OCF = 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
	281	1	12.63	5.62	100.00	101.09	.818
		2	10.34	6.21			
	282	1	4680.75	.98	8.78	110.09	.973
		2	4555.80	1.00			
	283	1	31384.50	.94	1.42	111.66	.903
		2	28346.47	.99			
	284	1	14.59	5.23	100.00	212.52	.899
		2	13.12	5.52			
	285	1	13.75	5.39	100.00	313.36	.908
		2	12.49	5.65			
	286	1	11866.94	.83	4.87	318.41	.693
		2	8228.95	.99			
	287	1	24169.32	.83	2.38	320.95	.695
		2	16809.24	.99			
	288	1	14.39	5.27	100.00	421.81	.895
		2	12.89	5.57			
	289	1	15.01	5.16	100.00	522.66	.912
		2	13.69	5.40			
1	290	1	15.36	5.10	100.00	623.52	.886
		2	13.61	5.42			

00535

SAMP	POS	CH	CPM	2S%	TIME	ELTIME	SCR
	291	1	14.52	5.24	100.00	724.46	.896
		2	13.01	5.54			
1	292	1	14.21	5.30	100.00	825.28	.909
		2	12.92	5.56			
1	293	1	14.68	5.21	100.00	926.14	.884
		2	12.99	5.54			
1	294	1	15.15	5.13	100.00	1026.99	.889
		2	13.48	5.44			
1	295	1	14.49	5.25	100.00	1127.85	.909
		2	13.18	5.50			
1	296	1	13.83	5.37	100.00	1228.70	.895
		2	12.38	5.68			
1	297	1	14.88	5.18	100.00	1329.56	.911
		2	13.57	5.42			
1	298	1	14.46	5.25	100.00	1430.41	.885
		2	12.81	5.58			
1	299	1	14.80	5.19	100.00	1531.27	.893
		2	13.22	5.50			
2	1	1	14.85	5.18	100.00	1632.15	.905
		2	13.45	5.45			
2	2	1	15.03	5.15	100.00	1733.01	.891
		2	13.40	5.46			
2	3	1	14.33	5.28	100.00	1833.87	.900
		2	12.91	5.56			
2	4	1	14.17	5.31	100.00	1934.72	.904
		2	12.81	5.58			
2	5	1	15.31	5.11	100.00	2035.57	.898
		2	13.75	5.39			
2	6	1	14.93	5.17	100.00	2136.43	.898
		2	13.41	5.46			
2	7	1	14.66	5.22	100.00	2237.29	.881
		2	12.92	5.56			
2	8	1	14.15	5.31	100.00	2338.13	.879
		2	12.45	5.66			
2	9	1	12.89	5.57	100.00	2438.98	.912
		2	11.76	5.83			

SAMP	POS	CH	CPM	2S%	TIME	ELTIME	SCR
~	10	1	14.61	5.23	100.00	2539.90	.891
		2	13.03	5.53			
3	11	1	15.42	5.09	100.00	2640.72	.897
		2	13.84	5.37			
3	12	1	14.65	5.22	100.00	2741.58	.913
		2	13.39	5.46			
3	13	1	14.59	5.23	100.00	2842.43	.899
		2	13.12	5.52			
3	14	1	14.59	5.23	100.00	2943.28	.905
		2	13.21	5.50			

D-10 - CARBON 14 ANALYSIS

No Data Reported For Core 9

D-11 - U AND Pu ISOTOPIC ANALYSIS

BY MASS SPECTROMETRY

No Data Reported For Core 9

D-12 - PIPET CALIBRATION DATA

PIPETTE CALIBRATION

PRIMARY DATA PACKAGE

D12-001

PIPET CALIBRATION FOR RADIOCHEMICAL ANALYSIS

D12-002

SST

PIPETTE CALIBRATION DATA COVER SHEET

Sample Number: 90-0300-A-1/2/3 90-0305-A-1/2/3 90-1257-C-1/2/5
90-0301-A-1/2/3 90-1255-A-1/2/3
90-0304-A-1/2/3 90-1256-A-1/2

Pipet Calibration LRB#: BNW 52920

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

BNW-52920
1—
5-13-88

PACIFIC NORTHWEST LABORATORY
RECEIVED
MAY 13 1988
BATTELLE TECH. INFO.

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- 52920	This document consists of ..... pages, copy no. .....

TITLE (INDICATE SUBJECT CONTENT)
Pipet Calibration for Radiochemical Analyses Using Balance ~~# 360~~ 06-01-018, Correlation Information for Uranium Standards and Uranium Analyze-Checks (WA52164)

AUTHOR - DIVISION AND DEPARTMENT

PERIOD COVERED FROM 12-21-89 TO 6-21-90

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D12-004

54-1100-005(10-84)

DATE	PIPET #	WEIGHT	NAME
2-21-90	#2 — 1 → 5 ml	5.0803	Virginia L Dunn
WT-CHECK = 30g = 29.9995g	C 5ml	5.0605	
24°C Vol factor = 1.00268		5.0566	
		5.0547	
		5.0375	
		25.2896 ÷ 5 X 1.00268 = 5.0715 ml	
2/21/90	#69-501	0.0500	Anne Ettegeldy
24°C Vol factor = 1.00268		0.0500	
		0.0502	
		0.0493	
		0.0500	
		0.2493 ÷ 5 X 1.00268 = 0.04994 ml	
2-22-90	#8 — 100λ	0.0991	Virginia L Dunn
WT. CHECK = 30g = 30.0003		0.0992	
24°C Vol factor = 1.00268		0.0995	
		0.0995	
		0.0999	
		0.4972 ÷ 5 X 1.00268 = 0.0997 ml	
	#1 — 100 → 1000λ	0.4981	Virginia L Dunn
24°C Vol factor = 1.00268	C 500λ	0.4955	
		0.4931	
		0.4979	
		0.5000	
		2.4842 ÷ 5 X 1.00268 = 0.4982 ml	
	#2 — 1 → 5 ml	5.0341	Virginia L Dunn
24°C Vol factor = 1.00268	C 5 ml	5.0249	
		5.0326	
		5.0340	
		5.0222	
		25.1478 ÷ 5 X 1.00268 = 5.0930 ml	

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DATE	PIPET #	WEIGHT	NAME
2-22-90	#33 – 100 → 1000λ @ 1000λ	0.9978	Virginia L Dunn
Wt check = 30g = 30.0003g		0.9952	
24°C vol factor = 1.00268		0.9971	
		0.9979	
		0.9980	
		4.9860 ÷ 5 × 1.00268 = 0.9999 ml	
2-22-90	#24 2-10λ @10λ	0.0097	P. J. Raney
Wt. Check - 30g = 30.0003g		0.0098	
24°C. Vol Factor = 1.00268		0.0101	
		0.0097	
		0.0098	
		0.0491 ÷ 5 × 1.00268 = 0.0098 ml	
	#41 20λ	0.0206	P. J. Raney
		0.0205	
		0.0200	
		0.0202	
		0.0199	
		0.1012 ÷ 5 × 1.00268 = 0.0203 ml	
	#55 50λ	0.0509	P. J. Raney
		0.0505	
		0.0502	
		0.0500	
		0.0499	
		0.2515 ÷ 5 × 1.00268 = ~~1.00~~ 0.0504 ml PJR 2-22-90	
	#14 100λ	0.1000	P. J. Raney
		0.0986	
		0.1005	
		0.1000	
		0.0998	
		0.4989 ÷ 5 × 1.00268 = 0.1000 ml	

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Date	Pipet #		Weight	Name
2-22-90				
30g = 30.0003g	#5		1.0010	
24°C. Vol. Factor = 1.00268		100-100ml	0.9994	P.J. Raney
		@ 100ml	0.9960	
			0.9985	
			0.9916	
			4.9865 ÷ 5 x 1.00268 = 1.0000 ml	
	#64		5.0320	
	→ 5ml		4.9676	P.J. Raney
	@ 5ml		4.9464	
			4.9451	
			4.9331	
			24.8242 ÷ 5 x 1.00268 = 4.9781 ml	
2-23-90	#10 - 10 → 100x		0.0249	
WT check - 30g = 29.9998g		@ 25x	0.0250	
24°C Vol factor = 1.00268			0.0237	Virginia S Dunn
			0.0252	
			0.0249	
			0.1237 ÷ 5 x 1.00268 = 0.0248 ml	
	#15 - 10 → 100x		0.0493	Virginia S Dunn
24°C Vol factor = 1.00268		@ 50x	0.0498	
			0.0499	
			0.0499	
			0.0499	
			0.2488 ÷ 5 x 1.00268 = 0.0499 ml	
	#8 - 100x		0.0988	
24°C Vol factor = 1.00268			0.0989	Virginia S Dunn
			0.0995	
			0.0995	
			0.0999	
			0.4966 ÷ 5 x 1.00268 = 0.0996 ml	

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DATE	PIPETTE	WEIGHT	NAME
2-23-90	#1 – 100 → 1000 λ @ 500 λ	0.4977	Virginia S Dunn
Wt check = 10g = 29.9998g		0.4954	
24°C vol factor = 1.00268		0.4961	
		0.4947	
		0.4983	
		2.4822 ÷ 5 × 1.00268 = 0.4978 ml	
	# 33 – 100 → 1000 λ @ 1000 λ	0.9982	Virginia S Dunn
24°C vol factor = 1.00268		0.9984	
		1.0024	
		1.0003	
		1.0028	
		5.0021 ÷ 5 × 1.00268 = 1.0031 ml	
	# 2 – 1 → 5 ml @ 5 ml	5.0378	Virginia S Dunn
24°C vol factor = 1.00268		5.0424	
		5.0450	
		5.0406	
		5.0303	
		25.1961 ÷ 5 × 1.00268 = 5.0527 ml	
2-23-90	#64 0-5 ml @ 5 ml	4.9982	P. J. Raney
Wt-30g = 29.9998g		4.9364	
24°C Vol. Factor = 1.00268		4.9243	
		4.9647	
		4.9217	
		24.7453 ÷ 5 × 1.00268 = 4.9623 ml	
	#5 100–1000 λ @ 1000 λ	1.0124	P. J. Raney
		1.0112	
		1.0074	
		1.0052	
		1.0030	
		5.0392 ÷ 5 × 1.00268 = 1.0105 ml	

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Date	Pipet #	Weight	Name
2-23-90 30g = 29.9998g 24°C Vol. Factor - 1.00268	#14 100λ	0.0992 0.0984 0.0991 0.0995 0.0992 0.4954 ÷5 X 1.00268 = 0.0993 ml	P. J. Raney
	#55 50λ	0.0502 0.0500 0.0503 0.0500 0.0500 0.2505 ÷5 X 1.00268 = 0.0502 ml	P. J. Raney
	#41 20λ	0.0201 0.0204 0.0201 0.0203 0.0201 0.1010 ÷5 X 1.00268 = 0.0203 ml	P. J. Raney
	#24 2-10λ @ 10λ	0.0102 0.0095 0.0104 0.0106 0.0099 0.0500 ÷5 X 1.00268 = 0.0100 ml	P. J. Raney
	#68 500λ	0.5022 0.5011 0.5036 0.5014 0.5028 2.5111 ÷5 X 1.00268 = 0.5036 ml	Imaiti

24°C Vol. factor = 1.00268

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BNW LABORATORY PAPER END DATE

D12-009

Date	Pipet #	Weight	Name
2-23-90	66		
30g = 29.9998g	100λ	0.0949	
		0.0944	Emariti
		0.0925	
		0.0957	
24°C Vol. factor = 1.00268		0.0947	÷5 x 1.00268 = 0.0947ml
		0.4722	

2-27-90	#24	0.0100	
30g = ~~28.~~ 29.9998g 2-27-90	240λ	0.0098	
24°C Vol Factor = 1.00268	@10λ	0.0100	P.J. Raney
		0.0097	
		0.0097	
		0.0492	÷5 x 1.00268 = 0.0099ml.
	#41	0.0198	
	20λ	0.0201	P.J. Raney
		0.0200	
		0.0200	
		0.0201	
		0.1000	÷5 x 1.00268 = 0.0201ml
	#55	0.0499	
	50λ	0.0502	P.J. Raney
		0.0498	
		0.0501	
		0.0503	
		0.2498	÷5 x 1.00268 = 0.0501ml
	#14		
	100λ	0.0991	P.J. Raney
		0.0995	
		0.1000	
		0.1000	
		0.1000	
		0.4986	÷5 x 1.00268 = 0.0100ml

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D12-010

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Date	Pipet #		Weight	Name
2-27-90		#65	0.9944	P. J. Ramey
30g = 29.9998g		→ 1ml	0.9962	
24°C Vol Factor = 1.00268		@ 1ml	0.9932	
			0.9915	
			0.9924	
			4.9677 ÷ 5 × 1.00268 = 0.9962 ml.	
		#64	5.0667	P. J. Ramey
		→ 5ml	4.9732	
		@ 5ml.	4.9789	
			4.9501	
			4.9396	
			24.9085 ÷ 5 × 1.00268 = 4.9951 ml.	

Date	Pipet # 68 1000λ	Weight	Name
2/28/90		0.9920	Imaiti
30g = 30.0003g		0.9968	
24°C Vol. factor = 1.00268		0.9953	
		0.9917	
		0.9934	÷ 5 × 1.00268 = 0.9965 ml
		4.9692	

Date	Pipet # 68 500λ	Weight	Name
3/1/90		0.4961	Imaiti
30g = 30.0003g		0.4959	
		0.4982	
		0.4978	
24°C Vol. factor = 1.00268		0.4968	÷ 5 × 1.00268 = 0.4982 ml
		2.4841	

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Signed 1. _____ Date _____
2. _____ Date _____

Date	Pipet #	Weight	Name
3/1/90	68		
30g = 30.0003g		0.0939	
		0.0953	Emaniti
		0.0938	
		0.0935	
24°C Vol. factor = 1.00268		0.0948	
		0.4713	÷5 × 1.00268 = 0.0945 ml

3/1/90 #5 - 100λ
24°C Vol factor - 1.00268

0.1009	
0.1003	
0.1004	
0.1000	Anne Etheridge
0.1004	
0.5020	÷ 5 × 1.00268 = 0.100669 ml

3-1-90 PgR

3-1-90 #5 ~~#28~~ 100-100λ
24°C Vol. Factor @ 500λ

0.4981	
0.4963	
0.4970	P.J. Raney
0.4985	
0.5007	
2.4906	÷5 × 1.00268 = 0.4995 ml.

#63
100-1000λ
@ 1000λ

1.0016 ~~1.00116~~ PgR 3-1-90	
0.9956	P. J. Raney
1.0015	
0.9985	
0.9991	
4.9963	÷5 × 1.00268 = 1.0019 ml.

#55
50λ

0.0494	P.J. Raney
0.0500	
0.0499	
0.0501	
0.0503	
0.2497	÷5 × 1.00268 = 0.0501 ml

Project No. _____ Date of Work _____
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Date	# Pipet #	Weight	
3/1/90	#67 - 20λ	0.0196	
30g - 30.0003g		0.0190	
24° C Vol factor = 1.00268		0.0197	
		0.0190	Anne Etzkitz
		0.0196	
		0.0981	÷5 x 1.00268 = 0.019673 ml
3/1/90	#33 - 1ml	1.0030	
24° C Vol fact = 1.00268		1.0046	
		1.0036	
		1.0024	Anne Etzkitz
		1.0007	
		5.0143	÷5 x 1.00268 = 1.005598 ml

Date	Pipet # 68 500λ	Weight	
3/2/90		0.4970	
30g = 29.9998g		0.4983	Emanti
24°C Vol. factor = 1.00268		0.4995	
		0.4984	
		0.4988	
		2.492	÷5 x 1.00268 = 0.4997 ml
	#66 100λ	0.0931	
		0.0930	Emanti
24°c Vol. factor = 1.00268		0.0937	
		0.0934	
		0.0922	
		0.4654	÷5 x 1.00268 = 0.0933 ml

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Date
3/2/90
30g = 29.9998 g
24°c vol factor
1.00268

Pipet #
#16 - 5 ml

Weights
~~5.0299~~ CWH 3/2/90
5.0378
~~5.0451~~ CWH 3/2/90
5.0352
5.0377 L O Harvey
5.0356
5.0347
25.1830 ÷5 = 5.0366 × 1.00268 =
= 5.0501 ml

#55 - 50λ

24°c vol factor
1.00268

0.0493
0.0494
0.0495 L O Harvey
0.0495
0.0496
0.2473 ÷5 × 1.00268 = 0.0496 ml

Date 3/5/90
30g = 3.0000 g
24°c vol factor
1.00268

Pipet #
41 - 20λ

0.0197
0.0199
0.0199
0.0196
0.0199
0.0990 ÷5 × 1.00268 = 0.0199 mL

3/5/90
30g = 30.0000 g
24°C vol factor = 1.00268

pipet # 15 - 10 → 100λ
@ 50λ

0.0497
0.0498
0.0498
0.0500
0.0498
0.2491 ÷ 5 × 1.00268 = 0.0500 ml

Virginia L Dunn

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DATE	Pipet #	WEIGHT	NAME
3-5-90	#8 — 100λ	0.0989	Virginia L Dunn
WT check = 30g = 30.0000g		0.0987	
24°C Vol factor = 1.00268		0.0993	
		0.0990	
		0.0993	
		0.4952 ÷ 5 X 1.00268 = 0.0993 ml	
3-5-90	#33 — 100 ⇒ 1000λ @ 1000λ	1.0066	Virginia L Dunn
24°C Vol factor = 1.00268		1.0059	
		1.0045	
		1.0050	
		1.0035	
		5.0255 ml ÷ 5 X 1.00268 = 1.0078 ml	
3-5-90	#2 — 1 → 5 ml @ 5 ml	5.0796	Virginia L Dunn
24°C Vol factor = 1.00268		5.0680	
		5.0515	
		5.0461	
		5.0519	
		25.2971 ÷ 5 X 1.00268 = 5.0730 ml	
3-5-90	#24 2-10λ @ 10λ	0.0097	P. J. Raney
24° Vol Factor = 1.00268		0.0101	
		0.0097	
		0.0099	
		0.0099	
		0.0493 ÷ 5 X 1.00268 = 0.0099 ml.	
	#41 20λ	0.0198	P. J. Raney
		0.0197	
		0.0197	
		0.0196	
		0.0199	
		0.0987 ÷ 5 X 1.00268 = 0.0198 ml.	

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Date	Pipet #	Weight	Name
3-5-90	#14	0.0992	
Wt Check - 30g = 30.0000g	100λ	0.0992	P. J. Raney
24° Vol Factor = 1.00268		0.0984	
		0.0989	
		0.0989	
		0.4946 ÷5 X 1.00268 = 0.0992 ml.	
	#65	0.9939	
	→ 1000λ	0.9900	P. J. Raney
	@ 1000λ	0.9913	
		0.9907	
		0.9909	
		4.9568 ÷5 X 1.00268 = 0.9940	
	#64	5.0052	
	→ 5ml	4.9741	P. J. Raney
	@ 5ml.	4.9576	
		4.9407	
		4.9567	
		24.8343 ÷5 X 1.00268 = 4.9802 ml.	
		0.4763	
	#28	0.4732	P. J. Raney
	500λ	0.4756	
		0.4708	
		0.4698	
		2.3657 ÷5 X 1.00268 = 0.4744 ml	
3-6-90			
wt check: 30.0001g	#2	5.0580	
24° vol factor: 1.00268	5ml.	5.0596	N. L. Abbey
		5.0530	
		5.0502	
		5.0484	
		25.269200	
		25.2692 ÷ 5 X 1.00268 = 5.0674 ml	

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Date 3-6-90 Pipet weight Name

3-6-90 #2

wt check: 30.0001g 4 mls

24°c vol factor: 1.00268

#2

4 ml

0.40643
0.40763
0.40667
0.40575
0.40622

2.0327 ÷ 5 × 1.00268 = 0.40763 ml.

N L Abley

3-6-90

#55 0.0503
50 × 0.0499
0.0500
0.0501
0.0497
~~0.2494~~ ÷ 5 × 1.00268 = 0.0501 ml
0.2500

N L Abley

3-6-90

#5 0.4999
500 × 0.5063
dide tuse 0.5045
0.5051
0.5038
2.5196 ÷ 5 × 1.00268 = 0.5053 ml

N L Abley

3-6-90

#5 0.1025
100 × 0.1011
0.1038
0.1024
0.1025
0.5123 ÷ 5 × 1.00268 = 0.1027 ml.

N L Abley

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D12-017

DATE	PIPET #	WEIGHT	NAME
3-7-90	#10 – 10 → 100 λ @ 25 λ	0.0250	Virginia Dunn
WT CHECK = 30g = 30.0001		0.0248	
23°C vol factor = 1.00244		0.0246	
		0.0252	
		0.0251	
		0.1247 ÷ 5 X 1.00244 = 0.0250 ml	
3-7-90	#8 – 100 λ	0.0992	Virginia Dunn
24°C vol factor = 1.00268		0.0993	
		0.0993	
		0.0990	
		0.0992	
		0.4960 ÷ 5 X 1.00268 = 0.0995 ml	
3-7-90	#1 – 100 → 1000 λ @ 500 λ	0.4956	Virginia Dunn
24°C vol factor = 1.00268		0.4957	
		0.4968	
		0.4966	
		0.4971	
		2.4818 ÷ 5 X 1.00268 = 0.4977 ml	
3-7-90	#33 – 100 → 1000 λ @ 1000 λ	1.0071	Virginia Dunn
24°C vol factor = 1.00268		0.9999	
		0.9994	
		0.9981	
		0.9988	
		5.0033 ÷ 5 X 1.00268 = 1.0033 ml	
3-7-90	#2 – 1 → 5 ml @ 5 ml	5.0571	Virginia Dunn
24°C vol factor = 1.00268		5.0415	
		5.0315	
		5.0369	
		5.0314	
		25.1984 ÷ 5 X 1.00268 = 5.0532 ml	

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Date 3/7/90
wt check 30g = 30.0001
24°c vol factor = 1.00268

P. pet #	Weight	name
41	0.0198	CO Harvey
20λ	0.0204	
	0.0200	
	0.0204	
	0.0197	
	0.1003 ÷5 x 1.00268 = 0.02011 mL	
14	0.0993	
100λ	0.0992	CO Harvey
	0.0995	
	0.0997	
	0.0996	
	0.4973 ÷5 x 1.00268 = 0.0997 mL	
64	4.9700	CO Harvey
1-5-1	4.9587	
@ 5 mL	4.9632	
	4.9590	
	4.9586	
	24.8095 ÷5 x 1.00268 = 4.9752 mL	
65	0.4911	CO Harvey
100λ - 1000λ	0.4930	
@ 500λ	0.4938	
	0.4945	
	0.4946	
	2.4670 ÷5 x 1.00268 = 0.4947 mL	

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Date 3/7/90
wt check 30g = 30.0001
23.5°c vol factor = 1.00256

P.Pet #	Weight	Name
#65 1000λ	0.9928	C O Harvey
	0.9908	
	0.9943	
	0.9910	
	0.9901	
	0.9930	
	0.9918	
	0.9907	
	0.9902	
	0.9890	
	9.9137	÷ 10 × 1.00256 = .9939 mL

#68
500λ

0.4985
0.4975
0.4976
0.4973
0.4979
2.4888 ÷ 5 × 1.00268 = 0.4991 ml

Imaiti

24°c Vol. factor
= 1.00268

#66
100λ

0.0930
0.0933
0.0939
0.0929
0.0939
0.4670 ÷ 5 × 1.00268 = 0.0937 ml

Imaiti

24°c Vol. factor
= 1.00268

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D12-020

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DATE	PIPET	WEIGHT	NAME
3-8-90	#8 — 100 λ	0.1009	Virginia L Dunn
WT check = 30g = 30.0002g		0.0996	
24°C Vol factor = 1.00268		0.1001	
		0.1002	
		0.1000	
3-8-90	#1 — 100 → 1000 λ @ 500 λ	0.4976	Virginia L Dunn
24°C Vol factor = 1.00268		0.4965	
		0.5004	
		0.4989	
		0.4983	
		2.4917 ÷ 5 X 1.00268 = ~~0.4999~~ ml 0.4997 ml	VLD 3/8/90
3-8-90	#33 100 → 1000 λ @ 1000 λ	0.9995	Virginia L Dunn
24°C Vol factor = 1.00268		1.0100	
		1.0095	
		1.0062	
		1.0082	
3-8-90	# 2 — 1 → 5 ml @ 5 ml	5.0451	Virginia L Dunn
24°C Vol factor = 1.00268		5.0607	
		5.0646	
		5.0676	
		5.0556	
		25.2936 ÷ 5 X 1.00268 = 5.0723 ml	
3-8-90	#63		P.J. Raney
24°C Vol Factor = 1.00268	100 — 1000 λ @ 1000 λ	0.9982	
		0.9987	
		0.9979	
		0.9960	
		0.9963	
		4.9871 ÷ 5 X 1.00268 = 1.0001 ml	

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Date	Pipet	Wt.	Name
3-8-90 24°C Vol Factor = 1.00268 Wt Check 3g = 30.0002	#69 20–100λ @ 100λ	0.0987 0.0975 0.0995 0.0990 0.0987 0.4934 ÷5 X 1.00268 = 0.0989 ml	P. J. Raney
3/8/90 24°c vol factor = 1.00268 @	41 20λ	0.0200 0.0197 0.0200 0.0201 0.0204 ~~0.05~~ 3/8/90 cw .1002 ÷5 X 1.00268 = 0.0201 ml	G O Harney
3/8/90	24 .002 → .010 @ 10λ	0.0098 0.0098 0.0101 0.0100 0.0097 0.0494 ÷5 X 1.00268 = 0.0099	G O Harney
3-8-90 24° Vol. Factor = 1.00268 Wt Check 3g = 30.0002	#55 50λ	0.0489 0.0493 0.0492 0.0501 0.0493 0.2468 ÷5 X 1.000268 = 0.0495 ml	P. J. Raney
	#67 5λ – 20λ @ 20λ	0.0197 0.0197 0.0197 0.0195 0.0194 0.0980 ÷5 X 1.00268 = 0.0197 ml	P. J. Raney

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DATE	PIPET #	WEIGHT	NAME
3-9-90	#10 – 10 → 100λ @ 25λ	0.0249	Virginia L Dunn
WT CHECK = 30g = 29.9998		0.0250	
24°C Vol factor = 1.00268		0.0250	
		0.0251	
		0.0249	
		0.1249 ÷ 5 × 1.00268 = 0.0250 ml	
	#8 – 100λ	0.0995	Virginia L Dunn
3-9-90		0.0992	
24°C Vol factor = 1.00268		0.0991	
		0.0992	
		0.0995	
		0.4965 ÷ 5 × 1.00268 = 0.0996 ml	
	#33 100 → 1000λ @ 1000λ	0.9980	Virginia L Dunn
3-9-90		0.9849	
24°C Vol factor = 1.00268		0.9922	
		0.9873	
		0.9807	
		4.9431 ÷ 5 × 1.00268 = 0.9912 ml	
	#2 – 1 → 5 ml @ 5 ml	5.0485	Virginia L Dunn
3-9-90		5.0260	
24°C Vol factor = 1.00268		5.0188	
		5.0094	
		5.0094	
		25.1121 ÷ 5 × 1.00268 = 5.0359	
	#68 500λ	0.4942	Imaiti
24°C Vol. factor = 1.00268		0.4970	
		0.4976	
		0.4970	
		0.4973	
		2.4831 ÷ 5 × 1.00268 = 0.4980 ml	
	#66 100λ	0.0923	Imaiti
24°C Vol. factor = 1.00268		0.0926	
		0.0925	
		0.0920	
		0.0923	
Using Rainin Colorless Tips		0.4617 ÷ 5 × 1.00268 = 0.0926 ml	

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DATE	PIPET #	WEIGHT	NAME
3-9-90 Wt. ck. 30g = 29.9998g 24°C Vol. factor = 1.00268	#30 25λ	0.0243 0.0249 0.0247 0.0243 0.0249 0.1231 ÷ 5 × 1.00268 = 0.0247 ml	Emaiti
3-12-90 wt check = 30g = 29.9999 23°C vol factor = 1.00244	#10 – 10 → 100λ @ 25λ	0.0249 0.0250 0.0250 0.0249 0.0247 0.1245 ÷ 5 × 1.00244 = 0.0250 ml	Virginia S Dunn
3-12-90 23°C vol factor = 1.00244	#33 – 100 → 1000λ @ 1000λ	0.9940 0.9898 0.9988 0.9945 0.9927 4.9698 ÷ 5 × 1.00244 = 0.9964 ml	Virginia S Dunn
3-12-90 24°C vol factor = 1.00268	#8 – 100λ	0.0986 0.0988 0.0989 0.0987 0.0994 0.4944 ÷ 5 × 1.00268 = 0.0991 ml	Virginia S Dunn
3-12-90 24°C vol factor = 1.00268	#2 – 1 → 5 @ 5 ml	5.0592 5.0393 5.0364 5.0356 5.0307 25.2012 ÷ 5 × 1.00268 = 5.0537 ml	Virginia S Dunn

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DATE	PIPET #	WEIGHT	NAME
3/12/90	#68 500λ	0.5006	Fmaiti
30g = 29.99999g		0.5029	
		0.5028	
24°C Vol. factor = 1.00268 (using plastic vial to contain water)		0.5024	
		0.5007	
		2.5094	÷5 X 1.00268 = 0.5032 ml
	#66 100λ	0.0914	Fmaiti
(plastic vial colorless pipet tip) 24°C Vol. factor = 1.00268		0.0924	
		0.0928	
		0.0916	
		0.0919	
		0.4601	÷5 X 1.00268 = 0.0923 ml
3-12-90	#41 — 20λ	0.0200	Virginia L Dunn
24°C vol factor = 1.00268		0.0196	
		0.0200	
		0.0203	
		0.0197	
		0.0996 ÷5 X 1.00268 = 0.0200 ml	
3-12-90	# 15 — 10 → 100λ @ 50λ	0.0508	Virginia L Dunn
24°C vol factor = 1.00268		0.0507	
		0.0503	
		0.0500	
		0.0506	
		0.2524 ÷5 X 1.00268 = 0.0506 ml	
3-12-90	#1 — 100 → 1000λ @ 500λ	0.4970	Virginia L Dunn
24°C vol factor 1.00268		0.4972	
		0.4969	
		0.4974	
		0.4960	
		2.4845 ÷5 X 1.00268 = 0.4982 ml	

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D12-025

DATE	PIPET #	WEIGHT	NAME
3-12-90			
30g = 29.9999g	#28	0.4713	P J Ramey
24°C Vol. Factor = 1.00268	500λ	0.4718	
		0.4740	
		0.4696	
		0.4698	
		2.3565 ÷ 5 × 1.00268 = 0.4726 ml.	
	#55	0.0499	P J Ramey
	50λ	0.0498	
		0.0503	
		0.0496	
		0.0507	
		0.2503 ÷ 5 × 1.00268 = 0.0502	
3-12-90			
30g = 29.9999g	#55	.0465	N L Ahley
24°C Vol factor: 1.00268	50λ	.0490	
		.0504	
		.0502	
		.0501	
		.2462 ÷ 5 × 1.00268 = 0.0494 ml	
	#14	.0980	N L Ahley
	100λ	.0997	
		.0997	
		.0997	
		.0999	
		.4970 ÷ 5 × 1.00268 = 0.0998 ml	
	#16	4.0301	N L Ahley
	4 ml.	4.0399	
		4.0258	
		4.0276	
		4.0196	
		20.1430 ÷ 5 × 1.00268 = 4.0394 ml.	

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DATE	PIPET #	WEIGHT	NAME
3-13-90	#10 – 10→100λ @ 25λ	0.0248	Virginia L Dunn
WT CHECK = 30g = 29.9999		0.0249	
23°C Vol factor = 1.00244		0.0247	
		0.0252	
		0.0251	
		0.1247 ÷ 5 X 1.00244 = 0.0250 ml	
3-13-90	#8 – 100λ	0.0986	Virginia L Dunn
23°C Vol factor = 1.00244		0.0996	
		0.0995	
		0.0988	
		0.0998	
		0.4963 ÷ 5 X 1.00244 = 0.0995 ml	
3-13-90	#1 – 100→1000λ @ 500λ	0.4967	Virginia L Dunn
23°C Vol factor = 1.00244		0.4957	
		0.4938	
		0.4945	
		0.4985	
		2.4792 ÷ 5 X 1.00244 = 0.4971 ml	
3-13-90	#33 – 100→1000λ @ 1000λ	1.0036	Virginia L Dunn
23°C Vol factor = 1.00244		0.9921	
		0.9982	
		0.9992	
		0.9912	
		4.9843 ÷ 5 X 1.00244 = 0.9993 ml	
3-13-90	#2 – 1→5 ml @ 5 ml	5.0708	Virginia L Dunn
23°C Vol factor 1.00268		5.0764	
		5.0684	
		5.0588	
		5.0590	
		25.3334 ÷ 5 X 1.00268 = 5.0803 ml	

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DATE	PIPET #	WEIGHT	NAME
3-13-90 Wt. Ck. 30g = 29.9999	# 68 500λ	0.4982 0.4963 0.4965 0.4990 0.4999 2.4899 ÷5 X1.00268 = 0.4993ml	Emaidi
24°C Vol. factor = 1.00268			
	#66 100λ	0.0916 0.0910 0.0925 0.0916 0.0914 0.4581 ÷5 X1.00268 = 0.0919ml	Emaidi
24°C Vol. factor = 1.00268			
3-13-90 Wt Check - 30g = 29.9999 24°C Vol Factor = 1.00268	#69 →100λ @100λ	0.0996 0.0995 0.0994 0.0991 0.0988 0.4964 ÷5 X 1.00268 = 0.0995ml.	P.J. Ramy
	#63 100-1000λ @1000λ	0.9970 1.0042 1.0045 1.0009 1.0006 5.0072 ÷5 X1.00268 = 1.0041ml	P.J. Ramy
3-14-90 Wt Check = 30g = 30.0000 24°C Vol factor = 1.00268	#1 — 100→1000λ @ 500λ	0.4990 0.4974 0.5025 0.5021 0.4990 2.5000 ÷5 X 1.00268 = 0.5013ml	Virginia L. Dunn

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DATE	PIPET #	WEIGHT	NAME
3-14-90	#2 - 1→5 @5ml	5.0567	Virginia L Dunn
WT CHECK = 30g = 30.0000g		5.0561	
24°C Vol factor = 1.00268		5.0584	
		5.0578	
		5.0613	
		25.2903 ÷ 5 X 1.00268 = 5.0716 ml	

3-15-90	#8 - 100λ	0.0999	Virginia L Dunn
WT. CHECK = 30g = 30.0003		0.1001	
24°C Vol factor = 1.00268		0.0992	
		0.0996	
		0.0994	
		0.4982 ÷ 5 X 1.00268 = 0.0999 ml	
	#33 - 100 → 1000λ @ 1000λ	0.9994	Virginia L Dunn
3-15-90		0.9974	
24°C Vol factor = 1.00268		0.9965	
		1.0008	
		0.9999	
		4.9940 ÷ 5 X 1.00268 = 1.0015 ml	
3-15-90	#2 - 1 → 5 ml	5.0660	Virginia L Dunn
24°C Vol factor 1.00268	@ 5 ml	5.0500	
		5.0475	
		5.0543	
		5.0467	
		25.2645 ÷ 5 X 1.00268 = 5.0664 ml	
3-15-90	#10 - 10 → 100λ @ 25λ	0.0247	Virginia L Dunn
24°C Vol factor = 1.00268		0.0250	
		0.0249	
		0.0254	
		0.0254	
		0.1254 ÷ 5 X 1.00268 = 0.0251 ml	

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DATE	PIPET #	WEIGHT	NAME
3-16-90	#10 - 10 → 100λ	0.0253	Virginia L Dunn
WT CHECK = 30g = 29.9998	@ ~~50~~ λ 25	0.0250	
24°C Vol factor = 1.00268	VLD 3/16/90	0.0253	
		0.0253	
		0.0254	
		0.1263 ÷ 5 X 1.00268 = 0.0253 ml	
	#15 - 10 → 100λ	0.0495	Virginia L. Dunn
3-16-90	@ 50λ	0.0498	
24°C Vol factor = 1.00268		0.0498	
		0.0497	
		0.0502	
		0.2490 ÷ 5 X 1.00268 = 0.0499 ml	
3-16-90	# 8 - 100λ	0.0994	Virginia L Dunn
24°C Vol factor = 1.00268		0.0994	
		0.0991	
		0.0993	
		0.0992	
		0.4964 ÷ 5 X 1.00268 = 0.0995 ml	
3-16-90	#33 - 100 → 1000λ	0.9940	Virginia L Dunn
24°C Vol factor = 1.00268	@ 1000λ	0.9955	
		0.9949	
		0.9952	
		0.9958	
		4.97~~44~~ 54 ÷ 5 X 1.00268 = 0.997~~8~~ 7 ml	
		VLD 3/16/90	VLD 3/16/90
3-16-90	# 2 - 1 → 5 ml	5.0450	Virginia L Dunn
24 °C Vol factor = 1.00268	@ 5 ml	5.0314	
		5.0382	
		5.0263	
		5.0239	
		25.1648 ÷ 5 X 1.00268 = 5.0464 ml	

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Date	Pipet #	Weight	Name
3-16-90 Wt. Ck 30g = 29.9998	#68 500λ	0.5022 0.5018 0.5012 0.5014 0.5031 2.5097	Kmaiti
24°C Vol. factor = 1.00268		÷5 × 1.00268 = 0.5033 ml	
	#66 100λ	0.0915 0.0922 0.0922 0.0931 0.0904 0.4594	Kmaiti
24°C Vol. factor = 1.00268		÷5 × 1.00268 = 0.0921 ml	

3-19-90 WT. CHECK = 30g = 30.0002 23°C Vol Factor = 1.00244	#10 — 10 → 100λ @ 25λ	0.0246 0.0245 0.0249 0.0253 0.0251 0.1244 ÷5 × 1.00244 = 0.0249 ml	Virginia L Dunn
3-19-90 24°C Vol Factor = 1.00268	#8 — 100λ	0.0995 0.0987 0.0995 0.0994 0.0999 0.4970 ÷5 × 1.00268 = 0.0997	Virginia L Dunn
3-19-90 24°C Vol Factor = 1.00268	#1 100 → 1000λ @ 500λ	0.4955 0.4939 0.4959 0.4959 0.4959 VLD 3-19-90 ~~2.9741~~ 2.4771 ÷5 × 1.00268 = 0.4967 ml	Virginia L Dunn

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DATE	PIPET #	WEIGHT	NAME
3-19-90	#33 – 100 → 1000 λ @ 1000 λ	0.9991	Virginia L Dunn
WT. CHECK = 30g = 30.0002		0.9974	
24°C vol factor = 1.00268		0.9942	
		0.9926	
		0.9918	
		4.9751 ÷ 5 X 1.00268 = 0.9977 ml	
3-19-90	#2 – 1 → 5 ml	5.0426	Virginia L Dunn
24°C vol factor = 1.00268		5.0275	
		5.0197	
		5.0177	
		5.0223	
		25.1298 ÷ 5 X 1.00268 = 5.0394 ml	
3-20-90	#8 – 100 λ	0.0988	Virginia L Dunn
WT CHECK = 30g = 30.0002g		0.0996	
24°C Vol factor = 1.00268		0.0994	
		0.0996	
		0.0993	
		0.4967 ÷ 5 X 1.00268 = 0.0996 ml	
3-20-90	#33 – 100 → 1000 λ @ 1000 λ	0.9979	Virginia L Dunn
24°C Vol factor = 1.00268		0.9994	
		0.9954	
		0.9915	
		1.0010	
		4.9852 ÷ 5 X 1.00268 = 0.9997 ml	
3-20-90	#2 – 1 → 5 ml @ 5 ml	5.0395	Virginia L Dunn
24°C vol factor = 1.00268		5.0486	
		5.0345	
		5.0359	
		5.0297	
		25.2082 ÷ 5 X 1.00268 = 5.0552 ml	

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DATE	PIPET #	WEIGHT	NAME
3-21-90	#8 – 100λ	0.0994	Virginia L Dunn
WT check = 30g = 30.0002		0.0990	
23°C Vol Factor = 1.00244		0.0996	
		0.0997	
		0.0995	
3-21-90	#33 – 100 → 1000λ @ 1000λ	1.0084	Virginia L Dunn
23°C Vol Factor = 1.00244		1.0062	
		1.0036	
		1.0060	
		1.0057	
		5.0299 ÷ 5 × 1.00244 = 1.0084 ml	
3-21-90	#1 1000 → 1000λ @ 500	0.4994	Virginia L Dunn
23°C Vol Factor = 1.00244		0.5035	
		0.4989	
		0.4995	
		0.4985	
3-21-90	#2 1 → 5 ml @ 5 ml	5.0527	Virginia L Dunn
23°C Vol Factor = 1.00244		5.0141	
		5.0287	
		5.0127	
		5.0059	
		25.1141 ÷ 5 × 1.00244 = 5.0351 ml	
3-22-90	#33 – 100 → 1000λ @ 1000λ	1.0041	Virginia L Dunn
WT check 30g = 30.0002		1.0027	
24°C Vol Factor = 1.00268		1.0019	
		1.0064	
		1.0080	
		5.0231 ÷ 5 × 1.00268 = 1.0073 ml	

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DATE	PIPET #	WEIGHT	NAME
3-23-90	#33-100→1000λ @ 1000λ	1.0054	Virginia L Dunn
WT. CHECK = 30g = 29.9998		1.0073	
23 °C Vol Factor = 1.00244		1.0113	
		1.0083	
		1.0096	
		5.0419 ÷ 5 × 1.00244 = 1.0108 ml	

83

3-26-90	Pipet #68 500λ	Weight	Name
WT. CK. 30g = 30.0003g		0.5026	Emaiti
		0.5017	
		0.5020	
24°c Vol. factor = 1.00268		0.5017	
		0.5009	
		2.5089 ÷ 5 × 1.00268 = 0.5031 ml	
	#66 100λ	0.0912	Emaiti
		0.0926	
		0.0920	
		0.0933	
24°c Vol. factor = 1.00268		0.0939	
		0.4623 ÷ 5 × 1.00268 = 0.0927 ml	
3-26-90	#33 - 100→1000λ @ 1000λ	1.0106	Virginia L Dunn
24°C Vol factor = 1.00268		1.0085	
		1.0083	
		1.0083	
		1.0072	
		5.0429 ÷ 5 × 1.00268 = 1.0113 ml	
3-26-90	#2 - 1→5 ml @ 5ml	5.0670	Virginia L Dunn
24°C Vol Factor = 1.00268		5.0570	
		5.0417	
		5.0510	
		5.0264	
		25.2431 ÷ 5 × 1.00268 = 5.0622 ml	

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Pat 28 BGR 3-29-90 Pipet # Weight Name

3-~~28~~-90

WtCheck - 30g = 29.9997g.

24°C Vol Factor - 1.00268

#64
0-5ml
@5ml

4.9667
4.9385
4.9274
4.9273
4.9275
24.6874 ÷5 X1.00268 = 4.9507 ml

P. J. Raney

#63
100-1000x
@ 1000x

1.0133
1.0093
1.0104
1.0076
1.0056
5.0462 ÷5 X1.00268 = 1.0119 ml.

P. J. Raney

#14
100x

0.1000
0.0998
0.0998
0.0992
0.0986
0.4974 ÷5 X 1.00268 = 0.0997 ml

P. J. Raney

#55
50x

0.0503
0.0503
0.0497
0.0497
0.0496
0.2496 ÷5 X 1.00268 = 0.0501 ml.

P. J. Raney

#41
20x

0.0200
0.0199
0.0200
0.0200
0.0200
0.0999 ÷5 X 1.00268 = 0.0200 ml.

P. J. Raney

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Date	Pipet #	Weight	Name
3-~~29~~ 29 PgR 90	#28 500λ	0.4851 g	P. J. Ramey
Wt. Check - 29.9994g (30g =)		0.4769	
24°C. Vol. Factor - 1.00268		0.4791	
		0.4737	
		0.4737	
		2.3885 ÷ 5 × 1.00268 = 0.4790 ml.	
	#55 50λ	0.0503	P. J. Ramey
		0.0501	
		0.0500	
		0.0501	
		0.0505	
		0.2510 ÷ 5 × 1.00268 = 0.0503 ml.	

Date	Pipet #	Weight	Name
3-30-90	#68 500λ	0.4933	Kmanti
30g = 29.9998g (wt. ck)		0.4960	
		0.4952	
24°c Vol. factor = 1.00268		0.4967	
		0.4985	
		2.4797 ÷ 5 × 1.00268 = 0.4973 ml	
	#66 100λ	0.0892	Kmanti
		0.0886	
		0.0887	
		0.0882	
24°c Vol. factor = 1.00268		0.0879	
		0.4426 ÷ 5 × 1.00268 = 0.0888 ml	
3-30-90	#15-10 → 100λ @ 50λ	0.0496	Virginia L. Dunn
24°C Vol Factor = 1.00268		0.0494	
		0.0498	
		0.0496	
		0.0499	
		0.2483 ÷ 5 × 1.00268 = 0.0498 ml	

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Date	Pipet #	Weight	Name
3-30-90	29.9998	1.0127	P.J. Raney
30g =	#63	1.0008	
24°C Vol Factor	100-1000µ	1.0052	
	@1000µ	1.0023	
		0.9967	
		5.0177 ÷ 5 × 1.00268 = 1.0062 ml.	

4-2-90	#14	0.0987	P.J. Raney
30g = 30.0004g	100µ	0.0993	
24°C Vol Factor		0.1000	
		0.0997	
		0.1000	
		0.4977 ÷ 5 × 1.00268 = 0.0998 ml.	
	#70	1.0096	P.J. Raney
	100-1000µ	1.0093	
	@1000µ	1.0092	
		1.0070	
		~~1.0034~~	
		5.0385 ÷ 5 × 1.00268 = 1.0104 ml.	
	#41	0.0199	P.J. Raney
	20µ	0.0200	
		0.0197	
		0.0203	
		0.0202	
		0.1001 ÷ 5 × 1.00268 = 0.0201 ml.	
	#55	0.0498	P.J. Raney
	50µ	0.0497	
		0.0502	
		0.0500	
		0.0502	
		0.2499 ÷ 5 × 1.00268 = 0.0501 ml	

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Date	Pipet #	Weight	Name
4-2-90 30g = 30.0007g 24°C. Vol. Factor	#24 10x	0.0102 0.0099 0.0098 0.0099 0.0097 0.0495 ÷ 5 X 1.00268 = 0.0099 ml.	P.J. Raney
4-3-90 30g = 30.0003 24°C. Vol. Factor	#24 2-10x @ 10x	0.0097 0.0102 0.0097 0.0102 0.0099 0.04970 ÷ 5 X 1.00268 = 0.0100 ml.	P.J. Raney
	#41 20x	0.0205 0.0204 0.0202 0.0204 0.0204 0.1016 ÷ 5 X 1.00268 = 0.0204 ml.	P.J. Raney
	#55 50x	0.0497 0.0501 0.0500 0.0500 0.0502 0.2500 ÷ 5 X 1.00268 = 0.0501 ml.	P.J. Raney
	#14 100x	0.0996 0.1001 0.1001 0.1002 0.1002 0.5002 ÷ 5 X 1.00268 = 0.1003 ml	P.J. Raney

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Date	Pipet #	Weight	Name
4-3-90 30g = 30.0 0038 24°C Vol Factor = 1.00268	#53 200λ	0.1994 0.2001 0.2010 0.2020 0.2005	P.J. Raney
		1.0030 ÷5 X1.00268 = 0.2011 ml	
	#70 100-1000λ @1000λ	1.0095 1.0106 1.0060 1.0055 1.0058	P.J. Raney
		5.0374 ÷5 X1.00268 = 1.0102 ml.	
	#64 0-5ml @5ml.	5.0007 4.9817 4.9840 4.9805 4.9800	P.J. Raney
		24.9269 ÷5 X1.00268 = 4.9987 ml.	
4-4-90 30g = 30.0001 g 24°C. Vol. Factor = 1.00268	#70 100-1000λ @1000λ	1.0048 1.0074 1.0003 1.0030 1.0024	P.J. Raney
		5.0179 ÷5 X1.00268 = 1.0063 ml.	
	#64 0-5ml @5ml.	4.9878 4.9782 4.9753 4.9668 4.9790	P.J. Raney
		24.8871 ÷5 X1.00268 = 4.9908 ml.	

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Date	Pipet #	Wt.	Name
4-4-90			
4-4-90 30g = 30.0001g 24°C. Vol Factor = 1.00268	#55 50λ	0.0499 0.0498 0.0498 0.0498 0.0498 0.2491 ÷ 5 X 1.00268 = 0.0500 ml	P J Raney
4-5-90			
30g = 30.0003g 24°C Vol Factor = 1.00268	#70 100–1000λ @1000λ	1.0012 1.0003 0.9956 1.0000 1.0031 5.0002 ÷ 5 X 1.00268 = 1.0027 ml.	P J Raney
4-5-90	#68 500λ	0.4943 0.4967 0.4991 0.4970 0.4990 2.4861 ÷ 5 X 1.00268 = 0.4986 ml	[illegible]
24°C Vol. Factor = 1.00268			
	#66 100λ	0.0915 0.0906 0.0920 0.0906 0.0908 0.4555 ÷ 5 X 1.00268 = 0.0913 ml	[illegible]
24°C Vol. Factor = 1.00268			
4-5-90 24°C Vol Factor = 1.00268	#1 – 100 → 1000λ @500λ	0.4975 0.5011 0.5001 0.4993 0.4993 2.4973 ÷ 5 X 1.00268 = 0.5008 ml	Virginia L Dunn

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DATE	PIPET #	WEIGHT	NAME
4-5-90	#33 – 100 → 1000 λ	1.0078	Virginia L Dunn
24°C Vol Factor = 1.00268	@ 100 λ	1.0057	
		1.0061	
		1.0057	
		1.0026	
		VLD 4/5/90 ~~5.5281~~ 5.0279 ÷ 5 X 1.00268 = 1.0083 ml	
24°C vol factor 1.00268	#2 – 1 → 5 ml @ 5 ml	5.0365	Virginia L Dunn
		5.0057	
		5.0111	
		5.0120	
		5.0230	
		25.0883 ÷ 5 X 1.00268 = 5.0311 ml	
4-5-90	#41	0.0200	P J Raney
30g = 30.0003g	20 λ	0.0202	
24°C Vol Factor = 1.00268		0.0198	
		0.0200	
		0.0200	
		0.1000 ÷ 5 X 1.00268 = 0.0201 ml	
	÷64	4.9740	P J Raney
		4.9747	
		4.9430	
		4.9350	
		4.9406	
		24.7673 ÷ 5 X 1.00268 = 4.9667 ml	
4-6-90	#74 – 1000 → 5000 λ	4.9910	Virginia L Dunn
WT CHECK = 30g = 30.0002g	@ 5000 λ	4.9781	
24°C Vol Factor = 1.00268		4.9799	
		4.9798	
		4.9830	
		24.9118 ÷ 5 X 1.00268 = 4.9957 ml	

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DATE	Pipet #	WEIGHT	NAME
4-6-90	#24	0.0098	P.J. Raney
Wt Check- 30.0002 g	2-10λ	0.0096	
25°C Vol Factor- 1.00294	@ 10λ	0.0099	
		0.0097	
		0.0095	
		0.0485 ÷ 5 X 1.00294 = 0.0097 ml.	
	#41	0.0204	
	20λ	0.0199	P.J. Raney
		0.0201	
		0.0198	
		0.0197	
		0.0999 ÷ 5 X 1.00294 = 0.0200 ml.	
	#55	0.0499	P.J. Raney
	50λ	0.0497	
		0.0501	
		0.0500	
		0.0500	
		0.2497 ÷ 5 X 1.00294 = 0.0501 ml.	
	#14	0.0990	
	100λ	0.1002	P.J. Raney
		0.1002	
		0.1003	
		0.0996	
		0.4993 ÷ 5 X 1.00294 = 0.1002 ml.	
	#53	0.2002	
	200λ	0.1996	P.J. Raney
		0.1992	
		0.2013	
		0.2008	
		1.0011 ÷ 5 ~~X 1.00294~~ 1.00294 PJR = 0.2008 ml.	

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Date	Pipet #	Wt.	Name.
4-6-90			
30g = 30.0002g	#70	1.0059	P J Raney
~~24~~ 25°C Vol. Factor	100-1000x	1.0065	
=1.00294	@ 1000x	1.0070	
QR		1.0048	
4-6-90		1.0041	
		5.0283 ÷ 5 X 1.00294 = 1.0086 ml.	
	#64	4.9338	P J Raney
		4.9525	
		4.9586	
		4.9561	
		4.9496	
		24.7506 ÷ 5 X 1.00294 = 4.9647 ml.	
4-6-90	#8 - 100x	0.1008	Virginia L Dunn
24°C Vol. Factor = 1.00268		0.0995	
		0.0997	
		0.1000	
		0.0990	
		0.4990 ÷ 5 X 1.00268 = 0.1001 ml	
4-6-90	#33 - 100 → 1000x	1.0038	Virginia L Dunn
24°C Vol factor = 1.00268	@ 1000x	1.0060	
		1.0010	
		1.0029	
		1.0011	
		5.0148 ÷ 5 X 1.00268 = 1.0056 ml	
4-6-90	# 10 - 10 → 100x	0.0250	Virginia L Dunn
24°C vol factor = 1.00268	@ 25x	0.0252	
		0.0251	
		0.0249	
		0.0249	
		0.1251 ÷ 5 X 1.00268 = 0.0251 ml	

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DATE	PIPET #	WT.	NAME
4-6-90	#15 — 10 → 100λ @ 50λ	0.0490	Virginia L Dunn
24°C Vol Factor = 1.00268		0.0498	
		0.0496	
		0.0495	
		0.0497	
		0.2478 ÷ 5 × 1.00268 = 0.0497 ml	
4-6-90	#1 — 100 → 1000λ @ 500λ	0.5035	Virginia L Dunn
24°C Vol factor = 1.00268		0.5031	
		0.5048	
		0.5025	
		0.5026	
		2.5165 ÷ 5 × 1.00268 = 0.5046 ml	
4-9-90	#10 — 10 → 100λ @ 25λ	0.0251	Virginia L Dunn
WT CHECK = 30g = 30.0000g		0.0248	
23°C Vol factor = 1.00244		0.0247	
		0.0250	
		0.0248	
		0.1244 ÷ 5 × 1.00244 = 0.0249 ml	
4-9-90	#8 — 100λ	0.0982	Virginia L Dunn
23°C Vol factor = 1.00244		0.0981	
		0.0987	
		0.0984	
		0.0989	
		0.4923 ÷ 5 × 1.00244 = 0.0987 ml	
4-9-90	#33 — 100 → 1000λ @ 1000λ	1.0067	Virginia L Dunn
24°C Vol factor = 1.00268		0.9988	
		0.9991	
		0.9974	
		0.9935	
		4.9955 ÷ 5 × 1.00268 = 1.0018 ml	

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DATE	pipet #	WEIGHT	NAME
4-9-90	#2 – 1→5 ml @5ml	5.0890	Virginia L Dunn
WT CHECK = 30g = 30.0000g		5.0256	
24°C Vol factor = 1.00268		5.0254	
		5.0189	
		5.0158	
		25.1747 ÷ 5 X 1.00268 = 5.0484 ml	

4-9-90 100λ pipet 14
wt check = 30g = 30.0001
25°C vol factor: 1.00294

0.0983	
0.0997	100λ N.L. Abbey 4-9-90
0.0998	
0.0999	
0.0998	
0.4975 ÷ 5 × 1.00294 = 0.0998 ml.	

4-9-90
50λ pipet 55

0.0501	
0.0503	
0.0500	N.L. Abbey 4-9-90
0.0501	
0.0502	
0.2507 ÷ 5 + 1.00294 = 0.0503 ml.	

4-10-90 #8 – 100λ
WT CHECK = 30g = 30.0000
24°C Vol factor = 1.00268

0.0986	Virginia L Dunn
0.0990	
0.1001	
0.0995	
0.0997	
0.4969 ÷ 5 X 1.00268 = 0.0996 ml	

4-10-90 #1 – 100→1000λ @500λ
24°C Vol factor = 1.00268

0.5017	Virginia L Dunn
0.4982	
0.5015	
0.5019	
0.5005	
2.5038 ÷ 5 X 1.00268 = 0.5021 ml	

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4-10-90	#2 - 1→5ml	5.0596	Virginia Dunn
24°C vol factor = 1.00268	@5ml	5.0483	
		5.0575	
		5.0621	
		5.0592	
		~~30.3542~~ ÷ 5 × 1.00268 = 5.0709 ml	
		25.2867 VLD 4/10/90	

4-10-90
24°C vol factor: 1.00268
pipet 55
50λ

0.0499
0.0495
0.0499
0.0495
0.0504
0.2492 ÷ 5 × 1.00268 = 0.0500 ml.

N. L. Ashley

4-10-90
24°C vol factor: 1.00268
pipet 28
500λ

0.4914
0.4929
0.4919
0.4892
0.4845
2.4499 ÷ 5 × 1.00268 = 0.4913 ml.

N. L. Ashley

4-10-90
24°C Vol. Factor = 1.00268
30g = 30.0000

#64
0-5ml
@5ml

4.9942
4.9735
4.9689
4.9824
4.9802
24.8992 ÷ 5 × 1.00268 = 4.9932 ml.

P. J. Ramey

#70
100-1000λ
@1000λ

1.0094
1.0084
1.0052
1.0038
1.0053
5.0321 ÷ 5 × 1.00268 = 1.0091 ml.

P. J. Ramey

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Date	Pipet #	Wt.	Name
4-10-90 30g = 30.000 g/ 24°C Vol Factor = 1.00268	#53 200λ	0.1997 0.2000 0.2018 0.2023 ~~0.2027~~ 1.0060 ÷5 X 1.00268 = 0.2018 ml.	P J Raney
	#14 100λ	~~0.098~~ PJR 4-10-90 0.1008 0.1002 0.1006 0.1002 0.1004 0.5022 ÷5 X 1.00268 = 0.1007 ml	P J Raney
	#75 50λ	0.0500 0.0498 0.0492 0.0500 0.0502 0.2492 ÷5 X 1.00268 = ~~0.04~~ PJR 4-10-90 0.0500 ml.	P. J. Raney
	20λ #41	0.0200 0.0202 0.0198 0.0200 ~~0.0200~~ 0.1000 ÷5 X 1.00268 = 0.0201	P. J. Raney
	#24 2-10λ @10λ	0.0098 0.0104 0.0098 0.0101 0.0102 0.0503 ÷5 X 1.00268 = 0.0101 ml.	P J Raney

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DATE	PIPET#	WT.	NAME
4-10-90	#10 25λ		
24°c volfactor: 1.00268		0.0250	N L Abley
		0.0248	
25λ		0.0253	
		0.0250	
		0.0252	
		0.1253 ÷ 5 × 1.00268 = 0.0251ml	

4.11.90
24°c vol factor: 1.00268
30g = 30.0003
pipet #75 50λ

0.0498	N.L Abley
0.0500	
0.0502	
0.0501	
0.0502	
0.2503 ÷ 5 × 1.00268 = 0.0502ml.	

4-11-90
24°c volfactor: 1.00268
pipet #14 100λ

0.1002	N L Abley
0.1001	
0.1003	
0.1002	
0.1000	
0.5007 ÷ 5 × 1.00268 = 0.1004ml.	

4-11-90
24°c volfactor: 1.00268
pipet #1 100λ to 1000λ 500λ

0.4984	N L Abley
0.4979	
0.5013	
0.5000	
0.5001	
2.4977 ÷ 5 × 1.00268 = 0.5009ml	

4-11-90
24°c volfactor: 1.00268
Pipet #10 25λ

0.0250	N L. Abley
0.0255	
0.0250	
0.0250	
0.0255	
0.1260 ÷ 5 × 1.00268 = 0.0253ml.	

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Date	Pipet #	Wt.	Name
4/11/90	#68	0.4977	
~~30g~~ 30g = 30.0003g	500λ	0.4965	[illegible]
		0.4997	
		0.5004	
25°c Vol. factor = 1.00294		0.5010	
		2.4953	÷ 5 × 1.00294 = 0.5005 ml
4-11-90	pipet #32	5.0331	
~~24°c~~ 25°c vol factor: 1.00294	5.00 mls.	5.0292	N L Abbey
		5.0186	
		5.0381	
		5.0206	
		25.1396	÷ 5 × 1.00294 = 5.0427 ml
4-11-90			
25°c vol factor: 1.00294		0.0100	N L Abbey
	pipet #24	0.0098	
	10λ	0.0100	
		0.0100	
		0.0102	
		0.0500	÷ 5 × 1.00294 = 0.0100 ml
4-11-90			
24°C Vol Factor - 1.00268	#28	0.4821	P. J. Raney
30g = 30.0003g.	500λ	0.4807	
		0.4816	
		0.4812	
		0.4810	
		2.4066	÷ 5 × 1.00268 = 0.4826 ml.
	#8	0.0993	P. J. Raney
	100λ	0.0999	
		0.1000	
		0.0992	
		0.0996	
		0.4980	÷ 5 × 1.00268 = 0.0999 ml

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D12-049

DATE	PIPET #	WT.	NAME
4-12-90	#54-100 → 1000λ	1.0090	Virginia L Dunn
WT CHECK = 30g = 30.0001g	@ 1000λ	1.0060	
24°C Vol factor = 1.00268		1.0040	
		1.0036	
		1.0020	
		5.0246 ÷ 5 X 1.00268 = 1.0076 ml	

005 ml

4-12-90	#2 - 1 → 5 ml	5.0728	Virginia L Dunn
24°C vol factor = 1.00268		5.0568	
		5.0682	
		5.0593	
		5.0676	
		25.3247 ÷ 5 X 1.00268 = 5.0785 ml	

27 ml

4-12-90	#28	0.4760	P.J. Raney
Wt. Check - 30g = 30.0001g	500λ	0.4777	
24°C Vol Factor - 1.00268		0.4703	
		0.4762	
		0.4735	
		2.3737 ÷ 5 X 1.00268 = 0.4760	

	#14	0.0992	P.J. Raney
	100λ	0.0989	
		0.0990	
		0.0994	PJR 4-12-90
		0.0989	
		0.4954 ÷ 5 X 1.00268 = ~~0.0095 ml~~ 0.0993 ml	

4-13-90		1.0051	N.L. Abbey
30g = 30.0001		1.0045	
24°C vol factor: 1.00268		1.0168	
		1.0105	
pipet #63		1.0070	
	1000λ	5.0439 ÷ 5 X 1.00268 = 1.0115 ml.	

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Date	Pipet#	Weight	Name
4/16/90	#68		
30g = 30.0005g	500λ		
		0.4939	Kmaiti
		0.4957	
		0.4987	
		0.4996	
		0.5002	
24°C Vol. factor		~~0.4881~~ Km	÷ 5 × 1.00268 = 0.4990 ml
= 1.00268		2.4881	
	# 37	0.0987	
	100λ	0.0989	Kmaiti
		0.0989	
		0.0993	
24°C Vol. factor = 1.00268		0.0991	÷ 5 × 1.00268 = 0.0992 ml
		0.4949	
4-16-90	#64	4.9813	
30g = 30.0065 g	0-5ml	4.9687	P.J. Raney
24°C Vol Factor = 1.00268	@5ml	4.9643	
		4.9585	
		4.9735	
		24.8463 ÷ 5 × 1.00268 = 4.9826 ml	
	#70	0.9897	
	100-1000λ	0.9910	P.J. Raney
	@1000λ	0.9847	
		1.0032	
		1.0038	
		4.9724 ÷ 5 × 1.00268 = 0.9971 ml.	
	#75	0.0494	
	50λ	0.0485	P.J. Raney
		0.0502	
		0.0500	
		0.0504	
		0.2485 ÷ 5 × 1.00268 = 0.0498 ml.	

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DATE	PIPET #		WEIGHT	NAME
4-17-90	#54 – 100 → 1000x @ 1000x		0.9977	101
WT CHECK = 30g = 30.0004g			0.9974	
23°C Vol Factor = 1.0244			0.9961	
			0.9976	
			0.9956	
			4.9844 ÷ 5 X 1.0024 = 0.9993 ml	

4-17-90	#59 – 1 → 5ml @ 5ml	5.0822	
23°C Vol Factor = 1.0024		5.0685	
		5.0705	
		5.0698	
		5.0673	
		25.3583 ÷ 5 X 1.0024 = 5.0840 ml	

4-17-90	#70	1.0091	
Wt Check 30g = 30.0004	100 – 1000x	1.0043	
23°C Vol. Factor =	@ 1000x	1.0041	
1.0024		0.9983	
		1.0029	
		5.0187 ÷ 5 X 1.0024 = 1.0062 ml	

20°C Vol Factor	#75	0.0500	
= 1.0029	50x	0.0492	
		0.0497	
		0.0495	
		0.0500	
		0.2484 ÷ 5 X 1.0029 = 0.0498 ml	

4-17-90			
Wt check 30g = 30.0005	#37 100x	.0996	
25.2° P Factor 1.0039		.0999	
		.0986	
		.0994	
		.0996	
		$\bar{x}$ = 0.0996 × 1.0039 = 0.0999	
		s = 0.000187 (0.19%)	

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