BOOK13R

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

-"Book 2" hand-written on front page of copy.

Blank pages: 5-10, 18, 25, 26, 38, 61, 80, 81, 89, 119, 132, 142, 158, 200, 212, 251, 295.

-2 photos on sheet after page 294
-next sheet (front & back) with info but not on regular logbook page.

Scanned by:
Sheila Finch
RSICC /Oak Ridge National Lab.
July 29, 1999

BOOK 2

3 Rose

7" dia. Be disc

yes

Thickness	Weight (g.)
2"	2,314
1½"	1,741
1"	1,159
9/16"	646
½"	573
3/8"	435
¼"	289
1/8"	135

3
2 yes
9 yes
7 yes
4 yes
sec
yes
04
11 yes
28 yes
233 yes
236

		Pages	Ross α
15" Diameter Cylinder	2 - 2 3/8"	11 - 12	yes
	2 - 2 1/2"	13 - 17	yes
15" - 7" with Be Core		19 - 21	
13" - 7" 4" C Reflector		27 - 32	
4" C Reflector and C Core		33 - 36	
15" - 7" - 3" C Reflector		39 - 41	
3" C Reflector and C Core		42	
15" - 9" - 3" C Reflector		44 - 46	
3" C Reflector and C Core		47	
13" - 7" - K Coefficients (core)		49 - 54	
Be Core		55 - 57	
Plexiglas Core		58 - 60	
11" Diameter Cylinder	2 - 2 3/8"	62 - 66	yes
	2 - 3"	67 - 73	yes
	2 - 3 1/8"	74 - 79	yes
	2 - 2 3/8"	82 - 87	
15" Diameter Cylinder	2 - 1 7/8"	91 - 96	yes
	2 - 2"	97 - 99	
	2 - 2 1/8"	100	
	2 - 2 1/4"	101	
	2 - 2 3/8"	102	
	2 - 2 1/2"	106 - 113	
	2 - 2 5/8"	114 - 118	
	2 - 2 3/4"	120 - 128	

11" DIAMETER CYLINDER	2 - 1 3/8"	129 - 130	
	2 - 2"	130 - 131	yes
(4.98") 7" DIAMETER CYLINDER	Solid	133 - 134	
	Top Be	135 - 140	
13" - 7"	- Plexiglas Core	143 - 147	
11" - 7"	" "	148	
15" - 7"	" "	149 - 151	
15" - 9"	" "	151 - 154	
~~13" - 9"~~	" "	155	

15" DIAMETER CYLINDER

(1)	3 - 1 1/2"	159 - 160	
(5)	3 - 1 3/8"	161 - 172	Yes
(6)	3 - 1 3/4"	173 - 179	Yes
(5)	3 - 1 7/8"	180 - 187	Yes
(2)	3 - 2"	188 - 194	Yes

11" Diameter Cylinder	2 - 2 1/2"	195	* See
	2 - 2"	196 - 199	Yes

15" Diameter cylinder	(1) 3 - 1 1/2"	201 - 204	
	(1) 3 - 1 3/8"	205 - 211	Yes
	(2) 3 - 1 1/8"	223 - 228	Yes
	(3) 3 - 1 1/4"	229 - 233	Yes
11" Diameter cylinder	2 - 2 1/2"	235 - 236	

(* See p. 236 for ctr position)

13" Diameter Cylinder Solid 237-242 3.14"

9" Diameter Cylinder Solid 243-250 3.82"

13" x 7", 1" C Refl 252
" , 1" " + C. Core 254

15" x 9", 1" C Refl 262 & 277
" , 1" C Refl + C Core 265 & 281

15" x 7", 1" C Refl 269
" 1" C Refl + C Core 275

11" x 7", 1" C Refl 283
, 1" C Refl + C Core 285

13" x 9", 1" C Refl + C Core 290

15" Solid cylinder, Bare 293 yes

29 MAY 63

INSTRUMENT CHECK P-8

8:10 AM PT

MIHALCZO
TAYLOR

Light OK
Tables OK F
OK

W/100	Opr	X	0	1050
1'		35"	4	8"
90		100	T	100

BF3 OK

C/ 15" DIA. cyl. Expr. Run 36
Sta. 2-2 3/8 Date May 29 1963 Time 9 00 AM
Purpose Russia a 2 3/8 15" Disc
See fuel arrangment Pg
299 of preceding book.

Lag N = .000 54
VDT #3 = -20 VDT #4 = not one
Selsyn #1 = 17.112 Selsyn #2 = 17.0426
Servo on Chan "A" 10/1000 @ 82.5 Signal @ 82

12

31 MAY 63

MIHALCZO

TAYLOR

McCARTY

INSTRUMENT CHECK

Source: P.B. δ

5:10 AM

Tables OK

Light OK

Range: F

Source Dist: δ K

% F.S. Trip

BE = OK

			X		1050
8"	0	30	4		10"
60	K	10°	T		10

15" DIA. OVL. Expr. Run. 37*

2 - 2 3/8 Date May 31 19 63 Time 8 30 AM

Purpose: Continue runs Rosai d

* cont. of run #36

Log N = .00069

VDT #3 = -21 VDT #4 = not on.

Selsyn #1 = 17.125 Selsyn #2 = 17.034

Servo on chan A @ 10/1000 @ 83 ; Signal @ 83

17.137
.125
12 Mile

17.0595
.034
25.5

15" DIA. CYL. EXP Run 38

Shot 2-2½ Date May 21 63 Time 11:30 =

Purpose: Rossi 2

See fuel arrangment below

2886	2783	2779	2775	2771	¼	
2885	X	X	X	X		¼
2784	2749	2743	2829	2729	⅜	
X	2782	X	X	X		¼
2848	2754	X	X	X	½	
2739	2757	X	X	X		1
X	X	2748	2741	2734	1½	
X	X	2803				¼
21					⅛	

10 MIL DIAPH.

2785	2760	2742	2736	2728	½	
2786	2752	X	X	X		⅜
2760	2751	X	X	X		½
X	X	2776	2762	2732	1	
20						⅛
2735	2756	2745	2738	2731	1	

Estimated critical Selsyn #1 = 15.62

Log N = .00062

VDT #3 = "barely" not on #4 = not on

Selsyn #1 = 15.605 #2 = 16.5165

Servo on Chan A @ 1%000 @ 82.5; Signal @ 82

3 JUNE 63

MIHALCZO

LYND

TAYLOR

						P.B.	
Time	8:0					Y	—
Light OK							
Tables OK		F		B	C		
			72 Torr	op	X	0	1/50
Source Dr.		O K		O		4	8"
% E.S. Trip			80	K	100	T	100

C.A.	15" DIA CYL	Expr.	39 *
Size	2 - 2 1/2	Date	June 3 -63 10:48 AM
Purpose	Rossi α		
	* Continuation of run # 38		

Scram: Chan "A" trip, at instrument Chuck position

Log N = .00069

VDT #3 = -2.4 #4 = -16.5

Selsyn #1 = ~~15.656~~ 15.656 Selsyn #2 = ~~15.562~~ 15.562

Servo on Chan A @ 10/1000 @ 82 Signal @ 82

15.700 15.589

.656 .562

44 27

6-4-63 8:25 — P.R. + γ

F A B

NV-8 10/100.0 gpm x @ 1050

07< 12" 0 30 4 10"

ctr #2 - OK 80 OK 100 — 100+

Dawn Silayma #1 = 00.000 #2 = 99.904

Thickness bottom 15-13 ring = S 2.502; E.503; N.504; W.504 SE.500 NW.503 AVG → 2.5027

Separation measured @ outer edge of 15 ring. = E 21.962; N.987; W.986; SW.980; S.974; E.963 SSW.943; SW.951; NW.985; SW.957 AVG 21.9688

separation at center = 21.933

depression of of top 13 below 15 = E 6; N5; S4 AVG = 6 MILS

12 below 13 = E22; N21; S21 AVG = 21 MILS

CRITICAL SEPARATION: 21.9688 - [15.589 + .096] = 6.284

+10 mils = 6.294"

15" DIA. CVL. Run #40a
2 - 2 1/2 9:00 AM
Evaluation of clean run

40a Measure Positive Period (clean)

VDT #3 = 11.8 VDT #4 = 6.0 (?)
Selsyn #1 = 15.72 Selsyn #2 = 15.611

cfg # 2 = 7.25x60 / 2.30=6	+188.9	+5.82¢	
Log N = -	+181.3	+6.05¢	5.66¢
Chan A = 73/27.5 (250)	+256.5	+4.47¢ > 5.11	
59/24 (250)	+192.8	+5.75¢	

40b Level ∞ (clean)

VDT #3 = -6.4 #4 = +5.0 (?)
Selsyn #1 = 15.70 Selsyn #2 = 15.589

.28¢/mil
42 | 11.73

5166
6.07
11.73¢

40c Negative Period (clean)

VDT #3 : not on #4 : not on (5)

Selsyn #1 = 15.68 Selsyn #2 = 15.569

ch #2 = $\frac{9.52 \times 60}{2,3026}$	- 248	-6.2$^{\phi}$	
Log N = -	- 241	-6.9$^{\phi}$	6.07$^{\phi}$
Chan A = $\frac{73}{38.5}(200)$	- 313	-4.75$^{\phi}$	> 5.10$^{\phi}$
$\frac{68}{33}(200)$	- 277	-5.45$^{\phi}$	

41a Evaluate rings, diaphragm and support stands.

Level ∞

VDT's not on

Selsyn #1 = 15.574 Selsyn #2 = 15.589 / 15.470 / 119

15.611 / 561 / 42 mils 15.72 / 64 / 90 mils

41 mil motiv

LN. 6,05 + 6.9

12,95

6-4-63

Core 15"- #1 Expr. _____ Run 1

with Beryllium core

Date 6-4-63 Time 1:45

Purpose To find critical Height

1" fuel, 1½" Be on diaphragm
2" fuel, 2" Be on Ram

Height = 3" fuel ; 3½" Be

Selsyn #1 = 22.56 #2 = 22.451

No multiplication

Run 2 Height = 3½" fuel ; 3½" Be

Selsyn #1 = 22.58 #2 = 22.473

No Multiplication.

Run 3 Height = 3¾" fuel ; 3¾" Be

VDT #3 = 4.8 #4 = 7.0

Selsyn #1 = 22.582 # 2 = 22.471

Ctr #2 = 0 #13

Run 4 Height = 4" fuel ; 4" Be

Super critical #1 22.500

Run 5 Removed 1/16" fuel from outer ring (15-13)

Super Crit. #1 22.6

Run 6 Removed 1/16" fuel from 13-11 ring.

Measured positive period.

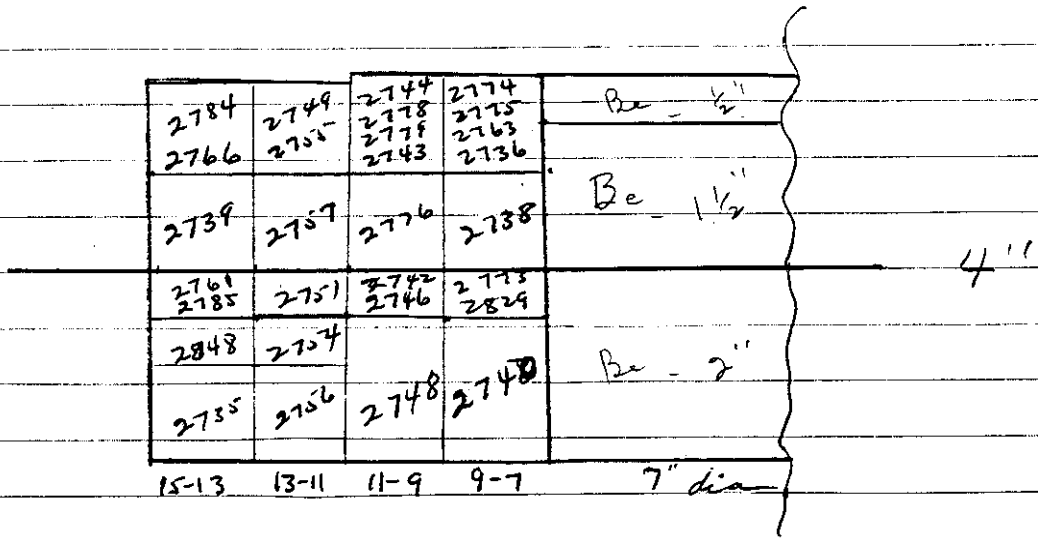
Log N	17.6 x 21.7147	+382	+3.1¢
ctr #2	28.2/30	+416	+2.88¢
Chan A	945/515(250)	+414	+2.89¢

Run 7 Evaluation of lower support stand, diaphragm support rings and 10 mil SS diaphragm.

Measured Positive

Log N =	3.375 x 21.714	+ 73.3	+12.45¢
ctr #2 =		+ 78.2	+11.9¢
Chan A =	94/55(50)	+ 93.3	+10.4¢ > 11.3
	60.2/31.2(50)	+ 76.1	+12.2¢

9.35 9.2 8.41



Top fuel measurements for Be Core

	15-13	13-11	11-9	9-7	Be
	1,940	1,945	2,007	2,004	2,001
	.939	.944	.012	1.005	.001
	.942	.943	.007	.003	.001
	.939	.944	.007	.003	.001
	.940	.944	.010	.004	.001
Avg	1,940	1,944	2,0086	2,004	2,001

Bottom fuel same as for Q core.
7" dia ; 4" thick Be = 4,627 grams.

22 Top = pencil

15-13

						SW	Avg
Solid	N 1.564	E 1.561	S 1.562	W 1.568	NE 1.563	1.560	1.4967 1.5630
1 5/8	1.623	1.623	1.622	1.623	1.625	1.622	1.6227 1.6230
1 3/4	1.748	1.749	1.748	1.753	1.751	1.748	1.7504 1.7495
1 7/8	1.870	1.877	1.877	1.882	1.879	1.877	1.8722 1.8783 ✓
2	1.997 2.004	1.996 2.005	1.998 2.005	1.999 2.009	1.9975 2.005	1.997 2.004 ✓	1.9978 ✓ 2.0053
2 1/8	2.129	2.130	2.132	2.133	2.130	2.129	2.126 2.1305
2 1/4	2.252	2.252	2.253	2.256	2.252	2.251	2.2516 2.2527
2 3/8	2.382	2.378	2.380	2.382	2.380	2.377	2.3778 2.3798
2 1/2	N-2.505	E 2.506	S-2.505	2.509	2.507	2.503	2.5027 2.5058

TOP = Pencil Bottom = red

13-11

	1.472	1.505	1.496	1.477	1.499	1.495	1.4980
Solid	N 1.565	E 1.565	S 1.565	W 1.567	NE 1.565	SW 1.565	1.5653
1 5/8	1.623 1.627	1.621 1.625	1.623 1.625	1.623 1.625	1.620 1.626	1.620 1.625	1.6217 1.6255
1 3/4	1.754 1.752	1.751 1.750	1.753 1.750	1.755 1.752	1.752 1.753	1.753 1.752	1.7530 1.7515
1 7/8	1.877 1.880	1.876 1.878	1.874 1.878	1.876 1.877	1.874 1.877	1.877 1.877	1.8757 1.8778 ✓
2	2.0025 2.002	2.0005 2.003	2.0005 2.004	2.0015 2.002	2.001 2.004	2.001 2.004	2.0012 2.0032
2 1/8	2.129 2.129	2.129 2.128	2.131 2.128	2.1295 2.129	2.1285 2.128	2.129 2.129	2.1293 2.1285
2 1/4	2.254 2.255	2.2535 2.255	2.254 2.254	2.254 2.254	2.254 2.255	2.2545 2.256	2.2540 2.2548
2 3/8	2.382 2.379	2.379 2.380	2.381 2.379	2.381 2.378	2.385 2.380	2.3805 2.380	2.3830 2.3793
2 1/2	2.506 2.507	2.5055 2.508	2.504 2.507	2.5045 2.505	2.5055 2.506	2.504 2.506	2.5048 2.5065

TOP = PENCIL
BOTTOM = RED

11-9

	N	E	S	W	NE	SW	Avg
SOLID	1.5655	1.564	1.564	1.564	1.565	1.5635	1.5643
	1.622	1.623	1.623	1.623	1.624	1.623	1.6230
1 5/8	1.625	1.6235	1.622	1.623	1.6245	1.623	1.6235
	1.7475	1.748	1.746	1.746	1.747	1.748	1.7474
1 3/4	1.754	1.752	1.752	1.7535	1.755	1.7515	1.7530
	1.873	1.8726	1.871	1.872	1.873	1.872	1.8723
1 7/8 ✓	1.878	1.878	1.876	1.877	1.878	1.877	1.8773
	2.0015	2.002	2.0025	2.0032	2.002	2.003	2.0023 ✓
2 ✓	2.001	2.003	2.000	2.001	2.004	2.000	2.0015
	2.124	2.124	2.123	2.123	2.1245	2.1235	2.1237
2 1/8	2.127	2.125	2.125	2.125	2.126	2.125	2.1255
	2.251	2.253	2.2525	2.251	2.2525	2.2515	2.2519
2 1/4	2.247	2.2465	2.246	2.245	2.2475	2.2455	2.2463
	2.377	2.3765	2.3762	2.375	2.377	2.3755	2.3763
2 3/8	2.375	2.375	2.374	2.375	2.376	2.374	2.3748
	2.4965	2.4965	2.495	2.495	2.4965	2.495	2.4956
2 1/2	2.503	2.501	2.500	2.500	2.5015	2.499	1.5007

9-7

	N	E	S	W	NE	SW	
	1.500	1.502	1.5035	1.501	1.502	1.501	1.5016
SOLID	1.565	1.567	1.566	1.561	1.567	1.563	1.5648
	1.619	1.6215	1.621	1.621	1.620	1.6215	1.6207
1 5/8	1.6255	1.622	1.624	1.623	1.623	1.6235	1.6234
	1.748	1.749	1.749	1.749	1.748	1.748	1.7485
1 3/4	1.749	1.750	1.749	1.749	1.750	1.749	1.7493
	1.874	1.8735	1.874	1.8735	1.8735	1.875	1.8739
1 7/8 ✓	1.876	1.878	1.877	1.8765	1.877	1.8765	1.8768
	2.000	1.999	2.000	2.0005	2.000	2.002	2.0003
2	1.999	2.000	1.998	1.997	1.999	1.9975	1.9984
	2.122	2.1225	2.122	2.123	2.122	2.1225	2.1223
2 1/8	2.123	2.1225	2.1215	2.1225	2.123	2.122	2.1224
	2.247	2.247	2.248	2.248	2.247	2.2495	2.2478
2 1/4	2.246	2.2455	2.247	2.245	2.246	2.2465	2.2460
	2.373	2.3735	2.372	2.373	2.3715	2.3725	2.3726
2 3/8	2.371	2.371	2.372	2.372	2.371	2.373	2.3717
	2.495	2.4965	2.496	2.4956	2.4955	2.496	2.4955
2 1/2	2.498	2.498	2.498	2.4985	2.497	2.498	2.4979

24 Top Pencil
Ext. Rd

	7" Disc						Avg
	1.511	1.5	.500	1.41	1.491	1.50	1.4973
SOLID	N 1.500	E 1.501	S 1.5015	W 1.5005	NE 1.501	SW 1.501	1.5008
	1.625	1.624	1.6225	1.625	1.623	1.6245	1.6236
1 5/8	1.626	1.6285	1.629	1.625	1.6275	1.628	1.6273
	1.750	1.7515	1.750	1.75	1.751	1.750	1.7504
1 3/4	1.753	1.7565	1.756	1.753	1.755	1.756	1.7549
	1.875	1.8765	1.876	1.875	1.876	1.8765	1.8758
1 7/8	1.875	1.8785	1.8785	1.875	1.877	1.8765	1.8768
	1.9975	2.001	1.9185	2.001	2.0005	2.001	2.0001
2	2.001	2.001	2.001	2.000	2.001	2.002	2.0010
	2.123	2.123	2.123	2.123	2.123	2.123	2.1230
2 1/8	2.121	2.120	2.120	2.120	2.121	2.120	2.1203 ✓
	2.2475	2.2475	2.246	2.250	2.2475	2.2495	2.2488
2 1/4	2.251	2.251	2.250	2.250	2.251	2.250	2.2505
	2.373	2.372	2.371	2.372	2.3725	2.372	2.3721
2 3/8	2.375	2.3775	2.376	2.375	2.376	2.375	2.3758
	2.501	2.501	2.501	2.500	2.501	2.501	2.5008
2 1/2	2.500	2.4995	2.497	2.497	2.500	2.497	2.4984

INSTRUMENT CHECK

Time 3:00 — Source γ

TABLES OK
LIGHT OK F

	Channel A	B	C	D	E
Range	1/1000	0 or K	X	0	1050
Source Dist	0	0	5"	"	8"
% F.S. Trip	100	100	T		100

C.A. _____ Expt. _____ Run _____

Sheet _____ Date _____ 19 ___ Time _____

Purpose 13-7 4" GRAPHITE
2 3/8 FUEL SQUARED OFF
REFLECTOR 4" THICK

VDT #3 = +2.4 #4 = -2.5 Not Critical
Selsyn #1 = 19.831 #2 = 19.6978 VERY SLOW COUNT RATE

2 1/2 400 mils from up

2 7/16 360 mils from up

JUL 1963

RuBe + S

8:50 AM

F

HV = 8 10/1000 Opn. X Q 1050 V

13" 0 26" ¼ T 8"

90 OK 100 — 100 +

Ch # 2 - OK

13-7

Cir. _____ Expr. _____ Run 4

Shee: 4" graphite Date 7-1 1963 Time 9:00 AM

Purpose Crit. Condition

2 3/8 inside Ring

VDT # 3 # 4

Selsyn #1-1951 #2-19392

Super Critical

Run-5 13 - 11 = 2 7/16" High = Fuel

11 - 9 = 2 3/8" "

9 - 7 = 2 3/8" "

Super Critical : Selsyn #1 = 19.63

#2 = 19.505

Run 6 Fuel = $2\frac{3}{8}$"
Reflector = 4" Bottom + Radial
= $4\frac{5}{32}$" Top. (Inner 13")

Super Crit. Selsyn #1 = 19.65°
#2 = 19.53

Run 7 Fuel = $2\frac{3}{8}$"
Reflector = Removed $\frac{1}{8}$" Reflector from top

VDT # 3 = +1 # 4 = -11
Selsyn #1 - 19.8158 #2 = 19.691
Sub-Critical

Run 8 Fuel = $2\frac{3}{8}$"
Reflector - 4" Bottom + Radial
$4\frac{5}{32}$" Top (Inner 13")

VDT # 3 = +1
4 = -11

Selsyn #1 = 19.815°
#2 = 19.689°

Measured Positive Period:

Log N = 117.25° sec. = + 8.7 ¢
Ctr #2 = 117 sec. + 8.7 ¢
Ch "A" : $\frac{65}{35}(100)$ =

$\frac{70}{48}(50)$ = 8.7 ¢

C-13-7 Run 9

4" Graphite 7-1-63
Support Stand & Ring Evaluation

VDTS #3 = 0.5 Selsyn #1 =
#4 = -9

Measured Positive period -

Log N = 38.3 sec Rd = + 19.4 ¢
Ch #2 = 39.5 sec + 19.0 ¢
Ch A = 19.2 ¢

Run 10 Diaphram Evaluation
VDT #3 = +08 #4 = 7.7

Selsyn #1 = 19815 #2 = 196955

Measured Positive Period -

Log N = 530 sec Rd - + 2.3 ¢
Ch #2 = 471 sec 2.5
Ch A = $\frac{59}{55}$ (300) 2.4 ¢

Base Run-11 (same as Run 8)
VDT #3 = +1.5 #4 -6.4

Selsyn #1 - 19815 #2 = 196955

Measured Positive period -

Log ν = 113 sec pd = + 8.96 ¢
Ctr #2 = 110 " " 9.15 ¢
18.11

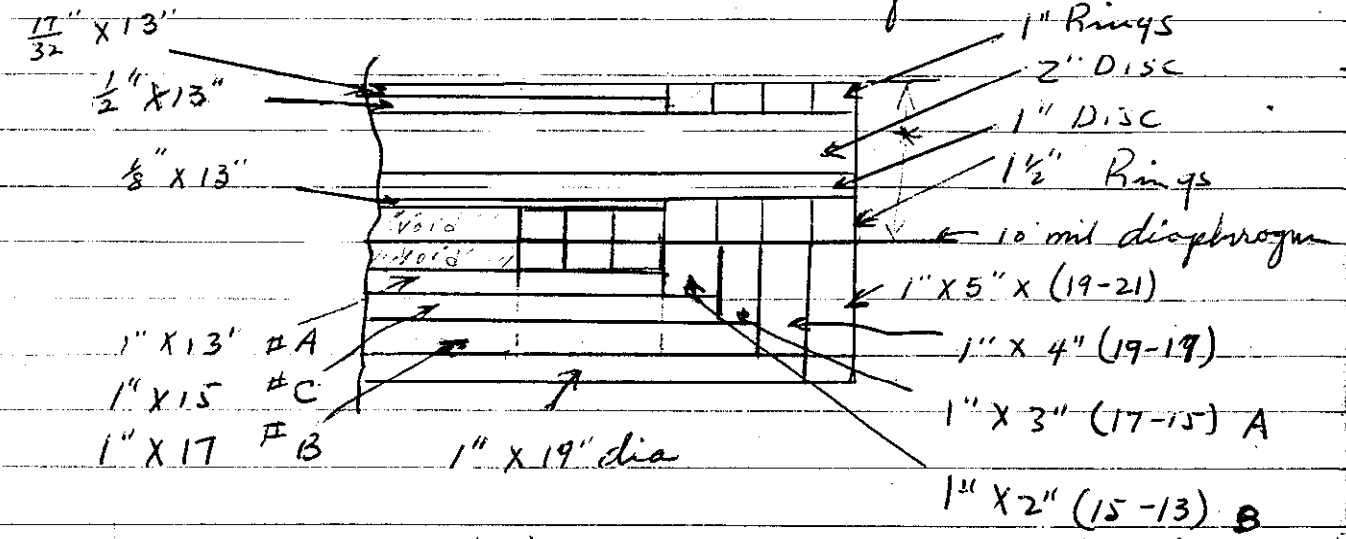
Run - Repeat of Run - 6 + 9.06 ¢
12

VDT #3 #4

Selsyn #1 #2

Super Crit = #1 = 19.65

Fuel and graphite arrangement for Runs 8 and 11.



Bottom Fuel (1")		Top Fuel (1 3/8")	
#2738	-(9-7) -	#2762	#2829
2745	-(11-9) -	#2776	2742
2756	-(13-11) -	#2750, 2781, 2749, 2754	

* Clean Critical as shown above = +8.88 ¢

Support stand and Rings = +10.32 ¢

10 mil diaphragm = -16.8 ¢

* 5.523; 5.515; 5.520; 5.522 Avg 5.520

JUL 7 1963

INSTRUMENT CHECK

T. 9:00 AM Source M-226 + 8

	Channel A	B	C	D	E
	10				
	10000	open	X	0	1050
Source Dist.	4"	0	56"	4	10"
% F.S. Trip	75	OK	100'	I	100+

Ctr #2 OK

Run 13-7 Expt. 4" graphite refl. graphite core Run 13

Date ____ 19__ Time ____ AM

Purpose critical condition

Fuel + Reflector as shown p. 32

added graphite core complete

Super crit #1 = 19.68

Run 14 Removed 1/8" x 13" graphite from Top Reflector.

Removed (1/8" x 13" #A) Added (3/8" x 13")

VDT #3 = 5.0 Selsyn #1 = 19.82

#4 = -1.5 #2 = 19.707

Measured positive period –

Log N = +45.6 sec = +17.4¢

Ctr #2 = 46.0 sec = 17.3¢

Ch A = 89/30 (50) +17.35¢

Run 18 Evaluate ($\frac{3}{32}$" X 13") top reflector. 7-2

7-2-63

Removed ($\frac{17}{32}$" X 13")$^{\#13}$ = 2,007 gms — Thickness 0.906"

($\frac{3}{8}$" X 13") = 1,386 gms

3,393 gms.

added ($\frac{9}{16}$" X 13") = 2,061 gms

($\frac{1}{4}$" X 13") = 916 gms — 0.8115"

2,977 gms

difference 416 gms 0.0945"

VDT #3 = 5.0 — Sel sys #1 = 19.82

#4 = ? — #2 = 19.701

measured ~~[redacted]~~ Negative period —

Log N = 334 sec = -4.4 ℄

Ch #2 = 323 sec -4.6 ℄

Ch A = $\frac{76}{49}$ (150)

-4.5 ℄

17.35 + 4.5 ℄ = -21.85 ℄ for 416 gm or 0.0945" thickness Run

7-2-63

C.A. 13-7 Expr 4" C Ruff Run 16
Sheet C core Date 7-2 19 63 Time 1:50 AM PM
Purpose Diaphragm Evaluation

VDT # 3 = +1.3 #4 = -3.5
Selsyn # 1 = 19.82 #2 = 19.703

Loading Same as Run 14.
added 10 mil diaphragm.

measured positive period.
Log N = 425 sec = 2.82 ¢
Ch 2 = 376 sec = 3.2 ¢
Ch "A" = $\frac{76}{60}(100)$ 3.01 ¢
$\frac{56.5}{39}(100)$

Run 17 added Support Stand and Support Rings.

VDT # 3 = 1.0 # 4 = -3.5
Selsyn #1 = 19.82 #2 = 19.705

Measured Positive Period —
log N = 65 sec pd = 13.6 ¢
Ch R # 2 = 62.7 sec pd = 13.9 ¢
Chan "A" = $\frac{88.5}{24}(100)$
13.75 ¢

Run 18 Base Run - Repeat of Run 14

VDT # 3 = 1.0 Selsyn #1 = 19.82
4 = -3.5 # 2 = 19.70 ¢

Measured Positive Period -

Log N = 40.1 sec pd = 18.9 ¢
Ctr 2 = 40.4 sec 18.8 ¢
Ch A = $\frac{68}{37.5}(25)$

18.85 ¢

* Clean Critical with graphite Core -
Run 14 + 18 = + 18.1 ¢

Support Stand and Rings = 10.7 ¢
Run 16 vs 18

10 mil diaphragm = 15.0 ¢
Run 16 vs 18

13-7-4" C Reflector 37

Bottom graphite reflector for 13-7 empty Core and with graphite Core -
pcs used 13" A; 15" C; 17" B + 19" B

4.022	4.026	4.029
.024	.025	4.023
.024	.026	.0225
		4.025

54

Top graphite mtl Empty Core

4.168	4.173
.166	.169
.168	.175
.169	.174
.169	.172
.171	.170
.170	.169
4.170	

Top graphite mtl with C Core

4.049	4.047
.047	.049
.048	.055
.049	.056
.051	.057
.052	.052
.048	
4.051	

Top Fuel for 13"-7" with & without C Core

13-11	11-9	9-7	Bottom Core discs 7" graph
1.385	1.3785	1.375	1.383
1.384	.378	.3755	.383
.385	.379	.375	.385
.384	.3785	.380	.386
.386	.379	.379	.382
.3855	.3785	.378	.383
1.3847	1.3785	1.377	1.384

JUL 3 1963

INSTRUMENT CHECK

1:40 — M-226 + 8

	F	A	B	C	D
Trans.	HV=8	$\frac{10}{1000}$ Open	X		
Source Dist.	OK	9"	0	26"	6"
S.S. Tank		85'	100	100+	

Ctr A2 - OK

C. 15" - 7" ~~Ref~~ 3" C Reflector 1

She Date 7-3 is 63 Time 1'45 PM

Pur Critical Condition
15" - 7" with 3" of
graphite reflector

Run 1 Loading - 1" Fuel on Ra
2" 1" Fuel on Diaph.
VDT #3 = +2 #4 = +5
Selsyn #1 = 20.825 #2 = 20.706

Sub-critical

Run 2 Aedded 1/4" Fuel to Top
Super critical #1 = 20.42.

Run 3 Removed 1/8" Fuel from Top.
Sub Critical - up positions # one
2 1/8"

Run 4 Added 1/8" x 13" graphite to top

up positions same.

Critical. [Slight Negative Trend]

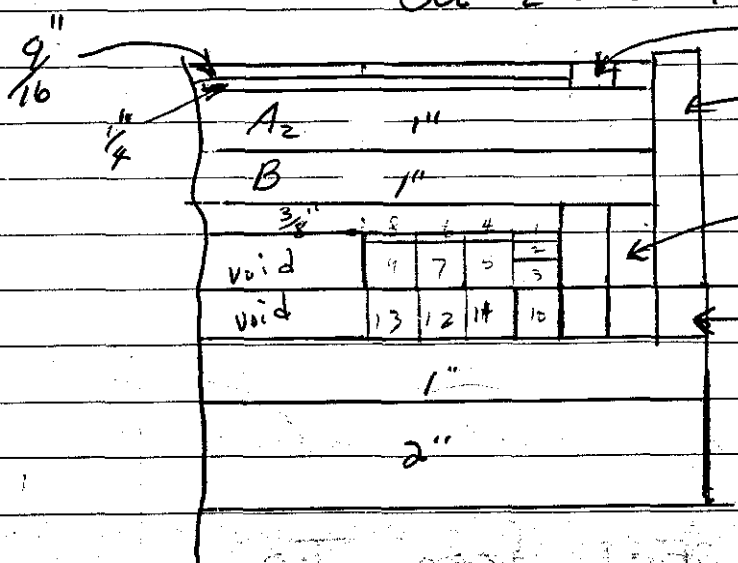
Run 5 Added 1/16" x 15" graphite to top
(Exchanged 9/16" for 1/2")

VDTs #3 = +2
" 4 = +4

Selsyn #1 = 20.825
#2 = 20,707

Measured Position period -

Log N = 27.8 sec 23.5
Ctr 2 = 30.7 sec 21.6 22.05



Top Fuel	1"	1/8"
15-13	2848 (2787)	2758
13-11	2757	2781
11-9	2776	2744
9-7	2762	2763

Bottom Fuel

15-13	13-11	11-9	9-7
#2735	#2756	#2745	#2738

INSTRUMENT CHECK

8:25 — Source M-2264 8

Channel

	F				
HV = 8	10/1000	opr	X	out	1050V
	10"		28		8"
	75		100		100+

ctr # 2

C. 18"-7" ~~Exp~~ Run 6

Shee 3" graphite Reflector Date 19 Time AM PM

Purpose Diaphragm & Ring Evaluation

Run 6 Diaphragm + support Rings in place

2.05

Measured positive period :

Log N = 139 sec pd

Ctr 2 = 139 " "

Ch A = $\frac{78}{30}(150)$ 7.6 ¢

Run 7 Base Run (same as Run 5)

measured positive period -

Log N = 28.2 sec pd = 23.1 ¢

Ctr #2 = 29.1 sec pd = 22.6 ¢

Ch A = $\frac{13.5}{48}(50)$ 5.7

22.8 ¢

Dia. + Rings -15.2 ¢

[redacted]

42

7-8-63

C.A. 15"X7" Expr. _____ Run 8

Sheet _____ Date _____ AM PM

Purpose 3" Graphite Reflector with Graphite Core.

Same as Run 5, except graphite Core added

VDT #3 = +1.7 #4 = +2 Selsyn #1 = 20.82
#2 = 20.71

Measured positive period -

Log N = 94.4 sec pd. = 10.3 ¢
ctr # 2 = 95.6 sec pd. 10.1 ¢
ch A = $\frac{69}{25}(100)$ 10.2 ¢

Run 9 Diaphragm & Support Ring Evaluation
VDT #3 = #4 = Selsyn #1 = 20.823
#2 = 20.703

Measured negative Period:

Log N = 499 sec pd 2.8 ¢
Ctr 2 = 493 2.84 ¢
Ch A = $\frac{67}{33}(400)$

-2.82 ¢

Diaph. + Rings = -13.02 ¢

Top Fuel measurements for 15"-7" with and without graphite Core -

15-13	13-11	11-9	9-7
1.133	1.128	1.127	1.121
.133	.130	.127	.120
.134	.131	.127	.123
.133	.129	.130	.124
.131	.128	.130	.124
.132	.127	.128	.124
1.1326	1.129	1.128	1.1226

Top graphite reflector

3.205	3.208	3.206
.204	.209	.206
.204	.206	.205
.205	.205	.205
	3.2056	

Top graphite core

1.130
.129
.127
.127
1.1265
.128
.128
1.128

Bottom graphite for 15-7 and 15-9.

3.018	3.011	3.011
.020	.010	.014
.018	.013	.012
.012	.012	3.014

For 15-7 fuel use [redacted] Top.

14

JUL 9 1963

INSTRUMENT CHECK

M-226 & 7

Time 9:00 AM

	F	A	B	C	D	E
Range	HV = 8	40/1000	Opg	X		1050
Source Dist.	OK	14"	of	28"		9"
% F.S. Trip		85	OK	100		100 †

Ckd #2 - OK

S.A. 15" X 9" Ex. 1

Sheet 7-9-63 9:10 AM PM

Purpose 3" Graphite Reflector

2½" Fuel { 1" on Ram
1½" on Diaphragm

VDT #3 = +2 #4 = +2.16 Selsyn 1 - 20.825
2 - 20.708

Sub critical -

Rm 2 added ¼" Fuel

Super Critical @ 20.52

Rm 3 Removed 1/16" Fuel

Sub-Critical -

Run 4 added $\frac{1}{8}$" graphite to top.

Fuel = $2\frac{11}{16}$"

Reflector = 3" Bottom + Radial
$3\frac{1}{8}$" Top.

UDT # 3 = +1.8
4 = +2.0

Selsyn #1 = 20.823
2 = 20.703

Measured positive period –

log N = 521 sec pd = +2.34 ¢
Ctr # 2 = 550 sec pd +2.21 ¢
Ch A = $\frac{88.5}{55}$ (300)

2.275¢

.825
.708

C.A. 15"X9" Expr. Run 5
Sheri Date 7-9 1963 Time 12:50 ~~AM~~ PM
Purpose Support & Ring Evaluation (Diaphragm)
3" Reflector Bottom & Radial Fuel $2\frac{11}{16}$"
$3\frac{1}{8}$" " on Top.

Measured positive period –

log N = 53.5 sec pd = 15.6 ¢
Ctr 2 = 52.1 sec pd 15.8 ¢
Ch A = $\frac{24}{17}$ (100)

15.7 ¢
~~-2.27~~

Support Stand and Rings = +13.43 ¢

Run 6 10 mil diaphragm added.

Measured Negative Period

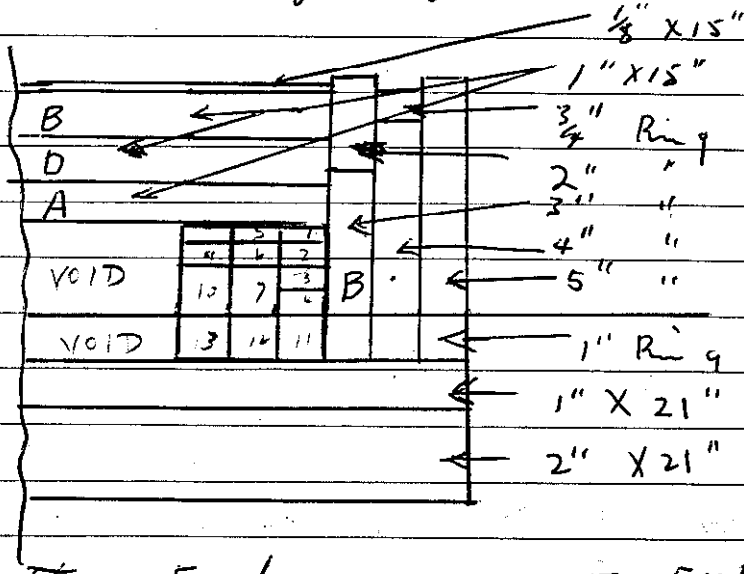
Log N = 738 sec/pd = −1.65 ¢
Ch 2 = 820 " " = −1.52 ¢
Ch A = −1.59 ¢

* Summary (15"-9" with 3" + Refl)

Clean Critical (Run 4) +2.27 ¢

Support Stand + Rings +13.43 ¢

10 mil diaphragm −15.02 ¢



Run

Run

Bottom Fuel		Top Fuel			
15-13	# 2735	28.48,	27 87,	2766,	2758
13-11	56	2757,	2755,	2780	
11-9	45	2776,	2767,	2744	

(see p. 48)

C- 15" - 9" ~~with Graphite Core~~ 7
She 3" Refl Date 19 Time AM
Purpose

Fuel = 2 11/16"
Refl = 3"
Graphite Core top

¢ Same Loading as Run 6 except 1 1/8" X 15" Graphite Removed.
Measured Positive Period -

Log N = 68.7 sec pd = +13.0¢
Ch 2 = 66. sec pd = 13.4¢
Ch A = 88/22 (100)

+13.2¢

Run 8 Diaphragm and Ring Evaluation.

Measured Positive Period:

9.35¢ Log N = 313 sec pd 3.9¢
Ch 2 = 300 sec pd 3.8¢
+3.85¢

Run 9 Added Support Stand:
Measured Positive Period -

Log N = 69.5 sec pd 13¢
Ch 2 = 69.3 13¢
Ch A =
+13¢
+9.15¢

Bottom Reflector for 15-9 see p. 43

Top Reflector meas. for 15-9, empty Core

3.136	3.140	3.140
.138	.141	.138
.135	.142	.130
.137	.143	

3.138

Top Refl. meas. for 15-9 with C Core

3.002	3.003	3.011
.003	.003	.008
.005	.005	.005
.003	.012	.011
	.015	.006

3.005

Run

Top Fuel Meas for 15-9 with and without C Core.

see p. 46

15-13	13-11	11-9	Top Core graphite
2.698	2.695	2.695	2.692
.696	.696	.694	.693
.698	.695	.695	.692
.700	.693	.697	.692
.698	.693	.692	.691
.700	.694	.693	.693
.698		.694	.694
2.698	2.694	2.694	2.692

Run

JUL 11 1963

JUL 11 1963

INSTRUMENT CHECK

Time 8:20 AM PM Source M-226 + 8

		Channel A	B	C	D	E
Range	HV = 8	10/1000	op	X		1050
Source Dist.	OK	8"	0	27"		9"
% F.S. Trip		80	OK	100		100+

Ctr #2 = OK

C.A. 13-7 Expr. Bare Run 1b

Sheet Date 7-11-63 Time 9:15 AM PM

Purpose Reactivity Check in preparation K Coefficient

Stock = 5 3/4" - (1/16" on 13-11 Ring)

Same as Run 53 p. 91 previous pk

Run 1b VOT # 3 = 0 Selsyn #1 = 20.6s

4 = +6.0 #2 = 20.5 1s

Measured negative period -

Log N = 1180 sec pd - 1.1s 4

Ctr 2 = 1020 sec pd - 1.2s 4 > -1.2+

Run 2b Added empty SS cans to Core:

7" dia; 3" high = 2416 gms

7" dia; 2½" high = 2354 gms

4770 gms.

Level Selsyn #1 = 20.47s

#2 = 20.340

Run 3b Removed 1/8" Fuel from 11-9 Ring

Level @ #1 = 20.505"
#2 = 20.368

4b Removed 1/8" Fuel from 9-7 ring.
up position
Fast Period — < 20 sec

5b Removed 1/8" Fuel from 13-11 - Ring
Stack Now: 5 5/8" - (1/16" on 13-11 ring)

Measured Positive Period:
VDT #3 = 0 #4 = 6.0 Selsyn #1 = 20.65"
Log N = 140 sec pd = 7.15¢ #2 = 20.515"
ctr 2 = 127 sec pd = 8.2¢
+ 7.85¢

6b Removed 1/16" fuel from 13-11 ring.
(5 5/8" on 9-7, 11-9; 5 1/2" on 13-11)

Measured negative Period:
Log N = -242 sec pd = 6.34¢
ctr 2 = 230 sec 6.80¢
-6.57¢

C 13-7 Expr. Bore No. 76

Shaw Date 7-11-1963 Time PM

Purp

K Evaluation

Empty SS Cans replaced with K filled Cans

3" Can empty = 2421 gms

3" Can K filled = 3755 gms. = 1334 gms K

2½ Can empty = 2360 gms

2½ Can K filled = 3424 " = 1064 gms K

Total 2398 gms K

Measured Positive Counts

UDT # 3 = 0 Scalsys #1 = 20.65

#4 = 60 #2 = 20,514

Log N = 306 accpd = 3.83 ¢

Ctr 2 = 320 acc pd = 3.67 ¢

7.50

73.75 ¢

6.57

+ 3.75

10.32 ¢ gain by adding K.

4.303×10^{-3} ¢/gm

7-11-63 7 9	9-11	11-13
		2780 1/8
		~~2755~~ 9/16
1/8 2763	1/8 2746	
1/4" 2774	1/4" 2778	2782 1/4
		2750 3/8"
1 1/2" 2741	1 1/2" 2748	2749 3/8"
1" 2762	1" 2776	2757 1"
3/8 2829	1/8" 2744	2754 1/2"
		2753 1/2"
1 1/2" 2740	3/8" 2742	2752 1/2"
1/8" 2773	1 1/2" 2747	2751 1/2"
1" 2738	1" 2745	2756 1"

2 11/16"

3"

The above fuel Arrangement for Run 1b. p. 49

NOTE: Pencil deletions & additions above show #6b

~~TOP 11-13 N 2.516 NE 2.513 E 2.514 S 2.513 SW 2.516 W 2.517~~

~~N 2.635 2.635 2.634 2.633 2.633~~

~~TOP 7-9 → N 2.623 2.622 2.624 2.623 2.623~~

AVG 2.5147

AVG 2.6338

AVG 2.6230

C 13-7 Expt Bore 9b
with K core
Sheet Date 7-11-63

Purpose Diaphragm + Support Ring Evaluation

VDT #3 = 0 Selsyn #1 = 20.655
#4 = 6.0 #2 = 20.573

Measured negative period -

Log N = 334 sec pd = -4.4 ¢
ctr 2 = 324 sec pd = -4.55 ¢
-4.47 ¢

9b Added fuel support stand to top.

VDT #3 = 0 Selsyn #1 = 20.65
#4 = 6.0 #2 = 20.511

Measured Positive Period -

Log N = 81 sec pd = 11.62 ¢
Ctr 2 = 80.8 " = 11.6 ¢
+11.61 ¢

Summary 13-7 Bare — $5\frac{5}{8}$" on 9-7 + 11-9 Rings
$5\frac{1}{2}$" on 13-11 Ring
K filled Core

Chan Crit Empty SS Cans Run 6b = −6.57¢
K filled SS Cans Run 7b = +3.75¢

∴ 2398 gm K = +10.32¢

Diaphragm + Support Rings Run 8b vs 7b = −8.22¢

Fuel Support Stand 9b vs 8b = +16.18¢

K Can Wall measurements

3" Can

Bottom + Top		side
0.202"	0.199"	0.062"
.202	.200	.062
.204	.200	.061
.202	.203	.062
.199		.062
Avg = 0.201		Avg = 0.062

$2\frac{1}{2}$" Can

0.209"	0.2095	0.062"	0.062
.208	.1945	.062	
.198	.197	.061	
.195	.196	.062	
.211		.063	Avg = 0.062
Avg = 0.201			

JUL 12 1963

INSTRUMENT CHECK

Time 9:55 AM Source M-226 + γ

		A	B		D
Range	F	10/200	opn	X	1050 V.
Source Dist	HV=8	11	e	25	6"
% F.S. Trip	OK	80	OK	100	100 +

ch 2 = OK

CA 13-7 Expr. Base Run 10 B

Shear Date 7-12 1963 Time 9:55 AM

Purp Bare with Beryllium Core

Fuel 5 1/2" High - Core is 5 3/8"

Super Critical @ 2 0.1"

11b Fuel = 5"

Be = 5"

Super Critical @ #1 = 20.49

12b Removed 1/8" fuel from 13-11 Ring

Super Crit @ #1 = 20.52

13b Fuel = 4 7/8"

Be = 4 7/8"

VDT #3 = 0 Sc/sys #1 = 20.62

#4 = 2 #2 = 20514

- Sub Critical -

14 b FUEL = 13-11 = 4 7/8" 4.9
11-9 = 4 7/8" 4.0
9-7 = 4 15/16" 3.2
Be = 5"

VDT #3 = 0 selsyn #1 = 20.6
#4 = 6 #2 = 20.515

measured Positive Period -

Log N = 33.2 sec = 21.2
Ctr 2 = 30.3 sec = 22.4 ¢

21.8 ¢

15 b Diaphragm + Ring Evaluation -

VDT#3 = 0 Selsyn #1 = 20.605
#4 = 6 #2 = 20.516

measured Positive Period -

Log N = 56 sec = 15.1 ¢
Ctr 2 = 57.4 sec = 14.8 ¢

14.95 ¢

16 b Rimond Support Rings, added Support Stand.

VDT #3 = 0 selsyn #1 = 20.6
#4 = 6 #2 = 20.510

measured Positive Period

Log N = 29.3 sec = 22.5 ¢
Ctr 2 = 28.8 sec = 23.0 ¢

22.75 ¢

17b Removed Support Stand - Diaphragm Evaluation —

VDT # 3 = 0 Selsyn #1 = 20.65
4 = 5 #2 = 20.516

Measured Positive Period —

Log N = 91 sec = 10.6 ϕ
CC 2 = 91.9 sec = 10.5 ϕ

10.55 ϕ

* Summary
Chan ~~da~~ Crit see Rn 14b - p.56

Diaphragm = −11.25 ϕ

Support Ring = + 4.4 ϕ

Support Stand = + 12.2 ϕ

	7" dia	7-9	9-11	11-13	
top Be					
center 1.996			3/8" 2742	2780	1/8"
N 1.995	2"	2829	1/4" 2779	2750	3/8" 9/16
NE 1.995					
W 1.994	Be	2737	1/4" 2778	2749	3/8"
NW 1.995					
S 1.994		2762	1" 2776	2757	1" ← 10 mil dia
E 1.994					
Avg 1.9947	3" Be				

Bottom fuel same as p. 52

Top 11-13 →	N 1.886	NE 1884	W 1.884	S 1.882	SW 1.884	← 1883	Avg → 1.8835	
Top 9-11 →	N 1.876	1.876	1.874	1.873	1.875	1.87	≈ 1.8743	
Top 7-9 →	N 1.932	1.932	1.932	1.932	1.931	1.93	≈ 1.9317	

JUL 15 1963

INSTRUMENT CHECK

JUL 15 1963

Time 9:00 AM Source m-226 + S

Channel	F	A	B	C	D	E
Range	HV=8	10/1000	Op	X		1000
Source Dist.	OK	7"	0	30"		9"
SD F.S. Trip		50	OK	100		100+

Ch 2 = OK

C.N. 13-7 Expr. Bare Run 18 b

Sheet _____ Date 7-15-63 Time 9:15 AM

Purpose To replace Be Core with plexiglas

Fuel Stems as Run 14 B

* Replaced center section of Beryllium with 1/8" Plexiglas
Super Critical @ 20.52
10 mil diaphragm in place as per Run 17 b

19b New approach -

Stock : 4" Fuel < 3" on Ram / 1" on Dia.

1 - 3/8" X 7" dia plexiglas on ram

1 - " " " on dia.

Sub critical

20b added 3/8" x 7" plexiglas to Core

Sub Critical -

JUL 15 1963 Added 1/8" x 7" Plexiglas to Core

21-B Sub-Critical

22 B Added 3/8" Fuel to top ($4\frac{3}{8}$" Fuel)
Sub-critical

23 B Added 1/4" of Fuel across top ($4\frac{5}{8}$" Fuel)
Sub-Critical

24 B Removed 7-9 1/4" 9-11 1/4" 11-13

Added 9/16" 9/16" 1/8"

Sub Critical $4\frac{15}{16}$" $4\frac{3}{4}$"

Plexiglas

25-B

	5-7	7-9	9-11	11-13
	B"	1/4" 2775	1/4 2779	
10 mil dia		1/4 2774	1/4 2778	9/16 2766
		3/8 2736	3/8 2743	3/8 2749
		1" 2762	1" 2776	1" 2759

$4\frac{7}{8}$" $4\frac{15}{16}$"

Bottom fuel same as p. 52

Rosie ~~R~~ with Be Core

~~25-B~~

Log N = .0006

Ch A @ $\frac{100}{100}$ = 60

Selsyn #1 = 20.28

#2 = 20.44

Bott 9-11 Ring measurement N 3.012 3.012 3.012 3.011
3.010 3.009 Avg → 3.0108

Bott 11-13 Ring N 3.018 3.017 3.018 3.018
3.019 3.020 Avg → 3.0183

Bott 7-9 Ring N 3.011 3.012 3.012 3.011 3.013
3.013 Avg → 3.0120

Bott Be N 3.006 3.008 3.007 3.0075
3.007 3.011 3.0075 Avg → 3.0080
~~Be~~

62

Piggy-Back Diaphragms

JUL 7 196[illegible]

INSTRUMENT [illegible]

Time 12 50 PM

M-226 & A

See p. 262 BR #1

MIKANCZO

LYNN

TAYLOR

	F	A		X
Range	OK	19/100s OPR	X	1050
Source Dist.		8"	30	8"
% F.S. Trip		90 OK	100	100+

RAM TOUCH (BOTTOM DIAPHRAGM) SEL #1 = 15.910 #2 = 15.780

1/8" FUEL "Level" (Bot diaphragm) 15.989 15.8605 –

LITE ON { +50 mil 16.040 15.9100

VDT #3 = +1.6 VDT #4 = +3.0

Run # 57a 11" dia. CYLINDER 2 7/8" TOP FUEL

2 7/8" BOTT. FUEL

level @ Sel #1 = 15.84

#2 = 15.714

The two diaphragms too close together.

Run #57b Raised top diaphragm 140 mils.

level @ Sel #1 = 15.935

#2 = 15.810

Still too close.

Run 57c Raised top diaphragm 70 more mils (1 turn screw)

level Sel #1 = 16.002

#2 = 15.872

"Down" selsyns #1 = 00.005 #2 = 99.897

TOP OF RAM FUEL TO BOTTOM OF BOTTOM DIAPHRAGM -> E 15.933" N.887 W.926 S.906
S.W. 895 NE .896 NW .904 SE .909 OUTER RING AVG -> 15.907"
AXIAL ℄ -> 15.891"

TOP OF FUEL ON BOTTOM DIAPHRAGM TO BOTTOM OF TOP DIAPHRAGM AXIALL -> 5.285 ℄ 5.280
SAME BOT ON OUTER EDGE E 5.282 NE .274 N .275 NW .274 W .277
5.284 Avg -> 5.277"

	11-9 RING	9-7 RING	7" DISC	
3/8	3078	- DITTO -		
1/8	2746	2773	2769	
1/4	2778	2774	2770	2 7/8"
3/8	2742	2736	2728	
1 1/2	2748	2741	2734	
1/4	2803	- DITTO -		

10 MIL DIAPHRAGM

1/8	2744	2763	2768	
1/4	2779	2775	2771	2 7/8
1	2745	2738	2731	
1 1/2	2747	2740	2733	

10 MIL DIAPHRAGM

TOP MASS = 83889
BOTT. MASS = 83838

Method of Separation Calucation

15.907 Avg. meas. separation of two lower pcs.
+ .1367 Thickness of 1/8" fuel + diaph.
+5.277 Avg. meas. separation of 1/8" fuel and Top Diaph.
21.3207" distance from top diaph. to top of Ram fuel in down pos.
- 15.985 travel of Selsyn #2
5.3357
- .1367
5.199" Separation -> +10 mil = 5.209"

JUL 1 1963

INSTRUMENT CHECK

Time 10^20 AM Source M-226 # 1

	Channel F	A	B	E
Recorder	OK	1%/1000 DPR X		1050
Source Dist.		7" OK 30		8"
% F.S. Trip		95 OK 100		100+

Ea 11" dia. cyl Expr. _____ Run 58a

Ea 2-2 7/8" Date Jul 18 1963 Time 1040 AM

Fuel Rossi A

SEE SKETCH Pg 63 FOR FUEL ARRANGEMENT.

LOG N = .00060

VDT'S NOT ON SCALE ✓

SELSYN #1 = 15.968 #2 = 15.844 I.E. 28 MILS LOWER THAN Run 57c

CHANNEL A 10%/100 @ 85 Servo @ 82

Counters & axial on top of BOTTOM fuel

RUN 58b SAME AS RUN 58a EXCEPT:

COUNTERS MOVED AND PLACED JUST UNDER TOP DIAPHRAGM STILL @ & AXIAL

LOG N = .0006 ✓

Selsyn #1 = 15.968 #2 = 15.844 ✓

Chan A = 85 Servo @ 82

JUL 19 1963

INSTRUMENT CHECK

Time 8:15 AM PM Source: Pu Be - γ

Tables OK
Light-O-Lite

	A	B	C	D	E
F	10/1000	Opr	X	0	1053
O	10	OK	30"	"	10
Source-Dist.	90		100	T	100
% F.S. Trip					

C.A. _____ Expr. _____ Rem. _____

Sheet _____ Date _____ 19 __ Time _____ AM PM

Purpose: Lower Diaphram Evaluation

Clean Critical

59a ~~Evaluate lower diaphragm~~

Measure Positive Period of "0". i.e. no extra daph.

57c

Log N	=	70.9 sec	12.8¢
Ch #2	$\frac{5.2 \times 30}{\text{en } 10}$ =	67.7 sec	13.3¢ + 13.05¢
Chan A	—		

VDT #3 : -5.2 #4 : -8.2

Sel #1 : 16025 #2 : 15.765

48 mils

59b Level ∞

Set #1 - 15.980 Sel 2 : 15.828

.271 ¢/mil

VDT's not on.

59c Lower extra diaphragm in place
Measure Positive Period

Log N		38.0 sec	19.5¢	
Ch #2	$\frac{2.65 \times 30}{2.30259}$	34.5 sec	20.1¢	+20.1¢
Chan A	—			

Sel #1 = 16.025 #2 = 15.8765 Lower diaph
VDTs #3 = -5.2 #4 = -8.2 value = 7.05¢

59d Level
VDT's not on
Sel #1 = 15.957 #2 = 15.803 2.5 mils
.282¢/mil

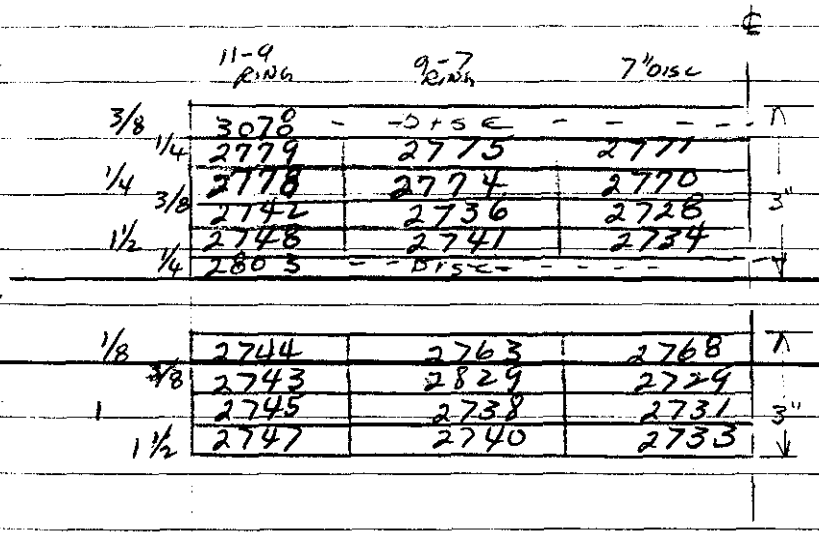
60a Evaluate Support rings of top diaphragm
Measure Positive Period

Log N		51.6 sec	15.9¢	
Ch #2	$\frac{4.1 \times 30}{2.30259}$	53.4 sec	15.6¢	15.75¢
Chan A				

VDT #3: -5.2 #4 = -8.2 Value rings 2.70¢
Sel #1 = 16.025 #2 = 15.8765

60b Level
VDTs not on 10 mils
Sel #1 = 15.970 #2 = 15.818
.27¢/mil

C.A. 11" dia. cyl. Expr. _____ Run 6/a
~~Shot~~ 3" on each half Date July 19 1963 Time 11 30 AM
Purpose Reasi X 2-3"
halfs See fuel
arrangment below.



— 7" separation — sub-critical
Upper limit Sel #1 = 15,945 #2 = 15,787

— Reduced separation 100 mile — sub-critical
— Reduced separation another 100 mile & Level ∞ :
Log N - .00067 VDTS NOT ON Sel #1 = 15871 #2 = 15.7175
Chan A 100/100 @ 85 Servo on 82
Started @ 1210 hrs.

JUL 22 1963

INSTRUMENT CHECK

Time 8:10 AM PM Source Yb-226 ε1

	F	Channel A	B	C	D	E
Range	H&L	1%/1000	DAC	X	0	1050
Source Dist.	OK	6"	OK	30"	±	8"
% F.S. Thk	OK	95	OK	100	±	100±

C.A. 11" dia. cyl. Expr. ____ Run 61b

Size 2 · 3" Date July 22 1963 Time 8:50 AM PM

Purpose Exact same as 61a just additional data

Rossi α

LaN = .00064

VDTs NOT ON

Sel.#1 = 15.875 Chan A 100%/100 @ 85

Sel.#2 = 15.717 ± .715 drive @ 82

Run #62a Clean 2-3" half cylinders.
Positive Period

Sel #1 = 15.940 Sel #2 = 15.775 (limit light)
VDT #3 = 4.8 #4 = +1.2

Log N = 215 sec +5.2¢ 5.2¢
Chan A = $\frac{68.5}{55}(50)$ 440 sec

Run 62b Clean Level —
VDTs: off scale
Selsyn #1 = 15.915 Selsyn #2 = 15.749 LV

Run 62c Clean Positive Period
VDT #3 = +2.6 #4 = +0.2
Sel #1 = 15.935 #2 = 15.770 (limit light)
Log N 271 sec +4.25¢ 4.26¢
Chan A
Ch #2 $\frac{10.35 \times 60}{\ln 10}$ = 269 sec +4.27¢ .18¢/mil

Run 62d Clean Neg. Period
VDT-off
Sel #1 = 15.865 Sel #2 = 15.7015
Log N = [redacted] 185 sec −9.00¢ 8.2¢
Chan A =
Ch #2 = $\frac{7.45 \times 60}{\ln 10}$ = 194 sec −8.5¢

Aaron Silsyna Read #1 00.005 #2 49.863

OUTER EDGE OF 1/8 FOIL TO BOTTOM OF TO DIAPHRAGM = E 6.855

SSE 6.861 SE 6.846 E 6.849 NE 6.852 N 6.854 NW 6.847 SW 6.860 Avg 6.853

axial ℄ → 6.856

OUTER EDGE BOTTOM foil to bottom of bottom diaphragm N 15.812 W 15.790

E 15.777 S 15.790 SW 15.775 NE 15.780 Avg 15.787

axial ℄ → 15.778

15.787 + .010 + 6.853 = 22.650 − 15.886 = 6.764

Run 63a Evaluate 2 - 10 mil diaphragms

Measured Positive Period

Log N = 61.3 sec +14.1° 14.05°

Char A =

Ch #2 = $\frac{4.8 \times 30}{\tan 10}$ = 62.5 sec +14.0°

VDTS #3 = -19 #4 = -23

Sel #1 = 15.917 #2 = 15.749

63b Level ∅ 75 mil

VDTS off

Sel #1 = 15.84 Sel #2 = 15.674

64a Evaluate 2 sets of support rings.
Measure Positive Period
VDT #3 = -14 #4 = -23
Sel #1 = 15.917 #2 = 15.749
Log N = 139 sec. +7.56° 7.69°
Chan A = ——
Ctr #2 = $\frac{5.1 \times 60}{\text{Lin ID}}$ = 133 sec +7.82°

749
7015
.047

64b Level ∞
Sel #1 = 15.87 Sel #2 = 15.7015

65a Evaluate support stand [simulated]
Measure Positive Period
VDT #3 = -19 #4 = -23
Sel #1 = 15.917 Sel #2 = 15.749
Log N = ~~100 fast~~
Ctr #2 = ~~fast~~

65b Same as ~~65a~~ but with neg ref.
Sel #1 = 15.865 #2 = 15.7015 Pos. Period
Log N = 22.1 sec +26.9° 26.4°
Ctr #2 = $\frac{1.82 \times 30}{\text{Lin ID}}$ = 23.7 sec +25.9°
~~X. X° X~~
~~21.0°~~

65c Level ∞
Sel #1 = 15.75 #2 = 15.590

23 1963

MIHALCZO
LYNN
TAYLOR

INSTRUMENT CHECK

Time 8 15 AM Source M-226 #1

	F	X	A	B	C	D	E
Source	H#2	%/100	OK	X			1050
Source Dist.	OK		8"	OK	20"		10"
% F.S. Thr	OK		95	OK	100		100+

Ctr # 2 OK

E.S. 11" dia cyl. Expr. _____ Run 66

Size 2-3" Date July 23 1963 Time 8 35 AM

Purpose Evaluate support stand (simulated)

Run 66a Measure Positive Period Evaluate simulated support stand.

VDT #3 = off VDT #4 = off

Selsyn #1 = 15.917 Selsyn #2 = 15.749

Log N = 48 sec 16.5° 16.6°

Ctr #2 = $\frac{3.7 \times 30}{\ln 10}$ = 48.2 sec 16.7° X .79 = 8

13.2°

Run 66b Level ∞

#1 = 15828 Sel #2 = 15.662 ✓

87 mil

67a Measure Clean Positive Period

VDT #3 = +4.0 VDT #4 = +0.8 (limit light)

SELSYN #1 = 15.941 SELSYN #2 = 15.778

LOG N = 2.39 sec 4.85° 4.87°

CTR #2 = 2.32 sec 4.88°

JUL 23 1963

Cyl. 11" DIA. CYL. Expr. 68

Baffle 2 - 3⅛" Date July 23, 63 11:20 AM

Purpose Critical Separation of 2 - 3⅛" DISCS. See fuel arrangement below

℄

	11-9 RING	9-7 RING	7" DISC	
⅜	3078	-- DISC --		⅞
1	2776	2762	2732	3⅛
1½	2748	2741	2734	
¼	2803	-- DISC --		1⅛

¼	2778	2774	2770
⅜	2743	2829	2729
1	2745	2738	2731
1½	2747	2740	2733

- Approx. separation 9.5" → sub-critical
- lessen separation ≈ 200 mils → sub-critical
- lessen separation ≈ 166 mils by raising lower diaphragm

Pos. Period - Log N = ~~#8 dec~~ $\frac{289}{}$ = $\frac{4.14}{}$ ~~=~~

VDT #3 = +1 Sel #1 = 16.10

#4 = 0.2 #2 = 15.937

Level ∞ #1 = 16.055

#2 = 15.895

69a Clean Critical

Positive Period –

VDT # 3 =
4 =

Selsyn #1 = 16.102
#2 = 15.9385

log N = 293 = 3.97 ¢
ctr 2 = 277 sec = 4.17 ¢ + 4.07 ¢

b Level ∞

#1 = 16.07
#2 = 15.903

c Measured negative period –

#1 = 16.025
#2 = 15.863

.13 ¢/mil

Log N = 273.6 sec pd = 5.52 ¢
ctr 2 = 270.8 sec pd 5.6 ¢
– 5.56 ¢

Down Selsyn Read # 0.005 #2 = 99.8625

Outer Edge of ¼" fuel to bottom of top diaphragm

W 9.406 NW 9.392 E = 9.413 SSE 9.392
SW 9.411 SE 9.405 NE = 9.409 optical ℄ = 9.412
Avg = 9.404

Outer Edge of bottom fuel to bottom diaphragm

W = 15.914 S 15.882 15.9037 9.267
NW .904 NE .892 +9.404 + .010
S .909 optical ℄ = 15.888 25.3077 9.277
N .903 Avg = 15.9037 – 16.0405
9.267 " Separat

Run 70a Evaluate 2-10 mil diaphragms - [VS 69c]

Positive Period - Selsyn #1 = 16.025

α_2 = 15.863

log N = 137.9 sec Rd = 7.6 ¢

Str 2 = 141 sec 7.48 ¢ + 7.54 ¢

863
3286
77

& Level ∞ #1 = 15.949

#2 = 15.786

71a Evaluate 2 sets of diaph support rings [VS 69b]

9038
3286
6

Positive Period - Selsyn #1 = 15.865

log N = 147.8 sec Rd = 7.2 ¢ #2 = 15.903

Str 2 = 143.0 sec = 7.38 ¢

+ 7.29 ¢

& Level ∞ #1 = 16.000

#2 = 15.8368

72a Evaluate Simulated Support Stand [VS 69c]

Positive Period #1 = 16.025

#2 = 15.863

14.3 ¢ log N = 62.4 sec Rd = 14.0 ¢ + 14.3 ¢

Str 2 = 58.8 sec Rd = 14.6 ¢

& Level ∞ #1 = 15.905

#2 = 15.742

JUL 24 1963

INSTRUMENT CHECK

8:20 AM Source-Sb-226 & Be

	Channel F	A	B	C	D	E
Source	OK	10/1000	OPR	X		1050
Source Limit		10"	OK	30"		8°
% F.S. Trip		85	OK	100		100+

C.S. 11" dia. ext. Expt. _____ Run 73a

Stack 2-3 1/8" Date July 24 1963 Time 9:00 AM

Purpose Rossi

counters on top center of bottom fuel stack.

UDTs = off Sakeyn #1 = 15,995 (.995)

Log N = .00068 #2 = 15,832 (.833)

Ch A = 86 100/100 Data taken 3½ hrs - 9:00 AM to 12:30 PM

73f 12:40 PM Counters moved to bottom center of top fuel stack.

Summary: 2 - 3 1/8" 11-dia Cyl.

Separation = 9.267"

2-10 mil diaph = 13.10¢ 77 mils .17¢/mil

2 sets Support Rings = 7.29¢ 66.2 mils .11¢/mil

1 Simulated Support Stand = 19.86¢ 161 mils .12¢/mil

× .7958

15.8¢

JUL 2 1963

INSTRUMENT CHECK

Source Mn-Be #

Channel

1	2	3	4	5	
X					

1" dia cyl - Expr. Run 74

2 - 3⅛" Date 1-25-63 10:55 AM

Repeat of 73f.

Moved Top diaph - up ~ 25 mils.

VDIs = Off

Sclsyn #1 = 16.015

" 2 = 15.857

Log N = .00069

Ch A = 85 @ 100/100

2:00 PM

74b Moved Centers down to top & bottom fuel.

Repeat of 73a

Sclsyn #1 = 16.015

" 2 = 15.854

Log N = .0007

Ch A = 85 @ 100/100

Data Taking started 2:25 PM

End 4:20 PM

INSTRUMENT CHECK

Time 8:10 AM PM Source M-226 4 d

	F	Channel A (X)	B	C	D	E
Amplifier	OIC	19/1000	OPR	X		1050
Source Dist.	OIC	10"	OIC	30		9"
% F.S. Trip	OIC	95	OIC	100		100 f

Col. 11" dia Expr. Run 74 c

Shots 2 - 3 1/8" Date 7-26-1963 Time 8:25 AM

Purpose Cont Run 74 b

Log N = .00069

Ch A = 85 @ 100/100

Selayn #1 = 16,013

#2 = 15.844

C 11 dia Cyl Expr. _____ Run 75a

Specs 2-2⅞ Date 7-26-63 3:30 PM

Purpose: Rerun of 2 - 2⅞" dia Cylinders

first setting - sub Crit.

75b lower top dial ~ 100 mils

VOT #3 = +5.0 Selsyn #1 = 16.078

#4 = -23 #2 = 15.908

sub Crit -

JUL 2 - 196

INSTRUMENT CHECK

Time 9:20 AM Source M-226 & 1

	F	Channel A	B	C	D	E
Scram	OK	1/1000	OPR	X		1060
Source Disc	OK	8"	OK	30"		8"
% F.S. Trip	OK ctr # 20K	95	OK	100+		100

C.F. 11 dia cyl Expr. _____ Run 76

Sheet 2- 2⅞" Date 7-29-1963 Time 8:30 AM

Purpose Rerun 75

78
08

For Fuel stack See p. 63

VDT #3 = +7 Selsyn #1 = 16.109

#4 = -10 #2 = 15.9228

Slightly sub Critical.

76b Clean Critical -

Positive Period -

VDT #3 = +5.3 #4 = +7.6 (?)

Selsyn #1 = 16.125 #2 = 15.9515

Log N = 331 sec per 3,07 376

Ctr #2 = 303 sec 3,86

301 sec 7.41

+3.76 ¢

c Clean ∞

VDT #3 = -12 Selsyn #1 = 16.115

#4 = -2.8 #2 = 15.931

d Clean Negative

VDT #3 = off
#4 = -22

Selsyn #1 = 16.094
#2 = 15.911

Log N = 259 sec Rd = 5.9° ±
Ctr #2 = 241.5 sec Rd = 0.35° ±
12.--

* 40.5 mils = 9.91 ¢ — 6.15 ¢

.244 ¢/mil

Down Selsyn Readings # 1 = 0.005"
2 = 99.832"

Measured Separation bottom of top diaph. to top of bottom fuel

E	5.207	SE	5.210
S	.211	NW	.204
N	.213	W	.205

Avg = 5.2083

Measured Separation bottom of lower diaph to top of Ram fuel

E	16.081	SE	= 16.081
N	.076	S	= .081
W	.084	SW	= .084

Avg = 16.081

* Separation

16.081
+ 5.208
21.289
- 16.098
5.191 + .010 = 5.201"

Selo #2 = 15.931
+ 0.167
16.098

77a Evaluate 2 - 10 mil diaph -

Positive Period -

Selsyn #1 = 16.115
#2 - 15.931

Log N = 64.1 rec pd 13.7 ϕ
ctr 2 = 62.6 " " 13.9 ϕ ÷ 13.8 ϕ

ϕ Level ∞ #1 = 16.080
#2 = 15.894

16.080
15.894
.186 mils

.293 ϕ/mil

78a Evaluate ϕ 2 sets of Support Rings.

Positive Period -

Selsyn #1 = 16.115
#2 = 15.931

Log N = 125.9 rec pd = 8.2 ϕ
123.0 " " = 8.38 ϕ
8.29 ϕ

ϕ Level ∞ #1 = 16.088
#2 = 15.9035

79a Evaluate Lower Fuel Support —

Positive Period — Selsyn #1 = 16.115
#2 = 15.931

Log N = 55.0 sec. pd. = 15.3 ¢
Ctr 2 = 56.0 sec pd 15.1 ¢
15.2 ¢

b Level ∞ #1 = 16.075
#2 = 15.885

80a Evaluate Simulated Support Structure
vs 76d

Positive Period: Selsyn #1 = 16.10
#2 = 15.911

Log N = 68.9 sec pd.
Ctr #2 = 68.9 sec. 12.95 ¢
+6.15
19.10 ¢

15.2 / 19.1 = .7958

b Level ∞

Selsyn #1 = 16.061
#2 = 15.87~~58~~
1875-8

35 mils

Summary: 2 - 7 7/8" cyl. = 5.201" Separation

2 - 10 mil diaphragms = 13.8 ℔ - 47 mils
2 set Supports Rings = 8.29 ℔ 27.5 mils
1 Lower Fuel Support = 15.2 ℔ 44 mils
118.5 mils

8/a Evaluation of Wire supports for raising the top 3/8" fuel disc.

Measured Negative period.

If VDTs are correct the estimated value is ~ -2.5 ℔

VDT # 3 = -21.5 Selsyn # 1 = 16,108
4 = -19.2 # 2 = 15.916
Log N = 325 sec pd = 4.33 ℔
Ctr 2 = 340.5 sec = 4.31 ℔ = -4.43 ℔

b Wire supports removed
Measured Negative Period

VDT # 3 = -17.2 Selsyn # 1 = 16,105
4 = -14.1 # 2 = 15.916
Log N = -495 Sec pd = -2.8 ℔
Ctr 2 = -472 " = -2.98 -2.89 ℔
-1.54 ℔

88 11-9 Top = Brass Bottom = red AVG

2 7/8	N2.880 E.880 S.879 W.879 NE.879 SW.880	2.795
3	3.002 - .003 - .003 - .003 - .003 - .002	3.0027
3 1/8	3.128 - .127 - .1275 - .127 - .127 - .126	3.1271
	7" disc	
Ramp for 2 7/8	2.756 - .7555 - .755 - .754 - .754 - .754	2.7548
for 3	2.885 - .884 - .882 - .882 - .8825 - .884	2.8833
for 3 1/8	Same as 3"	2.8833

9-7

2 7/8	2.877 - .877 - .877 - .877 - .877 - .877	2.877
3	3.003 - .003 - .0025 - .0035 - .003 - .003	3.003
3 1/8	3.125 - .125 - .125 - .125 - .126 - .126	3.1253
Ramp for 2 7/8	2.752 - .753 - .754 - .7525 - .754 - .752	2.7529
for 3	2.878 - .878 - .878 - .879 - .879 - .879	2.8785
for 3 1/8	Same as 3"	2.8785

7" Disc

2 7/8	2.877 - .877 - .876 - .877 - .875 - .875	2.8762
3	3.000 - 2.999 - 2999 - 29985 - 29985 - 2999	2.9990
3 1/8	3.125 - .124 - .1245 - .124 - .124 - .125	3.1244
Ramp for 2 7/8	2.752 - .751 - .753 - .752 - .753 - .752	2.7522
for 3	2.876 - .876 - .875 - .875 - .876 - .875	2.8755
for 3 1/8	Same as 3"	

11-9 Rings

Measured Thickness for top fuel p. 91

11 dia	1.884	1.885	1.884	1.884	1.883
	1.884	1.884	1.882	1.881	1.883
	1.882	1.881	1.882	1.881	1.884

Avg = 1.88306

15-13	1.8885	1.889	1.8865	1.887	
	1.8875	1.8875			

Avg 1.8876

13-11	1.883	1.882	1.883	1.883	
	.883	.884			

Avg 1.883

Top Fuel p. 97

15-13	2.010	2.008	2.006	
	.0085	.0065	.007	

Avg 2.0076

13-11	2.0075	2.006	2.0055	
	.0065	.006	2.006	

Avg 2.00625

11 dia	2.007	2.005	2.007	
	.006	.005	.0055	
	.005	.006	.005	
	.007	.0075	.006	
	.0065	.0065	.006	

Avg 2.00603

JUL 1

INSTRUMENT CHECK

Time 8 30 AM ☐ Source M-226 & 4

		Channel A	B	C	D	E
	X					
	F					
Source	K & L	10/1000	DRR	X		1050
Source Dist.	OIC	8"	OIC	30"		8"
% F.S. Trip	OIC	95		100		100

8306

C 15" Dia Cyl Exper. ____ Run 42 a

Sheet 2 - 1 7/8" Date ____ 19__ Time ____ AM PM

Purpose Rerun (see p. 284 previous book)

76

15-13	13-11	11-9	9-7	7" disc	
2761					
2885	2781	2746	2773	2769	1/8
2758	2782	2803	—	—	
2739	2760	2744	2763	2768	1/8 1/4
21	2757	2776	2762	2732	1 1/8
3058	—	—	—	—	1/4

101.329 Kg

25

10 mil diaph

2785	2750	2743	2829	2729	3/8
2784	2749	2742	2736	2728	3/8
20					1/8
2725	2756	2745	2738	2731	1

101.313 Kg.

003

Level ∞

Selsyn #1 = 15,13

#2 = 15,124

43a Clean Critical . 2 - 1⅞" dia cyl.

Positive Period — 7.93#

VDTs # 3 = -7.8 Selsyn #1 = 15,135

4 = -18.0 (7.75#) # 2 = 15,127

±1.93# Log N = 134.6 sec P Ctr #2 = 128 (8.1#) sec rad

Level ∞

3 = -14 # 1 = 15,128

4 = -24 ? # 2 = 15,120

Negative Period 5.79#

3 = -19.5 # 1 = 15,122

4 = — # 2 = 15,114

7.93
5.79
13.72

Log N = -273.6 (5.52#) 1.05#/mil

Ctr 2 = -2.74 6.05#

Measured Separation - Diagh to top of bottom fuel -

S 16.694 SW 16.701 E 16.668

SE .674 W .693

SW .702 N .674 Avg = 16.686

Selsyn Down Readings #1 = 0.000 #2 = 99,992

44a Clean Critical - 2 - 1 7/8" dia. Cyl.
After Releveling of Top Fuel [due to fuel Not being in Center of diagh.-]

Positive Period - ~~.1147~~ 8.55¢

UDT #3 =
#4 =

Del. #1 = 15.098
#2 = 15.089

Log N = 118.3 sec Pd > 119.7 sec
ctr 2 = 121 sec

b Level ∞

#3 = -0.05
#4 = -6

#1 = 15.086
#2 = 15.079

c Negative Period - 10.7¢

#3 = - 8
#4 = - 14

#1 = 15.076
#2 = 15.071 ✓

Log N = 165.0 sec > 162.7 sec
ctr 2 = 160.3 sec

1.07¢/mil

Measured Separation: Diagh to top of Bottom Fuel

16.640	16.655	
.637	.648	
.652	.645	Avg = 16.646

Selsyn Down Readings #1 = 0.000
#2 = 99.9925

15.0790	16.6460
+ .0075	- 15.0865
15.0865	1.5595 + (.010 - .0379) = 1.5316"

corrected separation

45a 10 mil diaph. Evaluation — 11.5 mils

Positive Period — 9.23$^{\phi}$

VOT #3 = -0.05 #1 = 15.086

#4 = -6.0 #2 = 15.0775

Log N = 108 sec pd } 108 sec

Ctr 2 = 109.4 "

∞ Level

#3 = -9.1 #1 = 15.078

#4 = -15.0 #2 = 15.0685

46a diaph. Support Ring Evaluation = 6.4 mils

Positive Period — 6.40$^{\phi}$

VOT #3 = -0.05 #1 = 15.088

#4 = -5.5 #2 = 15.0776

Log N = 162.8 sec pd } 170.1 sec

Ctr 2 = 177.4 "

Level ∞

#3 = -4.5 #1 = 15.082

#4 = -9.8 #2 = 15.0726

47a Lower Fuel Support Evaluation

[VS Run 44c]

Positive Period 14.5¢

VDT #3 = -8.0 Selsyn #1 = 15.078

#4 = -13.1 #2 = 15.059 ?

LogN : 58.6 sec 14.5¢ V

Ctr #2 = 59.9 sec + 10.7

25.2¢

LEVEL ∞

#3 = -20 #1 = 15.065

#4 = off #2 = 15.044 ?

5 mils

Selsyn #2 down pos. = 99.966

* Summary - 2 - 1⅞" thick, 15" dia Cyl

10 mil diaph -	9.23¢	11.5 mils
Diaph support rings -	6.4¢	6.4 mils
Lower Fuel Support -	25.2¢	20 mils
		37.9 mils

AUG 1963

INSTRUMENT

Time 8 45 AM M-226 & h

		X				
	F					
	H&L	10/1000 OPR		X		1050
Source Dist.	OK	12"	OK	30"	X	8"
% F.S. Trip		95	OK	100	X	100+

C.A. 15" DIA CYL Run # 48

Shot 2 - 1 7/8" Aug 1 63 8 45 AM

Purpose Rossi α

See pg 91 for fuel arrangement.

23500
-2205
21295

VDT #3 = +2.0 SELSYN #1 = 15.09

#4 = -3.6 #2 = 15.083

Log N = .0006

Chan A = 100/100 @ 85 - Signal @ 82

AFTER SHORT RUN - RESET SHIM TO BE WORTH MORE

VDT #3 = -1.8 SELSYN #1 = 15.086

#4 = -6.9 #2 = 15.0778

Log N = .00055

Chan A - Same

14.2986	16.5185
+ .0145	- 14.3131
14.3131	2.2054
	+ .010
	Separation 2.2154"

AUG 196

INSTRUMENT CHECK

MIHALCZO
LYNN
TAYLOR

8:30 AM

Source M-226 & N

	Channel F	A	B	C	D	E
Source	H&L	10/1000	OPR	X		1050
Source	CK	10"	OK	30"		8"
Tape		95	OK	100		100+

C.A. 15" DIA CYL. Expr. _____ Run 49

Shot 2-2" Date Aug 2 19__ Time 8:50 AM

Purpose Repeat Critical Separation of 2 - 2" 15" dia cyl.
(See previous book p. 288)

	15-13	13-11	11-9	9-7	7"	
	2886	2783	2778	2774	2770	1/4
	2885	2782	2803	—	—	1/4
2"	2758	2780	2744	2763	2768	1/8
	2739	2757	2776	2762	2732	1
	21	—	—	—	—	1/8
	3058	—	—	—	—	1/4

10 mil diaph

	2761	2781	2746	2773	2769	1/8
	2785	2750	2743	2829	2729	3/8
2"	2784	2749	2742	2736	2728	3/8
	20	—	—	—	—	1/8
	2735	2756	2745	2738	2731	1

Level ∞ VDT #3 = -12.2 Sel #1 = 14,315

#4 = -14.8 #2 = 14.2986

Down Selsyn Readings #1 = 0.00 #2 = 99.9855

Measured from diaph. to bottom fuel -

E = 16.507

E 16.512 W 16.520 S 16.521 Avg = 16.5185

N .518 SW .522 SE .526

15" dia cyl 50
2 - 2" 8-2-63 10:50
Rerun Critical Separation
of 2 - 2" 15" dia cyl with
same fuel as 5-23-63 ✓
p. 288 previous book.

Fuel stack is duplication of 5-23-63.

Level ∞ VDTs off Selsyn #1 = 14.295
#2 = 14.2755

Selsyn Down Reading #1 = 0.002
#2 = 99.985

Measured Separation from displ to bottom fuel, (down position).

E 16.518	SW 16.527	℄ = 16.490
N .519	S .531	
NW .517	SE .535	Avg 16.5246

14.2755 16.5246
+.015 −14.2905
14.2905 2.2341"
.010
2.244" Separation

AUG 5 1963

Time 9:10 AM — Pu Be + X

	F			E
Range	N&L	10/1000 opr	X	1050
Source Dist	O/C	9" OK 30"		8"
F.S. Trip		95 – 100		100+

C. 15" dia Cyl Run 51

Sheet 2-2" Date 8-5-1963 Time 9:20 AM

Purpose Repeat of Run 49

Fuel Stock - Duplication of p. 97

Level ∞ Selsyn #1 = 21.314
#2 = 21.2953

Selsyn down readings #1 = 0.00
#2 = 99.9862

Measured separation from diagh to bottom fuel (down positive)

E	23.498 ± .497	SW	23.517	± = 23.506
N	.502	S	.517	
NW	.513	SE	.501	Avg = 23.508

21.2953
10138
21.3093

23.508
– 21.3093
2.1987
+ .010
2.2087 SEPARATION

15" dia Cyl Run 52

Sheet 2 - 2 1/8" Date 8-5-63 Time 11:00 AM

Purpose Critical Separation of 2 - 2 1/8" thick cyl.

See p. 292 Book #1

	15-13	13-11	11-9	9-7	7"	
2 1/8"	2885	2782	2803	— —	— —	1/4
	~~2787~~	2753				
	2786	2752	2748	2741	2734	1 1/2
	2760	2751				
	21	— —	— —	— —	— —	1/8
	3058	— —	— —	— —	— —	1/4

10 mil digh

	2739	2757	2776 ~~2748~~	2762 ~~2744~~	2732 ~~2734~~	1
2 1/8"	20	— —	— —	— —	— —	1/8
	2735	2756	2745	2738	2731	1

Level ∞

Selsyn #1 = 20.438

#2 = 20.4196

Down Reading on Selsyn #1 = 0.002

#2 = 99.983

Measured Separation from diagram to bottom fuel (down position)

E.	23.374	SW	23.397	SE 23.376
N.	.372	SSW	.396	± = 23.382
NW	.387	S	.392	Avg = 23.3848

20.4196
+ 0.017
20.4366

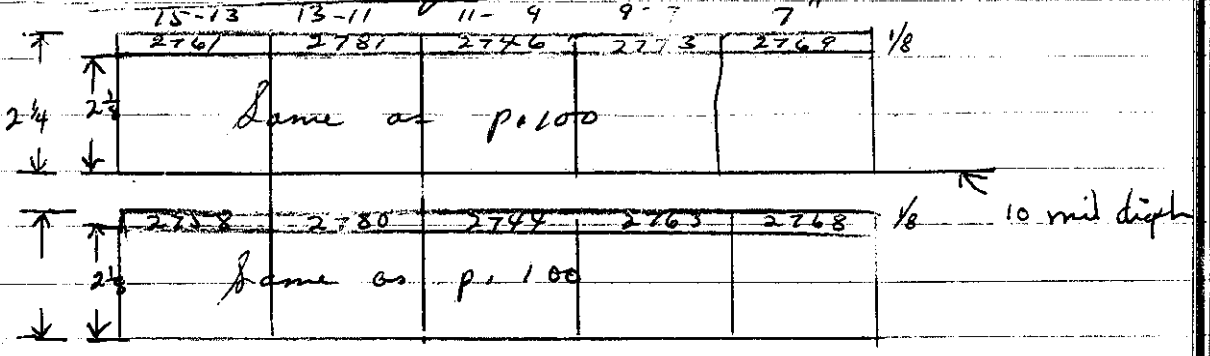
23.3848
- 20.4366
2.9482
+ .010
2.9582

Cyl 15" dia cyl Run √3

2 - 2¼" cyl 19 1800

Purpose Critical Separation of 2-2¼" Thick cyl.

See p. 295 book #1



Level ∞ Selsyn #1 = 19.436

#2 = 19.414 5⁻

Down Selsyn Readings .. #1 = 0.000

#2 = 99.9835

Measured Sep. from diaphragm to bottom fuel (down position)

E 23.249 W 23.265 SE 23.254

N .251 SW .265 .250

NW .259 S .264 ± = 23.250

Avg = 23.2564

− 19.431

3.825 4

+ 0.010

3.835 4

19.4145⁻

+ 0.0165⁻

19.431

15" dia cyl ~~58~~ 54

2 - 2 3/8" 8-5-63 2.00

Critical Separation of

2 - 2 3/8" Thick 15" dia cyl.

See page 298 Bk #1

	15-13	13-11	11-9	9-7	7"	
1/8	2758	2780	2779	2775	2771	1/4
3/8	2785	2750				
			Same as			

1/4	2886	2782	2778	2774	2770	
			Same as			

Level ∞ Selsyn #1 = 18.250

#2 = 18.2279

Down reading on Selsyn # 1 = 999.998

2 = 999825

Measured separation diaphragm to fuel

E 23.115	W 23.133	SE 23.121	
N .115	SW .133	± 23.117	
NE .125	S .127	Avg 23.1241	

18.2279
+ 0125
18.2454

23.1241
18.2454
4.8787
+ 010
4.8887 SEPARATION

Measure top fuel pg 102 thickness

2 3/8"	11" dia	2.371	.368	.369	.373	.374
		.370	.3715	.366	.369	.370
		.366	.371	.371	.367	.372
						Avg → 2.3499
	13-11	2.388	.389	.389	.340	.387
		.387	.388	.341	.388	Avg → 2.3774
	15-13	2.388	.388	.389	.389	
		.387	.387	.389	.387	Avg → 2.3880
2 1/4	11 dia	2.256	2.253	2.256	2.254	2.256
Pg 101 Top		.2565	.254	.255	.254	.256
		.253	255	.257	.255	.254
						Avg → 2.2548
	13-11	2.260	.263	.263	.266	
		.261	.265	.265	.267	Avg → 2.2638
	15-13	2.263	.262	.263	.264	
		.260	.263	.263	.266	Avg → 2.2630
2 1/8	11" dia	2.128	.128	.128	.129	.129
Pg 100 Top		.129	.128	.129	.128	.130
		.128	.129	.129	.129	.129
						Avg → 2.1287
	13-11	2.136	.135	.138	.139	
		.135	.1365	.140	.136	Avg → 2.1369
	15-13	2.138	.139	.139	.139	
		.137	.137	.140	.138	Avg → 2.1384

measure top fuel 15 - (2 - 2½) avg 2.5118

15-11 2.512" .512 .512 .512 .513 .512
.510 .512 .512 .511 .513 .511

11" dia 2.502 .501 .501 .502 .500 .502
.502 .502 .502 .501 .501 .502
avg 2.5015

Top fuel 15 - (2 - 2⅝)

15-11 2.641" .643 .645 .646 .645 .640
.640 .643 .645 .646 .641 .641 avg 2.6430

11" dia 2.630 .630 .631 .631 .630 .631
.630 .631 .631 .631 .631 .629 Avg 2.6305

Top fuel 15 - (2 - 2¾)

15-11 2.765 .768 .767 .763 .773 .767 .763
.764 .764 .768 .764 .768 .765 Avg 2.7661

11" dia 2.758 .758 .758 .759 .762 .764 .757
.756 .758 .758 .759 .764 .763 .758
avg 2.7566

Bottom fuel 15 - (2 - 2½) all fuel but does not incl 10 mil diaph

avg 2.5029

15-11	2.503	2.503 .501	2.504	2.503	.503	.501
	.504	.501 .503	.504	.504	.502	.504
11" dia	2.505	.502 .502	.506	.505	.501	.503
	.501	.504 .507	.503	.503	.502	.501

avg = 2.5032

Bot. fuel 15 - (2 - 2⅝) not incl 10 mil diaph.

avg 2.6249

15-11	2.623	.626	2.623	2.627	.626	
	.626	.623 .626	624 625	.623	.623	
11" dia	2.~~632~~ 629	~~.629~~ ~~.628~~	~~.625~~ ~~624~~	~~.636~~ ~~.632~~	.631	.629
	~~.624~~	~~.628~~	~~634~~		.628	.632

avg = 2.6299

Bott fuel 15 - 2 - 2¾) not incl 10 mil diaph

15-11	2.752	.752	.752	.762	.753	751
	752	.752	.753	.752	.752	752

avg 2.7521

11" dia	2.754	.754	.754	.754	.753	.757
	.756	.755	.755	.756	.756	.754

avg 2.7548

106

Piggy Back Diaphr

AU

INSTRUMENT CHECK

100 ± PM

M-226 # h

	A	B	C	D	E
Ramp H&L	10/1000 DIR	X		X	1050
Source Pres.	8" OK		30"		8"
F.C. Trip	85		100		100+

15" DIA. CYL. Ram # 55
2-2½" Thick

Building

RC 8-6-63 Date Sheet

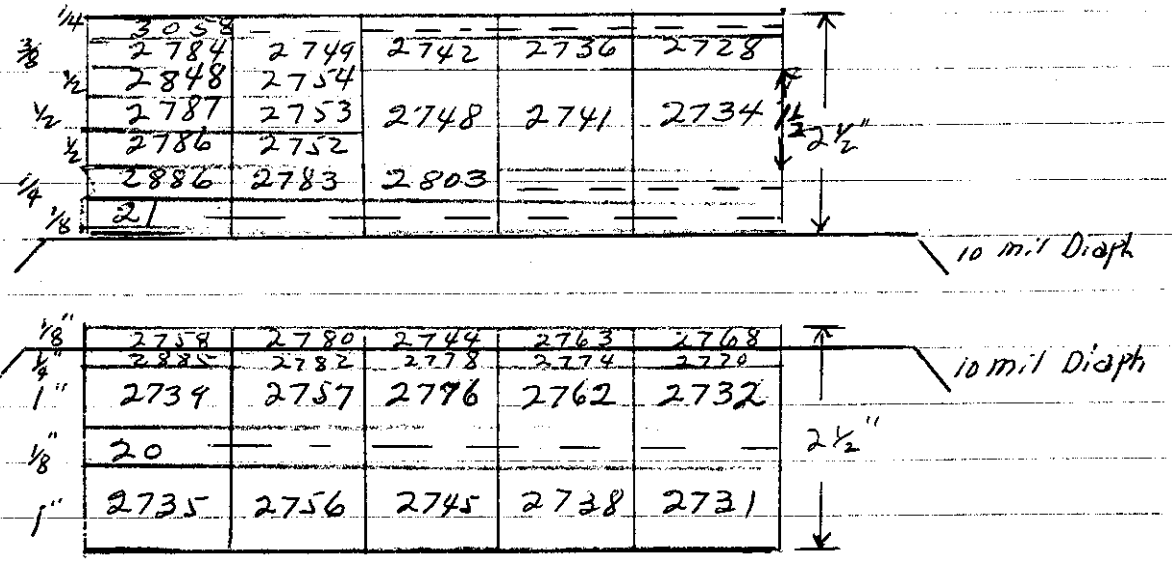
Ram Expr. Cyl.

ORIGINAL SETTINGS TODAY.

SEL #1 = 18.343
#2 = 18.322 } TOUCH LOWER RAM FUEL TO 1ST DIAPHRAGM

SEL #1 = 18.420
#2 = 18.400 } FUEL ON FIRST DIAPH. LEVEL & EVEN

SEL #1 = 18.470
SEL #2 = 18.450 → POSITION 50 MILS ABOVE LEVEL.
VDT #3 = +11.9
VDT #4 = +11.1



Positive Period Selsyn # 2 = 18.391

Level ∞ #1 = 18.380
#2 = 18.348

AGM

Clean Critical

552 Measure Positive Period.

Sel #1 = 18.458 VDT #3 = 0.00
#2 = 18.4265 #4 = -8.8

a Log N = 143.3 sec } 142.7 7.4°
Ctr #2 = 142.0 sec

b Level ∞ #1 = 18.435
#2 = 18.4025

7.4
6.62
48) 14.02 | .292 ¢/mil

@ Measure Neg. Period
Sel #1 = 18.410
#2 = 18.378

18.426
18.378
48 mils

Log N = 246.6 sec > 235.8 6.62¢
ctr #2 = 225 sec

— Measured distance from Bottom fuel to bottom of #1 diaphragm
E 18.370 NW .354 SW .379 ℄ → 18.340
N .353 W .368 .383 Avg = 18.3678

— Measured from top of 1/8" fuelon #1 diagh to bottom of #2 diagh
E 6.364 SE .370 W .374 NW .379 ℄ → 6.360
N .376 S. 367 SW .367 Avg = 6.3696

Down Selsyn Readings : #1 = 0.002
#2 = 99.9734

18.3678
+ 6.3696
24.7374
− 18.4291
6.3083"
+ .010 diaph
6.318
− .163 corrections
6.155"

56a 2- 10 mil Diaph in place - (V5-55 Run 6)

Positive Period - Selsyn #1 = 18.435
#2 = 18,402

log N = 47.7 Sec ϕ >48.4 16.6°
Ctr 2 = 49.0 "

b Level ∞ Selsyn #1 = 18.38
#2 = 18.350

57a 2 sets support Rings in place - (V5 Run 55+)

Positive Period - Selsyn #1 = 18,435
#2 = 18,402

log N = 66.9 sec >66.7 13.4°
Ctr 2 = 66.4 sec

Level ∞ #1 = 18,392
#2 = 18,359

AUG ~~7~~ 1963

INSTRUMENT CHECK

Time: 8[15] AM ~~PM~~ N-226 # 1

	F	A	B	C	D	X E
Range	H & L	10/1000	OPR	X		1050
Source Dist.	OK	7"	OK	30"		8"
% F.S. Trip	CTR #2	95	OK	100		100+

C.A. 15" dia ~~Cyl.~~ Run 58

~~Size~~ 2-2½" Date 8-6-63 Time 8:30 ~~PM~~ AM

Purpose Support Structure Evaluation

a Positive Period - Chon Critical (Repeat of Run 55)

VDT #3 = 0.0 Selsyn #1 = 18.460

#4 = -9.2 #2 = 18.426

Log N = 140 rev pd > 7.5°

CTR #2 = 139.6 " <

b Level D #1 = 18.434

#2 = 18.399

59a Lower fuel support in place for evaluation :

Positive Period –

b Log N = 60.3 sec = 14.3 ¢ Selsyn #1 = 18.418
ctr 2 = 61.5 sec 14.1 ¢ > 14.2 ¢ #2 = 18.378

14.2
6.62
20.82 ¢

Level ∞ #1 = 18,364 ✓
#2 = 18.3313

60a Lower fuel Simulated support stand in place for evaluation : 20.82 / 21.6 = .9639 (FACTOR)

15.0
6.6
21.6 ¢

Positive Period –

Log N = 56.4 sec pd Selsyn #1 = 18.414
ctr 2 = 56.7 " > 15 ¢ #2 = 18.378

b Level Selsyn #1 = 18,364 ✓
#2 = 18,3284

SUMMARY : 2-2½", 15" dia Cyl.

2 - 10 mil diaphragms – 16.6 ¢ – 52 mils
2 sets support Rings – 13.4 ¢ – 43 mils
Lower fuel support – 20.8 ¢ – 68 mils
163

15" dia Cyl Run 61

Snr 2 - 2½" Date 8-8-63 2:00 PM

Purpose Rossi L

Log N = .00065

Ch A = 87 @ 1%00

Sulzer #1 = 18,411

#2 = 18,368

≈ 2 hr. run.

Chron Cnt #2 = 18,426

.368

58 mile

#1 = 18,434

.411

23 mile

AUG 8 1963
AUG 8 1963

INSTRUMENT CHECK

Time 9:10 AM Source M-226 & h

	X F	Channel A	B	C	D	E
Range	H & L	1%/100	OPR	2		1050
Source Dist	OK	8"	OK	30"		8"
% F.S. Trip		95	OK	100		100+

Test 15" dia cyl. Run 62
Test 2-2½" Date Aug 7 1963 Time 9:00 AM
Purpose Rossi & continuation of run #61

Log N = .00067
Chan A = 85 @ 100/100 Sig @ 82
& 5 hr runs

Selsyn #1 = 18.415
#2 = 18.366

C- 15" DIA CYL 63

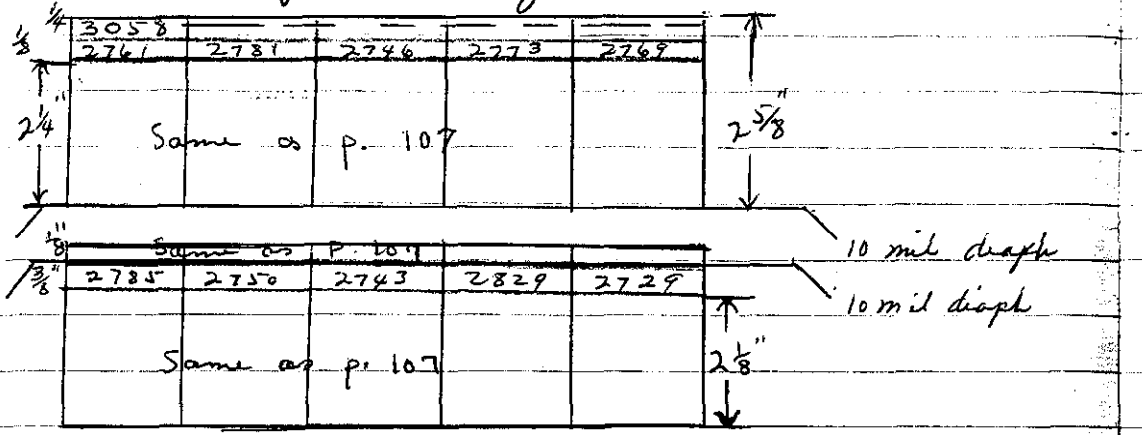
S- 2-2 5/8" 8-8-63 7:40

Purpo Critical Separation

of 2-2 5/8" thick, 15" dia

Cylinders.

Extrapolated Separation = 8.35"



Level ∞ with Rossi ∝ Counters in place

UDT # 3 = ~~-21~~ -16

4 = ~~-21~~ -16

#1 18,318

#2 ~~18,2544~~ 18,2575

18,2575

AUG

INSTRUMENT CHECK

Time 8:15 AM Source Pu Be + 8

	Channel F	A	B	C	D	E
Range	HV = 8	10/1000	opr	X		1050V.
Source Dist.	OK	9"	0	30		8"
% F.S. Trip		90	OK	100		100+

C.P. 16" dia cyl. Run 64

Size 2 - 2 5/8" Date 8-9-1963 Time AM

PURPOSE: Rossi α measurement

Level

Log N = .0006

Ch A = 86 100/100

UDT #3 = -8.0 #4 = -9.4

Selsyn #1 = 18.320 #2 = 18.265

≈ 7 hr run

Chan Level = 18.281

.265 ?

16

#1 = 18.354

.320

34 mils

AUG 12 1953

INSTRUMENT CHECK

Time 8:20 AM Source M-226 a h

		X Channel B	C	D	E
Range	N & L	10/1000 OPR	X		1050
Source Dist	OK	8" OK	30"		8"
% F.S. Trip		95 —	100		100+

S.A. 15" dia Cyl Expr. _____ Run 63

2-2 5/8" Date 8-12-63 Time 9:00 PM

Purpose Base Run

Measure distance from Ram fuel to bottom diaphragm

E, 18.231 W. 240 S. 242 ℄ = 18.312

NE. .233 SW. 243 SE. 236 Avg = 18.2375

Meas - distance from fuel on bottom dia. to top diaph.

E. 8.337 NE. 343 SE. 330 NE. 337

N. .339 S. 329 E. 334 ℄ = 8.319

Avg = 8.3355

.2814
.0635
18.3464

Down Selsyns #1 = 00.000 #2 = 99.935 .065

18.2375 26.5730

+ 8.3355 - 18.3464

26.5730 8.2266" Separation

65a Chan critical -

Positive Period - VOT #3 = NOT ON Delay #1 = 18.395

#4 = NOT ON #2 = 18.3225

Log N = 116.7 sec pd = 8.75 ¢

ctr 2 = 108 " " 9.25 ¢ = 9.0 ¢

b Level ∞ #1 = 18.334

#2 = 18.2814

15.55 c / 72 Negative Period - #1 = 18.322 (322 − 250 / 72)

#2 = 18.250

~~Log N~~ = 248.6 sec pd = 6.2 ¢

ctr 2 = 248.8 " " = 6.2 ¢ > 6.55 ¢

log N = 228 " " = 6.9 ¢

66a 2 - 10 mil diaph in place for evaluation (as 65c)

Positive Period Delay #1 = 18.322

#2 = 18.250

Log N = 92.8 sec pd = 10.4 ¢

ctr 2 = 93.4 " " 10.3 ¢ = 10.35 ¢

Level ∞ #1 = 18.270

#2 = 18.2005

10.35
6.55
16.9 ¢

67a 2 sets support rings in place for evaluation

Positive Period — Subject #1 = 18.354
#2 = 18.2814

Log N = 77.6 sec pd 12.0¢
Ctr 2 = 78.1 sec pd 11.8¢ = 11.9¢

b Level ∞ #1 = 18.295
#2 = 18.2249

68a Simulated support stand in place for evaluation

Positive Period - #1 = 18.322
#2 = 18.250

Log N = 60.8 sec pd = 14.2¢
Ctr 2 = 67.3 sec pd = 13.3¢ = 13.75¢

b Level ∞ #1 = 18.245
#2 = 18.1833

13.75
6.55
20.30¢

120

Base Diaph.

Piggy

15" dia cyl 69 a

2-2 3/4" S42-63 2100

Critical Separation

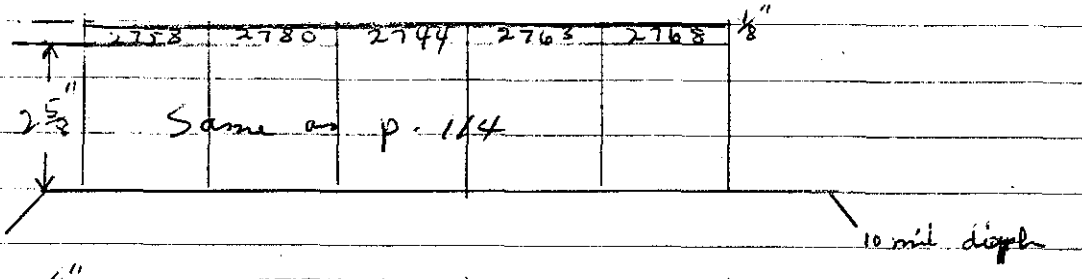
for 2 - 2 3/4" Thick

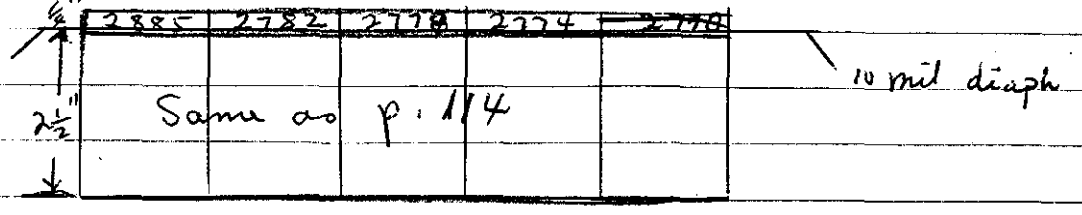
15" dia cyl.

~~Extrop~~ Extroplated guess ~ 11 1/4"

Level ∞ Selsyn #1 = 18,175

#2 = 18.100





69b moved top diaph ~ 200 mils up.

Level ∞ #1 = 18,344

#2 = 18,268

70a Clean Critical —
Positive Period —

VDT #3 = +11.0
VDT #4 = -7.0

Selsyn #1 = 18.403
#2 = 18.323

Log N = 205 sec pd = 5.46 = 5.38 ϕ
Ctr 2 = 211 sec pd = 5.3

75
10

b LEVEL —

SELSYN #1 = 18.360
#2 = 18,278

c NEGATIVE PERIOD —

SELSYN #1 = 16.311
#2 = 18.230

11.92 ϕ / 93 = .128 ϕ/mil

Log N = 280.1 sec pd = 5.39 ϕ = 5.57 ϕ
Ctr 2 = 267.4 = 5.75 ϕ

Measure Separation from ram fuel to bottom of bottom diaphragm.

E. 18.194 W. 206 S. 208 ϕ = 18.~~268~~ 168
N .190 SW. 207 SE. 204 Avg = 18.2015

Separation from fuel on bottom diap. to top diaphragm

W. 11.298 N .296 SW .296 ϕ 11.292
S .292 NW .300 E 293
Avg = 11.296

Known Selsyn readings — #1 = 0 #2 = 99.925
0785

18.2015
+ 11.296
29.4975

29.4975
- 18.3560
11.141 " SEPARATION

7/a 2-10 mil draph in place for evaluation

Positive Period.

Sobyn # 1 = 18.360
2 = 18.278

Log N = 59.0 sec = 14.5 ¢
Cor 2 = 62.9 sec = 13.9 ¢ = 14.2 ¢

Level D

1 = 18.231
2 = 18.1538

AUG 1 3 1963

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INSTRUMENT CHECK

Time 8:15 AM Source M-226 & H

		Channel A	B	C	D	E ✓
Range Hi & Lo		10/1000	OPR	X		1050
Source Osc.	OK	8"	OK	30"		8"
% F.S. Trip		95	– 100			100+

Shot 15" DIA CYLINDER Run 72a

Shaft ____ Date Aug 13 1963 Time 8:30

Purpose EVALUATIONS OF SUPPORT MATERIALS

72a 1 – 10 mil diaph in place, taped to top diaph.

Measure Positive Period

VDT's not on

Delays #1 = 18.356
#2 = 18.278

Log N = 124.3 sec pd = 8.3¢
Ctr #2 = 123.8 sec pd = 8.32¢ = 8.31¢

b Level ∞

#1 = 18.282
#2 = 18.206

73a 1 - 10 mil diaph in place, on top of ram fuel.

Positive Period -

Selsyn #1 = 18.355
#2 = 18.2728

Log N = 212.8 sec pd = 5.28
Counter 2 = 200 sec pd 5.45 = 5.37 ¢

b Level ∞

#1 = 18.310
#2 = 18.2288

2 diaph = 13.68 ¢

74a 1 set of rings (supported) top
Positive Period

Selsyn #1 = 18.355
#2 = 18.278

Log N = 249.7 sec = 4.58 = 4.62 ¢
CTR #2 = 246 sec = 4.65

b LEVEL ∞

#1 = 18.320
#2 = 18.240

75a 1 set of support rings in place, (bottom rings).

Positive Period —

Selsyn #1 = 18.357
#2 = 18.278

Log N = 225.8 sec pd = 5.0 ¢ = 4.96 ¢
BF_3 = 227.5 sec pd = 4.92 ¢

Level — ∞ #1 = 18.314
#2 = 18.2354

76a Clean Critical -

Positive Period -

Selsyn #1 = 18.403
#2 = 18.3225

Log N = 201 sec pd 5.55 ¢
BF_3 = 205.3 sec pd 5.45 ¢ = 5.50 ¢

b Level #1 = 18.354
#2 = 18.278

C Negative Period - #1 = 18.311
#2 = 18.230

Log N =
BF_3 = 278.1 sec pd = 5.45 ¢

$\frac{92.5 \text{ mils}}{10.95 ¢} = .118 ¢/\text{mil}$

77a Measure half of simulater (large) long:
Measure Positive Period

Selsyn #1 = 18.356
#2 - 18.278

Log N = 102 sec pd. = 9.7 ¢
BF_3 = 94.8 Sec pd 10.3 ¢ = 10 ¢

b Level ∞

#1 = 18.270
#2 = 18.1905

78a Small (short) half of Simulated support stand -

2 halves ↓ 20.25 ¢

Positive Period.

Selsyn #1 = 18,303
#2 = 18,278

Log N = 92.7 Sec pd = 10.4 ¢
BF_3 = 96.4 Sec pd = 10.1 ¢ = 10.25 ¢

b Level ∞

#1 = 18,276
#2 = 18,1975

15" DIAMETER CYLINDER Run 79

2-2 3/4" Dor AUG 1963 Time 12 45 PM

Operator Rossi a

278
22
58 mils

LEVEL ∞ VDT's NOT ON Sel #1 = 18,300

#2 = 18,220

Log N = ,00066

Chan A = 100/100 @ 85 Signal @ 82

~ 3½ hr run down 4:17 PM

Chan Orif # 2 = 18,278

,220

58 mils

#1 = 18,354

,300

54 mils

128

AUG 13 1963

INSTRUMENT CHECK

Time 8:00 AM Rec M-226 @ h

		A	B	C	D	E
Recorder	Hi & Lo	10/1000	OPR	X		1050
Source Dist.	OK	8"	OK	30"		8"
% F.S. Trip	OK	85	—	100		100+

C.A. 15" DIA. CYLINDER Run 80

Size 2 - 2 3/4" Date AUG 14 1963 8:15 AM

Purpose Rossi & continuation of run # 79

SEE FUEL ARRANGMENT Pg 120

LEVEL ∞

LOG N = .00077

CHAN A = 100/100 @ 85 INPUT SIGNAL @ 82

SELSYN # 1 = 18.313

2 = 18.204

11" DIA

AUG 1963

INSTRUMENT CHECK

Time 3:10 PM Source Pu Be + γ

	F	A (✓ Channel)	B	C	D	E
Range	HV=8	10 / 2000 cps		X		1050 V.
Source Dist.	OK	8"	0	30"		8"
% F.S. Trip		80	OK	100		100+

Ctr 2 = OK

C. 11" DIAMETER CYLINDER Run 82a

2 - 1 7/8" Date 8-15-63 Time 3:20

Purpose Critical Separation

82a measured Positive Period -

Log N = 86.8 Sc Pd VDT #3 = -0.2 #1 = 18.248

BF_3 = 84.5 " #4 = -8.0 #2 = 18.2385

b. Level ∞ #3 = -8.9 #1 = 18.239

#4 = -16.5 #2 = 18.2287

Down Selsyn Readings #1 = 99.985

#2 = 99.9980

Measure from ram fuel to diaphragm:

E 18.68½" W. 697 S. 695

N .687 SW. 701 SE. 685 Avg = 18.6910

18.2287 − 18.2327

+009 .4583

18.2327 .468 +.010

24 .4683

130

AUG 16 1963

INSTRUMENT CHECK

Time 8:05 AM Source R Be + γ

		Channel B	C	D	E ✓
	F	is loose	opn X		1050 V
Source Dist.	HV = 8 OK	10"	@ 30"		8"
S.S. Thp		80	OK 1		110+
BF_3	OK				

C.P. 11" DIAMETER CYLINDER 83

S 2-1 7/8" Da AUG 16 63 8 15 AM

Purpose ROSSI ALPHA (RECHECK RUN OF 23 APRIL 63)

VDT #3 = -11.9 SELSYN #1 = 18.232

#4 = -20.9 #2 = 18.222

LOG N = .00065

CH. A = 100/100 @ 85

INPUT SIGNAL SERVO @ 82

SEPARATION

11" DIAMETER CYLINDER Run 84
~~2-2"~~ Date 8-16-1963 Time 11:30 ±
Fuel Ross - Alpha (Recheck of 4-23-63)
p: 227 previous book
Same fuel as 4-23-63

VDT's = NOT ON Selsyn #1 = 17.772
#2 = 17.759

Log N = .00065
Ch. A = 100/100 @ 85 Input Signal to Serv @ 82
2⅓ hr run.

85a Clean Critical (2-2"; 11" dia cyl)
Positive Period -
VDT #3 = -7.6 Selsyn #1 = 17.782
#4 = -10.8 #2 = 17.7702
Log N = 78.4 sec pd
P_{F_3} = 78.2 sec "

b Level — VDT #3 = -14 #1 = 17.775
#4 = ~~off~~ #2 = 17.7631

— Down Selsyns #1 = 99.983 #2 = 99.9942

— Measure from ram fuel to diaphragm: E 18.551 NE. 554 NW. 567
W. 567 SW. 564 S. 559 SE. 554 Avg → 18.5594

Separation → 18.5594 - 17.7689 + .010 = 0.8005"

7" DIA. CYL

AUG 1963

INSTRUMENT CHECK

Time 8:00 AM PM Source M-226 # 1

		Comm: A	B	C	D	E
✓ F						
Period:	HV 8 H & Lo	10/1000	OPR	X		105DV
Source Dist	OK	7"	OK	30"		8"
% F.S. Trip	BF3 ctr #2	95	OK	100		100+

Exp. 7" DIAMETER CYLINDER Run 48 AM PM

Conf. SOLID Date AUG 19, 1963 Time

Purpose: To Obtain Critical Height of 7" Dia Cyl

H = 4 15/16"

Nos CONT FROM Pg 201 OF PREV. BOOK.

Ram Fuel = 1½"

Diaph. Fuel = 3 7/16"

Sub Crit VDT # 3 = 2.2 # 4 = -13.9 Selsyn #1 = 19.078 #2 = 19.076

#2729
#2730
#2732
#2734

#2733

10 mil diaph

48# added 5"x5"x 1/32" Fuel to top of stack. Rossi & counters in place.

Slightly super crit. VDT #3 = 0 #4 = -5.5 Selsyn #1 = 19.071 #2 = 19.0689

49c added servo -
adjusted Counter position to reduce reactivity.

7" dia cyl. Run 49c
Solid Date Aug 19 63 9:45 AM
See fuel assembly
Pg 133 (run 48b)
Rossi

VDT #3 = 0.0 Liteon Selsyn #1 = 19.074
#4 = -4.6 #2 = 19.0635

Log N = .00063
Ch. A = 100/100 @ 86 Servo signal @ 82.0

ity.

Cr. 7" Dia Cyl Run 50
Top Be Refl. Dat 8-19- Tim 2:00

Purpose Crit Height of 7" dia cyl
with 6" of top Be Refl.

Fuel = 1½" on Ram
1½ on Deck
1" Be on Top.

VDT #3 = 0.0 Sel #1 = 19.075
#4 = -4.8 19.065

1 Min cts BF_3 = 2.8 × (256)
2.8

Using "big" source

50b 3" Fuel ; 2" Be on Top.

up Poo same

1 min BF_3 = 2.85
= 3.10

3" Fuel ; 3½" Be on Top

up Poo Same

1 min BF_3 = 3.4
= 3.3
= 3.32

d 3" Fuel ; 5 15/16" Be on Top

up Poo VDT #3 = 2.0 Sel #1 = 19.075
#4 = -2.2 #2 = 19.068

1 min BF_3 = 3.38
3.64 Avg 3.51

e 2¼" fuel ; [redacted] 1
5 11/16" Be on Top

VDT 3 # 0 Sel #1 = 19.075
4 = -4.2 #2 = 19.065

1 min BF_3 = 4.33 avg 4.465
4.6

f. 3⅝" fuel
5 15/16" Be on top
VDT #3 = 0.0 Selsyn #1 = 19.075
#4 = -4.2 #2 = 19.065

1 min BF_3 = 6.2 avg 6.455
6.71

g. 4¼" fuel still using "big" source
5 15/16" Be ON TOP
VDT not on Sel #1 : 18.950
#2 : 18.940

Super Critical

h. Remove "big" source and use "console" source.
Sel #1 = 18.97 Super.

i. 4 3/16" fuel & 5 15/16" Be on Top
Sel #1 = 19.015
#2 : 19.007

Super-Critical

AUG 2 [illegible] 1963

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INSTRUMENT CHECK

Time 8:10 AM Source M-226 4 pt

		√	A	B	C	D	
		F					
Ramp Hi & Lo			10/1000	OPR	X		1050V
Source Drive	OIC		8"	OIC	30"		9"
% F.S. Trip	BF3-OIC		90	—	100		100+

C.R. 7" DIA. cyl. Be reflected Run 5-1

Date Aug 20 1963 Time 8:25 AM

Purpose Critical height fuel & (Be on top)

a. 4 3/16" fuel
5 9/16" Be reflector on top

Sel # 1 = 19.025

Super-Critical

b. 4 1/8" fuel
5 15/16" Be reflector on top

"Up lite" Sel # 1 = 19075

Super-Critical

51 c 4⅛" fuel — Still Super
5 9/16" Be on top

VDT #3 = +0.2 "Up" Sel #1 = 19.075
#4 = -4.0 #2 = 19.0615

52 a & Removed excess frames, walks etc for "clean" run.
4⅛" fuel
5 9/16" Be on top
VDT #3 = -2 #4 = -1 Selsyn #1 = 19.101
#2 = 19.0858
LogN 101.4 sec } +9.6¢
CTR #2 106.9 sec }
Positive Period

b. Evaluate diaphragm (10 mil)

VDT #3 = -1.5 #4 = -0.5 Selsyn #1 = 19.10
#2 = 19.0858

Neg. Period
LogN = 179.2 sec } -0.73¢ (-10.33¢ diaph)
CTR #2 = 182.3 sec }

c Rings and diaphragm on.
Measure Pos. Period
VDT #3 = -1.4 Sel #1 = 19.105
#4 = +0.2 #2 = 19.0878
LogN = 702 sec } +1.61¢
CTR #2 = 838 sec } (-8.0¢ rings & diaph)
(2.33¢ rings)

d Evaluate Support Stand & Rings & 10 mil diaphragm
support stand actually on top of Be*
Measure Positive Period

VDT #3 = -1.2
#4 = +0.6

Selsyn #1 = 19,103
#2 = 19,0868

Log N: 491 sec } 2.49¢
Ctr #2: 477 sec }

[-7.1¢ support (all)]
(a.9¢ support standby)

*Do Not Use 52d

- Bottom fuel support stand (educated guesstimation) from bare runs previously = 15¢

BE 9/16
Be 1/2
DE1
BE 2
Be 1½
2768 - 1½
2732 - 1
2734 - 1½
2733 - 1½

(*) SUMMARY

1. Clean Critical Assembly 10 MIL DIAPH
4 1/8" fuel + 5 9/16" Be on Top +9.6¢

2. Support rings value = 2.33¢

3. 10 mil diaphragm = -10.33¢

4. Bottom fuel support = ~~8.52¢~~ 15¢

MASS OF TOP FUEL = 31037 TOTAL FUEL: 48.729 Kg
MASS OF BOTT. FUEL = 17742

MASS OF Be = 6.433 Kg

Measured Beryllium thickness used as top reflector for previous exp.

5.5/16 70	5.5/16 70	5.5/16 71	5.5/16 74
.5/16 70	.5/16 70	.5/16 73	.5/16 72
.5/16 70	.5/16 73	.5/16 75	

Aug. 5.5/16 716

See p 139

7" diameter

Top fuel measurements with Be on Top

	2.630	2.630	2.6315	2.630
2.6304	.631	.630	.630	.631
	.6305			

p. 133 7" dia Solid Top fuel

3.441	3.441	3.442	3.442	3.4415
.442	.442	.441	.442	.443
.441	.441			

7" DIA CYL 53

Solid 8-20-63 3:05

Picture of Counter Pulses

Fuel = $9\frac{15}{16}$ + $\left(\frac{5 \times 5 \times \frac{1}{32}}{2.5 \times 2.5 \times \frac{1}{32}}\right)$

slightly Super at up Positions.

Log N = .001 → .005

AUG 2 1963

3961 5n

1125

AUG 7 1963

INSTRUMENT CHECK

Pu Be + γ

Ranges	HV = 8	200 Ops X	1050V
Source Dist	OK	24" @ 48"	8"
Trip		70 ~~dt~~ 100	100+

Source #563 installed on Drive.

C.A. 13" - 7" Expt. Plexiglas Core 26a

Sheet ____ Date ____

Purpose Determine Critical height

Bkg BF_3 = 48

2" on Rom
2" on Diaph.

26a Fuel = 4"
Plexiglas = 4"

UDT #3 = 0 #1 = 18,814
#4 = -2 #2 = 18,7813

BF_3 = 218 cts (1 min)
220 "

b Fuel = 4 ¼"
Plexiglas = 4 ¼"

up Pos. = Same

BF_3 = 267 cts (1 min)
= 300 "

c Fuel = 4 ½"
Plexiglas = 4 ½"

up Pos = Same

BF_3 = 378 (1 min)
= 402

d Fuel = 4 3/4"
Plexiglas = 4 3/4"

1 minute BF_3 = 4.15 (x 256) up Position = same
3.85
Avg = 1024 cts

e Fuel = 4 7/8"
Plexiglas = 4 7/8"

1 minute BF_3 = 15.82 up Position = same
10.2
Avg = 3968 cts

AUG 22 1963

INSTRUMENT CHECK

δ^{25} / F = Source M-226 & A

	Channel A	B	C	D	E
Rem. N & Lo	1/1000	OPR	X		1050
Source Dist OK	14"	OK	30"		8"
% F.S. Trip	95		100		100+

C.A. 13"-7" Expt. Plexiglas core Run 26f

Sheet ____ Date 8-22-1963 Time 9:00 AM

Purpose Critical height determination.

f. Fuel = ~~4~~ 15/16"

Plexiglas = ~~4~~ 15/16"

Super Crit

g. Removed 1/8" of fuel from 13-11 ring

sub critical

h. Repeat of Run f. Clean Critical

Measured Positive Period -

Log N = 4.8 sec pd 16.8¢

BF_3 = 43 sec > 18.0¢ up pos.

#1 = 18.81

#2 = 18.781

17.4¢

i 10 mil diaph, in position for evaluation

just crit. ∞ VDT #3 = -0.8

#4 = 0.5

Diaph = 17.4 ↓ Selsyn #1 = 18.815

#2 = 18.7758

j Diaphragm support Rings added.

Measured Positive Period VDT #3 = -0.8

#4 = +0.5

Log N = 245 sec pd → 4.72 ↓ sel #1 = 18.815

BF3 = 236.5 " #2 = 18.7758

Firing

k Support rings removed

Lower Fuel support added.

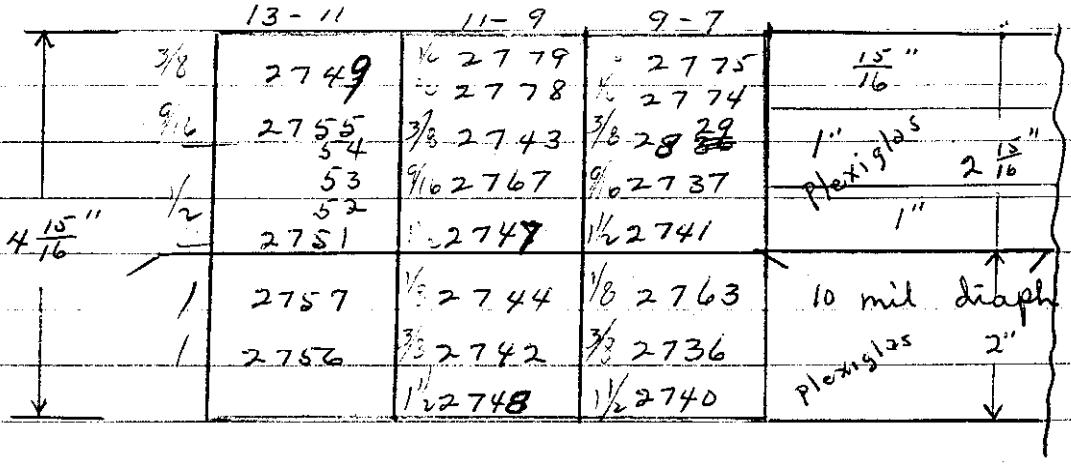
Measured Positive Period VDT #3 =

Log N = 65.1 sec pd → 13.6 ↓ #4 =

BF3 = 65.1 " Selsyn #1 = Same

#2 =

Support



Summary:

Critical Height 13"-7" with plexiglas Core = 4 15/16" with 17.4 ¢ Excess reactivity

10 mil diaph = 17.4 ¢

Support rings = 4.72 ¢

Fuel Support = 13.6 ¢

Top Plexiglas Measurements

2.940 .940 .938 .940 .938 .941
.940 .938 .937 .936 940

Avg 2.9389

Bottom Pliglas (2"-#11)

2.004 .003 .002 .003 .001
.002 .002 .003 .005

Cal. 11"-7" Exp. Plexiglas Core 1

Date 8-21-63 1:00

Purpose Critical Determination

2" on Ram

1a Fuel = $5\frac{15}{16}$"

Plexiglas = $6\frac{15}{16}$" Sub Critical

BF_3 = 283 cts/min

b Fuel = $7\frac{1}{16}$"

Plexiglas = $6\frac{15}{16}$"

BF_3 = 510 1 min

= 515 1 min

2 pts Extrap. = $8\frac{1}{4}$"

	15-13	13-11	11-9	9-7	
4"	1/2 2848	54	1/16 2746	1/8 2773	1" Plexiglas
	1/2 2787	53	3/16 2743	3/16 2829	
	1/2 2786	52	9/16 2748		1" Plexiglas
	1/2 2760	2751	11/2	11/2 2741	
	1/8 2739	1/8 2757	1/8 2744	2763 1/8	1"
	1/8 2735	1/8 2752	3/16 2742	2736 3/8	2" Plexiglas
			1/16 2748	2740 1/2	

10 mil diaphragm

15"-7" Plexiglas Core

C.A. 15" - 7" Expr. Plexiglas Core Run 10

Shee Dat 8-22-63 Time 2:45 ~~AM~~ PM

Purpose Critical Height Determination

2" on Ram

10a Fuel = 4 1/16" on 11-7

3 1/2" on 15-11

Plexiglas = 4"

VDT #3 = -0.5"

#4 = 0

Sel #1 = 18.815"

#2 = 18.781

1 min. BF_3 = ~~0~~ 1.9 (x256)

= 1.8

473 cts/min

b Fuel = 4 1/16" on 11-7

= 4" on 15-11

Plexiglas = 4"

up positions

Super Critical

2 - 1" Plexiglas Measured

2.003 .605" .004 .004 2.003

.004 .003 .004 .003

diph

c Fuel = 4" Clean Critical
Plexiglas = 4"

Measured Positive Period —

VDT #3 = 0
#4 = 0

Log N = 114.5 sec pd
BF_3 = ~~119~~ 117.2 sec pd → 8.75 ¢

Delayn #1 = 18.650
#2 = 18.620

d Diaph supports rings in place for evaluation.
Measured Positive Period —

Log N = 73.8 sec pd
BF_3 = ~~79~~ 71.1 sec pd → 12.73 ¢

VDT #3 = 0
#4 = 0
Delayn #1 = 18.650
#2 = 18.620

12.73 / 3.98 = Rings

e added 10 mil diaph —
measured negatin Period

Log N = 347.4 sec pd
BF_3 = 345.1 " → ~~4.80~~ -4.22 ¢

up pos. Same

+12.73
4.22
16.95 ¢ = Diaph

Summary: 15"-7" Plexiglas Core
Height = 4" with 8.75 ¢ Exist
10 mil Diaph = 16.95 ¢
Support Rings = 3.98 ¢
Fuel Support = 10.08 ¢

AUG [illegible] 63

LYNN

TAYLOR

INSTRUMENT CHECK

Time 2:05 AM Source M-226 E h

		Channel F	A	B	C	D	E
Range	Hi & Lo.		10/1000	over	X		1050V
Source Dist.			14"	OK	30"	X	8"
% F.S. Trip			95	OK	100	X	100 f

C.A. 15" - 7" Sqt. Plex. glas Run 10 f

Sheet _____ Date 8-23-1963 Time 8:10 AM

Purpose Cont'd from p. 150

f Repeat of Run 10e.

Measured Negative Period -

Log N = 347. sec pd. VOT #3 = + 2

BF_3 = 347.4 sec pd 9.22 ¢ # 4 = + 6.

Selsyn #1 = 18.659

2 = 18.623

g Add lower fuel support stand

measured Positive Period

Log N = 59.5 sec pd

BF_3 = 61.8 " up poo = Same.

12.13

14,36 ¢

- 4.22

10.08 ¢ = support

15" - 9" Plexiglas Core 9

Sheet 8-27-63 10:15

Purpose Determine Critical Height (See p. 47)

2" on Ram

9a Fuel = 5"
Plexglas = 5"

#3 = +2.1
sub Critical up #4 = 0
1 min BF_3 = 7.7 x256 #1 = 18.660
#2 = 18.6265

Fuel = 5 1/8"
b Plexiglas = 5 1/8"

Super Critical #1 = 18,47

c Fuel = 5 1/16" Clean Critical
Plexiglas = 5 1/16"
Positive Period up #3 = 2.1
Log N = 90.5 dc pd=107¢ #4 = 0
BF_3 = 91.7 " 105¢ #1 = 18.660
#2 = 18.6265
10.6¢ Excess

d Diaph Supports Rings in place –

Measured Positive Period

Log N = 47.7 sec pd = 16.7 ¢ → 16.6 ¢

BF$_3$ = 49.2 " = 16.5 ¢ up = Same

Diff. 0.6 → 1.05 ¢

e added 10 mil diaph –

Measured Negative Period –

16.6 Log N = 2200 sec pd = 0.6 ¢

.9 BF$_3$ = 1400 1.05 up = Same

17.5 ¢ C = 1350 1.05

= Diaph. 3)3.7 (-0.9 ¢

f added lower fuel support

Measured Positive Period –

Log N = 92.3 sec pd = 10.60 ¢

BF$_3$ = 94.4 " = 10.30 ¢ up = Same

C = =

10.4 ¢

+.9

11.3 ¢ = support

Summary:

15"-9" with Plexiglas Core

H = 5 1/16" with 10.6¢ Excess

10 mil diaph = 17.5¢

Diaph Support Rings = 6.0¢

Fuel Support = 13.3¢

1/4	2758	1/8 2780	1/8 2746	1 1/16" Plexiglas
9/16	2766	9/16 2755	1/4 2779	
3/8	2784	3/8 2749	1/4 2778	
	2848	54	9/16 2767	1" Plexiglas
	2787	53	3/8 2743	
1/2	2786	52	1/2 2748	1" Plexiglas
5 1/16"	2760	2751		
	2739	2757	1/8 2744	2" Plexiglas — 10 mil diaph
2"	2735	2756	3/8 2742	
			1/2 2748	

13"- 9" Plexiglas Core EXP. Run 18

Sheet Date By Time AM PM

Critical Height

2" on Ram

See p. 61 Previous Book

Fuel = $6\frac{1}{16}$"

Plexiglas = $6\frac{3}{16}$"

No Multiplication -

156

(Bottom) (Raw) fuel for "any" run from pg 143-155

15-13 Ring → 2.002 - .0015 - .0015 - .001 - .002 - .001 - .002 - .002 = 2.0014

13- 11 Ring → 2.003 - .002 - .005 - .004 - .002 - .005 - .004 - .004 = 2.0036

11- 9 Ring → 2.005 - .005 - .003 - .004 - .004 - .004 - .005 - .004 = 2.0043

9- 7 Ring → 2.005 - .003 - .002 - .004 - .003 - .003 - .005 - .004 = 2.0036

Top 11-9 Pg 154 → 3.073 - .072 - .072 - .071 - .0705 - .070 - .071 = 3.0714

Top 11-9 Pg 147 → ~~3~~.945 - .945 - .945 - .945 - .943 - .943 - .944 - .944 = ~~3~~.9443

Top 11-9 Pg 148 → 2.008 - .008 - .008 - .007 - .0075 - .008 - .008 - .007 = 2.0077

Top 13-11 Pg 148 → 2.013 - .013 - .012 - .013 - .013 - .014 - .013 - .013 = 2.0130

Top 13-11 Pg 147 → ~~3~~.957 - .955 - .955 - .9565 - .957 - .957 - .958 - .957 = ~~3~~.9566

Top 13-11 Pg 154 → ~~3~~.083 - .083 - .082 - .080 - .081 - .082 - .082 - .079 = ~~3~~.0815

-155

TOP 15-13 Pg 148 → 2.005 - .005 - .005 - .006 - .005 - .006 - .007 - .005 = 2.0055

0014

TOP 15-13 Pg 154 → 3.073 - .075 - .074 - .074 - .073 - .073 - .074 - .073 = 3.0736

·036

TOP 9-7 Pg 148 → 2.005 - .005 - .004 - .005 - .003 - .005 - .006 - .007 = 2.0050

TOP 9-7 Pg 147 → ~~3~~.941 - .941 - .9415 - .941 - .941 - .944 - .942 - .943 = ~~3~~.9414

43

36

714

443

077

)130

566

315

(Piggy BACK DIAPH AUG 27 1963 159

AUG 27 1963

INSTRUMENT CHECK

Time 8:50 Source Pu Be + γ

Channel A B C D

F 10 / 100 Div X 1050 V

OK

Source Dist 30 0 30" 8"

% F.S. Trip 80 OK 100 100+

C. 15" DIA. CYLINDER Run 81

Shot 3 - 1½" Time

Purp. To obtain separation of 2 - 15" dia cyl

Top of ~~Bottom~~ Piston to bottom Dragon = 19.046"

81a Top Separation = 4.155" meas at Center of Jam

Bottom Separation = 0.631" from Selsyn Reading

Selsyn #1 = 18.43

#2 = 18.401

Level ∞

Down Selsyn Readings
#1 = 44.990
#2 = 44.961

	15-13	13-11	11-9	9-7	7"
1½"	2734	2749	2742	2736	2728
	2739	2753	2746	2741	2734
	21	2752	76	62	32

10 mil di

1½"	2787	2780	2744	2763	2768
	2786	2757	2745	2738	2731
	20				

10 mil di

1½"	2760	2751			
	2735	2756	2747	2740	2733

RaM

81b Top Separation = 3.211" Measured at Centerfuel

Bottom Separation = 1.38"

Sub Critical

Selsyn #1 = 17.660
#2 = 17.6235

81c Top Separation = 3.211" Measured

Bottom Separation = 0.898

Level ∞

Selsyn #1 = 18.148
#2 = 18.1060

81d Top Separation = ~~2.420~~ 2.405" Measured

Bottom Separation = ∞

Sub-Critical

Selsyn #1 = 17.66
#2 = 17.624

81e Same But moved stops 1 turn

∞ Level

Selsyn #1 = 17.75
#2 = 17.710

Top Separation = 2.420"
Bott. Separation = 1.296
2 | 3.716
1.86

15" DIAMETER CYLINDER Run 82a

Shee 3 – 1 5/8" 8-27-63 2:25

Purpos Critical Separations

ing fuel

660
6235

~~Pro~~ Top of bottom fuel to bottom dosh = 18.921

82a Top Separation = 3" measured

Bottom Separation = 2.72"

Sub Critical

#1 = 16.20
#2 = 16.158

148
1060

1½"	2761	2787	2746	2723	2769
	Same	as	P. 1	59	

1 3/8"	2885	2782	2778	2774	2720
	Same	as	P 1	5	9

1½"	2758	2780	2744	2763	2768
	Same	as	P. 1	5	9

66
624

b Top Separation = 2 3/4" measured

75
710

Bottom Separation = 2.72"

Sub Critical

#1 = 16.20
#2 = 16.158

c Top Separation = ~ 2.6"

Bottom Separation = 2.46"

Sub-Critical

Selayn #1 = 18.458
#2 = 18.423

d Top Separation = ~ 2.4"

Bottom Separation = ~ 2.2"

Selayn #1 = 16.73
#2 = 16.696

AUG

INSTRUMENT CHECK

8:25 — M226 ϕ

F	✓		
Pres. H & Lo.	10/1000 OPR	X	1050
Source Dr. OK	7" OK	30"	8"
% F.S. Trip	90 – 100		100+

C. 15" DIAMETER CYLINDER Run 83

S 3 – 1 5/8" Dem. AUG [illegible] 1962 Tr 8:50

Purpose: CRITICAL SEPARATIONS (2)

DOWN Setpts = #1 - 99.990 #2 - 99.965

VDT's NOT ON

level

Sel# 1 = 16.602

2 = 16.568

SEPARATION OF TOP = 2.325 cal from outer ring meas.

SEPARATION OF BOTT = 2.319 cal from outer ring meas.

Sag of top fuel: use 15-13 ring as base (0)

13-11 = 6.0 mils from 0.

11-9 = 12.3 " " "

9-7 = 20.0 " " "

7 = 26.0 " " "

~~Measured~~ Outer ring separation from center fuel to top diaph → 18.9218

Outer Ring meas. sep. from center fuel to bott diaph → 2.3254

℄ measurement center fuel to top diaph → 2.2965"
℄ " ram " " bott " → 18.92175

CA	15" Data Syst	Run	84a
Sr	3 = 1 5/8	Date 8-28-63	Time 1:25 PM
Purpose	Critical Separation.		

Fuel Rearranged

a Measured Positive Period

Log N = 65.1 Sec Rd 13.6¢ UDT # 3 = -5
BF_3 = 64.6 " 13.7¢ #4 = -9
Sel #1 = 16.628
#2 = 16,590

b Level ∞ #1 = 16.610
#2 = 16,5715

c Negative Period #1 = 16.568
#2 = 16.5515

Log N = 137.8 Sec Rd 13.8¢
BF_3 = 132.4 " 14.8¢ = 14.3¢

.726 ÷ mil
31.5 mil / 27.95 ¢

Measured distance from top of center fuel to bottom of top diaphragm (outside ring only)

℄ 2.308 E = 2.331 SE = 2.323 W = 2.3215

N = 2.332 NW = 2.3268 SW = 2.3184

Avg = 2.327

Measured from ram-fuel to bottom of bottom diaphragm (outside ring only)

18.9105 18.9175 18.9280 ℄ = 18.920

.9205 .9270 Avg = 18.9207

Measured "sag" of top fuel, the 11" dia is 14 mils lower than "11"-15" dia.

Down Selsyn reading before Run 84a

#1 = 99.988 #2 = 99.962

	15-13	13-11	11-9	9-7	7" dia
3/8	2784	2781/8	1/4 2779	1/4 2775	1/4 2771
	2761/8	2749/8			
	2739'	2753 1/2	2776'	2762'	'2732
1/8	21	2752 1/2	2803	1/4 —	— —
1/4	2785	1/4 2782	1/4 2778	1/4 2774	1/4 2770
1/2	2787				
1/2	2786	'2757	'2745	'2738	'2731
1/4	3058	— —	— —	— —	— —
1/8	20	— —	— —	— —	— —
1/8	2758	1/8 2780	1/8 2744	1/8 2763	2768 1/8
1/2	2760	1/2 2751			
1	2735	2756'	1 1/2 2747	1 1/2 2740	1 1/2 2733

[redacted]

6" Dia cyl 85°

3 - 1 7/8" 8-28-63

Rossi ∝

Log N = .00068 H1 = 16.60

"A" = 85° @ 100 H2 = 16.561

Running Time = 80 min

AUG 2 1963

INSTRUMENT CHECK

8:15 AM — M-226 ft. N.

	A	B	C	D	✓
Scram H & Lo	1/1000 DPC	X			1050
Scram Time	7"	c/c	30"		8"
% Full Trip	85	–	100		100+

BF3 - OK

15" DIA cyl. Ref. _____ Rx. 86

= 3 - 1 5/8 D. Aug 28 1963 Tir. 8:45 AM

Purpose: Rossi Alpha

continuation from 85

See fuel arrangement

pg 165

Log N: .00068 ∞ Selsyn #1 = 16.60

Chan A = 85 @ 100/100 Signal @ 82 #2 = 16.561

15" DIA. CYL Run 87a

3 - 1 5/8" 8-29-63 3:10 PM

Critical Separations

a Measured Positive Period –

Log N = Selsyn #1 = 16.582

BF_3 = #2 = 16.5435

b Level ∞ #1 = 16.559

#2 = 16.5195

Level (Inst) discovered on Top Fuel

(forget above Runs)

88a Measured Positive Period – V

Log N = 99.3 sec pd VOTH #3 = -12

BF_3 = 102.8 #4 = -22 Sel #1 = 16.615

2 = 16.578

b Level ∞ #1 = 16.601

#2 = 16.5628

c Negative Period –

Log N = 135.7 sec pd #1 = 16.581

BF_3 = 130.1 " #2 = 16.5428

Selsyn Down Readings #1 = 99.988

#2 = 99.963

Measured top separation outer ring:

E 2.326 N, 3275 SE .316 S. 313 S. 3115 NW. 3178 W. 3158 SW. 3105

AVG → 2.3173

The TOP fuel 11" dia. segment is 14 mils lower than the rest ∴ 2.3173 − 7 mils = 2.3103 separation not incl. diaphragm

Bottom separation outer ring: ℄ = 18.9164

E 18.919 NE. 9074 N. 908 NW. 914 W. 9204 SW. 9235 S. 924

AVG → 18.9166

18.9166 − (16.5628 + 0.0365) = 2.3173 BOTTOM separation not incl. diaphragm

2.3103
2.3173
2 | 4.6276
2.3138" Avg.
+ .0100 diaph
2.3238

170

AUG 30 1963

MIHALCZO
TAYLOR

9:00 AM

M-226 #1

	F			
Hi & Lo	9/100 OPR	X		1050V
Source Ext	0/C	7"	OR 4'	6"
% F.S. Tol	95	100		100+

BF3 OK

Exper. _____ Run 89

Date _____ 19 __ Time _____ AM PM

Clean Critical 3-150D-1 5/8

Measured Separation before assembly (Run)

Lower E - 18.9147 NE 18.9108 N .9105 NW .915 W .920
SW .9236 S .926 SE .9236

Av 18.9181

UPPER E - 2.3194 NE .3223 N 2.321 NW 2.3176
W 2.3110 SW 2.308 S 2.3108 SE 2.3109

Av 2.3151

Down Scope Readings

#1 999.994 #2 999.628

A Position Period #1 16.618 #2 16.5834 #3 -15 #4 3

LogN = +88.4 sec BF3 = 10.8
BF3 = 91 10.2

B Level #1 16.602 #2 16.5666

Separation of Lower discs

18.9181 - 16.6038 = 2.3143

upper disc 2.3151 - .007 = 2.3081

↑ ACCOUNTS FOR SAG IN TOP DISC

C Measure Neg. Period

Sel #1 = 16.582

#2 = 16.5455

LogN = -139.7 sec 13.5

BF_3 = 135.5 cm 14.2

27.7 = 13.85 ¢

$\frac{\Delta P}{\Delta X}$ = 0.656 ¢

D Support Structure evaluation.

Added 2 sets of rings 2 diaphragms + support stand.

.9209

UPPER SPACING HELD FIXED - CHANGE IN LOWER SPACING MEASURED

Level #1 16.515 #2 16.4765

Change in SPACING #1 ~~16.5~~ SAME

#2

TOP SEP: Run #(88 + 89) ÷ 2 = 2.3092" NOT INCL. DIAPH

BOTT SEPS Run # (88 + 89) ÷ 2 = 2.3158" NOT incl. diaph.

change in spacing of top with all support evaluations = Same at ∠ label

change in spacing of bott. with all support evaluations = from 2.3158" to 2.4044" = 88.6 mils A

$\Delta\theta/\Delta x = \frac{(10.8 + 13.5) + (10.1 + 14.2)}{37 \quad \times 2} = 0.664$ ft/in

E RAISED upper disc ~40 mils Support mat ups in place

Level #1 16.550 #2 16.5155 (16.5662) ✓
.0511

B

Separation of UPPER DISCS

E 2.3598 SE .3501 NE .362 N .3618 NW .3622

E .355 SW .3526 S .373

Av = 2.3595

C

Support Structure worth 2.3595 / 16.5662
2.3092 / 16.5155
+ .0503" B− .0511

To get equal corrected separations

(2.3092 + 2.3158) ÷ 2 = 2.3125"

(0.0503 + 0.0511) ÷ 2 = .0507" → 48 ?

EACH SEPARATION 2.2618" ~~2.2618"~~

Run 90

Shot

PURPOSE Clean critical 3 - 1¾ Disc, 15" OD

A Level

#1 15,635 #2 15,628
+ 0362
15,990

Measured Sep at shutdown
18,783
15,639
3.144 — B

Top separation
2.65

B. Changed Top separation to ~~3.04~~ 2.804

LEVEL
15.818 15,780
036
15.816

LOWER SEP = 2.967

C CHANGE TOP SEPARATION 2.88
LEVEL AT #1 15.890 #2 15.8508

DOWN SELSYN.

174

Top
~~Bottom~~ Separation

N 2.8725 NE 2.8788 E 2.881 SE 2.882
S 2.877 SW 2.8698 W 2.865 NW 2.865

AVERAGE

~~Top~~ Bottom Separation

Changed 2 - 1/8 15-13 F-- 1/4" THICK
one of the 1/8 is slightly warped

Top SEPARATION

N 2.875 NE 2,877 E 2,881 SE 2.881
S 2.87~~05~~ 68 SW 2.8712 W 2,8683 NW 2,870
2,875

DOWN SELSYN - #1 99999 #2 99635

BOTTOM SEPARATION

E 18.7784 NE 18.7726 N 18.7708 SE 18.7827
S 18.790 SW 18.794 W~~E~~ 18.7915 NW 18.7795
Av 18.7824

15.8508
0365
15.8873

Bottom SEP = 18.7824
- 15.8873
2.890

Top — 2.875

SEP 3 1963

INSTRUMENT CHECK

Pu Be + 8

F

HV = 8 — 10/1000 opr X — 1050 V.

OK — 8" — 0 — 30" — 8"

BF_3 = OK — 80 — OK — 100 — 100 +

15" DIA CYLINDER — 91

3 - 1¾" — SEP 3 1963 — 8:45

Obtain Critical Spacing

Measure bottom separation:

E 18.786 N .775 NW .783 SW .795 S .795 SE .792

Avg = 18.7866

Measure Top separation:

E 2.887 N .8785 NW .883 W .876 SW 870 S .874 Avg = 2.878

91 a Measured Position Period — #1 = 15.915

#2 = 15.882

b Level ∞ #1 = 15.895

#2 = 15.860

No Separation Change

91c Increased Top Separation as measured 2.897 .896 .885 .882
.886 .890 .8895 Avg = 2.8882

Clean Critical

$\frac{\Delta l}{\Delta f} = 0.50^{\#}$ Measured 800 Period #1 = 15.926

Log N = 82.9 sec pd 11.3 # #2 = 15.8918
81.8
BF_3 = ~~88.2~~ sec pd 11.4

11.35#

d Level

∞ #1 = 15.905
#2 = 15.8695

e neg Period —

Log N = 147.7 sec pd #1 = 15.886
BF_3 = 149.1 sec pd. #2 = 15.849

Down Silsyn Readings — #1 = 99.994
#2 = 99.9645

15.8695 18,7866
+0.0355 −15.9050
15.9050 2.8816" Bottom Separation

2.8882" Top Separation

6.6 mil difference

Avg 2.8849"
.010 diff
2.8949

9/7 Increased Top Separation ~ 50 mils
added support structures -
(2 set rings; 2 diaphs + support stud)

Level ∞ Selsyn # 1 = 15.850
2 = 15.8134

15.8134	18.7866
+.0355	15.8489
15.8489	2.9377" Bottom Separation

measured Top Separation -

E 2.942	NE .939	S 2.939	W .929
N .936	SE .943	NW .931	.933

Avg = 2.9365" Top Separation

Av = 2.9371

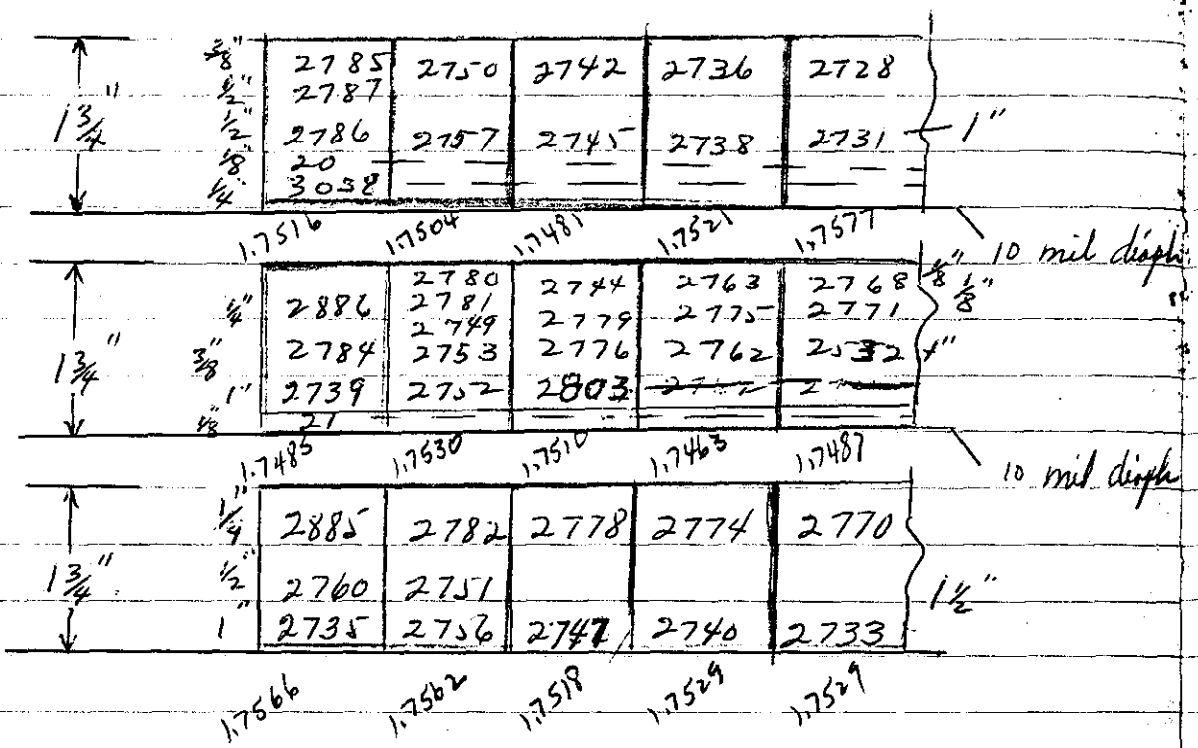
1.2 Mil difference

Calc. equal corrected separations
(2.8882 + 2.8816) ÷ 2 = 2.8849
(0.0483 + 0.061) ÷ 2 = 0.0522
EACH SEPARATION: 2.8327"

2.9371"
- 2.8849
522 mils for support

2.8849
- .0522
2.8327 Corrected SEPARATION

178



15" DIA CYL 92

Sp 3-1 3/4" 9-5-63 PM

Purpo Rossi L

Log N = .0007

A = 86 @ 100/100

#1 = 15.90 95

#2 = 15.860

.035

INSTRUMENT CHECK

SEP 4 1963

Time 805 AM

Source M-226 & h

	Channel A	B	C	D	E
	F ✓				
Type	H & Lo	10/1000	OPR	X	1050 V
Source Dist.		10"	OK	36"	8"
% F.S. Trip		90	—	100	100+

BF = OK

nil diaph

nil diaph

CA 15" dia. cylinders Run 93

3-1¾" Date SEP 4 1963 Time 820 AM

Purpose Rossi δ continuation of run #92

Log N = .00068

Chan A = 86 @ 10/100 signal @ 82

Delays #1 = 15.902 897

#2 = 15.847 835

[redacted]

C: 15" Dia Cyl. Run 94
S 3-1 7/8" Date 9-4-63 Time
Purpose To Find Critical Separation

94a 1st guess; ~ 0.65" more than previous separation (3-1 3/4") or Top = 3.5"

Level #1 = 15.110
#2 = 15.052

Bottom Now = 3.7"

b Raised Top diaphragm ~ 100 mils

Level #1 = 15.200
#2 = 15.142

Down Selsyns #1 = 99.99
#2 = 99.942

1 9/8"	2784-1/2	2754-1/2			
	2787-1/2				
	2786-1/2	2757-1	2748-1 1/2	2741-1 1/2	2734-1 1/2
	20 -1/8				
10 MIL DIA PIN	3058-1/2				
	1.8801	1.8814	1.8758	1.8788	1.8726

1 7/8"	2758-1/8	2782-1/4	2778-1/4	2774-1/4	2770-1/4
	2886-1/4	2781-1/8			
	2784-3/8	2749-3/8	2779-1/4	2775-1/4	2771-1/4
	2739-1	2753-1/2	2776-1	2762-1	2732-1
10 MIL DIA PIN	21-1/8	2752-1/2	2803		
	1.8749	1.8826	1.8740	1.8713	1.8692

1 7/8"	2785-3/8	2750-3/8			
	2760-1/2	2751-1/2	2742-3/8	2736-3/8	2728-3/8
	2735-1	2756-1	2747-1 1/2	2740-1 1/2	2733-1 1/2
	1.8790	1.8823	1.8785	1.8812	1.8810

Top measured Avg = 3.5848

Bottom " " = 3.4653

SEP 1963

SEP 1963 — $P_u Be + \gamma$

	F				
Hv = 8		$\frac{10}{1000}$	ok	X	1050
Source [illegible]	ok	8"	0	30	10"
% F.S. Trip		80	OK	100	100 +
Ch 2 = ok				500K	

c. 15 Dia Cyl 94c

Sh 3 - 1⅞" SEP 9 1963

Purp Repeat of 94b

94c Level ∞ #1 = 15.200
#2 = 15.146

94d Moved top diph down ~ 60 mils

Measured Positive Period

Log N = 57.9 #1 = 15.17
BF_3 = 62.9 per ρ^d #2 = 15.118

e Level ∞ #1 = 15.140
#2 = 15.0885

Separation top = 3.5278"
Bottom = 3.5090" i.e. E 18.652 SE.662 S.667 NE650; N646
NW.658 W.664 SW 18.668 Avg 18.658"
Top Sep = E 3.533 E.5295E .524 NE.5335 W.525 SW.521 S.523
NW,528 N.534 avg 3.5278"

SEP 10 1963

INSTRUMENT CHECK

Time 8:05 AM PM Source M226 & H

	Channel F	A	B	C	E
Range	OK	10/1000	OPR	Response to Curtis pulse	1050
~~Source Dist~~	OK	10"	OK		9"
% F.S. Trip	OK	80		Amplitude	100+

C.A. 15" dia. cylinder Run 95
Sheet 3-1/8" Date SEP 10 1963 Time AM PM
Purpose Rossi α
see Jul. arrangement Pg 181

Log N = .00073
Chan A = 85 @ 100/100
Signal (servo) at 81.5

Selsyn #1 = 15.138
#2 = 15.128

INSTRUMENT CHECK

@12 = M-226 # 1

SEP 1 1963

F ✓

[illegible]	Width	10/1000	OPR	X	/	1050
[illegible]	OK	10"	OK	30	/	8"
% F.S. Trip	—	90	OK	100	/	100+

C... 15" dia. cylinder Run 96

Smear 3-1⅞" Date SEP 11 1963 Time AM PM

Purpose Rossi alpha (continuation of run 95)

#3 = 77.9 138

-1.2

log N = .00075

Chan A = 85 @ 10/100

Servo demand @ 81.5

Selsyn #1 = 15.135

#2 = 15.121

119

3.5206
+ .010 dingel
3.5306

Sawed top ± 9 mils
W 3.5135 N. 5222 NW. 5165 SW. 5105 S 5130 E 5258
NE. 5262 SE. 5202 Avg 3.5165

Measured Bottom Separation:
E 18.652 NE. 652 N. 648 W. 665 SW. 667 S. 6695
NW. 655 Avg 18.6582

Down Delays 0.000 ¢ 99.9845

15" dia cyl Run 97a
3-1⅞" 9-11-63 2:15 AM/PM

Critical Separations

a Measured Positive Period: CLEAN CRITICAL

Log N = 127.5 sec/ft #3 = -1.4 #1 = 15.159
5.02 ¢ #4 = +5.5 #2 = 15.1398

$\frac{\Delta e}{\Delta x} = 0.44¢$

b Level ∞ #3 = -19.2 #1 = 15.134
#4 = -10.9 #2 = 15.120

dupl

15.120 18.6582
+ .0155 15.1355
15.1355 3.5227" Bottom Separation
3.5185" Top Separation
Average = 3.5206"

97c Raised top diaphragm ≈ 50 mils or 3.568

Added Support Structures for Evaluation
(2 -10 mil diaph; 2 sets rings + 1 fuel support)

Level ∞ #1 = 15.075
#2 = 15.051

Bottom Separation = 3.592"

97d Raised top diaph ≈ 10 mils

Level ∞ #1 = 15.085
#2 = 15.0568

Down Selsyns Readings #1 = 0.003
#2 = 99.977

Top Measured Separation-

N	3.580	
W	.5685	15.0128
NW	.5725	.023
SW	.5648	15.0798
S	.5673	18.6582
E	.5803	15.0798
NE	.5810	3.5784 Bottom
SE	.5780	3.5732
Avg. = 3.5732 Top		2 | 7.1516
		3.5758" Separation with support S[illegible]

3 - 1 7/8" slabs

3.5752" with Sup. =
3.5206" Clear
0.0552" support structure width

3.536
- .0552
3.4754" Corrected separation

Structure

INSTRUMENT CHECK

SEP 12 196[illegible] Time 9:20 — Source PuBe + γ

	F		B		D	
HV = 8		10/1000	oper	x		1050 V.
Source Dist		OK		0	30	10"
% FS Tap			OK	100		100+

C.A. 15" Dia Cyl. Run 98

Sheet 3 - 2" Date SEP 12 1963 Time AM

Purpose Critical Separations.

Raised top diaphragm to
Extrapolated separation ~ 4.1"

a Level ∞ #1 = 14,135
#2 = 14,108

b Raised top diaphragm ~ 170 mils.

Level ∞ #1 = 14,295
#2 = 14,261

C 15" DIA CYLINDER Run 99

SE 2.190 S 3-2" 9-12 63

Rossi α

Top Separation

S. 4.2645 E .273 NW .259 W .257

SE .2688 NE .2711 N .2655 SW .257

Average = 4.2643

Measured bottom separation -

18.5205, .5215 .5215 .5227 .5226

.5225, .5230 .5232 .5231

Average = 18.5246

Level ∞

3 = +4,2 # 1 = 14,294

4 = -13,1 # 2 = # 14,2545

Log N = .0065

SEP 13 1963

INSTRUMENT CHECK

8:10 — S. $P_1 B_2 + \gamma$

Light Tables > OK

	F	1°			
HV = 8		1000	open	X	1050 V
Source Unit	OK	8"	0	30"	8"
8" F.S. Tilt		80	OK	100	100

$B B_3$ = OK

C.A. 15" Dia Cyl Expt. — Rec. 99 b

3-2" Date 9-13-63 Time —

Purpose Cont'd Rossi ∞

Level ∞ Log N = .00059

UDT # 3 = +3 Selsyn #1 = 14.290
4 = -15 # 2 = 14.2500

Chan A - 100/100 @ 85 Signal @ 81.5

SEP 16 19

INSTRUMENT CHECK

Time 8:10 AM — M-226 & h

	A	B	C	D	E	
F						
Temp	10 & 40	10/1000 ORK	X		1050	Tables + Light OK
Stress Bar	OK	10" OK	30"		8"	
% F.S. Trip		85 OK	100		100+	

REF = OK

C 15" dia. cylinder Run 100

S 3-2" Date SEP 16 1953 Time 9:30 AM

Purpose Critical separation determination

Removed Counters:

Measured top separation:

a E 4.2585 SE .2562 S .253 NE .256

N .2523 NW .2515 W .249 SW .250

Avg = ~~4.2533~~ 4.2533

VDT #3 = +6 #1 = 14.

#4 = -10 #2 = 14.2502

Sub crit.

100 # moved top diaph. down ~ 15 mils.

measured top separation

W 4.232 SW .235 S .238 NW .235

N .238 SE .241 E .243 NE .240

Average = 4.2377

t Level ~ UDT #3 = -1.6 Selsyn # 1 = 14.288
#4 = -18.4 #2 = 14.240 S

c measured negative Bend -

#1 = 14.264
Log N = 266 sec P^{rd} = 5.71 ¢ #2 = 14.220
BF3 = 263 sec pd = 5.8 ¢
5.75 ¢
$\frac{\Delta \rho}{\Delta x}$ = 0.31 ¢

Down Selsyn # 1 = 99.99 S
#2 = 99.964

14.240 S
.036
14.276 S

p. 189 18.5246
14.276 S
4.2481" Bottom Separation
4.2377 Top "
10.4 mils Diff

2 | 8.4858
4.2429" Separation (clean)
.0100 dispt
4.2529"

15" Dia Cyl. — 101a
3-2" — 11:05

Support Structure Evaluation

Moved top diaph. up ~ 60 mils
Support Structure in Place.
(2-10 mil diaph; 2 stiffening + 1 fuel support)

101a Measured top separation

E 4.3035 SE .3012 S .297 NE 3005
N .297 S .296 NW .296 SW .2953
Average = 4.2983"

Level ∞

#1 = 14.204
#2 = 14.164
+ .035
14.199

18.5246
− 14.199
4.3256"
4.2983
27.3 mils difference

101b Moved top diaph up ~ 15 mils
measured separation
E 4.319 SE .3165 S ~~.3112~~ .3125
NE .315 NW .309 W .306 SW .309
Average = 4.3122"

Level ∞

#1 = 14.220
#2 = 14.178

Lower Selayn #1 = 99.995"
#2 = 99.964

14.178
+ .036
14.214

18.5246
14.214
4.3106" Bottom
4.3122 Top
2 | 8.6228
4.3114" Separation
− 4.2429"
68.5 mils Support Structure width

4.2529
− .0685
4.1844" Corrected Separation

SEP 17 1963

P. 243 previous 195
11" @ 2-2½"

INSTRUMENT CHECK

Time 8 30 AM Source M-226 E

Front Slope Rev. = 1.939
Rear Slope Rev. = 0.886

	Channel F	A	B	C	D	E
Range	Hi Lo	10/1000	OPR	X		1050
Source Dist.	OK	10"	OK	30"	X	8"
% F.S. Trip		90	OK	100	X	100+

Cu. 11" dia cyl. Run 86
Shots 2-2½" Date SEP 17 1963 Time AM
Purpose Pressi L, Checking Small BF3 as triggering instrument

Fuel - Duplicate of p. 248 Book 1

Level ∞ (Shim in)

# 1 = 15.411
2 = 15.411 5

Measured down separation
18.006
- 15.402
2.584"

Down Selsyn #1 = 0.00
#2 = 0.009

Not enough trigger

87a

11" dia Cyl
2-2" 9-17-63
Same as p. 195

Fuel - Duplicate of p. 227 previous tk.
Slightly Sub
#3 = +5 #1 = 17.748
#4 = -12 2 = 17.732

b Blown and adjusted flange.
Level ∞
#3 = -11.5 #1 = 17.750
#4 = -9.7 #2 = 17.7345

Servo demand @ 60 A = 61 $\frac{109}{500}$
Log N = .0025

SEP 1 1960

INSTRUMENT CHECK

805 — M-226 #1

	F	A	B	C	D	E
Range	Hi & Lo	10/1000	OPR	X		105
Source Dist	OK	10"	OK	30"		8"
% F.S. Trip		85	OK	100		100+

BF3 OK — Table OK - Area Cleared

Det. 11" dia cylinder — Room 88

Src. 2-2" — Date SEP 1 1960 — Time 8 35

Purpose: Rossi α with a small BF3 trigger detector. Fuel same as p. 227 prev. book

8:35

Log N = .0014

Chan A = 100/200 @ ~~84~~ Servo Signal @ 81.5 .740 .710

VDT #3 = -21 ✓ VDT #4 = -19.4 ✓ Delays #1 = 17.741 #2 = 17.719

SEP 19 1963 8^{10} = M-2216 & 8

F

SEP 1963 Wi & ho	10/1000	OPR	X		1050	Table OK
OK	12"	OK	30	X	8°	Area check
OK	85	OK	100		1007	JJS

BF_3 - OK

11" dia. cylinder 89

2-2" SEP 1963 8^{20} =

Purpose Rossi α (con't of run 88)

log N = .00145 Chan A = 100/100 @ 83

Servo signal @ 81.5

VDT # 3 = -20.0 ✓

#4 = -20.2 ✓

Selsyn #1 = 17.74 ✓

#2 = 17.707

INSTRUMENT CHECK

10^{45} = M226 ϕ-t.

		V			
	Hi & Lo	10/1000 OPR	X	1050	Tables OK
	OK	10" OK 30"		8"	Area Cleared
	OK	80 OK 100		100+	JJS

BF3 - OK

Comm 02.005
99.7 D

Run 11" dia cylinder Run 90

2-2" Date SEP 1963 Time 11⁰⁰

Purpose Rossi ϕ Same as Run 89 but using "fast" amplifiers

Log N = .0038 .0040

Chan A = 100/100 @ 84

Servo Signal = 81.5

VDT #3 = -19.5 -18.5

#4 = -20.0 -18.5

Selsyn #1 = 17.739 17.741

#2 = 17.703 17.712

Piggy Back

SEP 24 1963

11:10 — Pu Be + γ

Mihalczo
Lyon
Taylor

F — 10/1000 apr X — 1050 V — Tubbs - OK — Area cleared — J.J.L.

Source: HV=8 — 8" — 0 — 30 — 8" — 100 f

% F.S. Thr: OK — BF₃ - OK — 20 — OK — 100 — 100 f

C: 15" Dia Cyl — No. 102

She: 3-1½" — SEP 24 1963 — Time: 11:20 —

Purpose: Critical Separations of 3 - 1½" thick 15" dia slabs.

New diaphragm support that will allow closer separations.

102a Top separation set at ~ 1.7"
Down Delays #1 = .008 — #2 = 99.936
Level ∞ — #1 = 16.974
#2 = 16.900

Bottom measured @ 18.956

~~Bottom~~ Top Measured @ ● 1.625"

Avg. Separation 1.808"

102b. Top separation set @ 1.805"

Down Selsyn: #1 = 0.004
#2 = 99.942

Level ∞ #1 = 17.168
#2 = 17.093

C. 15" dia Cyl Run 103
SE 3 - 1½" Slots 9-24-63 1:45
Purp. Clean Critical

Fuel Shown
P. 208

a Measured Separations:

Top -	E 1.807	SE 1.798	NE ~~1.137~~ 1.800	S 1.800	N 1.800	NW 1.80
Bottom	18.952	18.957	18.937	18.955	18.932	18.929
Top	W 1.800	SW 1.800	Average 1.8006			Top
Bottom	18.932	18.939	18.9416			

Down Selsyn Readings: #1 = 0.0
#2 = 99.932

Measured Positive Period —

Log N = 59.4 sec 14.5 / 14.4 #1 = 17,180
BF3 = 59.93 / 14.45 #2 = 17,103

Level ∞ #1 = 17.160
#2 = 17.082

Clean Critical

17.083 + .068 = 17.151

18.9416 − 17.151 = 1.7906" Bottom Separation

1.7906
+ 1.8006
2 | 3.5912
1.7966" Average separation
.010 diaph.
1.8066

103 b Support Structures in place for evaluation.
(2 - 10 mil diaph; 2 sets of rings + 1 fuel support)

Down Selsyn #1 = 0.0
#2 = 99.932

Level ∞ #1 = 17.131
#2 = 17.053

Top fuel separation for support evaluation

E	1.855	NW	1.845
SE	.840	W	.843
NE	.854	SW	.839
N	.850	S	.837

Average 1.8454

Bottom Separation

17.053 + .058 = 17.111

18.9416 − 17.111 = 1.8306"

1.8454
1.8306
2 | 3.6760
1.838"
− 1.7966
41.4 mil for Supports

1.8066
− .0414
1.7652" Corrected SEPARATION

SEP 2

8:35 — Pu Be + γ

SE

F = 10/1000 0Ø2 × 1050 V.
Hv = 8 10" 0 30" 8
OK 80 OK 10.0 100+
BF3 = OK

Tables - OK
Area - cleared

J-J-L-

Det: 15" dia Cyl. Run: 104
Src: 3 - 1½" Dec: 9-25-63
Purpose: Rossi & measurements

105

Top Separation set @ 1.81"

Level ∞

#1 = 17.155
#2 = 17.095

Lewis & Burkhart

66

LogN = .00064
Chan A = 100/100 @ 84
Servo signal @ 81.5
BF3 Brown = 30000 @ 65

E1 = 17.154 ✓
0735
E2 = 17.0755

$1\frac{3}{8}$"

9.2" — M — 8 — SEP 1963

SEP 26 1963

F

Hv = 8 — 10 / 1000 Opr x — 1050 — Tables - ok

OK — 3" @ 30" — 9 — area cleared JJL

BF3 - OK — 8C OK 100 — 100+

15" Dia Cyl — Run 105

3 - $1\frac{3}{8}$" — SEP 26 1963

Critical Separation for Rossi α

Centers in place

105 a Top Separation set @ 1.4"

Down Subsyn #1 = .006 #2 = 99.932

Level ∞

#1 17.895

#2 17.768

Bottom Separation

@ 1.2517"

Bottom fuel down separations

E	19.091	N	19.071
SE	.098	NW	.062
S	.0975	S	.0785
NE	.077	SW	.085

Average = 19.0825"

206

Measurements taken [redacted] in Order to determine Close separations

Top Fuel Separations		Bolt Support Separations		
			Counter	Clockwise
E 1.935	N 1.933	S 2.692	.684	
SE .936	NW .932	E .791	.780	
S .936	W .934	N .696	.700	
NE .934	SW .931	W .808	.797	
Average = 1.934		Avg 2.745		

0.811 diff.

W	1.400	S	2.122	.139
NW	.406	E	.283	.275
SW	.397	N	.157	.166
NE	.400	W	.290	.275
E	.400	Average = 2.213		
SE	.397			
Average	1.400			

0.813 diff

1.934 — 2.745

1.400 — 2.213

0.534" — 0.532"

1054

15" dia cyl. Rec. 105 b

Size 2 - 1 3/8" Date 9-26-63

Rossi

Set top separation @ 1.325"

Level ∞ #1 = 17.785"

#2 = 17.696"

Log N = .00067

A = 85 100/100 BF_3 = 64 @ 30,000

Servo = 81.5"

17.696
.058
17.754

19.082"
17.754
~~2.285~~
1.328" Bottom Separation

1.3250
1.3285
2 | 2,6535
1.3267" average

15"-13" 13"-11" 11"-9" 9"-7" 7"

15" Dia. Cyl.

3 - 1½"

2886	2783	~~2746~~	~~2773~~	~~2769~~
2784	2750	2745	2738	2731
2787	2753			
#3058				
1.5081	1.5043	1.5075	1.5046	1.5065

1½"

2885	2782	2779	2775	2771
~~2761~~	~~2780~~	~~2744~~	~~2763~~	~~2768~~
~~2758~~	~~2791~~	2743	2829	2729
2785	2749	2742	2736	2728
2786	2752	#2803		
#21				
1.5083	1.5068	1.5023	1.5000	1.4977

1½"

2760	2751			
2735	2756	2748	2741	2734
1.5027	1.5050	1.5000	1.5003	1.5016

1½"

15" Dia Cyl

3 - 1⅜"

2760	2751			
2787	2753	2745	2738	2731
#3058				
1.3797 #20	1.3801	1.3750	1.3765	1.3797

1⅜"

~~2758~~	~~2781~~	2779	2775	2771
2885	2782	2743	2829	2729
2785	2749	2742	2736	2728
2786	2752	#2803		
#21				
1.3778	1.3791	1.3740	1.3734	1.3707

1⅜"

		~~2744~~	~~2763~~	~~2768~~
2784	2750	2778	2774	2770
2735	2756	2776	2762	2732
1.3713	1.3798	1.3802	1.3789	1.3796

1⅜"

2.1327

Avg

CHECK

8[30] AM — M-226 & H

✓

F	A	B	C	D	E
Rem Hi & Lo	10/1000 OPR	X			1050
Scram Dir	OK	12" OK	30"		8"
Sc F.S. Trip	-	80 OK	100		100+

BF_3 - OK

TABLES — OK
AREA CLEARED.
J.J. LYNN
J.R. TAYLOR
J. MIHALCZO

Run 15" dia. CYLINDER Run 106

3-1-3/8" DATE SEP 27 1963 TIME 8[50] AM

PURPOSE CLEAN CRITICAL SEPARATION

Down Selsyns
#1 = 0.002
#2 = 99.926

Top separation ~ 1.3"
Measured position period

lift

2.1	7
1.3	2
2	2
1.3	0
2	1
1.3	0
2	0

Log N = 73.5 sec p/d 12.45¢ #1 = 17.80
BF_3 = 78.3 sec p/d 11.8¢ #2 = 17.795
$\frac{\Delta\rho}{\rho}$ = 0.97¢ 12.12¢

Level ∞ #1 = 17.789
#2 = 17.697

Measured top fuel separation Avg. = 1.322
E 1.320 NE 1.320 SW 1.335 W 1.314

Bolt Support

	W	N	S	E
	2.198	2.068	2.057	2.201
	.188	.079	.073	.194

Avg = 2.1328

17.697
+ .074
17.771

19.0825
- 17.771
1.3115" Bottom Separation
Clean

1.3115" Bottom
1.3212" Top
2 | 2.6327
1.3163" Average Clearance
.010 diaph
1.3263"

106b Raised top fuel ~ 35 mils.

Support Structures in place for evaluation
(2 -10 mil diaph, 2 sets rings + 1 fuel support)

Level ∞

#1 = 17.742
#2 = 17.6525

Measured Bolt Supports Separations

W	2.227	.218
N	2.020	.084
S	2.083	.102
E	2.235	.227

Avg. = 2.1557
- 0.8116
1.3441" Top Separation

For This ~~Entire~~ Separations
Use Bolt Support Measurements
minus 0.8116

17.6525"
+ .071
17.7235

19.0825"
- 17.7235"
1.3590" Bottom Separation
1.3447
2 [2.7037
1.3518" Separation with Supports
- 1.3164
35.4 mils Support worth

1.3264"
.0352
* 1.2912" Corrected separation

C.A. 15" Dia Cyl ... 107
3-1¼" ... 9-27-63 ... 2:15
Purpose ... Critical Separations

Top separation set @ ≈ 0.9"

Level ∞ #1 = 18.43
#2 = 18.343

Measured down bottom separation
E 19.218 S 19.2240 N 2.197 W 19.1964
SE .2225 NE .2040 NW .1915 SW .2145
Average = 19.2085

Down Selsyn #1 = 0.0 #2 = 99.923

107b Lower Top ~ 15 mils
measured Belt Support Separation
N 1.535 W 1.683 S 1.5675 E 1.697
1.548 .671 .561 .6865
Average = 1.6186"
− 0.8116
0.8070" Top Separation

$\frac{\Delta P}{\Delta X}$ = 1.14#

Measured Static Period #1 = 18.431
Log N = 62.5 ave PQ = 13.95 / 13.50 / 13.729 #2 = 18.341
BF3 = 63.5

214

Clean Critical

107 c Level ∞ #1 = 18.418
#2 = 18.329

18.329	19.2085
.077	- 18.406
18.406	0.8025" Bottom
	0.807 Top
	2 | 1.6095
	0.8048" Average Clean.
	.010 diaph
	0.8148"

DO NOT USE

SEE P. 231

107 d Raised top diaphragm ~ 28 mils.

Support Structures in place for evaluation.
2-10 mil diaphs, 2 set g rings and 1 fuel support

Level ∞ #1 = 18.394
#2 = 18.301

Down Selsyn #1 = 0
#2 = 99.923

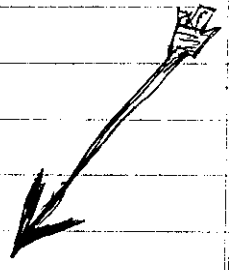
18.301	
.077	19.2085 -
18.378	-18.378
	0.8305" Bottom separation with supports

Measured Bolt Support Separations

S	E	W	N
1.5945	1.7246	1.696	1.574
.6115	.712	.7082	.564

Average = 1.6481

1.6481
−0.8116
0.8365" Top Separation
0.8305
2 | 1.6670
0.8335" Separation with supports
−0.8048
29.7 mils support worth



0.8148 ✓ DO NOT USE
−.0297
0.7851" Corrected separation SEE P. 231

15"-13"	13"-11"	11"-9"	9"-7"	7"	
2760	2751	2745	2738	2731	1"
2787	2753				¼"
# 3058					
1.2596	1.2596	1.2547	1.2562	1.2580	

1¼"

2885	2782	~~2744~~	~~2763~~	~~2768~~	⅛"
2785	2749	2743	2829	2729	⅜"
2786	2752	2742	2736	2728	⅜" ¼"
#21		# 2843			⅛"
1.2564	1.2577	1.2553	1.2533	1.2532	

1¼"

~~2886~~	~~2783~~ ~~2896~~	2748	2789	2770	¼"
2735	2756	2776	2762	2732	1"
1.2528	1.2527	1.2543	1.2524	1.2529	

1¼"

216

M-226 + δ

8:15 —

SEP 30 1965

J. MIHALCZO
JJ. LYNN
J.R. TAYLOR

F 10/1000 opr X 10/1000 1050 Table Light
HV=8 10" 0 30" 5" 8" OK
OK 88 OK ~~100~~ 80 100+ cleared area.

BF_3 - OK

C.A. 15" dia. cylinders Run 108
3 - 1¼" Date SEP 30 1965 Time 10 55 AM
Purpose Rossi Alpha
Fuel Arrangement Pg 215

LOG N = .00078

Selsyn #1 = 18.424 ~~398~~
#2 = 18.379 ~~398~~

SERVO ON CHANNEL A. SIGNAL = 81.5
MONITOR B5 100000 @ 17.5
CHANNEL A 100/100 @ 84
CHANNEL D 100/100 @ 46

1 1/8"

15" dia Cyl Run 109

3-1/8" Date 9-30-1963 Time 3:45

Critical Separations for 2 - 1 1/8" thick, 15" dia slabs.

Set top separation @ 0.42"

Sub Critical #1 = 19.002
#2 = 18.897
#3 = +3

Bottom Separation ≈ 0.35"

109b Lowered top diaphragm 30 mils. Separation 0.39"

Sub Critical #1 19.004
#2 18.8998
#3 3.0

Bottom Separation ≈ 0.35

OCT 1 1963

INSTRUMENT CHECK

Source M-228 + γ

T 8:20 —

Channel

	F	A	B	C	D	E	
	Hv = 8	10/7000	Opr	X	10/1000	1050 V-	Tables OK Area Cleared
	OK	10"	0	30"	3"	8"	
% F.C. Trip	BF3 = OK	80	OK	100	80	100+	

C. 15" Dia Cylr. Run 110

S 3 - 1⅛" Date 10 - 1 - 63 Time 8:45 ~~PM~~ AM

Purpose Critical Separation Cont'd.

Lowered top diaph. 30 mils.
separation now 0.36"

Bottom measurements, table down.

E 19.360 S .3655 N .3322 W .3332

SE .3635 NE .3388 NW .3275 SW .3305

Average = 19.347

Down Selsyn readings #1 = 0.004
#2 = 99.904

Level : ∞ #1 = 19.056
#2 = 18.938
#3 = - 18.5

Bottom Separation = 0.313"

15" dia cyls ____ 111

3-1⅛" 10-1-1968 10:00

Roosa D

Counters in place. Top Separation

Lowered top diaph. 2.5 mils 0.33⅝"

Level ∞

#1 = 19.03

#2 = 18.909

#3 = −6.2

Measured Bolt Support Separations

S	E	N	W
0.988	1.130	1.029	1.138
1.005	1.122	1.045	1.133

Average = 1.0752

− 0.8116

.2636" Top fuel separation

18.909
.095
19.004

19.347
19.004
.343" bottom separation

.343
.2636
2 | .6064
.3034

111 Raised top diaph 3.9 mils @ .3026"

Level ∞ 10:55 AM

#1 = 19.07 ✓

#2 = 18.951

#3 = + 4.9

Log N = .0006

Ch A = 84 @ 100/110

D = 79 @ 100/50

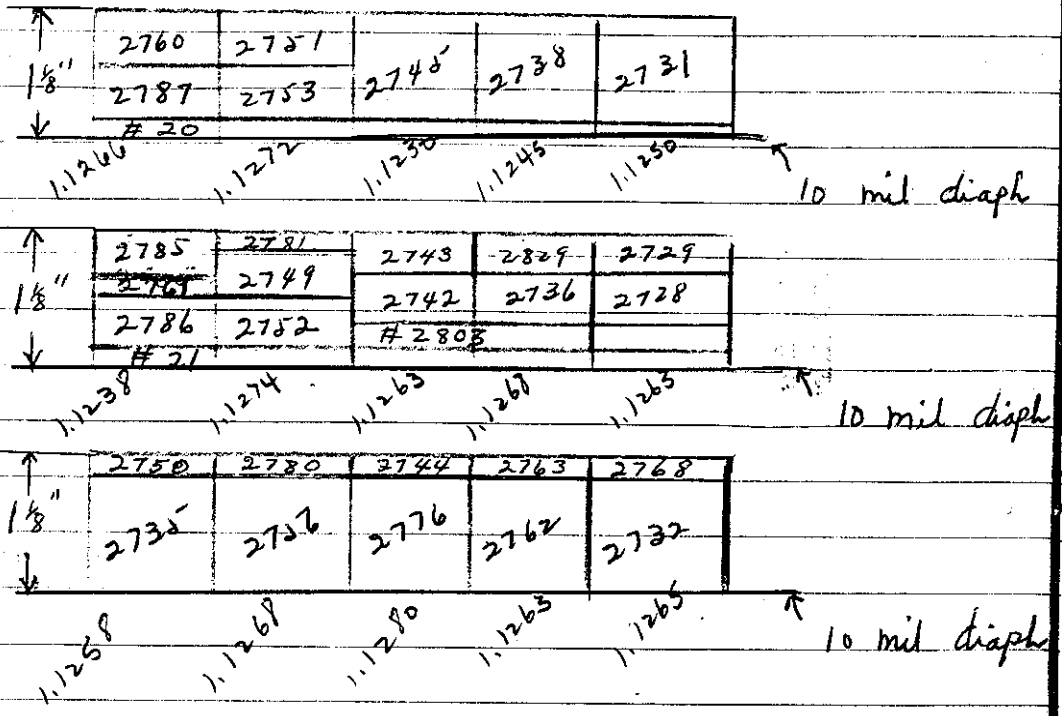
18.951
.094
19.045

19.347
19.043
.304" bottom

15"-13" 13"-11" 11"-9" 9"-7" 7"

15" dia. cyl.

3 - 1⅛"



C.A. 15" dia Cyl Expr. Run 112
Sta 3-1⅛" Date 10-1-1963 Time AM PM
Purpose Clean Critical Separation

aph

Do Not Use

Measured Bolt Separations.

W	N	E	S
1.198	1.061	1.162	1.002
1.184	1.075	1.153	1.020

disph

Average = 1.1068

Down Selsyn #1 = 0.002 #2 = 99.804

Measured positive period -

#1 = 19.074

Log N =

#2 = 18.952

BF_3 =

#3 = +3.8

Level ∞

#1 = 19.062

~~18.952~~

#2 = 18.939

.096

#3 = -7.0

18.939

.096

19.035

19.347

19.035

.312" Bottom

1.1068
.8116
~~.2952~~
.2952" Top

DoNoT Use

222

OCT 2 1963

INSTRUMENT CHECK

Time 8:25 AM

Source DJ-2264 X

Channel

F	A	B	C	D	E
HV = 8	10/1000 cps		X	10/1000	1050
OK	8"	C	36"	4"	8"
% F.S. Trip 13 F_3 = OK	85	OK	100	85	100+

Light - OK
Tables - OK
Area Cleared
JJL

Src. 16" dia Cyl Cor. Run. 113

Size 3-1⅛" Date OCT 2 1963 Time 8:34 AM

Purpose Clean Critical Separation

Do Not Use

Measured Bolt Support Separations

W	N	E	S
1.180	1.068	1.168	1.024
.170	.080	.160	.040

Average = 1.1033

− 0.8116

.2917

Down sel sys

Level ∞

#1 = 0.004
#2 = 99.896

#1 = 19.062
#2 = 18.941

0.8116
0.2510
.5606"

1.1033
0.5606
0.5427"

True Cal. top separation

Error in Separation Calculation of 3-1¼" and 1⅛"

18.944
.104
19.045

19.347
.045
0.302"

.5427
.302
2 | .8447 | 0.4224

B.

15" dia eye
—3-1⅛"

Run 114
10-2-63 12:20 PM

Clean Critical Separation

Top Fuel measured directly :

W 2.370s N .378 S .376s E .38s—
NW .370s SW .370 SE .380s NE .377s

AVERAGE = 2.3761"

Bolt Support Measurements —

E 3.059s W 3.025 N 2.8502 S. 2.841
.047 .0092 .8685 .861

Average = 2.9452"
— 2.3761
0.5691" Correction factor
for this separation

Bottom fuel measurements —

E 19.379 SE 19.382 SW 19.3637 NW 19.3572
NE .376 S .377s .35J-8 .364

AVERAGE = 19.370s"

Measured positive period #1 = 18.986
#2 = 18.964s—

Log N = 56.1 per pd
BF_3 =

Bottom

224

114 f Level ∞ #1 = 18.974
#2 = 18.953

Bolt Support measurement

S	E	W	N
0.8810	1.1015	1.077	0.890
.900	1.103	1.065	0.908

AVERAGE = 0.9907
-0.5691
0.4216" Top Fuel Separation

Down Sel Syn #1 = 0.000
#2 = 99.995

18.953 + .005 = 18.958

19.3705 - 18.958 = .4125" Bottom Fuel Separation

C./. 15" dia Cyl. Run 115
3-1⅛" Date 10-29 67 Time 1:00 AM/PM
Pwr Rossi L

Top Sep. = .4216 uncorrected
Bott. Sep. = .4290 "

Level ∞ #1 = 18.964
#2 = 18.941

Log N = .00070
Ch "A" = 100/100 @ 84
"D" = 100/100 @ 49
BF_3 = 30000 @ 57

Started Counting 1:16 PM

OCT 3 1963

OCT

OCT 3 1963

8:15 AM

M-226 # 8

F

HV=800

OK

$\frac{10}{1000}$ opr x $\frac{10}{1000}$ 1650V

10" 0 30" 4" 8"

80 OK 100 80 100+

Light - OK
Tables - OK
Area Cleared
JGL

BF3 = OK

C. 15" dia cylinder Run 115 b

Sh. 3-1⅛" OCT 3 1963 Tim. 8:30 AM

Run Rossin & Continued

Down Selsyn #1 = 0.005 #2 = 99.996

Level ∞ #1 = 18.964 (60)

Log r = .00060 #2 = 18.940 (39)

Ch "A" = 100/100 @84

"D" = 100/50 @82

BF_3 = 30000@56

PM

C. 15" dia Cyl Run 116

Str. 3 - 1 1/8" Date 10-3-63 12:30 PM

Purp. Clean Critical Separation

Fuel p-220

Bolt Support Measurements -

N	S	W	E
0.895	0.870	1.071	1.105
0.900	.890	1.054	1.093
.880	.867	1.070	1.105
.900	.888	1.055	1.088

AVERAGE = 0.9832"

Down Selsyn #1 = 0.003

#2 = ~~99.999~~

99.999

- 0.5691

0.4141" Top Separation

a measured positive period - #1 = 18.964

#2 = 18.939

Log N =

BF_3 = 54.1 Sec pd

Level ∞ #1 = 18.951

#2 = 18.926

Measured Neg period - #1 = 18.943

#2 = 18.9189

Plexiglas Shim up

Don't use

[redacted]

1.3

117a Measured positive period — #1 = 18.972
#2 = 18.9435

Log N = 137.9 sec pd = 7.5
BF3 = 139.8 " = 7.56

7.53

Level ∞ #1 = 18.964
#2 = 18.9362

Measured Negative period #1 = 18.954
#2 = 18.9254

Log N = 127.6 sec pd = 15.7
BF3 = 129.8 " 15.1

15.4

Down Selsyn #1 = 0.00
#2 = 99.992

Bottom down Separation

E 19.368 S 19.373 W 19.357 N 19.3585
SE .375 SW .360 NW .3525 NE .365

Average = 19.3634
- 18.9442
.4192" Bottom Separation

18.9362
.008
18.9442

.4141
2 | .8333
.4167 Average Fuel Separation

118 Support Structures in place for evaluation.
2 - 10 mil diaph, 2 sets rings + 1 support structure -

Top Bolt support Measurements -

N	W	E	S
0.906	1.090	1.126	0.887
.924	1.025	1.118	.906

Average = 1.004
- 0.5691 Top
.4349 Fuel Separation

Level ∞

#1 = 18.941
#2 = 18.9132

Down #1 = 0.0
#2 = 99.991

18.9132
.009
18.9222

19.3634
18.9222
.4412" Bottom Separation
.4349
2 | .8761
.4381 Average

.4381
.4167
21.4 Supports

0.4167 clear
.0214
.3953
+ .010 diaph
0.4053 Corrected SEPARATION

*

3 - 1¼"

M-226 & 8

8:45 —

Light - OK
Tables - OK

10-4-63

F — $\frac{10}{1000}$ opr X $\frac{10}{1000}$ 1050V.

HV = 800 — 8" 0 30 4" 8"

OK — 80 OK 100 90 100+

BF_3 - OK

15" dia cyl — 119

3 - 1¼" — 10-4-63 — 8:55 —

Critical Separations

Duplicated Fuel p. 215

Set top separation @ 0.8456 (measured)

Level ∞ — #1. = 18.370

#2 = 18.349

Bottom Fuel measurement

E 19.242 S 19.244 W 19.235 N 19.231

SE .246 SW .233 NW .223 NE .232

Avg = 19.2358 *

18.352

.8838 Bottom Fuel

.8456 Top

2 1.7294

.8647 Avg -

18.349
.003
18.352

8647
8452
19.1 mils Raise Top.

Top Fuel Measurements — (direct)

W	2.1920	N	2.1900	E	2.1880
SW	.1955	NE	.1920	S	.193
NW	.1960	SE	.1940		

Average = 2.1926"

Support Ears

S	2.7740	E	2.9845	W	2.9910	N	2.7875
	.7890		.9685		9760		.806

Average = 2.8846

− 2.1926

0.6920" difference

120a Raised top diagh 19.2 mils.

Support Ears —

N	1.603	W	1.514	E	1.589	S	1.520
	.584		1536		.572		.537

Average = 1.5568"

− 0.692

0.8648" Top Fuel Separation

Measured positive period —

Log ν = 85.4 cps 11.1 #1 = 18.398

BF_3 = 87.3 " 10.9 #2 = 18.373

11

b Level ∞ #1 = 18.385

#2 = 18.3625

Using #1 $\frac{\Delta e}{\Delta h} = 1.58^{\pm}$ $+ 18.373$ $- 18.351$ 22

120 C Measured Negative period

log N = 163.9 sec pd 10.6 $^{\pm}$ 10.5 $^{-}$ #1 = 18.378

Δf_3 = 165 #2 = 18.351

$\Delta v = 10.5$

Down Selsyn #1 = 0.003

#2 = 99.989

18.3625 19.2358

.011 .3735

18.3735 0.8623" Bottom Fuel Separation

$\frac{\Delta e}{\Delta h} = 0.934^{\pm}$

.8648 Top

.8623 Bottom

2 ⟌ 1.7271 | 0.8635" Average *

.010 diph Clear

0.8735

121 Raised top diaph ~ 27 mils

Support Structures in place for evaluation

2 10 mil diphs, 2 setscrews + 1 support stud.

Support Ears measured —

S	E	W	N
1.548	1.617	1.636	1.540
.564	.597	.611	.563

Average = 1.5838

18.3325 19.2358

.009 18.3415

18.3415 0.8943" Bottom Separation

0.692

.8918 Top Fuel Separation

Level ∞ #1 = 18.358

Down Selsyn #1 = 0.00 #2 = 18.3325

#2 = 99.991 Avg = 0.8931"

0.8931" with supports
.8635" Chan
29.6 mils support worth

0.8635 Chan
.010 diaph
0.8735"

0.8735
- .0296
0.8439" Corrected Separation

15" dia Aft Run 122

Shoot Date 10-4-63 Time

Purpose Passes 2

poration

Support Ears

S 1.578 E 1.601 W 1.613 N 1.519
.546 .583 .592 .542

AVERAGE = 1.5656
0.692
0.8636" Top Fuel Separation

Level ∞

#1 = 18.390
#2 = 18.363

Log N = .00064
Ch A = 85 @ 100/100
D = 49 @ 100/100
Bh3 =

Down Selsyn #1 = 0.00
#2 = 99.989

18.363
.010
18.373

19.2358
18.3735
0.8623" Bottom Fuel
.8636
2)1.7319
0.866" Average for Pass 2

234

OCT 2 1963

INSTRUMENT CHECK

T. 8 45 AM PM Date M26 # 1

J. MIHALCZO
J. LYNN
d. TAYLOR

	F	A	B	C	D	E ✓	
Scr. Hi & Lo		10/1000	OPR	X	10/1000	1050V	TABLES - OK
Source Dist.		10"	OK	30"	5"	8"	LIGHT - OK
% F.S. Trip	OK	85	OK	100	85	100+	CLEARED AREA

BF_3 OK

C.A. 11" dia. CYLINDER Run 91

~~Stack~~ 2-2" Date OCT 2 1963 Time 10 45 AM ~~PM~~

Purpose ROSSI α USING BF_3 AS "TRIGGER"

FUEL ARRANGMENT SAME AS ☐ 227 OF BOOK #1

SEPARATION ≈ 0.85" min cor.

BF_3 & SFC ARE IN THE SPACING.

LOG N: .00122

CHAN. A: 100/200 @ 84

CHAN. D: 100/200 @ 38

BF_3 MONT.: 100000 @ 43

SERVO DEMAND: 81.5 on CHAN. A.

START COUNTING @ 12⁰⁰ AM

END COUNTING @ 2³⁰ AM

VDT #3: -23.0

#4: NOT ON

SELSYN #1: 16.732 (29)

#2: 16.698 (93)

OCT 9 1953

Time 8⁰⁵ AM Source M226 d f

	F	Channel A	B	C	D	E
Range: Hi & Lo		10/1000	OPR	X	10/1000	1050V
	OK	10"	OK	20"	5"	8"
	OK	85	OK	100	85	100+
	BF₃ - OK					

TABLES OK
LIGHTS OK
AREA CLEARED JJL

CA 11" dia. cy/Ender Run 92
2-2½" Date OCT 9 1953 Time 9²⁷ AM
Purpose Ross: ALPHA SCIN. "TRIGGER"
FUEL ARRANGEMENT SAME AS
Pg 248 OF BOOK #1
SEP. ≈ 2.62" incor.

SCIN. ON TOP OF DIAPHRAGM AT EDGE OF FUEL
2 SFC's IN THE SPACING.

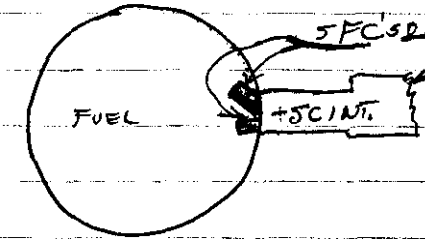
Down Sct #1 - 00.002
#2 = 99.974

Log N = .00066 (64)
CHAN. A = 10/100 @ 84
CHAN. D = 100/100 @ 58
BF₃ MONT. = 30000 @ 64
SERVO DEMAND TO CHAN. A = 81.5
START COUNTING = 9²⁷ AM

VDT #3 = NOT ON
#4 = NOT ON
SELSYN #1 = 16.612 (605)
#2 = 16.567 (538)

11" dia. CYLINDER Run 93
2-2½ OCT 9 1963 225
Rossi Alpha
SFC's placed differently
than run 92

SCIN. AND SFC VERY NEAR EACH OTHER



Log N = .00066
Chan A = 100/100 @ 84
Chan D = 100/100 @ 58
BF_3 Mont = 30000 @ 67

Delays #1 = 16.6 10 11
#2 = 16.56 13 5

13" Dia Cyl

OCT 10 1963

OCT 10 1963

INSTRUMENT CHECK

Time 8:18 Source M-226 9 8

Tables-OK
Light-OK
Area Cleared

	Channel A	B	C	D	E	F
HV = 800	~~1000~~ 10	~~0~~	X	10/1000	1050V.	
OK	10"	0	30"	5"	12"	
F.S. Trip	80	OK	100	80	100	f

BF_3 = OK

13" Dia Cyl Run 94

Source Solid Date OCT 10 1963 Time

Purpose Cont'd Run 93

Log N = .00066 62

Ch A = 100/100 @ 84

D = 100/100 @ 58

BF_3 = 30,000 @

Selayn #1 = 16,610 09

#2 = 16,547 39

13" Diameter Cylinder — Solid — Run 1 — 1:00 PM

Critical Thickness

Loading = $3\frac{3}{16}$"

Run 1 — $1\frac{11}{16}$" on Diaphragm
$1\frac{1}{2}$" on Ram

Up Positions
#1 = 20.498
#2 = 20.426
#3 = +2.5
#4 = +1.5

Super Critical — #1 = 20.204
#2 = 20.139

Run 2 Removed $\frac{1}{16}$" from 9-11 & 11-13 rings.

Super Critical — #1 = 20.231
#2 = 20.170

Run

Run 3 — Height = $3\frac{1}{8}$"

Sub Critical — #1 = 20.495
#2 = 20.431
#3 = 0
#4 = -1

Run 4 — added = $\frac{1}{16}$" to 7-9 & 9-11 rings

Sub Critical — up Some —

C. 13" Expt. Run 5

Solid

Purpose: Clean Critical

H =

1½" on Ram
1 1/16 on 7" center dia → on diaphragm
1 5/16 on 7" → 13" rings

2
98
26

measured negative period -

Log N = 197.6 sec fed 8.11⁻⁴ up. positions
BF_3 = 189 sec fed. 8.61⁻ same

Run 6 Added Lower Fuel Support for evaluation

Measured Positive Period up Positions same

Log N = 228 sec = 25.95⁻⁴
BF_3 = 24.3 sec = 25.05⁻ + 26.8⁻⁴
8.4
32.9

Modified Values

240

7 Added 10 mil diaph in place for evaluation (Inked)

Do Not use measured pos. period.

Log N = 181 sec up Same
$B^{12}F_3$ = 178.9 sec

8 Added 10 mil diaph in place for evaluation (Normal)

Measured Pos Period — up - Same

Log N 76.8 sec pd 11.82¢
$B^{12}F_3$ 81.3 " " 11.30¢

9. Added diaph support rings ~~supports~~ up Same

Measured Positive Period —

Log N = 67.3 Sec pd 13.0¢ up Same
BF = 68.3 Sec 12.86¢
.13¢

2782	2779	2775	2736
2749	2778	2774	
	2744	2773	2765
2757	2743	2829	2729
	2742	2736	2728
	# 2803		

10 mil depth

2751			
2756	2741	2740	2733

13 - 11 11 - 9 9 - 7 7" dia

INSTRUMENT CHECK

OCT 1 1 1965

8:20 —

M-226 # 8

Light Table arm Clear

F

Hv = 800	$\frac{10}{1000}$	open	X	$\frac{10}{1000}$	1050 ✓
Source OFF 0K	10	0	36	5	12
% F.S. Trip BF_3 = 0K	82	0K	102	85	100 +

C 13" Dia Cyl

S Solid

Pu Resin

H = 3.14"

1½" on Ram

$1\frac{11}{16}$ on 7" Dia } on Diaphragm

$1\frac{5}{8}$ on 7-9 ; 9-11 & 11-13 rings

Level ∞

Log N = .00063

Ch A = $\frac{100}{200}$ @ 49

D = $\frac{100}{100}$ @ 61

BF_3 = 30000 @ 74

SERVO NOT USED

Selsyn #1 = 20.496 ✓

#2 = 20.424 .421

VDT #3 = 0.0 ✓

#4 = -0.8 ✓

9" Dia Cyl

c. 9" Dia Cyl Run 1
Solid Date ____ 19__ Time 2:15 PM

Critical Thickness.

H = 3 7/8"

2" on Ram
1 7/8" on Diaph

Super Critical #1 = 19.77
#2 = 19.661

2 Reduced fuel 1/16"

3 13/16 Sub Critical #1 = 19.996
#2 = 19.933
#3 = +1.0
#4 = -0.5

3 Added 1/16" fuel to 7-9 Ring

Sub Crit

4 Reduced 7-9 Ring 1/16"
Added 1/16" to 7" disc

Super Crit @ #1 = 19.73

5 Fuel - $3\frac{13}{16}$" on 7" disc
- $3\frac{1}{16}$" on 7-9 Ring

Slight Sub Crit

#1 = 19.996
#2 = 19.661
#3 = +1.2
#4 = -0.9

OCT 14 1963

10-14-63

INSTRUMENT CHECK

Time 8:20 AM PM Source M-226 E 8

	Channel F	A	B	C	D	
Range HV=800		10/1000	opr	x	10/1000	1050 V
Source Dist OK		8"	0	36	4"	10"
Fe F.S. Trip BF=OK		85	OK	100	90	100 +

Tables - OK
Light - OK
Area Cleared
JJL

CA 9" Dia Cyl Run 6
Shape Solid Date OCT 14 1963 Time AM
Purpose Clean Critical.

HH = Same as p. 244

Measured Negative period

Log N = 669	sec pd	#1 =	19.998
BF$_3$ = 769	" "	2 =	19.936
Ch A = 725	" "	3 =	+1.1
D = 745	" "	4 =	−0.3

4 | 7.70
−1.857

Run 7 Diaph support rings in place for evaluation.

measured Negative period #1 =
2 =
Log N = 2380 sec pd = -0.54[4] 3 = Lower
BF$_3$ = 2650 sec pd = 0.49[4] 4 =
Dog = 2610 sec pd [illegible] avg = -0.51[4]

Run 8 Diaph support rings + lower support stand.
Measure Pos. Period

Log N = +32.6 sec +21.[illegible][4] avg = +21.30[4]
BF$_3$ 31.5 sec 21.2[4]

Run #9 Diaph support rings + lower support stand + extra diaphragm.
Measure positive period

Log N = +220 sec [illegible] avg = +5.03[4]
BF$_3$ = +219 sec [illegible]

Up positions same.

$= (\pi) = 3\frac{15}{16} + (D.) = 3\frac{13}{16}$

3.81" +

~~2773-1/8~~ 2774-1/4	2770 - 1/4
2737 9/16	2730 - 9/16
2738-1	2731 - 1

2763-1/8	2768-1/8
2736 3/8	2728 - 3/8
2740-1 1/2	2733 - 1 1/2

INSTRUMENT CHECK

Time _____ Key _____ Source _____

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

Cf. 9" dia. CYLINDER SOLID Run 10

~~Cf.~~ Solid Date OCT 14 19 63 Time 10 30 AM ~~PM~~

Purpose Rossi Alpha

Using 1/16" lexa fuel on top 9-7* ring only. that on the claxret. unit.

Log N = .00063
Chan A = 100/100 @ 84
Chan D = 100/100 @ 57
BF3 MONT = —

VDT # 3 = +1.9
4 = +0.2
Selsyn #1 = 19.996
2 = 19.922

* Top 9-7 Ring

2775-1/4
2774 1/4
2829-3/8
2738-1

J. MIHALCZO
J. LYNN
J. TAYLOR

INSTRUMENT CHECK

Time 9^00 AM Source M-226 E X

	F	✓ A	B	C	D	
Range	HV 800	1%/1000	OPR	X	1%/1000	1050V
Source Det.	OK	8"	0	30"	3"	8"
% F.S. TRIP	BF3 OK	85	OK	100	85	100+

Tabbed OK
Lights OK
Area Cleared

9" dia. CYLINDER SOLID Run 11
SOLID Date OCT 24 1963 Time 1110 AM PM
Rossi X
Fuel same as pg 248 Run 10

∞ Log N = .000055
Chan A = 100/100 @ 84
Chan D = 100/100 @ 53
Servo demand = 81.5

VDT #3 = + 2.8 ✓
#4 = + 2.1 ✓
Delays #1 = 19.995
#2 = 19.916

OCT 25 1963

INSTRUMENT CHECK

8^{20} = M-226 & Y

Channel

F					*
Hi & Lo	10/1000	OPR	X	10/1000	
OK	8"	0	36"	5"	
% Pwr TV	80	OK	100	80	

OK
DF = OK

C 9" DIA. CYL. = SOLID Run 12

= SOLID Date OCT 25 1963 Time AM PM

Purpose Rossi α

Same fuel as Run 11

* Easy high voltage problem repaired and checked out – OK.

∞ LogN = .00062
Chan A : 100/100 @ 85
Chan D : 100/100 @ 52
Servo Demand 81.5

VDT #3 = +1.2 (−5.0)
#4 = 0.0 (−6.0)
Delayn #1 = 19.998 (940)
#2 = 19.926 (943)

252

INSTRUMENT CHECK

OCT 2[illegible] 1966 — 1100 — M-226 & 8

J. Milhacco
J. Lynn
J. Taylor

F

HV=800 — $\frac{10}{1000}$ opr X $\frac{10}{1000}$ 1050

OK — 12" 0 30" 4" 8

75 OK 100 85 100+

BF_3 OK

Tables OK
Light OK
Area Cloud

Run

13" - 7"

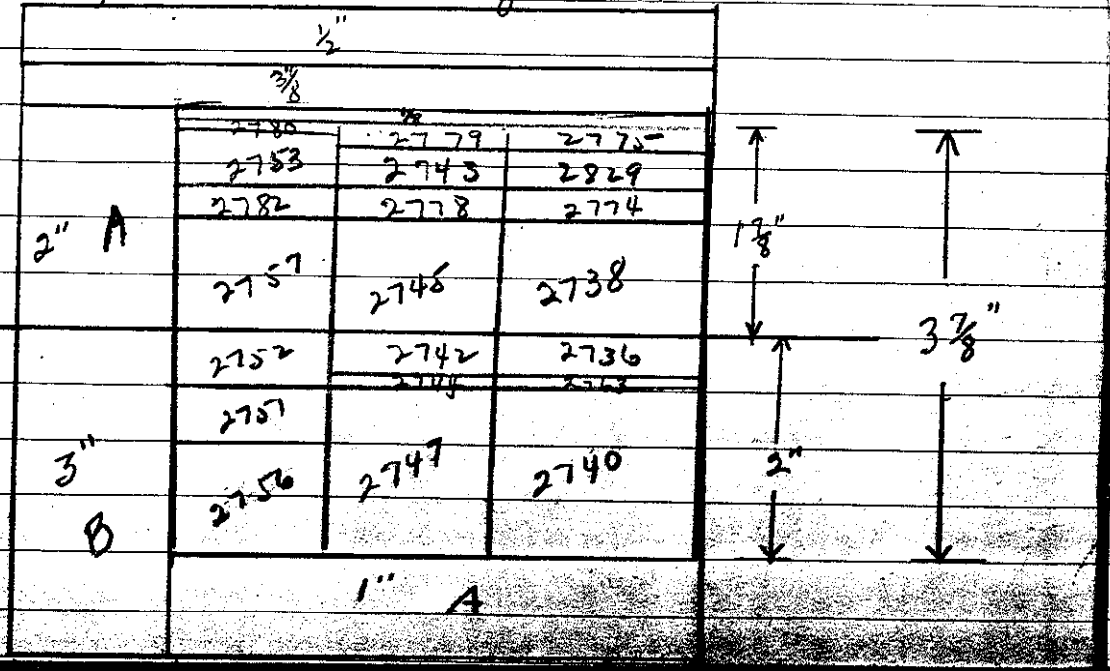
1" C Reflector — 19 — Time AM PM

Purpose: Repeat of Exp p. 100-101 of previous Book

Measured positive period — Clean Critical

Log N = 182.4 sec pd = 5.9¢ = +5.94¢

BF_3 = 179.3 sec pd = 5.98¢



Run 71 10 mil diaphragm in place for evaluation -

Measured Negative period

Log N = 131.9 sec pd = - 14.75 — 14.91 ¢
BF_3 = 130.3 " " = - 15.07

Diaph = -20.85 ¢

72 Diaph and Support Rings in place.

Measured Negative period =

Log N = 169 sec pd = -10.07 — 10.46 ¢
BF_3 = 160.3 sec pd = -10.86

Supports Rings = + 4.45 ¢

73 Support, Diaph + Rings in place

Measured positive period —

Log N = 121.6 sec pd 8.27 ¢ + 8.24
BF_3 = 122.5 8.21 ¢

Fuel Support = +18.7 ¢
(Heavy)
30"

254

OCT 29 1963

INSTRUMENT CHECK

JM
JLL
JRT

9 4/0 — M-226 ℓ & Tables OK light OK Area Clear

Channel

	A	B	C	D	E
F					
Hi & Lo	1%/1000 OPR	X	1%/1000	1050V	
OK	10" OK	30"	5"	12"	
	80 OK	100	95	100+	

Pwr. Trip BF3 - OK

Run 74

Date OCT 29 1963 Time AM PM

Purpose

Critical Condition

H = 3 13/16"

Super Critical #1 = 20.77

75 H = 3 3/4" ; 1"Refl + C Core

Sub Critical

Clean Critical

76 $H = 3\frac{13}{16}$" ; 1" C Reflector & C Core

OK
OK
Clear

Measured Positive Period - ?

Log N = 9.59 sec pd. = ~~40.58~~ 39.7 ¢

77 10 mil diaph in place for evaluation.

Measured Positive Period -

Log N = 17.2 sec pd - 30.18
BF_3 = 17.3 sec pd - 30.09 = 30.14 ¢ EXCESS

78 Reduced Top Reflector to $\frac{15}{16}$" [$\frac{9}{16} + \frac{3}{8}$]

Measured Negative period -

Log N = 105.8 23.15 ¢ = -23.65 ¢
BF_3 = 104.2 24.15 ¢ =
$\frac{1}{16}$" C on Top = 53.79 ¢

79 Diaph and Support Rings in place

Measured Negative period -

Log N = 108.5 sec pd 21.78 -22.43 ¢
BF_3 = 106 sec pd 23.07

Support Rings = +1.22 ¢

80 10 mil drop; ~~support rings~~ + Fuel Support in place.

Measured Positive Period —

Log N = 520 sec pd = 2.30 + 2.31 ¢
BF_3 = ~~514~~ 515 sec pd = 2.32

Fuel Support + = +24.74 ¢

10 mil drop (Run 78 US 11) = -20.41 ¢

81 H = $3\frac{13}{16}$"; C Core and 1" C Reflector except for Top = $\frac{15}{16}$"

Clean Critical —

Measured ~~Positive~~ Negative Period —

Log N = 456 sec pd = 3.053
BF_3 = 428 sec pd = 3.305 = -3.18 ¢

3/4"	3/8			
	9/16			
	2782	2778	2774	1/4
2" A	2755	2767	2737	C 3/16
	2757	2745	2738	Core 1" 1 13/16"

Bottom 2" Same as p. 252 except C Core added (2" x 7" dia)

82. H = 3 3/4", C Core and 1" C Reflector except for top = 1 1/16" [9/16 + 1/2]

Sub Critical

83 Added 1/32" to top Reflector [9/16 + 17/32] (1 3/32")

Measured Negative Period

Log N = 110.2 Sec pd — -21.0
$B f_z$ = 108.8 Sec pd — -21.60 -21.3 ¢

258

OCT 30 19[illegible]

INSTRUMENT CHECK

Time 1:45 ~~AM~~ PM Source M-226 ¢ x

JJL
JRT

Channel	F	A	B	C	D	E
Level	Nielo	1%00	OPR	X	10/4000	1050V
Source Pos.	OK	10"	0	30"	3"	10"
% Rel. Pow.	OK	75	OK	100	98	100+

BF_3 OK

Tables OK
Light OK
Area Cleared

Run 13" - 7" Expt. ____ Run 84
1" C Refl
C core Date OCT 30 1958 Time ____ ~~AM~~ PM
Remarks Critical Condition

Wp positions
#3 = +5.5
#4 = -2.1
1 = 21,003
2 = 20,950

Run 84 Loading Same as Rum 76 except 9"-7" fuel ring which is now 3 3/4".

Measured Positive Period —

Log N = 143.3 sec pd = +7.22 ¢ +7.26 ¢
BF_3 = 141.7 sec pd +7.30 ¢

85 Diaph. Support Rings in place for evaluation —

measured positive period —

Log N = 81.8 sec pd = 11.26 ¢ +11.24 ¢
BF_3 = 82.1 sec pd = 11.22 ¢

Support Rings = 3.98 ¢

86 Diaph Support Rings and 10 mil diaph in place for evaluation –

Measured Negative Period –

Log N = 318.1 sec pd = 4.57 ℄
BF$_3$ = 341.3 " = 4.22 ℄ – 4.4 ℄

Diaphragm = –15.64 ℄

87 Diaph Support Rings, 10 mil diaph and fuel support stud in place for evaluation

Measured Positive Period –

Log N = 74.2 sec pd = + 12.108 + 12.23 ℄
BF$_3$ = 72.1 sec pd = + 12.36

Fuel Support Studs = 16.63 ℄

1/16" Fuel Thickness Values/Ring.

9" – 7" = 36.32 ℄
11" – 9" = 39.27 ℄
13" – 11" = 26.80 ℄

1/16" = 102.39 ℄

OCT 31 1963

Tables OK
Lights OK
Area Cleared

JJLynn
JRTaylor

Core 13"-7" Rod Run 88
1"C Refl.
+ C Core Date OCT 31 1963 Time 9:15 AM
Purpose Critical Condition

88 Loading Same as Run 76, except fuel ring 11"-9" is now 3¾".

Measured Positive Period —

Log N = 262.7 sec pd = +4.29 +4.31 ±
BF₃ = 259.6 " = +4.33

89 Loading Same as Run 76, except 13"-11" ring is now 3¾".

Measured Positive Period —

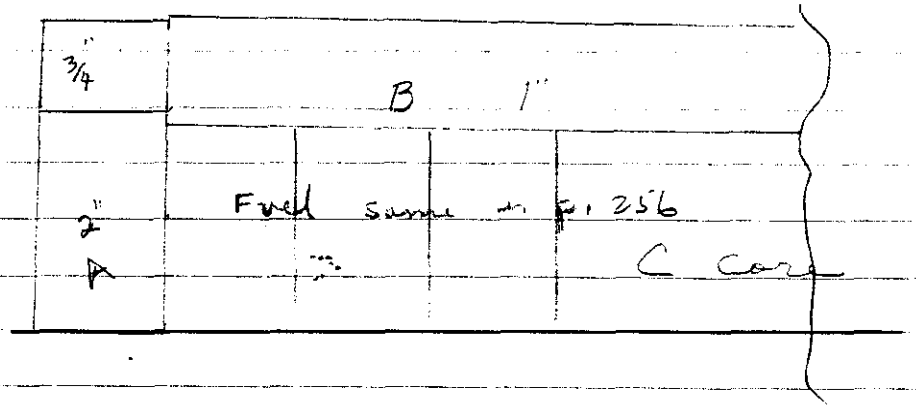
Log N = 46.3 sec pd = 16.85 +16.78
BF₃ = 46.9 " = 16.71

90 H = $3\frac{13}{16}$"; 1" C Reflector & C core.

Measured positive period

red

Log N = 8.1 sec pd = ~~43.38~~ 42.9 ¢



91 ~~Reduced~~ top Reflector $\frac{1}{16}$". $\left[\frac{9}{16} + \frac{3}{8}\right]$ $\left(\frac{15}{16}"\right)$

Measured Negative Period

1¢

~~Log~~ N = 371.3 sec pd 3.83 ¢ — 3.78 ¢

BF_3 = 380.9 " 3.73 ¢

$\frac{1}{16}$" C on Top = ~~47.36~~ 46.68 ¢

Same as p. 256

8

NOV 1963

J. MIHALCZO
J. LYNN
J. TAYLOR

15" - 9" Expr. Run 10

1" C Reflector NOV 1963

Critical Condition

INSTRUMENT CHECK

Time 8 25 AM Source M-226 & Ra

Charged ✓

	F	A	B	C	D	E
Scaler	Hi & ho	10/100	OPR	X	10/100	1050V
Source Drum	1"	12"	0	40"	3"	10"
BF3 Tube	BF3 OK	85	OK	100	95	100+

Tables OK
Lights OK
Area Cleared

Loading — 1 7/8" on diagh
2" on Ram + 1" C Refl.

Sub Critical

11 Added 1/16" fuel to 13" - 11" & 11" - 9" Rings.

Sub Critical.

Clean Critical

12 Loading — 15"-13" & 13"-11" Ring = 4"
1" C Refl. 11"-9" " = 3 15/16"

Measured Positive Period —

Log N = 32.6 sec pd = 21.07 + 20.95 =
BF = 33.2 " = 20.84
Excess

	1" X 15" B			
3" B (17-15)	2758 2780 / 2787	2753	2767	void 4"
	2784	2749	2743	
	2739	2757	2745	
3" A (17-15)	2786 / 2760	2752 / 2751	2744 / 2742	void
	2735	2756	2747	
	1" X 15" A			
	(15-13)	(13-11)	(11-9)	

10 mil diapl

13 10 mil diaph in place for evaluation —

measured positive period —

Log N = 825 sec pd = 1.47 ¢
BF$_3$ = 727 sec pd = 1.67 ¢ + 1.57 ¢

10 mil diaph = - 19.38 ¢

14. 10 mil diaph and Support Rings in place.

Measured positive period —

Log N = 157.3 sec pd = 6.72 ℄
BF_3 = 154.4 sec pd = 6.79 ℄ + 6.76 ℄

Support Rings = 5.19 ℄

15. 10 mil diaph and Lower Fuel Support in place

Measured positive period —

Log N = 42.9 sec pd = 17.72 ℄
BF_3 = 41.7 sec pd = 18.05 ℄ + 17.89 ℄

Support Stand = 16.32 ℄

15" - 9"
1" C Reflector
C Core

Run 16
Time

Purpose

Critical Condition

Loading - 15"-13" & 13"-11" Rings = $3\frac{15}{16}$"
1" C Refl 11"-9" Ring = $3\frac{7}{8}$"
C Core

Super Critical #1 = 20.75

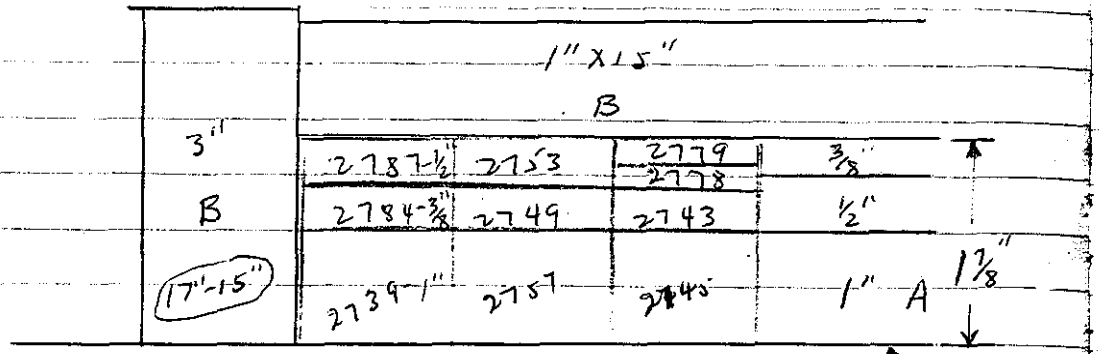
17 Loading - 15" - 13" Ring - $3\frac{15}{16}$"
1" C Refl 13" - 11" & 11" - 9" Ring = $3\frac{7}{8}$"
C Core

Super Critical #1 = 20.77

18 Loading - H = $3\frac{7}{8}$" Clean Critical
1" C Refl
C Core

Measured Positive Period -

Log N = 30.8 Sec pd = 21.813$^{\#}$ + 21.73$^{\#}$ Excess
BF_3 = 31.2 Sec pd = 21.64$^{\#}$



Bottom Same as p. 263 except C Core 2" x 9" added.

19 10 mil diaph evaluation

Measured Positive Period -

log N = 141.1 sec pd = 7.32 ¢ + 7.31 ¢
BF_3 = 142.0 sec pd = 7.30 ¢

10 mil diaph = -14.42 ¢

20 10 mil diaph and Support Rings in place

Measured Positive Period -

Log N = 74.1 sec pd = 12.12 + 12.11 ¢
BF_3 = 74.2 sec pd = 12.10

Supports Rings = 4.8 ¢

21 10 mil diagh 2nd Fuel Support in place –

Measured Positive Period –

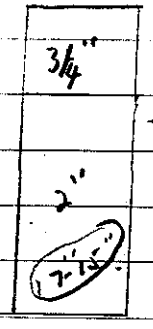
$\log N$ = 28.0 sec pd 23.083 = + 22.484

BF_3 = 28.4 sec pd = 22.892 =

Support Stand = 10.87 ¢

value probably too low because support stand was ⅛" above Top See p. 266.

22. The 3" B (17"-15") replaced with 2" (17"-15") + ¾" (17"-15").



Compare to Run 19.

Measured Negative Period –

Log N = 604 sec pd = - 2.25 — 2.02 ¢

BF_3 = 752 sec pd = - 1.78

23. 10 mil diagh ¢ Fuel Support in place –

¢ When ready to move tables up, there was no light indication for Tank 3. assumed bad light, started to move tables up, when reaching a height of about 4", lost high pressure & magnet current.

apparently float switch hanged in No Contact Position

24. Repeat of Run 22. Some Fuel Realignment

Negative Period –

Log N = 749 sec pd = -1.79 = -1.65 ¢
BF3 = 848 sec pd = -1.57

25. Repeat of Run 23.

Measured Positive Period –

Log N = 56.0 sec 14.81 ¢ + 1.19 ¢
BF3 = 52.1 sec 15.52 ¢

Support Stand = +16.87 ¢

INSTRUMENT CHECK

NOV 4 1963 — 10 25 AM — Sc M-226 #1

Cl

F — A — B — C — D

Hi & Lo — 10/1000 OPR X 10/1000 1050V

Source Det OK — 10" 0" 36" 4" 8"

Fuel Tan OK — 90 OK 100 75 100+

BF3 OK

15" - 7" — 11

1" C Refl NOV 4 1963

Form Critical Condition

H = 2 3/8"

11 Loading - 1" on Rom + 1" C Reflector
1 3/8" on Wisph

Sub Critical — # 1 = 21,880
2 = 21,827
3 = + .875
4 = + 3.5

11b add 1/8" fuel. (2½")

Sub Critical

11c added ⅛" fuel (2⅝")

Sub critical

11d add 1/16 fuel (2 11/16)

Sub Critical

11e added ½" fuel (2 15/16")

Sub critical. Some multiplication

11f added 1/16" fuel (3")

Sub Critical

11g added 1/16" fuel & 11'-9" & 9'-7" Ring (3" +).

Neg Period. - log N = -93

BF_3 = -87

11h #4 = 3 1/16"

Super Critical #1 = 2073

NOV 5 1963

INSTRUMENT CHECK

NOV 1963

AM

Source M-226 # 8

Channel

	F	A ✓	B	C	D	E
Range	Hi & Lo	10/1000 OPR	X	10/1000	1050 V	
Source Dist	OK	10"	0"	30"	3"	8"
% F.S. Test	OK	80	OK	100	95	100+
	BF_3 OK					

C. 15" - 7" Exp Run 12

Shape 1" C Refl. NOV 5 1963 Time AM

Purpose Critical condition

H = 3 1/16"

VDT #3 = +7.5
#4 = +2.9
Sol #1 = 21.88
#2 = 21.824

12 Exchanged 2", 1½" + ¾" (17"-15") graphite for 1 pc 3" (17"-15").

measured positive period —

Log N = 7.8 sec pd. +43.49¢

12a Removed 1/16" foil from 9"-7" Ring

measured Positive Period —

Log N = +154.2 sec 6.80 +6.81¢
BF_3 = +153.7 sec 6.82
1/16 ring 9"-7" = 36.68¢

12b Relative to run 12 we removed 1/16" from 11"-9" ring.
Measure Negative Period
Log N = -258.4 5.83$^{\phi}$ — 5.91$^{\phi}$
BF_3 = -253.2 5.98$^{\phi}$
1/16 ring 11"-9" = 49.90$^{\phi}$

12c Relative to run 12 now remove 1/16" from 13"-11" ring.
Measure Negative period

Log N = -239.9 sec 6.385$^{\phi}$ — 6.41$^{\phi}$
BF_3 = -238.6 sec 6.429$^{\phi}$
1/16 ring 13"-11" = 49.90$^{\phi}$

12d Relative to run 12 now remove 1/16" from 15"-13" ring
measure Positive Period
Log N = +91.9 sec 10.32$^{\phi}$ + 10.36$^{\phi}$
BF_3 = +90.8 sec 10.40$^{\phi}$
1/16 ring 15"-13" = 33.13$^{\phi}$

Total = 107.11$^{\phi}$

g. 12e Evaluate diaphragm (12d vs 12e)
Measure Negative Period

Log N = -314.9 -4.62$^{\phi}$ -4.54$^{\phi}$
BF_3 = -325.2 -4.46$^{\phi}$

diaph. assy = -14.90$^{\phi}$

12f Evaluate rings (rings & diaph in place) (12e vs 12f)
Measure Negative Period

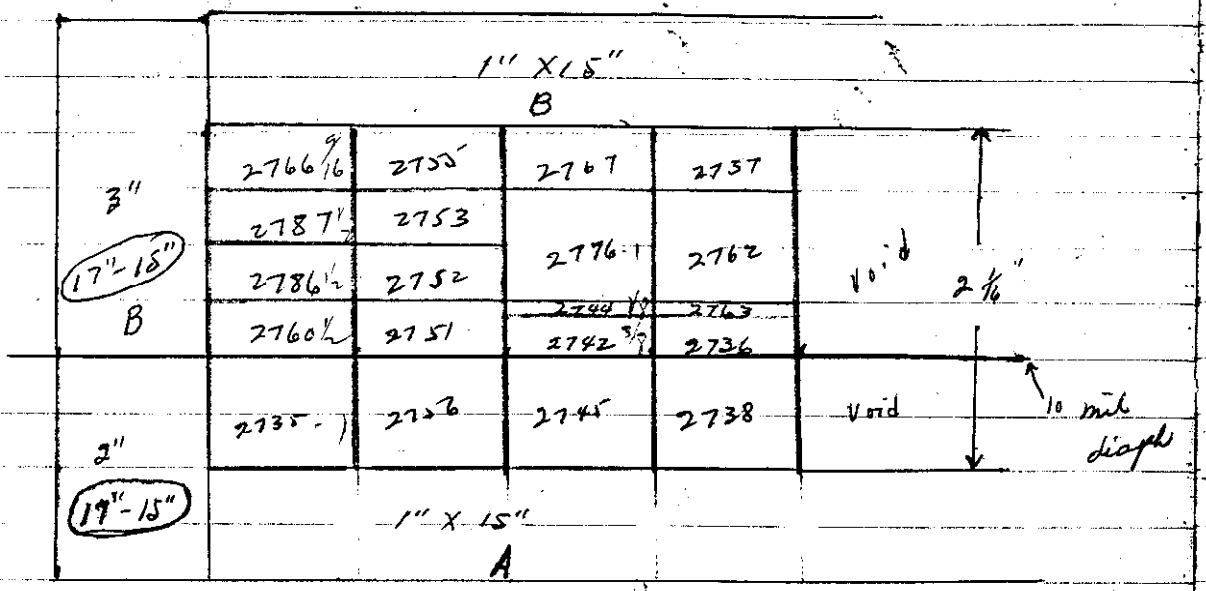
Log N = -1182 sec 1.12$^{\phi}$ -1.06$^{\phi}$
BF_3 = -1301 sec 1.01

rings +3.48$^{\phi}$

12g Evaluate support stand (~~rings~~, diaph & stand in place) (12e vs 12g)
Measure Positive period

Log N = +45.6 17,025$^{\phi}$ +16.94$^{\phi}$
BF_3 = +46.3 16,854$^{\phi}$

sup. stand = +21.48$^{\phi}$


1" X 15"
B
3"
17"-15"
B
2"
17"-15"
1" X 15"
A
2766 9/16
2750
2767
2737
2787 1/2
2753
2776-1
2762
2786 1/2
2752
2760 1/2
2751
2744 1/2
2763
2742 3/4
2736
2735-1
2756
2745
2738
Void
10'-0"
2 1/16"
10 mil
diaph
15-13
13-11
11-9
9-7

15"-7"
1" C Reflector
C Core 11-5-63 1:15 PM

13a

Critical Conditions

H = 3"

13a 1" on Rom + 1" Refl + C Core,
2" on Uioph

Sub Critical.

13b Added 1/16" fuel to 15"-13" ring

Sub critical

13c Added 1/16" fuel to 9"-7" ring + 1/16" C to Core.

Sub critical.

14d Loading - 3 1/16" fuel on 13"-11", 11"-9", & 9"-7"
3" fuel on 15"-13" ring, 3 1/16" C Core.

Measured Positive Period -

log N = 119.4 cps/d = 8.39 ¢
BF$_3$ = 112 " = 8.82 ¢ + 8.66 ¢
121
Excess

14e Evaluate diaphragm (14d vs 14e)

Measured negative Period

log N = 369 sec pd = -3.86 ¢
BF_3 = 376.5 sec pd = -3.78 ¢ = -3.82

diaphragm = -12.48 ¢

14f Evaluate Support Ring (Rings & diaph in place)

Measured negative period -

log N = 3680 sec pd = -0.35 ¢ -0.31 ¢
BF_3 = 4770 sec pd = -0.27 ¢

Rings = +3.51 ¢

14g Evaluate Support Stand (Stand & diaph in place)

Measured Positive Period -

log N = 38.8 sec pd 18.91 ¢ -18.86 ¢
BF_3 = 39.1 sec pd 18.81 ¢

Support Stand = +19.17 ¢

Graphite Core Bottom = 1" X 7"
Top = 1.5" X 7"
$\frac{9}{16}$" X 7"

Fuel p. 274

NOV 1963

INSTRUMENT CHECK

Time 8:10 AM Source M-228 ⊄ Y

	Channel F	A	B	C	D	E
Power	HV=800	10/1000	OPN	X	10/1000	1050 V.
Monitor Det.	OK	3	0	15"	0	12"
Hi F.S. Trip		80	OK	100	80	100 t

Conf. 15" - 9" Refl. Run 10

1" Reflector Date NOV - 6 1963 Time AM

Purpose: Critical condition.

H = 3 12/16"

10a 1" on Room
2 11/16" on diaph + 1" C Reflector

Sub Critical

#1 = 21.885"
2 = 21.8755"
3 = + 7.5"
4 = +5.5"

10B H = 3 15/16"

Sub critical

10c H = 4" 1" on Ram + 1" C Refl.
3" on Diaph

Super critical.

10d Removed $\frac{1}{16}$" fuel from 11"-9" Ring.

Measured Positive Period -

Log N = 14.9 sec pd = 32.45 ± Expect

10e H = $3\frac{15}{16}$" on 11"-9" & 15"-13" Rings
4" on 13"-11" Ring, C = 4"

* Measured Positive Period - Clean Critical

Log N = 2133 sec pd 0.585 ± 0.67 ±
BF = 1627 sec pd 0.765 ±

15"-13" Ring = 31.78 ±

10f Evaluation of Support Rings -

Measured Positive Period —

Log N = 168.8 sec pd = ± 6.30 ± + 6.25 ±
BF_3 = 172 sec pd ± 6.20 ±

Support Rings = ± 5.58 ±

10g Diaphragm Evaluation (Rings & Diaph in place)

Measured negative period –

Log N = 293 sec = -5.02 ¢
BF_3 = 301.7 sec -4.85 ¢ - 4.94 ¢

Diaph = -10.52 ¢

10h Support Stand Evaluation (Stand, Rings & Diaph. on)

Measured Positive Period –

Log N = 71.7 sec pd = +12.41 + 12.42 ¢
BF_3 = 71.6 sec pd = +12.43

Sup. Stand = +17.36 ¢

10i H = $3\frac{15}{16}$" on 13"-11" ¢
4" on 11"-9 ¢ 15"-13"

Measured Positive Period.

Log N = 18.6 sec 28.98 ¢ + 28.66 ¢
BF_3 = 18.4 sec 28.33 ¢

$\frac{1}{16}$ 13"-11" Ring = 43.28 ¢ ?

$\frac{1}{16}$ 11"-9" Ring = 39.49 ¢

$\frac{1}{16}$ 15"-13" Ring = 31.78 ¢

$\frac{1}{16}$" Fuel Layer = 114.55 ¢

280

10j $H = 4''$ $15'' - 13''$ Ring 9
$3\frac{15}{16}''$ $13'' - 11''$ & $11'' - 9''$ Ring
Diaphragm in place (-10.52)
Measured Positive Period

Log N = 17.37 sec pd = + 3006 [illegible]
BF_3 = 17.83 N = 29.22

1" (17"-15")	1" X 15" B			
3" (17"-15") B	2766 9/16	2749 3/8	2767 9/16	2746 (?) 1/8
	2758 1/8	2780 1/8	[illegible]	
	2785 5/8	2783 1/4	[illegible]	
	2848 1/2	2782 1/4	2778 1/4	
	2787 1/2	2754 1/2		
	2786 1/2	2753	2747 1/2	Void 4"
	2760 1/2	2752	[illegible]	
2" (17"-15")	2735	2751	2742 3/8	Void ↑ 10 mil depth
	1" X 15" A	2756	2745	

15-13 13-11 11-9

Run 10e

15" - 9" 11
1" C Reflector
C Core
Critical condition

11a H = 3 15/16" ; 1" C Refl ; C Core

Super Critical

11b Removed 1/16" fuel from 11" - 9" Ring.

Super critical

11c H = 3 7/8" ; 1" C Refl ; C Core

(*) measured Positive Period. Clean Critical

Log N = 31.8 sec + 21.39 ¢ +21.0 ¢
BF_3 = 33.8 sec + 20.61 ¢

11d Diaphragm Evaluation

Measured Positive Period —

Log N = 67.9 sec +12.91 ¢
BF_3 = 69.7 sec +12.67 ¢ +12.79

Diaph = -8.21 ¢

IIe Support Ring Evaluation (Diaph & Rings up)

Measured Positive Period –

Log N = 42.7 sec psd $-^{+}$ 17.77 ¢ + 17.73 ¢
BF_3 = 43.0 " $-^{+}$ 17.69 ¢

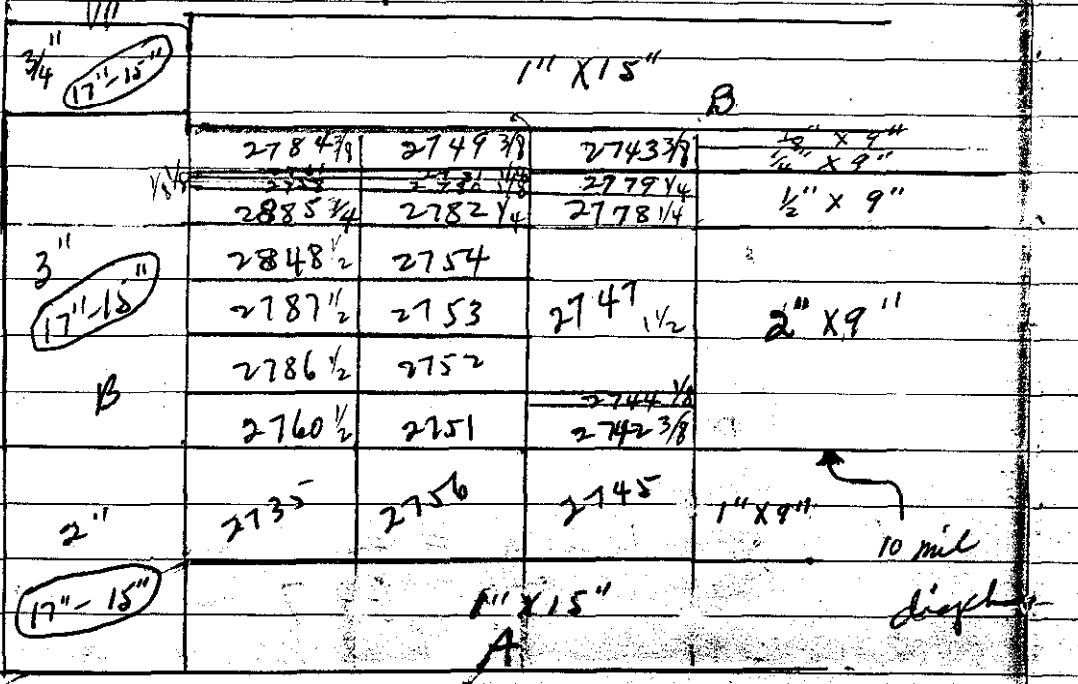
Support rings = 4.94 ¢

IIf Support Stand Evaluation (Diaph & Stand up)

Measured Positive Period –

Log N = 18.09 sec 29.42 ¢ + 29.3 ¢
BF_3 = 18.38 sec 29.18 ¢

Support Stand = 11.57 ¢



Run IIc

NOV 1963

INSTRUMENT CHECK

Date 11-0 AM Source M-388 ℄ Ra

	F	A	B	C	D	E	
				Channel			
Range	High	10/1000	OPR	X	10/1000	1050V	Tables ok Lights OR Area cleared
Source Dist.	OK	3" (50)	0"	12"	0" (23)	Y"	
B 55 Tube	OK	60	OK	100	60		
		BF_3 OK					

Conf. 11"-7" Run 36

Type 1" C Reflector-1963 Time 1:00

Purpose Critical Condition

36a H = 5½" ; 1" C Reflector

Sub critical

36b H = 6" ; 1" C Reflector

Sub critical

36c H = 6½" ; 1" C Reflector

Sub critical

36d Fuel = 7 1/16" ; Radial C 9/16" short at Top

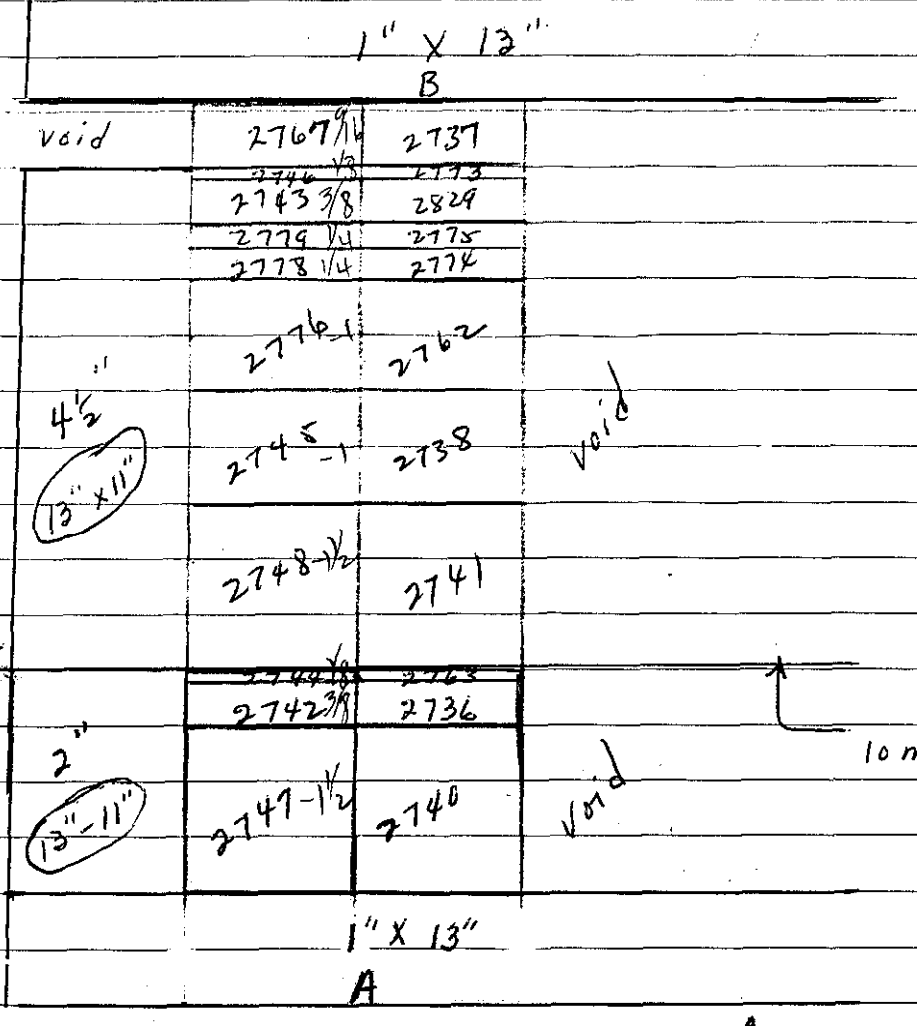
Positive Period Top + Bottom = 1" C

Log N = 81.1 Sec pd = 11.33 ℄

BF_3 = 82.1 Sec pd = 11.22 ℄

36e Fuel = 6 15/16" ; Radial C 7/16" Shut at top
1" C Tops + Bottom

Sub Critical



11"-17 37
1" C Refl
C Core
critical Condition

37a H = Same as 36e + C Core
Super critical #1 = 20.19

37b H = 6 9/16"; Radial C 1/16" short; C Core
Super critical #1 = 20.42

37c H = 6"; 1" C Refl; C Core
Sub critical

37d H = 6 1/4"; 1" C Refl; C Core
Super Crit #1 = 20.65

37e H = 6 1/8"; 1" C Refl; C Core
Super Crit #1 = 20.74

286

NOV 1963

12^{30} = Source M-228 & Ra

J. MIHALCZO
J.J. LYNN
J. R. TAYLOR

Rank	Hi & Lo	1/1000 OPR	X	1/1000	1050V	Tables-OK
Source Dist	OK	12" 0	8"	0"	10"	Lights-OK
% F.S. Trip	OK	60 OK	100	70 (25 set)	100+	Area Cleared 12^{10} PM
BF3 OK						

11"-7" Rod 37f
1" C Refl.
+ C Core Date NOV 1963 Time 12^{30} =
Critical Condition

37f H = 6 1/16" ; 1" C Refl ; C Core

Measured ~~Negative~~ Positive Period — CLEAN CRITICAL

Log N = 314.9 rec = -4.63 f — 4.45
BF_3 = 337.5 rec = -4.27 f

37g Support Ring Evaluation

Measured Positive Period —

Log N = 626 = +1.92 + 1.86
BF_3 = 670 +1.80

Support Rings = +6.31 f

37h Support Stand Evaluation (Rings Removed)
(37h vs 37f)

Measured Positive Period —

log N = 169 sec 6.29 + 5.23
BF_3 = 195 sec 5.57

12:10 PM

Support Stand = +10.28 ¢

37i Diaphragm Evaluation (Diaph + Sup Stand up)

Measured negative Period —

log N = 565 sec = -2.42 -2.32
BF_3 = 610 sec = -2.22

Diaphragm = -8.15 ¢

37j 11" x 9" Fuel Evaluation ($\frac{1}{16}$") (Diaph. up)
added $\frac{1}{16}$" fuel to 11-9 Ring
Measured Positive Period —

log N = 229 sec = +4.84 +4.76
BF_3 = 238 sec = +4.68

11" X9" Fuel Ring = 17.36 ¢

↑
GAIN By Adding Ring

37k Removed $\frac{1}{16}$" Fuel from 11"x9" Ring (Uraph up)
Added $\frac{1}{16}$" " to 9"x7" Ring.

Measured Positive Period —

Log N = 98.8 sec + 9.74 + 9.47 ¢
BF_3 = 106.8 sec + 9.18

9"x7" Ring − 11"x9" = 4.71 ¢

37l added $\frac{1}{16}$" C to Core. (Uraph up)

Measured Positive Period —

Log N = 37.5 sec = +19.32 ¢ + 19.18 ¢
BF_3 = 38.4 sec = +19.03 ¢

$\frac{1}{16}$" C to Core = 9.71 ¢

37m H = 6 $\frac{1}{8}$"; 1" C Refl; C Core (Uraph up)

Poo Per ~ 8.5 sec = 42 ¢
+ 8 ¢ diaph
50 ¢
+ 4.5 ¢ Run 37f
54.5 ¢

NOV 1963

INSTRUMENT CHEC

AM — Sc M-22Y & RA

Channel

	F	A	B	L	M	E
Type	Wicho	10/1000	OPR	X	10/1000	1050Y
Source	OK	15"	0"	20"	0"	12"
P.S. Trig	OK	50	OK	100	60	100+

BF_3 → OK

C.R. 11" – 7 Expr. ____ Run ~~3 4~~ AM

1" C Rupt

~~C~~ Core Date NOV 1963 Time ____ PM

Purpose # = 6 1/16 Run 37 f

~~1/2" x 13"~~

1/2" x 11"

Void 1/16"

4 1/2"

13" x 13"

2" 13" x 11"

2767 9/16	2737 - 9/16	9/16" x 7"
2776 - 1	2762 - 1	1 3/8" x 7"
2745 - 1	2738 - 1	1/2" x 7"
2748 - 1 1/2	2741 - 1 1/2	1" x 7" A
~~2744 1/2~~	~~2735 1/2~~	1 1/2" x 7"
2742 3/8	2736 3/8	
2747 - 1 1/2	2740 - 1 1/2	2" x 7"
1" x 13" A		

6 1/16"

10 mil diaph

Run 37 f

290

C. 13" x 9"
1" C Reflector
C Core
Run 20
NOV 1963
Time 10:10
Purpose Critical Condition

up Position
#1 = 20.882
#2 = 20.829
#3 = +7.0
#4 = +7.2

20a H = 5¼" ; 1" Reflector ; C Core.

Sub Critical.

20b H = 5½" ; 1" C Refl ; C Core

Sub Critical.

20c 6 1/16" ; 1" C Refl ; C Core

Sub Critical.

20d 6 1/8" = 11"x9" ring ; 1" C Refl ; C Core
6 1/16" = 13"x9" ring

20e 6 1/4" = 11"x9" ring ; 1" C Refl ; C Core
6 1/16" = 13"x11" ring

Measured Positive Period.

Log N = 16.5 sec = 30.8 ℓ

20f $6\frac{3}{16}$" on 11"x9" ; 1" C Reflector ; C Core ($6\frac{3}{16}$")
$6\frac{1}{16}$" on 13"x11"

Position

20.882
20.829
+7.0
+7.2

Measured Positive Period –

Log N = 66.0 sec = 13.18 ¢
BF_3 = 65.1 sec = 13.32 ¢ = +13.25 ¢

Reactivity loss caused by Removing $\frac{1}{16}$" from 11"x9" fuel and C Core = −17.51 ¢

↑ Value low because top Refl. moved down when fuel removed ($\frac{1}{16}$")

20g Diaphragm Evaluation

Measured Positive Period –

Log N = 207.4 sec = 5.28 ¢
BF_3 = 218.8 " = 5.04 ¢ = + 5.16 ¢

Diaph = −8.09 ¢

20h Ring Evaluation (Diaph. & Rings up)

Measured Positive Period –

Log N = 72.7 sec = 12.28 ¢
BF_3 = 72.9 sec = 12.26 ¢ = +12.27 ¢

Rings = +7.11 ¢

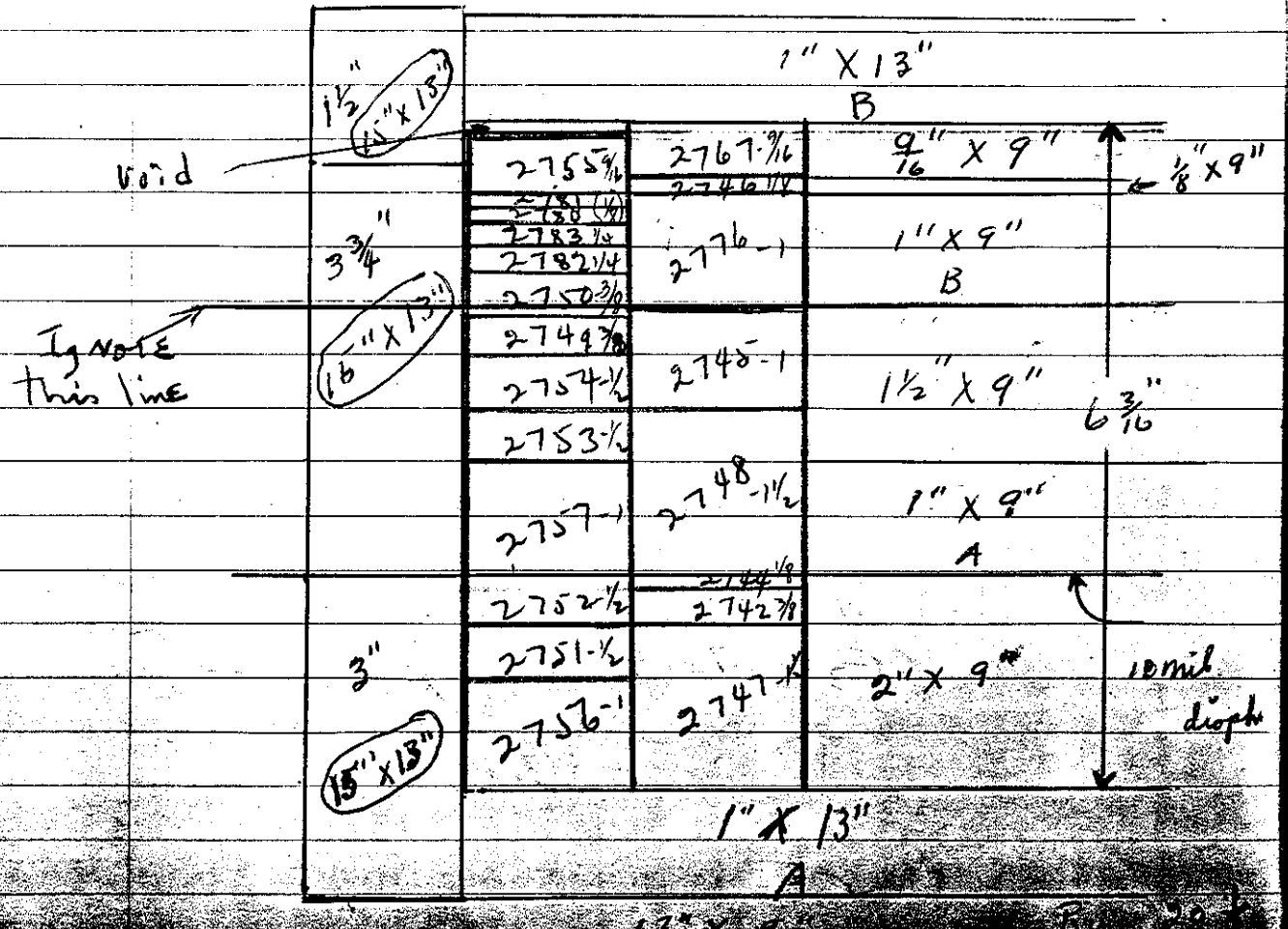
20i Lower Fuel Support Evaluation (Uniph ≠ Stand up)

Positive Period –

$\log N = 50.3 \cdot \text{sec} = 15.9\,\text{¢}$
$BF_3 = 51.9 \text{ sec} = 15.60\,\text{¢}$ + 15.77 ¢

Support Stand = 3.5 ¢

↑
Low value because of fuel ≠ Refl. condition



NOV 1 2 1960

INSTRUMENT CHECK

Time 8 15 AM PM Source M-228 & X

Chart F A B C D E

Rem.	Hi & Lo	10/1000	OPR	X	10/1000	1050 V	Tables OK
Source Dist.	OK	12"	0"	20"	0"	12"	Lights OK
F.S. Trip	OK	70	OK	100	60	100+	Area Chard

BF3 OK

C.A. 15" Solid Cylinder Run 19

Sheet Date NOV 1 2 1960 8 20 AM PM

Purpose Rossi α

Loading see p 113 Bk 1

H = 3" on 15" x 13" ; 9" x 7" & 7" disc

= 3 1/16" on 13" x 11" & 11" x 9"

up positions # 1 = 20.69

2 = 20.6161

3 = +4.5

4 = -3.0

NOV 13 1963

INSTRUMENT CHECK

Time 8 50 AM PM Source M-28 # 4

	Channels A	B	C	D	E	
Ranges	Hi & Lo	10/1000 OPR	X	19/1000	105K	Tables OK
Source Dist.		3"	0"	15"	0"	10"	Lights OK
% F.S. Trip	BF3=OK	70	OK	100	45	100+	Area Cleared 8 55 AM

C.n. 15" dia. cyl. Sonic Run 20

Sheet Date NOV 13 1963 Time AM PM

Purpose Clean Critical Condition

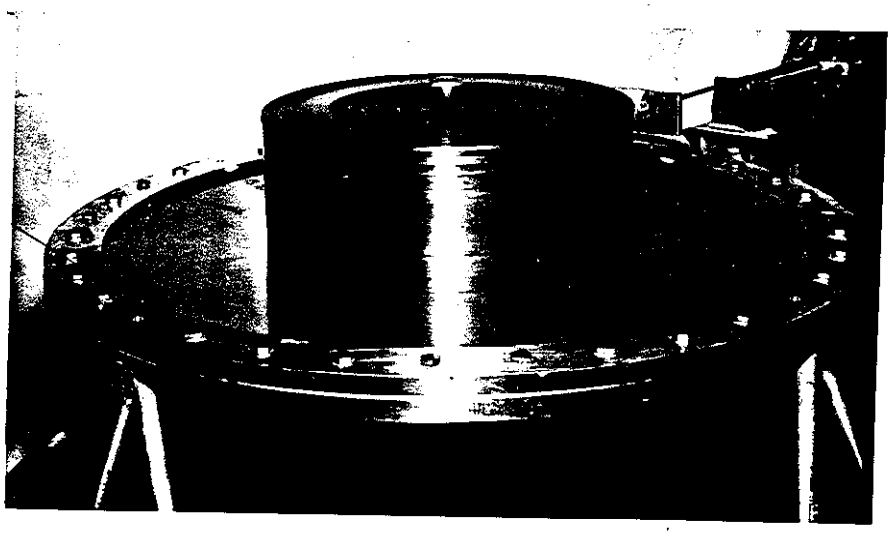
20 Loading : see p. 113 Bk 1.

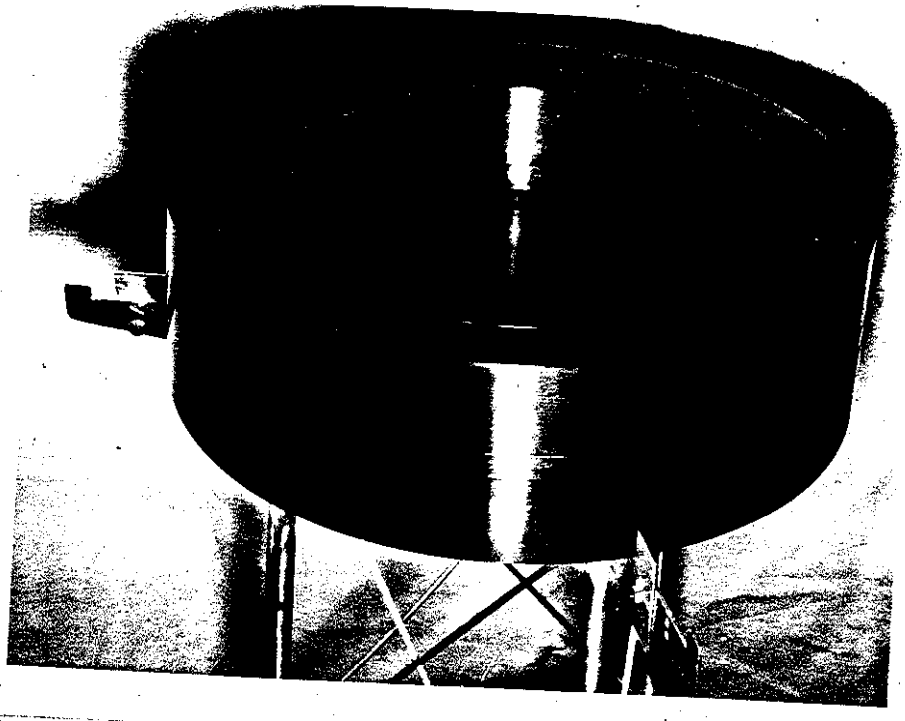
VDT #3 = +9.0 #4 = -3.0

Measured Negative Period — Sel #1 = 20.721 #2 = 20.663

Log N = 143.6 sec = -7.22 ¢

BF3 = 155.6 sec = -6.7 ¢ = -6.96 ¢





C21F44

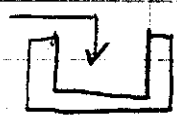
Bottom

THICKNESS OF BOTTOM RINGS

6471 g

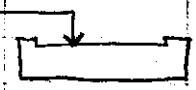
11-9 –

3.375 – .377	
3.374 – .375	1.994"
3.375 – .372	1.994
3.373 –	1.997
3.375 – .374	1.997



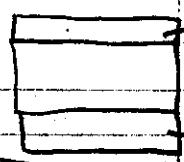
9-7

3.375 – 3.376	0.131
3.375 3.376	.132
3.374 3.376	.132
	.131



Fuel in Bottom of Hole

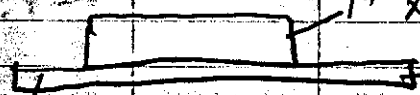
1.379	1.380
1.380	1.380
1.381	1.380



¼	2769
1"	2731
¼	2770

Top

3.9 – 2732



2403

1.250	1.251
1.249	1.249
? – 1.245	1.240
1.254	1.255
1.248	1.247

Top

11-9

3.945	3.945	1/8	7/8
3.945	3.945	1/8	3 1/8
3.945	3.946	1/4	3 3/8
3.947	3.947	1/4	3 3/8 +16
		3/8	3.825
		1/4 solid plt	584
		9/16	3.939
		1	
		1	

9-7

3.937	3.936		1/8
3.940	3.941	25 19 -4	1/8
~~3.94~~			1/4
3.937	3.938		1/4
3.944	3.942		3/8
3.941	3.937		1/4
			5/16
			1 1/2
			1 1/2
			1 1/4
			1.248

3.249
3.245
3.255
3.247