BOOK15R

Notes:
-This is a "paper copy" of a logbook previously copied by someone other than myself.

-"Book 4" hand-written on page 1.

-Pages 32 and 33 are missing.

Blank pages: 2, 7, 8, 24, 25, 142, 173, 288.

Scanned by:
Sheila Finch
RSICC /Oak Ridge National Lab.
July 30, 1999

BOOK 4

→	7" Solid, 14" C Reflector	p. 101 + 119
→	15" solid, 10" C Reflector	103
→	13" Solid, 11" C Reflector	108
→	11" Solid, 12" C Reflector	112
→	9" Solid, 13" C Reflector	115
→	7" Solid, 14 C Reflector	119
	9"x7", 13" C Reflector	121
	" " + Core	124
	11" x 9", 12" C Refl.	127
→	15" Solid, 18" C Refl	131
	13" Solid, 16" C Refl	136
	11" Solid, 17" C Refl	140
	9" Solid, 18" C Refl	143
	7" Solid, 19" C Refl	146

15" Solid, 7" C Reflector p. 152

1-10-65 0.375" Holes now in some fuel pcs. See p. 163

7" Solid, Bare 157

7" Solid, U-S-S Sandwich 159

15"X 7", 15" Carbon Reflector 174
+ Core 177

15"X 9", 15" C Refl 179
+ Core 182

15"X 11", 15" C Refl 184
+ Core 186

15" X 13", 15" C Refl 189
+ Core 190

13"X 11", 16" C Refl 192
+ Core 194

13" X 9", 16" C Refl 197
+ Core 199

13"X 7", 16" C Refl 202
+ Core 204

11"X7", 17" C Reflector	205
+ C Core	207
11"X9", 17" C Reflector	209
+ C Core	211
9"X7", 18" C Reflector	213
+ C Core	214
7" cyl, Bare	218
11" cyl, Bare (U^{235} Foil Calibration)	232
2(15" dia cyl, $2\frac{3}{4}$")	257
2(15" dia cyl, $2\frac{7}{8}$")	261
2(15" dia cyl, $2\frac{3}{4}$")	294

MAY 1 5 1964

MIHALCZO
LYNN
TAYLOR

INSTRUMENT CHECK

Time 10⁰⁰ AM   Source M-226 & L

	F	A	B	C	D	E
Range	Hi & Lo	10/1000	OPR	X	10/1000	1050V
Source Dist.	OK	4"	0"	6'	1"	9"
% F.S. Trip	OK	100+	OK	100	100+	100+

BF_3 1 & 2 OK

MAGNETS OK
TABLES OK
LIGHTS OK
AREA CLEARED

C.A. 7" cyl 15"X11" Ring Bore   Purpose CR-I   Run 1

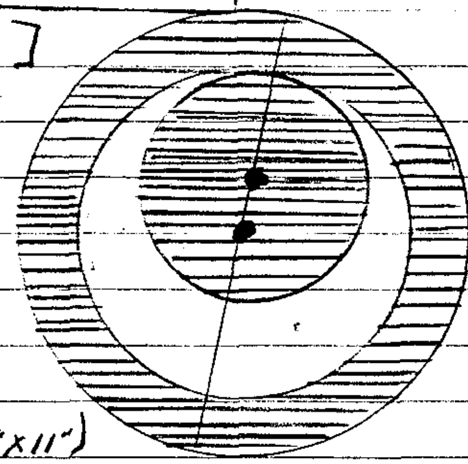
Date ______ 19 ___ Time ______ AM/PM

Purpose: To obtain critical with a 7" cylinder off center inside a 15"X11" ring.

up. Positions
#1 = 17.653
2 = 17.694
3 = +5.5
4 = −1.0

1. H = 4"   [2" on Ram]

Super Critical   15 sec
#1 = 17.570   −80 mils



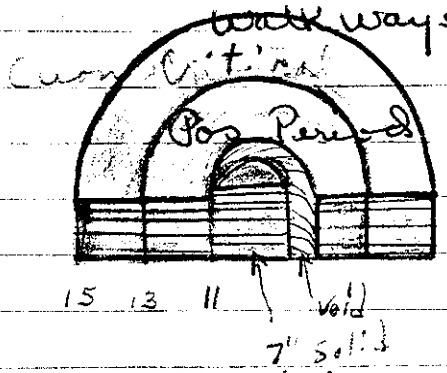
2. Removed 1/32" (15"X13") and (13"X11")

Super Crit — close

3. Removed 1/32" (15"X13") and (13" X11")
Pos Period — Log N = 40.4 sec   18.42¢
#1 = 42.9 "   17.72¢
#2 = 43.0 "   17.69¢ + 17.94¢

[redacted]

4. $H = 3\frac{15}{16}$" (15"X13") and (13"X11")
= 4" on 7" solid
walk ways and other moved.



- Log N = 43.0 sec 17.70 ϕ
#1 = 44.3 " 17.35 ϕ
#2 = 44.3" 17.35 ϕ + 17.47 ϕ

1:30 PM 5. Added Supports [Rings, stand, Diaph End Extra]
[vs Run 4]

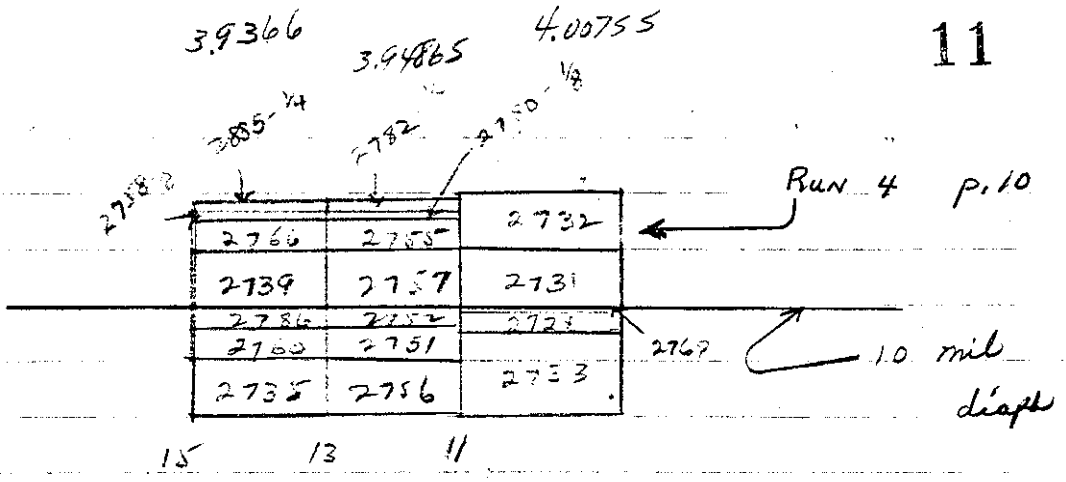
Positive Period - Log N = 23.5 sec 25.52 ϕ
#1 = 22.3 " 25.64
#2 = 22.7 " 26.02 + 25.73 ϕ

Supports = + 8.26 ϕ

6. Diaph Evaluation (other Removed).
(vs Run 4)

Neg Period - Log N = 3490 sec 0.37
#1 = 1900 " 0.68
#2 = 2700 " 0.47 - 0.51 ϕ

Diaphragm = - 17.98 ϕ



Fuel Evaluation

7. added $\frac{1}{32}$" (13" X 11") fuel [vs Run 6]

Boo Period - Log N = 149.2 sec 6.99 ¢
#1 = 147.7 " 7.05 ¢
#2 = 148.9 " 7.12 ¢ ÷ 7.05 ¢

$\frac{1}{32}$" (13" x 11") fuel = 7.56 ¢

8. added $\frac{1}{32}$" (15" x 13") fuel [vs Run 7]

Boo Period - Log N = 83.6 sec 11.07 ¢
#1 = 83.4 " 11.09 ¢
#2 = 86.3 " 10.81 ¢ ÷ 10.99

$\frac{1}{32}$" (13" x 11") fuel = 3.94 ¢

3:35 PM 9. Added $\frac{1}{32}$" (15" x 13") and (13" x 11") [vs Run 8]

H = 4", Diaphragm up (-17.98 ¢)

Pos Period - Log N =	25.2	24.53 ¢
#1 =	24.8	24.25 ¢
#2 =	26.0	24.09 ¢ + 24.46 ¢

$\frac{1}{32}$"(15" x 11") = 13.47 ¢

10. Removed $\frac{1}{16}$" from 7" cyl. [vs Run 9]

added $\frac{1}{32}$" x 5" x 5" to top of 7" cyl.

Sub Crit - No Measure

7"

7" dia disc x 1" thick = #2732 = 11,814 gms

$\frac{1}{32}$" x 7" = 370 gms

$\frac{9}{16}$" x 7" - #2730 = 6,646

$\frac{3}{8}$" x 7" #2729 = 4440

11,086 gms

11,814 − 11,331 = 483 gms

$\frac{1}{32}$" x 5" x 5" = 245

11,331 gms

$\frac{483}{370}$ = 1.308

2

MAY 18 1964

Lynn Taylor

INSTRUMENT CHECK

Time 10:30 AM Source M-226 & P

	F	A	B	C	D	E
Range	Hi & Lo	10/1000	OPR	X	10/1000	1050V
Source Dist.	OK	3"	0"	6'	2"	10"
% F.S. Trip	OK	100+	OK	100	100+	100+

DB 1 & 2 OK

Magnets OK
Lights OK
Tables OK
Area Cleared

C.A. See p.9 Expr. CR-1 Run 11

Date 5-18-1964 Time 10:35 AM

Purpose Repeat of Run 10. p.12

$\frac{1}{32}" \times 5" \times 5" = 245$ gm

7\. 11 H = 4" (15"x13") & (13"x11")
= $3\frac{15}{16}" + \frac{1}{32}"$(5"x5"), 7" cylinder

Neg. Period Log N = 135.7 sec 14.05¢
#1 = 130.2 " 15.08¢
#2 = 127.6 " 15.60¢ − 14.91¢

$1.308 \left(\frac{1}{32}" \times 7"\right) = 39.37¢$ or $\frac{1}{32} = 30.00¢$

2:00 PM 12. Two small fission Counters and Scintillation Counter in place for Rossi α

Self critical.

13. added $\frac{1}{32}$" (13" x 11") fuel.

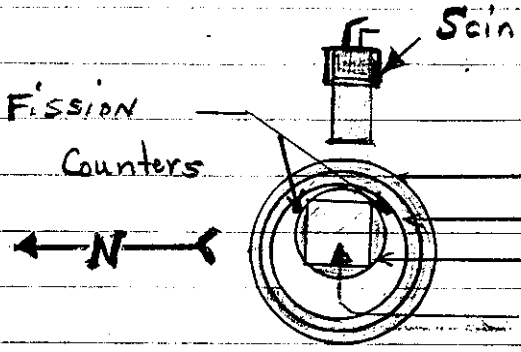
adjusted Counters for ∞ Period.

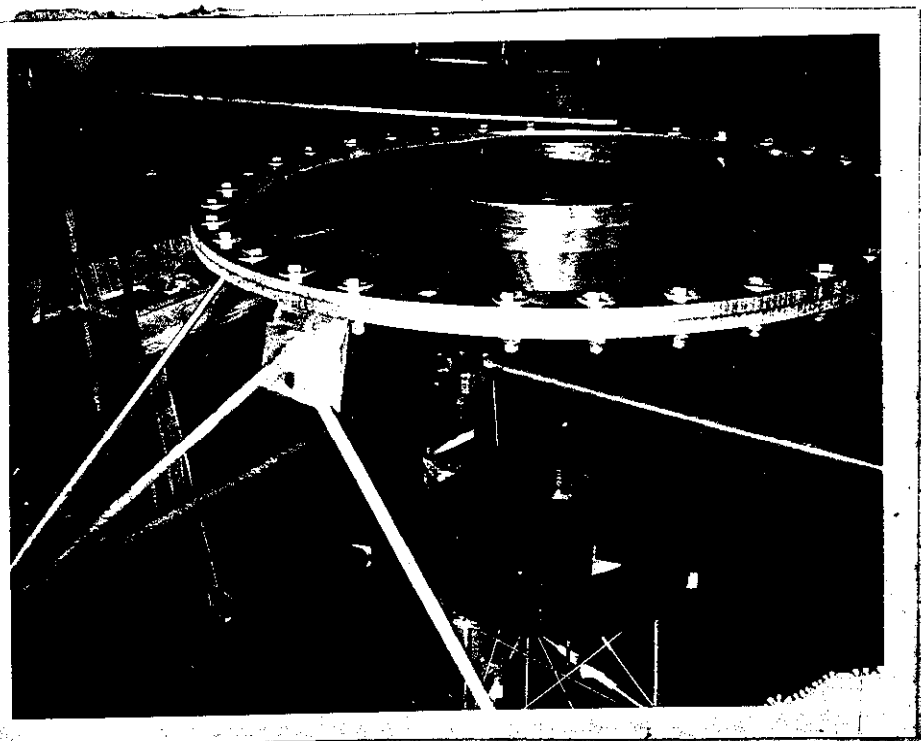
Rossi α measurements.

Log N = .0007

"D" = 66 @ $\frac{10}{1000}$

Miha
Lyn
Tayl





MAY 19 1964

Mihalczo
Lynn
Taylor

INSTRUMENT CHECK

Time 8:00 AM/PM   Source M-276 & P

	F	A	B	C	D	E
Range	Hi & Lo	10/1000	OPR	X	10/1000	1050V
Source Dist.	OK	3"	0"	20'	3"	10"
% F.S. Trip	OK	100+	~~100~~ OK	100	100+	100+

BF3 1 & 2

C.A. 15" x 11" 7" cyl   Expr. CR-1   Run 14

Bare   Date 5-19-1964   Time 8:12 AM

Purpose: Rossi α

Data started @ 8:40 AM   Log N = .0006
"D" = 65 @ 10/1000

Down @ 12:30 PM

15. Reactivity Check of stack as per Run 13.

Neg. Period - Log N = 186.7   8.79¢
#2 = 175.9   9.53¢ — 9.16¢

Reproducibility ± 2.0¢

MAY 20 1964

MIHALCZO
LYNN
TAYLOR

INSTRUMENT CHECK

Time 1:10 ~~AM~~ PM Source M-226 &h

	Channel A	B	C	D	E
Range Hi & lo	1%000	OFF	X	1%000	1050V
Source Dist. OK	3"	0	7'	2"	9"
% F.S. Trip OK / BF3 #2 OK	100+	OK	100	100+	100+

Magnets OK
Lights OK
Tables OK
Area Cleared

5" X 5" in C.A. 15" X 11" Expr. SR-1 Run 1

~~Bare~~ Date 5-20-1964 Time 1:20 ~~AM~~ PM

Purpose Critical height determination with 5"X5" inside 15" X 11" ring 3" on Ram

1 H = 5" X 5" = 6"
= 15" X 11" = 5 1/16"

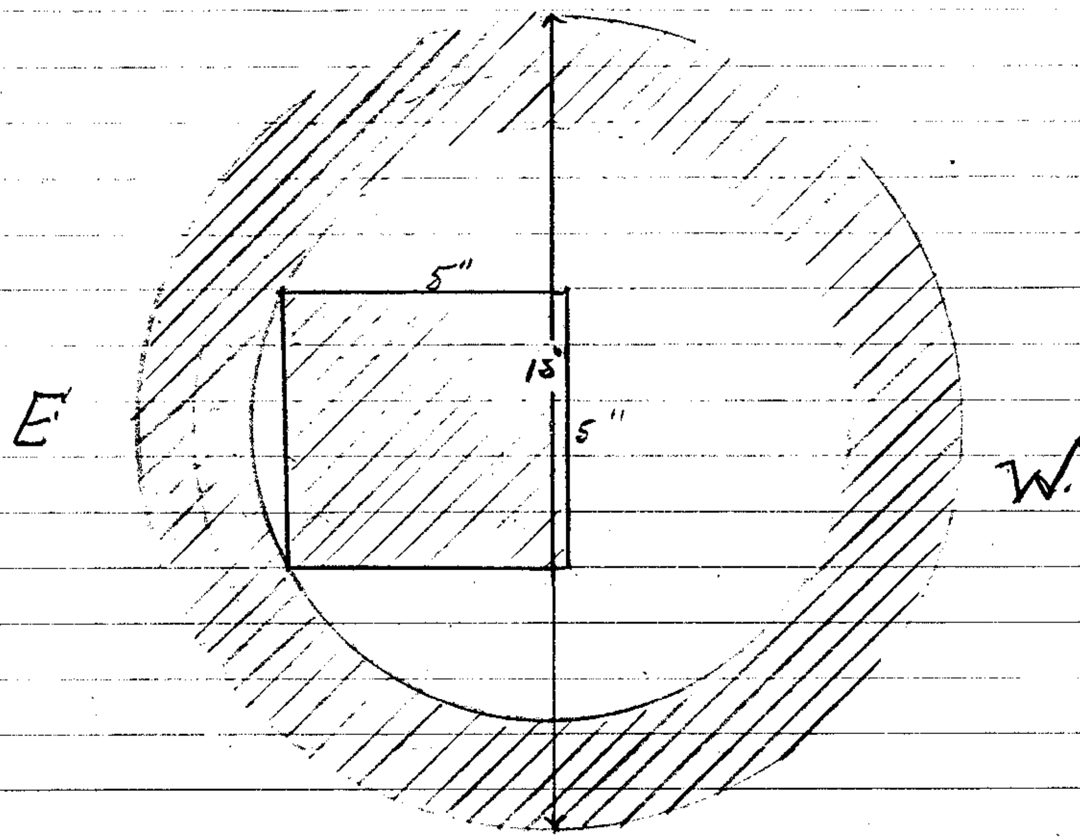
Super Critical #1 = 15.97

2 H = 5" X 5" = 5 7/8"
15" X 11" = 5 1/2"

Super Crit #1 = 16.26

3 H = 5" - Sub Critical

4 H = 5 1/16" - Sub critical



1/4"	~~2885~~	~~2783~~	~~# 2002~~
9/32"	~~3214~~	~~3215~~	[illegible]
9/16"	2766	2755	# 1012
1"	2739	2757	# 1008
	2848	2754	# 1010
	2787	2753	# 0971
	~~2786~~	~~2752~~	[illegible]
	2760	2751	# 0967
			# 0957
	2735	2756	# 1011

← Run 6

p. 18

18 MAY 22 1964

INSTRUMENT CHECK

Time 2:20 AM/PM   Source M-226 E f

	F	A	B	C	D	E
Range	Hi & lo	10/1000	OPR	X	10/1000	1050V
Source Dist.	OK	6"	OK	}	2"	9"
% F.S. Trip	OK	100	OK		85	100+

BF3 2 OK

MAY 22 1964

Lights - OK
Tables - OK

5"x5" m ~~15"x11"~~   Expr. @ SR-1   Run 5

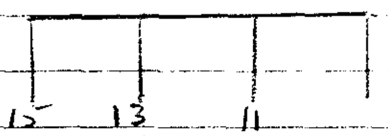
Bove   Date MAY 22 1964   Time 2:50 PM

Purpose Crit. Condition

#1 = 16,655
#2 = 16674
#3 = 4
#4 = 1

5. $H = 5\frac{1}{8}$" – Clean Critical

Positive Period – Log N = 11.29 sec   37.00¢
#2 = 11.24"   37.12¢   +37.06¢



6. $H = 5\frac{3}{32}$" – Period ∞.

$\frac{1}{32}$ fuel = 37¢

7. Supports Evaluations (diaph., Rings + Stand)
Pos Period – Log N = 8.58 sec   1.42¢
#2 = 7.92"   1.52¢
+1.47¢

[redacted] 1964

MAY 25 1964

J. T. Mihalczo
J. J. Lynn

INSTRUMENT CHECK

MAY 25 1964

Time 8:35 AM PM Source M-226 + 8

	F	Channel A	B	C	D	E
Range	OK	10 / 1000	OK	Δ	1 / 1000	1050V
Source Dist.		6"	OK		2"	9"
% F.S. Trip		100+	OK		60	100+

Lights - OK
Tubes - OK

3"x5" ~
C.R. 15"x11" Expr. SR-1 Run 8
Bare Date MAY 25 1964 Time AM PM
Purpose Reactivity

8 Height = 5"x5" and 15"x13" = $5\frac{3}{32}$"
= 13"x11" = $5\frac{1}{16}$"

Data collection started @ 9:20 AM
" " Finished @ 11:10 AM

C.A. 5"X5" in 15"X11" Expr. SR-2 Run 1

Bare Date 5-25-64 Time 1:00 AM PM

Purpose To obtain Critical Height for Rossi α See drawing for Stock 3" on Ram

3" on Ram or 7.62 cm

Material (5"x5") on diaphragm moved to opposite side of 15"X11" ring.

1. H = 6" Sub Crit.

2. H = $6\frac{11}{32}$" (15"X13") Sub Crit.
   $6\frac{15}{32}$ (5"X5")

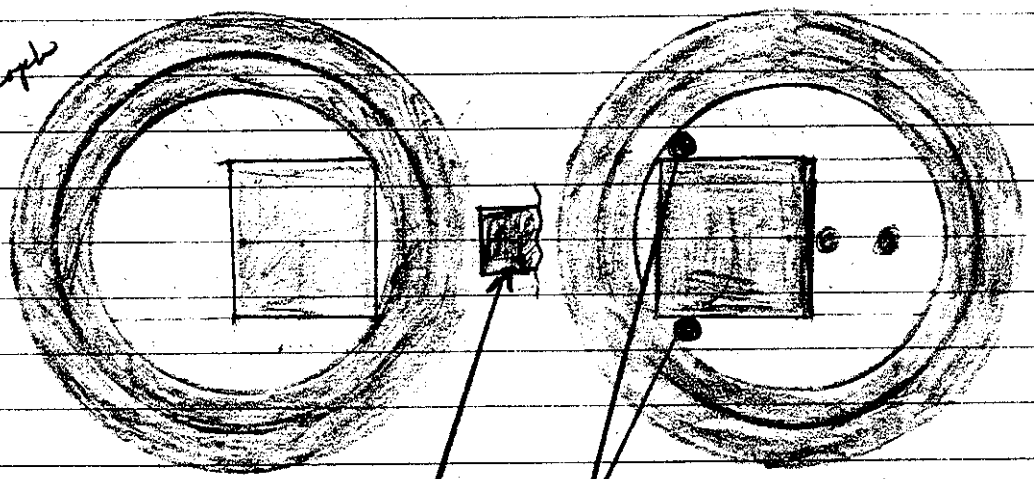
3. H = $6\frac{11}{32}$" 15"X13" and 13"X11" Ring.
   5"X5" = $7\frac{11}{32}$"

18.65 cm / 7.62 = 11.03 cm on diaph

VJL 11-22-71

$6\frac{11}{32}$" = 16.113 cm

$7\frac{11}{32}$" = 18.65 cm



Data Collection Started @ 2:30 PM

Done @ 3:50 PM

MAY 26 1964

INSTRUMENT CHECK

Time 8:10 AM / ~~PM~~ Source M226 & h

	F	A	B	C	D	E
		Channel				
Range	Hi & lo	10/1000	OPR	X -	10/1000	10SCL
Source Dist.		3"	ok	-	2'	10"
% F.S. Trip		100+	ok	~~100~~	45	100+

C.A. ~~15"X11"~~ 5"x5" Expr. SR-2 Run 4

Date 5-26 1964 Time AM / ~~PM~~

Purpose Recording

4 Counters (fission) moved as shown by group no.

VDT #3 = +3

#4 = -16

Selsyn #1 = 16.64

#2 = 16.663

Log N @ .00074

Channel D = 54 @ 10/1000

Servo input @ 572 units

MAY 27 1964

INSTRUMENT CHECK

Time 8 05 AM ~~PM~~   Source M-226 & P

	F	A	B	C	D	E
Range	Hi & ho	10/1000	OPR	—	10/1000	1050 V
Source Dist.		4"	0	—	3"	8"
% F.S. Trip		100+	OK	—	80	100+

Tables OK
Lights OK
Magnets OK
Area Cleared

C/C 5"X5" ~~15"X11"~~   Expr. SR-2   Run 5

Bore   Date   19   Time 8:15 AM ~~PM~~

Purpose Clean critical of stock for Rossi α

p. 21

5 H = 6 11/32" (15"X11")
7 11/32" (5"X5").

Negative Period – Log N = 123.7 sec – 16.54¢
#2 = 121.1 " –17.22¢
–16.88¢

7 11/32"

6. added 1/32" (5"X 5")

Positive Period – Log N = 271 sec 4.17¢
#2 = 253 " 4.43¢ + 4.30¢

(5"x5") = 7 3/8"

1/32" (5"X5") = 21.18¢

7. Support Rings Evaluation - VS Run 6

Positive Period - Log N - 97.7 sec 9.82 ¢
#2 = 97.8 " 9.82 ¢
+ 9.82

Rings = 5.52 ¢

8. Diaphragm Evaluation (VS Run 7)

Positive Period - Log N 114.0 sec 8.70 ¢
#2 = 112.6 " 8.77 ¢
+ 8.74 ¢

Diaph = -1.08 ¢

9. Simulated bottom fuel Support. (VS Run 7)

Pos Period - Log N = 35.1 sec 20.13 ¢
#2 = 37.0 " 19.48 ¢
19.80 ¢

Fuel Support = 10.0 ¢

INSTRUMENT CHECK

Time 11:20 AM PM Source #1 - 226+8

Magnets OK
Lights OK
Tables OK
Area Cleared

Channel	A	B	C	D	E
	0/1000	off	X	10/1000	1050V
Source Dist.	5"	ok	4'	1"	10"
% F.S. Trip	100+	V	100	~~90~~ 100	100+

EA 5 Stack Expr. I Run 1

Date ____ 19__ Time ____ AM PM

Purpose To find critical array
5 stack

21 mil diaphragm

1 3 pcs on ~~Base~~ Ram (See drawing)

# 2470	4.53" dia, 1" Thick	5.2 Kg.
# 1008	5"X5", 7/8" "	6.7
# 3380	4.8" dia Hemisphere	8.8
		20.7 Kg.

4 Stacks 2" High on diaphragm

# 2731	7" dia	# 1010	5"X5"X 7/8"
32	"	1011	"
		0955	5" X 5" X 1/4"

4.53" dia, 1" Thick

West	East	
# 2468	# 2471	1 min to
69	72	25
		13

2. added 1"; except on 7" dia pc -

0970 5"x5"x½" # 2473 - 4.53" dia, 1"

0971 " 2474 - 3.57 "

1 min cts - 18

17

3 added ½" to 7" dia

2728 - ⅜"

68 ⅛"

1 min cts - 19

20

4 added ½" to 7" dia, 1" to 5"x5"

2729 - ⅜" # 1012 - ⅞"

69 - ⅛" # 1024 - ⅛

2467 - 4.53" dia, 1" Thick to West

1 min cts - 24

31

21

5 added # 2572 to East

1 min cts - 28

24

35

6. added #0950 – 5"x5"x¼
57 – "
67 – 5"x5"x½

1 min cto – 30
33
31

Total of 129.2 Kgs

JUN 5 1964

INSTRUMENT CHECK

Time 9:30 AM

Source M-226 + Y

	Channel A	B	C	D	E
F	$\frac{10}{1000}$	open	X	$\frac{10}{1000}$	1050
Source ok	4"	OK	4'	1"	10"
% F.S. Trip	100	✓	100	85	100

JUN 5 1964

C.A. ______ Expr. ______ Run 7.

Date JUN 5 1964 Time 9:40 AM

Purpose Con't 5 Stack array

M-226 just under diaphragm

7 1 min ct before start up — 9^{+89} (x256)

added 5" x 5" x 7/8" (6.84 Kg) to Ram

1 min cts — 11^{+170} (x256)

11^{+220}

8 added 5" x 5" x 7/8" (6.84 Kg.) to Ram (34.1 ~~36.8~~ Kg / 2)

1 min cts — 11^{+250} (x256)

11^{+196}

~ 14~~8~~ Kg Total

[redacted]

EA 9 Stock Expt. I Run 1
Date 6-8-1964 Time 1:40 ~~AM~~ PM
Purpose To Find Critical Height

1 min cts
Table down
6^{+187} (x256)

1. on diaph 5"X5"X4⅛" 1 - 4.53" dia, 4" 4 - 3.57" dia, 3.4"
   3"X5"X2⅝" 1 - 4.53" dia, 3"

   on Ram 1 - 4.53" dia, 1" 158.1 Kg.
   3 - 5"X5"X⅞"
   1 - 4.8" dia Hemisphere

   1 min cts - $1\bar{5}^{+99}$ (x256)
   $1\bar{5}^{+122}$ "

2. Added 1.7" to each 3.53" dia.

   Super Crit - @ - 2.6"
   Total = 178.9 Kg.

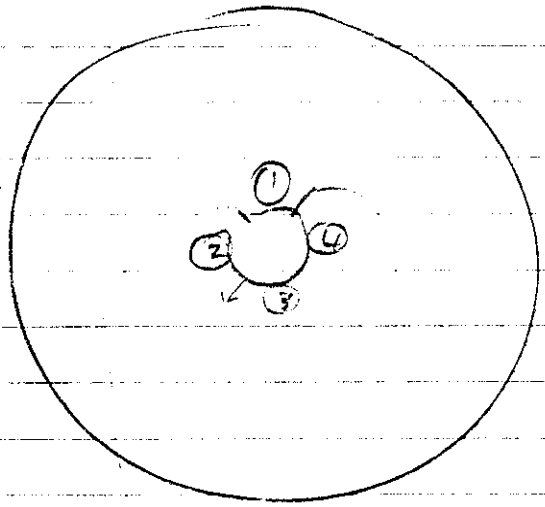
3. Moved the cylinderical stacks away from center a ⅝".

   Sub Crit - 1 min cts = 19^{+14} (256)
   19^{+55}

4 added 1 1/16" to 1-4.53" dia cy 5.2 kg
2 1/8" to 1-4.53" dia cy 10.4
15.6 kg
+178.9
194.5 kg

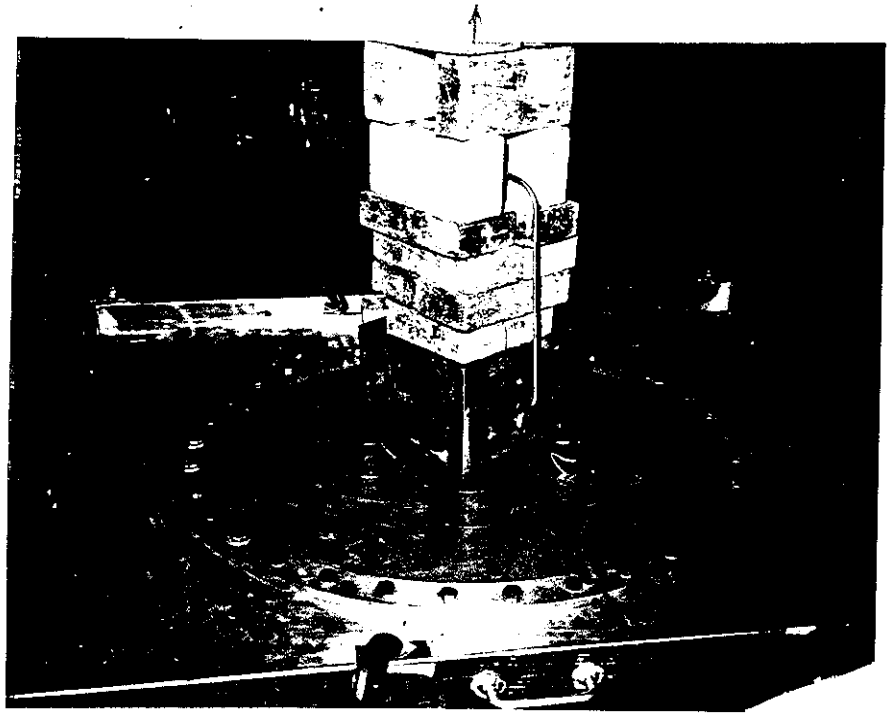
super Critical @ -2"

34 Test #2



wt	defl (units)
2 pieces (Fe)	138
3 pieces	145
4 pieces	160
4.75 kg (4) Bucket 5 kg + 6 Bricks	390
+ 8 "	420
+ 10	450
+ 12	473
4 pieces	272
+ 12	469
+ 14	500
1/4" snip.	505
+ 16	529
+ 18	550
+ 20 "	575
	578
	580
1/2" cut	590
34	635 ↓
	640
1/2" cut	648
1"	652
+ 26	665
1 1/2	720
3"	760
	770
	790
All weight in center	830
0 →	568

8 Jun 64 @ 4:20 pm Dial: 820
9 Jun 64 @ 8:00 am Dial = 823
} 450#



TEST # 1 (Pg 33) AND/OR TEST # 2 (Pg 34)...

Picture above shows greater than 700# of weight on four (4) cylinders. Table on Pg 34 shows amount of deflection increase as more wt. is added as well as returning to "zero" wt. As shown cuts were put at 3 positions. Still it held good. This is a 10 mil SS. diaphragm (30" O.D.) Hole in center of diaph. is 7¼" dia

JUN 1 0 1964

MIHALCZO
LYNN
TAYLOR

INSTRUMENT CHECK

Time 10[20] AM   Source M-226 & [illegible]

	F	A	B	C	D	E
Range	Hi & lo	10/1000	OPR	X	10/1000	1050V
Source Dist.	OK	4"	0	12'	1"	9"
% F.S. Trip	OK	100+	OK	100	90	100+
BF_3 #2	OK					

Tables OK
Magnets OK
Lights OK
Area Cleared

CA 9 Stack Expr. II Run 1
Bare Date 6-10-1964 Time 10:30 AM
Purpose To find Critical height

Diaph. now on ½" al plate

up = 17.5

			#2470	Ht
1 on Ram	1 - 4.53" dia cyl		5.247	1.06
	3 - 5"X 5"X⅞" -	#1008 -	6.693	2.625
		10	6.695	2.4
		12	6.684	6.085"
	1 - 4.8" dia Hemisphere		8.838	
			34.110 Kg.	

on diaph -

S 5"X5"X3½"		wt	N 2x5 (3"x5")x3½"		1x5		wt	
# 1011	(⅞)	6689	0845	(⅞)	#1085	(⅞")	1,346	
0971	½	3,827	43	(⅞)	0942	(⅞")	1,161	
0970	½	3,822	44	(⅞)				
867	½	3,838	46	(⅞)	0979	(½")	769	0978 = 768g
950	¼	1,916						
955	¼	1,916			0962	(¼")	385	0963 = 383
1023	⅛	963			1032	(⅛")	192	1014 = 193
24	⅛	963						
48	⅛	963						
957	¼	1,918						

1 on diagb coat - 4.53" dia = 5.8" High

W 4.53" dia E 4.53 dia

# 2260	# 2267
62	68
63	69
64	70
66	72

10 X 5.2 = 52. Kg

3.57" dia = 5.1". High

SE 3.57" dia	SW	NE	NW
# 2277	2286	2283	2280
76	85	82	79
71	84	81	78

12 X 5.2 = 62.4 Kg

1 min etc $3^{+84}_{3^{+115}}$ (X256)

	wt
# 0945	- 2,679
0943	- 2,680
0944	- 2,682
0946	- 2,682

2572

2 added 1 ~ 3.57" dia cyl ~~added~~ centered on front of the 3"x5" stock

2272

1 min cto 8^{+225}_{+182} (x256)

3 added 5"x2"x 1¾", with 5" dimension toward center, to the 5"x 5" stock

		wt			wt
# 0974	(½")	1534 g	0960	(¼")	768 g
20	(½)	1533	95	(⅛)	381
48	(¼)	765	1033	(⅜)	386

Super Critical - #1 = 16.15
~ 30 sec period

4 Removed 5"x2"x ¾" - # 0948, # 0995
60, 1033

Super crit ~ #1 = 17.0
~ 30 sec

5 Removed # 0975 (½")
Added # 0948 (¼")

Sub Critical –

6. Removed ⅜" X 5" X 5" from Ram
#1010 – 6,695 g. out
#0967 – 3,838 in
2,857 g.

34,110
2.857
31.253 Kg on Ram

5" X 5" Now = 5" X 5" X 2 ⅜"
5" X 2" X 1 ⅜" (5" face in)

Sub Crit – 1 min cts = 7^{+153}_{7+207} (X256)

7. Added 5" X 2" X ⅜" – #0960 (¼")
1033 (⅛")
on
5" X 5"

Sub Critical – 1 min cts = 10^{+36}_{9+210}

8 added # 2273 @ 9.53" dia East

Super Crit #1 = 17.04
~ 30 sec period.

WP 17.452

9. Removed #2273 – 4.53" dia 9.2
Added #1916 – 5"X5" 3.846g
1.4

Poo Period log N = 89.6 sec 10.50 ϕ
ϕ2 = 86.6 " 10.78 ϕ
+10.64 ϕ

2 – 4.53" dia = 5.30" High = 52.0 Kg
4 – 3.57" dia = 5.10 " 62.4
1 – 3"X5" = 3.5" + 1.7" (3.57" dia cyl) 21.2
1 – 5"X5" = 4.375" + 1.75" (5"X2" on inside top) 38.6
Ram Height = 5.71" 174.2
31.25
205.45 Kg

JUN 11 1964

J M
JHL
JRT

INSTRUMENT CHECK

Time 8^{45} AM Source M226 & ƒ

	F	Channel A	B	C	D	E
Range	Ac & ho	10/1000	OPR	X	10/1000	1050V
Source Dist.	OK	4"	0	12'	2"	10"
% F.S. Trip	OK	100+	OK	100	65	100+
BF_3 #2	OK					

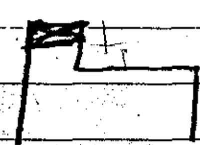
C.A. 9 Stock Expr. II Run 10
Bore Date 6-11-1964 Time 8:45 AM
Purpose Repeat of Run 9 p. 40 after removing some fuel for overnight.

10. Pos Period — Log N = 59.9 sec 14.13¢
#2 54.7 " 15.05¢
+ 14.59¢

up #1 = 17.455
∞ #1 = 16.775

11. Removed 5" X 2" X 3/4" from 5" X 5".
−2300 g.
Added Counters and servo control for Rossi α measurements.

Sub Critical.



12 added 5" x 2" x 3/4" to 5" x 5" just back of the 5" x 2" x 1".

Super Crit #1 = 16.65 ÷ 2300 gm
∞ #1 = 16.35

13 Removed 5" x 2" x 1/4" from front top of 5" x 5".

5" x 5" Stack Now - 5" x 5" x 4.375" -767 gm
5" x 4" x 0.75"

Sub Crit ~ 1.0 ϕ up
~ 2.0 @ #1 = 17.00

JUN 12 1964

INSTRUMENT CHECK

Time 8:05 AM PM Source M226 # 1

	F	A	B	C	D	E
Range	Hi & Lo	10/1000	OPR	X+	10/1000	1050V
Source Dist.	OK	5"	OK	4½"	4"	12"
% F.S. Trip	OK	100+	OK	100	70 ~~100~~	100+

BF₃ #2 OK

MAGNETS O/C
LIGHTS O/C
TABLES O/C
AREA CLEARED

C.A 9 Stack Expr. III Run 1

Bare Date 6-12-1964 Time 8:30 AM PM

Purpose Rossi α measurements

vs Run 13

1 @ added 5"x2"x⅛" on 5"x5" (at 2"-4" position) (#0-995) = 381 g.

∞ #1 = 16.65 Rem = 4.91" above diaph

2 @ Removed plank walkways and dial gauge.

∞ #1 = 16.86

On Servo #1 = 16.85 #2 = 16.861 Rem = 5.11 above diaph.

Log N = .00068

D = 68 10⁶/1000 Servo @ 6.5

Ram Loading - 4.53" dia x 1.06" ht # 2470 = 5,247 g.

(9)

5" X 5" X 7/8" # 1008 = 6,693

" # 1012 = 6,684

5" X 5" X 1/2" # 0967 = 3,833

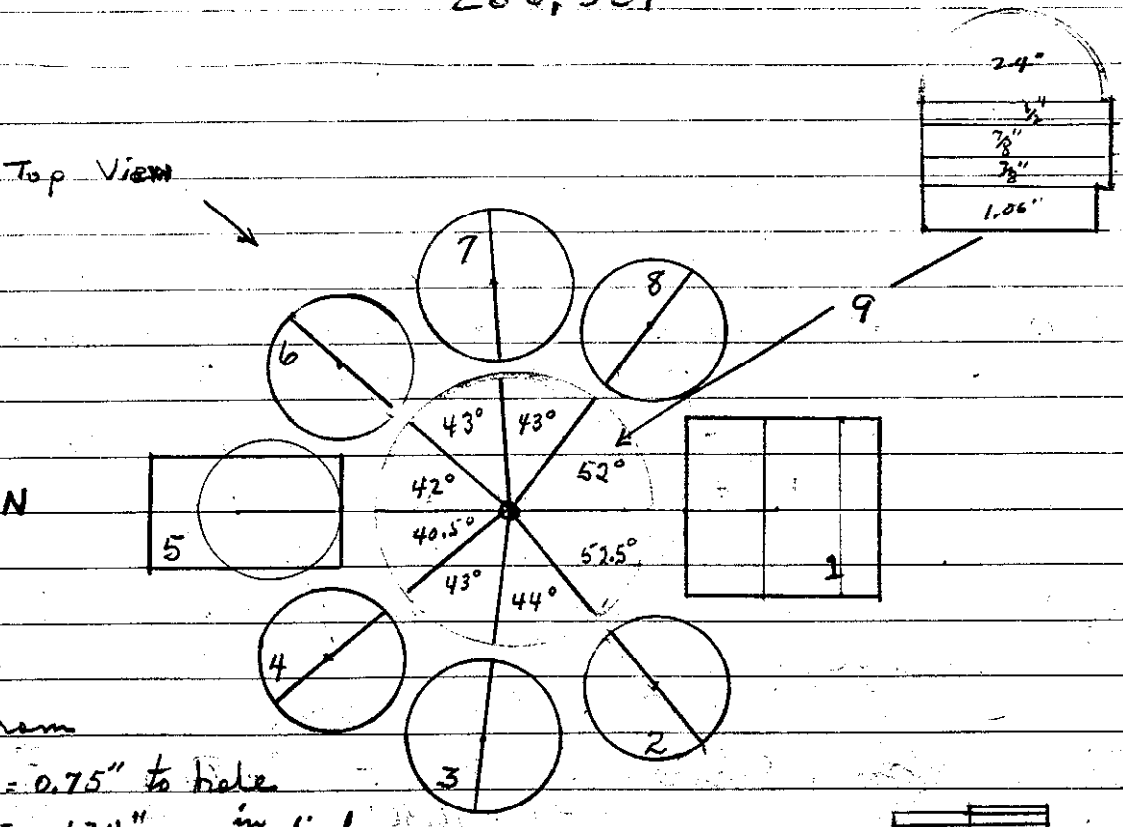
4.8" dia hemisphere # 3380 = 8,838

Total = 31,300 g.

Total Loading = ~~201.243~~ Kg.

206,529

On diaph = 69,943 g.



Distance from

stark #1 = 0.75" to hole

#2 = .624" in diaphragm

#3 = .579"

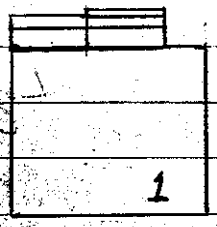
#4 = .365"

#5 = .755"

#6 = .380"

#7 = .588"

#8 = .591"



Side View

Diaphragm Loading

4 Stacks

3.6" dia x 1.7" ht cyl.

	#			
(8)	2571	=	5,231 g.	SE
	2276	=	5,254	SE
	2277	=	5,270	SE
(4)	2278	=	5,267	NW
	2279	=	5,219	NW
	2280	=	5,234	NW
(6)	2281	=	5,259	NE
	2282	=	5,220	NE
	2283	=	5,248	NE
(2)	2284	=	5,195	SW
	2285	=	5,287	SW
	2286	=	5,286	SW

Total 62,970 g.

(5) 3"x5" Stack (North)

2"x5"

#		
0945	=	2,679 g.
943	=	2,680
944	=	2,682
946	=	2,682

10,723 g.

1"x5"

#		
1085	=	1346
0942	=	1,341
0979	=	769
0962	=	383
1032	=	192
0978	=	768
0963	=	383
1014	=	193

Total 16,100 g.

+ 1 - 3.6" dia x 1.7" ht cyl # 2572 = 5,286

21,386

On diaph. ~~109,943 g.~~ 175,229 g.

2 Stacks

4.53 dia x 1.06" ht cyl

	#			
(3)	2460	=	5,250 g.	W
	2462	=	5,237	W
	2463	=	5,258	W
	2464	=	5,219	W
	2466	=	5,252	W
(7)	2467	=	5,251	E
	2468	=	5,224	E
	2469	=	5,218	E
	2471	=	5,226	E
	2472	=	5,242	E

Total 52,376 g.

(1) 5"x5" Stack (south)

#		
1011	=	6,689 g.
0971	=	3,827
0970	=	3,822
1010	=	6,695
0950	=	1,916
0955	=	1,916
1023	=	963
1024	=	963
1048	=	961
0957	=	1918
1916	=	3846

33,516 g.

* 0974	=	1,534
* 0975	=	1,533
* 0948	=	765
* 0960	=	768
* 0995	=	381

Total = 38,497 g.

JUN 15 1964

LYNN
TAYLOR
ELLIS

INSTRUMENT CHECK

Time 8:15 AM PM Source M226 d/p

		Channel A	B	C	D	E
	F					
Range	Hi & Lo	10/100	CPR	50	10/100	1000V
Source Dist.	OK	10"	OK	4'	4"	12
% P.S. Trip BF3	OK OK	100+	OK	100	80 on 100	100

Light OK
Magnets OK
Tables OK
Area Cleared

C.A. 9 Stack Expr. III Run 3
Date 6-15-64 Time 8:30 AM PM
Purpose Rossi α

3. Conditions same as Run 2 p. 43.
Data taking started @ 8:36 AM

Log N = .00068
D = 76 @ 10/1000 Servo @ 6.2
Selsyn #1 = 16.76
#2 = 16.777 Ram Fuel = 5.02" above diaph

at Shut down #1 = 16.765
#2 = 16.784

4. Zero Reactivity Run (Clean Critical)
Counters Removed –

#1 = 16.765

Measured Negative Period – #2 – out

log N = 180.0 secpd 9.2¢
#2 = 182.4 9.05¢
– 9.13¢

INSTRUMENT CHECK

Time 9 55 AM

Source N-226 & P

Channel	F	A	B	C	D	E
Range	Hi & Lo	10/1000	OPR	RECORDER ON 50 UNITS	10/1000	1050 V
Source Pos.		6"	OK		1"	9"
% F.S. Trip		100+	OK	100	100	100+

BF_3 # 2 OK

Table
Lights
Magnets
Area Cleared

C.A. 9 Stack Expr. IV Run 1

Bore Date 6-16-1964 Time 10:20 AM

Purpose Support Evaluation.

1. Chan Critical. Repeat of Run 4, P.47
on Pos Period = #17.20
~ 154 sec =
Negative Period #1 = 16.76$

Log N = 203 sec = -7.87
#2 = 192 " = -8.47
-8.17¢

2 10 mil diaphragm evaluation -

Log N = 610 sec = 1.97
578 " = 2.07 +2.02¢
10 mil diaph = +10.19¢

3. Added 10 mil diaphragm (now 2-10 mil diaphs)
([redacted])

#1 = 10.765 ¢

Poo Period — Log N = 85.0 sec 10.93 ¢
#2 = 81.4 " 11.30 ¢
+ 11.12 ¢

20 mil diaph = +19.29 ¢

4. Added Support Plate, diaph. support ring and simulated support stand.

US Run 1

Log N = 750 sec = 1.62 ¢
#2 = 487 " = 2.44 ¢
+ 2.03 ¢

Supports = + 10.2 ¢

5 Clean Critical — Sel sys #1 = 17.40

Poo Period — Log N = 191 sec + 5.66
#2 = 198 " 5.49
+ 5.58

JUN 17 1964

INSTRUMENT CHECK

Time 9 10 AM PM Source M226 & h

Channel

	F	A	B	C	D	E
Range	Hc & Hc	10/1000	OFF	(5)	10/1000	105 V
Scope Dist.	OK	4"	OK		1"	8"
F.S. Trip	OK	100+	OK	100	100	100+
DF 2	OK					

Light OK
Magnets OK
Tables OK
Cleared Area

CR 9 Stack Expr. IV Run 6
Bare Date 6-17-1964 Time 9:14 AM PM
Purpose Reactivity Check.
Observation indicates some individual shift of pieces of some stacks

6. Repeat of Run 5 p. 49.
#1 = 17.41
~ +38.4 pcc = +19.03 ¢
The shift of positions probably caused by vibrations when walkways were put up.
7. Stacks straightened to normal.

#1 = 17.40
Pos Period — log N = 171 pcc 6.24 ¢
#2 = 161 6.56 ¢
+ 6.4 ¢
#1 = 16.765
Neg Period — log N = 222.5 pcc = 7.00 ¢
#2 = 212.3 = 7.42 ¢
— 7.21 ¢

JUL 16 1964

S. MIHALCZO
J. LYNN
J.R. TAYLOR

INSTRUMENT CHECK

Time 8:35 AM Source Mzz6 ℰh

F

Range	Ni&ho	10/1000	OPR	X4	10/1000	1050V
Source Dist.	OK	5"	OK	3'	3"	10"
% F.S. Trip	OK	100+	OK	100	75	100+

BF#2 OK

Magnet OK
Light OK
Tables OK
Area Cleared

C.A. 15" x 7" Expr. XVIII Run 1
10" C Refl. Date 7-16-1964 Time 9:45 AM
Purpose Critical Height

Loading – See p. 2

up
#1 = 22.910
#2 = 22.907
#3 = 0
#4 = 0

1a Fuel Height = 1 1/8" = 1.125"

1 min cts –	ctr #1	ctr #2	(x 256)
	1^{+67}	0^{+83}	
	1^{+67}	0^{+83}	

b Fuel Height = 1 5/32" = 1.15625"

1 min cts – 2^{+74} 0^{+132} (x256)

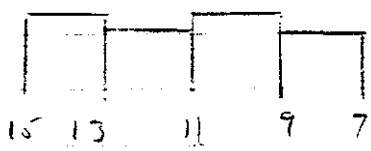
c Fuel Height = 1 3/16" = 1.1875"

1 min cts – 11^{+75} 2^{+169} (x 256)

52

Close Critical

d Fuel Height - 15" x 13" and 11" x 9" = .1 $\frac{7}{32}$"
13" x 11" and 9" x 7" = .1 $\frac{3}{16}$"



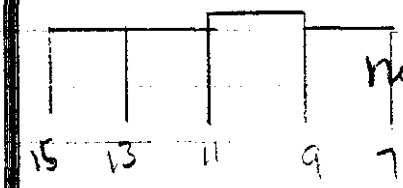
Po Period:

Poo Log	=	25.8 sec	24.20 ±
#2	=	27.1 "	25.50 ±
#3	=	25.25 "	24.50 ±

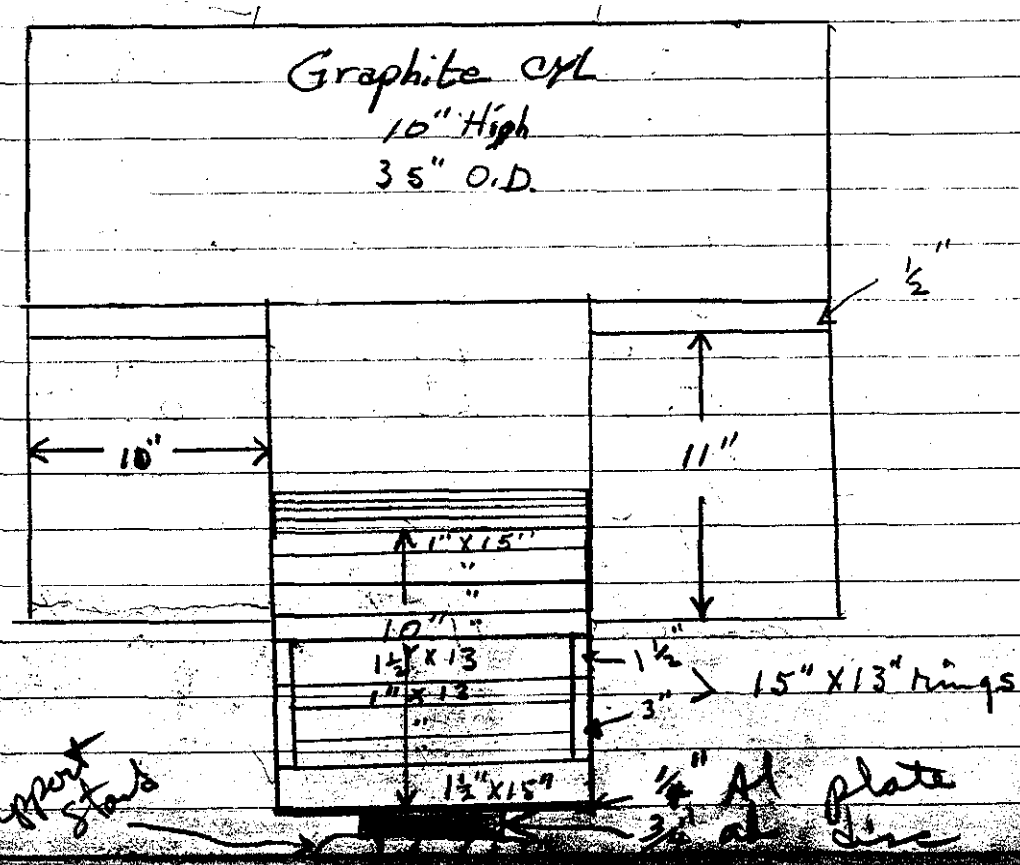
± = 4.07 ¢

Fuel Evaluation -

e Removed $\frac{1}{32}$" from 15" x 13" ring.



Neg pmd Log r = -.165 sec -6.42 ¢



JUL 17 1964

INSTRUMENT CHECK

Time 8^{15} AM Source M-226 & P

	F	A	B	C	D	E ✓
Range	Hi & Lo	10/1000	OPR	X+2	10/1000	1050 V
Source Dist.	OK	6"	0	3'	1"	10'
% F.S. Trip	OK	100+	OK	100	70 on 100	100+

BF_3 #2 #3 OK

MAGNETS OK
LIGHTS OK
TABLES OK
AREA CLEARED

7 ¢

C.A. 18" X 7" Expr. XVIII Run 1 f
10" C Refl Date ______ 19 ___ Time ______ AM/PM
Purpose Cont fuel Evaluation

¢

up
#1 = 22.888
#2 = 22.886
#3 = +5
#4 = -5

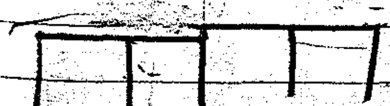
1f Repeat of Run 1e.

Negative Period - Log N = 140 sec -13.36¢
#2 = 144.6 " -12.55¢
#3 = 142.0 " -13.06¢ -12.99¢

$\frac{1}{32}$" (10" X 13") = 37.06¢

9 Added $\frac{1}{32}$" (9" X 7") ring.

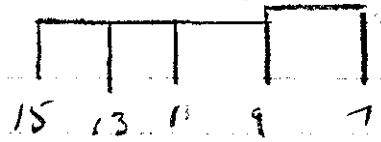
Pos Period - Log N = 32.4 sec + 21.15¢
#2 = 32.4 " + 21.15¢
#3 = 30.1 " + 22.11¢ + 21.47



$\frac{1}{32}$" (9" X 7") = 34.48¢

h Removed $\frac{1}{32}$" (11" X 9") fuel.

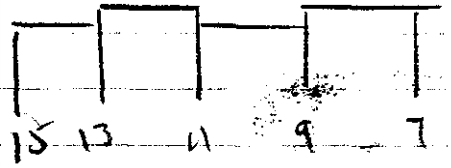
Negative Period — Log N = 95.05 sec 30.0 ϕ
#2 = 90.1 " 34.0 ϕ
#3 = 88.6 " 35.0 ϕ - 33.0 ϕ



$\frac{1}{32}$" (11" X 9") fuel = 54.47 ϕ

i Added $\frac{1}{32}$" (13" X 11") fuel.

Positive Period — Log N = 26.3 sec 23.94
#2 = 24.7 " 23.73
#3 27.4 " 23.37 + 23.68 ϕ



$\frac{1}{32}$" (13" X 11") = 56.68 ϕ

9/32	3214	2783	3216	2774	1/4
9/16	2766	2755	2767	2737	9/16
1/8	~~2756~~	~~2720~~			
1/4	2885	2782	2442	2736	3/8
	15	13	11	9	7

← Run 1d p. 52

1/4" X 7"
9/16 X 7"
3/8" X 7"

C Core p. 55

1st time the 9/32" thick graphite has been available.

j. Added Support Stand and Support Plate

Pos Period – Log r = 12.88 sec 34.83 ¢
#2 = 12.89 " 34.81
#3 = 13.20 " 34.42 + 34.69 ¢

3.0 ¢

Supports = + 11.01 ¢

3.68 ¢

C.A. 15" x 7" Expr. XIX Run 1
40" C Refl
& cone Da. 7-17-1964 Time 2:40
Purpose Added Carbon Cone to 15" x 7"

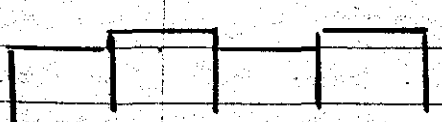
1a Added C. Cone to Run j. (above) (Supports on),

7"
7"
7"

Pos Period – Log N = 10.72 sec 37.91 ¢
#2 = 9.42 " 40.0 ¢
#3 = 11.55 " 36.66 ¢ + 38.19 ¢

k Removed supports:

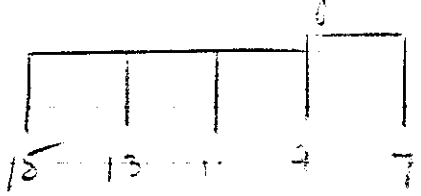
Pos Period – Log N = 18.5 sec 29.06 ¢
#2 = 17.87 " 29.58
#3 = 18.06 " 29.41 + 29.35 ¢



Supports = 8.84 ¢

c Removed $\frac{1}{32}$" (13" x 11") fuel –

Negative Period –

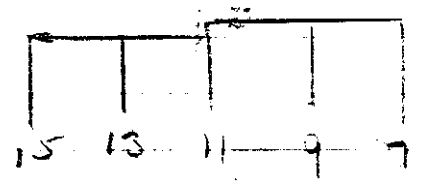


Log N = 112.9 sec	19.85 ¢	
#2 = 114.0 "	19.47 ¢	
#3 = 110.7 "	20.77 ¢	- 20.04 ¢

$\frac{1}{32}$" (13" x 11") = 49.39 ¢

d Added $\frac{1}{32}$" (11" x 9") fuel –

Pos Period –



Log N = 20.8 sec	27.29 ¢	
#2 = 21.1 "	27.08 ¢	
#3 = 20.8 "	27.29 ¢	+ 27.22 ¢

$\frac{1}{32}$" (11" x 9") = 47.26 ¢

JUL 20 1964

MIHALCZO
LYNN
TAYLOR

20.04 ¢

INSTRUMENT CHECK

Time 10:00 Source M'226 S.H.

Range #1 10/1000 OPE X+' 10/1000 1050

Source Dist. OK 6" OK 2' 4" 9"

% F.S. Trip 100+ OK 100 @ 40/100 100+

BF3 #2 OK

Tables OK
Magnets OK
Lights OK
Area Cleared

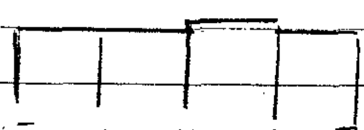
22 ¢

C.A. 15" x 7" Expr. XIX Run 1e
10" C Refl
C. Core Date 7-20-1964 Time 10:...

Purp. Cont'd fuel Evaluation.

e Removed $\frac{1}{32}$" (9" X 7") fuel (vs Run 1d p. 56)

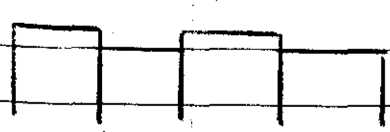
NEG PERIOD —



Log - 319 sec -4.55 ¢
#1 = 299 " -4.91 ¢
#2 = 288 " -5.12 ¢ -4.87 ¢

$\frac{1}{32}$" (9" X 7") = **32.09 ¢**

f Added $\frac{1}{32}$" (15" X 13") fuel [vs Run e]



POS PERIOD —

Log N = 15.85 sec +31.46
#1 = 15.89 sec 31.49
#2 = 16.41 sec 30.93 +31.29

$\frac{1}{32}$" (15" X 13") = 36.16 ¢

Clean Critical

[redacted]

g Reflector Evaluation —
Removed 35" X 15" X ½" graphite from radial reflector (Effectively ½" from bottom)

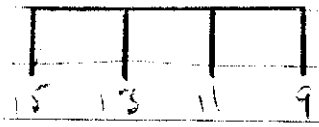
Position Period – Log N = 114 sec 8.70 ¢
113 ± 2 " 8.63 ¢
105 ± 2 " 9.27 ¢ 8.90 ¢

OD ID Thick
(35" X 15") X ½" C = 22.39 ¢

C.A. 15" X 9" Expr. XX Run 1a
10" C Reflector Date 19 Time
Purpose Crit Height with 15" X 9" & 10" C Refl

1a Fuel = 1½"

Positive Period – Log N = ~~41.5 sec~~ 34.5 sec 20.35
#1 = 35.5 sec 20.0 ¢
#2 = 35.6 sec 19.99
+ 20.11 ¢



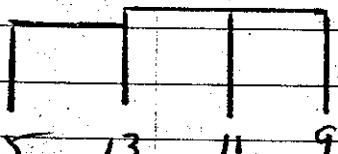
b Fuel Evaluation –
Removed 1/32" (15" X 13") fuel –

NEGATIVE PERIOD – Log N = 96.9 sec 29.0 ¢
#1 = 91.6 sec 33.5 ¢
#2 = 91.5 sec 33.6 ¢ – 32.0 ¢

out → 1/32" (15" X 13") fuel = 52.11 ¢ No Good

c Support Evaluations –

NEGATIVE PERIOD – Log N = 143.3 sec -12.88 ¢
#1 = 137.5" -13.75
#2 = 135.5" -14.09
– 13.57 ¢



JUL 2? 1964

INSTRUMENT CHECK

Time 8:20 AM ~~PM~~   Source M-226 & II

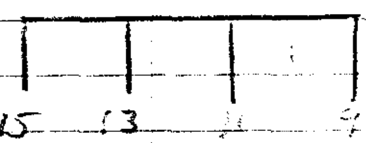
	F	A	B	C	D	E
Channel						
Range Hi & Lo.		10/1000	OPR	500	10/1000	1050
Source Dist.	OK	5"	0	3'	3"	10"
% F.S. Trip	OK	100+	OK	100	70	100+
B13 1 & 2	OK					

Magneto OK
Lights OK
Tables OK
Area Cleared

C.A. 15" X 9"   Expr. XX   Run 1d
10" C C Refl ~~Control~~   Date 7-21-1964   Time 8:30 AM

Purpose Cont'd fuel evaluation

1d added $\frac{1}{32}$" (15" X 13") fuel –
Position Period –



Log N = 29.5 sec   22.38¢
#1 = 32.83 "   20.96¢
#2 = 30.87 "   21.80¢   +21.71

Fuel = 1½"

$\frac{1}{32}$" (15" X 13") = 35.28¢   vs Run C
~~Supports = 10.29¢~~   ~~vs Run a~~

e Mounted gauge on top of stack to be sure that we are up (No void at top)
Repeat of Run 1d –
Pos Period – Log N = 28.1 sec   23.03¢
#1 = 28.66 "   22.77
#2 = 27.35 "   23.40 + 23.0?

f Removed $\frac{1}{32}$" (11" x 9") fuel -

NEGATIVE -

Too Fast ~~[illegible]~~

g. Return to Clean Critical (Run 1a p.59)

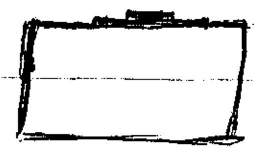
Positive Period - Log N = 52.5 sec 15.48¢

#1 = 54.1 " 15.16¢

#2 = 56.2 " 14.77¢ + 15.15¢

15 13 11 9 Supports = 7.25¢ (Avg. of Run 1a - long.)

h added $\frac{1}{8}$" x 15" and $\frac{1}{8}$" x 9" C disc to top Center (vs Run g)



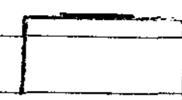
Positive Period - Log N = 25.19 sec 24.53

#1 = 25.12 " 24.54 ~~[illegible]~~

#2 = 25.08 " 24.62 + 24.56¢

Carbon = 9.42¢

i added $\frac{3}{8}$" x 15" C disc to top Center (vs Run g)

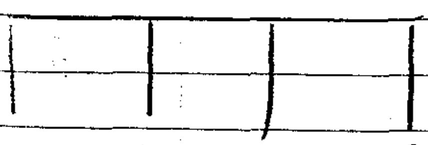


Po Period - Log N = 13.90 sec 33.57¢

#1 = 13.94" 33.60¢

#2 = 14.66" 32.74

+33.30¢

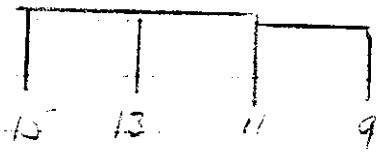


15 13 11 9 $\frac{3}{8}$ x 15" d = 18.16¢

Carbon

j. Removed $\frac{1}{32}$" (11" x 9") fuel (vs Run i)

Negative Period —

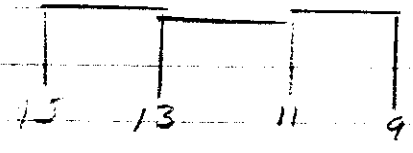


Log N = 105.3 sec − 23.47 ¢
#1 = 103.7 " − 24.49 ¢
#2 = 108.3 " − 21.90 ¢ − 23.28 ¢

$\frac{1}{32}$" (11" x 9") = 56.58 ¢

k Removed $\frac{1}{32}$" (13" x 11") fuel (vs Run i)

NEGATIVE PERIOD —

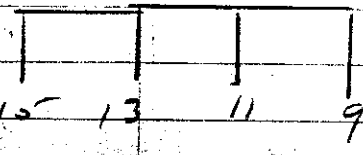


Log N = 101.3 sec 26.0 ¢
#1 = 94. " 31.0
#2 = 101 " 26.35 ¢ − 27.78

$\frac{1}{32}$" (13" x 11") = 61.08 ¢

l Removed $\frac{1}{32}$" (15" x 13") fuel (vs Run i)

PERIOD = ∞ (neg. Trend)



$\frac{1}{32}$" (15" x 13") = 33.3 ¢

Run 1a
p. 59

1/4	2886	2783	2779	1/4
1/4	2885	2782	2778	1/8
1/2	2786	2752	2744	1/4
1/2	2760	2751	2743	1/8
			2742	1/16

C.A. 15" X 9" Expr. XXI Run 1
10" C Reflector
C Core Date 7-21- 1964 Time 3:20 AM PM
Purpose Crit Height determination

up. 2215

1a Fuel Height = $1\frac{17}{32}$" Core Ht = $1\frac{17}{32}$"
Pos Period —
~ 30 sec @ 2.30

b Fuel Ht — 15" X 13" = $1\frac{15}{32}$"
13" X 11" and 11" X 9" = $1\frac{1}{2}$"
Core Ht = $1\frac{1}{2}$"

NEGATIVE ~ 320 sec 405 ϕ

SEE p. 52 for fuel and graphite arrangement.

64

JUL 2 2 1954

MIHALCZO
LYNN
TAYLOR

INSTRUMENT CHECK

Time 1:00 — Source M226 Eh

	F	A	B	C	D	E
Range	Hi & Lo	10/1000	OPR	500	10/1000	1050V
Source Dist.		5"	OK	3'	2"	10"
% F.S. Trip		100	✓	100	60	100+

BFs 1 & 2 OK

Tables OK
Lights OK
Magnets OK
Area Cleared

1c Repeat of Run 1b p. 63.

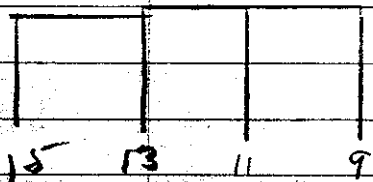
Ram material off center (~ 1/4") pushed magnet loose.
Realigned Ram material with Top. (See p. 52)
Mounted dial gauge on top of Stack.

NEGATIVE PERIOD —

Log N = 162.8 Sec 10.62 ¢
#1 = 162.3 " 10.67 ¢
#2 = 169. " 10.07 ¢ -10.45 ¢

d Why difference in Run b + c adjusted —
Repeat — NEGATIVE PERIOD —

Log N = 222.5 sec -7.00 ¢
#1 = 228 " 6.80 ¢
#2 = 221.4 " 7.04 ¢ -6.95 ¢



e added $\frac{1}{32}$" (15" X 13") fuel. (vs Run d)

Fuel Ht = 1½"

C Core = 1½" CLEAN CRITICAL

POSITIVE PERIOD — Log N = 12.16 sec 35.80 ¢

$\#_1$ = 13.28 " 34.40 ¢

$\#_2$ = 12.98 " 34.60 ¢ +34.97

$\frac{1}{32}$ (15" X 13") = 41.92 ¢

SEE p. 62 - Same fuel as no core.

2)

¢

¢

66

JUL 2 3 1964

INSTRUMENT CHECK

Time 8:20 A.M. P.M. M226 & h

	F				
Range Hi & Lo	~~4000~~	OPR	500	10/1000	1050V
Source Dist.	OK	OK	30"	1"	12"
% F.S. Trip	OK	OK	100	100+	100+

BF3 1 E2 OK

MAGNETS OK
LIGHTS OK
TABLES OK
AREA CLEARED

C.A. 15" X 9" 10" C Refl. C core Exp. XXI Run f

Date 7-23-64 Time 8:40 AM PM

Purpose Cont'd fuel Evaluation

f Removed $\frac{1}{32}$" (13" X 11") fuel. [vs Run e]

NEGATIVE PERIOD - ~~10 9.2~~ sec

Log N = 109.2 " -21.46 ¢

1 = 110.7 sec -21.23 ¢

2 = 106.8 " -22.61 -21.77 ¢

$\frac{1}{32}$" (13" X 11") = 56.74 ¢

g. Removed $\frac{1}{32}$" (11" X 9") fuel [vs Run e]

NEGATIVE PERIOD:

Log N = 128.5 sec : 15.44 ¢

#1 = 121.8 " = 17.00 ¢

#2 = 122.5 " = 16.85 ¢ -16.43 ¢

$\frac{1}{32}$" (11" X 9") = 51.40 ¢

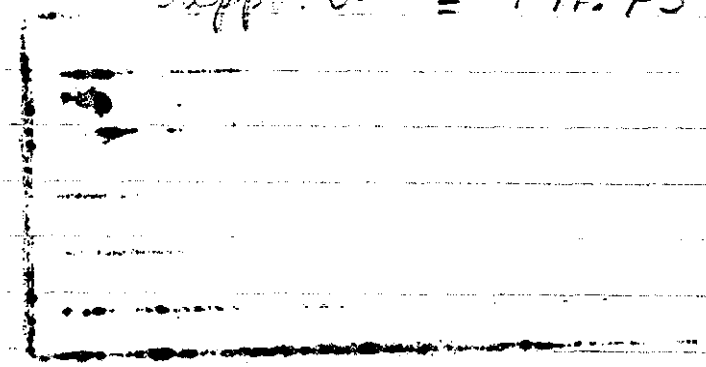
h Supports Evaluation — [Stand and Plate.]
[Vs Run 9]

NEGATIVE PERIOD —

RED

Log N = 296 sec -5.09
1 = 297 " -4.95
2 = 296 " -4.96 - 5.0 ϕ

Supp. to = + 11.43 ϕ



7 ϕ

.43

C.A. 18" X 11" Loc. XXII Run 1a
10" Refl. Date 7-23-64 Time 11:15 AM
Purpose Crit. Ht Determination

Curve Extrapolation Range Ht ~ 2.3"

1a Fuel Ht = $2\frac{5}{16}$" = 2.3125"

Super at 21.90" ~ 30 sec

b Fuel Ht = $2\frac{1}{4}$"

Super crit @ 22.40 ~ 30 sec.

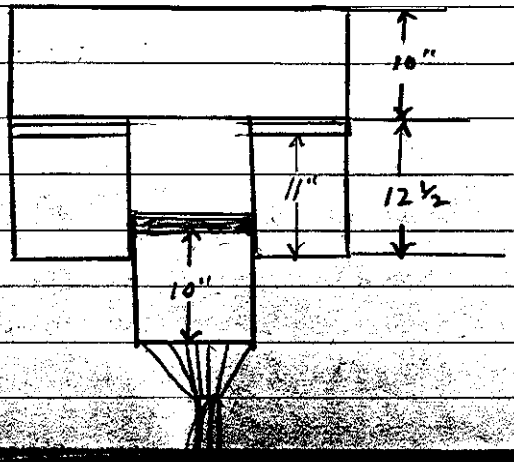
c Fuel Ht = $2\frac{3}{16}$"

Super crit @ 22.84 ~ 30 sec

d Fuel Ht = $2\frac{5}{32}$" = 2.15625"

NEGATIVE — Too Much

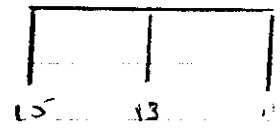
Arrangement for the above exps. this page →



e. Removed the 35" OD X 15" ID X ½" thick Carbon

Fuel Ht = 2 3/16" CLEAN CRITICAL

Positive Period - Log N = 55.8 sec 14.84 ¢
1 = 56.2 " 14.77 ¢
2 = 55.5 " 14.90 ¢ + 14.83 ¢



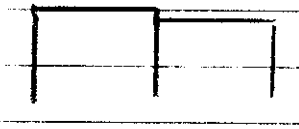
f Removed 1/32" (15" X 13") Fuel [as Run e]

NEGATIVE PERIOD - Log N = 91.2 Sec 33.5 ¢
1 =
2 = 91.2 Sec 33.5 ¢

1/32" (15" X 13") = 48.3 ¢ SEE p. 71

g Removed 1/32" (13" X 11") fuel (as Run e)

NEGATIVE PERIOD - Log N = 86 sec −39.5 ¢
1 = 86 " −39.5 ¢
2 = ~~86~~ sec
~~[illegible] 11 36.5 ¢~~



1/32" (13" X 11") = 54.33 ¢

(SEE p. 71)

JUL 24 1954

INSTRUMENT CHECK

Time 1^{10} AM ~~PM~~ Source M226 & P

	F	Channel A	B	C	D	E
Range	Hi Echo		OPR		10/1000	1050V
Source Dist.	OK		0	12"	2"	10"
% E.S. Trip	OK		OK	100+	95	100+

(Across channel A: "Dutz[?]")

BF3 1&2 OK

Tables OK
Lights OK
Magnets OK
Area Cleared.

C.A. 15" X 11" Expr. XXII Run h

10" C Refl. Date ______ 19 ___ Time 1:15 ~~AM~~ PM

Purpose Supports Evaluation

h Supports up. [Stand and Plate]

[vs Run e]

Positive Period – Log N =	28.98 sec	22.63¢		
#1 =	22.88 "	22.66¢		
#2 =	22.02 "	22.02¢	22.44¢	

i Repeat Run 1e. Clean Critical

Poo Period – Log N =	54.8 sec	15.03¢		
#1 =	57.3 "	14.57¢		
#2 =	57.7 "	14.50¢	+14.70¢	

Supports = +7.74¢

j. Added ½" X 15" ℄ disc to Top of Stack, US Run i

Positive Period — Log N = 11.58 sec 36.62 ¢
#1 = 10.95 sec 37.55 ¢
#2 = 11.39 " 36.84 ¢

+37.00

½" X 15" ℄ = 22.30 ¢

k Removed ½"(13" X 11") fuel ..... (US Run j)

NEGATIVE PERIOD — Log N = 520 sec -2.64 ¢
#1 = 537 " -2.55 ¢
#2 = 463 " -3.00 ¢

-2.73 ¢

½"(13" X 11") = 39.73 ¢

L Removed ½"(15" X 13") fuel (US Run j.)

NEGATIVE PERIOD —
Log N = 468 sec 2.96
#1 = 451 " 3.09
#2 = 448 3.11 -3.05 ¢

½"(15" X 13") = 40.05 ¢

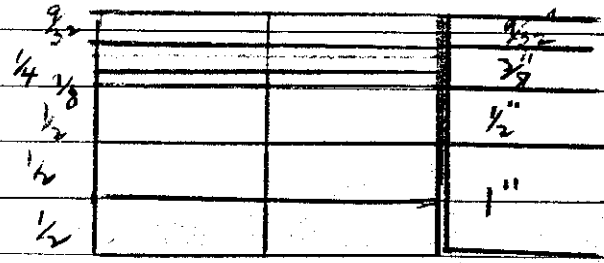
CA. 15" X 11" Expr. ~~XXIII~~ Run 1
10" C Refl.
C Core Date 7-24-1964 Time 3:40 ~~AM~~ PM
Purpose: Critical Ht determination

1a Fuel Ht = 2 1/16"
C Core = 2 1/16" Sub Critical.

b Fuel Ht = 2 3/16"
C Core = 2 3/16"
Super Crit — 200 mils

c Fuel Ht = 2 1/8"
C Core = 2 1/8"
Sub Crit
Close

2766	55	9/16
~~58~~	~~80~~	1/8
2767	53	1/2
2768	54	1/2
2760	2751	1/2



Run 1e p ~~89~~
" 1c p 70
NO Core

Run 1d p. 73
with Core

JUL 27 1964

INSTRUMENT CHECK

Time 10:00 Source M-226 & 8

	F			θ	E
HV = 8	10/1000	op	X	1/1000	1050 V
Source	OK	4"	0	15" 2"	8"
% F.S. Trip		100	OK	100 95	100

Cto 1+2 OK

Tables OK
Lights OK
Magnets OK
Area Clear

C.A. 15" X 11" Expr. XXIII Run 1 d
10" C Refl.
C. Core Date JUL 27 1964 Time AM/PM
Purpose Crit. Ht. determination

6

d Fuel Ht = 2 5/32"
C Core = 2 5/32"

Pos Period – Log N = 38.0 sec 19.16¢
#1 = 37.5 " 19.65¢ +19.41¢
#2 = ?

e Supports Evaluation (Stand and plate)
(vs Run d)

Pos Period – Log N = 21.35 sec 26.90¢
#1 = 23.5 " 25.52 +26.26
#2 = 22.6 "

Supports = +6.85¢

2 7/8 X 2 7/8 X 4" = (1 Kg)

f Fuel Evaluation [Vs Run 1e]

Removed $\frac{1}{32}$" (15" X 13") fuel.

Negative Period - Log N = 129.2 sec 15.27 ¢

#1 = 125.7 " 16.07 ¢

#2 = 123.8 " 16.51 - 1-.67 ¢

$\frac{1}{32}$" (15" X 13") = 41.93 ¢

g Removed $\frac{1}{32}$" (13" X 11") [Vs Run 1e]

NEGATIVE PERIOD - Log N = 134.6 sec 14.25 ¢

#1 = 139.4 " 13.45 ¢ - 14.10

#2 = 132.8 "

$\frac{1}{32}$" (13" X 11") = 40.96 ¢

C.A. 15" X 13" Expr. XIV Run 1a
10" C. Refl. Date 7-27-196_ Time 4:00 PM
Purpose Critical Ht determination

1a. Fuel = $6\frac{1}{32}$" — Super Critical 17.35"

~~JUL 3 0 1964~~

AUG 3 1964

INSTRUMENT CHECK

Time 9:00 AM   Source M-226 & 1

F

	Channel				
	A	B	C	D	E
Range Hi Lo	10/1000	OPR	500	10/1000	1050V
Source Dist OK	4"	OK	2'	2"	8"
% F.S. Trip OK BF3 1 & 2 OK	100+	OK	100	100	100+

TABLES - OK
LIGHTS - OK
MAGNETS - OK
BLDG ALARM LIGHTS - OK

C.A. 7" Cyl Expr. ______ Run A_1

______ Date ______ 19 ___ Time ______ AM

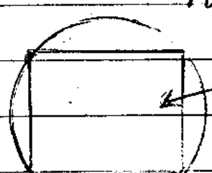
Purpose: Preparing for Rossi α measurements with 36"X36"X6" of polyethylene acting as a wall.
2½" Fuel on Ram

#1 = 17,342
#2 = 17,361
#3 = 0
#4 = +6

58,396 g = (11,827 × 4 15/16")
 241 = (5 × 5 × 1/32)
58,617
 +60 for 6.7¢ (2¼×2¼×1/32)
58,677

A_1 H = 4 15/16" + [5"×5"×1/32"], Ctrs in place + Supports for polyethylene.

Negative Period Log N = 244 sec −6.25¢
#1 = 216 " −7.27¢
#2 = 234 " −6.58
−6.70¢


5"X5"X1/32"

A_2 Placed 36"X36"X6" polyethylene 24" from center of fuel stack to inside edge of polyethylene. (North Side)

Neg Period Log N = 543 sec 2.52¢
#1 = 562 " 2.45¢
#2 = 578 " 2.36¢
−2.44

Wall = +4.26¢

A3 added 6" x 6" X 36" to either end of walls 3½
Now 48" X 36" X 6"

Built an additional wall on east side
48" X 48" X 6½", 26" from center of fuel

Poo Period log 381 sec = 3.06¢
#1 377 " 3.09¢
376 " 3.10¢ + 3.08¢

2nd wall = 5.52¢
Two (2) walls = 9.78¢

A4 added 3rd to ~~east~~ west side
44" X 48" X 6¼" Polyethelene

Poo Period - Log N = 111.8 sec 8.84¢
#1 = 109.4" 8.99¢
#2 = 112.0" 8.86 + 8.90

3rd wall = 5.82¢

Three (3) walls = 15.60¢

AUG 4 1964

Shynn
J Taylor

INSTRUMENT CHECK

Time 9^{40} AM ~~PM~~ Source M226 # h

	F	A	B	C	D	E
Range	Ai & ko	10/100	OPR	500	10/1000	1050V
Scaler Dist.	OK	NORMAL	[illegible]			
SS F.S. Trip	OK	100+	OK	100	100	100+
BF3 #2	OK					

Lights OK
Tables OK
Magnets OK
Alarm OK
Area Cleared

Had "DOG" adjusted

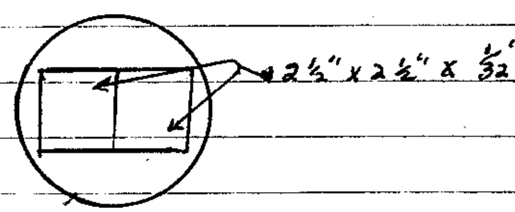
C.A. 7" Cyl Expr. Run A_5
Polyethelene walls Date 19 Time 9:40 AM

Purpose Critical Condition for Rossi α Measurement

2½" Fuel on Ram

A_5 $H = 4\frac{15}{16}" + [2(2\frac{1}{2}" \times 2\frac{1}{2}" \times \frac{1}{32}")]$

Period = ∞



Servo Shim ~ 3" from Stack

AUG 5 1964

INSTRUMENT CHECK

Time 12 05 AM PM Source M-226 & 1

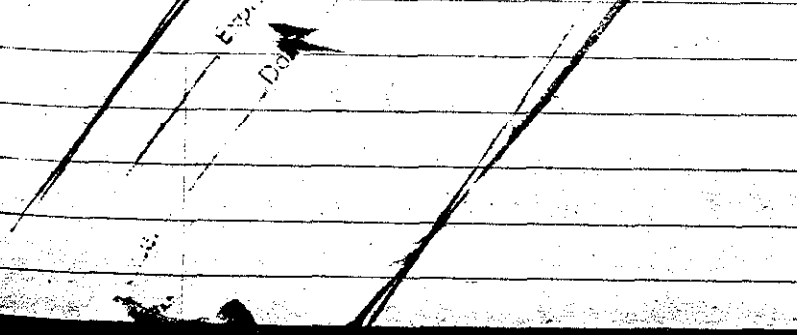
		Channel A	B	C	D	F
Ranges	Hi & Lo	10/1000 OPR	500	10/1000	1050V	
Beams Plot.	OK	5"	OK	30"	4"	5"
% P.S. Trip	OK	100+	OK	100	95	100+
BF3 #2	OK					

LIGHTS OK
TABLES OK
MAGNETS OK
ALARM LIGHTS
AREA CLEARED

E.A. 9" cyl Expr. _____ Run A6
POLYETHYLENE WALLS CHECK
Date AUG 5 1964 Time 12 25 AM PM
Purpose ROSSI ALPHA MEAS.

Start 1225PM
Stop 105PM

VDT #3 = +6 Sebsyn #1 = 17.350
#4 = +3 #2 = 17.363
Servo On Dot Input @ 620 10/500 Brown @ 62
Log N = 9.0002 (Log N is behind a "poly" wall.)
FUEL AS SHOWN IN A5 Pg 78.



AUG 5 1964

INSTRUMENT CHECK

Time 8:40 AM   Source M 320 & N

	F	A	B	C	D	E
Range Hi & Lo		10/1000	OPR	500	10/1000	1050V
Source Dist.	OK	6"	OK	20"	2"	12"
% F.S. Trip	OK	100	OK	100	100+	100+

BF3 #2 OK

Lights OK
Tables OK
Magnets OK
Area Cleared

C.A. 7" cyl Expr. ______ Run. A6

Date 8-6-1964 Time 8:45 AM

Purpose: Base Run for wall evaluation

A_7 Repeat of Run A_4 p. 77

Fuel Ht = $4\frac{15}{16}"$ + [5" x 5" x $\frac{1}{32}"$]

Pos Period —	Log N	= 112	sec	8.82
	#1	= 114.6	"	8.67
	~~# 117.~~		"	+ 8.75 ¢

A_8 Removed all polyethelene walls and their associated supports.

Negative Period —	Log N	= 206	sec	7.72 ¢
	#1	= 213	"	7.40
				− 7.56

3 Polyethelene Walls = 16.31 ¢

Ag Removed ~~Bare~~ counters used for Boron.
[2 fission + 1 scintillation]

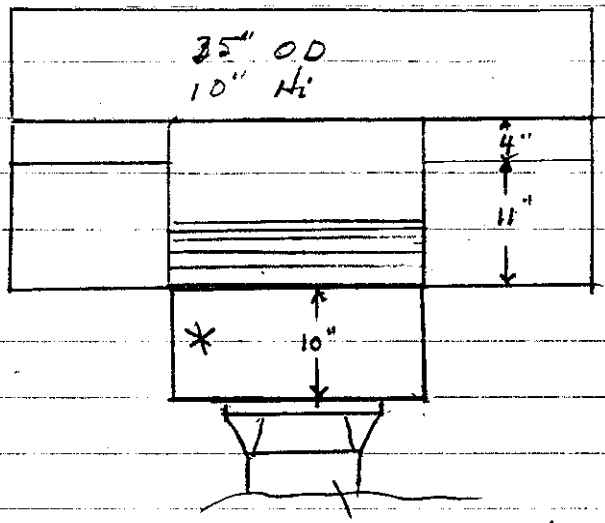
Negative Period — Log N = 128 sec = 15.54 ¢
#1 = 141 " = 13.20 ¢
− 14.37 ¢

cts = 6.81 ¢
↑
Counters

5 ¢

/s

¢



Support stand

*

	15" X 1"
	15" X 1"
	15" X 1"
	15" X 1"
15" X 13"	13" X 1"
	13" X 1"
3"	13" X 1½"
15" X 13"	13" X 1"
	15" X 1½"

Ram Carbon

NOV 1 1 1964

INSTRUMENT CHECK

Time 3:50 PM   Source M-226 & ϒ

	F ✓	A ✓	B	C	D	E
Range	Hi & Lo	10/1000	OPR.	30	10/1000	1050V
Source Dist.	OK	10"	@	3'	3"	12"
% F.S. Trip	OK	95	OK	100	95	100

J R Taylor

NOV 1 2 1964

INSTRUMENT CHECK

Time 8:30 AM   Source M-226 & ϒ

	F	A	B	C	D ✓	E
Range	Hi & Lo	10/1000	OPR.	30	10/1000	1050V
Source Dist.	OK	8"	@	4'	3"	10"
% F.S. Trip	OK	95	OK	100	95	100

TABLES OK
MAGNETS OK
ALARM LIGHTS:
A-OK; B-No; C-OK
LIGHTS-OK
AREA CLEARED
-Taylor, Lynn

C.A. 15" X 13" Expr. XIV Run 2a
10" C REFLECTOR Date 11-12-1964 Time ____ AM/PM
Purpose Critical Height Determination

2a H = 4 1/4" — Sub Crit.

1 min cts

b H = 4 1/2" — ctr #2 = 2 +218 #3 = 3 +0

c H = 4 3/4" — #2 = 4 +129 #3 = 3 +234

d H = 5" — #2 = 13 +117 #3 = 13 +246

INSTRUMENT CHECK

Time 8:10 AM So. M-226 #1

Ch.

F

	Hi & Lo	1%000	CPR	30	1%00	1050V
Source Dist	OK	10"	@	3'	3"	10"
F.S. Trip CTR 2 #3	OK	95	OK	100	95	102

NOV 1964

Tables OK
Magnets OK
Lights OK
Area Cleared
Taylor, Lynn

Cont'd 15" X 13" with 10" C Reflector

& H = 5¼"

#1 = 20.90 Pos Period
−.3" ~ 80 sec

& H = 5⅛" – Raise speed (Slow) reduced to ~ 1 mil per min for unknown reason. Fast feed reduced Correspondly –

11'-17'-6¼ ERP

Counter #1 – Ampl. Sier Y-100308
Gain – Fine 1
Coarse 8
Rise Time 0.2 μs
In Put = Negative
PHS = 30

Counter #2 – Amplifier Y = 100307

Settings same as #1

NOV 16 1964

INSTRUMENT CHECK

Time: 2^{30} PM — Shift: M-226 & N

F

		A	B	C	D	E
	Hi & Lo	1/1000	DPR	20	1/1000	1050 V
Source Dist.	OK	8"	OK	3'	3"	10"
% F.S. Trip	OK	95	OK	100	80	100

#2 & 3 OK

Tables OK
Magnets OK
Lights OK
Area Cleared
Taylor, Lynn

g. Cont'd 15"X13" ring with 10" C Reflector.

H = 5 1/8" — Negative Period — Clean Cut

Log N = − 235 sec = −6.53 ¢
Ctr #2 = −242 " = −6.30 −6.42 ¢

h. H = 5 5/32" — Pos Period.

Log N = + 56.8 sec = + 14.66
#2 = 58.8 = + 14.31 + 14.48

1/32" Fuel = 20.90 ¢

i. Supports — stand + 1" thick at base

Log N = + 33.9 sec + 20.57 ¢

Supports = [illegible] 6.09 ¢

(Counter questions on above measurements)

[redacted]

NOV 17 1964

Tables OK
Magnets OK
Lights OK
Area Cleared
Alarm Lights
{A & C are OK
{B not tripped

INSTRUMENT CHECK

8[10]				M226 & ß		
	F					
	Hi & Lo	1%/1000	OPR	30	1%/1000	1050V
	OK	8"	OK	3'	3"	12"
SS F.S.	OK	95	OK	100	80	100

CTR 1 & 2 OK

Taylor
Lynn

CA 15"X13" Expt. XIV Run J
10" C Reflector Date 11-17-64 Time AM/PM
Purp. Cont'd

J. Rerun of Clean Critical H = 5 1/8"

Neg Period — Log N = -257 = -5.87 ¢
#1 = -240 = 6.32 ¢
#2 = -268 = 5.59 ¢
— 5.92 ¢

SEE PAGE 82
for Reflector Condition

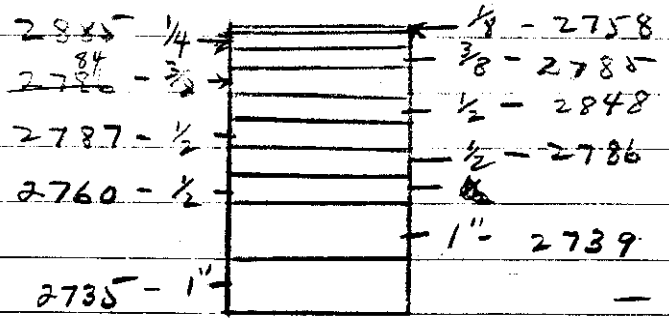
K H = 5 5/32" — Pos Period
Log N = 59.1 14.26
#1 = 58.6 14.35
#2 = 58.6 14.35 + 14.32

1/32" fuel = 20.24

l Supports Evaluation — Stand, 1" al Base + 1/2" plate

Poo Period — Log N = 31.1 Dec 21.68 ¢
#1 = 32.3 " 21.19 ¢
#2 = 30.9 " 21.77
+ 21.55 ¢

Support = + 7.23 ¢



— Run J. p. 86

C.A. 15"X13" Expr. XV Run 1a
10" C Reflctr
C. Core Date 11-17-1964 Time 11:00 AM PM
Purpose: Critical Height
Carbon Core

a H = 5" - Super Critical #1 = 19.08

b H = 4" = Sub Critical

c H = 4 1/4 = Sub Critical

d H = 4 1/2" - Negative Period - Clean Cit

SEE P. 82 for Reflector Condition

Log N = -116.8 sec = -18.5 ¢
#2 = -110.3 = -20.9 ¢
-19.7 ¢

e H = 4 17/32"
Pos. Period
Log N = +52.8 = +15.42 ¢
#1 = 52.8 = 15.42 ¢
#2 = .1 = 15.57 ¢
+15.47 ¢ ✓

1/32" Fuel = 35.17 ¢

7 Support Evaluations

Poo Period — Log N = 31.67 sec + 21.45 ¢
#1 = 31.48 " + 21.57 ¢
#2 = 31.46 " + 21.54 ¢
= 21.51 ¢

Supp To = 6.104 ¢

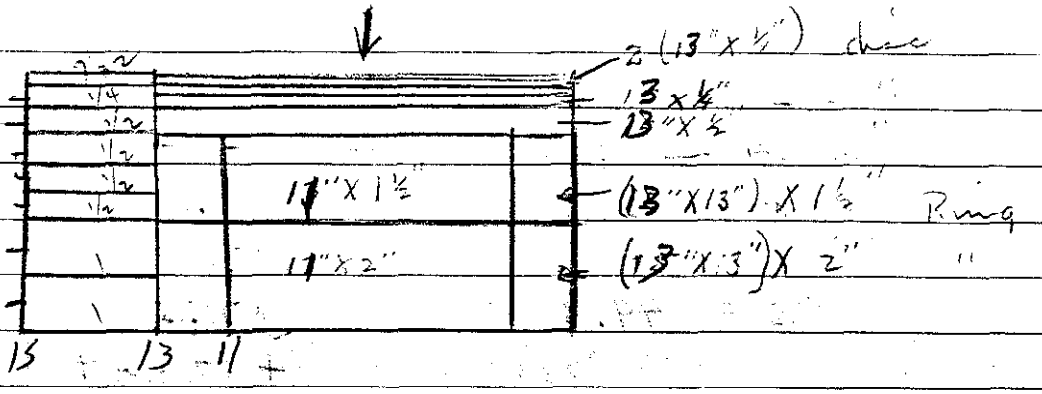
9 Added to top 35" OD - 15" ID graphite ring ½" thick — vs Run e

Poo Period — Log N = 15.12 sec 29.57 ¢
#1 = 17.19 " 32.13 ¢
#2 = — 30.85 ¢

Crit

(35" x 15") x ½" C = 15.38 ¢.

Carbon Ins Run d



NOV 13 1964

INSTRUMENT CHECK

Time 8:20 AM PM Source M-226 & h

	F	Channel A	B	C	D	E
Range Hi & Lo		10/1000	OPR	30	10/1000	1050V
Source Dist.	OK	12"	OK	4'	2"	12"
% F.S. Trip	OK	80	OK	100	100	100

BT 3 & 2 OK

Lights OK
Tables OK
Magnets OK
Area Cleared
Alarm A & C OK
B - No
Taylor, Lynn
S. Rafferty

Cam 13" X 11" Expr. XXV Run 1a
11" C Reflector Date 11-18-64 Time ____ AM PM
Purpose Critical Height Determination

11" C Reflector less
Small ant on Top.

a. H = 5" — Pos Period #1 = 20.463 up (closed)
+ 5.9 ¢

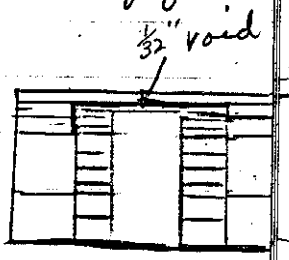
b. H = 5" — Clean 11" C Reflector.
Super Crit #1 = 21.21 up = 21.46

c H = 4 15/16" Top Reflector 11 1/16"
Pos Period —

* Log N = 42.3 sec = + 17.88 ¢
#1 = 44.6 " = 17.27
#2 = 44.3 " = 17.35
+ 17.50 ¢

Clean critical

d H = 4 29/32" – Top Reflector = 11 1/16"
13" X 1/32" void @ 13/16" above top of fuel.



Negative Period –
Log N = -162.7 sec = -10.19 ¢
#1 = -162.8 " = -10.62
#2 = -164.1 " = -10.50 ¢
-10.44 ¢

e H = 4 29/32" – Top Reflector = 11 1/16"
13 x 1/16 void @ 25/32" above top of fuel

Neg. Period Δt = -141.4 sec = -13.14 ¢
#1 = 140.7 " = 13.22
#2 = 140.7 " = 13.22
-13.19 ¢

13" X 1/32" C = 2.75 ¢

f added 1/2" to top reflector (vs Run d)
35" OD x 1/2" thick

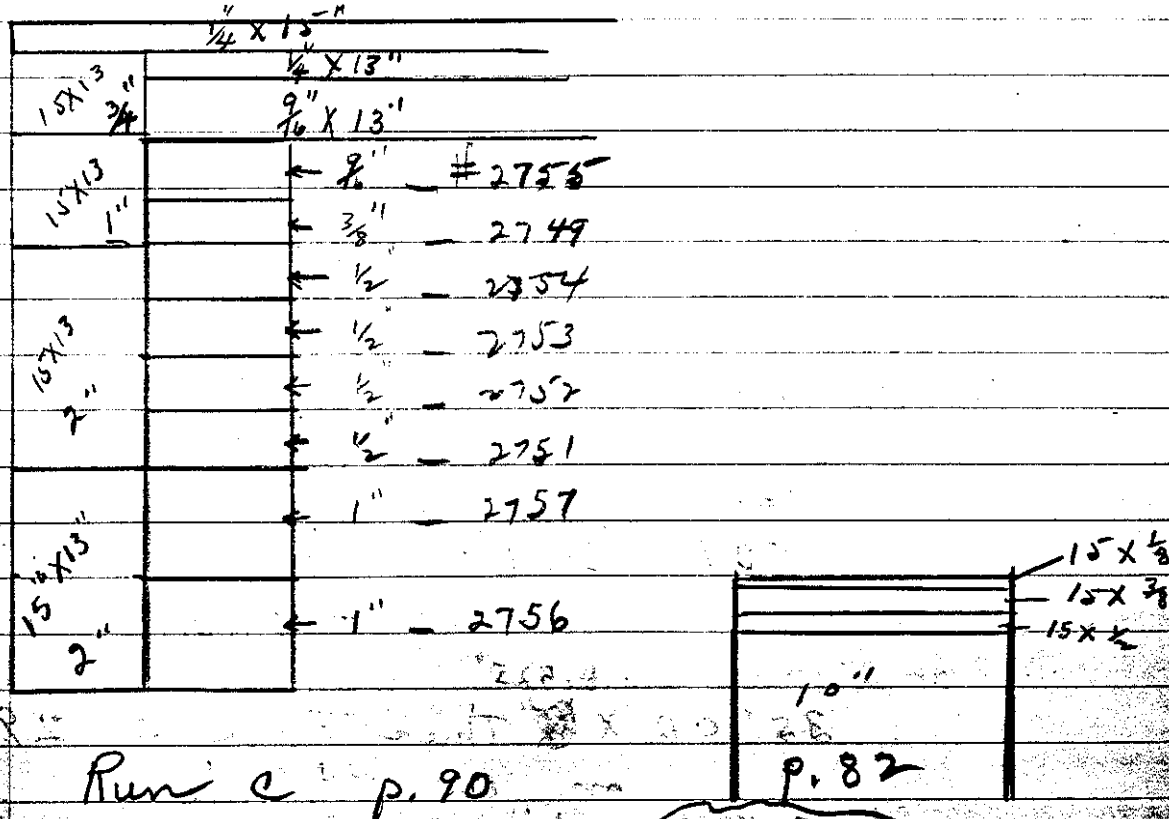
Pos Period –
Log N = 37.3 sec = 19.38 ¢
#2 = 37.4 " = 19.35 ¢
#1 = 36.1 " = 19.79 ¢
+19.51 ¢

35" OD X 0.525" Thick Top C = 2.93 ¢
or 0.057 ¢/mil
∴ 35" OD X 1/16" Top Refl = ~~3.28~~ 3.56 ¢

g Support Evaluations – (Vs round)

Log N = -328 sec = -4.41 #
#1 = -288 " = -5.13
#2 = -320 " = -4.54
-4.69 #

Supports = 5.75 #



Run c p. 90

p. 82

Rain Carbon

13" x 11" Exp. XXVI Run 1a
11" C Reflector
C Core Date 11-18-64 Time 3:00 ~~AM~~ PM

Critical Height Determination

11" C Reflector
Carbon Core

a H = 4 ½" – Super #1 = 21.43 #p = 21.96

b H = 4 ¼" – Top Reflector = 11 1/32"

Sub Critical #1 = 22.20

NOV 1 [illegible] 1964

INSTRUMENT CHECK

Time 8[10] AM

Source M226 #1

	Channel A	B	C	D	E
F					
Range Hi & Lo	10/1000	DPR	30	10/1000	1050V
[illegible] Dist.	8"	ok	3'	3"	12"
PA Trip	90	✓	100	86	100+

BF3 152 - ok

LIGHTS
TABLES
MAGNETS
AREA CLEARED
ALARM LITES A✓ B✗ C✓
Taylor, Lynn

c Cont. 13"x11" with 11" Carbon Reflector, Core. Carbon

H = 4 3/8" - Top Reflector = 10 15/16"

Chain Critical

Negative Period — See p. 96

log N = 221 sec = -7.07 ¢

#1 = 227 sec = -6.83 ¢

#2 = 216 sec = -7.27 ¢

-7.06 ¢

See p. 96

d H = 4 13/32" — Top Refl. = 10 15/16"

1/32" void over 15"x13" C ring @ 13/16" below top reflector —

Pos Period —

log N = 39.6 sec = + 18.66 ¢

#1 = 35.8 " = 19.89 ¢

#2 = 37.8 " = 19.22 ¢

19.28 ¢

1/32" Fuel = 26.32 ¢

e Added (35" ~~ID~~ OD) x .525" to top reflector (vs Run C)

Pos Period –

Log N = 29.5 sec	=	+22.38 ¢
#1 = 26.8 "	=	23.68
#2 = 28.2 "	=	22.98 ¢
		23.01 ¢

(35" OD x .525" C = 30.07 ¢) ✓

f Added (35" x 15") x 0.525" to top reflector (vs. Run C)

Pos Period

Log	= 172.5	= +6.19 ¢
#1	= 165.5	= 6.41
#2	= 165.9	= 6.40
		6.33 ¢

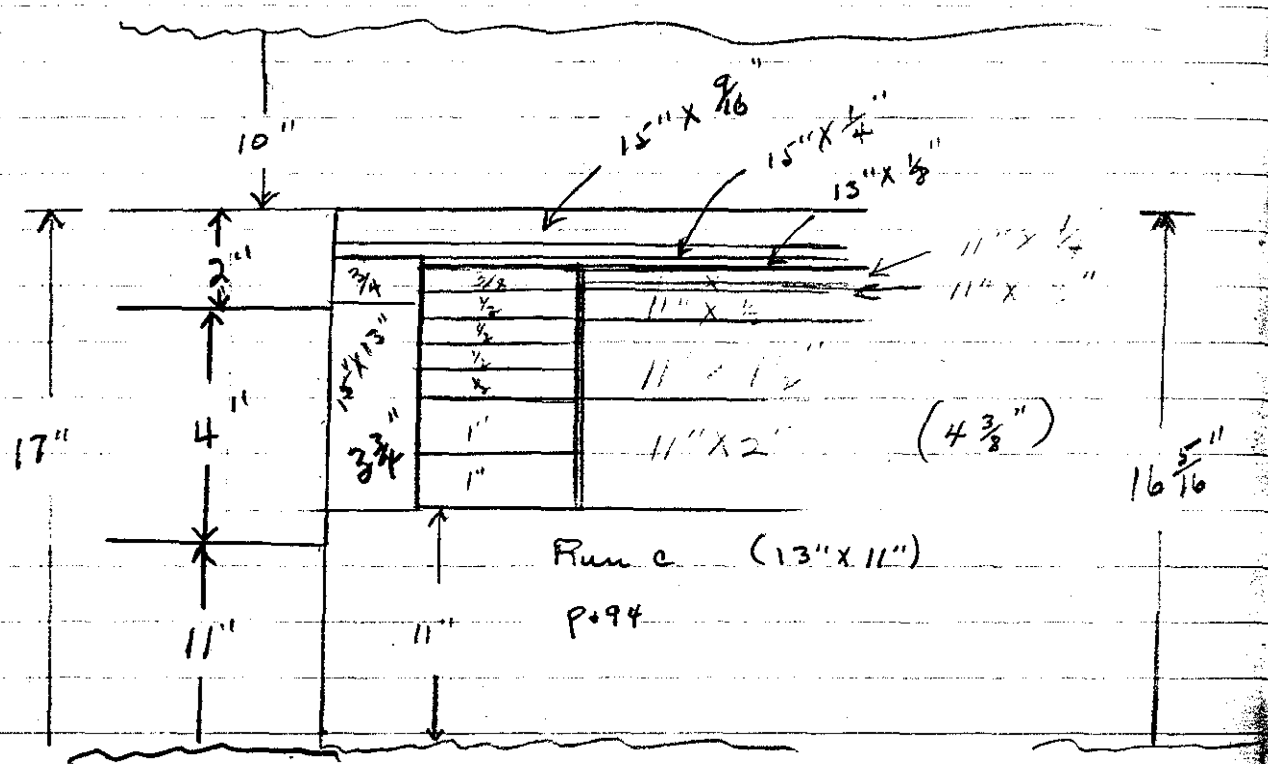
35" x 15" x .525" C = 13.39 ¢

g. Supports Evaluation – vs Run C

Neg. Period –

Log N = -794 sec		= -1.69 ¢
#1 = -831		1.61
#2 = -810		1.65
		-1.65 ¢

-7.06 ¢ - (-1.65 ¢) = 5.41 ¢


10"
15" X 9/16"
15" X 1/4"
13" X 1/8"
11" X 1/4
11" X
11" X 1/2
11" X 1 1/2"
11" X 2"
(4 3/8")
17"
2"
4"
11"
3/4
15" X 13"
3 3/4"
1"
1"
16 5/16"
Run c (13" X 11")
p. 94
11"

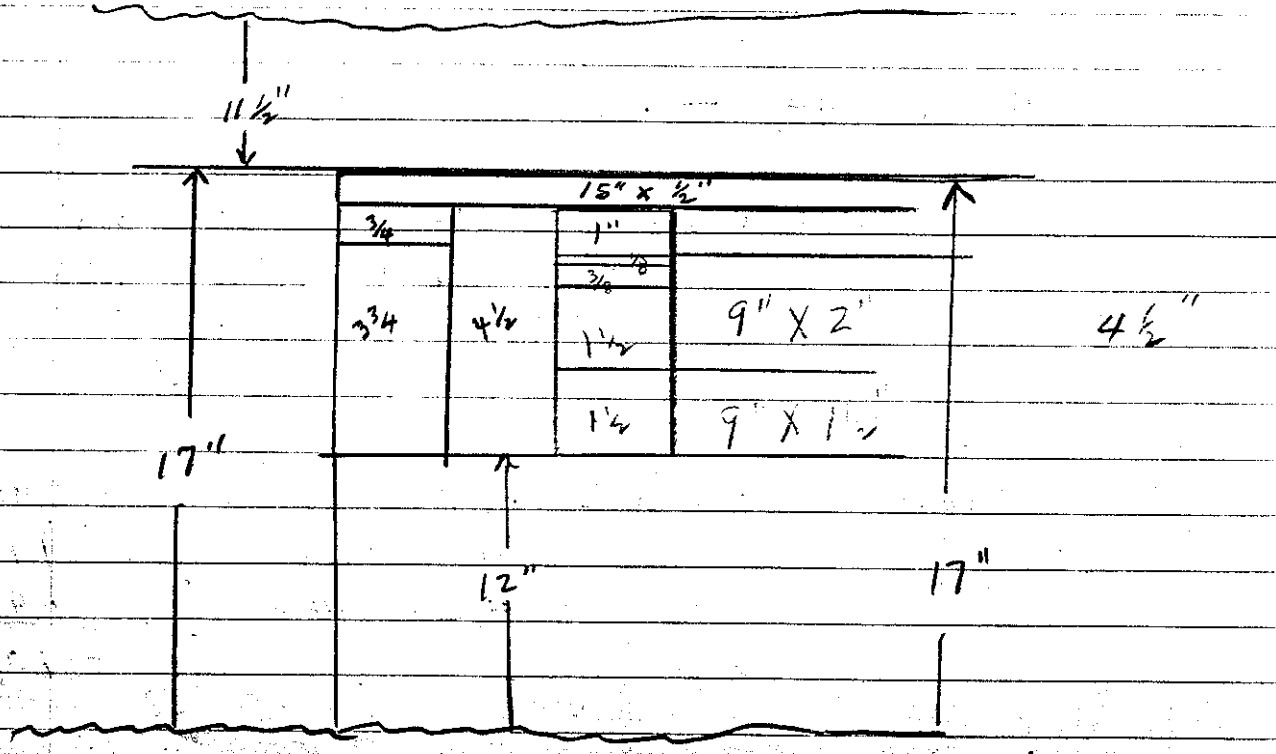
11" X 9" Expr. XXVII Run 1a
12" C Reflector
C Core Date 19 Time AM PM
Purpose Critical Height Determination

a H = 4 1/4" - Sub Crit #1 = 21.242

b H = 4 3/8" - Sub crit.

~~#1 = 21.618~~

c H = 4 7/16" = Sub crit. #1 = 21.618



Run d
p. 98

NOV 20 1964

INSTRUMENT CHECK

Time 8:15 AM ~~PM~~ Source M-226 + γ

	Channel A	B	C	D	
Range	10/1000	open	X	10/1000	1050 V.
Source Dist.	8"	✓	3'	2"	12"
% F.S. Trip	100	✓	100	80	100 +

ctrs 1 + 2 ok

Lights
Tables
Magnets
Area Cleared
Alarms A✓, B, C✓

Taylor
Lynn
Rafferty

CA 11" X 9" Expr. NOV 20 1964 Run 1 d
12" C Reflector
~~C-Core~~ Date 11-20-1964 Time 8:25 AM ~~PM~~

Purpose Cont. p. 97

d ~~Φ~~ H = 4½ ~~...~~ Clean Critical

p. 97

Pos Period – Log N = 18.82 = + 28.80¢
#1 = 18.7 = + 28.90¢
#2 = 18.62 = + 28.96¢
+ 28.89¢

e H = 4 15/32" – 1/32" void over fuel ring.
Negative Period – Log N = –1383 – 0.95¢
#1 = –1122 – 1.18¢
#2 = –1418 – 0.92¢
– 1.02¢

1/32" fuel = 29.91¢

7 Supports Evaluation –

Positive Period –

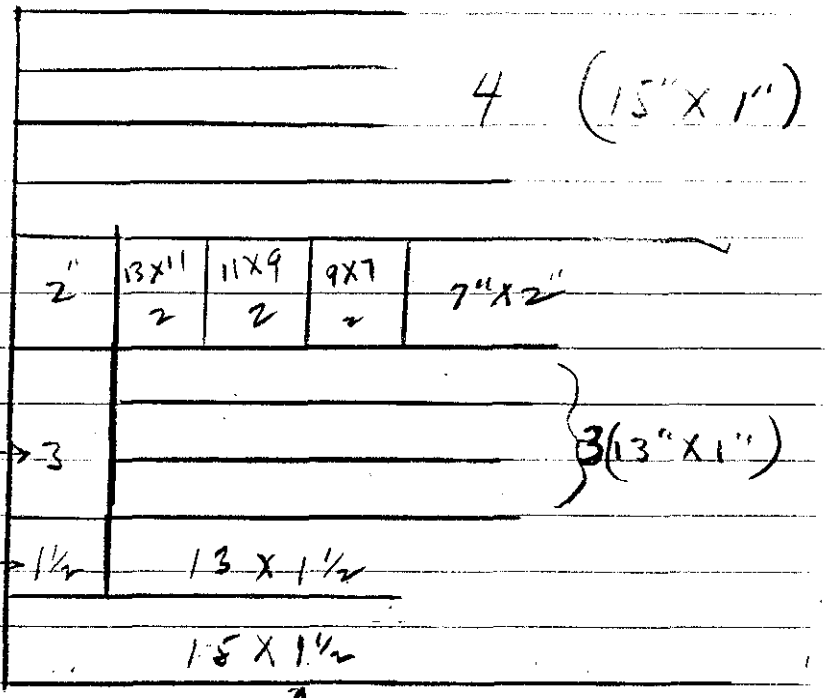
Log N = 536 psi = + 2,23 ¢

#1 = 469 " = 2.53

#2 = 508 " = 2.34

+ 2,40 ¢

Supports = + 3.42 ¢



Row C (11" X 9" with Core

Row Carbon

g. H = 4½" - created (15" x 9") x 1/32" void by adding 1/32" to Core Carbon [vs Run d]

Poo Period - LogN = 18.67 sec
#1 = 18.7 " 28.9 ϕ
#2 = 18.1 "

- d]

INSTRUMENT CHECK

Time 1 45 ~~AM~~ PM   Source M-226 & γ

	F	A	B	C	D	E
Range	Hi & lo	1%/1000	OPR	X	1%/1000	1050V
Source Dist.	OK	8"	OK	4'	3"	10"
% F.S. Trip		95	OK	100	90	100

CTR 1 & 2 OK

NOV 23 1964

LIGHTS OK
TABLES OK
MAGNETS OK
AREA CLEARED
ALARM A✓, B, C✓
√AYLOR - LYNN

~~INSTRUMENT CHECK~~

~~Time 1:45   Source M-226 + γ~~

~~Channel~~

	A	B	C	D	E
Range	10/1000				
Source Dist.					
% F.S. Trip					

7" dia Cyl. ~~XXVIII~~ Run 1a
14" C Refl. Date 11-23-64 Time 1:45 ~~AM~~ PM

Purpose
Critical Height Determination
7" dia fuel (solid)
14" Carbon Reflector

a H = 1½" - Sub Critical

b H = 1¾" - Sub Critical

c H = 2" - Super #1 = 18.88   up = 20.94

d H = 1⅞" - Top Reflector ~ 14⅛"

Super # 21.31   up = 21.53
.21
~~22~~

~ 220 mils

NOV 2 4 1964

INSTRUMENT CHECK

Time: 8 10 AM

Source: M-226 & J

	Channel F	A	B	C	D	E
Range	Hi & Lo	10/1000	OPR	30	10/1000	1050V
Source Dist.	✓	6"	✓	4'	2"	12"
% F.S. Trip	✓	95	✓	100	95	100

DF 1 #2

LIGHTS OK
TABLES OK
MAGNETS OK
AREA CLEARED
ALARM A, B, C

Taylor, Lynn, Mihalczo

R.A. 7" dia Cyl Expr. XXVIII Run 1e
14" C Reflector Date 11-24-1964 Time 8:30 AM

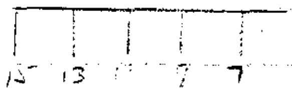
Purpose Critical Height determination.

e $H = 1\frac{13}{16}''$ - Sub Critical

Core 15" dia Cyl Expr. XXIX Run 1a
10" C Refl Date 11-24-63 Time 3:00 PM
Purpose Critical height determination.

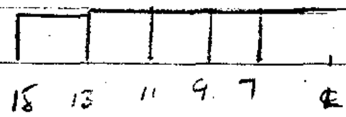
15" Solid

1a $\delta H = 7/8"$ – Positive Period – Clean Critical

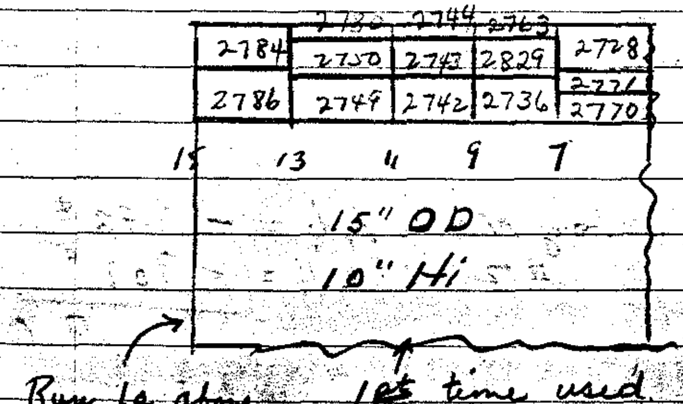


Log N = +103. sec +9.42 ¢
#1 = 99 " 9.73 ¢
#2 = 101.6 " 9.52 ¢
= +9.56 ¢

b Fuel Evaluation – Removed 1/32" fuel from 15"x13" ring.



Neg Period = ~120 sec ~ 17.5 ¢



other reflector
35" OD x 10" High (Top)
(35" OD x 15" ID) x 11" High (Radial)

NOV 25 1964

INSTRUMENT CHECK

Time 8 AM PM Source M-226 ¢'s

Channel ✓

	F	A	B	C	D	E
Range Hi Echo		10/1000	OPR	30	10/1000	1050V
Source Dist.	✓	6"	✓	6'	2"	12"
% F.S. Trip	✓	95	✓	100	95	100

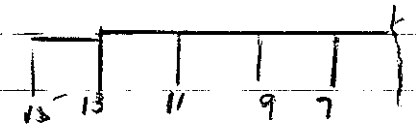
BF3 1&2

AREA CLEARED
LIGHTS - OK
TABLES - OK
MAGNETS - OK
ALARM A, B, C ✓

Mihalcyo, Taylor, Lynn

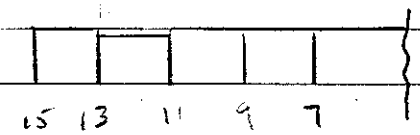
C. Repeat Run C p. 103.

negative Period - Log N = 127.6 sec = ~~7.85 ¢~~ -15.66 ¢
#1 = 125.1 " ~~-8.08 ¢~~ -16.22
#2 = 126.3 " ~~-8.01 ¢~~ -15.90
~~-8.01 ¢~~ -15.93 ¢



1/32" Fuel (13" x 11") = ~~25.49 ¢~~ 7.51 ¢

d Removed 1/32" fuel from 13"X11" ring [vs Run 1a]



Neg Period - Log N = 84.7 sec
#1 = 86.5 "
#2 = 85.1 "

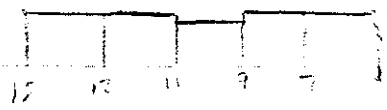
e added 1/8" x 15" Con top & fuel [equals 1/8" over top]
added support structures [vs Run d]

Neg Period - Log N = 184.6 = - 8.92 ¢
#2 = 182.4 = - 9.07 ¢
- 9.0 ¢

1/32" (13"X11") fuel = 35.57 ¢

f Evaluation of 11" X 9" fuel ring vs Run

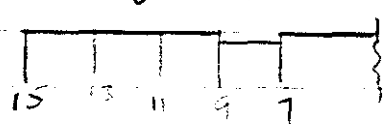
Neg Period – Log N = – 121.6 = – 17.12
#1 = – 119.8 = – 17.65
#2 = – 123.8 = – 16.50
– 16.99 ¢



$\frac{1}{32}$" (11" X 9") fuel = 43.56 ¢

g Evaluation of 9" X 7" fuel ring vs Run
#1 = 21.575 #3 = -10 #4 = -7

Neg. Period – log N = 185.6 sec = – 8.86 ¢
#1 = 191.5 " = – 8.58 ¢
#2 = 178.5 " = – 9.34 ¢
– 8.90 ¢



$\frac{1}{32}$" Fuel (9" X 7") = 35.47 ¢

h Fuel Conditions same as Run 1 c.
16" X ⅛" C on top of fuel plus supports (Run e)

Positive Period – Log N = 120.5 sec = + 8.23
#1 = 113.4 " = 8.73
#2 = 117.2 " = 8.52
+ 8.49 ¢

i. Removed supports -

Negative Period - Log N = -252 = - 6.01 ¢
#1 = 274.9 = - 5.42 ¢
#2 = 257.8 = - 5.85 ¢
- 5.76 ¢

Support = 14.25 ¢

j. Repeat Run 1c

Log N = - 106.0 = - 23.07 ¢
#1 = - 105.5 = - 23.36 ¢
#2 = - 101.0 = - 26.36
- 24.26 ¢

NOV 2? 1964

6¢

INSTRUMENT CHECK

Time 800

Source M226 & 07

	F	A	B	C	D	E
Ai & ho		10/1000	OPR	30	10/1000	1050 ✓
Scanner Dist.	✓	6"	✓	3'	3"	12"
% F.S. Trip	✓	95	✓	100	95	100
BF3 1 & 2	✓					

LIGHTS OK
TABLES OK
MAGNETS OK
AREA CLEARED ✓
ALARM LITES A, B, C ✓✓✓

✓ TAYLOR - LYNN

C.A. 15" dia cyl Expr. XXIX Run 1k
10" C Refl. Date 11-27-1964 Time 8:20 AM
Purpose Repeat Run 1c

k H = Same as 1c p. 104
negative Period – log N = 125 = -16.23¢
#1 = 114.7 = -19.28¢
#2 = 114.0 = -19.47¢
-18.33¢

l Repeat – Log N = 118.9 = -17.03¢
#1 = 114.6 = -19.28¢
#2 = 121.1 = -17.20¢
-17.83¢

Avg = -18.08¢

15" X 1/8" C added to top of fuel
Clean Crit Run 1a = 12.32¢

13" dia cyl Expt. XXX Run 1a
11" C Reflector Date 11-27-64 Time 10:45 AM
Purpose Critical Height determination.

13" Solid

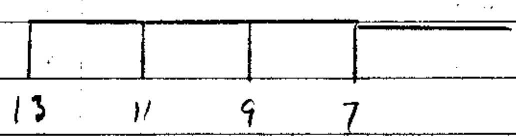
$\phi = 21.580$

1a $H = 1"$ Super Crit #1 = 21.425

b $H = 1"$ - 7" dia } Super Crit #1 = 21.527
$\frac{31}{32}"$ - 13"X7" }

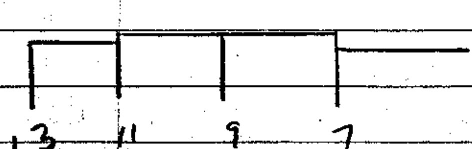
c $H = \frac{15}{16}"$ - 7" dia }
1" - 13"X7" } Clean Critical.

Pos Period — Log N = 54.3 sec = 15.14¢
#1 = 56.0 " = 14.81¢
#2 = 54.0 " = 15.19¢
+ 15.05¢ ✓

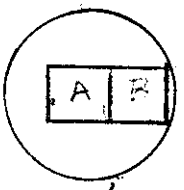


d $H = \frac{15}{16}"$ - 7" dia
$\frac{31}{32}"$ - 13"X11"
1" - 11"X7"

Neg Period — Log N = - 95.5 sec
#1 = - 94.45 "
#2 = - 96.4 "
95.45 sec



e Added support structure –
Added 2($\frac{1}{2}$" x 2$\frac{1}{2}$" x $\frac{1}{32}$") fuel to Center 7"



Positive Period – Log N = 50.3 sec = 15.94 ¢
#1 53.3 " = 15.32 ¢
#2 48.0 " 16.45 ¢
+ 15.90 ¢

f Removed support structure –

Poo Period Log N = 1650.0 sec = 6.42 ¢
#1 = 160.2 " = 6.58 ¢
#2 = 166.8 " = 6.36 ¢
+ 6.45 ¢

Supports = 9.45 ¢

g Removed $\frac{1}{32}$"(11" x 9") fuel
added $\frac{1}{32}$"(13" x 11") fuel [Run 2]

Period ∞

NOV [illegible] 1964

INSTRUMENT CHECK

Time 8:30 AM/PM — Source M226 & γ

	δ	Channel A	B	C	D	E
Range Hi & Lo		10/1000	OPR	30	10/1000	1050 V
Source Check	✓	6"	✓	6'	2"	12"
% F.S. Trip	✓	95	✓	100	85	100
BF3182	✓					

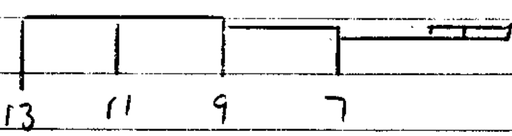
Area cleared
Lights OK
Magnets OK
Tables OK

Lynn, Taylor

h 13" dia cyl, 11" C Refl - Cont'd

Removed $\frac{1}{32}$" from 9"×7" fuel ring -
Added $\frac{1}{32}$" to 11"×9" fuel

Negative Period - Log N = -384 sec = -3.69¢
#1 = -438 " = -3.19¢
#2 = -358 " = -4.10¢
— 3.63¢



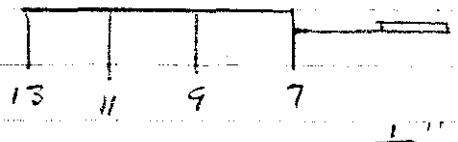
i Removed (2½"×2½"×$\frac{1}{32}$") pc nearest Center added for Run 1e.

neg Period - Log N = 102 sec = -25.61¢
#1 = 101.6 " = -25.95¢
#2 = 107. " = -22.27
-24.61

1 pc (2½ × 2½ × $\frac{1}{32}$") = 20.98¢ pc A Run 1e

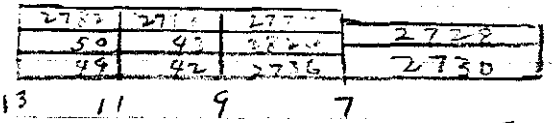
j added $\frac{1}{32}$"(9"X7") fuel -

Pos Period - Log N = 19.8 sec = + 28.03 ¢
#1 = 20.8 " = + 27.29 ¢
#2 = 20.7 " = + 27.36 ¢
÷ 27.56 ¢



$\frac{1}{32}$" (9"X7") = 52.17 ¢

k Removed 1pc (2½" x 2½" x $\frac{1}{32}$") pc B (Run e)
Repeat of Run 1c.
Positive Period - Log N = 55.9 sec = + 14.82 ¢
#1 = 54.7 " = + 15.05 ¢
#2 = 55.3 " = + 15.13 ¢
15.00 ¢



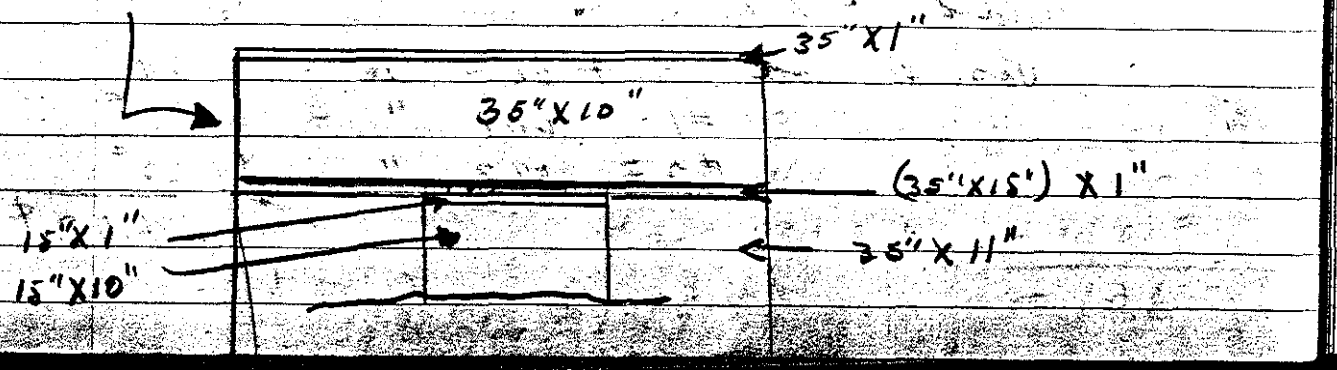
1pc (2½"x2½"x $\frac{1}{32}$") pc B = 12.56 ¢
pc B
Run 1e

$\frac{1}{32}$" (9"X7") = 52.17 ¢

$\frac{1}{32}$" (11"X9") = 48.54 ¢

$\frac{1}{32}$" (13"X11") = 42.09 ¢

Carbon (13" dia cyl)



C.n. 11" dia cyl Expr. XXXI Run 1a
12" C Reflector Date ..... 19 Time 1:40 PM
Purpose Determine Critical Height
11" Solid

1a $H = 1\frac{1}{8}$" - Negative Period. Near Critical

2744	2763	
22	2774	2770
43	2829	29
42	2736	28

Log N = .380 sec = - 3.73
#1 = 441 " = - 3.17
#2 = 417 " = - 3.36
- 3.52 ¢

b Added (35"X15") X 0.525" Carbon to top reflector.

#1 = 21,460
#3 = -2
#4 = -1

Pos Period = +152.7 = + 6.86 ¢
#1 = 142.0 = 7.28
#2 = 152.4 = 6.86
7.0 ¢

(35"OD X 15"ID) X 0.525" C = 10.52 ¢

c Added 15"X 1/4" C to top reflector.
Pos Period = + 60.4 sec = +14.04 ¢
#1 = 61.9 " = 13.80 ¢
#2 = 59.3 " = 14.22 ¢
14.02 ¢
15"X 1/4" C = 7.02 ¢

INSTRUMENT CHECK — DEC 1 1964

Time 8^10 AM — Source M226 & ϕ

Channel	F	A	B	C	D	E
Range	Hi & Lo	10/1000	OFF	30	10/1000	1050V
Source Dist.	✓	7"	✓	5'	2"	12
% F.S. Trip	✓	90	✓	100	80	100
DF₃ 1&2	✓					

Lights OK
Tables OK
Magnets OK
Area cleared
Alarms A, B, C ✓
Taylor & Lynn

11" dia cyl, 12" C Reflector

d added 15" X ½" C to center of top Reflector.
Positive Period - Log N = +23.2 sec = +25.70 ¢
#1 = 23.5 " = 25.52
#2 = 22.3 " = 26.27
15" X ½" C = 11.81 ¢ — 25.83 ¢

e Fuel Evaluation 1/32" (11" X 9") ring
Negative Period - Log N = ~~114~~ 111.3 sec = ~~19.47~~ 20.50 ¢
#1 = ~~104.2~~ 105.3 " = ~~21.~~ 23.35 ¢
#2 = 110 " = -21.08 ¢

-21.64 ¢

1/32" (11" X 9") = 47.47 ¢

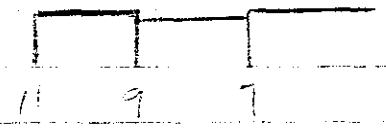
f added 4" X 4" X ½" plexiglas to 2 points under bottom reflector.

Neg Period - Log N = 139 sec = -13.51 ¢
#1 = 141.3 " = -13.15 ¢
#2 = 131.1 " = -14.90 ¢
-13.85 ¢

Plexiglas = 7.79 ¢

g Fuel Evaluation $\frac{1}{32}$"(9"X 7")-

Negative Period - Log N = -125.9 = - 16.00 ϕ
#1 = 128.5 = - 16.85 ϕ
#2 = 125. = - 16.22 ϕ
- 16.36 ϕ

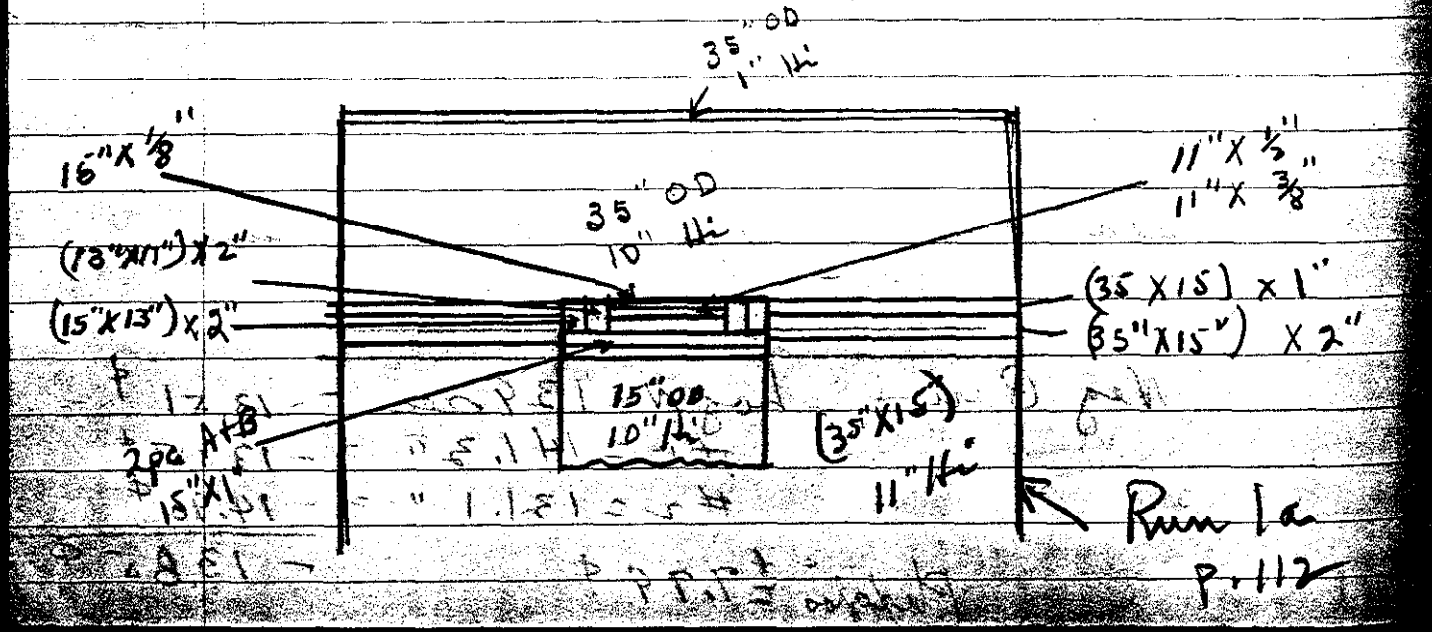


$\frac{1}{32}$"(9" X 7") = 49.98 ϕ

h Supports Evaluation - vs Run 1a

Pos Period - Log N = + 413 = 2.84 ϕ
#1 = 410 = 2.85 ϕ
#2 = 427 = 2.76 ϕ
2.82 ϕ

Supports = 6.34 ϕ



9" dia Cyl. Expt. XXXII Run 1a
13" C Reflector Date 12-1-1964 Time 3:40 PM
Purpose Critical Height Determination.

9" Solid

1a H = 1 3/8" - Sub Critical

b H = (9"X7") ring - 1 13/32"
7" dia = 1 3/8" + 2 (2½"X 2½"X 5/32")

A|B

Pos Period = ~~togn~~ = 38.2 sec = 19.09 ¢
#1 = 37.6 " = 19.29 ¢
#2 = 36.4 " = 19.68 ¢
19.35 ¢

? on Closure this Run

DEC 1964

INSTRUMENT CHECK

Time 8 15 AM PM Source M-22 # 1

	F	Channel A	B	C	D	E
Range: Hi & Lo		10/1000	CPK	30	1%/min	1050V
Source Ht.	✓	11"	✓	4'	3"	12"
% F.S. Trip	✓	95	✓	100	85	100
BF: 1 & 2	✓					

CLEARED AREA.
Tables OK
Lights OK
Magnets OK
Alarm A, B, C

Taylor & Lynn

1c 9" Solid Cont., 13" C Reflector
Repeat Run 1b p. 115 Check Critical

Pos Period - Log N = 28.6 sec = + 22.80 ¢
#1 = 27.9 " = + 22.29 ¢
#2 = 29.4 " = + 22.42 ¢
22.50 ¢

2763	2763
3217	16
2774	20
2829	29
2736	2728

d Removed $\frac{1}{32}$" (9"x7") fuel - (Us Run c)

Negative Period = Log N = 123 sec = - 16.72 ¢
#1 = 119.8 " = - 17.68 ¢
#2 = 124 " = - 16.47 ¢
16.96 ¢

$\frac{1}{32}$" (9"x7") = 39.46 ¢

2 Removed 2½" X 2½" X 1/32" pc ~~[illegible]~~ nearest center. (A) (p. 115)

[Vs Run 1c]

Positive Period –

Log N = + 635 sec = + 1.90 ¢
#1 = 583 " = 2.06 ¢
#2 = 578 " = 2.08

2.01 ¢

pc A = 20.49 ¢

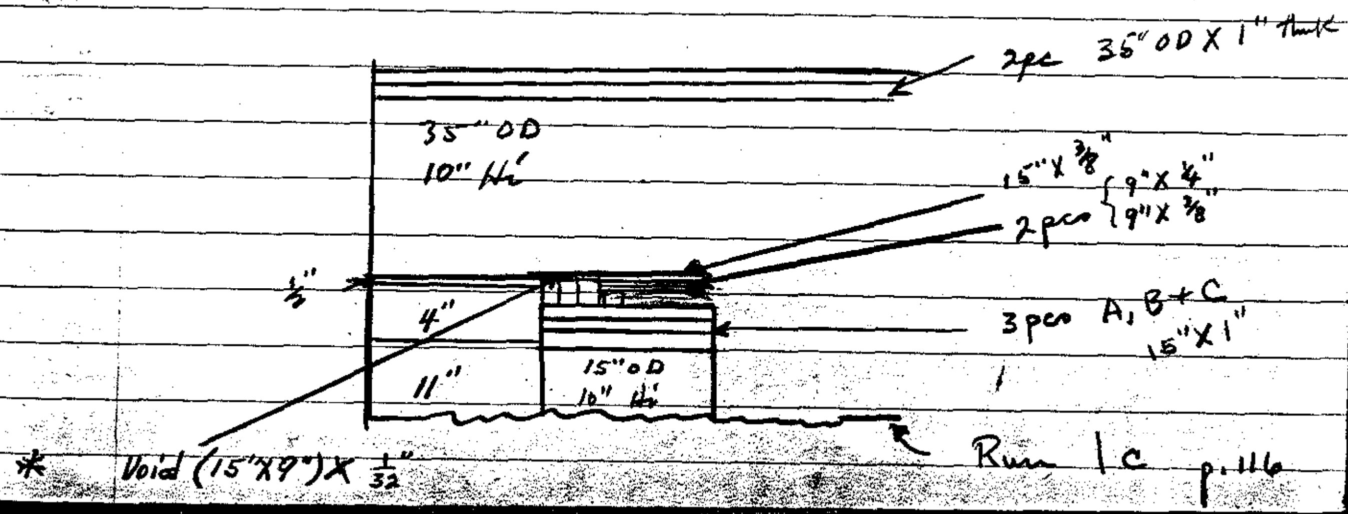
7 Removed 2½" X 2½" X 1/32" pc B (see p. 115) (Vs Run 1c)

Pos Period – Log N = 244 sec = + 4.58 ¢
#1 = 259 " = + 9.34 ¢
#2 = 242.3 " = + 4.61 ¢

4.51 ¢

~~(pc B = 17.99 ¢)~~

See next page



g Repeat Run of p.117.

Pos Period — Log N = 280.1 sec = + 4.05 ϕ
#1 = 270.9 " = + 4.18 ϕ
#2 = 268.4 " = + 4.20 ϕ
4.14 ϕ

P= D = 18.36 ϕ

h Created additional void of (15"x9") x 1/8" in carbon. *see bottom previous page. (Us Run 1c)

Negative Period — Log N = 369 sec = − 3.86 ϕ
#1 = 424 " = − 3.30 ϕ
#2 = 410 " = − 3.43 ϕ
− 3.53 ϕ

(15"x9") x 1/8" C void = 26.03 ϕ
or
1/32" = 6.51 ϕ

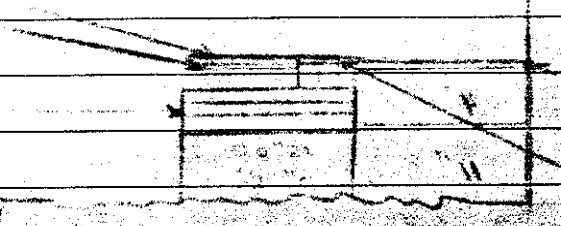
le

i Supports Evaluation [Us Run 1c]

Positive Period — Log N = 23.4 sec = + 25.38
#1 = 23.71 " = + 25.40 ϕ
#2 = 23.71 " = + 25.40 ϕ
25.46 ϕ

i

Supports = 2.96 ϕ



INSTRUMENT CHECK

10:50 — M-326 & 8

Channel ✓

F	A	B	C	D	E
✓	10/1000	oper	X	10/10.00	1052 V.
✓	7"	ok	4'	3"	12"
✓	90	✓	100	100	100+

BF3 1 & 2 ✓

Table ok
Lights ok
Magneto ok
Area Cleared
Alarms A, B + C ok
Taylor and Lyman

(c)

C.A. 7" dia Cyl. Expr. XXVIII Run 1 J

14" Carbon Reflector 12-3-1364 Time 11:05 AM

Date Critical Height Determination

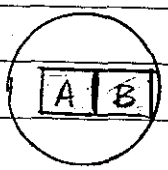
7" Solid

14" Carbon Reflector

If Ht = $1\frac{7}{8}$" Super critical #1 = 21.577 Yp = 21.700

-125 mils

g Ht = $1\frac{13}{16}$" + 2 (2½" x 2½" x $\frac{1}{32}$")

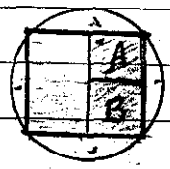


#1 = 21.690

Sub critical 7" dia A = 38.48 in²

2 (2½ x 2½) A = 12.50 in²

h Ht = $1\frac{13}{16}$" + 2(2½" x 2½" x $\frac{1}{32}$") + 5" x 5" x $\frac{1}{32}$"

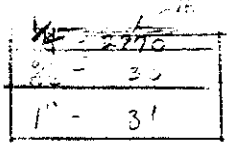


Sub Critical

Chipped graphite (9"x7") ring so that 5"x5" would go down against 7" dia fuel.

i $H = 1\frac{13}{16}" + 5" \times 5" \times \frac{1}{16}"$ Clean Initial
(+77 gms)

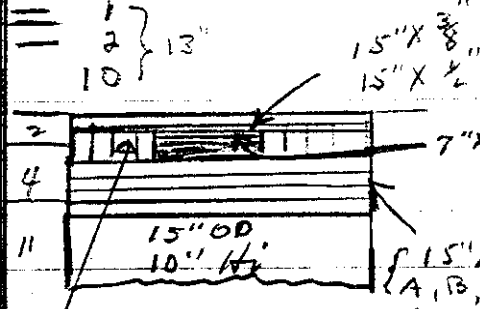
Positive Period – Log N = 114 Dec = 8.68 ¢
#1 = 110 " = 8.93 ¢
#2 = 104 " = 8.36 ¢
+ 8.66 ¢



j. Support Evaluations –

Pos Period – Log N = 87.9 sec 10.66 ¢
#1 = 91.2 " 10.36 ¢
#2 = 88.6 " 10.60 ¢
+ 10.57 ¢

Support = 1.88 ¢



k added $2(2\frac{1}{2}" \times 2\frac{1}{2}" \times \frac{1}{32}")$ as per Run h p.119

Positive Period –

Log N = 28.5 sec 22.84
#1 = 28.5 " 22.84
#2 = 31.0 " 21.73
22.47 ¢

created voids
a. $(2\frac{1}{2} \times 2\frac{1}{2} \times \frac{1}{32})$ at full top
b. $(15" \times 7") \times \frac{1}{32}"$ in Carbon

l Removed $1(2\frac{1}{2}" \times 2\frac{1}{2}" \times \frac{1}{32}")$ –

Pos Period – Log N = 634 sec = 1.90 ¢
#1 = 718 sec = 1.69 ¢
#2 = 631 sec = 1.91 ¢
1.83 ¢

Top

$2\frac{1}{2}" \times 2\frac{1}{2}" \times \frac{1}{32}" = 20.64$ ¢

DEC ... 196

INSTRUMENT CHECK

Time 10:00 AM

Source M-226 + 8

	Channel A	B	C	D	E
Range	$\frac{10}{1000}$	open	x	$\frac{10}{1000}$	1050 V
Source Dist.	6"	OK	4'	2"	8"
% F.S. Trip	90	✓	100	100	100 +

Tables OK
Lights OK
Magnets OK
Area Cleared
Alarms A, B, + C OK

Taylor + Lyman

C.A. 9"X7" Ring Expr. XXXIII Run 1a
13" C Refl. Date DEC ... 7 19[illegible] Time 11:00 AM
Purpose Critical Height Determination

1a $H = 5''$ — Sub Critical.

b $H = 5\frac{1}{4}''$ — Super #1 = 21.5 15
−65 mils

c $H = 5\frac{3}{16}''$ — Clean Critical
Top Reflector = $12\frac{3}{4}''$
Negative Period Log N = −233 sec = −6.61
#1 = −213 " = −7.38
#2 = −231 " = −6.69
−6.89 ¢

d $H = 5\frac{7}{32}''$ — Cleaner Critical
↗ Pos Period = 33.5 sec = +20.72 ¢
#1 = 33.0 " = +20.17 ¢
Top Reflector #2 = 37.6 " = +19.29 ¢
$12\frac{25}{32}''$ 20.06 ¢

$\frac{1}{32}(9''X7'') = 26.95$ ¢

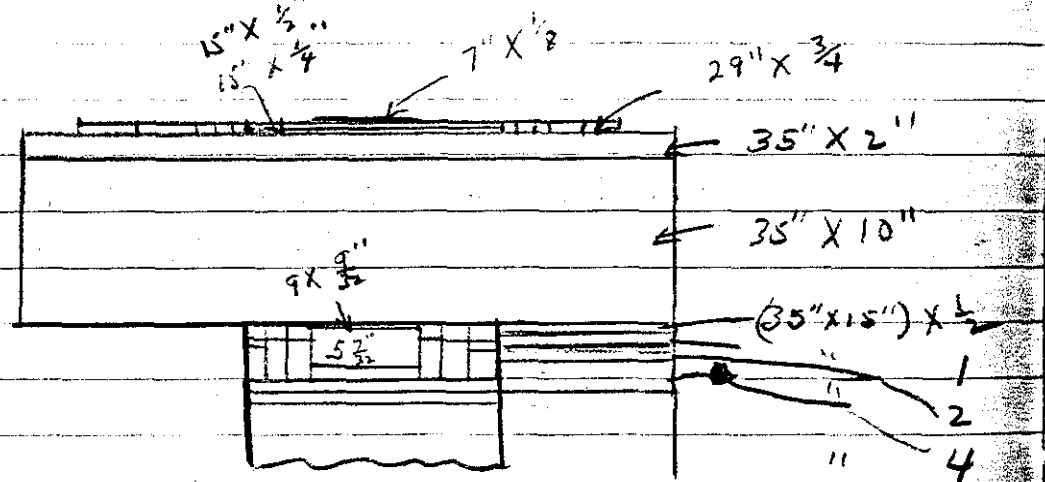
e Supports Evaluation =

log N = 28.9 sec = +22.66 ϕ
#1 = 28.6 " = +22.34 ϕ
#3 = 28.5 " = +22.84 ϕ
22.61 ϕ

Supports = 2.55 ϕ

f Clean Critical – H = 5 7/32", 13" Reflector

Pos Period – log N = 20.8 sec = 27.29 ϕ
#1 = 21.8 " = 26.60 ϕ
#2 = 22.3 " = 25.64 ϕ
26.51 ϕ



C.A. 9" X 7" Expr. XXXIV Run 1a
13" C Reflector
L Core Date ______ 19 ___ Time 3:50 ~~AM~~ PM
Purpose Critical Height Determination

1a H = 4½" — Sub Critical

DEC 7 1964

INSTRUMENT CHECK

Time 8^30 AM — M226 & L

	F	A ✓	B	C	M	E
Range	Hi & lo	10/1000	OPR	30	10/1000	1050 V
Source	✓	10"	✓	2'	6"	8"
% F.S. Trip	✓	95	✓	100	100+	100+
DF₁ 1&2	✓					

Area Cleared ✓
Magnets ✓
Lights ✓
Tables ✓
Alarm A✓, B✓, C✓
Taylor & Lynn

C.A. 9" X 7" Expr. XXXIV Run 1-B
13" C Reflector
C Core Date ____ 19 ___ Time 8:30 AM
Purpose Critical Height Determination

1B. H = 4 5/8" – Sub Critical –

c H = 4 11/16" – Clean Critical

Negative Period – Log N = 467 = −2.97 ¢
#1 = 474 = −2.93 ¢
#2 = 534 = −2.57 ¢
−2.82 ¢

d H = 4 23/32 – 9" X .013" void 3/4" above fuel

Pos Period – Log = 40.7 sec 18.34
40.7 " 18.34
41.7 " 18.05
18.24 ¢

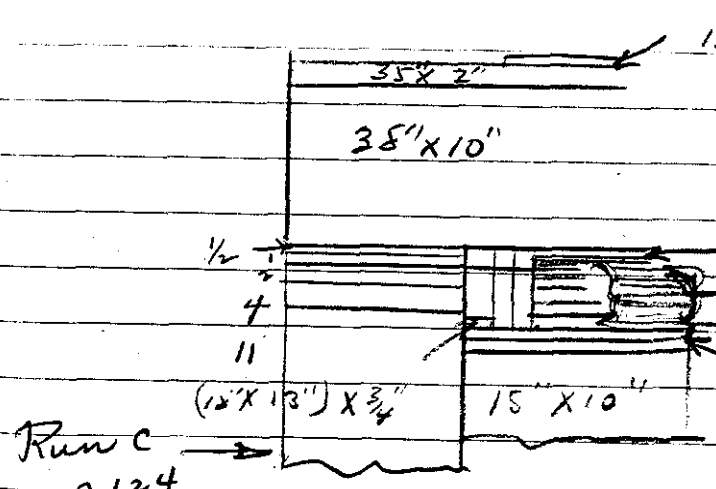
next page 1/32" (9" X 7") = 21.06 ¢ + void

$N = 4\frac{23}{32}$", 9" X .064". void $\frac{11}{16}$" above fuel.

Pos Period Log N = 105.0 sec = + 9.29 ¢
106.5 " = + 9.18 ¢
106.2 " = + 9.21
9.23 ¢

57 mil additional void = 9.01 ¢

13 mil void = 2.30 ¢
21.06
$\frac{1}{2}$"(9" X 7") = 23.36



Core Centerline

	2773 - ⅛
7" X ¼"	37 - 7/16
X ⅜"	38 - 1"
X 9/16"	41 - 1½
X 1½"	40 - 1½"
X 2"	

7 Supports Evaluation –

Pos Period – Log N = 82.5 sec = 11.18
#1 = 80.0 " = 11.45
#2 72.5 " = 11.72
Supports = 2.22 ¢ 11.45 ¢

Core 11"X9" Run XXXV Run 1a
12"C Rifle Date 12-7-56 Time 3:40 ~~AM~~ PM
Purpose Critical Height Determination

1a H = 5 1/16" - #1 = 21.028 ∞ 3:48 PM
21.030 ∞ 3:55 PM

Fuel just removed from 109 @ 65° F

DEC 8 1964
Area Cleared
Lights OK
Magnet OK
Tables OK
Alarm A✓ B✓ C✓
Taylor & Lynn

INSTRUMENT CHECK

Time 8:05 AM Source M226 #1

	F	A	B	C	D	E
		Channel				
	Hi & Lo	10/1000	OPR	30	10/1000	1050 V
	✓	8"	✓	3'	2"	10"
% F.S. Trip	✓	95	✓	100	100	100+
CTR 1 & 2	✓					

-8 PM
5 PM

C.A. 11" X 9" Expr. XXXV Run 1-b
12" C Refl. Date 12-8-1964 Time 8:15 AM
Purpose Repeat 1a p. 126

ℓ H = 5 1/16" #1 = 21.03 ∞
No detectable difference in level.
Fuel in 108 overnight — Temp 71° F.

c H = 4 15/16" — Top Refl = 12 1/16"
Clean Critical
Pos Period — Log N = 79 sec = 11.55 ¢
#1 = 77.5 " = 11.72 ¢
#2 = 76.8 " = 11.80 ¢
+11.69 ¢

d - Supports Evaluation (see p. 52)

Positive Period - Log N = 51.7 sec 15,64 ¢
#1 = 52.0 " 15,58 ¢
#2 = 54.0 " 15,18 ¢
15,47 ¢

Supports = 4.72 ¢

e Fuel Evaluation - $\frac{1}{32}$" (11"x9") (vs Run C)

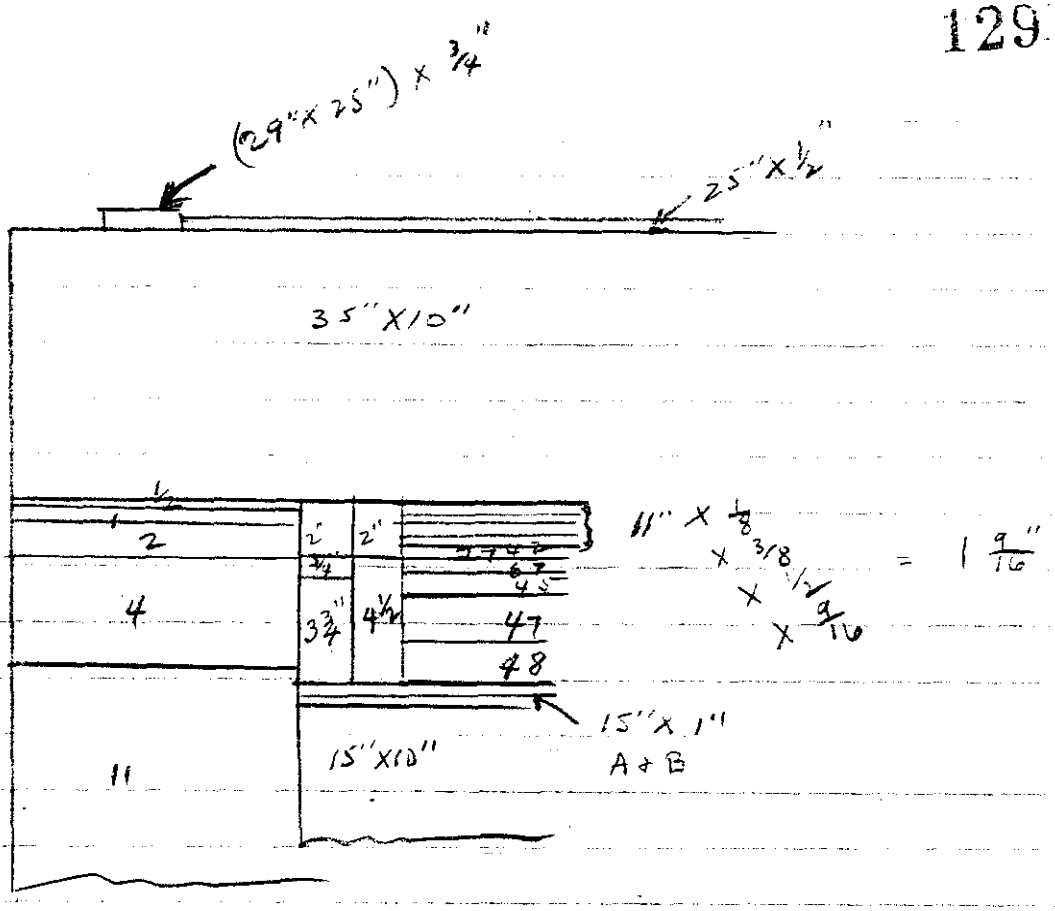
Neg. Period: Log N Top Reflector = $12\frac{3}{32}$" ¢
152 sec = - 11.75 ¢
#1 148.5 " = - 12.18 ¢
#2 153.7 " = - 11.76 ¢
- 11,83 ¢

$\frac{1}{32}$" (11"x7") = 23,52
+ $\frac{1}{32}$" Top Reflector

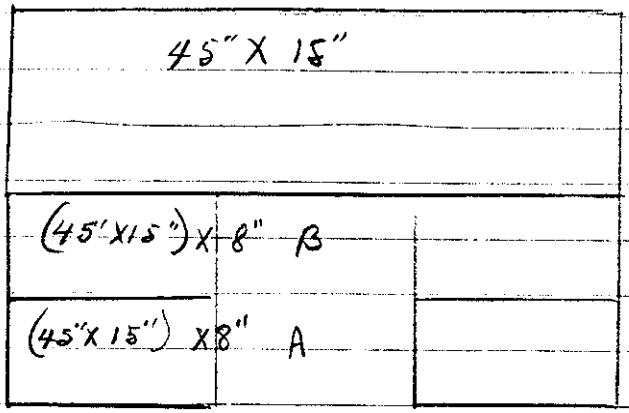
f Top Reflector Evaluation - Top Reflector = $12\frac{19}{32}$"
(35" OD x 1") B substituted for (25"x $\frac{1}{2}$") and (29"x 25") x $\frac{3}{4}$" shown for Run C.

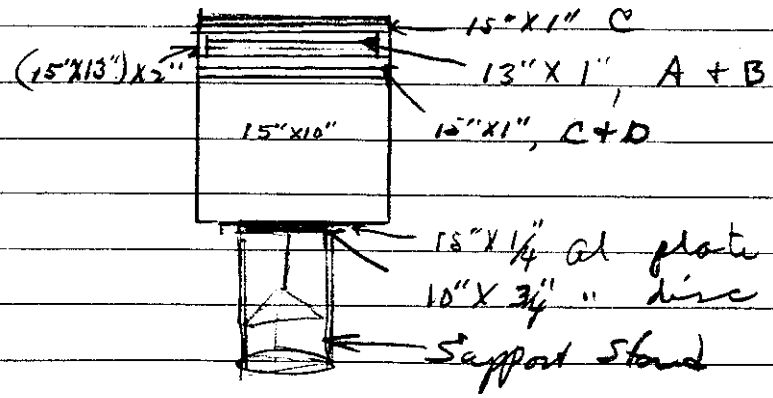
Pos Period Log N = 108 = +9.06 ¢
#1 = 100.9 = +9.58 ¢
#2 = 103.6 = + 9.38 ¢
9.34 ¢

~ 35"x $\frac{1}{2}$" = 21.17 ¢
35" x $\frac{1}{32}$" = 1.32 ¢
∴ Fuel $\frac{1}{32}$" (11"x9") = 24.89 ¢


(29" X 25") X 3/4"
25" X 1/2"
35" X 10"
2
4
11
2"
2"
3/4
3 3/4"
4 1/2"
47
48
15" X 10"
15" X 1"
A + B
11" X 1/8 X 3/8 X 1/2 X 9/16 = 1 9/16"

Run 1c p. 127


45" X 15"
(45"X15") X 8" B
(45"X15") X8" A


15"X1" C
(15"X13")X2"
13"X1" A+B
15"X10"
15"X1", C+D
15"X1¼ al plate
10"X3¼" disc
Support Stand

DEC 1964

INSTRUMENT CHECK

1:15 Am ~~1:45~~

M-226 + 8

F 10/1000 ... x 10/1000 1030 V.

OK 8" OK 4' 2 9"

F.S. Trip 90 ✓ 100 100 100 +

Ch 1, + 2 OK

Lights OK
Magnets OK
Tables OK
Area Cleared

C. 15" Solid ... XXXVI Run 1

15" C Reflector DEC 1 1 1964 Time 1:30 ~~AM~~ PM

Purpose Critical Height Determination

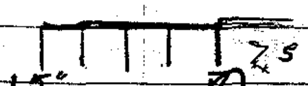
1a $H = \frac{11}{16}$" (11" dia) #1 = 21.886 up - 21.935
$\frac{5}{8}$" (15" x 11")

Sub Critical

b $H = \frac{3}{4}$" (7" dia) #1 = 21.760 up = 21.8~~40~~
$\frac{3}{4}$" (15" x 13") - 78 mils
$\frac{11}{16}$" (13" x 7")

Super Critical

c $H = \frac{3}{4}$" (7" dia) ~~......~~ #1 21.842
$\frac{11}{16}$" (15" x 7") #2 21.841

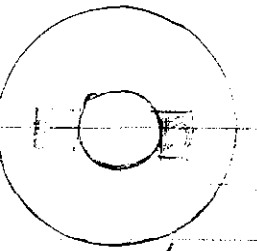


.68

Period - ∞ - Chron Critical

[redacted]

d added 2 ($2\frac{1}{2}$" x $2\frac{1}{2}$" x $\frac{1}{32}$") to either side of 7" dia disc



Pos Period _ Log N = 43.4 sec 17.58 ¢
#1 = 44.0 " = 17.43 ¢
17.50 ¢

2 pcs = 17.50 ¢
non cutter

e Supports Evaluation _ {Stand and $\frac{1}{4}$" plate $\frac{3}{4}$ disc}

Pos Period _ Log N =
#1 = 36 sec 19.82 ¢
#2 = 37.5 sec 19.32 ¢
19.57 ¢

Supports = 2.07 ¢

See p. 135

~~2758~~	~~2758~~	~~2744~~	~~2763~~	2729
2766	2785	2767	2737	2728

← Run 1c

DEC 14 1964

INSTRUMENT CHECK

Time: 8^{15} AM

Source: M-226 #1

	F	A	B	C	D	E
	Hi & Lo	10/1000	OPR	30	10/1000	1050 V
Scrams	✓	8"	✓	3'	2"	8"
% F.S. Trip	✓	95	✓	100	95	100+
BF3 1 & 2	✓					

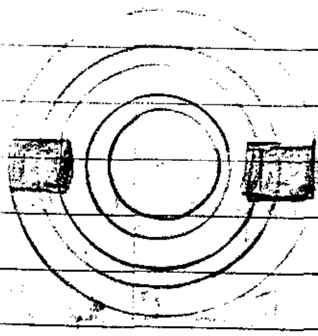
Area Cleared
Lights OK
Tables OK
Magnets OK
Alarm A✓, B✓, C✓
TAYLOR & LYNN

C.A. 15" dia cyl XXXVI — Run 17
15" C Refl. — Time 8:21 AM
Purpose: Con't

17 moved the 2pcs in Run d to outside edge
Removed supports

(VS Run c)

Positive Period — Log N = 70.0 sec = 12.63¢
#1 = 69.5 " = 12.70¢
#2 = 74.0 " = 12.13¢
12.48¢



2pc at edge = 12.48¢

1g. 2pcs moved in to edge of 13" ring. [vs Run 1c]

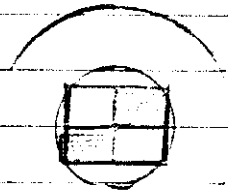
Po Period –

Log N = 38.2 sec 15.96
#1 = 49.2 " 16.18
#2 = 49.2 " 16.18

16.11 ¢

2pcs at 13 ring = 16.11 ¢

h H = 11/16" + (5" X 5" X 1/32") + 2 (2½" X 2½" X 1/32")



Sub Critical

i H = 11/16" + (5" X 5" X 1/16") + 2 (2½" X 2½" X 1/32")

Placed as in Run h
Sub Critical

j. Evaluation of (45" X 15") X ½" C Top Reflector

Po Period 6 –

Log N = + 38.2 sec = 19.09 ¢ (vs Run C and d)
#1 = + 39.1 " = 18.81 ¢ 1pc (2½" X 2½" X 1/32") as in Run d
#2 = + 40.0 " = 18.28 ¢

18.72 ¢
8.75 ¢ 1pc
9.97 ¢

(45" X 15") X ½ = 9.97 ¢

k Supports Evaluation – Complete [vs Rung]

Pos Period –	Log N =	31.9 sec	=	21.35¢
	#1 =	31.7 "	=	21.43¢
	#2 =	30.9 "	=	21.77¢
				21.52¢

Supports = 2.80¢

C.A. 13" dia Solid XXXVII Run 1a
16" C Reflector 12-14-64 Time 2:30 PM
Purpose Critical Height Determination

1a H = $\frac{13}{16}$" - Sub Critical.

b H = $\frac{13}{16}$" - 7" dia.
$\frac{27}{32}$ - (15" X 7") } Near Critical

Top Reflector = $16\frac{5}{32}$"

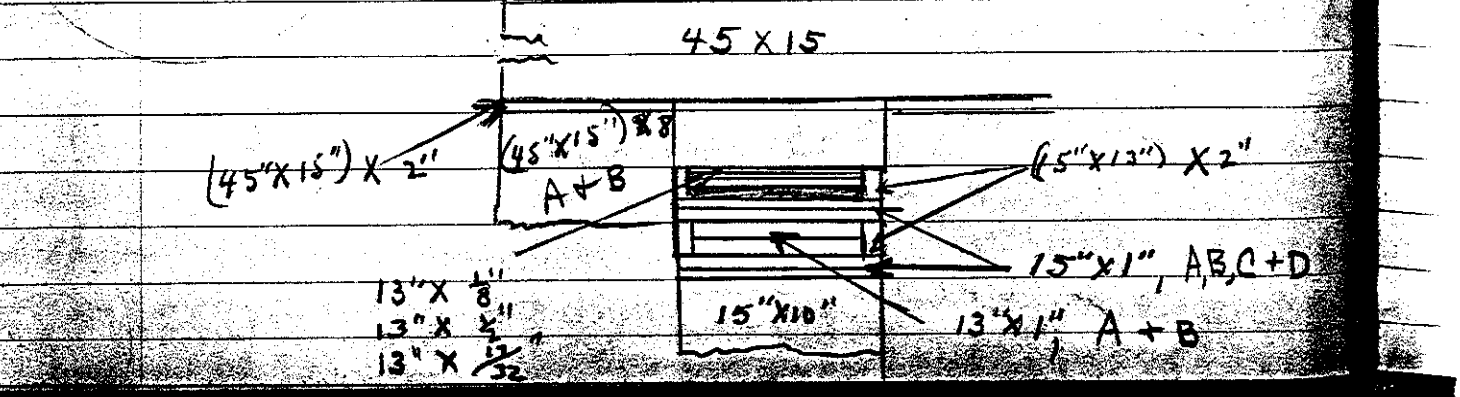
Poo Period Log N = 64.3 sec = 13.43 ¢
H1 = 64.5 " - 13.41 ¢
H2 = 67.1 " - 13.03 ¢
13.29 ¢

3215	32	3217	2770
2715	2760	2737	2730

13 11 9 7

c Added 1 pc $2\frac{1}{2}$" X $2\frac{1}{16}$" X $\frac{1}{32}$" on edge of 7" dia.

Poo Period Log N = 22.6 sec 26.08 ¢
H1 = 20.0 ¢ " 27.88 ¢
H2 = 21.5 ¢ " 26.81
1 pc as Shown = 13.64 ¢ 26.93 ¢



INSTRUMENT CHECK

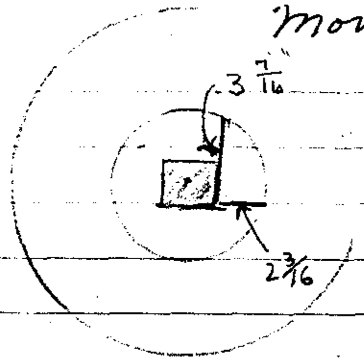
8^{10} Mzze & F

	F	A			D	E
R	Hi & Lo	10/1000	OPR	30	1%/1000	1050V
	✓	10"	✓	4'	2"	8"
F.S. Trip	✓	95	✓	100	85	100
BF_3 1#2	✓					

DEC 15 1964
Lights OK
Table OK
Magnet OK
Alarms A✓ B✓ C✓
Area Cleared
LYNN & TAYLOR

8:35 AM 1d 13" Solid, 16" C Reflector.

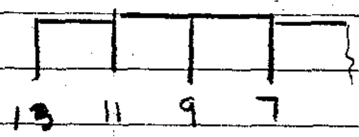
Moved the $2\frac{1}{2}" \times 2\frac{1}{2}" \times \frac{1}{32}"$ near Center.



Pos Period - Log N = 20.7 sec 27.36¢
#1 = 21.1 " 27.08
#2 = 21.5 " 26.67
pc Near Center = 13.75¢ 27.04¢

e Fuel Evaluation Removed $\frac{1}{32}"$ (13"X11").

Negative Period - Log N = -182.4 sec = -9.07
#1 = -186.3 " = -8.82
#2 = -179.7 " = -9.24
-9.04¢



$\frac{1}{32}"$ (13"X 11") = 36.08¢

f Removed $\frac{1}{32}$" (11" x 9") - Added 2½" x 2½" x $\frac{1}{32}$"

vs Run C

26.93
13.64
40.57

negative Period -

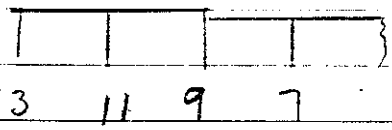
Log N = 710 sec = - 1.89 ¢
#1 = 727 " = - 1.84 ¢
#2 = 846 " = - 1.58 ¢
- 1.77 ¢

$\frac{1}{32}$" (11" X 9") = 42.34 ¢

g Removed $\frac{1}{32}$" (9" X 7"). added 2½" X 2½ X $\frac{1}{32}$"

vs Run C

40.57 ¢



negative Period -

log N = 1168 sec = -1.03 ¢
#1 = 1515 " 0.86 ¢
#2 = 1550 " 0.84 ¢
- 0.93 ¢

$\frac{1}{32}$" (9" X 7") = 40.57

1/32"

12:50 PM h Supports Evaluation - [Vs Run b]

6.93
.64
.57

Pos Period = Log N = 44.8 sec = + 17.23 ¢
#1 = 43.3 " 17.62 ¢
#2 = 45.6 " 17.03
+ 17.29 ¢

Supports = 4.0 ¢

i Top Reflector Evaluation 45" X ½" C added to top.

Pos Period - [Vs Run b]

Log N = 18.45 sec = + 29.10 ¢
#1 = 18.37 " = 29.16
#2 = 19.00 " = 28.65
28.97 ¢

.57 ¢

45" X ½" C = 15.68 ¢

45" X 1/32" C = 0.98 ¢

DEC 16

INSTRUMENT CHECK

Time 9^10 AM Source M-226 & n

	F	Channel A	B	C	D	E
Range	Hi & lo	10/1000	OPR	30	10/1000	1050 V
Source Dist.	✓	10"	✓	3'	2"	8"
% F.S. Trip	✓	95	✓	100	90	100+
BF_3 1 & 2	✓					

Lights OK
Tables OK
Magnets OK
Area Cleared
Alarm A✓ B✓ C✓

TAYLOR & LYNN

C.A. 11" Solid Expr. XXXVIII Run 1a
17" C Reflector Date 12-16-1964 Time 8:15 AM
Purpose Critical Height Determination

up. 21.530

1a H = 1 1/16" H1 = 21.10
Super Critical. ± 6?

b H = 1" 21.532 21.582
Super critical. ∞ 21.500
~ ? ¢/mil

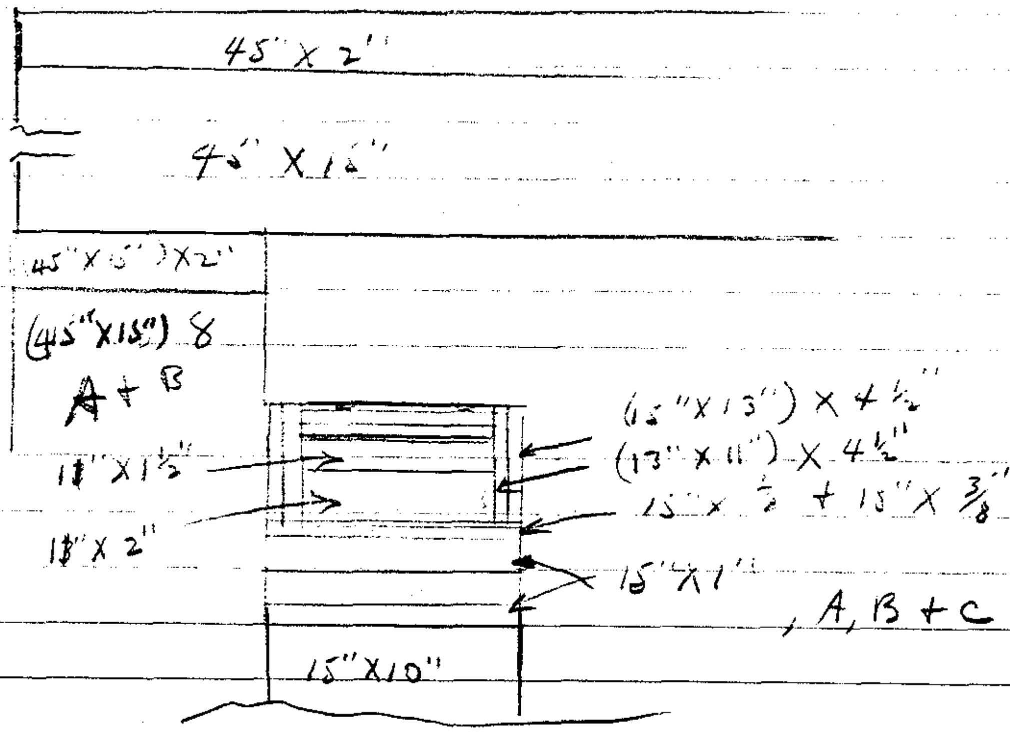
c H = 1" (7" dia)
= 31/32" (11" X 9") } Sub Critical

d H = 1" (7" dia + 11" X 9" ring)
= 31/32" (9" X 7")

Sub Critical (Close)

d Cont'd

271[illegible]	~~[illegible]~~	2770
43	2517	2744
42	[illegible]7	27[illegible]8



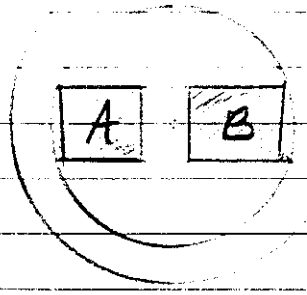
Supports = 2¢ Est.

6.3×10^4

9" Solid ~~XXXX~~ 1a
18"C Reflector 12-16-64 2:10
Critical Height Determination

1a $H = 1\frac{1}{2}$" - Sub Critical

b $H = 1\frac{1}{4}" + 2\left(2\frac{1}{2}" \times 2\frac{1}{2}" \times \frac{1}{32}"\right)$ on 7" dia
$1\frac{9}{32}"$ (9"X7") ring
Clean
Critical
Top Reflector = $18\frac{1}{4}$" ; Void $\frac{1}{4}$" above Fuel @ 15"X9"C
Po Period Log N = 78.2 sec = 11.64 ¢
#1 = 78.1 " = 11.65 ¢
#2 = 80.1 " = 11.43 ¢
+ 11.57 ¢



3217	2768
2774	
2736	29
2829	24

9" 7"

c Removed 1 pc (B) in Run b.

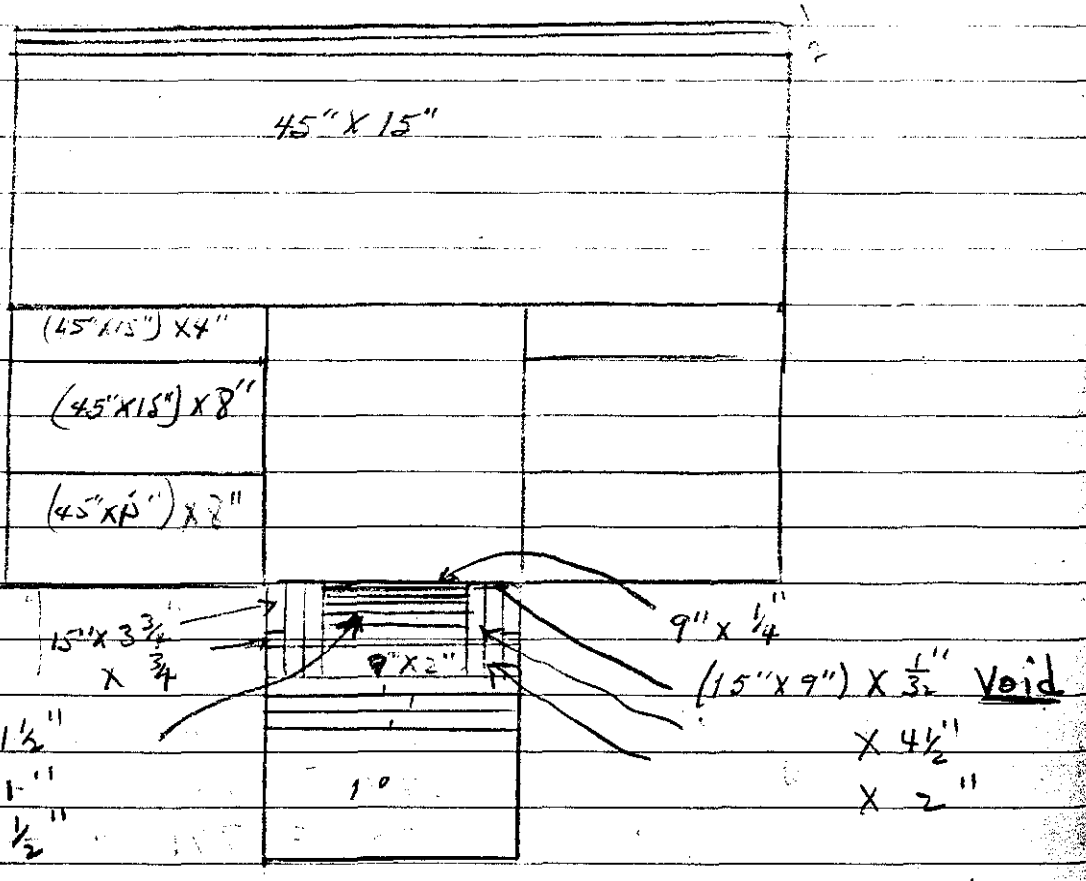
Neg Period Log N = 440 sec - 3.17 ¢
#1 = 401 " - 3.51 ¢
#2 = 396 " - 3.57 ¢
- 3.41

1 pc = 14.98 ¢

d. Supports Evaluation (Vs Run B)

Pos Period — Log N = 42.3 sec 17.88 ϕ
#1 = 40.6 " 18.36 ϕ
#2 = 42.1 " 17.94 ϕ
18.06 ϕ

Supports = 6.49 ϕ



18

DEC 1964

INSTRUMENT CHECK

Time 8^{20} AM Z   Sample M226 & 8

	Channel					
	F	A	D	C	B	E
Range	Hi & Lo	10/1000	OPR	10/1000 30		1050 V
Source	✓	10"	✓	4'	2"	8"
% F.S. Trip	✓	90	✓	100	90	100+
BF3 1&2	✓					

Lights OK
Tables OK
Magnets OK
Area Cleared
Alarm A✓ B✓ C✓
TAYLOR & LYNN

e - Repeat of Run b p. 143

Pos Period - Log N = 73.8 sec = + 12.15 ¢
#1 = 74.9 " = 12.02 ¢
#2 = 73.6 " = 12.18 ¢

12.12 ¢

Supports = 5.94 ¢ ?

Est = 1 ¢

C.N. 7" Solid Expr. XXXV Run 1a
19" C Reflector Date 12-17 1964 Time AM PM
Purpose Critical Height Determination

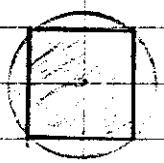
1a H = 1 3/4 - Super ~ -100 mils
#L = 21.438

b H = 1 11/16 - Sub Critical

c H = 1 11/16" + (5" x 5" x 1/32") - Sub Critical

d H = 1 11/16" + (5" x 5" x 1/16") - Top Refl = 19 1/4"
Chron Critical

Pos Period - LogN = 57.2 sec = 14.59
#1 = 54.7 " = 15.05
#2 = 54.7 " 15.05
+ 14.98 #



e Supports Evaluation
Pos Period - LogN = 56.5 sec #4.72
#1 = 56.6 " + 14.70
#2 = 54.5 " + 15.09
+ 14.84 #

Supports = 0

f Top Reflector Evaluation - 45" x ½"

Poo Period - Log N = 47.7 sec = + 16.52
#1 = 47.8 " = + 16.50
#2 = 46.9 " = + 16.71
+ 16.58 ¢

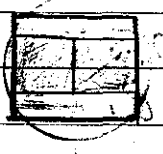
45" x ½" C = 1.68 ¢ ?

g Rerun of Run f Squeezing up position 3 mils

Poo Period - Log N = 38.0 sec +19.16 ¢
#1 = 39.4 " 18.72 ¢
#2 = 39.7 " 18.63 ¢
18.83 ¢

45" x ½" C = 3.93 ¢

h Fuel Evaluation. Removed 5" x 5" x 1/16" fuel
Added 5" x 5" x 1/32" + 2 pcs (2½" x 2½" x 1/32")



Sub Critical

DEC [illegible] 1964

INSTRUMENT CHECK

Time 9^{05} Source M226 & [illegible]

	F	Channel A	B	C	D	E
Hi & Lo		10/1000	OPR	30	10/1000	1050 ✓
Source Dist.	✓	10"	✓		2"	10"
% F.S. Trip	✓	95	✓	100	100	100+
BF3 1 & 2	✓					

AREA CLEARED ✓
LIGHTS ✓
TABLES ✓
MAGNETS ✓
ALARMS A, B, C ✓ ✓ ✓

TAYLOR & LYNN.

Core 7" Solid   Expr. ~~XXXX~~   Run i

19" C Refl.   Date 12-18-1964   Time ____ AM ~~PM~~

Purpose: Repeat of Run 1 of p. 147
To measure shutdown as Ram is lowered - measured on plate

i   H = $1\frac{11}{16}$" + (5" x 5" x $\frac{1}{16}$")   Top Refl = $19\frac{3}{4}$

Level ∞   #1 = 21.476
#2 = 21.497

Reactivity ~ −7 ¢ @ #1 = 20.078
1½"   #2 = 20.104

$9{:}45^{AM}$ Reactivity ~ −6   #1 = 20.425
1"   #2 = 20.447

9:05 Reactivity @ #1 = 21.225
#3 ~ 1/3" ~ #1.90 #2 = 21.245

#4 Reactivity @ #1 = 20.490
~~~~ ~ 2.9" ~ #5.57 #2 = 20.49

#5 Reactivity
~ -3" ≈ #10.00 @ #1 = 18.390

10:25 Hm

#6 Reactivity ≈ #14.00 #1 = 13.91
≈ -8"

Repeat of Run 1h p. 147

30" x 30" x 2 1/2" Plexiglas Shim on Top

Not enough reactivity to reach power

XS140 switch apparently not working,
Check with Erk
~~~~

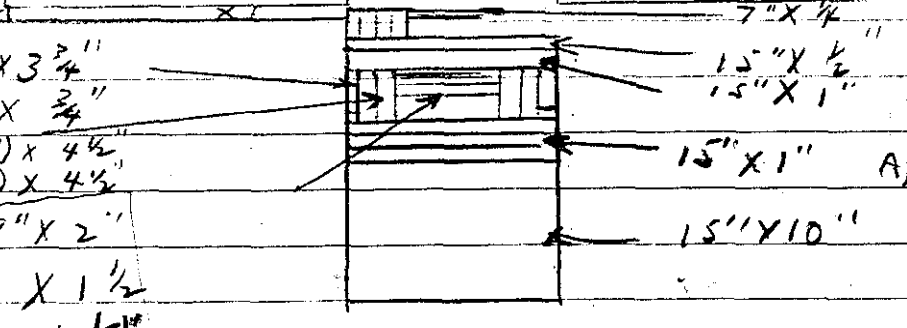
45" X 2"

45" X 15"

X 4

X 8

(45" X 15") X 8



1965

INSTRUMENT CHECK

Time 2 30 PM — Source M-226 & h

	Chennel					
	F	A	B	C	D	E
Range	Hi & Lo	10/1000	OPR.	30	10/1000	1050V
Source Dist.	✓	6"	✓	2'	2"	8"
% F.S. Trip	✓	100	✓	100	10	50

BF3 1 & 2 OK

JAN 1965

Magnets OK
Tables OK
Lights OK
Alarm A✓ B✓ C✓

Taylor & Lynn

Magnets had been repaired (new relays).
Low trip levels of E & D being investigated.

JAN 6 1965

Lights OK
Magnets OK
Tables OK
Area Cleared
Alarm A✓, B✓, C✓

INSTRUMENT CHECK

Time 9:00 → ... M-226 & h

Taylor & Lynn

	F			C		
	Hi & Lo	10/1000	OPR	30	10/1000	1050V
Source	✓	10"	✓	2'	✗	8"
% F.S.	✓	95	✓	100	Out	80
BF_3 1 & 2	✓					

Easy trips at 80 (in circuit)
Dog trips low (out of circuit)

C.A. 15" Solid Expr. ~~XXXII~~ Run 1a
7" C. Refl. Date 1-6-1965 Time 9:40 AM
Purpose: Critical Height Determination

1a H = 7" dia = 1" 7" Reflector
15" x 7" = $1\frac{1}{32}$"

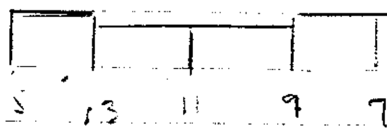
Sub Critical —

b H = $1\frac{1}{16}$" — Super Critical #1 = 18.271

c H = 9" dia = $1\frac{1}{16}$"
15" x 9" = $1\frac{1}{32}$" Sub Critical

d 7H = 15"x13" and 9" dia = 1 1/16" — Jeam Critical
13" x 9" = 1 1/32"
(13"x11") + (11"x9")
Top Left = 7 ... (...)

-V... Pos Period — Log N = 45.6 sec 17.02 ¢
#1 = 44.6 " 17.27
+ 17.15 ¢



e. Reflector evaluation.
.8 (25"x21") C ring - removed -

Position Period — Log N = 105.3 sec = 9.26 ¢
#1 = 98.5 " = 9.75 ¢
#2 = 102.1 " = 9.50 ¢
+ 9.50 ¢

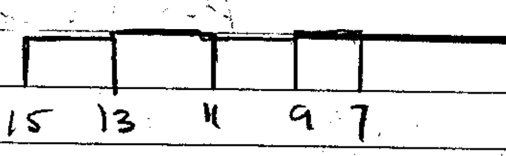
.8 (25"x21") C = 7.65 ¢

f Removed 7/8" (19"x17") C

Negative Period — Log N = 358 sec = -3.99
#1 = 331 " = -4.36
#2 = 357 " = 4.00
- 4.12 ¢

7/8" (19"x17") = 13.62 ¢

.27 g. Fuel Evaluation -
Removed 1/32" (15"x13") -
Added 1/32" (13"x11") -



Positive Period — Log N = 1010 sec = 1.22 ¢
#1 = 865 " = 1.41 ¢
#2 = 935 " = 1.31 ¢
+ 1.31 ¢

Run g vs Run f = 15.43

1-7-65

INSTRUMENT CHECK

Time 8:45 Cont M-226 + 8

Light - OK
Tab book OK
Area Clean

	Channel A	B	C	F
	10/1000	opr	X	10/1000 1050
Sound Test	8"	ok	'	2" 8"
% F.S. Trip	90	✓	100	90 90

Chg. 15" dia Cyl Expr. XXXXL Run h
7" C Rfl Date 1-7- 1965 Time AM PM
Purpose Cont p. 153

h Supports Evaluation (vs Run g)

Pos Period Log N = 25.8 sec 24.20 ¢
#1 = 25.3 " 24.47 ¢
+24.34 ¢

Supports = +23.03 ¢

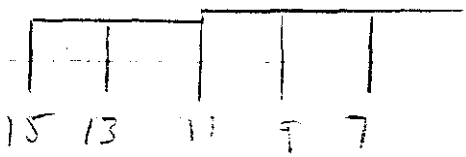
i Diaphragm Evaluation (10 mil) (vs Run h)

Pos Period Log N = 38.00 sec 19.16 ¢
#1 = 37.1 " 19.45 ¢
#2 = 37.8 " 19.22 ¢
+19.28 ¢

diaph = -5.06 ¢

j. Fuel Evaluation (vs Run g)

Removed $\frac{1}{32}$"(13"X11")
added $\frac{1}{32}$"(11"X9")

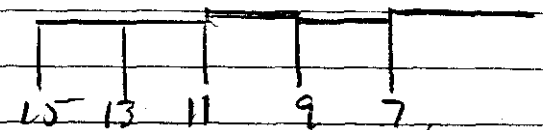


Positive Period - Log N = 130.3 sec + 7.81
#1 = 130.3 " 7.81
#2 = 129.0 " 7.88
+ 7.83

Run j vs Run g = + 6.52¢

k Removed $\frac{1}{32}$"(9"X7") fuel (vs Run j)
Added .8"(25"X21") C Run e 7.65¢
added $\frac{7}{8}$"(19"X17") C Run f 13.62¢
21.27¢

Negative Period - Log N = 185.7 sec 8.84¢
#1 = 179.1 " 9.29¢
#2 = 178.0 " 9.37¢
- 9.17¢



$\frac{1}{32}$"(9"X7") = 38.27¢

$\frac{1}{32}$"(11"X9") = 36.93¢

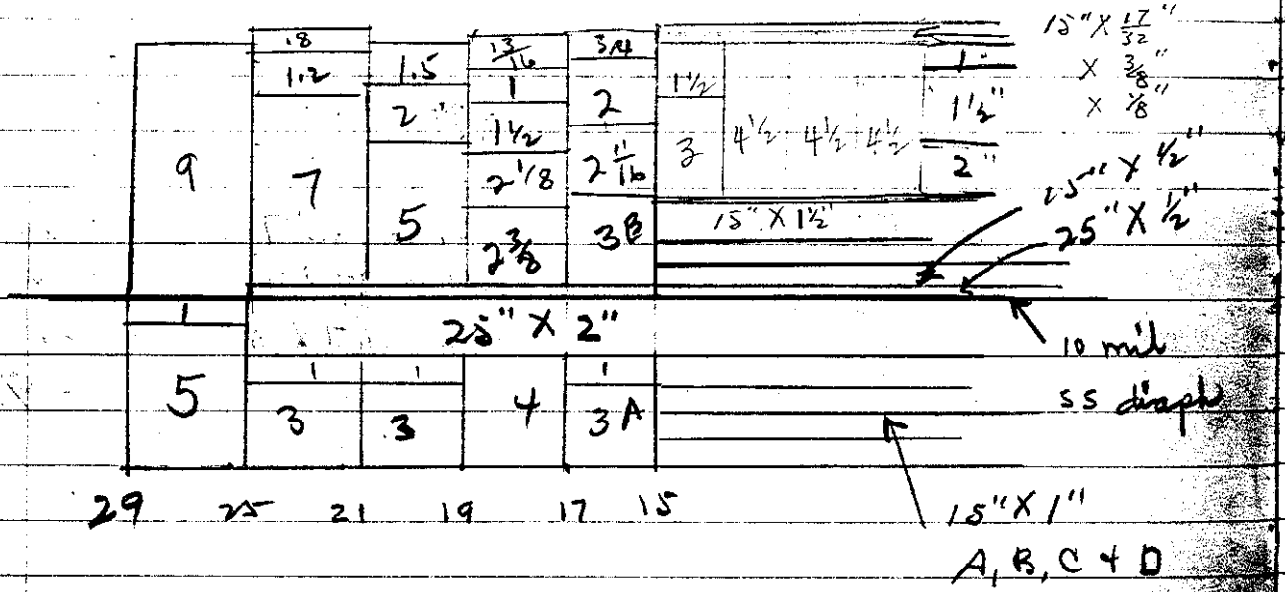
$\frac{1}{32}$"(13"X11") = 30.41¢

$\frac{1}{32}$"(15"X13") = 24.98¢

I added 15" x 1/8" C to top.

Positive Period – LogN = 171.5 sec +6.22
#1 = 157.3 " +6.90
#2 = 148.5 " +7.02
6.62 ¢

15" x 1/8" C = 1.79 ¢



2766	3215	3216	2737	2730
	2782	2778		
2760	2751	2744	2763	2768
		2742	2736	2728

15 13 11 9 7

Run 1 d
Puls

* - 7" Diameter Disc Now Have 0.375" Holes

INSTRUMENT CHECK

JAN 13 1965

8^10 — M-226 & ...

	A	B	C	D	E
Hi Rho	10/1000	OPR	30	19/1020	1050V
Source Dist. ✓	8"	✓	4'	2"	6"
% F.S. Trip ✓	95	✓	100	90	100T

Light OK
Tallies OK
Magnets OK
Alarm A✓ B✓ C✓
Area Cleared
TAYLOR LYON

C.A. 7" Solid Bare Exp. XXXXII Run A
Date JAN 13 1965 Time AM
Purpose Critical Height Determination of 7" Solid cyl, after .375" holes have been bored in 7" disc.

A. $H = 5"$ - Sub Critical

B $H = 5" + 2(2\frac{1}{2}" \times 2\frac{1}{2}" \times \frac{1}{32}")$ - Sub Critical.

C $H = 5" + (5" \times 5" \times \frac{1}{32}") + (2\frac{1}{2}" \times 2\frac{1}{2}" \times \frac{1}{32}")$ - Sub critical

D $H = 5" + (5" \times 5" \times \frac{1}{32}") + 2(2\frac{1}{2}" \times 2\frac{1}{2}" \times \frac{1}{32}")$

Log N = .0006
"D" = 84 @ 100/50 Servo @ 740

Start @ 10:35 AM

Selsyn #1 = 16.855
#2 = 16.857

VDT #3 = +1
#4 = -4

Loading - 2" on Ram - pc # 2731 = 11,780 g. A.
2729 = 4,426
2728 = 4,409
2771 = 2,907 B.

$5\frac{1}{32}$" +

Bottom
2V
1V
2V
1V

3" on diaph # 2734 = 17,693 C.
2733 = 17,640
5"x5"x$\frac{1}{32}$" = 241
2(2½"x2½"x$\frac{1}{32}$") = 120 D.

1V
2V

T = 59,216 g. E.

p. 76 Loading ≅ 58,677 g.
(3" on Ram)

Holes Coat ≅ 540 grams

U-S.S. SANDWICH

A. 7" SOLID WITH 1/2" S. STEEL ON BOTTOM & TOP
N = 4 1/4" FUEL → SUB-CRITICAL

B. N = 4 1/2" FUEL SUB-CRITICAL SLIGHT MULTIPLICATION.

C. N = 4 1/2" (7" DIA) + 1 (5"x5"x1/32")
SUB-CRITICAL & SLIGHT MULT.

D. N = 4 9/16" (7" dia) Still SUB + MULT.

E. N = 4 9/16" (7" dia) + 1 (5"x5"x1/32") 16.845
Can be ∞ period using servo. 16.858

JAN 1965

INSTRUMENT CHECK

Time 8:15 AM — M-226 + X

	A	B	C	D	E
Range	10/1000	off	X	10/1000	1050 V.
Source dist.	5"	⊘	3'	2"	5"
% F.S. Trip	90	✓	100	90	100+

Lights OK
Tables OK
magnets OK
alarms OK
area cleared

7" dia cyl. ~~XXX~~ — XXXXII — F

½" S.S. Top + Bottom JAN 1965

Purpose:

Rossi OK

Loading same as Run E.

Log N = .0006
D = 82 @ 100/50
Servo @ 620

F Data Collection Started @ 8:41 AM

Loading on Ram — #1 7.055" 0.505" SS 2,520 g.

pc# 2731	11,780 g.	↓	2V
29	4,426		1V
69	1,489		1V

$4\frac{19}{32}$" Fuel

on Diaphragm

# ~~2731~~ 2734	17, ~~640~~ 693	↓	1V
32	11,674		1V + 1R
30	6,646		None
5" X 5" X 1/32"	241		

#2 7.029 0.507 SS — 2,520 g

53, ~~876~~ 949 g U

(5.4 Kg U)

(5.04 Kg SS)

7" dia Cyl Exp XXXXII Run 6
1"SS Top + Bottom Date 4-14-65 Time 1:40 AM PM
Purpose Critical Height Determination

G. $H = 4\frac{3}{8}$" — Super Crit #1=16.180

H. $H = 4\frac{5}{16}$" (7" dia) + 1 (5"x5"x 1/32") Super (16.185 #1)

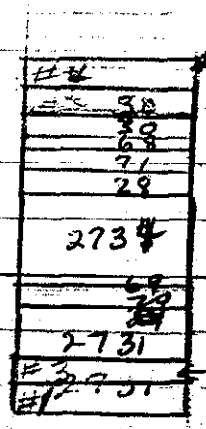
In exchanging fuel pcs the total mass is about same in Run G + H.

I Removed the 5"x5"x $\frac{1}{32}$".

∞

Log N = .0006
D = 82 @ $\frac{100}{50}$ Servo @ 620

#1 = 16.355
#2 = 16.359
#3 = -1
#4 = -4



$H = 4\frac{5}{16}$" Fuel

2730	= 6,646
68	= 1,471
71	= 2,907
28	= 4,409
34	= 17,693
69	= 1,489
29	= 4,426
31	= 11,780
	50,821

5.1 Kg 55
3.1 Kg U

JAN 1965

INSTRUMENT CHECK

Time 8¹⁵ AM — M226 & 8

Light OK
Table OK
Magnet OK
Alarm OK
Area Cleared

	F	A	B	C	D	E
Range	High	1%/1000	OPR	30	1%/1000	1050V
Source Dist.	✓	8"	✓	3'	2"	7"
% F.S. Trip	✓	95	✓	100	90	100

TAYLOR & LYNN

7" dia Cyl Expr. ~~XXXXII~~ Run J.
1" SS Top & Bottom Date 1-15-1965 Time AM ~~PM~~

Purpose Cont'd Rossi α

J. Data Collection Started @ 9:45 AM

Down ↓

12:

Down 3:10 PM

C.A. 7" dia Cy Expr. ~~XXXXII~~ Run K
1" SS on Bottom
~~2" SS on Top~~ Date 19 Time ~~AM~~ PM

Purpose H = 4 3/16" Fuel
~100 mil separation for Rossi α County

Rough

JAN 20 1965

Lynn, J.
Taylor, J.

INSTRUMENT CHECK

Time 1:00 AM/PM — Source M-226 + R

Lights - OK
Tables - OK
Magnet - OK
Area Cleared

	A	B	C	D	E
Range	10/1000	open	X	10/1000	1050 ✓
Source Distance	6"	OK	30"	2"	5"
% F.S. Trip	90	✓	100+	100	100+

C.A. 7" dia cyl Expr. XXXVII Run L
2" S.S. Top + Bottom Date JAN 20 1965 Time AM/PM
Purpose Critical Height Determination
of 2" dia U-5S sandwich
(0.365" plugs now available for use.)

Holes Plugged

L H = 4" Fuel - Sub critical

M H = 4" + (5"X5"X 1/32") - Sub Critical

N H = 4" + 2(5"X5"X 1/32") - Super Critical

Top SS = 4(7"X 1/2") = ~~10,053~~ 9632 gms

Bottom SS = 4(7"X 1/2") = 10,053 "

Poo Period - Log N = 133.4 sec
7.66 ¢

Rossi & Ctro in place (Fuel)

Removed 0.360"X.4" plug from top of Ram fuel.

p Removed Rossi α ctrs

Added Supports – [Rings, Stand & diaph]

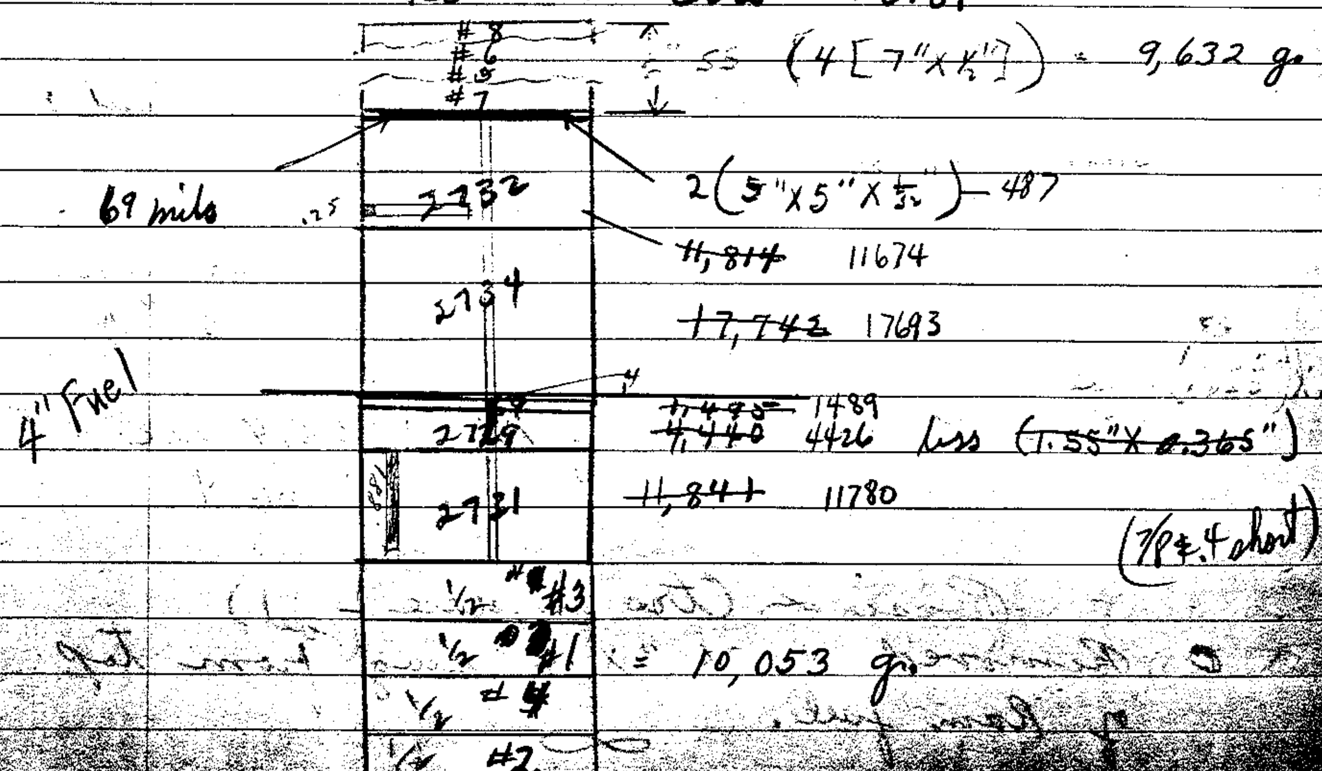
Negative Period – Log N = −146.6 sec = 12.41¢
#2 = −142.3 " = 13.00¢
− 12.70¢

q Removed Supports – Clean Critical

Positive Period – Log N = 628 sec = + 1.92¢
#2 = 682 " = + 1.77¢
+ 1.85¢

Supports = −14.55¢

Rossi α Ctrs = +5.81¢



JAN 2 1965

INSTRUMENT CHECK

Time 10:00 AM Serial M-226 & h

	F	A	B	C	D	E*
Range	Hi & Lo	10/1000	OPR	30	10/1000	1050V
Source Dist.	✓	6"	✓	30"	2"	4"
% F.S. Trip	✓	90	✓	100	85	100+

Light OK
Tabbs OK
Magnets OK
Alarms OK
Area Cleared

TAYLOR & LYNN

C.A. 7" dia Exp. XXXXII Run R.
U-SS Sandwich 1-21-65 Time 10:10 AM
Purpose Rossi α measurement

2" SS

* EASY'S ZERO HAS DRIFTED DOWN TO WHERE IT CANNOT BE SEEN. CHECK OUT IS OK. MAKE ADJUSTMENTS LATER. JRD

R. Loading as shown p. 164, with
.4" plug removed - top of Ram fuel.
.3" plug removed - outer edge (radial) pc 2732
outer Vertical hole in pc #2731 empty

Start = 10:23 AM

ageb]
2.41¢
3.00¢
2.70¢
¢
¢
5¢
go

JAN 22 1965

INSTRUMENT CHECK

Time 8^10 AM   Source M-226 & P

Lights OK
Tables OK
Magnets OK
Area Cleared

TAYLOR & LYNN

Channel	F	A	B	C	D	E*
Range	Hi & Lo	10/1000	OPR	30	10/1000	1050V
Source Dist.			✓			
% P.S. Trip		95	✓	100	95	100+

* EASY IS STILL WORSE ON ITS ZERO (REF 21 JAN 65)

C.A. 7" dia cyl Expr. XXXXII Run 5
U-SS Sandwich Date 1-22-1965 Time ____ AM/PM
Purpose Reactivity Check
US Run 2 p.164
2" SS top
8" SS Bottom

1 Exchanged small dia SS pcs and large dia..
pcs #1 and #3 moved to top against fuel
pcs #6 and #8 moved to bottom away from fuel

Positive Period Log N - 211.7 sec = 5.19¢
A2 219 " = 5.02¢
5.11¢

Steel Change = + 3.26¢

= added .863" plug to outer vertical hole in pc # 2731

Positive Period - 143.3 sec = 7.22 ¢
#2 = 145.9 " 7.12 ¢
7.17 ¢

.863" outer V) plug = 2.06 ¢
(.495" + .368")

Pc # 2731 - ℄ plug hole = .873" deep
outer plug hole = .881" "

C.A. 7" dia Cyl Expr. XXXXII Run T
U-5S Sandwich 1-22-63 Time 1:45 AM PM
Purpose Critical Height
Rossi ∝ Counters in place
1" SS top + Bottom
p. 169

T, 7H = 4 1/4" + 2(5"X5"X 1/32") - Plugs in.
Super Critical

2 7H = 4 1/4" + 1(5"X5"X 1/32") - Plugs in

Super ≈ 8 → 10 ¢

3 Removed Rossi ∝ Counters

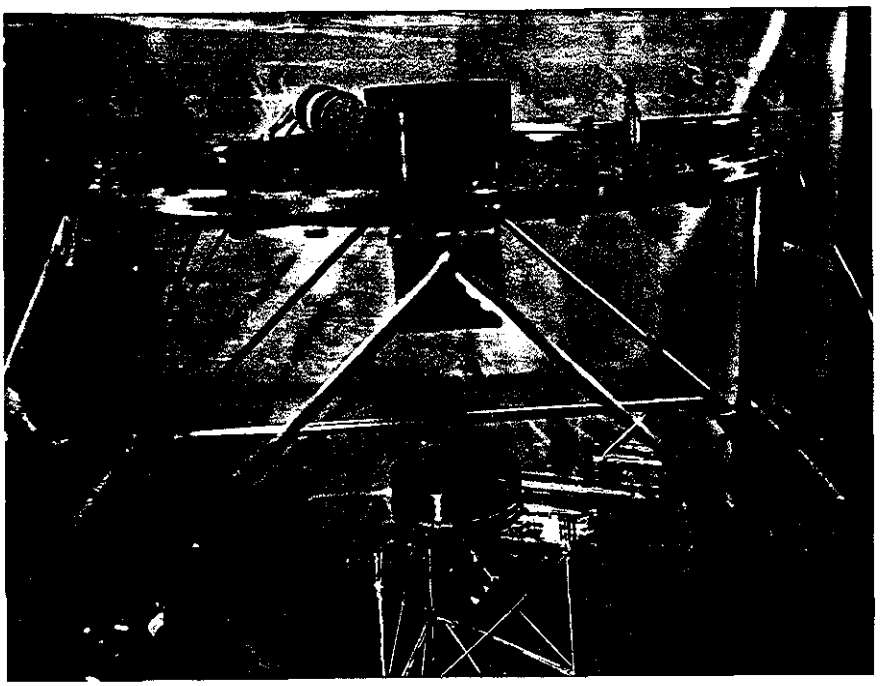
Positive Period - Log N = 208 sec = 5.26 ¢
ω2 = 192 sec = 5.64 ¢
Clean Critical + 5.44

4 Supports Evaluation (Rings, Stand + Diaph)

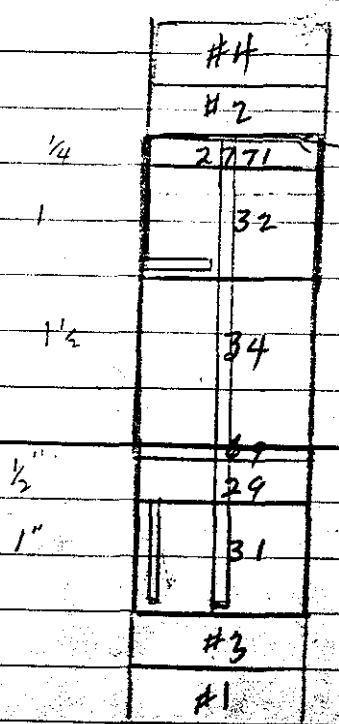
Negative Period - Log N = -282 sec. - 5.26
ω2 = -291.8 sec² - 5.05
-5.16

Supports = - 10.60 ¢

5 Repeat Run 2, with .375" plug out pos 69+29
∞ + .375" " out pc 32



7" DIA. CYLINDER & 1" S. STEEL ON EACH OF TOP & BOTTOM



Run 3, p. 168

JAN 25 1965

INSTRUMENT CHECK

Time 955 AM Source M-226 & h

	Channel	A	B	C	D	E
Fc						
	Hi & lo	10/1000	OPR	30	10/1000	1050 V
Source		6"	✓	15"	2"	8"
% F.S. Trip		95	✓	100	90	100+

Lights OK
Magnet OK
Tables OK
Alarms OK
Area Cleared

JRT & HL

7" air Expr. XXXXII Run 4

U-55 Sandwich Date 1-25-19 60 Time AM

Purpose Rossi α

½" SS Top
½" SS Bottom

5, Data Collection Starts 9:50 AM

Loading - (4¼") + 1 (5"X5"X 1/32")
Less - .375" plug top of Rom Fuel
- .375" plug inside and edge of pc #32

SEE PAGE 159 + 160

Log N = .0007
"D" = 85 @ 100/60 Durro @ 670

C/S 7" dia cyl Exp XXXXII Run V
U-55 Sandwich Date 1-25-61 Time 1:45 ~~AM~~ PM
Purpose Reactivity measurements of U-55 Sandwich
1/2" SS Top & Bottom

V_1 H = 4 9/16" Fuel - All holes plugged. Super Crit.

2 Removed plug (1.375") from Ram Fuel

Poo Period - Log N = 18,67 sec 28.91 ¢
#2 = 20.75 " 27.33
+28.12 ¢

3. Supports Evaluation (Rings, Stand + Diaph)

Positive Period - Log N = 23.2 = 25.7
#2 = 27.88 = 23.15
+24.41

Supports = - 3.71 ¢

4. Diaphragm Evaluation - (vs Run 2)

Positive Period - Log N = 57.8 sec = 14.48 ¢
~~2~~ 1.

Diaph = -13.64

5. added 1.375" plug to Ram Fuel.

Poo Period – Log N = 14.83 sec = 32.53 #

Fuel plug = 15.05 #

174

SEE P. 130 For Typical Loading

29 1965

INSTRUMENT CHECK

12[40] — M-226 & 8

Lights OK
Table OK
Magnets OK
Alarm OK
Area Cleared

	F	A	B	C	D
	Hi & Lo	1%/m	OPR	30	1%/m	1050V
	✓	8"	✓	2'	2"	4"
F.S. Trip BF3	✓	95	✓	100	90	100

LYNX & TAYLOR

S.A. 15"X 2" Expr. JAN 29 1965 Run 1
15" C Refl Date ____ 19 __ Time 12:45 PM
Purpose Critical Height Determination

up H/ = 22.5

1 H = 1" Fuel - Super Critical
22.06

2 H = 15/16" Fuel - up = 22.622
Sub-Crit = 22.605

3 H = 17/32 Fuel - up = 22.573
H/ = 22,425

4 H = 15/16" (9"X 7") + (13"X 11")
31/32" (11"X 9") + (15"X 13")

Poo Period - log N = 23.7 sec 25.4 ¢
#2 = 26.4 23.88
#3 = 27.8 23.18
+ 24.48

2785
2766
275=

FEB 1965

INSTRUMENT CHECK

Time 8^30 AM ~~PM~~ Source M226 & h

	F	Chan. A	B	C	D	
Range	Hi & Lo	10/1000	OPR	30	1/1000	1050V
Source Dist.	✓	6"	✓	4'	2"	3"
F.S. Trip	✓	95	✓	100	80	100
BF_3 2&3	✓					

Lights OK
Tables OK
Magnets OK
Alarms OK
Area Cleared
TAYLOR & LYNN

C.A. 15" X 7" Expr. XXXXIV Run 5
15" C Refl Date 2-1-1965 Time 8:24 AM
Purpose Repeat Run 4 p. 174

up #1 = 22.586
#2 = 22.603
#3 = 0
#4 = -2

5. Same — Clean Critical

Positive Period LogN = 24.6 sec - 24.87¢
#2 = 24.03 " 25.19
#3 = 25.01 " 24.65
24.90¢

2885	3215	2778	3217
2766	2753	2767	2737
2758	2782	2744	2763

6 Removed 1/32 (9"X7") - (vs Run 5)

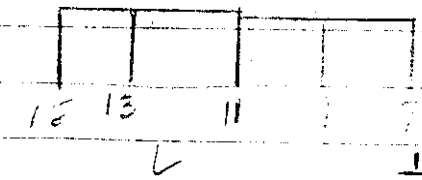
Negative Period - LogN = 150.9 sec -11.88¢
#2 = 152.4 " -11.70¢
#3 = 145.9 " -12.51¢
-12.03¢

1/32" (9"X7") = 36.93¢

[redacted]

7. Added $\frac{1}{32}$"(15"X13") — (vs Run 6)

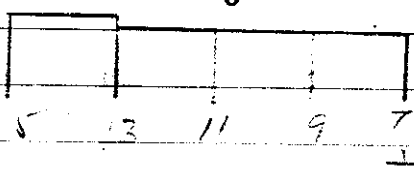
Pos Period - Log N = 19.9 sec 27.95 #
#2 = 20.19 " 27.74 #
#3 = 19.97 " 27.89 #
+27.86



$\frac{1}{32}$"(15"X13") = 39.89 #

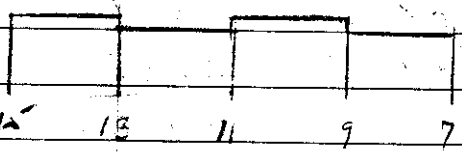
8. Removed $\frac{1}{32}$"(13"X11") - (vs Run 7)

Neg. Period - Log N = 122.7 sec -16.77 #
#2 = 123.7 " -16.50 #
#3 = 109.4 "
-16.65 #



$\frac{1}{32}$"(13"X11") = 44.51 #

9. Added $\frac{1}{32}$(11"X9") -(vs Run 8)



Pos Period. log N = 18.28 = +29.24
#2 = 18.76 = +28.85
#3 = 18.76 = +28.85
+28.98

$\frac{1}{32}$"(11"X9") = 45.63 #

10. Supports Added (vs Run 8)

Pos Period - Log N = 15.76 sec 31.55 #
#2 = 15.63 " 31.68 #
#3 = 16.15 " 31.16 #
Supports 2.47 # 31.45

15"X7" Expr. XXXXV Run 1
15"C Reflector
C Core Date 2-1-1968 Time 12:30 PM
Critical Height Determination

1. H = 15/16" (15"X13"), (13"X11") + (9"X7"),
= 31/32" (11"X9")

9/32 Supports on 9/16"

15 13 11 9 7 1/8

Negative Period - LogN = 284 sec - 5.21
#2 = 266 " - 5.68
#3 = 260 " - 5.79
- 5.57

2. Supports Evaluation - show Critical

Negative Period - LogN = 198 sec = 8.13 ϕ
#2 = 209.7 " = 7.55 ϕ
#3 = 208.4 " = 7.61 ϕ
- 7.76

15 13 11 9 7

Support = 2.22 ϕ

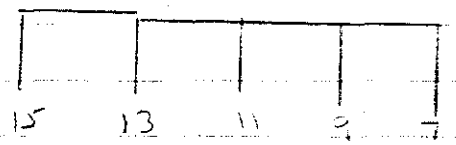
3. Added 1/32" (15"X13") fuel - (vs Run 2)

Positive Period - LogN = 15.2 sec 32.13
#2 = 14.3 " 33.11
#3 = 16.2 " 31.12
+ 32.12 ϕ

15 13 11 9 7

1/32" (15"X13") = 39.88 ϕ

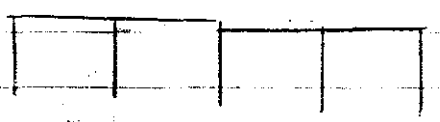
4 Removed $\frac{1}{32}$"(11"X9") fuel (vs Run 3)



Neg. Period - Log N = 134.6 sec -14.25 ¢
#2 = 127.2 " 15.72 ¢
#3 = 130.2 " 15.09 ¢
-15.02 ¢

$\frac{1}{32}$ (11"X7") = 47.14 ¢

5 added $\frac{1}{32}$"(13"X11") fuel (vs Run 4)



Pos Period - Log N = 16.78 sec 31.0 ¢
#2 = 15.75 31.05 ¢
#3 = 15.61 31.70 ¢
+31.42

$\frac{1}{32}$"(13"X11") = 48.44 ¢

6 added $\frac{1}{32}$"(9"X7") fuel (vs Run 4)

Pos Period - Log N = 29.3 sec 22.47
#2 = 29.95 " 22.18
#3 = 27.66 " 23.24
22.66 ¢

$\frac{1}{32}$"(9"X7") = 27.68 ¢

Con. 15" x 9"
15" C Refl. Expt. XXXXVI Run 1
Date 2-1- 1965 Time 3:20 PM
Purpose Critical Height Determination

1. H = 1⅛" - Sub Critical

2. H = 1 3/16" - Near Critical

Positive Period - Log N = 76.3 sec - +11.85 ¢
#2 = 79.47 " - 11.61 ¢
#3 = 78.28 " - 11.63 ¢
~~11.69 ¢~~
+11.70 ¢

~~2826~~	~~2782~~	2778
2766	2755	2767
2784	2749	2742

15 13 11 9

FEB 1965

INSTRUMENT CHECK

Time 8:05 PM — M226 & A

	F	A	B	C	D	E
	Ni & ho	10/1000	OPR	30	10/1000	1050V
Scram Time	✓	7"	✓	30"	2"	8"
% FS Trip	✓	95	✓	100	90	100
BF3 3 & 2	✓					

Lights OK
Tables OK
Magnets OK
Alarms OK
Area Cleared

Taylor & Lynn

C/L 15" X 9" Expr. XXXXVI Run 2
15" C Refl Date 27 1965 Time 8:30 AM
Purpose Con't p.179

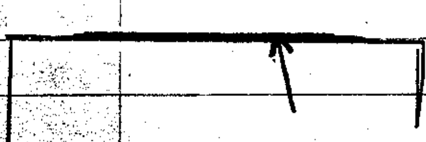
2 Supports Evaluation - (Vs Run 1)

Pos Period Log N = 61.0 sec +13.94¢
#2 = 58.9 " 14.29¢
#3 = 57.3 " 14.57¢
+14.27¢

Supports = 2.57¢

3 Top Reflector Evaluation ½" x 25" C. (vs Run 1)

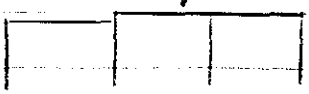
Pos Period Log N - 20.8 sec. 27.29¢
#2 = 21.3 " 26.94¢
#3 = 21.8 " 26.60¢
+26.94¢



½"X25" C = 12.67¢

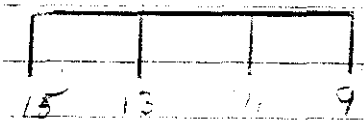
4 Fuel Evaluation — 1/32" (15" x 13") fuel removed - 1" x 17" C added to top (center)

Negative Period - Log N = 208 sec - 7.63¢
#2 = 210.4 " - 7.53¢
#3 = 201.9 " - 7.93¢
- 7.70¢



5 Added 1/32" (15"x13") fuel.

Pos Period - Log N = 9.29 sec 41.0¢
#2 = 9.63 sec 39.5¢
#3 = 9.33 sec 40.5
+ 40.3¢

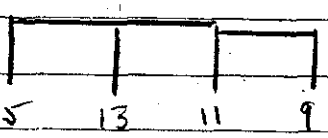


1/32" (15"x13") = 48.00¢

1" x 18" C = 13.36¢

6. Removed 1/32" (11"x9") fuel - [Vs Run 5]

Neg Period - -1¢ log N = 1.3¢
ctc = ~0.2¢



1/32" (11" x 9") = 41.3¢

7. Removed 1/32" (13"x11") fuel - [Vs Run 5]

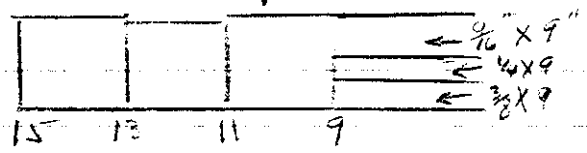
Low Power Neg Period - Log N = 139 sec -13.5¢
#2 = 110 " -21.0¢
#3 = 129 " -15.09¢
-16.5¢

1/32" (13"x11") = 56¢ ± 3¢

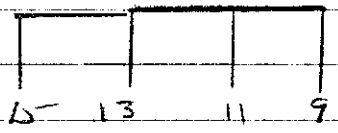
C.A. 15" X 9" Expr. XXXXVII Run 1
15" C Refl.
C Core Date 2-2-65 Time 12:35 PM
Purpose: Critical Height Determination

1 H = $1\frac{3}{16}$" (15"X13") and (11"X9")
= $1\frac{5}{32}$" (13"X11")
Reflector as per Run 4 p.181

Negative Period – Log N = -182 sec - 9.09 ϕ
#2 = 181.1 " - 9.15 ϕ
#3 = 183.7 " - 8.97 ϕ
-9.07 ϕ



2 H = $1\frac{3}{16}$" (13"X11") + (11"X9") 1"X17 on Top
= $1\frac{5}{32}$" (15"X13") ½"X25" on Top



Negative Period – Log N = 360 sec - 3.97 ϕ
#2 = 380 " 3.73 ϕ
#3 = 420 " 3.34 ϕ
-3.68 ϕ

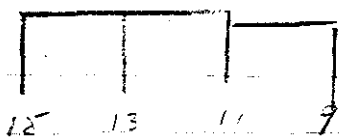
$\frac{1}{32}$" (15"X13") = 48.71 ϕ

$\frac{1}{32}$" (13"X11") = 54.1 ϕ

$\frac{1}{32}$" (11"X9") = 40.66 ϕ

Fuel Same as

3. $H = 1\frac{3}{16}"(15"\times 13") + (13"\times 11")$ 1" x 9" on Top
$= 1\frac{5}{32}"(11"\times 9")$ ½" x 25" on Top



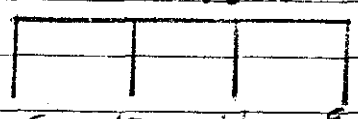
Pos Period - Log N = 251.9 sec 4.45 ¢
#2 = 260.5 " 4.33 ¢
#3 = 260.5 " 4.38 ¢
+4.37 ¢

4 Removed 1" X 17" C from Top Reflector. (US Run3)

Negative Period - Log N = 171.5 sec 9.87 ¢
#2 = 164.1 " 10.46 ¢
#3 = 172.9 " 9.77 ¢
-10.03 ¢

1" X 17" C = 14.4 ¢

5. added $\frac{1}{32}"(11"\times 9")$ fuel (US Run4)
½" X 25" C on Top



Positive Period - Log N = 16.29 sec 31.11
#2 = 15.9 " 31.41
#3 = 18.1 29.39
$\frac{1}{32}"(11"\times 9")$ = 40.66 ¢ 30.63 ¢

6 Removed ½" X 25" C - Clean Critical
$H = 1\frac{3}{16}"$, 15" C Refl., C Core

Poo Period - Log N = 48.2 sec +16.40 ¢
#2 = 47.5 " 16.56
#3 = 49.5 " 16.11
½" X 25" C = 14.27 ¢ +16.36 ¢

FEB 3 1965

INSTRUMENT CHECK

T- 10^{10} = M226 & M

F Ch

	Hi & ho	10/1000	OPR	30	10/1000	1050 V
Source Dist.	✓	5"	✓	30"	2"	3"
% F.S. T.	✓	90	✓	100	85	100
$DF_3 \neq 3$	✓					

Lights Ok
Magnets Ok
Tables Ok
Alarms Ok
Area Cleared
TAYLOR & LYNN

Easy is loosing sensitivity. keep watch on it.

C.A. 15" X 11" Expr. ~~XXXXVIII~~ XLVIII Run 1
15" C Refl Date 15 Time AM PM
Purpose Critical Height Determination up
#1 = 22.720
SEE p. 188 for REEL. Cond.

1 H = $1\frac{13}{16}$" - Super Crit #1 = 21.75

2 H = $1\frac{11}{16}$" - Sub critical

3 H = $1\frac{23}{32}$" - Super #1 = 22.73 up. #1 22.81

4 H = $1\frac{23}{32}$" (13"X11") - Pos Period
$1\frac{11}{16}$" (15"X13") - Log N = 195.4 dec 5.55
#2 = 185.0 " 5.81
#3 = 188.9 " 5.73
+ 5.70

2845	3215
2766	2755
2784	2749
2760	2751

Clean Critical

15 — 13 X 11

5 Add supports: Log N = +130.7 sec 7.80 ¢
#2 = +131.6 " 7.75 ¢
#3 = +130.9 " 7.80 ¢
+ 7.78 ¢

Supports +2.05 ¢

6 Top Reflector Evaluation - (vs Run 4)
added (45" x 15") x ½" C to top

Pos Period - Log N = 48.9 sec 16.24 ¢
#2 = 48.2 " 16.40 ¢
#3 = 47.9 " 16.47 ¢
+16.37 ¢

(45" x 15") x ½" = 10.67 ¢

7 added 15" x ½" C to top. (vs Run 6)

Pos Period - Log N = 25.7 sec 24.26 ¢
#2 = 26.3 " 23.94 ¢
#3 = 25.8 24.20 ¢
+24.13 ¢

15" x ½" C = 7.76 ¢

45" x ½" C = 18.43 ¢

C.A. 15" X 11" Expr. ~~XLIX~~ Run 1
15" C Reflector
~~C core~~ Date ______ 19 ___ Time ______ AM PM
Purpose Critical Height Determination

2-4

1. $H = 1\frac{11}{16}$" — Top Ruflector 15½"

Pos Period — Log N = 67.3 sec 13.01 ¢
#2 = 69.2 " 12.74 ¢
#3 = 66.8 " 13.07 ¢
+ 12.94 ¢

2885	2782	9" x 11"
2766	2755	~~1/8 x 11~~
2724	2749	1" X 11" C
2760	2751	

2. Removed 45" X ½" C from top.

Neg Period Log N = 282 sec − 5.28 ¢
#2 = 281.4 " − 5.27
#3 = 276. " − 5.39
− 5.31 ¢

Clean Critical

45" X ½" C = 18.25 ¢

FEB 1965

INSTRUMENT CHECK

Time 10⁰⁰ AM ← Source M226 & A

2-4-1965

Channel	F	A	B	C	D	E
Range		10/1000	oper	X	10/1000	0
Source Dist.		10"	OK	30"	2"	24 T
% F.S. Trip		90	✓	100	100	

Ctrs 2 + 3 OK

Light ✓
Tables ✓
Magnets ✓
Alarms ✓
Area Cleared
TAYLOR & LYNN

3. $H = 1\frac{23}{32}$" (15"X13") + Core
$1\frac{11}{16}$ (13"X11")

Pos Period – Log N = 18.9 sec + 28.73 ¢
#2 = 18.92 " + 28.72 ¢
#3 = 19.6 " + 28.18 ¢
+ 28.54 ¢

		$\frac{23}{32}$" X 11
		$\frac{9}{16}$" X 11"
		$\frac{3}{8}$" X 11"
		$\frac{1}{2}$" X 11"

$\frac{1}{32}$" (15"X13") + $\frac{1}{32}$" C Core = +33.85

4. $H = 1\frac{11}{16}$" (15"X13")
$= 1\frac{23}{32}$" (13"X11") + Core

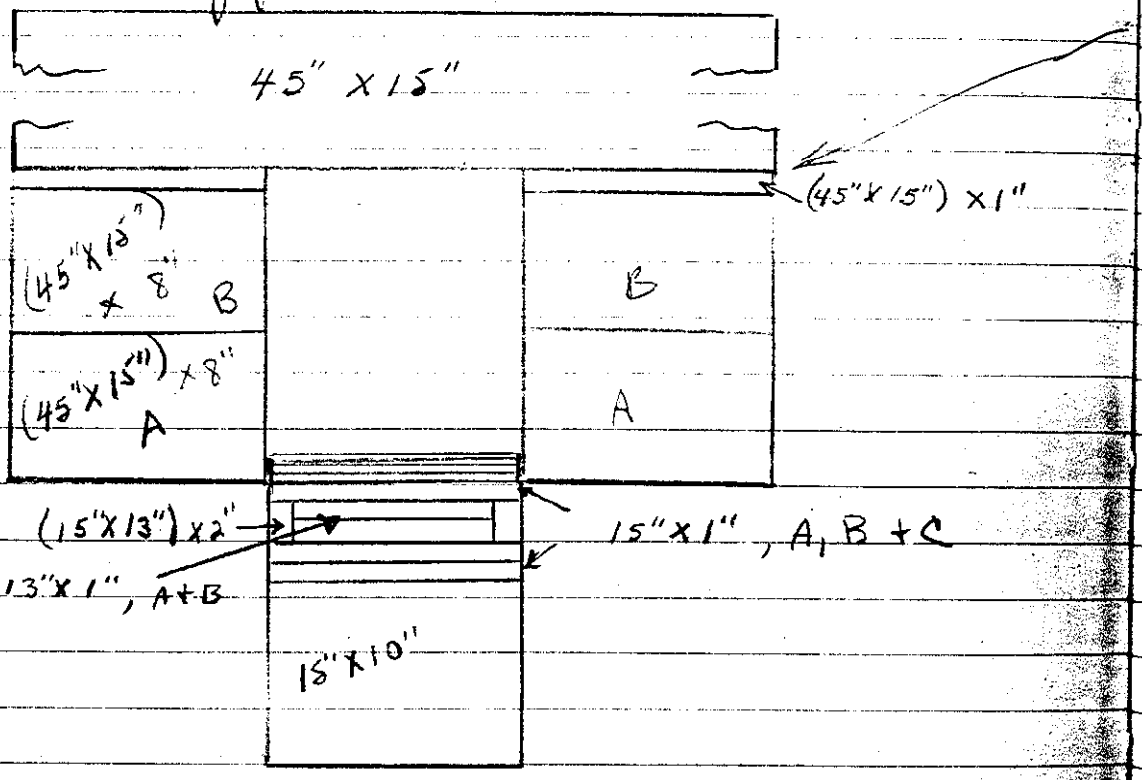
Pos Period – Log N = 16.47 sec 30.85 ¢
#2 = 16.64 " 30.69 ¢
#3 = 16.29 " 31.00 ¢
30.85 ¢

$\frac{1}{32}$" (13"X11") + $\frac{1}{32}$"X11" C Core = 36.16 ¢

5. Added Supports -

Poo Period - Log N = 14.98 sec = 32.36
#2 = 14.07 " = 33.35
#3 = 14.07 " = 33.31
33.02 #

Supports = 3.14 #



Run 4, p. 184
" 2, p. 186

C.A. 15"X13" Expr. XLIX Run 1
15" C Reflector Date 2-4- 1965 Time 2:00 AM PM
Purpose: Critical Height Determination

added (45"X15") x 2" C to Reflector as shown p. 188

22.52

1. H = 4" Super #1 = 19.85

2 H = 3 5/8" — Pos Period — Log N = 68.9 sec + 12.77
Clean Critical #2 = 71.0 " 12.50
#3 = 70.3 " 12.60
+ 12.62 #

Blue Hole 19"

2785
2784
2842
2787
2786
2760
2739

3. Supports Added —

Pos Period — Log N = 55.4 sec 14.92
#2 = 58.6 " 14.36
#3 = 57.0 " 14.62
14.63 #

Supports = 2.01 #

4 H = 3 21/32" — Pos Period Log 1400/50 sec
Log N = 6.75 sec
+46 #

1/2" (15"X13") = 32 #

FEB 1965

INSTRUMENT CHECK

8^{50} AM — Source M226 & P

F	Channel A	B	C	D	E
Hi & Lo	10/1000	OPR	30	10/1000	x
✓ ✓	8"	✓	30"	2"	
P.S. Trip ✓	80	✓	100	95	0
BF3 243 ✓					

Lights ✓
Tables ✓
Magnets ✓
Alarms ✓
Area Cleared
TAYLOR & LYNN

15" X 13" Expr. I Run 1
15" C Reflector
C Core Date 2-5-1965 Time AM/PM
Purpose: Critical Height Determination

Removed the (45" X 15") X 1" as p. 188

1. H = 3 3/16" - Sub critical — Blue Hole 18"
2. H = 3 5/16" - Sub Critical
3. H = 3 7/16" - Pos Period -
   Log N = 12.1 sec
   + 35.87¢
4. H = 3 13/32" - Pos Period - Clean Critical
   Log N = 198.7 sec — -8.09
   #2 = 177.8 — -9.38
   #3 = 190.8 — -8.53
   -8.67¢

1/32" Fuel = 44.54¢

Run 3 p.190

2758

2885

2766	
2787	
2786	
2760	
2739	1½" X 13"

2(⅛ per)

¼

9/16

½

Run 4 p.190

2885

3214	
3282	
2784	
2787	
2786	
2760	
2739	1½" X 13

½

$\frac{3}{32} + \frac{1}{4} + \frac{19}{32} + \frac{1}{8} + \frac{1}{8}$

5, added to top (45"X18") X 2" C.

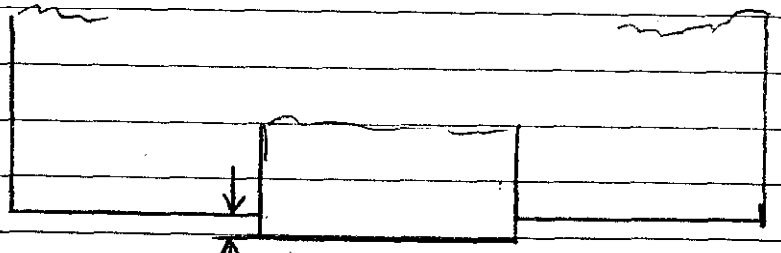
Pos Period - Log N = 548 sec 2.18 ¢

#2 = 495 " 2.40 ¢

#3 = 474 " 2.50 ¢

+ 2.36 ¢

(45"X18") X 2" C = 11.03 ¢



$\frac{13}{32}$" - Run 4 p.190

13"X11" Expr. II Run 1
16" C Refl. Date 2-5-1965 Time 1:50 PM
Purpose Critical Height Determination

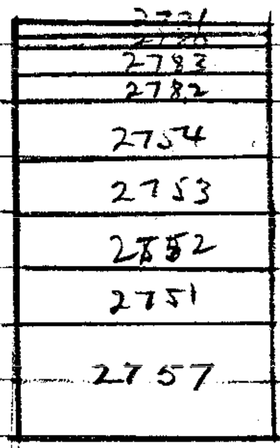
[illegible] 19½"

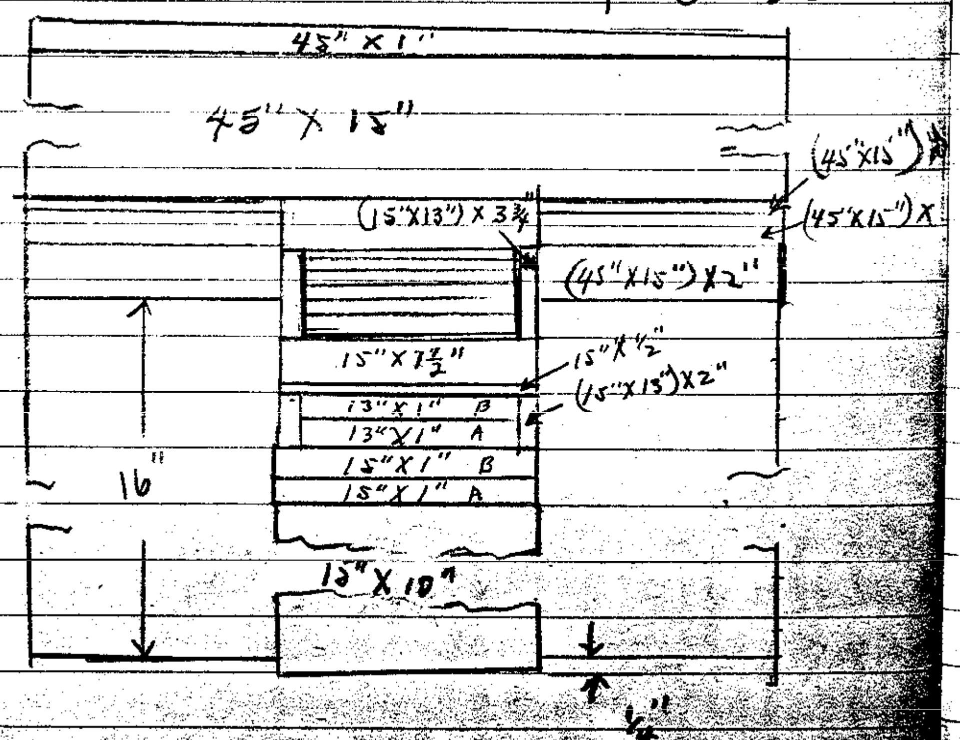
1. H = 3½, Top Refl OK ~~[illegible]~~

2. H = 3⅝", Top Reflector 16⅛"

3. H = 3¾", Top Reflector OK Clean Crit.

Pos Period - Log N = 17.19 sec 30.19¢
#2 = 16.5 " 30.83¢
#3 = 17.28 " 30.07¢
+ 30.36¢





4. Supports added –

Pos Period – Log N = 15.42 sec 31.90 ¢
#2 = 14.17 " 33.25 ¢
#3 = 14.86 " 32.50 ¢
+ 32.55 ¢

Impacts = 2.19 ¢

5. $\frac{1}{32}$" Fuel Evaluation –

Log N = 173.7 sec − 9.69 ¢
#1 = 175.8 " − 9.54 ¢
#2 = 170.6 " − 9.94 ¢
− 9.72 ¢

$\frac{1}{32}$" Fuel = 42.27 ¢

C.A. ~~15"x13"~~ 13"x11" Expr. LII Run 1
16" ℄ Reflector
℄ Core Date 2-5-1963 Time 3:20 ~~AM~~ PM
Purpose Critical Height Determination

1 H = 3 3/8", Top Refl = 16 1/8"

Sub Critical

	~~2750~~	1/8"
	2750	3/8"
1/2"	2754	
1"	2753	←
	2752	
	2751	
1/2	2757	

Refl. See p. 192

FEB 8 1965

INSTRUMENT CHECK

8^{45} AM/PM — Source: M226 & [illegible]

Lights OK
Tables OK
Magnets OK
Alarms OK
Area Cleared
TAYLOR & LYNN

	F	✓			
	Hi #ho	10/1000	OPR 30	10/1000	1050V
Source	✓	10"	✓ 10'	2"	out Xtal
S.S. Trip	✓	95	✓ 100	90	
BF3 2 & 3	✓				

Core: 13" × 11½ — 16" C Reflector — C Core
Exp. LII Run 2
Date 2-8-1965 Time 9:00 AM
Purpose: Crit. Ht. Determination

"E" & "C" out

Glory Hole = 19½" = up = 22.508

2. H = 3½", 16" C Reflector.

Pos Period – Log N = 59.2 sec = 14.24 ¢
← Clean Critical

3. Added Supports –

Log N = 47.0 sec 16.68 ¢
#2 = 46.0 " 16.92
#3 = 48.8 " 16.27
16.63 ¢

Supports = 2.19 ¢

Instrument Change:

Feb-9, 1965 - "E" - general overhaul.

→ Note Changed settings & Conditions:

→ H.V. = 900

→ Trip level set 6.5 (For F.S. + Trip + manual reset)
Brown Zero control set (expected to drift) = 3.5

→ Trip = F. Scale + (10 IN.) with 4.8 mg radium source.

J. F. E.

FEB 1 1965

Lights OK
Tables OK
Magnetos OK
Alarms OK
Area Cleared

TAYLOR & LYNN

INSTRUMENT CHECK

Time 12 45 PM Source M226 & P

	Channel A	B	C	D	E
Range Hi & Lo	10/1000	OPR	1	10/1000	900 V
Source Dist. ✓	8"	✓	duty	3"	10"
F.S. Trip ✓ BF3 283 ✓	95	✓		90	100+

C.R. 13" X 9" Exp. L III Run 1

16" C Reflector 2-10-1965 Time 12:50 PM

Purp. Crit. Ht. Determination

Glory Hole = 17½"

1. H = 1 5/8", Top Refl = 16½"

2. H = 1 3/4" – Unsure Critical

Neg. Period – Log N = 319 sec = – 4.55 ¢
#2 = 324 " = – 4.47 ¢
#3 = 338 " = – 4.26 ¢
– 4.43 ¢

3. added 1/32" (11" X 9") fuel – (vs Run 2)

Pos Period – Log N = 12.81 sec 34.92 ¢
#2 = 13.1 " 34.58 ¢
#3 = 14.6 " 32.78
+ 34.08 ¢

1/32" (11" X 9") = + 38.51 ¢

4. added ½"(13"X11") (vs Run 2)

Pos Period _ Log N = 12.90 sec = +34.80 ¢
#2 = 14.30 " = 33.11 ¢
#3 = 13.05 " 34.58 ¢
+34.16 ¢

½(13'X11') = 31.57 ¢

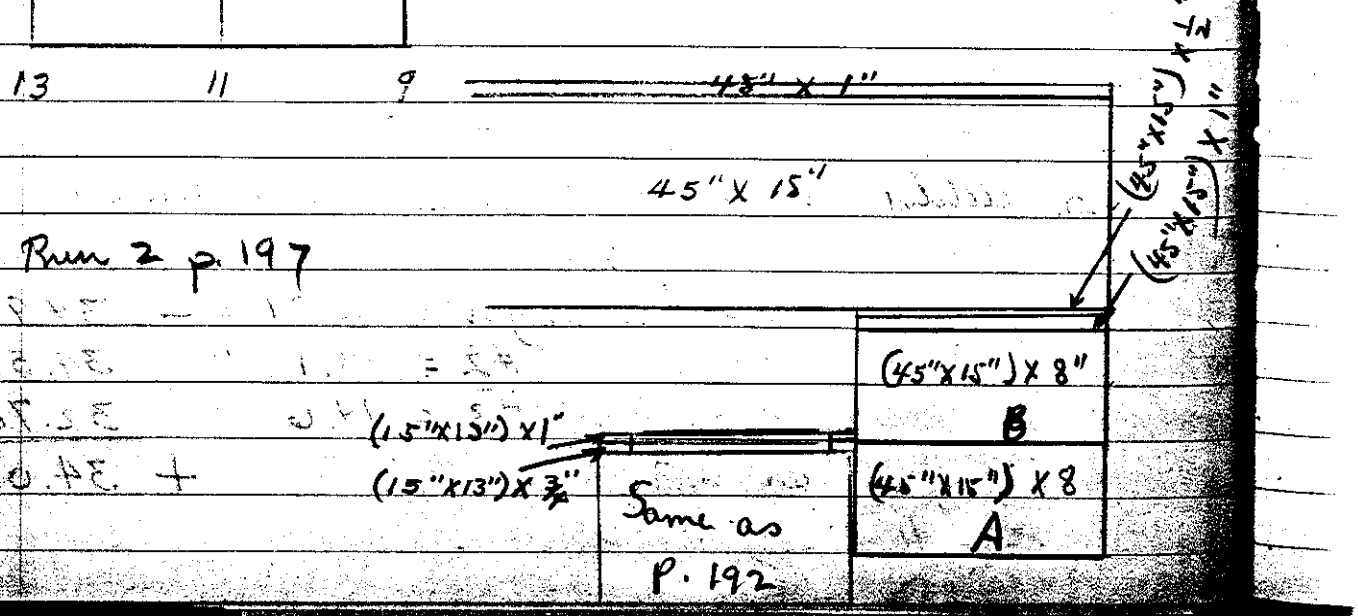
5 Added Supports (vs Run 4)

Pos Period _ Log N = 11.39 sec = 36.88 ¢
#2 = 11.53 " = 36.69
#3 = 12.91 " = 34.79
+36.12 ¢

supports = 1.96 ¢

~~2781~~ ~~2783~~	2744 2778
2751	2742
2757	2776

13 11 9

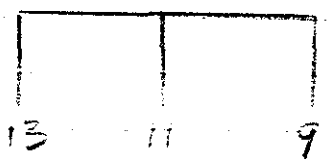


13" x 9" Expr. LIV Run 1
16" C Reflector
C core Date 2-10-1961 Time 3:00 PM
Purpose Crit. Ht Determination -

Glory Hole 17½"

1. Ht = 1 ¾" - Supports on

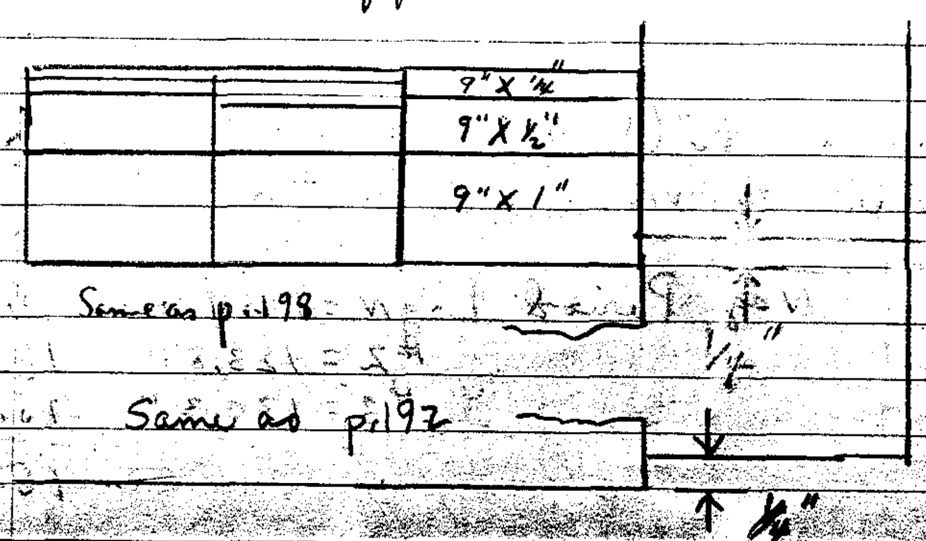
Pos Period - Log N = 14.4 sec - + 33.0 ¢
#2 = 16.0 " - 31.31 ¢
#3 = 15.2 " - 32.13 ¢
+32.15 ¢



2. Supports Removed - Clean Critical

Pos Period - Log N = 16.94 sec 30.41
#2 = 16.4 " 30.92
#3 = 16.02 " 31.30
+30.88 ¢

Supports = 1.27 ¢



FEB 1 1965

INSTRUMENT CHECK

Time 8^{15} AM

Source M226 & h

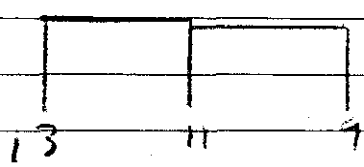
	Channel F	A	B	C	D	E
Range	Hi & Lo	10/1000	OPR	0/1	10/1000	900 V
Source Dist.	✓	8"	✓	1/2	2"	10"
% F.S. Trip	✓	90	✓		95	100+
BF_3 2 & 3	✓					

Lights OK
Tables OK
Magnets OK
Alarms OK
Area Cleared
Lynn & Taylor

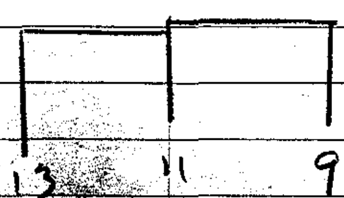
Core 13" X 9"
16" C Refl.
C. Core
Expr. LIV
Run 3
Date 2-11-1965
8:20 AM

Purpose:
p. 199 Cont'd

3. Removed 1/32" (11" X 9") fuel. (vs Run 2)
added (35" X 15") X 1/2" C to top.
Neg Period Log N = 228 sec = − 6.80 ¢
#2 = 214 " = − 7.36 ¢
#3 = 238 " = − 6.44 ¢
− 6.87 ¢



4. Removed 1/32" (13" X 11") fuel (vs Run 2)
added (35" X 15") X 1/2" C to top



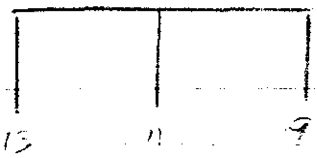
Neg Period Log N = 128.1 sec 15.53 ¢
#2 = 123.8 " 16.50 ¢
#3 = 130.3 " 15.06 ¢
− 15.70 ¢

5. added (35"x15") x ½" C to top. (vs Run 2)

Positive Period – Log N = 9.4 sec — 40.0 ¢

#3 = 9.31 " = 40.0 ¢

+40.0 ¢



(35"x15") x ½" C = + 9.12 ¢

1/32" (13"x11") Fuel = 55.70 ¢

1/32" (11"x9") Fuel = 46.87 ¢

GA 13"X7" Expr. IV Run 1
16" C Reflector Date 2-11-1965 Time 1:20 PM
Purpose Crit-Ht determination

Glory Hole 17½"

1 H = 1 5/32" – Sub Critical

2 H = 1 3/16" – Sub Critical

3 H = 1 7/32" – Sub Critical

up = 22.78

4 H = 1 ¼ – Super #1 = 22.74

5 H = 1 ¼" (11"X9") + (9"X7")
= 1 7/32" (13"X11") – Clean Critical

Pos Period – Log N = 140.1 sec 7.37 ¢
#2 = 135.5 " 7.57 ¢
#3 = 132.9 " 7.69 ¢
+ 7.54 ¢

6 Added Supports

Positive Period – Log N = 105.3 sec 9.26 ¢
#2 = 106.8 " 9.16
#3 = 106.8 " 9.16
+ 9.19 ¢

Supports = 1.65 ¢

FEB 12 1965

INSTRUMENT CHECK

8[10] — 2 — M226 & K

F	A	B	C	D	E
Hi & lo	10/1000	OPR	0	10/1000	900
✓	8"	✓	4	2"	10"
95 F.S. Trip ✓	90	✓	Z	90	100+
BF_3 2 & 3 ✓					

Light OK
Tables OK
Magnets OK
Area Clear OK
Alarms OK
TAYLOR & LYNN

S.A. 13"X7" Expr. L.V. Run 7
16" C Refl. Date FEB 12 1965 Time 8:25 AM
Purpose p. 202 cont'd

.78

7a Removed $\frac{1}{32}$" (9"X7") (US Run 5)
added 35"X½" C to top
added 25"X½" C to top top

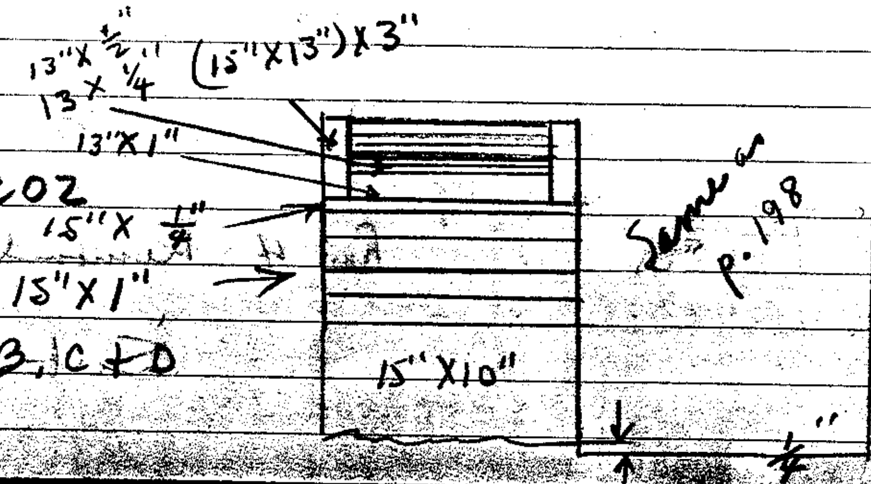
~~3215~~	~~2719~~ 2778	~~2775~~ ~~2777~~
2755	2743	2829
2750	2742	2736

↑

Run 5 P. 202

Sub Critical

26
16
6
99



Init A,B,C+D

C.A. 13"X7" Expr. LVI Run 1
16" C Refl
C Core Date 2-12-65 Time AM PM
Purpose Crit Ht det.

1. H = $1\frac{7}{32}$" (13"X11") + (9"X7")
≈ 1 1/4" (11"X9")
Sub critical

2 H = 1 1/4" (13"X11") + (11"X9") Clear Critical
$1\frac{7}{32}$" (9"X7") Refl. same as p.203

Positive Period — Log N = 20.8 sec 27.29 ¢
#2 = 21.8 " 26.60 ¢
#3 = 20.8 " 27.29 ¢
+ 27.06 ¢

3. added 25"X ½" C to top.

Pos Period - Log N = 10.86 sec 37.67 ¢
#2 = 10.62 " 38.06 ¢
#3 = 10.82 " 37.75 ¢
+ 37.82 ¢

25"X ½" C = 10.76 ¢

2780	2779	3217	1/4
2782	2778		
2751	2743	2737	1
2750	2742	2736	

Run 4. Removed $\frac{1}{32}$"(13"X11")
Sub Critical

Size 11"x 7" Expt. LVII Run 1
17" C Refl. Date 2-12-79 63 Time AM PM
Purpose: Crit Ht Det.

Glory Hole = 19"

1. H = 1 3/4" Sub Critical

2 H = 1 7/8" - Super -

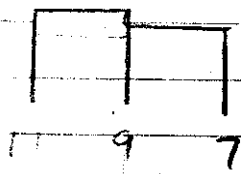
3 H = 1 27/32" (11"x9") -
1 7/8" (9"x7") -

p.203

SEE p.207 Crom Critical

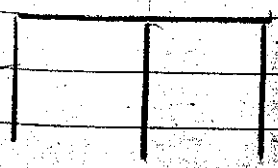
Neg. Period - Log N = 161.2 = -10.76
#3 = 170.0 = - 9.99
-10.38 ϕ

4 H = 1 27/32" (9"x7")
= 1 7/8" (11"x9")



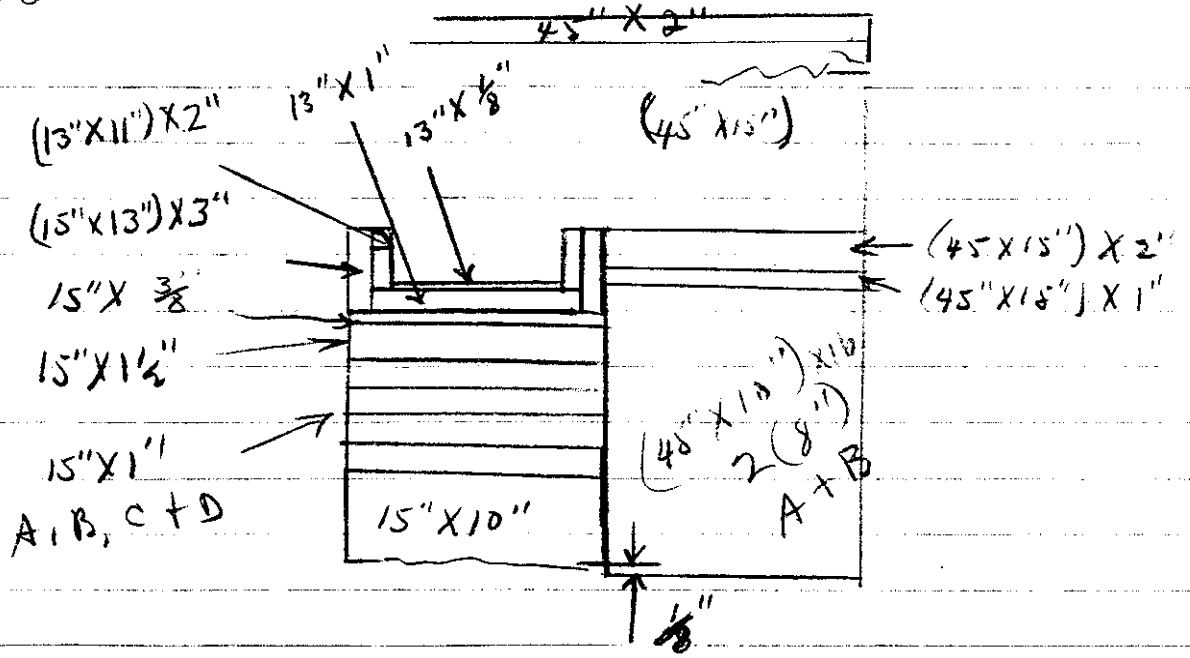
Positive Period - Log N = 365 sec 3.18
#3 = 328 " 3.51 ϕ
+3.35

5. H = 1 7/8" - Positive Log N = 7.81 sec
= 48 ϕ +5 ϕ
-0



1/32" (11"x9") = 58.38 ϕ +-0

1/32" (9"x7") = 44.65 ϕ +-0


45" X 2"
(13"X11")X2"
13"X1"
13"X⅛"
(45"X15")
(15"X13")X3"
15"X ⅜
15"X1½"
15"X1"
A, B, C + D
15"X10"
(45X15")X2"
(45"X18")X1"
(48"X10")X2
2(8")
A+B
⅛"

INSTRUMENT CHECK

8^{30} AM ~~PM~~ M226 & h

	F			C		E
	Hi & lo	10/1000	OPR	D U	10/1000	900V
Source Dist.	✓ ✓	8"	✓	T	2"	10"
% F.S. Trip	✓	95	✓	Z	95	100
BF_3 #2 & 3	✓					

FEB 15 1965
LIGHTS OK
TABLES OK
MAGNETS OK
ALARMS –
AREA CLEARED
TAYLOR & LYNN

11"X7" 17" C Reflector Expr. LVIII Run 1
~~C. Core~~ Date FEB 15 1965 Time 8:50 AM
Purpose: Crit. Ht. determination

Glory Hole = 19"

1 H = $1\frac{27}{32}$" Fuel + Core — $\frac{1}{32}$" gap between fuel + top reflector

Sub Crit.

2. H = $1\frac{7}{8}$" (9"X7") + Core
$1\frac{27}{32}$" (11"X9")

Pos Period – Log N = 13.9 sec : + 35.58
#2 = 14.98 " : + 32.37
#3 = 14.16 " : + 33.30
33.75 ¢.

3216	2765 / 2829	7"X 3/8"
2767	2736	7"X 1/2"
2776	2762	7"X 1"

3 H = $1\frac{7}{8}$" (11"X9") + Core
$1\frac{27}{32}$" (9"X7")

Pos Period – Log N = 6.5 sec 49.8¢
#2 = 5.03 " 52.0¢
51¢

2743	3211
2742	2737
2750	2732

Same as Run 2

4 H = $1\frac{27}{32}$" – Clean Cut –

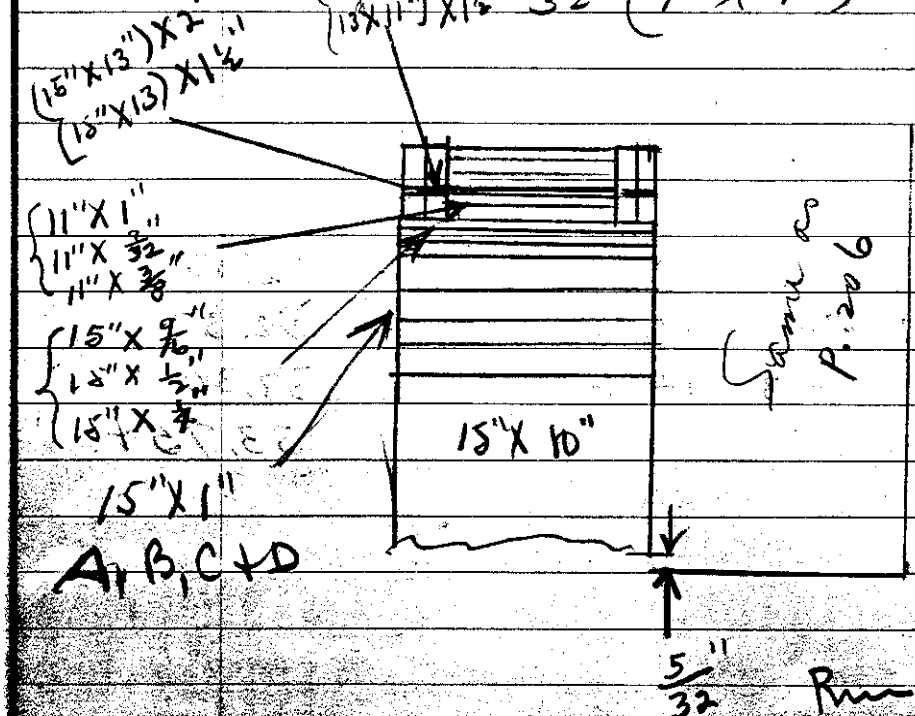
3216	3217
2769	2739
2764	2762

7"X $\frac{9}{16}$"
7"X9/16"
7"X1"

Neg Period – Log N = 2.44 sec – 6.25¢
#2 = 268 " 5.38¢
#3 = 274 " 5.44¢
– 5.73¢

$\frac{1}{32}$" (11 X 9) = 56.73¢

$\frac{1}{32}$" (9"X7") = 39.48¢



C. 11" X 9" Expr. LIX Run 1
17" C Refl Date 2-15-1963 Time 2115
Purpose Crit Ht Determination

Glory Hole = 21"

1 H = 1 3/4" - Sub Critical -

2 H = 4" - Near Critical

Pos Period - Log N = 22.8 sec
+ 25.95 ¢

3 H = 3 31/32" - No Carbon Changes from Run 2

2. Neg. Period -

Log N = 92.7 sec - 32.0 ¢
#2 = 92.0 " - 32.6 ¢
#3 = 92.5 " - 32.2 ¢
32.3 ¢

Sep. 210

1/32" (11"X9") fuel + gap = 58.25 ¢

2746
2779
2778
2743
2742
2776
2747
Run 2

(13"X11") X 4½"
(15"X13") X 3"
" X 1½
11" X ½"
15" X 1½"
15" X ½"
15" X 3/8"
15" X ⅛

4"
15" X 14"

(45"X15") ± (45"X2")
(45"X15") X 4"
X 1"
16"
(45"X15") X 8"
A + B

Same as p. 208

FEB 1 8 1965

INSTRUMENT CHECK

8:45 — 2 — M226 & P

	F	A	B	C	D	E
	Hi & Lo	10/1000	OOR	out	10/1000	900V
Source Dist.	✓	8"	✓		2"	8"
% F.S. Trip	✓	90	✓		85	100+
BF_3 273	✓					

Lights OK
Tables OK
Magnets OK
Alarms OK
Area Cleared

TAYLOR & LYNN

C.A. 11"X9 Expt. LIX Run 4
12" C Refl. Date ____ 19 __ Time ____ AM/PM
Purpose Clean Crit.

4. $H = 3\frac{31}{32}"$ — Clean Critical

Neg Period – Log N = 103.7 sec = -24.45¢
#2 = 120.0 " = 20.24
#3 = 106.8 " = ~~-20.18~~
-22.27¢

3216
2767
2778
2742
2776
2747

$\frac{1}{32}"(11"\times 9") = 48.22¢$

C.A. 11" X 9" Expr. 4X 1
17" C Reflector
C Core Date 2-16-65 Time 10:40 AM
Subject Crit. Ht. Determination

Glory Hole 21"
up #1

1 H = $3\frac{13}{16}$" – Super Crit. = 22.390
– 300 milo

2 H = $3\frac{11}{16}$" –

Neg Period – Log N = 102.5 sec = – 25.97 ¢
#2 = 112.0 " = 20.24 ¢
#3 = 110.8 " = 20.75
–22.32 ¢

2767	9" X 9/16"
2778	9" X 1/4"
2742	9" X 3/8"
2776	9" X 1"
2749	9" X 1 1/4"

Clean Critical

3 H = $3\frac{23}{32}$ – Pos Period

3216	9/32"
2767	9/16"
2742	3/8"
2776	1"
2741	1 1/4"

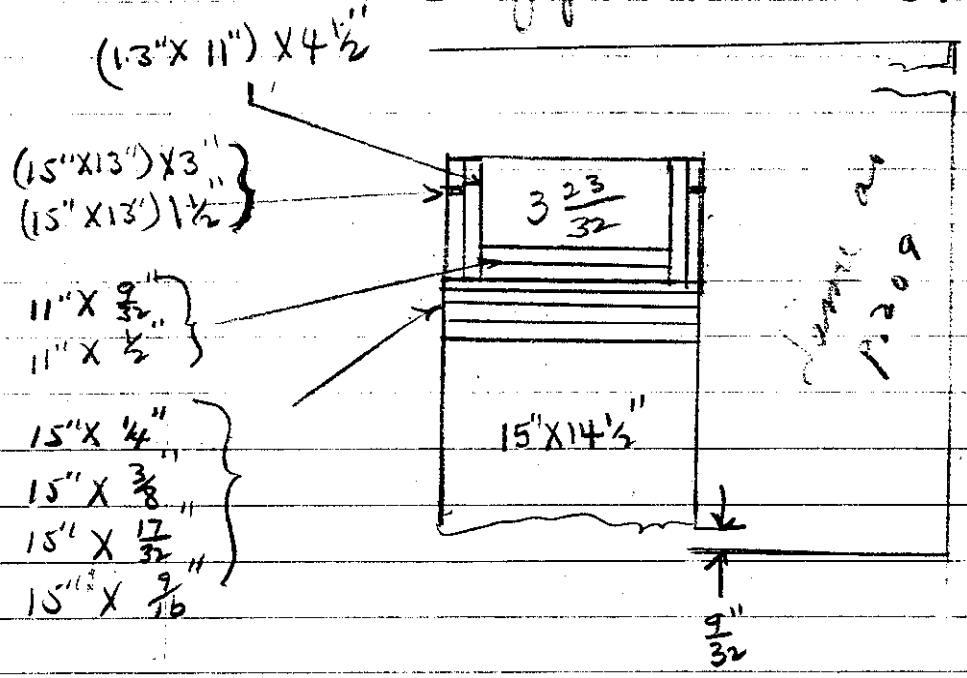
Log N = 22.8 sec = +25.95 ¢
#2 = 23.6 " = +26.08 ¢
#3 = 24.5 " = +24.93 ¢
+25.66 ¢

1/32" Fuel = 47.98 ¢

4. Added Supports —

Poo Period — Log N = 21.72 sec 27.36 ¢
#2 = 21.3 " 27.65
#3 = 22.9 " 25.89
+26.97 ¢

Supports = 1.31 ¢



FEB 17 1965

INSTRUMENT CHECK

10⁰⁰ — M226 & A

	F	A	B	C	D	E
	Hi & Lo	10/1000	OPR	out	10/1000	900V
Distr. Dist.	✓	8"	✓	}	2"	10"
% F.S. Trip	✓	90	✓	}	90	100+
BF_3 2 & 3	✓					

Lights OK
Tables OK
Magnets OK
Alarms OK* (EXCEPT C)
Area cleared ✓
TAYLOR & LYNN

*Alarm C could not be tripped with our "weak" source

C.A. 9"X7" Expr. LXI Run 1
18" C Refl Date 2-17-1965 Time AM
Purpose Crit Ht. Determination

Dlong Hole = 22.5"

1. H = 4 3/8" —

Pos Period — Log N = 257 sec = −5.87¢
#2 = 299 " = −4.91¢
#3 = 279 " = −5.32¢
−5.37¢

~~2763~~
~~2829~~
2741
~~2775~~
~~2736~~
2740

Mean Criticals

2. H = 4 13/32" — Pos Period —

Log N = 15.20 sec = +32.13¢
#2 = 14.07 " 33.36¢
#3 = 14.87 " 32.47¢
1/32" Fuel = 38.36¢ 32.99¢

Same
~~3217~~
~~2774~~
~~2736~~
2740

C... 9"x7" 18" C Refl. C core Expr. LXII Run 1
Date ____ 19__ Time ____
Purpose Crit Ht Determination

Glory Hole = 22.5"
#1 = 22.915

1 H = 4" – Sub Critical

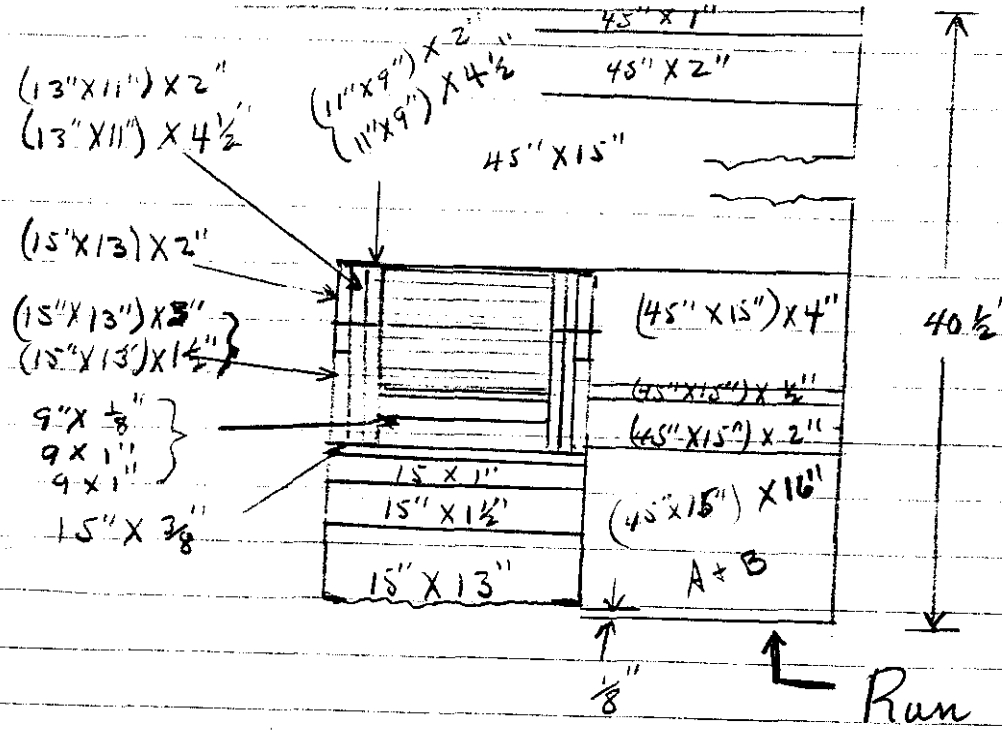
2 H = 4⅛" – Super Crit. #1 = 22.80
−.115 mike

3 H = 4 1/16" – Clean Cut.

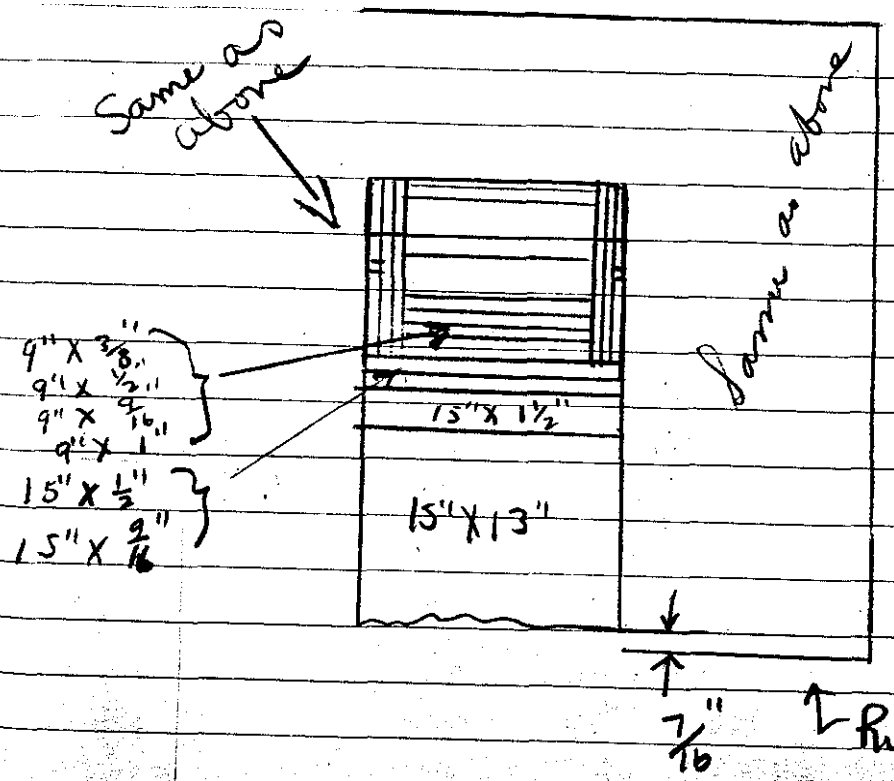
Pos Period – log N = 85.8 sec = 10.86 ¢
#2 = 84.7 " = 10.96 ¢
#3 = 82.1 " = 11.22 ¢
+11.01 ¢

~~2763~~ ~~2829~~ 2741	7"x2"
~~2737~~	~~7"x 5/16"~~
2740	7"x1½"

9"x
9"
9"
9"
15"
15"



Run 1 p. 213



Run 3 p. 214

FEB 12 1965

Lights OK
Tables OK
Magnets OK
Alarms OK
Area Cleared

INSTRUMENT CHECK

8:10 AM — Mark 4 P

	F	A	B	C	D	E
Alarms	Hi & Lo	10/100	OPR	30	10/1000	900V
Source Pos.	✓	8"	OPR	30"	2"	10"
[illegible]	✓	90	✓	180	95	100+

BF3 2#3 ✓

9"X7" Expr. LXII Run 4
18" C Refl.
C Core Date 2-18-65 Time 8:40 AM
Purpose Refl Evaluation

up
#1 = 22.970
#2 = 22.990

4. Added (45"X18") X 1" Carbon to top.
(VS Run 3)

Pos Period-Log N = 45.4 sec 17.07 ¢
#2 = 45.0 " 17.17 ¢
#3 = 43.0 " 17.69
+17.31 ¢

(45"X 18") X 1" C = 6.30 ¢

5. Fuel Evaluation (Vs Run 4)

H = 4 1/32" -

Neg.

Period - log N = 167.7 = -10.17 ϕ

#2 = 172.0 = -9.83 ϕ

#3 = 171.9 = 9.83 ϕ

— 9.97

1/2 Fuel = 27.2 ϕ

FEB 2 1 1965

INSTRUMENT CHECK

$2^{\frac{25}{32}}$ "

M226 & 4

Tables OK
Lights OK
Magneto OK
Alarm OK
Area Cleared

TAYLOR & LYNN

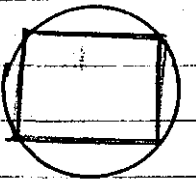
F					
Hi & Lo	1/1000	OPR 30	1/1000	900V	
✓	8" ✓	OK	2"	10"	
BF3 2 & 3 ✓	95 ✓	100	90	100+	

C.A. 7" Solid Expr. EXIII Run 1

Bare Date 2-24-65 Time AM PM

Purp Preparation for Pulsing with Accelerator

2½" Fuel on Ram
Holes plugged in 7" disc



1. $T_f = 4\frac{15}{16}" + (5" \times 5" \times \frac{1}{32}")$

Neg. Period – Log N = 96.1 sec = 31.0 t
H_3 = 96.4 " = 31.5 t
−31.25 t

100 t

2. Accelerator in place, under diaphragm
Tube ~ 2" from stack, below diaphragm.

Neg. Period – Log N = 114.4 sec 19.42
H_3 = 106. " 23.07
−21.25 t

Accelerator 10 t

INSTRUMENT CHECK

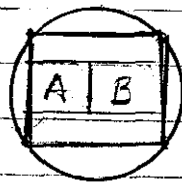
Time 8^{15} AM — M226 & H

Lights ✓
Tables ✓
Magnets ✓
Alarms ✓
Area Cleared
TAYLOR & LYON

	Hi & Lo	10/1000	OPR	30	10/1000	900 V
Source	✓	8"	✓	4'	2"	10"
F.S. Trip	✓	95	✓	100	95	100+
BF_3 3	✓					

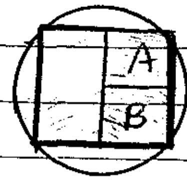
7" Solid Bare — Exp. LXIII — Run 3
Date 2-25-1965 — 8:30
Purpose: p. 218 Cont'd

3. added 2 (2½" X 2½" X 1/32")



~ 5¢ Super Crit.
Pulsed at 0.35" separation for 60 minutes.

1:00 PM 4. Moved A and B to edge of the (5"X5"X 1/32")



Poo – Log N = 0.198¢

Down and up – Log N = 0.228¢

5. Normal slow speed switch out.
aux. slow speed at –.25" in use.
up and down 20 times
(Separated ~.25" each time)

FEB 2_ 1965

9:20 | M-226 + 8

$\frac{10}{1000}$	oper	X	$\frac{10}{1000}$	1050 V.
7"	✓	3'	2"	8"
95	OK	100	95	100

Lights
Tables
magnets
alarms
area Cleared
OK

7" Solid | LXXII | 6
Bore | Date FEB 2_ 1965

Evaluate Reactivity of Accelerator Nose, under diaphragm.

Taylor
Lynn

6. Loading as Run 4, p. 219.

Negative Period - Log N sec <.1 ¢
#3 = -19,000 sec 0.06 ¢

7. Accelerator moved away.

Negative Period -
Log N - 510 sec = -2.70 ¢
#3 - 508 " = -2.71 ¢

Accelerator Tube = + 2.6 ¢

MAR 4 1965

Time 8^40 AM

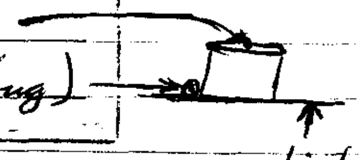
M-226 #n

	F	A			D	E
Range	Hi & Lo	10/1000	OPR	30	10/1000	900 V
Source Dist.	–	8"	✓	4'	2"	10"
% F.S. Trip	✓	95	✓	100	95	100+
BF_3 3 ✓						

Lights ✓
Tables ✓
Magnets ✓
Alarms ✓ *
Area Cleared
TAYLOR & LYNN

*Alarm A went to the trip point but would not trip. E.R. checking this situation.

C.A. 7" Cyl Expr. LXIII Run 8
Bare Date 3-4-1965 Time ___ PM
Purpose Pulsing with accelerator.
1 small fission Ctr
1 BF_3 (1" dia, 12" long)



up #1 = 21.165 ; drop to 20.860
about 1.1 min per cycle.
Fuel same as Run 3, p. 219

Log N → .002
Ch "A" → 60 @ 1000/25
"D" → 47 @ 1000/50

Data Collection started @ 2:30 PM
Down @ 4:30 PM

INSTRUMENT CHECK

MAR 5 1965

Time: 1 30 PM

Source: M226 & P

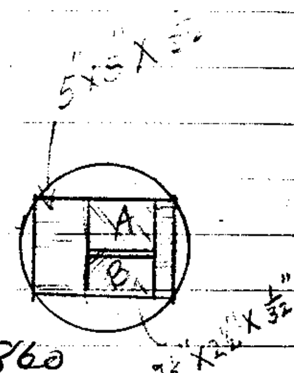
	F	A	B	C	D	
	Hi #ho	10/100	OPR	30	10/100	900V
Source	✓	8"	✓	4'	3"	10"
% E.C. Trip	✓	95	✓	100	95	100+
BF_3 #3	✓					

Channel

Lights ✓
Magnets ✓
Tables ✓
Alarms ✓
Area Cleared
TAYLOR ELYON

C.A. 7" Cyl Expr. XLIII Run 9
Bore Date 3-5-1965 Time AM
Purpose: Pulsing with accelerator
1 BF_3 (1" dia x 12" long)

Fuel = 4½" +



up #1 = 21.165 ; drops to ~~20.945~~ 20.860

~~Started data collection @ 10:55~~

Log N ⟹ .002

11:50 AM Period — Log N = 1440 sec 0.86¢
#3 = 1450 0.86¢

1:00 PM After 50 cycles Log N = 778 sec 1.57¢
#3 = 931 " 1.32
1.45¢

adjusted top per fuel

1:40 Period — Log N = 4500 sec 0.28
#3 = 3400 " 0.37
0.33¢

3:00 PL after 60 cycles

Log N = +2510 με = 0.50 ϕ
#3 = +2200 με = +0.37 ϕ
0.54 ϕ

4:10 PL after 60 cycles

Log N = 1900 με 0.65 ϕ
#3 = 3300 με 0.38 ϕ
0.52 ϕ

X 1/32"

MAR 1965

8:20 — M-226 & A

Tables OK
Lights OK
Magnets OK
Alarms OK
Area Cleared
TAYLOR & LYNN

	F					
Hi & Lo	10/000	OPR	30	10/000	900V	
	✓	8"	✓	3'	2"	10"
	✓	95	✓	100	95	100
BF_3 3	✓					

C... 7" cyl Exp... XLVII Run 10
bore Date ... 19 ... Time ... P.M.
Purpose: Pulsing with accelerator (con't)

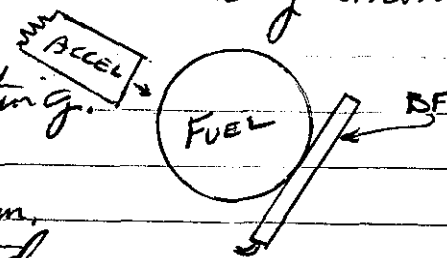
9:00 AM Period check: Log N +1735 sec. = 0.71 ¢
Ch. C +4283 sec. = 0.30
Ch. D. +3158 sec. = 0.40
Ch. A. +1707 sec. = 0.73
Avg = 0.53 ¢

10:35 AM Period check after 72 cycles: Log N +1486 ¢ = 0.87 ¢
BF_3 3 +1968 = 0.63 ¢
Avg 0.75 ¢

12:10 PM Period after 60 cycles: Log N = 1646 sec 0.76
BF_3 3 = 1333 " 0.92
0.84 ¢

General Information:

Log N Peak @ 0.001
Charlie on Course range = 40 - 72
Dog 1000/25 range = 15.5 - 40
ABLE 1000/25 range = 13.5 - 55
Up Selsyn #1 = 21.165 ; #2 = 21.176
VDT 3 = +7 ; VDT 4 = +6
Ram travel distance = 0.31"
Ram Complete Cycle time = 1.10 min.
Accelerator "optimized."
Beam Current "On" = 1.2 on x1 scale
High Voltage = 143 KV
Vacuum = 2.2×10^{-5} on 10^{-4} scale
Using automatic cycler fabricated by E. Rokker.
D_2 pressure @ 12#
1" dia BF_3 used in counting.
BF_3 located as shown and is on top of diaphragm.
End of accelerator located as shown and is 2½" from fuel under the diaph.
Accel. double slit = ± 1/3" apart.
Strong Focus set @ 55 Dia Voltage = 4500 V.
Pulsing @ 50 KC
Pulse to accel. is delayed 5 μ sec after anal. has been pulsed.
We get 3×10^5 triggers per assembly (or cycle)
Using ½ memory so 3 pulses are observed out of 4.



— cont next page —

Every other pulse triggers the anal.
Triggers are fed to blocking gate
with 35 sec. block. 2 to 1 PHS = 4
The signal goes to TMC with 200 ohm resistor
20 ohm on input of TMC and gain of 2

75 ohm on output of linear amp. # Y90320
Gain = 16x1
Rise Time = 0.2 μs Input = neg
PHS = 12

C.A. 7" cyl Exp. LXIII Run 11
Bare Date 3-8-1965 Time 1:00 AM
Purpose Pulsing with accelerator.

tor.

Exchanged BF_3 (1" dia) Counter for He Counter (10 atm) (1200 V.) located ~ ½" from Fuel Stack.

No satisfactory results.

MAR 1965

INSTRUMENT CHECK

Time 8^20 AM   Source M-226 & f

Channel

	F	A	B	C	D	E
Rec.	Hi & Lo	10/1000	OPR	30	10/1000	900V
Source Dist.	✓	8"	✓	4'	2"	9"
% F.S. Trip	✓	95	✓	100	95	100++
BF_3 # 3	✓					

Tables ✓
Lights ✓
Magnets ✓
Alarms ✓
Area Cleared

TAYLOR & LYNN

MAR 1965

INSTRUMENT CHECK

Time 2^05 PM   S. M226 & f

	F	A	B	C	D	E
	Hi & Lo	10/1000	OPR	30	10/1000	900V
Source Dist.	✓	7"	✓	8'	2"	10"
% F.S. Trip	✓	95	✓	100	95	100+
BF_3	✓					

Tables ✓
Lights ✓
Magnets ✓
Alarms ✓
Area Cleared

TAYLOR & LYNN

C.A. 7" Cyl   Expr. XLIII   Run 12

Bare   Date 3-11 1965   Time ____ PM

Purp. Preliminary Run for reactivity check of Plexiglas shim mounted on horizontal table safety.
1½" Fuel on Rdm.

a Positive Period _ Shim Cocked +17.3¢
" Fired 5.34
Shim = 11.96¢

Shim = 4½" X 4½" X 1" — ¾" from Stack
½ of Shim above stack

b Larger Shim. (4½" X 8" X 1") Curved to 8" Circumfrence.
Adjusted fuel.
Poo Period — Shim Cocked — 22,84 ¢
— or Fired — 0.92 ¢

C. Moved shim in ~ ¼"
Ajusted fuel

Poo Period — Shim Cocked - 25.0 ¢
Fired - ∞

MAR 1 2 1965

INSTRUMENT CHECK

Time 8^{10} AM Source M226 & h

F

	Channel A	B	C	D	E
Range Hi & lo	10/1000	OPR	30	10/1000	900 V
Source Dist. ✓	8"	✓	5'	2"	10"
% F.S. Trip ✓	95	✓	100	90	100+
BF_3 #3 ✓					

Lights ✓
Magnets ✓
Tables ✓
Alarms ✓
Area Cleared
TAYLOR & LYNN

Core 7" Cyl Exp. LXIII Run 13
Bore Date 3-12-65 AM

Purpose Center Check in preparation for transient measurements.

a Pos Period - BF_3 = 181.1 sec = 5.94¢ Log N from .001 → .001
He = 185.0 " = 5.82¢

~~Counters~~ TMC reached limit @ Log N = .0034

Six Run made Shim Cocked = ~ 24¢ Pos
Fired ≅ ∞

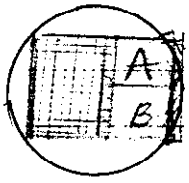
Fired shim when Log N = .0036

7" cyl Exp. IXIII Run 14

Date 3-12-1966 Time

Remarks: Rossi α with He ctr
(10 atm, ±1200 V)

1½" Fuel on Ram



a $H = 4\frac{15}{16}" + (5" \times 5" \times \frac{1}{32}) + 2(2\frac{1}{2}" \times 2\frac{1}{2}" \times \frac{1}{32})$

Tables #1 = 22.098 up #1 = 22.156
#2 = 22.119 #2 = 22.177

Log N = .0002
"D" = 85 @ 10/200 Servo @ 610
"A" = 32 @ 100/100

→ .001

MAR 1965

1^{st} — M226 ef

F

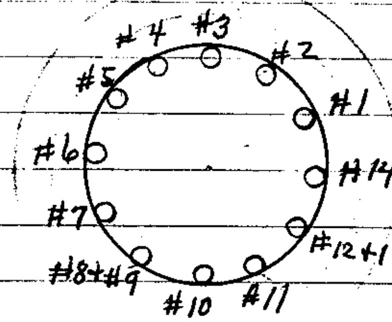
Hi & Lo	1/1000	OPR	30	1/1000	900Y	
✓	8"	OK	40"	2"	8"	
	95	OK	100	95	100++	Taylor & Lynn

Lights ✓
Tables ✓
Magnets ✓
Alarms ✓
Area Cleared

Core 11" dia cyl Expr. LXIV Run 1
Bare Date 3-15-65 Time 1:20 PM

Purpose Foil Exposure for Normalizing different thickness U^{235} foils
1 3/4" fuel on Ram

1. Foils placed at circumference of the 7" dia disc as shown at right.
Foil dia .365"



Position	Foil #	Thickness
#1	122	.148"
2	11	.1 (X .067" Hole)
3	23	.1
4	111	.125
5	108	.25
6	9	.25 (X .067" Hole)
7	135	.195
8	117 on 116	.125
9	112	.125
10	31	.1
11	34 on 33	.1
12	UMo #1	.25

Log N = .006 → .005
"A" = 45 @ $\frac{1000}{100}$
"D" = 84 @ $\frac{100}{500}$ Circ @ 6/0

Exposed 20 min. 2:10 PM → 2:30 PM

Fuel – H (7" dia) = $3\frac{3}{8}$"
H (9"X7" Ring) = $3\frac{7}{16}$"
H (11"X9" Ring) = $3\frac{19}{32}$"

INSTRUMENT CHECK

MAR 16 1965

8^{10} — M226 & h

	F	A	R			
	Hi & Lo	10/1000	OPR	30	10/1000	900V
	✓	8"	✓	5'	2"	8"
BF₃ #3 ✓	✓	95	✓	100	95	100+

Tables ✓
Lights ✓
Magnets ✓
Alarms ✓
Area Cleared
TAYLOR & LYON

C.A. 11" dia cyl Expr. LXIV Run 2
Bore Date 3-16-1965 Time 8:30 AM
Purpose Re exposure of foils in position 1 thru 7, Run 1.

SA1 + SA2 – 1 crystal in Counting position

Log N = .055
"A" = 70 @ $\frac{1000}{1000}$
"D" = 77 @ $\frac{1000}{500}$ —

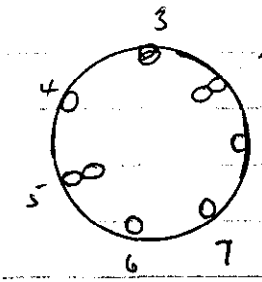
Exposed – 30 min. 8:45 AM → 9:15 AM

11" dia Cyl LXIV 3

Bare Date 3-16-65 Time 10:30

U^{235} Foil ~~Exposure~~ Exposure for Calibration

3. Loading of foils



Pos	Foil #	Thickness
#1	UMo #1	.25"
2	34 on 33	.1"
3	31	.1"
✱ 5	117 on 116	.125"
● 4	112	.125"
6	115	.125"
7	36	.1"

Log N = .05 F = .5 (HV = 9)

"A" = 78 $\frac{1000}{1000}$

"D" = 80 $\frac{1000}{500}$

Time = 30 min

MAR 1 1965

INSTRUMENT CHECK

Time 8^{45} AM   Source: M-226 8 ft

	γ	A	B	C	D	E
	Hi sho	10/1000	off	30	10/1000	960 V
Source	✓	8"	✓	5'	2"	8"
E.S. Trip	✓	95	✓	100	95	100+

BF_3 #3 - No

Lights ✓
Magnets ✓
Tables ✓
Alarms ✓
Area Cleared

TAYLOR & LYNN

C.: 11 dia cyl Expt. LXIV Run 4
Bare Date 3-17-1965 Time 8:55 AM

Purpose Re-exposure of foil of Run 2,

2 Crystals of SA1 and SA2 now in normal position (~3" separation)

4. Log N = .058   E = 2.4 @ 690 Vr.
"A" = 61 1000/1000
"D" = 66 1000/500

Time = 8 min

11" dia cyl LXIV 5"
Bore 3-17-65 10:25 ←
Re-Exposure of foils of Run 3
p. 234

5. LogN = .059 "E" = 1.0 → 4.0
"A" = 65 $\frac{1000}{1000}$ "F" = ~ .5
"D" = 78 $\frac{1000}{300}$

Time = 9 min

INSTRUMENT CHECK

4⁵⁵ AM   M226 & P

Ni # Lo	$^{10}/_{1000}$	OPR	30	$^{10}/_{1000}$	900V
✓	8"	✓	40"	2"	10"
% F.S. Trip ✓	95	✓	100	95	100+

BF_3 No

MAR 19 1965

Lights ✓
Tables ✓
Magnets ✓
Alarms ✓
Area Cleared
TAYLOR & LYNN

11 dia cyl Expr. LXIV Run 6

Bore Date 3-19-1965 Time 10:00 AM

Purp. Re-exposure of foils in Run 3 p. 234

6. Log N = .06   F = .37   HV = 9

"A" = 60 $\frac{1000}{1000}$ E = 2.0   HV = 690

"D" = 66 $\frac{1000}{500}$

Time = 10 min

MAR 2 [illegible] 1965

INSTRUMENT CHECK

9:40 AM

M-226 & 8

	A				
	10/1000 cps	X	10/1000	900 V.	
Power	8"	OK	5'	2"	10"
% F.S. Trip	95	OK	100	95	100+

Exp. 11" dia Cyl Exp. LXIV Run 7

Bare Date MAR 2 2 1965 Time AM PM

Reexposure of foils

#108, #9, #23 and #11

.25" .1"

7 Log N = .052

"A" = 57 1000/1000

"B" = 61 1000/500

"E" = 2.0 @ 690 V.

"F" = 3.2 @ 9

Time = 10 Min

MAR 24 1965

INSTRUMENT CHECK

Time 10:30 AM Source M-226 + γ

	F	A	B	C	D	E
		Channel				
Scale	Hi & Lo	10/1000	OPR	30	10/1000	900V
Source Dist.	ok	8"	ok	5'	2"	10"
% F.S. Trip		95	✓	100	95	100+

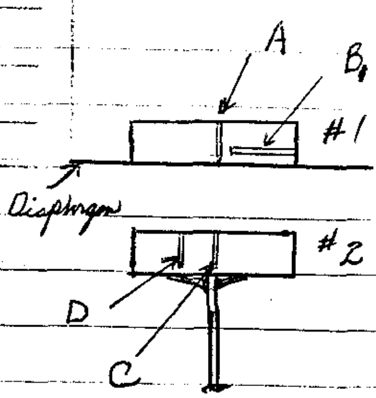
BF3 ~~None~~

Lights
Tables
Magnets
Alarms
Area Cleared

TAYLOR & LYNN

Core 2 (11" dia cyl.) 2 (2¾)" LXV Run 1
SEP ≅ 4" Date 3-24-65 Time 10:55 AM
Bare
Purpose 235 U Foil Traverse

Top = Stack #1
Bottom = Stack #2



Foil Traverse Locations – 1 hole Vertical = A
Horizontal Hole = B
Center hole of pc with 2 Verticals = C
Outer hole of pc with 2 Vertical holes = D

Location A, from Bottom = # 80, 78, 82, 75, 76, 77, 79, 73, + 74.

Location B, from center of disc ~~[illegible]~~ 3¼" → 3⅛" = #71
4¼" → 4⅛" = #70

Location D, Top Foil – #81, Normalizer

Run 1

Log N = .0335 "E" = 1 690 V
"A" = 75 1000/500 "F" = 2 900 V.
"D" = 48 1000/500

Time = 10 minutes

Separations, down measured E = 20.787 N = 20.797
S = 20.790 C = 20.795
W = 20.799
Aug = 20.7936

down Selsyn #1 = 0.004
#2 = 0.036

31.3 sec pos #1 16.78
#2 16.799

up #1 = 16.728
#2 = 16.744 ← ∞

Separation #1 = 4.069 ~~3.969~~"
#2 = 4.085"

Avg = 4.072" ~~4.027~~"
.010 ciaph
4.082" — pc to pc

Separation - ~~4.077~~" pc to pc.
∞ Selsyn #1 = 16.728

MAR 25 1955

8:25 AM — M-224 ~~3~~ 8

		A	B	C	D	
F 900		10/1000	opn	+	10/1000	900 V
	off	8"	off	3'	3"	10"
F.S. Trip		95	✓	160	95	100t

BF_3 #3 = off

2 (11" dia cyl.)
2 (2 3/4") — LXV — 2

Time 8:40

235 U Foil Traverse

78
799

SEE P. 239

Separation – ~~4.037~~ 4,082" pc to pc.

Selsyn #1 = 16.728

distances shown are from bottom of stack

Location A – #68 @ .5" — #63 @ 1.375"
#119 @ 1.1875" — #118 @ 1.5625"
#113 @ 2.6875"

B – #72 @ 3.625" — #69 @ 4.625"

C – #60 @ 0.25" — #85 @ 1.6875"
#65 @ 0.50" — #57 @ 1.9375"
#114 @ 0.6875" — #61 @ 2.1875"
#56 @ 0.9375" — #59 @ 2.4375"
#67 @ 1.1875" — #64 @ 2.6875"
#62 @ 1.4375"

D – N_1 = #66 — down
TB N_2 = #103 (west side edge of 7" dia.) — Selsyn #1 = 0.000, #2 = 0.0415

Log N = .03 — E = 1.0069
"A" = 71 @ 1000/500 — F = 2.00 @ 900
"D" = 47 @ 1000/800

Time = 10 min

2(11 dia cyl) IXV 3

2(2 3/4") Date 3-25 1965 Time 2100

Purpose 235 U Traverse

.1" Thick, .365" dia

See p. 239

3. Horizontal along top of Stack #2 (bottom), through a dia N → S

#29 @	− 5.3175"	#25 @	+ .370"
38	− 4.370	40	+ 1.370
30	− 3.370	21	+ 2.370
39	− 2.370	32	+ 3.370
37	− 1.370	27	+ 4.370
26	− .370	24	+ 5.3175

"E"

distances are from Center of stack

N_2 = #107 outer edge of 7" dia, west side

Log N = .0595

"A" = 72 1000/1000

"D" = 98 1000/500

"E" = 2.0 @ 690 V

"F" = 4+ @ 900 V

Time = 10 min.

Selsyn ∞ down

#1 = 16.728" 0.000

#2 = 16.755 —

Separation = 4.082" pc to pc

MAR 2 1965

INSTRUMENT CHECK

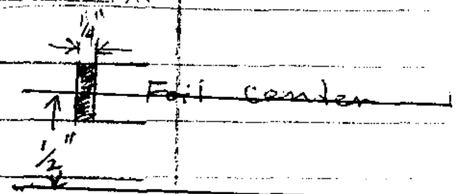
Time 9^00 AM   Source Pu 226 & RA 248

	F	A	B	C	D	E
		Channel				
Range	Hi & Lo	10/1000	OPR	X	10/1000	900V
Source Dist.	✓	8"	✓	3'	2"	10"
% F.S. Trip	✓	95	✓	100	90	100+

BF_3 # 3 - (5)

Lights
Tables ✓
Magnets ✓
Alarms ✓
Area Cleared
TAYLOR & LYNN

2(11" dia cyl) Expt. LXV Run 4
2(2 3/4") Date 19 Time 12:30 PM
Purpose 235 U Foil Exposure



Location SEE p. 239

Stack #1, "B", #105 = 0.375"   #100 = 4.000"
Distance from center of Stack down   106 = 1.125"   101 = 4.630"
109 = 1.875"   96 = 4.835"
∞ #1 = 16.728   0.000   107 = 2.625"   98 = 5.085"
#2 = Out   104 = 3.375"   120 = 5.2725"
121 = 5.3925"

Stack #2 "C" # 97 = 2.~~1..~~ 235"   "E" S { #15 = +0.365"; #16 = +1.055" }
.2" → #134 = 2.467"
N_2 = #99   .1" → #22 = 2.~~568~~ 605"   N { #4 = −0.365"; #14 = −1.055" }
→ #28 = 2.~~693~~ 705"

Separation 4.08 from ~~re~~ to Re

Log N = .0615
"A" = 65 1000   "E" = 1.6 @ 690 V.
"D" = 86 1000/300   "F" = X+ @ 900 V.

Time = 10 min

side
V.
V.

[redacted]

MAR 9 1965

10:20

M-226 & 8

$\frac{10}{1000}$	opr	X	$\frac{10}{1000}$	900V
9"	OK	3"	2"	10"
95	✓	100	98	100+

2(11" dia cyl)
2(2¾")

LXV

5

Date: MAR 29 1965

10:30 AM

Purpose: ~~235 U~~ Foil Exposure
U Mo, .25" Long, .365" dia

SEE P. 239

Location "D", Vertical 3" from center of bottom stack. (# 2)

Foil #, Distance from top of Stack (#2)

#~~15~~ 5	- 0.125"	#5	- 1.625"	
# 35	- 0.375"	U#121	= 1.8125"	N_2 = #95 (235U)
17	- 0.625"	# 3	= 2.000"	N(UMo) = #34
33	- 0.875"	16	- 2.250"	
18	- 1.125"	24	- 2.50"	
20	- 1.375"			

Log N = .06 "E" = 3.1 @ 690 V.

"D" = 62 $\frac{1000}{1000}$ "F" = 5 @ 900 V.

"A" = 100+ $\frac{1000}{1000}$

Time = 8.5 min

(Log N' Adjusted Since Run #)

down 99.997 0.044

Setup #1 = 10.725"
#2 = 10.795"

Separation = 4.087" pc to pc

Separation = 4.[illegible]" pc to pc

MAR 1965 INSTRUMENT CHECK

10:00 AM

M-226 + 8

Taylor
Lynn

$\frac{10}{1000}$ cps × $\frac{10}{1000}$ 900V.

8" ok 3' 2" 10"

95 ✓ 100 95 100+

Lights ok
Tables ok
Magnets ok
area cleared
alarm ok

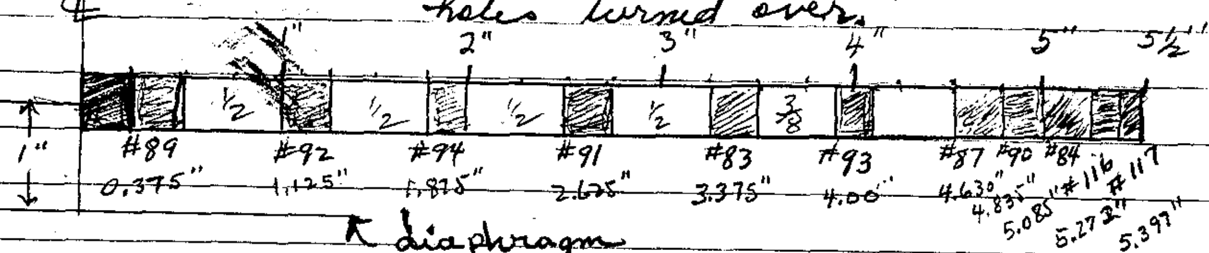
C.A. 2 (11" dia cyl) Expr. LXV Run 6
2 (2¾") Date MAR 1965 Time AM/PM
~ 4" Separation
Purpose

235 Foil Exposure
Foils = ¼" Long, .365" dia

SEE P. 239

Location "B_2", Fuel pcs with horizontal holes turned over.

Separation = pc to pc = 4.078"



↖ diaphragm

N_2 = #88

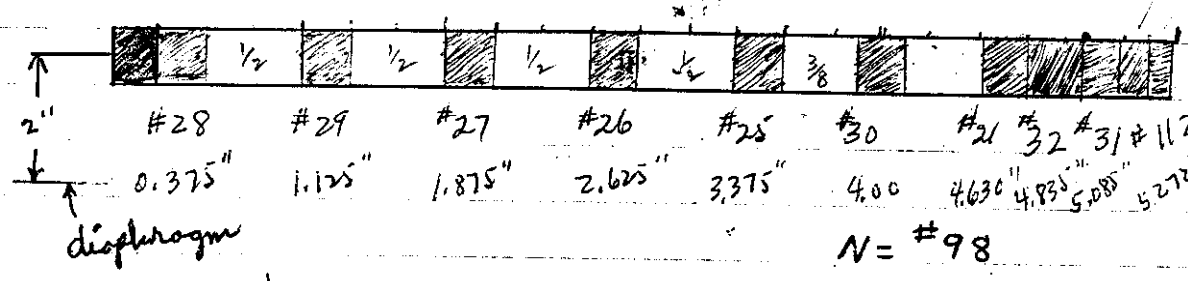
Log N = .050
"A" = 78 @ $\frac{1000}{1000}$
"D" = 50 @ $\frac{1000}{1000}$
"E" = ~~20~~ @ 690V
"F" = 4.0 @ 900V.
Time = 10 minutes

Selsyn ∞
#1 = 16.722
#2 = 16.766

down #1 = 99.997
#2 = 0.041

2(11" dia cyl) Exp. LX6 Run 7
2(2 3/4") Date 31 Mar 65 Time 1:25 EST
Purpose U Mo Foil Exposure

Location "B"3, Fuel pcs with horizontal holes on Top of Stack, holes down.



N = #98

Log N = .05
"A" = 69 @ 1000/1000
"B" = 45 @ 1000/1000 Time = 9 mins.
"E" = 2.0 @ 690 V.
"F" = 4.0 @ 900 V. Down = 1:41 PM

	∞	down	
Selsyn #1 =	16.725"	99.992	= 16.733
#2 =	16.770	0.048"	= 16.725"

Separation = 4.074" pc to pc

2(15" dia) 2(2 1/4)
3.8" Separation

Separation = 4.077" pc to pc

APR 1966

INSTRUMENT CHECK

Time 8:40 AM Source M-226 + X

	Channel A	B	C	D	E
Range	10/1000	✓	X	10/1000	900V
Source Dist.	7"	ok	3"	2"	10"
% F.S. Trip	95	✓	100	95	100

BF_3 - 3 ok

2 (11" dia Cyl) Expr. LXV Run 8

2 (2 3/4") Date APR 1 1966 Time 9:00 AM PM

Purpose 235 U Foil Exposure, thru separation of the 2 cylinders

Location "F_1" Foil hung on 1/8" Al wire hook as shown

Foils = .25" Long, .365" OD X .067" ID except #13 = .010" Lg, .365" OD X .067" ID

Measured from diaph to Bottom of foils = 3.765"

from bottom fuel stack to bottom of foils = 16.993".

Separation = 4.077" pc to pc.

	down		down
Selsyn #1 =	0.000	16.723	@ 99.995
#2 =	0.046	16.763	0.040 = 16.723

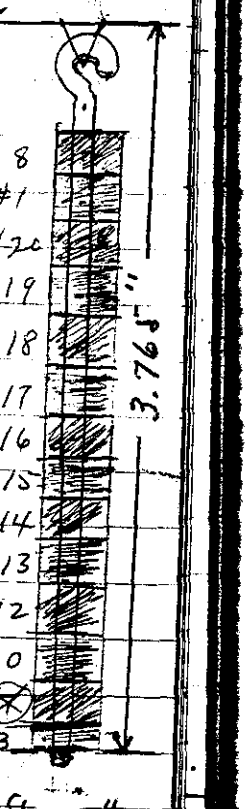
Log N = .025⁻ "E" = 0.8 @ 690V

"A" = 77 1000/500

"D" = 51 1000/500

Time = 20 min

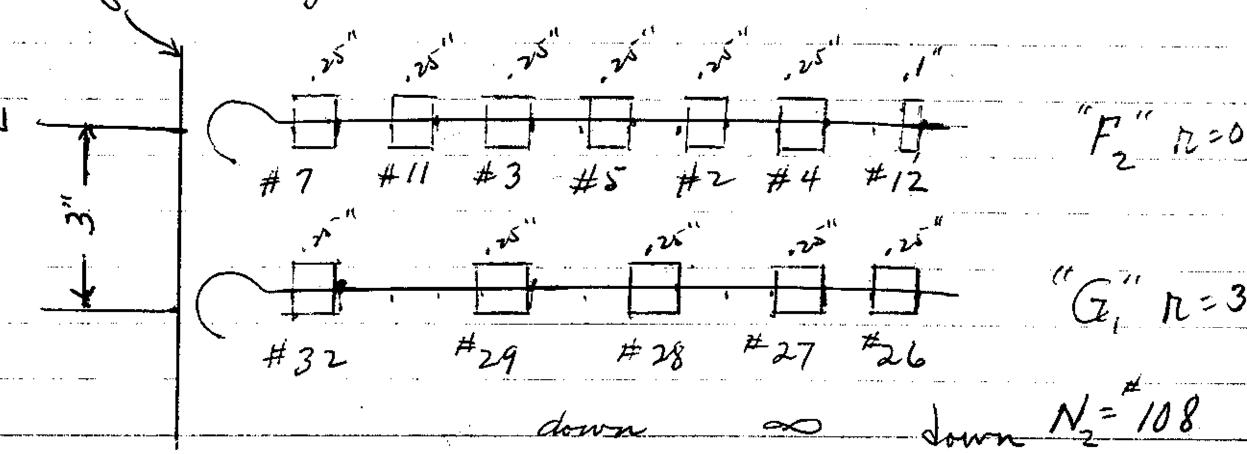
Down = 0923



2(11" dia cyl) Exp. LXV Run 9
2(2¾") Date 4-1-1965 Time 11:00 →

Purpose 235 U Foil Exposure thru separation of 2 cyl.

235 U foils, .25" Long, .365" O.D. x .067" ID
except #12 = .1" " , " "



	down	∞	down N_2 = #108	
Selsyn #1 =	99.995	16.723	99.995	=16.728
#2 =	0.051	16.764	0.042	=16.718
				16.723

Log N = .019

"A" = 82 1000/500 "E" = 0.4 @ 690

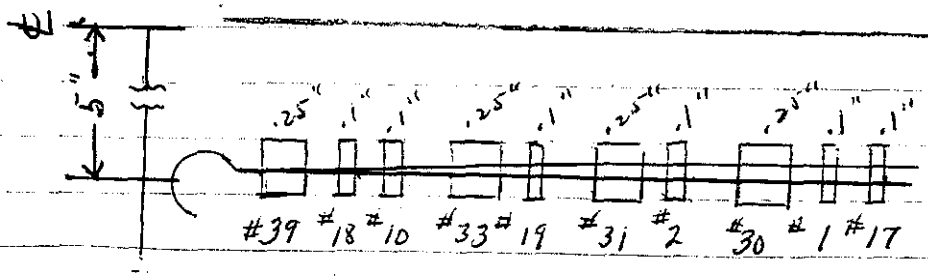
"D" = 87 1000/500

Separation = 4.080" pc to pc.

Measured from bottom stack to bottom of foil #26 = 17.017"

measured from bottom Stack to diaph. 20.797"

2(11" dia cyl. LXV Run 10
2(2 3/4") Date 4-1-1965 Time 12:55 AM PM
Purpose 23521 Foil Exposure



"H"
12 = 5"

Measured distance from bottom Stack
to bottom of foil #17 = 17.021"

	down	∞	down
Selsyn #1 =	99.995"	16.720	99.995" = 16.726
#2 =	0.042	16.764	0.044 = 16.721

Log N = .017
"A" = 45 1000/500 "E" = .25 @ 680 V.
"D" = 28 1000/500

Time = 20 min
Down @ 1:24 PM

Separation = 4.080" pc to pc.

APR 5 1965

INSTRUMENT CHECK

Time AM/PM — Source M-226 + 8

Channel

	F	A	D	X	B	E
	F	10/1000	opr	X	10/1000	900V.
Source Dist.	OK	8"	OK	4'	2"	10"
% F.S. Trip		95	✓	100	95	100+

BF_3 #3 = OK

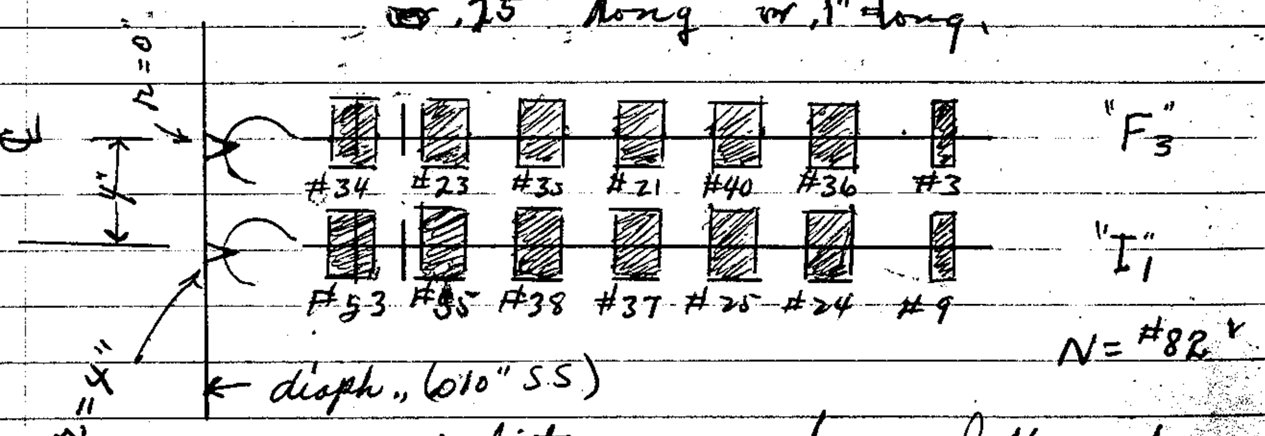
Lights OK
Magnet OK
Tables OK
Alarms OK
Area Clear

C.A. ~~2(1"~~ dia Cyl 2(2¾) Exp XLV Run 11
Date APR 5 1965 Time 9:30 AM
Purpose 235 Foil Exposure

Separation = 4.081" pc to pc.

16.724
16.720

235 Foils, .365" ~~dia~~ O.D. X .067" I.D
~~or~~ .25" long or .1" long.



down
99.998
0.042

N = #82 ✓

Measured distance from top of bottom stack to bottom of foil #9 = 17.030"
#3 = 17.006"

Shape #1 = 16.719
2 = 16.762

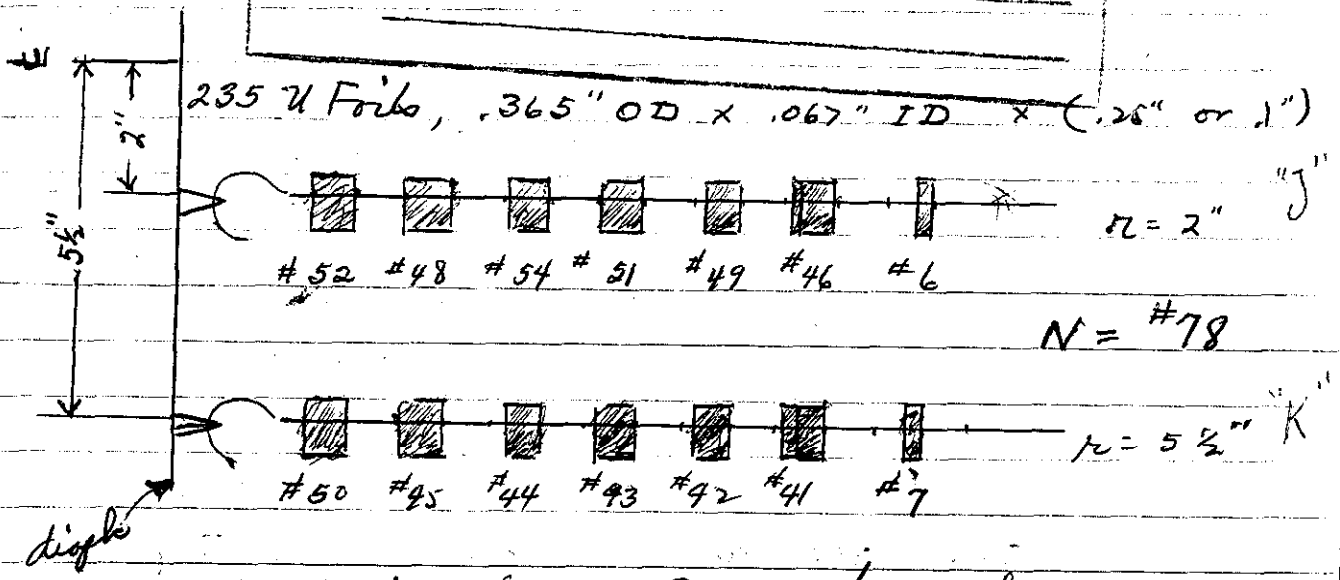
Log N = .017
"A" = 48 1000/~~300~~
"D" = 75 1000/200

"E" = 0.5 @ 690 V
"F" = 0.8 @ 900 V
Time = 20 min
Down = 0956

20.793"

2(11" dia Cyl)
2(2 3/4")

Expr. 5XV Run 12
Date 4-5-1965 Time 1:15 PM
Purpose: 235 U Foils.



Measured distance from top of bottom stack to bottom of foil #7 = 17.050"
#6 = 17.030"

Log N = .017 "E" = .05 @ 690
"A" = 50 100/500 "P" = 1.0 = @ 900
"D" = 78 1000/200 Time = 20 min

Down @

		∞	down	
Setsyn	#1 =	16.718	99.995	= 16.723
	#2 =	16.762	0.044	= 16.718

Separation = 4.082" #1 = 16.721

INSTRUMENT CHECK

Time 8:50 AM ~~PM~~ Source M-226 + 8

Channel	A	B	C	D	E
Range	10/1000	open	X	10/1000	900 V.
Source Dist.	8"	OK	3½'	2"	10"
% F.S. Trip	95	L	100	95	100

BF_3 #3 - OK

Lights OK
Magnet OK
Tables OK
Area cleared
alarms OK

C: 2(11" dia cyl) Expt. LXV Run 13
2(2 3/4") Date 4-6-1961 Time 9:00 AM ~~PM~~
Purp: .235 U Foils Exposure

Foils .365" dia X .1" long across top of top stack (#1), 1 foil at center, then foils spaced ½" from surface to surface.

NE ← → SW

(33), 26, 38, 21, 24, 29 (#32) #25, 37, 39, 27, 40, (39)

0, .865", 1.730", 2.595", 3.460", 4.325", 5.313"

"L"

Separation = 4.082 gc & pc

M = 0, #47, (.25") same position as #21 p. 250
N = 102

Log N = .017, "E" = .4 @ 690 V
"A" = 49 1000/500 "F" = 1.0 @ 850 V
"D" = 77 1000/200

Time = 20 min
Down @ 9:32 AM

Selsyn #1 = 16,718 down 99.995 16.720
#2 = 16,709 0.042 16.717

C... (11" dia cyl) Expr. LXV Run 14

Date 4-6-1965 Time 1:15 PM

Run... 235 U Foils

Re-exposure of foils # 24, 29, 32, 25 + 37 of Run 13

Added foil # 34 to position of # 39 Run 13

N = # 76

Log N = .017 "E" = .4 @ 690V.

"A" = .42 $\frac{1000}{5000}$ "F" = .8 @ 900V.

"D" = 68 100

Time = 20 minutes

Down @

	∞	down	
~~Selsyn #1~~ = 16.716		99.995	16.721
#2 = 16.760		0.044	16.716
			16.719

Separation = 4.084" pc to pc

APR 1965

INSTRUMENT CHECK

Time 8:30 AM PM Source M-226 + X

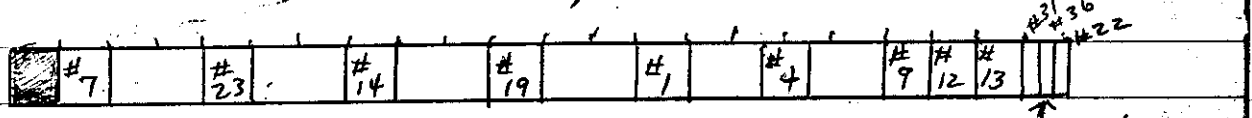
		Channel A	B	C	D	E
Range	F	10/1000	~~off~~	Y	10/100	900V.
Source Dist.	OK	8"	OK	5"	1"	10"
SCA E.C. Trip		95	r	100	95	100+

BF_3 #3 - OK

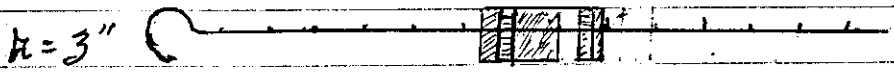
Light OK
Magnet OK
Tables OK
Area Clear
Alarms OK

2(11" dia Cyl) Expr. IXV Run 15"
2(2¾") Date APR 1965 Time AM PM
Purpose UMo, 235 U Foil Exposure

U Mo at Location "B_4", $\bar{x} = 2\frac{1}{2}" + (2.040) = 4.54"$



UMo = .365 dia x .25" long



#11, #20, #9, #5, #4

#11, 20, 4 + 5 = .365 OD .067 ID

#9 = .125" x .365 OD .067 ID

Log N = .017 "E" = 0.4 @ 890 V.
"A" = 47 1000/500 "F" = 1.0 @ 980 V.
"D" = 71 1000/200 Time = 20 min
Down = 0905

		down	
Selsyn #1	= 16.717	0.000	16.717
#2	= 16.759	0.042	16.717

2(11" dia cyl) Expt. IXV Run 16

Date 7 Apr 65 Time 1:40 PM

Purpose Re-exposure of

Foils #31, 36 + 22

" #11, 20, 9, 5 + 4 - Run 15

Log N = .017 "E" = 0.40 @ 680

"A" =

"D" = 70 $\frac{2000}{200}$ Time = 16 min.

Down = 1409

∞ down

Selagen #1 = 16.717 0.000

#2 = 17.763 0.045

1.54"

After Run a-6 p. 260

Measured –

Bottom of top diaph to top of bottom fuel –

E 11.457	S 11.456	℄ 11.417
N 11.441	W 11.448	Average = 11.444

Bottom of bottom diaph to Ram fuel –

E 17.430	S 17.436	℄ = 17.403
N 17.449	W 17.446	Average = 17.433

#2883 plate and 13"x11" ring shimmed with al
[illegible] flat [illegible]

C1 (small BF_3)	Input neg Amp Y90320 ⟸
Gain 16	PHS = 10
Risetime .2 μsec	HV = 1700

2 (Piggy Back Dumps)

INSTRUMENT CHECK

Time 8:20 AM ~~PM~~ Source M-226 + X

	Channel A	B	C	D	E
Range	$\frac{10}{1000}$	open	X	$\frac{10}{1000}$	900 V-
Source Dist.	8"	OK	5'	2"	9"
25 P.S. Trip	98	✓	100	98	100

P OK

BF₃ #3 - OK

Lights o/k
Table OK
mount OK
area clear
alarms OK

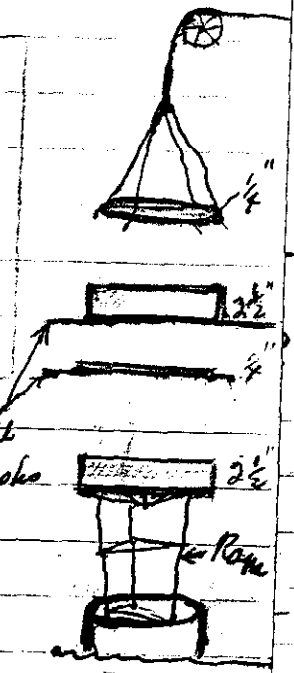
C. 2 (15" dia Cyl) Exp. 66 Run a-1

2 - 2¾" Date ____ Time ____ AM PM

Purpose Obtain Critical Separation of 2-15" dia cyl Bare

SEE Bk #2 p. 120

Separation = 11.14"



a-1 Ram Fuel = 2½" } 2¾"
Bottom diaph = ¼"

Top diaph = 2½" } 2¾
Wire Hanger = ¼"

Small BF_3 ctr on Top of Bottom Stack

Super Critical #1 = 17.698 #3 = +7
+21.7 sec #2 = 17.743 #4 = 0
26.7 ¢

∞

#1 = 17.545 down 99.996
#2 = 17.587 0.037

∞ @ -15⅜ mils

Top ¼" Fuel for Top stack - on Control Rod Drive ("B")
Rases & Counters in place, a. Small BF_3
b. Scintillation
Servo Shim in place

#2 B3 plate and 13"x11" ring shimmed with al (80 mils and 40 mils)
to that top is level

C. 15" dia Cyl Expt. 66 Run a-2
2 - 2 3/4" Date 4-13-65 Time AM PM
Purpose: Possi α

a-2 Separated diaphragms 165 mils

∞ #1 = 17.500 Po 15.588
#2 = 17.543 128 sec 17.631
7.92 ϕ

Ram Stop raised 125 mils (from a-1)

a-3 Separated diaphragms 66 mils.

∞ # 3 = +7 #1 = 17.510
4 = +1 #2 = 17.552

Log N = .007
"A" = 50 @ 100/200
"D" = 61 @ 10/1000 Servo Demand @ 5.70

1:15
a

a-4 Moved Small BF_3 under top diaphragm

Repeated above Run.

63

15 dia
2 – 2 3/4"

3058 – 1/4" Plate on hanger.

# 3058		2746	2773	2771
2785	2750	39	75	68
84	49	44	63	
		43	2829	29
60	51	42	2736	28
35	56	45	38	32
2886	83	# 2803		

11.366"

10 mil SS Diaph

2885	2782	2778	2774	2770
2848	54	47	40	33
2787	53			
86	52			
39	57	76	62	31

15 13 11 9 7

1:25 PM Removed Small BF_3 Ctr.

a-5 Small Spiral fission on top of bottom Stack

		down	
Selsyn #1 =	17.508	99.995	VDT #3 = +3
2 =	17.545	0.036	#4 = -3

17.511" SEPARATION = 11.366"

Log N = .0007

"A" = 52 100/200

"D" = 65 10/1010 Servo Demand @ 5.70

Data Started @ 1:25 PM

down @ 4:17 PM

APR 1965

INSTRUMENT CHECK

Time 8:05 AM

Source Pu226 & Ra 248

	F	A	B	C	D	E
Range	Ai & Lo	1%/1000	OPR	x	1%/1000	900V
Source Dist.	✓	8"	OK	5'	2"	9"
	✓	95	OK	100	90	100+

BF_3 #3 OK

Lights OK
Tables OK
Magnets OK
Alarms OK
Area Cleared

Taylor & Lynn

CTR #1 @ 1700V

C.A. 15 dia cyl. 2 (2¾") Expr. 66 Run a-6
Date APR 14, 1965 Time 8:30 AM
Purpose Cont'd Rossi α

Added 2nd Spiral fission ctr.

a-6 ∞ down

Selsyn #1 = 17.485 99.995 #3 = -15
#2 = 17.526 #4 = -20

Log N = .00077
"A" = 57 100/1000
"D" = 70 1%/1000 Servo at 670

Down @ 3:00 PM

SEE P. 256

2 - 2 7/8"

APR 15 1965

INSTRUMENT CHECK

Time 1:15 AM

Source Pu226 & RA243

	F	A	B	C	D	E
Range	Audio	10/1000	OPR	X	10/1000	900V
Source Check	✓	8"	✓	4'	D"	9"
BF3 #3	✓	95	✓	100	90	100++

Lights OK
Table OK
Magneto OK
Alarms OK
Area Cleared

TAYLOR & LYON

15" dia cyl Exp. 67 Run a-1
2(2 7/8") Date 4-15 1965 Time 2:30 PM

Purpose Obtain Critical Separation for 2 - 15" dia cyl (2 7/8")

up #1 = 13.485
#2 = 13.520

Set Spacing at 16.5"

a-1 Pos Period #1 = 13.290 ∞ 13.240
#2 = 13.328 13.275
42.3 sec =
17.88 ¢ .378 ¢/mil −0.245"

down #1 0.000
#2 = 0.040

a-2 Lower bottom diaphragm 0.250"
up #1 = 13.235 #2 = 13.270
Pos Period #1 = 13.114 #2 = 13.154
24.43 sec = 24.99¢
∞ #1 = 13.042 #2 = 13.080
− 193 mils
.347 ¢/mil

a-3 Lower bottom diaphragm 0.750".

	#1	#2	#3	#4
up	~~12.485~~	~~12.520~~		
Pos Period	12.472	12.511	+5	-5
∞	12.419	12.458		

-52 mils

15597 gm, add 7 = 2.889, 2.8824" mat incl. stacking, OD = 14.99535"

61	81	46	73	69	1/8" on hanger
#3058					
58	80	44	63	68	1/4" on hanger
2885	82	78	74	70	
85	50	43	2824	29	
60	51				
		48	41	34	
35	56				
2886	83	#2803			

Vol = 8360.92 cc
ρ = 18.656 gm/cc

17.477"

.010" SS diaph

15598 gm, add = 2.880, 2.8768" mat incl. stacking, OD = 14.99535

84	49	42	36	28
2848	2754	47	40	33
2787	53			
86	52			
39	57	76	62	31
15	13	11	9	7

Vol = 8334.89 cc
ρ = 18.715 gm/cc

Δm = 10 gm

¢/mil = .0451
17.7¢/in

Supports = 33.9¢ pg 264
0.0451 ¢/mil

APR 1965

Lights OK
Tables OK
Magnets OK
Alarms OK
Area Cleared

TAYLOR & LYNN

INSTRUMENT CHECK

Time 8:50 AM

Source Pu226 & Ra24B

	F	Channel A	B	C	D	E
	Hi & Lo	10/1000	OPR	X	10/1000	900 V
Source Dist.	✓	8"	✓	4'	2"	8"
% F.S. Trip	✓	95	✓	100	90	100+
BF3 #3	✓					

15" dia cyl 67 Run a-4

2 (2 7/8") 4-19-65 9:00 AM

Cont'd p. 262

a-4 Lowered Bottom diaph ~ 30 mils

Pos Period #1 up #2

12.442

+ 241 sec = 4.6 ¢ ←

a-5 Lowered bottom diaph ~ 1/8". (125)

Neg Period #1 12,331 #2 12,366 = up

Log N = 1060 sec

— 1.04 ¢

125 = 5.64¢

a-6 Supports Evaluation - (Rings, diaphragms, and supports.)

Pos Period - Log N = + 14.47 sec
32.9 ¢

Supports = 33.9 ¢

a-7 Removed Supports -
Lower ~~bottom~~ diaphragm 62 mils.
added 2-small spiral fission Counters
on top & bottom fuel stack and
scintillation ctr on top diaphragm
Slightly Position

15" dia cyl Exp. 67 Run a-8
2 - 2 3/8" Date 4-19-1965 Time 12:45 PM
Purp. Rossi L

a-8 Counters as per Run a-7.
Lower bottom diaphragm 32 mils.
Log N = .0007 Selsyn #1 = 12.235
"A" = 57 10/200 #2 = 12.271
"D" = 70 10/1000 VDT #3 = + 2.5
Servo @ 685 #4 = - 9.0
Data Started - 1:30 PM
Down - 4:15 PM

SEPARATION = 17.

Measured SEPARATION -
E = 17.567 W = 17.588 C = 17.550
S = .577 N .587 Average =
Avg = 17.570

Down = Ram to Diaphragm.
E = 12.173 W = 12.176 C = 12.134
S = .174 N = .177
Avg = 12.175

APR 2 0 1965

INSTRUMENT CHECK

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

	F	A	B			E
	OK	10/1000	opr	x	10/1000	900V.
Source		8"	ok	4'	2"	8"
		95	ok	100	95	100+

Lights ok
Magnets ok
Tables ok
Area cleared
alarms

C.N. 15" dia Expr. 67 Run a-9
2 - 2 ~~30~~ " Date APR 2 0 1965 Time AM ~~PM~~
Purpose Cont'd Rossi α

Data Collection Started - 8:35 AM

Log N = .0007	Selsyn #1 = 12,214
"A" = 56 100/200	#2 = 12,207
"D" = 70 10/1000	VDT #3 = −16
SERVO 673	#4 = ~~4~~

Down @ 12:00 Noon

Moved 2 Spiral ctrs to bottom of Top Stack

Data Collection Started - 12:25 PM
Down 4:15 PM

APR [illegible]

INSTRUMENT CHECK

9:10 → M 226 + 8

	A	B	C	D	E
F	10/1000	opr	x	10/1000	900V.
OK	8"	OK	4'	2"	10"
	95	✓	100	95	100+

15 dia cyl Exp. 67 Run f-1
2(2 3/8") Date APR [illegible] Time AM

Purpose 235 U foil exposure.
Raised bottom diaphragm 100 mils
Ctrs Removed
.365 dia, .25" Long, .125" Long (#115 + 120)

Foils Vertical in bottom stack at r = 0
Bottom to top #93, 84, 88, 90, 94, 85, 91, 89, 92, 120
115, 87

N = #95

Log N = .017 E = .5 690V.
"A" = 47 1000/500 F = 1.2 900V.
"D" = 75 1000/200 Time = 20 min
Down = 9:50 AM

Selsyn #1 = 12.330 #3 = +1
#2 = 12.373 #4 = -14

Cyl. 15" cyl Expt. 67 Run b-2
2-2 7/8" Date 4-21-61 Time 2:10 PM
Purpose Vertical 235 u foil
Exposure in Top Stack
Raised bottom diaphragm 62 mils

$r = 0$,
Foils from bottom #77, 80, 97, 71, 100, 81, 99,
74, 73, (1/4" plate) #112
N = #70

Log N =
"A" = 78 1000/500
"D" = 50 1000/200

"E" = .5 690 V.
"F" = 1.0 900 V.

Time = 20 min
Down = 2:39 PM

Selsyn #1 = 12.36
#2 = 12.405

up
#1 = 12.410
#2 =

APR 2 ? 1965

INSTRUMENT CHECK

Time 9[15] AM Source Pu 226 & RA 248

	F	A	B	C	D	E
		Channel				
	Ai tho	10/100	OPR	x	7/100	900 V
Source Dist	✓	8"	✓	5'	2"	10"
% F.S. Trip	✓	90	✓	100	90	100

Light OK
Tables OK
Magneto OK
Alarms OK
Area Cleared
Taylor & Lynn

#70

C.A. 15" dia cyl Expr. 67 Run 6-3
2-2⅞" Date 4-22-1965 Time 9:40

Purpose: 235 U foil exposure
Bottom Stack
Lowered bottom diaphragm 36 mils

r = 3", Vertical thru bottom Stack

Foils from bottom - #104, 66, 107, 103, 106, 98, 109,
101, 105, 113, | 118, 58
diaph

113 + 118 = ⅛"

N = #96

#69 in same position as #73 p. 268

Log N = .0184   "E" = .4   690 V
"A" = 65   "F" = 1.0   900 V
"D" = 50

Time = 20 min.
Down = 10:10 AM

Selsyn #1 = 12.382   #3 = -11
#2 = 12.402   #4 = -12.5

Up #1 = 12.362   #3 = -1
= 12.412   #4 = -2.5

15" dia Cyl Run 67 Run 6-4
2-2 7/8" Date 4-22-65 Time 11:50 AM
Purpose 235 # Sil exposure
.1" foils across top of
Top Stock
.365" dia

π - center of foil
N ⇐ π = -7.318", -6.983", -6.0, -3.0, 0, +3, +6.0, +6.983, +7.318
#foil = #21 #22 #23 #26 #27 #30 #32 #38 #39

N = #79 Selsyn #1 = 12.335 #3 = -17
#2 = 12.378 #4 = -21
up #1 = 12.350 #3 = -2
#2 = 12.393 #4 = -4

Log N = .02 E = .8
"A" = 68 1000/500 F = out
"D" = 44 1000/500

"F" - Repaired

APR 23 1965

INSTRUMENT CHECK

9^00 AM — Source Pu 226 Ra 248

	F	Channel A	B	C	D	E
	F	16/1000	Opr	x	10/1000	900V.
Source Dist.	OK	8"	OK	5'	2"	10"
% F.S. Trip		95	✓	102	95	100+

Lights - OK
Magnets - OK
Tables - OK
Alarms - OK
Area cleared
Lynn & Taylor

7,318
39
S ⇒

15" dia Cyl. 67 Run 8-5
2-2 7/8" Date 4-23-1965 Time 9:20 AM
Purpose 235 U foil exposure
.1" on top of top Stack

Lowered bottom diaph 15 mils

r = Center of foil.

N ← r = -6.5", -6.0, -5.5, -4.0, -2.0 → S

Foil = #36 #34 #40 #31 #29

N = #102

* .1" x (.365" OD x .067" ID) foil at edge of 7" dia, #16 on Top - Top
#4 on Bottom - Bottom

Log N = .02
"A" = 65 1000
"D" = 41 1000

"E" = .7 690V.
"F" = .7 750V.

Time = 20 min
Down = 9:52 AM

Silsyn #1 = 12.330
#2 = 12.368
#3 = -9
#4 = -14

up #1 = 12.345
#2 = 12.378
#3 = +1
#4 = -3

Cyl. 15" dia Cyl Expt. 67 Run 8-6
2-2 7/8" Date 4-23-65 Time 11:40 PM
Purpose 235 ft foil exposure
across top, top
Lowered Bottom diaph 10 mils

← N R = +2.0, +4.0, +5.0, +5.5, + 6.5 → S
Foil = #23 #24 #25 #33 # 37
N = #76

at R = 3.318" #14 Top
#11 Bottom

Log N = .022 → .028 "E" = .8 680V
"A" = 62 → 80 "F" = .8 750V
"B"

up Selsyn #1 = 12.335 #3 = +2
#2 = 12.378 #4 = −5

Run #1 = 12.320 #3 = −10.
#2 = 12.363 #4 = −18

Trim = 18 min
Down = 12:20 PM

15" dia cyl Exp. 67 Run 8-7
2-2⅞" Date 4-23-1965 Time 2:00 PM
Purpose 235 U foils exposure across top of Bottom

.25" X .365" foils

r = center of foil

5 ← N r = -7.318", -6.953", -6.0", -3.0, 0, +3, +6.0, +6.953, +7.318"
Foil: #59 #~~56~~ 86 #56 #60 #68 #67 #65 #57 #72

N = #61

.1" ⊙ Top Top = #20
Bottom, Bottom = #5

Log N = .02
"A" = 57 $\frac{1000}{500}$
"D" = 88 $\frac{1000}{200}$

"E" = .8 690V
"F" = .8 750V

Time = 20 min
Down = 2:27 PM

up Selsyn #1 = 12.335
#2 = 12.379

#3 = +1
#4 = -8

∞ #1 = 12.295
#2 = 12.337

—
—

APR 1955

INSTRUMENT CHECK

8:50 AM ~~PM~~ Source M-226 + 8

Light. OK
Tables. OK
Magnetic OK
alarms - OK
area Clear

Taylor + Lyons

Channel	F	A	B	C	D	E
Range	OK	10/1000	off	X	10/1000	900 ✓
Source Dist.		8"	OK	5'	2"	10"
% F.S. Trip		95	✓	100	95	100+

S.A. 15" cyl Expr. 67 Run 6-8

2 - 2 7/8" Date APR 1955 Time 8:55 ~~PM~~ AM

Purpose: U Mo Foil Exposure -
(.25" X .365" dia)
Across top of Bottom Stack
Louvred ~~#~~ Bottom diaphragm .32 mils.

R = Center of Foil

← N R = -6.5", -5.5", -5", -4", -2", +2", +4", +5", +5.5", +6.5"
Foil = #33 #34 #15 #5 #10 #14 #22 #20 #26 #23

Log N = .02 "E" = 1.0 690 V. N = #62.
"A" = 68 1000/500 "F" = 1.0 750 V.
"D" = 44 1000/500 Time =

Down =

∞ down

Selsyn #1 = 12.290 0.00 VOT #3 = -1
#2 = 12.336 0.041 #4 = -12

15" cyc Exp. 67 Run 6-9
2-27/8" Date 4-26-65 Time 12:15 PM
Purpose 235U Foil Exposure.
Vertical thru Separation
R = 0, Separation = 17.

Z = 0, bottom of upper most foil (Top Hole)
Z = 0, 1", 3", 5", 8", 11", 13", 16 1/4", 16 3/4"
Foil = #1 #39 #26 #13 #2 #30 #12 #5 #19
#1 + #19 = .1" other .25" N(.25") = #75
N(.15") = #125 at 13" dia, Top of Bottom

Log N = .0473 "E" = 3.5 @ 690 V.
"A" = 100+ 1000/1000 "F" = 3.0 @ 750 V.
"D" = 78 1000/100

Time = 25 min
Down = 2 07 PM

Selayn #1 = 12.428 VDT #3 = +3
(high) #2 = 12.464 #4 = -11

∞ #1 = 12.398 #3 -26
#2 = 12.435 #4 off

Down #1 = 0.00
#2 = 0.042

APR 27 1965

INSTRUMENT CHECK

M-226 + 8

Time 8:15 AM

		A	B		D	E
	F					
Range	OK	10/1000	OK	X	10/100	900V
		8"	OK	5'	2"	9"
Sl. F.S. Trip		95	✓	100	95	100+

Lights - OK
Tables OK
Magneto OK
Alarm OK
Area Cleared

Taylor + Lynard

C.C. 15" cyl Expt. 67 Run 6-10

2-2⅞" Date APR 1965 Time 8:35 AM

Purpose 235 # foil.
Thru Separation
n = 3"
SEE Run 6-9

Z = 0, 1", 3", 5", 8", 11", 13", 16¼", 16¾"

Foil = #12 #6 #4 #10 #33 #20 #29 #3 #17

#12 + #17 = .1" others .25"

N (.25") = #64

N (.15") = #123

(2" Polyehelene in front) → Log N = .10

"A" = 58 1000/1000 "E" = 3.0@690V

"D" = 60 1000/1000 "F" = 2.4@750V.

Time = ~~20~~ 21 min Down: 90 ft.

Selsyn #1 = 12.~~334~~

Light #2 = 12.361 #4 =

∞ #1 = 12.390 #3 = -.20

#2 = .427 #4 = off

15" cyl 67 4-11
2-2¾" Date 4-27-1965 Time 10:30 AM
235 # foils
Thru Separation
Z = 5"

Z = 0, 1", 3", 5", 8", 11", 13", 16¼", 16¾"
Foil # 2, 32 7 16 31 17 11 28 10

#2 + 10 = .1", others = .25" N(.15") = 127
N(.25") = 108

	down	Light	
Selsyn #1 =	0.00	12.385	12.379
#2 =	0.040	12.426	12.419
#3 =		-1	-6
#4 =		-7	-12

Logn = .06 "E" = 2.8
"A" = 21 1000/1000 "P" =
"D" = 53 1000/1000 Time = 24 min
Down = 10 53/Rpm

15" cyl Expt. 67 Run 6-12
2-2 7/8" Date 4-27-65 11:45 AM
235 # foils
Thru Separation
R = 7 1/2"

Z, 0, 1, 3, 5, 8, 11, 13, 16 1/4, 16 3/4"
Foil # 18a 27 18 1 15 19 8 14 13

#18 at 13 = .1", others 25"

N(.15") = #127
N(.25") = #53

	Down	Light	∞
Selsyn #1 =	0.00	12.384	12.389
#2 =	0.040	12.427	12.428
#3 -		- 1	+ 3
#3		- 7	- 4

Log N = .068
"A" = 60 1000/1000
"D" = 62 1000/1000

"E" = 3.3 @ 690 V
"F" = 3.0 @ 790 V
Time = 25 min
Down = 12:18 PM

C.A. 15" cyl Expr. 67 Run 6-13
2-2 7/8" Date 4-27-1965 Time 1:25
Purpose Foil Exposure
Scattered

SEE P.273, 274, & 275

Across Top, Top
\# 112 @ -1.0" } U^{235}
\# 120 @ +1.0"

Across Top, Bottom
\#13 @ -1.0" } U Mo
\#32 @ +1.0"

SEE p.271 + 272

\#121 on Top
\#114 on Bottom } See * p. 271

N(.15") = #121
N(.25") = #73

	down	Light	∞
Silsyn #1 =	0.00	12.383	12.325
#2 =	0.042	12.427	12.395
#3 =	–	-1	off
#4 =	–	-7	off

Log N = .04
"A" = 70 1000/500
"D" = 75 1000/500

"E" = 1.2 @ 690 v.
"F" = 1.6 @ 750 v.
Time = 20 min
Down = 2:00 PM

APR 28 1965

INSTRUMENT CHECK

8:30 —

M-226 + 8

	F				D	
	OK	10/1000	open	x	10/1000	900V
		8"	OK	4'	2"	10"
		95	✓	100	95	100+

Lights OK
Tables OK
Magnet OK
Alarms OK
Area Cleared
Taylor + Lynn

15" dia Cyl 67 f-14
2-2 7/8" 4-28-65 8:45 —
235 U foil Exposure
Thru Separation
r = 1"

Z = 0", 1", 3", 5", 8", 11", 13", 16¼", 16¾"
Foil # 9 42 x 36 44 x 41 38 3

#9 + #3 = .1", others .25"

N(.25) = #82
N(.15) = #126

Selsyn Down Light + Run
#1 = 0.00 12.370
#2 = 0.040 12,410 > 12.370"
#3 = — -2
#4 = 0 -10

Log N = .07 E = 4.0 @ 690V
"A" = 69
"D" = 73

Time = 20 min
Down @ 9:20 AM

Measured Separation –

Top of Bottom Fuel to Top diaphragm

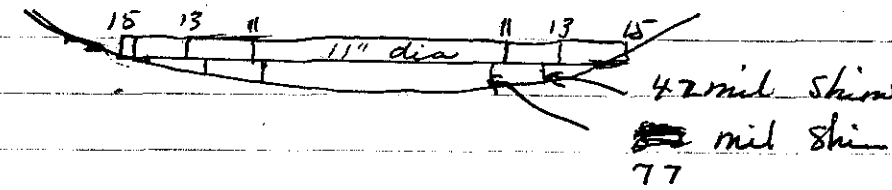
E = 17.495
S = .501
N = .494
W = .497
C = .470

Avg = 17.497

Top RAM Fuel to Bottom diaphragm

E = 12.308
S = .308
N = .314
W = ~~[illegible]~~ .309
C = .272

Avg = 12.310



29.807"
.010"
29.817"
– 12.370
SEPARATION 17.447"

15" dia cyl Exp 67 Run 6-15
2-2 7/8" 4-28-65 Time 10:15 AM
Purp .2352 foil exposure
2 hrs separation
R = 4"

Z 0, 1", 5", 8", 13", 16 1/4", 16 3/4"
Foil #6 21 53 35 54 51

N(.25") = #78
N(.15") = #128

#6 + = .1", others .25"

	down	∞ Light
Selsyn #1	0.00	12.370
#2	0.041	12.410
#3		-2
#4		-10

Log N = .075
"A" = 68 1200/1000
"D" = 72.5 1200/1000
Svero = 680

"E" = 4.0 @ 690 V.
"F" = 3.4 @ 750 V.

Time = 20 min
Down = 10:43 AM

15" dia Cyl — 67 — 6-16

2-2 7/8" — 4-28-65 — 12:10

2354 Foils Exposure

Vert Thru Separation

R = 6"

Z = 0, 1, 5, 8, 13, 16 1/4, 16 3/4

Foil # 7 52 48 34 46 47 20

#7 + #20 = .1", others = .25" N(25") = #94

* TT = #39 } SEE p. 271 N(.15") = #122

BB = #30 }

	down	light
Silsyn #1 =	0.00	12.370
#2 =	0.044	12.410
#3	—	-2
#4	—	-10

Log N = .025" "E" = 4.00 @ 690V.

"A" = 66 1000/1000 "F" = 3.2 @ 750V

"B" = 69. 1000/1000 Time = 20 min

Down = 12:32 PM

— PLACED ~ 25 mils of CADMIMUM ON BASE OF RAM.

BASE - 1/2" Al

- 1" SS

- 2" NYLON

Cyl 15" cyl Exp 67 Run b-17
2-2 7/8" Date 4-28-65 Time 1:40
Purpose 235 U foil Exposure
Vert Thru Separation
r = 7"

Z 0, 1, 3, 5, 8, 9, 11, 13, 16 1/4, 16 3/4"
Foil # 11 40 ~~30~~ 50 24 45 43 ~~39~~ 37 49 55 4

#11 + 4 = .1", others 25"

N(.25") = 66
N(.15") = #124

* # 27 = TT } SEE P. 271
# 21 = BB }

	Down	Light
SELSYN #1 =	0.00	12.370
#2 =	0.43	12.410
#3 =	—	-2
#4 =	—	-10

Log N = .025
"A" = 66 1000/1000
"D" = 69 1000/1000

"E" = 3.8 @ 690 V.
"F" = 3.2 @ 750 V.
Time = 20 min
Down @ 2:06 Rm —

3:20 Rm Removed cd add for Run b-16 p. 283
b-17 Added 1½" CH₂ to Bore.
26 TT } SEE p. 271 Log N = .108
22 BB }
Selsyn #1 = 12.345
#2 = 12.382
Exp = 17 min
Down = 3:480

APR 29 1965

11:40 AM

M-226 + 8

Lights - ok
Tables - ok
Magneto - ok
Alarms - ok
Area Cleared

F	A	B	C	D	E
	10/1000	opr	x	10/1000	900 V.
ok	8"	ok	5'	2"	10"
	95	✓	100	95	100+

Lynn & Taylor

15" Cyl Expt. 67 Run 6-18

2-2 7/8" Date 4-29-65 1:00 PM

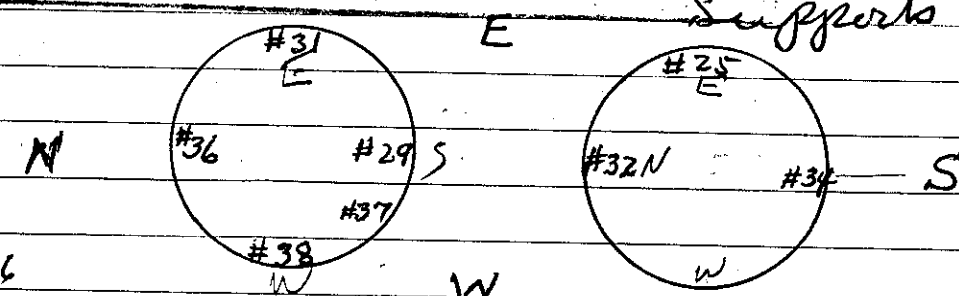
4

Foil Position Comparison

Cd on top of support stand base

Removed SERVO and associated Supports

.1" Solid



N(.25) = #56
N(.15) = #115

Top Stack Bottom Stack

Run Selsyn #1 = 12,383 #3 = +15
#2 = 12,421 #4 = +6

Log N = .06 → .03 "E" = 2.0 → .5
"A" 1000/1000 "C" = 3.0 → 1.0
"D" = → 20

Time ≈ 27 min
Down ≈ 1:35 PM

15" cyl 67 C-1
2-2⅞"

Purp. Evaluation of ΔC/Δx when
in separation 2-15"-2,875 T
DISCS

~~Meas Neg~~ Period - Log N ∞
BF3

Selsyn #1 = 12.410
#2 = 12.445
#3 = -8.5
#4 = -20.0

Measured Pos Period - + 1252 sec
0.99¢ .00469¢/mil

#1 = 12.430
#2 = 12.466 +21.1 mils
#3 = 14.5
#4 = 0.5

Measured Negative Period - 541.1 sec
-2.53¢

#1 = 12.350 80.5 mils
#2 = 12.387 3.52¢ .00437¢/mil

Measured Negative Period - 5.23¢
#1 = 12.320 110.5 mils
#2 = 12.357 6.22¢ .00562¢/mil

Too Much SEPARATION
Bottom stock Broken (Probably

[redacted]

APR 30 1965

INSTRUMENT CHECK

9:25 AM ~~PM~~

Source M-22648

Check

	A	B	C	D	E
F 850V	10/100	oper	x	10/1000	900V
OK	8"	OK	5'	2"	9"
	95	✓	100	95	100+

15" cyl Expt. 6.7 Run d-1

2-2 7/8" Date APR 30 1965 Time 9:35 AM

Purpose To See if Reactivity Change is Made by Removing Stairway Landing Mock up

SLAB

Pc Polyethelene 68 1/4" X 27 1/2" X 6" placed at stack height ~~same~~ same distance away as ~~North wall~~ Stairway Landing

9¢/mil

∞ #1=12.409

#2=12.448

#3=-9

#4=-70

Moved Polyethelene away

7¢/mil

-3350 sec

-0.38 ¢

2¢/mil

[redacted]

CTU atop Horizontal Tables 289

MAY 6 1965

INSTRUMENT CHECK

Time 2:50 ~~AM~~ PM   Source M-226 + γ

Channel

	A	B		D	E
Range	10 / 1000	opr	x	12 / 1200	900 r.
Source Dist.	8"				
Sl. F.S. Trip					

15" dia Expt. 68 No. a-1
2-2⅞"

Date MAY 6 1965 Time

Critical Separation
of 2-15" dia disc, 2⅞" thick
after moving CTU to near
middle of Room. (Same Fuel as Exp 67)

a-1 up - #1 = 13,480 hight Pos. 167 sec
∞ #1 = 12,300 +6.37¢

a-2 Lowered Bottom diaphragm 125 mils

up		∞	
#1 = 13.295		#1 = 13.260	
#2 = 13.340		#2 = 13.307	
#3 = +6.0		#3 = off	
#4 = -12.5		#4 = off	13.262

13.262

~~125 mils = 6.37¢~~

13.420
13.260
160 mils = 6.37¢

Measured distance -
Ram to Bottom diaph

S = 13.220
W = 13.230
N = 13.210
E = 13.214
℄ = 13.177

Avg = 13.2185

Top & Bottom fuel to top Diaph

S = 17.340
W = 17.343
N = ~~17.342~~ 17.342
E = 17.338
℄ = 17.008

Avg = 17.3407

SEPARATION = 17.297"
.010" diaph
17.307"

5-7-65 Log N = .04 Alarm A = 500'

" = .05 " A = 600
" B = 160
" C = 190

MAY 1965

Lights

INSTRUMENT DATA

Time 9:00 AM Source M-226 + X

Chamber

	A	B	C	D	E
Range	F	10/1000	open	X	10/1000	100 +
Source Dist.	OK	8"	OK	8'	2"	7"
% F.S. Trip						

15" dia cyl 68 a-2

2 - 2 7/8" Date 8-7-65

Purpose 235 U foil Exposure

Location Comparisons
Top to Bottom

Some foils at same positions as shown on page 285.

Log N = .05 "E" = 80.9 690 V.

"A" = 49 1000/1000 (2" CH_2) "F" = 5.5 850 V.

"D" = 96 1000/1000

		down
Selsyn	#1 = 13.248	0.00
	#2 = 13.292	0.044

Time = 25 min

Down = 10:04 AM

up. SEE p. 289

C.A. 15" Cyl Expr. 68 Run a-3
2-2 7/8" Date 5-7-1965 Time AM/PM
Purpose Supports Evaluation
Zero Run
Tubing Post, etc

Lowered bottom diaphragm 30 mils.
a-3 up - Same as p. 289

∞ #1 = 13,255 Log N = .004
#2 = 13,299.

Measured Neg. Period — Log N = -542 sec = -2.53 ¢
BF_3 = -287 sec
#1 = 13,205 - 5.154 ?
#2 = 13,247

a-4 Added diaphragm support tubes and post.

#1 = 13,255
#2 = 13,299

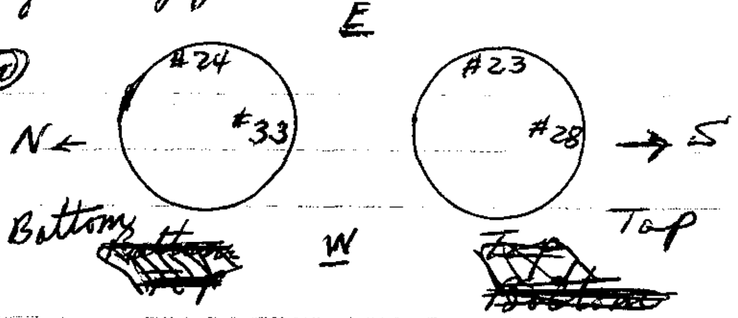
Pos Period — Log N = +1628 sec = 0.77 ¢
BF_3 = + ~~3650~~ sec = 0. ~~34~~ ¢
? 438 sec
~~[illegible]~~ ¢

Support tubes, Post

15" dia 68 a-5
2° 2 7/8" 5-7-65 3:30

Boral 1/4" thick placed on base grating of CTU.
Cd 40 mils placed on base of support stand

235 U foils @ .1" Thick, .365" dia.



2.53

#1 = 13.255
#2 = 13.365

Time = 18 min
Down = 4:03 PM

Log N = .075
"A" = 69 $\frac{1000}{1000}$
"D" = 180 $\frac{1000}{1000}$

"E" = 1.3 @ 600
"F" = 0.8 @ 850 Vr

$\frac{24}{23}$ = 0.983

$\frac{33}{28}$ = 0.945

INSTRUMENT CHECK

Time 9:10 AM ~~PM~~ Source M-226 + 8

	Channel A	B	C	D	E
Range	F	$\frac{10}{1000}$	open	X	$\frac{10}{1000}$	900V.
Source Dist.	OK	10"	OK	12'	2"	7"
S. E.S. Trip		95	✓	100	95	100 +

Lights OK
Tables OK
Magnets OK
Alarms OK
Area Cleared

Taylor + Lynn

C.E. 1.5" dia Expr. 68 Run a-6

2- {3" / 2 3/4"} Date 5-10-1960 Time 9:15 AM

Purpose Reactivity Check.

Bottom Stack = 3"

Top Stack = 2 3/4"

a-6 moved 1/8" fuel from Top & Top to Bottom Stack.

Pos. @ #1 = 12.700 ~~0.555~~ 0.430 from up

a-7 Raised 1/4" plate from top Stack. (8")

Pos @ #1 = 12.900 0.355" from up
- 0.125

0.230"

Top = 2 3/4"
Bottom = 3"

MAY 11 1965

INSTRUMENT CHECK

9:20 — M-226 + 8

Lights ok
Tables ok
Magnets OK
Alarms OK
Area cleared

F OK	10/1000 opr	X	10/1000	900V.	
	12"	OK	8'	2"	8"
	95	–	100	95	100+

Taylor & Lynn

2 (15 cyc) Expr. 69 Run a-1
2 3/4" – Top
3" – Bottom Date MAY 11 1965 Time 9:45 AM

Critical Separation.

Separation = ~24"

up

a-1 #1 = 20.935 ∞ #1 = 21.128
#2 = 20.986 #2 = 21.196
#3 = +.3.5
#4 = –8.0

a-2 Raised top 1/4" Plate

Sub critical.

a-3 Lowered bottom diaphragm 4". SEPARATION ≈ 27"

up

up = Pos Period, +613 sec #1 = 17.132
+1.9¢ #2 = 17.180
#3 = +5
#4 = –0.5

Left margin: k, k, ed, IN, up,), up

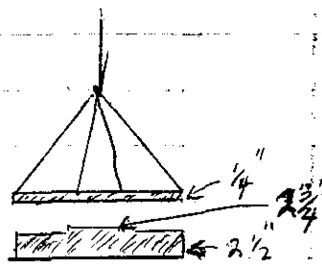
MAY 3 1955

MAY 3 1955

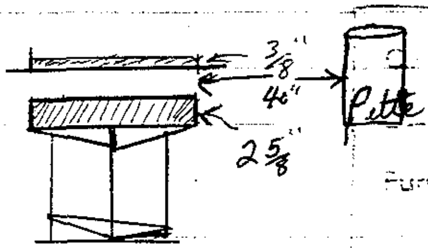
Time 1:00

Source M-226 + 8

Channel



	10 / 1000	oper	x	10 / 1000	900 V.
Source Dist.	10"	OK	5'	2"	8"
% F.S. Tele	95	✓	100	95	100+



2(15" cyl) Expt. 69 Run 8-1

Date MAY 3 1955

Purpose: Critical Separation
Bottom cyl 15" X 3" Thick
Top Cyl, 7" X 3" Thick
(15" X 7") X 2 3/4" Thick

SEPARATION ≅ 37.5" 18¢

8-1 On Positive Period, Run Shim on. Leveled with Tables.

8-2 Lower Tables at Normal Speed.

Plate = -7.00

8-3 up and Level. ∞ #1 = 16.960 #2 = 17.009

Raised 1/4" plate. -22¢

Run Shim off -88¢, Shim = 66¢

8-4 Added 7/32" fuel to (15" x 13") on Top diaph.

Run Shim on ∞ #1 = 16.905
(2" x 4" x 7/16 plexiglas) #2 = 17.004

Lower Tables Normal Plate - Same as 8-2

1965 b-5 ∞

Raised Top ¼" plate – Same as b-3

b-6 Added ¼" fuel ~~to~~ top (9"x7").
Run Shim not moved from previous run to see if ∞ positions really Change.

Bos Period #1 = 16.955
#2 = 17.004

∴ Fuel = 18¢

∞ #1 = 16.910
#2 = 16.963

Lowered Table Normal = -5.00.

b-7 Raised Tables and ∞ #1 = 16.910
#2 = 16.963

~~Raised~~ Raised ¼" Top Plate.

SEE Little tape.

INSTRUMENT CHECK

MAY 1 1965

Time 8:15 AM

Source M-226 + Y

	Channel A	B	C	D	E
Range	10/1000	oper	X	10/1000	900 V.
Sens. Dial	8"	OK	6'	2"	8"
Sens. Trip	95	✓	100	95	100+

Tables - OK
Magnets - OK
Lights - OK
alarms - OK
area cleared

2 (15" cyl) Expr. 69 Run b-8

{3" / 2¾"+} Date 19 Time AM

Purpose Cont'd p. 297

b-8 Some loading - To check Shim value.
Poo Period - Removed Run Shim -10¢
~ 24¢

Shim = 35¢

Lowered Tables Normal = -35

Up Poo +1¢

#1 = 17,130
#2 = 17,177
#3 = +4
#4 = -3

6-9 Lower bottom diaphragm. SEPARATION = 39.5"

Shim in Reactive Position Log N = +35 ¢

Shim off Cattle = -22 ¢

Shim = 57 ¢

6-10 Rerun of above.

Pos Period. +30 ¢

Removed Top 1/4" Plate +2 ¢

6-11 Rerun 6-10

Pos Period = +28 ¢

Shim off -31 ¢

Shim = 59 ¢

6-12 Previous Runs Shim on bottom Stack only 2" X 4" X 7/16".

Above Shim moved to top Center of Top Stack

a 3" X 3" X 1/2" Shim Now on Bottom of Bottom.

Pos Period - +21 ¢ #1=14.92

Lowered Tables - -3

Pos Period #1 = 14.94 +30 ¢

#2 =

Bottom Shim off = -17 ¢ Bot Shim = 47 ¢

Pos Period #1 = 15.135 +8 ¢

#2 =

Top Shim off = -10 ¢ Top Shim = +18 ¢

(over)

Counter - Hook up - 1-12-65 (Rossi α)

Scintillator - HV = A-2
Signal = A-4

Small Fission #1 = Pre Amp Supply = A-5 (Amp #4
(Smallest) Signal = A-3 Y-90319)

" (Larger) #2 = C-1 (Amp #1
Y-100308)

BF_3 #2 = C-2 (Amp #2
Y-100307)

BF_3 #3 = C-3 (Amp #3
Serial #358)

8-12 Removed Top 1/4" plate = -50¢
Tables lowered tables? Little too low