BOOK72R

Notes:
"2% Bk#4 H/X - 195 & 500 60" on front
"2%" on front
"Bk 4" on front
"#4 2%" on front

"#4" on spine
"60 2% Bk #4" on spine

Blank pages: inside front cover sheets, page opposite page 1, 2, 35, 42, 80-82, 86, 88-152, inside back cover sheets

-pages 2/3 has 1 small piece of paper between pages
-pages 4/5 has 1 (8.5x11) between pages
-pages 53/54 has paper clip at top of page
-pages 134/135 has paper napkin with writing between pages

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

E-12

H-X = 500

22" dia cylinder	p. 3
20" " "	6
18" X 18" Parallelepiped	9
21" X 21" "	11
24" Dia cyl	12
26" " "	14
27" " "	15
32" " "	17
28" " "	19
26" " "	21
40" " "	22
30" " "	26
23" " "	28
24" Parallelepiped	32

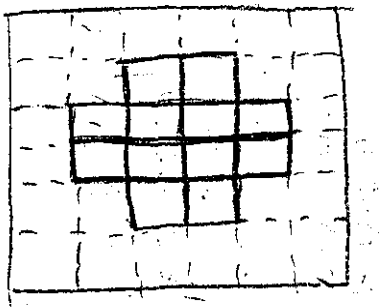
H/X = 192

30" X 30" Parallelepiped	36

H/X = 500

20" X 22" Parallelepiped	43
24" X 24" "	51
22" X 24" "	66

		−	+	
	21	4	5	
	18	31	2	
	15	28	25	
	12	37	13	
	9	16	33	
	6	21	6	
	3	34	20	
	0	10		



28" + ⅛" Layer on Inner ½" of Top.

or

28.08" High

$\frac{H}{X} = 500$ 3

9-16-60

Run 1-A

INSTRUMENT CHECK

Time 12:45 AM ~~PM~~ Source Pu Be

Tables OK F

Channel	A	B	C	D	E
Range	1/100	opr	10	1/100	1050
Source Dist.	2½" OK		3'	1½"	¼"
% F.S. Trip	80		10	60	10

C.A. 290 $\frac{82}{18}$ Expt. Run 1

Sheet Time 1:10 ~~AM~~ PM

Purpose 2" 2" Cylinder
24" High
6" Reflected Completely

LOADING CHANGE

Description 22" dia ~~x~~ 24" High

~~743 gm of Base~~

Fixed Table 12" Deep 380 X .644 = 245.3

Moveable " 10" Deep 245.3 X 24 = 5,888

~~243 gm of Base~~

Mass before change gmU ~~gmU-235~~

Mass of Change gmU ~~gmU-235~~

Total Mass gmU 5,888 ~~gmU-235~~

Run 1-B

LOADING CHANGE

Description 22" dia ~~x~~ 24.37" High Completely Reflected 6"

380 Same as B. X .644

Added ½ Layer to Fixed Table

Mass before change gmU gmU-235

Mass of Change gmU gmU-235

Total Mass gmU 5,978 gmU-235

9-16-60

Run

Run 1-C

LOADING CHANGE

Description 22" dia x 24.63" High Completely reflected 6" Reflector

Fixed Table - 24.5" High

Moveable Table - 25" High

Mass before change ____ gmU ____ gmU-235

Mass of Change ____ gmU ____ gmU-235

Total Mass ____ gmU 6,042 gmU-235

Run 1-D

LOADING CHANGE

Description 22" dia, 25" High - 6" Refl.

Period + 100 sec per Log N

Mass before change ____ gmU ____ gmU-235

Mass of Change ____ gmU ____ gmU-235

Total Mass ____ gmU 6,133 gmU-235

Run 1-E

LOADING CHANGE

Description 22" Dia 24.93" High 6" Reflector

+ 114 Sec period per Log N

Mass before change ____ gmU ____ gmU-235

Mass of Change ____ gmU ____ gmU-235

Total Mass ____ gmU 6,117 gmU-235

Reflector Savings HX 185

H = 30.75 without Refl.

	1	2	3	Log N
T	+ 84.3	+ 87.7	+ 88.4	+ 86.8
U^{235}	7.1347	6.9827	6.9604	7.1087
U^{238}	11.0418	10.2882	10.6273	10.7859

H = 28 1/2 with 6 in Paraffin

	1	2	3	Log N
T =	+ 144	+ 143.5	+ 139.5	+ 143.3
U^{235} =	4.7047	4.7827	4.8298	4.7237
U^{238} =	7.0807	7.1027	7.2785	7.1105

$\lambda = 2.25$ –

LOADING CHANGE

Run 1F

Description 22" Dia, 29.75" High - 6" Refl.

T = ~+68° ave

Mass before this change ____ gmU ____ gmU-235

Mass of Change ____ gmU ____ gmU-235

Total Mass ____ gmU 6,071 gmU-235

Crit H = 24.78"

CMV = 6.05 E-1 Kgm

6

9-19-60

INSTRUMENT CHECK

Time 11:20 AM ~~PM~~ Source I

	Channel A	B	C	D	E
Tables ok F ok	1000	open	10^{10}	1000	1000V
Source Dist.	3"	0"	3"	1½"	½"
% F.S. Trip	75	ok	100	75	100+

C.A. 270, 82/18 20" Dia. Run 1 A

Sheet 9-19-1960 Time AM PM

Purpose 20" Diameter Cylinder

LOADING CHANGE

Run 1A

Description 20" Dia, 33" High, 6" Refl.
314 in² Base
202.3 g/in height

Mass before change gmU gmU-235

Mass of Change gmU gmU-235

Total Mass gmU 6,676 gmU-235

LOADING CHANGE

Run 1-B

Description 20" Dia., 33.50" High 6" Refl.
314 in² Base
202.3 g/in Height

~~Mass before change~~ gmU gmU-235

Mass of Change gmU gmU-235

~~Total Mass~~ gmU 6,777 ~~gmU-235~~

Run 1-C

LOADING CHANGE

Description 20" Dia., 34" High 6" Refl.
314 in² Base
202.3 g/in Height

Mass before change	gmU		gmU-235
Mass of Change	gmU		gmU-235
Total Mass	gmU	6,878	gmU-235

Run 1-D

LOADING CHANGE

Description 20" Dia., 36" High 6" Refl.
314 in² Base
202.3 g/in Height

Mass before change	gmU		gmU-235
Mass of Change	gmU		gmU-235
Total Mass	gmU	7,282	gmU-235

Run 1-E

36.5" +140 sec

LOADING CHANGE

Description 20" Dia., 37" High 6" Refl.
314 in² Base
202.3 g/in Height
T = +80.3 sec

Mass before change	gmU		gmU-235
Mass of Change	gmU		gmU-235
Total Mass	gmU	7,485	gmU-235

8

9-2

18"

9-20-60

Run

INSTRUMENT CHECK

Time 9:00 AM ~~PM~~ Source PoBe

Tablo OK F

	Channel A	B	C	D	E
Range	1%/1000	OK	1-10	1%/100	1050
Source Dist.	3	OK	4'	1/2"	0
% F.S. Trip	80	100	60	100	

LOADING CHANGE

IF

C.A. 20" Dia 27.82 / 18 Expr. 20" Dia Run IF

Sheet ____ Date 9-20 19 60 Time ____ AM PM

6

3

Purpose

Lg N T = +97.7 mv

Tmc T = 104 mv

36.75

Ru

LOADING CHANGE

Description 20" Dia Cyl, 36.75" High, 6" Refl.

Mass before change	gmU	gmU-235
Mass of Change	gmU	gmU-235
Total Mass	gmU 7,435	gmU-235

Unit H = 36.

Cm = 7.28 Kg

9-20-60

18" X 18"

Run 1-A

E.A. 270 8u/18 Expr 18" Run 1-A

Sheet Date 9-20 1960 Time 1:52 AM

Purpose

18"X18"X36" 6" Refl.

LOADING CHANGE

Description 18"X18"X36"-
324 in² Base
208.78 g/in Height

65.536 sec
321 Cto

Mass before change	gmU		gmU-235
Mass of Change	gmU		gmU-235
Total Mass	gmU	7,5160	gmU-235

Run 1-B

LOADING CHANGE

Description 18"X18"X38.1 6" Refl.
324 in² Base
208.78 g/in Height
Fixed Table 40" High - movable 36" High

Mass before change	gmU		gmU-235
Mass of Change	gmU		gmU-235
Total Mass	gmU	7,954	gmU-235

LOADING CHANGE

Run 1-C

Description 18" x 18" x 39" - 6" REFLECTOR

69.5 Sec Period.

Mass before change ______ gmU ______ gmU-235

Mass of Change ______ gmU ______ gmU-235

Total Mass ______ gmU 8,142 gmU-235

LOADING CHANGE

Run 1-D

Description 18" x 18" x 38.50 6"

~~3 24 in~~ 2 Base — g/in Height

2.18.78

Removed ½ inch 144.x Sec. Period.

Mass before change ______ gmU-235

Mass of Change ______ g ______ gmU-235

Total Mass ______ gmU 8,038 gmU-235

Crit H = 38.19" ? 37.8[illegible]

CM = 8.0 Kg

HEIGHT -	108.3	108.1	108.2
	108.2	108.2	108.3
	108.1	108.2	108.2
	108.2	108.1	108.1
	108.1	108.1	108.0
	108.2	108.2	108.1
			108.0

108.2 CM

19 ⟌ 2053.9

9-2

9-21

Run

1.

9-21-60

INSTRUMENT CHECK

Time 11:00 AM ~~PM~~ Source PN-467

Tables OK

	Channel A	B	C	D	E
Range F	1°/100	opr	1°	1°/100	1050
Source Dist. OK	3"	OC	3'	½"	0
% F.S. Trip	70		10°	8°	100

C.A. ~~22~~ 82/18 Expr. 21"x21" Run 1-A

Sheet _____ Date 9-21-19 60 Time 11:10 AM

Purpose Crit. Cyl Height 21x21 Bare

LOADING CHANGE

Description 21"x21"x [redacted] 42" Bare

21"x21" = 441

441 x .6444 = 284.18

Sub Crit. 284.18 x 42" = 11,935

Mass before change	gmU		gmU-235
Mass of Change	gmU		gmU-235
Total Mass	gmU	11,935	gmU-235

9-21-60

Run 1-B

LOADING CHANGE

Description 21"x21"x 43"

21"x21" = 441

441 x .6444 = 284.18

Period T=469.2 L_2 N 486.4

Mass before change	gmU		gmU-235
Mass of Change	gmU		gmU-235
Total Mass	gmU	12,219	gmU-235

12

24" dia Cyl.

Run 1-A-
9-21-60

LOADING CHANGE

Description 24" dia" X 35" High. Bare

24" X 24" = 576

452.39 in² Base

576 X 6444 = 371.17

291.2 g/in Height

371.17 X 35 = 12,990

Mass before change	gmU		gmU-235
Mass of Change	gmU	10,192	gmU-235
Total Mass	gmU	12,990	gmU-235

Super Critical

C. H. = 34.45"

C. M. = 10,03 Kg.

LOADING CHANGE

Description

Mass before change	gmU		gmU-235
Mass of Change	gmU		gmU-235
Total Mass	gmU		gmU-235

9-
Run

9-22-60

INSTRUMENT CHECK

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

	Channel A	B	C	D	E
Range	Tables OK / F OK	10 / 1000 OK	OK	10 / 1000	1050V
Source Dist.	3"	0"	3"	½"	½"
% F.S. Trip	80	OK	100	80	100

C.A. 270 82/18 Expr. 24" Dia. Run 1-B

Sheet ____ Date 9-22 1960 Time 8:40 ~~PM~~ AM

Purpose 24" Diameter Cylinder

Height 34.50"

Bare

LOADING CHANGE

Description Removed ½"

~~87.19 x 34.50 = 12,805~~ 291.2 x 34.5 =

T = +228 gm

Mass before change ____ gmU ____ gmU-235

Mass of Change ____ gmU ____ gmU-235

Total Mass ____ gmU ~~12,805~~ 10,046 ~~gmU-235~~

9-22-60

Run 1-A

LOADING CHANGE

Description 26" Dia. Cylinder Bare

26" High 526 in² Base

338.95 g/in height

Mass bef ____ gmU-235

Mass of Ch ____ gmU-235

Total Mass ____ gmU 8,813 ~~gmU-235~~

14

9-22-60 Added ¼" to ~~Top Table~~ Top

Run 1-B

LOADING CHANGE

Description 26" Dia. Cylinder, 26¼" High, Bare

T = +20.6 cm

Mass before change ____ gmU ____ gmU-235

Mass of Change ____ gmU ____ gmU-235

Total Mass ____ gmU 8,897 gmU-235

9-22-60

Run 1A

LOADING CHANGE

Description ~~27" Dia. Cylinder Bare~~ 25" High

572.55 in² Base

368.95 g/in Height

Mass before change ____ gmU ____ gmU-235

Mass of Change ____ gmU ____ gmU-235

Total Mass ____ gmU ~~9223~~ 9150 gmU-235

LOADING CHANGE

Description 27" Dia Cylinder Bare 25" High

Super Critical 568.2 in² Base

Mass before change ____ gmU ____ gmU-235

Mass of Change ____ gmU ____ gmU-235

Total Mass ____ gmU 9150 gmU-235

Run-

9-23-60

INSTRUMENT CHECK

Time 8:35 AM PM Source

Channel	A	B	C	D	E
Range	Tables OK	10/100 off	10^{-10}	10/1000	1050 V.
Source Dist.	F ok	2.5"	0"	45'	1" 0"
% F.S. Trip	75	ok	100	80	100 ✓

C.A. 296 Expr. 27" Dia. Run 1-B

Sheet 9-23-60 Time 9.10 AM PM

Purpose

27" Dia. cylinder
24½ in High

LOADING CHANGE

Description 27" Dia. Cylinder Base
24½" High
568 in² Base
Super Critical - Removed ½ in on Top

Mass before change	gmU	gmU-235
Mass of Change	gmU	gmU-235
Total Mass	gmU 8,967	gmU-235

LOADING CHANGE

Run - 1-B

Description Removed ½" from Top Base
27 in Dia. Cylinder 24½" High
568 in² Base (24" on movable / 25" on fixed)
366.01 X 24½ = ~~8,784~~ 8,967

Mass before change	gmU	gmU-235
Mass of Change	gmU	gmU-235
Total Mass	gmU ~~8,784~~ 8,967	gmU-235

174.8 See Pd

9-23-60
Run 1-C

LOADING CHANGE

Description 24.25 Height Bare
27 in Dia cylinder
568 in² Base
366.01 X 24.25 =

Mass before change ____ gmU ____ gmU-235
Mass of Change ____ gmU ____ gmU-235
Total Mass ____ gmU 8,875 gmU-235

Crit - ?

Run 1-D

LOADING CHANGE

Description Height 24.31 Bare
27 in Dia. cylinder
568 in² Base
366.01 X 24.31

Mass before change ____ gmU-235
Mass of Change ____ gmU-235
Total Mass ____ 8,897 gmU-235

1170 Sec Pd

9-2
Run

9-23-60

C.A. 2% 8/18 Expr. 32" Dia. Run 1-A

Sheet Date 9-23 1960 Time 2:20 A.M.

Purpose 32" Dia. Cylinder
20" High

Bare

LOADING CHANGE

Description Height 20" Bare

Supercritical 32 in Dia. Cylinder
800 in² Base
515.52 X 20"

Mass before change	gmU		gmU-235
Mass of Change	gmU		gmU-235
Total Mass	gmU	10,310	~~gmU-235~~

9-23-60 Removed 1" from top

Run 1-B

LOADING CHANGE

Description Height 19~~5~~"

32 in Dia Cylinder

800 in² Base

515.52 X 19~~5~~"

Bare

Crit.

Mass before change	gmU		gmU-235
Mass of Change	gmU		gmU-235
Total Mass	gmU	~~10,171~~ 9,794	gmU-235

9-23-60
Run 1-C

LOADING CHANGE

Description Height 19.06", (¼" on 1 quad.) Bare
32" dia. Cylinder
800 in² Base
Crit 515.52

Mass before change	gmU		gmU-235
Mass of Change	gmU		gmU-235
Total Mass	gmU	9,825	gmU-235

208.5 Sec Pd - Log N
187 Sec Pd - TMC

9-2

Run

Run

31675

9-26-60

INSTRUMENT CHECK

Time 11:15 AM ~~PM~~ Source PN-467

	Channel A	B	C	D	E
Range	1/1000	open	1/10	1/1000	1/50
Source Dist.	3'	GIC	6'	1/2	0
% F.S. Trip	70		10	70	100

LOADING CHANGE

Run 1A

Description 28" Dia cyl, 23" High Bare
616 in² Base
396.95 g/in height

Mass before ____ gmU ____ ~~gmU-235~~

Mass of Change ____ gmU ____ ~~gmU-235~~

Total Mass ____ gmU 9130 ~~gmU-235~~

Super Crit. Table .25

LOADING CHANGE

Run 1B

Description 28" dia cyl, 22.5" High Bare

Mass before change ____ gmU ____ ~~gmU-235~~

Mass of Change ____ gmU ____ ~~gmU-235~~

Total Mass ____ gmU 8931 ~~gmU-235~~

Super Crit - 149 Spd

LOADING CHANGE

9-26-60
Run 1-C

Description 28 dia. Cylinder 22 3/4" High Bare
Fixed table 22 1/4"
Movable table 22 1/2"
396.95 X 22.38

Mass before change _____ gmU _____ gmU-235
Mass of Change _____ gmU _____ gmU-235
Total Mass _____ gmU 8,883 gmU-235

Sub Crit.

LOADING CHANGE

9-26-60
Run 1-D

Description 28 dia. Cylinder 22.44 Bare
616 in² Base
396.95 X 22.44 = 8907.5

Mass before change _____ gmU-235
Mass of Change _____ gmU-235
Total Mass _____ gmU 8907. gmU-235

~~675~~ 652 Sec Pd

9-27-60

INSTRUMENT CHECK

Time 2:20 PM ~~AM~~ ~~PM~~

Source $Po\ B-$

	Channel A	B	C	D	E
Range	1"/100	of	10	1"/cm	105°
Source Dist.	3"	of	6'	1"	"
% F.S. Trip	20		100	70	100

Temp 75°

LOADING CHANGE

Description 26" Dia, 26" High BARE
526 in² Base
338.98 g/in height

Mass before change	gmU		gmU-235
Mass of Change	gmU		gmU-235
Total Mass	gmU	8,813	gmU-235

Sub Critical

22

9-29-60

INSTRUMENT CHECK

Time 8:25 AM PM Source PN-467

	Channel A	B	C	D	E
Tables OK	1/1000	off	10"	10/1000	1030V
Scale	2"	0"	3"	1"	½"
% F.S. Trip	80	OK	100	80	100+

Temp.

CA 290 8-2/18 40" 1 A

Sheet AM PM

Purpose 40" Dia. Cylinder
16. High
Bare

LOADING CHANGE

Description 40" Dia. Cylinder — Bare
Fixed Table 16" Movable 16" (¼ or ⅛)
1264 in² Base
81452

Mass before change	gmU	gmU-235
Mass of Change	gmU	gmU-235
Total Mass	gmU 13,081	gmU-235

9-29-60

Run 1-B

LOADING CHANGE

Description 40" Dia. Cylinder 16.375" Bare
Fixed 16.25 movable 16.50"

Mass before change ____ gmU ____ gmU-235
Mass of Change ____ gmU ____ gmU-235
Total Mass ____ gmU 13,338 gmU-235

Super Crit

Run 1-C

LOADING CHANGE

Description 40" Dia. Cylinder, 16.31 Bare
16 1/4 on 3/4, 16 1/2 on 1/4

Mass before change ____ gmU ____ gmU-235
Mass of Change ____ gmU ____ gmU-235
Total Mass ____ gmU 13,285 gmU-235

Super Crit

Run 1-D

LOADING CHANGE

Description 40" Dia. Cylinder, 16.25", Bare
16.25" on 1/2, 16" on 1/4
16.5" on 1/4

Mass before change ____ gmU ____ gmU-235
Mass of Change ____ gmU ____ gmU-235
Total Mass ____ gmU 13,236 gmU-235

Super Critical.

24

9-30-60
Repeat of Previous Run

INSTRUMENT CHECK

Time 2:0- PM Source Pu Be

Table or Channel	F	A	B	C	D	E
Range	Oil	$\frac{1}{1000}$	Oil	$\frac{1}{10}$	$\frac{1}{10}$	1050
Source Dist.		5"	Oil	5'	½"	0
% F.S. Trip		80		100	80	120

LOADING CHANGE

Description 40" Dia. Cyl. Bare
Repeat of Run 100

Mass before this ch		gmU	gmU-235
Mass of Change		gmU	gmU-235
Total Mass		gmU 13,236	gmU-235

Super Critical - 93.4 See P.&

BF_3 Chamber Loose 1% of counts at Count Rates

Counter	1% Loss	Gain	Rise Time	Disc
1	~ 300,000 cpm	16-1	.2	23
2	~ 100,000 cpm	8-1	.2	29
3	~ 280,000 cpm	4-1	.2	30

10-4-60

INSTRUMENT CHECK

Time 8:40 ~~AM~~ PM Pu. 467

	Channel A	B	C	D	E
Tables - OK					
F - OK					
Range	10/1000	oper	10^{10}	10/1000	1050V.
Source Dist.	2½"	0"	30"	0"	0"
% F.S. Trip	85	OK	100	80	100+

Repeat of Previous run

Poo Period 91.2 Sec. (~~6.8~~)

Run 1-E

LOADING CHANGE

Description 40" Dia. Cyl.

126 X in = Base 16.18 avg. Height

Removed: 16.5 on ¼
16.0 " ⅜
16.25 " ⅜

156 X .6444 = 10052

Mass before change	gmU	13,236	gmU-235
Mass of Change	gmU	25	gmU-235
Total Mass	gmU	13,211	gmU-235

Poo Period 241 Sec (~~6.8~~ 3.11)

C. H. = 16.13"

C. M. = 13.19 Kg

10-4-60

Run 1-A

LOADING CHANGE

Description 50" Dia. Cyl. 15.25" Height

1964 in.^{2} 15" on 3/4 16" on 1/4

Mass before change ~~gmU~~ ~~gmU-235~~

Mass of Change gmU gmU-235

Total Mass gmU 19,300 ~~gmU-235~~

Super critical

Run 1-B

LOADING CHANGE

Description 50" Dia. Cyl. 15.09 in Height

1964 in.^{2} X 6444 = 1,265 176 in.^{2} = 1" Height

Remainder = 15" Height

15" X 1,265 =

Mass before change ~~gmU-235~~

Mass of Change gmU-235

Total Mass 19,097 ~~gmU-235~~

Super Critical

Run 1-C

LOADING CHANGE

Description 50" Dia. Cyl. 15.06 in Height

1964 in.^{2} X .6444 = 1265.6

15.06 X 1,265

Mass before change ~~gmU~~ ~~gmU-235~~

Mass of Change gmU gmU-235

Total Mass gmU 19,050 ~~gmU-235~~

Super critical

LOADING CHANGE

10-4-60
Run 1-D

Description 50 Dia. Cyl. 14.96 ~~15~~" Height
1964 in² x .644 x M.W. 15" Fuzzed ~~14~~ 14¾ except for 128 in³ which is 16"
14.96 ~~15~~" x 1,265

Mass before change ____ gmU ____ gmU-235
Mass of Change ____ gmU ____ gmU-235
Total Mass ____ gmU 18,924 ____ gmU-235

Pos. Period of 83

LOADING CHANGE

Run 1-E

Description 50 Dia. Cyl. 14.93
1964 in² X .644 x
Removed ¼" from ⅛" 1955 ea. per.
14.93 X 1,265

Mass before change ____ gmU ____ gmU-235
Mass of Change ____ gmU ____ gmU-235
Total Mass ____ gmU 18,886 ____ gmU-235

195 Pos. Period

C. H = 14.90
C. M = 18.84 Kgs

28

10-5-60

Run 1-A

INSTRUMENT CHECK

Time 11:30 ~~PM~~ Source PN-467

	Channel A	B	C	D	E
Range	Tables OK F OK	1/1000	gpl 10⁻¹⁰	10/1000	1050
Source Dist.		2½"	8"	30"	1" 0"
% F.S. Trip		85	OK 100	75	100

Corrected

LOADING CHANGE

Description 23" Dia. Cyl. 48" High Bare

267.42 in² ∫/in height

Mass before change _____ gmU-235

Mass of Change _____ g _____ gmU-235

Total Mass _____ gmU 12,836 gmU-235

Super Critical

Run 1-B

LOADING CHANGE

Description 23" Dia. Cyl. 46" High Bare

267.42 in² ∫/in

Mass before change _____ gmU-235

Mass of Change _____ g _____ gmU-235

Total Mass _____ gmU 12,301 gmU-235

Pos. Period 65.1 (8.7)

Run 1-C

LOADING CHANGE

Description 23" Dia. Cyl. 45" High Bare

267.42 in² f/in

Mass before charge ~~gmU~~ gmU-235

Mass of Charge ~~gmU~~ gmU-235

Total Mass ~~gmU~~ 12,033 ~~gmU-235~~

Pos. Period 330 Sec. (2.27)

C. H. = 44.65"

C. M. = 11.942 Kg.

3:00 PM ROOM 108

Wet Bulb = 56°

Dry Bulb = 72°

R. H = 37% A. H = 42 grains

3:20 PM Demand Control for 108 Set at 82°

10-6-60

8:10 AM W. B = 60° D. B = 79° R. H = 31%

A. H = 47 grains

8:15 AM Demand control set at 90°

12:08 PM W. B. = 64° D. B. = 86° R. H. = 29% A. H = 54 grains

12:12 PM Demand Control set at 82°.

1:08 PM W. B = 59 D. B. = 80 R. H = 28° A. H: 44 grains

1:10 PM Kathabar ~~Shut~~ Turned off.

10-7-60 8:05 AM Rm # 108 — DB = 79° WB = 60.5° RH = 33% AH = 50 gr 10- Run

Repeat of run 1-C

INSTRUMENT CHECK

Time 8:15 AM ~~PM~~ Source P_o P_x

Tables OK

	Channel A	B	C	D	E
Range F OK	10/1.00	opr	10	10/10.0	1050
Source Dist.	2½"	OK	2.5"	½	0"
% F.S. Trip	85		100	80	100

Sub-critical

Run 1-D

LOADING CHANGE

Description 23" Dia. cyl. 45.50"

Mass before change ____ gmU-235

Mass of Change ____ gmU-235

Total Mass ____ gmU 12,180 gmU-235

9:48 AM Readings for 108 Same as for 8:01 AM

10-7-60
Rm. 1-E

LOADING CHANGE

Description 23" Dia Cyl. 45:30" High

Mass before change ____ gmU ____ gmU-235

Mass of Change ____ gmU ____ gmU-235

Total Mass ____ gmU 12,180 gmU-235

Critical ~ 10:30 AM

Rathaban at 11:10 AM & Water Dumped ~ 108

Shut down 1:18 PM

1:30 PM

RM #108 - WB = 67° DB = 80° RH = 52% AH = 79 gr.

4:20 TEMP. SET BACK TO 72° F

32

10-10-60

INSTRUMENT CHECK

Time 10:05 ~~PM~~ AM Source DN 467

	Channel A	B	C	D	E
Table	O/C				
Range	F	O/C			
	17/1000	off	10^{-10}	10/1000	105 V
Source Dist.	3"	6"	36"	4½"	0"
% F.S. Trip	85	O/C	100	80	100+

C.A. 270 8½/18 24" X 24" 1-A

Sheet 24" Parallelipiped 10:20 ~~AM~~ PM

~~Purpose~~ 26" High

Bare

LOADING CHANGE

Description ~~24" X 24" X 26"~~ - Bare

4" X 4" X 4" Void at Center

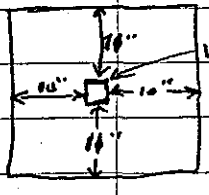
576 in² Bore

371.17 X 26.

Mass before change

Mass of Change gmU-235

Total Mass gmU-235 9,650 / 41 = 9,609 gmu 235 for 4 in³ hole in center



Run 1-B

LOADING CHANGE

Description 24" X 24" X 26.3" 26.½" on fixed

576 in² 26" on movable

371.17 X 26.3

Mass before change

Mass of Change 9,761 / 41 = 9,720 gmU-235 for 4 in hole center

Total Mass gmU 9,826 / 41 = 9,785 gmU-235

Run 1-C

LOADING CHANGE

Description 24"X24"X26.50 – Base
4"X4"X4" Void at ~ Center
576 in² Base

Mass before change ____ gmU 9,836 gmU-235
Mass of Change ____ gmU -41 for 4 in² in center gmU-235
Total Mass ____ gmU 9,785 gmU-235

LOADING CHANGE

Run 1-D

Description 24"X24"X26.50 Bare
4"X4"X4" Placed in cent. of stack
576 in² Base on fixed table

Mass before change ____ gmU ____ gmU-235
Mass of Change ____ gmU ____ gmU-235
Total Mass ____ gmU 9,836 gmU-235

LOADING CHANGE

Run 1-E

Description 24"X24"X26 1/4

576 in² Base
576 X.6444 = 371.17

Removed
Replaced with regular 29 5/8 / 18
4"X4"X4" Void at center

Mass before change ____ gmU ____ gmU-235
Mass of Change ____ gmU ____ gmU-235
Total Mass ____ gmU 9,743 gmU-235
-41 for 4 in² hole in cent
9,702 gmU-235

New Period of 420 Sec.

34

LOADING CHANGE

Description 24" x 24" x 26 1/4"
576 in² Base

Placed 270 82/19 block in center (4" x 4" x 4") with 8 grams B Glass

371.17 x 26.25 =

Mass before change _____ gmU _____ gmU-235

Mass of Change _____ gmU _____ gmU-235

Total Mass Critical _____ gmU 9,743 ~~gmU-235~~

Negative Period 320.3 Sec.

$\frac{H}{X} = 195$

10-11-60

Run 1-A

INSTRUMENT CHECK

Time 11:25 AM   Source BN-467

Channel

	A	B	C	D	E
Tobler UK	19/1000	OFF	10^{-10}	10/1000	10.50 V.
Source Dist. F	3"	0"	30"	0"	0"
% F.S. Trip	80	OK	100	80	100

LOADING CHANGE

Description 30" X 30" X 32" Bare
with 4" X 8" X 4" hole
in center of fixed table

Mass before change 29549 gmU-235
Mass of Change - 66 gmU-235
Total Mass 29,483 gmU-235

Run 1-B $\frac{H}{X} = 195$

LOADING CHANGE

Description 30" X 30" X 31½" Bare
4" X 4" X 8" hole
+ 65 Sec. Period

Mass before change 29087 gmU-235
Mass of Change - 66 for 4 in³ hole gmU-235
Total Mass 29,021 gmU-235

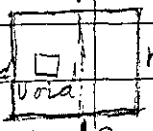
1-C

H/X = 195

LOADING CHANGE

Description 30"X30"X31 1/4" Bare

4"X4"X4" hole in Center of fixed table



Mass before change	gmU	28856	gmU-235
Mass of Change	gmU	-66	gmU-235
Total Mass	gmU	28,790	gmU-235

38

10-12-60
Repeat of
Run 1-C

INSTRUMENT CHECK

Time 9:00 AM PM Source P. B.

Tables OIC F

	Channel A	B	C	D	E
Range	1/100	opr	10	10/1000	1050
Source Dist.	1"	OIC	30"	0	0
% F.S. Trip	60		100	70	100

10-13-60

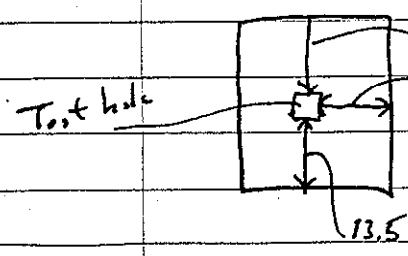
INSTRUMENT CHECK

Time 8:00 AM PM Source P. B.

Tables OIC F

	A	B	C	D	E
Range	10/1000	opr	10	10/1000	1050
Source Dist.	2.5"	OIC	2.5'	1"	0"
% F.S. Trip	95		100	80	100

C.A 92-8 29.
Expr. 30X30 Run 1C
Sheet Date 19 Time AM PM
Purpose Zero Run on Replacement Measurement with 4x4x4 hole 30x30x31 1/4



negative period - 472.6 sec

10-13-60

Run 1-D

LOADING CHANGE

Description 30"X30"X31¼" Bare

Test Sample 4X4X4 H-X 195 with 10 j Bglass

gms fuel inserted in hole

30"X30" @ 900

900X1.026 = 923.4

Mass before change ____ gmU ____ gmU 235

Mass of Change ____ gmU ____ gmU-235

Total Mass ____ gmU 28,856 ____ gmU-235

Position period — 2000 Sec.

.6 Sec

40

10-14-60

Run 1-E

INSTRUMENT CHECK

Time 9:08 AM ~~PM~~ Source PM-467

Channel

	A	B	C	D	E
Tables ✗					
Range	$\frac{10}{1000}$	Opr	10^{-10}	$\frac{10}{1000}$	1050V
Source Dist.	3"	0"	30"	0"	0"
% F.S. Trip	85	OK	100	80	100+

Ctrs

C.A. ~~H~~ 195 Exp 30"x30" 1-E

Sheet ... Da 10-14-60 9:40 AM ~~PM~~

Purpose

Stack 30 3/4" high

LOADING CHANGE

Description 30"x30"x30 3/4 Bare

~~102.6 x 92 3/4~~

~~1.026~~ 923.4 x 30 3/4

Pos. Period 174 Sec

Mass before change ... gmU-235

Mass of Change ... gmU ... gmU-235

Total Mass ... gmU 28,394 gmU-235

Run 1-F

LOADING CHANGE

Description 30"X30"x28 3/4" ~~Reflected~~

Removed 2" from top Added 6" Reflector to top

Pos Period .58.6 Sec.

Mass before change ... gmU ... gmU-235

Mass of Change ... gmU ... gmU-235

Total Mass ... gmU 26,547 gmU-235

10-17-60

1-G

INSTRUMENT CHECK

Source PIX - 467

Time 8:30 AM

	Channel B	C	D	E
Range	Tables OK	1/1000 opr	10^{-10}	10/1000
Source Dist.	3"	0"	30"	½"	0"
% E.S. Trip	80	OK 100	80	100

C.A. H/X 195 Expr. 30"X30" Run 1-G

Sheet Date 10-17 1960 Time 9:10 AM

Purpose

Height 28½ 6" Reflector on Top

LOADING CHANGE

Description 30"X30"X28½

923.4 x 28.50 =

142 Sec. Boo. Per.

Mass before change gmU gmU-235

Mass of Change gmU gmU-235

Total Mass gmU 26,316 gmU-235

Run 1-H

LOADING CHANGE

Description Added 2¼" Stack - 30"X30"X30¾ Removed 6" reflector from top

923.4 X 30.75"

97.7 86.88 Sec. Poo. Per.

Mass before change gmU gmU-235

Mass of Change gmU gmU-235

Total Mass gmU 28,394 gmU-235

$\frac{H}{X} = 500$

10-18-60

PN-467

T - 840 — 4 —

T - OK

F - OK 10/1000 open .10" 10/200 1050 V

Panel	A	B	C	D	E
Source Dist.	3"	0"	36"	1"	0"
% F.S. Trip	85	MC	100	80	100+

C.A. [redacted] Expr. 22"X20" 10-18-60 Run 1-A

Sheet ____ Date [redacted] 19 ____ Time 9:40 AM PM

Purpose ____

22"X20"X42.50" Bare

Sub. Critical

LOADING CHANGE

Description 22"X20"X42½"

440 in² Bare X .6444 283.53

283.53 X 42.50:

Mass before change ____ gmU ____ gmU-235

Mass of Change ____ gmU ____ gmU-235

Total Mass ____ gmU 12,050 ____ gmU-235

10-18-60

Run 1-B Sub

LOADING CHANGE

Description 22"X20"X43" Bare

440 X .6444 = 283.53

283.53 X 43 =

Mass before change ____ gmU ____ gmU-235

Mass of Change ____ gmU ____ gmU-235

Total Mass ____ gmU 12,191 ____ gmU-235

Sub. critical

44

C.A. 270 $\frac{82}{78}$ Expr. 22"X20" Run 1-C

Sheet _____ Date 10-18-60 T. 1:35 AM

Purpose ~~Vertical~~ Traverse

270 $\frac{2}{35}$ Foils, 2 Bs

Height 44" Bare

Pos.	-21	-18	-15	-12	-9	-6	-3	0	+3	+6	+9	+12	+15
Foil #	B-8	B-38	B42	B37	B-32	B-24	B-40	B-15	B-3	B-18	B-36	B-17	B-6
	+18	+21											
	B-41	B-9											

CRITICAL POSITIONS

CRITICAL POSITIONS

C.A. 270 $\frac{82}{78}$ Expr. 22"X20" Run 1-C

Table Pos. .065 T-4545

Plastic 2.03 44 $\frac{1000}{100}$

B .61

$\bar{c}$ 7.5 4×10^{-11}

D 39 $\frac{1000}{100}$

E .4 750

AM

Tim Crit. 1:55 PM Duration 20 min.

10-19-60

INSTRUMENT CHECK

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

	Channel A	B	C	D	E
Range	10/1000	open	10	10/1000	1050
Source Dist.	1"	0"	30"	4"	0"
% F.S. Trip	90	ok 100	80	100+	

2 HS
17 B2
6

C.A. 20 82/18 Expr. 22"X20" Run 1-D

Sheet ____ Date 10-19 1960 Time 8:25 A.M.

Purp. Vertical Traverse

20 lt 235 Foils

Height 44 1/4" Bare

Pos.	-21	-18	-15	-12	-9	-6	-3	0	+3	+6	+9	+12	+15
Foil #	B-4	B-31	B-28	B35	B-16	B-21	B-34	B-10	B-20	B-6	B-33	B-13	B-25

+18	+21
B-2	B-5

CRITICAL POSITIONS

C.A. 20 82/18 Expr 22"X20" Run 1-D

Rod Pos. .065 T 4455

Control Rod	Channel	
Plastic 3.94	A 45	1000/100
2	.01	
3	C 7.8	4X10^-11
4	D 40	1000/100
	E .4	750

Tim Crit. 8:40 AM ~~PM~~ Duration 20 min.

Run 1E Vertical Traverse, μ^{235}, 27. Foils

Pos.	-21	-18	-15	-12	-9	-6	-3	0	3	6	9	12	15	18	21
Foil #	A-11	A-1	B-27	B-22	B-12	B-30	B-7	B-1	B-11	B-29	B-14	B-39	A12	A-4	A-9

CRITICAL POSITIONS

27% 84/18 Expr 20 x 22 Run 1E

.06 T .4515

Plotic 6.7

40 $\frac{1000}{100}$

.01

8.6 4×10^{-11}

35 $\frac{1000}{100}$

E .4 752 V.

Init Crit. 10:47 AM Duration 20 min.

Run 1F Vertical Traverse, μ^{235}, 29 foils

Pos	-21	-18	-15	-12	-9	-6	-3	0	+3	+6	+9
Foil #	C-24	C-4	C-21	C-36	C-39	C-29	C-6	C-10	C-9	G40	C-25

+12	+15	+18	+21
C-30	C-19	C-46	C-22

CRITICAL POSITIONS

C.P. 29 84/18 Expr 20 x 22 Run 1-F

.065

Plastic 1.85

50 $\frac{1000}{100}$

.013

9.0 4×10^{-11}

45 $\frac{1000}{100}$

E .4 750

1:19 25/60 ~~P.M.~~ 28 min.

Run G Vertical Traverse, U^{235}, 27 Foils.

Pos. -21, -18, -15, -12, -9, -6, -3, 0, 3, 6, 9, 12, 15, 18, 21

Foil # C-39, C-18, C-12, C-38, C-2, C-27, C-14, C-5, C-11, C-7, C-41, C-43, C-3, C-32, C-44

CRITICAL POSITIONS

27₀ 82/18 Expr. 20 x 22 Run 1 G

Pos. 1065 T 5-5-5-6

Control Rod	Channel	
	A	42 1000/100
Plastic = 1.49	B	.01
	C	5.7 10^{-10}
	D	37 1000/100
	E	.4 750 V.

Crit 2142 AM PM Duration 20 min

Run 2-A

10-20-60

INSTRUMENT CHECK

Time 8:30 AM PM Source Po Be

Tables OK

	F	Channel A	B	C	D	E
Range	OK	1/10 mr	opr	10 mr	10/100	1-50
Source Dist.		3"	OK	2.5'	2"	5'
% F.S. Trip		90		100	80	100

C.A. 270 8½/8 Size 20"X22" Run 2A

Sheet Date 10-20-60 Time 9:15 AM PM

Purpose Preparation for a P/A Measurements.

Stack - 12" on movable & 8" on Fixed Table.

20"X22"X42½" Bare

LOADING CHANGE

Description 20"X22"X42½

283.53 X 42.50 =

Mass before change gmU-235

Mass of Change gmU-235

Total Mass gmU 12,050 gmU-235

Sub Crit. - Neg. Period too Short for a P/a h Measurements.

a P/a h Measurements:

Stack: 20"X22"X93" - Neg. Periods

20"X22"X94" - Pos. Periods

Δ P/Δ h Measurements

LOADING CHANGE

10-20-60
Run 3-A

Description 20" X 22" X 43" Bare

740 X .6444 · 28353

28353 X 43

Mass before change _____ gmU _____ gmU-235

Mass of Change _____ gmU _____ gmU-235

Total Mass _____ gmU 12,191 gmU-235

	Period	Log N (1)	(2) BF3 Counter (3)	Fission (4)
10-20-60 3A.	Negative	242.1		
Run 3-B	Positive	200.8		
C	Positive	198.1		
D	Negative	230.2		
E	Positive	203.6		
2:45 PM F	Positive	Total 199.8 ~~245.4~~ gmU		gmU-235
G	Negative	245.4		
H	Positive	197.6		

10/21/60

INSTRUMENT CHECK

Time 8:00 AM Source Po Be

	Channel A	B	C	D	E
Tables OK F					
Range OK	12/100	off	1 10	1/100	105
Source Dist.	3"	0"	30"	0"	0"
% F.S. Trip	65	OK	100	90	100

8:20 AM

I	Negative	250.8
J	Positive	184.6

50

10-21-60

	Period	Log N	Counters BF_3 1	2	3	Fission X
Run 3 K	Negative	237.8				
L	Positive	184.6				
M	Positive	184.6				
1:18 PM N	NEGATIVE	239.9				
O	POSITIVE	186.7				
P	POSITIVE	184.6				
Q	NEGTIVE	248.6				
R	Positive	186.7				

10-23-60 Height of Stack 44"

E	S	W	N	Width 22"
112.2	112.2	112.2	112.2	56.1
.3	.2	.1	.2	.2
.1	.1	.1	.3	.2
.2	.1	.2	.3	.3 .227
.2	.2	.2	.2	.3
112.19				.2
σ_h - .43 cm				.2
				.1
				.3
				.2
				.2
				σ_w - .347 .3
				.3
				.3

10-24-60

INSTRUMENT CHECK

Time 1:30 PM

Source Pu 467

	Channel A	B	C	D	E
T = OK					
Range F = OK	1000	opr	10^{-10}	1000	10^{-10}
Source Dist.	3"	0"	3'	½"	0"
% F.S. Trip	90 OK	100	80	100+	

CA 29 83/8 Expr. 24X24 Run 2A

Sheet ____ Date 10-24-1960 Time ____ AM PM

Purpose Preparation for U^{238} Fission Counter Traverse

(for first stacking see Bk #3 p. 203)

LOADING CHANGE

Description 24" X 24" X 28.25"

24" X 24" = 576

576 X .644 = 371.17

371.17 X 25.25 =

Mass before change	gmU		gmU-235
Mass of Change	gmU		gmU-235
Total Mass	gmU	9,372	gmU-235

227

H/X = 500

10-25-60

INSTRUMENT CHECK

Time 8:40 AM   Source Pu - 467

	Channel A	B	C	D	E
Range T = OK F = OK	10/1000	opr	10^{-10}	10/1000	1050 V.
Source Dist.	8 3/8"		3'	1/2"	0"
% F.S. Trip	85		100	85	100+

C.A. 270 82/48   Expr. 24"X24"   Run 2-B

Sheet   10-25-60   Time 9:05 AM

Purpose U^{235} Fission Counter Traverse

LOADING CHANGE

Description 24" X 24" X 25.08   Bare

24"X24" 576

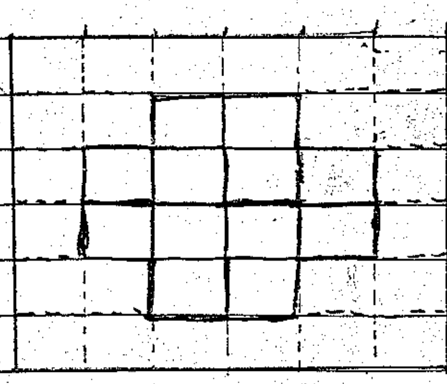
576 x .6444 = 371.17

371.17 x 25.08

Mass before change ______ gmU ______ gmU-235

Mass of Change ______ gmU ______ gmU-235

Total Mass ______ gmU 9,308 gmU-235



25" + 1/4" Layer on Inner 1/3" of Top   or 25.08 High

5 min Counts Scale 256

Position	U^{238}	U^{235}	Ratio $(\frac{238}{235})$
9.00	7 197 1989	610 135 156295	
	8 119 2167	622 37 159269	
	4156	315564	1317
10.01	1. 223	608 177	
	10 76	582 14	
	5419	304831	1777
11.00	12 29	571 19	
	12 84	577 221	
	6257	294128	2127
12.00	14 134	559 189	
	13 218	530 238	
	7264	279211	2602
13.00	14 43	490 93	
	13 61	469 97	2856
	7014	245174	
14.00	15 194	490 240	
	16 84	517 48	3183
	8214	25808	
15.00	16 79	498 50	
	16 129	477 123	3363
	8400	249773	
16.00	16 110	458 241	
	16 4	443 253	3593
	8306	23115	
17.00	16 75	434 35	
	16 27	431 239	3741
	8294	221714	
17.50	16 84	419 221	
	16 12	418 41	3863
High	8288	214534	

10-25-60

Position	u^{238}	u^{235}	Ratio ($\frac{238}{235}$)
18.00	15 251	415 9	
	16 62	407 41	3919
~~18.25~~	8249	210482	
18.25	15 59	397 142	
	15 146	387 242	3921
	7885	201088	
18.50	15 +184	390 94	
	15 + 65	397 101	3932
	7929	201667	
18.75	15 82	398 21	
	16 59	395 87	3976 ?
	8077	203116	
19.0	16 53	405 29	
	16 240	398 174	41235 ?
	8485	205771	
19.50	15 + 205 4045	407 +114 104304	3878
	16 192 4288	399 13 102157	4197
	17 45 4317	389 238 99822	4404 .3823
	14 69 3653	391 25 97561	.3744
~~20.50~~	13 202 3530	373 95543	.3694
	13 61 3389	359 138 92042	.3682
	23302	591431	.394
20.50	13 50	394 175	
	12 222	397 15	
	6672	~~20~~ 2,681	.32918
21.5	12 201	402 160	
	13 89	407 26	
	6690	207290	.3273

10-25-60

Position	U^{238}	U^{235}	Ratio $\left(\frac{238}{235}\right)$
2 2.50	12 182 3254	407 178 104320	
	12 226	417 109	
	6552	21123/	.3102

56

10-26-60

INSTRUMENT CHECK

Time 8:25 AM PM Source Pu-467

	Channel A	B	C	D	E
T = OK					
Range F = OK	0/1000	Opr	10"	10/1000	1050 V
Source Dist.	3.5"	0"	4'	½"	0"
% F.S. Trip	75	OK	100	80	100+

Time Started
8:50 A.M.
5 min counts U^{238} Fission Counter Traverse
Scale 256

Position		U^{238}	U^{235}	Ration $\frac{238}{235}$
9.01	-10.5	6 170	616 207	1080
		6 201	625 216	1084
		3443	318,119	1082 ✓
10.01	-9.5	8 146	595 149	1419
		8 143	580 164	1474
		4,253	301,113	1446 ✓
11.01	-8.5	9 124	565 113	1617
		9 105	549 119	1719
		4,867	285,414	1705 ✓
12.01	-7.5	11 17	555 123	1992
		11 122	569 70	2015
		5,771	287,937	2004 ✓
13.01	-6.5	13 203	561 73	2457
		13 136	547 55	2472
		6,995	283,776	2465 ✓
14.01	-5.5	13 53	529 73	2495
		13 4	521 133	2495
		6709	269,002	2497 ✓
15.01	-4.5	14 140	524 231	2771
		14 225	534 152 → 2183	2777 ✓
		7533	271,231	

Position		n^{238}	n^{235}	Ratio
16.01	-3.5'	15^{226}	533^{122}	29,772
		15^{166}	521^{62}	30,020
		8072	270,008	29891
17.01		15^{166}	513^{87}	30542
	-2½	15^{121}	513^{126}	30133
		7967	262,613	30337
17.51	-3	15^{188}	513^{138}	30638
		15^{242}	515^{205}	30905
		8110	263,511	30776
18.01	-1½	16^{78}	512^{167}	31805
		16^{72}	505^{113}	32211
		8342	260,632	32006
18.25	-1¼	16^{119}	495^{85}	33240
		15^{55}	477^{11}	31892
		8,110	248,928	32579
18.51	-1	15^{67}	470^{105}	32444
		15^{36}	464^{245}	32564
		7783	239,454	32502
18.76	-¾	14^{42}	456^{130}	31027
		13^{252}	448^{99}	31193
		7206	231,633	31109
19.01	-½	13^{171}	441^{207}	30936
		14^{108}	440^{146}	32735
		7191	225889	3183
1951	0	14^{113}	440^{17}	3281
		14^{38}	445^{228}	3172
		7319	226805	3227
20.201	+½	14^{91}	450^{228}	3184
		14^{195}	454^{115}	.3248
		14454	231167	3211

10-26-60 5 min. Counts

Position		U^{238}	U^{235}	
20.51	1	14 96	456 235	3146
		15 18	461 129	3265
		7538	235116	3206
21.01	1½	14 109	450 3	22057
		14 95	444 227	32302
		7372	229094	32178
22.01	2½	13 155	453 239	2997
		13 236	469 209	2963
		7047	236478	2979
23.01	3½	13 108	477 25	2813
		13 14	476 162	2739
		6778	244155	2776
23.51	4	13 75	484 172	2743
		13 49	486 140	2711
2		6780	248632	2727
24.01	4½	12 110	488 178	2596
		13 19	485 102	2692
		6595	249428	2644
24.51	5	11 161	471 217	2464
		11 26	461 63	2407
		5819	238872	2436
25.01	5½	11 90	457 81	24823
		11 41	458 34	24360
		5763	234355	24591
25.51	6	10 211	466 188	2319
		10 180	476 24	2248
		5511	241364	2283

10-26-60

Position		u^{238}	u^{235}	
26.01	6.5'	10 155	482 143	2198
		10 137	484 155	2174
		5412	247594	2186
26.51	7	9 237	477 99	2079
		9 113	472 198	1997
		4958	243241	2038
27.01	7.5	8 128	474 59	179224
		8 252	480 91	18703
		4476	244374	18316
27.51	8'	8 41	471 208	17295
		7 180	480 148	16749
		4021	236132	17028
28.01	8.5'	6 146	435 150	1508
		6 25	419 199	1453
		3243	218973	1481
28.51	9	5 169	418 104	1353
		1449	107,112	1352

Shut down 2:55 P.M.

60

10-28-60

INSTRUMENT CHECK

Time 10:25 ~~AM~~ ~~PM~~ Source PN-467

	Channel A	B	C	D	E
Range T=	10/1000	Dpn	10"	10/1000	1050
Source Dist. F=	8"	0"	4'	0"	0"
% F.S. Trip	80	OK	100	95	100

C.A. 290 82/8 Expr. 24"X24" Run 3-A

~~Sheet~~ Date 10-27 19 60 10:42 ~~AM~~ ~~PM~~

Purpose Graphite Reflector Savings

Height 22" 18 1/8" Graphite Reflector on top of stack

LOADING CHANGE

Description 24"X24"X22" =

24"x24" : 576 = ~~371.17~~

576 X .6444 = 371.17

Mass before change _____ gmU _____ gmU-235

Mass of Change _____ gmU _____ gmU-235

Total Mass _____ gmU 8,165 _____ gmU-235

Run 3-B

LOADING CHANGE

Description 24"X24"X22 1/4" 18 1/8" Graphite Reflector on top of Stack

24"x24" = 576

576 X .6444 = 371.17

Mass before change _____ gmU _____ gmU-235

Mass of Change _____ gmU _____ gmU-235

Total Mass _____ gmU 8,258 _____ gmU-235

Measured Neg. Period.

Log N - 244.3 Sec

10-28-60

Run 3-C

LOADING CHANGE

Description 24" X 24" X 25" - BARE Removed 18¾" of Graphite Reflector

576 X .6444 = 371.17

Mass before change		gmU	gmU-235
~~Mass of Change~~		gmU	gmU-235
Total Mass		gmU	9,279 gmU-235

Measured neg. Period.

Log N -

sto

235

235

35

ector

62

10-31-60

INSTRUMENT CHECK

Time 8:20 AM PM Source PX-967

	Channel A	B	C	D	E
Range T=OK	$\frac{10}{1000}$	open	10^{10}	$\frac{G}{10^2}$	1050
Source Dist. F=OK	3"	0"	4'	½"	0"
P.F.S. Trip Counting	80	OK	102	80	100+

C.A. 290 $\frac{82}{18}$ Expr. 24"X24" Run 3-D

Sheet ____ Date 10-31-60 Time 8:50 AM PM

Purpose Concrete Refl. Savings

Stack 24"X24"X23¼"

LOADING CHANGE

Description 24"X24"X23¼" Removed 23¼" of fuel

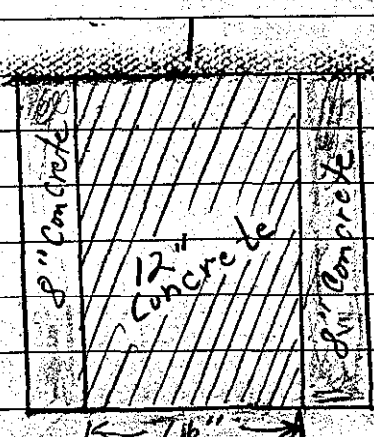
24"X24" = 576

576X6.444 = 371.17

Mass before change	gmU		gmU-235
Mass of Change	gmU		gmU-235
Total Mass	gmU	8,629	gmU-235

Measured neg. Period

Low Density Concrete as Shown



Run 3-E 8" of Concrete over top
10-31-60 Neg. Period

Run 3-F Removed 8" of Concrete.
Added 1¾" of fuel over Top - Stack 24"x24"x25"
Neg. Period

Run 3-G Removed 1¾" fuel - stack 24"x24"x23¼"
Add 12" Thick High Density Concrete to top
Neg. Period

64

11-1-60

INSTRUMENT CHECK

Source PN-417

Time 10:00 AM

Channel	A	B	C	D	E
Range	80	10	10	80	10
Source Dist.	3"	0"	40"	1"	½"
% F.S. Trip	10/1000	open	10/10	10/1000	10 V

Tables OK

F =

C.A. 290 82/1-8 Expr. 24"X24" Run 3-4

Sheet 11-1-60 Time 10:45 AM

Purpose Refl. Savings

24"X24"X23¼"

3-4

LOADING CHANGE

Description 24"X24"X23.25 6" Paraffin on Top

24"X24" = 576

576 X .6444 = 371.17

5.7 Per Pad

124

Mass before change gmU-235

Mass of Change gmU-235

Total Mass gmU 8,629 gmU-235

Neg. Period —

I. Stack - 24" X 24" X 25" - BARE

Neg. Period —

93 J. Stack - 24" X 24" X 23.25" - 16" Low Density Concrete on Top

8.0 202 Suppl Neg. Period —

11-2-60

INSTRUMENT CHECK

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

	Channel A	B	C	D	E
Range	10/100	open	10-"	12/100	1050 V
Source Dist.	3"	0"	x'	1/2"	0"
% F.S. Trip	95	~~one~~	105	85	100

C.A. 29 8/18 Expr. 24"X24" Run 3-K

She Date 11-2 1960 Time 9:00 AM ~~PM~~

Purp Reflector Savings

3-K Stack 24"X24"X 23.25 - 16" Low Density Concrete on Top. on Top
Neg. Period

3L Stack - 24"X24"X25" - BARE
Neg. Period

3M Stack - 24"X 24"X23.25" - 12" Paraffin on Top.

Run 3N 1, 2, 3, 4 - Periods Runs for TMC

66

10-3-60

INSTRUMENT CHECK

Time 9:30 AM PN-867

	A	B	C	D	E
T = OK F = OK	10/1000	Off	16"	10/1000	1050 V
Source Dist	2"	0"	40"	½"	0"
% F.S. Trip	80	100	80	100 +	

LA 290 82/18 Type 22"X24" Run 1-A

Start Date 11-3 1962 Time 9:45

Purpose Delta 0 / Δh Measurement

LOADING CHANGE

Description 22"X24"X28" Bare

22 X 24 = 528

528 X .6444 = 340.24

340.24 X 28" = 9,526

Mass before change ____ gmU ____ gmU-235

Mass of Change ____ gmU ____ gmU-235

Total Mass ____ gmU 9,526 ____

Neg. Per. 600 Sec.

11-3-60

Run 1-B

LOADING CHANGE

Description 22"X24"X28.25" Bare

22 X 24 = 528

528 X .6444 = 340.24

Mass before change ____ gmU ____ gmU-235

Mass of Change ____ gmU ____ gmU-235

Total Mass ____ gmU 9,611 ____

Pos. Per. 127 Sec.

1:00 PM Runs C 1, 2, 3 & 4

Expts to determine the behavior of crystal NE 102 at high counting rates and on stable periods

10-4-60

INSTRUMENT CHECK

Time 8: AM PM Source PN-967

Channel	A	B	C	D	E
Range	1 / 100		1	1 / 100	105
Source Dist.	2"		4'	0	0
% F.S. Trip	9		100	80	100

Amp. Noise Settings

	Gain
#1 - 29	1-8
#2 - 29	1-8
#3 - 24	1-4
#4 - 18	1-32

22" X 24" X 28" - For Negative Periods

22" X 24" X 28.25" - For Positive Periods

Δ C/Δ h measurements

	Log N	Counters 1 BF_3	2 BF_3	3 BF_3	4 FC
Run 4 A	Negative Period -				
B	Positive Period -				
C	Positive Period -				
D	Negative Period -				

1:15 PM — Log N — BF_3 1 — BF_3 2 — BF_3 3 — FC 4

Run 4E — Positive —

F — Positive —

G — Negative —

H — Positive —

~~X~~

11-7-60

INSTRUMENT CHECK

Time 8:15 AM ~~PM~~ Source P_i B_e

Tables OK

	Channel A	B	C	D	E
Range	1/100	opr	10	1/100	100
Source Dist	3"	OK	4'	1/2"	0
% F.S. Trip	85		100	80	100

OK

Continued $\Delta P/\Delta h$ measurements.

Run 4I — Negative —

J — Positive —

K — Positive —

L — Negative —

12:50 PM M — Positive —

=c 4

N Positive —

O " Negative —

P " Positive —

Q " Positive —

R " Negative —

11-8-60

INSTRUMENT CHECK

Time 8:30 P — PN - 467

Tubes ok

		A		D	E
Range	F.S.	10/1000 op	2.5X10⁻¹⁰	10/1000	1050
Source Dist.		3"	0"	18"	½"	0"
% F.S. Trip		72	ok	100	85	100+

Continued ΔP/Δh measurements

Run 45 Negative —

T Positive —

C.A. 270, 87/18 Expr. 22 x 24 Run 5A
Sheet ____ Date 11-8-1960 Time 1:50 ~~AM~~ PM
Purpose Support Structure Evaluation

Run 5A Al extrusions on top of stock equal to the amount on bottom with 4'X4'X 3/4" Steel plate centred above stock on al extrusions.
Stock 22"X24"X28"
Positive period —

5B Stock 22"X24"X28" - BARE
Negative Period —

	E	N	W	S	Width
Measured	71.5 Cm	71.4 Cm	71.4 Cm	71.4 Cm	56.1 Cm
	71.6	71.3	71.3	71.4	56.2
	71.4	71.4	71.4	71.4	56.1
	71.4	71.4	71.3	71.4	56.2
	71.5	71.4	71.3	71.3	56.1
	71.4		71.3	71.3	56.2
	Height = 71.38 Cm				56.3
	Width = 56.2 "				56.2
					56.3
					56.1
					56.3

11-10-60

INSTRUMENT CHECK

Time 9:00 AM ~~PM~~ Source Ra-467

Table OK

F = OK

	Channel A	B	C	D	E
Range	10	10	10^{-12}	10	1000
Source Dist.	2"	0"	2"	½"	0"
% F.S. Trip	81	OK	100	95	100+

C.A. 290.8 ± 2 / 18 Expt. 26"x24" Run 2-A

Sheet — 11-10-60 Time 9:20 AM PM

Purpose ΔP/Δh measurements

Repeat (see Bk #3 p. 271)

24"x26"x23" - for Neg. Periods

24"x26"x23.25" - for Pos. Periods

LOADING CHANGE

Description 26"x24"x23" — Bore

Neg. Period

Mass before change	gmU		gm U-235
Mass of Change	gmU		gmU-235
Total Mass	gmU	9,248	gmU-235

Run Tried adjusting and tightening blocks.

Repeat of Run 2-A2 - Negative Period —

Run 2A - Neg. Pd — changed LoN Counter chamber Holder, Now Lead Lined 137.9

Run 2-B - Pos Period — ~~299~~ 290.4

2C - Pos Period - 292.0

Run 20 2 Negative Period – 136.8

3

2E Positive Period – 293.1

11-11-60

INSTRUMENT CHECK

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

Tables - OK

F - OK

	A	B	D	E
Range	1/1000	Open	10^{-2}	1/1000 1050 V.
Source Dist.	1.5"	0"	2"	0" 0"
% F.S. Trip	85⁻	100	80	100⁺

Continued S P/S h measurements:

2F Negative Period – 138.9

4

G Positive Period – 269.2

H Positive Period – 275.8

5

I Negative Period – 135.2

J Positive Period – 279.0

K Positive Period – 273.6

7

L Negative Period – 138.2

8

M Positive Period – 276.8

N Positive Period - 272.5'

9

0 Negative Period - 150.2

11-14-60

INSTRUMENT CHECK

Time 8:15 AM PM Source P. B.

Tabletop F

	Channel A	B	C	D	E
Range	1/100	opr	10	1"/1000	10
Source Dist.	2"	oic	3"	1/2	0
% F.S. Trip	70	01C	100	80	100

Stack - 24" X 26" X 23" - BARE - For TMC Periods

Run 3 A_1 Positive - 3 A_2 - Negative

Height 23"

E	N	W	S	Width
58.8 cm	58.7 cm	58.8 cm	58.7 cm	66.5 cm
.8	.7	.7	.7	.4
.7	.7	.7	.7	.6
.7	.7	.7	.7	.5
.7	.7	.7	.8	.5
.8		.8	.7	.7
	JJ		JM	.5
Av Height -	58.726 cm		58.69	.6
Width -	66.527 cm		66.43	.5
				.5
				.5

11-15-60

INSTRUMENT CHECK

Time 3:00 ~~AM~~ PM Source PN-467

	Channel A	B	C	D	E
Range	10/1000	opr	10^{-12}	10/1000	1050V
~~Source Dist.~~	2"	0	1"	0"	½
% F.S. Trip	80	ok	100	80	100+

Stack - 24"X26"X23". Bore

Run # A_1 - Positive for TMC

A_2 - Negative "

11-16-60

INSTRUMENT CHECK

Time 10:10 AM ~~PM~~ Source Pn 467

~~Table - OK~~

F - OK

	Channel A	B	C	D	E
Range	10/1000	opr	10^{-12}	10/1000	1050V.
Source Dist.	2.5"	0"	2"	0"	0
% F.S. Trip	85	OK	100	80	100+

C.A. 29-82/18 Exp. 24"x26" Run 5-A

Sheet Time 10:30 AM PM

Purpose 2 Mil Gold Foil - Horizontal Traverse Through Center

Foils Oriented ⊥ to direction of Flux Traverse.

Stack 24"x26"x23.2 Bore

Pos.	-9	-7	-5	-3	-1	+1	+3	+5	+7	+9
Foil #	G-6	G-4	G-3	G-7	G-11	G-5	G-22	G-17	G-24	G-9

11-16-60
Run 5A

CRITICAL POSITIONS

C.A. 270 82/18 Exp: 24"x26" Run 5-A

Tone F .065 T .9552 B .030

	Channel	
1 Plastic 12.08	52	1000/1000
2	.09	
3	100 F	
4	D 58	1000/500
	E 8	700

Tim Crit. 10:58 AM PM Duration 30 min.

76

11-17-60

Run

INSTRUMENT CHECK

T 8:20 AM Source PV-467

Tables - OK Channel B D E

F - OK 10/1000 opr 10 → 60/1000 1050V.

Source Dist 2" 0" 2" 0" 0"

% F.S. Trip 8% OK 100 100+ 100+

C.A. 290 82/18 Exp 24"x26" Run 5-B

Sheet Date 11-17 960 Time 8:35 AM PM

Purpos 2 mil Gold Foil

Horizontal Traverse

Foils ⊥ to Direction of Traverse

24"x26"x23.22 Bare

Pos.	-9	-7	-5	-3	-1	+1	+3	+5	+7	+9
Foil No.	H-17	H-9	G-23	G-20	G-27	G-10	G-13	H-5	H-1	H-16

CRITICAL POSITIONS

C.A 290 82/18 Expr 24"x26" Run 5-B

Tapia Pos .065 T .9605 .0303

Control Rod Channe

Plastic 10.21 A 55 1000/1060

.11

100+

D 63 1000/500

E 2.0 760 Volts

First Crit. 8:45 AM PM Duration ~~35~~ 25 min.

Run 5-C Pos. -- -9, -7, -5, -3, -1, +1, +3, +5, +7, +9

Foil #- H-3, H-4, H-24, H-7, H-10, H-12, H-15, H-19, H-28, H-8

Rails 1 to direction of Traverse.

CRITICAL POSITIONS

C.A. 29, 32/8 Expr. 24"x26" Run 5C

Table Pos. .065 L T P

	Control Rod		Channel
	Plastic - 9.62	A	50 1000/1000
2		B	.1
3		C	100+ ?
4		D	56 1100/500
		E	1.6 760 V.

Tim Crit. 12:55 AM/PM Duration 27 min

78

11-18-60

INSTRUMENT CHECK

Time 8:30 AM PM Source PN-467

	Channel A	B	C	D	E
Tables = OK					
F - Range	10/1000	opr	10^-12	10/100	1050
Source Dist.	2.5"	0'	1.5"	0"	0"
% F.S. Trip	80	OK	100	90	1.00 T

Horizontal- Au (2 mil), Traverse, Foils ⊥ to direction of Traverse Run

Pos.	-9	-7	-5	-3	-1	+1	+3	+5	+7	+9
Foil #	H-22	H-11	H-21	H-30	H-26	H-2	H-14	H-6	H-18	H-2

CRITICAL POSITIONS

A 290 82/18 Expr 24"X26" Run 5-D

.065 T9565 .0302

Channel

51 1000/1000

Plastic 10.17 .1

100+

D 58 1000/500

E 1.6 768V.

Time Crit. 8:55 AM PM Duration 2.5 min.

Stack is 24"X26"X23.2 Bare

Run 5-E Horizonal Traverse, 2 mil Au, Foils ⊥ to direction of Traverse

Pos.	-9,	-7,	-5,	-3,	-1,	+1,	+3,	+5,	+7,	+9
Foil #	H-19,	H-28,	H-14,	H-15,	H-8,	H-1	H-18,	H-16,	H-26,	H-12

Log N = .1 Tables = .065

11-21-60

INSTRUMENT CHECK

Time 1:, 0° AM ~~PM~~ Source P. B.

		Channel A	B	C	D	E
Table or Range	F	10/100	open	1^{-12}	10/100	100
Source Dist.		3"	or	4'	0	-
% F.S. Trip		90		100	90	100

Run 6A Horizontal Traverse, 2 mil Au, plane of foils // to plane of table separation.

Pos. −9, −7, −5, −3, −1, +1, +3, +5, +7, +9

Foil # F-4, G-2, G-25, H-23, H-29, H-13, H-25, F-21, F14, F-9

Log N = .1 Tables = .065

Critical 10:29 $\frac{20}{60}$, 25 min. Exposure

Run 6B Foils Positioned as in 6A

Pos. −9, −7, −5, −3, −1, +1, +3, +5, +7, +9

Foil # F-18, F-7, F-11, F-10, F-21, F-16, F-15, F-2, F-20, F-17

Log N = .1 Tables = .065

Critical - 1:33 $\frac{10}{60}$ 25 Min. Exposure

W
66.4
66.4
66.5
66.5 66.
24
66.4
66.35 4/29
66.4
66.3
66.4
66.6
66.4 66.43

H
58.7
58.6
23 58.7
58.6
.7
.7
.7
.7 58.69
.65
.7
.75
.4
.8
.7
.7
.65
.6
.7
.7
.7