

BOOK 3R

Notes:

Blank pages: inside front cover,

2, 4, 6-14, 18, 20, 24, 52, 54, 94, 112, 118, 123, 130, 144-152,
both sides of inside back sheet, inside back cover

-2 yellow note sheets clipped to inside cover

-2 notes clipped to inside first sheet

-note sheet between pages 4 & 5

-3 sheets between pages 14 & 15

-sheet taped to page 92

-note between 98 & 99

Scanned by:

Sheila Finch

RSICC /Oak Ridge National Lab.

March 22, 1999

Sal Exp.
JTT, 1965

14

15

16

MEMO

AVOID ORAL INSTRUCTIONS

Date July 20 1965

To J. Thomas

.0912 g Pu in soln. 3.7 mg Pu/ml ; 1.3 M HNO₃ with trace HF
25 ml. of soln.

MASS ASSAY :
atom %

239 - 4.05

240 - 95.7

241 - 0.24

242 - 0.01

Signed JMS

one million of 5 Nov. alpha
produce approx. 22.5 ml.
H₂ per month assuming
same volume of gas

MEMO

AVOID ORAL INSTRUCTIONS

Date August 2 19 65

To Joe Thomas - 9213

The data on the Pu-239 nitrate solution which you picked up today is as follows:

47.0 ml. of 1.0 M HNO₃ solution (with trace of HF) that contains a total of 0.100 g Pu whose assay is:

239- 99.18 %

240- 0.81 %

241- 0.01 %

242- 0.01 %

Signed F. Schaitkin

J.K.F.

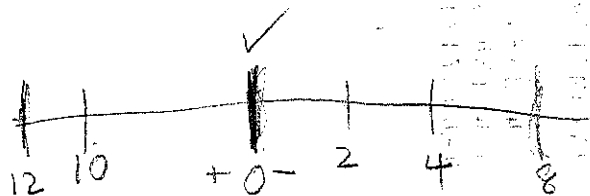
Art. Bann

ICPP

2

Leo. Holland

~~_____~~



RECEIVED
MAY 10 1966
U.S. AIR FORCE
OFFICE OF THE
SECRETARY OF THE AIR FORCE
WASHINGTON, D.C.

3PN-95

NUMBER OF POINTS 111

ESTIMATE 4

	PARAMETERS	VARIANCES
B 1	2 40853452	1 58592654
B 2	5 42154090	7 11973455
B 3	4-44371717	4 19745989

VARIANCE Y

1 65091909

Paul Hoff

244 sample (make up)
Cm

~~36873~~ 36258

Robinson

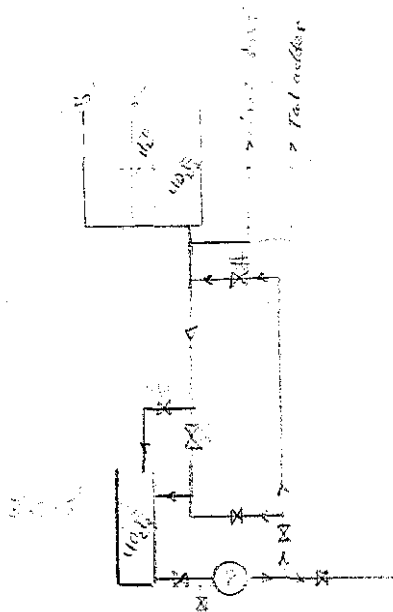
36873

3PN-150

Contents

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The Assembly



The following UO_2F_2 solution was put into the 3" slot - Storage tank. Bottles 1-6 (25 l. capacity) had been stored in Vault Rm #105.

Mat type	Reg #	G	T	net	g/g	assay	Sp gr.	SS net
1938	593241	25.925	2.650	23.275	.017640	93.2%	1.0127	411 g
"		26.000	2.190	23.810	"	"	"	420
"		28.900	2.740	26.160	"	"	"	461
"		27.890	2.688	25.202	"	"	"	476
"		29.070	2.768	26.302	"	"	"	464
"		27.825	2.400	25.425	"	"	"	449
* "	593231	20.800	2.850	17.950	.20630	"	1.3084	3.703 kg.

* 8.81 kg of solution was used.

No	face							
----	------	--	--	--	--	--	--	--

12	20,3479	+46						
5	20,3225	+38						
9	20,3107	+17						
7	20,3084	+28						
15	20,3282	+26						
6	20,3390	+27						
13	20,3252	+44						
14	20,3058	+26						
17	19,7070	+354						

Sample Bottle data.

Bottle #	W(g)	Material contained	Experiments (used in)
1	20.1893		
2	20.3537		
3	20.3445		
4	20.1157		
5	20.3787		
6	20.5363		
7	20.4056		
8	20.1964	2066	
9	20.3092		
10	20.2065		
11	19.6816		
12	20.3433		
13	20.5208		
14	20.1552		
15	20.3256		

PM-1 Low Trip OK Alarm Trip OK
 PM-2 Alarm Trip
 IC-1 $> 3 \times 10^{-4}$ Water Trip OK Fast Trip OK
 IC-2 $> 3 \times 10^{-4}$ Water Trip OK
 IC-3 Responds Calibration
 IC-4 Responds Calibration
 ORM Emergency Check on
 Room 113 Pressure Differential 1.4"
 Red Light On and Personnel Check OK
 Screams and Bldg. Alarm Detect OK
 Source Inserted OK
 Safety Withdrawn None
 Controls Set Variable soln ht.
 Reflector Water None
 Moderator Water H₂O in 15cm².

Under reactor How. BF-3
 # 4 # 3

11:30 AM

not crit - ^{very} low mult.

2 3
 ○ ○



1:30 P

added 2 liters ~ 260 g/l.

not crit. - more multip.

○ ○
 1 4

2:10 P

added 2 liters ~ 260 g/l.
 more multip.

.26
2
 182
3

2:55 P

added 3 liters ~ 260

3:45 P

R=1 25.11 →

11:19 AM

Instrument Check on 5-17 Source 10mX

11:19 AM

Instrument Check on 5-17 Source 10mX

11:19 AM

Instrument Check on 5-17 Source 10mX

11:19 AM

3PN-94

NUMBER OF POINTS 101

ESTIMATE 1

PARAMETERS

VARIANCES

B 1	1 78169700	33738576
B 2	4 34887519	5 52510949
B 3	4-36893774	4 66114628

VARIANCE Y

1 13147274

Instrument Check on 5-18 Source 10 mc

PH-1	Low Trip		Alarm Trip
PH-2			Alarm Trip
IC-1	Meter Trip	<u>OK</u>	Fast Trip
IC-2	Meter Trip		
IC-3	Calibration		
IC-4	Calibration		
SRM	Meter Trip		

Preliminary Check on _____

Room LIS Pressure Differential _____
Red Light On and Personnel Check _____
Screws and Bldg. Alarm Reset OK _____
Source Inserted _____
Safety Withdrawn _____
Controls Set _____
Reflector Water _____
Moderator Water _____

added 1 liter

9⁰⁵/_A crit. 25.45"

9¹⁰ added 5 liters.

9¹⁵ start Pumping solution into Moderator to Determine Crit

crit 29.27

10¹⁰ Add 1.5 H₂O

10⁴⁵ check Crit

Pos lev 31.70

level 30.81

11²⁵ Add 1 liter H₂O

11³⁰ check Crit

level 32.08

3PN-94

NUMBER OF POINTS 101

ESTIMATE 4

PARAMETERS

VARIANCES

B 1	1 78052248	34239465
B 2	4 34843046	5 48534250
B 3	4-36868074	4 65579751

VARIANCE Y

1 13145210

3PN-94

NUMBER OF POINTS 100

ESTIMATE I

PARAMETERS

VARIANCES

B 1	1 77581122	34927814
B 2	4 34266190	5 56224684
B 3	4-36691368	4 72909392

VARIANCE Y

1 13219574

EXPERIMENT 1
Instrument Check on 5-18 Source 10 mcd

PM-1	Low Trip	OK	Alarm Trip	OK	
PM-2			Alarm Trip	out	
IC-1	$> 3 \times 10^{-4}$	Meter Trip	OK	Fast Trip	OK
IC-2	$> 3 \times 10^{-4}$	Meter Trip	OK		
IC-3	Reponds	Calibration			
IC-4	Reponds	Calibration			
CRM		Meter Trip			

Preliminary Check on 5-18

Room 113 Pressure Differential 1.5"
 Red Light On and Personnel Check C.C. + S.R.
 Screams and Bldg. Alarm Reset JA
 Source Inserted JA
 Safety Withdrawn NONE
 Controls Set _____
 Reflector Water NONE
 Moderator Water UO₂F₂ Solution

Purpose:	Exploratory	Criticals
Condition	Solution ht (in)	Tad position (in)
R=1	31.83 ⁵	0.96
R=1	31.82 ⁶	3.67

Exp. 2

"Body Effect" Polyethylene stack 42"x6"x14" tangent to North east quadrant of reactor.

R>1	27.90	8.97	52.97 mcd → 15.774
R=1	27.46	16.81	~ 30.2 mcd

Exp. 3

"Body Effect" Same radial location now 6" from reactor surface.

R>1	31.71	15.05	31.71 mcd → 22.14
R=1	30.87	15.86	~ 26.2 mcd

Sample Bottle #4 tare wt 20.560 g.

Gross wt. 120.0413

wt of H_2O 99.4813

When selsyn reads 0.03 mark (center of 120 cc of solution in bottle) on container is 15.91 in. above bottom of reactor vessel.

Expt. 2

purpose: Check sensitivity of container + bottle of H_2O .

Instrument Check on 5-20-65 Source 10 mcb

PM-1		Low Trip	OK	Alarm Trip	OK
PM-2				Alarm Trip	out
IC-1	$> 3 \times 10^{-4}$	Water Trip	OK	Fast Trip	OK
IC-2	$> 3 \times 10^{-4}$	Water Trip	OK		Diff. Pres. 1.5"
IC-3	Responds	Calibration	JH	Red light	OK
IC-4	Responds	Calibration	JT	Bldg Alarm	OK
CRM		Water Trip			

Condition	Solution wt. (in)	Position of Tad. (in)	Bottle pos. (in)	
$k > 1$	31.79 ⁵	23.36	29.71 ⁵	98.56 acc \Rightarrow 9.9954
$k = 1$	31.43 ⁵	6.03	29.71 ⁵	27.764 $\frac{1}{in}$
Insert bottle				
$k > 1$	31.43 ⁵	6.03	0.03	82.932 acc \Rightarrow 11.409 $\frac{1}{in}$

Have changed from 1" dia Tad to 2" dia.

Expt. 3
Instrument Check on 5-21-65 Source 10me8

PM-1	Low Trip	OK	Alarm Trip	OK
PM-2			Alarm Trip	out
IC-1	$> 3 \times 10^{-4}$	Meter Trip	OK	Fast Trip OK
IC-2	$> 3 \times 10^{-4}$	Meter Trip	OK	Red light. OK
IC-3	Responds	Calibration	OK	Bld. alarm OK
IC-4	Responds	Calibration	OK	Press. Diff. 1.5"
CRM		Meter Trip		

Purpose: Determine Tad sensitivity.

Expt	Condition	Setpoint kt. (in)	Position of Tad (in)	Bottle pos. (in)
3	b < 1	31.19 ⁴	0.10	out
4	b > 1	31.33 ⁴	15.10	"
5	b < 1	31.18 ⁸	0.10	" ← dumped
#6	b > 1	31.44 ⁵	20.00	out ← dumped some soup.
7	b < 1	31.20 ⁵	0.10	"
8	b > 1	31.35	15.10	"
9	b < 1	31.20 ⁵	0.10	" ← dumped more soup
10	b < 1	31.13	0.10	
11	b > 1	?	15.10	

Instrument Check on 5-25-65 Source _____

PM-1	Low Trip	OK	High Alarm Trip	OK
PM-2			Alarm Trip	
IC-1	Meter Trip	OK	Fast Trip	OK
IC-2	Meter Trip	OK		Red light OK
IC-3	Response Calibration			Bld Alarm OK
IC-4	Response Calibration			Press Dif 1.3"
CRM	Meter Trip			

Purpose: Check Counters

E.R.R. cc.

Condition	solu Ht	rad Adder	Bottle
R > 1	31.47	22.62	out
K = 1	31.11	22.62	"
K < 1	30.90	0.08	"
K > 1	31.26	5.93	"
K < 1	30.91	5.93	"
K > 1	31.25	8.63	"

0900 hrs

5-26-65

Interchanged inputs to scales C3 + C4

- 1
- Exp 13-1
- Exp 14
- Exp 15-
- " 16
- " 17
- " 18

- Exp 19
- " 20
- " 21
- " 22
- " 23
- " 24
- " 25

Instrument Check on 5-26-65 Source 10 mcr

PM-1	Low Trip	OK	Alarm Trip	OK		
PM-2			Alarm Trip	OK		
IC-1	10×10^{-12}	Meter Trip	OK	Fast Trip	OK	
IC-2	10×10^{-12}	Meter Trip	OK	Red light	OK	
IC-3	Response	OK	Calibration	S.P. OK	Bldg Alarm	OK
IC-4	"	OK	Calibration	S.P. OK	Press Dif	1.3"
CRM		Meter Trip				

Purpose: Check stability of system

Time	Cond.	Sol. Rct.	Rad addn	Bottle
0917	b > 1	31.33 ⁵	15.00"	out
0930	b ≈ 1	31.07	15.00"	"
1025	b ≈ 1	31.07	15.64"	"
Exp. 13-1026	b < 1	31.02 ⁰	10.64	"
Exp. 14	b > 1	?	20.64	"
Exp. 15	b < 1		10.64	"
" 16	b > 1	31.10	20.64	"
" 17	b < 1	31.02	10.64	"
" 18	b > 1	31.11	20.64	"
1200	Ran Rad addn to 0.0 and left some up during lunch. ^{break.}			
Exp. 19	b > 1	31.16	25.64	out
" 20	b < 1	30.98	5.64	"
" 21	b > 1	31.16	25.64	"
" 22	b < 1	30.98	5.64	"
" 23	b > 1	31.16	25.64	"
" 24	b < 1	30.98	5.64	"
" 25	b ≈ 1	31.07	15.64	"
3:58 PM	b < 1	17.90	31.07	"

PM-1	Low Trip	OK	Alarm Trip	OK	
PM-2			Alarm Trip	OK	
IC-1	3×10^{-4}	Meter Trip	OK	Fast Trip	OK
IC-2	3×10^{-4}	Meter Trip	OK		Red light OK
IC-3	Response	Calibration	SFR.		Bldg. Alarm OK
IC-4	Response	Calibration	SFR.		Pres. dif 1.3"
CRM		Meter Trip			

Exp	Condition	Soln Ht	Rad Addr	Bottle
	K > 1	31.41	20.00	Out
	2:02 PM K = 1	31.02	18.00	"
26	2:05 K < 1	30.88	3.00	"
27	2:30 K > 1	31.16 ⁺	33.00	"
28	2:50 K < 1	30.88 ^b	3.00	"
29	3:21 K > 1	31.16 ⁵⁻	33.00	"
30	2:43 K < 1	30.89 ?	3.00	"
	4:19 K = 1	31.03	18.00	"

Expt. 37 Bottle #1 containing H_2O

Gross wt = 119.7702 g tare = 20.1893g Net H_2O = 99.5809g

Wt. of plastic insert for bottle container is 40.4029g.

Expt.

31

32

33

34

35

36

37

38

Expt. 39 Switched input from C_3 to C_4

39

40

99.5809g

PM-1	Low Trip	OK	Alarm Trip	OK	
PM-2			Alarm Trip		
IC-1	3×10^{-4}	Meter Trip	OK	Fast Trip	OK
IC-2	3×10^{-4}	Meter Trip	OK		Red light OK
IC-3	Responds	Calibration	S/R.		Oldy alarm OK
IC-4	Responds	Calibration	S/R.		Pres def. 1.4'
CRM		Meter Trip			

Expt.	Time	Condition	Solution wt.	Tad. Add.	Bottle
31	11 ¹⁵ A	R=1	31.03 ⁵	21.10	out.
		R<1	30.97 ⁸	13.60	"
32	11 ³⁶ A	R>1	31.10 ⁶	28.60	"
33	11 ⁵⁰ A	R<1	30.97 ⁸	13.60	"
34	12 ¹² P	R>1	31.11 ³	28.60	"
35	12 ²⁹ P	R<1	30.97 ³	13.60	"
36	12 ⁴⁹ P	R>1	31.11	28.60	"
	1 ²² P	R=1	31.04 ²	20.70	"
37	2 ¹² P	R<1	30.90	0.80	out
38	2 ³⁸ P	R>1	30.90	0.80	in
39	3 ⁰¹ P	R<1	30.90 ²	0.80	out
40	3 ²² P	R>1	30.90 ²	0.80	in

Expt #1. Continue experiments with Bottle #1 containing
99.5809 g H_2O . Have inserted Plastic ring in bottle container.

Expt #6 Continue experiments with bottle #1
Gr 154.6047 Containing ^{Net} 134.3244⁴¹⁵⁴ g H_2O - W/R

Expt. 51 Use Bottle #8 tare 20.1964g Gross 154.6352
Net H_2O = 134.4388g, Container w/Ring

Expt.
41
42
43
44
45
46 1
47 11
48 12
49 12
50 12

51 1

52 2
53 2
54 2

Instrument Check on 6-2-65 Source 10mc

PM-1	Low Trip	OK	Alarm Trip	OK	
PM-2			Alarm Trip	out	
IC-1	$> 3 \times 10^{-4}$	Meter Trip	OK	Fast Trip	OK
IC-2	$> 3 \times 10^{-4}$	Meter Trip	OK		Red light ✓
IC-3	Responds	Calibration	JR		Bldg. Alarm ✓
IC-4	Responds	Calibration	JR		Press. Diff. 1.4"
GM		Meter Trip			

Expt.	Time	Condition	Solution ht.	Tab.	Bottle
41	8 ⁵⁵ A	k=1	30.98 ²	20.70	out #1
42	9:07	k < 1	30.80 ²	0.70	out
43	9 ²⁵ A	k > 1	30.80 ²	0.70	in
44	9:41 A	k < 1	30.80 ²	0.70	out
45	9 ⁵⁸ A	k > 1	30.80 ²	0.70	in
46	11 ⁴⁰ A	k = 1	31.00 ⁸	20.00	out
47	11 ⁴³ A	k < 1	30.87 ¹	5.00	out
48	12 ⁰² P	k > 1	30.87 ¹	5.00	in
49	12 ²³ P	k < 1	30.87 ¹	5.00	out
50	12 ³⁹ P	k > 1	30.87 ¹	5.00	in
		R=1	31.00 ²	20.00	out.
51	1 ⁴² P	R=1	31.03 ⁸	33.96 ⁹	out #8
		k < 1	30.90 ⁹	18.96 ⁷	out
52	2 ¹³ P	k > 1	30.90 ⁹	18.96 ⁷	in
53	2 ⁴² P	k < 1	30.90 ⁹	18.96 ⁷	out
54	2 ⁵⁸ P	k > 1	30.90 ⁹	18.96 ⁷	in
		k = 1	31.03	32.10	out

Exps 55 - 60 Continuous calibration of Bottle #8
with H_2O .

Exps.

55

56

57

58

59

60

Instrument Check on June 7, 1965 Source 10mc8

PM-1	Low Trip	Alarm Trip	OK
PM-2		Alarm Trip	out
IC-1	$> 3 \times 10^{-4}$	Meter Trip	OK
IC-2	$> 3 \times 10^{-11}$	Meter Trip	OK
IC-3	Responds	Calibration	Jul
IC-4	Responds	Calibration	Jul
CRM	Meter Trip		

Red light ✓
Bldg Alarm ✓
Pass. Diff ✓ 1.4"

Expt.	Time	Condition	Solution ht	ht	Bottle
55	1 ²⁰ p	k=1	30.91	21.60	out #8
		k<1	30.78 ⁵	7.60	out
56	1 ⁴³ p	k>1	30.78 ⁵	7.61	in
57	2 ⁰³ p	k<1	30.78 ⁵	7.61	out
58	2 ³⁰	k>1	30.78 ⁵	7.61	in
59	2 ⁴⁶	k<1	30.78 ⁵	7.61	out
60	3 ¹⁵	k>1	30.77 ⁵	7.61	in
	3 ⁴⁵	k=1	30.90 ⁵	20.29	out

Instrument Check on 6-8-65 Source 10mcx

PM-1	Low Trip	Alarm Trip	OK
PM-2		Alarm Trip	OK
IC-1	$> 3 \times 10^{-11}$	Meter Trip	OK
IC-2	$> 3 \times 10^{-11}$	Meter Trip	OK
IC-3	Responds	Calibration	OK
IC-4		Calibration	out
ORM	Meter Trip		

Red light ✓
Alarm ✓
Diff Pres. 1.4"

8.8202g

Expt.	Time	Condition	Solu. Act.	Tad.	Bottle
61	1235 p	k > 1	30.90 ⁵	20.29 ⁵	out
		k > 1	30.90	20.29 ⁵	in
		k ≈ 1	30.90	20.29 ⁵	out
		k < 1	30.73 ²	2.29 ⁵	out
62	1 20 p	k > 1	30.73 ²	2.29 ⁵	in
63	1 30 p	k < 1	30.73 ²	2.29 ⁵	out
64	1 41 p	k > 1	30.73	2.29 ⁵	in
65	1 57 p	k < 1	30.73	2.29 ⁵	out
66	2 14	k > 1	"	"	in
67	2 30 p	k < 1	"	"	out
68	2 56 p	k > 1	"	"	in
69	3 16	k < 1	"	"	out.
70	3 41	k > 1	"	"	in.
71	4 04	k < 1	"	"	out

U 238

End work
~112.8 sec → ~9 g

11/11/57
{ Gross wt of Bottle #10 154.6728g. see page 36 }

AXIAL TRAVERSE w/ Bottle #8 ≈ 2.5 ~~Uetz~~

Instrument Check on 6-9-65 Source 10mc

PM-1	Low Trip	OK	Alarm Trip	OK
PM-2			Alarm Trip	out
IC-1	$> 3 \times 10^{-4}$	Water Trip	OK	Fast Trip OK
IC-2	$> 3 \times 10^{-4}$	Water Trip	OK	Redlight \checkmark
IC-3	Responds	Calibration	OK	Alarm \checkmark
IC-4	out	Calibration	out	Press diff. 1.4"
CRM	Meter Trip			

Expt	Time	Condition	Solution	Tad	Bottle position	
	9 ³⁰ AM	K > 1	31.22 ⁵	20.00	996.00	
		K = 1	30.645	18.10	996.00	
72	10 ⁴⁷ AM	K > 1	30.645	18.10	00.015	3.745
	11 ⁰⁰	Dumped				High level trip on IC-2
	11 ⁰⁹	b \approx 1	30.63 ⁸	18.10	996.00	
	104	K = 1	30.63 ⁴	17.36	996.00	
Expt 73	10 ⁵ P	K > 1	"	"	999.01 ⁶	3.002
Expt 74	1 ²⁴	K < 1	"	"	6.00	-4.031
	75 1 ⁴⁸	K > 1	"	"	0.00	3.228
	76	K < 1	"	"	5.00	-1.902
	77 2 ²⁷ P	b > 1	"	"	998.00	2.224
	78 2 ⁴⁸ P	b \approx 1	"	"	995.99 ⁵	-4.717
	79 3 ⁰⁴ P	b < 1	"	"	07.00 ³	-
	80 3 ²² P	b > 1	"	"	01.00	2.405
	81 3 ⁵³ P	b > 1	"	"	99.50	3.023
	82 4 ²⁵ P	b > 1	"	"	99.75	2.908

36

Calibration of bottle #10 with H_2O . p. 39

Instrument Check on 6-10-65 Source 10mc

PM-1	Low Trip	OK	Alarm Trip	OK	
PM-2			Alarm Trip	out	
IC-1	$>3 \times 10^{-5}$ "	Meter Trip	OK	Fast Trip	OK
IC-2	$>3 \times 10^{-5}$ "	Meter Trip	OK		Rad. Lpt. <input checked="" type="checkbox"/>
IC-3	Responds	Calibration	JII		Alarm <input checked="" type="checkbox"/>
IC-4	Installed	Calibration	c		Press diff. 1.4"
CRM		Meter Trip			

Expt.	Time	Condition	Solution	Tad	Bottle #10	H ₂ O
83	9 ¹⁰ AM	K < 1	30.78	0.02	14.938	
	10 ¹¹	K > 1	30.97 ⁵	20.00	14.938	
	10 ¹⁵	K = 1	30.80 ⁵	20.70	14.935	
84	10 ⁵³	K < 1	30.66 ⁸	6.7	15.00	
85	11 ³⁰ A	K > 1	30.66 ⁸	6.7	0.00	
86	12 ⁰⁵	K < 1	30.66 ⁵	6.7	15.03	
87	12 ³⁰ P	K > 1	"	"	0.00	
88	1 ¹⁰	K < 1	"	"	15.03	
89	1 ³⁰	K > 1	"	"	0.00	
90	1 ⁵⁷	K < 1	"	"	15.03	
91	2 ¹⁸	K > 1	"	"	0.00	

Used a solution of V (~5.7% V²³⁵) O₂ F₂ to make up
 Sample No. 2. From diluted sol. in bottle #16
 as calc. from dilution data:

Sample
 No. 2

$$\left. \begin{aligned} \text{Conc} &= 100.27057 \frac{\text{mg V}}{\text{g sol.}} \\ \text{density} &= 1.12655 \frac{\text{g}}{\text{ml}} \end{aligned} \right\} \text{sol used to make up sample}$$

V (~5.7% V²³⁵)

Bottle #8 + H₂O = 154.6454 g

Removed ~ 33.26 ml H₂O = 121.3875 g

V (5.06% V²³⁵) O₂ F₂

added V O₂ F₂ sol: amount = 158.9380 g

$\frac{\text{mg V}}{\text{ml}} = 28.09$

wt of V O₂ F₂ sol added = 37.5505 g

$f = 1.029826 \frac{\text{g}}{\text{ml}} @ 21^\circ\text{C}$

$\frac{\text{mg V}}{\text{ml}} = 27.27646$

Conc. = 28.09 $\frac{\text{mg V}}{\text{ml}}$

Sp. Gr. @ 21°C = 1.0319

~~V — 94.97% V²³⁸~~

V — 0.03% V²³⁴, 5.06% V²³⁵, 0.05% V²³⁶, 94.86% V²³⁸

Comb. of reports from Eby, etc. and ...

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PM-1	Low Trip	OK	Alarm Trip	OK	
PM-2			Alarm Trip	out	
IC-1	7.3×10^{-11}	Meter Trip	OK	Fast Trip	OK
IC-2	7.3×10^{-11}	Meter Trip	OK		Red light ok
IC-3	Responds	Calibration	S/A		alarm OK
IC-4	Responds	Calibration	1/T		Presently
GM		Meter Trip			

Exp.	Time	Condition	Solution	Std	Bottle # 8 with VO_2F_2 (8% VO_2F_2)
	8 ⁵⁵ A	b = 1	30.72	27.02	15.02 (out)
	10 ⁰⁹ A	b = 1	30.70 ⁶	25.60	15.02 out
92	10 ¹¹ A	b < 1	30.52 ⁸	5.60	15.02
93	11 ⁰⁰ A	b < 1	30.52 ⁵	7.60	15.01
94	11 ²³ A	b > 1	30.52 ⁵	7.60	0.00
95	11 ⁴⁶ A	b < 1	30.52 ⁵	7.60	15.01
96	12 ⁰⁹	b > 1	30.52 ⁸	7.60	0.00
97	12 ³⁷ P	b < 1	30.53 ⁵	7.60	15.01 ⁵
98	1 ⁻ P	b > 1	30.52 ⁷	7.60	0.00
99	12 ²⁸ P	b < 1	30.52 ⁷	7.60	15.01 ⁶
100	1 ⁵⁰ P	b > 1	30.52 ⁷	7.60	0.00
101	2 ¹⁷ P	b < 1	30.53 ⁵	7.60	15.01 ⁴
102	2 ⁴⁰ P	b > 1	30.52 ⁹	7.60	0.00
103	3 ⁰⁸ P	b < 1	30.52 ⁸	7.60	15.01 ⁸
104	3 ³⁰ P	b > 1	30.53	7.60	0.00

Used solution from bottle # 17 to make up this sample. as calculated from dilution data for this solution

Sample

9₁. 3

V (~ 35.88) O₂ F₂

Conc. = 50.1119 $\frac{mg V}{g sol}$

density = 1.0579 g/ml

Exp

Bottle # 10 + H₂O gross wt = 154.6876 g

Removed ~ 9.9 ml H₂O gross wt = 144.8116

added V O₂ F₂ sol. " " = 155.2833

WT of V O₂ F₂ sol added = 10.4717 g

V (37.39%) O₂ F₂

$\frac{mg V}{ml} = 3.89$

$\rho = 1.002980 \frac{g}{ml} @ 21^{\circ}C$ Conc = 3.89 $\frac{mg V}{ml}$

$\frac{mg V}{g sol} = 3.87744$

Sp. Gr. = 1.0050 @ 24°C

~~V - 37.20% V²³⁵, 62.80% V²³⁸~~

V - 0.24% V²³⁴, 37.39% V²³⁵, 0.21% V²³⁶, 62.16% V²³⁸

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Instrument Check on 6-18-65 Source 10 mcr

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PM-1	Low Trip	OK	Hi Alarm Trip	OK	
PM-2			Alarm Trip		
IC-1	3×10^{-11}	Meter Trip	OK	Fast Trip	OK
IC-2	3×10^{-11}	Meter Trip	OK		Red light on
IC-3	Responds	Calibration	SFR		alarm OK
IC-4	Responds	Calibration	±		Press Dif 1.4"
CRM		Meter Trip			

Exp	time	Condition	soln	tad	Bottle # 10 with $u_{0.2} 35.58$
	10 ⁵⁰ AM	K = 1	30.65	26.50	15.02
	10 ⁵⁰	K = 1	30.45 ⁴⁸	8.50	3.70
105	11 ¹⁷ A	b > 1	30.47	8.50	0.00
106	11 ⁴⁰	b < 1	"	"	15.01 ⁵
107	12 ⁰⁵	b > 1	"	"	0.00
108	12 ³⁰	b < 1	30.48 ²	8.50	15.01 ⁵
109	12 ⁵⁸	R > 1	"	"	0.00
110	1 ²⁹	b < 1	"	"	15.00 ⁵
111	1 ⁵⁵	b > 1	"	"	0.00
112	2 ²⁵	b < 1	"	"	15.01 ⁵
113	2 ⁵⁰	b > 1	"	"	0.00
114	3 ¹⁹	b < 1	"	"	15.01 ⁵
115	3 ⁴⁵	b > 1	"	"	0.00

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Sample No. 4

Bottle # 8

= 20.2145 g

Bottle + H₂O

= 154.1351

V (~97.4) O₂ (NO₃)₂Bottle + H₂O + VO₂(NO₃)₂

= 154.9294

V (97.42 w/o) O₂ (NO₃)₂

$$\frac{\text{mg V}}{\text{ml}} = 1.52$$

$$\rho = 1.000186 \frac{\text{g}}{\text{ml}} @ 21^\circ\text{C}$$

$$\frac{\text{mg V}}{\text{g sol}} = 1.51972$$

V —	1.77 w/o	V ²³⁴
	97.42 w/o	V ²³⁵
	.10 w/o	V ²³⁶
	.71 w/o	V ²³⁸

Epp

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Instrument Check on 29 June 65 Source 10 mc Y

PM-1	Low Trip	OK	Hi Alarm Trip	OK	
PM-2			Alarm Trip		
IC-1	3×10^{-4}	Meter Trip	OK	Fast Trip	OK
IC-2	3×10^{-4}	Meter Trip	OK		Red light on
IC-3	Response	Calibration	JT		alarm OK
IC-4	Response	Calibration	JT		Pass Dif 1.4
CRM		Meter Trip			

Exp	Time	Condition	soln	Tad	Bottle #8	with $VO_2(NO_3)_2$ 9747
	0900	$b \approx 1$	30.60	24.97		
	0915	$b \approx 1$	"	25.2	15.3	
	0916	"	30.41	7.2	3.8	
	0940	$b = 1$	"	7.20 ^s	3.62	
116	0944	$b < 1$	"	"	15.02	
117	1010	$b > 1$	"	"	0.00	
118	1035	$b < 1$	"	"	15.02 ^f	
119	1102	$b > 1$	"	"	0.00	
120	1128	$b < 1$	"	"	15.02 ^f	
121	1158	$b > 1$	"	"	0.00	
122	1245	$b < 1$	"	"	15.02 ^f	
123	1 ¹² PM	$b > 1$	30.40 ^s	"	0.00	
124	1 ³⁷ P	$b < 1$	"	"	15.02 ^s	
125	2 ⁰² P	$b > 1$	30.40 ^f	"	0.00	
126	2 ³⁰ P	$b < 1$	"	"	15.02 ^s	

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Sample # 5

Bottle # 10 = 20.2183
 Bottle + H₂O = 154.1948
 Bottle + H₂O + UO₂(NO₃)₂ = 154.9612

V(92.48 w/o) O₂ (NO₃)₂

$\frac{mgV}{ml} = 1.57$

$\rho = 1.000375 @ 21^{\circ}C$

$\frac{mgV}{g/L} = 1.56940$

Sample Analysis

1.57 mg/ml

sp. gr. 1.0024

U —

0.99 w/o U²³⁴

92.48 w/o U²³⁵

0.56 w/o U²³⁶

5.97 w/o U²³⁸

EXP

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Instrument Check on 6-30-65 Source 10 MC r 45

FM-1	Low Trip	OK	Hi Alarm Trip	OK	
FM-2			Alarm Trip		
IC-1	3×10^{-11}	Motor Trip	OK	Fast Trip	OK
IC-2	3×10^{-11}	Motor Trip	OK		
IC-3	Response	Calibration	J +		Red light on
IC-4	Response	Calibration	J +		Alarm OK
CRM		Motor Trip			Press Dif. 1.4"

Exp	time	Condition	soln	rad	Bottle #10 uo ₂ (NO ₂) ₂ with
	9 ³³ / _{AM}	R ≈ 1	30.39	24.30	3.62
127	9 ⁴² /	b < 1	"	"	15.02 ⁴
128	10 ¹⁰ /	b > 1	"	"	0.00
129	10 ³⁵ /	b < 1	"	"	15.02 ⁵
130	11 ⁰² /	b > 1	"	"	0.00
131	11 ³⁷ /	b < 1	"	"	15.02 ⁷
132	11 ⁵⁴ /	b > 1	30.39 ⁸	"	0.00 ²
133	12 ²¹ /	b < 1	30.40	"	15.02 ⁵
134	1 ²¹ / _P	b > 1	"	"	0.00
135	2 ⁰⁰ / _P	b < 1	30.40	"	15.02 ⁴
136	2 ²³ /	b > 1	30.40	"	0.00
137	2 ⁵³ /	b < 1	"	"	15.02 ⁵
138	3 ³⁰ /	b > 1	"	"	0.00
139	3 ⁴⁶ /	b < 1	"	"	15.02 ⁵

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Empty bottle #8	= 20.2248 g		2 July	
Bottle + H ₂ O	= 154.6454 g	4:08 PM	2 July	
Bottle + H ₂ O	= 154.6431 g	8:30 AM	6 July	
added H ₂ O → Bottle + H ₂ O	= 154.6454 g	8:42	6 July	
Removed from reactor and weighed at once	Bottle + H ₂ O	= 154.6467 g	4:20	6 July
	Bottle + H ₂ O	= 154.6461 g	3:46 PM	7 July

Expos. 140-150 Bottle #8 with H₂O only.

Instrument Check on 7-6-65 Source 10mcr 47

PM-1	Low Trip	OK	Hi Alarm Trip	OK	
PM-2			Alarm Trip		
IC-1	3×10^{-4}	Meter Trip	OK	Fast Trip	OK
IC-2	3×10^{-4}	Meter Trip	OK		Red light on
IC-3	Responds	Calibration	S/R		alarm OK
IC-4	Responds	Calibration	S/R		Over def. 1.4"
ORM		Meter Trip			

Expt.	Time	Condition	soln	rad	Bottle # 8	with dist H ₂ O
	9 ¹⁵ AM	b ≈ 1	30.36	25.20	3.62	
140	9 ⁴⁵	b = 1	30.36 ⁵	25.01	3.62	
140	9 ⁴⁷	b < 1	"	"	15.02 ⁵	
141	10 ¹⁸	b > 1	"	"	0.00	
142	10 ⁴⁷	b < 1	"	"	15.02 ⁵	
143	11 ⁴⁵	b > 1	"	"	0.00	
144	11 ⁴⁶	b < 1	"	"	15.02 ⁵	
145	12 ¹³	b > 1	"	"	0.00	
146	12 ⁴⁹	b < 1	"	"	15.02 ⁵	
147	1 ¹⁷	b > 1	"	"	0.00	
148	1 ⁵⁴	b < 1	"	"	15.02 ⁵	
149	2 ²⁰	b > 1	"	"	0.00	
150	2 ⁵⁴	b < 1	"	"	15.02 ⁵	

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Expts. 151-161 Bottle 10 with H₂O only

	Empty bottle #10 =	20.2225 g	3:35 PM	6 July
	Bottle + H ₂ O =	154.6876 g	4:10 PM	"
	Bottle + H ₂ O =	154.6864 g	8:30 AM	7 July
Added H ₂ O →	Bottle + H ₂ O =	154.6874 g	8:40 AM	"

Removed from
reactor and
weighed alone

	Bottle + H ₂ O =	154.6889	3:38 PM	7 July
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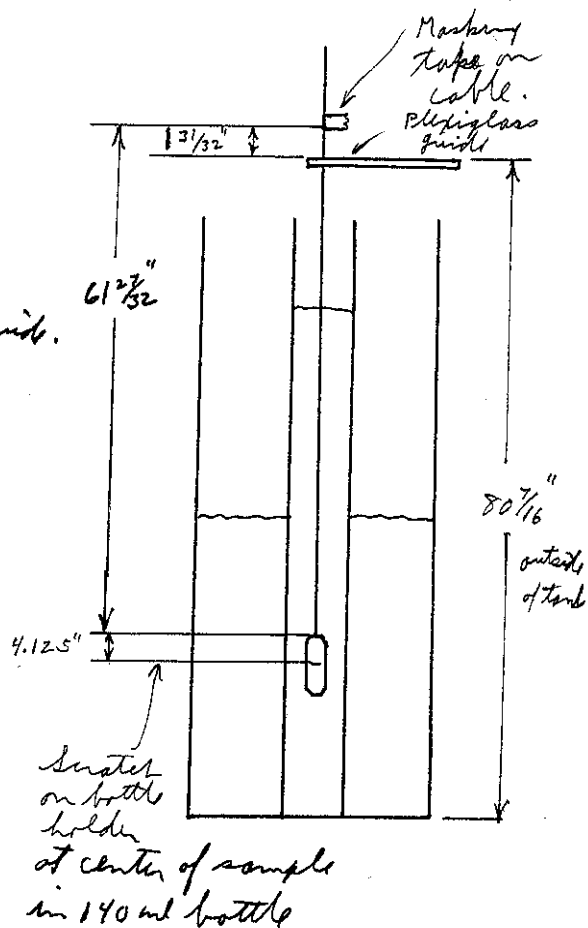
	Bottle + H ₂ O =	154.6854	11:20 AM	13 July
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PM-1	Low Trip	OK	Hi Alarm Trip	OK	
PM-2			Alarm Trip		
IC-1	3×10^{-4}	Meter Trip	OK	Fast Trip	OK
IC-2	3×10^{-4}	Meter Trip	OK		Red light on
IC-3	Responds	Calibration	S.F.A.		Alarm OK
IC-4	Responds	Calibration	S.F.A.		Pen slip 1.4"
CRM		Meter Trip			

Expt	Time	Condition	soln	std	Bottle # 10 with H ₂ O
	9 ¹⁵ AM	b ≈ 1	30.34	25.75	3.62 ²
150	9 ⁴⁸	b = 1	30.34	24.24 ⁴	3.62 ²
151	9 ⁴⁸	b < 1	"	"	15.02 ⁵
152	10 ¹⁹	b > 1	30.34	"	0.00
153	10 ⁴⁷	b < 1	"	"	15.02 ⁵
154	11 ¹⁵	b > 1	"	"	0.00
155	11 ⁴⁴	b < 1	30.36	"	15.02 ⁵
156	12 ¹⁴	b > 1	30.34	"	0.00
157	12 ⁴²	b < 1	"	"	15.02 ⁵
158	1 ¹¹ PM	b > 1	"	"	0.00
159	1 ⁴⁰ PM	b < 1	"	"	15.02 ⁵
160	2 ⁰⁸	b > 1	"	"	0.00
161	2 ³⁶	b < 1	"	"	15.02 ⁵

12 July 65
 Disconnected bottle drive cable to work on drive mech.
 Rechecked zero.

When relay reads 0.00 the
 bottom of masking tape on cable
 is $1\frac{3}{32}$ " above top of Plexiglas guide.



Exp
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Exp
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Instrument Check on 7-12-65 Source 10 mcr

GRIDS

PM-1	Low Trip	OK	Hi	Alarm Trip	OK
PM-2				Alarm Trip	
IC-1	3×10^{-11}	Meter Trip	OK	Fast Trip	OK
IC-2	3×10^{-11}	Meter Trip	OK		
IC-3	Response	Calibration	S.P.A.		Red light ON
IC-4	Response	Calibration	S.P.A.		Alarm OK
CRM		Meter Trip			Press Dif 1.4"

Expr	time	Condition	Soln	+ A.	Bottle
162	4:30	R > 1	30.34	24.29	0.0

Instrument Check on 7-13-65 Source 10 mcr

GRIDS

PM-1	Low Trip	OK	Hi	Alarm Trip	OK
PM-2				Alarm Trip	
IC-1	$> 3 \times 10^{-11}$	Meter Trip	OK	Fast Trip	OK
IC-2	$> 3 \times 10^{-11}$	Meter Trip	OK		Red light ON
IC-3	Responds	Calibration	S.P.A.		Alarm OK
IC-4	Responds	Calibration	S.P.A.		Press Dif 1.4"
CRM		Meter Trip			

Expr	time	Condition	Soln	+ A	Bottle
163	4:18	R > 1	30.41	24.29	#10 + H ₂ O 0.0"

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m
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ass

0 7/16"
outside
of tank

Instrument Check on 7-14-65 Source 10 mCT

PM-1	Low Trip	OK	²⁴ⁱ Alarm Trip	OK	
PM-2			Alarm Trip		
IC-1	2.5×10^{-4}	Meter Trip	OK	Fast Trip	OK
IC-2	$> 3 \times 10^{-4}$	Meter Trip	OK		Red light on
IC-3	Responds	Calibration	S.P.O.		Alarm OK
IC-4	Responds	Calibration	S.P.O.		Press Dif 1.4"
CRM		Meter Trip			

Have placed 7.3×10^6 ^{PM - Be source.} ^(Bottle) ^{1/2} sec source in sample holder.

Time	Condition	Scan	Stand Addr.	Bottle holder	IC-3
10:25	$b \approx 1$	29:88	23:72	24.26	
10:40	$b = 1$	28.93 ⁵	22:43	3.62 ⁵	
10:41	$b < 1$	"	"	15.01	
12:40	$b \approx 1$	28.04 ⁵	23.92	0.00 ²	
12:44	$b < 1$	"	"	15.01	40.6

Instrument Check on 7-15-65 Source 10 m cK

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PM-1	Low Trip	OK	^{HI} Alarm Trip	OK	
PM-2			Alarm Trip		
IC-1	$> 3 \times 10^{-4}$	Meter Trip	OK	Fast Trip	OK
IC-2	$> 3 \times 10^{-4}$	Meter Trip	OK		Red light on
IC-3	Responds	Calibration	SfR.		Alarm OK
IC-4	Responds	Calibration	SfR.		Press 1.4"
CRM		Meter Trip			

To change and check detector position for higher power runs.

9 ²⁰	b = 1	IC-3 = 10
9 ⁴⁵	b = 1	IC-3 = 10
10 ¹⁰	b = 1	IC-3 = 10
10 ⁴⁵	b = 1	IC-3 ≈ 9
10 ⁵⁵	b = 1	IC-3 ≈ 50

10 min. Backgd. count 0, 3, 22, 44.

Received Pu^{240} sample from F. Schuetlin 9204-3. in small
2oz glass sample bottle.

Contents: 0.0912 g Pu in solution

3.7 mg Pu/ml. 1.3 M HNO_3 with trace HF.

Sample #6

Pu^{240}

Mass Assay:	atom%
239	4.05
240	95.7
241	0.24
242	0.01

Placed sample bottle in holder; filled void with water.

Instrument Check on 7-20-63 Source 10 mcK

PM-1	Low Trip	OK	Alarm Trip	OK	
PM-2			Alarm Trip	OK	
IC-1	$> 3 \times 10^{-11}$	Meter Trip	OK	Fast Trip	OK
IC-2	$> 3 \times 10^{-11}$	Meter Trip	OK	Red light	✓
IC-3	Response	Calibration	JL	Diff. press.	1.4"
IC-4	Response	Calibration	JL	Alarm	✓
CRM		Meter Trip			

Expt.	time	Condition	Solution	T.A.	Bottle.	Temp. 12 ²³ pm
164	10 ⁴⁵ _A	k > 1	30.55 ⁵	20.49 ⁵	3.62	#1 25.5
	11 ²¹ _A	k = 1	29.69 ⁵	19.28	3.62	#2 25.6
	11 ²³ _A	k < 1	29.69 ⁵	19.28	15.00	#3 25.5
165	11 ⁵¹	k > 1	29.65 ⁵	19.28	0.0	#4 26.6
	12 ²⁹	k = 1	"	"	3.62	

Expts 166-176 ^{240}Pu sample. See page 56.

Sample #6

Expt.

166

167

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Instrument Check on 7-21-65 Source 10mc8

PM-1	Low Trip	OK	Alarm Trip	OK
PM-2			Alarm Trip	OK
IC-1	$> 3 \times 10^{-11}$	Meter Trip	OK	Fast Trip OK
IC-2	$> 3 \times 10^{-11}$	Meter Trip	OK	Redlight ✓
IC-3	Responds	Calibration	JH	Diff. Pres. 1.4"
IC-4	Responds	Calibration	JH	Alarm ✓
CRM		Meter Trip		

Expt.	Time	Condition	Solution	T.A.	Bottle
166	9 ⁰⁰ / _A	K=1	29.66	1992	3.62
	9 ¹² / _A	k < 1	"	"	15.01 ⁵
167	9 ⁴¹ / _A	k > 1	"	"	0.00
168	10 ¹³ / _A	k < 1	"	"	15.01 ⁷
169	10 ⁴² / _A	k > 1	"	"	0.00
170	11 ¹⁵ / _A	k < 1	"	"	15.00 ⁵
171	11 ⁴⁴ / _A	k > 1	"	"	0.00
172	12 ¹⁶ / _P	k < 1	"	"	15.00
173	12 ⁴⁴ / _P	k > 1	"	"	0.00
174	1 ¹⁹ / _P	k < 1	"	"	15.00 ²
175	1 ⁴⁸ / _P	k > 1	"	"	0.00
176	2 ²³ / _P	k < 1	"	"	15.00 ⁵

Eppie's 177-186 . Dummy bottle similar
to the ^{240}Pu bottle but filled with distilled water.

H_2O only for
Sample #6

Eppie

177

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Instrument Check on 7-22-65 Source 10 mCr

notes.

PM-1	Low Trip	OK	Hi Alarm Trip	OK	
PM-2			Alarm Trip		
MC-1	$> 3 \times 10^{-4}$	Meter Trip	OK	Fast Trip	OK
MC-2	$> 3 \times 10^{-4}$	Meter Trip	OK		Red Light ✓
MC-3	Response	Calibration	S.F.P.		Over Diff 1.4
MC-4	Response	Calibration	S.F.P.		Alarm ✓
MC-5		Meter Trip			

Eff.	Time	Cond.	sol.	Trade address	Bottle
	9 ⁴⁰	b = 1	29.63 ⁵	24.51	3.62
177	9 ⁴¹ _A	b < 1	29.63 ⁵	24.51	15.01 ⁵
178	10 ¹¹	b > 1	29.64	"	0.00
179	10 ⁴⁸	R < 1	29.64	"	15.00
180	11 ¹⁷	b > 1	"	"	0.00
181	11 ⁴⁷	b < 1	"	"	15.01 ⁴
182	12 ⁴⁵	R > 1	29.63 ⁵	"	0.00
183	12 ⁵⁰ _A	b < 1	29.64 ⁴	"	15.01 ³
184	1 ¹⁸ _A	b > 1	"	"	0.00
185	1 ⁴⁵ _A	b < 1	"	"	15.02
186	2 ¹⁶	b > 1	28.65 ³	"	0.00

Received Pu²³⁹ sample from F. Scheitlin 9204-3

Contents : 0.100 g Pu in solution
47.0 ml. of 1.0 M HNO₃ solution
(with trace of HF)

Sample # 7

Assay :	239	99.18	atom %
	240	0.81	"
	241	0.01	"
	242	< 0.01	"

Sample has $2.13 \pm \frac{\text{mg Pu}}{\text{ml sol}}$

Effri's 187-197 - Pu²³⁹ sample

104-3

Instrument Check on 8-3-65 Source 10mK

PM-1	Low Trip	OK	Hi Alarm Trip	OK	
PM-2			Alarm Trip		
IC-1	$> 3 \times 10^{-11}$	Meter Trip	OK	Fast Trip	OK
IC-2	$> 3 \times 10^{-11}$	Meter Trip	OK		Red light ✓
IC-3	Responds	Calibration	S.P.R.		Pre Diff 1.4
IC-4	Responds	Calibration	S.P.R.		Alarm ✓
CRM		Meter Trip			

Exp.	Condition	Soln	Tad	Bottle
187	$\frac{9^{25}}{A}$ $k=1$	29.54	19.62	3.62
	$\frac{9^{28}}{A}$ $k < 1$	"	"	15.01 ⁵
188	$\frac{9^{57}}{A}$ $k > 1$	"	"	0.00
189	$\frac{10^{38}}{A}$ $k < 1$	"	"	15.01 ⁵
190	$\frac{11^{05}}{A}$ $k > 1$	"	"	0.00
191	$\frac{11^{34}}{A}$ $k < 1$	"	"	15.01 ⁵
192	$\frac{12^{00}}{A}$ $k > 1$	"	"	0.00
193	$\frac{12^{30}}{A}$ $k < 1$	"	"	15.02
194	$\frac{1^{00}}{P}$ $k > 1$	"	"	0.00
195	$\frac{1^{29}}{P}$ $k < 1$	"	"	15.01 ⁷
196	$\frac{1^{53}}{P}$ $k > 1$	"	"	0.00
197	$\frac{2^{25}}{P}$ $k < 1$	"	"	15.01 ⁵
	$\frac{3^{00}}{P}$ $k = 1$	"	"	3.62

H₂O only for } Expt's 198-203 Dummy bottle similar
 sample #7 } to the Pu²³⁹ bottle but filled with distilled water

Expt 204 added 1 liter of H₂O to reactor. Mixed for
 ~ 15 min. Pumped all sol. into reactor and was
 super critical with a long pos. period. Drained and
 filled again. total height = 30.54 Expt

19

19

20

20

2

2

2

Discharge Characteristics on 8-5-65 source 10mcV

Item	Test	OK	Hi	OK
HI-1	Test	OK		OK
HI-2	Test			
HI-1	$> 3 \times 10^{-4}$	OK		OK
HI-2	$> 3 \times 10^{-4}$	OK		Red light ✓
HI-3	Response	SfR.		Pre Dif 1.4
HI-4	Response	SfR.		Alarm ✓
HI-5	Test			

0.54

Exp	Time	Cond	Vol	Tab addn	Bottle
	9 ⁴³	b=1	29.54	19.59	3.62 ⁵
198	9 ⁴⁵ _A	b<1	"	"	15.01 ⁸
199	10 ¹³ _A	b>1	"	"	0.00
200	10 ⁴⁹	b<1	"	"	15.01 ⁵
201	11 ¹²	b>1	"	"	0.00
202	11 ⁴⁹	b<1	"	"	15.01 ⁵
	12 ³⁰	b=1	~0.25F	"	3.62 ⁵
			Power ~ 0.5m hr	"	
203	1 ³⁵	b<1	~10.0m hr	"	3.62 ⁵
204	3 ³⁵	b=1	30.54	23.57	3.62 ⁵

Using TMC. 214 unit - have ganged output from
 U^{233} , BF_3 , & C_3 . Feed into By-Pass PAA in TMC 214
have 75 ohm resistance in line.

H_2O for
Sample #7

PO^{239} Dummy bottle

Results from BF_3 channel may be in error - see p 68

Instrument Check on 8-6-65 Source 10 mcd

PM-1	Low Trip	OK	Alarm Trip	OK
PM-2			Alarm Trip	OK
IC-1	$> 3 \times 10^{-11}$	Water Trip	OK	Fast Trip OK
IC-2	$> 3 \times 10^{-11}$	Water Trip	OK	Red light ✓
IC-3	Responds	Calibration	JT	Diff. Pres. 1.4
IC-4	Responds	Calibration	JT	Alarm ✓
CRM		Meter Trip		

Exptl.	Time	Condition	Solution	Turb	Bottle
205	11 ⁴⁵	$b \approx 1$	30.35	11.75	3.62
	11 ⁴⁶	$b < 1$	"	"	15.01 ⁵
206	12 ²⁶	$b > 1$	"	"	0.00
	1 ⁰¹	$b = 1$	30.35 ⁵	"	3.62
207	1 ⁰⁸	$b \leq 1$	"	"	"
208	1 ³⁹	$b > 1$	"	"	0.00
209	2 ³⁶	$b < 1$	"	"	15.01 ⁵
	3 ³⁰	$b \approx 1$	"	"	3.62.

any long pos. pres.

Expt. 210 - Pu²³⁹ Dummy Bottle

Expt. 210 A	- 1/2 memory	- time	10 min.	38.7 sec.	4,989,844 <i>counts</i>
210 B	2/2	"	"	38.8 sec.	4,999,062 <i>counts</i>
211	1/1	"	21 min.	17.9 sec.	4,999,779 <i>counts</i>

H₂O for Sample 7

Determination of resolving times

TMC - By-Pass PHA - $\sim 1 \mu\text{s}$.

BF₃-channel: From DDZ amplifier $\sim 2 \mu\text{s}$.

U²³⁵ " From " $\sim 1 \mu\text{s}$

C₃ " " " $\sim 1.5 \mu\text{s}$.

Discovered scalar on BF₃-channel \sim doubles the counts/channel in T.M.C. Correct count rate observed when scalar^{is} removed.
Now operating BF₃ channel without scalar.

Note Effect on period data for experiments 205-211 not certain - may weight BF₃ channel by factor of 2.

Instrument Check on B-9-65 Source 10mcY

PM-1	Low Trip	OK	Alarm Trip	OK	
PM-2			Alarm Trip	OK	
TC-1	$> 3 \times 10^{-11}$	Meter Trip	OK	Fast Trip	OK
TC-2	$> 3 \times 10^{-11}$	Meter Trip	OK	Red light	✓
TC-3	Responds	Calibration	JT	Press	-1.4"
TC-4	Responds	Calibration	JT	Alarm	OK
RM		Meter Trip			

Exp.	time	Condition	Solution	t _{0D}	Bottle	
210	11 ⁴¹ _A	R=1	30.30 ^B	16.79 ^B	3.62	lin N range
A	11 ⁴⁵ _A	R>1	"	"	0.0	7x10 ⁻¹⁰ - 1.8x10 ⁻⁹
B	12 ²⁵	R>1	"	"	"	5x10 ⁻⁹ - 1.1x10 ⁻⁸
211	12 ¹⁰	R<1	"	"	15.01 ^S	10 ⁻⁸ -

70 Data not used

Second Sample holding bottle - (from stores) polyethylene.

Tare weight 104.1458 g.

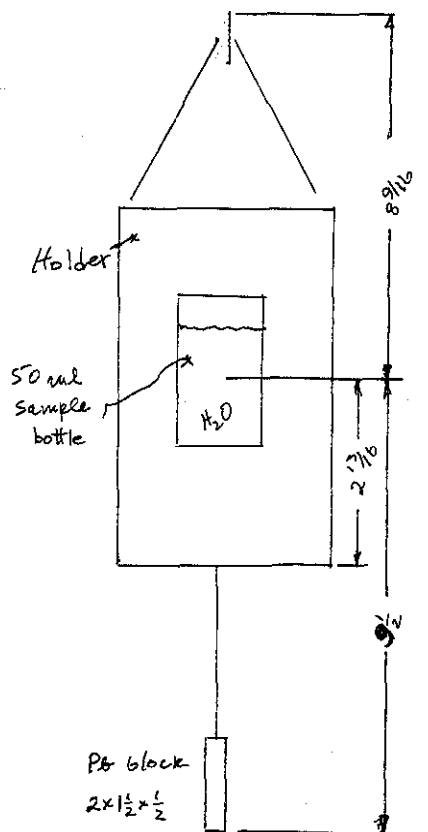
Bottle will contain a 50ml sample bottle centered in holder by polyethylene crossiform.

Tare weight of 50ml. bottle is 12.6741 g.

This bottle will contain about 47 ml. of sample solution.

Sample holder
2

Exps. 212 A + B Gross weight of 50ml bottle ^{#19} is 59.6799 g ;
contains 47.0058 g of H₂O



Instrument Check on 10 Aug 65 Source 10 m c r

PM-1	Low Trip	OK	^{H₁} Alarm Trip	OK	
PM-2			Alarm Trip	OK	
IC-1	$> 3 \times 10^{-11}$	Meter Trip	OK	Fast Trip	OK
IC-2	$> 3 \times 10^{-11}$	Meter Trip	OK		Red light ✓
IC-3	Responds	Calibration	J.T.T.		Pres. Diff. 1.4
IC-4	Responds	Calibration	J.T.T.		alarm ✓
CRM		Meter Trip			

Exp.	Time	Condition	Solution	rad.	Bottle
212	$2 \frac{30}{P}$	$R \approx 1$	30.31	18.83^5	4.00
A	$3 \frac{12}{P}$	$R \approx 1$	30.31	18.83^5	0.34
B	$3 \frac{21}{P}$	$R \approx 1$	30.31	18.83^5	15.23

Data not used

Evaluate some bottle ^{#19} & holders

50 ml bottle ^{#19} contains 72.0058 g of H₂O.

Expt 213,	TMC	1/1	memory	total time	21 min.	19.6 sec.
214	TMC	1/1	"	" "	21 "	20.2 sec.
215	TMC	1/1	"	" "	21 "	20.0
216	TMC	1/1	"	" "	21 "	19.7

Instrument Check on B-11-65 Source 10max

PM-1	Low Trip	OK	Alarm Trip	OK	
PM-2			Alarm Trip		
IC-1	$> 3 \times 10^{-11}$	Meter Trip	OK	Fast Trip	OK
IC-2	$> 3 \times 10^{-11}$	Meter Trip	OK		
IC-3	Responds	Calibration	S/R		
IC-4	Responds	Calibration	S/R		
CRM		Meter Trip			

Expt	time	Condition	Solution	rad	Bottle
213	10 ¹² / _A	k = 1	30.31 ⁸	10.01	0.34 ²
		k ≥ 1	30.33 ⁵	12.75 ⁸	0.34 ²
		k ≤ 1	30.33 ⁵	12.75 ⁸	16.00 ²
		k ≤ 1	30.33 ⁵	12.25	16.00 ²
		k ≥ 1	30.33 ⁵	12.25	0.34 ²
213	Period	"	30.33 ⁴	12.00	0.34 ³
214		k < 1	30.33 ⁴	12.00	16.00 ⁴
215	11 ⁵⁴ / _A	k > 1	30.33 ⁴	12.00	0.34 ⁴
216	12 ²⁰ / _P	k < 1	"	"	16.00

H₂O for
sample #7

Pu²³⁹ dummy bottle in holder #1. return of Exps 205-211.

Exps.	TMC	$\frac{1}{1}$ memory	5 sec/ch.
217	"	"	"
218	"	"	"
219	"	"	"
220	"	$\frac{1}{2}$ "	"
221	"	$\frac{2}{2}$ "	"
222	"	$\frac{1}{4}$ "	"
223	"	$\frac{1}{4}$ "	"

Instrument Check on 8-12-65 Source 10mc X

TC-1	Low Trip	OK	Alarm Trip	OK
TC-2			Alarm Trip	OK
TC-1	$> 3 \times 10^{-4}$	Meter Trip	OK	Host Trip OK
TC-2	$> 3 \times 10^{-4}$	Meter Trip	OK	Red light ✓
TC-3	Responds	Calibration	JH	Press Diff. .14"
TC-4	Responds	Calibration	JH	Alarm OK
URM		Meter Trip		

Expt.	Time	Condition	Solution	t _{ad}	Bottle
217	9 ⁵⁴	k = 1	30.25	21.37	4.35
		k > 1	"	"	0.0
218	10 ⁴³ A	k < 1	"	"	15.00 ⁵
219	11 ¹⁰ A	k > 1	"	"	0.0
220	11 ⁴⁴ A	k < 1	"	"	15.02
221	11 ⁵⁹	k > 1	"	"	0.0
222	12 ⁰⁵ P	k > 1	"	"	"
223	12 ²² P	k < 1	"	"	15.02

Second sample holder. with $V(97.4) O_2(NO_3)_2$

Expt. 224 A	TMC:	$\frac{1}{2}$	Memorized	5 sec/ch.	
B	TMC:	$\frac{1}{2}$	"	"	
225	TMC:	$\frac{2}{2}$	"	"	
226	TMC:	$\frac{2}{2}$	"	"	eratic data
227	TMC:	$\frac{2}{2}$	"	"	" "
228	TMC:	$\frac{2}{2}$	"	"	" "
229	"	"	"	"	lost data
230	"	"	"	"	
231	"	"	"	"	
232	"	"	"	"	

Sample holder #2

Sample 8

50 ml sample bottle (Batch # 19)

Gross Wt with H_2O = 59.6857

" " after removing H_2O = 59.4105

" " after adding $VO_2(NO_3)_2$ = 59.8241

} 0.4136 ^{stock} g sol. added

Stock $VO_2(NO_3)_2$ sol = 243.348 $\frac{mg V(97.4)}{g sol.}$

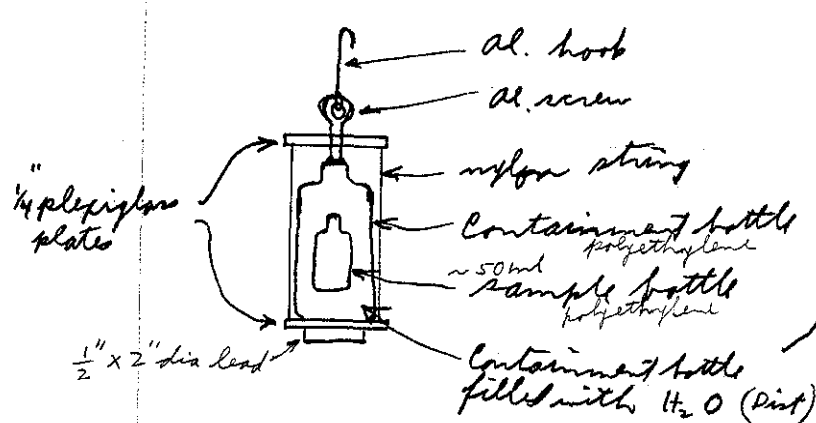
Instrument Check on 8-13-65 Source 10mcX

PM-1	Low Trip	OK	Alarm Trip	OK
PM-2			Alarm Trip	OK
IC-1	$> 3 \times 10^{-11}$	Meter Trip	OK	Fast Trip OK
IC-2	$> 3 \times 10^{-11}$	Meter Trip	OK	Red Light OK
IC-3	Responds	Calibration	SJR	Pass Diff .1F
IC-4	Responds	Calibration	JTI	Warm OK
CRM		Meter Trip		

Expt	Time	Condition	Solution	Feed	Bottle
224	9 ²²	R=1	3023	19.65 ⁵	0.34
"	9 ⁴⁵ A	R>1	30.24 ⁵	23.40	0.34
"	10 ¹² B	"	"	"	"
225	10 ²⁶	R<1	30.25 ⁶	"	16.00 ⁵
226	10 ⁴⁰	R>1	30.25 ⁶	"	0.34
227	10 ⁵³	R<1	30.25 ⁶	"	16.00 ⁵
228		R>1	"	"	0.34
	11 ⁴⁹	b ≈ 1	"	"	8.30
229	11 ⁵²	b > 1	"	"	0.34
230	12 ⁰³	R<1	"	"	16.03 ⁵
231	12 ¹⁵	R>1	"	"	0.34
232	12 ³⁴	R<1	"	"	16.01 ⁵

Hand

3rd Sample Holder



Center of sample
at same position
in reactor as center of
sample in 1st bottle holder
when scale reads the
same. See p. 50

Epp

233

⇒ Epp's 233 → 247

234

H₂O only for
Sample #9

Sample holder #3

235

Containment bottle #1

236

Sample bottle (50ml) #20 with Dist. H₂O

237

238

Empty bottle wt. = 11.5598 g

239

Bottle + H₂O = 58.5605 g

240

Net H₂O = 47.0007 g

241

242

243

-

244

245

246

247

H₂O sample in Holder #3 Sample bottle # 20

79

Instrument Check on 9-22-65 Source 10 mct

PM-1	Low Trip	OK	Alarm Trip	OK	
PM-2	3 x 10⁻⁴		Alarm Trip		
IC-1	$> 3 \times 10^{-4}$	Meter Trip	OK	Fast Trip	OK
IC-2	$> 3 \times 10^{-4}$	Meter Trip	OK	Red light	OK
IC-3	Responde	Calibration	S.P.R.	Press diff	
IC-4		Calibration	S.P.R.	.14	
CRM		Meter Trip		Alarm	OK.

6

Expn	Time	Condition	Solution	Std	Bottle.
	11:00	b = 1	30.02	22.75	3.62 ⁵
233	11:03 AM	b < 1	"	"	15:00
234	11:22 AM	b > 1	"	"	0.00
235	11:53 AM	b < 1	30.02 ⁵	23.75	15:00
236	12:08	b > 1	"	"	0.00
237	12:33	b < 1	"	"	15.00
238	12:48	b > 1	30.01'	23.75	0.00
239	1:01	b < 1	"	"	15.00
240	1:16	b > 1	30.02 ⁵	"	0.00 ⁴
241	1:31 PM	b < 1	"	"	15.00 ⁵
242	1:46 PM	b > 1	"	"	0.00
243	2:03	b < 1	30.03 ⁴	"	15.00
244	2:38	b > 1	30.16 ⁸	36.00 ³	15.00
245	2:51	b > 1	"	"	0.00
246	3:25	b < 1	30.02	19.99 ⁶	0.00
247	3:28	b < 1	"	"	15.00

Expts 248 → 261 ~ 0.1 g U₂₃₅

Sample holder # 3

Containment bottle # 1

with insert removed from cap.
(Will use with insert removed on
all subsequent runs)

Sample bottle # 20

Empty bottle WT = 11.5598

Gross WT with H₂O = 58.5605 g

Sample # 9

" " after removing H₂O = 58.2924

" " after adding U(97.441)O₂(NO₃)₂ = 58.7132

g U(97.441)O₂(NO₃)₂ sol. added = 0.4208 g

U(97.441)O₂(NO₃)₂ sol. obtained from bottle 5-5

Contains 377.78 $\frac{\text{mg U}}{\text{ml}}$ or 243.348 $\frac{\text{mg U}(97.441)}{\text{g sol}}$

Sp. Gr. = 1.5559

Removed sample bottle from reactor at ~ 4:00 PM, dried
with tissues. ~~out left~~

8³⁰ AM Sept 24. Sample bottle weighed ~ 59.3⁺ g.

This is a gain in weight of ~ 0.6 g indicating
H₂O leaked into sample bottle. Decided to rerun
sample in another bottle.

Instrument Check on 9-23-65 Source 10 mCr

PM-1	Low Trip	OK	Alarm Trip	OK	
PM-2			Alarm Trip		
IC-1	$> 3 \times 10^{-4}$	Meter Trip	OK	Fast Trip	OK
IC-2	$> 3 \times 10^{-4}$	Meter Trip	OK	Red light	OK
IC-3	Responds	Calibration	S & R.	Pres. diff.	.14
IC-4	Responds	Calibration	S & R.	Alarm	OK
CRM		Meter Trip			

Sample bottle #20 in 3rd sample holder, and containment bottle #1
~~97420~~ U (97.441) O₂ (NO₂)

Effn	Time	Cond.	Vol.	Tad	Bottle
	10:45	b = 1	29.99	24.50 ⁴	3.80
248		b > 1	"	"	0.00
248	11:00	b < 1	"	"	15.00
249	11:16	b > 1	"	"	0.00
		Raised Tad	1.3"		
250	11 ³³	b < 1	29.99	25.80 ⁴	15.00
251	11 ⁴⁸	b > 1	29.99	"	0.00
252	12 ⁰⁸	b < 1	"	"	15.00
Shut down to and removed plastic insert in top of containment bottle.					
	1:15 PM	b = 1	30.05	25.50	4.44
253	1 ¹⁷ PM	b < 1	"	"	15.00
254	1 ³¹	b > 1	"	"	0.00
255	1 ⁴⁵	b < 1	"	"	15.00
256	2 ⁰²	b > 1	30.06	"	0.0
257	2 ¹⁸ PM	b < 1	"	"	15.00
258	2 ³²	b > 1	"	"	0.0
259	2 ⁴⁸	b < 1	"	"	15.00
260	3 ⁰⁹	b > 1	"	"	0.00
261	3 ³²	b < 1	"	"	

Eppri's 262 → 272

Sample holder # 3

Containment bottle # 1

H₂O only for
Sample #9

Sample bottle # 21

Empty bottle wt. = 12.3322 g

Bottle + Dist. H₂O = 59.3323Net H₂O = 47.0001 g

Removed sample from reactor at ~ 3¹⁰ PM Sept. 24 and
dried outside with tissue.

at 3:40 PM Sept 24 weighed 59.3432 g

" 4:35 PM " " " 59.3345 g

" 8:20 AM Sept 27 " 59.3282 g

Instrument Check on 9-24-65 Source 10 mcr

PK-1	Low Trip	OK	Alarm Trip	OK	
PK-2			Alarm Trip		
IC-1	$> 3 \times 10^{-4}$	Meter Trip	OK	Fast Trip	OK
IC-2	$> 3 \times 10^{-4}$	Meter Trip	OK	Red light	OK
IC-3	Responds	Calibration	S.F.R.	Presdif.	.14
IC-4	Responds	Calibration	S.F.R.	Alarm	OK
CRM		Meter Trip			

Sample bottle # 21 with H₂O

Expn	Time	Cond.	Sol	Std	Battly.
262	11³⁷	b = 1	30.00	29.25	4.35
262	11 ³⁷	b < 1	"	"	15.00
263	11 ⁵⁴	b > 1	"	"	0.00
264		b < 1	"	"	15.00
265	12 ²⁴	b > 1	"	"	0.00
266	12 ⁴⁰	b < 1	"	"	15.00
267	1 ⁰¹	b > 1	"	"	0.00
268	1 ¹⁵	b < 1	"	"	15.00
269	1 ^{20 PM}	b > 1	"	"	0.00
270	1 ⁴⁴	b < 1	"	"	15.00
271	2 ⁰¹	b > 1	"	"	0.00
272	2 ¹⁵	b < 1	"	"	15.00

Epp's 273 → 287

~ 0.1 g U²³⁵

Sample holder #3

Containment bottle #1

Sample #9 Sample bottle #21

Same sample as run in Epp's 248 → 261. see p. 80

9⁰⁰ AM Sept 27. Removed H₂O from sample bottle #21, rinsed with alcohol, and dried with compressed air. Filled with sol. from sample bottle #20 (see p. 80) to obtain a gross wt. of 59.4836 g

$$59.4836 - 12.3322 = 47.1514 \text{ g of solution}$$

2⁴⁵ PM 27 Sept. Removed sample from reactor and dried sample bottle with tissue.

4³⁵ PM 27 Sept. Gross wt of sample 59.4857 g

8¹⁵ A 28 Sept. " " " " 59.4840 g

Sample analysis

Took ~ 17 ml ~~from~~ from sample for manometric analysis.
$$2.18 \frac{\text{mgU}}{\text{ml}} \text{ corrected for enrichment}$$

$$\text{sp. gr.} = 1.0222 @ 23^\circ\text{C}$$

$$\frac{\text{mgU}}{\text{g sol.}} = 2.18057 \text{ --- } \text{for } \text{Temp.}$$

$$1.77\% \text{ U}^{234}, 97.42\% \text{ U}^{235}, 0.10\% \text{ U}^{236}, 0.71\% \text{ U}^{238}$$

Instrument Check on 9-27-65 Source 10 mCV

PM-1	Low Trip	OK	Alarm Trip	OK	
PM-2			Alarm Trip		
IC-1	73×10^{-11}	Motor Trip	OK	Fast Trip	OK
IC-2	73×10^{-11}	Motor Trip	OK		Red light OK
IC-3	Responds	Calibration	S & R.		Pass dif .14
IC-4	Responds	Calibration	S & R.		Alarm OK
CRM		Motor Trip			

Exp.	Time	Cond.	Std.	Std	Bottle
	9 ³⁸	b = 1	29.82	24.05	4.30
273	9 ⁴⁰	b < 1	"	"	15.00
274	9 ⁵⁴	b > 1	"	"	0.00
275	10 ⁰⁹	b < 1	"	"	15.00
276	10 ²⁷	b > 1	"	"	0.00
277	10 ⁴⁷	b < 1	"	"	15.00
278	11 ⁰³	b > 1	"	"	0.00
279	11 ¹⁹	b < 1	"	"	15.00
280	11 ³⁴	b > 1	"	"	0.00
281	11 ⁵⁰	b < 1	"	"	15.00
282	12 ⁰⁶	b > 1	"	"	0.00
283	12 ²³	R < 1	"	"	15.00
284	12 ⁴¹	R > 1	29.93	37.01 ⁵	15.00
285	12 ⁴³	R > 1	29.93	"	0.00
286	12 ⁵⁵	R < 1	29.73	14.00	0.00
287	1 ⁰³	R < 1	29.73	"	15.00

1 Oct 1965

Received Pu^{239} sample from F. Scheitlin, 9204-3,
in Bottle #21.

See p. 62 for assay, etc.

$$\begin{array}{r}
 \text{paper + bottle + Pu sol} = 59.6316 \text{ g} \\
 \text{paper} = \underline{.4806} \\
 \text{bottle + Pu sol} = 59.1510 \\
 \text{bottle} = \underline{12.3322} \\
 \text{Pu sol} = 46.8188 \text{ g}
 \end{array}$$

Sample #10

 Pu^{239}

Placed sample bottle #21 with Pu^{239} sol in
containment bottle #1 and filled with water as
in preceding exp's.

Exps 288 → 296

Sample holder #3

Containment bottle #1

Sample bottle #21

Left sample bottle hanging above the water in
flux trap over the weekend.

-3,

Instrument Check on 10-1-65 Source 10mc

PM-1	Low Trip	OK	Low Trip	OK
PM-2				
IO-1	$> 3 \times 10^{-11}$	OK	OK	
IO-2	$> 3 \times 10^{-11}$	OK	Red light	OK
IO-3	Responds	JIT	Press diff	:14
IO-4	Responds	JIT	alarm	OK
CRM	Meter Trip			

Expt.	Time	Condition	Solution	Tad	Bottle	Temp.	
						m.w.	°F
288	1 ³⁸ / _p	k < 1	none		15.00	0.968	75.82
	1 ⁵⁰	k > 1	29.88^s	24.10	15.00	0.971	75.
	2 ⁰³	k < 1	29.35 ^c	0.00	0.00	0.967	
289	2 ¹⁰	k < 1	"	"	15.00	0.967	
290	2 ²⁵	k > 1	29.67	37.25	15.00	0.93	
291	2 ³²	k > 1	"	"	0.00	0.95	
292	3 ⁰⁰	k < 1	29.56 ^s	22.84	15.00	0.962	75.55
293	3 ¹⁴	k > 1	"	"	0.00	0.972	76.00
294	3 ²⁸	k < 1	"	"	15.00		
295	3 ⁴⁴	k > 1	"	"	0.00		
296	4 ⁰⁰	k < 1	"	"	15.00		

↑
K=2 not working properly

Epp's 297 → 307

Sample #10

Sample holder # 3

Containment bottle # 1

p²³⁹
14

Sample bottle # 21

See p. 86

2
2
2
2
3
3
3
3
3
3
3
3
3
3

Instrument Check on 10-4-65 Source 10 mcr

PM-1	Low Trip	OK	Alarm Trip	OK	
PM-2			Alarm Trip		
IC-1	$> 3 \times 10^{-4}$	Water Trip	OK	Fast Trip	OK
IC-2	$> 3 \times 10^{-4}$	Water Trip	OK	Red light	OK
IC-3	Responds	Calibration	S.P.R.	Pressure	0.14
IC-4	Responds	Calibration	S.P.R.	alarm	OK
CRM		Water Trip			

Exp.	Time	Condition	Ld.	Tab	Bottle	Temp m.v.	°F
297							
297	11 ⁴⁰	b = 1	29.44	24.40	4.25	.9242	
	11 ⁴²	b < 1	"	"	15.00		
298	11 ⁵⁸	b > 1	"	"	0.00	.9339	
299	12 ¹²	K < 1	"	"	15.00		
300	12 ²⁵	K > 1	"	"	0.00		
301	12 ⁴²	K < 1	"	"	15.00		
302	12 ⁵⁶	K > 1	"	"	0.00		
303	1 ¹⁵	K < 1	"	"	15.00	.9219	
304	1 ²⁹	K > 1	"	"	0.00		
305	1 ⁴⁹	b < 1	29.43	"	15.00		
306	2 ⁰³	b > 1	"	"	0.00		
307	2 ²⁵	b < 1	"	"	15.00		

H₂O only
for sample # 11

Expts 308 → 327

sample holder # 3

Containment bottle # 2

sample bottle # 22

H₂O only

Bottle # 22 + H₂O

72.1818 g

Bottle # 22 empty

12.2913

Net H₂O

59.8905

		Cond.	soln.	Tcd	Bottle
324	2 ³⁷	K>1	29.54 ⁵	34.02	15.00
325	2 ⁵⁰	K>1	"	"	0.00
	325 ⁵				
326		K<1	29.49	23.00	15.00
327	3 ³⁸	K<1	29.47 ⁵	"	0.00

Instrument Check on 10-7-65 Source 10 mcr

PM-1	Low Trip	OK	Alarm Trip	OK	
PM-2			Alarm Trip		
IC-1	7×10^{-4}	Lower Trip	OK	East Trip	OK
IC-2	$> 3 \times 10^{-4}$	Upper Trip	OK		Red light OK
IC-3	Responds	Calibration	S.P.R.		Press diff 0.14
IC-4	Responds	Calibration	S.P.R.		alarm OK
CMK		Meter Trip			

Exp.	Time	Cond.	Sol	Std	Bottle
308	9:00	b ≈ 1			
	9:23	b = 1	29.47	24.00	4.25
	9:26	b < 1	"	"	15.00
309	9:40	b > 1	"	"	0.00
		→ Raised Std added			
310	10 ⁰³	b > 1	29.47	26.00	0.00
311	10 ²⁶	b < 1	"	"	15.00
312	10 ⁴¹	b > 1	29.46 ⁵	"	0.00
		b = 1	29.49 ⁵	27.00	4.25
313	11 ¹⁵	b > 1	29.49 ⁵	27.50	0.00
314	11 ³²	b < 1	29.50	"	15.00
315	11 ⁴⁵	b > 1	29.49 ⁶	"	0.00
316	12 ⁰⁵	b < 1	"	"	15.00
317	12 ¹⁹	b > 1	"	"	0.00
318	12 ⁴¹	b < 1	"	"	15.00
319	12 ⁵⁹	b > 1	"	"	0.00
320	1 ²⁰	b < 1	"	"	15.00
321	1 ³⁵	k > 1	"	"	0.00
322	2 ⁰⁵	k < 1	29.47	23.00	15.00
323	2 ¹⁸	k < 1	29.47	23.00	15.00

Exp's 328 →
 Sample holder # 3
 Containment bottle # 2
 Sample bottle # 22
 V(97.447) O₂ (NO₃)₂

Sample # 11
 V(97.42 98%)

$\frac{mgV}{ml} = 37.59$
 $f = 1.052003 @ 20^\circ C$

Oct 8
 $\frac{mgV}{f} = 35.73184$

Bottle # 22 + H₂O = 72.1848g
 Removed ~ 5.3ml H₂O 66.9040g

added V(97.424) O₂ (NO₃)₂ 2l 75.1228
 66.9040

VO₂(NO₃)₂ sol. added = 8.2188g

11 Oct. Removed sample from reactor about 2:30PM and dried with trisene.

11 Oct, 4:45PM Bottle # 22 plus sample 75.1212g

12 Oct 8:15 AM " " " 75.1196g

Exp	Time	Cond.	Sol.	Tad	Bottle
341	12 ⁴⁶	b > 1	28.99	19.00	0.00
342	11 ⁵⁴	b < 1	"	"	15.00
343	12 ⁰³	b > 1	"	"	0.00 ²
344	12 ¹⁰	b < 1	28.98 ⁵	"	15.00
345	12 ¹⁹	b > 1	28.98 ⁵	"	0.00
	12 ³⁰	b = 1	"	"	3.30

Experiment Check on 10-11-65 Source 10 m.c.F

Time	Low Rate	OK	High Rate	OK
	$> 3 \times 10^{-11}$	OK	OK	OK
	$> 3 \times 10^{-11}$	OK	Red light	OK
	Response	S/R	Press diff	0.14
	Response	S/R	Alarm	OK

Exp	Time	Cond.	Sol	Tad	Bottle
328	9 ⁰²	b ≈ 1	29.02	26.24 ⁵	4.30
	9 ²¹	b ≈ 1	29.04 ⁵	26.91	4.30
	9 ⁴⁴	b = 1	29.06	28.00	4.30
	9 ⁴⁵	b < 1	"	"	15.00
329	9 ⁵²	b > 1	"	"	0.00
Changed Tad addn.					
330	10 ⁰⁵	b < 1	29.04	25.00	15.00
331	10 ¹⁵	b > 1	"	"	0.00
332	10 ²¹	b < 1	"	"	15.00
Changed Tad addn.					
333	10 ³⁵	b > 1	29.02 ⁸	22.00	0.00
334	10 ⁴²	b < 1	29.02 ²	"	15.00
Changed Tad addn.					
335	10 ⁵³	b > 1	29.00 ⁵	19.00	0.00
336	11 ⁰¹	b < 1	29.00	"	15.00
337	11 ¹¹	b > 1	28.99 ⁶	"	0.00
338	11 ¹⁹	b < 1	"	"	15.00
339	11 ³²	b > 1	"	"	0.00
340	11 ³⁷	b < 1	"	"	15.00

Instrument Check on 12-22-65 Source 10 mCV

PM-1	Low Trip OK at 1"	9i Alarm Trip OK	Source at Contact
PM-2		Alarm Trip	
IC-1	73×10^{-4} Meter Trip OK at $\frac{1}{2}$ "	Fast Trip OK at $\frac{1}{2}$ "	
IC-2	73×10^{-4} Meter Trip OK at 2"	Red light OK	
IC-3	Responds Calibration S f R.	Press diff 0.15"	
IC-4	Responds Calibration S f R.	alarm OK	
CRM	Meter Trip		

Expt.
346

Sol. Tad Bottle
To check out reactor in preparation for the Com²⁴⁴ runs.

	b=1	30.105	23.425	out
	b<1	30.09	20.784	"
12 ³⁸ PM	b<1	29.995	9.875	"
1 ⁰⁶ PM	b<1	27.815	8.06	"
1 ¹⁶ PM	b<1	drained sol to dump tank		"
1 ²⁴ PM	b<1	drained more sol.		"
1 ³¹ PM	b<1	~24.00		"
	b<1	~12.00		"
	b<1	0.0		"

Counting Channels.

Ch #1 — $\frac{1}{4}$ " BF₃Ch #2 — 2" BF₃ Nr. 1941, Preamp Nr.
On cable rack.Ch #3 — $\frac{1}{4}$ " BF₃ thin tubeCh #4 — 2" BF₃ Nr. 1938

On platform

PM-1	Low Trip OK 1"	Hi Alarm Trip OK Contact
PM-2		Alarm Trip
IC-1	3×10^{-11}	Meter Trip At Contact Fast Trip OK At Contact
IC-2	3×10^{-11}	Meter Trip OK 2"
IC-3	Response OK Calibration	S.P.R. Red light OK
IC-4	Response OK Calibration	S.P.R. Pres Diff .15"
CRM	Meter Trip	Alarm OK

Purpose: Check and Position Counters and Instruments

Expr #	347	Condition	Soln Ht	+ A	Bottle	temp
		K = 1	30.04	18.05	—	
10 ⁰⁰	AM	K = 1	30.01	21.29	—	
11 ¹³	AM	K = 1	30.05	22.865	—	
11 ³⁶	AM	K = 1	30.09	17.54	—	
11 ⁵³	AM	K < 1	30.068	18.38	—	
12 ¹⁰		K < 1		17.38	—	
12 ⁵⁴		K < 1	30.05	15.38	—	
2 ²⁵		K < 1	30.04	16.38	—	
2 ³²		K < 1	30.05	17.38	—	
2 ⁴³		K ≤ 1	30.05	18.38	—	
3 ¹³		K < 1	30.05	19.38	—	
3 ⁴²		K ≤ 1	30.05	20.38	—	
3 ⁵³		K ≤ 1	30.07	21.38	—	
3 ⁵⁸			30.08	22.38	—	

thermocouple No. 19 on side of reactor in function Box No. 19
 " No. 26 in solution plugged in " " No. 15

H₂O only
 for sample # 12

Sample holder # 3

Containment bottle # 2

Sample bottle # 22

H₂O only - Carl Haff placed 50 ml of H₂O by vol.
 meas. in bottle # 22. Placed in containment bottle
 # 2 and filled with H₂O to $\sim \frac{1}{4}$ " from top. Total H₂O
 is 468.8 g.

50 ml. in bottles
468.0 g. total H₂O

162° F max
80° F outside

in
100W
2cm H₂O
30 min at 100W
5.43 watts if 2 g in
50 ml.

~ 200 mcm at surface.

1-2

1"
2"
3"
4"

3PN-150

NUMBER OF POINTS 115

ESTIMATE 2

PARAMETERS	VARIANCES
3 60569749	2 17695088
5 32837779	6 11500455
4-26090315	3 20386158

B 1
B 2
B 3

VARIANCE Y

1 15513886

Instrument Check on 1-17-66 Source 10 mcr

PM-1	Low Trip	OK	Alarm Trip	OK	
PM-2			Alarm Trip		
IC-1	$> 3 \times 10^{-11}$	Meter Trip	OK	Fast Trip	OK
IC-2	$> 3 \times 10^{-11}$	Meter Trip	OK	Red light	OK
IC-3	Responds	Calibration	S.F.R.	Press. Air	0.15"
IC-4	Responds	Calibration	S.F.R.	Alarm	OK
CRM		Meter Trip			

Condition	sol. HT.	T.A.	Bottle.
Eppor 348 To check and proc. counters.			
k=1 (IC-3=1.5)	29.87	27.91	15.00
349 k>1	29.99	27.27	0.00
3.06PM 350 k<1	"	21.75	15.00

See p. 98.

H₂O only
for samples
12 + 13

Thermocouple locations

Th. Co. #	func. Box #	location	Recorder printout #
21	11	on water island	1
12	12	on outside bottom of tank near center	4
43	13	room air	8
19	14	on outside of tank ~ 15" from bot.	K-2 Pot.
26	15	in sol.	

Instrument Check on 1-18-66 Source 10mct

PM-1	Low Trip	OK	Alarm Trip	OK	
PM-2			Alarm Trip		
IC-1	$> 3 \times 10^{-4}$	Meter Trip	OK	Fast Trip	OK
IC-2	$> 3 \times 10^{-4}$	Meter Trip	OK	Red light	OK
IC-3	Out for repair	Calibration		Press. diff	0.15"
IC-4	Response	Calibration	S/P.R.	Alarm	OK
CRM		Meter Trip			see p. 98

	Condition	L.S. HT.	T.A.	Bottle	7/26.19	7/26.26
Expn 9 ²⁹ / _{AM}	351 $b=1$	29.945"	29.26"	out	0.851	0.840
	$b > 1$	29.91	23.76	0.00		
	Resistor leveled off due to temp. creep? Raise T.A. .5" and start over.					
9 ⁵¹ / _{AM}	352 $b > 1$	29.95	29.26	0.00		
10 ⁴⁶ / _{AM}	353 $b < 1$	29.945	"	15.00		
	Raised T.A. 1" in.					
11 ¹⁶ / _{AM}	354 $b > 1$	29.955	30.27	0.00		
11 ⁴⁶ / _{AM}	355 $b < 1$	29.95	"	15.00	0.866	0.853
12 ¹⁴ / _{AM}	356 $b > 1$	"	"	0.00		
12 ⁴⁴ / _{AM}	357 $b < 1$	29.96	"	15.00	0.863	0.862
	Raised T.A. 3 in.					
1 ⁰⁴ / _{AM}	358 $b > 1$	29.99 ⁹	33.27	0.00	0.862	0.854
	359 $b < 1$	"	"	15.00	0.865	0.864
	360 $b > 1$	29.99 ⁵	"	0.00		
	361 $b < 1$	30.00	"	15.00	0.873	0.865
	362 $b > 1$	"	"	0.00	0.868	0.861
3 ²⁷ / _{AM}	363 $b < 1$	"	"	15.00	0.869	0.870
3 ⁵⁴ / _{AM}	364 $b > 1$	30.00 ³	"	0.00		
	365	30.04	37.27	0.00		
	Raised T.A. 4". To get data to check convergence on the computer for use Ch. and small reactivities					

IC-3 back in operation.

Sample holder #3

Containment Bottle #2

Sample Bottle #22

U(~~92.45~~) ~~DE~~

Sample 12.

V(92.48%)

41.23 $\frac{\text{mg U}}{\text{ml}}$

$f = 1.053179 \frac{\text{g}}{\text{ml}}$ @ 21°C

$\frac{\text{mg U}}{\text{g sol}} = 39.1485$

all data 1 sec. ch. on THC. ; ^{Take} Punch not operating. ^{used} printer tape.

Bottle tare 12.3597 g.

Bottle + Solution 20.1088 g.

Bottle + Sol'n + H₂O 64.7618 g.

Wt of U(~~92.45~~)_{92.48}O₂(NO₃)₂ present 2.7491 g.

20 Jan 66

Sample taken from sample #12 for V conc. and specific gravity. Bottle #22 emptied and washed. Rinsed with acetone and allowed to drain for ~ 2 hrs. before sample #13 was made up in it.

Instrument Check on 1-19-66 Source 10 mc X

PM-1	Low Trip	OK	Alarm Trip	OK
PM-2			Alarm Trip	
IC-1	$> 3 \times 10^{-11}$	Motor Trip	OK	Fast Trip OK
IC-2	$> 3 \times 10^{-11}$	Motor Trip	OK	light ✓
IC-3	Responds	Calibr. Trip	OK	Pseudo. 0.15"
IC-4	Responds	Calibration	OK	Alarm ✓
CRM		Motor Trip		

		Condition	Solution	T.A.	Bottle	14 No. 19	19 No. 26
Exp. 366		R=1	29.925	26.59	out		
		k>1	"	"	0.0 ^{~34 sec.} 20.74	73.1	72.8
	150	k>1	29.66	24.23	0.0		
367	203	k<1	"	"	15.00		
368	212	k>1	"	"	0.00		
369	218	k<1	"	"	15.00		
370	229	k>1	"	"	0.00		
371	233	k<1	"	"	15.00	73.2	73.2
372	242	k>1	"	"	0.00		
373	246	k<1	"	"	15.00		
374	256	k>1	"	"	0.00		
375	301	k<1	"	"	15.00	73.1	73.1
376	308	k>1	"	"	0.00		
377	314	k<1	"	"	15.00		

Sample
13

$$V(5.06 \text{ wt} \%)$$

$$\frac{\text{mg U}}{\text{ml}} = 46.32$$

$$f = 1.051105 @ 21^\circ\text{C}$$

$$\frac{\text{mg U}}{\text{ml}} = 44.06793$$

Sample holder # 3

Containment Bottle # 2

Sample Bottle # 22

Sample # 13 made up from stock sol. in Bottle 5-2

$$V(5.03 \text{ wt} \%) \text{O}_2 \text{F}_2, 443.85090 \frac{\text{mg U}}{\text{g sol}}, 2.01989 \frac{\text{g}}{\text{ml}} @ 22^\circ\text{C}$$

$$\text{Bottle tare} = 12.3791 \text{ g}$$

$$\text{Bottle} + \text{Stock sol} = 16.9240 \text{ g}$$

$$\text{Bottle} + \text{Stock sol} + \text{H}_2\text{O} = 64.8348$$

$$\text{Stock sol } V(5.03) \text{O}_2 \text{F}_2 \text{ used} = 4.5449 \text{ g}$$

$$U - 0.03 \text{ \% } U^{234}, 5.06 \text{ \% } U^{235}, 0.05 \text{ \% } U^{236}, 94.86 \text{ \% } U^{238}$$

Instrument Check on 20 Jan 66 Source 10 mCr

PM-1	Low Trip	OK	Alarm Trip	OK	
PM-2			Alarm Trip		
IC-1	$> 3 \times 10^{-11}$	Meter Trip	OK	Fast Trip	OK
IC-2	$> 3 \times 10^{-11}$	Meter Trip	OK	Redlight	OK
IC-3	Responds	Calibration		Press. Dif.	0.16"
IC-4	Responds	Calibration	S.P.R.	alarm	OK
CRM		Meter Trip			

Did not run because repair man wanted to take
Taps punch to shop for repair.

2
at
22°C

20 V²³⁸

106

379 → 390

391 → 394

Data taken on TMC

" " " "

1 sec/channel

5 sec/channel.

Sample #13

see p. ~~103~~ 104

Instrument Check on 25 Jan 66 Source 10 mCK

PM-1	Low Trip	OK	Alarm Trip	OK
PM-2				
IC-1	$> 3 \times 10^{-4}$	Meter Trip	OK	Alarm Trip
IC-2	$> 3 \times 10^{-4}$	Meter Trip	OK	Fast Trip
IC-3	Responds	Calibration	S.P.R.	Red light OK
IC-4	Responds	Calibration	S.P.R.	Alarm OK
CRM		Meter Trip		Pressure gauge reset " " 0.06"

Expn	Time	Condition	Counters	TA	Rate	Ref. Temp. (°C)	Temp. (°F) No. 19	Temp. (°F) No. 26
378	9 ³⁵ AM	k = 1	29.73	29.72 ⁵	15.00	0.6	71.6	71.8
	10 ¹⁰ AM	k = 1	29.77 ⁵	33.50	15.00	0.6	71.6	71.8
	10 ²⁹	k = 1	29.78	34.12	15.00			
		k > 1	29.78 ⁵	"	0.0			
	10 ⁵⁰	k = 1	29.82	35.00	15.00	0.6	71.96	71.92
379	10 ⁵⁵	k < 1	29.74	28.00	15.00			
380	11 ¹⁰	k > 1	29.74	"	0.00	0.7	72.0	72.2
381	11 ³²	k < 1	29.73 ⁵	"	15.00	0.7	72.28	71.91
382	11 ⁴⁶	k > 1	"	"	0.00	0.7	72.28	72.5
383	12 ⁰¹	k < 1	"	"	15.00			
384		k > 1	"	"	0.00			
385	12 ⁴⁶	k > 1	29.74 ⁹	29.00	0.00			
386	1 ⁰⁶	k < 1	"	"	15.00			
387	1 ¹⁶	k > 1	"	"	0.00			
388	1 ²⁷	k > 1	29.74 ⁹	32.00	0.00	0.7	72.92	72.96
389	1 ³⁹	k < 1	"	"	15.00			
390		k > 1	"	"	0.00			
391	2 ⁰⁰	k < 1	"	"	15.00		73.2	73.14
392	2 ¹⁴	k > 1	"	"	0.00			
393	2 ³⁰	k < 1	"	"	15.00			
394	2 ⁴⁷	k > 1	"	"	0.00	0.7	73.64	73.97

~~3~~ 3 of 4 counters moved to positions for green block
Expt. on 1 Feb.

2 Feb. 3PM 3 counters repositioned for green. Expt.
Cm²⁴⁴ due on the 3rd of Feb.

Instrument Check on 2 Feb. 66 Source 10mcK

PM-1	Low Trip	OK	Alarm Trip	OK	
PM-2			Alarm Trip		
IC-1	73×10^{-4}	Meter Trip	OK	Fast Trip	OK
IC-2	73×10^{-4}	Meter Trip	OK	Redlight	OK
IC-3	Response	Calibration	S/R	alarm	OK
IC-4	Response	Calibration	S/R	Press dif	0.08"
CRM		Meter Trip			

To check and position counters for soln exps.

Exps	395	Condition	Sol.	T. A.	Bottle
	10=1		29.76 ⁵	19:85	out

110

Com ²⁴⁴ sample arrived ~ 10 AM. Checked and placed
on sample shims in reactor at 10²⁰ AM.

Sample #14

Sample holder #3

Containment bottle #3

Com ²⁴⁴

Sample bottle # 23

Exp

397

398

399

400

401

402

403

404

405

406

407

408

409

410

411

412

Instrument Check on 2-3-66 Source Comet

PM-1	Low Trip	OK	Hi Alarm Trip	OK	
PM-2			Alarm Trip		
IC-1	$> 3 \times 10^{-4}$	Meter Trip	OK	Fast Trip	OK
IC-2	$> 3 \times 10^{-4}$	Meter Trip	OK	Red light	OK c.c.
IC-3	Responds	Calibration	J _N	Alarm	OK
IC-4	Responds	Calibration	J _N	Pres. Diff	.15
CRM		Meter Trip			

Expt # 396 to check Counters

	Condition	Soln HT	+ A	Bottle	Temp
	K = 1	29.86	23.475		
397	11 ⁰⁰ AM K = 1	29.96 ⁵	23.97	15.00	Ref. cal. frame 0.1°C
398	11 ⁰¹ AM K > 1	"	"	0.00	no. 19 0°F
399	11 ²⁰ AM K < 1	29.73	0.0	15.00	no. 26 0°F
400	12 ¹⁵ AM K < 1	29.85 ⁵	15.00	15.00	set up for ref. cal. frame
401	12 ²⁷ AM K < 1	29.90 ⁶	20.00	15.00	
402	12 ⁵⁴ AM K < 1	29.70 ⁴	0.01	0.00	
403	2 ⁰⁸ PM K > 1	29.85	14.26	0.00	
404	2 ^{20.5} PM K < 1	29.85	14.26	15.00	11 ³⁵ AM 73.3°F 73.2
405	2 ³¹ PM K > 1	29.909	19.264	0.00	2 ¹⁰ PM 73.6 74.0
406	2 ⁴⁴ PM K < 1	29.905	19.264	15.00	2 ⁴⁵ PM 74.0 74.04
407	2 ⁵⁶ PM K > 1	"	"	0.00	2 ⁵⁸ PM 74.04 74.04
408	3 ⁰⁹ PM K < 1	"	"	15.00	
409	3 ²⁰ PM K > 1	"	"	0.00	
410	3 ³⁴ PM K < 1	"	"	15.00	
411	3 ⁴⁷ PM K > 1	"	"	0.00	3 ³⁷ PM 74.22 74.28
412	3 ⁴⁷ PM K < 1	"	"	15.00	cont 113

	time	Condition	Soln H+	+ A	Bottle	74.19	74.26
413	4 ⁰⁰	K > 1	29.905	19.264	0.0		
414	4 ¹³	K < 1	29.905	19.264	15.00		
415	4 ²⁴	K > 1	"	"	0.0		
416	4 ³⁷	K < 1	"	"	15.0		
417	4 ⁵¹	K < 1 } <i>~ 10 seconds</i> <i>over in bottle</i> <i>then start work</i>	"	"	15.0	74.4	
418	5 ⁰⁵		K > 1	"	0.0		
419	5 ¹⁵		K < 1	"	15.0		
420		K = 1	29.87	13.24	0.0		
		K < 1	29.87	12.24	0.0	6 ⁰² PM	74.91°F 74.91
		Pulled bottle	"	"	15.0		
		Inserted "	"	"	0.0		
6 ⁵²		Shut Down - Drained Soln thru feed Valve.					

Instrument Check on 2-8-66 Source 10mCK

PM-1	Low Trip	OK	9.1 Alarm Trip	OK
PM-2			Alarm Trip	
IC-1	$> 3 \times 10^{-11}$	Meter Trip	OK	Fast Trip
IC-2	$> 3 \times 10^{-11}$	Meter Trip	OK	OK
IC-3	Responds	Calibration	S.P.R.	Red light OK
IC-4	Responds	Calibration	S.P.R.	alarm OK
CRM		Meter Trip		Pres Dif 0.08"

Expt 421 Plan to get Cm^{244} sample back on Fri. and repeat meas. at a power ~ 1 decade above that used on 3rd. Have replaced 2" BF_3 detector with $\frac{1}{4}$ " V^{233} fission ch and a $\frac{1}{4}$ " V^{235} fission ch, Comp. Ch. # and 2 respectively. Also moved IC-3 down to the floor under split table.
 $\mu = 1$ $\text{Ld Gt} = 29.965$ " T.A. = 27.57

$\frac{1}{4}$ " BF_3 in counting ch. #1 is not working.

9 Feb 66

Have replaced $\frac{1}{4}$ " BF_3 detector in ch #1 by a parallel plate V^{235} fission chamber (FC-10). Also placed small polyethylene refl behind V^{235} det in ch. 2 and a cyl. of plexiglass moderator around Cd covered BF_3 in ch. 3.

Instrument Check on 2-9-66 - Source 10mct

115

PM-1	Low Trip	OK	Hi Alarm Trip	OK	
PM-2			Alarm Trip		
IC-1	$> 3 \times 10^{-4}$	Meter Trip	OK	Fast Trip	OK
IC-2	$> 3 \times 10^{-4}$	Meter Trip	OK	Redlight	OK
IC-3	Respond	Calibration	S/R	alarm	OK
IC-4	Responds	Calibration	S/R	Press. Dif.	0.08"
CRM		Meter Trip			

	Cond.	ht. NT	T.A.
Effn 422	$\rho = 1$	29.90	24.99
Effn 423	$\rho = 1$	~29.90	~23.90

Above runs made to position and calibrate detectors.

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1/2

116

2-11-64

"Note"

- (1) Removed BF-3 Counter in ch # 3 between
Exp # 430 - 431. Using 3 remaining counters
- (2) Sample bottle is raised $\sim 3/8$ " from bottom of bottle holder jig
necessary to change bottle reading to 999.82 to
position sample as in previous runs.

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Sample
14 A
244
Com

Sample holder # 3
Containment bottle # 4
Sample bottle # ~~23~~ 23A

Instrument Check on 2-11-66 Source 10 mcr

PM-1	Low Trip	OK	Hi Alarm Trip	OK	
PM-2			Alarm Trip		
IC-1	73×10^{-4}	Meter Trip	OK	Fast Trip	OK
IC-2	73×10^{-4}	Meter Trip	OK	Red light	OK
IC-3	Responds	Calibration	S.P.R.	alarm	OK
IC-4	Responds	Calibration	S.P.R.	Pressure	0.08"
CRM		Meter Trip			

Exp	Condition	John Ht.	T.A.	Barth	Red. Cal. Temp.	76.19 (°F)	76.26 (°F)
424	b = 1 (~1.4 m IC-3)	30.09	25.16	15.00	0.4°C	76.80	76.60
425	10 ¹⁷ AM b > 1	"	"	999.82			
426	10 ³⁷ b = 1 (~30 m IC-3)	30.09 ⁸	25.60	15.00			
427	10 ⁴⁰ b < 1	30.01	15.60	15.00	10.4°C	76.80	77.09
428	11 ¹⁰ K < 1	30.01	15.60	3.70			
429	11 ¹⁴ K > 1	30.01	15.60	999.82			
430	11 ⁴³ K > 1	30.01	15.60	999.82			
431	12 ¹¹ K > 1	30.005	20.60	999.82			
432	12 ²⁶ k < 1	30.034	20.60	15.00	12.3°C	77.68	78.27
433	12 ³⁶ k > 1	"	"	999.82			
434	12 ⁴⁷ k < 1	"	"	15.00			
435	12 ⁵⁸ K > 1	"	"	999.82	1.0°C	77.96	78.58
436	1 ¹³ K < 1	30.04	"	15.00	1.1°C	78.00	78.50
437	1 ²⁴ K > 1	"	"	999.82			
438	1 ³⁷ K < 1	30.13	30.60	15.00			
439	1 ⁵⁰ K > 1	30.14	30.60	999.82			
440	1 ⁵⁷ K < 1	30.14	"	15.00	2.0°C	78.72	79.45
441	2 ⁰⁹ K > 1	"	"	999.82			
442	2 ¹⁹ K < 1	30.135	"	15.00	2.3°C	78.72	79.37

Cont P 119

Th.C.
19
OF

Expt	time	Condition	Soln HT	+ A	Bottle
443	2 ³³	K > 1	30.135	30.60	999.82
444	2 ⁴⁴	K < 1	"	"	15.00
445	2 ⁵⁵	K > 1	"	"	999.82
446	3 ¹⁰	K > 1	"	"	999.82
447	3 ¹⁷	K < 1	"	"	15.00
448	3 ³⁴	K = 1	30.10	26.37	999.82
449		K < 1	30.08	25.37	"
	3 ³⁶	K < 1	30.08	25.37	15.00

420

79.50

Put bottle back into 999.82 and
~~reactor~~ to > 1 by both IC-2 & liquid.
 Lowered T.A. to 21.36"

Instrument Check on 2-18-66 Source 10mck

PM-1	Low Trip	OK	Alarm Trip	OK	
PM-2			Alarm Trip		
IC-1	$> 3 \times 10^{-11}$	Meter Trip	OK	Fast Trip	OK
IC-2	$> 3 \times 10^{-11}$	Meter Trip	OK	Red light	OK
IC-3	Responds	Calibration	OK	alarm	OK
IC-4	Responds	Calibration	OK	Press dip	0.08"
CRM		Meter Trip			

To adjust and check counters and ion chambers for lower power runs.

Expr	Time	Condition	John RT.	T.A.	Bottle
450	1 ⁴⁰ PM	b=1	29.85		out
	2 ⁰⁷ PM	shut down			
450 cont.	2 ¹⁷	b=1	29.85		
	2 ²⁵	shut down.			
4	2 ⁵¹	b=1			
	3 ⁰⁰	shut down			
	3 ¹⁵	b=1			
	3 ²⁶	shut down			
	3 ⁴⁰	b=1			
	3 ⁴⁸	shut down			
	4 ⁰⁴	b=1			
	4 ²⁰	shut down			

The following 4 detectors are now adjusted to give ~ the same count rates.

Ch. 1	- 1/2" BF ₃	45
Ch. 2	- 2" BF ₃ in cable rack	45
Ch. 3	- 1" BF ₃	46
Ch. 4	- 2" BF ₃ on balcony	46

~~Sample~~ H₂O only for sample # 14 & 14A

Instrument Check on 2-22-66 Source 10mcK

PM-1	Low Trip	OK	Alarm Trip	OK	
PM-2			Alarm Trip		
IC-1	> 3 X 10 ⁻⁴	Meter Trip	OK	Fast Trip	OK
IC-2	73 X 10 ⁻⁴	Meter Trip	OK	Redlight	OK
IC-3	Responds	Calibration	A/R.	Alarm	OK
IC-4	Responds	Calibration	A/R.	Pres dip	0.08"
CRM		Meter Trip			

Sample holder # 3
 Containment bottle # 5
 Sample bottle # 24

Measured 25 ml of distilled H₂O into bottle # 24 using a 15 ml and a 10 ml pipette. Placed in holder and in reactor.

Expn	Time	Condition	Sub H ₂	TA	Bottle	Ref. Cal. temp	7/19 (°F)	7/26 (°F)
451	10 ¹⁰	b = 1	29.80 ⁵	31.83	15.00	10 ²⁴		
	10 ¹²	b > 1	"	"	0.00	0.2°C	73.96	73.87
	10 ³⁰	b = 1	29.82	32.58	15.00			
452	10 ⁴⁰	b < 1	29.78 ⁵	25.00	15.00			
453	10 ⁵¹	K > 1	29.78	25.00	0.00			
454	11 ⁰⁴	K < 1	29.78	"	15.00	11 ¹⁶		
455	11 ¹⁴	K > 1	"	"	0.00	0.2°C	74.23	74.63
456	11 ²⁴	K < 1	"	"	15.00	11 ³⁸		
457	11 ³⁷	b > 1	"	"	0.00	0.2°C	74.37	74.41
458	11 ⁴⁹	K < 1	"	"	15.00	11 ⁴²	74.78	74.78
459	12 ⁰²	K > 1	29.78 ⁵	27.50	0.00			
460	12 ¹³	K < 1	29.79	"	15.00			
461	12 ²⁷	K > 1	29.78	"	0.00			
462	12 ⁴⁰	K < 1	29.78	"	15.00			

(over)

122

Expr	time	condition	Soln Ht	+A	Bottle	Ref. Cell Temp	No. 19 (°F)	No. 26 (°F)
463	12 ⁵²	K>1	29.79 ⁴	27.50	0.00			
464	1 ⁰⁶	K<1	29.78 ⁵	27.50	15.00			
465	1 ¹⁸	K>1	29.785	27.50	0.00	1 ⁴⁰		
466	1 ⁴²	K=1	29.76	22.50	0.00	0.2°C	75.04	75.70
		K<1	29.755 ⁻	21.50	0.00			
	1 ⁴⁸	K<1	29.75 ⁻	21.50	15.00			
	3 ¹²	K<1	29.745 ⁻	21.50	0.00	3 ³⁵		
	3 ⁵⁹	K>1 [?]	29.76	23.50	0.00	0.2°C	75.32	75.32
	4 ¹⁴	K>1	29.76	25.50	0.00			
	4 ²⁸	Shut Down		Dump Soln				

124

Sample
15

HNO₃ in
solution
~ 0.5 Normal

Sample holder # 3
Containing bottle # 5
Sample bottle # 24

25 ml of ~ 0.5 Normal HNO₃ and water solution.

Instrument Check on 2-23-66 Source 10mcK

PM-1	Low Trip	OK	Alarm Trip	OK	
PM-2			Alarm Trip		
IC-1	7.3×10^{-4}	Meter Trip	OK	Fast Trip	OK
IC-2	7.3×10^{-4}	Meter Trip	OK	Red light	OK
IC-3	Responds	Calibration	A/R.	Alarm	OK
IC-4	Responds	Calibration	A/R.	Press diff	0.08"
CRM		Meter Trip			

Exp.	Time	Condition	John H.	T.A.	Bottle	Ref. Cold pipe	76.19 (°F)	76.26 (°F)
467	10 ⁵³	K=1	29.885	27.02	15.0			
	10 ⁵⁸	K>1	29.885	27.02	0.0	11 ⁰⁰ 0.4°C	75.23	75.82
	11 ¹⁸	K=1	29.89	28.01	15.0			
468	11 ²⁶	K<1	29.86	21.50	15.0	12 ⁴⁶ 0.4°C	75.69	75.54
469	11 ³⁸	K>1	29.848	21.50	0.0			
470	11 ⁴⁸	K<1	"	"	15.0			
471	11 ⁵⁸	K>1	"	"	0.0			
472	12 ⁰⁸	K<1	29.845	"	15.0			
473	12 ²⁰	K>1	29.84	"	0.0			
	12 ³²	K<1	"	"	15.0			
475	12 ⁴³	K>1	"	"	0.0			
476	12 ⁵⁴	K<1	"	"	15.0			
477	1 ⁰³	K>1	"	"	0.0			
478	1 ¹⁷	K<1	"	"	15.0			
479	1 ²⁸	K>1	29.84	21.50	0.0	14 ⁴ 0.4°C	75.92	76.19
480	1 ⁴⁰	K<1	"	"	15.0			
	1 ⁴⁵	Shut Down - Dump Soln						

Handwritten notes:
 Instrument checked on 2-23-66
 Source 10mcK
 Checked on 2-23-66

126

Sample

#16

HVO

distilled H₂O

~1.5 g sample

Sample holder #3

Containment bottle #5

Sample bottle #24

25 ml (pipetted) of ~0.5N HNO₃ and H₂O sol.

4954496

TMC repeated 14 Times by [unclear]

PM-1	Low Trip	OK	Alarm Trip	OK
PM-2			Alarm Trip	
IC-1	3×10^{-11}	OK	Fast Trip	OK
IC-2	3×10^{-11}	OK		
IC-3	Response	OK	S & R.	Red light OK
IC-4	Response	OK	S & R.	Alarm OK
GRM				Press Dif. 0.8"

Expt	time	condition	Soln Ht	+A	Bottle	76.19 (°F)	76.26 (°F)	
481	9 ⁰⁰	K=1	29.865	25.61	15.0			
	9 ¹⁴	K>1	"	"	0.0			
	9 ³⁸	K=1	29.875	27.51	15.0			
482	9 ⁴⁵	K<1	29.834	21.00	15.0	76.13	76.60	
483	9 ⁵⁷	K>1	29.83	21.00	0.0			
484	10 ⁰⁴	lower Power for Repair man to check						
		Monroe Printer. (with Bottle 15.0")						
	11 ¹²	K=1	29.91	30.80	15.00			
484	11 ¹⁸	K>1	29.875	24.30	0.0			
485	11 ²⁶	K<1	29.87	24.30	15.0			
486	11 ³⁹	K>1	"	"	0.0			
487	11 ⁴⁸	K<1	"	"	15.0			
488	12 ⁰⁰	K>1	"	"	0.0			
489	12 ¹⁰	K<1	"	"	15.0	76.60	76.60	
490	12 ²²	K>1	"	"	0.0			
491	12 ³²	K<1	29.865	24.30	15.0			
492	12 ⁴⁴	K>1	"	"	0.0			
493	12 ⁵⁴	K<1	"	"	15.0			
494	1 ⁰⁷	K>1	"	"	0.0			
495	1 ¹⁸	K<1	"	"	15.0			
496	1 ³⁰	K>1	"	"	0.0			
	1 ³³	Shut Down - Dump Soln.						

↑
76.60

128

[Handwritten signature]
#17
[Handwritten signature]
H603

PM-1	Low Trip	OK	Alarm Trip	OK	
PM-2			Alarm Trip		
IC-1	$> 3 \times 10^{-4}$	Meter Trip	OK	Fast Trip	OK
IC-2	$> 3 \times 10^{-4}$	Meter Trip	OK		Red light ✓
IC-3	Response	Calibration	SfR.		Alarm OK
IC-4	Response	Calibration	SfR.		Pres dif. 0.08"
CRM		Meter Trip			

Purpose: Check Counters

Expr	time	Condition	Soln #	TA	Bottle
497	9 ⁵⁰	K >	30.61	24.38	15.00"
	9 ⁵⁵	Source Out			
	10 ¹³	K=1	29.79	25.03	15.00"
	10 ¹⁴	K > 1	29.79	25.03	0.00"
	10 ²⁰	K=1	29.795	27.13	15.00"
	10 ⁵⁸	Shut Down to Adjust Counters			
Start	12 ³⁰	Start feeding Soln			
	12 ³⁷	K > 1	30.61	24.06	15.00"
	12 ⁵⁷	K=1	29.87	25.43	15.00"
	1 ⁰¹	Shut Down to Adjust Counters			
	1 ²⁷	K > 1	30.54	25.43	15.00"
	1 ⁴³	K=1	29.92	23.22	15.00"
	2 ⁰⁰	Shut Down to check Counters			
	3 ³⁰	K > 1	30.65	25.01	15.00"
	3 ⁴⁸	K=1	29.925	24.36	15.00"
	4 ⁰⁰	Shut Down to Adjust Counter ✓			
	4 ⁰³	K > 1	30.66	24.01	15.00
	4 ¹⁶	K=1	29.935	22.87	15.00
	4 ¹⁷	Shut Down			

Instrument Check on 3-3-66 Source 10mcr

PM-1	Low Trip	OK	Alarm Trip	OK
PM-2			Alarm Trip	
IC-1	$> 3 \times 10^{-11}$	Meter Trip	OK	Fast Trip OK
IC-2	$> 3 \times 10^{-11}$	Meter Trip	OK	Red light OK
IC-3	Responde	Calibration	SFB	Alarm OK
IC-4	Responde	Calibration	SFB	Press Def. .08"
CRM		Meter Trip		

Expr time Purpose: Check Counters
 498 920 Condition Soln HT + A Bottle
 R>1 30.75 24.21 15.0"
 938 R=1 29.86 24.02 15.0
 940 Shut Down - Dump Soln

132

Sample #
 # 17
 ~ 2.5% Normal
 HNO₃

Sample holder # 3
 Containment bottle # 5
 Sample bottle # 24
 25 ml (pipetted) of ~ 2.5 N HNO₃ and H₂O sol.

Expt	time	condition	soln Ht	tA.	Bottle
504	11 ⁵¹	K < 1	29.70	18.70	15.0
505	12 ⁰⁴	K > 1	29.70	18.70	0.0
506	12 ²¹	K < 1	29.69	"	15.0
507	12 ³⁴	K > 1	"	"	0.0
508	12 ⁴⁵	K < 1	"	"	15.0
509	12 ⁵⁷	K > 1	"	"	0.0
510	1 ⁰⁹	K < 1	"	"	15.0
511	1 ¹⁹	K > 1	"	"	0.0
512	1 ³²	K < 1	"	"	15.0
	1 ³⁸	Shut Down	(Dump Soln)		

Instrument Check on 3-8-66 Source 10 mcr

PM-1	Low Trip	OK	Alarm Trip	OK	
PM-2			Alarm Trip		
IC-1	73X10 ⁻⁴	Motor Trip	OK	Fast Trip	OK
IC-2	73X10 ⁻⁴	Motor Trip	OK	Redlight	OK
IC-3	Responds	Calibration	S/R	alarm	OK
IC-4	Responds	Calibration	S/R	Pressure Trip	0.08"
CRM		Motor Trip			

Expn	Time	Condition	Sub #1	TA	Bottle
H99	8 ³⁵	R>1	30.70	25.10	15.0
	8 ⁵⁰	R~1	29.67	26.50	15.0
		Shut Down to check Counters			
	9 ⁰⁰	R>1	30.55	26.50	15.0
	9 ¹²	R~1	29.735	24.62	15.0
		Shut Down to Adjust Counters			
	9 ²¹	R>1	30.54	24.62	15.0
	9 ³⁸	R=1	29.75	23.53	15.0
	9 ³⁹	Shut Down to Adjust Counters			
	9 ⁴⁷	R>1	30.70	24.90	15.0
	10 ¹⁰	R~1	29.76	24.84	15.0
		Shut Down to Adjust Counter			
	10 ¹⁵	R>1	30.72	25.02	15.0"
	10 ³⁵	R=1	29.76	26.00	15.0
		R~1	29.76	25.21	15.0
500	11 ⁰³	R<1	29.72	18.70	15.0
501	11 ¹⁸	R>1	29.70	"	0.0
502	11 ²⁸	R<1	"	"	15.0"
503	11 ⁴¹	R>1	"	"	0.0"

T₁₉ (°F) T₂₆ (°F)

74.73 74.46

cont.

See Page 132

134

Sample #18
~ 5% V

Made up sample #18 by pipetting 25 ml of the solution left from sample #2 (see p. 38) into Bottle #24

Bottle #24 empty wt. = 12.5726⁵

Bottle + solution = 38.3432⁵

Sol = 25.7706 g

$V(5.05\% \text{ } O_2 \text{ } F_2)$

$\frac{msl}{ml} = 27.171$

$p = 1.029500 \text{ } \frac{kg}{m^3} @ 20^\circ C$

$\frac{msl}{sol} = 27.36129$

$V = 0.05\% \text{ } F_2^{200}, 5.05\% \text{ } V^{200}$

$0.05\% \text{ } V^{200}, 95.05\% \text{ } V^{200}$

Expr	time	condition	Soln Ht	t.A.	Bottle
528	<u>108</u>	K L	29.65"	21.00"	15.0"
529	<u>118</u>	K 7	- "	"	0.0
	<u>123</u>	Shut Down (Damp Soln)			

10
0.7°C 74.87 74.

Instrument Check on 3-9-66 Source 10 mcr

PM-1	Low Trip	OK	Alarm Trip	OK	
PM-2			Alarm Trip		
IC-1	7.3×10^{-11}	Meter Trip	OK	Fast Trip	OK
IC-2	$> 3 \times 10^{-11}$	Meter Trip	OK	Red light	OK
IC-3	Response	Calibration	SfR.	alarm	OK
IC-4	Response.	Calibration	SfR.	Press Dif	0.08"
CRM		Meter Trip			

Expn	Time	Condition	John H7.	TA	Bottle
513	8 ⁴⁰	K >	30.54	25.12	15.0
	9 ⁰⁸	Shut Down	to change counter		
	9 ²⁰	K > 1	30.60	25.05	15.0
	9 ⁴⁵	K = 1	29.685	26.72	15.0
	10 ¹⁰	K > 1	29.685	27.48	0.0
514	10 ³⁰	K < 1	29.65	17.80	15.0
515	10 ⁴²	K > 1	29.64	"	0.0
516	10 ⁵⁴	K < 1	"	"	15.0
517	11 ⁰⁵	K > 1	29.64	21.00	0.0
518	11 ¹⁶	K < 1	"	"	15.0
519	11 ²⁷	K > 1	"	"	0.0
520	11 ³⁷	K < 1	"	"	15.0"
521	11 ⁴⁸	K > 1	"	"	0.0
7496 522	11 ⁵⁸	K < 1	"	"	15.0
523	12 ¹¹	K > 1	"	"	0.0
524	12 ²¹	K < 1	"	"	15.0
525	12 ³³	K > 1	"	"	0.0
526	12 ⁴⁵	K < 1	"	"	15.0
527	12 ⁵⁶	K > 1	"	"	0.0

Ref	9/19	9/26
Coldpane	(°F)	(°F)
10 ⁴⁵	73.28	74.73
11 ⁰⁵	74.47	74.60

↑
 74.47
 74.60

Cont

See Page 134

136

Weighed sample bottle #25 → 12.2228 g

Pipetted ~~50~~⁵⁵ ml. of dist. H₂O into bottle #25 → 67.1209 g.

Net ~~water~~ water 54.8981 g.

Sample Holder #3

Containment bottle #5

Sample bottle #25 with H₂O as above.

Instrument Check on 7-11-66 Source 10m cK

PM-1	Low Trip	<u>OK</u>	Alarm Trip	_____
PM-2	_____	_____	Alarm Trip	_____
IC-1	<u>> 3x10⁻¹¹</u>	Meter Trip	<u>OK</u>	Fast Trip <u>OK</u>
IC-2	<u>> 3x10⁻¹¹</u>	Meter Trip	<u>OK</u>	<u>Red light OK</u>
IC-3	<u>Responds</u>	Calibration	<u>S.P.O.</u>	<u>Oldy alarm OK</u>
IC-4	<u>out</u>	Calibration	_____	<u>Pres. Diff. 0.05"</u>
CRM	_____	Meter Trip	_____	_____

To check reactor and instruments in preparation for
measurement of sensitivity to boron in sample bottles.

Exp	Time	Cond.	Soln Ht.	TA.	Bottle
530	3 ⁰⁵	K-1	29.21	27.01	0.00
	4 ⁵⁵	Shut Down			

138

Distilled H₂O in bottle #25.

See p. 136.

H₂O for

samples

19429

Eppri's 531 → 538

Data taken on 3 pulse (BF₃) detectors and 1 log n-inch. G

Instrument Check on 7-12-66 Source 10 Mcv

PM-1	Low Trip <input checked="" type="checkbox"/>	Alarm Trip
PM-2		Alarm Trip
IC-1	3×10^{-11} Meter Trip <input checked="" type="checkbox"/>	Fast Trip
IC-2	3×10^{-11} Meter Trip <input checked="" type="checkbox"/>	
IC-3	Response <input checked="" type="checkbox"/> Calibration <u>S&R</u>	Red light <input checked="" type="checkbox"/>
IC-4	Calibration	Bldg Alarm <input checked="" type="checkbox"/>
CRM	Meter Trip	Press. Dif. $0.05''$

Purpose: Measure Sensitivity of H₂O in Sample Bottle #25

Expr	time	Cond	Soln Ht	TA	Bottle
531	8 ⁴⁵	K > 1	29.17	24.69	6.0''
	9 ⁴⁰	b > 1	29.17 ⁵	22.69	0.0
532	10 ²⁹	b < 1 IC-3=40	29.18	22.69	15.00
533	11 ³⁴	b > 1 IC-3=9	"	"	0.0
534	12 ¹⁰	b < 1 IC-3=27	"	"	15.00
535	1 ¹⁰	K > 1 IC-3=8	"	"	0.0
536	1 ⁵⁰	b < 1 IC-3=30	"	"	15.00
537	2 ⁵⁰	b > 1 IC-3=85	"	"	0.0
538	3 ³¹	K < 1 IC-3 H6	"	"	15.0
	4 ¹⁷	Shut Down			

Epp's 539 → 546

Mixed new soln. of dried $\text{Na}_2\text{B}_4\text{O}_7$ in distilled H_2O
with a concentration of $\sim 0.9 \frac{\text{g}}{\text{L}}$.

Pipetted 55 ml of above soln. into sample bottle #25
and weighed.

Bottle plus B soln. = 67.0962 g.

Empty Bottle (from 4.136) = 12.2228 g.

Net B soln = 54.8734 g.

Sample holder #3

Containment bottle #5

Sample bottle #25

Sample
19

Instrument Check on 7-13-66 Source 10 mct

PM-1	Low Trip	OK	Alarm Trip	
PM-2			Alarm Trip	
IC-1	7.3×10^{-4}	Meter Trip	OK	Fast Trip OK
IC-2	$> 3 \times 10^{-11}$	Meter Trip	OK	Red light OK
IC-3	Response	Calibration	S.F.R.	Bldg alarm OK
IC-4	Response Out	Calibration		Press Diff 0.04"
IRM		Meter Trip		

Purpose: Meas. sensitivity to Brown soln (ca. 9%^B) in sample bottles.

Exp.	Time	Cond.	Power on IC-3	ln $\frac{N}{N_0}$	T.A.	Bottle.
539	10 ²⁰	b > 1				
	11 ²⁵	b > 1	~ 11.0	29.18	26.50	15.00
540	11 ⁵⁴	b < 1	~ 18.5	"	"	0.00
541	12 ³⁰	b > 1	~ 12.0	"	"	15.00
542	1 ⁰⁵	b < 1	~ 20.0	"	"	0.00
543	1 ³⁹	b > 1	~ 13.0	"	"	15.00
544	2 ¹⁵	b < 1	~ 21.0	"	"	0.00
545	2 ⁴⁷	b > 1	~ 14.0	"	"	15.00
546	3 ²⁵	b < 1	~ 22.0	"	"	0.00
	4 ⁰⁵	Shut Down				

1
 Sample
 # # 36

Pipetted new soln of dried $\text{Na}_2\text{B}_4\text{O}_7$ in distilled H_2O
 with a concentration of $\sim 1.478 \frac{\text{g}}{\text{l}}$.

Pipetted 55 ml of above soln into sample bottle #2
 and weighed

$$\text{Bottle plus B soln.} = 67.2212 \text{ g.}$$

$$\text{Empty bottle (from p. 136)} = \underline{12.2228 \text{ g.}}$$

$$\text{Net B soln.} = 54.9984 \text{ g.}$$

Sample holder #3
 Containment bottle #5
 Sample bottle #25

Instrument Check on 14 July 66 Source 10 mck

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PM-1	Low Trip	OK	Alarm Trip
PM-2			Alarm Trip
IC-1	$>3 \times 10^{-11}$	Meter Trip	OK
			Fast Trip OK
IC-2	$>3 \times 10^{-11}$	Meter Trip	OK
			Red light
IC-3	Response	Calibration	Sf. R.
			Bldg. Alarm
IC-4	Out	Calibration	Press. diff. 0.05"
CRM		Meter Trip	

Purpose: To Meas. sensitivity to Boron sub ($\sim 1.478 \frac{g}{g}$) in sample bottle.

Exp	Time	Cond	Power on IC-3	Soln HT	T.A.	Bottle
547	9 ³⁵	b > 1				
	9 ⁴²	K ~ 1		29.18	22.38	15.00"
	10 ³⁰	b > 1	~9.0	"	24.00	15.00
548	11 ⁰⁷	b < 1	~26.0	"	"	0.00
549	11 ⁴⁰	b > 1	~12.0	"	"	15.00
550	12 ¹⁴	b < 1		"	"	0.00
551	12 ⁴⁸	b > 1	~11.0	"	"	15.00
552	1 ²⁸	b < 1		"	"	0.00
553	2 ⁰⁵	b > 1	~13.0	"	"	15.00
554	2 ⁴³	b < 1	~25.0	"	"	0.00
555	3 ²⁰	b > 1	~12.	"	"	15.00
	3 ⁵¹	Shut Down				