BOOK73R

Notes:
"Book #1 3%, H/U - 4 61-62" on front
"3% Bk 1" on front

"3% 61-62" on spine

Blank pages: page opposite page 1, 1, 4, 14-26, 96, 114, 139, 143-152, inside back cover sheets

-page 37 has 1 sheet taped to it
-page 43 has 1 small sheet clipped to it
-pages 43 thru 46 are clipped together
-page 80 has small sheet taped to it
-pages 92/93 has thin sheet between pages
-page 93 has 1 (8.5x11) sheet stapled to it
-page 94 has 2 (8.5x11) sheets taped to it
-pages 112/113 has small green sheet between pages

Scanned by:
Sheila Finch
RSICC /Oak Ridge National Lab.
August 25, 1999

E-14

2 3% - 92/8 1st Mix

Exp.	Bare Size	Remarks	Page
1	24 x 24	Bare	27
2	22 x 24	Bare	46
3	22 x 22	Bare	51
4	23 x 23	Bare	59
1	24 x 24	Bare	61
5	24 x 24	Refl	67
6	22 x 22	Refl	70
7	20 x 20	Refl	72
8	18 x 18	Refl	75
9	17 x 17	Refl	77
10	28 x 28	Refl	79
11	36 x 36	Refl	81
12	28 x 28	Bare	85

U-Al alloy foil Calibrations
p. 42, 44, 57, 64, 87

MIXED BLOCKS
2% + 3%

Exp.	BASE Size	REMARKS	PAGE
1	24"X24"	BARE	5
2	26"X26"	BARE	8
3.	24"X24"	REFLECTED	9

Mixtures of 2 & 3% 92-8 Blend.

11-22-60

INSTRUMENT CHECK

Time Po Bc AM PM Source P>-Bc

Tables OK Channel

		A	B	D	E
Range	F	10/1000 opr	10^{-12}	10/1000	1050
Source Dist.	OK	3" ok	4"	0	0
% F.S. Trip		95	100	90	100

C.A. 2-3 9 3/4 Expr. 1 Run A

Sheet ____ Date ____ Time ____ AM PM

Purpose 24"x24" Base 8" High

Mixed Blocks 5.89 Kg.

Alternating 2% and 3%

2% = 1.026 g/in³

3% = 1.530 g/in³

∴ mixed blocks 1.278 g/in³

BARE

1st Layer of 4" Blocks 2nd Layer of 4x4x4

24

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

24

3	2	3	2	3	2
2			1		3
3					2
2					3
3					2
2	3	2	3	2	3

	1	2	3
CP 3min	44 counts	33	463

216

6

Add-d

CP 2

LOADING CHANGE

Description Added 8" in Height

24x24x16

576 in² Box X 1.278 = 736.13 g/in height

Mass before change ____ gmU ____ gmU-235

Mass of Change ____ gmU ____ gmU-235

Total Mass ____ gmU 11,778 gmU-235

	1	2	3
CP 2 Min	60	40	549
			182

LOADING CHANGE

Description Added 8" in Height

24x24x24

CP 2 M

Mass before change ____ gmU ____ gmU-235

Mass of Change ____ gmU ____ gmU-235

Total Mass ____ gmU 17,667 gmU-235

CP 2 Min	79	35	640
			156

LOADING CHANGE

Description Add-d 4 in to height

24x24 X28

C

Mass before change ____ gmU ____ -235

Mass of Change ____ gmU ____ -235

Total Mass ____ gmU 20,617 ____ -235

	1	2	3	[illegible]
CP 2 Min	110	76	863	with partial reflector
	89	45	802 125	with no reflector

LOADING CHANGE

Description Added 4 in to height.
2 + 3 % in top layer 2½ - 4x4x4 short in 3%
of top layer short in corners (outside)
24" x 24" x 32"

Mass before change ______ gmU ______ gmU-235
Mass of Change ______ gmU ______ gmU-235
Total Mass ______ gmU 23,490 gmU-235

	1	2	3	
CP 2 Min	205	84	1572	with partial reflector
	162	68	1283	with no reflector

78
LOADING CHANGE

Description 24" x 24" x 36"
added 4" layer of H/X = 195, 2% blocks.

Period - 400 sec

Mass before change ______ gmU ______ gmU-235
Mass of Change ______ gmU ______ gmU-235
Total Mass ______ gmU 25,853 gmU-235

	1	2	3
Cts/2 min	5 +173 (256)	505	10,003

C.A. 2-3 9 2/8 Exp 26x26 2 A

Sheet ______ Date ______ M / M

Purpose CH of 26x26" mixture at 2+3%

11-23

LOADING CHANGE

Description 26" X 26" X 26" – BARE

17,576 in^3

Mass before change ______ gmU-235

Mass of Change ______ gmU-235

Total Mass 22,462 gmU-235

Sub Critical

LOADING CHANGE

Run B

Description 26" X 26" X 27" – BARE

alternating blocks except 52 in^3 of Top (~~[illegible]~~)

(3 – 4x4x1 blocks)

Mass before change ______ gmU ______ gmU-235

Mass of Change ______ gmU ______ gmU-235

Total Mass ______ gmU 23,312 ______ gmU-235

Sub critical

11-23-60

INSTRUMENT CHECK

Time 8:15 AM ~~PM~~ Source P. B.

	Channel A	B	C	D	E
Tables 01C					
Range	F	10/100 opr	10	10/10	10
Source Dist.		3"	3"	0	=
% F.S. Trip		70	100	80	100

~~LOADING CHANGE~~

Description 24"x24"x28" - BARE
Added 1" Layer of 2% blocks

Period = -400 seconds

Mass before change ____ gmU ____ gmU-235
Mass of Change ____ gmU ____ gmU-235
Total Mass ____ gmU 24,605 gmU-235

Sub Critical

C.A. 27 39 93/8 Expr. 3 Run A
Sheet ____ Date 11-23-60 Time ____ AM PM
Purpose Reflected System
24"x24"

LOADING CHANGE

Description 24"x24"x20" - 6" Refl.
except for top
736.12 g/in height

Mass before change ____ gmU ____ gmU-235
Mass of Change ____ gmU ____ gmU-235
Total Mass ____ gmU 14,722 gmU-235

Sub Critical -

10

Run B

LOADING CHANGE

Description 24" X 24" X 20" – 6" Refl. Complete

Mass before change ____ gmU ____ gmU-235

Mass of Change ____ gmU ____ gmU-235

Total Mass ____ gmU 14,722 gmU-235

Super Critical – Tables: .22

Run C

Description 24" X 24" X 19" – 6" REFL

Mass before change ____ gmU-235

Mass of Change ____ gmU-235

Total Mass ____ gmU 13,986 gmU-235

Sub Critical

LOADING CHANGE

Description 24" X 24" X 19.25" – 6" REFL

Mass before change ____ gmU ____ gmU-235

Mass of Change ____ gmU ____ gmU-235

Total Mass ____ gmU 14,170 gmU-235

Super Critical

Pos. Period – 124 Sec.

11-28-60

INSTRUMENT CHECK

PM

Channel	A	B	C	D	E
Range					
Source Dist	3"	1"	0"	0"	
% F.S. Trip	15	100	90	100	

Exp 4 Run A

LOADING CHANGE

Description 24" X 24" X 36" - BARE

736.13 g/in height

Mass before change ____ gmU ____ gmU-235

Mass of Change ____ gmU ____ gmU-235

Total Mass ____ gmU ____ gmU-235

Sub Critical - ~ -225 sec pd

Run B Horizontal Au Traverse

Pos -8, -6, -4, -2, 0, 2, 4, 6, 8

Foil # E-13, E-8, E-22, E-3, E-11, E-2, E-10, E-15, E-1

CRITICAL POSITIONS

29, -3% 4 Run B

.062

Channel

Plastic 16.7

S 8 1004/1000

.57 - log N on back of Fixed Table

7.2

D 71 1004/500

E .4 690 V.

4:04 AM PM Duration 20 min.

11-29-60

INSTRUMENT CHECK

Time 2:15 AM/PM — Source QD-467

Tables – ok
F – ok

	Channel A	B	C	D	E
Range	$\frac{10}{1000}$	Opr	10^{-12}	$\frac{10}{10000}$	1000
Source Dist.	2"	0"	2"	½"	½"
% F.S. Trip	90	OK	100	80	100+

~~Pos~~ Horizontal Au Traverse — Bare

Pos.	-8	-6	-4	-2	0	+2	+4	+6	+8
Foil #	E-23	E-9	E-14	E-16	E-4	E-18	E-21	E-6	E-

CRITICAL POSITIONS

27.1 + H/x 195 E 4 — Run C

.06

Channel

Plastic 14

A.	67	$\frac{1000}{1000}$
B.	.6	
C.	7.7	
D.	75	$\frac{1000}{500}$
E.	.2	690

Tim Crit. — Duration 45 mins.

Foil
P
Fo
Foil
F
Fo

INSTRUMENT CHECK

Source P₀ Be

Time 9:05 AM ~~PM~~

Table OK

Channel	A	B	C	D	E
Range F	10/1000	off	10^{-12}	1/1000	1050
Source Dist OK	1½"		2"	½	0
% F.S. Trip	95		100	90	100

Horizontal Au Traverse 290 + $\frac{11}{X}$ 195 Bare

Foils on Blocks

Pos.	-8	-6	-4	-2	0	+2	+4	+6	+8
Foil #	A-19	A-11	A-14	A-10	A-13	A-8	A-16	A-7	A-9

Foils on Tape

Pos.	-8	-6	-4	-2	0	+2	+4	+6	+8
Foil #	A-18	A-3	A-12	A-4	A-1	A-5	A-15	A-17	A-2

CRITICAL POSITIONS

290 + $\frac{11}{X}$ 195 Expr 4 Run D

.06 144 232

Channel

Plastic 9.7

A	68	1000 / 1000
B	.6	
C	84	2×10^{-10} / 1000
D	40	1000
E	0	700

Time Crit. 9:32 $\frac{50}{60}$ ~~AM~~ PM Duration 30 min.

3% 92/8

12-1-60

INSTRUMENT CHECK

Time 10:00 AM PM Source P. Pc

Tables OK F

	Channel A	B	C	D	E
Range	1/1000	up	10-12	1/1000	1050
Source Dist.	OK 2" to	OK	2"	1"	0
% F.S. Trip	100	100	90	100	

C.A. 3%, 92/8 Expr. 1 Run A

Sheet Date 12-1-60 Time 10:10 AM PM

Purpose Critical determination

3% = 1.530 g/in^3

PN-467 placed on al against east side of stack

LOADING CHANGE

Description 24" X 24" X 16" - Bare

576 X 1.53 = 881.28 g/in height

Mass before change gmU gmU-235

Mass of Change gmU gmU-235

Total Mass gmU 14,100 gmU-235

Counts for 2 min. (2) Printers (1)

# 1 (X 256)	# 2	# 3	# 4 (fission)
0 +77	70	591	0
	58	531	
0 +66	45	461	

28

Run 1 B
12-1-60

LOADING CHANGE

Description: Moveable Table - 24"X24"X16" → BARE
Fixed " - 24"X24"X20"

88.28 X 18 = 15,863 g

Mass before change ____ gmU ____ gmU-235
Mass of Change ____ gmU ____ gmU-235
Total Mass ____ gmU 15,863 gmU-235

Counters	#1	#2	#3	#4
	0 +72	53	584	0 +1

1C

LOADING CHANGE

Description: 24"X24"X20" - Bare

88.28 X 20 = 17,625

Mass before change ____ gmU ____ gmU-235
Mass of Change ____ gmU ____ gmU-235
Total Mass ____ gmU 17,625 gmU-235

Counters	#1	#2	#3	#4
	0 +83	56	670	0 +4

Run D

LOADING CHANGE

Description 24"X24"X20.50 Added 1" To Fixed Table

Mass before change ____ gmU ____ gmU-235
Mass of Change ____ gmU ____ gmU-235
Total Mass ____ gmU 18,066 gmU-235

Counters	#1	#2	#3	#4
	088	53	686	0 +1
			145	

12-1-60

LOADING CHANGE

Run E

Description 24"x24"x21" Added 1" layer to Mov. Table

Mass before change ____ gmU ____ gmU-235

Mass of Change ____ gmU ____ gmU-235

Total Mass ____ gmU 18,507 ____ gmU-235

Counter

#1	#2	#3	#4
0 88	73	716 ~~8~~ 1396	0 +1

LOADING CHANGE

Run F

Description 24"x24"x22"

Mass before change ____ gmU ____ gmU-235

Mass of Change ____ gmU ____ gmU-235

Total Mass ____ gmU 19,388 ____ gmU-235

#1	#2	#3	#4
0 +108	88	1810	0 +1

LOADING CHANGE 123

Run G

Description 24"x24"x23"

Mass before change ____ gmU ____ gmU-235

Mass of Change ____ gmU ____ gmU-235

Total Mass ____ gmU 20,269 ____ gmU-235

Counter

#1	#2	#3	#4
0 124	99	990	
0 157	74	938 1067	0 +1

30

12-1-60
Run H

LOADING CHANGE

Description 24"x24"x24" Bare

Mass before change ____ gmU-235
Mass of Change ____ gmU-235
Total Mass ____ gmU 21,150 gmU-235

	#1	#2	#3	#4
Counter Run D	0 199	113	1358	0 41

LOADING CHANGE

Description 24"x24"x25" Bare

88128 x25

Mass before change ____ gmU ____ gmU-235
Mass of Change ____ gmU ____ gmU-235
Total Mass ____ gmU 22,032 gmU-235

	#1	#2	#3	#4
Counter Run Y	2 452			

441
110

LOADING CHANGE

Description 24"x24"x25.56

Mass before change ____ gmU-235
Mass of Change ____ gmU-235
Total Mass ____ gmU 22,473 gmU-235

	#1	#2	#3	#4
Counter R				

Sub Critical — 282 Sec Pd

(Crit H = 25.58"
Crit M = 22.542 Kg.)

12-1-60
Run K

C.A. 3%, 93/8 Expr. 1 Run K
Sheet ____ Date 12-1-60 Time ____ AM PM
Purpose Counter Checks

Same loading.
Counted - Positive & negative periods.

Neg at 25.5 g 273 Sec - 5.55 ¢
Pos 25.25 g 76 Sec - 12.12 ¢
1/4" layer = 17.67 ¢

$\frac{12.12}{17.67} = 68.6\%$

.686 X 1/4" = .171"
220.3 g X .686 = 151.2 g

Stack Measure
HEIGHT (~~25.75"~~) (25.25")

E	N	S	W	Width (24")
65.7 Cm	65.8	65.7	65.7	61.2 cm
.8	.8	.8	.9	.3
.7	.8	.8	.9	.3
.8	.8	.7	.8	.4
.7	.8	.8	.8	.6
.7	.8	.7	.8	.4
			.8	.5
				.3
				.4
				.3
				.3
				.4

average Height - 65.78 cm
width - 61.4 cm

32

12-2-60

INSTRUMENT CHECK

Source PN-46T

Time 8:40 AM PM

	Channel A	B	C	D
Tables - OK				
F - OK				
Range	10/1000	opn	10-12	10/1000 10 V
Source Dist.	2.5"	2.5"	½"	0"
% F.S. Trip	90	100	80	100+

C.A. 3%, 9% Expr. 1 Run L-1

Sheet ____ Date 12-2-60 Time AM PM

Purpose ΔP/Δh measurements

Stack - 24"x24"x25.5" - neg. Periods

24"x24"x25.75" - Pos. Periods

Run L-1	Period	Log #	#1	Counters #2	#3	#4
	Negative -	271.4	273	306.8	272.8	274.7
1						
L-2	Positive -	76.5	76.07	76.06	77.32	73.23
L-3	Positive -	76.0	76.22	76.06	76.4	75.36
2						
L-4	Negative -	280.1	265.9	277.0	276.3	271.7
3						
L-5	Positive -	77.6	76.7	76.43	80.9	76.7
L-6	Positive -	79.6	76.9	76.8	77.04	75.67
4						
L-7	Negative -	274.2	275.5	276.8	275.0	269.2
5						
L-8	Positive -	76.0	76.4	76.75	75.49	78.1

L-9	Positive —	77.6	76.7	77.04	76.97	75.8
6 L-10	Negative —	268.2	274.0	273.8	272.6	263.9

12-5-60

INSTRUMENT CHECK

Time 8:25 AM Source Pu-467

Tables- ok
F- OK

Channel	A	B	C	D	E
Range	10/1000	open	10^{-12}	10/1000	1050V.
Source Dist.	2.5"	0"	1.5"	0"	½"
% F.S. Trip	80	OK	100	80	100+

Continued Δ P/Δ L Measurements.

7 L-11	Negative —	260.6	277.0	264.0	261.3	251.1
L-12	Positive —	79.8	79.56	79.86	80.5	76.9
L-13	Positive —	80.3	79.5	80.55	76.93	80.22
8 L-14	Negative —	249.7	264.1	263.8	264.78	255.7
9 L-15	Positive —	79.8	79.78	79.35	81.8	78.0
L-16	Positive —	79.8	79.47	79.74	79.85	76.84
10 L-17	Negative —	257.3	264.3	264.7	263.05	235
11 L-18	Positive —	80.1	79.79	79.1	79.2	81.06
L-19	Positive —	78.7	79.14	80.15	80.13	78.68
12 L-20	Negative —	260.6	262.8	261.1	—	259.8
L-21	Positive —	79.8	80.2	80.0	81.27	78.84

12-6-60

INSTRUMENT CHECK

Time 10:05 AM ~~PM~~ Source PV-467

	Channel A	B	C	D	E
Tables-OK F-OK Range	10/1000	Opr	10^{-12}	10/1000	1050V
Source Dist.	2.5"	2.5"	0"	0"	
% F.S. Trip	75	100	85	100+	

C.A. 3% 9%/8 Expr. 1 Run M-1a

Sheet _____ Date 12-6-1960 Time 10:20 AM ~~PM~~

Purpose Support Structure Evaluation

Run M-1a Al extrusion and steel plate in place.
Stock 24"x24"x25.5"
Positive Period - 78.7.

M-1b Repeat of M-1a.
Positive Period - 78.7

M-1c Repeat of 1a + 1b - 78.7

M-2 Support Structure Removed.
Stock: 24"x24"x25.5". Bore
Negative Period - 244.3

M-3 Reflector Savings. Stack · 24"X 24"X 23.5" – 6" Paraffin on Top

Positive Period –

12-7-60

INSTRUMENT CHECK

Time 8:30 AM PM Source PN – 467

Tables – OK
F – OK Channel

	A	B	C	D	E
Range					
Source Dist.	2.5"		2.5"	0"	0"
% F.S. Trip	80		100	80	100

M-4 Paraffin Reflector Savings.
Stack · 24" X 24" X 23.25" – 6" Paraffin on Top.
Negative Period – 305.1

M-5 Stack: 24" X 24" X 25.5" – Bare
Negative Period – 238.9

M-6 Graphite Reflector Savings:
Stack: 24" X 24" X 22.75" – 17.25" Graphite on Top.
Positive Period:-

M-7 Graphite Reflector Savings:
Stack: 24"X24" X 22" – 17.25" Graphite on Top.
Negative Period – 5,745

~~INSTRUMENT CHECK~~

~~Time AM PM Source~~

~~Channel A B C D E~~

~~Range~~

~~Source Dist.~~

~~% F.S. Trip~~

12-8-60

INSTRUMENT CHECK

Time 8:10 AM Source P. Bc

Tables OK

f

OK

	Channel A	B	C	D	E
Range	1%/1000	up	10^{-12}	1%/1000	10^5
Source Dist.	1"	OC	1"	0"	0
% F.S. Trip	90		100	90	100

M-8 Graphite Reflector Savings - Repeat of M-7
Positive Period - 6,639

M-9 Stack: 24" X 24" X 25.5" - Bare
Negative Period - 252.4

N-1

$\frac{C-17}{C-15} = 1.74365$

$\frac{C-8}{C-15} = 1.7206$

$\frac{C-8}{C-19} = 1.70624$

$\frac{C-17}{C-19} = 1.7438$

-2

$\frac{C-4}{C-14} = 1.73095$

$\frac{C-3}{C-14} = 1.73553$

$\frac{C-4}{C-10} = 1.74261$

$\frac{C-3}{C-10} = 1.71285$

N-3

$\frac{\#508}{\#506} = 1,99892$

$\frac{\#510}{\#506} = 1.95279$

$\frac{\#510}{\#507} = 1.94768$

$\frac{\#508}{\#507} = 1.9992$

N-4

$\frac{\#513}{\#509} = 1.97206$

$\frac{\#511}{\#509} = 1.97642$

$\frac{\#511}{\#512} = 1.99844$

$\frac{\#513}{\#512} = 1.99886$

mil Au Foils

BARE & Cd Covered.

N-3

$$\frac{\#508}{\#506} = 1.99892$$

$$\frac{\#510}{506} = 1.95279$$

$$\frac{\#508}{507} = 1.9992$$

$$\frac{\#510}{\#507} = 1.94768$$

N-

C.A. 3%, 92/8 Expr. 1 Run N-1

Sheet ____ Date 12-8-19 60 Time 11:24 AM

Purpose - Gold Cadmium Fraction

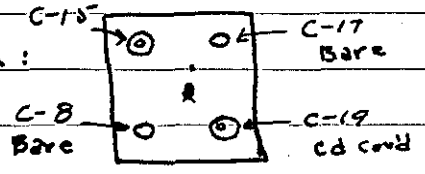
20 mil Covers

Stack: 2½" X 2½" X 25.6"

Cd Cov'd

N-1 Foils Load about Center as shown:

2 mil Au Foils



Tables - .065"

Log N - .13

Plastic - 10.8

Crit - 11:37 45 AM.

Exp. - 30 Min

A - 70 1000/1060

B - .13

C - 10 +

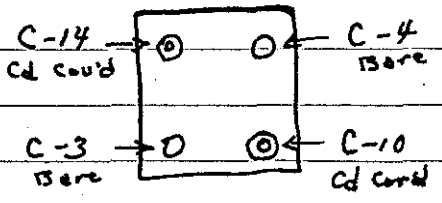
D - 83 1000/500

E - .8 690 V.

N-2 2 mil Au Foils

Exp. - 15 min

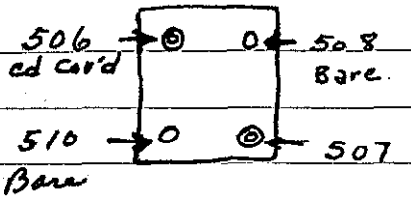
Log N = .12



N-3 5 Mil Au Foils

Exp. - 12 min

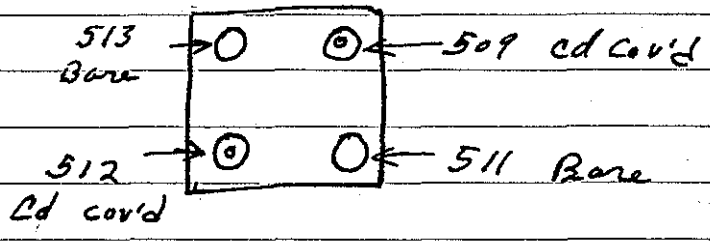
Log N = .1



N-4 5 mil Au Foils

Exp. - 20 min

Log N = .12



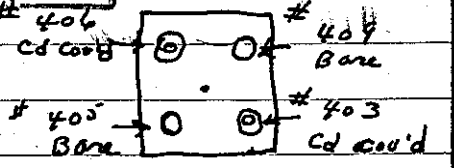
12-9-60

INSTRUMENT CHECK

Time 8:42 AM ~~PM~~ Source P. B.

	Channel A	B	C	D	E
Tables O.K. F					
Range	1/1000	opr	10^{-12}	1/1000	10^{-5} a
Source Dist.	3" ~~82~~	O.K.	3"	"	0
% F.S. Trip	60		100	80	100

Gold Cadmium Fraction



N-5 Foils placed about Center as Shown:

1 Mil Gold

Tables = .065

Plastic = 8.4

Crit. @ 9:04 AM

Time - 20 min

A = 72 1000/1000

B = .125

C = 10^{+}

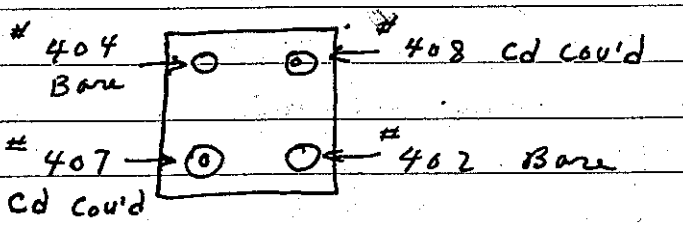
D = 42 1000/1000

E = .8 690V.

N-6 1 mil Gold

Exp. 20 min

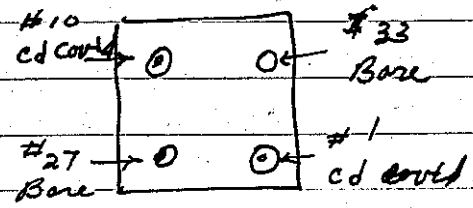
Log N = .13



N-7 Indium Cadmium Fraction

5 mil In Cd Foils

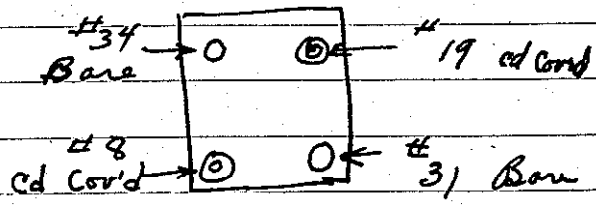
Exposure 10 min. Log N = .02



N-8 5 mil Indium

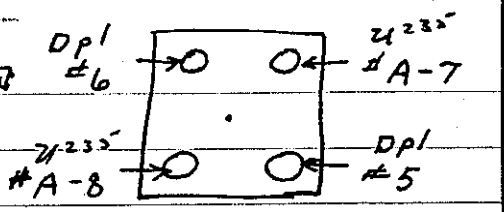
Exposure 10 min

Log N = .022



N-9 ~~U^{235} Cadmium Fraction~~

$\frac{U^{235}}{U^{238}}$ Ratio



12-12-60

INSTRUMENT CHECK

Time 8:30 AM ~~PM~~ Source PN-467

Tables – or F – Range	Channel A: $\frac{10}{1000}$	B: over	C: 10^{-2}	D: $\frac{10}{1000}$	E: 1050 V
Source Dist.	2.5"	0"	3"	0"	0"
% F.S. Trip	75	OK	100	80	100+

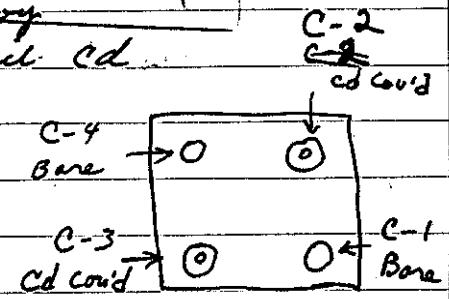
U-al alloy

N-10 cd Fraction U^{235} foils 20 mil cd

Foils 7/16" dia, 5 mil thick

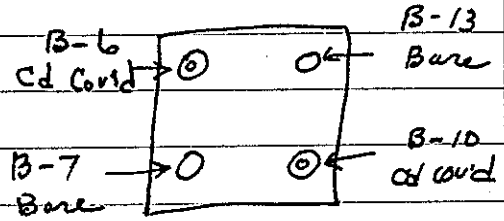
Tables = .065"
Plastic = 9.4
crit = 9:00 AM
Time Exp = 18 min.

A = 66 $\frac{1000}{1000}$
B = .12
C = 10^{+}
D = 78 $\frac{1000}{500}$
E = 2.8 780 V.



N-11 U-al alloy

Tables = .065"
Plastic = 8.68"
crit = 10:20 AM
Exp = 20 min.



C.A. 37, 92/8 Expr. 1 Run N-11
Sheet ______ Date 12-12-60 Time 1:50 ~~AM~~ PM
Purpose Horizontal Gold Traverse
2 mil foils ⊥ to direction
of traverse.
Stack: 24" X 24" X 25.6"

Run
N-12 Position -8, -6, -4, -2, 0, 2, 4, 6, 8,
Foil # J-1, J-6, J-14, J-4, J-17, J-12, J-13, J-10, J-16

Tables = .065 , Log N = .11 Plastic = 4.1 [Plastic in 13.9]

12-13-60
Run
N-13

INSTRUMENT CHECK

Time 8:40 AM ~~PM~~ Source RN-467

Tables: OK
F - OK

Channel	A	B	C	D	E
Range	10/1000	open	10^{-12}	100/10000	1050 V
Source Dist.	2"	0"	2"	0"	0"
% F.S. Trip	85	OK	100	80	100%

Horizontal Gold Traverse Stack 24" X 24" X 25.6

Run N-13 Pos. -8, -6, -4, -2, 0, +2, +4, +6, +8
Foil # J-5, J-2, J-9, J-11, J-7, J-3, J-8, J-15, E-24
Log N = .125, Plastic = 7.4, Exp. for 20 min.

Run N-14 Horizontal Traverse, 2 mil Au Foils ⊥ to Line of Traverse.

Position -8, -6, -4, -2, 0, 2, 4, 6, 8
Foil # D-16, D-11, D-7, D-33, D-31, D-30, D-8, D-28, D-25
Log N = .12 , Plastic 8.1 Exp. = 12 min.

12-13-60 Horizontal Gold Traverse

Run N-15 2 mil Au Foils ⊥ to line of Traverse

Position	-11¾	-11	-10	-9	-8	-6	-4	-2	0	+2	+4
Foil #	D-3	D-12	D-19	D-22	D-13	D-1	D-4	D-2	D-14	D-15	D-16

Pos.	+6	+8	+10½	+11½
Foil #	D-20	D-21	D-9	D-29

Log N = .14 Exp. 25 min Plastic out

12-14-60

INSTRUMENT CHECK

Time 10 AM Source P. B. m

		A	B	C	D	E
Tables ok F Range	OK	10/1000		10	10/1000	1050
Source Dist.		3"		3"	0	0
% F.S. Trip		80		100	90	100

Run N-16 Horizontal Gold Traverse

2 mil Au Foils ⊥ to direction of Traverse.

Position -11¾, -11, -10, -9, -8, -6, -4, -2, 0, 2, 4, 6, 8, 10½, 11½

Foil # C-7, D-5, D-24, D-6, D-32, D-17, D-18, D-23, D-27, C-1, C-16, C-13, C-5, C-12, B-3

Log N = .1135 Exposed - 12 min Plastic out

Run N-17 Horizontal Gold Traverse

2 mil Au Foils ⊥ to direction of traverse

Position	-11¾	-11	-10	-9	-8	-6	-4	-2	0	+2	+4	+6	+8	+10½	+11½
Foil #	B-1	B-2	B-16	B-7	B-13	B-9	B-10	B-12	B-11	B-6	B-4	B-5	B-15	B-8	B-14

Log N = .14 Exp. = 25 min Plastic out

12-15-60

INSTRUMENT CHECK

Time 12.40 AM ~~PM~~ Source Po B- γ

Tables OK

	F	A	B	C	D	E
Range		10/1000	9-	10	10/1000	1050
Source Dist.	ok	3"	ok	3"	0	0
% F.S. Trip		85		100	85	100

C.A. 3%, 9 7/8 Expr. 1 Run N-18

Sheet ______ Date ______ 19 ___ Time ______ AM PM

Purpose U^{235} - Al Foil Calibration
5/6 5 mil, 10 wt %

Foils placed in Rotating Wheel.
Pos. #1 - Foil B-6 from previous Calibrated group
Pos 2 thru 14 foils of wt 0.0171 gms.
Pos 15 thru 18 " " 0.0173 ",

A = 70 1000/1000
Crit 1:10 PM
B = .12
Exp. 20 min
C = 10 +
plastic = 4.6
D = 82 1000/500
E = 1.0 680V.

2	1253	X
1	1154	X
2	1571	X
1	1391	X
2	2066	X
1	1827	X
2	3328	X
1	2984	X
2	11497	X
1	10160	P
2	22095	X
1	19266	P
2	42253	X
1	37191	X
2	25496	X
1	22669	X

12-16-60

INSTRUMENT CHECK

Source PN - 467

Time 9:00 AM ~~PM~~

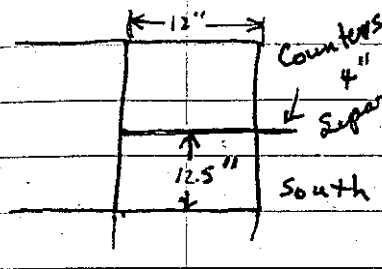
	Channel A	B	C	D	E
Range	10		10	10	10 V
Source Dist.	3.5"		2"	0"	0"
% F.S. Trip	~~95~~		~~100~~	80	~~200~~ +

C.A. ~~3/0, 9/8~~ Expr. 1 Run M-1a AM

Sheet _____ Date 12-16-1960 9:20 ~~PM~~

Purpose U^{238} and U^{235} fission chamber ratios. FAST FISSION FACTOR

Stack - 24" X 24" X 25.65"



LogN = .03

	Fine	Coarse	Rise	Rise
Counter #1	1	8	0.8 μs	17.0
#3	1	8	.8 μs	24.0

	Chan #1 Printer #2 U^{235}	Chan #3 Printer #1 U^{238}	Ratio $\frac{U^{235}}{U^{238}}$
Cts/5min	483,656	1,176	41.12 X11
	492,982	1,275	38.66
	499,560	1,294	38.606
	509,016	1,302	39.09
	518,783	1,314	39.481
	530,956	1,332	40.507
	540,628	1,399	39.048
	550,749	1,384	39.794
	564,029	1,425	38,764
	575,263	1,471	39,107

Chamber # 5-3

" # 8-2

~~avg 39,411~~

39.4.17

44

Exchanged Counters in front of Preamps.

Run M-16

Log N = .028

	Chan #1	Chan #3	Ratio
	1,406	577,936	41.105 X10
5 min	1,266	504,718	39.069
	1,139	482,795	41.105
	1,198	486,359	40.597
	1,245	500,424	40.195
	1,273	502,982	39.512
	1,286	505,092	39.276
	1,236	507,193	41.035
	1,276	509,956	39.965
	1,282	513,953	40.090

average = ~~40.195~~ 401.95

Raised Power Level to Log N = .055

5 min	2,438	971,752	39.86
	2,433	1,002,556	41.206

12-16-60

avg.: 40.533

Run N-19

C.A. 39.9 2/8 Expt. 1 N-19

Sheet 12-16-60 1:55 ~~AM~~ PM

Purpose Pu^{235} Al Foil Calibration

5/16" 5 mil, 10 NVT0

Foils placed in rotating wheel

Pos. #1 Foil B-7 from previous calibrated group

Pos. 2 thru 7 Foils of wt. .0161

Pos. 8 thru 16 " " " .0163

Pos. 17 thru 18 " " " .0165

12-16-60

39₀ 92/8	1 — M-2a
Sheet	12-16-60 3:00 PM
Purp.	U^{238} and U^{235} fission chamber ratios

Sames as Run M4b — Stack 24" × 24" × 25.65

Chan #1	Chan #3	Ratio
1,106	454,334	41.079
1,158	470,235	40.607
1,193	487,740	40.883
1,283	507,503	39.556
1,289	527,026	40.888
		avg = 40.602

M-2b Repeat of Run M-1a

486,129	1320	36.828
503,641	1313	38.358
524070	1354	38.706
544,002	1390	39.137
550015	1423	38.652

46

12-19-60

INSTRUMENT CHECK

C.A. 390 9 3/8 Expr. 2 (22"X24") Run A-1

Sheet ____ Date 12-19-1960 Time 10:10 AM

Purpose 22" X 24" Parallelepiped Bare

LOADING CHANGE

Description 22"X24"X28" ~ Bare

528 X 1.53 = 807.84

Sub critical

Mass before change		gmU	gmU-235
Mass of Change		gmU	gmU-235
Total Mass		gmU 22,619	gmU-235

Run-A-2

LOADING CHANGE

Description 22"X24"X28.50" Bare

807.84 X 28.50

Mass before change		gmU	gmU-235
Mass of Change		gmU	gmU-235
Total Mass		gmU 23,023	gmU-235

Sub Critical

Run A-3

LOADING CHANGE

Description 22" X 24" X 29" Bare

807.84 x29

Mass before change ____ gmU ____ gmU-235

Mass of Change ____ gmU ____ gmU-235

Total Mass ____ gmU 23,427 gmU-235

Critical

135 Sec. Per.

Run A-X

LOADING CHANGE

Description 22" X 24" X 28.75 Bare

807.84 X 28.75"

Mass before change ____ gmU ____ gmU-235

Mass of Change ____ gmU ____ gmU-235

Total Mass ____ gmU 23,225 gmU-235

CH = 28.85"

CM = 23.31

C.A. 37, 93/8 Expr. 2 Run B-1

Sheet ____ Date 12-19-60 Time 1:00 A.M. P.M.

Purpose Δρ/δh Measurements

Stock: 22" X 24" X 28.75" - for Negative Period

22" X 24" X 29" - for Positive Period

BF_3 Counters Fission ch

Run B-1 Periods Log N° (1) (2) (3) (4)

Negative - 298.5

B-2 Positive - 141.1

B-3 Positive - 139.0

B-4 Negative - 225.8

12-20-60

INSTRUMENT CHECK

PN-467

8:20 —

Tables - OK
F - OK

	A	B	C	D	E
	10/1000	oper	10^{-12}	10/1000	1050V.
Source Dist.	2"	0"	2"	0"	0"
% F.S. Trip	80	OK	100	80	100

Continued Δ F/Δ h measurements.

Run B-5 Negative - 279.0

3 B-6 Positive - 144.4

4 B-7 Positive - 142.2

B-8 Negative - 284.5

B-9 Positive - No Good Plastic Ruffle up.

B-10 Positive - No Good " " "

5 B-11 Negative - 280.1

B-12 Positive - 145.5

6 B-13 Positive - 147.7

B-14 Negative - 282.3

7 B-15 Positive - 143.3

12-21-60

INSTRUMENT CHECK

Time 8:20 AM ~~PM~~ Source PN-467

Tabba - DIC
F - OK

	Channel A	B	C	D	E
Range	___	___	10^{-2}	10 1000	1000 V
Source Dist.	2"	___	___	0"	0"
% F.S. Trip	85	___	___	80	100+

Continued a/c/o h measurements

Run B-16 Negative — 282.3
" B-17 Positive — 144.4

B-18 Positive — 143.3
" B-19 Negative — 282.3
B-20 Positive — 142.8

B-21 Positive — 142.2
" B-22 Negative — 277.9

22 X 24 X 28.78 = Neg period ~ 280 sec = 5.4 ¢
22 X 24 X 29.0 = Pos period ~ 140 sec = 7.5 ¢
1/4" = 12.9 ¢

$\frac{54}{129} = 42\%$

(CM = 28.81"
CM = 23.31 Kg)

12-22-60

INSTRUMENT CHECK

Time 8:20 AM — Source PNC-567 #1

Tables - ok
F - ok

	Channel A	B	C	D	E
Range	10/100	0 por	10^{-12}	10/1000	10 50 V
Source Dist.	2"	0"	2"	0"	0"
% F.S. Trip	100+	ok	100	85	100+

C.A. 3%, 9½/8 Expr. 2 Run C-1

Sheet ______ Date 12-22-60 9:00 AM

Purpose Support Structure Evaluation

Run C-1 Al extrusions and steel plate in place on top.
Stack: 22" X 24" X 28.75"
Positive Period -

C-2 support structure Removed. Stack - same
Negative period -

12-22-60

C.A. 370, 9 3/8 Expr. 3 Run A-1
Sheet Date 12-22 1960 Time 1:15 PM
Purpose 22" X 22" - Parallelepiped.

Bare

LOADING CHANGE

Description 22" X 22" X 32" - Parallelepiped.
484 X 1.53 = 740.52
740.52 X 32"

Mass before change gmU gmU-235
Mass of Change gmU gmU-235
Total Mass gmU 23,696 gmU-235

Sub critical

LOADING CHANGE

Run A-2

Description 22" X 22" X 33.25 Bare
484 X 1.53 = 740.52
740.52 X 33.25 =

Sub Critical

Mass before gmU gmU-235
Mass of Change gmU gmU-235
Total Mass gmU 24,623 gmU-235

LOADING CHANGE

Run A-3

Description 22" X 22" X 33.50
484 X 1.53 = 740.52
740.52 X 33.50 =

Mass before change gmU gmU-235
Mass of Change gmU gmU-235
Total Mass gmU 24,807 gmU-235

Sub critical

185 g / 1/4" Layer

12-23-60

INSTRUMENT CHECK

Time 8:10 AM ~~PM~~ Source PN-467

Tables – OK
F – OK

	Channel A	B	C	D	E
Range	19/1000	gr	10^{-12}	10/1000	1050 V.
Source Dist.	3"	0	3"	0	0
% F.S. Trip	90	OK	100	50	100

C.A. 390 92/8 Expr. [illegible] Sp 3 B-1

Sheet ____ Date 12-23-60 Time 8:15 AM ~~PM~~

Purpose ΔP/0h Measurement

22" X 22" X 33.75" – Positive Periods
22" X 22" X 33.50" – Neg. Periods Bare

	Period	Log N	BF₃ Counters (1)	(2)	(3)	Fission Ctr. (4)
Run B-1	Negative –					
B-2	Positive –	Printer #1 went out				

Measured Stack: 22" X 22" X33.5"

Height				Width	
85.? cm	85.5 cm	85.3	85.4	56.4 cm	56.3
.4	.6	.5	.4	.5	.4
.4	.5	.4	.4	.3	.4
.5	.4	.4	.4	.4	.3
.5	.4	.6	.5	.3	.3
.6	.5	.4	.5	.3	.4
		.5			.4

Average Height 85.46 cm
" Width 56.47 CM

1-3-61

INSTRUMENT CHECK

Time 12:40 ~~AM~~ PM Shot PN-467

Tables - ok
F - ok

	A	B	C	D	E
Range	10/100	open	10	12	10/100
Source Dist.	3"	0"	2"	0"	0"
% F.S. Trip	85	OK 100	85	100+	

Continue 1, 2 & 3 ok

C.A. 3% 92/8 Expr. 3 Run C-1

Sheet ____ Date ~~1-10~~ 1-3-61 Time 1:10 ~~AM~~ PM

Purpose Support Structure Evaluation,

C-1 Al extrusions and steel plate in place. Stack: 22" x 22" x 33.5"
Positive period -

C-2 22" x 22" x 33.5' - Bare
Negative period -

22 x 22 x 33.5 - neg Period = ~315 Sec - 4.71 ϕ
22 x 22 x 33.5 - Pos " = ~315 Sec - 3.72 ϕ

1/4 = 8.43 ϕ

471/843 = 55.87%

CH = 33.64"
CM = 24.91 Kg

1-10-61

INSTRUMENT CHECK

Time 8:20 AM Source P. B.

Tables OK

Channel

	F	A	B	C	D	E
Range		100/500	opn	10^{-12}	10/1000	1050
Source Dist.	O.K.	??	ok	2	0	
% F.S. Trip				100	80	100

C.A. 390 9½/8 Expr. 3 B-3

Sheet Date 1-10 1961 10⁰⁵ AM

Purpose Criticality check

22" X 22" X 33.50" Bare

Sub critical.

1-10-61

Run B-4

C.A. 390 9½/8 Expr. 3 Run B-4

Sheet Date 1-10 1961 Time AM PM

Purpose Counter check

22" X 22" X 33.50" Bare

Run B-5 Counter check

Stack 22" X 22" X 33.50" Bare

9:45

1:00

1:25

2:30

3:2

1-11-61

INSTRUMENT CHECK

Time 9:05 AM Source M-226

Jablo – ok
F – ok

	Channel A	B	C	D	E
Range		opr	10^{-2}	10/1000	1050 V
Source Dist.		0"	1/4"	2"	1/2"
% F.S. Trip		ok	100	88	180+

C.A. 3% Expr. 3 (22"X22") Run D-1
Sheet Date 1-11-1961 Time 9:30 AM
Purpose $\Delta \rho / \delta h$ measurements

STACK: 22" X 22" X 33.5" – Negative Periods
22" X 22" X 33.75" – Positive Periods

Run	Period	Log	Counters 1	2	3	4 (Fission)
9:45 AM D-1	Negative					
1:00 PM D-2	1 Positive					
1:25 PM D-3	Positive					
2:30 PM D-4	2 Negative					
3:25 D-5	3 Positive					

1-12-60

INSTRUMENT CHECK

Time 8:15 AM ~~PM~~ Source M-226

Table - OK
F - OK

	A	B	C	D	E
Range		opr	5x10^-12	19/1000	1150 V
Source Dist.	0/1	0"	2"	3"	1/2"
% F.S. Trip	—	—	100	88	100+

8:40 AM Continued Δ P/Δ h measurements -

D-6 Negative -

9:40 D-7 [4] Positive -

10:05 D-8 Positive -

10:55 D-9 [5] Negative -

~~10:45~~ D-10 [6] Positive -

1:35 PM D-11 [7] Positive -

2:25 PM D-12 Negative -

3:15 PM D-13 [8] Positive -

3:35 D-14 Positive -

4:00 PM D-15 [9] Negative -

INSTRUMENT CHECK

1-13-61 Time 8:15 AM PM Source M-226

	A	B	C	D	E
Range		opr	10^{-2}	10/1000	1050V
Source Dist.		~~3~~ X 0"	12"	3"	1"
% F.S. Trip		ok	100	85	100+

8:50 AM Continued α β/α h measurements.

D-16 Negative —

9:50 D-17 Positive —

10:15 AM D-18 Positive —

11:15 AM D-14 Negative —

C.A. 39 9/8 Expr. ~~3~~ Run E-1

Sheet Date 1-13 1961 Time 1:40 PM

Purpose h^{235} - Al Foil Calibration

5/16" 5 mil, 10 Wt%

Foils placed in Rotating wheel

Pos. #1 = Foil B-6 from previous Calibrated group.

Pos. 2 thru 12 = .0169

Pos. 13 thru 17 = .0175

18 = .0165

Crit. @ 1:53 33/60

Exp. 20 min.

Plastic = 999.3

Tables = .12 (in = .065)

A = out

B = .1

C = 9.7 5×10^{-10}

D = 6.8 1000/500

E = 1.0 700 V.

1-16-61

INSTRUMENT CHECK

Time ______ AM/PM   Source ______

Tables - OK
F - OK

Range	op	10^{-2}	10/1000	1000 ✓
Source Dist.	0"	14"	3"	1"
% F.S. Trip	OK	100	80	100+

C.A. 390 92/8 Expr. 3 Run E-2

Sheet ______ Date 1-16-61 Time 9:25 AM/PM

Purpose U 235 Al Foil calibration
5/16" 5 mil Wt %

Stack 22" X 22" X 33.50   Bare

Foils Placed in Rotating wheel
Pos. #1 Foil B-7 from Previous calibrated group
Pos. 2 thru 8 = .0177
Pos. 9 thru 18 = .0181
Critical at 9:50 25/60
Exp. 20 min.

Exp.

1-17-61

M-224

Time 11:15 AM

Tables OK
F - OK
Range — 10^-2 10/1000 1050 V.
Source Dist — 0" 14" 2" 1"
% F.S. Trip — OK 100 75 100+

C.A. 3% 92/8 Expr. 4 Run A-1
Sheet — Date 1-17-61 Time 10:20 AM
Purpose 23" X 23" - Critical Height Determination

LOADING CHANGE

Description 23" X 23" X 28.50" Bare

23 X 23 = 529

529 X 1.53 = 809.37

809.37 X 28.50 =

Mass before change ____ gmU ____ gmU-235

Mass of Change ____ gmU ____ gmU-235

Total Mass ____ gmU 23,067 gmU-235

Sub Critical

Exp. 4 Run A-2

LOADING CHANGE

Description 23" X 23" X 28.75 Bare

809.37 X 28.75 = 23,269

Mass before change ____ gmU ____ gmU-235

Mass of Change ____ gmU ____ gmU-235

Total Mass ____ gmU 23,269 gmU-235

Super Critical 217 Sec. Per.

60

Exp 4 1-17-61
Run A-3

LOADING CHANGE

Description 23"X 23" X 28.50" Bare
809.37 X 28.50 =

Mass before ... gmU ... gmU-235
Mass of Change ... gmU ... gmU-235
Total Mass ... gmU 23,067 gmU-235

Sub. critical
204 Sec. Period
Negative Period

- 204 sec pd = 8.12 ¢
+ 217 = 5.16 ¢
13.28 ¢ = 1/4"

$\frac{8.12}{13.28} = .61$

$.61 \times 1/4 = .15$

Crit Height = 28.65"
" Mass = 23.18 Kg.

1-18-61

INSTRUMENT CHECK

Source M-226

Time 10:50 ~~PM~~ AM

Tables - OK

Range F - OK

Source Dist.

% F.S. Trip

Channel	A	B	C	D	E
		~~OK~~	10^{-12}	~~1000~~ 10	1050 V.
		~~2~~	0"	1/4"	3"	1.5"
		~~OK~~	100	95	100+

C.A. 3%, 9 1/8 Expr. 1 (24"x24") Run N-1

Sheet Date 1-18- 1961 Time 11:00 ~~PM~~ AM

Purpose Reflector Savings

(Repeat of p. 35)

N-1 Stack: 24" X 24" X 23.25" - 6" Paraffin on Top.

Negative period -

1-23-61

INSTRUMENT CHECK

Time 8:45 AM   Source M-226

Tables - OK
F - OK

	Channel A	B	C	D	E
Range			off	10^{-2}	$\frac{10}{1000}$	1050V
Source Dist.	3/4	0"	15"	3"	1.5"
% F.S. Trip		OK	100	80	160+

C.A. 390 $\frac{92}{8}$ Expr. Repeat of Run N-1

Sheet ____ Date 1-23-1961 Time 9:15 AM

Purpose: Reflector Savings for Paraffin & graphite

Stack 24"x24"x23¼ - 6" Paraffin on Top ~~Bare~~

N-1 Stack: Same
Negative period -

N-2 Stack: 24"x 24" x 25.5" - Bare
Negative period -

N-3 Stack: 24"x24"x22" - 17.25" of graphite on top
Negative period -

C.A. 3%, 9 3/8 Expr. 1 Run 0-1

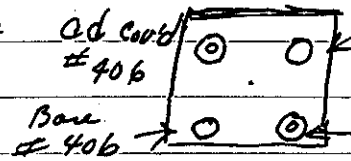
Sheet ____ Date 1-23-1964 Time 3:00 ~~AM~~ PM

Purpose - Au Cadmium Fraction

1 Mil Au Foils

Stack: 24"x24"x25.6" - Bare

Foils at center of stack:



Log N = .1

Tables = .06 s'

Crit. = 3:25 PM

Exp = 20 Min

Plastic Control = 5.8 (in=13.9)

1-25-61

INSTRUMENT CHECK

Time 7:30 AM   Source M-226

Tables - OK
F - OK

	Channel A	B	C	D	E
Range		opr	10^{-12}	10/1000	1050 V.
Source Dist.	0	0"	15"	4"	1"
% F.S. Trip		OK	100	96	100+

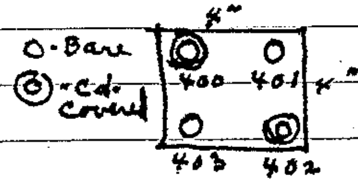
C.A. 390 92/8   Expt. 1   0-2

Sheet   Date 1-25-61   10:05 AM

Purpose Au Cadmium Fraction
1 Mil Au Foils

Stack 24"X24"X25.6"   Bare

Foils in center of stack



Tables = .065
Log N = .1
Critical = 9:59 33/60 AM
Exposure = 20 min.   Plastic Control = 4.5

C.A. 390 92/8   # 1   Run 0-3

Sheet   1:10 PM

Purpose U235 Al Foil Calibration
5/16" 5 mil wt %

Stack 24"X24"X25.50   Bare

Foils placed in rotating wheel

20 min Run Pos #1 Foil B-6 from previous Calibrated group
Pos. 2 Thru. 13 = .0187
Pos. 14 Thru. 17 = .0189
Pos. 18 = .0185

1-26-61

INSTRUMENT CHECK

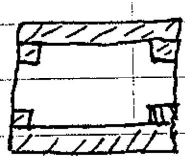
M-226

Time 11:30 AM

			D	
Range	~~4~~	10^{-2}	~~10/100~~	1050V.
Source Dist.	~~0~~	0"	17"	3" 1"
% F.S. Trip		ok	100	80 100+

Stack 25¾" high

Shadow area of 25.5"



C.A. 37o, 9/8 Expr. 1 Run P-1

Sheet Date 1-26- 1961 Time AM PM

Purpose Fast Fission Factor

Repeat of page 43

	Chan # 2 U-235	Chan # 1 U-238	Ratio 235/238
5 min	767,791	1843	41.66
	796,347	2001	39.797

Slightly positive, Removed 4 "½" fuel blocks from Corner

571,670	1394	41.009 X 10
580,695	1444	40.214
584,344	1521	38.418
590,086	1489	39.629
596,038	1499	39.762
601,184	1458	41.233
605,886	1503	40.311
612,494	1563	39.187

Log N = .034 avg. ~~39.970~~ 399.70

Slightly positive

Run P-2 Exchanged Counters in front & preamps.

Chan #2 U^{235}	Chan #2 U^{238}	Ratio $\frac{U^{235}}{U^{238}}$
598,377	15625	38.237 X10
608,161	15689	38.273
619,001	15669	39.451
631,587	1649	38.301
641,174	16561	38.835
651,561	1720	37,881
666,009	1743	38.210
679,114	1763	38.520

average = 385:885

Log N = .036

Slightly Positive

1-31-61

INSTRUMENT CHECK

Time 10:00 AM PM Source M-22-6

	Channel A	B	C	D	E
Range		oper	10^{-12}	$\frac{10}{1000}$	1050 V.
Source Dist.	$\frac{0}{7}$	0"	15"		½"
% F.S. Trip		osc	100		100+

C.A. $37\frac{23}{8}$ Run #5 Run A-1

Sheet Time 1-31-1961 10:20 AM PM

Purpose

LOADING CHANGE

Description 24"X 24"X 16" 6" Reflector

24 X 24 = 576

576 X 1.53 = 881.28

881.28 X 16 = 14,100

Mass before change	gmU		gmU-235
Mass of Change	gmU		gmU-235
Total Mass	gmU	14,100	gmU-235

Super Critical

Table .43

LOADING CHANGE

Run A-2

Description 24"X 24"X 15" - 6" Refl.

881.28 X 15 = 13,2129

Mass before change	gmU		gmU-235
Mass of Change	gmU		gmU-235
Total Mass	gmU	13,219	gmU-235

Sub, Critical

68

Run A-3

LOADING CHANGE

Description 24"X24"X 15.25 6" Refl.

888.28 X 15.25 =

Mass before change ____ gmU ____ gmU-235

Mass of Change ____ gmU ____ gmU-235

Total Mass ____ gmU 13,439 ____ gmU-235

$T = \theta_m + 95.5$ m

10.234

2

4

2

2-1-60

100 80 100 OK
1" 2½ 22" 0" 0
1030V, 1000 5^-12 ope T

% F.S. Trip
Source Dist.
Range

M-226 Time 12:55

INSTRUMENT CHECK

LOADING CHANGE

Description ~~24"X24"X15.20~~ 1875 — 6" Refl.
881.28
~~881.28~~ X 15.19

Mass before change ______ gmU ______ gmU-235
Mass of Change ______ gmU ~~13,386~~ gmU-235
Total Mass ______ gmU ~~12,429~~ gmU-235

Positive Period - 369 Sec
[crossed out] ¢ 3.20 ¢

(53g) ¼" layer from 1 quadrant = 7.03 ¢

$\frac{3.2}{7.03}$ = 45.5%

1/16 X .455 = .0285

.455
53
24 g

15.1875
-.0285
15.1590" Crit. Height

~~15.1875~~
~~-.030~~
~~15.1575" Critical Height~~

13,386
-24
13,362 Crit. Mass

2-2-61

INSTRUMENT CHECK

Time 1:00 PM — Source M-226

	A	B	C	D	E
Range	0	opr.	10^{-2}	10/1000	10 50
Source Dist.	T	0"	20"	3"	1"
~~% F.S. Trip~~		ok	100	80	100+

C.A. 39 92/8 Expt. X 6 Run A-1

Sheet Date 2-2 1961 Time 1:10 PM

Purpose

LOADING CHANGE

Description 22" X 22" X 17" — Completely Reflected 6"

22" X 22" = 484

4.84 X 1.53 = 740.52

740.52 X 17 =

Sub Crit Mass before change ______ gmU ______ gmU-235

Mass of Change ______ gmU ______ gmU-235

Total Mass ______ gmU 12,588 ______ gmU-235

Run A-2

LOADING CHANGE

Description 22" X 22" X 17.0625" — 6" Refl.

22" X 22" = 484 (¼" layer on 1 quadrant)

484 X 1.53 = 740.52

740.52 X 17.0625

Mass before change ______ gmU ______ gmU-235

Mass of Change ______ gmU 12,635 ______ gmU-235

Total Mass ______ gmU ~~12,713~~ 12,635 ______ gmU-235

Positive Period — 260 Sec 4.4 ¢

Run

LOADING CHANGE

Run A-3

Description 22" x 22" x 17.125" - 6" Refl.
(½" layer on ½" g Top)

484 X 1.53 = 740.52

Mass before change ____ gmU ____ gmU-235

Mass of Change ____ gmU ____ gmU-235

Total Mass ____ gmU 12,681 gmU-235

Pos. Period 92.28 Sec

10.48 ¢

Then ½" layer on 1 quadrant = 6.08 ¢

$\frac{4.4}{6.08} = 72.3\%$

.0625" X .723 = .045"

46 g X .723 = 33 g.

17.0625" − .045" = 17.0175" Crit Height

12,635 − 33 = 12,602 g Crit M.

72

2-3-61

INSTRUMENT CHECK

Time 10:55 AM Source M-226

	A	B	C	D	E
Range			10-12		
Source Dist.	0"	20	3"	½"	
% F.S. Trip	OK	100	80	100+	

CA 39a 93/8 Exp. 7 Run A-1

Sheet 2-3-61 Time 11:05 AM PM

Purpose

Stack 20"x20"x19"

LOADING CHANGE

Description 20"X20"X19" Completely Reflected 6"

20X20=400

400X1.53=612

Mass before change gmU gmU-235

Mass of Change gmU gmU-235

Total Mass gmU 11,625 gmU-235

2-3-61
Run A-2

LOADING CHANGE

Description 20"X20"X19.60 6" Reflector

612X19.60

Mass before change gmU gmU-235

Mass of Change gmU 11,995 gmU-235

Total Mass gmU ~~11,995~~ gmU-235

2-3-61
Run A-3

LOADING CHANGE

Description 20"X20"X19.8" 6" Reflector
6 1 2 X 19.8

Mass before change ____ gmU ____ gmU-235
Mass of Change ____ gmU ____ gmU-235
Total Mass ____ gmU 12,117 ____ gmU-235

2-3-61
Run A-4

LOADING CHANGE

Description 20"X20"X20 6" Reflector
6 1 2 X 20

Mass before change ____ gmU ____ gmU-235
Mass of Change ____ gmU ____ gmU-235
Total Mass ____ gmU 12,240 ____ gmU-235

2-3-61
Run A-5

LOADING CHANGE

Description 20"X20"X20.125" 6" Reflector
6 1 2 X 20.125"

Mass before change ____ gmU ____ gmU-235
Mass of Change ____ gmU ____ gmU-235
Total Mass ____ gmU 12,316 ____ gmU-235

2-3-61
Run A-6

LOADING CHANGE

Description 20"X20"X20.25 6" Reflector

Mass before change ____ gmU ____ gmU-235
Mass of Change ____ gmU ____ gmU-235
Total Mass ____ gmU 12,393 ____ gmU-235

Pos. Period - 11.5 Sec 8.78 ±

2-3-61
Run A-7

LOADING CHANGE

Description 20" X 28" X 20.31 6" Reflector
6.12 X 20.31

Mass before change gmU gmU-235
Mass of Change gmU gmU-235.
Total Mass gmU 12,429 gmU-235

Positive Period = 73.8 Sec
12.39 ¢

12.39 ¢
− 8.78
3.61 ¢ = 1/4" layer on 1 quadrant
∴ 1" layer = 14.44 ¢

8.78 / 14.44 = 60.8 %

1/4" * 60.8% = .152"

36g X .608 = 22 g.

20.25 − .15 = 20.1" Crit Height

12,393 − 22 = 12,371 g. Crit M.

2-6-61
Run A-1

INSTRUMENT CHECK

Time 9:35 AM PM
Tables - OK
F - OK

Source M-226

Channel	A	B	C	D	E
Range		Opr	10^{-2}	10/1000	10 ± 8 V.
Source Dist.	0 4	0"	15"	3"	½"
% F.S. Trip		T OK	100	50	100 +

C.A. 990 92/8 Expr. 8 Run A-1
Sheet _____ Date 2-6 1961 Time 10:08 AM PM
Purpose _____

LOADING CHANGE

Description 18"X18"X26" 6" Reflector
Sub-critical 18"X18" = 324
324 X 1.53 = 495

Mass before change _____ gmU _____ gmU-235
Mass of Change _____ gmU _____ gmU-235
Total Mass _____ gmU 12,870 gmU-235

2-6-61
Run A-2

LOADING CHANGE

Description 18"X18"X27"
18"X18" = 324
495 X 27

Mass before change _____ gmU _____
Mass of Change _____ gmU _____
Total Mass _____ gmU 13,419 _____

Super-Critical

2-6-61
Exp. 7
Run A-3

LOADING CHANGE

Description 18"X18"X 26.75" 6" Reflector
495 X 26.75" =

Mass before change ____ gmU ____ gmU-235
Mass of Change ____ gmU ____ gmU-235
Total Mass ____ gmU 13,241 ____ gmU-235

Pos. Period 134.6 Sec.
7.75 ¢

Run A-4

LOADING CHANGE

Description 18"X18" 26.625" 6" Reflector
495 X 26.625

Mass before change ____ gmU ____ gmU-235
Mass of Change ____ gmU 62 ____ gmU-235
Total Mass ____ gmU 13,179 ____ gmU-235

Pointing Period - 282 Sec.
4.05 ¢

7.75 ¢
4.09
2.66 ¢ = 1/2" layer on 1 quadrant or 1/8" layer
x2
5.32 ¢ = 1/4" layer
1/4 x 14.2 = 3.6"
7.75 / 5.32 = 1.45

Exp.
Ru

26.625
- .36
26.265" Crit. H.

13,179
- 198
12,981 g. Crit M

2-7-61

INSTRUMENT CHECK

8:15 AM — M-2-6

Tables - OK

F - OK

	A	B	C	D	E
Range	$\frac{10}{1000}$	0	10^{-12}	$\frac{10}{1000}$	1010 V
Shift	7"	0"	20"	3½"	1"
Trip	80	OK	100	80	100+

C.A. 390 $\frac{9\frac{1}{2}}{8}$ Expr. 89 Run A-1

Sheet _____ Date 2-7 1961 Time 9:30 AM FM

Purpose _____

LOADING CHANGE

Description 17" X 17" X 32" — 6" Reflector

17" X 17" = 289

289 X 1.53 = 442

442 X 32 =

Sub Crit

Mass before change _____ gmU _____ gmU-235

Mass of Change _____ gmU _____ gmU-235

Total Mass _____ gmU 14,144 _____ gmU-235

Exp. 8

Run A-2

LOADING CHANGE

Description 17" X 17" X 34 — 6" Reflector

442 X 34 =

Mass before change _____ gmU _____ gmU-235

Mass of Change _____ gmU 884 _____ gmU-235

Total Mass _____ gmU 15,028 _____ gmU-235

Very Slight Pos. Period.

467

78

2-7-61

Exp-8

Run A-3

LOADING CHANGE

Description 17"X17"X34½ 6" Reflector

443 X 34.56 =

Mass before change ____ gmU ____ gmU-235

Mass of Change ____ gmU ____ gmU-235

Total Mass ____ gmU 15,249 ____ gmU-235

Positive Period - 118.8 Sec P@

8.6 ¢

Run A-4

LOADING CHANGE

Description 17"X17"X34.625

443 X 34.625

Mass before change ____ gmU ____ gmU-235

Mass of Change ____ gmU 55 ____ gmU-235

Total Mass ____ gmU 15,304 ____ gmU-235

Positive Period - 94.4 Sec

10.3 ¢

10.3

8.6

1.7 ¢ = ¼" layer on ½ g stack

x2

3.4 ¢ = ¼ layer

¼ X .41 = .10"

1.4 / 3.4 = 41%

34.00"

- .10

33.9" Crit H.

8.6 ¢

6.8 - ½" layer

1.4 ¢

Exp 9 Ru

110.5 X .41 = 45 g.

15,028 g

- 45

14983 g Crit M.

2-8-61

INSTRUMENT CHECK

9:10 AM

171-226

	A	B	C	D	E
Table – OK	10				
F – OK	1000	apr	10^{-12}	10/1000	1080
Source D.	9"	0"	20"	3"	½"
% F.S. Trip	90	ok	100	85'	100+

C.A. 2-9-61 Expr. Exp. #10 Run A-1

Sheet ____ Date 2-8-1961 Time 9:25 AM

Purpose ____

LOADING CHANGE

Description 28" X 28" X 12.43" 6" Reflector

28 X 28 = 784

784 X 1.53 = 1,199

1,199

Mass before change ____ gmU ____ gmU-235

Mass of Change ____ gmU ____ gmU-235

Total Mass ____ gmU 14253 ____ gmU-235

Exp. # 9

layer Run A-2

LOADING CHANGE

Description 28" X 28" X 12.75 6" Reflector

784 X 1.53 = 1,199

1199 X 12.75

Mass before change ____ gmU ____ gmU-235

Mass of Change ____ gmU ____ gmU-235

Total Mass ____ gmU 15,287 ____ gmU-235

2-8-61

Exp. 9
Run A-3

LOADING CHANGE

Description 28" X 28" X 13" 6" Reflector

784 X 1.53 = 1,199

1,199 X 13

Mass before change ________ gmU ________ gmU-235

Mass of Change ________ gmU ________ gmU-235

Total Mass ________ gmU 15,587 gmU-235

Exp. 9
Run A-4

LOADING CHANGE

Description 28" X 28" X 13.0625" — 6" Reflector

784 X 1.53 = 1,199

1,199 X 13.06

Mass before change ________ gmU ________ gmU-235

Mass of Change ________ gmU 71 gmU-235

Total Mass ________ gmU 15,658 gmU-235

Pos. Per. 97.7 Sec. Period

10 ¢ excess

Run A-5

LOADING CHANGE

Description 28" X 28" X 13.03" — 6" Reflector

1,199 X 13.03 =

Mass before change ________ gmU ________ gmU-235

Mass of Change ________ gmU 36 gmU-235

Total Mass ________ gmU 15,622 gmU-235

~~6.26 / 3.74 = 1.67~~

~~1/8 X 1.67 = .0021"~~

~~1.67 X 36 = 60 g.~~

Pos Period - 173.7 Sec - 6.26 ¢

10.0 ¢
6.26
3.74 ¢ = 1/4" on 1 octant
X 8
29.92 ¢ = 1/4" longer

~~13.030~~
~~-.0021~~
~~12.9919" C.H.~~

~~3.74 / 6.26 = 60%~~

~~1/8 X 60 = .0075"~~

~~.60 X 36 = 21.6 g~~

~~13.03125~~
~~-.0075~~
~~13.0237" Crit H.~~

~~15,622~~
~~-22~~
~~15,600 g Crit M~~

2.9
Exp
Run

6.26 # Excess @ 13.03"
-3.74 # = 1 octawt
1.42 # excess @ 13.00"

$\frac{1.42}{3.74} = 38\%$ $\frac{1}{8} \times .38 = .05"$

$36g \times .38 = 13.6g.$

13.00
- .05
12.95" Crit Ht

15,387 g @ 13"
- 14
15,573 g. Crit. M

2-9-61

INSTRUMENT CHECK

Time 12:45 ~~AM~~ PM

Source M-226

	A	B	C	D	E
Tables - OK					
Range F -	10/1000	oper	10^{-12}	10/1000	10 x 10
Source Dist.	7"	0"	18"	3"	½
% F.S. Trip	85	OK	100	75	100+

C.A. 3%0 92/8 Expr. 11 Run A-1

Sheet ______ Date 2-9 1961 Time 1:15 PM

Purpose

LOADING CHANGE

Description 36" X 36" X 10" 6" Reflector

36 X 36 = 1,296

1,296 X 1.53 = 1,982

Mass before change ______ gmU ______ gmU-235

Mass of Change ______ gmU ______ gmU-235

Total Mass ______ gmU 19,820 gmU-235

2-9-61
Exp 10
Run A-2

LOADING CHANGE

Description 36" X 36" X 10.45" 6" Reflector

1,296 X 1.53 = 1,982

1982 X 10.45

Mass before change ______ gmU ______ gmU-235

Mass of Change ______ gmU ______ gmU-235

Total Mass ______ gmU 20,711 gmU-235

.75"

1.6g

MH

82

2-9-61

Exp. 1
Run A-3

LOADING CHANGE

Description 36"X36"X11" 6" Reflector
1,982 x 11 =

Mass before change ~~gmU~~ gmU-235

Mass of Change gmU gmU-235

Total Mass gmU 21,802 gmU-235

LOADING CHANGE

Exp. 1
Run A-4

Description 36"X36"X11.06" 6" Reflecto
1,982 x 11.06=

Mass before change ~~gmU~~ gmU-235

Mass of Change gmU gmU-235

Total Mass gmU 21,920 gmU-235

2-10-61

Exp. 18
Run A-5

INSTRUMENT CHECK

Time 8:22' ...   Source 17-226

Tables - OK
F - OK

	Channel A	B	C	D	E
Range	10/1000	OK	10^{-12}	10/1000	10 50 V.
Source Dist.	7"	0"	18"	3"	½"
% F.S. Trip	85	OK	100	80	100+

LOADING CHANGE

Description 36" X 36" X 11.12's   6" Reflector
1,982 X 11.12's

Mass before change ______ gmU ______ gmU-235
Mass of Change ______ gmU ______ gmU-235
Total Mass ______ gmU 22,049 ______ gmU-235

Pos. Per. 423 Sec.
2.83 ¢

84

Exp. 11
2-13-61

Run A-6

INSTRUMENT CHECK

Time 9:10 AM

Source Pu-226

	A	B	C	D	E
Tables - 0%					
I = - 0%					
Range	10/1000	0.1	10^{-12}	1m/1000	650 V
Source Dist.	9"	~~20~~ 0"	18"	4"	1"
% F.S. Trip	90	~~Kick~~	100	80	100+

LOADING CHANGE

Description 36"X36"X 11.15 6" Reflector

1,982 X 11.15"

Mass before change		gmU	gmU-235
Mass of Change		gmU	gmU-235
Total Mass		gmU 23,099	gmU-235

Tables = .16

Positive Period = 108 Sec

(Est Crit H. = 11.1"
" Crit M = 22 Kg.)

Exp.
Ru

2-14-61
Exp. # 12

INSTRUMENT CHECK

Time 2:20 ~~AM~~ PM Source M-226

Table - ok
F - ok

	Channel A	B	C	D	E
Range	1000	opr	10^{-12}	1000	1050 V.
Source Dist.	9"	0"	20"	3"	1"
% F.S. Trip	90	ok	100	78	100+

CA 39.92/8 Expt. # 12 Run A-1

Sheet Date 2-14 1961 Time 2:48 PM

Purpose

~~LOADING CHANGE~~

Description 28" X 28" X 19.14" - Bare
Fixed Table (16" Deep) 20" High
Movable " (12" ") 18" High

28" x 28" = 784
784 X 1.53 = 1,199 1,199 X 19.14 =

Mass before change gmU gmU-235
Mass of Change gmU gmU-235
Total Mass gmU 22,948 gmU-235

Exp. # 12
Run A-2

LOADING CHANGE

Description 28" X 28" X 20" Base

784 X 1.53 = 1,199
1,199 X 20" =

~~Mass before change~~ gmU-235
Mass of Change gmU-235
Total Mass gmU 23,981 gmU-235

Expt 12
Run A-3

LOADING CHANGE

Description 28"X28"X20.125" Bare

784 X 1.53 = 1,199

Mass before change ____ gmU ____ gmU-235

Mass of Change ____ gmU ____ gmU-235

Total Mass ____ gmU 24,129 ~~gmU-235~~

Super critical

60.08 Sec. - 10.48 ¢

2-14-61
Exp. 12
Run A-4

LOADING CHANGE

Description 28"X28"X20.06 Bare

784 X 1.53 = 1,199

1,199 X 20.06

Mass before change ____ gmU ____ gm

Mass of Change ____ gmU 78 gmU-235

Total Mass ____ gmU 24,051 gmU-235

Positive Period - 174 Sec

6.25 ¢

10.48
- 6.25
4.23 ¢ = 1/4 Layer on 1 quadrant

x4
16.92 ¢ = 1/4" Layer

6.25 / 16.92 = 37%

1/4 X .37 = .09"

156 g X .37 = 58 g.

20.06"
.09
19.97" C.H

24,051
- 58
23,993 g. C.M.

INSTRUMENT CHECK

2-15-61 Time 9:00 AM ~~PM~~ Source M-226

Tables - OK

F - OK

Channel	A	B	C	D	E
Range	$\frac{10}{1000}$	6pa	10^{-12}	$\frac{10}{1000}$	1050 V.
Source Dist.	10"	0"	18"	3"	1"
% F.S. Trip	8	OK	100	80	100

C.A. $39\frac{92}{8}$ Expr 12 Run B-1

Sheet Date 19 Time AM PM

Purpose: N^{235} Al Foil Calibration

$\frac{5}{16}$" 5 mil, 10W t .90

Stack 28"x28"x20.03 Bare

Foils placed in rotating wheel

Pos. #1 Foil B-6 from previous Calibrated group.

Pos. ~~2 → 8~~ = ~~.0169~~ Pos. 2 thru 8 = .0177

~~Pos 9 → 17 = .0175~~ Pos. 9 thru 18 = .0181

~~Pos 18 = .0165~~

Tables = .11

Log N = .11 (on flow behind Fixed Table)

Exposure = 20 min.

Crit @ 10:06 AM

Foils 1st Counted gave ~100 Reg./2 min

2 min after Shutdown

2-17-61

INSTRUMENT CHECK

Time 10:00 AM ~~PM~~ Source M-2-2

	Channel A	B	C	D	E
Range	10/1000	ozn	10^{-2}	10/1000	1000 V
Source Dist	10"	0"	20"	3"	1"
% F. Trip	80	OK	100	80	100

C.A. 39 $\frac{92}{8}$ Expr. ~~[illegible]~~ 1 Run ~~[illegible]~~ 8-1

Sheet ______ Date 2-17-61 Time 10:03 AM

Purpose: U^{235} Al Foil Calibration

5/16" 5 mil 10 wt %

~~25" x 25" x 20.03~~ 24" x 24" x 25.6" - Bare

Foils placed in rotating wheel

Pos. #1 Foil B-10 from previous Calibrated group

Pos. 2 & 3 .0169

4-5-6-7 .0175

8-9-10-11 thru 15 .0171

16 - thru 18 .0173

Exposure = 30 min

Log N = .15

Crit = 10:30 AM

2-24-61

INSTRUMENT CHECK

Time 9:00 AM ~~PM~~ Source M-226

	Channel A	B	C	D	E
Range					
Source Dist.	8"		24"	2"	1"
% F.S. Trip	85		100	80	100 +

C.A. 37% 9/8 Expr. 1 Run 9-2

Sheet 2-24 :961 Time 9.00 AM PM

Purpose: Horizontal Cadmium covered traverse
U. al alloy foil 7/16" dia

Stack 24"X24"X25.6" Bare

Pos. Ø 1 3/4 +11 +8 +6 +4 +2 0 -2 -4 -6 -8 -10 -10½

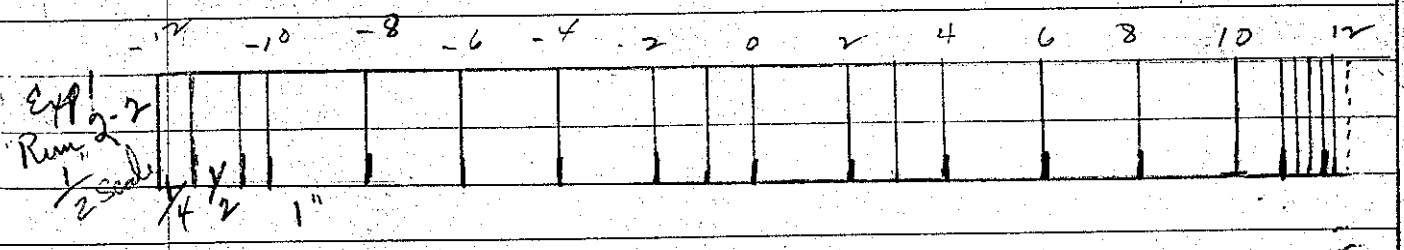
Foil # 0-5 0-7 0-2 0-13 0-1 0-8 0-3 0-6 0-4 0-12 0-10 0-9 0-11

10:06 AM

Log N = .15" Plastic = 13.5

Exposure = 40 min

Critical = 10:06 AM



2-27-61

INSTRUMENT CHECK

Time 12:40 PM (AM struck through)

Source M-226

Tables - ok
F - ok

	A	B	C	D	E
Range	$\frac{10}{1000}$	3 [illegible]	10^{-12}	$\frac{10}{1000}$	1000 V
Source Dist.	12"	0	30"	4"	1"
% F.S. Trip	84	OK	100	78	100

C.A. $3920 \frac{92}{8}$ Expr. 1 Run 2-3

Sheet ___ Date 2-27-61 Time 12:45 PM

Purpose: Horizontal Cadmium covered Traverse
N. al alloy foil 5/16" dia.

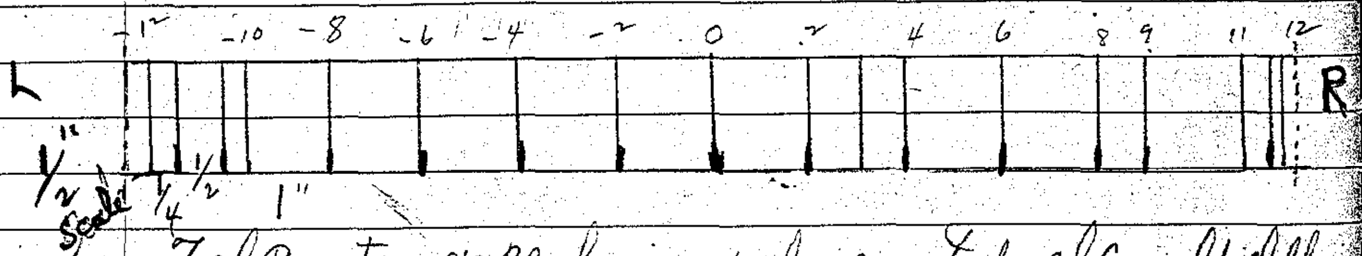
24" x 24" x 25.6" Bare

Pos.	+11½	+9	+8	+6	+4	+2	0	-2	-4	-6	-8	-10¼	-11¼
Foil #	P-7	P-13	P-4	P-10	P-1	P-8	P-11	P-8 (7, 12)	P-2	P-5	P-9	P-3	P-6

Log N = .16 Plastic = 11.93

Exposure = 60 min.

Critical = 1:13 PM



Foil Positions & Block size & placement for Cd Covered N. alloy Traverse

2-28-61

INSTRUMENT CHECK

AM
Time 12:35 PM

M-226

	A	B	C	D	E
Tables — ok					
F —	10/1000	opr	10^{-12}	10/1000	1052 V.
Source Dist	10"	0"	23"	2½"	1"
% F.S. Trip	85	ok	100	75	100+

E.A. 37, 42/8 Expr. 1 Run 9-4

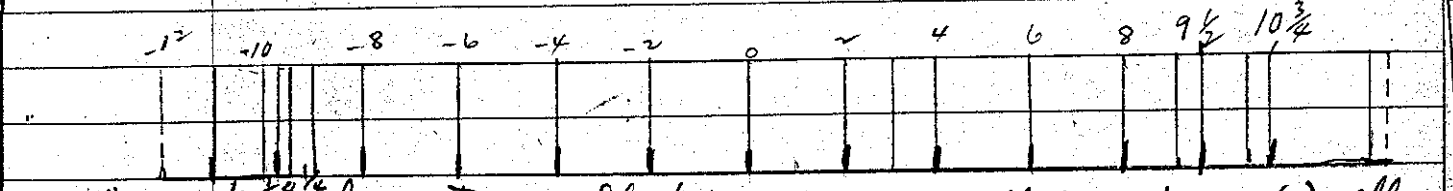
Sheet Dat 2-28-61 AM PM

Purp Horizontal Cd covered Traverse
U-al alloy pile, 7/16" dia.

24"X24"X25.6" - Bare

Pos. +10¾, +9½, +8, +6, +4, +2, 0, -2, -4, -6, -8, -9¾, -11

Foil # 9-12, 9-13, 9-8, 9-4, 9-11, 9-7, 9-5, 9-1, 9-10, 9-6, 9-3, 9-9, 9-2



½" scale ½ 2 3 4 Foil position + block size & placement for Cd covered U-alloy Traverse

Log γ = .18

Exposure = 60 Min

Critical = 1:25 PM

Plastic = 10.76

92

3-1-61

INSTRUMENT CHECK

Time 9:10 AM ~~PM~~ Source M-226

Tables – OK

F – OK

	Channel A	B	C	D	E
Range	10^{-12} 1000	open	10^{-12}	10^{-12} 1000	900 V.
Source Dist.	9"	0"	24"	2½"	1"
% F.S. Trip	90	OK	100	75	100+

C.A. 39 9⅛ Expr. 1 Run Q-5

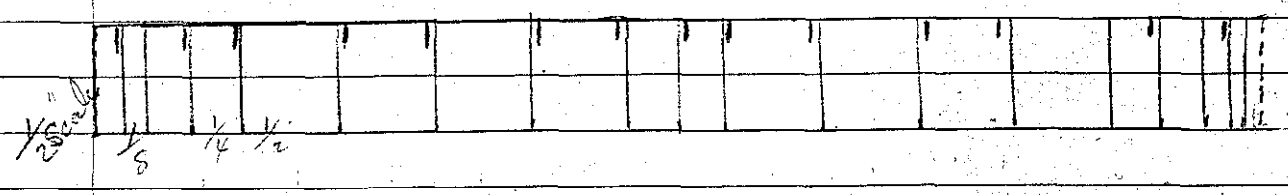
Sheet ___ Date 3-1 1961 Time 9:55 AM PM

Purpose Horizontal Cd. covered Traverse Neutral alloy foil, 5/16" dia.

24"X24"X25.6" Bare

Pos. +11½ +10 +7 +5 +3 +1 0 -1 -3 -5 -7 -9 -10 -11½

Foil # 5, 1, 11, 14, 3, 9, 8, 4, 12, 17, 2, 15, 16, 18



Log N = 45

Exposure = 60 min

Critical = 10:15 AM

Plastic = 11.7

2	9277L
1	17L
2	580695L
1	1444F
2	584344L
1	1521L
2	590086L
1	1489L
2	596038L
1	1499L
2	601184L
1	1458L
2	605886L
1	1503L
2	612494L
1	1563L
2	36088L
1	80F
2	1525L
1	598377L
2	1589L
1	608161F
2	1569L
1	619001F
2	1649L
1	631587L
2	1651L
1	641174L
2	1720L
1	651561L
2	1743L
1	666009L
2	1763L
1	679114L
2	86L
1	21202L
2	0L
1	7L

3-6-61

	Run R-1 #2 35 Sec. Count	#3	FC Printer		Run R-2 #2 35 Sec. count	#3
0	28 188	11 72	8150		133 79	181 29
1	33 213	13 169	9557		94 97	126 2
2	39 161	15 112	11410		66 205	88 87
3	46 92	18 106	13428		47 188	61 249
4	54 97	21 120	15954		33 53	43 93
5	62 80	25 34	19301		23 93	30 139
6	73 166	29 52	22922		16 158	21 63
7	84 102	33 232	28234		12 5	14 236
8	99 178	40 43	34679		8 75	10 238
9	114 253	46 140	42773		6 14	7 199
10	136 129	55 37	51107		4 0	5 106
11	155 192	64 12	62597		2 241	3 210
12			76935			
13						
14						

3-6-61

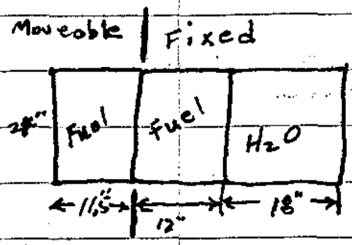
INSTRUMENT CHECK

Source 79.226   Time 12:32 PM (AM struck out)

Channel	E	D	C	B	A
Range	~~1080~~ 1050V.	10/1000	10^{-12}	opr	10/1000
Source Dist.	1"	2½"	18"	0"	9"
% F.S. Trip	100+	80	100	ok	85

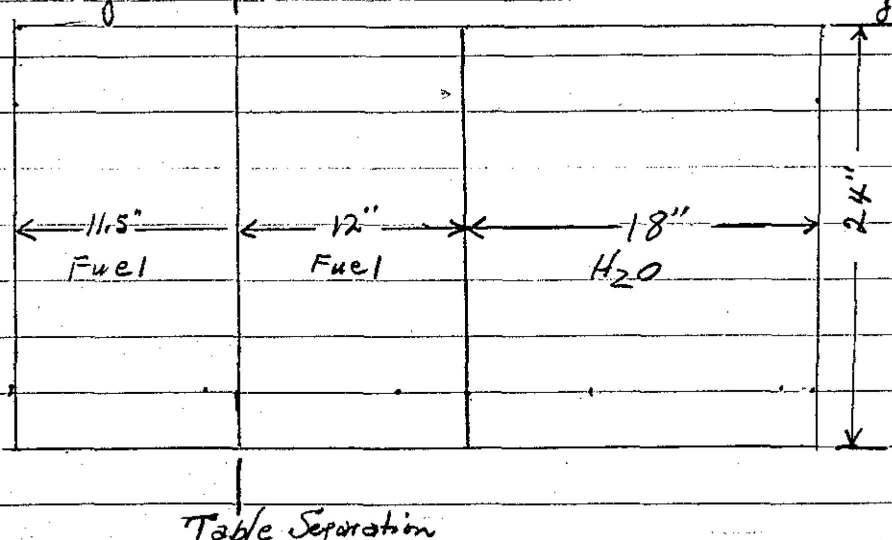
C.A. 3%, 92/8 Expr. 1 Run R-1
24"x24"
Sheet ______ Date 3-6-1961 Time 12:30 PM
Purpose Reflector ~~Evaluation~~ Savings.

Stock: 24"X24"X23.5"



1½ R-1 al tank (1/8" al) of H_2O, 24"x24"X18" placed
8 against back of stock on fixed Table.
Measured positive period - log N = 375 sec

R-2 Stock - 24"X24"X23.5" - Bare
Negative Period — 167 Sec or Log N



3-7-61

INSTRUMENT CHECK

Time 1:35 ~~AM~~ PM   Source M-226

	Channel A	B	C	D	E
Range	10/1000	off	10^{-11}	10/1000	1050V
Source Dist.	10"	0"	23"	3"	1"
% F.S. Trip	95		100	75	100+

C.A. 3% 92/18   Expr. 1   Run R-3
Sheet ____   Date 3-7 19 61   Time 2:00 ~~AM~~ PM
Purpose Reflector Savings

Stack: 24" X 24" X 23.5"

R-3 Placed 24" X 24" X 18" of paraffin on fixed table against stack as water tank shown p. 93. Measured positive period - 215 Sec.

R-4 Stack: 24" X 24" X 25.5" - Bare
Measured ~~positive~~ negative period - 165 Sec.

3-9-61

	Run R-3 35 Sec. Count			Run R-4 35 Sec. Count		
	#1	#2	#3	#1	#2	#3
0	11 202	8 224	4 32	159 140	120 5	169 218
1	14 66	12 94	5 63	106 104	83 136	115 171
2	20 96	15 208	6 248	74 231	58 247	81 75
3	26 10	19 206	9 1	51 252	41 103	55 146
4	34 225	26 167	12 128	36 134	29 113	39 136
5	47 33	34 183	15 194	25 148	20 136	27 122
6	59 205	45 93	20 143	17 209	14 173	19 190
7	80 214	60 140	27 67	12 140	10 30	13 93
8	107 98	76 107	36 88	8 187	7 55	9 185
9	141 43	102 113	49 35	6 18	5 19	6 210
10	185 167	141 67	64 219	4 103	3 91	4 159
11	233 77	179 152	83 74	3 143	2 165	3 137
12						
13						
14						

3-9-61

	Run R-5 35 Sec. Count			Run R-6 35 Sec. Count		
	#1	#2	#3	#1	#2	#3
0	78 216	63 35	90 214	6 10	4 194	2 128
1	54 126	44 245	63 131	8 125	7 17	3 153
2	36 33	31 41	43 204	11 210	10 24	5 24
3	25 177	21 184	31 9	15 238	13 155	6 187
4	17 231	15 142	21 131	22 237	19 42	9 234
5	12 78	10 169	14 146	31 190	26 255	13 246
6	8 103	7 141	10 135	44 138	36 55	19 39
7	6 37	5 96	7 66	62 27	50 219	27 209
8	4 48	3 175	4 253	87 146	69 83	36 152
9	3 47	2 173	3 183	123 179	96 151	51 236
10				170 111	132 187	72 137
11				238 143	180 225	100 38
12						

3-9-61

INSTRUMENT CHECK

Time 8:30 ~~PM~~ AM Source M-226

Tables – OK
F – OK

Channel

	A	B	C	D	E
Range	10/1000	opr	10-12	100/1000	105 V.
Source Dist.	11"	0"	18"	3½"	1"
% F.S. Trip	80	OK	100	70	180

C.A. 3% 9% Expr. 1 Run R-5

Sheet ___ Date 3-9-61 Time 9:00 AM PM

Purpose Reflector Savings

R-5 Reflector Savings: Stock 24" X 24" X 25.5 - Bare.
Measured Negative Period – Log N = 165 Sec.

R-6 Placed 24" X 24" X 16" of Low Density Concrete on fixed table against stock as shown p. 93
stock: 24" X 24" X 23.5".
measured positive period – Log n = 180 Sec.

7-5-61

INSTRUMENT CHECK

Time 1:30 PM S/N M-226

Tables - OK

	A	B	C	D	E
Range	10/1000	off	10^2	10/1000	1000 V.
Source Dist.	7"	0"	22"	3"	1.5"
% F.S. Trip	82	OK	100	80	100+

C.A. 3%; 9 7/8 Expr. 13 Run A-1

Sheet ____ Date 7-5-1961 Time 1:43 PM

Purpose To obtain just Critical System.

Small BF_3 Counter at Center of Stack

Stack: 24" x 25" x 24.5" - BARE

sub critical

Run A-2 Added: 10 pcs - 4" x 4" x 1/4"

4pc - 2" x 2" x 1/4" about Center of top.

Super Critical ~ 500 dec pd.

Run A-3 Removed: 2 pcs 4" x 4" x 1/4"

20 pcs 2" x 2" x 1/4" from top

Super Critical - Very Slight

Run A-4 Removed: 2pc 4" x 4" x 1/4" from top Level

Log N = .001δ

98

7-6-61

Miholczo
Lynn
McCarty

INSTRUMENT CHECK

Time 8:20 AM ~~PM~~ Source M-226 Er

Tables - ok
F - ok

	A	B	C	D	E
Range	10/100	off	10	10/100	1050 V.
Source Dis	9"	8"	26"	4.5"	12"
% F.S. Trip	100	ok	100	75	100+

C.A. 3%; 9 1/8 Expr. 2 Run A-5'

Sheet ____ Date 7-6 1961 Time 1:30 ~~AM~~ PM

Purpose Counter Check in preparation for pulsing.

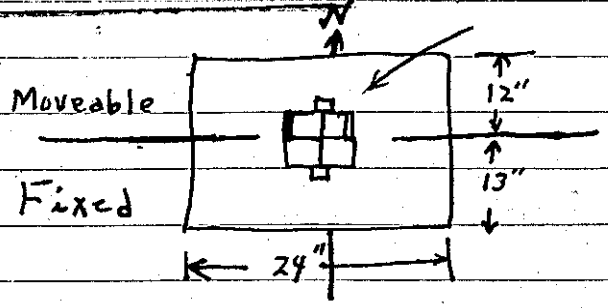
Slightly Super Critical. Log ok = .001

C.A. ____ Expr. 13 Run A-6

Sheet ____ Date 7-6 1961 Time ____ ~~AM~~ PM

Purpose Pulsing

Stack 24" X 25" X 24.5" + 4 - 4 X 4 X 1/4 } about Center top
2 - 2 X 2 X 1/4



7-7-61

INSTRUMENT CHECK

Time 8:15 AM ~~PM~~ Source M-226 & 8

Tables : ok

F :

Channel	A	B	C	D	E
Range	10 1000	Opr	10^{-12}	10 1000	1050
Source Dist.	7"	0"	27"	6"	12"
% F.S. Trip	80	ok	100	78	100+

C.A. Expr. 13 Run A-7

Sheet Date 7-7- 19 61 Time 8:30 AM ~~PM~~

Purpose Crit Check

Stack : Same as A-6

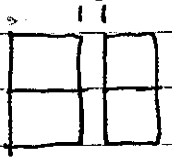
Slightly Super Crit.

Run A-8 Removed - 2 - 2x2x 1/4 blocks

Level Log ν = .0008

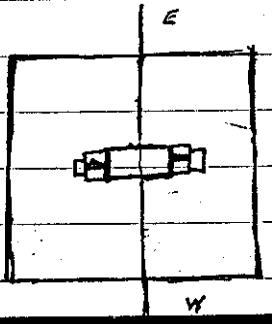
A-9 Spaced The 4x4 x 1/4 1/2" apart + Tightened up the stack

Slightly critical super



A-10 Removed 2 - 4x4x 1/4

Added 6 - 2x2x 1/4



Slightly Sub Critical

7-10-61

INSTRUMENT CHECK

Time ______ AM/PM Source PuBe + γ

Tables - OK

F - OK

	Channel A	B	C	D	E
Range	11/1000	ok	10	10/1000	1050 V
Source Dist.	8"	0"	26"	3"	8"
% F.S. Trip	90	OK	100	85	100

C.A. 32 ; 9 7/8 Expr. 24X25 X25 1/2 Run A-11

Sheet ______ Date 7-10 1961 Time ______ AM/PM

Purpose Check Crit Height for Pulsing

Level (Trend downward)

7-11-61

INSTRUMENT CHECK γ

Time 8:25 AM/PM Source Pu Be

Tables OK

	F	A	B	C	D	E
Range	OK	10/1000	Open	10^-14	10/1000	1050
Source Dist.		7"		26"	6"	13"
% F.S. Trip		90		100	75	100

/

C.A. 3%; 9/8 Expr. 2X125X2% Run A-12

Sheet Date 7-11-1961 Time 9:00 AM

Purpose Pulsing

INSTRUMENT CHECK

Time 8:45 AM ~~PM~~

Source Pu Be + r

Tob Tho - OK
F - OK

Channel	A	B	C	D	E
Range	10/1000	Opm	10^{-12}	10/1000	100 V
Source Dist.	7"	0"	28"	4"	13"
% F.S. Trip	95	OK	100	100+	100+

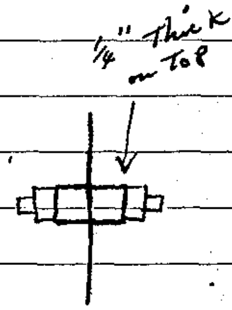
C.A. ______ Expr. 24 X 25 X 24.5 + Run B-1

Sheet ______ Date ______ 19 __ Time ______ AM PM

Purpose 1/4 Boral Added under the Assembly

T = +217 sec

Boral close to fuel



Without Boral T = ∞

C.A. ______ Expr. ______ Run B-2

Sheet ______ Date ______ 19 __ Time ______ AM PM

Purpose 1/4" Boral moved 3/4" Away

C - 59 - 95 in 600 sec

Log N Factor 1.65 in 12.5x50

C.A. ______ Expr. ~~24×25×24.5~~ + Run B-3
Sheet ______ Date ______ 19 ___ Time ______ AM/PM
Purpose Added Cd on top + all sides
24×25 ×24.5 − 1×3×¼ on
back corner
cd = 36 mil Thick

T = + 341 sec

C.A. ______ Expr. ______ Run B-4
Sheet ______ Date 7-12-1961 Time 11:13 AM
Purpose Crit. Height Check
Cd Same as B-3, Boral as B-2.
Pulsing

Stack: 24" × 25" × 24.25" + [268 in² about Center in 25.5"]
Period = ∞ [Slight Positive Trend]

7-13-61

INSTRUMENT CHECK

Time 8:15 AM Source Pube + γ

• Tabbs - ok

	Channel A	B	C	D	E
Range	10/1000	opr	10^{-12}	10/1000	1000
Source Dist.	5"	0"	28"	5"	14"
% F.S. Trip	90	ok	100	80	100

C.A. 3½ 9⅞ Expr. 24X25X24.5 Run A-13

Sheet ____ Date 7-13-1961 Time 8:45 AM

Purpose Pulsing

Stack: See A-10 p-99

7-14-61

INSTRUMENT CHECK

Time 9.45 AM ~~PM~~ Source P.B. X

~~Tables~~ OK Channel

	F	A	B	C	D	E
Range	OK	1/100 opr		1-12	10/100	100
Source Dist.		10"	OK	26"	6"	14"
% F.S. Trip		100		100	80	100

C.A. 2% 9/8 Expr. 24X24 Run 1-A

Sheet ____ Date 7-14-1961 Time 10:50 AM ~~PM~~

Purpose Preparation for Parting

Stock: 24"X24"X23.5" + 10 - 4X4X1/4"
2 - 2X2X1/4"
1 - 1X1X1/4"
about Centre Top.
Bore

Slightly Position

7/17/61

INSTRUMENT CHECK

Source Pu Be

Time 8:15 AM ~~PM~~

Tables OK F

	Channel A	B	C	D	E
Range	10/1000	OK	10	10/1000	1050
Source Dist.	7"	OK	28"	5"	17"
% F.S. Trip	100		100	80	100

C.A. ________ Expr. ________ Run ________

Sheet ________ Date ________ 19 ___ Time ________ AM PM

Purpose Pulsing of 24x24 with halves separated 3/4"

7/18/61

INSTRUMENT CHECK β-B.

Time 8:40 AM

Source γ

Tables OK

	F					
Channel		A	B	C	D	E
Range		10/1000	opn.	10^-12	10/100	1050
Source Dist.	OK	8"	OK	28"	7"	30"
% F.S. Trip		100		100	80	100

INSTRUMENT CHECK

Time ______ AM

Source ______

Channel	A	B	C	D	E
Range					
Source Dist.					
% F.S. Trip					

C.A. ______ Expr. ______ Run ______

Sheet ______ Date ______ 19 ___ Time ______ AM PM

Purpose Pulsing of 24x24 with holes

enlarged by 3/4", 1"

7-19-61

INSTRUMENT CHECK

Time 8:15 AM/PM — Source Pu Be, γ

Tables

Channel	F	A	B	C	D	E
Range		10/1000	3pr	1/1	10/100	1.50
Source Dist.	OK	8"	OK	27"	5"	13"
% F.S. Trip		100		100	90	100

C.A. ______ Expr. 37, H.U. 4 Run ______

Sheet ______ Date 7-19 1961 Time 8:30 AM/PM

Purpose Pulse neutron expt
α vs separation
1.25", 1.5", 2.0", 2.5", 3"

7-20-61

INSTRUMENT CHECK

Time 8:10 AM / PM   Source Pu Be γ

Tables OK

Channel	F	A	B	C	D	E
Range		10 / 1000	op	10^{-12}	10 / 1000	log 21
Source Dist.	OK	8"	OK	28"	6"	13"
% F.S. Trip		100		100	80	100

C.A. ______ Expr. 37 H:u-4 Run ______

Sheet ______ Date 7-20 1961 Time 8:30 AM

Purpose Pulse neutron expt

4.0", 5.0", 6.0", 8.0", 10"

C.A. ______ Expr. 37 H:u-4 Run ______

Sheet ______ Date 7/20 1961 Time 6:30 PM

Purpose Pulsing at Critical

INSTRUMENT CHECK

Time 8 AM PM Source

Table or F Channel

	A	B	C	D	E
Range	10/1000	opr	10^-12	10/1000	1050
Source Dist.	6"	OIC	2'	8"	
% F.S. Trip	100		100	60	100

C.A. _____ Expr. _____ Run _____

Sheet _____ Date _____ 19 ___ Time _____ AM PM

Purpose Pulsing at critical NaI detector

C.A. _____ Expr. _____ Run

Sheet _____ Date _____ 19 ___ Time _____ AM PM

Purpose Pulsing at critical with L.I. Detector.

Made two runs to determin the counting losses in the detector

2 Runs at intervals pulsing with L.I

Low level scram of system by building alarm detector at 8:55 Tables separated during pulse neutron expt at critical. No other instrument responded. Three earlier this day this instrument tripped on low level public experiments were not in progress

7-24-61

INSTRUMENT CHECK

Time 8:15 A

Source Pu Be + γ

Table - OK

F - OK

Channel	A	B	C	D	E
Range	1/100	OK	10^{-12}	10/1000	1000 V.
Source Dist.	7"	0	27"	6"	9"
% F.S. Trip	90	OK	100	80	100+

C.A. _____ Expr. _____ Run _____ AM PM

Sheet _____ Date _____ 19 __ Time _____

Purpose Trouble with Vacuum gauge on Acc!

INSTRUMENT CHECK γ

Time 8:20 AM/PM   Source Pu Be

Tables	F	A	B	C	D	E
Range	OK	10/1000	opr	10^-12 / 100	10/1000	1050
Source Dist.		11"	OK	3'	11"	13"
% F.S. Trip		90		100	80	100

C.A. ________ Expr. ________ Run ________

Sheet ________ Date ________ 19 ___ Time ________ AM/PM

Purpose ________

-11 — 0-4-2.5"
-10 — 0-1-5.2
-8 — 0-11-10.3
-6 — 0-8-15.4
-4 — 0-10-20.55"
-2 — 0-2-25.7
0 — 0-6-30.8
2 — 0-13-35.9
4 — 0-9-41.
6 — 0-12-46.15"
8 — 0-3-51.35
10 — 0-8-53.9
11 — 0-7-56.5"

89.15"

= 61.75"

11 10 8 6 4 2 0 -2 -4 -6 -8 -10

INSTRUMENT CHECK

Time AM PM

Table - OK

F - OK

	A				
Range	10/1000	off	10^{-12}	10/1000	100 V.
Source Dist.	7"	0"	18"	21"	10"
% F.S. Trip	95	OK	100	100	100+

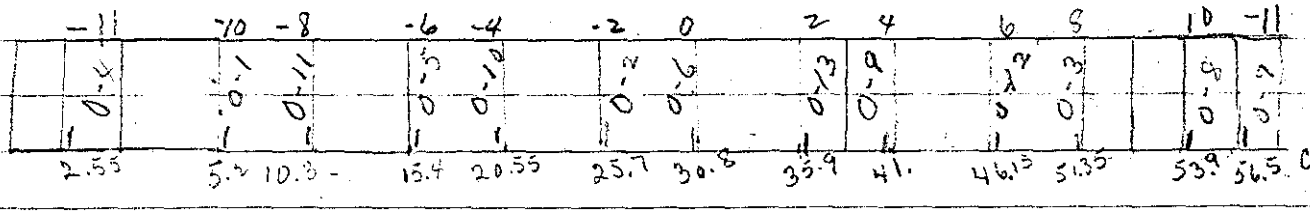
C.A. 39 9½/8 Expr. 1 Run

Sheet 1 Date 7-9 1961 Time 9:30 AM ~~PM~~

Purpose Horizontal Cadmium covered - Inconel alloy foil 5/16" dia.

Stack 24"X24"X25." Bare

30.8 cm



3-5-62

INSTRUMENT CHECK

Time 8:25 AM PM Source RuBe + 8

	Channel A	B	C	D	E
Range	F	0	off	10^12	10/1000	1050 V.
Source Dist.	OK	C/T	0"	30"	2"	8"
% F.S. Trip			OK	100	78	100+

ctr #1, + 2 — OK

C.A. 370; 9V/8 Expr. 24X24 Run C-1

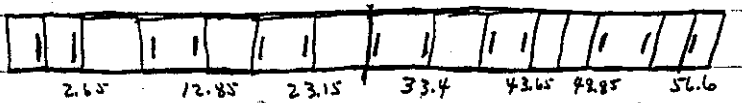
Sheet ____ Date ____ 19 ____ Time ____ AM PM

Purpose Cd Covered Gold Traverse in 24 x 24 x 25.85" - Bare

Width of Cav 61.35, 61.35, 61.4, 61.3, 61.2 61.3
61.2 61.3, 61.3, 61.45, 61.35, 61.4
61.38

At Foil position 61.8

Pos -11", -10", -8", -6", -4", -2", 0, 2", 4", 6", 8", 10", 11"
E-15, E-2, E-13, E-22, E-20, E-24, E-5, E-20, E-8, E-11, E-16, E-23, E-10



Measured in cm: 0, 7.75, 17.95, 28.3, 38.55, 46.25, 54.0

N

(Foil Holes 50 mil deep) Pos in cm East to West 0, 2.40, 8.00, 12.60, 18.20, 22.9, 28.55,
33.15, 38.80, 43.4, 49.10, 53.75, 56.8

Log N = [illegible] (N)

Exposed = 60 Min

Critical = 3:25 PM

3-7-62

INSTRUMENT CHECK

Time 2:30 PM — Source Ra Be + Y

		A	B	C	D	E
Range	F	0	opr	10^{-12}	$\frac{10}{1000}$	1050
Source Dist.	OK	5/7	0"	28"	2"	1.5"
% F.S. Trip			OK	100	78	100+

C.A. 39 92/8 Expr. 24 x 24 Run C-3

Sheet Date 3-7-62 Time 2:40 PM

Purpose Cd. Covered Gold Traverse

2.4" X 2.4" X ~~26.8~~ 25.8"

-11 = F-12 -10 = F-6 -8 = F-1 -6 = F-20 -4 = F-16 -2 = F-18

.12 0 = F-19 +2 = F-13 +4 = F-10 +6 = F-7 +8 = F-21 +10 = F-15

+11 = F-2

.1 45'

3 05

Log N = .1 (n)

Exposed = 45 Min

Crit = 3:05 PM

Measured Stack Width	61.35	61.2
	.35	.3
	.4	.3
	.3	.2
Average = 61.354 Cm	.2	.45
	.3	.35
	.4	.35

3-8-62

INSTRUMENT CHECK

Time 2:20 ~~AM~~ PM

Source PuBe + γ

Channel	A	B	C	D	E
Range		3	10^{-12}	10^{-12}	10 Laro	10S
Source Dist.		4	6'	28"	2"	3"
% F.S. Trip			100	75	100T

~~PY~~ 1, + 2

C.A. 370 $\frac{92}{8}$ Expr 24 X 24 Run C - 4

Sheet ______ Date 3-8-62 Time 3:25 ~~AM~~ PM

Purpose Cd covered Gold ~~foils~~ Traverse

24" X 24" X ~~25 5/8~~ 8

East -11 = D-16 -10 = D-33 -8 = D-28 -6 = D-30 -4 = D-25
-2 = D-9
0 = D-12 +2 = D-31 +4 = D-29 +6 = D-22 +8 = D-8
+10 = D-18 +11 = D-3

Log N = .1 (N)
Exposed = 40 min
out = 3:40 PM

INSTRUMENT CHECK

3-9-62 Time 1:50 PM Rb Be + 8

		A	B	C	D	E
Range	F		opr	10^{-12}	$\frac{10}{1000}$	1050
Source Dist.	OK	O C T	0"	28"	2"	0"
% F.S. Trip			OK	100	80	100+

Ch 1 + 2

C.A. $37_0 \frac{92}{8}$ Expr. 24 X 24 Run C-5

Sheet Date 3-9-62 Time 2:00 PM

Purpose Cd. Covered Gold Traverse

24" X 24" X ~~26.8~~ 25.8

East -11 = D-4 -10 = D-19 -8 = D-6 -6 = D-20 -4 = D-13
-2 = D-27 0 = D-17 +2 = D-14 +4 = D-23
+6 = D-15 +8 = D-26 +10 = D-2 +11 = D-32

Log N = .1 (N) D = 74 $\frac{1000}{1000}$ (No shielding)
Exposed = 60 min E = 1.3 750 Volts (2" Pb Shielding)
Crit = 2:10 PM

3-6-62

INSTRUMENT CHECK

Time 1:55 PM — Source Pu Be & γ

	Channel A	B	C	D	E
Range F	0	~~cpr~~	10^{-12}	10/1000	1050 V.
Source Dist. OK	F / 1	0"	28"	2"	2" (Shielded)
% F.S. Trip		OK	100	75	100+

Counters 1 + 2

C.A. 3%; 92/8 Expr. 24 x 24 Run C-2

Sheet ______ Date 3-6-1962 Time ______ ~~AM~~ PM

Purpose Cd Covered Gold Traverse

24 x 24 x ~~26.8~~ 25.8

East -11 = F-11 -10 -- -8 = E-19 -6 = E-21 -4 = E-1 -2 = E-3
0 = E-17 +2 = E-7 +4 = E-6 +6 = E-4 +8 = E-14 +10 = E-12
+11 = E-18 · West

Log N = .1 (N)
Exposed = 40 min
Crit = 3:20 PM

3-12-62

INSTRUMENT CHECK

Time 2:45 ~~AM~~ PM Source PuBe + γ

				Channel		
		A	B	C	D	E
Range	5	~	ok	10^{-12}	10/1000	1050V
Source Dist.	OK	~	0"	42"	25"	0"
% F.S. Trip		—	~~OK~~	100	75	100+

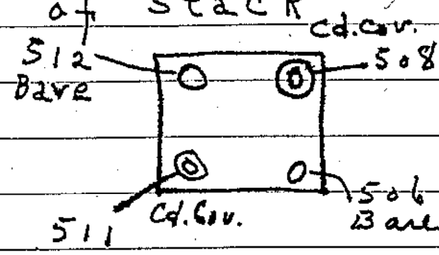
Ctrs 1, 2

C.A. 390 92/8 Expr 24 X 24 Run C-6

Sheet ______ Date 3-12-1962 Time 2:55 ~~AM~~ PM

Purpose Au Cadmium Fraction
5 mil. Au Foils
40 mil Cad. Covers.
24 X 24 X 25.8

Foils in center of stack



Log N = .1
Exposed = 20 min
Out = 3:05 PM

3-13-62

INSTRUMENT CHECK

Time 10:50 AM Source Pu Be + F

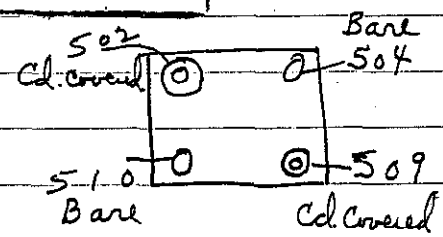
		A	B	C	D	E
			OK	10-12	10/1001	1000
Source Dist.	F OK	S	0"	36"	1.5"	0"
% F.S. Trip	Ctrs 1, 2		OK	100	85	100+

C.A. 39.92/8 Expr. 2-4 X 2-4 Run C-7

Sheet [illegible] 3-13 62 Time 1:10 ~~AM~~ PM

Purpo Au Cadmium Fraction
5 mil Au foils
40 mil cad. covers
24" X 24" X 25.8"

Foils in center of Stack



Log N = .1
Exposed = 12 min
Crit = 1:20 PM.

/ca

7.2

9.

4-13-62

INSTRUMENT CHECK

Time 2:00 ~~AM~~ PM Source

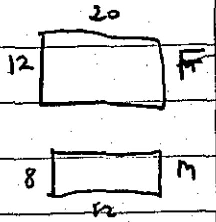
	Channel A	B	C	D	E
Range	F	out	opr	10^{-12}	$2000\ 10^{10}$ 1000
Source Dist.	OK	1	0.4	28	1.5" 1.5 (Shielded)
% F.S. Trip / Counter		1	OK 100	80	100+

C.A. 3% 92/8 Expr. 20x20 R Run B-1

Sheet ______ Date 4-13 1962 Time 2:15 ~~AM~~ PM

Purpose Obtain Crit. ~~A~~ in preparation for pulsing.

20"x20"x20.25" - 6" Refl.



moved Limit (slow speed) ~~#~~ forward ~2".
(Now 1/8" from closed).

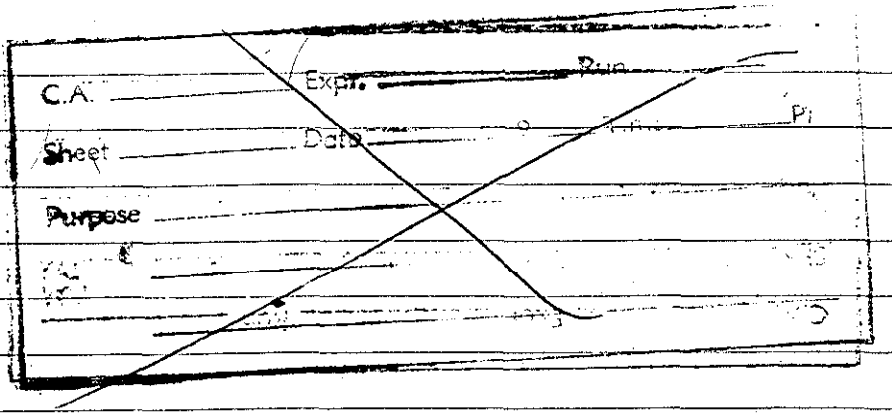
System Sub Critical

Accelerator target assembly at the center of the south face of the cube : Two 1/4 in DIA BF_3 chamber in the center of the assembly

C.A. 3% 92/8 Expr. 20x20 R Run 2

Sheet ______ Date 4-13 62 Time 3:30 PM

Purpose Added 1/4 in fuel to height
20x20x20.75



C.A. _____ Expr. _____ Run B-3

Sheet _____ Date _____ 19 ___ Time _____ AM PM

Purpose Removed 1/4 from top of movable table 8 x 20 x 20.5

T = +147 sec + 7 ¢

Removed 1/4 inch pad from fixed table on

C.A. _____ Expr. _____ Run B-4

Sheet _____ Date _____ 19 ___ Time _____ AM PM

Purpose Removed 1/4" from outer edge of fixed table (8-1/2" Blocks

T = + 193 sec 5.7 ¢

4-16-62

INSTRUMENT CHECK

Time 8:25 ~~PM~~ AM

Source Pu Be + 8

	Channel A	B	C	D
Range	F	out	out	10^{-12} $\frac{10}{1000}$ 1050 V
Source Dist.	OK	0"	30"	2.5" 1"
% F.S. Trip		OK	100	80 100+

C.A. 3%; 9 2/8 Expr. 20x20 Run 13.5

Sheet Date 4-16-62 Time ~~PM~~ AM

Purpo To obtain just Critical Stock for pulsing measurments.

H = 20.5" (8 in² at Center 20.25")
Comp. 6" Reflector

Slightly Sub Critical.

Pulsing ~ 4 hrs - Level (Positive Trend)

Down 4:15 PM

4-17-62

INSTRUMENT CHECK

Time 8:45 AM ~~PM~~ Source PuBe + γ

Channel	A	B	C	D	E
Range	F	out	3pr	10^{-12}	10/100	1050
Source Dist.	OK		0"	30"	25"	2"
% F.S. Trip			OK	100	80	100

C.A. 390, 9⅞ Expr. 20 x 20 Run B-6

Sheet Date 4-17-1962 Time 9:00 ~~AM~~ AM

Purpose Reactivity Check in preparation for pulsing

20.25 (less 8 in) - 6" Refl.

Slight sub critical

Started Pulsing at 12:38 PM

1:20 PM Reactivity Check. Level (Negative Trend.)

4-18-62

INSTRUMENT CHECK

Time 10:50 AM Pu Be & γ

	A	B	C	D	E
Range	F" 10/1000	opr	10^{-12}	10/1000	1050
Source Dist.	OK 6"	0"	28"	2"	1"
% F.S. Trip	90	OK	100	75 / 90	100+

CA 3%, 9⅔/8 Expr. 24 X 24 Run D-1

Sheet Date 4-18-1962 Time 12:40 PM

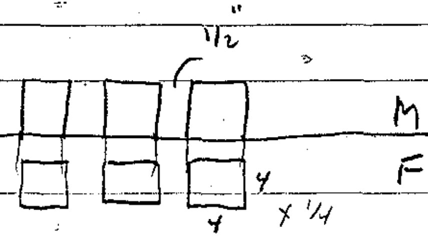
Purpose To obtain just Critical system in preparation for pulsing.

H = 20.6" Bare.

Sub critical. T = ~-500 Sec.

Run D-2 Added 4 - 4"X4"X¼" to top Center of Stack. Super Critical T= + 200 Sec

Run D-3 Removed 2- 4"X4"X¼" - block from top Center. Slightly super Critical.



128

4-19-62

INSTRUMENT CHECK

Time 8:20 AM PM Source Pu Be + γ

	Channel A	B	C	D	E
Range	10/1000	oper	10^{-12}	10/1000	1060 V.
Source Dist.	7"	0"	30"	2"	15"
% F.S. Trip	100	OK	100	100	100 †

C.A. 3% ; 92% Expr. 24x24 Run D-4

Sheet ____ Date 4-19-1962 Time 8:45 AM PM

Purpose Obtain just Critical Stack for Pulsing.

H = 25.5" + 6-¼" blocks about Center top.

Before Neg. Trend C = 52 → 51 in 10 min

D $\frac{26.5}{24.5}$ in 10 min

After Pulsing C = 79 → 71 in 10 min.

D = $\frac{26.5}{23.5}$ in 10 min

C.A. ____ Expr. ____ Run D-5

Sheet ____ Date ____ 9 Time ____ AM PM

Purpose Fuel Added to make SYS critical

Pulsed then 1" apart

D-6 Pulsed at 2"

4-23-62

INSTRUMENT CHECK

10:00 AM

Pu Be + 8

F		1/1000	cpm	10^{-1}	1/1000	1050
Source Dist	OK	7"	0"	30"	25"	1"
% F.S. Trip		100+	OK	100	96-	100+

C.A 3.0; 1.2; .8 Expr. 24 X 24 Run 0-6

Shot Date 4-23-62 Time AM PM

Purpose Pulsing at 2".

130

4-24-62

INSTRUMENT CHECK

Time 8115 AM PM Source PuBe + γ

	D	E
Range	$\frac{10}{2000}$ or 10^{-12}	$\frac{10}{1000}$ 1050 V_{DC}
Source Dist.	7"	30" 2" 2"
% F.S. Trip	100+	100 100+ 100+

Run D-7

	TC	A	LW	C	D
	10 μa	54 $^{10}/_{200}$	.00015	46 2×10^{-8}	32 $^{10}/_{200}$
8.06 Tables	20	43 $^{10}/_{500}$	.00025	72	57 $^{10}/_{200}$
	30	66 $^{10}/_{500}$	.00036	98	82 $^{10}/_{200}$
	40				
	50	67 $^{10}/_{1000}$	.0008	53 -4×10^{-11}	64 $^{10}/_{500}$

4-25-62

INSTRUMENT CHECK

Time 8:10 AM — Source: Pu Be + γ

		A	B	C	D	E
Range	F	10/1000	Opr	10^{-12}	10/1000	1050
Source Dist.	ok	2"	0"	30"	7"	1.5"
% F.S. Trip		100+	ok	100	90	100+

New Target X-18

Target Current	A	LN	C	D
10 μa	54 100/200	.0012	74 4×10^{-11}	57 100/100
20 μa	40 100/500	.0023	30 2.5×10^{-10}	40 100/200

Pulsing As A Function of Separation

C.A. — Expr. — Run D-8

Sheet — AM/PM

Purpose: Critical Check + Evaluation of Detector

Detector	D	3/43.5	10 min
Against stack	C	69/87	10 min

132

4-26-62

INSTRUMENT CHECK

Time 8:40 AM PM Source Pu Be + 8

		Channel A	B	C	D	E
Probe	F	10^{10} / 1010	opn	10^{-12}	10^{10} / 1000	1050
Source Dist.	OK	7"	0"	30"	2"	2"
% F.S. Trip		100+	OK	100	90	100+

C.A. _____ Expr. _____ Run D-9

Sheet _____ Date _____ 19 ___ Time _____ AM PM

Purpose Critical Check Beton

Reducing dimension for pulsing expts

24" x 24" x 25.5" + 6-4x4x¼ or 3-2x2x¼

S

H (25.5+)		W (24") 25.6"	T (12")	
65.0 cm	65.1 cm	61.25 cm	30.65 cm	30.6 cm
.05	.0	.35	.65	.65
.0	.1	.3	.65	.65
.1	.0	.4	.7	.65
.0	.0	.3	.6	
.0	.0	Av. 61.32	.7	Avrg = 30.65

Av = 65.04

N

H (25.5+)		W (24")	T (12") E	T (12") W
65.1 cm	65.05 cm	61.25 cm	30.6 cm	30.7 cm
.15	.1	.4	.7	.75
.15	.1	.45	.75	.7
.15	.1	.4	.7	.75
.0	.0	.3	.7	.65
.0		.25	.65	.65
.0	65.07	Av = 61.34		Av = 30.192

Run D-10

Removed 1" From North Face - 24"X23"X25.6"

T(cm) 28.15, 28.1, 28.1, 28.2, 28.15, 28.15

(11") .15, .2 28.2 28.15, .1, .1

Av = 28.15

Run D-11 Removed 1" from North Face - 24"X22"X25.6"

T(cm) 25.6, 25.5, 25.6, 25.5, 25.6, 25.6

(10") 25.6, 25.7 25.7, 25.65, 25.6

Averg = 25.604

Run D-12

3:05 PM Removed 1" from North Face - 24"X21"X25.6"

Thickness (cm) - 22.9, 22.95, 23.0, 22.95, 23.0

of 9" side 23.0, 23.05, 22.9, 22.95, 23.1,

23.1, 23.0, 23.0. Av = 22.99

Run D-13 Removed 1" from North Face - 24"X20"X25.6"

T (cm)			W		
20"	51.0	51.05	(24")	61.4	61.4
	51.1	51.15		61.45	61.45
	50.95	51.1		61.4	61.5
	51.0	51.0		61.5	61.4
	51.1	51.0		61.4	61.4
	51.05	51.1		61.3	61.4
	51.0	51.1			
	51.0	51.0			

Av = 61.416

30.65
25.604
56.25

Av = 51.04

3/27/62

		A	B	C	D	E
Time 8:05 PM						
	γ PuBe					
Range		10/1000	φr	10^{-12}	10/1000	1
Source Dir.						OK
% F.S.		100	OK	OK	80	100

Pulsing of Subcritical Systems

24 x 24.5 X 21 –

53.65 53.7 53.65 53.7 53.65 53.7
53.7 53.6 53.7 53.7 53.7 53.65
53.75

Av = 53.68

24 x 24.5 x 22

56.3	56.2
56.15	56.2
56.25	56.25
56.2	56.3
56.3	56.15

Avg. = 56.23

24x24.5 X23

(11")

28.0 Cm 28.1 28.05 28.0 28.0 28.1

28.05 28.1 28.1 28.05 28.05 28.15

Av = 28.07

19" T

48.6 48.5 48.6 48.65 48.6

48.65 48.5 48.55 48.5 48.6 48.6

48.7 48.7 48.65

Av = 48.61

18" T

46.1 46.15 45.95 46.1

45.95 46.15 46.00 46.05

46.00 46.00 46.00 46.00

Av = 46.03

17 43.5 Cm 43.45 Cm

43.45 43.35

43.45 43.45

43.5 43.5

43.5 43.5

43.4 43.45

43.5

Av = 43.46

16 40.85 Cm 40.9 Cm

40.9 40.85

40.9 40.8

40.8 40.8

40.9 40.9

40.85 40.85

Av = 40.86

15. 38.4 38.5 38.35

38.35 38.35 38.4

38.0 38.4 38.4

38.4 38.4

38.4 38.35

Av = 38.36

136

4-30-02

INSTRUMENT CHECK

Time 8:20 ~~PM~~ AM

Source PuBe + X

	Channel A	B	C	D	E
Range	F	$\frac{10}{1000}$ opr	10^{-12}	$\frac{10}{1000}$	10.50
Source Dist.	OK	7"	0"	34"	2"	1.5"
% F.S. Trip		100	OK	100	90	100+

14" 35,85 35,75 ,8 ,85 ,75 ,75 ,8 ,75
,8 ,8 ,75 ,85 Av = 35.79

13" 33.2 cm 33.25 33.2 33.15 33.25 33.3
33.2 33.2 33.25 33.2
Av = 33.22

12" 30,6 30.65 30,65 30,6 30,65
30,6 30,7 30,65 30,65 30,7
30,6 30,65

13" 33.3 33.25 .25 .2 .2 .3 .25 .2 .2
.2 .25 .3 Av 33.24

14" 35.75 35.8 35.8 .8 .85 .8
.7 .8 .8 .75 .25 .8 .85 .8
Av 35.79

15" 38.45 38.45 38.3 38.5
38.45 38.35 38.35 38.45
38.4 38.40 38.4 38.4
38.35 38.40
AV = 38.39

16" 40.8 40.85 40,8 40,8
40.85 40.85 40.75
40.75 40.75 40.8
40.9 40.8 40.75
40.9
AV. = 40.79

17"	43.5	43.5	43.45	
	43.5	43.55	43.5	
	43.5	43.4	43.5	
	43.4	43.45	43.5	43.48

18"	46.0	46.0	46.0	46.0
	46.1	46.0	46.05	45.98
	46.15	45.9	46.0	
	45.85	45.9	45.85	

5-1-62

INSTRUMENT CHECK

Time ~~9:30~~ AM ~~PM~~ Source Pu 13 + 5

		Channel A	B	C	D	E
Range	F	10/1000	cpm	10^{-12}	10/1000	1050
Source Dist.	~~OK~~	9"	0"	32"	2"	1.5"
% F.S. Trip		90	~~OK~~	100	85	100 †

19"

48.65	48.7	48.6	48.65
48.6	48.65	48.5	48.65
48.65	48.6	48.7	
48.5	48.6	48.5	48.62

20"

51.05	51.1	51.1	
51.1	51.0	51.1	51.07
51.2	51.0	51.1	
51.0	51.0	51.65	

21 53.6 .6 .7 .7 .8 .75 .65 .45 .65 .7 .6 .7

53.67

22 56.3 .3 .25 .35 .25 .2 .2 .2 .3 .35 .3 .3 .2 .2

56.27

140

5-2-62

INSTRUMENT CHECK

Time 9:00 AM ~~PM~~ Source Pu Be + X

	Channel A	B	C	D	E
Range	F	$\frac{10}{1000}$	~~off~~	10^{-12}	$\frac{10}{1000}$	1000
Source Dist.	OK	11"	0"	30"	2"	2"
% F.S. Trip		90	~~OK~~	100	85	100+

C.A. 32, 92/8 Expr. 24 X 24 Run

Sheet Date , 19 Time AM PM

Purpose Pulsing

Run A ½" separation EW

B ½" EW + NS

C ½" EW

D ½" EW NS

E ½" EW NS

F ¾" EW

G ¾" EW NS

H ¾" EW

I ¾" EW

J 1" EW I

K 1" EW NS

L 1" EW O 1.5 NESW

M 1" EW NS P 1.5 EW

N 1.5 EW Q

INSTRUMENT CHECK

5-3-62 T 8:45 AM S PuBe + γ

Ch	A	B	C	D	E
	1/1000	gm	10^{-12}	10/100	1000 V.
Source Dist.	13"	0"	30"	15"	2.5"
% F.S. Trip	85	OK	100	80	100 +

A 2" EW
B 2" EWNS
C 2" EW
D 2" EWNS

5-4-62
A 3" EW
B 3" EWNS
C
D
E 4" EW
F 4" EWNS
G 4" EW
H 4" EWNS
I 5" EW
J 5" EWNS
K 5" -
L 5" EWNS
M 6" EW
N 6" EWNS
O 6" -
P 1' " -

5-7-62

INSTRUMENT CHECK

Time ______ AM PM Source ______

Channel

		A	B	C	D	E
Range	F	1000	Opr	10	1000	1050
Source Dist.	OK	11"	0"	30"	2"	1.5"
% F.S. Trip		100+	OK	100	80	100+

C.A. 370 92/8 Expr. 28,528 Run

Sheet ______ Date 5-7 1962 Time ______ AM PM

Purpose Pulsing

A	6"	EWNS
B	6"	EW
C	5"	—
D	5"	EW
E	4"	EWNS
F	4"	—
G	3"	EWNS
H	2"	EWNS
I	1.5"	EWNS
J	1.0	—
K	-	—