BOOK29R

Notes:
"EGS Plates #2" on spine

Blank pages: inside covers and opposite page 1, 1, 2, 149-294, 296-300, inside back covers

-2 (8.5x11) sheets paper-clipped to inside cover sheet (probably won't scan well)
-pages 43/44 and 83/84 have a paperclip clipped to the top
-page 60 small note clipped to it

Scanned by:
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August 5, 1999

10/22/63

BGS, RKR, EJ, WCT (part)

Future Program for Plates

With water space in center: (26 full elements + 2 4/8 elements on ends)

1. Move 2 center elements out from center 1 1/2 slots (repeat of our prelim).
2. Move 2 center elements out from center 5 1/2 slots (540 mil center gap)
3. Move 2 center elements out from center 10 1/2 slots (540 mil center)
4. Move 2 center elements out from center 1/2 slot (340 mil center)
5. Starting at the center, move each element 1/2 slot outward, each side of the core. This produces, again, a 340 mil gap in center but keeps uniform spacing of 140 mils on each side
6. Leaving 2 center elements, move all other elements outward 1/2 slot. This produces a 240 mil space on each side of the core (140 mil center), separated from the center by 1 element.
7. Move the 3rd element from center to between the 1st and 2nd.
8. Move the 6th element from center to between the 1st and 2nd.
9. Double perturbation: move the 5th element from center to between the 2nd and 3rd and the 8th to between the 1st and 2nd.

With fuel plate in center and water gap approx 1 in.:

Build base core.

Bring plates in toward gap. (The gap similates a control rod well.)

Must have all same material in core as spacers.

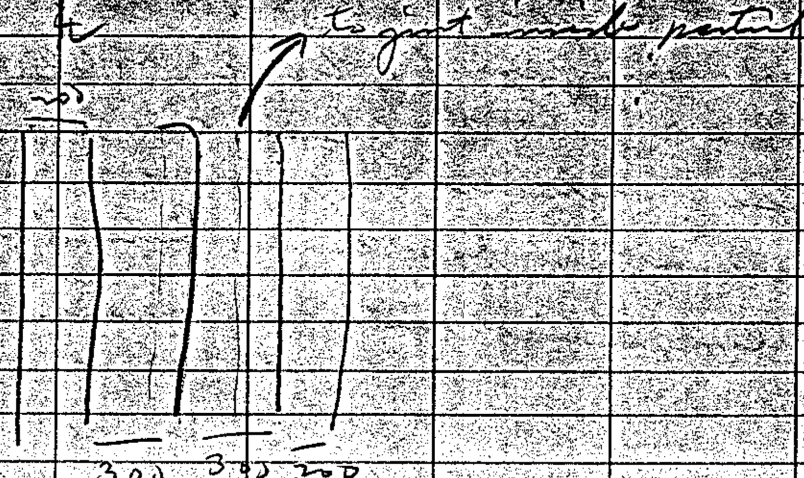
Calibrate as necessary.

3/12

H_2O center (omit 6 plates center)

Partials either full or half

Try
Remove 4 elements on each side of center
Replace with 3 at 300 mil contact



7/7/67

6 plate gap in center:

12 el each side but quite enough

4 plate gap:

12 el each side almost exactly.

5 plate gap:

~~(Probably 6 plate gap)~~

Base:

5 plate gap:

12½ el each side 1.14 in gap in center

Possibly 4 perturbations

4/11/64 EGS proposed addition to 1st set:

10. Working from ℄: leave 1st element. Effectively remove the 2nd & 3rd. Place an element in the center of the wide water space so produced. Put the remaining element at the outer boundary of the core by moving the portions out one space.

10/4/63

INSTRUMENT CHECK

INSTRUMENT	RANGE	TRIP	SOURCE DISTANCE	SET	START-UP RANGE
K-1	10×10^{-12}	Meter ✓	7"		10×10^{-12}
		Fast ✓			
K-2	10×10^{-12}	Meter ✓	8"		10×10^{-12}
		Fast ✓			
R-1	—				
R-2	—				
PM-1	600	Alarm ✓	Contact		500
PM-2	1200	Low ✓	18"		900
		Alarm ✓	3"		

LOG N CALIBRATE ✓ OPERATE ✓ SOURCE No. Ra-f

DUMP WELL PROBE LIGHT —

START-UP CHECK LIST

Equipment checked by RKR Personnel check by IDC

Instruments and safeties checked and reset by RKR

Source in checked by RKR Source No. PM-43

Emergency equipment in control room checked by _____

Instruments in trip circuit: PM-1, PM-2, K-1, K-2

Red light on by EJ Time 0900

Start-up Ok'd by RKR, EJ, DC Date 10/4/63

Returned to uniform loading with spacers as described on p. 291 of previous log. Fuel plate which was added 10/3 P (p. 295) is still in Pos. 2. Measurements checked close previously recorded.

		Mass (cm)	Height (cm)
0935	+Per (1)	8.77	55,625
			55,625
			55,630
0945	lyte slightly +Per	8.28	55,155
			55,160
			55,160
0949	lyte just exit	8.25	55,135
		Best value →	55,130
			55,130
0959	+Per (2)	8.60	~~55,250~~
			55,355
			55,355
1045	+Per (3)	9.1	55,940
			55,940
1100	+Per (4)	8.58	55,430
			55,430
1115	shut down.		

10/4/63

Measurements on above core before disassembly:

across top: South 6.4315

South spacer	6.4300
" center	6.4421
Center	6.4550
North center	6.4615
" spacer	6.5000
North	6.5200

Removed element in pos. 2 which was made up of 7 Al plates and 1 fuel plate in pos. 6.

Time		Mass (cm)	Seq (cm)
1310	+ Period (5)	10.4 cm	57.265
	Ln NT = 99.1 sec = 1.04		57.265
1323	System very slightly − Neg.		56.660
			56.655
	use avg of very slightly + −: − 56.67		
1325	System super crit + Pos		56.710
1327	System very slightly + Pos. 9.81		56.695
			56.690
1340	+ Per (6)		58.145
	Ln NT = 317 sec = 1.94		58.145

	Mass (cm)	Scale (cm)
13.59 + Pas (5)	10.6	57.455
LyNT = 13.84		57.445
petts = 13.334		57.445

10/14/63 Micrometer across top: Before run

South 6.2518
" spacer 6.2458
" center 6.2517
Center 6.2586 average 6.2689
North spacer 6.2675
" center 6.2905
North ~~[illegible]~~ 6.3162

After run:

South 6.2551
S spacer 6.2450
S center 6.2518
Center 6.2589
N center 6.2678
N spacer 6.2859
N outer 6.3208 / 6.2693

INSTRUMENT CHECK

10/14/63

INSTRUMENT	RANGE	TRIP		SOURCE DISTANCE	SET	START-UP RANGE
K-1	10 X 10^-12	Meter	✓	4"	—	10 X 10^-12
	"	Trip	✓	"	✓	"
K-2	10 X 10^-12	Meter	✓	10"	✓	"
	"	Trip	✓	"	✓	"
R-1						
R-2						
PM-1	600 v	Alarm	✓	cont	—	500 v
PM-2	1200 v	Low	✓	18	—	900 v
		Alarm	✓	3	—	—

Beckman —

LOG N CALIBRATE ✓ OPERATE ✓ ~~SOURCE No.~~

DUMP WELL PROBE LIGHT

START-UP CHECK LIST

Equipment checked by RKR Personnel check by I.D.C

~~Instruments and safeties checked and reset by~~ RKR.

~~Source in checked by~~ RKR Source No. PM-43

Emergency equipment in control room checked by I.D.C

Instruments in trip circuit: K-1 K-2 PM-1 PM-2

Red light on by RKR. Time 10:00

Start-up OK'd by LBJ. RKR Date 10-14-63

27 full elements, no partials. ∴ no change since end of 10/4/63.

Restoring chambers & counters to appropriate positions.

		mom. (cm)	staple (cm)
10:35	+ Period (1)	10.46	57.330
	Log 75.2 sec = 12.34 ; Delta = 11.774		57,330
10:48	System slightly — Neg	9.72	56.595
			56.600
			56.600

		Man.	Scope (cm)
10:53	System very very slightly +Per	9.77	56.645
		out value for unit	56.645
11:22	+Per (2)	10.35	57.230
	Lg = 89.1 mm = 13.8 g; pellet = 10.09 g		57.230
11:48	+Per (3)	10.71	57.585
			57.585

Replaced "lucite" spacers with solid plexiglas spacers.

W_3 16.0259
W_5 16.0380
W_7 15.9980
W_9 15.8971

14:20	+Per (4)	9.82	56.700
	pellet 8.70 g		56.700
14.38	System very very slightly -Neg	9.34	56.220
			56.225
14:55	+Per (5)	9.91	56.805
	pellet = 11.00 g		56.800

	Mass (cm)	Scope (cm)
15.25 + Pen (6)	10.20	57.080
settle 16.44		57.080

Source drive hanging.

15.42 Shut down.

10-15-63 Measurements across top of array for solid spacers:

South = 6.2365"
South spacer = 6.2340"
South center = 6.2415"
Center = 6.2585"
North center = 6.2668"
North spacer = 6.2878"
North = 6.3175"
avg = 6.2632"

INSTRUMENT CHECK

10/15/63

INSTRUMENT	RANGE	TRIP		SOURCE DISTANCE	SET	START-UP RANGE
K-1	10x10^{-12}	Meter	✓	6"	✓	10x10^{-12}
	"	Fast	✓	6"	✓	"
K-2	10x10^{-12}	Meter	—	8"	—	10x10^{-12}
	"	Fast	—	8"	—	"
R-1						
R-2						
PM-1	600v	Alarm	✓	cont	—	500v
PM-2	1200v	Low	✓	18"	✓	900v
		Alarm	✓	3"	✓	"

Pickrson ✓ LOG N CALIBRATE ✓ OPERATE ✓ SOURCE No. 5 Mg Rod

DUMP WELL PROBE LIGHT ______

START-UP CHECK LIST

Equipment checked by RKNJ [illegible] check by F.D.C

Instruments and [illegible] by RKNJ

Source in checked by RKNJ [illegible] PM-43

Emergency equipment [illegible] checked by F.D.C

Instruments in trip circuit: K-1 K-2 PM-1 PM-2

Red light on by RKNJ [illegible] 0925

Start-up OK'd by L.B. / RKNJ [illegible] 10-15-63

Returned "blue" ~~[illegible]~~ spacers to core. Cf 10/14/63.

W-2	16.1502	South	6.2432
W-5	16.0475	S spacer	6.2343
W-9	15.8985	S center	6.2472
W-7	15.9899	Center	6.2575
		N center	6.2668
		N spacer	6.2723
		North	6.3022/6.2012

		Mon (cm)	Teapot (cm)
0952	+Per ①	10.63	57.550
			57.540
	K-Leg : 14.5 ℄ - 59.5 mm		57.450
			avg = 57.513
10:02	Lysteria very very slightly-my 9.80		56.695
	good exit number.		56.685
			56.690
			avg 56.690
10:15	+Per ②	10.40	57.240
			57.245
	K-Leg = 10.3 ℄ - 94.3 mm		57.~~245~~ 240
			avg 57.242
10:32	+Per ③	10.25	57.100
			57.100
	K Leg = 8.1 ℄ - 127.3 mm.		avg 57.100
10:05	Shut down.		

INSTRUMENT	TRIP	START-UP RANGE
K-1	Motor	
K-2	Motor	
R-1		
R-2		
PM-1		
PM-2		

LOG N CALIBRATE

DUMP WELL PROBE LIGHT

10/15/63 After removing blue tape and replacing with yellow tape:

South	6.2405
S space	6.2329
S center	6.2518
Center	6.2635
N center	6.2688
N space	6.2846
North	~~6.2~~ 6.3229/6.2664

W-2	16.~~1500~~ 1482
W-5	16.~~0477~~ 0480
W-9	15.~~8989~~ 8978
W-7	15.~~5899~~ 5962
W-3	16.0275

INSTRUMENT CHECK

10/16/63

13

INSTRUMENT	RANGE	TRIP	SOURCE DISTANCE	SET	START-UP RANGE
K-1	10 X 10 -12	Meter ✓	6"	✓	10 X 10 -12
	"	Fast ✓	"	✓	"
K-2	10 X 10 -12	Meter ✓	8"	✓	"
	"	Fast ✓	8"	✓	"
R-1					
R-2					
PM-1	600 v	Alarm ✓	Cont	✓	500 v
PM-2	1200 v	Low ✓	18"	✓	900 v
		Alarm ✓	3"	✓	

Dickson

LOG N CALIBRATE ✓ OPERATE ✓ SOURCE No. 5 mg Ra-Be

DUMP WELL PROBE LIGHT

START-UP CHECK LIST

Equipment checked by RKH Personnel check by E.D.C

Instruments and safeties checked and reset by RKH.

Source in checked by RKH Source No. PM-43

Emergency equipment in control room checked by E.D.C

Instruments in trip circuit: K-1 K-2 PM-1 PM-2

Red light on by E.D.C Time 0850

Start-up OK'd by EDC RKH. Date 10-16-63

Removed fibre tape from poly tubular spacers, replaced with low-mass yellow tape. 5 layers of yellow tape / spacer to get proper thickness. Returned spacers to core.

		Mass (cm)	Height (cm)
0915	+ Per ①	9.08	55.925
			55,925
	K-Log = 77.8 cm = 12.0 ¢		
	Cycles very very slightly - neg.	8.53	55,400
	last value of joint exit		55,405
0947	+ Per ②	9.19	56,035
	K-Log = 59.1 cm = 14.6 ¢		56.035
10:02	+ Per ③	9.00	55,865
			55.870
	K-Log = 86.9 = 11.0 ¢	South 6.2415	N center 6.2703
		S. spacer 6.2318	N spacer 6.2856
10:15	Shut down:	S. center 6.2513	North 6.2231
		Center 6.2595	

Remove & replace yellow spacers.

W-N	16.1417	South	6.2405
W-5	16.0385	S. spacer	6.2365
W-9	15.8857	S center	6.2455
W-1	16.1809	Center	6.2595
		N center	6.2710
		N spacer	6.2821
		North	6.3055 / 6.2630

		Main (cm)	Scope (cm)
13:30	+ ~~Pos~~ Per (4)	9.02	55.920
	K·Log = 65.6 sec = 13.6 ¢		55.920
	System very very slightly + Per	8.49	55.325
	best value for crit.		55.330
13:53	+ Per (5)	9.11	55.980
	K·Log = 56.1 sec = 15.1 ¢		55.980
14:08	+ Per (6)	8.89	55.755
	K·Log = 97.4 sec = 10.1 ¢		55.755
14:18	Shut down.		

10/17 Measurements of array after cutting off 2¼" of the top of spacers. (Spacers now are ¼" above ~~of~~ the top of array).

W-2 = 16.1485		South	= 6.2590
W-5 = 16.0350		S. spacer	= 6.2465
W-9 = 15.8810		S. center	= 6.2535
W-1 = 16.1895		Center	= 6.2636
		N. center	= 6.2752
		N. Spacer	= 6.2856
		North	= 6.3045
		AVG	= 6.2697

Above measurements made before run.

INSTRUMENT CHECK

INSTRUMENT	RANGE	TRIP	SOURCE DISTANCE	SET	START-UP RANGE
K-1	10 X 10⁻¹²	Meter ✓	6"	✓	10 X 10⁻¹²
	"	First ✓	"	—	"
K-2	10 X 10⁻¹²	Meter ✓	8	✓	"
	"	Fast ✓	"	—	"
R-1					
R-2					
PM-1	600 v	Alarm —	Cont	—	500 v
PM-2	1200 v	Low —	18"	—	900 v
		Alarm ✓	3"	—	"

Quitman LOG N CALIBRATE ✓ OPERATE ✓ SOURCE No. Sng Pa T

DUMP WELL PROBE LIGHT ______

START-UP CHECK LIST

Equipment checked by AKH Personnel check by F.D.C

Instruments and safeties checked and reset by AKH

Source in checked by AKH Source No. PM-43

Emergency equipment in control room checked by F.D.C

Instruments in trip circuit: K-1 K-2 PM-1 PM-2

Red light on by AKH Time 10:55

Start-up OK'd by AKH F.D.C Date 10-17-63

Cut plastic spacers so that they extend 1/4" above foil plates.

		Mass (cm)	Slope (cm)
11:19	+Per (1)	9.42	~~56.310~~
	K-Lag = 55.2 cm = 15.3 ¢		56.295
			56.295
11:32	System just init.	8.80	55.660
			55.655
11:42	+Per (2)	9.10	55.995
	K-Lag = 120.8 cm = 8.5 ¢		55.990
12:02	+Per (3)	9.33	56.195
	K-Lag = 65.2 cm = 13.6 ¢		56.200
12:08	Shut down.		

10/18/63

"Split" element in position so that 4 plates (alternated) are in pos. 2 and 4 in pos. __, numbered as below:

allowing of some [illegible] pos. 2

10/18/63 Array dimentions

10:30 AM

W-1	= 15.9795	E-1	= 17.8655
W-2	= 15.9559	E-2	= 17.8535
W-3	= 15.8302	E-3	= 17.7785
W-4	= 15.8493	E-4	= 17.8573
W-5	= 15.8255	E-5	= 17.8475
W-6	= 15.7718	E-6	= 17.7957
W-7	= 15.7593	E-7	= 17.8522
W-8	= 15.7498	E-8	= 17.8985
W-9	= 15.6702	E-9	= 17.8085

10:30 AM

South = 5.4345
South spacer = 5.4280
South center = 5.4384
Center = 5.4515
North center = 5.4668
North spacer = 5.4662
North = 5.4489
AVG = 5.4478 ← excludes end plates

Plexiglas

11/1/64

10/21/63

INSTRUMENT CHECK

INSTRUMENT	RANGE	TRIP	SOURCE DISTANCE	SET	START-UP RANGE
K-1	10×10^{-12}	Meter ✓	5"		10×10^{-12}
		East ✓			
K-2	10×10^{-12}	Meter ✓	8"		10×10^{-12}
		East ✓			
R-1	—				
R-2	—				
PM-1	600 ✓	Alarm ✓	Contact		500
PM-2	1200 ✓	Low ✓	24"		1200
		Alarm ✓	0"		

LOG N CALIBRATE ✓ OPERATE ✓ SOURCE No. La-4

DUMP WELL PROBE LIGHT —

START-UP CHECK LIST

Equipment checked by RKR Personnel check by RKR

Instruments and safeties checked and reset by EJ

Source in checked by RKR Source No. M-43

Emergency equipment in control room checked by EJ

Instruments in trip circuit: PM-1, PM-2, K-1, K-2

Red light on by EJ Time 1300

Start-up OK'd by RKK, EJ Date 10/21/63

	Mon (cm)	Height (cm)
13:17 + Rep ①	9.4	56.295
K-log = 68.2 mm = 13.2 ℓ		56.290
		avg = 56.2925
13:13 System very slightly -Neg	8.88	55.740
	ant. volume	55.735
		= 55.737

		mon (cm)	paper (cm)
13:40	+ Pos ②	9.20	56.075
	K-lag = 133.6 mm = 7.8 ¢		56.065
			56.070
14:00	+ Pos ③	9.57	56.440
	K-lag = 45.2 mm = 17.5 ¢		56.435

14.06 Shut down:

10-24-63 Measurements of (nominal .060" in) plexiglas spacers (one at random).

.055	.0590
.055	.0595
.0555	.0595
.0555	.0600
.0560	.0602
.0560	.0605
.0565	.0610
.0570	.0610
.0572	.0615
.0580	.0618
.0582	.0620
.0585	
.0590	

avg = .0585 (in) (0.0585 ± 0.0020).

Max deviation from mean

nominal .040 (in)

.0394	.0385
.0385	.0385
.0380	.0385
.0375	.0385
.0375	.0385
.0375	.0382
.0378	.0382
.0380	.0382
.0380	.0385
.0380	.0385
.0382	.0385
.0382	

avg = .0382

10-25-63 Drain water from hold tanks (Washed & flushed out with de-ionized water Hold tanks and reactor tanks and ports.) Tanks to be ~~refilled~~ refilled with clean water.

1/14/64 Array dimensions

South = 5.4330
South Spacer = 5.4280
South Center = 5.4390
Center = 5.4490
North Center = 5.4550
North Spacer = 5.4480
North = 5.4440

AVG 5.4423

W-1 = 15.9785	E-1 = 17.8490
W-2 = 15.9430	E-2 = 17.8390
W-3 = 15.8270	E-3 = 17.7600
W-4 = 15.8380	E-4 = 17.8250
W-5 = 15.8330	E-5 = 17.8140
W-6 = 15.7940	E-6 = 17.7630
W-7 = 15.7585	E-7 = 17.8310
W-8 = 15.7580	E-8 = 17.8750
W-9 = 15.6800	E-9 = 17.7930
AVG 15.8233	AVG 17.8166

1/14/64

thermocouple #		Location
# 2	–	Dump tank
# 4	–	West center of array
# 6	–	East center " "
# 5	–	South east bottom of array
# 1	–	North west bottom " "
# 3	–	201 air temp.

1/15/64

INSTRUMENT CHECK

INSTRUMENT	RANGE	TRIP		SOURCE DISTANCE	SET	START-UP RANGE
K-1	10×10^{-12}	Meter	✓	6"	✓	
	"	Fast	✓	"	✓	
K-2	10×10^{-12}	Meter	✓	5'	✓	
	"	Fast	✓	"	✓	
R-1						
R-2						
PM-1	700 v	Alarm	✓	1"	✓	
PM-2	1200 v	Low	✓	14"	✓	
	"	Alarm	✓	1"		

O.R.N.L. LOG N CALIBRATE ✓ OPERATE ✓ SOURCE No. B-80 5 mg C 5137

DUMP WELL PROBE LIGHT

START-UP CHECK LIST

Equipment checked by AKH Personnel check by AKH

Instruments and safeties checked and reset by AKH

Source in checked by AKH Source No. M-43

Emergency equipment in control room checked by I.D.C

Instruments in trip circuit: K-1 K-2 PM-1 PM-2

Red light on by AKH Time 0940

Start-up OK'd by L.B.A. AKH I.D.C Date 1/15/64

Array consists of 26 full elements + 4/8 element on each end (fuel alternates with Al). Total 28 elements, uniform 140 mil plexiglas spacers. Top of spacers is 1/8" above top of elements. Clean water in system. Installed additional automatic valve in drain to satisfy "2 independent automatic shut down devices." Manometer

not moved. Cathetometer now at south end of console.

Time		Mano (cm)	Scope (cm)
10:15	+ Pos (1)	10.41	57.730
			57.725
			AVG 57.728
10:25	System very slightly + Pos	9.93	57.290
			57.280
			AVG 57.285
10:31	System very slightly − Neg	9.90	57.245
11:10	+ Pos (2)	10.22	57.960
			57.960
			57.960
11:22	+ Pos (3)	10.13	57.460
			57.460
			57.460
11:45	+ Pos (4)	10.49	57.805
			57.805
			57.805
11:58	System just crit k-eff = 1	9.9	57.240
			57.240
11:59	Shut down.		

1/15/64

[illegible] in [illegible], determined top of plates as average of 55.350 and 55.330 = 55.340 cm on cathetometer in its new location. Glass scale = 8.00 cm. Difference to "old" top of plates is +8.625 cm. on cathetometer.

1/16/64 Array dimentions

40 & 60 mil spacers were in (p. 26)

South	=	5.4330
South Spacer	=	5.4245
South Center	=	5.4385
Center	=	5.4485
North Center	=	5.4570
North Spacer	=	5.4500
North	=	5.4450
	AVG	5.4424

W-1	=	15.9750	E-1	=	17.8500
W-2	=	15.9425 ~~15.8510~~	E-2	=	17.8400 ~~17.8270~~
W-3	=	15.8200 ~~15.7620~~	E-3	=	17.7640
W-4	=	15.8510	E-4	=	17.8270
W-5	=	15.8385	E-5	=	17.8130
W-6	=	15.7710	E-6	=	17.7615
W-7	=	15.7620	E-7	=	17.8350
W-8	=	15.7615	E-8	=	17.8785
W-9	=	15.6740	E-9	=	17.7940
	AVG	15.8217		AVG	17.8181

LOG N CALIBRATE ______ OPERATE ______ SOURCE No. ______

DUMP WELL PROBE LIGHT ______

1/16/64

INSTRUMENT CHECK

INSTRUMENT	RANGE	TRIP	SOURCE DISTANCE	SET	START-UP RANGE
K-1	10×10^{-12}	Meter ✓	5"	✓	10×10^{-12}
	"	Fast ✓	"	✓	"
K-2	10×10^{-12}	Meter ✓	5"	✓	10×10^{-12}
	"	Fast ✓	"	✓	"
R-1					
R-2					
PM-1	700 v	Alarm ✓	out	✓	500 v
PM-2	1200 v	Low ✓	16"	✓	900 v
	"	Alarm ✓	1"	✓	"

LOG N CALIBRATE ✓ OPERATE ✓ SOURCE No. B-90

DUMP WELL PROBE LIGHT ______

Uniform 140-mil spacing; however, in ~~slots~~ spaces 12, 13, 15 & 16 (or, calling the center water space 0, ±1 and ±2 ~~slots~~ spaces) this thickness is made up of ~~3~~ 2-40-mil and 1-60-mil. 16 grade composite spacers.

START-UP CHECK LIST

1/16/64

Equipment checked by RKM Personnel check by RKM. E.D.C

Instruments and safeties checked and reset by RKM.

Source in checked by RKM Source No. M-23

Emergency equipment in control room checked by E.D.C

Instruments in trip circuit: K-1 K-2 PRT-1 PM-2

Red light on by RKM. Time 12:15

Start-up OK'd by RKM. E.D.C Date 1-16-64

		room (cm)	keyp. (cm)
12:20	Start up -		
12:30	+ Per (1)	10:35	57.700
	K bg T=107, P=9.4 ℓ		57.700
13:03	+ Per (2)	10:~~33~~ 73	57.975
	K bg T=54.3 sec, 15.5 ℓ		57.970
	Corr = 14.6 + 0.5 = 15.1 ℓ		
	Syston very very slightly - Neg: (best value of unit)		57.185
13:15	~~Syston just unit~~	9.92	57.185
			57.185
13:55	+ Per (3)	10.25	57.510
	K bg 164.5 sec = 6.6 ℓ		57.510
	Corr = 5.8 + 0.5 = 6.3 ℓ		
14:16	Syston just unit:	9.92	57.190

13,

50.

11/17/64 Dimentions of array

South = 5.4330
South Spacer = 5.4255
South center = 5.4370
Center = 5.4495
North center = 5.4535
North Spacer = 5.4490
North = 5.4415

AVG 5.4413

W-1 = 15.9765	E-1 = 17.8500
W-2 = 15.9370	E-2 = 17.8440
W-3 = 15.8235	E-3 = 17.7650
W-4 = 15.8440	E-4 = 17.8250
W-5 = 15.8340	E-5 = 17.8190
W-6 = 15.7860	E-6 = 17.7650
W-7 = 15.7665	E-7 = 17.8300
W-8 = 15.7650	E-8 = 17.8771
W-9 = 15.6915	E-9 = 17.7930
AVG 15.8249	AVG 17.8187

INSTRUMENT CHECK

INSTRUMENT	RANGE	TRIP	SOURCE	SET	START-UP RANGE
K-1	10-X10-12	✓	5"	✓	10X10-12
"	"	✓	5'	✓	"
K-2	10-X10-12	✓	6"	✓	"
		✓	6"	✓	"
P-1					
P-2					
PM-1	700V	Alarm ✓	cent	✓	500V
PM-2	1200V	✓	15"	✓	900V
"	"	✓	7"	✓	"
LOG N CALIBRATE	✓				B-80

1/17/64

START-UP CHECK LIST

Equipment checked by AKRJ Personnel check by E.D.C

Instruments and safeties checked and reset by AKRJ.

Source in checked by AKRJ Source No. M-43

Emergency equipment in control room checked by E.D.C

Instruments in trip circuit: K-1 K-2 PM-1 PM-2

Red light on by AKRJ. Time 10:25

Start-up OK'd by AKRJ L.B.O. E.D.C Date 1-17-64

Moved 2 center elements out from center 1/2 slat (340 mil center).

		Mass (cm)	Scaler (cm)
11:20	Lpeter very slightly sub -	Log n = .03	57.900
11:22	Lpeter very slightly Pos +	Log n = .03	57.975
11:30	Lpeter very slightly Pos +	Log n = .12	58.020
11:43	Lpeter very slightly - Neg	Log n = 1	58.010
11:46	Lpeter very slightly Pos +	Log n = 1	58.040
11:59	Lpeter slightly - Neg	Log n .1	57.885
12:02	Lpeter very slightly - Neg	Log n .1	57.965
12:09	Lpeter slightly + Pos	Log n .1	58.140
12:07	Lpeter very slightly + Pos	Log n .1	58.070

		Mam (cm)		Scope (cm)
13:20	+ Per (1)	11.47		58.745
	K log - [illegible]			58.745
	Petter - 10.~¢ +			
13:37	System very slightly Pos +	10.82		58.090
				58.080
13:41	System just crit	10.81	Log n 22	58.080
13:51	System very slightly - Neg	10.75	Log n .9	58.025
14:00	System just crit	10.80	Log n .9	58.065
				58.060
14:20	+ Per (2)	11.20		58.460
				58.455
	Petter - 1.2¢ +			
15:04	+ Per (3)	11.38		~~58.675~~
				58.635
	Petter - 5.~¢ +			58.640
15:21	System very slightly + Pos		Log n 24	58.070
				58.070
15:23	System very slightly + Pos		Log n 24	58.050
15:27	System very slightly - Neg		Log n 24	57.995
15:50	Shut down.			58.07

1/20/64 1) Removed all plate - top east most element (#129), numbered 29-8'

2) add a U-al plate to this position - number 29-8'

3) Purpose: to explore reduction in critical top reflector thickness observed to be 2.7 cm - last run 1/17 -

4) Remeasured top thickness of array (to be compared to dimensions pg 28 -

South - 5.4370 in.

South Spacer 5.4265

South Center 5.4425

Center ~~5.4430~~ 5.4400

North Center ~~5.4650~~ 5.4540

North Spacer 5.4520

North 5.4470

INSTRUMENT CHECK

INSTRUMENT	RANGE	TRIP	SOURCE DISTANCE	SET	START-UP RANGE
K-1	10×10^{-12}	Meter ✓	5"		10×10^{-12}
	"	Fast ✓			
K-2	10×10^{-12}	Meter ✓	6"		10×10^{-12}
		Fast ✓			
R-1	—				
R-2	—				
PM-1	700V	Alarm ✓	Contact		900V
PM-2	1200V	Low ✓	16"		900V
		Alarm ✓	2"		

LOG N CALIBRATE — OPERATE ✓ SOURCE No. Ra-8

DUMP WELL PROBE LIGHT —

START-UP CHECK LIST

1/20/64 Equipment checked by DC-RKR Personnel check by RKR

Instruments and safeties checked and reset by EQ

Source in checked by RKR Source No. M-43

Emergency equipment in control room checked by ~~M-43~~

Instruments in trip circuit: K-1, K-2, PM-1 PM-2

Red light on by RKR Time 8:34

Start-up OK'd by RKR DC EQ Date 1/20/64

		main (cm)	sample: cm
08.54	+ Pos (1)	10.83	58.095
	petter 8.44 + .5 = 8.9		58.095
0908	system slightly + Pos		57.700
	system very very slightly - Neg		57.630
		[illegible] 57.640	57.680
0912	Drain:		

Replaced Al plate in 29-8 with fuel plate of the same number. (29-8 still has fuel).

E-1 17.8450
E-6 17.7695
E-8 17.8610

1/28/04

South 5'.4390 in.
S. spacer 5'.4205'
S. center spacer 5'.4400'
Center ~~5'.4450~~ 5'.4410
North center sp. ~~5'.4675'~~ 5'.4565'
North spacer ~~5'.4565'~~ 5'.4585'
North 5'.4475'

		man (cm)	huge. (cm)
10:56	+Per (1)	9.6	56.850
	Settle = 12.0R + 0.5 = 12.5R		56.845
10:12	Lyster very slightly +Per		56.380
			56.375
		emit 56.370	
	Lyster slightly -Rey		56.340
10:48	+Per (2)	9.40	56.640
	Settle = 6.3R + 0.5 = 6.8R		56.645
11:09	+Per (3)	9.51	56.765
	Settle = 9.7R + 0.5 = 10.2R		56.765
11:20	Lyster just emit.		56.370
			56.375
11:25	Drain.		

1/20/64

Replaced Plate in pos 29-1 with Al; Fuel still in pos 29-3

Remeasured:

South	5.4390 in.
South Spacer	~~5.4480~~ 5.4230
South Center	5.4370
Center	5.4400
North Center	5.4510
North Spacer	5.4460
North	5.4435

		man (cm)	scale (cm)
12:20	+ Per (1)	9.80	57.050
	Bottle – 11.34 + 0.5 = 11.84		57.050
12:34	System slightly + Per	9.30	56.560
12:37	System just crit.		56.555
12:45	+ Per (2)	9.66	56.910
	8.34 + 0.5 = 8.84		56.905
13:12	+ Per (3) 5.8 + 0.5 6.34	9.60	56.850
			56.845
13:31	Drain;		

1/20/64

Replaced elements which had been displaced ½ slot (p-29) to normal position. Now have uniform (140 mil) spacing. Element 29 (East) now has fuel in pos. 1 & 3. (as well as 2, 4, 6, & 8).

South	5.4335	E-1	17.8445	
S. Spacer	5.4265	E-4	17.8300	17.8330
S. Center	5.4395	E-7	17.8300	
Center	5.4485	E-8	17.8675	
N. Center	5.4540	E-9	17.7905	
N. Spacer	5.4495	E-6	17.7890	
North	5.4450	E-5	17.8290	
		E-2	17.8450	
W-1	15.9770	E-3	17.770	
W-9	15.6885			
W-5	15.8345			

			mom (cm)	shape (cm)
15:54	+ Per (1)	Rochelle 16.5 + .5 = 17.0 ¢	9.15	56.395
		Dn 17.3 ¢		56.405
16:01	System just crit		8.60	55.830
				55.825
16:13	+ Per (2)		8.95	56.210
		Dn 10.8 ¢		56.180
		Rochelle 10.35 + 0.55 = 10.9 ¢	56.190	56.175
				56.195
				56.195

1/20/64 | Scale | Cathetometer
1630 + Period (3) | 8.80 cm | 56.040 cm
km, ~~15.74~~ 6.94 | | 56.035
- Rhoads 6.2 ± 0.5 = 6.7 ¢

1/21/64 Removed fuel (Plates E29-8 & E29-6) from Positions 29-1 & 29-3 (East element) and replaced with Al - This returns core to condition on 1/16/64, page 26-28. Fuel still in positions 2, 4, 6, 8 element 29 (easternmost).

Width of array		Spacing to East End of Tank	
South	~~5.4215 in~~ 5.4405 in.	E-1	17.8365 in.
South Spacer	5.4295	E-5	17.8190
South Center	5.4390	E-9	17.7925
Center	5.4440		
North Center	5.4535		
North Spacer	5.4470		
North	5.4405		

INSTRUMENT CHECK

4/1/64

INSTRUMENT	RANGE	TRIP	SOURCE DISTANCE	SET	START-UP RANGE
K-1	10×10^{-12}	Meter ✓	6"	~	10×10^{-12}
"		Fast ✓	6"	~	"
K-2	1×10^{-12}	Meter ~	5"	~	"
		Fast ~	"	~	"
R-1					
R-2					
PM-1	700 v	Alarm ~	Cont	~	500 v
PM-2	1200 v	Low ~	14"	~	900 v
"		Alarm ✓	2"	~	"

LOG N CALIBRATE ~ OPERATE ✓ SOURCE No. B-80

DUMP WELL PROBE LIGHT ~

START-UP CHECK LIST

Equipment checked by RKJ Personnel check by I.D.C

Instruments and safeties checked and reset by RKJ

Source in checked by RKJ Source No. M-93

Emergency equipment in control room checked by I.D.C

Instruments in trip circuit: K-1 K-2 PM-1 PM-2

Red light on by I.D.C Time 08:10

Start-up OK'd by A.D.C F.D.C RKJ Date 1-21-64

		mean (cm)	Scaler (cm)
0835	+ Pen (1)	10.22	57,470
	In 10.1 ¢		57,475
	Rhoecke 9.28 + 0.5 = 9.8 ¢		
0850	System just drift	9.77	57,010
			57,010

		man (cm)	flap (cm)
0900	+ Per (2)	10.95	57.715
	In 13.9¢		57.710
	Rhode 13.9 + 0.5 = 13.8¢		
0915	+ Per (3)	10.10	57.345
	In 6.4¢		57.340
	Rhode 5.46 + 0.5 = 6.0¢		
0937	Lyster just exit	9.80	57.070
			57.065
0946	+ Per (4)		57.645
	In 12.6¢		57.640
	Rhode 11.61 + 0.5 = 12.1¢		
10:25	Drain; shut down;		

PM After above, loosened east end, adjusted spacers, reassembled and tightened to original dimensions (p. 22).

Array dimentions

South = 5.4340	E-1 = 17.8425	W-1 = 15.9785
South Spacer = 5.4290	E-2 = 17.83 45	W-2 = 15.94 48
South center = 5.4390	E-3 = 17.7640	W-3 = 15.8310
Center = 5.4450	E-4 = 17.8265	W-4 = 15.8385
North Center = 5.4550	E-5 = 17.8170	W-5 = 15.8350
North Spacer = 5.4485	E-6 = 17.7670	W-6 = 15.7940
north = 5.4440	E-7 = 17.8340	W-7 = 15.7585
AVG 5.4421	E-8 = 17.8740	W-8 = 15.7625
	E-9 = 17.7910	W-9 = 15.6845
	AVG 17.8167	AVG 15.8254

1/21/64		mon (cm	keff (cm)
14:30	+ Per (5)	10.09	57.335
	Log n = 7.2 f		57.330
	Rothill = 7.2 f		
14:55	bytes just exit		57.010
15:00	Shut down.		
~~14:30~~			

1/22/64 Loading increased in following manner to reduce thickness of top water reflector:

U-al plate # E-29-6 added to position 1, East element
" " #E-29-8 " " " 7 " "
U-al plate # W-2-2 " " " 2 West element
" " " 2-8 " " " 8 " "

Loading now consists of:

a) 26 full elements
b) fuel in positions 1, 2, 4, 6, 7, 8 East element
c) fuel in positions 1, 2, 3, 5, 7, 8 West "

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1/22/64 Array Dimentions

South = 5.4370
South Spacer = 5.4270
South Center = 5.3950
Center = 5.4450
N. Center = 5.4550
N. Spacer = 5.4510
North = 5.4420
Avg 5.4360

W-1 = 15.9830	E-1 = 17.8400
W-2 = 15.9510	E-2 = 17.8290
W-3 = 15.8260	E-3 = 17.7570
W-4 = 15.8520	E-4 = 17.8300
W-5 = 15.8450	E-5 = 17.8150
W-6 = 15.7870	E-6 = 17.7690
W-7 = 15.7680	E-7 = 17.8395
W-8 = 15.7720	E-8 = 17.8740
W-9 = 15.6830	E-9 = 17.7860
Avg 15.8297	INSTRUMENT CHECK Avg 17.8155

INSTRUMENT	RANGE	TRIP	SOURCE DISTANCE	SET	START-UP RANGE
K-1	10 X 10 - 12	Meter	9"		
	"	Fast	"		
K-2	10 X 10 - 12	Meter	6"		
		Fast	"		
R-1					
R-2					
PM-1	700V	Alarm	Cont		
PM-2	1200V	Low	14"		
	"	Alarm	1"		

LOG N CALIBRATE ✓ OPERATE ✓ SOURCE No. A-90

1/22/64

START-UP CHECK LIST

Equipment checked by AKA/ Personnel check by E.D.C

Instruments and safeties checked and reset by AKA/

Source in checked by AKA/ Source No. M-4-3

Emergency equipment in control room checked by E.D.C

Instruments in trip circuit: K-1 K-2 PM-1 PM-2

Red light on by E.D.C Time 8:20

Start-up OK'd by E.D.C AKA, T.B/ Date 1-22-63

		Mm (cm)	Scope Cans
10:13	+Pos (1)	8.80	56,050
	Log n = 50 mm = 16.44 Rhotte = 15.31 + 0.5 = 15.94		56,050
10:25	System very very slightly +Pos		55,475
			55,470
10:27	System slightly - Neg		55,465

12:30P Changed loading to further increase core reactivity;

a) Removed fuel E-29-8 from position 7, East element
b) added Al 3-29-3 to " 7 " "
c) added fuel E-29-8 to " 3 " "
d) Removed Al from position 3 " "
e) Removed fuel E-29-6 " " 1 " "
f) added Al to " 1 " "

(cont)

1964
1/22

e) Removed fuel 2-8 and added al W-6 pos 8 west element
f) Removed al " " " fuel 2-8 pos 6 " "
g) " fuel W-2-2 " " al W-2 " 2 " "

Loading now consists of:
a) 26 full fuel elements
b) fuel in positions 2, 3, 4, 6, 8 east element
c) fuel in positions 1, 3, 5, 6, 7 west "

1/22/64 Array dimentions ~~W-1 15.9486 in~~
South = 5.4350 in.
S. Spacer = 5.4280
S. Center = 5.4410
Center = 5.4475
N. Center = 5.4550
N. Spacer = 5.4480
North = 5.4430
Ave - 5.4425

		Mom (cm)	Scope (cm)
13:10	tPow (1)	?	~~55.680~~
	Log n = 26.9 cm = 24.2 ¢		55.660
	@ Critic = 22.65 + 0.5 23.15 ¢		56.650

1355 Removed fuel plate 29-1 from pos. 8 in east end. Replace with A129-7.
Removed fuel plate # 29-8 from Pos. 1 in west end. Replaced with AL [redacted] W-8

1/22/64 14:15	South = 5.4430 in	W-3 15.8235 / W-1 15.9785 in.	E-3 17.7630 / E-1	17.8450 in.
	S. Spacer = 5.4260	W-4 15.8580	E-6	17.7810
	S. Center = 5.4410	W-7 15.7805	E-9	17.7875
	Center = 5.4490	W-8 15.7945	E-8	17.8665
	N. Center = 5.4575	W-9 15.7015	E-7	17.8270
	N. Spacer = 5.4500	W-5 15.8570	E-5	17.8250
	North = 5.4420	W-6 15.7900 / W-2 15.9475	E-4 17.8370 / E-2	17.8310 17.8181
	5.4441	avg Mom (cm) 15.8369		Scope (cm)

14:40	+ Pr (1)	8.63		55.760
	Log n = 74.4 = 12.44			
	Rochelle = 11.37 + 0.56 = 11.87			55.760
15:05	+ Pr (2)	8.80	▽	56.070
	Log n = 38.03 = 19.6			
	Rochelle = 18.7 + 0.5 = 19.2			56.050
			avg →	56.060
15:23	+ Pr (3)	~~[illegible]~~ 8.37		~~55.625~~ 55.630
	Log n = 110.8 = 9.1			55.625
	Rochelle = 8.25 + 0.5 = 8.75			55.625

	E	W
1	–	–
2	X	–
3	X	X
4	X	–
5	–	X
6	X	X
7	–	X
8	–	–

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1/23/64

INSTRUMENT CHECK

IINSTRUMENT	RANGE	TRIP	SOURCE DISTANCE	SET	START-UP RANGE
K-1	10×10^{-12} ✓	Meter ✓	5"	✓	10×10^{-12}
		Fast ✓			
K-2	10×10^{-12} ✓	Meter ✓	5"	✓	10×10^{-12}
		Fast ✓			
R-1	—				
R-2	—				
PM-1	2000 ✓	Alarm ✓	Contact	✓	500
PM-2	2000 ✓	Low ✓	14"	✓	500
		Alarm ✓	1"		

LOG N CALIBRATE ✓ OPERATE ✓ SOURCE No. ~~Ra-Be~~ B-[illegible]

DUMP WELL PROBE LIGHT —

START-UP CHECK LIST

Equipment checked by EJ, RRR Personnel check by IDC

Instruments and safeties checked and reset by EJ

Source in checked by IDC Source No. M-43

Emergency equipment in control room checked by IDC

Instruments in trip circuit: K-1, K-2 ✓ PM-1, PM-2 ✓

Red light on by EJ Time 1015

Start-up OK'd by ~~RRR~~ EJ Date 1/23/64

Decided to adopt the existing curve and its dimensions (p.43) as standard of reference. Will attempt to determine more precisely the curve slope.

1/23/64

EBR put wedge shaped pieces of Cd on top of counters.

		mom (cm)	scope (cm)
10:53	+ Pen (1)	8.60	55.825
	Log n = 66.5 mu = 13.4¢		
	Rochette = 12.66 + 0.5 = 13.2¢		55.830
	H_2O may not have been completely over plates.		
11:15	+ Pen (2)	8.55	55.800
	Log n = 67.9 mu = 13.2¢		
	Rochette = 13.07 + 0.5 = 13.6¢		55.800
11:29	+ Pen (3)	8.51	55.755
	Log n = 70.1 mu = 12.8¢		
	Rochette = 11.93 + 0.5 = 12.4¢		55.765
			avg 55.760
			~~55.670~~
11:45	+ Pen (4)	8.28	~~55.575~~
	Log n = 128.2 mu = 8.1¢		
	Rochette = 7.42 + 0.5 = 7.9¢		55.530
			55.525
12:40	+ Pen (5)		55.630 ~~55.670~~
	Log n = 102.1 mu = 9.7¢		
	Rochette = 8.84 + 0.5 = 9.34¢		55.635 ~~55.680~~
13:05	+ Pen (6)	8.45	55.700
	Log n = 80.8 mu = 11.6¢		
	Rochette = 10.69 + 0.5 = 11.24¢		55.700

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1/23/64	South = 5.4450	W-1 15.9785	E-1 = 17.8460
1/24	S. Space = 5.4285	W-2 15.9460	E-2 17.8325
	S. Center = 5.4420	W-3 15.8210	E-3 17.7625
	Center = 5.4470	W-4 15.8565	E-4 17.8380
	N. Center = 5.4580	W-5 15.8568	E-5 17.8255
	N. Space = 5.4505	W-6 15.7890	E-6 17.7810
	North = 5.4430	W-7 15.9765	E-7 17.8260
	AVG 5.4449	W-8 15.7890	E-8 17.8675
		W-9 15.7005	E-9 17.7880
		AVG 15.8348	AVG 17.8186

1/24/64

INSTRUMENT CHECK

INSTRUMENT	RANGE	TRIP	SOURCE DISTANCE	SET	START-UP RANGE
K-1	10 X 10 - 12	Meter	5"	✓	10 X 10 - 12
	"	Fast ✓	"	✓	"
K-2	10 X 10 - 12	Meter ✓	5"	✓	"
	"	Fast ✓	"	✓	"
R-1					
R-2					
PM-1	7000 ✓	Alarm ✓	cont	✓	5000 ✓
PM-2	12000 ✓	Low ✓	19"	✓	7500 ✓
	"	Alarm ✓	"	✓	"

LOG N CALIBRATE ✓ OPERATE ✓ SOURCE No. D-80

DUMP WELL PROBE LIGHT

START-UP CHECK LIST

1-24-64

Equipment checked by AKH Personnel check by E.D.C

Instruments and safeties checked and reset by AKH, Z.B.

Source in checked by AKH Source No. M-F3

Emergency equipment in control room checked by E.D.C

Instruments in trip circuit: K-1 K-2 PM-1 PM-2

Red light on by AKH Time 0830

Start-up OK'd by E.D.C EBT AKH Date 1-24-64

Moved 2 center element out from center ½ slot (340 mil center. Array dimensions P-46.

Add blades in center H_2O space to observe meniscus on spacers and height of spacers.

With tank essentially full, core is dead. Air drawn trapped in the 40 mil spaces on each side of center. Bubbles in other slots are at tops.

Drain till H_2O slightly low on highest spacer. 8.6 cm 55.825 cm

Add till H_2O breaks over highest spacer. Still well above plates. 8.72 cm 55.555

Drain to water still covering spacers, surface still unbroken over highest. 55.985

Drain more, surface not broken. 8.65 55.900 cm

Drain to broken surface 55.840 cm

Drain then add to most plates covered. 55.480

Add till all plates covered 55.640

There is visual evidence that a meniscus exists around the spacers which makes the effective water height over part of the core greater than that in the reflector region. It is this latter which the manometer matches.

1/24/64

K-1 dumped while water was being drained thru feed valve. Found loose connector on loading box.

Cd cont.

		Mom (cm)	Scope (cm)
11:17	+ Per (1)	9.26	56.495
	Rochette = 16.57 + 0.5 = 17.1 ¢	X	56.495
11:29	System slightly sub - Neg		55.800
11:32	System slightly + Per	8.60	55.820
12:00	+ Per (2)		56.480
	Rochette = 14.8 + 0.5 ¢ = 15.3 ¢	avg 56.470	56.460
12:15	+ Per (3)	8.95	56.220
	Rochette = 8.6 + 0.5 = 9.1 ¢		56.215
	Log n = 107.6 sec = 9.3 ¢		
12:35	Drain to make change in loading.		

1315 On east side of loading, moved fuel plate from pos. 2 to pos. 1 and Cd from pos. 1 to 2.

E-1 17.8465 Is not dried reason, top: + 1 mil

E-2 17.8330

E-3 17.7600

E-5 17.8260

		Mass (cm)		Scale (cm)
13:43	+ Pen (1) Roulette 11.7+0.5 = 12.2¢ Log n = 74.4 = 12.4¢	~~grd~~	X	56.800 56.800
13:58	Lepton slightly – Neg			56.295 56.290
14:01	Lepton just crit.			56.305 56.300
14:12	+ Pen (2) Roulette = 6.39+0.5 = 6.9 Log n = 153.2 = 7.0	9.30		56.580 56.580
14:30	+ Pen (3) Roulette = 16.87+0.5 = 17.4¢ Log n = 46.2 = 17.3	9.75		57.050 57.050

14:45 Drain: to make a change in loading.

	E	W
1	F	
2		
3	F	F
4	F	
5		F
6	F	F
7		F
8		

1/27/44			
South	5.4450	W1 15.9790	E1 17.8460
S. Spacer	5.4265	W2 15.9475	E2 17.8315
S. Center	5.4410	W3 15.8230	E3 17.7630
Center	5.4510	W4 15.8585	E4 17.8385
N. Center	5.4585	W5 15.8575	E5 17.8260
N. Spacer	5.4520	W6 15.9900	E6 17.7810
North	5.4425	W7 15.7800	E7 17.8260
	AVG 5.4452	W8 15.7935	E8 17.8670
		W9 15.7030	E9 17.7905
		AVG 15.8369	AVG 17.8188

INSTRUMENT CHECK

INSTRUMENT	RANGE	TRIP	SOURCE	SET	START-UP RANGE
K-1	10 X 10 -12	Meter ✓	5"	✓	10 X 10 -12
"	"	✓	"	✓	"
K-2	10 X 10 -12	Meter ✓	6"	✓	"
"	"		"	✓	"
R-1					
R-2					
PM-1	700 ✓	Alarm ✓	Cont	✓	500 ✓
PM-2	1200 ✓	Low ✓	14"	✓	950 ✓
"	"	Alarm ✓	1"	✓	"

LOG N-CALIBRATE ✓ OUTPUT ✓ SOURCE No. B-80

DUMP WELL PROBE LIGHT

START-UP CHECK LIST

Equipment checked by RKR Personnel check by E.D.C

Instruments and safeties checked and reset by AKAJr.

Source in checked by AKAJ Source No. M-43

Emergency equipment in control room checked by E.D.C

Instruments in trip circuit: K-1 K-2 PM-2 PM-1

Red light on by E.D.C Time 9:20

Start-up OK'd by E.D.C AKAJ Date 1-27-63

Have new uniform array (14 mil spacing) loading see P 48.

		mon (cm)	baffle pos.
09:32	+Pen (1) Rochelle = 24.20 + 0.5 = 24.74	9.38	56.645 / 56.640
09:~~47~~ 58	+Pen (2) Rochelle = 18.155 + 0.5 = 18.74	9.10	56.370 / 56.365
10:14	+Pen (3) Rochelle = ~~7.4~~ 7.54 + 0.5 = ~~8.04~~ 8.04	8.70	(X) 55.970 / 55.960
10:41	+Pen (4)	8.81	56.075 / 56.075

12:45 Drain: to make change in Loading.

avg.

1-27-64

[redacted] Moved element next to center to west end pos. Then
13:00 moved west end element .140 mil. This gave a core with a .340 mil gap in center with uniform spacing of .140 mil on each side. (a .060 mil spacer was used to replace the next to center element.) Now have 13 full elements on each side of gap + East and West element loaded as of page 48.

		Scope (cm)
14:30	System slightly + Pos	48.400

Top of plates = 55.340
48.400
Crit ≈ 6.940 cm below top of plates.

14:31 Shut down.

The above produced #5 in program list and was two readings.

1/28/64

INSTRUMENT CHECK

INSTRUMENT	RANGE	TRIP	SOURCE DISTANCE	SET	START-UP RANGE
K-1	10 X 10^{-12}	Meter	6"	✓	10 X 10^{-12}
	"	Fast	6"	✓	"
K-2	10 X 10^{-12}	Meter	6"	✓	"
	"	Fast	"	✓	"
R-1					
R-2					
PM-1	700 v	Alarm	Cont	–	500 v
PM-2	1200 v	Low	14"	–	750 v
	"	Alarm	1"	–	"

LOG N CALIBRATE ✓ OPERATE ✓ SOURCE No. B-80

DUMP WELL PROBE LIGHT ______

START-UP CHECK LIST

Equipment checked by RKA/ Personnel check by I.D.C

Instruments and ____s checked and reset by RKA/

Source in checked by RKA/ Source No. M-F3

Emergency equipment in control room checked by I.D.C

Instruments in trip circuit: K-1 K-2 PM-1 PM-2

Red light on by I.D.C Time 08:15

Start-up OK'd by I.D.C RKA/ Date 1-28-64

Removed from core the plate which was moved (p. 52) from center of core to side. Moved partial on west end back to its normal position. This produces a 25 full element loading with partial on each end.

1-28-64

		Mass (cm)	Scope (cm
0815	+Per (1) Rochette = 10.95 + 0.5 = 11.54 ¢ Log n = 77.7 sec = 12.0 ¢	8.92	56.190 56.190
0900	System + Pos. (Top of spacer showing):		55.930
0920	+Per (2) Rochette = 8.25 + 0.5 = 8.75 ¢ Log n = 110.8 sec = 9.1 ¢	8.82	56.095 56.090
0945	Drain:		

10:35 Moved west-end element out 200 mil. Now have core with 340 mil gap ~ center + 340 mil gap between west end element and core: 25 full element + 2 partial elements.

10:50 System super crit — 53.500

Top of plates = 55.340 (cm)
53.500
1.840 (cm) below top of plates;

11:30 Installed 8 aluminum plates in center of 340 mil H_2O space at west end of core. Still have 25 full elements and 2 partials, and one aluminum element.

11:55 System very slightly +Pos: 54.045

12:00 Drain:
Installed 8 al plates ~ center: Now have 340 mil gap next to west-end: 140 mil spacing through-out rest of core: Still have 25 full elements + 2 partial elements + one al element:

		Mon (cm)	Loge (cm)
13:27	+ Pu (1)	10.22	57.465
	Rabbette = 12.59 + 0.5 = 13.1 ℔		
	Log n = 66.8 cm = 13.4 ℔		57.465
13:41	System just exit:		56.840
13:54	+ Pu (2)	9.8C	57.140
	Rabbette = 5.58 + 0.5 = 6.1 ℔		
	Log n = 165.9 cm = 6.5 ℔		57.140

15:10 Removed the 8 al plates + center system replaced with original fuel plates. Now have 26 full fuel element + 2 partial elements. Also still have the 340 mil gap next to west end. 140 mil spacing through out rest of core.

15:27 System slightly - neg 52.410

55.340 cm (top of fuel

52.410 cm (exit)

2.930 cm below top of fuel.

1-31-64 South	5.4460	W1 15.9785	E1 17.8460
S. Spacer	5.4260	W2 15.9465	E2 17.8345
S. Center	5.4410	W3 15.8230	E3 17.7625
Center	5.4485	W4 15.8580	E4 17.8390
N. Center	5.4575	W5 15.8560	E5 17.8240
N. Spacer	5.4510	W6 15.7925	E6 17.7815
North	5.4430	W7 15.7805	E7 17.8260
	avg: 5.4447	W8 15.7910	E8 17.8680
		W9 15.7020	E9 17.7870
		avg: 15.8364	avg = 17.8187

Spacers cut to top of elements. Uniform 140-mil spacing.

INSTRUMENT CHECK

INSTRUMENT	RANGE	TRIP	SOURCE	SET	START-UP RANGE
K-1	10 x 10^{-12}	Meter ✓	6"	✓	10 x 10^{-12}
	"	Fast ✓	6"	✓	"
K-2	10 x 10^{-12}	Meter ✓	5"	✓	"
	"	Fast ✓	"	✓	"
R-1					
R-2					
PM-1	700 v	Alarm ✓	Cont	–	500 v
		Low ✓	"	–	750 v
PM-2	1200 v				"
	"	Alarm ✓	16"	✓	

LOG N CALIBRATE ✓ O TRAT ✓ [illegible] B-80

DUMP WELL PROBE LIGHT ———

N.B. : From this point on, the Rhe... has been corrected by the discrepancy between it and 3 counters, to nearest →

73/44
Partial elements

	E	W
1	F	
2		
3	F	F
4	F	
5		F
6	F	F
7		F
8		

~~START-UP~~ CHECK LIST

Equipment checked by RKR Personnel check by E.D.C.

~~Instruments and safeties checked and reset by~~ RKR - L.B.

Source in checked by RKR Source No. M-43

Emergency equipment in control room checked by E.D.C

Instruments in trip circuit: K-1 K-2 PM-1 PM-2

Red light on by RKR Time 0920

Start-up OK'd by L.B. / E.D.C. RKR Date 7-3-64

		Mon (cm)	Scope (cm)
0946	+ Per (1)	9.13	56.400
	Rochelle = 20.8 + ~~0.5 = 21.304~~ + 0.9 = 21.7		56.395
0958	System very very slightly - neg.		55.555
			55.555
10:07	+ Per (2) ~~0.9 = 9.5~~	8.65	+ 55.915
	Rochelle = 8.955 ~~10.5 = 9.54~~		55.920

7/3/64

avg Spacer measurement:
length = 23.438" ± .032"
width = 1.00"
thickness = .141
weight of 16 = 1,0377 grams.

East Face Plate:
height = 23.375" ± .032"
width = 23.750" ± .032"
avg thickness = .4969"
→ 0.1% dev. avg. check – Total weight = 5,316.0 grams

West Face Plate
height = 23.375" ± .032"
width = 23.750" ± .032"
avg thickness = .4912"
Total weight = 5,287 grams.

See page 58 for East & west face plate measurements.

7/3/64

South	5.4430	W1 15.9775	E1 17.8450
S. Spacer	5.4260	W2 15.9495	E2 17.8325
S. Center	5.4410	W3 15.8250	E3 17.7635
Center	5.4480	W4 15.8575	E4 17.8375
N. Center	5.4550	W5 15.8550	E5 17.8240
N. Spacer	5.4510	W6 15.7900	E6 17.7815
North	5.4430	W7 15.7810	E7 17.8280
	AVG: 5.4439	W8 15.7950	E8 17.8050
		W9 15.7010	E9 17.7875
		AVG 15.8368	AVG 17.8183

West Face Plate	Diff. from Avg.	East Face Plate	Diff. from Avg.
.4840	-0.007	.4927	-0.004
.4939	+0.003	.5035	+0.007
.5080	+0.017	.5110	+0.014
.5086	+0.017	.5115	+0.015
.5012	+0.010	.4985	+0.005
.4940	+0.003	.4885	-0.004
.4878	-0.003	.4895	-0.003
.4783	-0.013	.4855	-0.011
.4760	-0.015	.4830	-0.014
.4869	-0.004	.5020	+0.005
.4883	-0.003	.5075	+0.011
.4875	-0.004	.4890	-0.008
avg .4912"	+0.017 -0.013	avg .4969"	+0.015 -0.014

Measurment were made ~1" in from ~~edge~~ edge of plate: 3 on each of 4 sides.

#29-2 replaced with al plate #W-2

Removed fuel from pos. 7 in West partial element. The partials on each end (26 full elements in between) have had labels.

2/3/64

	E	W
1	F	
2		
3	F	F
4	F	
5		F
6	F	F
7		(This was removed)
8		

INSTRUMENT CHECK

INSTRUMENT	RANGE	TRIP	SOURCE DISTANCE	SET	START-UP RANGE
K-1	10 X 10 -12	Meter —	5"	—	10 X 10 -12
"		Fast —	"	—	"
K-2	10 X 10 -12	Meter —	6"	—	"
"		Fast ✓	"	—	"
R-1					
R-2					
PM-1	700 v	Alarm —	Cont	—	500 v
PM-2	1200 v	Low —	16"	—	750 v
"		Alarm ✓	1"	—	"

LOG N CALIBRATE ✓ OPERATE ✓ SOURCE No. A-80

DUMP WELL PROBE LIGHT _____

✓

START-UP CHECK LIST

Equipment checked by RKRJ Personnel check by F.D.C

Instruments and safeties checked and reset by RKRJ

Source in checked by RKRJ Source No. M-43

Emergency equipment in control room checked by F.D.C

Instruments in trip circuit: K-1 K-2 PM-1 PM-2

Red light on by RKRJ Time 0825

Start-up OK'd by F.D.C RKRJ Date 2-4-64

		mom (cm)		fixpu (cm)
0836	+Per (1) ~~0.9 = 15.7~~ Roulette = 14.83 ~~+0.5 = 15.34~~	9.44	①	56.715
				56.710
0845	System very slightly +Per			56.080
0847	System very slightly -neg			56.075
0906	+Per (2) ~~0.6 = 8.2~~ Roulette = 7.28 ~~+0.5 = 7.84~~	9.12		56.390
				56.390

0906 Drain:

Removed al plate # 29-7 from pos # E-8; added fuel plate # 29-8 to pos # E-8

add p. 65
recomm for -0.04
lit. correction

2/4/64 10:15 AM

South - 5.4420	E1 - 17.8440	W1 -
S. Spacer - 5.4260	E2 - 17.8320	W2 -
S. Center - 5.4420	E3 - 17.7560	W3 -
Center - 5.4470	E4 - 17.8375	W4 -
N. Center - 5.4570	E5 - 17.8250	W5 -
N. Spacer - 5.4510	E6 - 17.7770	W6 -
North - 5.4430	E7 - 17.8265	W7 -
AVG = 5.4440	E8 - 17.8660	W8 -
	E9 - 17.7860	W9 -
	AVG = 178167	

	E	W
1	F	
2		
3	F	F
4	F	
5		F
6	F	F
7		
8	F	

		Mon (cm)	Gauge (cm)
1045	+ Pen (3) ~~+0.5 = 13.2~~ Rachette = 12.8 ~~+0.0 = 12.84~~	Δ	56.480
			~~56.410~~
		avg 56.475	56.470
		−0.04	
		56.435	~~56.475~~
1100	Systems just on it	55.93	55.935
			55.930
			−0.04
			55.890

		mon	Scope (cm)
11:12	+Per (4) ~~0.5=8.4~~ Rachute = 7.525 + ~~0.5 = 8.04~~	8.95	56.285
			56.285 -0.04 56.245
	South	W1	E1-17.8415
	S. Spacer 5.4265		E2
	S. Center		E3
	Center 5.4480		E4
	N. Center		E5-17.8240
	N. Spacer 5.4500		E6
	North		E7
			E8 17.8660
			E9 17.7775

1 - Removed fuel plate #29-8 from pos # E-8; added Al plate # 29-7

2.- Removed Al plate # 29-3 from pos # E-7; added fuel plate # E-29-6

	E	W
1	F	
2		
3	F	F
4	F	
5		F
6	F	F
7	F	
8		

		mon		
1300	+Per (5) 0.5=23.1 Rachute = 22.165 + ~~0.5 = 22.74~~	9.08	(1)	56.395
				56.395 -0.04 56.355

		Mon (cm)	Scope (cm)
1312	System very slightly + Pos:		55.510
			55.510
			-0.04
		best value = 55.500	55.470
		-0.04	
1313	System slightly - Neg:	55.460	55.485
			55.490
			-0.04
			55.450
1326	+ Pos (6) 0.9 = 12.6 Roulette = 11.71 ~~+0.5 = 12.01~~	8.68	55.995
			55.990
			-.04
			55.950

Removed Al plate #29-7 from pos # E-8: added ~~fuel~~ fuel plate #29-8:

	E	W
1	F	
2		
3	F	F
4	F	
5		F
6	F	F
7	F	
8	F	

Spot check of dimentions

1440 E1 - 17.8450 South Spacer 5.4260
E5 - 17.8255 Centr - 5.4490
E9 - 17.7820 N. Spacer - 5.4500
E8 - 17.8680
E7 - 17.8270

		Mon (cm)		Scope (cm)
15:00	+ Pos (7)	8.60	☐	55.880
	Roulette 14.21 + 0.9 = 15.1 ~~0.5 = 14.7~~			55.870
				55.875
			Basis of o insertion	55.825 55.825

		Nom (cm)	Scope (cm)
15:15	Lyden very slightly -ve	~~8.05~~	55.275
			55.275
		Below plate	+.0
			55.275
16:07	+Per (8)	8.35	56.100
	Rheotle: 21.38 + ~~2~~ 0.5 = 21.9	8.86	56.150 - 0.05 + 56.100
	below top of plate:	7.30	54.610
16.18	+Per (9)	8.40	55.680
	Rheotle = 9.80 + ~~0.5~~ 0.9 - 10.7		55.670
			+.01
			55.675
16.23	Shut down.		

INSTRUMENT CHECK

INSTRUMENT	RANGE	TRIP		SOURCE DISTANCE	SET	START-UP RANGE
K-1	10 x 10⁻¹²	Meter	✓	6"	—	10 x 10⁻¹²
	"	Fast	✓	"	—	"
K-2	"	Meter	✓	6"	—	"
		Fast	✓	"	—	"
R-1						
R-2						
PM-1	700 v	Alarm	✓	cont	—	500 v
PM-2	1200 v	Low	✓	16"	—	750 v
	"	Alarm	✓	1"	—	"

LOG N CALIBRATE ✓ OPERATE ✓ SOURCE No. B-80

DUMP WELL PROBE LIGHT

START-UP CHECK LIST

Equipment checked by RKA Personnel check by I.D.C

Instruments and safeties checked and reset by RKA

Source in checked by RKA Source No. M-43

Emergency equipment in control room checked by I.D.C

Instruments in trip circuit: K-1 K-2 PM-1 PM-2

Red light on by I.D.C Time 10:45

Start-up OK'd by I.D.C RKA Date 2-5-64

		mon (cm)		Scope (cm)
11:31	+ Per (1) 0.5 = 20.8 Rochette = 19.87 + ~~0.5 = 20.4~~	8.80	☐	56.105 56.105 − 0.025 = 56.080
11:43	+ Per (2) 0.9 : 14.3 Rochette = 13.44 + ~~0.5 = 13.94~~	8.55		55.845 55.845 − 0.025 55.820

2/5/64

12:30 Removed fuel plate #29-3 from pos # E-6: added al plate # E-5

	E	W		
	E	W	S. Spacer 5.4265	E1 - 17.8430
1	F		South - 5.4450	E5 - 17.8230
2			S. Center - 5.4420	E9 - 17.7860
3	F	F	Center - 5.4490	E7 - 17.8260
4	F		N. Center - 5.4570	E3 - 17.7600
5		F	N. Spacer 5.4504	AVG
6		F	North - 5.4425	
7	F		AVG = 5.4446	
8	F			

		mon (cm)		Scope (cm)
13:04	+ Per (3) 0.5 - 16.25 Rochelle = 15.35 + 0.5 ~~= 15.85~~	9.80	DC	57.110 57.105
			RKR	57.100 57.105
		△	EBJ	57.095 -0.025 57.070
13:15	System very very slightly - Neg		OC	56.420 56.415
			EBJ	56.405 56.405 - 0.025 = 56.380
			RKR	56.410 56.415

Y5764 — Nom (cm) — Scope (cm)

13:30 + Pass (4) 0.5 = 6.65 9.35
Paddle = 5.75 + 0.5 = 6.25

EBT { 56.665 − 0.025 = 56.640
56.660

DC { 56.675
56.680

AKR { 56.660
56.660
56.665

13:53 + Pass (5) 0.5 = 10.2 9.52
Paddle = 9.33 + 0.186

DC { 56.840
56.840

EBT { 56.825 − 0.025 = 56.800
56.825

AKR { 56.800
56.800

15:15 Removed al plate # 29-1 from pos # E-2; added fuel plate # 29-2:

E1 - 17.8430 S. Spacer 5.4260
E2 - 17.8310 Center - 5.4480
E3 - 17.7610 N Spacer - 5.4500

	E	W
1	F	
2	F	
3	F	F
4	F	
5		F
6		F
7	F	
8	F	

2-6-64

		Mon (cm)		Scope (cm)
15:38	+Per (6) 0.9 = 11.2 Rachette = 10.25 + ~~0.5 = 10.84~~ Log n = 60.8 sec = 14.3	8.92	FBO -0.10 = 56.210	56.240 56.235
			AKB	56.220 56.220
			OC	56.275 56.250 56.250
15:48	System very slightly - Neg	8.51	[illegible] = 55.820	55.825 55.830
15:50	System slightly + Pos			55.845
16:00	+Per (7) 0.9 = 17.2 Rachette = 16.3 + ~~0.5 = 16.84~~ ~~Log n = 45.1 sec = 17.64~~	9.13		56.440 56.445 56.420
16:15	+Per (8) 0.9 = 6.1 Rachette = 5.22 + ~~0.5 = 5.724~~ Log n = 183.1 sec = 6.04	8.71		56.025 56.025 56.000
1640	Slightly positive	8.51		55.820 55.825 55.800
1650	+ Period (9) 0.9 = 16.0 [illegible] Rachette = 15.09 + ~~0.5 = 15.64~~ Log n = 51.1 sec = 16.14	9.09		56.395 56.390 56.370
1655	Drain.			

2-6-64

~~2-6-64~~ Moved 2 center elements out from center 1½ slots (540 mil center gap: Added fuel to E-6, W-2, W-7

Measurment of array:

	E (in")	W (in")	Tops of array.
1	17.8450	15.9785	south = 5.4420
2	17.8310	15.9470	south spacer = 5.4260
3	17.7625	15.8220	~~south spacer~~ = 5.4410
4	17.8370	15.8585	center = 5.4490
5	17.8250	15.8560	north C spacer = 5.4570
6	17.7800	15.7890	North spacer = 5.4510
7	17.8260	15.7804	north = 5.4460
8	17.8660	15.7940	AVG = 5.4446
9	17.7850	15.7015	
	AVG 17.8175	AVG 15.8363	

Renumbering plates in partial elements as below:

	East Face	West Face.
1	Fuel - was 29-7 - now E-1	1 al - was W-8 - now W-1
2	Fuel - was 29-2 - now E-2	2 ~~Fuel~~ - was W-2-2 - now W-2 Removed al plate # W-2
3	Fuel - was E-29-8 - now E-3	3 Fuel - was 29-6 - now W-3
4	Fuel - was 29-5 - now E-4	4 al - No number - now W-4
5	al - No number - now E-5	5 Fuel - was 29-4 - now W-5
6	Fuel - was 29-3 - now E-6 Removed al plate # E-5 - now E-6.	6. Fuel - was 2-8 - now W-6
7.	Fuel - was 29-6 - now E-7	7. Fuel - rolled plate equal weight of 29-2. Removed al plate = W-2 now - W-7.
8	Fuel - was 29-8 - now E-8	8. al - No number - now W-8

2/4/64

INSTRUMENT CHECK

INSTRUMENT	RANGE	TRIP	SOURCE DISTANCE	SET	START-UP RANGE
K-1	10 X 10 -12	Meter ✓	6"	-	10 X 10 -12
	"	Fast -	"	-	"
K-2	"	Meter -	6	-	"
		Fast -	"	-	"
R-1					
R-2					
PM-1	700 V	Alarm -	Cart	-	500 V
PM-2	1,200 V	Low -	16"	-	750 V
	"	Alarm ✓	1"	✓	"

LOG N CALIBRATE ✓ OPERATE ✓ SOURCE No. B-80

DUMP WELL PROBE LIGHT

START-UP CHECK LIST

Equipment checked by RKA/ Personnel check by I.D.C.

Instruments and safeties checked and reset by RKA/

Source in checked by RKA/ Source No. M-43

Emergency equipment in control room checked by I.D.C.

Instruments in trip circuit: K-1 K-2 PM-1 PM-2

Red light on by RKA/ Time 14:20

Start-up OK'd by I.D.C. RKA/ Date 2-6-64

8-6-64 See array movement on page 69. Also changes in fuel & al plate numbers.

7/6/64 Moved 2 center elements out from center 1½ slots (540 mil center gap.

Fuel loading on E & W - ends

	E	W
1	F	
2	F	F —
3	F	F
4	F	
5		F
6	F —	F
7	F	F —
8	F	

		mon (cm)		Aspic (cm)
15:16	+ Per (1) ~~6.0~~ 0.9 17.0 Rochelle = 16.07 ~~+ 0.5 = 16.6 ¢~~ ~~Log n = 47.3 sec = 17.0 ¢~~	9.31	⊙	56.635 56.630 .025 56.610
15:28	"Level"	8.69		55.975 55.980 .025 55.955
15:21	+ Per (2) 0.9 = 17.1 Rochelle = 10.23 ~~+ 0.5 = 10.7~~ ~~Log n = 85.8 sec = 11.1 ¢~~	9.05		56.375 56.370 -.025 56.350
15:56	+ Per (3) 0.5 = 6.1 Rochelle = 5.24 + 0.5 = 6.24 ¢ ~~Log n = 165.1 sec = 6.6 ¢~~	8.89		56.200 56.200 -0.025 56.175
16:17	Shut down.			

2-7-64 Removed dl plate #W-8 ; added fuel plate #W-8 (was #2-7)
Fuel backing E & W-ends

	E	W
1	F	
2	F	F
3	F	F
4	F	
5		F
6	F	F
7	F	F
8	F	F

W1 15.9785	E1 17.8450	South = 5.4435
W2 15.9460	E5 17.8250	S. Spacer = 5.4260
W3 15.8210	E9 17.7870	S. Center = 5.4410
W4 15.8585		Center = 5.4480
W5 15.8530		N. Center = 5.4575
W6 15.7900		N. Spacer = 5.4546
W7 15.7780		North = 5.4420
W8 15.7900		
W9 15.7010		

7/7/64

INSTRUMENT CHECK

INSTRUMENT	RANGE	TRIP	SOURCE DISTANCE	SET	START-UP RANGE
K-1	10×10^{-12}	Meter ✓	6"	✓	10×10^{-12}
	"	Fast ✓	"	✓	"
K-2	"	Meter ✓	6"	✓	"
	"	Fast ✓	"	✓	"
R-1					
R-2					
PM-1	700 v	Alarm ✓	cont	✓	500 v
PM-2	1200 v	Low ✓	16"	✓	750 v
	"	Alarm ✓	1"	✓	"

LOG N CALIBRATE ✓ OPERATE ✓ SOURCE No. B-80

DUMP WELL PROBE LIGHT ______

START-UP CHECK LIST

~~Equipment checked by~~ AKAJ ~~Personnel check by~~ I.D.C

~~Instruments and safeties checked and reset by~~ AKAJ

Source in checked by AKAJ Source No. M-43

Emergency equipment in control room checked by AKAJ, IDC

Instruments in trip circuit: K-1 K-2 PM-1 PM-2

Red light on by AKAJ Time 0950

Start-up OK'd by I.D.C RKAJ Date 2-7-63

added fuel plate to pos W-8; 2 center element at 1 1/2 slots from center (540 mil gap) Page 72 for loading.

		mon (cm		[illegible] (cm
0911	+ Pos (1) 1.0 - 15.3	9.05	☐	56.370
	Roulette 14.33 ~~+0.5 = 14.84~~			
	~~log n = 53.8 sec = 15.64~~		Plot	56.375
				56.340
		8.50		55.790
0925	System just crit.			55.790
				55.765

Telescope not level; Std line indicated -0.01 cm correction

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7/1/64

		mom (cm)	keff (cm)
0935	+Per (2)		
	Rochelle, 9.95 ~~10.05~~ 1.0 = 11.0 ¢	8.90	56.195
	Log n = 86.4 cm = 11.1 ¢		56.195
			.025
			56.170
0948	Drain:		

10:15 Removed fuel plate # W-2: added Al plate # W-2:

South	5.4450	W1	15.9785
S. Spacer	5.4260	W2	15.9470
S. Center	5.4420	W3	15.8220
Center	5.4480		
N. Center	5.4560		
N. Spacer	5.4510		
North	5.4450		

Fuel loading E & W ends

	E	W
1	F	
2	F	
3	F	F
4	F	
5		F
6	F	F
7	F	F
8	F	F

		mom (cm)	keff (cm)
1046	+Per (3)		
	Rochelle 17.20 ~~+1.1~~ +1.0 = 18.2	9.95 Δ	57.215
	Log m = 43.5 cm = 18.0 ¢		57.220
			-.025
			57.195

		mon (cm)	scope (cm)
10:55	System just crit.	9.12	56.430
			56.430 - 0.025 56.405
11:11	+ Per (4) Rochelle = 9.02 + 0.5 = 9.54 Log n - 100 sec = 9.94	9.50	56.825
			56.825 - 0.025 56.800
11:25	Drain.		

2-7-64 1 Removed fuel plate #E-6; added al plate #E-6

2 Removed fuel plates #W-7, #W-8; added al plates #W-7; #W-8.

2-7-64 & 2-10-64	E1 17.8450	W1 15.9785	South 5.4440
	E4 17.8350	W4 15.8570	S. Spacer 5.4260
	E7 17.8260	W7 15.7700	S. Center 5.4400
	E8 17.8660	W8 15.7920	Center 5.4470
	E9 17.7860	W9 15.7005	N. Center 5.4545
	E5 17.8240	W5 ~~15.8050~~ 15.8550	N. Spacer 5.4490
	E6 17.7800	W6 15.7910	North 5.4430
	E2 17.8300	W2 15.9470	
	E3 17.7635	W3 15.8240	

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Fuel loading E & W ends.

2-10-C-4

	E	W
1	F	
2	F	
3	F	F
4	F	
5		F
6		F
7	F	
8	F	

INSTRUMENT CHECK

INSTRUMENT	RANGE	TRIP	SOURCE DISTANCE	START-UP RANGE
K-1	10 X 10 -12	Meter ✓	7"	
	"	Fast ✓	7"	
K-2	"	Meter ✓	5"	
	"	Fast ✓	"	
R-1				
R-2				
PM-1	700 V ✓	Alarm ✓	Count	
PM-2	1200 V ✓	Low ✓	16"	
	"	Alarm ✓	1"	

LOG N CALIBRATE ✓ OPERATE ✓ SOURCE No. B-80

DUMP WELL PROBE LIGHT _____

2/10/64

START-UP CHECK LIST

Equipment checked by RKH Personnel check by E.D.C

~~Instruments and safeties checked and reset by~~ RKH

Source in checked by RKH Source No. M-43

Emergency equipment in control room checked by E.D.C

Instruments in trip circuit: K-1 K-2 PM-1 PM-2

Red light on by RKH Time 0850

Start-up OK'd by E.D.C RKH Date 2-10-64

Recheck of run 2-5-64: pages 75 & 76 for loading & measurement of array.

		mom (cm)	scale (cm)
0925	+ Per (1) 1.0 = 13.1 Rochelle = 12.11 ~~+0.5 = 12.64~~ Log m = 66.8 sec = 13.4 ¢	9.06	56.355 56.355 0.025 56.330
0940	System just crit	8.57	55.880 55.880 55.855
10:00	+ Per (2) 1.0 = 16.7 Rochelle = 15.67 ~~+0.5 = 16.4~~ Log m = 47.8 sec = 16.9 ¢	9.18	56.460 56.470 .025 56.445
10:15	+ Per (3) 1.0 = 11.0 Rochelle = 10.24 ~~+0.5 = 10.7~~ Log m = 86.9 sec = 11.0 ¢	8.95	56.250 56.245 0.025 56.220
10:50	Drain		

(1) Removed al plate #w-2 ; added fuel plate #w-2.

2, Moved 2 center elements out from center 1/2 slot. Now have (.340 mil) gap.

RKH.

W1 - 15.9820	E1 - 17.8460	South - 5.4440
W2 - 15.9460	E5 - 17.8240	S. Spacer - 5.4260
W3 - 15.8220	E9 - 17.7890	S. Center - 5.4440
W6 - 15.7910		Center - 5.4480
W5 - 15.8575		N. Center - 5.4490
W4 - 15.8600		N. Spacer - 5.4490
W7 - 15.7810		North - 5.4430
W8 - 15.7930		
W9 - 15.7010		

In makeing change in array brake 2 - 40 mil spacers and 1 - 60 mil: Replaced with spacers of equal weight. (2 - 40 mil & 1 - 60 mil.)

Fuel loading E & W ends: (3 40 mil center gap)

	E	W
1	F	
2	F	F
3	F	F
4	F	
5		F
6		F
7	F	
8	F	

		mon (cm)		Scope (cm)
14:35	+ Per (4) +1.0 = 14.3 Rachette = 13.34 ~~+0.5 = 13.844~~ Log n = 60.3 sec = 14.44	9.10	⊕	56.405 56.395 .025 56.375
14:50	System just crit	8.60		55.905 55.880

15:10 Mon (cm) Scope (cm)

+Per (5) 1.0 = 10.24 ~~56.250~~

Roulette = 9.22 + ~~0.5 = 9.74~~ 8.90 ~~56.045~~

Log n = ~~9...~~ 96.7 sec = 10.24 ~~56.240~~

56.245

56.240

56.2[illegible]

2-11-64

1. Removed Al plate # E-6; added fuel plate # E-6.
2. Moved ~~to~~ 2 center elements out from center 5 1/2 slots.
Now have (.540 mil gap in center.)

E1 - 17.8440	W3 - 15.8260	South = 5.4420
E2 - 17.8300	W5 - 15.8600	S. Spacer = 5.4250
E3 - 17.7640	W7 - 15.7790	S. Center = 5.4420
E4 - 17.8360		Center = 5.4490
E5 - 17.8250		N. Center = 5.4550
E6 - 17.7820		N. Spacer = 5.4530
E7 - 17.8280		North = 5.4430
E8 - 17.8670		
E9 - 17.7850		

80

INSTRUMENT CHECK

INSTRUMENT	RANGE	TRIP	SOURCE DISTANCE	SET	START-UP RANGE
K-1	10X10 - 12	Meter —	6"	~	10x10 - 12
	"	Fast —	"	~	"
K-2	"	Meter —	6"	~	"
	"	Fast —	"	~	"
R-1					
R-2					
PM-1	7000 ~	Alarm —	Cont	~	5000 ~
PM-2	12000 ~	Low —	16"	~	7500 ~
	"	Alarm —	1"	~	"

LOG N CALIBRATE ~ OPERATE ~ SOURCE No. 13-80

DUMP WELL PROBE LIGHT —

START-UP CHECK LIST

Equipment checked by RKB Personnel check by E.D.C

Instruments and safeties checked and reset by RKB

Source in checked by RKB Source No. M-93

Emergency equipment in control room checked by E.D.C

Instruments in trip circuit: K-1 K-2 PM-1 PM-2

Red light on by RKB Time 10:05

Start-up OK'd by E.D.C RKB Date 2-11-64

Moved 2 center elements out from center 5½ slots. Now have 0.540 mil gap.

E	W
1 - F	1 -
2 - F	2 - F
3 - F	3 - F
4 - F	4 -
5 -	5 - F
6 - F	6 - F
7 - F	7
8 - F	8

		Mon (cm)	Scope (cm)
10:35	+Per (1)		61.350
	log n = 133.1 sec = 7.94		
10:50	Drain!		

12:00 (1) Removed al plates # W-4, W-7, W-8; added fuel plate's # W-4, W-7, W-8,
(2) Removed al plate # E-5; added fuel plate # E-5

Fuel loading E + W ends (.540 mil gap)

	E	W
1	F	
2	F	F
3	F	F
4	F	F
5	F	F
6	F	F
7	F	F
8	F	F

W1 - 15.9785	E1 - 17.8460	South	= 5.4440
W2 - 15.9465	E2 - 17.8320	S. Spacer	= 5.4260
W3 - 15.8220	E3 - 17.7640	S. Center	= 5.4410
W4 - 15.8570	E4 - 17.8380	Center	= 5.4460
W5 - 15.8560	E7 - 17.8290	N. Center	= 5.4500
W6 - 15.7910	E8 - 17.8720	N. Spacer	= 5.4530
W7 - 15.7800	E9 - 17.7890	North	= 5.4420
W8 - 15.7940	E5 - 17.8265		
W9 - 15.7010	E6 - 17.7810		

7/11/67 — Mon (cm) — Scope (cm)

13:25 +Per: (2) 1.0 = 10.9¢ — 8.40 + — 55.715
Rochette: 9.91, ~~+.05 = 10.4¢~~ — 55.720
Log n = 87.5 sec = 11.0¢ — 0.025
55.695

13:40 System very very slightly +Pos — 55.355
13.42 System very very slightly -Neg — 55.345

(Water probably not over plates? N.C. as critical.)

1400 + Period #3 — 8.60 — 55.900
Rochette = 15.21 ~~+0.5 = 15.7¢~~ + 1.0 = 16.2¢ — 55.895
Log n = 52.7 sec = 15.8¢ — 55.870

1415 + Period #4 — 8.45 — 55.775
Rochette = 11.5 ~~+0.5 = 12.0¢~~ + 1.0 = 12.5¢ — 55.775
Log n = 73.9 sec = 12.4¢ — 0.020
55.755

14:28 Dinner!

14:55 Removed fuel plate # W-8; added al. plate # W-8.

fuel loading (.540 mil gap)

	E	W			
			W1-15.9785	E1-17.8440	South = 5.4440
1	F		W2-15.9470	E5-17.8240	S. Spear - 5.4270
2	F	F	W3-15.8250	E9-17.7875	S. Center = 5.4410
3	F	F	W4 15.8580		Center = 5.4470
4	F	F	W5-15.8510		N. ~~Center~~ = 5.4510
5	F	F	W6-15.7905		N. Spear - 5.4470
6	F	F	W7-15.7800		North - 5.4420
7	F	F	W8-15.7910		
8	F		W9-15.7005		

		Mon (am)	Scope (cm)
15:35	+ Per (5) 1.0 = 16.7 Rochette = 15.69 + 0.5 = ~~16.24~~ Log n = 47.8 sec = 16.24	8.79	56.100 56.095 .025 ~~56.070~~
15:48	System just crit:	8.20	55.510 55.485
16:00	+ Per (6) +1.0 = 10.75 Rochette = 13.75 ~~+0.5 = 13.25~~ Log n = 64.6 sec = 13.7 sec	8.65	55.975 55.970 .025 ~~55.950~~
16:12	+ Per (7) Log n = 88.5 sec = 10.94 Rlivette = 9.8 + 1.0 = 10.84	8.53	55.855 55.850 025 55.830

2-12-64 (1) Removed the west "displaced" element:
(2) Removed fuel plate # W-2, # E-2: Replaced with al plates # E-2, W-2:
(3) Fill have .540 mil gap in center: (25) full elements + 2 partials as shown on page 84. This opened the water space 5¼ out on west.

W1 - 15.9785	E1 - 17.8480	South	= 5.4430
W2 - 15.9470	E2 - 17.8330	S Spacer	= 5.4260
W3 - 15.8230	E3 - 17.7650	S. Center	= 5.4390
W4 - 15.8590		Center	= 5.4420
W5 - 15.8570		N. Center	= 5.4480
W6 - 15.7910		N Spacer	= 5.4540
W7 - 15.7810		North	= 5.4410
W8 - 15.7935			
W9 - 15.7015			

84

E W

1 F

2

3 F F

4 F F

5 F F

6 F F

7 F F

8 F

INSTRUMENT CHECK

INSTRUMENT	RANGE	TRIP	SOURCE DISTANCE	SET	START-UP RANGE
K-1	10 X10 -12	Meter ✓	6"	✓	10 X40 -12
	"	Fast ✓	"	✓	"
K-2	"	Meter ✓	6"	✓	"
	"	Fast ✓		✓	"
R-1					
R-2					
PM-1	7000 ✓	Alarm ✓	coal	✓	5000 ✓
PM-2	12000 ✓	Low ✓	16"	✓	7500 ✓
	"	Alarm ✓	1"	✓	"

LOG N CALIBRATE ✓ OPERATE ✓ SOURCE No. D-80

DUMP WELL PROBE LIGHT _____

2/12/64

START-UP CHECK LIST

Equipment checked by RKM Personnel check by I.D.C

Instruments and safeties checked and reset by RKM

Source is checked by RKM Source No. M-43

Emergency equipment in control room checked by I.D.C

Instruments in trip circuit: K-1 K-2 PM-1 PM-2

Red light on by RKM Time 0920

Start-up OK'd by I.D.C RKM Date 2-12-64

See paper 83, & 84. (.590 mil gap, with ~~west element displaced~~ displaced west element out; 25 full elements + 2 partial; Scope reading to scribe line = "59.610" (correction now (-0.030 was -0.025)

			mon(cm)		Scope (cm)
10:00	+Rec (1)	I.D = 12.16	8.71	☒	56.000
	Rabelle = 11.59 + 0.57 = 12.16				55.995
	Log n = 73.3 cm = 12.54				530
					55.470
10:13	System just exist		8.021		530
					55.940
					530
					55.410
10:23	+Rec (2)	I.D = 17.17	8.92		56.225
	Rabelle = 16.69 + 0.5 = 17.24				56.230
	Log n = 43.5 cm = 18.04				-0.030
10:30	Drain.				56.200

11:00 (1) Removed al. plate #W2; added fuel plate #W2

(2) Removed fuel plate #E4; added al. plate #E4

(3) Removed al. plate #E2; added fuel plate #E2

Twice loading (with 1 displaced element out; 25 full elements + 2 partials)

E.	W
1 - F	1 -
2 - F	2 - F
3 - F	3 - F
4 -	4 - F
5 - F	5 - F
6 - F	6 - F
7 - F	7 - F
8 - F	8 -

2-12-64 W1-15.9785 E1-17.8440 South - 5.4470

W2-15.9470 E2-17.8300 S Spacer - 5.4250

W3-15.8230 E3-17.~~8300~~ 7628 S. Center - 5.4420

W5-15.8565 E4-17-8370 Center - 5.4447

W7-15.7820 E5-17.8245 N. Center - 5.4555

E6-17.7830 N. Spacer - 5.4510

E7-17.8260 North - 5.4430

E8-17.8667

E9-17.7860

Mom (cm) Scope (cm)

1240 +Res (3) 1.0 - 1V15 ¢ 8.92 [X] 56.240
Rochelle - 11.465 + 0.5 = ~~12.0 g~~
Log n = 74.4 nc = 12.44

56.240
0.030
56.210

1255 System just cut: 8.50 55.800

55.800
030
55.770

13:05 +Res (4) 1.0 - 17.0 ¢ 9.11 56.440
Rochelle = 15.98 + 0.5 ~~= 16.48 g~~
Log n = 46.7 = 17.24

56.440
030
56.410

13:15 Drain:

15:35 W1-15.9780 E3-17.7650 South - 5.4430

W2-15.9475 E5-17.8250 S Spacer - 5.4255

W3-15.8225 E7-17.8250 S. Center - 5.4410

W4-15.8600 Center = 5.4450

W5 15.7580 N. Center = 5.4540

W6-15.7905 N. Spacer = 5.4500

W7-15.7790 North = 5.4430

W8-15.7920

W9-15.7020

2-12-63 Moved 2 center elements out from center 10½ slots. Now have 540" mil gap in center: 26 full elements + 2 partial:

Fuel loading E & W. (Displaced element back in!)

	E	W
1	F	
2	F	F
3	F	F
4		F
5	F	F
6	F	F
7	F	F
8	F	

INSTRUMENT CHECK

INSTRUMENT	RANGE	TRIP		SOURCE DISTANCE	SET	START-UP RANGE
K-1	10 x 10⁻¹²	Meter	✓	6"	—	10×10^{-12}
	"	Fast	✓	"	—	"
K-2	10×10^{-12}	Meter	—	5"	—	"
	"	Fast	✓	"	—	"
R-1						
R-2						
PM-1	700 v	Alarm	—	Out	✓	500 v
PM-2	1200 v	Low	—	16"	✓	750 v
	"	Alarm	—	"	✓	"

LOG N CALIBRATE ✓ OPERATE ✓ SOURCE No. B-80

DUMP WELL PROBE LIGHT ____

2/13/64

START-UP CHECK LIST

Equipment checked by AKAJ Personnel check by E.D.C

Instruments and safeties checked and reset by AKAJ

Source in checked by AKAJ Source No. M-43

Emergency equipment in control room checked by E.D.C

Instruments in trip circuit: K-1 K-2 PM-1 PM-2

Red light on by AKAJ Time 0810

Start-up OK'd by E.D.C D.C AKAJ Date 2-13-64

See page #87 for loading!

Scope = 59.620 (correction now is 0.040 was 0.025.)

		nom Cm	Scope (cm)
0830	+Per (1 ~~15-29~~	8.45	55.775
	Rochette = 27.96 + ~~0.5 = 28.5~~		55.770
	Eq n = 19.01 cu = 29.34		55.725
0835	Drain!		

0850 Removed fuel pl. #E6; Replaced with al. plate #E6

E1-17.8425	W3-15.8230	South = 5.4440
E2-17.8300	W5-15.8610	S. Spacer = 5.4265
E3-17.7625	W7-15.7810	S. Center = 5.4400
E4-17.8375		Center = 5.4470
E5-17.8240		N. Center = 5.4480
E6-17.7820		N. Spacer = 5.4510
E7-17.8280		North = 5.4410
E8-17.8640		
E9-17.7875		

Fuel loading E + W (540 mil gap) (2 element at 10½ slots)

	E	W
1	F	
2	F	F
3	F	F
4		F
5	F	F
6		F
7	F	F
8	F	

		mon (cm)		scope (cm)
0930	+ Rev (2) 1.0 = 15.3 F Rachelle = 14.29 + ~~0.5 = 14.84~~ ~~Jay n = 54.3 sec = 15.54~~	8.83	⊗	56.145 56.140 56.190
0940	system just crit	8.30 ~~8.83~~		55.610 55.610 55.570
0950	+ Rev (3) ~~1.0 = 11.15 L~~ Rachelle = 10.15 + ~~0.5 = 10.65 f~~ ~~Jay n = 84.7 sec = 11.24~~	8.69		55.970 55.975 55.530
10:12	system very very slightly - neg			55.590 55.550

10:13 Drain.

1400 (1) Removed al. plate E6; added fuel plate #E6
(2) Removed fuel plate E5; added al. plate #E5

over

E1-17.8440 ~~W~~ South = 5.4430
E2-17.8310 W7-15.7810 S. Spacer = 5.4250
E3-17.7610 W8-15.7935 S. Center = 5.4390
E4=17.8380 W9-15.7030 Center = 5.4410
E5-17.8250 W4-15.8570 N. Center = 5.4500
E6-17.7810 W5-15.8590 N. Spacer = 5.4500
E7-17.8290 W6-15.7890 North = 5.4420
E8-17.8670 W1-15.9790
E9-17.7880 W2 15.9460
W3-15.8220

Fuel loading E & W (.540" mil gap: 2 elements + 0½ slots)

	E	W
1	F	
2	F	F
3	F	F
4		F
5		F
6	F	F
7	F	F
8	F	

Scope read 59.640: correction now is 0.060 mom (Em) was 0.025 — Scope (cm)

1447 +Per (4) 9.05 ⊕ 56.390
Rochette = 12.325 + 1.0 = 13.325¢ ✓
Log n = 67.4 sec = 13.3¢
56.390
.060
56.330

1500 System very very slightly +Per: 8.55 55.885
.060
55.825

Scope now read 59.620: correction now is 0.040 was 0.025
15:13 +Per (5) 8.91 56.240
Rochette = 9.31 + 1.0 = 10.3¢
Log n = 76.1 sec = 10.1¢
56.240
.040
56.200

2-13-04
&
2-19-04 (1) Removed al plate # [redacted] E-5; added fuel plate # E-5
(2) Removed fuel plate # W-5; added al plate # W-5.

Fuel loading E. & W.

	E	W
1	F	
2	F	F
3	F	F
4		F
5	F	
6	F	F
7	F	F
8	F	

E1	17.8450	W1 15.9790	South 5.4420
E2	17.8315	W2 15.9480	S. Spacer 5.4265
E3	17.7630	W3 15.8230	S. Center 5.4430
E4	17.8370	W4 15.8540	Center ~~5.4530~~ 5.4430
E5	17.8250	W5 15.8570	N. Center ~~5.4500~~ 5.4530
E6	17.7805	W6 15.7910	N. Spacer 5.4500
E7	17.8270	W7 15.7815	North 5.4420
E8	17.8650	W8 15.7910	
E9	17.7850	W9 15.7020	

2/14/69

INSTRUMENT CHECK

INSTRUMENT	RANGE	TRIP	SOURCE	SET	TRIP
K-1	10×10^{-12}	Meter ✓	6"	–	10×10^{-12}
"		Test ✓	"	–	"
K-2	10×10^{-12}	Meter ✓	"	–	"
"		Test ✓	"	–	"
R-1					
R-2					
PM-1	700 v	Alarm ✓	Out	–	500 v
PM-2	1200 v	Low ✓	16".	–	750 v
"	"	Alarm ✓	1"	–	"

LOG N CALIBRATE ✓ OPERATE ✓ SOURCE No. B-80

DUMP WELL PROBE LIGHT —

START-UP CHECK LIST

Equipment checked by RKJ Personnel check by E.D.C

Instruments and safeties checked and reset by RKJ

Source in checked by RKJ Source No. M-93

Emergency equipment in control room checked by E.D.C

Instruments in trip circuit: K-1 K-2 PM-1 PM-2

Red light on by RKJ Time 0845

Start-up OK'd by I.D.C R.K.J Date 2-14-69

Scope made 59,620: Correction now is 0.040 was 0.025.

See page 91 for fuel loading & measurements.

7/14/64

	Mon (cm)		Liquee (cm)
09.12 ~~0918~~ + Per (1) Rachette = 9.998 + 1.0 = 11.0¢ ✓	8.95	⊕	56.265
			56.260
			Corrected = 56.225 ✓
0930 System just cool;	8.53		55.855
			Corrected 55.815 ✓
0940 + Per (2) Rachette = 15.67 + 1.0 = 16.7¢ ✓	9.18 ~~9.16~~		56.490
			56.480
			avg = 56.485
			−.040
			corrected 56.445 ✓

10:30 (1) Removed fuel pl. #E6; Replaced with Al pl. #E6
(2) Removed Al plate #W5; Replaced with fuel plate #W5

E1 - 17.8450	W1 - 15.9785	South	= 5.4420
E2 - 17.8310	W2 - 15.9475	S. Spacer	= 5.4260
E3 - 17.7620	W3 - 15.8235	S. Center	= 5.4400
E4 - 17.8390	W4 - 15.8575	Center	= 5.4430
E5 - 17.8250	W5 - 15.8565	N. Center	= 5.4500
E6 - 17.7810	W6 - 15.7950	N. Spacer	= 5.4510
E7 - 17.8290	W7 15.7805	North	= 5.4430
E8 - 17.8690	W8 15.7930		
E9 - 17.7870	W9 15.7030		

Fuel loading

#	E	W
1	F	
2	F	F
3	F	F
4		F
5	F	F
6		F
7	F	F
8	F	

		mon (cm)		keff (corr)
1140	+Rev (3) Rochette = 19.17 + 1.0 = 20.2 ✓	9.01	⊕	56.340 56,340 -.040 56.300 ✓
1148	System slightly – Neg	8.30		55,600 -.040 55.560
1200	+Rev (4) Rochette = 10.85 + 1.0 = 11.6 ✓	8.65		56.000 56.000 -.040 55.960

array ~~rebuilt~~ as of 2/10/64. Uniform spacing, 26 elements. Purpose is for zero check. partials as p. 76

Fuel loading

				E	W
W1-15.9785	E1-17.8440	South	5.4450		
W2-15.9460	E2-17.8325	S. Spacer	5.4265	1 F	
W3-15.8240	E3-17.7630	S. Center	5.4400	2 F	
W4-15.8580	E4-17.8370	Center	5.4460	3 F	F
W5-15.8575	E5-17.8250	N. Center	5.4490	4 F	
W6-15.7905	E6-17.7805	N. Spacer	5.4460	5	F
W7-15.7820	E7-17.8280	North	5.4420	6	F
W8-15.7945	E8-17.8670			7 F	
W9-15.7065	E9-17.7875			8 F	

		mon (cm)		keff (corr)
1513.1	+Rev (5) Rochette = 11.01 + 1.0 = 12.0 ✓	8.91	X	56.245 56.250 – .042 .040 56.242

56.210

	Mom (cm)	Scope (cm)
15:45 System very slightly + Pos	8.51	55.840
		.040
		55.800
15:48 + Pos (6)	9.15	56.465
Rheostat 16.74 + 1.0 = 17.74		56.460
		.040
		56.[illegible]
16:12 Drain!		

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INSTRUMENT CHECK

2/17/64

INSTRUMENT	RANGE	TRIP	SOURCE DISTANCE	SET	START-UP RANGE
K-1	10×10^{-12}	Meter ✓	6"	✓	10×10^{-12}
"		Fast ✓	"		"
K-2	10×10^{-12}	Meter ✓	5"	✓	"
"		Fast ✓	"	✓	"
R-1					
R-2					
PM-1	700 ✓	Alarm ✓	cont	✓	500 ✓
PM-2	1200 ✓	Low ✓	16"	✓	900 ✓
"		Alarm ✓	1"	✓	"

LOG N CALIBRATE ✓ OPERATE ✓ SOURCE No. 43-80

DUMP WELL PROBE LIGHT

START-UP CHECK LIST

Equipment checked by RKG/c Personnel check by I.D.C.

Instruments and safeties checked and reset by RKG/c.

Source in checked by RKG/c Source No. M-43

Emergency equipment in control room checked by I.D.C.

Instruments in trip circuit: K-1 K-2 PM-1 PM-2

Red light on by RKG/c Time 0900

Start-up OK'd by I.D.C RKG/c Date 2-17-64

Data for this day is in another log (DWM). He is attempting to measure Rossi-2. Neutron level too high.

START-UP CHECK LIST

Equipment checked by AKK Personnel check by I.D.C

Instruments and safeties checked and reset by AKK

Source in checked by AKK Source No. M-43

Emergency equipment in control room checked by I.D.C

Instruments in trip circuit: K-1 K-2 PM-1 PM-2

Red light on by AKK. Time 1455

Start-up OK'd by I.D.C AKK Date 2-17-63

Scope read 59,620. Correction still 0.040.

Measurements of array:

	East face	West face	Top of array
1	17.8450	15.9780	South = 5.4450
2	" .8315	" .9470	South L. = 5.4260
3	" .7620	" .8240	South C = 5.4410
4	" .8360	" .8580	Center = 5.4430
5	" .8255	" .8565	North C = 5.4520
6	" .7820	" .7910	North S = 5.4490
7	" .8270	" .7805	North = 5.4420
8	" .8665	" .7900	
9	" .7875	" .7010	

Fuel loading

East face	West face
1 - F	1
2 - F	2
3 - F	3 - F
4 - F	4
5 - F	5
6 - F	6
7 - F	7
8 - F	8

(1) Removed al plates #s E-5-E-6.
added fuel plate's # E-5-E-6.

(2) Removed fuel plate # w-5-w-6.
added al plate # w-5-w-6

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		Norm (cm)	Scaper (cm)
15:19	+ Per (1) Rochette = 8.86 + 1.0 = 9.9 ℓ	8.90 Ⓧ	56.215
			56,210
			any + counties = 56.170
15:35	System very very slightly -neg.	8.57 (cm)	55.880 000
			55,840
15:46	+ Per (2) Rochette = 15.42 + 1.0 = 16.4 ℓ	9.15	56,480
			56,475
			any + counties 56,440
16:00	Shut down.		

INSTRUMENT CHECK

INSTRUMENT	RANGE	TRIP	SOURCE DISTANCE	SET	START-UP RANGE
K-1	10 X 10	Meter ✓	6"	✓	10 X 10 ✓
	"	Fast ✓	"	✓	"
K-2	"	Meter ✓	7"	✓	"
	"	Fast ✓	"	✓	"
R-1					
R-2					
PM-1	700 ✓	Alarm ✓	Cent	✓	500 ✓
PM-2	1200 ✓	Low ✓	15"	✓	750 ✓
	"	Alarm ✓	1"	✓	"

LOG N CALIBRATE ✓ OPERATE ✓ SOURCE No. B-80

DUMP WELL PROBE LIGHT

START-UP CHECK LIST

Equipment checked by AKAJ Personnel check by E.D.C

Instruments and safeties checked and reset by AKAJ

Source in checked by AKAJ Source No. M-43

Emergency equipment in control room checked by E.D.C

Instruments in trip circuit: K-1 K-2 PM-1 PM-2

Red light on by AKAJ Time 10:20

Start-up OK'd by E.D.C AKAJ Date 2-18-64

"Blue line" on manometer reads 59.620 ∴ correction is still -0.040 cm.

(1) Moved west element 1 full slot (.200 mil) to west.

(2) Moved west-center element to where west element was. (Now have 340 mil gap in center.

(3) Removed fuel plates # E-5, E-6; added Al plate # E-5, E-6

Measurements of array:

	East #	West	Top	
1	17.8460"	15.7790"	South	- 5.6430
2	" .8320	" .7475	S-spacer	" .6240
3	" .7625	" .6265	S.C. spacer	- " .6410
4	" .8355	" .6580	Center	- " .6420
5	" .8250	" .6550	N.C. spacer	- " .6500
6	" .7840	" .5920	N. spacer	- " .6480
7	" .8265	" .5790	N	- " .6450
8	" .8690	" .5895		
9	" .7800	" .5000		

End loading E + W. Faces:

1 - F	1 -
2 - F	2 -
3 - F	3 - F
4 - F	4 -
5 -	5 -
6 -	6 -
7 - F	7 -
8 - F	8 -

		Mon (cm)	Hope (cm)
10,40	System super crit:	4.33	52.035
10.45	Drain:		
16;00	Removed fuel element "E-4" added al element "E-4.		

	East:	West (check)	TOP:
1	17.8445	15.7790	
2	" .8310		South S. = 5.6240
3	" .7625		Center = 5.6430
4	" .8360		North S = 5.6480
5	" .8255	15.670	
6	" .7840		
7	" .8250		
8	" .8670		
9	" .7890	15.5025	

Fuel loading E-W. fuel

E	W
1 - F	1
2 + F	2
3 - F	3 - F
4	4
5	5
6	6
7 F	7
8 F	8

11:35	System super crit:	6.60	53.905
11'40	Drain		
12'30	Removed fuel plates # E2, E3 Replaced with al. plates # E2 + E3.		

12'45	E1 17.8450	W 3 15.6235	South - 5.6450
	E2 17.8310	W S 15.6560	S. Spacer 5.6250
	E3 17.7620	W - 15.5800	S Center 5.6438
	E4 17.		Center 5.6440
	E5 17.8250		N. Center 5.6535
	E6		N Spacer 5.6490
	E7 17.8260		North 5.6420

Fuel loading E & W faces -

	E	W
1	F	
2		
3		F
4		
5		
6		
7	F	
8	F	

		Mon (cm)		Leg (cm)
13:15	+ Pu (1) Rackette = 19.95 + 1.0 = 21.0 ¢	8.73	X	56.025 56.025 .040 Cor 55.985
1324	Septum very very slightly - Hg.	8.05		55.325 (1 KKL)
13:35	+ Pu (2) Rackette = 14.54 + 1.0 = 15.54 ¢	8.51		55.830 55.835 0.040 55.795

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2-19-64 Removed fuel plates #E-1, E, 8. added al plates #E-7, E-8.

Fuel loading E & W fuels

	E	W			
			E1 17.8450	W3 15.6250	South 5.6450
1	F		E2 17.8315	W5 15.6565	S. Spacer 5.6250
2			E3 17.7630	W7 15.5815	S. Center 5.6430
3		F	E4 17.8370		Center 5.6430
4			E5 17.8255		N. Center 5.6480
5			E6 17.7830		N. Spacer 5.6490
6			E7 17.8260		North 5.6440
7			E8 17.8670		
8			E9 17.7875		

INSTRUMENT CHECK

INSTRUMENT	RANGE	TRIP	SOURCE RANGE	SET	START-UP RANGE
K-1	10 x 10 -12	Meter ✓	5"	✓	10 x 10 -12
	"	Fast ✓	"	✓	"
K-2	10 x 10 -12	Meter ✓	6"	✓	"
	"	Fast ✓	"	✓	"
R-1					
R-2					
PM-1	700 ✓	Alarm ✓	Cent	✓	500 ✓
PM-2	1200 ✓	Low ✓	16"	✓	750 ✓
	"	Alarm ✓	1"	✓	"

LOG N CALIBRATE ✓ OPERATE ✓ SOURCE No. B-80

DUMP WELL PROBE LIGHT

START-UP CHECK LIST

Equipment checked by RKG/ Personnel check by F.D.C.

Instruments and safeties checked and reset by RKG/

Source in checked by RKG/ Source No. M-43

Emergency equipment in control room checked by F.D.C RKG/

Instruments in trip circuit: K-1 K-2 PM-1 PM-2

Red light on by RKG/ Time 0855

Start-up OK'd by F.D.C. RKG/ Date 2-19-63

Scope mode 59.620 ; correction still 0.040 cm.

		Norm (cm)		Scope (cm)
~~09~~ 0911	+Rem (1) Rochelle = 12.525 + 1.0 = 13.54	9.11	⊗	56.430
				56.430
				− .040
			corr	56.390
0925	Lyten just exit.	8.67		55.965
				− .040
				55.925
0939	+Rem (2)	9.00		56.305
	Rochelle = 8.935 + 1.0 = 9.94			56.300
				− .040
			corr	56.262

2-27-64 E1. 17.8450 W1 15.9780 South - 5,4450
E2. 17.8340 W2. 15.9520 S Spacer - 5.4~~4~~240
E3. 17.7630 W3. 15.8250 S. Center - 5.4450
E4. 17.8370 W4. 15.8580 Center - 5.4450
E5. 17.8250 W5. 15.8570 N. Center 5.4490
E6. 17.7825 W6. 15.7880 N. Spacer 5.4550
E7. 17.8270 W7. 15.7810 North 5.4480
E8. 17.8670 W8. 15.7950
E9. 17.7880 W9. 15.7020

E W Fuel loading E + W faces

	E	W
1	F	
2	F	
3	F	F
4	F	
5		F
6		F
7	F	
8	F	

INSTRUMENT CHECK

INSTRUMENT	RANGE	TRIP	SOURCE DISTANCE	SET	START-UP RANGE
K-1	10 x 10 -12	Meter ✓	6"	✓	10 x 10 -11
	"	Fast -	"	✓	"
K-2	"	Meter -	"	✓	"
	"	Fast ✓	"	✓	"
R-1					
R-2					
PM 1	700 v	Alarm ✓	cent	✓	500 v
PM-2	1200 v	Low ✓	16"	✓	750 v
	"	Alarm ✓	1"	✓	"

LOG N CALIBRATE ✓ OPERATE ✓ SOURCE No. D-80

PUMP WELL PROBE LIGHT

START-UP CHECK LIST

Equipment checked by AKAJ Personnel check by I.D.C

Instruments and safeties checked and reset by AKAJ.

Source in checked by AKAJ Source No. M-43

Emergency equipment in control room checked by I.D.C

Instruments in trip circuit: K-1 K-2 PM-1 PM-2

Red light on by AKAJ. Time 12:50

Start-up OK'd by I.D.C AKAJ. Date 2-27-64

Uniform array (.140 mil spacing) see page 104 End plates loading:
Scope reads 59.605 on scribe line - corrections now 0.025

		(mom) (cm)		(scope) (cm)
1314	+ Per (1) Rachette = 15.05 + 1 = 16.14	9.19	☒	56.480 56.475 .025 56.450
1329	System just crit.	8.57		55.875 55.880 .025 55.850
1344	+ Per (2) Rachette = 9.55 + 1 = 10.554	9.00		56.290 56.290 .025 56.265
1400	+ Per (3) Rachette = 15.35 + 1 = 16.35	9.18		56.470 56.470 .025 56.445
1419	+ Per (4) Rachette = 11.94 + 1.04 = 12.94	~~9.11~~ 9.05		56.330 56.330 .025 56.305
1435	Shutdown:			

2-27-64	E1. 17.8440	W1. 15.9785	South	5.4450
	E2. 17.8340	W2. 15.9460	S. Spacer	5.4260
	E3. 17.7650	W3. 15.8225	S. Center	5.4420
	E4. 17.8360	W4. 15.8580	Center	5.4440
	E5. 17.8230	W5. 15.8565	N. Center	5.4510
	E6. 17.7840	W6. 15.7910	N. Spacer	5.4510
	E7. 17.8290	W7. 15.7820	North	5.4450
	E8. 17.8470	W8. 15.7960		
	E9. 17.7865	W9. 15.7000		

Fuel loading E & W faces.

	E	W
1	F	
2	F	[redacted]
3	F	F
4	F	
5		F
6	F	
7	F	
8	F	

1. added fuel ~~plate~~ element # E-6 ; removed ~~added~~ al plate # E-6.
2. Removed fuel plate # W-6 ; added al plate # W-6

INSTRUMENT CHECK

INSTRUMENT	RANGE	TRIP	SOURCE DISTANCE	SET	START-UP RANGE
K-1	10 x 10 -12	Meter ✓	6"	—	10 x 10 -12
	"	Fast ✓	"	—	"
K-2	10 x 10 -12	Meter ✓	"	—	"
	"	Fast ✓	"	—	"
R-1					
R-2					
PM-1	700 v	Alarm ✓	cont	—	500 v
PM-2	1200 v	Low ✓	16"	—	750 v
	"	Alarm ✓	1"	—	"

LOG N CALIBRATE ✓ OPERATE ✓ SOURCE No. B-80

DUMP WELL PROBE LIGHT ——

START-UP CHECK LIST

Equipment checked by RKN Personnel check by RKN

Instruments and safeties checked and reset by RKN

Source in checked by RKN Source No. M-43

Emergency equipment in control room checked by I.D.C

Instruments in trip circuit: K-1 K-2 PM-1 PM-2

Red light on by RKN Time 0810

Start-up OK'd by I.D.C RKN Date 2-28-64

Sequence made 59,605 : Correction now 0.025 cm.

Uniform array (.140 mil spacing). See page 106 for end plate loading:

		Mon (cm)	Sequence (cm)
0832	+ Per (1)	9.20	56.505
	Rodlette = 17.68 + 1.0 = 18.7 ✓		56.505 - 0.025
			56.480

		Nom(am)	Hope Cons
0842	hysteresis very slightly + Pos		55.835
0845	hysteresis very slightly - Neg		55.825
			avg = 55.830
	RRR's guide line reading = 55.595 : His correction = 0.015		
0905	#2 Period	56.335 = .015	56.320 / RRR
	Plusette 13.07 + 1.0 = 14.1		56.320
			56. ~~450~~ 345
		= .015 - .025	56. 340 / E

10:35 w-1 15.9785 E1. 17.8440 South - 5.4480
w-2. 15.9475 E2 17.8325 S. Spacer - 5.4260
w3. 15.8235 E3. 17.7630 S. Center - 5. 4430
w4. 15.8580 E4. 17.8390 Center - 5. 4470
w5. 15.8560 E5 17.8250 N-Center - 5. 4540
w6 15.7910 E6. 17.7810 N. Spacer 5. 4560
w7. 15.7790 E7 17.8300 North - 5.4430
w8. 15.7925 E8. 17.8690
w9. 15.7010 E8. 17.7880

Fuel loading

	E	W
1	F	
2	F	
3	F	F
4		F
5		F
6	~~F~~	
7	F	
8	F	

7/28/64

The preceding end plate loading (p. 108) is the result of adding fuel to W-4 and removing from E-4, to evaluate E-4 in terms of W-4. E-4 weighs 199.5 g, W-4 = 197.1 g

1120	#3 Period	9.20	56.485 / RKR
	Rheostat = 15.78 + 1.0 = 16.84	56.465 = .015	56.480
		56.465 = .025	56.490 / (?)
			56.490
1135	Slightly Neg	55.855 = -.025	55.880
	Slightly Pos.	55.865 -.015	55.880
		55.870	
1155	#4 Period	9.00	56.285 / RKR
	Rheostat = 10.97 + 1.0 = 12.00	56.265 = 0.015	56.280
		56.265 = -.025	56.290
1210	Drain.		

1400

E1 17.8440	W1 15.9775	South	5.4470
E2 17.8320	W2 15.9460	S. Spacer	5.4270
E3 17.7630	W3 15.8240	S. Center	5.4420
E4 17.8365	W4 15.8590	Center	5.4470
E5 17.8250	W5 15.8540	N. Center	5.4490
E6 17.7815	W6 15.7930	N. Spacer	5.4530
E7 17.4270	W7 15.7700	North	5.4430
E8 17.8690	W8 15.7910		
E9 17.7880	W9 15.7015		

1445 Fuel loading

	E	W
1	F	
2	F	
3		F
4	F	F
5		F
6		F
7	F	
8		

Weights of End fuel plates in use.

Plate #	weight (grams)	Plate #	weight (grams)
E-1	= 201.3	W-1	
E-2	= 196.9	W-2	= 198.2
E-3	= 198.0	W-3	= 199.7
E-4	= 199.5	W-4	= 197.1
E-5	= 198.0	W-5	= 200.0
E-6	= 199.9	W-6	= 199.4
E-7	= 198.7	W-7	= 197.3
E-8	= 199.4	W-8	= 200.5

Compared with +, this change effectively adds W-4 and removes E-3 and E-8 to evaluate E-~~8~~3.

☒

1510 #5 Period 8.80 56.105 -0.015 56.120 / RKR

Rheostat - 10.61 + 1.0 ~ 11.6~~4~~ 56.115

-0.015 56.130 (?)

7-28-64

1525 Apparently level 55.705
.015
55.690

1540 #6 Period 56.295 -0.015 56.310 / RKR
Rlrsette - 16.16+1.0=17.22 56.305
56.285 -0.025 56.310 [illegible]
56.290

1555 #7 Period 8.58 -0.015 56.280 / RKR
Rlrsette = 15.04+1.0=16.04=56.265 56.280
56.265 -0.025 56.290 [illegible]

1607 Drain

3/2/64

E1. 17.8440	W1 15.9780	South	- 5.4420
E2. 17.8340	W2, 15.9470	S. Spacer	- 5.4260
E3. 17.8440	W3. 15.8210	S. Center	- 5.4440
E4. 17.8360	W4. 15.8570	Center	- 5.4410
E5 17.8280	W5. 15.8540	N. Center	- 5.4510
E6 17.7810	W6. 15.7900	N. Spacer	- 5.4550
E7. 17.8260	W7. 15.7820	North	- 5.4420
E8. 17.8650	W8. 15.7950		
E9. 17.7870	W9. 15.7020		

Fuel loading

	E	W
1		
2	F	
3		F
4	F	
5		F
6	F	F
7	F	
8		

1. Removed fuel plate # E-1; added al plate # E-1
2. added fuel plate # E-6; removed al plate # E-6
3. Removed fuel plate W-4; added al plate # W-4

INSTRUMENT CHECK

INSTRUMENT	RANGE	TRIP	SOURCE DISTANCE		START-UP
K-1	10 X 10 $^{-12}$	Meter	6"		10 X 10 $^{-12}$
	"	Fast	"		"
K-2	"	Meter	6"		"
	"	Fast	"		"
R-1					
R-2					
PM-1	700 v	Alarm	Cont		500 v
PM-2	1200 v	Low	15"		750 v
	"	Alarm	1"		"

LOG N CALIBRATE ——— OPERATE ——— SOURCE No. B-80

DUMP WELL PROBE LIGHT ________

START-UP CHECK LIST

Equipment checked by AKAJ Personnel check by I.D.C

Instruments and safeties checked and reset by AKKJ

Source in checked by AKKJ Source No. M-43

Emergency equipment in control room checked by I.D.C

Instruments in trip circuit: K-1 K-2 PM-1 PM-2

Red light on by AKRJ Time 10:00

Start-up OK'd by I.D.C AKAJ Date 3-2-69

Scope reads 59.615. Correction was 0.035 cm

		mon (cm)	0	scope (cm)
10:29	+Per (1)	9.60		56.900 ~~.035~~
	Rhoelle = 15.93 + 1.0 = 16.97			~~56.900~~ 56.865
10.42	System very very slightly +Per	8.86		56.180

		Mom(cm)	Leque(cm)
10:56	+Pwr (2) Rochette = 12.84+1.0 = 13.8¢	9.45	56.755 56.755
11:12	+Pwr (3) Rochette = 9.74+1.0 = 10.7¢	~~9.10~~ 9.30	~~56.415~~ 56.610 56.600 56.610
11:26	Drain:		

12:40 Removed fuel pl. #24 added al. plate #W6
Removed al. plate #W4 added fuel pl. #W4

W1 - 15.9780	E1 17.8490	South	5.4410
W2 - 15.9460	E5 17.8220	S. Spacer	5.4270
W3 - 15.8220	E9 17.7880	S. Centr	5.4410
W4 - 15.8560		Centr	5.4460
W5 - 15.8570		N. Centr	5.4530
W6 - 15.7920		N. Spacer	5.4500
W7 - 15.7810		North	5.4430
W8 - 15.7930			
W9 - 15.7020			

Fuel Loading

	E	W
1		
2	F	
3		F
4	F	F
5		F
6	F	
7	F	
8		

1. Removed fuel plate #W-6:
2. added fuel plate #W-4:

		Mom (cm)	Leaf (cm)
13:21	+ Pre (4) Rochette = 9.53 + 1.0 = 10.5 +	8.92	56.230
			56.230
13:35	Cycles very very slightly - Ny	8.55	55.535
	" " " " + Poe	8.58	55.840
13:50	+ Pre (5) 14.77 + 1.0 = 15.5 +	9.15	56.445
			56.435
			56.445

15:15 Removed al. plate # E5 added fuel plate # E5
3/2/64 Removed fuel plate # W4 added al. plate # W4
3/3/64

W1 - 15.9790	E1 - 17.8445	South - 5.4410
W2 - 15.9480	E2. 17.8320	S. Spacer - 5.4425
W3 - 15.8230	E3. 17.7640	S. Center - 5.4420
W4 - 15.8580	E4. 17.8380	Center - 5.4460
W5 - 15.8560	E5. 17.8240	N. Center - 5.4520
W6 - 15.7910	E6 - 17.7800	N. Spacer - 5.4530
W7 - 15.7825	E7 - 17.8270	North - 5.4410
W8 - 15.7920	E8. 17.8640	
W9 - 15.70000	E9 - 17.7890	

Fuel loading

F	W
1 -	1 -
2 - F	2 -
3 -	3 - F
4 - F	4 -
5 - F	5 - F
6 - F	6 -
7 - F	7 -
8 -	8 -

INSTRUMENT CHECK

INSTRUMENT	RANGE	TRIP	SOURCE DISTANCE	SET	START-UP RANGE
K-1	10 X 10 -12	Meter	6"		10 X 10 -12
"	"	Fast	"		"
K-2	"	Meter	"		"
"	"	Fast	"		"
R-1					
R-2					
PM-1	700 V	Alarm	cont		500 V
PM-2	1200 V	Low	16"		750 V
"	"	Alarm	1"		"

LOG N CALIBRATE ✓ OPERATE ✓ SOURCE No. B-80

DUMP WELL PROBE LIGHT

START-UP CHECK LIST

Equipment checked by RKA Personnel check by F.D.C.

Instruments and safeties checked and reset by RKA

Source in checked by RKA Source No. M-43

Emergency equipment in control room checked by F.D.C

Instruments in trip circuit: K-1 K-2 PM-1 PM-2

Red light on by RKA Time 0810

Start-up OK'd by F.D.C. RKA Date 3-3-69

Scope reads 59,600 : correction now = 0.020

See page 115 for end elements loading!

0840 System scrammed by K-1

		Mom (cm)	Scope (cm)
0850	+ Per 1 Rebetter 9.40 + 1.0 = 10.44¢	8.91	56.205
			56.205
0910	Lepton just exit	8.50	55.785
0921	+ Per 2	9.09	56.385
			56.380
0931	Drain;		

10:40	E1. 17.8455	W1-15.9790	South	- 5.4430
	E2. 17.8310	W2-15.9470	S. Spacer	- 5.4270
	E3. 17.7630	W3-15.8230	S. Center	- 5.4420.
	E4. 17.8370	W4. 15.8580	Center	- 5.4480
	E9. 17.7860	W5. 15.8560	N. Center	- 5.4500
		W6 15.7910	N. Spacer	- 5.4520
		W7. 15.7820	North	- 5.4410
		W8. 15.7930		
		W9. 15.9010		

Fuel loading

	E	W
1	F	
2		
3	F	F
4	F	
5	F	
6	F	F
7	F	
8		

		Mom (cm)	Scope (cm)
1128	+ Pour (3) Rachette = 12.11 + 1.0 = 13.1 ¢	8.71	56.000
			56.005
1141	System just [illegible]!	?	55.545
1150	+ Pour (4) Rachette = 16.61 + 1. = 17.6 ¢	8.85	56.160
			56.160
12:03	Drain!		

9
1430

E1. 17.8450	W1. 15.9785	South	- 5.4420
E2. 17.8320	W2. 15.9490	S. Spacer	- 5.4250
E3. 17.7650	W3. 15.8230	S. Center	- 5.4210
E4. 17.8370	W4. 15.8610	Center	- 5.4490
E5. 17.8250	W5. 15.8570	N. Center	- ~~5.[illegible]~~ 5.4530
E6. 17.7810	W6. 15.7910	N. Spacer	- 5.4540
E7. 17.8270	W7. 15.7810	North	- 5.4510
E8. 17.8650	W8. 15.7950		
E9. 17.7860	W9. 15.7015		

Fuel loading

	E	W
1	F	
2	F	
3	F	F
4	F	
5	F	
6	F	F
7	F	
8	F	

Moved the two 3rd elements from about center to between the 1st & 2nd:
Now have (.140 mil gap in center: & 2 - .340 mil gaps between
2nd and 4th elements about center: Exp #7 of program:

		Mom (cm)	Scope (cm)
15:10	+Per (5)	10.05	57.350
			57.350

15:21 Drain:

1600	W1. 15.9780		
	W2. 15.9480	E1. 17.8465	South 5.4450
3-3-64	W3. 15.8240	E5. 17.8250	S. Spacer 5.4230
&	W4. 15.8610	E9. 17.7860	S. Center 5.4420
3-4-64	W5. 15.8560	E3. 17.7640	Center 5.4480
	W6. 15.7900	E7. 17.8280	N. Center 5.4480
	W7. 15.7810		N. Spacer 5.4530
	W8. 15.7960		North 5.4420
	W9. 15.7050		

Fuel loading ○

	E	W
1	F	
2	F	F
3	F	F
4	F	
5	F	
6	F	F
7	F	F
8	F	

: added fuel ~~elements~~ plates #W-2 & W-7: ~~Replaced with~~ ~~al plates #~~: Removed al plate #W-2 & W7.

INSTRUMENT CHECK

INSTRUMENT	RANGE	TRIP	SOURCE DISTANCE	SET	START-UP RANGE
K-1	10×10^{-12}	Meter	6"	–	10×10^{-12}
	"	Fast	"	–	"
K-2	"	Meter	"	–	"
	"	Fast	"	–	"
R-1					
R-2					
PM-1	700 V	Alarm	Cont	–	500 V
PM-2	1200 V	Low	16"	–	750 V
	"	Alarm	"	–	"

LOG N CALIBRATE ✓ OPERATE ✓ SOURCE No. B-80

DUMP WELL PROBE LIGHT ———

START-UP CHECK LIST

Equipment checked by AKA Personnel check by E.D.C.

Instruments and safeties checked and reset by AKA

Source in checked by AKA Source No. M-43

Emergency equipment in control room checked by E.D.C

Instruments in trip circuit: K-1 K-2 PM-1 PM-2

Red light on by AKA Time 0815

Start-up OK'd by E.D.C AKA Date 3-4-64

Scope read 59.6 cc Correction now 0.020

See page 119 for end element loading.

		Nom (cm)	Legs (cm)
0837	tPer (1) Rochelle = 15.91 + 1 = 16.9#	8.85	56.170 56.165
0847	Lysteria just cut!	8.25	55.575
0907	tPer 2 Rochelle = 13.80 + 1.0 = 14.8#	8.72	56.045 56.045
0921	tPer 3 Rochelle = 13.74 + 1.0 = 14.7#	8.75	56.060 56.070 56.060
0929	Drain;		

1225	W1.15.9780	E1.17.8460	South - 5.4440
	W2.15.9480	E5.17.8240	S. Spacer - 5.4240
	W3.15.8240	E9.17.7865	S. Center - 5.4420
	W4.15.8560	E7.17.8280	Center - 5.4420
	W5.15.8565	E8-17.8680	N. Center - 5.4490
	W6.15.7900	E4.17.8390	N. Spacer - 5.4530
	W7.15.7810	E6.17.7800	North - 5.4550
	W8.15.7930	E3.17.7650	
	W9-15.7010	E2-17.8315	

12:#6 3/4/?? Fuel loading

	E	W
1	F	
2	F	F
3	F	F
4	F	
5	F	F
6	F	F
7	F	F
8	F	

Added fuel plate # W-5: removed al plate # W-5.

(+)

Perturbation # 8

Moved the two #6 elements from about center, to between the (2nd + 4th elements:) (#3 elements pair.) The #3 number's #3 elements are between the #1st + 2nd elements. (? see top of page 119 for description.) Now have a .340 mil gap between 5th and 7th element: Exp # 8 of program.

		Mom (cm)	Scope (cm)
13:15	+ Per 4 Rachelle = 12.13 + 1.0 = 13.1 ¢	8.82	56.145 56.145
13:27	System very very slightly +Pos:	8.40	55.690
13:36	+ Per 5 Rachelle = ~~~~ 21.30 + 1.0 = 22.3 ¢	9.20	56.490 56.490
13:45	Drain:		

3/5/64 0840

W1 - 15.9770	E1. 17. 8450	South - 5.4440
W2. 15. 9480	E2. 17. 8320	S. Spacer - 5.4270
W3 - 15. 8220	E3. 17. 7640	S. Center - 5.4420
W4. 15. 8580	E4. 17. 8370	Center - 5.4420
W5 - 15. 8580	E5. 17. 8240	N. Center - 5.4490
W6 - 15 - 7920	E6. 17. 7815	N. Spacer - 5.4530
W7. 15. 7810	E7. 17. 8270	North - 5.4460
W8. 15, 7950	E8. 17. 8670	
W9 - 15. 7010	E9. 17. 7870	

Fuel loading +

Same as Page 67 (Blue +)

	E	W
1	F	
2	F	
3	F	F
4	F	
5		F
6		F
7	F	
8	F	

INSTRUMENT CHECK

INSTRUMENT	RANGE	TRIP	SOURCE DISTANCE	SET	START-UP RANGE
K-1	10×10^{-2}	Meter	6"	✓	10×10^{-2}
"	"	Fast	"	✓	"
K-2	10×10^{-12}	Meter			"
"	"	Fast			"
R-1					
R-2					
PM-1	700 V	Alarm	Cont	✓	500 V
PM-2	1200 V	Low	16"	✓	750 V
"	"	Alarm	1"	✓	"

LOG N CALIBRATE ✓ OPERATE ✓ SOURCE No. B-80

[illegible] PROBE LIGHT _____

START-UP CHECK LIST

Equipment checked by RKR Personnel check by ~~E D C~~

Instruments and safeties checked and reset by RKR

Source in checked by RKR Source No. M-43

Emergency equipment in control room checked by E. D. C.

Instruments in trip circuit: K1, ~~K2~~ PM1, PM2

Rod light on by RKR Time 0940

Start-up OK'd by ~~E.D.C~~ RKR Date 3/5/64

Scope reads 59.600; Correction 0.020.

Uniform loading: See page 123 and element loading:

		mom (cm	Scope (cm)
10 20	+ Per (1)	9.20	56.500
	Pebble = ~~[illegible]~~ 16.39+1=17.44		56.495

		mon (cm)	frape (cm)
10:32	System just crit	8.55	56.870

10:34 Drain:
~~12:20~~

	E	W		
12:15	E1. 17.8450	W3. 15.8240	South	- 5.4450
	E2. 17.8315	W5. 15.8600	S. Spacer	- 5.4260
	E3. 17.7640	W7-15.7810	S. Center	- 5.4400
	E4. 17.8370		Center	- 5.4420
	E5-17.8245		N. Center	- 5.4510
	E6-17.7820		N. Spacer	- 5.4520
	E7- 17.8250		North	- 5.4410
	E8. 17.8660			
	E9. 17.7850			

Fuel loading X

	E	W
1	F	
2	F	
3	F	F
4		
5	F	F
6		F
7	F	
8	F	

1. Removed fuel plate # E-4
added al plate # E-4
(2) added fuel plate # E-5
removed al plate # E-5

		mom (cm)	frape (cm)
1300	+ Per (2)	8.89	56.185
	Rachelle = 9.26 + 1.0 = 10.3¢		56.185

		Norm (cm)	Scope (cm)
13:15	Systems first crit.	8.52	55.830

14:30

E1-17.8450	W1.15.9780	South	- 5.4420
E2-17.8310	W2.15.9460	S. Spacer	- 5.4250
E3.17.7640	W3.15.8230	S. Center	- 5.4410
E4-17.8375	W4-15.8560	Center	- 5.4420.
E5.17.8230	W5-15.8580	N. Center	- 5.4470
E6-17.7820	W6-15.7890	N. Spacer	= 5.4490
E7-17.8280	W7-15.7780	North	- 5.4430
E8-17.8660	W8-15.7940		
E9. 17.7880	W9-15.7030		

Fuel loading

	E	W
1	F	
2	F	
3	F	F
4		F
5		F
6		F
7	F	
8	F	

1. Removed fuel plate # E-5; added Al plate # E-5
2. Added fuel plate # W-4; removed Al plate # W-4

Scope reads = 59.596 - AKA - correction = 0.010
" " 59.600 - OC - correction = 0.020

← Norm (cm) Scope (cm)

1527 +Per (3)
Rochelle = 11.54 + 1.0 = 12.54 ¢

D.C. { 56.325, 56.335, 56.330 }
56.300, 56.295 } RRR

		Mon Com	Hope Com	
15:40	System very very slightly -Mg:	8.59	55.875	Sc
			55.875	
			55.855	Alk.
			55.855	

15:50 Drain:

3/6/64 0800

W1 - 15.9780	E1 - 17.8440	South	- 5.4410
W2 - 15.9480	E2. 17. 8300	S. Spacer	- 5.4250
W3 - 15.8230	E3, 17. 7620	S. Center	- 5.4410
W4. 15.8580	E4. 17. 8380	Center	- 5.4450
W5 - 15.8590	E5. 17. 8250	N. Center	- 5.4480
W6 - 15. 7910	E6 17. 7820	N. Spacer	- 5.4510
W7 - 15. 7810	E7. 17. 8270	North	- 5.4420
W8. 15. 7930	E8. 17. 8655		
W9 - 15. 7030	E9. 17. 7890		

Fuel Loading △

	E	W	
1	F		1. added fuel plate # E-5 ; removed
2	F		al plate # E-5
3	F	F	2. Removed fuel plate # W-5,
4		F	added al plate # W-5.
5	F		
6		F	
7	F		
8	F		

INSTRUMENT CHECK

INSTRUMENT	RANGE	TRIP	SOURCE DISTANCE	SET	START-UP RANGE
K-1	10 x 10 -12	Meter ✓	6"	—	
		Fast —	"	—	
K-2		Meter			
		Fast			
R-1					
R-2					
PM-1	7000 ✓	Alarm —	cont	—	
PM-2	12000 ✓	Low —	18"	—	
"		Alarm —	1"	—	

LOG N CALIBRATE ✓ OPERATE ✓ SOURCE No. B-80

DUMP WELL PROBE LIGHT _____

START-UP CHECK LIST

Equipment checked by RKJ Personnel check by F.P.C

Instruments and safeties checked and reset by RKJ.

Source in checked by RKJ Source No. M-43

Emergency equipment in control room checked by F.P.C.

Instruments in trip circuit: K-1 PM-1 PM-2

Red light on by RKJ Time 0910

Start-up OK'd by F.P.C RKJ Date 3-6-64

Blue line 59.595 RKR Correction -0.015

Shapes reads 59.610 CJ Correction -0.030

Uniform loading: see page 127 for end elements loading.

		Mon (cm)	Gage (cm)
0926	+Per (1)	9.05	56.360 / 56.350 [?] 56.325
	Reactivity = 13.42 + 1.0 = 14.4¢		

56.320 RKR
56.305

0940 Slightly +Per — 55.810 / 55.815 RKR, 55.800

55.~~825~~ 835 / 55.805 [?]

0945 Drain

3-9-64	E 1	17.8440
	2	17.8315
	3	17.7630

1. Removed fuel plate # E-2
2. added al plate # E-2

Fuel loading:

	E	W
1	F	
2		
3	F	F
4		F
5	F	
6		F
7	F	
8	F	

130

3/9/64 Setup for Tubing - Perforation #9

INSTRUMENT CHECK (D-6(e))

INSTRUMENT	RANGE	TRIP	SET	START-UP RANGE
K-1	10 X 10		5"	1 X 10
K-2	10 X 10	Meter	Out	
		Ft		
R-1				
R-2				
PM-1	7 & D	Alarm	Contact	500
PM-2	1700	Low	15"	700
		Alarm	1"	

LOG N CALIBRATE ✓ OPERATE ✓ SOURCE No. _____

DUMP WELL PROBE LIGHT _____

START-UP CHECK LIST

Equipment checked by RKR Personnel check by RKR

Instruments and safeties checked and reset by ΣJ

Source in checked by _____ Source No. _____

Emergency equipment in control room checked by _____

Instruments in trip circuit: K-1, PM-1, PM-2

Red light on by ΣJ Time 0845

Start-up OK'd by ΣJ, R.K.R. Date 3/9/64

Scope made 59.615 } D.C.
on Blue Line 59.615 }
59.605 } AKA.
59.605 }

59.615 EBS

		Mon (cm)	Leaper (cm)
0906	+ Pen (1) Rochette = 13.788 + 1.0 = 14.794	10.81	57.620 } DC
			57.620 }
			57.580 RKR
0941	system just crit.	9.52	56.860 } DC
			56.860 }
			56.820 } RKR
			56.820 }
0947	Drain to "for pulsing" sub crit	8.57	55.885 DC
			55.855 RKR
			55.870 EBS

See page 12 of O.W.M's log book for pulsing data:

3/10/64 added fuel plates W-2, W-5, W-7, W-8, E-2, E-4, E6. Run 40

W-1	15.9765	E-1	17.8450		
2	15.9460	2	17.8320	S -	5.4480
3	15.8240	3	17.7620	S. Space	5.4250
4	15.8590	4	17.8370	S. Center	5.4440
5	15.8550	5	17.8240	Center	5.4430
6	15.7905	6	17.7825	N Center	5. ~~45~~ 4485
7	15.7810	7	17.8260	N Space	5. ~~44~~ 4524
8	15.7920	8	17. ~~8658~~ 8680	N -	5.4420
9	15.7020	9	17.7890		

3/10/64

INSTRUMENT	RANGE	TRIP	SOURCE DISTANCE	SET	START-UP RANGE
K-1	10×10^{-12}	Meter	5"		10×10^{-12}
		Fast			
K-2	—	Meter			
		Fast			
R-1	—				
R-2	—				
PM-1	700	Alarm	Contact		500
PM-2	1200	Low	5"		750
		Alarm	1"		

LOG N CALIBRATE ✓ OPERATE ✓ SOURCE No. Ra-8

DUMP WELL PROBE LIGHT ____________

START-UP CHECK LIST

Equipment checked by RKR, DL Personnel check by EJ

Instruments and safeties checked and reset by EJ

Source in checked by RKR Source No. M-43

Emergency equipment in control room checked by EJ

Instruments in trip circuit: K-1, PM-1, PM-2

Red light on by EJ Time 0830

Start-up CK'd by EJ, RKR Date 3/10/64

Blue line: 59.610 RKR; EJ
Correction: -.020

0930 + Period - very long. H_2O at top of tank
16.12 63.420

3/10/64

Al

1103	+ Period - source in.	16.09	63.400 RKR
	Rhostat −0.94 + 1.0 = 1.74K		
1106	source out		−0.030
			63.370
1135	Start to level	15.20	62.510
			62.510 R-KR
			.030
			62.480
1145	Drain		

On East half of core, restored plates to uniform (1.40 mil) spacing. Removed E-4 fuel, replaced with Al.

West half of core still has plates displaced for the last perturbation, and the West portion still contains fuel in all positions except W-1.

fuel loading:

E	W
1 - F	1 -
2 - F	2 - F
3 - F	3 - F
4 -	4 - F
5 - F	5 - F
6 - F	6 - F
7 - F	7 - F
8 - F	8 - F

				Across Top:
E-1	17.8450	W-1	15.9820	5.4400
E-2	17.8310			5.4250
E-3	17.7600			5.4420
E-4	17.8380			5.4460
E-5	17.8245	W-5	15.8560	5.4515
E-6	17.7820			5.4540
E-7	17.8270			5.4450
E-8	17.8660			
E-9	17.7875	W-9	15.705	

59.605 E.f. scope reading: correction = 0.025
59.605 - RKR "
59.615 OC

		Mon (cm)	Scope (cm)
1445	+Per. Rachette = 11.998 + 1.0 = 13.0 ¢	9.20	56.525 56.520 56.495 RKR 56.495
1504	System just crit.	8.70	55.980 RKR 55.980 55.995 OC 56.005 56.000 55.995
1516	+Per. (2) Rachette = 16.71 + 1.0 = 17.7 ¢	9.40	56.705 56.705
1525	Shut down.		

3/11

Restored West half of core to uniform spacing. Due partial elements, removing E-6, W-2, W-5, W-8.

(X)

	East	West
1	F	
2	F	
3	F	F
4		F
5	F	
6		F
7	F	F
8	F	

3/11/64

INSTRUMENT	RANGE	TRIP		SOURCE	SET	START-UP
K-1	10x15^-10		✓	6"	✓	10x10^-10
			✓			
K-2	—	Meter	✓			
			✓			
R-1	—					
R-2	—					
PM-1	700	Alarm	✓	Contact.		500
PM-2	1200	Low	✓			700
		Alarm	✓			

LOG N CALIBRATE ✓ OPERATE — SOURCE No. [illegible]

DUMP WELL PROBE LIGHT —

START-UP CHECK LIST

Equipment checked by RKR Personnel check by EJ

Instruments and safeties checked and reset by EJ

Source in checked by RKR Source No. M-40

Emergency equipment in control room checked by EJ

Instruments in trip circuit: K-1, PM-1, PM-2

Red light on by EJ Time 0825

Start-up Ch'd by EJ, RKR Date 3/11/64

Scope reads 59.605 RKR
59.615 D.C - Correction = 0.035 cm

Non Corr

0945 + Mer (1) 8.46
Rodlette - 12.18 + 1.0 = 13.24

Scope Corr
55.770 D.C
55.765
.035
55.730

3/11/64

W1	15.9785	E-1	17.8460	S	5.4480
2	15.9480	2	17.8310	SS	5.4240
3	15.8240	3	17.~~8~~ 7670	SC	5.~~448~~ 4400
4	15.8585	4	17.8350	C	5.4415
5	15.8580	5	17.8240	NC	5.4520
6	15.7940	6	17.7820	NS	5.~~442~~ 4525
7	15.7805	7	17.8260	N	5.4410
8	15.7935	8	17.8655		
9	15.7040	9	17.7870		

See page 135 for end elements' loading:

		Mom	Liquid Corr.
10:02	+Per (2) Rochelle = 20.3+1.0 = 21.3¢	8.71	56.055 56.060 (6) .020 56.020
10:15	+Per (3) Rochelle = 13.3+1.0 = 14.3¢	?	55.800 55.795 .035 55.760

11:A Removed E2, E3, E5, E7, E8

Loading?	E	W	~~W~~ E			
			-1	17.8460		
1	F		2	17.8320	S	5.4480
2	–		3	17.7610	SS	5.4254
3	–	F	4	17.8360	SC	5.4410
4	–	F	5	17.8260	C	5.4420
5	–		6	17.7840	NC	5.4490
6	–	F	7	17.8280	NS	5.4520
7	–	F	8	17.8650	N	5.4470
8	/		9	17.7885		

3/11-12/64

		Mon (cm)	Scale (cm)
11:30	+ Pos 4	16.40	63.750
			63.740
			63.740
			-.030
			63.710
12:00	System just crit; Pochette = 0.88¢ + 1.0¢ = 1.88¢	15.45	62.770
			62.770
			-.035
			62.735

3/12 Loading change - Add E3, E4, E5, E7, E8
Remove W6, W7

E 1 -	17.8450 (35)	W-1	15.9775	S	5.4430
2 -	17.8315	2	15.9480	SS	5.4270
3 -	17.7635	3	15.8225	SC	5.4410
4 -	17.8375	4	15.8580	C	5.4400
5 -	17.8225	5	15.8570	NC	5.4490
6 -	17.7810	6	15.7905	NCS	5.4520
7 -	17.9260	7	15.7810	NSA	5.4430
8 -	17.8665	8	15.7930	~~N~~	~~5.4430~~
9 -	17.7490	9	15.7030		

	East	West
1	F	
2		
3	F	F
4	F	F
5	F	
6		
7	F	
8	F	

3/12/64

INSTRUMENT CHECK

INSTRUMENT	RANGE	TRIP	SOURCE DISTANCE	SET	START-UP RANGE
K-1	10 x 10^-12 ✓	Meter ✓	6"	✓	10 x 10^-12 ✓
		Fast ✓			
K-2	—	Meter			
		Fast			
R-1	—				
R-2	—				
PM-1	700	Alarm ✓	Contact		500
PM-2	1200	Low ✓	15"		750
		Alarm ✓	1"		

LOG'N CALIBRATE ✓ OPERATE ✓ SOURCE No. ______

DUMP WELL PROBE LIGHT —

START-UP CHECK LIST

Equipment checked by RKR Personnel check by EJ

Instruments and safeties checked and reset by EJ

Source in checked by EJ Source No. M-43

Emergency equipment in control room checked by ______

~~Instruments in trip circuit:~~ K-1, PM-1, PM-2 ✓

~~Red light on by~~ EJ ~~Time~~ 0820

~~Start-up OK'd by~~ EJ, RKR, DC Date 3/12/64

Scope reads = 59.615 – D.C.
" " = 59.610 – EJ.

Mon (cm) ⊕ Scope (cm)

0845 + Rev (1) 9.32 56.645 } DC
Rotate = 13.675 H₂O = 14.74 56.645

56.640 } EJ
56.635
.03

31 Mar 64

0910	System very slightly -ing	8.72	56.050
0922	+Per (2)	9.20	56.495
	Rhoads ~10.48 + 1.0 ~ 11.54		56.490
			-0.030
			56.460

Loading Change add W6; Remove E3

W1	15.9775	E1 -	17.8450
2	15.9480	2 -	17.8335
3	15.8835	3 -	17.7670
4	15.8600	9 -	
5	15.8565		
6	15.7895		
7	15.7790		
8	15.7915		
9	15.7035		

Loading

	E	W
1	F	-
2	-	-
3	-	F
4	F	F
5	F	-
6	-	F
7	F	-
8	F	

		Mon (cm)	Legan (cm)
11:20	+ Pos (3) 22.81 + 1.0 = 23.8 ✓	9.83	57.155 -7.155 .000 57.155
11:29	+ Pos 4 Rochette = 12.75 + 1.0 = 13.75 ✓	~~9.14~~ ~~9.31~~ ~~4.15~~	~~56.480~~ 56.670 56.670 .00
11:40	hysters just end	8.78	56.095 56.100 .00
11:45	+ Pos 5 Rochette = 10.41 + 1.0 = 11.4 ✓	9.20	56.555 56.555 .00

Measurment of array

w-1	15,9790		E-1 17,8440
-2	15,9465	s = 5.4430	2-17,8320
-3	15,8240	ss = 5.4240	3-17,7630
-4	15,8580	sc = 5.4420	4-17,8375
-5	15,8575	c = 5.4440	5-17,8240
-6	15,7910	Nc = 5.4480	6-17,7820
-7	15,7810	Ns = 5.4530	7-17,8280
-8	15,7930	N = 5.4420	8-17,8660
-9	15,7020		9-17,7865

Fuel loading

	E	W
1	F	
2		
3		F
4	F	F
5		F
6		F
7	F	
8	F	

Removed E-5;
added W-5;

(X)

		mom (cm)	keff (cm.)
1405	+Per (6) Rachette = 8.78 + 1.0 = 9.8¢	9.19	56.490 56.490
1421	keff = just crit	8.79	56.090
1430	+Per (7) 13.51 + 1.0 = 14.5¢	9.40	56.690 56.695
1440	Drain!		

Measurement of Array

W - 1 - 15.9785	SC - 54410	E 1 - 17.8460
2 - 15.9475	NC - 54490	2 - 17.8320
3 - 15.8240	C - 54440	3 - 17. ~~7562~~ - 7562
4 - 15.8580		4 - 17.8360
5 - 15.8560		5 - 17.8260
6 - 15.7900		6 - 17.7800
7 - 15.7800		7 - 17.
8 - 15.7930		8 - 17.
9 - 15.703		9 - 17

~~S~~

~~SS~~

~~SC~~

Fuel loading:

	E	W
1	F	
2		F
3		F
4		F
5		F
6		F
7	F	F
8	F	

1. Removed E-4.
2. added W-2; W-7

X

1627 + Period # 8 9.52 s 56.845

Rhosette - 11.1 + 1.0 = 12.1 ¢ 56.855

56.820

1640 Just critical 5.05 56.390

.03

56.360

144 3/12/64 3/13

165 + Point #9 5.40 cm 56,700
,033
56,733

17.15 Shut down

3/13/64 Loading Chg.

Remove W2 add E3 (10)

E-1	17.8440	W-1	15.9785
2	17.8310	W 2	15.9465
3	17.7610	W 3	15.8240

Loading	E	W
1	F	
2		
3	F	F
4		F
5		F
6		F
7	F	F
8	F	

IX

INSTRUMENT CHECK

INSTRUMENT	RANGE	TRIP	SOURCE DISTANCE	SET	START-UP RANGE
K-1	10 x 10 -12	Meter ✓	6"	✓	10 x 10 -12
	"	Fast ✓	"	✓	
K-2		Meter			
		Fast			
R-1					
R-2					
PM-1	7000	Alarm ✓	cart	✓	5000
PM-2	12000	Low ✓	1"	✓	7500
		Alarm ✓	16"	✓	"

LOG N CALIBRATE ✓ OPERATE ✓ SOURCE No. B-80

DUMP WELL PROBE LIGHT ______

START-UP CHECK LIST

Equipment checked by AKR Personnel check by AKR

Instruments and safeties checked and reset by AKR

Source in checked by AKR Source No. M-43

Emergency equipment in control room checked by AKR

Instruments in trip circuit: K-1 PM-2 PM-1

Red light on by O.C Time 0800

Start-up OK'd by O.C. AKR Date 3-13-60

Scope read 59.615 - O.C

" " 59.610 - E.J. Conversion 0.330

Mon. (cm) Scope (cm)

0820 + Per (1) 9.05 56.365 } OC

Rochelle = 12.16 + 1.05 = 13.24 56.365 }

56.360

3/13/64

		Mom (cm)	Leape (cm)
0833	System very slightly +Pos	8.62	55.860
0841	+Pos (2)	9.30	56.620
	Roulette = 18.105 + 1.0 = 19.14		56.615

E - 1	- 17.8450	S - 5.4490	W - 1 -	15.9770
2	- 17.8310	SS - 5.4270	5 -	15.8590
3	- 17.7625	SC - 5.4410	9 -	15.7030
4	- 17.8365	C - 5.4450		
5	- 17.8250	NC - 5.4510		
6	- 17.7820	NS - 5.4500		
7	- 17.8265	N - 5.4440		
8	- 17.8660			
9	17.7870			

Fuel Loading

	E -	W -
1	F	
2		
3		F
4		F
5		F
6	F	F
7	F	F
8	F	

X

3-13-69

		Mass (cm)	Scope (cm)
1027	+ Per 3 Rochelle = 11.54 + 1.0 = 12.5¢	9.02	56.340 56.340
10.40	Before first cut:	8.490	55.810
10.50	+ Per 4 Rochelle = 15.98 + 1 = 17.0	9.22	56.555 56.555
1106	+ Per 5 Rochelle = 14.31 + 1.0 = 15.3¢	9.15	56.480 56.480

1118 Drain:
Loading change (Added E5, Removed W4

measurement of array

W-1 = 15.9770	S 5.4460	E -	17.8450
2 = 15.9470	SS 5.4270		17.8320
3 = 15.8230	SC 5.4400		17.7635
4 = 15.8585	C 5.4460		17.8370
5 = 15.9580	NC 5.4520		17.8250
6 = 15.7900	NS 5.4570		17.7820
7 = 15.7815	N 5.4480		17.8280
8 = 15.7945			17.8665
9 = 15.7025			17.7870

3/13/64

Loading

	E	W
1	F	
2	-	
3		F
4		
5	F	F
6	F	F
7	F	F
8	F	

		mom (cm)	scope (cm)
1300	+Pos 6 Rochette = 14.96+1.0 = 15.00	9.10	56.420 56.415
1314	System very slightly - neg.	8.41	55.730
1322	+Pos 7 Rochette = 13.6 +1.0 = 13.64	8.95	56.290 56.290
1335	Shut down.